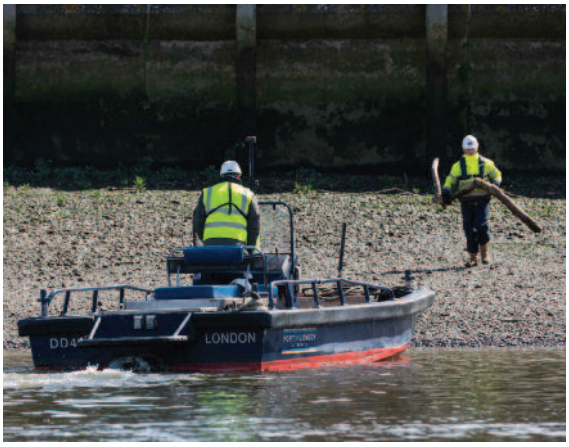
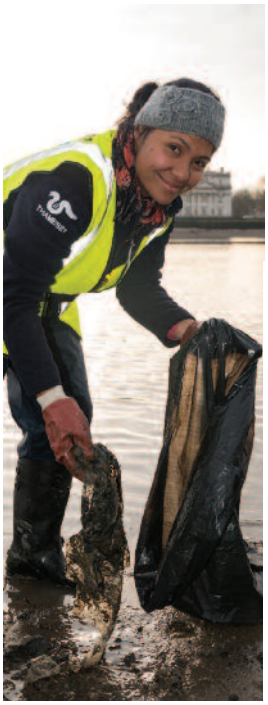


Litter Strategy for the Thames Vision



THAMES LITTER FORUM

THAMES 2035

The River Thames is one of the world's most iconic rivers and home to an abundance of thriving wildlife. Regrettably, the last half century has also seen the river become home to ever increasing quantities of litter.

One of the ambitions at the heart of the Thames Vision project[1], a shared stakeholders' view of how the river will develop between now and 2035, is to see the cleanest Thames since the industrial revolution. Reducing litter in the river has been identified as an essential part of achieving this goal.

Tackling this major issue will require holistic action from the many organisations and networks involved in, and already striving to reduce the Thames litter problem. This document has been developed in consultation with organisations that are part of the Thames Litter Forum[2] with the purpose of outlining a collective strategy to reduce litter in the River Thames.

The Strategy sets out the context for future action on litter in the Thames environment and outlines the types of actions that the Thames Litter Forum will work towards over the next five years.

Section 1: Context

The Thames Vision

The Vision for the Tidal Thames was published in July 2016. Co-ordinated by the Port of London Authority (PLA), the Vision was developed with stakeholders to create a 20 year view of the river's future to make the most of its potential for the benefit of all. One of the six goals central to the Thames Vision is to see the cleanest Thames since the Industrial Revolution, with improved habitats and awareness of heritage. In order to achieve this goal, a priority action has been set to *'Improve water quality by a range of measures including reduced litter in the river.'*

The Thames Litter Forum

Created by the PLA in 2014 with support from the Thames Estuary Partnership, the Thames Litter Forum is a group of non-governmental organisations, university researchers, river operators, businesses, industry bodies and other relevant authorities that meet quarterly to tackle the problem of litter in the Thames. The Forum aims to maximise work already undertaken by organisations and networks by providing opportunities to:

- Share ideas about how to deal with inherited litter on the Thames.
- Share information, case studies and best practice.
- Bridge the gap and learn from citizen science studies with regulators and interested parties.
- Provide a collaborative environment to promote actions towards reducing litter on the Thames and maximise funding opportunities.
- Develop a membership that reflects the production and impact of rubbish i.e. from producer, user to remover.

The Thames Litter Forum will be the collaborative platform from which the Litter Strategy for the Thames Vision is delivered by member organisations and will report progress to wider Vision and stakeholder groups.

Litter and the Thames

In the context of this strategy, litter is defined to include any anthropogenic, manufactured, or processed solid material discarded, disposed of, or abandoned in the environment. The last century has seen litter become a significant and ubiquitous problem in aquatic environments the world over[3]; this partially reflects an increase in the 'on-the-go' eating habits of consumers and consequential littering of food related packaging. Studies continuously identify plastic to be the most prevalent and widespread litter type in aquatic environments due to the material's permanence and low weight.[4]

Litter can enter river systems through voluntary and involuntary discarding, sewage overflows, surface runoff, and wind. Aquatic litter may result from activities both on land and water, but globally land-based sources account for the vast majority.[5] Once introduced to a river, litter may sink, be deposited on banks and or be transported to estuarine and marine environments. Plastics may also be broken down into smaller fragments by photo-degradation, called microplastics when under 5mm.

Litter harms aquatic wildlife through ingestion and entanglement leading to increased mortality.[6] Aquatic litter also causes substantial socio-economic damage as a degrader of aesthetic value, a hazard to commercial and recreational vessels, and as a potential vector of aquatic invasive species.[7] Furthermore, research is increasingly demonstrating the potential for microplastics to concentrate persistent organic pollutants as well as other toxic chemicals and introduce them into marine food-webs, potentially ending with human consumption.[8]

Since being declared biologically dead in the 1950s and 60s, the River Thames has made a considerable recovery to become one of the cleanest metropolitan rivers in the world. Amongst other environmental statuses, the tidal Thames is home to nine sites of Special Scientific Interest (SSSIs) and provides a range of diverse, thriving habitats for many species of fish, birds, seals and other wildlife. Furthermore, with construction underway on the Thames Tideway Tunnel, water quality is set to significantly improve as both the number and total volume of sewage discharges will be dramatically reduced.[9]

Against the many reasons to be optimistic, recent work has highlighted litter as one of the major challenges remaining to an improved Thames environment. Up to 300 tonnes of debris is recovered from the Thames each year, much of this being plastic litter. Monitoring of the Thames foreshore by Thames21 in 2017 has shown that food and drink packaging is responsible for 47% of litter found with 59% of 1m^2 foreshore areas surveyed containing small fragments of plastic or polystyrene.[10] Studies by researchers at the Royal Holloway, University of London and Natural History Museum have found a substantial sub-surface flow of litter items in the Thames,[11] and have more recently discovered that up to 75% of European flounder

in the Thames have plastic fibres in their guts.[12] Furthermore, while it is difficult to calculate the true economic impact of Thames litter, the emptying and maintenance of the PLA's network of debris/litter collectors alone costs approximately £50,000 annually with the construction and installation of just one collector costing over £100,000. The PLA are currently working with river operators and users to gain a better understanding of incidents caused by litter and their economic cost.

Ongoing Work

There is already encouraging work being undertaken to counteract the threat of litter in the Thames Environment. Voluntary organisations including Thames21, the Marine Conservation Society and partners regularly run clean-up events which remove large quantities of litter from the foreshore and beaches of the Thames Estuary from Teddington to Southend. Most of this litter is then disposed of by the PLA. Thames21 have also implemented 'Thames River Watch'; a citizen science project training Londoners to monitor and report litter in the Thames environment.

For many years the PLA have operated a 'driftwood service' that annually removes up to 300 tonnes of debris from the Thames, much of this being plastic litter. This service includes two purpose built vessels and a network of Passive Debris Collectors (PDCs), which are positioned in key locations in the river between Greenwich and Putney to intercept and collect floating litter on both the ebb and flood tide.

Campaigns

In 2015, the PLA launched the Cleaner Thames Campaign. The campaign's main objective has been to reduce the amount of litter collected in the Thames by changing people's perceptions on littering and its effects on the river. Launched and fronted by explorer Paul Rose, the campaign has involved a variety of materials including films, posters and art installations. The campaign also engaged with the organisers of many of London's popular sporting events to further spread the message and to minimise event related litter entering the Thames.[13]

The #OneLess campaign, led by the Zoological Society of London (ZSL) and partners is working to make London the first capital city to end the practice of single-use plastic bottles, through the targeting of both the individual and businesses across the city.[14] Most recently, the Hubbub Foundation's 2017 campaign For Fish's Sake (#FFSLDN) has had a successful year encouraging London's residents, commuters and tourists to reduce the flow of litter into the River Thames.[15] At one of the campaign's target sites near London Bridge Station, litter was reduced by 32% through innovative promotion of the following three messages:

1) Use the bin – not the gutter, not the river, not the pavement.
2) If you see some litter and you're near a bin – pick it up.
3) If the bin is full, find another one or take your litter home.

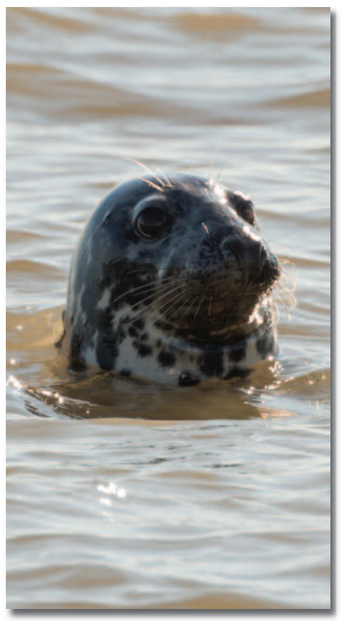
Wider Policy

Strategic action is also being taken at the regional, national and international levels. The Greater London Authority's Environment Strategy acknowledges the issue that litter on London's streets often finds its way into its waterways,[16] and in April 2017 the Government published its Litter Strategy for England[17] which includes a range measures to help tackle aquatic litter. Globally, the UN has recently set an ambitious tone with environment ministers signing a resolution stating that the flow of plastics into oceans must be stopped. While in Europe, millions of euros funding have been announced towards actions hoped to foster a cleaner and healthier marine environment, including measures to reduce the leakage of plastics into the environment as part of the European Union's upcoming plastics strategy.[18]

Actions in this Litter Strategy for the Thames have been set to embrace these wider objectives as well as those in other multinational strategies, including the OSPAR Marine Litter Regional Action Plan[19]; a plan for the North-East Atlantic region containing 55 collective and national actions aiming to address both land based and sea based sources. Linking local strategic action with that at larger-scales is essential in order to reflect the global, cross-boundary nature of litter pollution.

Section 2: Strategic Actions

Outlined in this section are the actions to be driven by the Thames Litter Forum in order to achieve the Thames Vision goal of reducing litter in the River Thames. The large scale and ambition of these actions means that a high degree of coordination and cooperation both within the Forum and with external partners will be essential. Table 1 sets out the common actions for the members of the Thames Litter Forum to implement, which as a delivery plan is an evolving document subject to review and updating. The actions are divided into the following four strategic themes:



1) Baseline and evidence for informing the strategy

A pivotal and challenging element of the strategy will be to develop a data baseline and subsequent monitoring programme from which progress can be assessed. As a minimum, the baseline should provide a relative quantification of the current extent of litter pollution in the Thames. Data collected will need to be statistically robust and eventually enable the measurement of performance around the strategy's central aims:

- to reduce the quantity of litter entering the river;
- maximise the quantity of litter removed from the river;
- to maximise the number of people reached through education and outreach.

Initially, data from Thames21 'Rapid Appraisal' surveys will be used as a simple and repeatable baseline. This methodology involves surveyors travelling the length of the tidal Thames and grading every 250m stretch of the foreshore north and south of the river based on the approximate quantities of transient and immobile litter present. Grades 'A' to 'D' are assigned to foreshore stretches providing a snapshot of the extent of litter pollution along the intertidal foreshore.

It is acknowledged that this data only provides a simplistic representation of litter pollution in the Thames, therefore it is intended that this baseline and subsequent monitoring will be flexible to allow for future expansion of data inputs. Furthermore, where opportunities arise, data collected will be accompanied by academic study in order to develop a deeper understanding of the dynamics and impacts of litter in the Thames environment.

2) Combating pathways of litter into the Thames

Once dropped, litter finds its way into the Thames through a variety of pathways many of which are hidden from sight. Some of these pathways may be responsible for a disproportionately large quantity of litter transport to the river and should therefore be the focus of mitigation efforts. An important objective of the strategy is to try and identify these pathways and entry 'hotspots' and to work with Local

Authorities to develop and implement best practice for the prevention and management of litter. Also included in this strategic theme will be work to combat litter pathways at the source; working with industry to look at plastic product design, recyclability and biodegradability.

3) Removal of existing litter in the Thames

For over 60 years, plastic and other forms of litter have been entering the Thames environment. Other than that removed by volunteers and the PLA, the eventual fate of this litter is currently unclear. Much of it may still remain in the river; moving up and down with the tide, breaking down into ever smaller fragments, and or being buried in river bed and bank sediments. It is also possible that a proportion of this litter is being transported out into the North Sea further exacerbating plastic pollution in the marine environment. What is clear is that efforts to remove existing litter in the Thames need to continue. The Litter Strategy will look for opportunities to build capacity of litter removal response and develop best practice for more effective, environmentally friendly clearing.

4) Behavioural change through education and outreach

If people didn't consciously discard litter in the first place then there wouldn't be much of a litter problem in the Thames. Data that has been collected on the types of litter in the Thames consistently shows that the vast majority is food and drinks packaging such as plastic bottles. Attempting to create a culture in London where it is totally unacceptable to drop litter is therefore a fundamental part of this strategy. This will hopefully be achieved through broad themes of education and outreach, including work within in schools and public campaigns.

Table 1: Strategic actions of the Litter Strategy

Strategic Theme	Action
	Develop and agree coordinated SMART reduction/ operational targets for the relevant actions in the strategy.
1. Baseline and evidence for informing the strategy	A. Develop an impartial, statistically robust and proportionate methodology for assessing and monitoring the extent of litter in the tidal River Thames, underpinned with contribution from academia
	B. Produce a baseline based on the agreed methodology, with flexibility for future expansion of data inputs, for litter in the Thames
	C. Review and where necessary improve understanding of the litter, and its relevant life cycles, entering the Thames environment
	D. Develop the evidence base on the impacts of litter on the ecological, economic and amenity values of the Thames
2. Combating pathways of litter into the Thames	A. Develop a 'Hotspot' map of entry sites into the tidal River Thames
	B. Investigate and evaluate best practice for the prevention and management of Litter. Engage with local authorities and industry at the appropriate level to encourage uptake of these practices
	C. Work with local authorities to improve "binfrastrucutre" of riparian boroughs
3. Removal of existing litter in the Thames	A. Develop best practice on environmentally friendly technologies and methods for cleaning and reducing litter in the Thames
	B. Identify opportunities for improving the identification and removal of litter from the tidal Thames
	C. Explore means to address the practical barriers to keeping the River Thames clear of litter, including issues relating to both clearing and litter-prevention
	D. Build capacity of litter removal response
4. Behavioural change through education and outreach	A. Contribute to the delivery of Government's 'world class national anti-litter campaign' as outlined in the Litter Strategy for England (2017)
	B. Increase awareness within schools of the issue of litter relating to the River Thames
	C. Encourage and develop partnerships internally and with stakeholders to promote the issue of litter entering the Thames
	D. Advocate the use of behavioural insight to develop and test new ways to reduce littering

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