Climate change on the tidal Thames

Impacts, adaptation and mitigation

Scientific evidence suggests, with high confidence, that climate change is happening now and that it is the result of greenhouse gas emissions caused dominantly by human activities, such as the burning of fossil fuels.

The independent Climate Change Committee established by the Government to advise on emissions targets, identified a range of concerns and risks for the future under various scenarios. These risks will have increasing and inevitable impacts on the natural environment, people, and the economy, if no action is taken to prepare for change (adaptation) or reduce greenhouse gas emissions (mitigation).

As home to the UK's largest port, at the PLA we have looked closely at this, voluntarily producing a climate change adaptation report and returning it to Government.

This infographic document sets out the impacts of climate change on the tidal Thames, the port, how we are adapting to it and what we can do to improve things for the future.

PORT OF LONDON AUTHORITY

Climate change on the tidal Thames
Impacts, adaptation and mitigation

What CLIMATE CHANGE means for the tidal Thames

Impacts of the mid-range change predicted for 2050, compared to a 1981-2000 baseline under the medium greenhouse gas emissions scenario (RCP4.5).

Summer max air temperature of 36.3ºC and more frequent heatwaves

Increased peak river flow

Increase in wind speed in winter

Increased number of fog days in winter

10% more rainfall in winter

Increased frequency of flooding

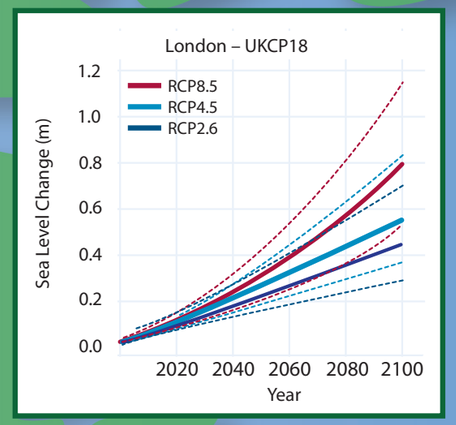
Sea level rise by 0.25m

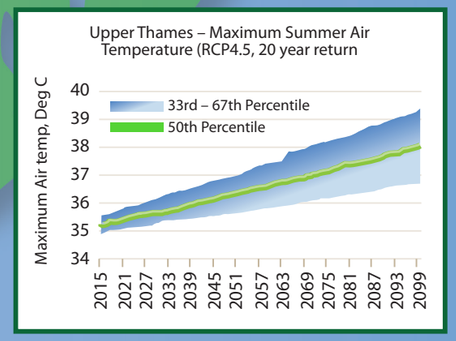
Increased annual mean temperature by 1.4 ºC

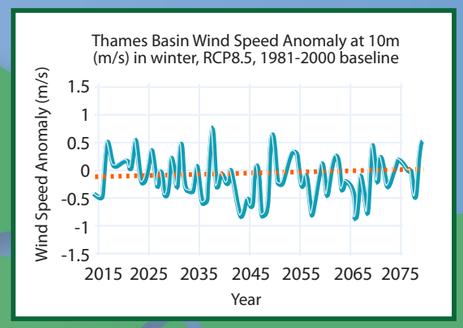
Increased water temperature

Increase in wave height

17% less but more intense rainfall in summer







THAMES ESTUARY 2100 (TE2100)

Key facts from the Environment Agency's ten-year Thames estuary plan review:

- Sea level rising at a rate of 1.4 mm per year between 1911 and 2018 and 3.66 mm per year between 1990 and 2018
- Thames Barrier is expected to be closed more frequently
- The majority of river flows have increased in the last 30 years

The fully reviewed flood defence plan for the Thames Estuary will be published by TE2100 in 2022.

Climate change on the tidal Thames
Impacts, adaptation and mitigation

Impacts of CLIMATE CHANGE to the Port of London

Climate change could affect the operation of the Port of London in various ways

ECONOMIC

Remote sites less accessible for maintenance

- Increased risk of international supply chain interruption
- Shift in cargo type linked to consumer behaviour

- Increased electricity use for vehicles, vessels and machinery
- Increased dependence on energy providers
- Increased risk when developing new energy infrastructure

Extreme weather can accelerate deterioration of structures, buildings and river walls

Higher risk when loading/offloading cargoes with cranes due to the increased wind speed in winter

Disruption in river traffic due to closure of flood defence barriers or closure of locks to retain water in the channel upstream

- Disruption to the pilotage service, due to extreme weather and poor visibility
- Navigation channel depth affected due to change in sediment movement
- Potentially reduced operational window for hydrographic surveying

SAFETY

Poor summer air quality, due to higher temperatures, sunnier and less windy conditions

Less favourable conditions for leisure activities afloat, due to extreme weather and increased river flows

Overhead bridge clearance (air draught) reduced due to increased sea/river levels

ENVIRONMENT

Increased chance of non-native species colonisations

Poor water quality due to increasing run off, temperature, water abstraction and discharge, changes in river flow and sediment movement

Increased risk of heat exhaustion and UV exposure for all river users

Habitat migration north, due to increasing temperature

- Coastal squeeze of saltmarshes due to rising sea levels and flood defence development
- Increased chance of bank erosion
- Increased chance of trees falling

Climate change on the tidal Thames
Impacts, adaptation and mitigation

Adapting TO CLIMATE CHANGE ON THE THAMES

We have developed and are implementing various plans to adapt and minimise the risks associated with climate change; stakeholders are contributing too

SAFETY

- PLA: Ebb tide flag warning system introduced to inform recreational users of river flow conditions
- Familiar with the safety code on the river
- Check the weather, tide and Ebb flag before going on the river
- PLA: Operating the Marine Safety Management System, including incident investigation
- Information online, including tide tables, live tides, depths on tiers, bridge heights and critical depths
- Maintaining locks to ensure safe and reliable operations
- Follow rules, guidelines and best practice for navigation on the tidal Thames
- PLA: Monitoring the changes in riverbed
- Upgrade tide gauges coverage
- New surveying technologies to improve data collection efficiency
- PLA: Support operators access to berths in line with safety requirements
- Regular maintenance dredging to maintain water depth at berth

ENVIRONMENT

- PLA: Developed the Thames Litter Strategy to combat the source of litter entering the Thames
- Driftwood and debris recovery from the river by our passive debris collectors and driftwood vessels
- Regular review of oil spill emergency plan
- Reduce marine litter as much as possible
- Report any incidents, i.e. oil spill, litter
- Organise or join litter pick events
- Use reusable water bottles and travel mugs
- PLA: Maintenance team set-up to maintain the riverbank between Kew and Putney
- PLA: Working closely with the Environment Agency on flood defence, foreshore management and water quality
- PLA: Working closely with water companies on their water management plans
- Consume water sensibly

ECONOMY

- PLA: Continued investment in pilots recruitment and training, upgraded ship's bridge simulator
- Avoid carrying pilots outside of the PLA's jurisdiction

AWARENESS

- PLA: publicising the impacts of climate change through different channels
- Voluntarily submitted Climate Change Adaptation reports to DEFRA
- Help us to spread our words through social media, news letters and public meetings
- PLA: Participating at various resilience forums, partnership and working groups

PLA Actions by the PLA
Actions by sporting clubs
Actions by operators
Actions by individuals

Climate change on the tidal Thames
Impacts, adaptation and mitigation

Mitigating CLIMATE CHANGE ON THE THAMES

With stakeholders, we are working to mitigate emissions that contribute to climate change

PLA Actions by the PLA | Actions by operators | Actions by individuals

TECHNOLOGY

- Follow best practice to maximise energy efficiency
- PLA: Switching to low emissions fuel
  First hybrid pilot cutter in the UK.
  Use shore power whenever possible
- PLA: Established the Sustainable Innovation Fund
  Investigating the future energy infrastructure needs for river operations
- Get involved with trials and demonstration projects
- Implementing the Green Technology Development Plan
- PLA: Others - Install renewable energy on sites
  Us - Designated test site for tidal energy technology trial
  Us - Solar energy generation for our buildings, vessels, lighthouses and buoys.
- PLA: Rainwater harvesting installed to supply toilets

BEHAVIOUR CHANGE

- PLA: To minimise the impact on water quality
  Regulation change proposed to prevent the discharge of raw sewage into the river
  Worked with Tideway on the Thames Tideway Tunnel project, which will minimise the raw sewage outflow into the river
- Follow best practice for sewage and greywater management
- PLA: Promote the use of the river as a low carbon option for freight movement
- Take public transport instead of driving
  Chose river service providers with green credentials – use Thames Green Scheme as a guide
- PLA: Sustainability assessment completed for all major projects
- Consider sustainable procurement

PLANNING

- PLA: Committed to more than halve our carbon emissions by 2025 and reach Net Zero by, or before 2040
- Develop action plan to get to Net Zero
  Join the environment indicator schemes, such as Thames Green Scheme (inland) and Environmental Ship Index (international) to keep track on the environmental performance
- PLA: Replacing PLA vehicle and vessel fleet with low/zero emission alternatives

ENHANCEMENT

- PLA: Restore valuable marshes at West Thurrock through natural flood defences
  Investigate green roofs and green walls on PLA buildings
- Enhance habitat by installing bugs hotel, bird boxes, green rooves or wall
  Raising awareness of wildlife on the Thames