Managing risks and increasing resilience in London

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Building Cities Resilience to Disasters: Protecting Cultural Heritage and Adapting to Climate Change. 19-20 March 2012, Venice
How is London vulnerable to climate impacts?

- Flooding
- Overheating
- Water resources
- Wind storms
- Snow and ice
- Air quality
- Subsidence and heave
- Global climate events
The challenges - flooding

5 flood sources

- Tidal
- Fluvial
- Surface
- Sewer
- Groundwater

Tidal and fluvial flood risk.
Source: Environment Agency

- Low (0.1% - 0.5%)
- Moderate (0.5% - 1.3%)
- Significant (>1.3%)
80,000 properties at significant risk of surface water flooding
How will climate change increase the risk of floods and droughts?

- Rising sea levels
- Wetter winters and more heavy rainfall episodes
- Peak river flows could increase by 40% by 2080s
The challenges - drought

- The south east of England is already seriously ‘water stressed’.
- 80% of London’s water supply from rivers. 20% from groundwater
- London’s water resources are already over-abstracted, or over-licensed.
- In a dry year, we can only balance supply and demand through desalination.
- Londoners use more water than the national average (167 l/p/d vs 150 l/p/d)
- Only 1 in 4 homes has a water meter
- The Victorian-era water distribution network loses over 1/4 water in leakage
The challenges - overheating

- 600 people died in the 2003 heatwave
- London’s microclimate amplifies the impact of hot weather (London is up to 10°C warmer than the greenbelt on summer nights)
- Londoners are more resilient to rising temperatures than other UK regions, but suffer most when temperatures exceed 24°C.
Adaptation actions

• Identifying who and what is at risk, today & tomorrow
• Re-greening the city
  – Increase London-wide tree cover by 5% by 2025
  – Increase greencover in the centre of London by 10% by 2050
• Ensuring new development is fit for the future
• Retrofitting existing development
  – Public and private sector retrofit programmes
• Raise awareness, encourage ownership of risk and build capacity to act
  – Revising emergency plans to be more proactive
  – Community Resilience Plans
• Leading by example
  – Changing corporate approach to climate risks
• Research into ‘adaptation gap’
Closing the ‘adaptation gap’
Thames Estuary 2100

Managing flood risk through London and the Thames Estuary to the end of the Century
Storm Surge

depression originating in the Atlantic
Storm Surge
at Northern Scotland
Storm Surge
off East Coast
Storm Surge at Thames Estuary
Storm Surge
at Thames Estuary
What is the TE2100 Plan?

A plan of options and actions demonstrating how flood risk could be managed in the Thames Estuary over this century in response to:

- A changing estuary
- A changing climate
- Ageing flood defences
Managing flood risk over the century

- more people/property
- climate change
- ageing FD

Risk levels:
- Unacceptable risk
- Tolerable
- Risk as low as reasonably possible

Timeline:
- 2009
- 2050
- 2100
Maximum sea level rise:

- 0m
- 1m
- 2m
- 3m
- 4m

**All four options suitable in 2100**

**Existing system**
- Improve defences
  - Improve Thames Barrier and raise d/s defences
  - Over-rotate Thames Barrier and restore interim defences
  - Flood storage, improve Thames Barrier, raise u/s & d/s defences
  - Flood storage, over rotate Thames Barrier, raise u/s & d/s defences

**Estuary-wide options**
- Raise Defences
- Flood storage, restore interim defences
- New Barrier, retain Thames Barrier, raise defences
- New barrier, raise defences
- New barrier with locks

**Maximise storage**
- HLO 1
- HLO 2
- HLO 3a
- HLO 3b
- HLO 4

**High ++**
- New Barrier with locks

**Current Defra**

**A plan adaptable to climate change**