

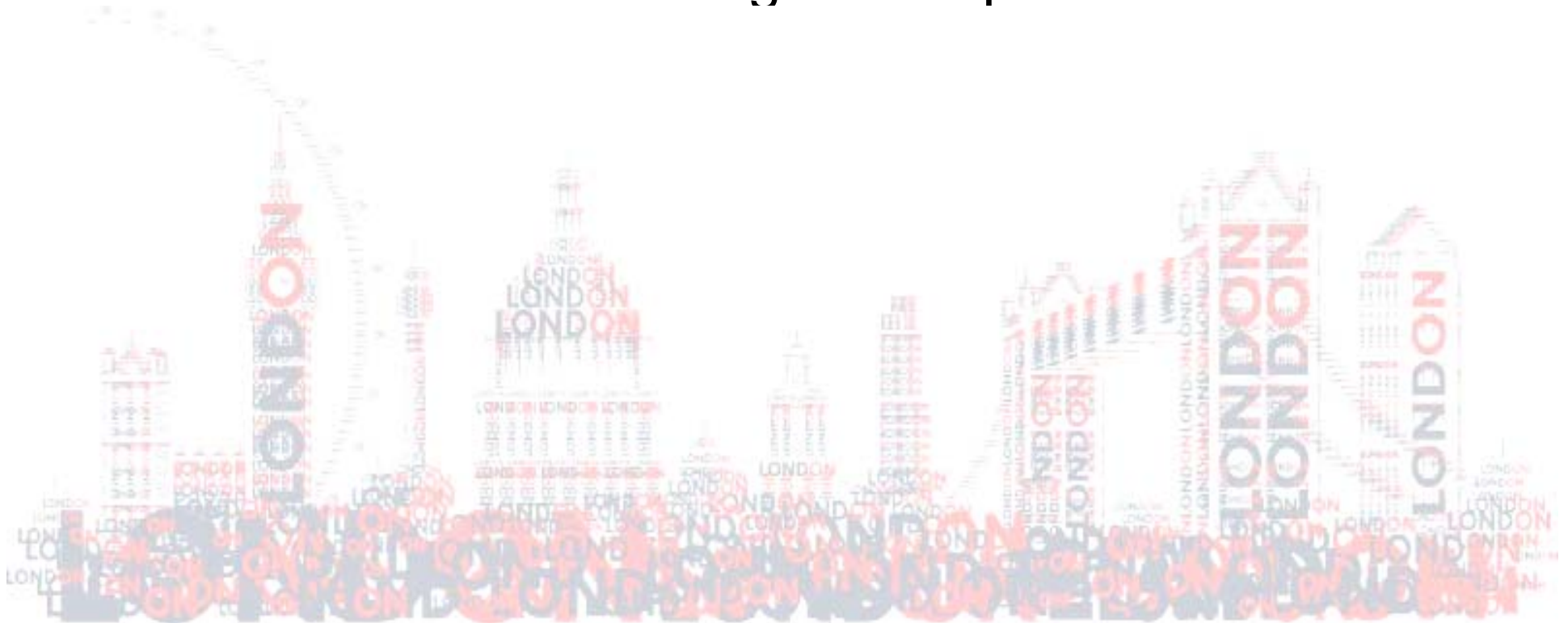
The challenge of climate change in London

Shirley Rodrigues
Head of Environment
Greater London Authority
2 March 2006



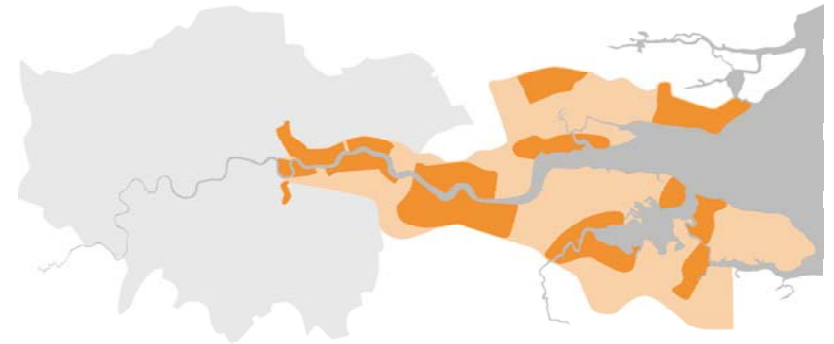
The impact of climate change

- London and its vulnerability to climate change
- Mitigation approaches
- What London is doing on adaptation



London

- 7.3m people in 2001
- Growth 2001-16
 - 800,000 more people
 - 640,000 more jobs
- **Thames Gateway** is the largest of 4 growth areas
 - 800 km², 65km long, up to 32 km wide
 - 129,000 housing capacity to 2016 (91,000 in London)



Mitigation

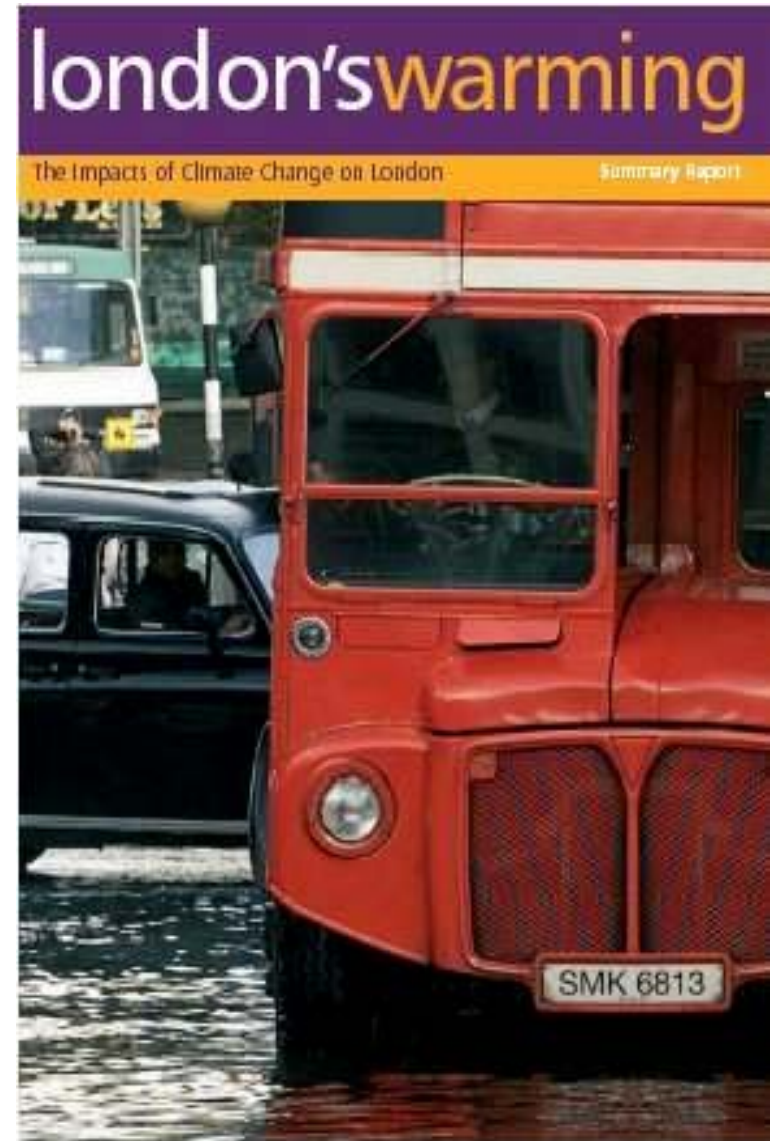
- Land Use Planning
 - London Plan (spatial development strategy)
 - Control of “strategic” developments (determined by size or site)
- Transport
 - congestion charge, increase in buses and bus use
- Leading by example
- Environmental and cultural strategies
- Promotion, persuasion and partnership

Mitigation (2)

- Mayor's Energy Strategy
 - Reduce CO₂ emissions by 20% by 2010
 - Pathway to a 60% reduction by 2050
 - From:
 - Increased energy efficiency
 - Community Energy and Combined Heat and Power (CHP)
 - Renewable energy
 - Development of a hydrogen economy
- London Climate Change Agency

Adaptation

- London Climate Change Partnership (LCCP)
- London's Warming - Climate change impacts study (October 2002)
- Urban focus



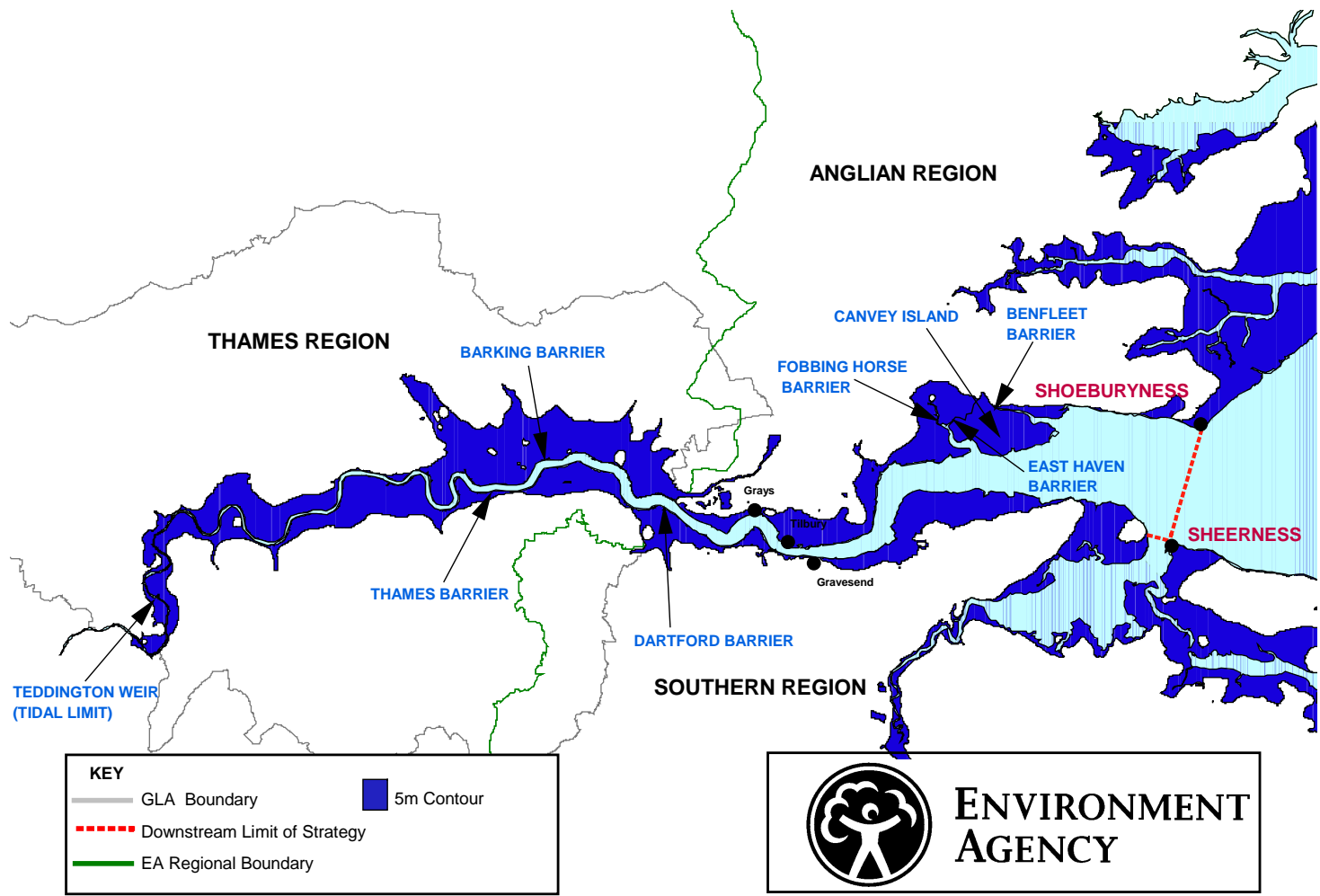
Climate change – impacts in London

- Higher temperatures – summer and winter
 - plus added urban heat island effect
- Wetter winters, with more frequent heavy downpours
- Drier summers
- Sea level rise
- Increasing storm surges
- London is particularly vulnerable

London's vulnerabilities

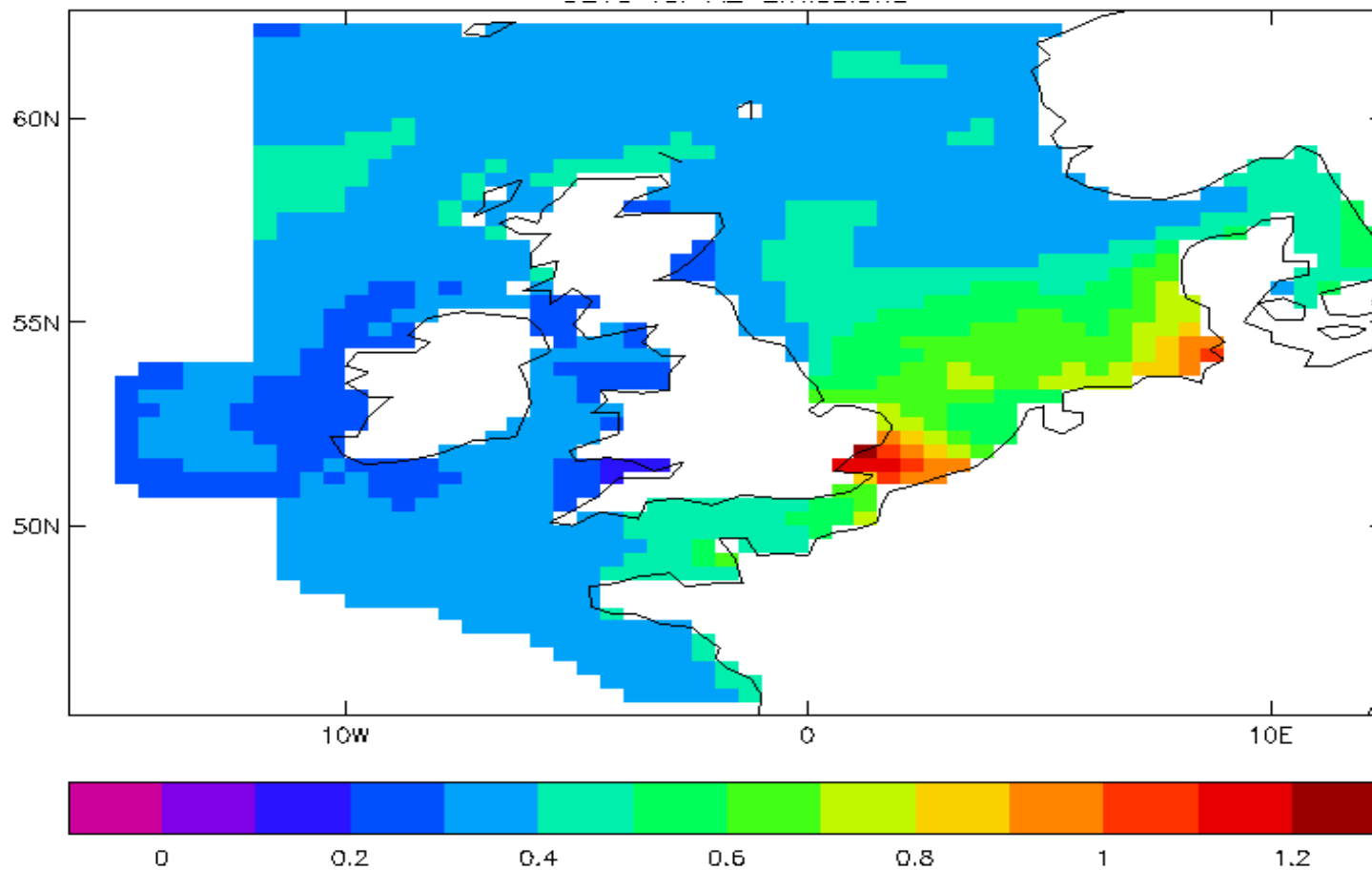
- Tidal and fluvial flooding
- Pressure on water resources
- High temperatures in the heat island

Water everywhere...



Water everywhere..

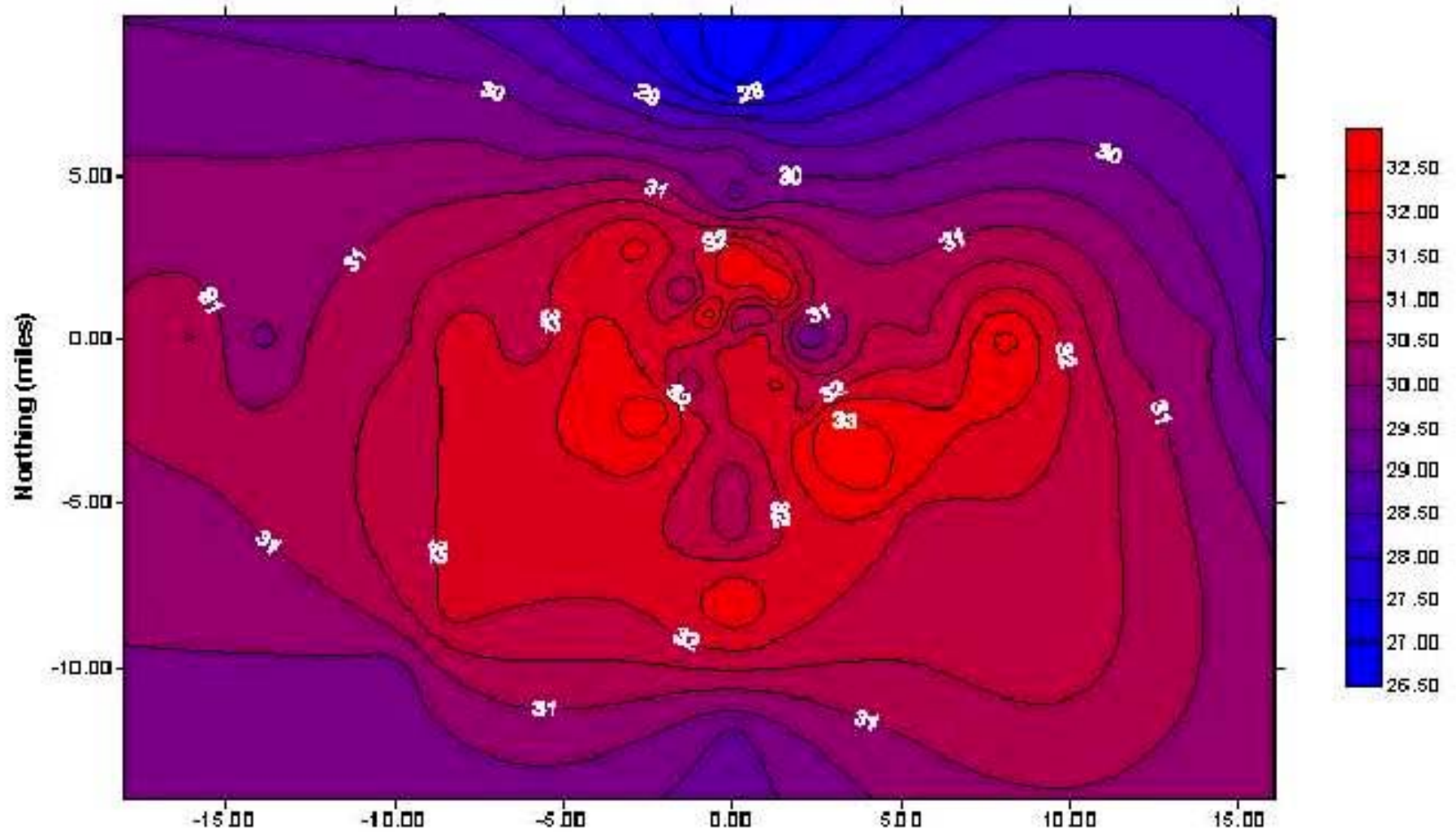
Change in storm surge height
height for 50yr return period; 2080s A2 emissions



...but not a drop to drink

- London - one of driest capital cities in the world
- High average per capita usage – 155 litres per day

Urban Heat Island



Impacts

- Planning
- Transport
- Economy
- Environment
- Health
- Equality



Impacts

- Planning
 - Increased risk of flooding
 - More need for and more intensive use of green spaces
 - Location of intense water or energy use
 - Location of vulnerable land uses e.g. hospitals, care homes

Impacts

- Transport
 - High temperatures on public transport, esp. Underground
 - Disruption/delays
 - flooding
 - speed restrictions
 - rail buckling
 - but less disruption from cold

Impacts

- Economic Development
 - Impacts on financial services from extreme weather events (e.g. storm damage), both at home and globally
 - Opportunities for trading related to weather risk management
 - Benefits to tourism and night time economy

Impacts

- Environmental strategies
 - Reduction in supply and increased demand for water
 - Reduced water quality
 - Change in energy demand from winter to summer, and from gas to electricity
 - Northward migration of species
 - Climatic stress to vegetation, coastal squeeze, loss of grazing marsh

Impacts

- Cross-cutting issues
- Main health impacts:
 - increased heat stress in summer
 - respiratory diseases (linked to AQ)
 - reduced winter excess deaths
- impacts fall disproportionately on lower income households
- reduced winter fuel poverty

Adaptation work streams

- Transport Report
- New development checklist
- Flood risk assessments
- Water Action Framework
- Urban Heat Island Research
- Economic impacts

Transport

- Research study 2004-05
- Case studies:
 - Tidal and river flooding in Thames Gateway
 - Flash flooding of Underground, railway stations and roads
 - Damage to rail and road infrastructure in hot weather
 - Passenger comfort on the Underground

Transport

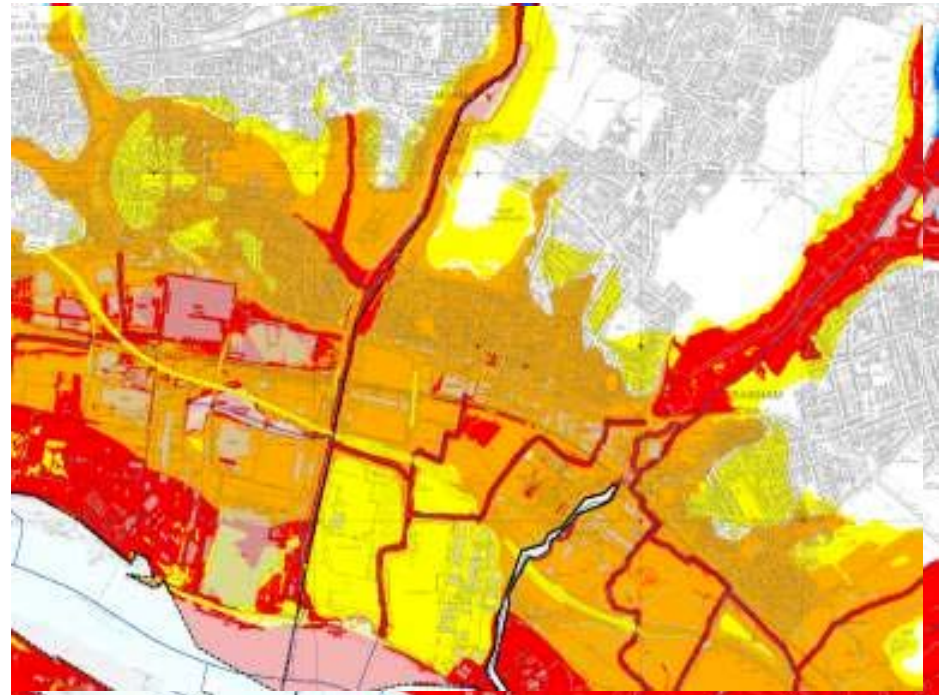
- Most climate change risks already apparent but change in level of risk
- Ensure all new infrastructure is designed for the climate throughout its likely lifetime
- Monitor temperature and humidity
- Establish plan for reviewing climate change risks
- Consider how use of transport may change in the future

Design of new developments

- London worked with neighbouring Thames Gateway regions
- Produced guidance and checklist for developers
- Two aims:
 - Direct influence on developers and design teams
 - Influence regulation and other guidance (national and regional) e.g. Code for Sustainable Building, Building Regulations, Planning Guidance

Strategic Flood Risk Assessment

- Integrating flood risk management options
 - improves urban design
 - enhances biodiversity
 - saves money if planned in early
- Identify high risk areas
 - Restrict ground floor habitation
 - Avoid vulnerable land uses
 - Identify safe emergency access and egress routes



Water Action Framework

- Limit water consumption
- Be more water efficient
- Water-efficient devices
- Leak detection
- Rainwater harvesting

Example: City Hall

- Ground water cooling
- Exhaust water used to flush toilets



Urban Heat Island

- research into London's Urban Heat Island effect
- Predicted temperature maps for 2020's, 2050's and 2080's
- define and rank socio-economic factors that influence vulnerability to overheating.
- Case studies from other parts of the world

Financial and economic issues

- Climate change will have positive and negative effects on **all** businesses.
- Research into the effects on London's businesses
- Identify opportunities to routinely integrate climate change into their business planning.

Next steps

- **Climate Change Adaptation Strategy**
 - First adaptation strategy for a world city
- **Review of the London Plan**
 - Underway - to be launched in 2008
 - Adaptation policies to feature strongly
- **Partnership with cities**
 - C20,
 - ICLEI

