MAYOR OF LONDON

London: how is the city adapting to climate change?

Vicky Boorman, Policy and Programme Officer Lead on Water, GLA
Holly Smith, Project Manager (surface water flooding), GLA

30th March 2023

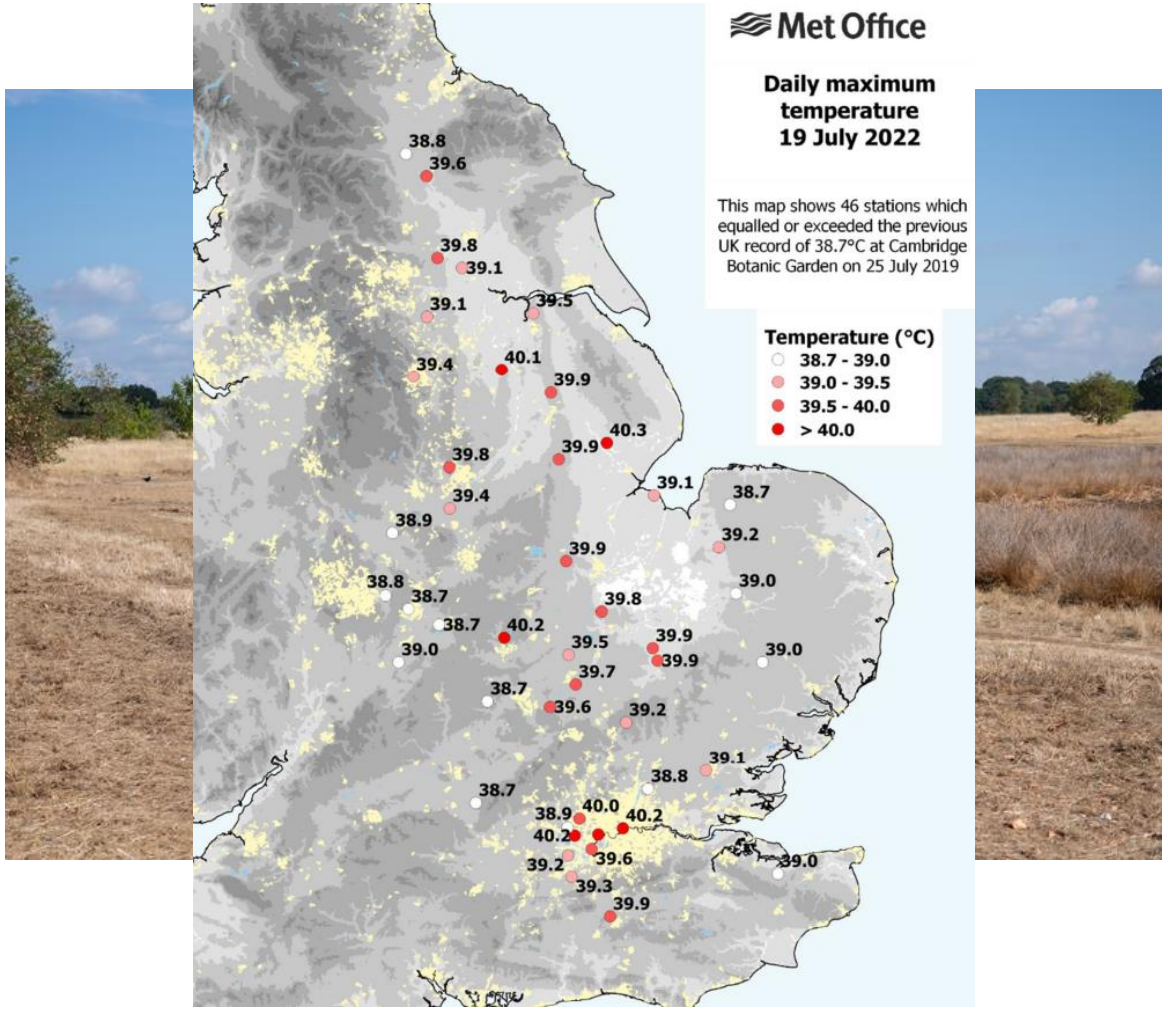
Why adapt?

2000 – flooding
2001 – flooding
2003 – heatwave
2005 – flooding
2006 – drought
2006 – heatwave
2007 – flooding
2008 – flooding
2008 – snow and ice
2009 – snow and ice
2009 – flooding
2010 – flooding
2010 – snow and ice
2011 – warm spring
2011 – warm autumn
2012 – drought
2012 – wet summer
2013 – snow and ice
2013 – heatwave
2014 – flooding
2015 – flooding
2015 – heatwave
2016 – heatwave
2017 – heatwave
2018 – snow and ice
2018 – heatwave
2019 – record heat
2019 – drought
2020 – heatwave
2020 – flooding
2021 – flooding
2021 - heatwave
2022 – heatwave
2022 – flooding
2022 – drought
2022 – Snow and ice

WHAT ARE THE CLIMATE RISKS?

London faces 3 main climate risks from climate change:

- **Surface Water Flooding**
- **Water scarcity during drought conditions**
- **Overheating**



PROPERTIES IN LONDON AT RISK OF SURFACE WATER FLOODING

Residential Properties

High (1 in 30 year event)

68,499

Medium (1 in 100 year event))

164,546

Commercial Properties

High (1 in 30 year event)

12,148

Medium (1 in 100 year event))

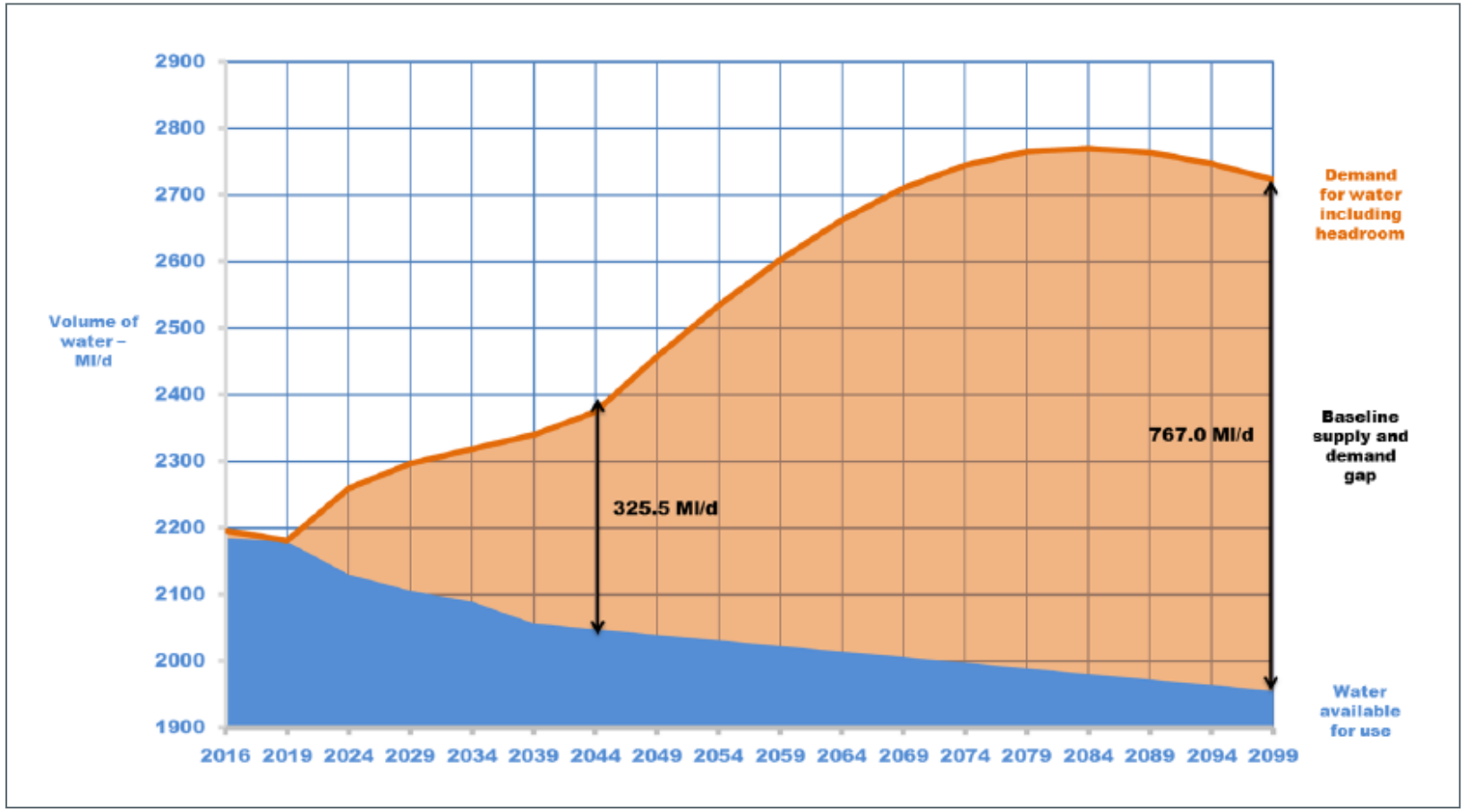
25,623

Source: GLA modelling based on: The GeoInformation Group (2016), UKMap; and Environment Agency (2017), Risk of Flooding from Surface Water.

SUMMER 2021 FLOODING IN NORTHWEST LONDON

WATER DEFICIT PROJECTIONS

(Ml/d) 2016-2100 under dry year annual average – Thames Water



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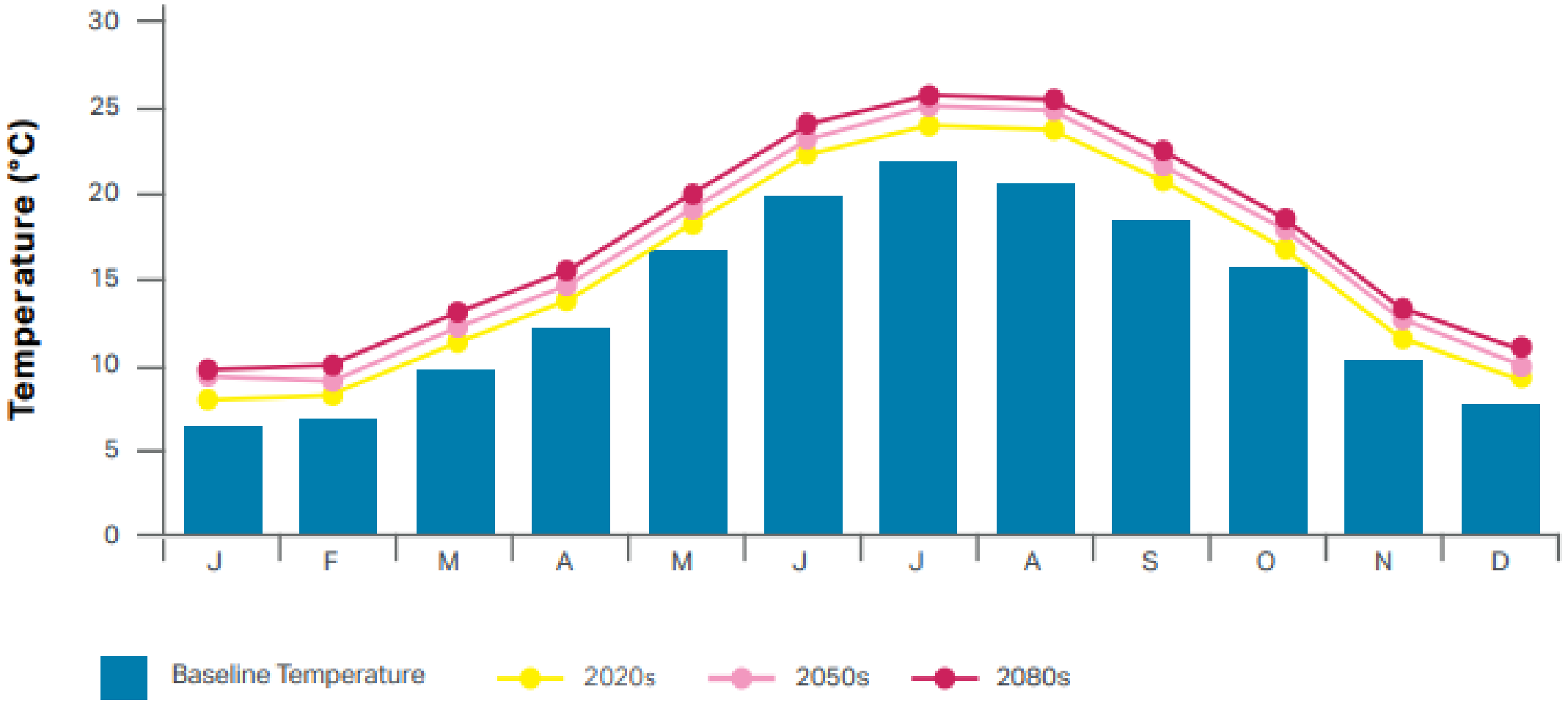
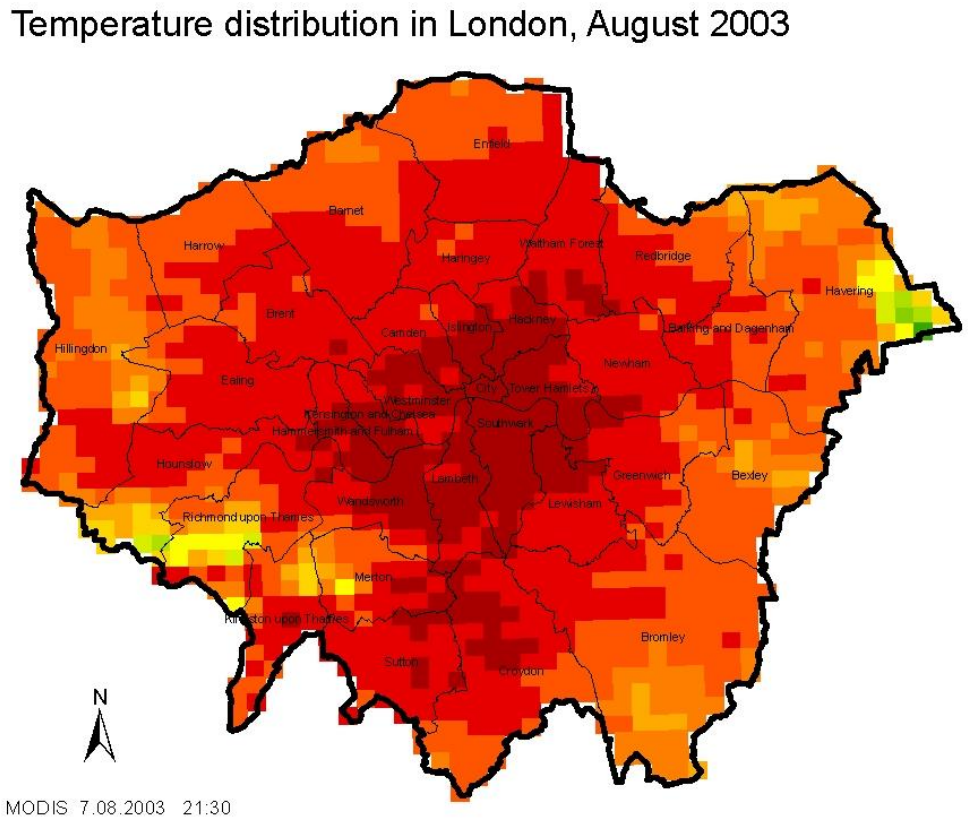


Generated from UKCIP (2009) UK Climate Projections. Accessed from: http://ukclimateprojections.metoffice.gov.uk/21708?projections=23860

HOT WEATHER AND IMPACTS IN LONDON



Heat already impacts services and people

Buildings

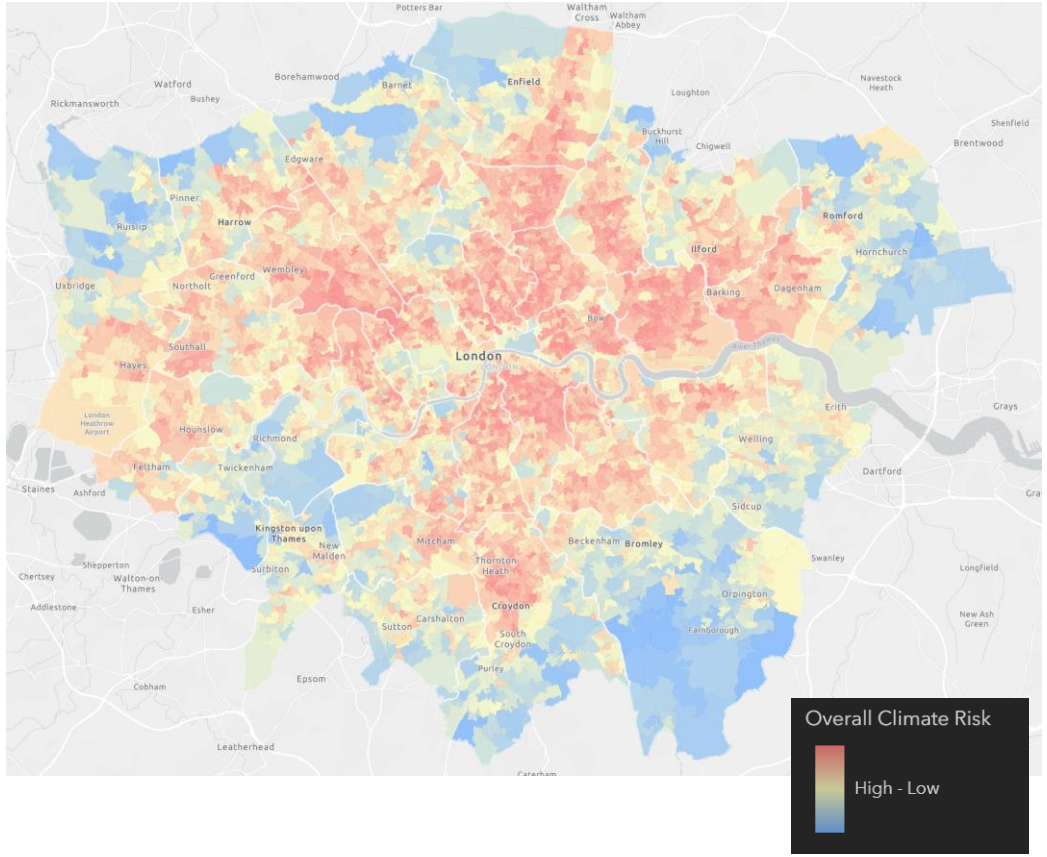
Urban Heat Island

Impacts not equal or fair

Projected 5-6˚increase in summer and winter average temperatures by 2050

LONDON'S INEQUALITY / SOCIAL VULNERABILITY TO CLIMATE CHANGE

https://data.london.gov.uk/dataset/climate-risk-mapping



- **'Climate vulnerability'** relates to people's exposure to climate change impacts like flooding or heatwaves, but also to personal and social factors that affect their ability to cope with and respond to extreme events. **High climate risk coincides with areas of income and health inequalities**.

- The Greater London Authority takes a targeted approach to tackling these inequalities in the context of the disproportionate impacts of climate change.

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Strategic programmes in London

Surface water plan, IWMS etc.

SURFACE WATER FLOODING STRATEGY

- Following the July 2021 floods, the Mayor convened a roundtable on surface water flood risk in London
- 5 key areas for improvement: Governance, Strategy Evidence, Funding, Communication
- Task and finish group established to look at longer-term management of surface water flood risk and climate change. The group published a Progress Report in March 2022
- The Roundtable also initiated a London Resilience Partnership debrief that included 30 recommendations to improve flood incident response and comms
- Working has started on London's first city-wide surface water flooding strategy

GOVERNANCE

New Senior Governance group created

A Senior Governance Group has been created to drive the strategy

- 1st meeting on the 8th December 2022
- Political and senior Leaders from variety of organisations.
    - Greater London Authority Deputy Mayor, Assistant director Transport for London, Thames Water, Councillors from a variety of London Boroughs and independent member.
- Supported by an Officer Group from all the same organisations

Recruitment of resource Independent Chair, Project officer and secretariat to support the work recruited and managed by one organisation hosted by others.

Short term actions The group reiterated the importance of recognising the current great work already done and ongoing work which must be continued and accelerated.

STRATEGY

World Leading

- **Scope** for new Vision, Strategy and Engagement and Implementation plans developed
- Funded by GLA, TFL ,Thames Water and DEFRA through the Regional Flood and Coastal Committee
- **Procurement** of consultants through framework
- **Ambition** is high to make this a world leading strategy learning from world cities

Copenhagen

Population: 805,000
Size: 178 km²

Plans/Program:
- Climate Adaptation Plan (2011)
- Cloudburst Management Plan (2012)

Rotterdam

Population: 1 million
Size: 325 km²

Plans/Program:
- Water Plan 1 (2001)
- Water Plan 2 (2007)
- Climate Change Adaptation Strategy (2013)
- Reassessment of Water Plan 2 (2013)
- Resilience Strategy (2016)

Amsterdam

Population: 908,000
Size: 219 km²

Plans/Program:
- Amsterdam Rainproof (2014)
- Stormwater Bottleneck Map (2020)

NYC

Population: 8.8 million
Size: 783 km²

Plans/Program:
- PlaNYC (2007, 2011, 2015)
- Green Infrastructure Plan (2010)
- Cloudburst Resiliency Planning Study (2015)
- Stormwater Resilience Study (2017)
- Climate Resiliency Infras Guidelines (2017)
- Local Law 172 (2018)
- Citywide Stormwater Flood Maps (2019)
- Stormwater Resilience Plan (2022)

Washington, D.C.

Population: 689,000
Size: 158 km²

Plans/Program:
- Stormwater Retention Credit Trading program (2013)
- Climate Ready DC (2016, 2020)
- Sustainable DC (2109)
- Resilient DC (2019)
- Cloudburst Management Strategies for DC – workshops & report (2019)
- Resilient Design Guidelines (2021)

Philadelphia

Population: 1.6 million
Size: 369 km²

Plans/Program:
- Greenworks Phila (2008, 2016)
- Green City Clean Waters (2011)
- Growing Stronger: Toward a Climate-Ready Philadelphia (2016)
- GCCW Strategic Framework (2022)

STRATEGY

FIRST London surface water vision strategy and action plan

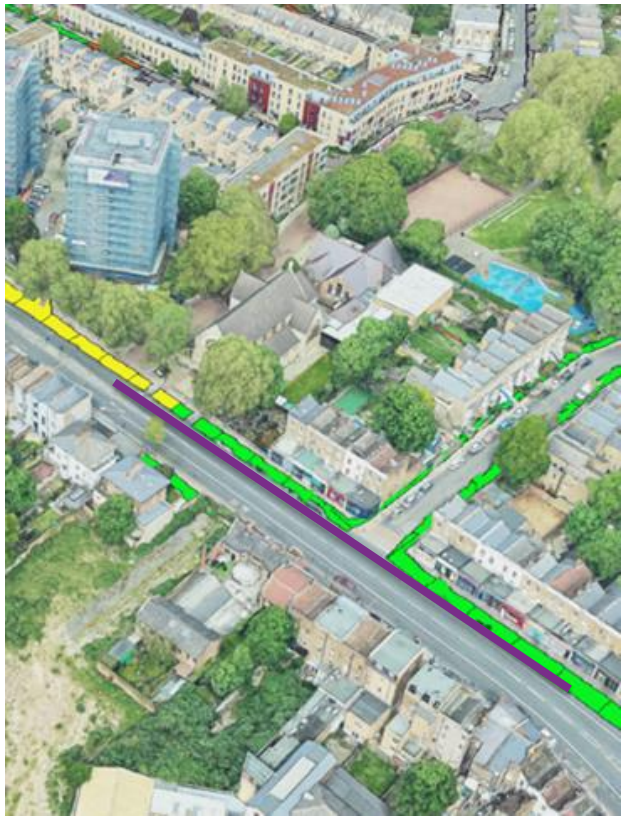
Key Aspirations: WORLD LEADING

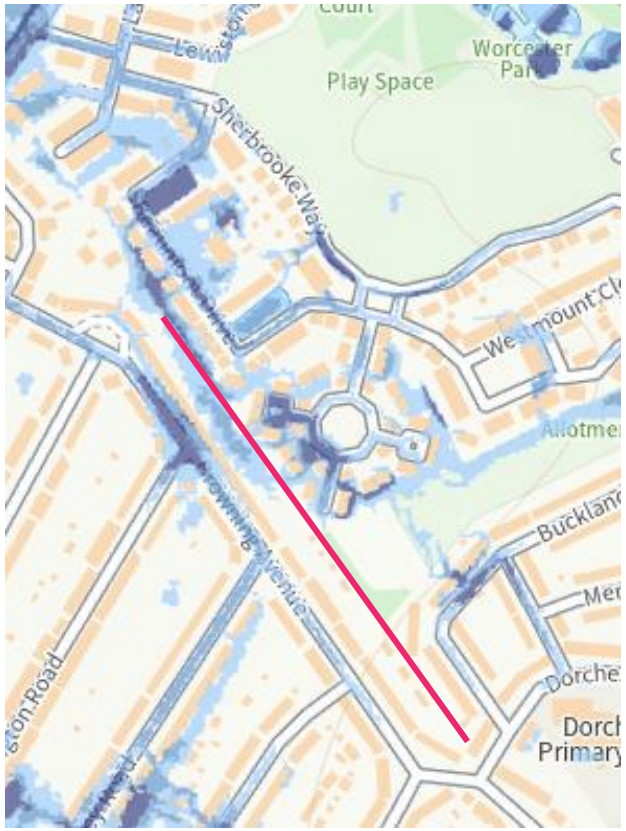
- **Scope** for new Vision, Strategy and Engagement and Implementation plans developed
- Funded by GLA, TFL ,Thames Water and DEFRA (Regional Flood and Coastal Committee)
- **Procurement** of consultants through framework
- **Ambition** is high - learning from international Bloomberg work
- The gaps in roles and responsibilities between LLFA and EA - need for a regional plan
- Explain how all plans work together and where this one will sit, not statutory.
- Cross boundary issues not currently addressed in the current framework of 33 London
- How to enable SuDS projects need to be delivered on a much bigger scale.
- Identify the priority areas for London.
- Need for evidence to secure further funding for resource and delivery.
- The Plan may need to request legislative change needed in the long term to help aspiration for a standard of risk that all should manage to focused on the most.
- Lots of ideas best practice that can be shared and highlighted across London
- Identifying the frequently flooded communities from surface water.

ASSET DATA COLLECTION AND SHARING

ENABLING COLLABORATION and REDUCING COSTS THROUGH DATA SHARING

GLA part of the NUAR pilot INFRASTUCTURE MAPPING APPLICATION – Enfield and Camden





https://www.london.gov.uk/what-we-do/better-infrastructure/data-and-innovation-tools/infrastructure-mapping-application

SUB-REGIONAL INTEGRATED WATER MANAGEMENT

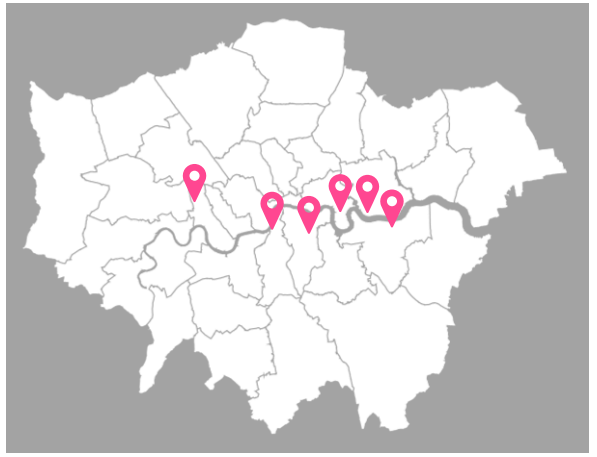
Set in motion a process of collaborative and coordinated delivery

Background

- Driver – unlocking capacity for sustainable growth.
- Local strategies - delivery and implementation challenges.
- Local strategies - system trade – offs and dependencies missing.

Our ambition

- Water and environmental systems at the centre.
- Maintain ‘clear view’ provided by IWM – identify where there are multi-benefits.
- Begin journey of collaborative planning and delivery across stakeholders.
- Develop the markets and mechanisms to enable action.
- Taking a catchment scale approach



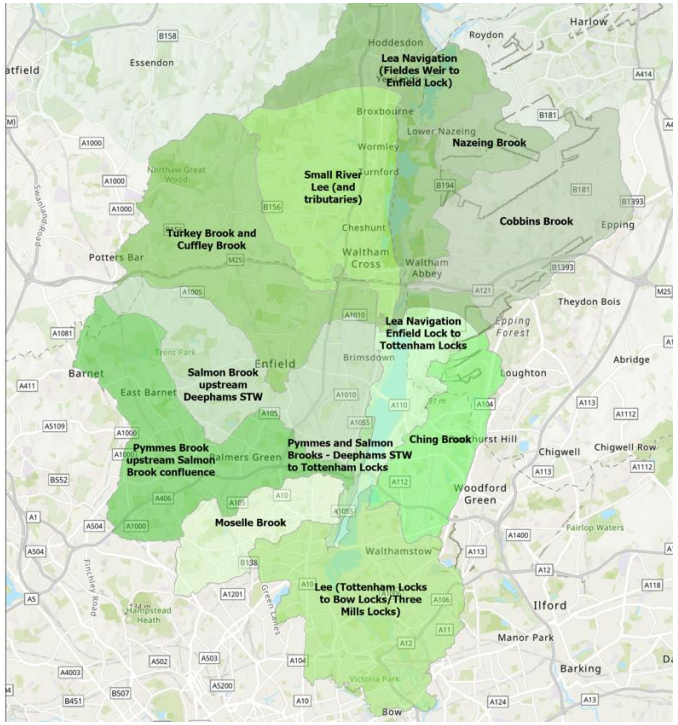
Implementation

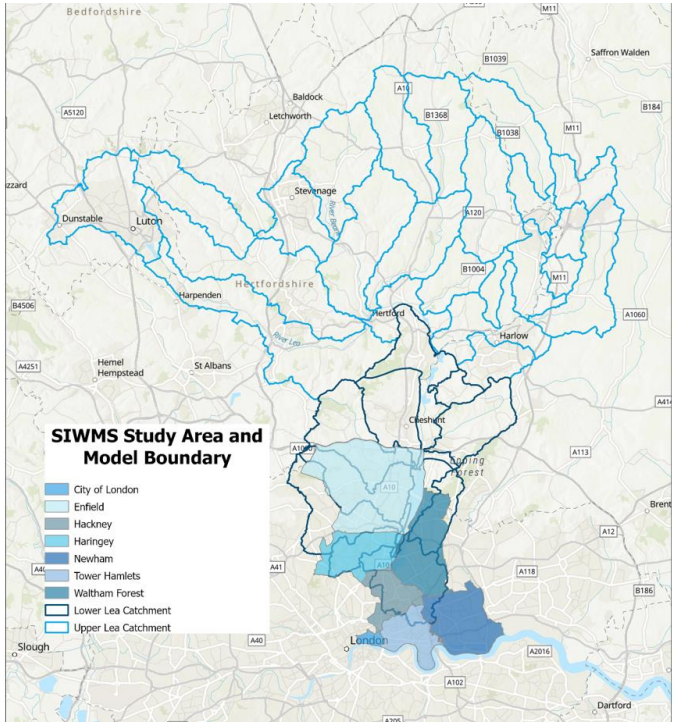
Strategic planning

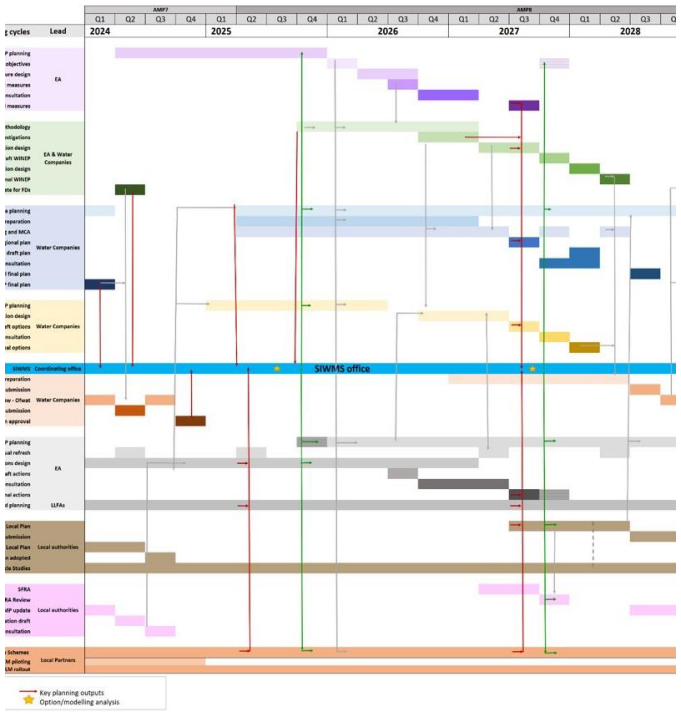
Data and monitoring

COLLABORATION PLANNING AND ALIGNING DELIVERY

Identifying interdependencies







Credit: Imperial College and Mott MacDonald

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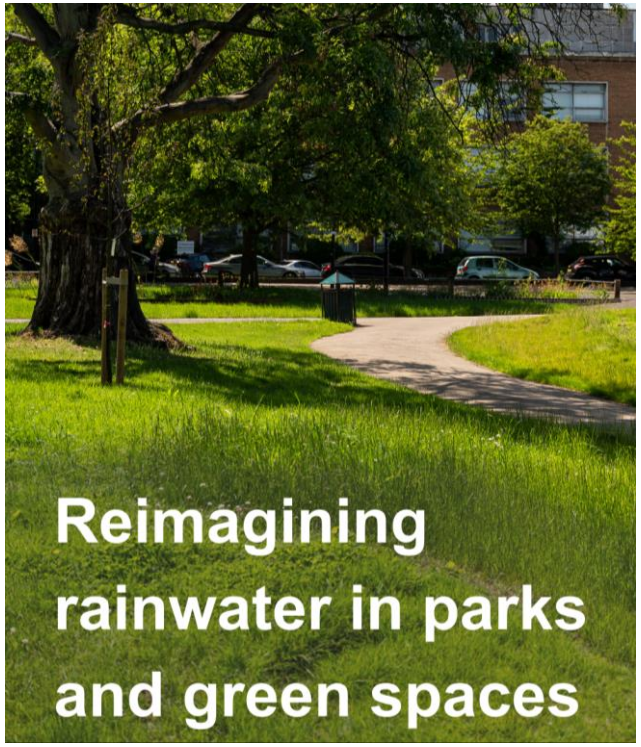
Case studies

How our green and blue spaces can help us adapt

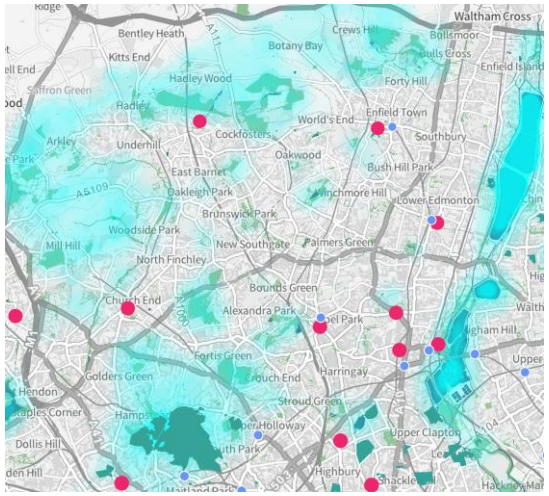
“SPONGIFIYING” LONDON

How to create blue spaces



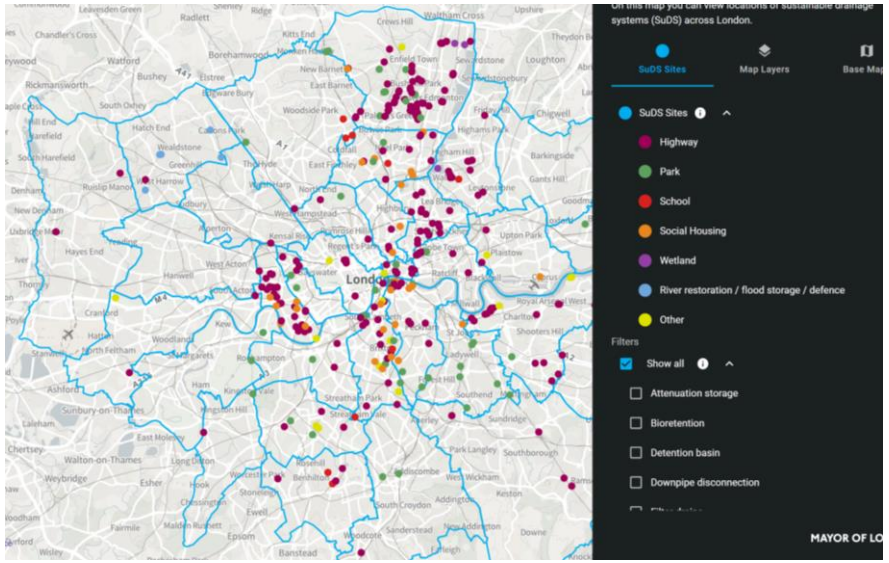
SuDS Sector Guidance | London City Hall

Cool spaces | London City Hall



City of London Riverside Strategy (arcgis.com)

Good Examples



London Retrofit SuDs Map

CLIMATE RESILIENT SCHOOLS

Department for Education

Working with up to 101 schools- cuts across flood and overheating risks

571 SuDS Rain planters at the end of downpipes across 71 schools

Thames Water Smarter Business Visits to improve water efficiency

Climate adaptation education resources linked to monitoring of the SuDS rain planters

60 Be-spoke climate adaptation plans

BLUE SPACES – SMALL SCALE - AGNES RILEY GARDENS

PHOTOS CREDIT JAMES O JENKINS

The 2021 Grow Back Greener Fund, co-funded by the Mayor of London and Thames Water awarded £1.4m to 45 community projects

Blue spaces: why time spent near water is the secret of happiness | Health & wellbeing | The Guardian

Agnes Riley Rain Garden. Partners: **London Borough of Lambeth,** working with Clapham Park Project and **Friends of Agnes Riley Gardens**, awarded £20,466 to address flooding at the park in Clapham Park.

The project will create new wetlands, sustainably manage rainwater and improve the existing pond, boosting climate resilience.

BLUE SPACES – SMALL SCALE - RECTORY GARDEN

PHOTOS CREDIT JAMES O JENKINS

Rectory Garden Rainpark – Haringey

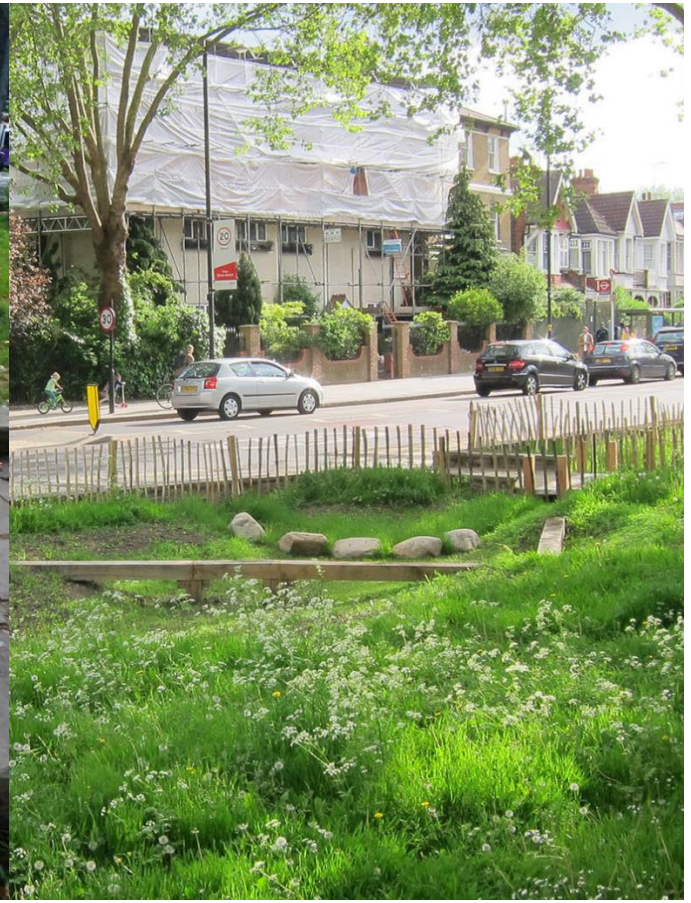
A series of depressions connected by channels (some under footpaths) .

Holds 1 in 100 year (plus 20 per cent allowance for climate change) rainfall.

Polluted run off from Priory Road is treated before clean water enter the Moselle Brook.

Play equipment (balance beams) is part of the design.

This relatively large (1,000m^2) and complex SuDS measure cost around £80,000 to install.



River Lea Catchment Partnership - Rectory Gardens SuDS Rainpark

BLUE PROJECTS – LARGE SCALE - HEADSTONE MANOR

Headstone Manor Park Project - Headstone Manor Museum
Headstone Manor Park - Final Video - YouTube

Headstone Manor Park – London Borough of Harrow.
Parks for People project funded by Harrow, DEFRA,Thames Water, GLA,and National Lottery Heritage Fund.
New amenity features including new footpaths, picnic areas and a refurbished playground;
Variety of habitat including seasonal ponds, reedbeds, orchard and meadows.
Restoration of the Yeading Brook. New wetland spaces increasing wildlife.
Storing rainwater reducing flood risk
Cleaning polluted water coming into the Park.
Linking with **historic landscape** and created a additional focus to help make the visitor centre **economically sustainable**

BLUE SPACES – LARGE SCALE ALBANY PARK

Green Capital Grants, part of the Mayor's **Greener City Fund.** The Mayor has awarded £2.1 million of capital funding to six projects across London.

Albany Park in London Borough of Enfield The Turkey Brook was man-made channel with concrete walls. The project **naturalised up to 350m,** bringing the river into the park. A River Prize finalist 2022
Creating better access - 300 metres of improved footpaths and cycleways.
Creates a **new habitat** for wildlife and a diverse landscape for park users to enjoy.
A **flood storage** area that will reduce flood risk to over 200 properties

BLUE SPACES – LARGE SCALE

Green and Resilient Spaces -Large innovative enhancements to spaces

Haringey – Chestnut Park Rainscape Masterplan

This project aims to create new **wetlands and swales** to help with drainage issues, which will also help tackle flooding downstream.

Hillingdon – Green Blue You

A series of inter-linked projects across the Pinkwell ward, it aims to reduce flood risk and **alleviate pollution to water courses**, improving and creating habitats.

Lambeth Bee Roads

Ten miles of green highways for bees, butterflies and other pollinators. It also help better **manage rainwater through SuDS**, improve walking routes, and create natural play spaces.

GRS: www.london.gov.uk/what-we-do/environment/parks-green-spaces-and-biodiversity/green-and-resilient-spaces-fund
Grow Back Greener: https://www.london.gov.uk/what-we-do/environment/parks-green-spaces-and-biodiversity/grow-back-greener

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Thanks for listening

Questions?

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