The London Strategic SuDS Pilot
Graeme Kasselman and Craig Boorman (Thames Water)
on behalf of the LSSP Steering Group
The case for Distributed SuDS

Strategic delivery of small SuDS is an investable and sustainable approach to adapting to climate change

Need for change

“UK struggling to keep pace with climate change impacts”

Challenges to address

• Funding mechanisms
• Availability of space
• Appreciation of aggregated benefits
• Time/effort to access funds

Goal 2: Adapt to protect communities and natural habitats

“UK struggling to keep pace with climate change impacts”
Project Components and Delivery Partners

Funding Calculator

Hydraulic Modelling

Construction

Monitoring

Delivery Pilot

Thames Water

GREATER LONDON AUTHORITY

Environment Agency

ENFIELD Council

LoDEG

THAMES Flood Advisors

Transport for London

METIS

ARCADIS

University of East London

THAMES21

Southwark Council

Hillingdon Council

Camden

City of Westminster

Harrow Council

The Royal Borough of Kingston upon Thames
Modelling
Preliminary Conceptual Development

Stage 1 Modelling outputs for Enfield Town Centre
Modelling - Stage 2

Comprehensive Economic Valuation

• More ambitious - used sewer models and 2D ground level data
• Modified the selection of SuDS to reflect the more dense urban environment
• Optimisation carried out based on TfL hex grids (modelling >150,000 SuDS features compared to ~ 2,000 in Stage 1)
• Optimisation shows where the most significant hydraulic benefit is likely to be realised with the least investment in SuDS

Spatial distribution of the realisation levels for the All Streetscape SuDS
Modelling results

Opportunities for street SuDS

Sewer capacity

Key:
- > 250 dwellings
- > 600 dwellings
- > 12,000 dwellings (+0.5%)
- > 40,000 dwellings (+2.5%)
- > 120,000 dwellings (+5%)
SuDS Delivery

Haselbury Neighbourhood (Enfield), Field End Road (Hillingdon)

Winner of the ICE London Civil Engineering People’s Choice Award 2021
SuDS Delivery
Camley Street (Camden) and Edgware Road (Westminster)
Key Finding – Optimise Delivery

**Optimisation** can be Used to Effectively Identify the SuDS Opportunities that Generate **substantially Higher benefit-cost** than Non-optimised Locations

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**Natural Capital Value** Increases the Benefit-Cost Ratio from 0.4 to 1.6
(Average of un-optimised Streetscape SuDS Scenarios)

All SuDS Opportunities (un-optimised)...

- **£700 Million** Capital Investment in SuDS
  (On Average per London Borough)
  - Could generate...
    - **£300 Million** in Flood Damage Reduction
    - **£800 Million** in Natural Capital Value

- **Creation of Wastewater Network Capacity** for between 116,000 and 180,000 additional dwellings
  (Beckton & Crossness STW Catchments)
  - Requiring Comparable or Less CAPEX than Typical Strategies to Create the Same Capacity

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5% of Most Optimal SuDS Features Represent...

- **£35 Million** Capital Investment in SuDS
  (On Average per London Borough)
  - Could generate...
    - **£190 Million** in Flood Damage Reduction
    - **£40 Million** in Natural Capital Value

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**£3 Million** in Street Tree SuDS Improvement Could Secure **Full FCERM GIA Funding**
(On Average per London Borough)

Project Already Secured **£600,000** in Short-term Local Levy Funding
Key Finding – Delivery needs to be Opportunistic

Integrating SuDS into other streetscape or public realm works can reduce costs and realise additional funding.

**Average cost per $m^2$ of SuDS**

- Rainwater Planters
- Living Roofs
- New Street Trees
- Street Tree Replacement
- Streetscape Bioretention

**Average cost per SuDS feature**

- Rainwater Planters
- Living Roofs
- New Street Trees
- Street Tree Replacement
- Streetscape Bioretention

*Key:*
- Black: Opportunistic Delivery Uncertainty Range
- Orange: Direct Procurement Uncertainty Range
Monitoring

- Support the business case for Dispersed SuDS
- Lead by research team from University of East London (UEL) and Thames21
- A physical science and social science monitoring plan
- Evaluate the impact of a wide range of benefits
- Plug knowledge gaps

Be part of our research

Are you involved in the planning, delivery, and/or stewardship of SuDS or Green Infrastructure?
Take part in our short online survey
Recognition

Winner of the Surface Water Management Category at Flood and Coast Excellence Awards 2021
What next

1. SuDS monitoring research project ongoing
2. Formation of a SuDS Working Group in the Thames RFCC
3. SuDS Delivery Pilot commenced in 2021
4. Extend beyond London
5. Thames RFCC have allocated an additional £1m of levy funding LLFA’s can apply for

Study report available on the Susdrain website

https://www.susdrain.org/resources/evidence.html
Thank You