

London Strategic SuDS Pilot Study – Executive Summary

1. Introduction

- 1.1. In 2017, the Thames Regional Flood and Coastal Committee (RFCC) approved the development of the London Strategic SuDS Pilot Study (LSSPS). The intention was to evaluate the benefits of small retrofit sustainable drainage systems (SuDS) features dispersed across a catchment, referred to in this report as ‘Distributed SuDS’.
- 1.2. The funding mechanisms available at the time made it difficult for small-scale surface water projects like SuDS to attract funding. The proposed pilot aimed to maximise the wider health and social benefits associated with retrofit SuDS by prioritising Green Infrastructure (GI) measures such as rain gardens, green roofs and SuDS tree pits.
- 1.3. The long-term intention was to develop a strategy for retrofitting SuDS delivery that could be rolled out in surface water catchments, aligning them with existing public work programmes where possible to improve efficiency. This has the potential to provide cumulative flood risk protection that meet the standards required to release Flood and Coastal Erosion Risk Management (FCERM) Grant in Aid (GiA) and Levy funding. The inclusion of the multiple benefits can further strengthen the business case and attract partnership funding.
- 1.4. The Thames RFCC allocated £750,000 Levy to the pilot, which was due to be matched by Thames Water Utilities Limited (TWUL). The pilot commenced in 2017 and ran until April 2021, at the end of the FCERM capital programme (2015-2021).

2. Objectives

2.1. The LSSPS set the following 5 objectives:

- Use hydraulic modelling to determine the flood risk benefits of strategic Distributed SuDS solutions within an urban river or sewerage catchment.
- Identify and evaluate the wider social and health benefits of Green Infrastructure SuDS delivery across London. To achieve this, the Urban Partnership Funding Calculator (UPFC) would be created. This would include SuDS-specific benefits that are not factored in the current FCERM Partnership Funding Calculator.
- Deliver SuDS measures in up to 6 pilot boroughs to demonstrate the feasibility and benefits of this approach.
- Monitor the delivery of strategic SuDS measures within the pilot boroughs.
- Develop a long-term programme for SuDS implementation to facilitate alignment with other public works programmes.

3. What happened?

- 3.1. The LSSPS has supported the successful delivery of retrofit SuDS in 3 boroughs in London (LBs Camden, Enfield and Hillingdon). For 3 of the boroughs involved in the pilot (LBs Camden and Hillingdon and RB Kingston), this pilot was their first foray into retrofit SuDS. Due to delays including Coronavirus, construction is still to be

completed in the remaining 3 boroughs (RB Kingston, LB Southwark and City of Westminster). These works are due to be complete later in 2021.

- 3.2. The updated Urban Partnership Funding Calculator (UPFC) was developed and presented to Defra and the Environment Agency during the development of new partnership funding arrangements for the FCERM capital programme (2021-2027).
- 3.3. The modelling was delivered in two stages, the first looked at the outer London boroughs (LBs Enfield and Hillingdon and RB Kingston). Stage 2 built on and refined the methodology while focussing on the inner London boroughs (LBs Camden and Southwark and City of Westminster). A methodology has been established that can be applied to optimise the delivery of Distributed SuDS in other catchments.
- 3.4. Delays to the commitment of funding from TWUL impacted on the monitoring programme timeline, despite the greatest efforts of officers. Funding has now been committed and a monitoring programme is being developed by University of East London. It will begin in spring 2021 and run beyond the end of the LSSPS. This will allow data collected from LSSPS sites to develop understanding of the perceived and actual barriers to SuDS delivery, and provide crucial evidence to inform all stakeholders of the long-term benefits of Distributed SuDS.

4. Key findings

- 4.1. The LSSPS found that there are two suitable delivery models for Distributed SuDS.
 - **Optimised delivery:** To maximise flood risk management (FRM) benefits, the delivery of Distributed SuDS should be optimised through catchment-wide hydraulic modelling. In these cases, the benefit-cost ratio (BCR), based solely on flood benefits, will be significantly greater than 1 (the average was found to be 5.4) and the scheme can potentially be funded entirely by money allocated to FRM (for example, FCERM GiA or Levy).
 - **Opportunistic delivery:** In addition, an alternative delivery model can be used where there are opportunities to integrate SuDS measures into non-FRM works. As the modelling demonstrates, non-optimised SuDS often do not meet the criteria for FCERM GiA without a significant amount of partnership funding. The average BCR for a non-optimised SuDS feature was found to be 0.42. Therefore, funding from FRM sources should be used to support this approach provided that the FRM funding contribution is less than 40% of the SuDS cost (rounded down from 42%).
- 4.2. SuDS deliver more for less – the study demonstrates that by using hydraulic modelling to target key locations and/or integrating SuDS measures into wider public realm works, Distributed SuDS can deliver a greater benefit more efficiently. The main findings from the study can be categorised as below. A full report on the LSSPS can be found in the annex.

Surface water flood risk benefit

- Hydraulic modelling indicates that Distributed SuDS can be highly effective at reducing flood risk in urban areas.
- £35m investment in Distributed SuDS has the potential to provide a return of £190m flood damage reduction and £40m natural capital benefit.
- Not all locations for SuDS are equal but modelling helps to optimise site selection.

- London potentially needs over £1bn of investment to address priority areas to mitigate flood risk (this is a high level of extrapolation from an average estimate of £35m/borough). Due to their dispersed nature, it is anticipated that projects would most likely be delivered in £20-50k elements.
- Proactive flood risk management needs to find partners for delivery in order to capitalise on opportunities to collaborate.
- Urban flood mitigation needs a different delivery model to delivery at any scale.

Sewer capacity increase

- Distributed SuDS free up significant capacity within the sewer network, helping to reduce spills from Combined Sewer Overflows (CSOs). This enables growth, reduces flood risk from sewers and requires comparable or less capital investment than typical piped systems in order to create the same capacity.
- Delivering additional capacity via Distributed SuDS means the capital investment can be shared amongst other interested stakeholders. This has the potential to draw on other sources of funding and create a 'win-win' for all stakeholders and beneficiaries involved (private or publicly funded).
- Distributed SuDS generate public value by significantly improving public health and wellbeing. Further benefits include capturing carbon, recharging groundwater and improving air quality.
- Incorporating the public value benefits increases the BCR of Distributed SuDS by a factor of four.

Public realm / environmental improvement

- Natural capital benefits of highway SuDS are less influenced by location.
- The wider benefits of Green Infrastructure increase the overall BCR by four times.
- Public health and wellbeing outweigh all other benefits.
- Integrating SuDS into other public realm projects reduces costs and increases funding opportunities.
- 235,000 properties are at risk of flooding within the capital, this will only increase with the impacts of climate change.
- The project developed a methodology which puts the street in the heart of the flood mitigation.
- The long term sustainability of our communities relies on streets changing to better serve the public, this includes the management of water.

Cost effectiveness / deliverability

- Small scale SuDS solutions miss out on funding under the current flood risk management funding system.
- The current funding system isn't really suited to count the benefits of multiple SuDS working together.
- Not all locations for SuDS are equal but modelling helps to optimise site selection.
- Current flood funding isn't flexible enough to align with other funding streams.
- The wider benefits of Green Infrastructure increase the overall BCR by four times.

- Public health and wellbeing outweigh all other benefits.
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- London potentially needs over £1bn of investment to address priority areas to mitigate flood risk (this is a high level of extrapolation from an average estimate of £35m/borough). Due to their dispersed nature, it is anticipated that projects would most likely be delivered in £20-50k elements.
- Proactive flood risk management needs to find partners for delivery in order to capitalise on opportunities to collaborate.
- Urban flood mitigation needs a different delivery model to delivery at any scale.
- Need effective stakeholder relationships at both senior management (TRFCC) level and at an activity (Officer) level to enable SuDS delivery.
- The championing of small SuDS is hard because individually they are not on a business critical path.

Green recovery

- 235,000 properties are at risk of flooding within the capital, this will only increase with the impacts of climate change.
- The long term sustainability of our communities relies on streets changing to better serve to public, this includes the management of water.