

Retro living – it's back in fashion



In this briefing Jonathan Glerum, CIRIA, talks to many of London's key players responsible for changing the way surface water is managed

Don't worry – the '70s aren't back in fashion, so you can leave your flares, flower print, big knitwear and even bigger hair locked away for another time! What is happening though is that London is going all retro – retrofitting to manage surface water.

Background

The opportunity to try something different is taking root in several of the city's councils. London is particularly vulnerable to surface water flooding, and the city's open water bodies are heavily degraded through the problem of urban diffuse pollution. Heavy rainfall can swiftly overwhelm the drainage network, leading to localised flooding or discharges from combined sewer overflows.

As climate change increases the frequency and intensity of heavy rainfall and London's growth puts added pressure on the drainage network, the risks of flood or pollution incidents rises higher, as do the consequences. And with London currently facing drought conditions, the city needs to start using its precious water resources more wisely, and not just allowing the water to disappear into the Victorian drainage system.

To combat these issues, several initiatives have been set up. The Drain London partnership was established, with members including the Greater London Authority, Transport for London, the London Councils, the Environment Agency and Thames Water, to manage surface water flood risk. The Mayor of London has also created a water strategy, to provide a complete picture of London's water needs.

When retrofitting surface water management measures is also linked to the provision of green infrastructure (GI), there is the opportunity to manage the risk of flooding, manage water resources more appropriately during periods of

drought when there are intense rain storms (by mimicking nature, keeping water close to its source and recharging groundwater), help reduce the effect of surface water pollution, and, some might say most importantly, help to improve the areas we live, work and play in.

With this at the heart of the solution, several London boroughs are taking the plunge and retrofitting their urban spaces to manage surface water differently. This comes in conjunction with the recent publication of *Retrofitting to manage surface water (C713)*. The work being carried out in London can be compared to the framework developed in the guidance document (see Figure 1).

Lambeth Council

Lambeth's population, like most of the UK is rising, with the number of dwellings likely to increase by almost 20 per cent within the next 15 years.

There are no natural watercourses within the borough other than a short section of the River Thames, and 15 per cent of the land use is made up with highways. For those that don't know Lambeth well, it contains Waterloo train station, Brixton, the Oval cricket ground and the eastern side of Clapham Common. So there can be no doubt that it is a highly urbanised area.

However, this has not stopped Owen Davies, the borough's sustainability engineer, who works within the borough's highway department, from championing the retrofitting cause.

Owen recently stated that retrofitting is a "no brainer". The work being carried out in Lambeth is in response to the borough's surface water management plan, which identified several critical drainage areas. However, it is not high up the borough's agenda at the moment, and this means that Owen has to just "get on with it".



Figure 1 Framework for retrofitting surface water management measures (from C713)

More champions like Owen are needed, but he recognises that he can't do everything alone. He highlights that: "partnerships within the borough still need to be developed – this is something I will work on in the future, understanding better what else is going on and where retrofitting SuDS can fit in. I've also tried to develop good relationships with our planning team, for obvious reasons, and with our neighbouring boroughs."

Owen also understands that although he is carrying out projects that will "nibble away" at the problem, ie delivering lots of small scale solutions such as retrofit bio-retention areas (see Figure 2), he needs to keep one eye on the bigger, more strategic picture. This, he explains: "means that we can link the work we are doing back to the critical drainage areas identified in the surface water management plan". With at least five or six projects on the go, Owen is certainly doing a lot of "nibbling" at the moment.

These projects should be considered to be in the developing options and appraisal stages, and soon to be moving towards implementation activities.

Islington Council

In recent years Islington have led the way in retrofitting many surface water management measures. Green roofs are common in a borough of almost 250 000 people and measures to manage surface water are becoming increasingly common.

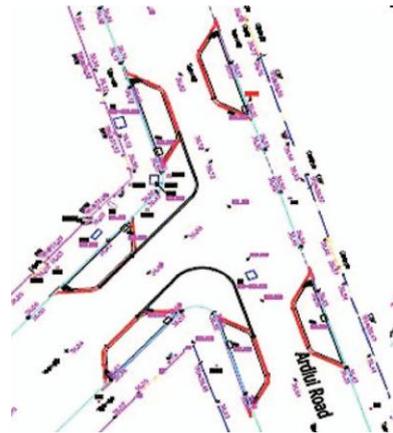


Figure 2 Framework for retrofitting surface water management measures (from C713)

In particular, the recent work completed by the Drain London partnership has provided improved evidence on which to base future decision making relating to the retrofit of surface water management measures. This has helped to underline concerns that the borough already had with regards to surface water flooding, and has highlighted where certain issues need addressing.

As Doug McNab, sustainability officer in planning, explained that: "planning policy and new development will help to address some of the issues we face, but retrofitting will be essential to deal with the majority of the concerns highlighted through the Drain London work".

However, unsurprisingly, Doug admits that retrofitting to manage surface water will never be the borough's number one priority and further work is needed to raise awareness of the opportunities that retrofitting present to departments and individuals with different priorities. The good news though, is that: "colleagues understand that we have got to all work together. If there is a proposal for public realm works, then there is an opportunity to incorporate SuDS. It makes all the work more cost effective, and helps to add to the total value and benefits of the wider project".

Referring to work being carried out on a retrofit rain garden in Ashby Grove (see Figure 3), Doug outlines that: "monitoring data from Middlesex University, one of the project partners, is very important to show that retrofit solutions actually work, thereby demonstrating what is achievable and deliverable within the borough". This should ultimately help to improve knowledge and capacity for the future, resulting in further internal buy-in.

The Ashby Grove rain garden should be considered to be in the performance monitoring stage.



Figure 3 Ashby Grove retrofit rain garden

Hackney

The Environment Agency and Groundwork London, the community charity that is helping to green urban environments, are currently working in partnership with the local community to carry out a scheme to reduce surface water flooding and improve water quality in the Lower Lea catchment area. This is part of work to improve compliance with the Water Framework Directive. Urban diffuse pollution is a serious problem in the Lower Lea, and retrofitting the urban environment offers the partnership with an opportunity to start to tackle this issue.

The first phase of the scheme plans to retrofit SuDS into several residential settings and should act as a demonstration project in the Lower Lea catchment, showing how SuDS could be retrofitted through the involvement of several partners.

Although the project will be led by the Environment Agency and Groundwork London partnership, they will be supported through a wider partnership project team including social landlords, Hackney Council (as the local authority, highway authority and lead local flood authority) and local community groups such as schools.

As Jenny Schofield from the Environment Agency explains, the project has several outputs: “we plan to work closely with landlords to see whether much of the work can be achieved through volunteering, and we really want the community to help inform the work that is completed. After all, it is their space that we plan to retrofit”.

Lucy Geldard from Groundwork London emphasises this by pointing out that there are three key stakeholder groups: “the strategic

stakeholders, including Hackney Highways, the Environment Agency, Thames Water and the local housing association; the implementers, including unemployed local residents who will gain a horticultural qualification for helping to build the retrofit SuDS schemes; and the local residents, who will need to be engaged through a number of methods, including gardening workshops”.

Of particular interest to local communities will be a number of small retrofitted rain gardens (see Figures 4, 5 and 6), and a central rain garden that will form a “green spine” through the middle of one of the borough’s housing estates. This rain garden will be situated on space that is currently inaccessible (due to fencing that was put up to stop anti-social behaviour), and as Lucy explains: “we hope that through community engagement and empowerment, the local residents will help to maintain the rain garden. What we really want to create are local stewards who are proud of where they live”.

This project would be considered to be in the developing options and appraisal stages, and soon to be moving towards implementation activities.



Figure 4 Part of the Kingsmead estate before retrofitting a rain garden took place



Figure 5 Local residents helping with the retrofit work



Figure 6 Part of the Kingsmead estate after retrofitting

Hammersmith and Fulham/Kensington and Chelsea

Thames Water, in conjunction with two of London's boroughs, is working hard to try and solve several historical sewer flooding issues in the Counters Creek area, one of London's lost rivers. The large number of basements in the area means that minor sewer flooding issues can become a major problem.

Thames Water understands the benefits that retrofitting surface water management measures can provide, including:

- The potential to form part of a lower whole life cost solution to flooding, making schemes more affordable
- Increasing the headroom of the network, improving resilience to severe weather and adaptation to climate change
- Providing an opportunity for customers and other stakeholders to work alongside them

- Encouraging innovation in a marketplace that is often considered to be a "closed shop"
- Providing wider benefits such as improvements in biodiversity and a reduction in the heat island effect.

As Kyle Robins explains: "we've had some really positive feedback from the boroughs and the local residents, although there is still a lot of communication and engagement work that still needs to be carried out".

With this in mind, Thames Water will be working alongside the London Sustainability Exchange to engage with the local communities, and in particular reach out to local schools. Once extensive stakeholder communication has started, the process of short-listing the areas and/or streets that will be retrofitted can start, using several criteria including level of flood risk reduction and improvements in water quality.

Once this is complete the feasibility of certain measures and any cost-benefit analysis can be carried out. Interestingly, however, Thames Water will deliberately shy away from immediate quick wins. Kyle explains that instead, Thames Water want to: "focus on carrying out retrofitting work that is more difficult to achieve but which can be replicated in alternative areas". This is clearly an ambitious goal, but one that should help Thames Water achieve its aim of becoming a sustainability leader.

This project should be considered to be in the feasibility phase, moving towards developing options.

The Greater London Authority

The London *Greenstreets* project, which is being managed by the Greater London Authority in conjunction with Drain London, Thames Water and the Environment Agency, is planned to help reduce pollution on the capital's watercourses, manage surface water flood risk and reduce the use of treated water for non-potable uses.

The project aims to demonstrate how to reduce the diffuse pollution of urban watercourses and manage surface water and sewer related flooding in existing high-density areas through the large scale retrofitting of GI. It is hoped that the project will act as a catalyst for rolling out this approach across London.

The project has five key objectives:

1. To demonstrate the large scale retrofitting of “soft” interventions (such as GI and flood resilience measures) at the neighbourhood scale into existing high density urban areas.
2. To demonstrate the cost-benefits of these approaches over traditional heavy engineering (grey infrastructure) approach, particularly emphasising ecosystem services.
3. To examine and test how to develop, deliver and maintain more diffuse “bottom up” solutions through working with communities, businesses and the voluntary sector.
4. To demonstrate how to develop and maintain long-term climate resilience by identifying further actions required through the century.
5. To develop a decision support system to help strategic-level decision makers identify, plan and retrofit measures to secure the best environmental, social and economic outcomes and enable the long-term planning of phased interventions.

As Alex Nickson, the LGA’s project manager for this work explains: “now that the project programme has been established with the core funders, the team can now focus on carrying out detailed investigations into which areas are suitable for retrofitting”.

This project should be considered to be in the preparation and feasibility phases.

Other initiatives

This briefing has only “scratched the surface” of the London retrofit scene. There are numerous other initiatives that are currently ongoing, including, but certainly not limited to:

- A large scale river restoration scheme at Mayesbrook Park, in the London Borough of Barking and Dagenham
- Wildfowl and Wetland Trust, the Environment Agency and Thames Water in conjunction with Enfield, Barnet and Haringey Councils

- Other retrofitting schemes being delivered in Camden, Enfield and the City of London.

So, retro living really is coming back into fashion in one of the most densely populated cities in Europe. And if it can be done in London, then surely it can be done anywhere.

CIRIA’s recent publication *Retrofitting to manage surface water* (C713) aims to help councils and other stakeholders with the process of retrofitting, and a new project, *Communicating local flood risk management* (RP975), should help to make the link between practitioners, local authorities and the public. As has been seen in all of the situations mentioned in this briefing, stakeholder and community engagement is vital to any works carried out in the public realm, and these two projects should help to build capacity and understanding for the stakeholders involved.

If you would like to find out more, contact Paul Shaffer, CIRIA, on email:

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or visit www.susdrain.org

References

DIGMAN, C, ASHLEY, R, BALMFORTH, D, BALMFORTH, D, STOVIN, V and GLERUM, J (2012) *Retrofitting to manage surface water*, C713, CIRIA, London (ISBN: 978-0-86017-715-9).
Go to: www.ciria.org

MAYOR OF LONDON (2011) *Securing London’s water future. The Mayor’s Water Strategy*, The Greater London Authority, London (ISBN: 978-1-84781-468-5).
Go to: www.london.gov.uk/sites/default/files/water-strategy-oct11.pdf