

# River Restoration Workshop 3

## Urban Restoration

Urban river reaches are some of the most heavily modified in the country and at the same time present some of the greatest constraints where restoration is attempted. More often than not complete re-naturalisation is impossible and improvement opportunities have to be realised through working with altered channel form and process. At the same time restoration must avoid increasing flood risk which may threaten lives and livelihoods in these densely populated areas. This workshop session attempted to synthesise past approaches to urban restoration and review the lessons learned to date. We explored the following key areas:

- Type of modification dealt with
- Type of river on which the modification has occurred
- Background information used to define a restoration methodology
- Restoration methodologies adopted
- River response to restoration
- Lessons learned - ways to improve methods for the future
- Other useful information including Contractors, EA contacts etc.



## Workshop outcomes in summary...

Improving rivers in urban areas is often the most desired, but also the most limited category of river restoration. The constraints imposed by local conditions include flood risk, access issues, perception on health and safety or water quality. In this workshop session we identified the main reasons for urban river restoration to be improvements to biodiversity, aesthetics, health and safety of the watercourses. The socio-economic aspects seem to be the main drivers in urban river restoration, as opposed to hydromorphology and natural processes, which we see as the key drivers in more natural (and less risk-sensitive) environment. Urban watercourses are amongst the most degraded and neglected in terms of in-channel morphology and floodplain connectivity.

The vast majority of the urban river restoration projects that we have completed to date worked with passive or active single-thread rivers and pool-riffle types of river reaches. We identified that the future work focuses on passive single-thread rivers. We concluded that more emphasis and

opportunities have been given to natural approaches of river restoration over engineered ones. This demonstrates a move away from historic management processes within our urban river systems. The most common cases of urban river naturalisation are re-meandering, wetland creation, removal of culverts, introduction of multiple channels, offline water storage or bank re-profiling.

We feel that we have been more successful in including local communities and interest groups in urban river restoration when compared with river and floodplain restoration, probably owing to the close proximity. More opportunities also arise through working with developers and involving river restoration in the context of recreation, health improvement and amenity values. Flood risk, however, remains an unsolved issue in urban river restoration.

In the following pages we present the key outcomes of this workshop session, including more detailed statistics and illustrative photographs.

# Urban river restoration- our view

## Why do we restore urban rivers?

- Improve biodiversity
- Improve aesthetics
- Improve health and safety
- Re-create habitat connectivity
- Reduce maintenance/cost issues
- Improve water quality, flood risk
- Create opportunities for engaging communities
- Reduce pollution
- ...and others

## What are the opportunities and constraints?

### Opportunities

- 'Anything is an improvement'
- Public/community support
- Ecosystem services benefits
- Increased funding opportunities
- Improvement in 'joined-up approach' - multi-partnership projects
- Opportunities to exploit development
- Small inputs - big gains
- Increase in property values

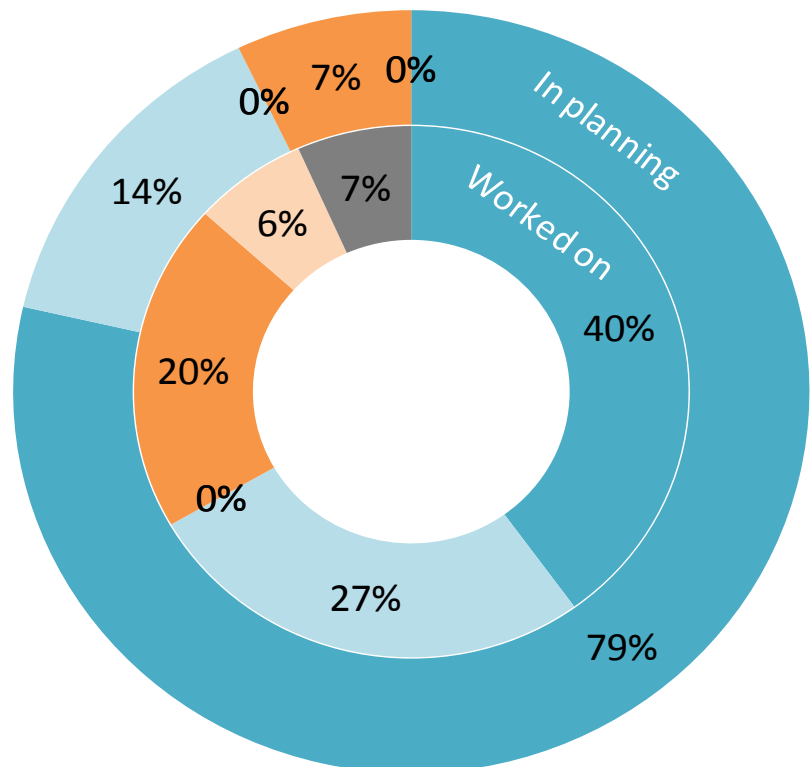
### Constraints

- NPPF - might encourage development in unsuitable areas
- Flood risk issues
- Utilities and immovable objects
- Expensive schemes
- Health and safety concerns
- Hidden rivers - these should be identified and considered in planning.

## River reaches we worked on and are planning

Our experience shows that the dominant type of river reach for which we have undertaken river restoration and have projects planned for are passive single-thread systems, followed by active and pool-riffle systems.

- Passive single-thread
- Active single-thread
- Wandering
- Braided
- Pool-riffle
- Step-pool (pool-rapid)
- Bedrock influenced



# Urban river restoration- our view

## What methods do we use?

We use both engineered and more natural approaches. However, natural approaches seem to be favoured.

### Natural

- River bank rehabilitation
- Re-meandering (in-channel predominantly)
- Flood storage/wetland creation
- Landscaping and planting
- Creation of new channels

### Engineered

- Removal of culverts
- River bank works
- Rock rolls
- Removal of other structures
- Adding meanders
- Step dams
- Removal of contamination

## Issues that remain

Our discussions revealed that particularly funding and partnerships are still not fully exploited in urban areas. Sharing successful examples is key to improving this for future schemes. However, we realized that lack of monitoring and post project appraisals, as well as timing issues, make this difficult.

Urban river restoration does not seem to be seen as a current WFD priority in some cases, potentially because focus is on quick win schemes before 2015 and urban river restoration schemes are often expensive, need considerable planning and significant ground works.

Flooding and liability remain as unsolved issues probably because flood risk is higher in urban areas where buildings and people are in closer proximity to watercourses and even small increases in flood risk are unacceptable. Hydraulic modelling and suitable mitigation measures are key to satisfying this issue.

