

## Urban river corridors and sustainable living agendas

### Director's view

Rivers remain at the heart of most of our cities, yet in the past they have suffered from neglect, pollution and physical modification. They do however provide potentially attractive spaces for the people who live around them, and are now prime targets for redevelopment. Can we enhance their ecological value at the same time as protecting against floods and supporting social and economic development?

Finding the best ways of regenerating these areas is the task faced by the URSULA project, and we have put together a multi-disciplinary team to work with local communities and stakeholders. As we look back over our first year, much of this time has been spent learning how to talk to each other and listening to our partners.

The team now begin their second year hard at work, doing practical measurements and working on design approaches by concentrating on the River Don. New additions include a group of ecologists who have begun examining ecosystem vibrancy and planning for future interventions.



Above: River Don, from Blonk St Bridge. Picture: Tom Wild

Our next big event will be our annual conference in October, when you can catch up with our research findings and outcomes. You can join us for the journey by visiting our website (see footer) or by subscribing to our quarterly e-bulletins.

David Lerner is the URSULA Consortium Director

### URSULA's 1st annual conference

We held our first annual conference in October 2008. The event was attended by a mix of people, including academics, policy-makers and practitioners, and focused on a single proposed development in Sheffield's Lower Don Valley – British Land's Lower Don District scheme at Weedon Street near Meadowhall. During the last few months, the research team has been piloting URSULA's holistic approach in using case studies like this to explore regeneration scenarios for urban river corridor development.

The whole team has been working hard in developing the various strands of the project, and establishing how these can come together. It was gratifying to see what had been learned so far. Feedback was welcomed from both strategic thinkers and the practitioners working on the

day-to-day challenges. There was a wide range of presentations on *interventions* in river corridors – things that people do to bring about social, economic and environmental change – and their potential integration and assessment.

The day's highlight involved a map-based planning session centred on the Weedon Street case study, exploring different participants' interests in regeneration. This exercise generated useful ideas (and interesting surprises!) on how riverside land might be used to further alternative aspirations from a variety of stakeholders, in the fields of social, economic and environmental aspects of the river corridor.

Tom Wild is URSULA Project Manager, at the University of Sheffield.

### Water Sensitive Urban Design in Melbourne, Australia – a personal view

Richard Ashley is one of URSULA's principal investigators, working within the Design theme. He recently returned from Australia, where he led a workshop on assessing sustainability in water management, and writes:

There has been something of a 'sea change' in water management in much of Australia in the last year. Following some ten years of drought and significant progress in demand management, with most domestic consumers reducing their usage, the politicians have now found a 'magic wand' - desalination plants. These are being constructed in almost every major urban conurbation across Australia apart from Brisbane. In Melbourne, which will have the largest plant, the scheme will double water bills.

At the workshop, the consensus view was that the Victorian State Government were seeking the 'easy way out', and this would lead to further climate degradation by high energy use. Concern was voiced that the Government

misleadingly presented a distorted case for desalination by lying about the true costs. There seemed to have been little scenario planning considering the potential rapid changes in climate and socio-economics during the 30-100 year lifetime of the development. Adaptability, resilience and flexibility were thus not considered. There was little effort to adopt 'social learning'; i.e. building the capacity in the public and others to engage in future changes, and to be able to cope with them.

Other issues raised were the relative incompetence of both the economic and environmental regulators in Victoria, neither of whom were perceived to understand 'sustainability' and who actually promote environmentally damaging schemes because of an unwillingness to take a whole-system performance approach.

To read the complete article by Richard, please visit our website

## URSULA pioneers research on the visualisations of urban landscapes

### Ed Morgan

The URSULA project proposes changes or “interventions” which could be made to Sheffield river corridors, and will be analysing the social, economic and environmental implications of these interventions. Part of this analysis process incorporates the production of visualisations which will show the existing sites in conjunction with any proposed interventions as interactive three dimensional computer models.

The modelling approach being piloted within URSULA combines photographic survey data, existing GIS data and aerial photography in order to make realistic three dimensional models of the study sites. These models can then be viewed in real time on a standard PC or within an immersive virtual reality facility, which includes stereoscopic viewing hardware to increase the 3D visual effect. The viewing style is similar to modern computer games in which you are immersed into the computer model and can walk through the environment in real time,

controlling your speed and walking/viewing direction with a standard game joystick controller. See for yourself on our website.

The pilot study has highlighted that the production of these models is a very labour intensive manual process. Part of the ongoing research will look at ways in which models can be created and then altered more rapidly. Achieving this will allow the visualisation tool to be used within a collaborative workshop type environment, when ideas from different stakeholders may be rapidly combined into a model and the results visualised immediately. One of our research goals is to enable several change/visualisation iterations to take place within a single workshop.

Early results from the pilot study are very promising, helped by one of the newcomers to the team: Lewis Gill is studying for a PhD and is contributing by working on lowering the barrier of production costs of creating such visualisations, which is tied to the

complexity of the modelling. By leveraging the increasing amounts of spatial data available and procedural generation methods, the aim is to decrease the time taken to create such models. This reduction will increase the interactivity of the model with the user and, coupled with the ability to alter the underlying data, allow rapid visual prototyping of landscapes.

Lewis is also looking at the field of non-photorealistic rendering, which offers the possibility of supporting the early design stages where designers are working with abstract ideas. By combining these strands, a visualisation tool can be provided that not only communicates ideas, but also acts to support the design of landscapes.

You can read more about the other new PhD students in the URSULA project on the back page.

*Below: Area around Ball Street Bridge including the proposed tenth scale Brooklyn Bridge. (Picture Ed Morgan)*



## Harnessing the power of Sheffield's waterways - new work on micro-hydro

Abigail Hathway and Ric Bingham

(Principal Designer in the Regeneration Projects Design Team at Sheffield City Council)



The URSULA team will gather data from an existing hydro site, similar in capacity to those identified in Sheffield. This will provide much needed evidence of the real performance and seasonal variations, giving designers and investors greater confidence in estimating the power output from a site. Hydropower is more reliable than sun or wind, and distributed micro-generated power may have an important role to play to meet our future energy demands.

If you are interested in renewable energy, you can find further information from the following links:

[www.sheffieldcommunityrenewables.org.uk](http://www.sheffieldcommunityrenewables.org.uk)

Community owned social enterprise supporting and developing renewable energy projects in Sheffield

[www.torrshydro.co.uk](http://www.torrshydro.co.uk)

Social enterprise run hydro scheme in New Mills

*Above left: A initial sketch of a water wheel at Kelham Island.*

*Picture: Ric Bingham, Sheffield City Council*

*Below: Archimedes Screw at New Mills (Torr's Hydro)*

*Picture: Abigail Hathway*

The opportunity to tackle climate change and celebrate local heritage is too good an opportunity to miss for the city of Sheffield. The council are thus currently investigating the feasibility of installing a modern water wheel at Kelham Island. This is one of many unused historical water power sites in the UK, which when combined together would have the potential to power 2 million homes. Many of these sites are economically marginal, but Sheffield Community Renewables believe some of those lying within Sheffield's urban boundary may be viable through accessing social investment and volunteer activity. They are currently looking at several possibilities on the River Don.

Sheffield Community Renewables is a local social enterprise, which aims to support, promote and develop local renewable energy projects. A sub-group is currently looking at the feasibility of installing micro hydro power on the river Don which would be owned by the social enterprise company with profits going back to benefit the community. This is a similar method to that adopted by Torr's Hydro, another local community scheme located on the River Goyt in New Mills, Derbyshire which began in 2006 and is now generating renewable electricity.



## Sheffield leads two major new European projects on green infrastructure

*Maria Wilding is a Project Manager with the South Yorkshire Forest Partnership*

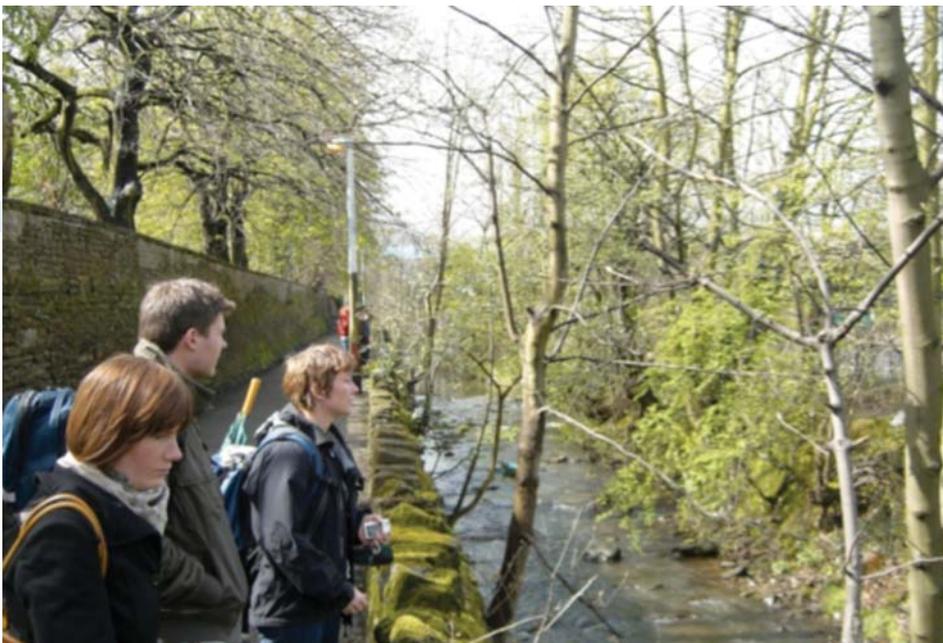
South Yorkshire Forest Partnership, partnered locally with The University of Sheffield and Sheffield City Council, is leading two new Interreg projects that demonstrate how to deliver social and economic growth by enhancing public spaces and green infrastructure. These projects, 'VALUE' and 'Making Places Profitable', started earlier this year, and involve networks across North West Europe and the North Sea Region respectively.

Tom Wild was responsible for developing these project proposals as part of his previous role with us. He points out that the leading role taken by Sheffield in such high-profile transnational initiatives as these is in keeping with the city's ambitions to become a leading location for innovation in Europe.

John Henneberry is Principal Investigator on the VALUE project – on valuing attractive landscapes in the urban economy. His view is that this work represents a major development for research on the economic impacts of environmental quality, and will build on our work in the highly successful Interreg 'CSI' project on Creating a Setting for Investment.

Mel Burton, who will work alongside Nigel Dunnett at the University of Sheffield on Making Places Profitable, explained "this is an important international study that will identify, establish and evaluate approaches for managing public and private open space in the long term. The aim is to help ensure that the potential benefits of investing in open spaces are maintained."

The projects involve partners in Germany, the Netherlands, Belgium, Denmark and Sweden. Many of the partners are leading European cities, well respected for advanced, evidence-based policy development approaches. We feel that by working hand in glove with URSULA these demonstration projects will really help to put 'England's greenest city' on the map.



Above: Sharrow Vale, Sheffield: URSULA project team members on a familiarisation walk. Picture: Tom Wild

## Newcomers to the URSULA team

4 PhD students are now working within URSULA to carry out groundbreaking research on urban river corridors from different disciplinary perspectives. The projects will explore the following topics:

- The application and representation of the ecosystem service concept to aid water management decision making (Ed Shaw, supervised by David Lerner and Eckart Lange)

"I am applying the ecosystem service concept to a real ecosystem management problem; the management of the weirs within the Don catchment. I am interested in how service provision is determined by temporal, spatial and social factors and what implications this has for decision making, how the different ecosystem services can be modelled and represented, and whether the approach has real benefits for decision making."

- Communication expertise and power in environmental policy work (Peggy Haughton, supervised by Steve Connolly, Susan Molyneux-Hodgson and Liz Sharp)

"I am exploring the power relationships and the use of expertise in participatory environmental policy processes, and investigating how these factors influence the outcomes of processes in relation to river management. This research is important because of the current drive towards participatory working, and the inherent assumption that 'better' results are being achieved through this. My research will primarily involve interviewing stakeholders about the processes, in two or three case study sites of neighbourhoods on urban river corridors where participatory processes have been used when a change to the locality."

- Socio-ecological valuation of the River Don: an historical perspective (Nicki Schiessel, Supervised by Susan Molyneux-Hodgson, Lorraine Maltby, and Philip Warren)
- An integrated 3D-visualisation design and planning tool for interactive stakeholder involvement (Lewis Gill, supervised by Eckart Lange, Daniela Romano, John Henneberry and Mel Burton) See page 2

Any future opportunities for PhD projects will be advertised via our website

[www.ursula.ac.uk](http://www.ursula.ac.uk)