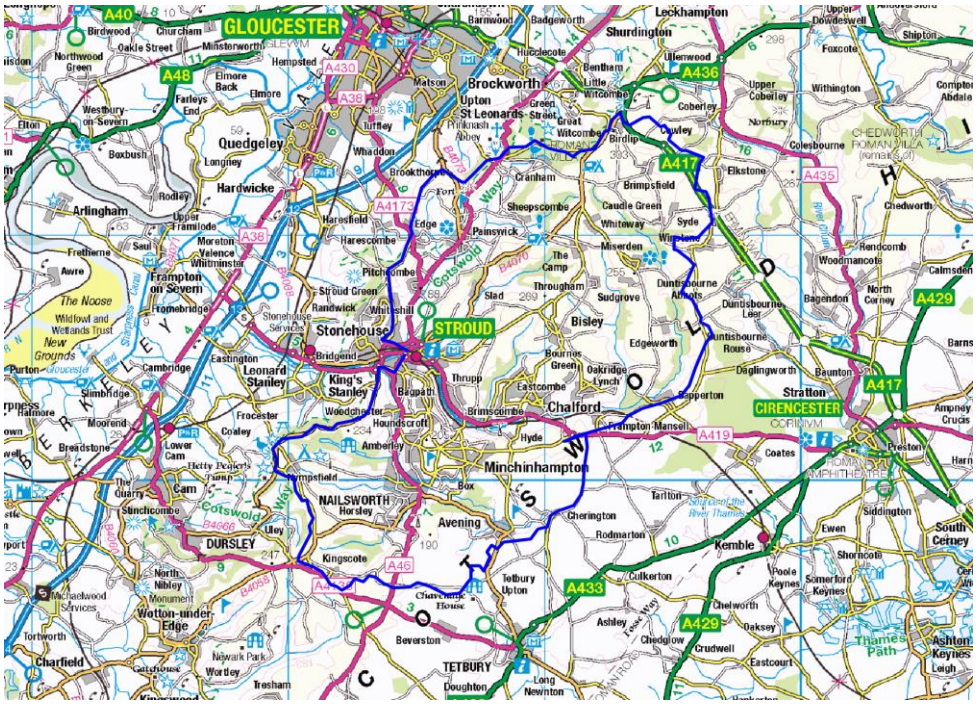
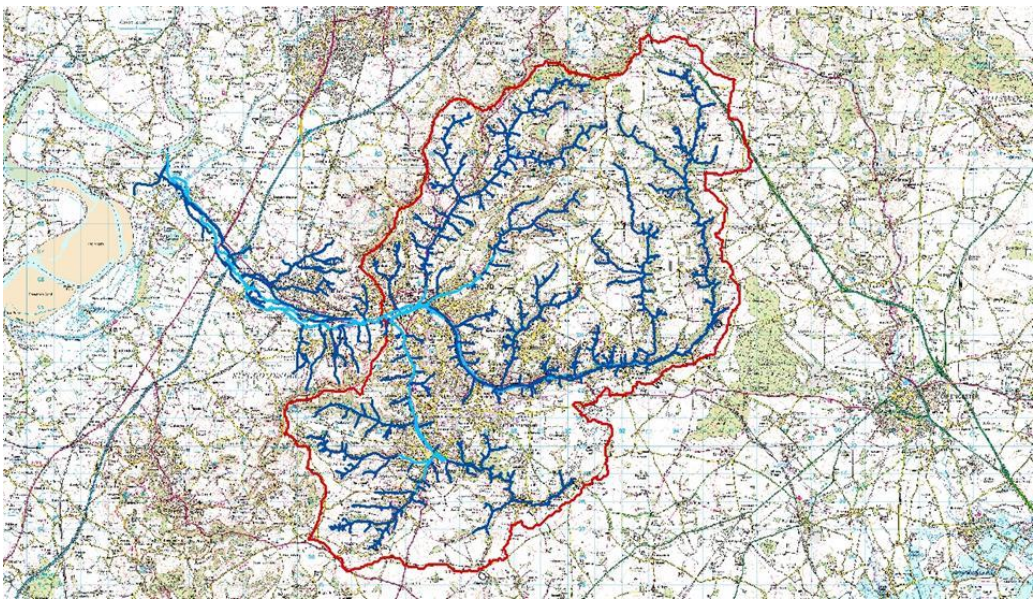
Notes of visit to Stroud Rural SuDS project – April 16

On 13th April 2016 I visited the Stroud SuDS project with project officer Chris Uttley. I was very impressed with what I saw and heard and so, given that the project is currently focussing very much on getting on and doing natural flood management work on the ground, rather than lots of monitoring and report-writing, I thought it would be useful to those interested in the subject to hear what the project has achieved in a short space of time. The data and information in this report are derived through *pers comm* with Chris Uttley himself and the photos are a combination of his and mine.

Location



The Upper Stroud Frome Catchment



Work done since work started on the ground (Dec 14 – Mar 16 inclusive)

- Constructed 140 “major” structures, which includes 110 large woody debris leaky dam structures, 9 culverts and soakaways, 15 field bunds, 6 erosion gulley works.
- Constructed app. 30 “minor” coarse woody debris structures, which includes smaller in-channel deflectors, spring gulley structures.
- Installed 5 drinking troughs for cattle, and approx 1.5km stream-side fencing
- Part funded creation of app. 50 swales or grips to divert run-off from track to woodland floor
- Produced a 20 min film to publicise and explain the works & imminent release of a more technical film.

Total costs of work done in the 2 years since the project started

In the two years since project inception, the total project funding and expenditure was £215K, broken down as follows:

- Salary, T&S, Pension, publicity, overheads etc – £105K - funded by local levy allocation from Regional Flood Consultative Committee (£95K) and office costs and IT funded by hosts, Stroud District Council (£10K)
- Capital works - £115K from EA/RFCC, Glos CC & SDC and in kind capital of £5k from GWT & NT

Value for money

In summary, 140 major structures have been installed at an overall cost (revenue & capital) of £1500k per structure, and for this they have also secured drinking troughs, fencing, maintenance works, signage, publicity, film, project management, interaction and communication with the community, attendance at public meetings, landowner meetings etc, etc.

Photos

Use of woody debris to deflect seasonal spring flows back into the ground and to slow instream flows in seasonal headstreams

Forest tracks diverted into soakaways and spring-fed drinking troughs to keep livestock out of watercourse

Upper Painswick Valley field bund in normal and flood flow conditions

Dillay Brook (Slad Valley) debris dam in normal and flood flow conditions

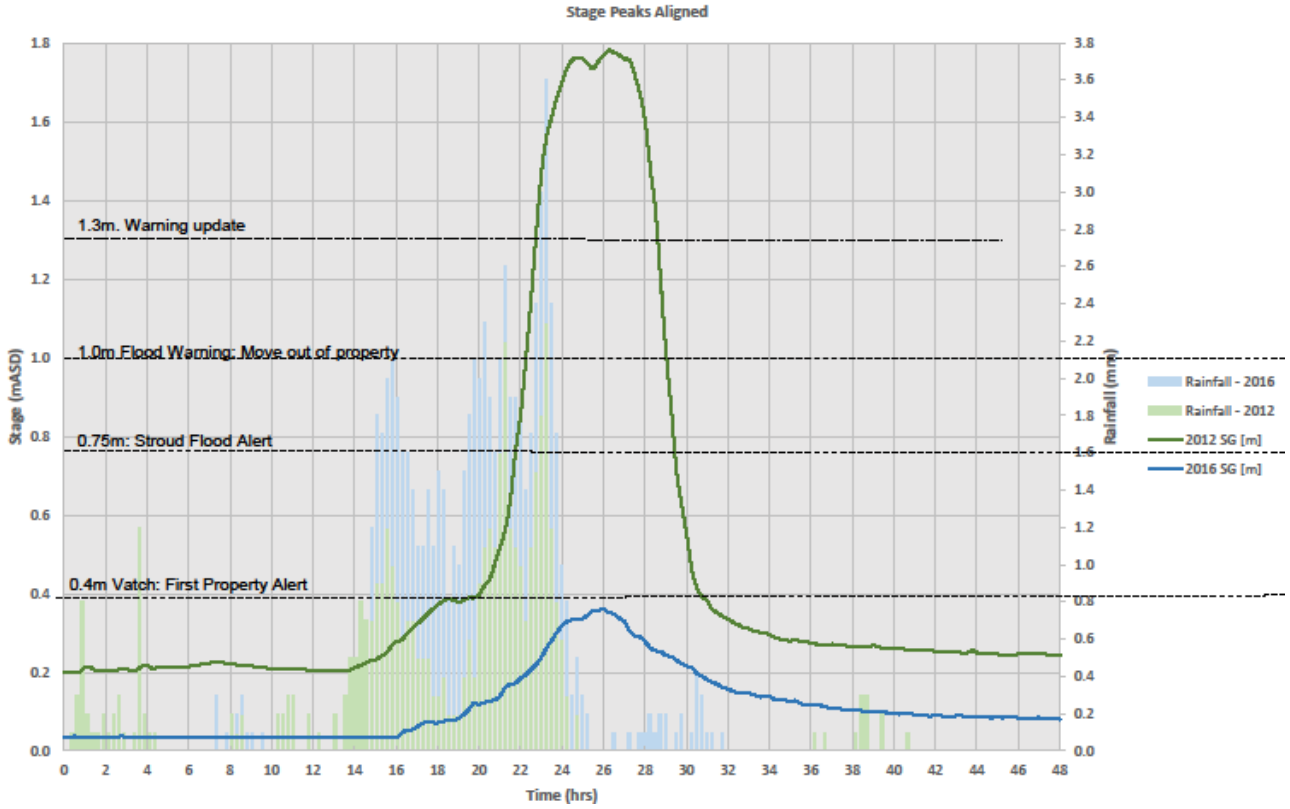
<u>Impact on flood flows</u>

It is still very early days, but the project has already experienced a rainfall event which has demonstrated the impact of the work on the Slad Brook, which is a rapid response catchment

On March 9th, 2016, Stroud had a similar amount of rain in 12hrs, to the 36mm of rain that fell in 12hrs on similarly saturated ground in November 2012. In 2012 the peak flow was app. 1.5M at the

flow gauge on the Slad Rd with a typical flashy response and in 2016 the flow gauge peak was 0.4M and flows took longer to return to normal – see hydrograph below.

The only difference in the catchment in the intervening period between the two major rainfall events is that the project has constructed over 40 large woody debris structures in the upper & mid catchment.



Comparison of similar rainfall events in Slad Valley in 2012 and 2016 and associated flow gauge readings, with flood alert levels added

NB it is important to bear in mind that no two rainfall events will ever be identical, but the project partners looked for two rainfall events that were closely comparable in terms of total rainfall, duration, intensity, preceding conditions and seasonality. It is also important to note that on the one hand, the base flow level for 2012 was higher, indicating greater preceding ground saturation, and therefore potential run-off , but on the other hand, the total rainfall over the 10 hours prior to the peak was higher in the 2016 event. So although one could not claim that the entire 1.4 m difference is due to natural flood management, it is certainly reasonable to claim that a significant impact has been achieved through the project's work so far.

The impact of this on the reduction of flood risk to properties is yet to be specifically determined, but on the morning of the 9th March, Antony Perry, the EA Area FRCM Manager sent the following to Anne Wheeler, Chair of Severn and Wye RFCC:

"*There was over 40mm of rain in some parts of the Stroud valley from about midnight through to about 09.00 this morning. The monthly rainfall totals in this area for March generally range from 40 to 60mm. The pictures attached show how the work that Chris has been leading on has 'slowed the flow' and we haven't experience any downstream flooding today. Similar amounts of rainfall in the past has. This shows the benefit of the great work that Chris is doing in Stroud, and how the support*

of the English Severn and Wye RFCC has improved the quality of peoples' lives. It would be great if you could share this good news story with members."

Key observations from me

1. This is an excellent value-for-money local authority-led project which should be considered as a great model for many other local authorities with similar topography, land use and flood issues elsewhere in the country.
2. The impact on the Slad Brook hydrograph, so quickly and cheaply since the project started, is remarkable, and additional monitoring on the other project watercourses and particularly the Frome downstream, should in my view be a priority.
3. It would also be hugely valuable to know roughly how many properties are now expected to be protected from these interventions in a range of rainfall events.
4. It is clear that some reaches of these watercourses had completely lost contact with small areas of floodplain due to long-term artificial deepening, resulting in storm flows being contained within channel and rushing rapidly on downstream. These woody debris dams enable the utilisation of these narrow areas of upstream floodplain just as they would have been used pre-man-induced deepening.
5. The use of woody debris in seasonal spring-fed stream courses was particularly interesting to me – I had not come across that type of intervention before.
6. The additional benefits in terms of habitat at least, are also clearly significant. During the site visit, Chris and I saw wild Brown Trout in a scour hole under a recently installed woody debris dam in the upper reaches of the Slad Brook, way upstream of where they had been recorded before and only about a 1 km from the limit of permanent flow.

Key "lessons learned" from Chris Uttley

1. Keep it local & community-led.
2. Build capacity in local contractors.
3. Build small and many interventions, rather than large and few.
4. Start as far upstream as possible & concentrate on Ordinary Watercourses.
5. Don't wait for perfect data before building.
6. Focus on low risk, certain wins to gain community confidence.

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