13th Annual Network Conference

Delivering River Restoration: Recipes for Success

Restoring Europe’s Rivers
Rewilding the River Adur

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Structure

- Aims and objectives
- Original concept
- Key challenges
- Final design
- Construction
- Key lessons learned
River Adur at Knepp Castle

- Knepp Castle Estate
- Horsham, West Sussex

River Adur

- Meandering lowland river
- Low energy
- Dominated by fines
- Historically straightened and enlarged
Aims and objectives

- **Main aim:**
  - To enhance the channel and floodplain habitat diversity by physical manipulation of channel planform, bed levels and flow patterns with a particular emphasis on reconnecting the floodplain to the river channel (RRC, 2006)

- **Primary objectives:**
  - Produce a “rewilded” landscape which requires minimal maintenance
  - Increase the habitat diversity of the river channel and floodplain
  - Restore natural river processes
  - Increase floodplain wetness without increasing flood risk
Original concept

(RRC, 2006)
Original concept

- Changing scope
  - Increased focus on WFD delivery
  - Structure removal
- Detailed design
  - Geomorphological enhancements
  - Hydraulic modelling (ISIS-Tuflow)
Key challenges – flood risk

- Flood risk implications key consideration
- Balance need to reduce channel capacity to achieve floodplain wetting with flood risk issue
- Major constraint at Tenchford Bridge
Key challenges – flood risk

- Bridge deck level close to level of floodplain downstream
- Detailed Tuflow modelling to identify flooding mechanism

Design alterations
- Channel capacity
- Channel planform
- Floodplain excavation
- Changes to bridge deck

Two phase design:
- New small channel upstream
- Channel enhancements downstream
Key challenges – PRoW

- Public footpath and public bridleway
- Avoid increases in flooding (!)
- Bridleway unaffected
- Footpath provides a good enhancement opportunity
Key challenges – PRoW

- Reinstate historic causeway
- Considerable benefits for access and heritage
- Lengthy consultation with planning authority
  - Changes in personnel
  - Discussions over construction materials
Final design – Phase 1 (small channel)
Final design – Phase 2 (enhanced channel)
Final design – Phase 2 (enhanced channel)
Construction

- Phase 1 construction commenced summer 2011
- New channel
- Structure removal
- Floodplain enhancements
- Backwaters
- LWD
Construction
Construction
Construction
Construction

- Generally good results, but…
  - Relatively uniform finish
  - Very low rainfall since construction
  - Limited revegetation
  - Limited action by livestock
- Hand finishing during Phase 2 construction
Lessons learned

- There are lots of constraints to river restoration, even in an apparently “unconstrained” site!
- The scope rarely remains static
- A lot of effort is needed to maintain project partnerships and deliver project goals
- Site supervision is important to ensure that the outcomes are as expected
- Ensure that finishing is not too careful!
- A strong, integrated team is required to overcome challenges
Any questions?

THE END