the River Restoration Centre

Working to restore and enhance our rivers

Delivering River Restoration: Recipes for Success

13TH ANNUAL NETWORK CONFERENCE

Restoring Europe's Rivers

ACE · AlaskA · ARUP · Cain · Halcrow A CH2M HILL COMPANY · LAND & WATER Services · Penny Anderson Associates Ltd Consultant Ecologists · ROYAL HASKONING Enhancing Society · rshydro · Salix · WILLOWBANK Erosion & Conservation Services · WLW

Rewilding the River Adur

Ian Dennis and Karen White – Royal Haskoning

Charlie Smith and Damon Block – Environment Agency

Martin Janes – River Restoration Centre

19th April 2012

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Structure

- Aims and objectives
- Original concept
- Key challenges
- Final design
- Construction
- Key lessons learned

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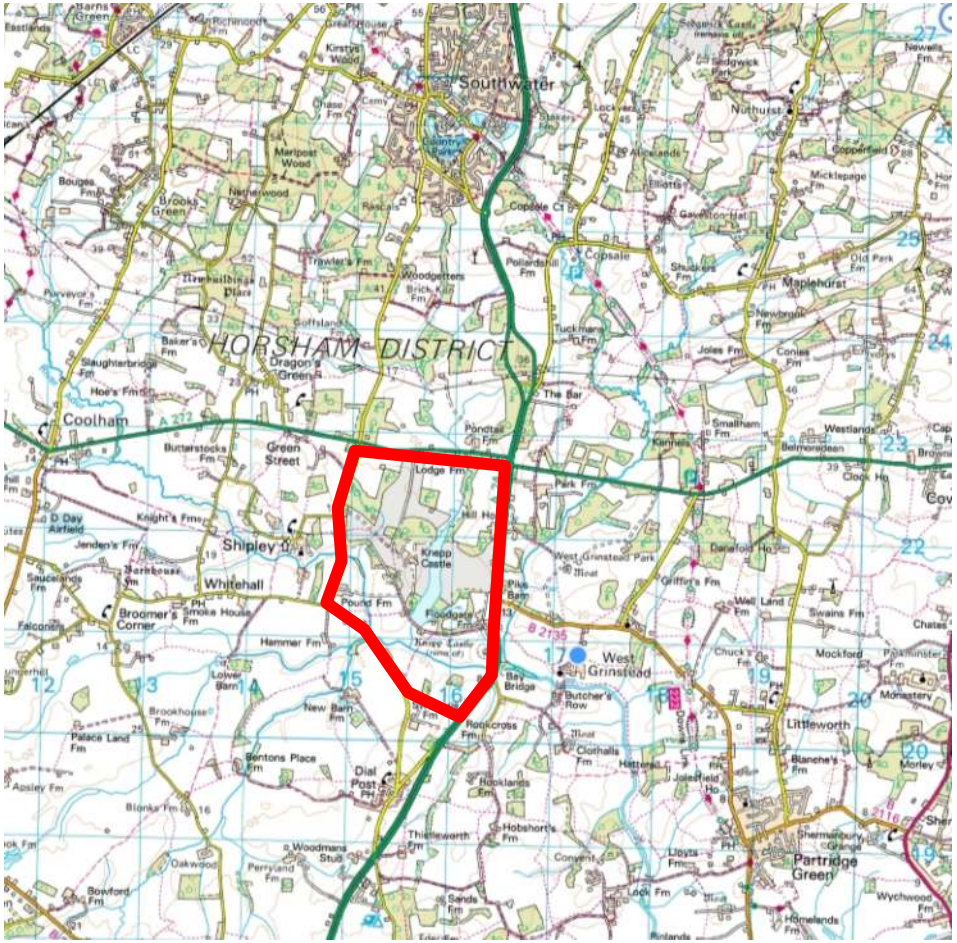
River Adur at Knepp Castle

- Knepp Castle Estate
- Horsham, West Sussex

- River Adur
  - Meandering lowland river
  - Low energy
  - Dominated by fines
  - Historically straightened and enlarged



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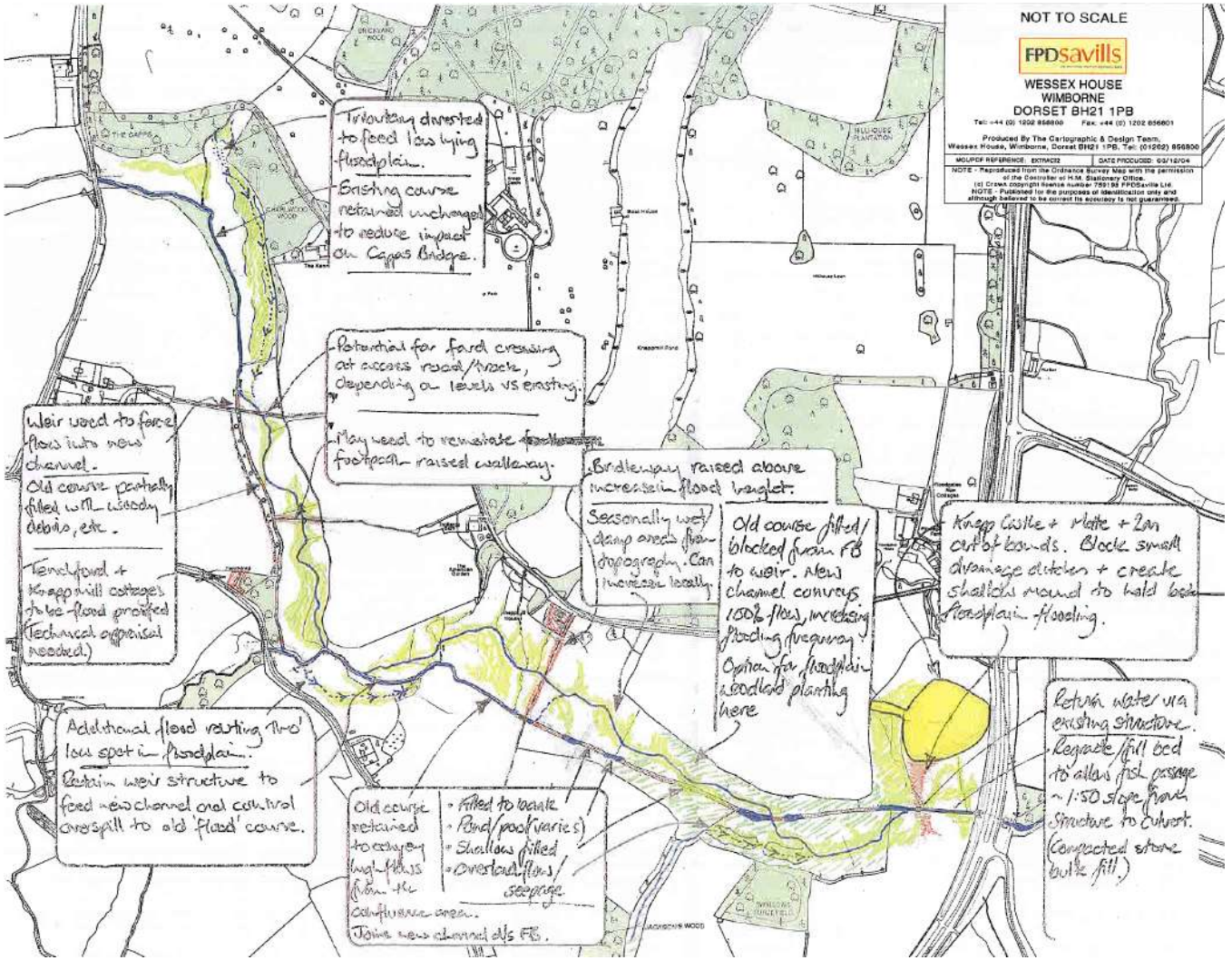
Aims and objectives

- 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)

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Original concept

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

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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

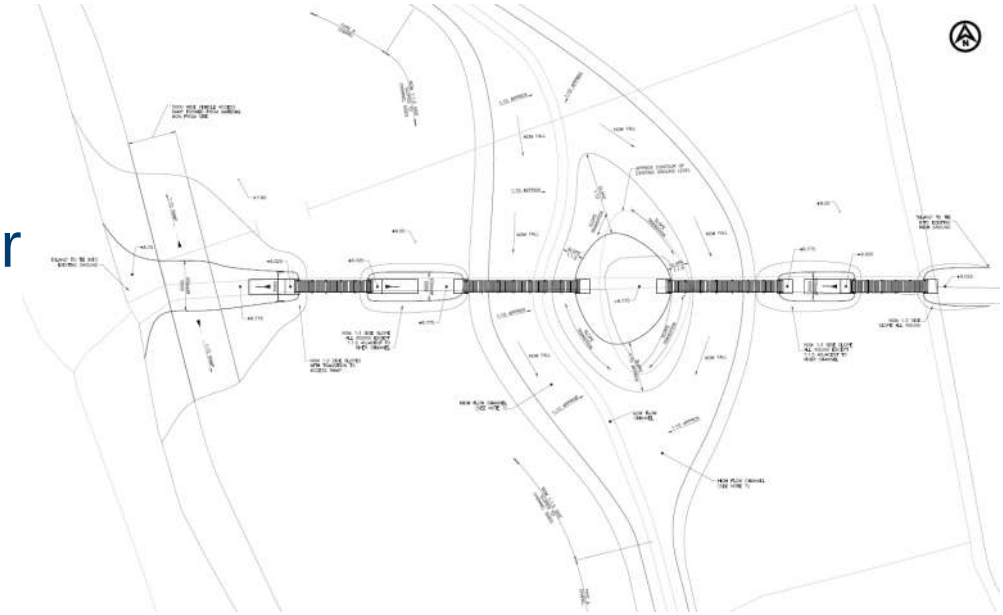
- Bridge deck level close to level of floodplain downstream
- Detailed Tuflow modelling to identify flooding mechanism
- Design alterations
  - Channel capacity
  - Channel planform
  - Floodplain excavation
  - Changes to bridge deck
- Two phase design:
  - New small channel upstream
  - Channel enhancements downstream

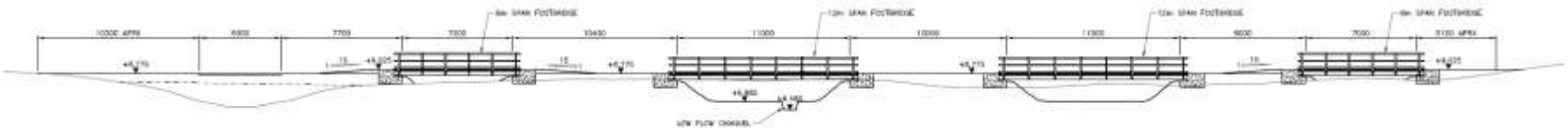
Key challenges – PRoW

- 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





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Final design – Phase 1 (small channel)

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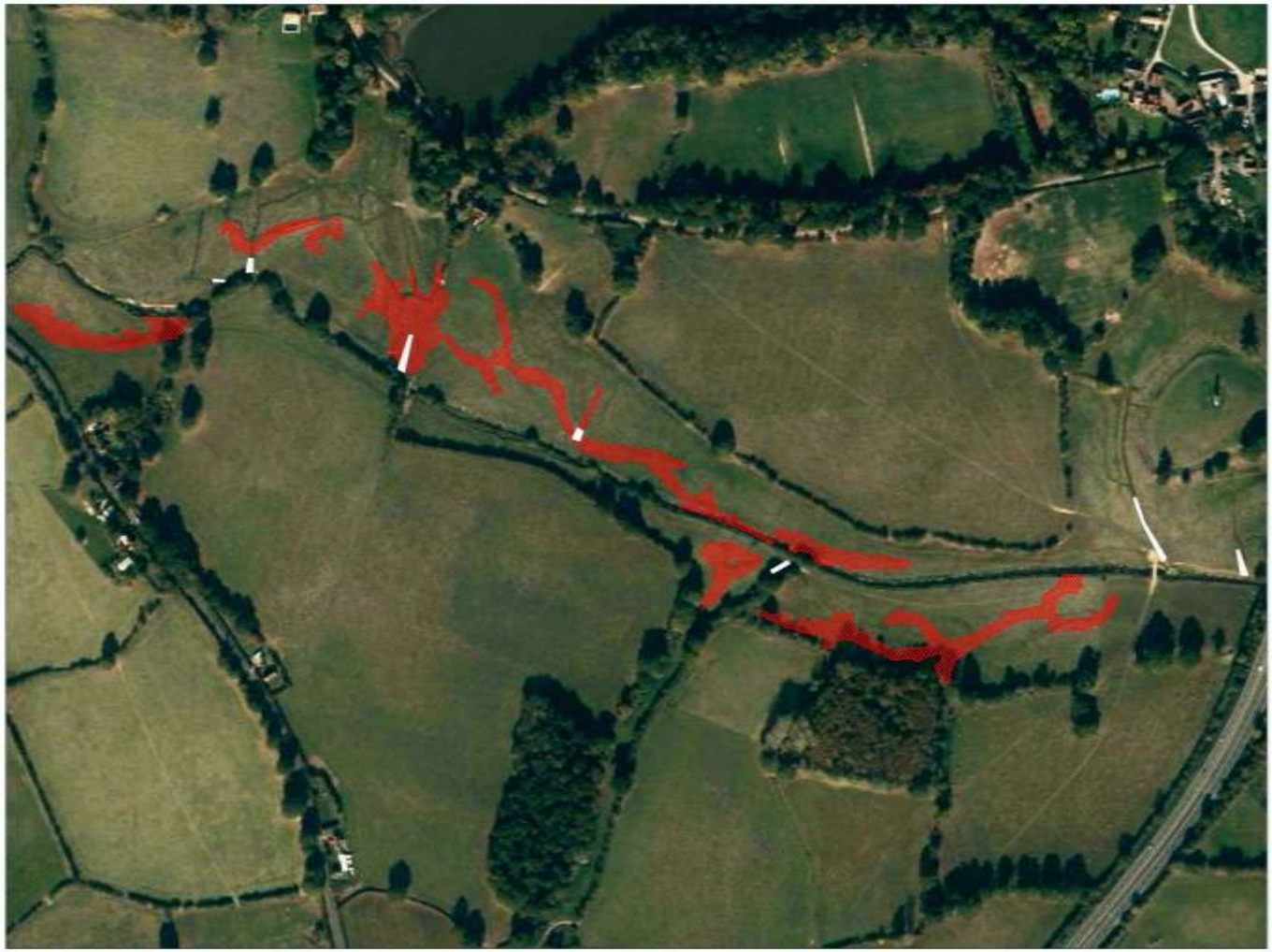
Final design – Phase 2 (enhanced channel)



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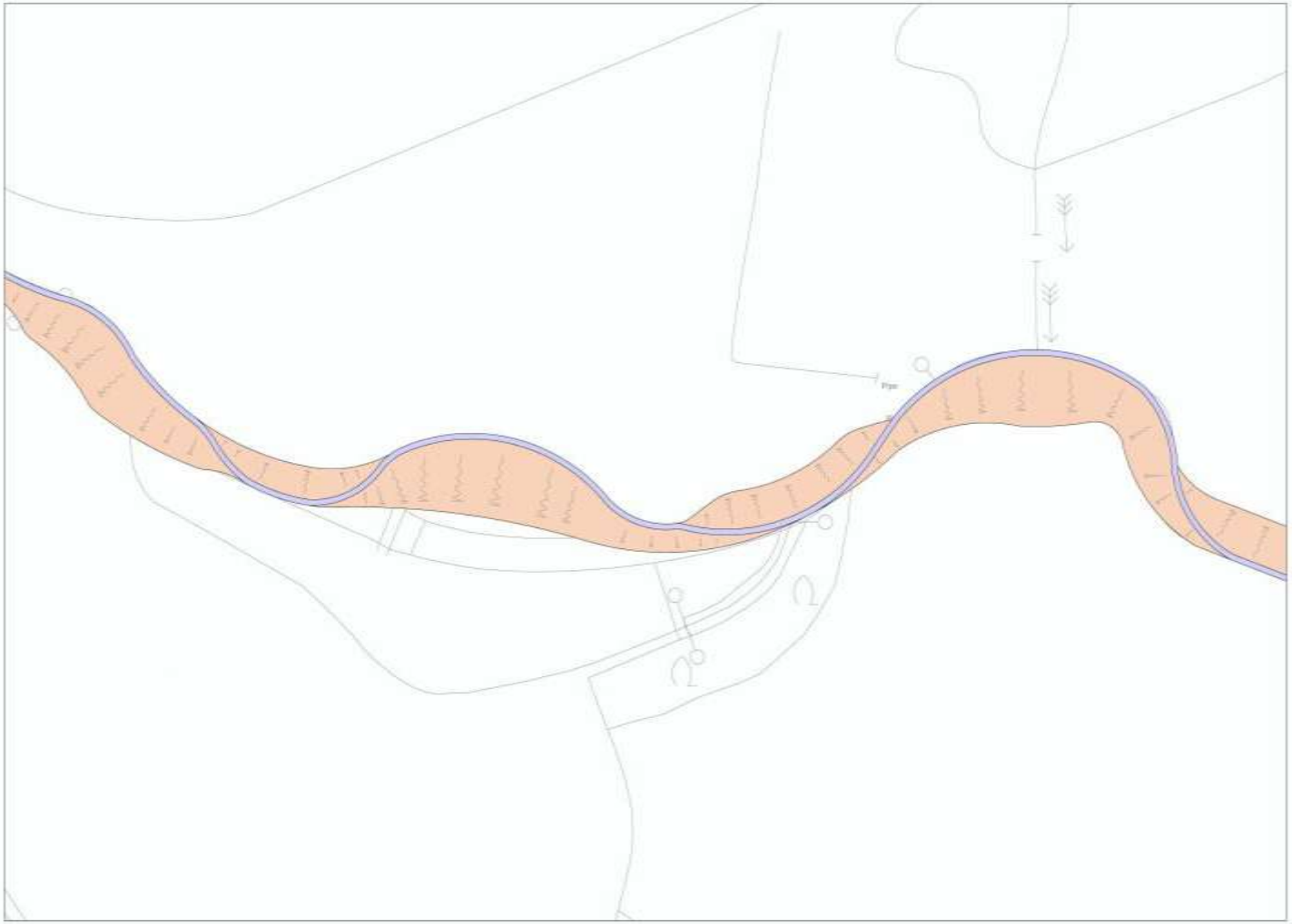
Final design – Phase 2 (enhanced channel)



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Construction

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

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Construction

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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

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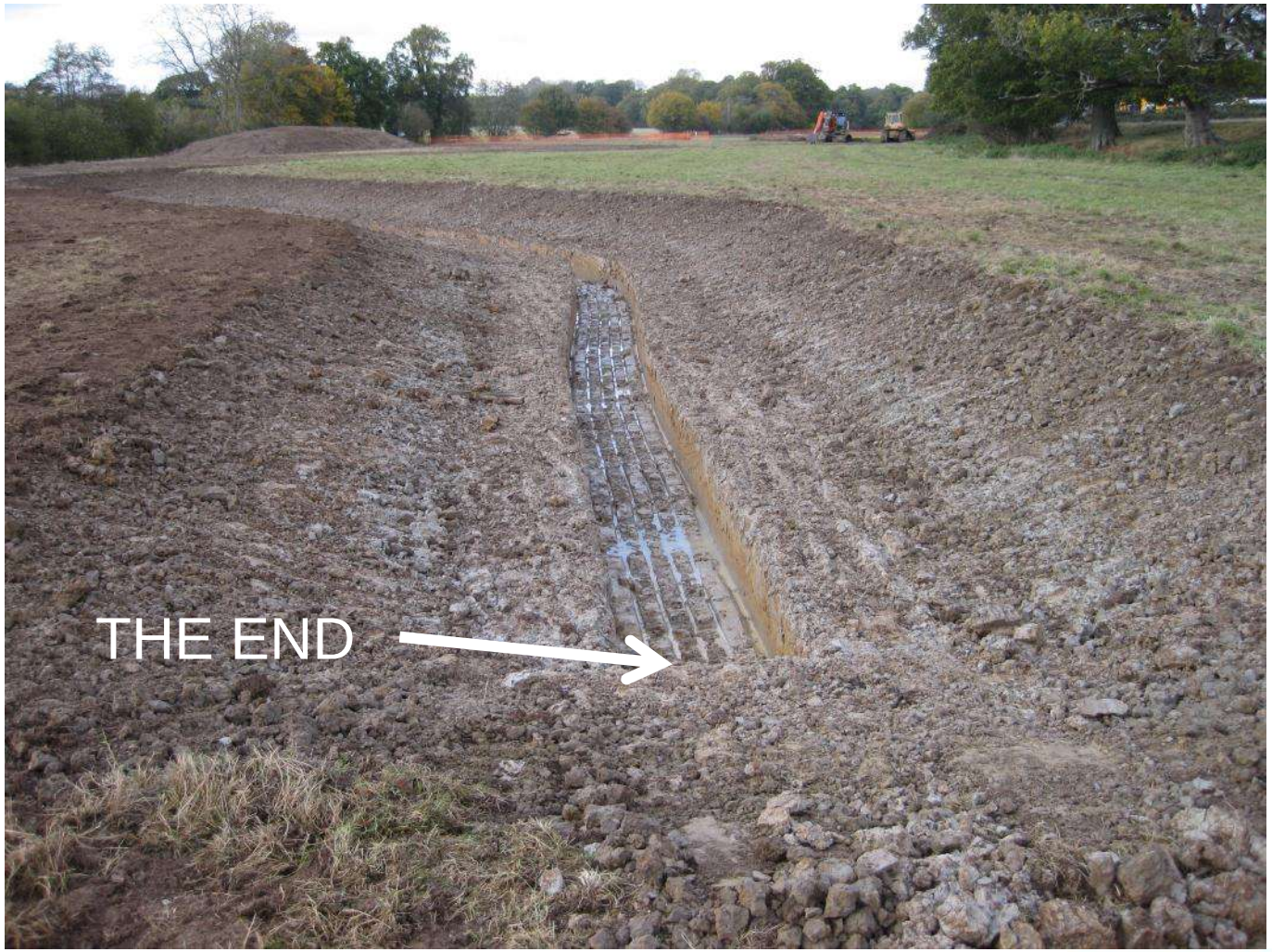
Lessons learned

- 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?



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