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

SIMPLY IS THE BEST

Nigel Holmes

KEY MESSAGES

- Use what nature provides if at all possible
- Work with natural processes and accentuate
- Energise dead systems
- Know when and where to create turbulence
- Don't fuss and be too tidy – smooth edges rarely good
- Manipulate to set healing process in train – let the river do the rest
- Evaluate success by invisibility of involvement and positive landscape and biological responses.

1. ILLUSTRATION FROM PROJECT 3 WEEKS AGO: RIVER NAR IN NORFOLK

- Imported material - 20 tonnes of gravel and some wire!!
- Two woody debris dams
- 40 self-sustaining pools
- 36 'riffles' associated with channel narrowing
- Eight backwaters
- Total cost: £<22k over 1.3km

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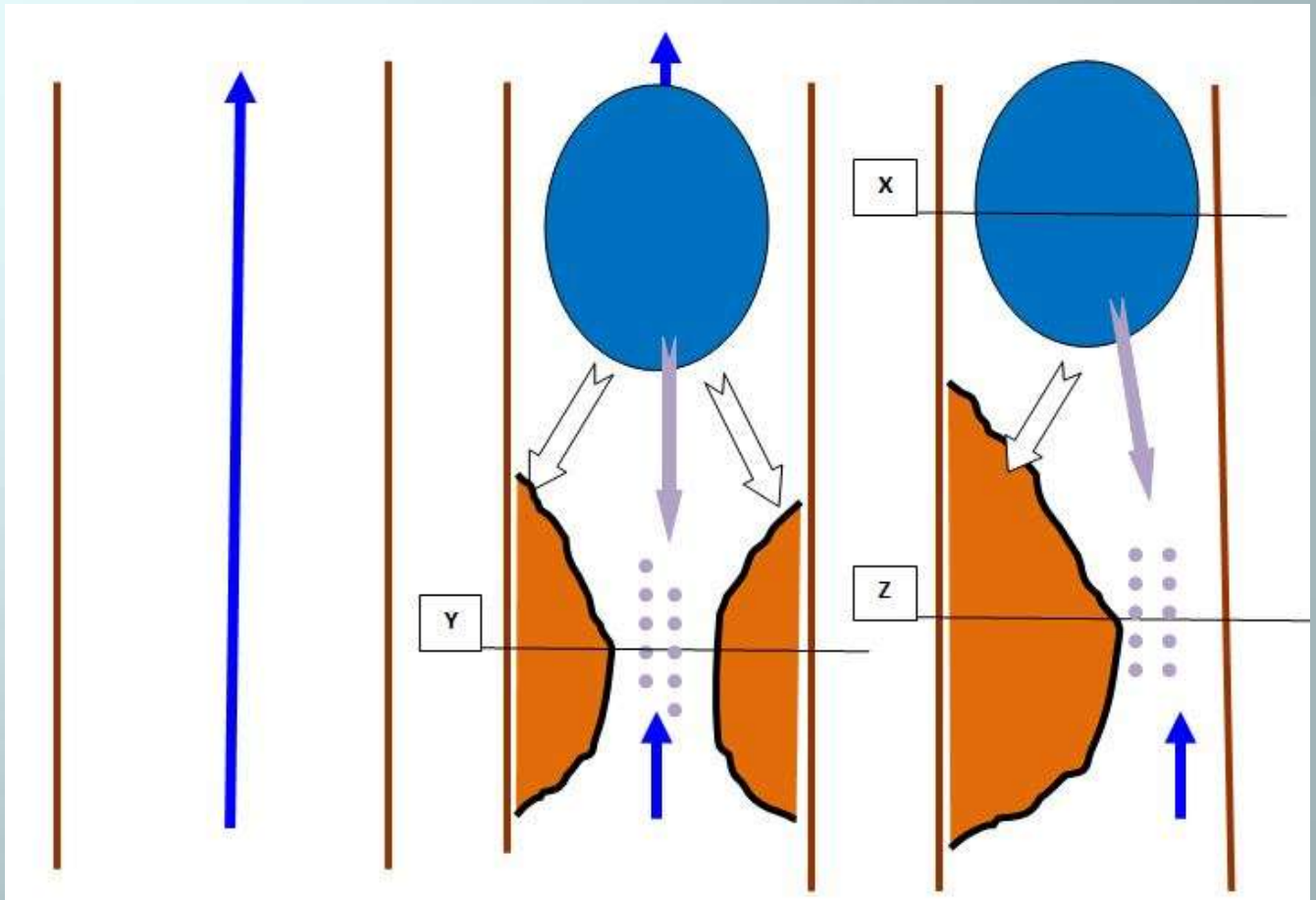

EXISTING: Even gradient across and along channel

Option A. Pool dug and spoil used to form upstream double deflectors

Option B. Pool dug and spoil used to form upstream single deflector – shown on left bank

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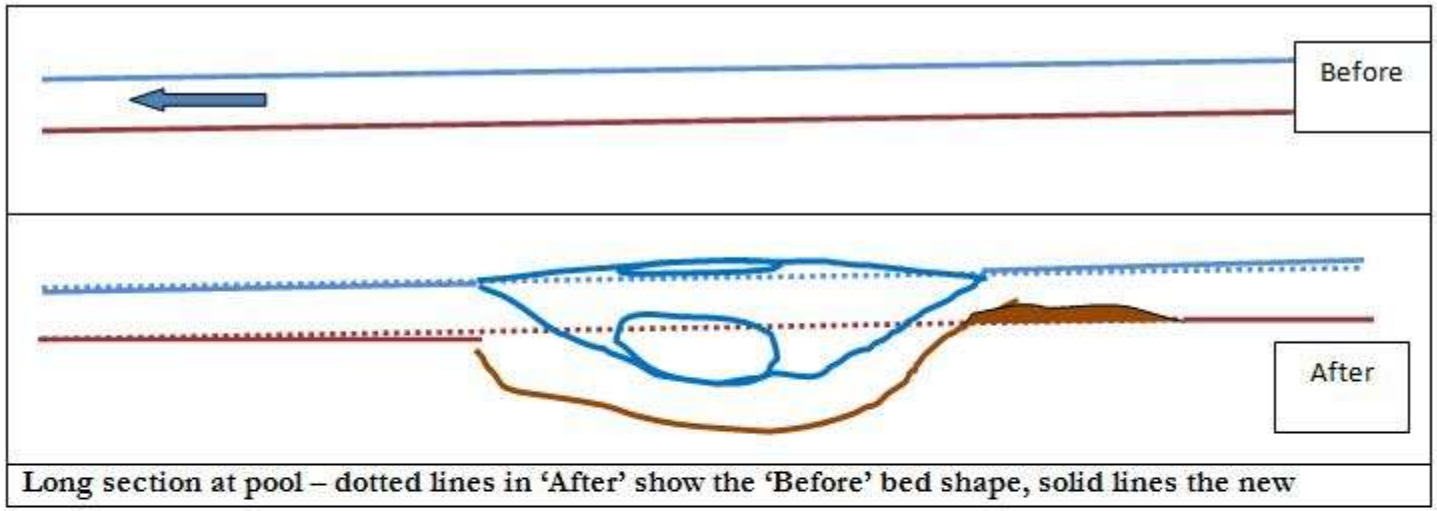
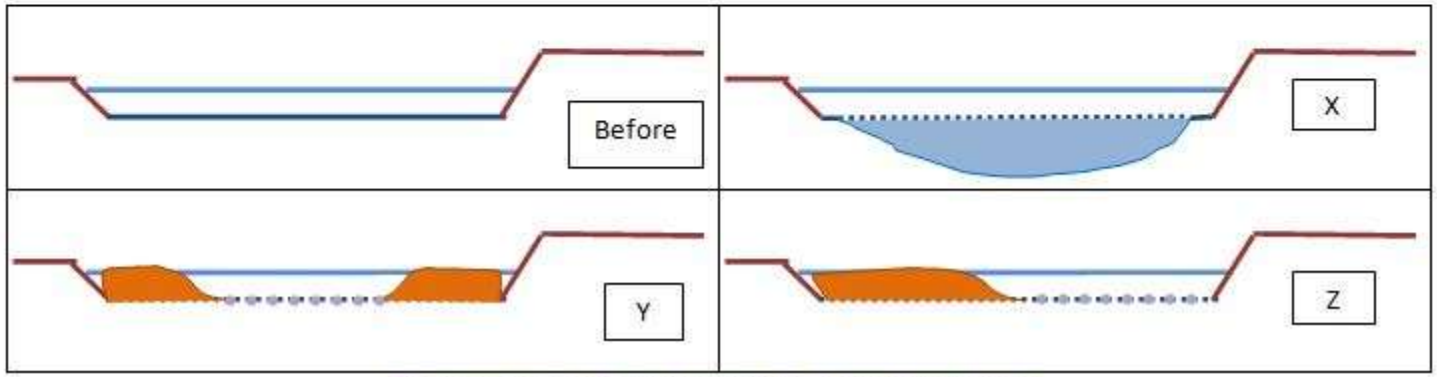
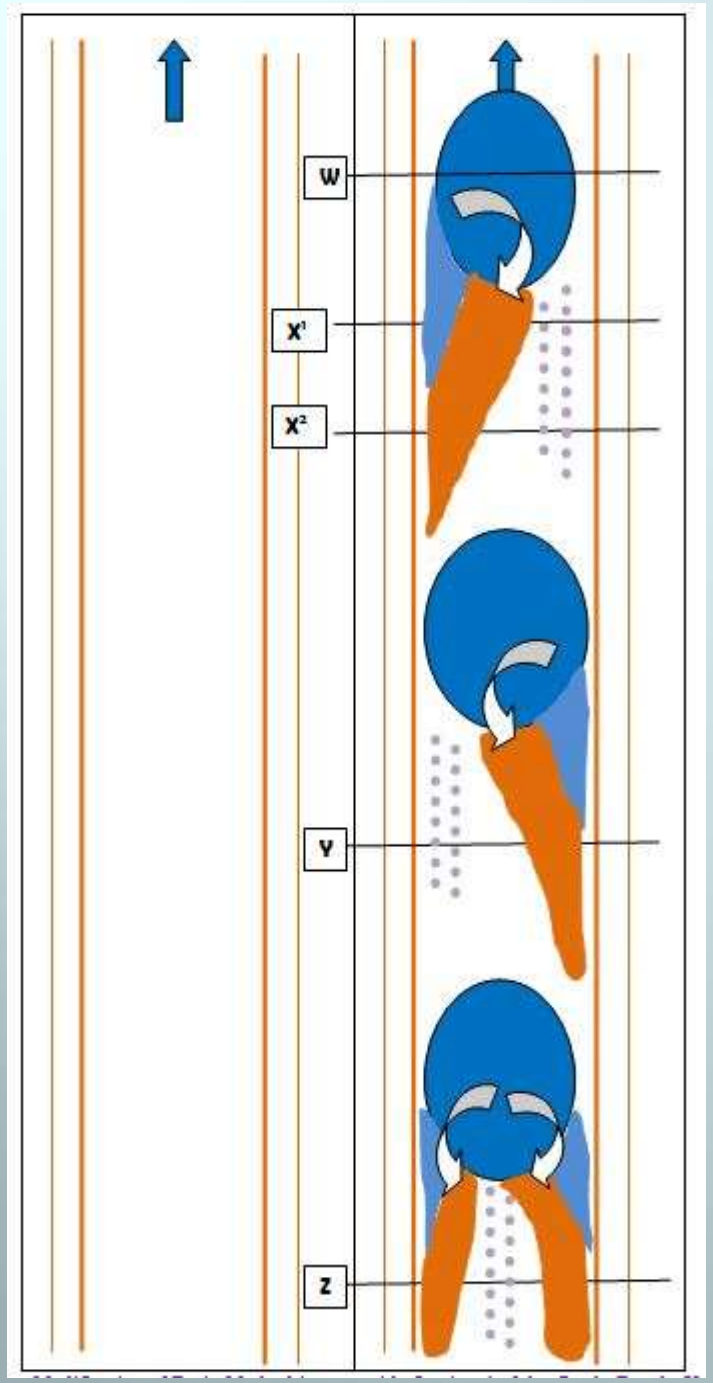


Long section at pool – dotted lines in 'After' show the 'Before' bed shape, solid lines the new



Cross-section through pool and run formations



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Most often asked question: How big/deep should the pool be?

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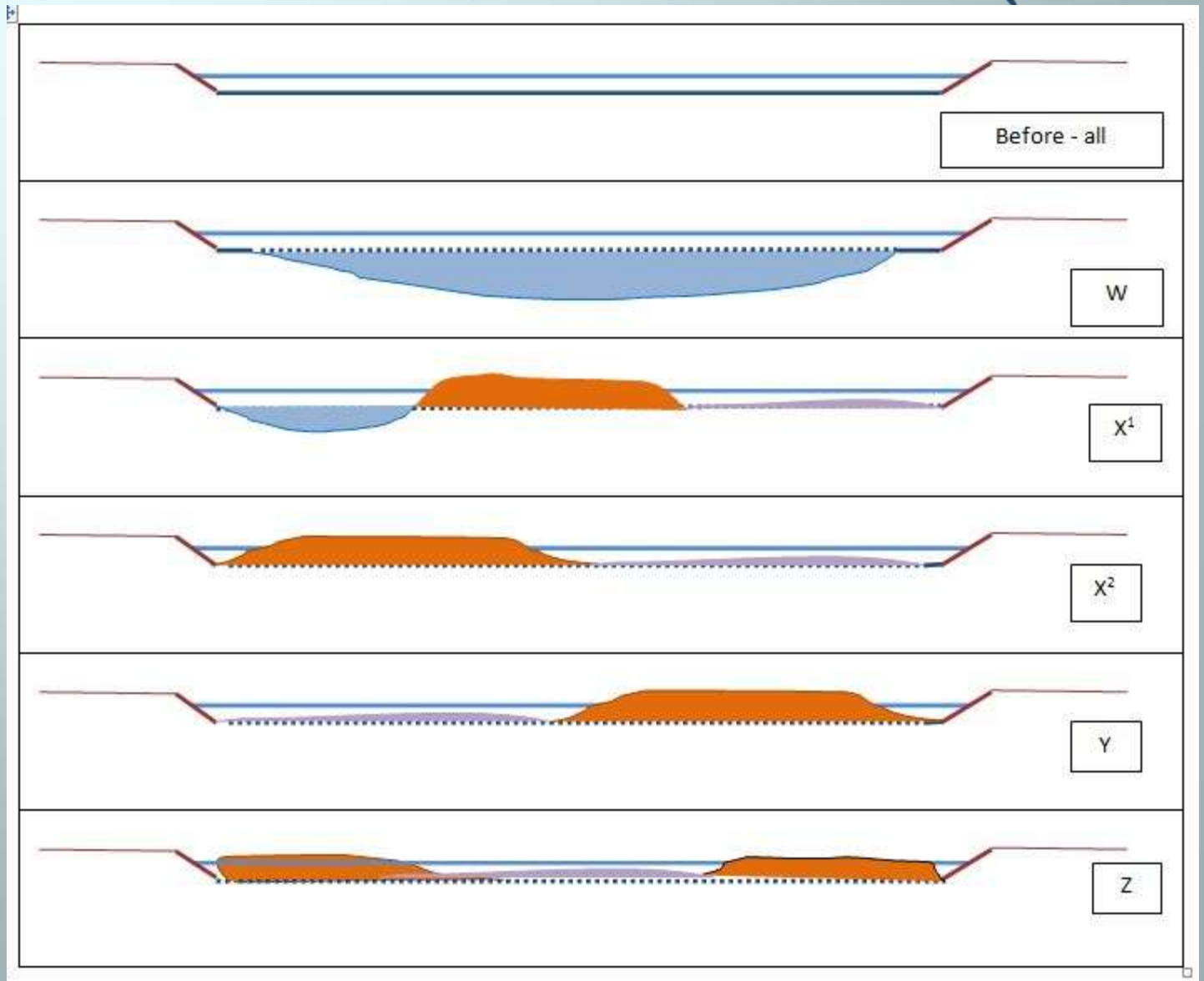
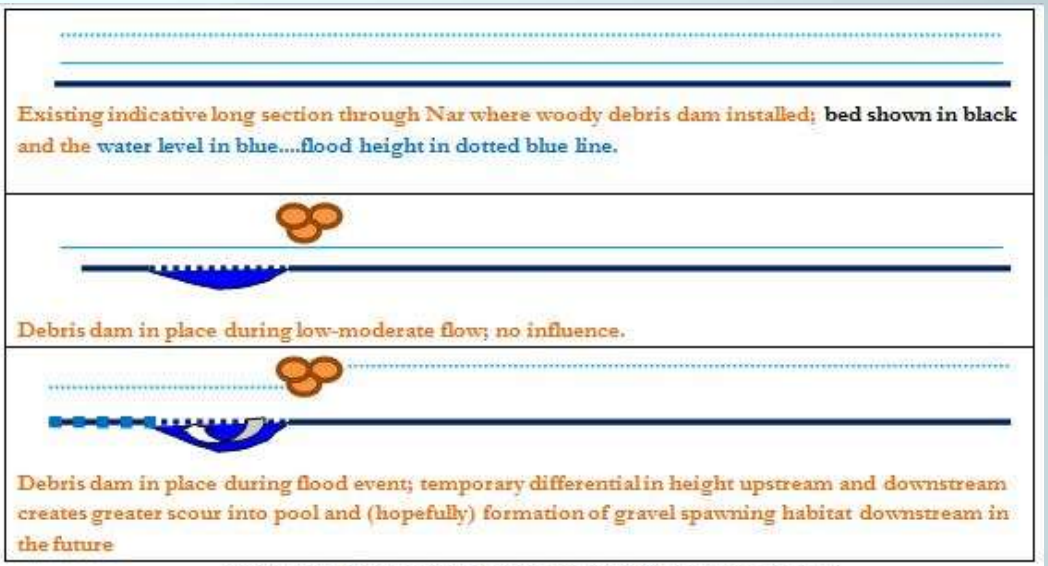
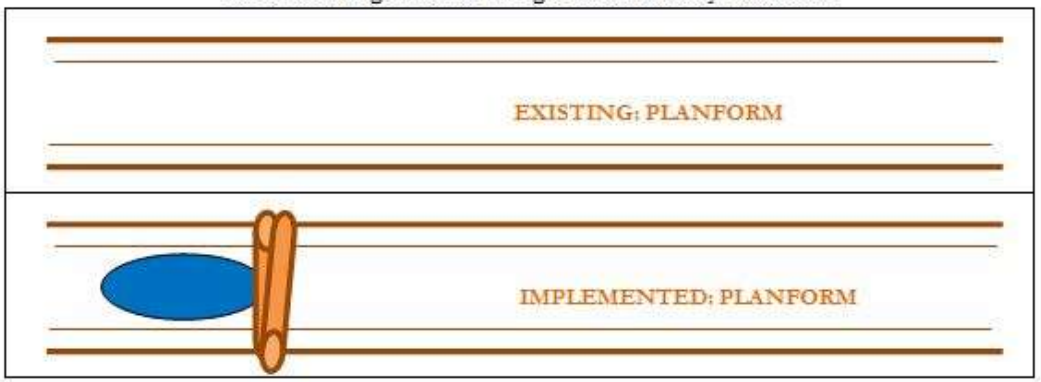
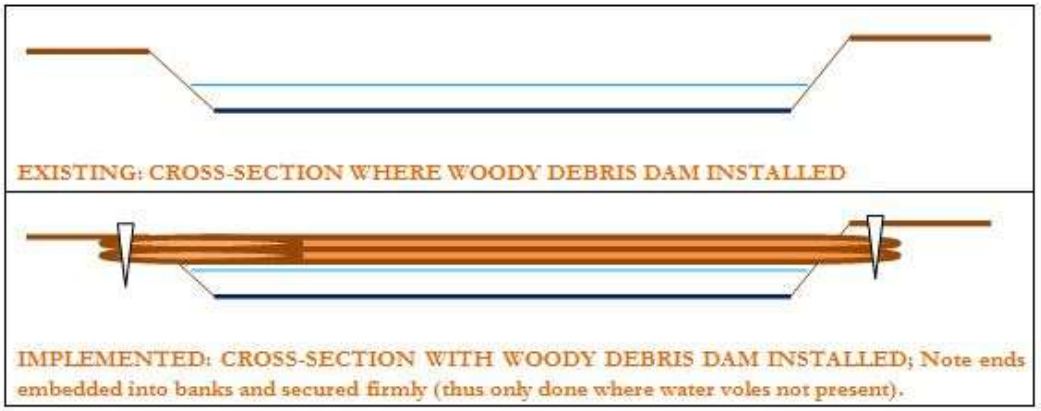




Schematic long-sections through installed woody-debris dam





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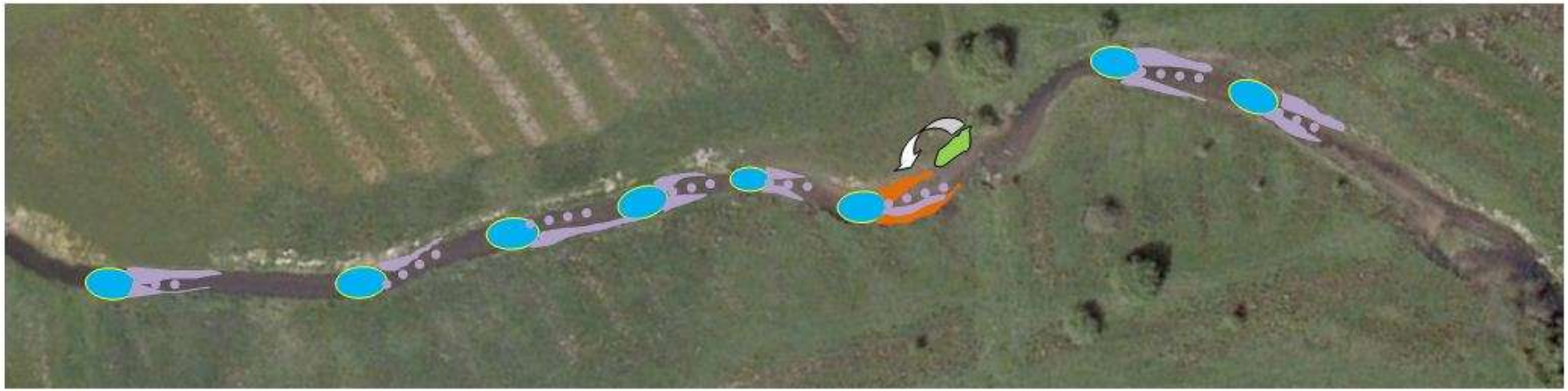

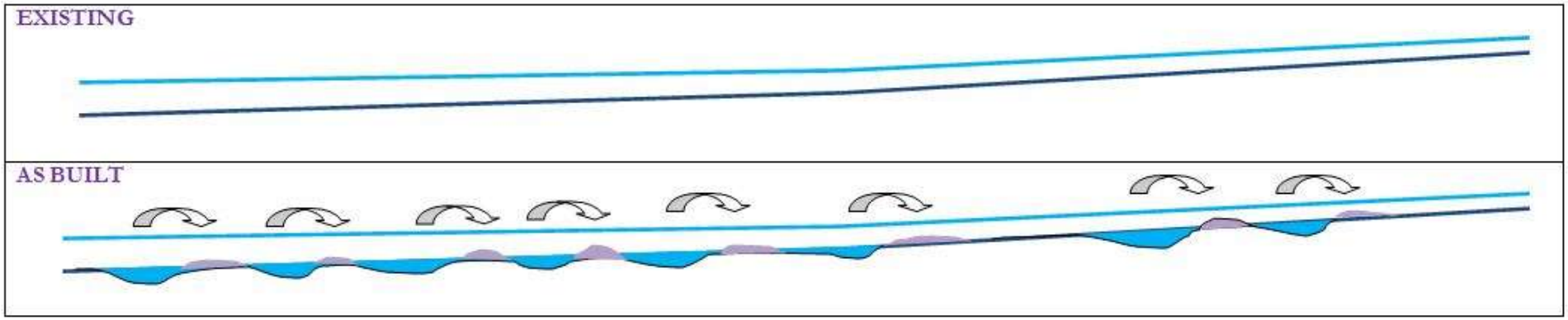

Example where banks and riparian zone cannot be touched

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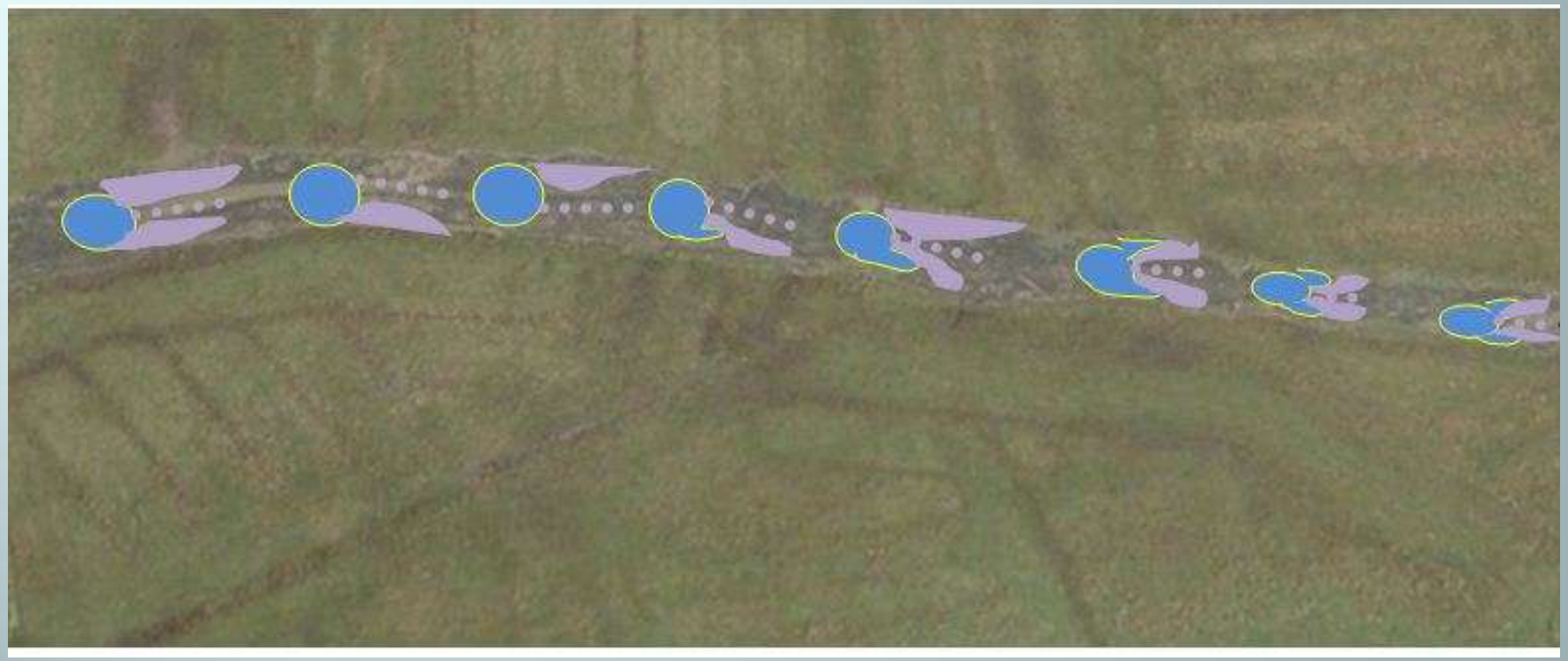

Example where very wide; incorporation of backwaters

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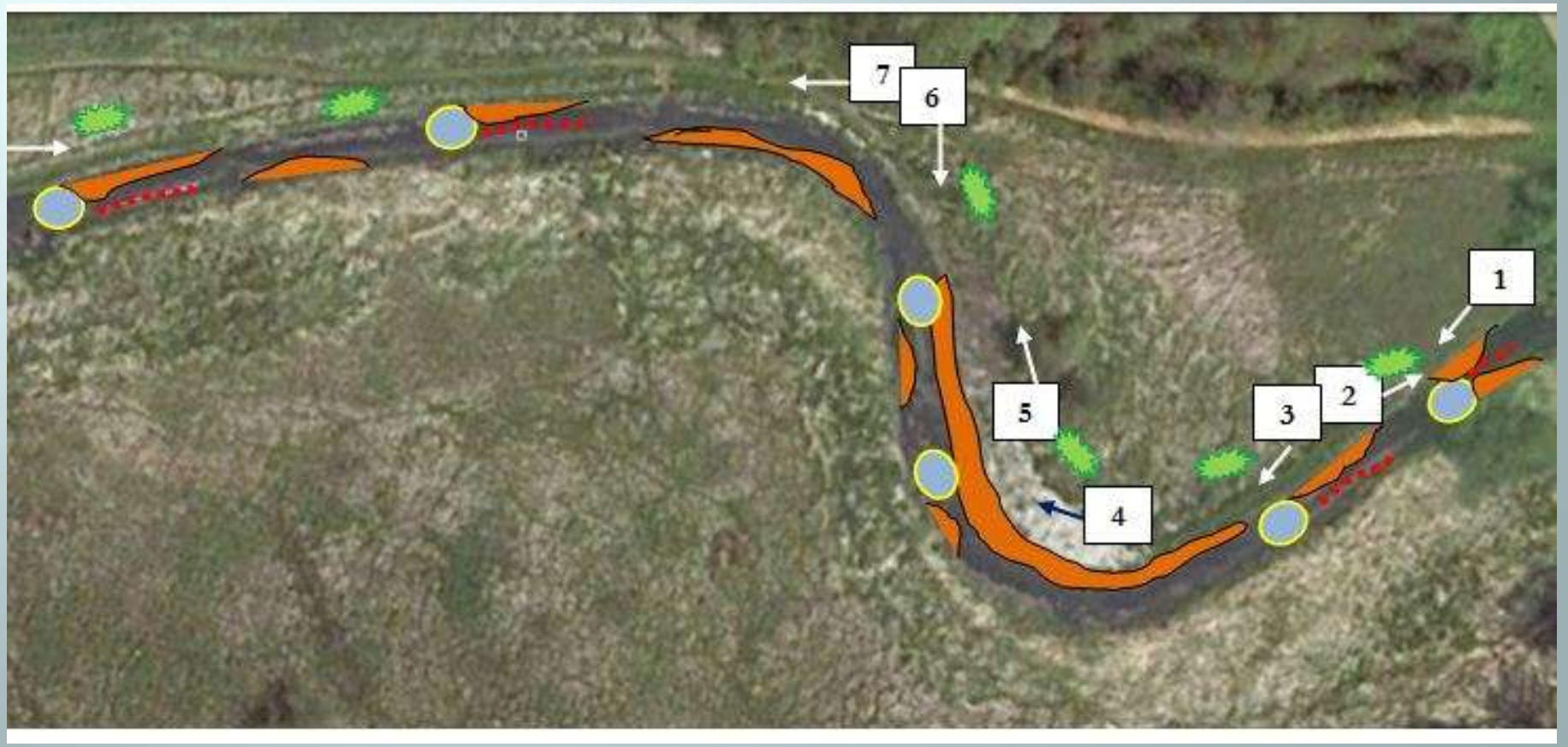

Example riparian zone cannot be used (not banks); accentuating natural process and associated features; no gravel so some imported

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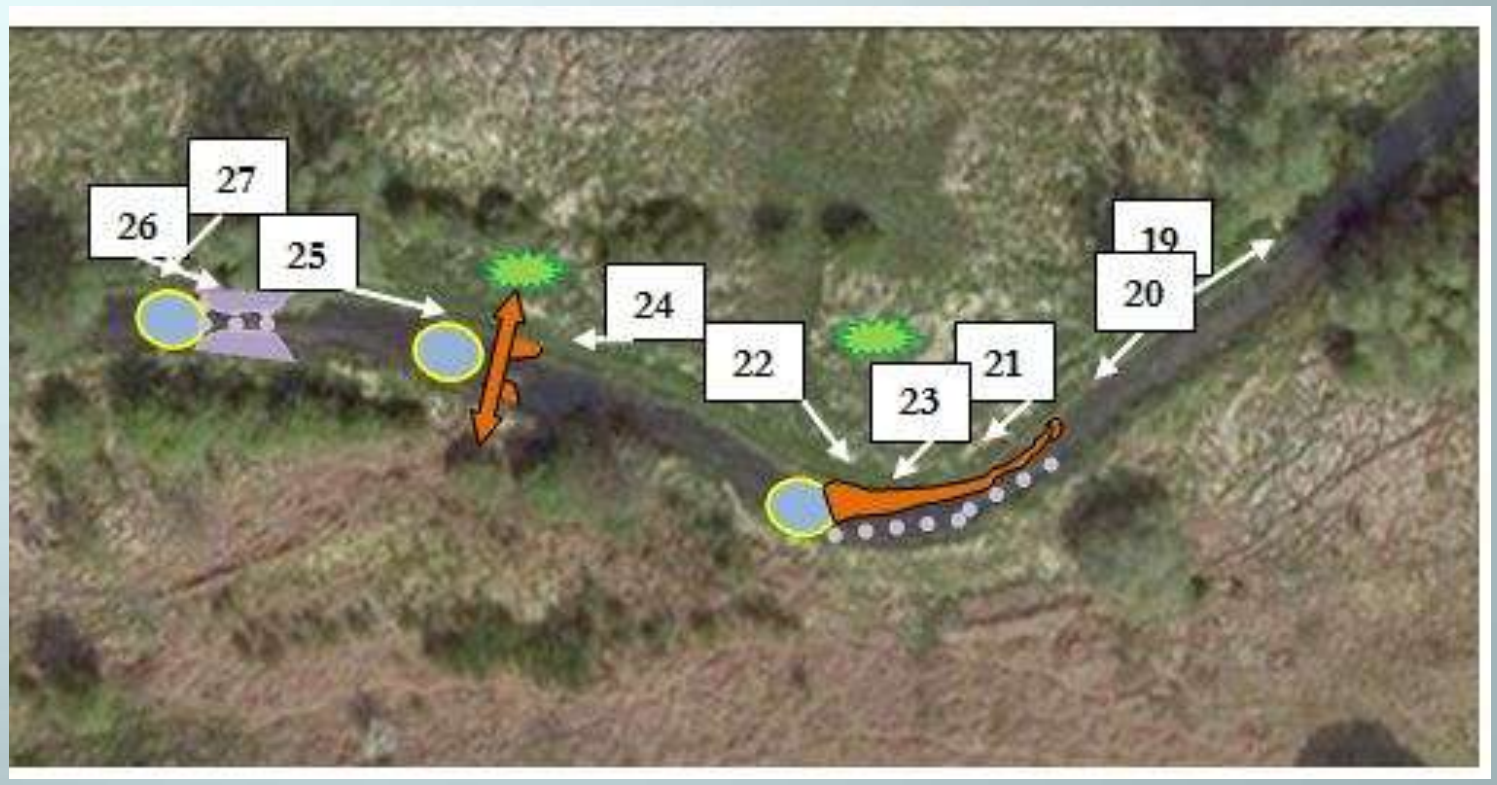
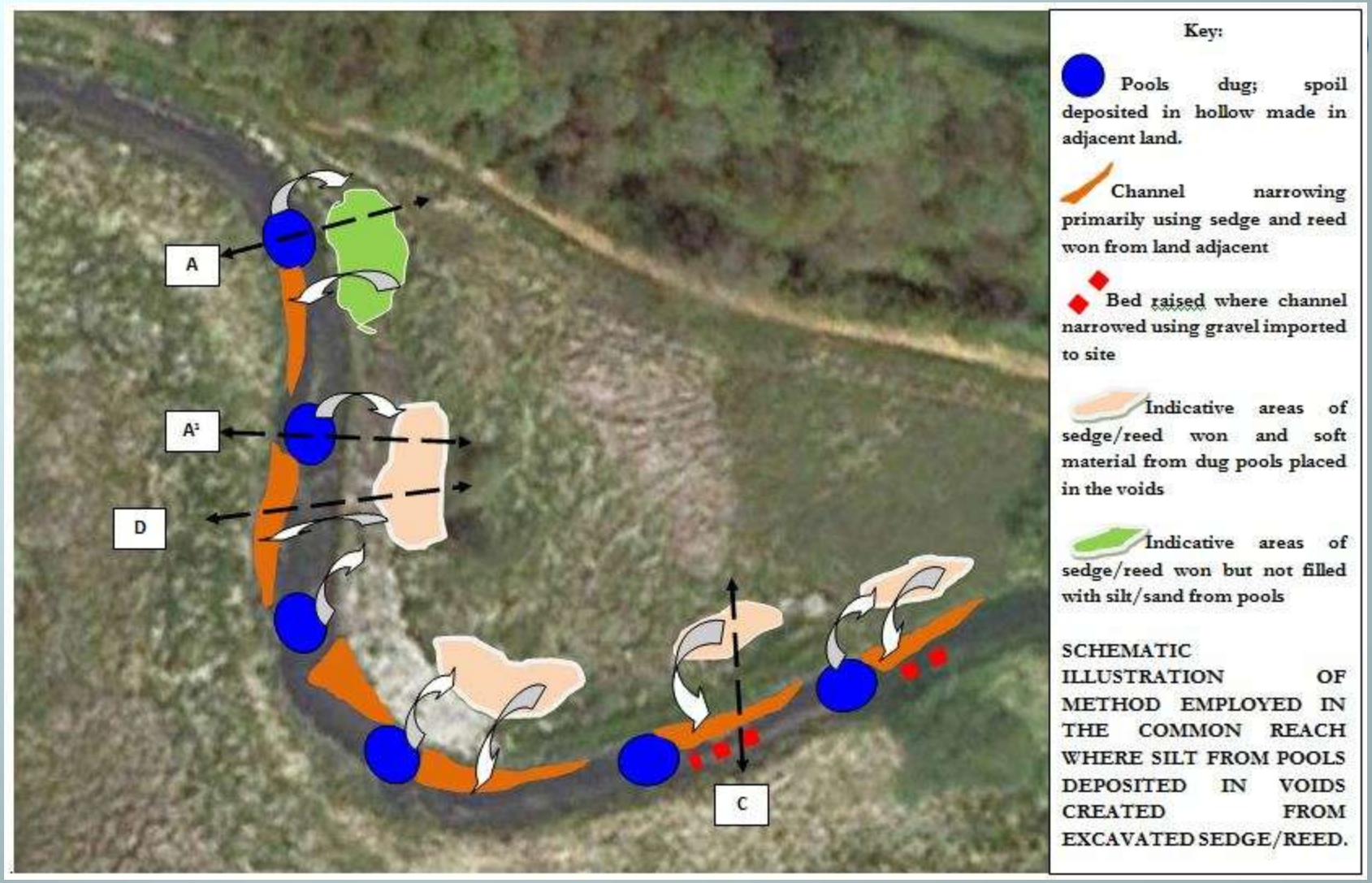


As previous but: gravel present so used in narrowing/'riffle formation AND woody debris dam installed

KEY ELEMENTS: UNDOING

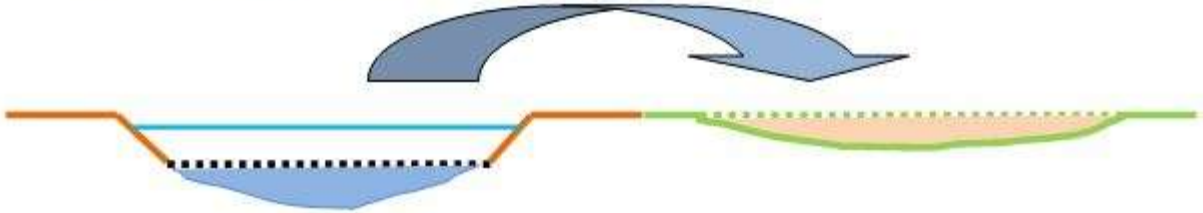


Getting rid of silt in over-wide channel!!

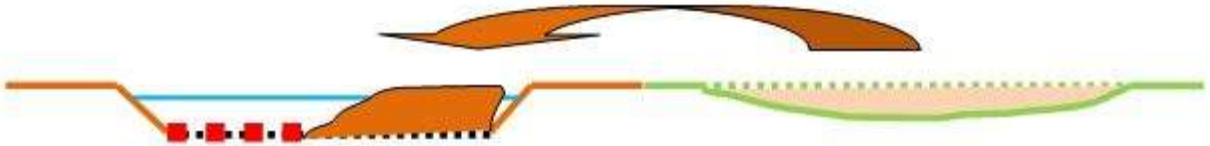
Pre-works indicative cross-section (all sections) looking DOWNSTREAM

Indicative cross-section 'A': Pool dug; adjacent land provides sedge for channel narrowing and left; void on right formed when sedge used to narrow channel upstream of the dug pool

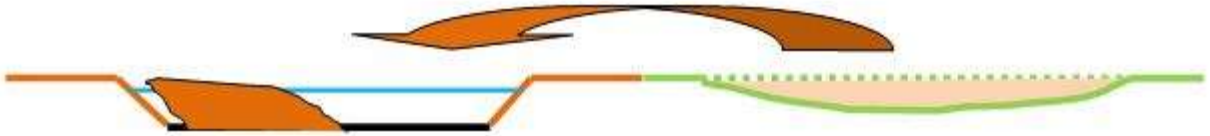
Indicative cross-section 'A[b]': Pool dug; adjacent land provides sedge for channel narrowing and soft sediment from pool added to the void and left to regenerate



Indicative cross-section 'C': Channel narrowed on right side; imported gravel added to raise bed slightly and form suitable spawning habitat; adjacent land provides sedge for channel narrowing and void filled with silt/sand from pools and left to regenerate. NOTE GAP BETWEEN BANK AND INFILL – TREATMENT TO PROTECT WATER VOLE HABITAT



Indicative cross-section 'D': Channel narrowed on left side; no gravel added; adjacent land provides sedge for channel narrowing and soft sediment from adjacent pool added to the void and left to regenerate. AGAIN GAP LEFT AS TREATMENT TO PROTECT WATER VOLE BURROWS.



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NAR MEET THE TWO VEG!!

2. ILLUSTRATIONS FROM PREVIOUS PROJECTS: PROVEN LONGEVITY AND SUCCESS

- Darent: 7 years on
- Itchen: 2 years on
- Nar Drain!!: 1 year on

DARENT: 7 YEARS ON

DARENT: 7 YEARS ON

DARENT: 7 YEARS ON

DARENT: 7 YEARS ON

ITCHEN: 2 YEARS ON

ITCHEN: 2 YEARS ON

ITCHEN: 2 YEARS ON

ITCHEN: 2 YEARS ON

ITCHEN: 2 YEARS ON

NAR DRAIN!!:

NAR DRAIN!!

NAR DRAIN!!: 4 MONTHS ON

3. ACCOLADES

- WTT: Andy Thomas 2011.....'want to do something more adventurous than the usual DIG AND DUMP'
- Itchen: WTT award 2011 (shared and also recognised importance of biological response and monitoring)

3. THANKS

- Kind & Trusting Consenting Officers!!
- Landowners
- Funders
- GREAT DIGGER DRIVERS!!