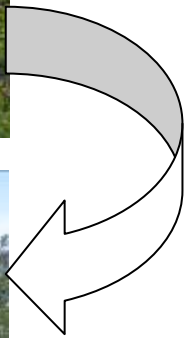


LITTLE OUSE HEADWATERS: PILOT RESTORATION PROJECT (AS BUILT REPORT)

October 2013

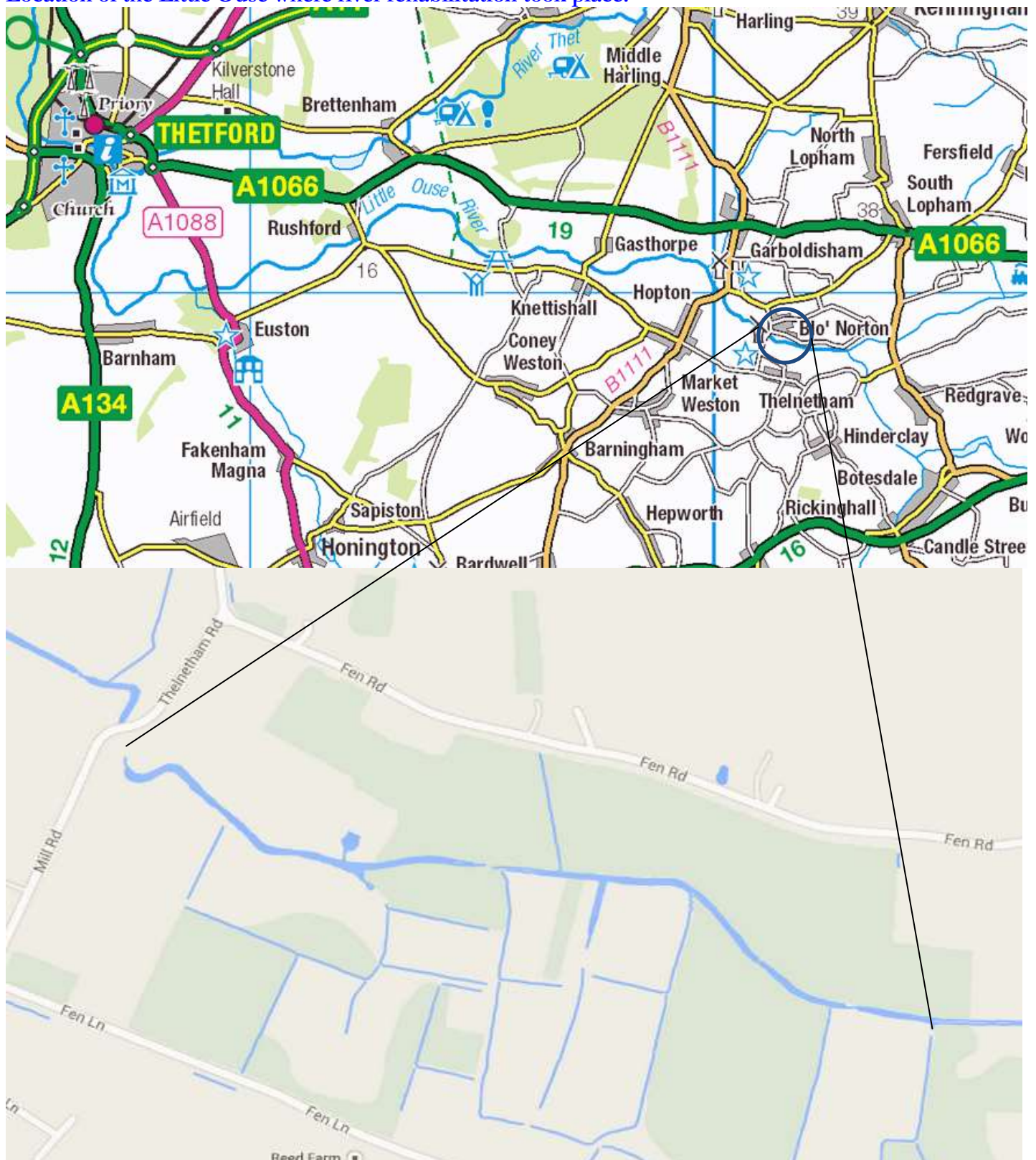


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1. Purpose: Following on from the production of a discussion document (April 2012) in relation to possible river rehabilitation measures for the River Little Ouse south of Blo’Norton, Suffolk, work on the river took place in the first week of October 2013. The aim was to improve habitat diversity, aesthetic qualities and enhanced self-cleansing of the channel to reduce the extent of silt deposition (and the in-channel habitats being totally dominated by emergent reeds). The work aimed to improve biodiversity and have either beneficial, or no, effect on flood risk.

2. Location of Site: The location of the reach of the Little Ouse investigated is shown in the Figure below. The upstream limit was at TM021788 and the downstream limit TH127791. The length affected was very close to 1,000m.

Location of the Little Ouse where river rehabilitation took place.



3. General Channel Character Prior to Rehabilitation:

At the upstream end there is open improved grassland on the left and woodland on the right for c200m. The bank on the left is higher than on the right and half the channel is shaded by bankside trees (mainly oaks and sycamores). Unlike anywhere else, water was relatively shallow and lesser water-parsnip (*Berula*) was present. Despite local shallowness, only silt was present on the bed. In places the river was trying to create a narrower low-flow channel by reeds growing in from the edges and accreting silt.

There then is a c300m wooded stretch with a footbridge across the channel. Prior to work no water movement was visible. Open sections were almost totally occluded by emergent reed (branched bur-reed – *Sparganium erectum*) whilst areas shaded by the bankside alders were either bare or supported patches of broad-leaved pondweed. No gradient along the channel resulted in ponded conditions upstream of blocking reed growth downstream. Deep black mud covered the whole bed from top to bottom and from side to side.

A very open section follows which was almost totally blocked by reed – either bur-reed or common reed (*Phragmites*). As upstream, only black mud was present on the bed. Immediately upstream of the footbridge a wide fringe of sedge (*Carex*) was present on the left margin.

The final quarter had a few more marginal trees and small sections of the channel shaded by them were not blocked by reed. Otherwise reeds blocked the silted channel.

Throughout water voles were present and detailed surveys were carried out in advance of the work to determine location of burrows within the banks. For the most part burrows were present on the right (non-working) bank. This bank was left entirely alone throughout the work. Where burrows were confirmed as present on the left bank, or there was potential for them to be so, these banks were taped-off to ensure they remained untouched during the work.



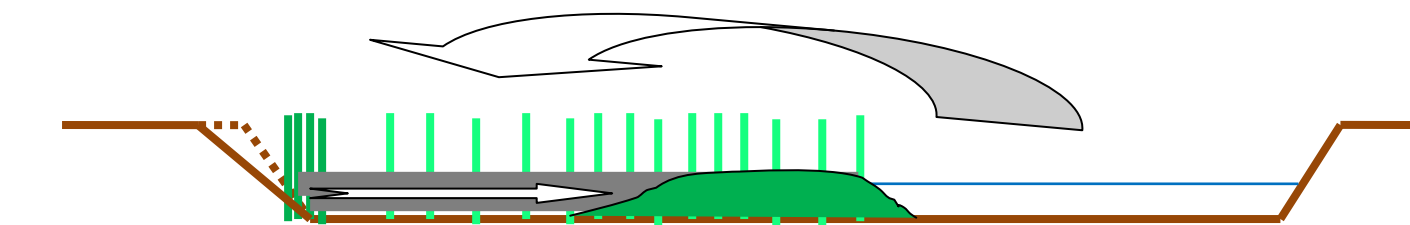
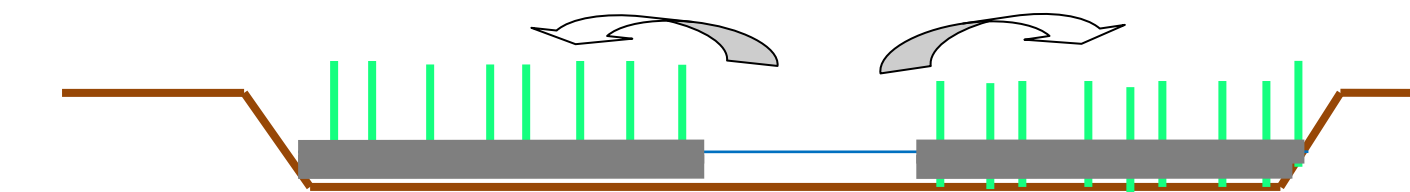
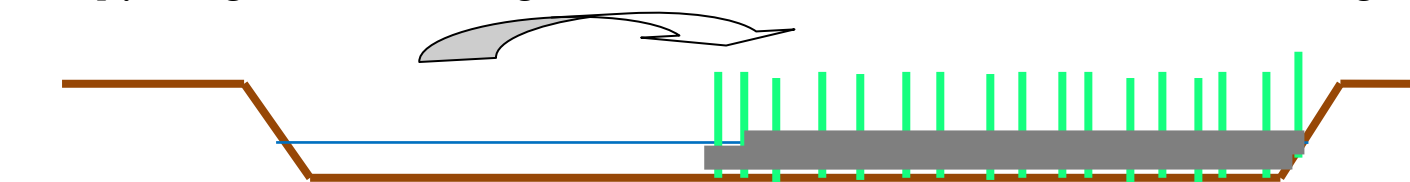
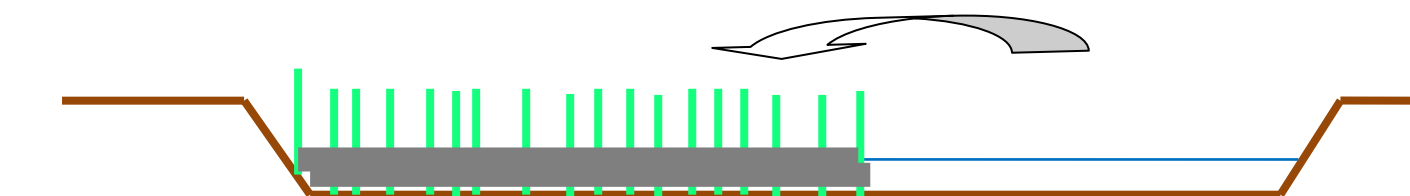
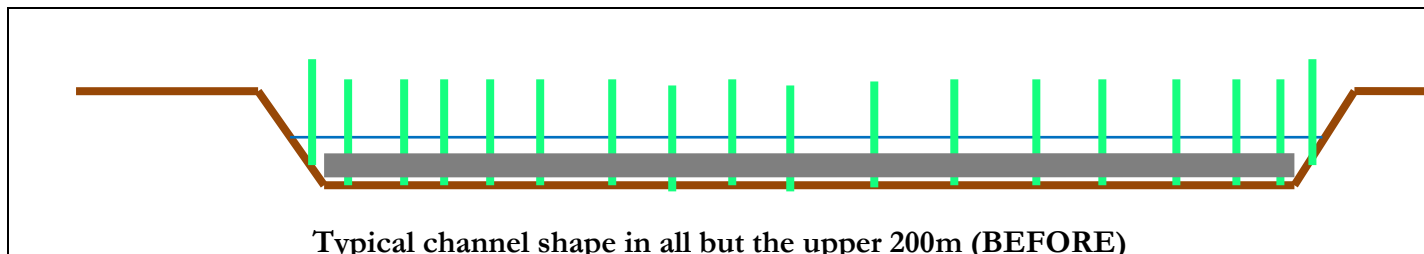
Finger-tip searches took place in advance of the work for signs of water voles, and where burrows were present, banks were clearly marked to ensure they remained unaffected by the work.

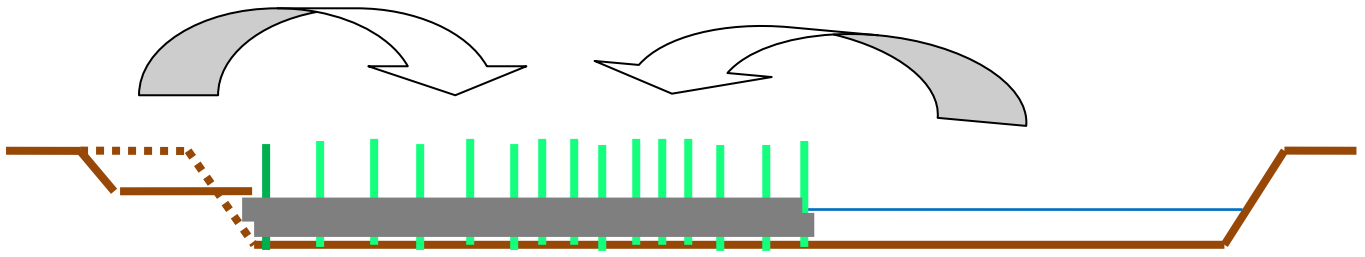
This report deliberately has low resolution images so that the document can be easily electronically transmitted to anyone interested in having a copy.

4. Rehabilitation Work Undertaken

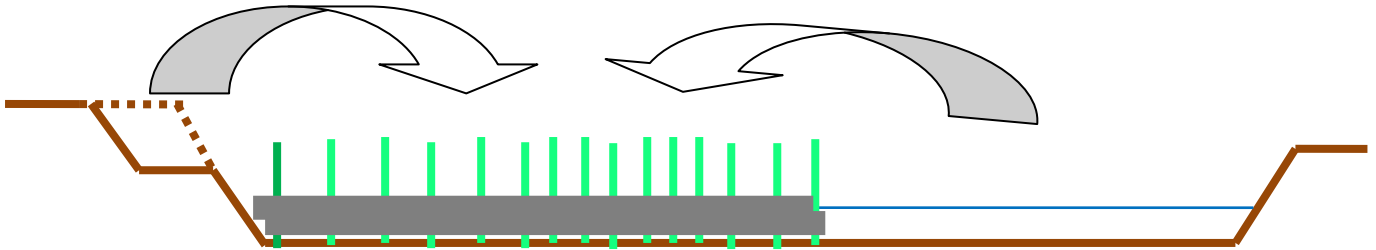
In essence a narrow low-flow channel was created along almost the entire 1,000m of affected stream. In a few places nothing was done because trees shade the channel and stop the growth of blocking reeds. Narrowing took place most of the right side of the channel but also took place on the left where conditions were more appropriate. In some locations (six) pools were also created with the channel very comprehensively narrowed upstream with the arisings.

Figures below show the variation in measures carried out.

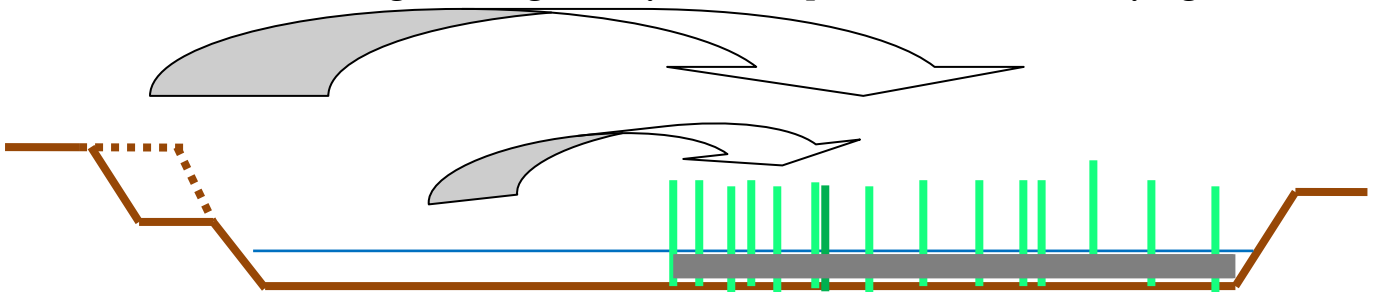




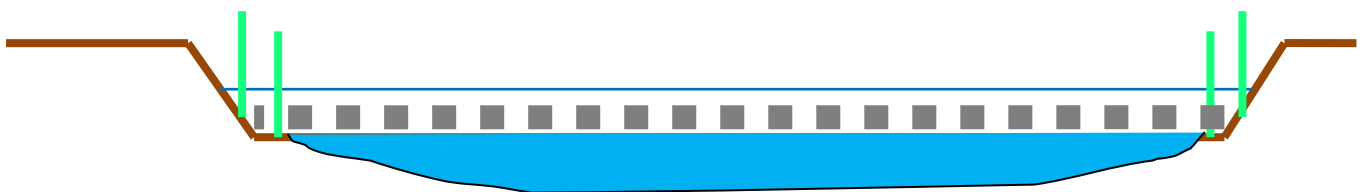
E1. Channel reed and silt re-distribution combined with bank re-profiling to create wider wetland reed shelf and provide more material to make formation of low-flow channel more self-cleansing in the future.



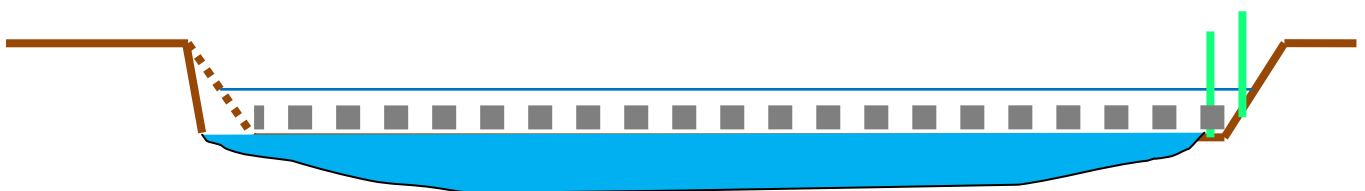
E2. Channel reed and silt re-distribution combined with bank re-profiling to make formation of low-flow channel more self-cleansing on the right – only done in top 200m where banks very high.



E3. Channel reed and silt re-distribution combined with bank re-profiling to make formation of low-flow channel more self-cleansing on the left – only done in top 200m where banks very high.



F1. Creation of pool with banks left untouched

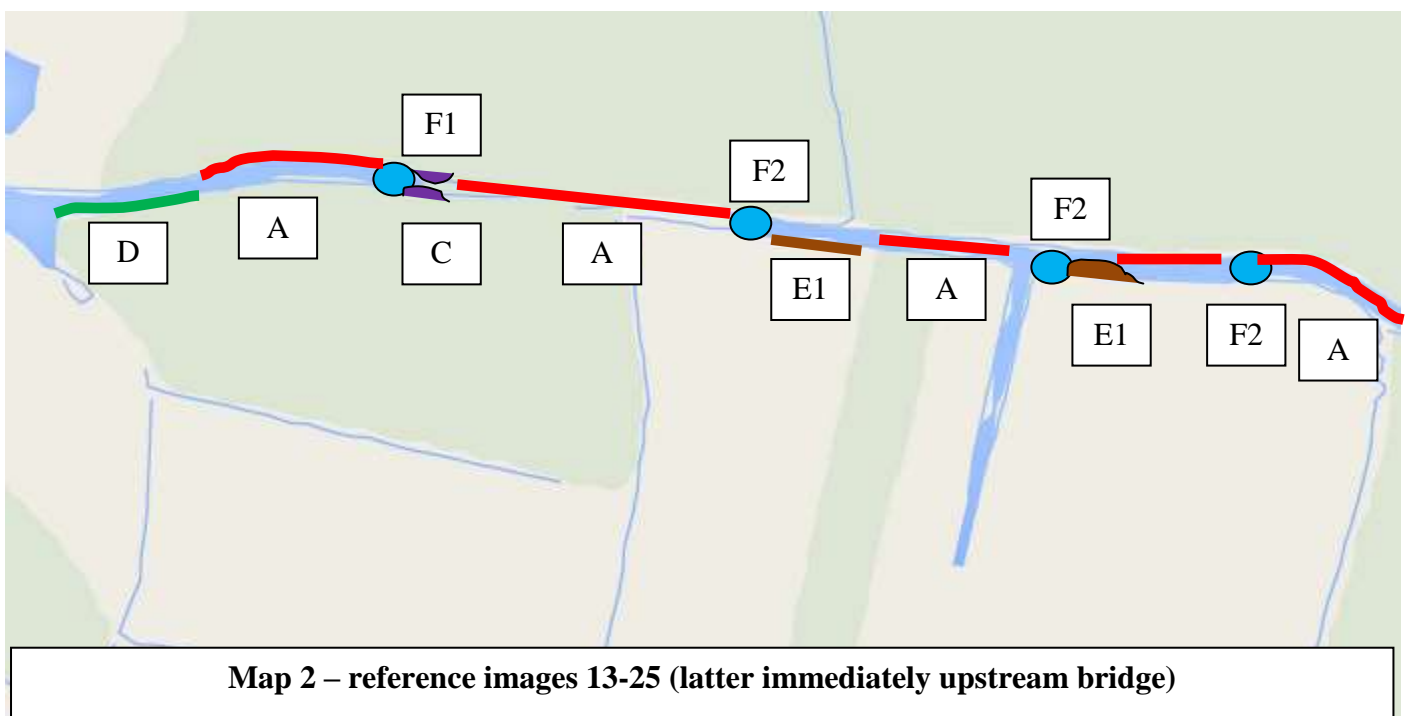
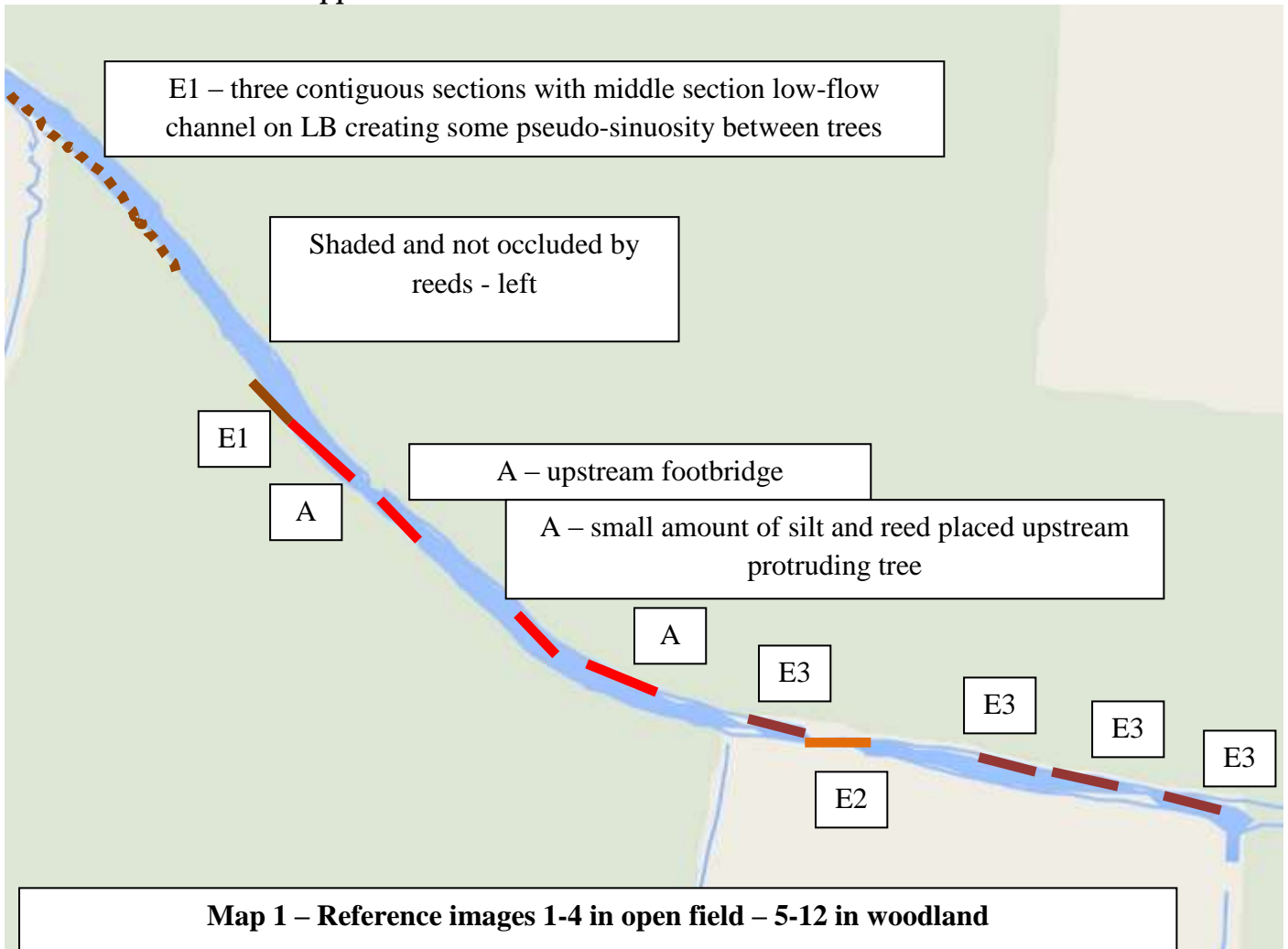


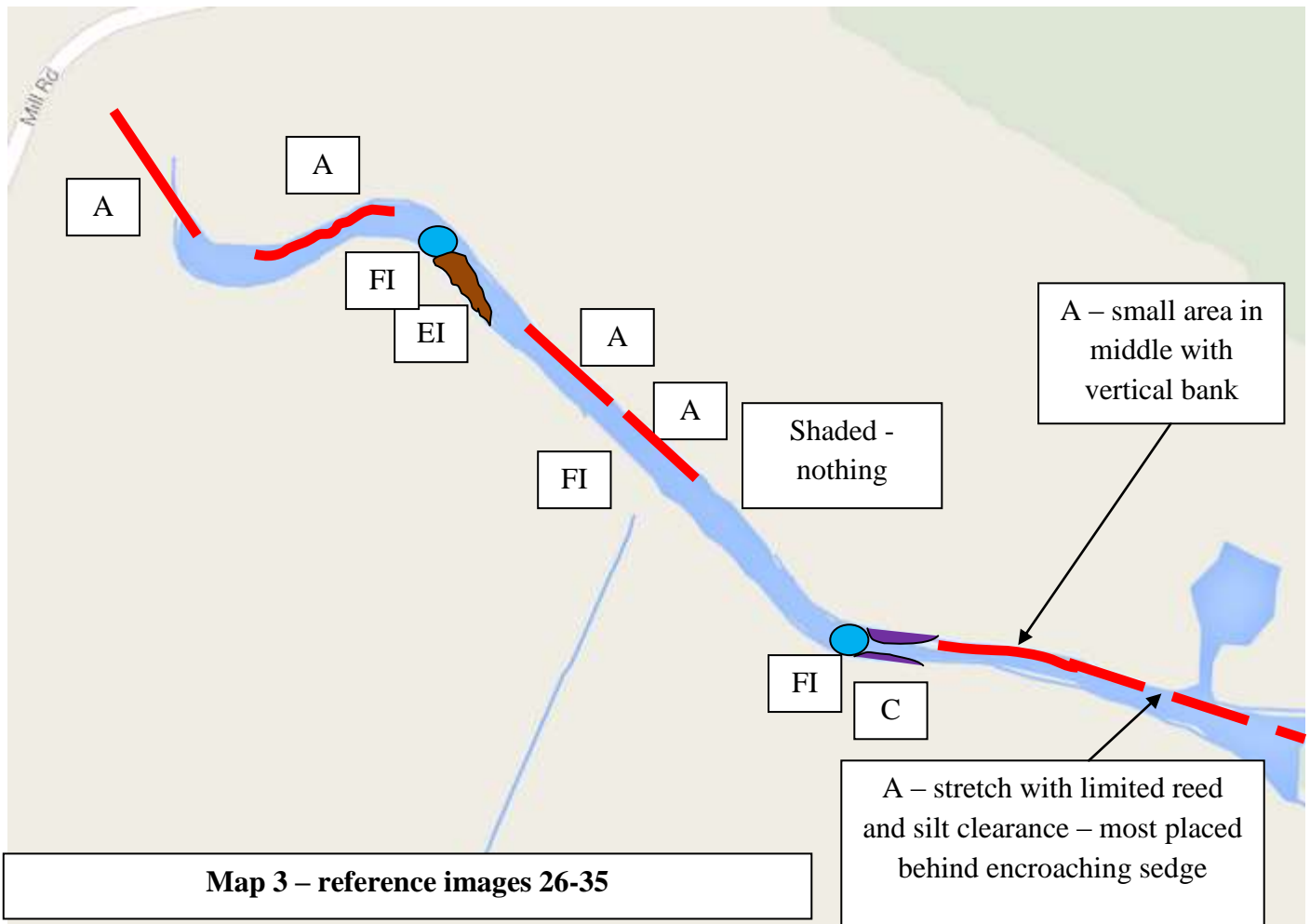
F2. Creation of pool with left bank made steeper and more suitable for water voles to burrow into

The following maps show the approximate locations of treatments carried out as described above. Images that follow illustrate each method.

A full photographic reference collection (on CD) of before and after images will be made available to the Little Ouse Headwater Project, Suffolk Wildlife Trust and the Environment Agency. Photo series 1-4 in open field and 5-12 in wooded section in map 1

Approximate locations of features down the Little Ouse





Images to illustrate the different techniques. Photo numbers are sequential from top to bottom (see maps above).



Photos 9B (Before) and 9P (Post) – Method A – simple folding of reed and silt from one side the channel to the other.



Photos 11B and 11P – Method A – simple folding of reed and silt from far side of the channel to the near side.



Photos 5B and 5P – Method B – simple folding of reed and silt from near side of the channel to the far side.



Photos 13PP and 29P. Method C – major narrowing of low-flow channel formed by shoulders on both sides of the channel upstream of pools.



Photos 25B and 25P. Method D – major narrowing of low-flow channel by pushing into the channel a firm sedge fringe and folding in the reed and silt from the far side of the channel into void created behind the sedge fringe and the rest of the bank



Photos 27B and 27P. Method E1 – major narrowing of low-flow channel formed by shoulder on left bank created using bank re-profile material and reed and silt from a third of the remaining channel (low-flow) width



Images 3B and 3P – Method E3 - showing example of accentuating channel narrowing using top of bank spoil (TYPE E3 - only done in upper 200m).



Photos 4B and 5P. Combination of Method E1, E2 & E3 – major narrowing of low-flow channel formed by shoulder on both sides of the channel created using bank re-profile material and reed and silt from a third of the remaining channel (low-flow) width



Image 16P – Method F1 – pool without vertical water vole edge



Image 14P & 28P – Method F1 – pool with vertical water vole edge