Project Proposal

Knaresborough Anglers

River Nidd – Yorkshire

1. Introduction

This report is the output of a site visit undertaken by Gareth Pedley of the Wild Trout Trust (WTT) to the River Nidd. The visit was requested by Peter Chambers and Stuart Gregory of Knaresborough Angling Club (KAC). The section inspected is approximately 3.5km in length, between Hampsthwaite Bridge and Old Killinghall Bridge, of which KAC has double bank fishing rights to the downstream half and RB rights for the upper. The purpose of the visit was as a follow-up to an original advisory visit undertaken in 2012, to outline specific actions and potential projects that can be undertaken on the river.

Normal convention is applied throughout the report with respect to bank identification, i.e. the banks are designated left bank (LB) or right bank (RB) whilst looking downstream. For convenience, upstream and downstream are often abbreviated to u/s and d/s, respectively. Locations are identified using the National Grid Reference system.

2. Background and rationale

Following the WTT visit in 2012, KAC began to initiate the recommendations of the advisory visit report, reducing the extent of riparian tree and in-channel woody material maintenance/removal and reducing the numbers and size of fish stocked in a move towards developing a fully-sustainable wild trout and grayling fishery in 2017. The club now seeks a suite of actions and small projects that can be undertaken over the upcoming season and in the short to medium-term to improve the fish holding capacity of their waters and promote the retention and survival of the wild trout and grayling stocks.

3. Proposed measures

3.1. River Nidd

Grazing remains a major impact upon the habitat quality and bank stability in the un-fenced river sections, with banks observed to now be in a poorer state than on the previous visit. Grazing pressure is perpetuating a near monoculture of sparse grasses (grass being the only species that can withstand long-term sustained grazing) and even so, they are struggling (Fig. 1a). This is leaving significant areas of bare bank and a general lack of root-mass within the ground to bind the banks together. A notable knock-on impact of this being that high flows cause significant additional erosion around bankside trees (Figs. 1b & 1c), eventually leading to their loss into the river.

Grazing (even quite low intensity) also inhibits the natural tree regeneration that would ordinarily occur along a riverbank meaning that as old trees die or are lost to erosion there is little or no understory to replace them. In the absence of trees, vital habitat is lost and banks are further destabilised leading to even greater erosion and habitat degradation.

Figure 1a-c. Prolonged grazing pressure on the river banks has a created a sparse grass monoculture, leaving a bank that is highly that is susceptible to erosion and loss of trees. The two-strand barbed-wire fence is ineffective at excluding sheep. In the short-term, the trees in 1b & c are likely to be lost, with the trees in 1a also being lost ultimately. This would greatly denude those bank areas of habitat and further destabilise the area, leading to channel over-widening.

Correspondingly, long open sections of bank now exist in the grazed areas and, while grazing pressure continues, there is no real scope for the situation improving naturally as any regeneration of herbaceous vegetation and planted trees will simply be eaten by the livestock (Fig. 2). Owing to the far more stable un-grazed opposite banks, the grazed banks are often eroding and slumping, despite being on the inside of the bend where they should be more stable. Attempting to protect the bank with rubble is not appropriate and is likely to exacerbate erosion issues through scouring around the hard material (Fig. 2 a & b). As the rubble is also a very poor growing medium, it will prevent those areas of the bank from being colonised by vegetation, further perpetuating the problem.

Figure 2a & b. Long, open sections of bank with a lack of herbaceous vegetation or trees. 2b. Rubble dumped on the areas of eroding bank will only exacerbate the issue.

The simple solution is to exclude stock from the bank between NGR SE 2704759366 and SE 2804559373, ideally with stock netting above a strand of plain wire and possibly one or two strands of barbed-wire on top. Fencing will have to be undertaken in conjunction with management of Himalayan balsam (*Impatiens glandulifera*) as the grazing is likely to be providing *some* control of the weed at present.

Another area of bank erosion, associated with some large trees that have collapsed into the river from the bank (with the addition of trees accumulating from u/s) may also require some action. From a fishery perspective, the large amount of woody material is a significantly positive addition, providing habitat and refuge for fish and invertebrates while also driving beneficial bed scouring and pool formation/maintenance. The small inconvenience of fishing around the structure is far outweighed by the greatly increased number of fish that the area can support. As these structures have been assessed as having no impact upon flood-risk by the Environment Agency, the recommendation, from a fishery management perspective, would definitely be to leave them in place, allowing them to naturally redistribute, if necessary.

Figure 3. Large accumulation of trees/woody material and bank erosion, immediately d/s of sheet piling in the bank which has undoubtedly deflected a greater energy of scour onto the bank in the erosion area.

It is understood that the farmer of the adjacent land is concerned about further land loss and wishes to remove the trees; however, this action is also likely to cause yet further erosion, leaving the steep, un-vegetated bank completely unprotected and exposed to high flows. The bank will always be susceptible, being high/perched and immediately d/s of a sheet-piled bank section – a treatment that invariably increases scouring in other areas as flows hitting that area of bank are simply deflected elsewhere, with little energy dissipated from those flows. For this reason, it is recommended that if work is to be undertaken with the trees, at least some whole trees are pulled tight into the eroding RB. Whole trees are important for this as the root ball forms an anchor while the canopy creates the greatest dissipation of flow energy, increasing retention of substrate locally and helping the steep bank to regrade.

Unless the bank material can be retained for long enough to revegetate and stabilise enough to regrade, it will remain steep and subject to major erosion. A larger buffer strip between the worked field and river should also be created to allow the growth of new trees and vegetation that will be required to consolidate the bank material.

The recommendation from the previous report of retaining any woody material that is low-lying, trailing or falls into the channel remains. These features greatly increase the fish-holding capacity of the river, diversifying flows in uniform sections and developing bed morphology while also protecting the banks. Such features should actually be promoted by laying occasional trees and branches into the channel where they will be of benefit. Suitable locations could include but are not necessarily limited to Figs. 4a-f. It is recommended that Flood Defence consent be sought for (X) No. of willow trees/branches to be laid into the channel throughout the length. As the EA have already taken the decision that the much larger trees within the channel present no major flood risk, the consent process should be a simple but necessary formality.

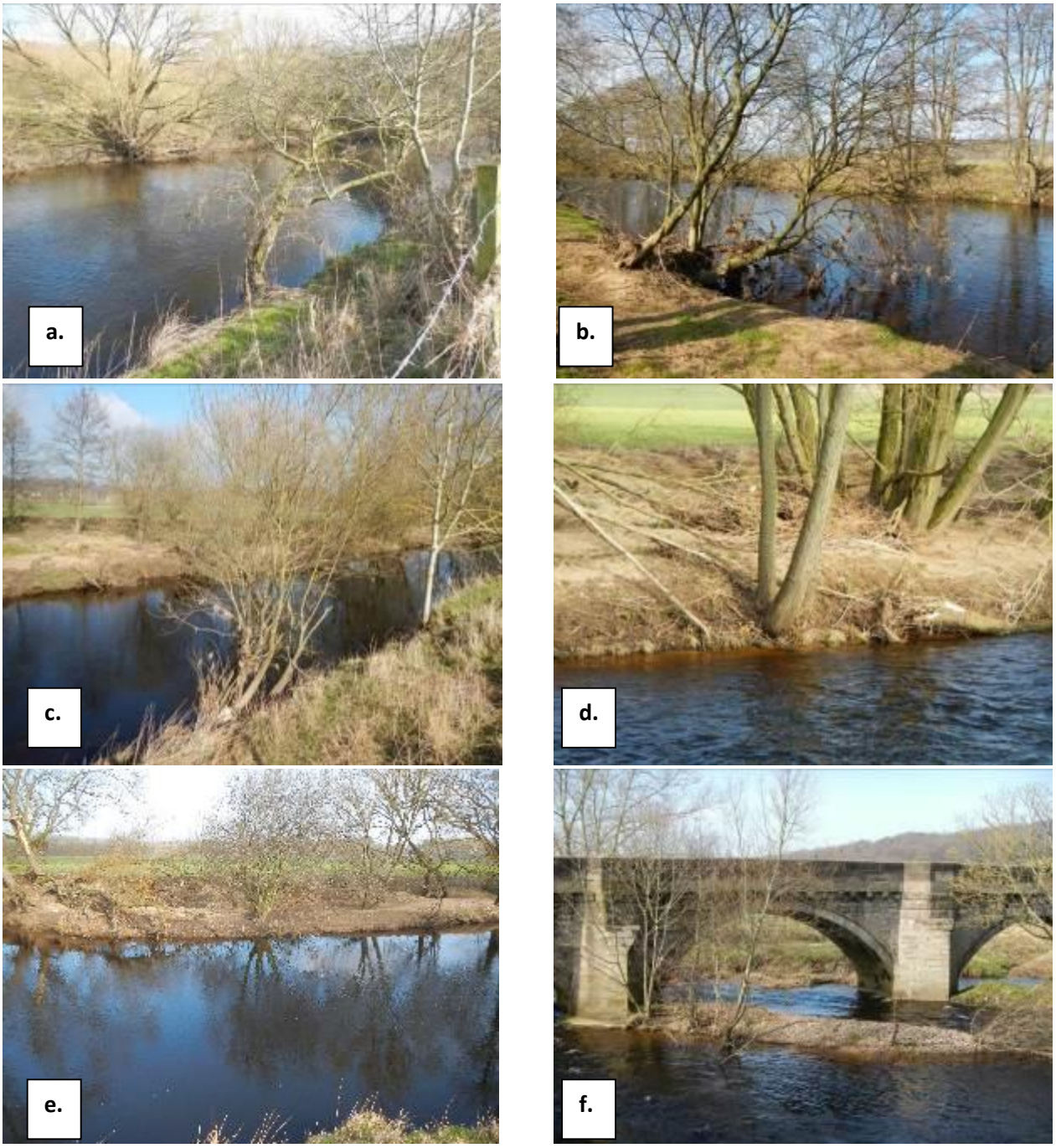

Figure 4a-f. Locations for laying willow to promote cover and flow diversity. NGRs SE 2864859651, SE 2851359578, SE 2836159423, SE 2820959361, SE 2811159360 & SE 2606959139, respectively.

3.2. Cockhill Beck

Cockhill Beck has great potential as a spawning tributary and juvenile salmonid habitat but is severely impacted by fine sediment input and suspected channel realignment and dredging. Channel 'maintenance' has created a straighter, more uniform channel, reducing the occurrence of discrete areas of scour and deposition to sort bed materials (Fig. 5). This means that, while the watercourse does provide suitable sized substrate for spawning, its quality is greatly compromised by infiltration of fine silt which is deposited on the bed and blocks the spaces between the gravels. This degrades the habitat in which many beneficial invertebrates live and reduces the flow-through of water that is required to oxygenate incubating fish ova.

Figure 5. Good spawning and juvenile salmonid habitat on the Cockhill Beck but the substrate is severely compromised by fine sediment infiltration. Increasing woody material within the channel and laying willow branches to create scouring flows will potentially improve bed sorting and be greatly beneficial in for general habitat improvement but the siltation issues must also be addressed at source.

As the channel is unlikely to be restored (re-meandered), at least in the foreseeable future, optimising the habitat it can provide will be an important step to improving the wild fish stocks of the Beck and the main river. Increasing the occurrence of structure such as large woody material and branches etc. along with trailing tree branches with techniques such as tree

laying will be vital in assisting the currently reduced geomorphological processes, and in naturally maintaining sorting of the bed material. However, identifying and addressing the sources of fine sediment entering the Beck will be of even greater importance. A spot-check of the Beck from a bridge in Hampsthwaite Village identified that, even on the day of the visit when there had been no rain for a while, the Beck was running very coloured (Fig. 6). This should not be expected and is likely to constitute a chronic pollution incident.

It is therefore recommended all such occurrences of pollution or water discolouration are noted, investigated and immediately reported to the Environment Agency on their Pollution Prevention Hotline (0800 80 70 60). It is also recommended that a specific project of walking-over the Cockhill Beck be undertaken, noting the issues such as silty field drains, road runoff, erosion and livestock access to the banks (if occurring), along with any other potential pollution sources, with a plan for addressing those issues with the possible culprits. Perusal of Google Maps identifies an online pond on the Beck and this may also be linked to the issues and is well worth inspection.

Figure 6. Looking off a bridge in Hampsthwaite at a notable loading of fine sediment in Cockhill Beck after a long dry period. This certainly should not be occurring and could constitute a pollution incident.

3.3. Ripley Beck

As with Cockhill Beck, Ripley Beck also poses a significant input of fine sediment to the River Nidd (as noted on both the 2012 and 2016 visits). Again, it should not be expected that a beck is running that coloured after little or no rain, but certainly not constantly as appears to be case. This is not only an impact on the main river but also greatly degrades the habitat of the Beck as fish habitat in its own right, and as a spawning and juvenile area. It is therefore recommended that investigation is also undertaken into the exact source(s) of the issues on this watercourse in the same manner as on Cockhill. If, as suspected by the club, it is associated with online ponds, the operators of the ponds should be approached to ascertain whether those ponds could be managed in a way that reduces the sediment input. If ponds are online, they will be subject to greater siltation and reducing/preventing the through-flow of water is also likely to greatly reduce the requirement for their maintenance.

Figure 7. Immediately d/s of the Ripley Beck / River Nidd confluence. Note the plume of discoloured water entering the river along the far bank (the extent of dispersal indicated by the red line).

4. Killinghall Sewage Treatment Works (STW) outfall

As noted on the previous visit, the outfall of Killinghall STW was discharging discoloured water (Fig. 8). It may or may not be operating within the discharge consent but it is certainly not a good thing; it is worth checking if it is meeting the required standards. The Environment Agency should be asked to sample the water during a period that it is discharging the cloudy, odorous water as it is almost certainly contributing to eutrophication of the river and will increase algal blooms, particularly in low summer flows.

Figure 8. Killinghall STW discharge – well-worth having inspected to ensure it is not breaching its discharge consent.

5. Summary of recommendations

Issue	Recommendation	Fig.	NGR
Livestock access to the river bank, lack of cover and erosion	Riverside buffer fencing	1 & 2	SE 2704759366 – SE 2804559373
Accumulation of trees in channel and bank erosion	Retain as much as possible to provide habitat and bank protection. If required drag trees into the eroding bankside to encourage flows through a central channel. Reinstate a larger buffer strip between the river and field and plant with native deciduous trees.	3	SE 28402 59460
Impacted channel morphology and areas of poor cover – River Nidd	Lay suitable tree species along the bank/into the channel and plant open areas of bank	4	SE 2864859651 SE 2851359578 SE 2836159423 SE 2820959361 SE 2811159360 SE 2606959139
Impacted channel morphology and areas of poor cover - Cockhill Beck	Lay suitable tree species along the bank/into the channel		Throughout accessible areas where no flood risk is present
Siltation - Cockhill Beck	Catchment walkover to identify all potential pollution sources	5 & 6	All accessible catchment
Siltation - Ripley Beck	Catchment walkover to identify all potential pollution sources	7	All accessible catchment
Killinghall STW	Get EA to sample outfall when discoloured. This may require reporting as an incident on (0800 80 70 60).		SE 2710659072

It is recommended that the exact requirement for consent to do the work highlighted is investigated with the local EA as a new process of consenting has just come into force. This should make it easier to undertake in-channel habitat works in low flood risk areas but the guidance is likely to be open to interpretation so may vary depending upon EA area teams. The likelihood is that 20m sections of habitat improvements may be allowed without consent (simply requiring registration), although it is unclear whether multiple works will require multiple registrations - they probably will. Discussion with the local EA Flood Risk and Coastal Management (FCRM) and Fisheries, Biodiversity and Geomorphology (FBG) teams is likely to shed more light on the situation, although it is expected that there will be a period of transition where the process is somewhat uncertain.

6. Making it happen

WTT may be able to offer further assistance such as:

- WTT Practical Visit
  - Where recipients are in need of assistance to carry out the work highlighted in a report, there is the possibility of WTT staff conducting a practical visit. This would consist of 1-3 days work, with a WTT Conservation Officer teaming up with interested parties to demonstrate the habitat improvement techniques. The recipient would be asked to contribute only to reasonable travel and subsistence costs of the WTT Officer. This service is in high demand so not always be possible.
- WTT Fundraising advice
  - Help and advice on how to raise funds for habitat improvement work can be found on the WTT website - www.wildtrout.org/content/project-funding

The WTT officer responsible for fundraising advice is Denise Ashton: dashton@wildtrout.org

In addition, the WTT website library has a wide range of free materials in video and PDF format on habitat management and improvement: www.wildtrout.org/content/index

We have also produced a 70 minute DVD called 'Rivers: Working for Wild Trout' which graphically illustrates the challenges of managing river habitat for wild trout, with examples of good and poor habitat and practical demonstrations of habitat improvement. Additional sections of film cover key topics in greater depth, such as woody debris, enhancing fish stocks and managing invasive species.

The DVD is available to buy for £10.00 from our website shop www.wildtrout.org/product/rivers-working-wild-trout-dvd-0
or by calling the WTT office on 02392 570985.

7. Disclaimer

This report is produced for guidance; no liability or responsibility for any loss or damage can be accepted by the Wild Trout Trust as a result of any other person, company or organisation acting, or refraining from acting, upon guidance made in this report.