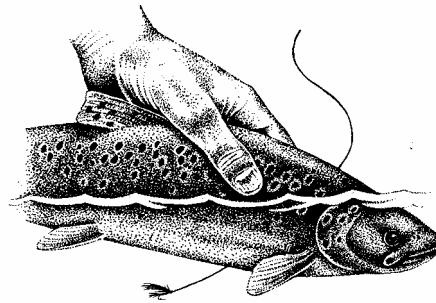


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Consultants : Freshwater Fisheries, Conservation & Wetland Ecology

Marlborough College stretch of River Kennet

Recommendations for improvement



## Introduction

The Wild Trout Trust initiated this one day survey & report in order to assess the potential of the Marlborough College stretch of the upper River Kennet for habitat and fishery management improvements. The report is sponsored by English Nature. The river, which runs within the school grounds is important both for wildlife conservation / environmental projects and for the provision of trout and grayling angling for staff and students. Frank Sawyer, well known chalk stream trout fishery manager, designed the two trout ponds and channels which link them to the river, these too are the subject of this brief initial report.

## Key findings

### Stream flows

The upper Kennet is subject to periodic low flows - due to a combination of water abstraction from underlying aquifer sources and climatic variation, particularly in winter rainfall. As a consequence the river around Marlborough tends to have healthy clean flows during the spring and early summer which dwindle away towards late summer and early autumn. Abundant clear, cool chalk spring water is excellent for growing lush water crowfoot (*Ranunculus*) beds which, in turn channel flows to scour clean gravel beds. Brown trout, grayling, bullheads, lampreys and other fish depend upon silt-free clean gravels for successful spawning and egg incubation. The appearance of the river bed along most, but not all, of the College stretch of the Kennet is not good - most of the gravel is clogged with silt and filamentous algae (blanket weed). This silted bed is very poor for trout and grayling spawning and for invertebrate and aquatic plant production.

### Impoundments

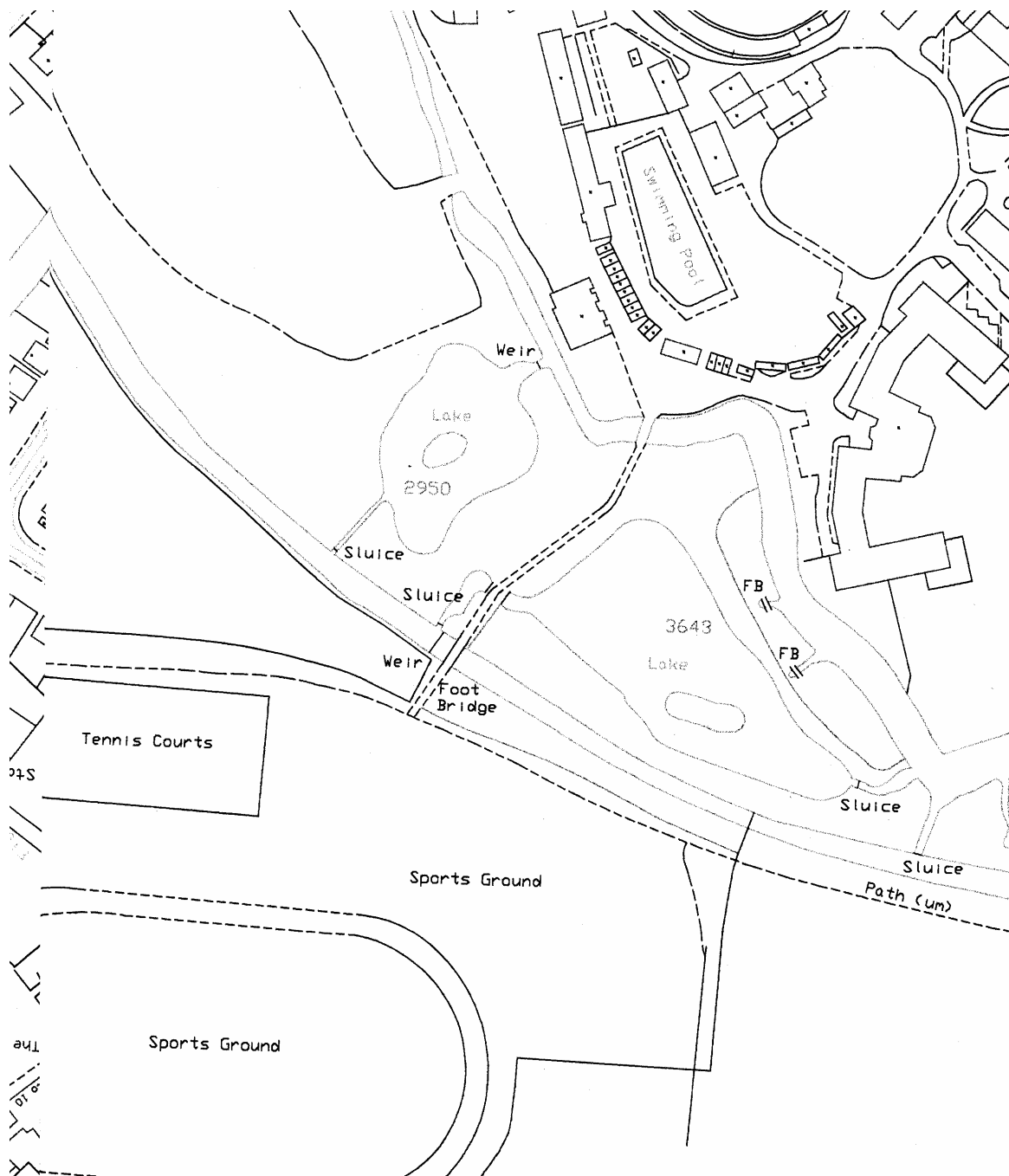
At least some of the siltation problem is due to the upper weir which impounds the upper section of the river right up to the upper boundary. At late summer water levels the current speed along this section is effectively killed by the weir and any fine sediment drops out on the river bed, clogging it thoroughly. The lower weir above the road bridge has a similar effect on part of the lower stretch of river but here the deep impounded stretch provides useful habitat for shoals of grayling and stocked brown trout.

The weirs serve to stop the river falling away to very low levels during late summer low flows but also canalise it, robbing it of much of its natural succession of shallow gravel bars and deeper intervening pools. A possible solution to this situation is offered below.

Map 1 on the next page shows some of the important features.

Note that Mr K. Carter will need to be fully appraised of and agree to these plans as they also affect his property and river frontage.

Map 1 showing top weir and trout lakes.



### Shading & tree cover

Along the vast majority of the College river there is far too much shading by willow, oak, alder, hazel and ash trees. Much of this over-shading is along the south-west edge of the water. This has the following adverse effects :

- Killing of bank side grasses, sedges, rushes and reeds which bind the banks with their roots. This leads to bank erosion back in under the trees and to an over-wide, shallow, silty river channel. Potential habitat for species such as water voles is greatly reduced.
- Reduced in-stream aquatic plant (eg water crowfoot) growth
- Reduced production of aquatic invertebrates including insects essential to fly-fishing
- Excessive inputs of dead leaves in autumn which help to silt up the channel and are swept into the trout ponds, adding to their siltation problems.

The whole of the fishery needs a carefully assessed tree management plan, as part of the overall fishery management plan which will let light back into the river channel, stimulating plant growth both on the banks and in-stream. This will have the following benefits :

- Better resistance to bank erosion and better bank side habitats for small mammals, insects and marginal cover for fish.
- Better marginal reed and rush growth and better water crowfoot growth
- More aquatic invertebrates including better fly hatches
- A natural re-narrowing of the channel as marginal vegetation grows back along the edges of the channel.

Much of the timber produced during the tree management work could be used along over-wide river sections to construct low-level bunds which will trap silt and soon become re-vegetated, helping to gradually narrow over-wide river sections. Such bunds would deliberately be designed to be low-level so that they will have minimal flood risk implications during high winter flows.

## Bank works

In addition to the narrowing of channels and construction of new low-level banks timber off-cuts can also be used to stake banks which have eroded during winter floods. A good example is just upstream of the sluice which feeds the smaller trout pond. Here flood flows have broken down the bank which now needs careful repair. This could readily be achieved with a combination of timber stakes and faggots, plus clay or chalk infill to restore the former bank level.

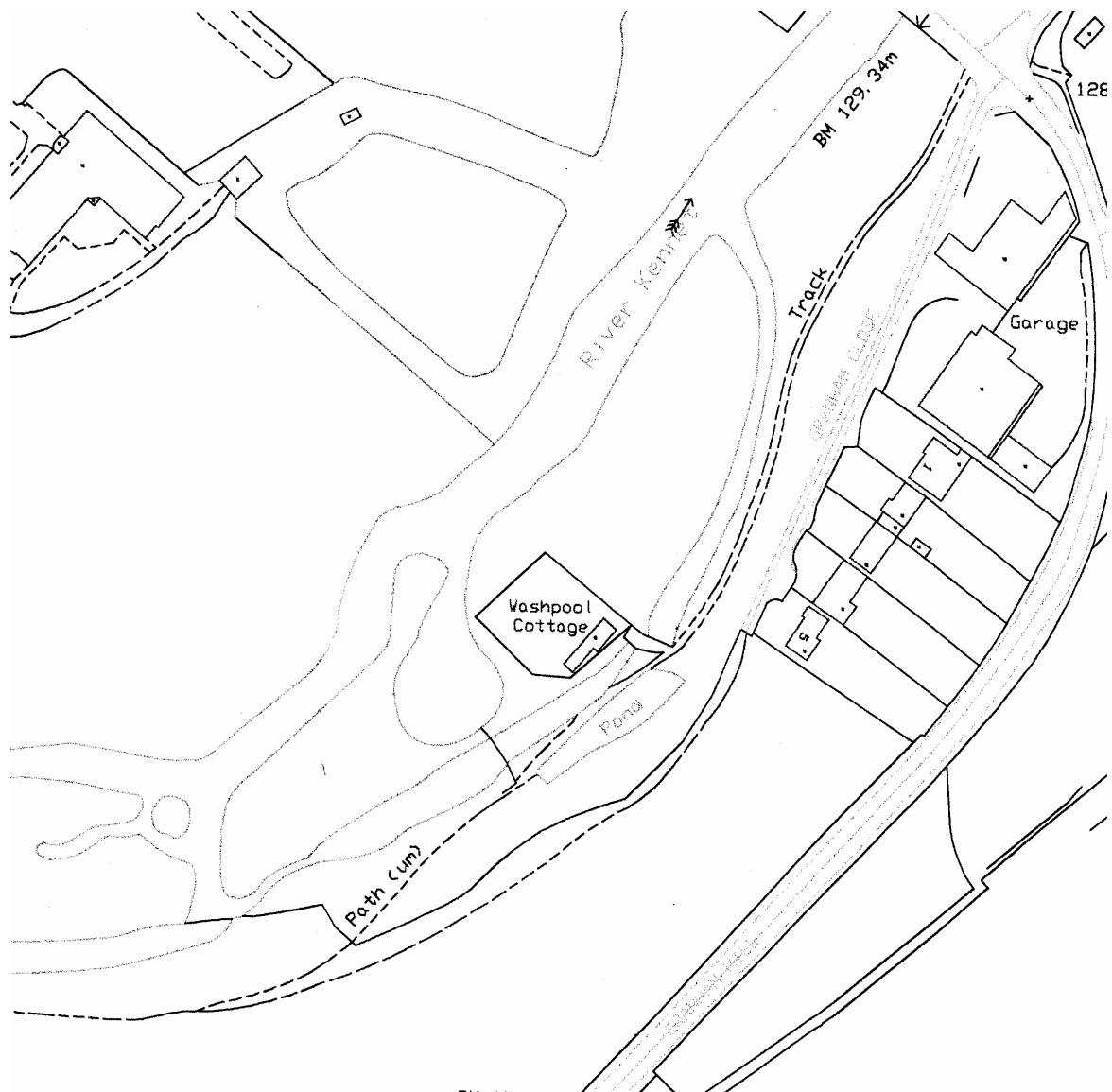
## Trout ponds

The trout ponds are both tending to silt up. This is happening for three key reasons :

- Sediment coming in through the sluice channels with high winter flows (solution is to close the sluices each winter)
- Dead leaves from the many trees around the ponds (these need to be cut back as part of the fishery management plan)
- Dead reeds and other aquatic plant matter which is gradually accumulating on the pond beds (a mechanical de-silting programme would be worth considering, especially if the silt can be safely disposed of within the school grounds).

Map 2 (next page) shows the lower river.

Map 2 showing back channel, Sawyer's pool and deep section to road bridge.



The back-channel which has a good gradient, a cleaner gravel bed and a series of small pools developed through the building of some wooden current deflectors has great potential for further improvement work:

- The current deflectors can be tidied-up and staked securely,
- A series of pools could be excavated,
- Water crowfoot growth could be encouraged by deliberate channelling of the flow.

On the main river, the banks downstream of Sawyer's Pool are particularly over-shaded by mature willows and other trees. This area, adjacent to the playing fields has great potential for cutting back trees and using the timber to make low-level berms which will narrow the summer channel and concentrate the flows. Excellent environmental projects could be carried out by students, comparing improved and untouched stretches of river. Monitoring would establish the value of the work in terms of maintaining and improving biodiversity in the school grounds.

## Recommendations for future work

### Overall recommendation

This short report should be built upon with a further contract to produce a detailed fishery management and river habitat restoration plan. The plan should be costed and include a recommended schedule of activities. The habitat restoration work could be undertaken by a combination of anglers, students, staff and contractors, overseen by an independent expert such as Nick Giles.

### Upper weir

Ideally, the upper weir would have one or more sections cut out of it and sluice gates installed. If a pair of gates was installed, each in line with the arches of the footbridge immediately downstream, then the gates could be opened for much of the winter, spring and early summer, allowing a free-flow of water through the upper fishery. This would have the following beneficial effects ;

- De-silting the channel upstream of the weir
- Allowing the river to start to re-establish a series of shallow gravel riffles and pools
- Reducing the flooding problems which currently send silt into the trout ponds
- Improving habitats for wild trout, grayling, invertebrates, water crowfoot and many other species.

The gates could then gradually be closed over the late summer and autumn to retain adequate water levels in the upper river section during typical low-flow periods.

Advice from the Environment Agency (Flood Defence function) should be sought to ensure that the changes to the weir do not threaten the footings of the foot bridge immediately downstream. Full liaison with Mr Carter will also be necessary.

### Bank side trees

A great deal of over-hanging bough removal, coppicing, pollarding and tree felling must be done on order to let light back into the fishery and to reduce leaf litter inputs to the trout ponds.

A detailed tree management plan and work programme should be produced as part of the overall fishery management plan.

Stakes, faggots, live willow spiling and logs can all be used along eroded river bank sections to construct low-level bunds and berms which will rapidly re-vegetate and produce a better summer low-flow channel.

Recommendations for areas of bank suitable for such work should be part of the detailed management plan.

## Funding the river restoration work

Given that the restored river and ponds would greatly enhance:

1. wildlife habitats,
2. the appearance of the school grounds,
3. the educational value of the river and
4. add value to the fishery,

it seems reasonable to suggest that a ' River Improvement Fund' could be established.

Financial inputs direct from the school could be added to by donations from interested parents, alumni and, perhaps, from grant-awarding bodies. Several species of high conservation value would benefit from the suggested works, these include :

Water crowfoot, bullheads, brook lamprey, water vole, wild trout and grayling.

Given the important conservation status of the upper Kennet, some funds may be forthcoming from English Nature, the sponsors of this initial short report.

Nick Giles, September 2001.