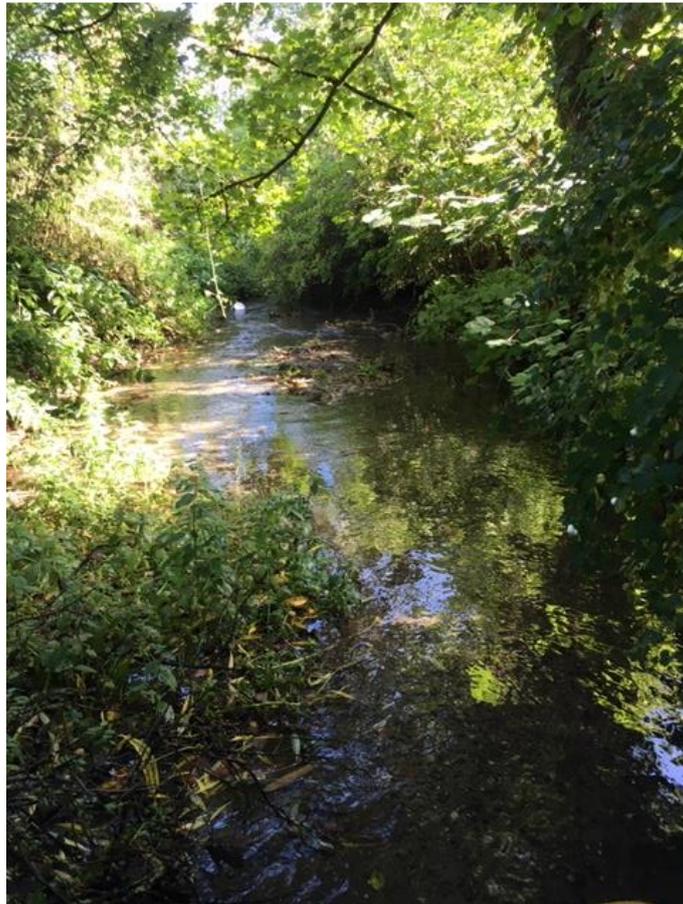




Shalbourne Stream – Mill House



**An Advisory Visit by Nick Lawrence on behalf of the Wild Trout Trust
September 2019**

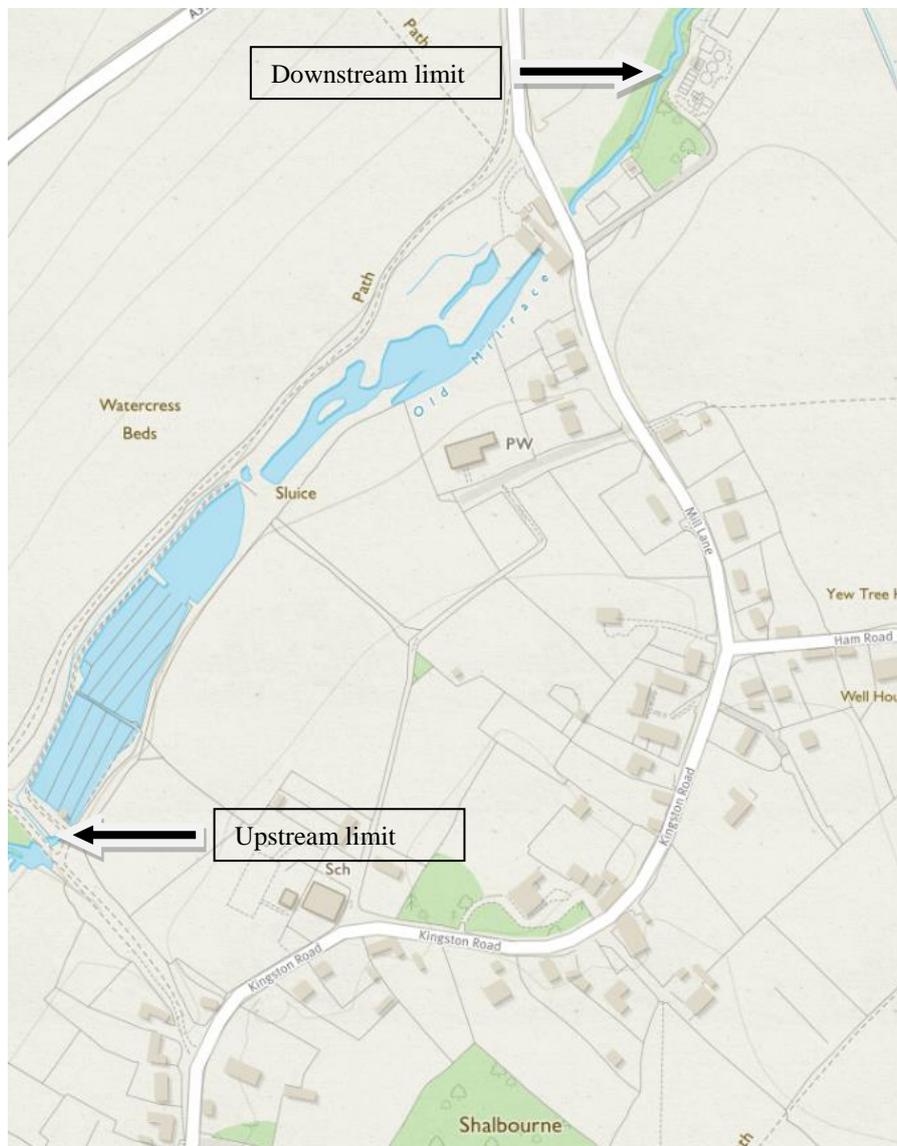
1. Introduction

This report is the output of advisory visit of the Shalbourne Stream at the Mill House at Shalbourne. The section visited is marked on map 1.

The request for the visit came from the landowner who recently acquired the Mill House at Shalbourne and has observed an apparent lack of fish within the reach. He is therefore keen to explore opportunities to enhance and improve the stream's fish-holding capabilities.

Comments in this report are based on observations on the day of the site visit and discussions with the landowner.

Throughout the report, normal convention is followed with respect to bank identification, i.e. banks are designated Left Bank (LB) or Right Bank (RB) whilst looking downstream.



Map 1 Mill house reach on the Shalbourne Stream

The reach visited lies within the perennial headwaters of the Shalbourne Stream, a small tributary of the River Dun which is in turn a tributary of the Kennet. It shares many chalk stream characteristics including gin-clear water, relatively constant flows and a wide range of aquatic vegetation. The upstream end of the reach is near the village of Shalbourne [SU 31327 63283](#) and the downstream end is below the Mill house, downstream of the Mill Lane road bridge [SU 31680 63725](#).

The fishery consists of a section of main river channel downstream of the road, and a maze of small channels old lakes and watercress beds upstream of the road, fed by groundwater. There is a weir structure towards the middle of the fishery which splits the flow, with one channel flowing under the house, the other bypassing the mill and joining again under the road culvert. In all, the fishery extends over approximately 400m of channel.

The Shalbourne water body classification is available on the Environment Agency website:

<https://environment.data.gov.uk/catchment-planning/WaterBody/GB106039017370>

2. Catchment and fishery overview

The Shalbourne Stream is a tributary of the River Dun. It rises from springs in the Upper Greensand and flows north for 6 km across the upper chalk through agricultural land towards Hungerford. Until recently, the Shalbourne flowed directly into the Kennet and Avon Canal, but was diverted back to its natural course in 2000, where it now flows, before passing through a culvert beneath the canal to join the River Dun. This has improved water quality in the lower Shalbourne and the River Dun, but the culvert presents an obstacle to fish migration.

A significant area of concern for the Shalbourne is nutrient pollution, especially phosphorous, elevated from sources such as domestic sewage and agriculture.

3. Habitat assessment

The habitat quality within the River Shalbourne is mainly determined by flow, channel morphology, geology, riverbed gradient and local river maintenance regimes, both historical and latter day.

Chalkstream reaches that have more variety in channel shape and form (pools, riffles and glides) provide more valuable habitat for wild trout, particularly when compared to long sections of impounded river, typically characterised by uniform smooth glide habitat and laminar flows.

In the section downstream of the Mill House, notable fine sediment pollution from road run off was pouring directly into the river (Photo 1). This sediment can smother gravels which fish spawn in, reducing natural recruitment within the reach. It can also be damaging to invertebrates which will have a knock-on effect upon fish populations.



Photo 1 Massive amounts of sediment washed down the road directly into the river. (SU 31629 63648)

This short section downstream of the road bridge (approximately 50 yards long) was the most diverse in terms of flow and channel shape, and no doubt contains trout. However, during the visit no fish were observed, which supports the concerns of the owner.



Photo 2 Downstream of road bridge: quality varied habitat with dappled light, in-channel bars and a riffle and pool formation.

Photo 2 is a prime example of the type of varied habitat that trout favor. In the picture, encroaching marginal vegetation is providing cover for fish and pinching the flow. Downstream is an island where the channel splits before a high-quality riffle that flumes into a pool, where the white bucket is visible.



Photo 3 Near the bottom boundary the stream becomes more uniform, overwide, heavily shaded with lots of siltation.

Towards the downstream boundary, the stream is suffering from an overwide uniform channel (Photo 3) which is allowing the sediment from the road run off to settle across the bed. There is no flow diversity here and the shading is suppressing marginal plant growth; plants that could otherwise help to collect the silt in the margins and assist in pinching the channel to keep gravels clean.

The habitat shown in photos 2 and 3 appears capable of supporting brown trout and just because no fish were seen on the visit, does not mean they aren't there. Investigations downstream after the visit found no impoundments and reasonable habitat, which means that even if trout aren't here, once the habitat is right, they should be able to re-colonize it. These areas could do with some skylighting of the channel and, using the locally won timber, some strategic woody deflectors could be used to pinch the channel to scour and clean the gravels.

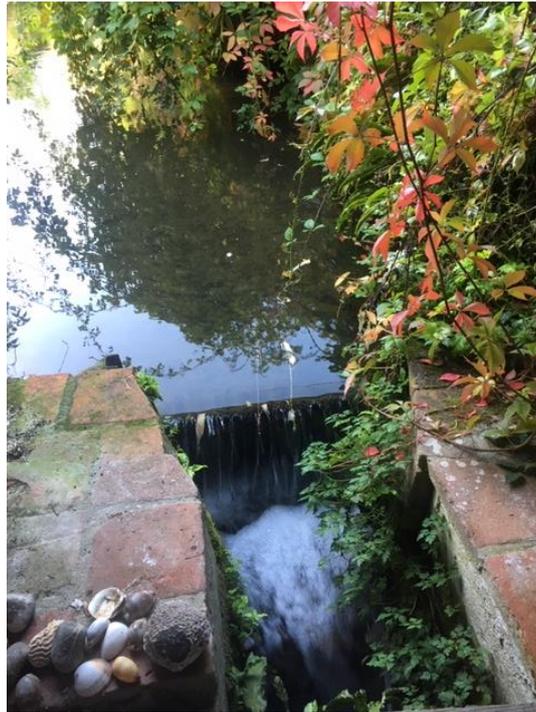


Photo 4 Boards in the old mill race, impounding the flow and impeding fish passage.

The old mill structure in photo 4 has led to a devastating loss of habitat upstream, impounding the river for at least 70 metres, where it can only really be described as a slow flowing canal. The river has been robbed of its natural flow diversity, greatly impeding natural geomorphic processes. Consequently, sediment has been deposited on the bed in large quantities, smothering the gravels and restricting the natural processes of the river. The thick layer of fine silt is also impeding the growth of aquatic plants, most notably water crowfoot (a very important weed in the chalkstream environment), which will lead to a subsequent reduction in the suitability of the habitat for fish and invertebrates.

This weir is also an impassable barrier to fish passage. Fish need to migrate within a river for many reasons such as spawning and to find better places to feed. This barrier is stopping that migration. It will affect local populations of brown trout, grayling and bullheads within this reach and the broader river system.

The first issue that needs to be addressed is the weir. If the weir was lowered or removed, the habitat upstream of it would change dramatically.

As it stands, there does seem to be an absence of fish in the upper reach. The perennial headwater is only 250 yards upstream and as the habitat is so poor for spawning and adult trout, there could be issues for recolonisation, especially in light of the barriers observed.

There is a maze of channels upstream of here and it is best explained by looking at map 1. There is a side channel where some of the flow from the headwater goes; this seems to be the more natural channel than the perched mill race. The two channels do meet at one stage so fish could pass between the two channels.

With no fish visible in this channel, it is possible that the culvert under the road in photo 1, where both channels meet, is impassable to fish. This couldn't be

surveyed on the day as the culvert is approximately 30 yards long. This will need to be investigated further.

The mill race is also stranded by 2 online lakes upstream of it, which again inhibits fish movements. These lakes (photo 5) are shallow, and if fish were to venture into them, they would find it hard to navigate the maze of channels.

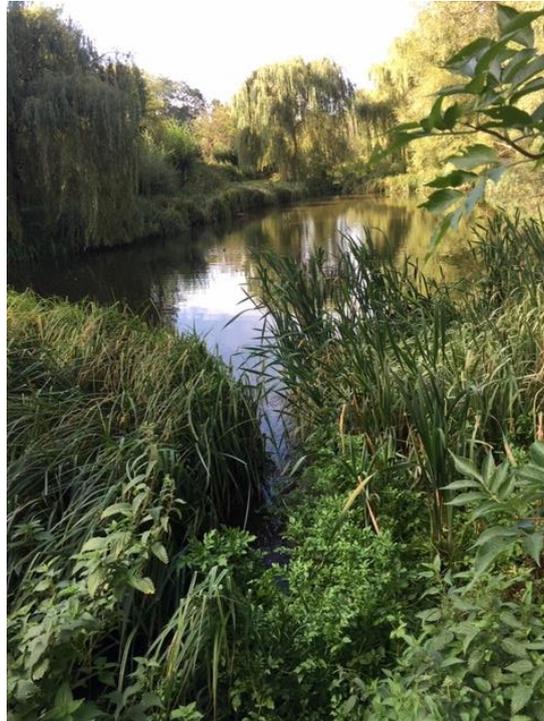


Photo 5 Top of the mill leat looking onto online lake.

The more valuable un-impounded habitat seems to be available in the bypass stream (photo 6) that flows alongside the lakes and around the mill leat, although the unknown is still what happens to it under the road culvert. This stream looks like prime trout habitat, with pristine gravels, a likely spot for trout spawning if they can get there.



Photo 6 Bypass channel: pristine headwater habitat.



Photo 7 Two old derelict weirs, impeding fish passage and natural processes.

The side stream does have 2 impounding structures (Photo 7) that were possibly used historically to build a head of water to power the mill. With their purpose now obsolete, they have fallen into disrepair and all they are doing now is impeding passage of fish (debatable whether fish would go above here as 50 yards away the river was dry) and the natural transportation of silt and gravel downstream.

Note that 50 – 100 yards upstream of photo 7 the stream is dry as it seems to be fed from an artesian well (photo 8) that was spewing water out at the most upstream section of the site. This well was used in the past to feed watercress beds and the channel would have been manipulated to accommodate the cress farm. The derelict cress beds are now acting as a good quality shallow wetland habitat, perfect for wildfowl, of which many different species were spotted on the visit.



Photo 8 Artesian well, the perennial head of the Shalbourne Stream

4. Conclusions and Recommendations

This reach has potential to be a prosperous environment for wildlife, it does have a wild feel with lots of birds and wildfowl present. But the fish passage issues, and significant habitat degradation created by impoundment severely degrade the productivity of the reach for fish.

The lower section, downstream of the road, has nice varied habitat, with pools, riffles and glides. This area is the most likely area for fish to colonise without extensive fish passage investigations and projects. Some localised skylighting/coppicing to encourage light to the channel in the right areas and then using the locally won material to create more diversity in flow and habitats, and scour gravels to encourage the sediment to settle in the edges of the river rather than the main channel.

It would be worthwhile contacting Action for the river Kennet (ARK) as they have an app that they use to record point source pollution issues within the Kennet

catchment (Called Muddy Walks). Once the issue has been logged a plan can be made to reduce the sediment running directly into the stream.

The mill house weir (photo 4) should be removed to assist fish passage for any fish that venture through the culvert under the road into the reach upstream. This in turn will improve the habitat directly upstream of the house, reduce sedimentation of the channel and provide more favourable conditions for in stream weed. As a minimum the boards should be left out during the critical period October- April when fish are migrating, and flows are high, but a more aspirational project to restore the watercourse back to a functioning stream should be the primary goal.

The culvert under the road needs more thorough investigation to ascertain its passability. The primary contact here would be the environment agency.

There will need to be a fair amount of consultation as there could be complications and implications that only a geomorphologist could know about. The EA geomorphologist is available for free and would advise to the best outcome.

The side stream has the more valuable habitat for fish and although unproven probably has better potential for fish to migrate into the reach, discussions should be had with neighbours as to the state of this stream where it goes under the road and whether there are any other structures impeding fish passage. A collaborative effort could be engineered into a project to restore this.

The two other 2 small impoundments that were seen during the visit were caused by concrete structures (Photo 7). These are again stopping fish passage and hindering the natural processes of the stream and the winterbourne section upstream. The ideal would be to remove them. Removal of these weirs would see an improvement to the appearance of the gravel bed, which would likely be clean and clear of silt.

This section of the Shalbourne stream is already being managed in a responsible manner for wildlife. There is an opportunity here to open fish passage to the upper sections of the stream and the Winterbourne section this would need some careful planning. At present, little to no regular maintenance is required, and effort should be focused on carefully thought-out habitat improvements.

5. Suggested Action Plan

- **Invite an Environment Agency representative to the reach for an assessment and discuss the possibilities of weir removal and improvement of fish passage under the road culvert. Discussions could be had to see whether some funding would be available, and with a geomorphologist to see the feasibility (Paul St Pierre from the Environment Agency is the technical fisheries specialist within the catchment).**
- **Contact ARK to undertake an assessment of the sediment pollution from the road run off. They can then log the point source of pollution and come up with a plan to reduce it.**

- **Explore possibilities of adding woody material, tree limbs or brushwood mattresses in the lower section to encourage variation in flow and depth. This can be done in conjunction with some coppicing in the heavily shaded areas of woodland to generate the material for the structures and add light to the channel in the right places. Approximately 3-4 structures could change this reach and drastically improve it. Photos 9, 10 & 11 show some examples of the type of structures that could be installed.**
- **Engage in a dialogue with the other owners downstream and adjacent to discuss fish populations and see if they are experiencing problems.**
- **Employ light touch management, e.g. leave fallen trees if they are not impounding the river or causing excessive bank erosion. If a fallen tree does fall in a place where it might cause a problem, adjust it into a more favourable position and secure it with posts and sisal rope to retain the ecological (and fishery) benefit.**

Note: All work within 8m of the top of the bank will require a consultation with the EA and may require a formal, written Bespoke Environmental Permit prior to any work being carried out.

Making It Happen

There is currently a big demand for practical assistance and the WTT has to prioritise exactly where it can deploy its limited resources. The Trust is always available to provide free advice and help to organisations and landowners through guidance and linking them up with others that have had experience in improving river habitat.

Acknowledgement

The WTT would like to thank the Environment Agency for supporting the advisory and practical visit programmes.

Disclaimer

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Photo 9. Faggots on the Upper Itchen used to narrow the river to help establish a margin.



Photo 10. Brushwood mattress constructed with coppiced willow.



Photo 11. Log deflector combined with folded willow.