



WILD TROUT TRUST



Advisory Visit

River Rhee, Haslingfield, Cambridgeshire

October 2025

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Key Issues

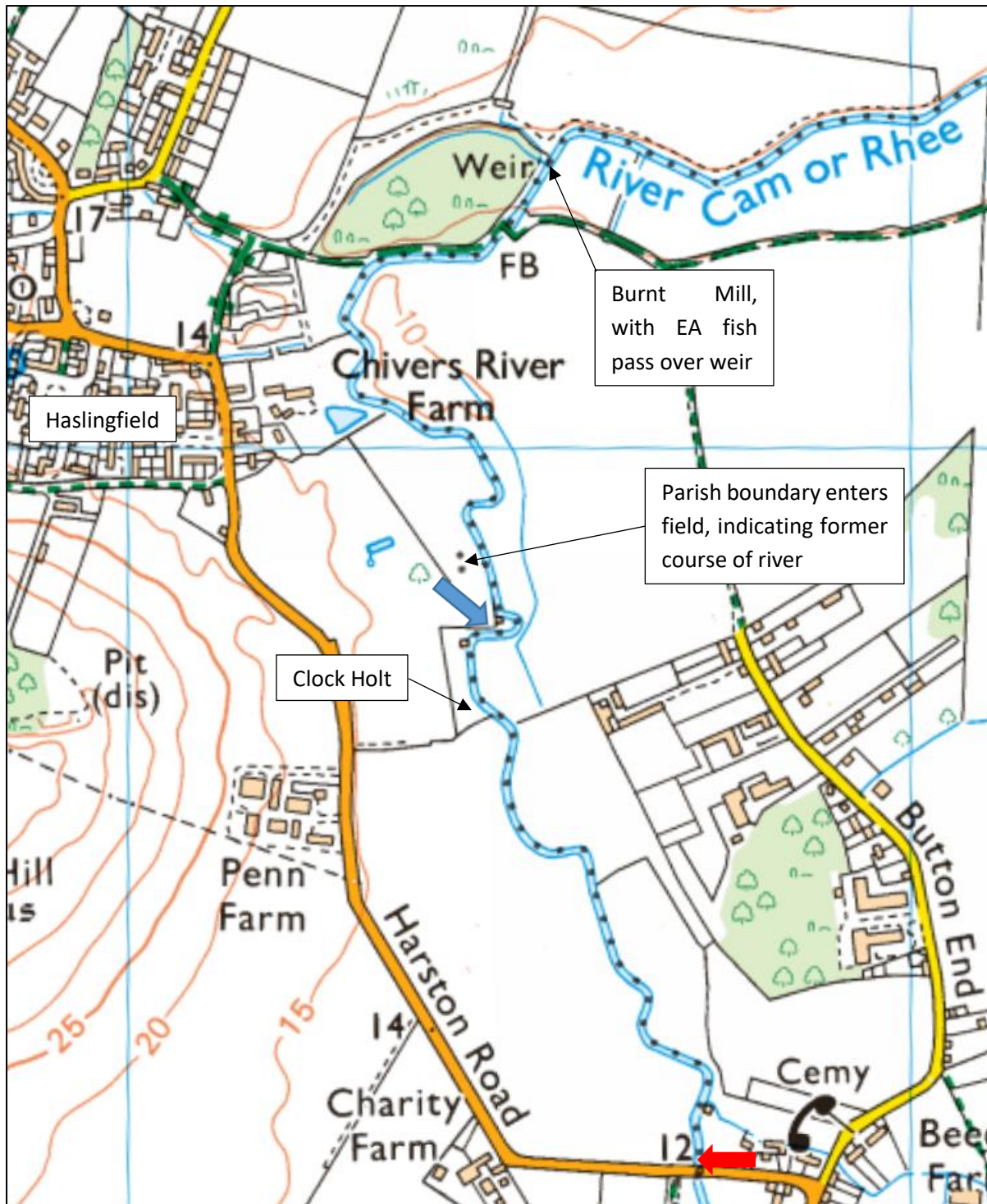
- The river is overburdened by fine sediment. ~20 years ago, the river ran clear and had extensive beds of aquatic and marginal plants, today the river is extremely turbid and no longer supports the plant diversity it once did.
- For significant ecological and hydromorphological improvements to be achieved, the sources oversupplying fine sediment upstream will need to be identified and addressed.
- High water turbidity and the action of invasive signal crayfish is considered to adversely affect aquatic plant growth.
- Any riverbed gravel is likely to be smothered with fine sediment and unlikely to support spawning brown trout.
- As a consequence of dredging, the channel has become incised and has lost its habitat diversity. A levee of spoil partially disconnects the river from its floodplain and prevents flood water from draining back to the river.
- The reach visited contained a high number of veteran pollard willows of high ecological value for their deadwood habitats.
- The reach contained some examples of excellent trailing woody material, marginal cover and fallen trees. All features that would harbour trout.

1.0 Introduction

This report is the output of an Advisory Visit (AV) undertaken by Rob Mungovan of the Wild Trout Trust (WTT) to the River Rhee on 6th October 2025. The author was accompanied by a representative from the Friends of the River Rhee conservation group. Comments in this report are based on observations made on the day. The purpose of the visit was to advise on the suitability of the river for wild brown trout, and to consider the impact (positive or not) of a large number of riparian willows.

Normal convention is applied throughout the report with respect to bank identification, i.e. the banks are designated left bank or right bank whilst looking downstream.

Specific locations are identified using decimal latitude and longitude (e.g. 53.054667, -1.9038695), which can be pasted straight into common mapping platforms to identify locations.



Map 1 - The River Rhee near Haslingfield. Red arrow is upper limit, blue arrow is downstream limit of visit, © Ordnance Survey.

2.0 Catchment Overview

The Rhee rises at Ashwell in Hertfordshire from springs emerging from the Tottenhoe Stone (a hard formation of chalk). The river flows for ~36km in a general north easterly direction through South Cambridgeshire to meet

the River Cam at Trumpington Meadows. The geology of the valley is mixed being underlain by Cretaceous bedrock, primarily chalk and mudstone formations (including gault clay), together with deposits containing glacial tills and river terrace gravels. The Rhee is categorised as a chalk river, albeit in a degraded state these days. The river receives notable small stream tributaries including the River Mel, Shep and Hoffer Brook. Where they are accessible to the river’s fish populations, these clear chalkstreams provide important nursery grounds. But connectivity along the river is significantly hindered by multiple mills (almost one in every parish). Extensive grazing meadows can still be found from Malton downstream to Haslingfield. The grassland habitats provide important floodplains.

Tables 1 and 2 summarise the Water Framework Directive (WFD) data for the River Rhee. The river is classified as overall ‘moderate’ ecological status, which constitutes a failure. Parameters that make up the overall classification include ‘moderate’ for fish and ‘high’ for invertebrates. Phosphate is classed as ‘poor’ which is unsurprising given that several sewage treatment works are known to discharge untreated effluent via combined sewer overflows on many occasions. Similarly, the river is classed “moderate” for dissolved oxygen which is disappointing for a chalk river, but not surprising once one enters the river and gets a feel for the large volume of rotting organic matter present on its bed. But like most rivers in the country, it fails to meet its expected standard due to the impact of ‘forever chemicals’ that persist in the aquatic environment.

	Waterbody details
River	River Rhee
WFD Waterbody Name	Rhee (downstream of Wendy)
Waterbody ID	GB105033037610
Management Catchment	Cam and Ely Ouse Management Catchment
River Basin District	Anglian
Current Ecological Quality	Moderate Ecological Status
U/S location inspected	52.140025, 0.069598
D/S location inspected	52.146143, 0.066302
Length of river inspected	~900m

Table 1 Data from [Rhee \(DS Wendy\) | Catchment Data Explorer | Catchment Data Explorer](#)

Classification Item	2019	2022
Ecological	Moderate	Moderate
Biological quality elements	Poor	Moderate
Fish	Poor	Moderate
Invertebrates	High	High
Macrophytes and Phytobenthos Combined		
Macrophytes Sub Element	Moderate	Good
Physico-chemical quality elements	Moderate	Moderate
Ammonia (Phys-Chem)	High	High
Biochemical Oxygen Demand (BOD)		High
Dissolved oxygen	Good	Moderate
Phosphate	Poor	Poor
Temperature	Good	High
pH	High	High
Hydromorphological Supporting Elements	Not high	Not high
Hydrological Regime	Supports good	Supports good
Supporting elements (Surface Water)	Moderate	Moderate
Mitigation Measures Assessment	Moderate or less	Moderate or less
Specific pollutants	High	High
Chromium (VI)	High	High
Mecoprop	High	High
Phenol	High	High
Toluene	High	High
Chemical	Fail	Does not require assessment
Priority hazardous substances	Fail	Does not require assessment

Table 2 - Data from [Rhee \(DS Wendy\) | Catchment Data Explorer | Catchment Data Explorer](#)

The Rhee within the scope of this AV it not a fishery; in the distant past it formed part of the Rhee Trout Fishing Club (1980s) which was a stocked trout water, and Royston and District Angling Club had control of the river towards Burnt Mill in the 1990s. Today the river is no longer controlled by any club, possibly a reflection of the river’s declining state in recent decades. Casual fishing is known to have taken place at various locations into the 2000s with chub and dace once visible from the Harston Road bridge. However, in the last 15 years or so the turbidity of the water has prevented fish from being seen and the author has not heard of any angling taking place.

3.0 Habitat Assessment

The author has lived in the local area for many decades and is familiar with this part of the Rhee. ~20 years ago, the river ran clear and had extensive beds of aquatic and marginal plants. Today the river is extremely turbid

and no longer supports the plant diversity it once did. Following a dynamic risk assessment and the author knowing the reach of river, it was waded to get a better understanding of its current form and bed substrate. The current drought conditions made for low water, aiding wading.

The visit commenced immediately downstream of the Harston Road bridge with the left bank used for access. River width was estimated at 5-6m with a depth known to range from $\sim 0.4\text{m}$ to $\sim 1\text{m}$. A ranging pole was used to show depths in pictures.



Pic 1 – The visited started where the river was overhung by a weeping willow from the right bank downstream of the Harston Road bridge. Several of the weeping willow limbs had set roots into the water.



Pic 2 – Turbidity was extremely high, with visibility into the water little more than 30cm.

Moving downstream along the left bank, a slight levee of past dredging spoil was present. The dredging would have removed large volumes of ecologically valuable gravel that would have provided habitat diversity, fish spawning areas, and sustained important aquatic invertebrate communities, which in turn would feed fish. As a consequence of the dredging, the channel has become incised and is not as diverse as it would have once been. The levee now partially disconnects the river from its floodplain, and prevents flood water from draining back to the river.

Rivers should naturally connect to their floodplains, allowing water to flow from the channel at bankfull conditions. With peak flows making use of overland flow, pressure is taken off the river and its banks, and rates of erosion are reduced. From an ecological perspective, spreading the energy of high flows results in less wash-out of species, be them fish (especially juveniles and weak swimming species), aquatic invertebrates and even plants. Wash-out can be a serious issue where fish have no opportunity to shelter in backwaters and/or margins, and where habitats are disconnected by barriers such as weirs and mills.

The first of more than 10 very large veteran pollard willows was observed at 52.140160, 0.069554 (pic 3). This tree had been recently re-pollarded, but many others had been allowed to collapse as part of their natural aging process. There are benefits to re-pollarding including occasional periods of

light reaching the river and its banks, as well as sustaining the age of the tree before it collapses. There are also benefits to allowing trees to grow naturally (even if formerly pollarded): important fallen wood enters the channel, the river is kept cool by the shade of canopy for longer, and a better diversity of structure and age can evolve when pollarding complements existing standard trees. The challenge for the Rhee is to establish a tree-management regime that protects the very best of the veteran willow trees and creates diversity amongst the remaining stock. It is also important to consider diversifying the species present and not to rely solely on willows as the main riverside tree. Only a few other species of tree were observed during the visit: common alder, white poplar and walnut. Understory species of elder and hawthorn were occasional.



Pic 3 - Veteran pollard willow.

A significant stand of bur reed was noted at 52.140295, 0.069598 (pic 4). The plant was once confined to the margins, and the open channel was wide with flow moving swiftly over a shallow gravel bed. Over time the channel has adjusted because of the downstream transport of fine sediment, which has accumulated over fallen woody material. Water velocity has reduced allowing the bur reed to establish its dominance, resulting in further slowing of the flow and channel narrowing. At the time of visit the channel had been narrowed to ~2m with flow concentrated against the right bank (pic 5). In the open aspect, marginal vegetation (mainly of water forget-me-not and reed sweetgrass) held the bank firm and prevented fine sediment from washing in. This kind of narrowing and further incision often occurs in over-capacity channels where the bed has

been lowered. It is then very difficult for a river to recover a natural morphology without significant introduction of coarse sediment; this may not occur naturally, particularly if there is limited supply from predominantly fine sediment (alluvial) banks.



Pic 4 – A stand of bur reed almost engulfed the channel where the river once flowed swiftly.



Pic 5 – Where light reached the right bank vegetation gave it strength and narrowed the channel.

Beneath the extensive willow tree canopies sunlight was reduced and the bank was largely devoid of vegetation. Collapsed willow branches trailed to the water and created random flow pathways. Trout will use this complex cover for shelter and feeding opportunities; with multiple lies created the river may support greater numbers of fish. But with the very high number of fallen branches and numerous flow pathways against the bare and weak alluvial bank (pic 6), block failure was occurring (pic 7) causing large volumes of fine sediment to enter the river. This failure was being exacerbated by extensive galleries of crayfish burrows. Signal crayfish are an invasive non-native species which are recorded as causing a range of problems when they establish in watercourses
[ID *Pacifastacus leniusculus* \(Signal crayfish\)](#).



Pic 6 - Flow was being pushed against the weak alluvial bank.



Pic 7 - Crayfish galleries resulting in block failure of the bank. Crayfish burrows shown inset.

Walking on the riverbed released a high volume of fine sediment (as expected) but investigation by hand revealed a high volume of organic matter, most of which appeared to have originated from (willow) trees (small twigs, catkins and leaves, pic 8). Encouragingly, there were large numbers of freshwater shrimp (*Gammarus* sp.) breaking down the matter. The input of naturally occurring organic matter to a river is normally to be welcomed, but in this instance, one must wonder just how much lays at the bottom of the river, and whether it is being cleansed by a through flow of water, or whether it is simply accumulating year on year (if entering anaerobic conditions). Note the gas bubbles in the picture. Further inspection of the bed substrate beneath the organic matter revealed fine sediment mainly of sand, grit and small (~5mm) gravel (all particles of a size that the river can transport by its flow).



Pic 8 – A very large volume of organic material had accumulated on the riverbed.

Whilst the diversity and abundance of aquatic plants is reduced from that known 20 years back, it was pleasing to observe willow moss (pic 9) growing attached to willow roots suspended in the river's surface layer. Without trailing branches this plant would not find a niche. The plant favours cool water with a medium to fast pace. Its trailing stems and leaves provide a substrate for fish such as perch and roach to spawn upon, and for aquatic invertebrates to shelter amongst. The former gravel run below the Harston Road bridge was once dominated by water crowfoot (a chalk river indicator species) and arrowhead grew abundantly by late summer together with unbranched bur reed. High water turbidity, and the action of crayfish is now considered to adversely affect aquatic plant growth.



Pic 9 - Willow moss growing attached to trailing willow limbs.

Another very large veteran pollard willow was observed at 52.140564, 0.069554 (pic 10). Although in state of decline, its roots still held the bank strong, and its branches provided a source of important large woody material (LWM) to the river. The occurrence of fallen branches, together with the organic matter that they collect, may look unsightly to some but the presence of LWM is of great importance within rivers. LWM leads to an increase in the surface area on to which a biofilm (algae, bacteria and other microbes) can grow. Where LWM presents no flood risk it should be retained as it improves hydraulic roughness within the channel and, as water is forced around and under, it can initiate bed scour. Fallen LWM can also provide cover to fish from predators. Where possible, fallen trees and timber should be secured in river margins to increase habitat and cover.

With the branches of the veteran willows rooting in the channel, areas of slower water were created, and at one occurrence a mid-channel bar of fine sediment had accumulated (52.140699, 0.069686 pic 11). Whilst it is desirable to see the formation of in-river features bringing diversity to flow and river form, it is a sad reflection of the river's current state: one which is overburdened with fine sediment and can only create features which are transient. In the distant past the river would have been supplied with coarse sediment (gravel and cobbles) together with its fine sediment as a result of erosion of the riverbed and banks. This material would have been transported downstream to form natural occurrences of riffles and gravel bars, which would have provided areas of shallow and fast-moving water, leading to deeper pools and scoured meanders. The challenge of the river trying to restore itself with fine sediment is that most features are prone to

washout as high flows return or a branch causes new flow deflection. Permanence of river features leads to better fine sediment sorting and transport along the river, with the evolution of a greater variety of ecologically important habitats.



Pic 10 - Another very large veteran pollard willow.



Pic 11 - A mid-channel bar of fine sediment.

Due to the permanence of a large willow which grew low from the left bank (52.140834, 0.069730), flow was deflected to the centre of the channel resulting in depth creation and maintenance (pic 12). The depth was $\sim 0.8\text{m}$, and in combination with the cover provided by the tree, is likely to harbour adult fish, especially trout and chub. The high, but strong, canopy of a willow that had not been too frequently pollarded, retained shade and high cover over the water. Shade over rivers is becoming increasingly important as hotter summer temperatures are experienced. A further benefit of trees over rivers is the terrestrial invertebrates that occupy them, which may ultimately fall to the river below to become prey for fish.



Pic 12 - Flow deflection by the willow has maintained pool depth by flushing through fine sediment.

Approximately 40m before the first significant meander, the bed was noted to rise again. This is not how the river used to be. Although formed from fine sediment (mainly sand) it could support the author's weight. The ranging pole was pushed down into the sediment, revealing an accumulation depth of $\sim 0.8\text{m}$, with $\sim 0.3\text{m}$ of open water above (pic 13).



Pic 13 – The author supported on ~0.8m of firm fine sediment.

The deposition of very large volumes of fine sediment, which is not subject to annual scouring and flushing, demonstrates the extent of bed raising that the river requires to bring about restoration of riffles and glides that would have been present many decades ago. The river has been dredged, and then subject to bed incision, and now it is simply filling with sediment to a point where scour prevents further deposition and fine sediment remains mobilised. Restoration of the river's bedform using large volumes of mixed grade gravel and stone should be a medium-term aspiration for Friends of the River Rhee.

Whilst there may be much local objection to the proposed East West Rail (EWR) route which crosses the river ~0.5km upstream, EWR may need to deliver significant habitat gain to offset the harm of its crossing and other riverine impacts, and with the excavation of tunnels and cuttings, the new railway will have vast amounts of aggregate to remove, some of which could benefit the river. During their next consultation the Friends should make the case for EWR delivering significant habitat restoration for the river.

Concerningly, when the sediment was kicked about, large volumes of anaerobic gases were released (pic 14). One has to wonder if the slow release of (harmful?) gases from the riverbed may make the reach less desirable for fish, especially in low flow summers with excessively high temperatures when dissolved oxygen levels would be naturally lower. This may be a factor affecting fish distribution in the river and may account for

local anglers stating that certain reaches appear to contain few larger fish anymore (larger fish have higher oxygen demands, as do species such as brown trout). After the long 'sand bar' the depth returned to what was expected, ~1.2m.



Pic 14 - Kicking the bed released a large volume of foul-smelling gas.



Pic 15 – Once the fine sediment deposition reduced, depth was established once again.

Following the meander, the bed had been scoured, with fine sediment entrained to the lee of the left bank where a marginal stand of bur reed grew as one would expect (pic 16). A common alder sapling grew from a tree stump cut from over the river, had this been the river's only alder?



Pic 16 – A common alder was observed. Alder roots are excellent for stabilising banks and should be included in future planting schemes.

The channel became dominated by a random assortment of fallen wood and willow branches once again, with the main flow pathway partially obstructed by woody nightshade binding material together (pic 17). Once the fallen material was passed the flow pathway returned to the centre of channel and marginal growth of bur reed occurred (pic 18).



Pic 17 – The channel was dominated by fallen material once again (52.141157, 0.069642).



Pic 18 – Bur reed growing as marginal plants suggesting mid-channel scouring of fine sediment.

Turning another meander, willow tree roots held the bank firm (52.141535, 0.068675 pic 19). Willows can effectively lock a river in its current state, if that state is one of poor-quality habitat, then that will be maintained. In a naturally diverse and active river, fresh supplies of gravel would be transported downstream from eroding gravel beds and banks, but the Rhee

has had its gravel bed almost completely removed and the alluvial banks erode only to add further fine sediment to the system which is massively overburdened.



Pic 19 – Willow roots hold the bank firm.

Amongst cover afforded by the willows and their collapsing branches, otter spraints were found. Although old and dried, it was possible to see fragments of crayfish carapace and occasional fish bones (pic 20). Otters have been present in the Rhee catchment since the early 1990s. A possible artificial holt, with a pipe entrance, was observed at 52.145146, 0.066302 (pic 21). The now defunct Cambridge Greenbelt Project embarked on a programme of holt building to aid the species' recovery.



Pic 20 - Otter spraint on a fallen willow branch.



Pic 21 – A pipe, possibly leading to an artificial otter holt.

Any remaining gravel is likely to be heavily silted. Importantly, with respect to the spawning requirements of brown trout, clean and well-sorted gravel is needed, generally in the range 10mm-40mm, which will remain stable and undisturbed for up to 100 days before young trout (the fry) emerge in early spring (illustration 1). It is doubtful that trout could spawn in this reach of river, they will rely on tributary streams.

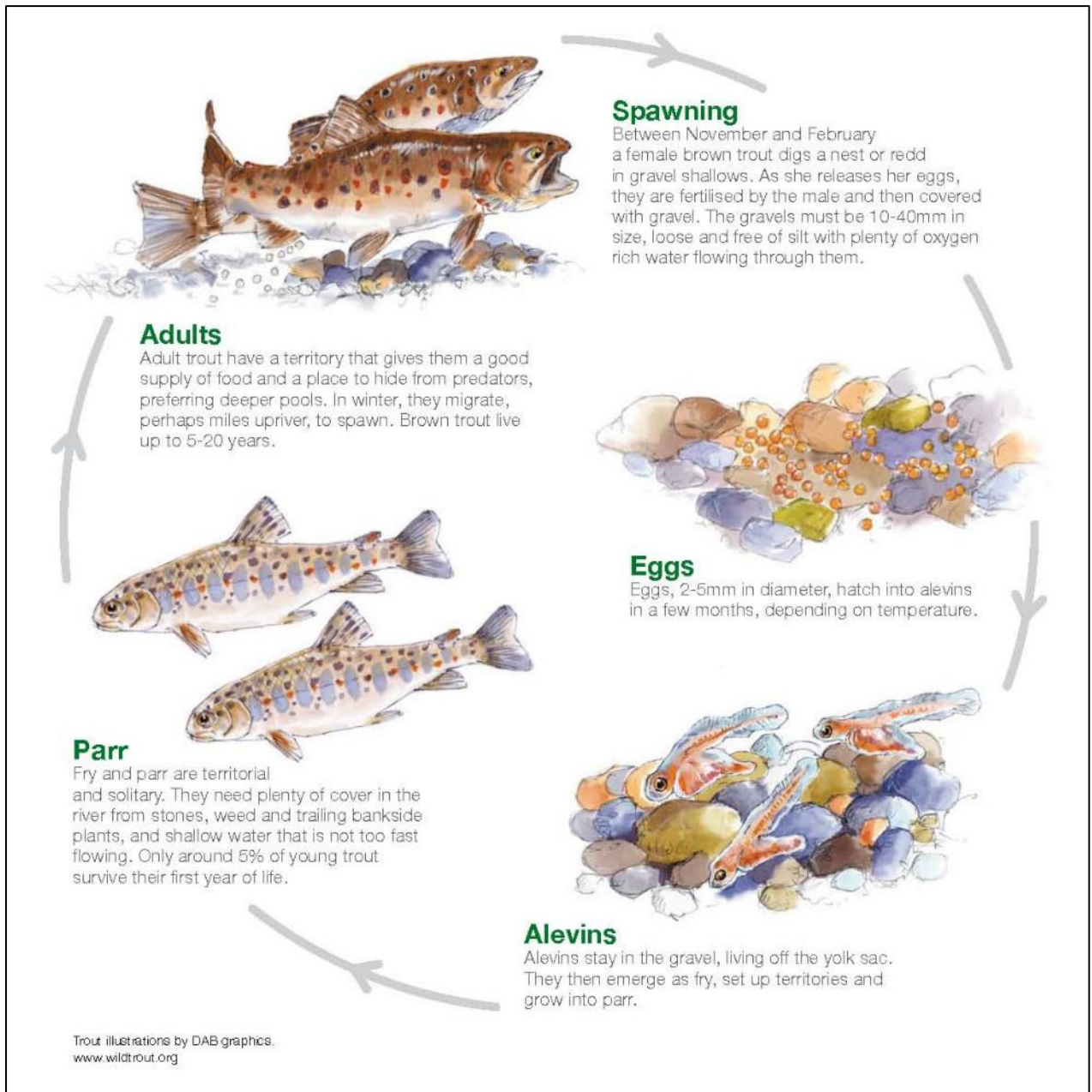


Illustration 1 – The lifecycle of the brown trout.

Where the grade of the left bank was not too steep and it received light, it was covered by dense marginal growth of reeds and grasses. This is encouraging as it may be possible to re-grade banks to encourage vegetation regrowth and limit the extent of bank collapse, and ultimately fine sediment input.



Pic 21 - Where light reached the bank vegetation was established.

Further investigation of the riverbed where it shallowed once again (to $\sim 0.4\text{m}$) revealed little coarse substrate. Instead, a sample of gault clay was lifted (52.141508, 0.068675 pic 22). The Rhee is categorised as a chalk river, but with its gravel bed removed, erosion has now exposed gault clay. Fine clay particles are easily mobilised and held in suspension. In the last ~ 20 years the signal crayfish population has exploded in the Barrington to Harston reach; the constant activity of possibly millions of crayfish is constantly mobilising even more clay particles than would naturally occur. It is the author's view that the action of invasive crayfish (undertaking a form of bioturbation), in combination with past dredging, has created conditions for high turbidity to prevail. This phenomenon is currently being investigated by different parties including the Cam Catchment Partnership ([Sediment and Turbidity – Cam Catchment Partnership](#)) and the Cam Valley Forum ([22049-final-CVF-Turbidity-Summary-2025-03-31-.pdf](#)). It is quite possible that a number of pressures are compounding to cause turbidity in different ways. Decomposing organic matter can also contribute to water turbidity.



Pic 22 - Gault clay lifted from the bed of the river.

This report has highlighted examples of willow trees stabilising riverbanks and sediment deposits forming new river forms, but they cannot be relied upon to bring about restoration in the short to medium term. Where willows colonise bed sediments their roots spread out first into the softest material, this means that roots are rarely put down into the hard bed. Trees may grow for several years until their canopies catch the wind, then entire stands of trees can be uprooted, lifting the rootbase from the riverbed and margins resulting in an overly wide channel once again (52.142397, 0.068192 pic 23). The supply of mixed grade substrates is required to bring permanent river restoration in combination with tree establishment.



Pic 23 – These willows (red arrows) had grown at the toe of bank, only to blow over resulting in channel widened once again.

Considering willow management again, it was interesting to observe recent canopy fall (pic 24). Where “medium aged” pollard willows had been left they had multiple branches of the same diameter (and one would assume strength) and of great length. The wind had caught the branches to bring down a large number all at once. The oldest and largest pollard willows did not support a large number of long branches, instead they tended to have around five, with some having been lost as the tree has aged (beneficially lightening its load). Contrastingly, willows that had been left to grow naturally retained their strong central stem from which high branches grew of various diameters. This made them less susceptible to total collapse and didn’t cast dense shade like top-heavy mature pollards. Pollarding of willow trees is typical of the Cambridge area but if it cannot be sustained then its purpose and ultimate value should be reconsidered.



Pic 24 – Two or possibly more pollard willows had been left to grow tall with much canopy weight, unsurprisingly significant collapsed has occurred.

A massive collapsed pollard willow had been left unmanaged (52.143879, 0.066434 pics 25 & 26). Interestingly, with its limbs touching the ground they had re-rooted. This anchoring increased the tree's stability and its ability to uptake water and nutrients. This tree highlights the need to assess the reach's willows in winter when they can be properly viewed, and the need to produce a plan of willow tree management (which may include 'do nothing') and new planting to include further species.

Importantly, beneath this collapsed veteran willow the riverbed was relatively shallow at 0.6m and contained gravel. It could be possible that dredgers missed some areas of riverbed as they worked around important trees several decades ago. Whilst willow trees are recorded it would be useful to make a note of bed depths (or commission a topographical survey), it may become apparent that more parts of the river are shallower, presenting easier wins for restoration.



Pic 25 – A massive collapsed willow now supported by its branches. The branches have collected material (red ellipse) which provides flow deflection and cover to animals.



Pic 26 – The same tree as pic 25, note how wide it has spread with branches now rooted. This tree should be left unmanaged and not be re-pollarded.

As Clock Holt was approached a small flush was observed (52.145173, 0.066214 pic 27). It was encouraging that it was still flowing in the drought. However, it was not a strong flow and is unlikely to provide a spawning area for fish. Much of its flow was seeping through the ground, with little

evidence of it ever having the energy to downcut its channel or scour away the excess of fallen wood.



Pic 27 – A flush entering from the side of Clock Holt.

Clock Holt is a parcel of land owned by a Haslingfield charity (pic 28). A project idea was scoped for it back in 2011, including a backwater creation and gravel placement. The details are still held by the author and could be shared to the Friends.

Downstream of Clock Holt the river appeared deep again. Bur reeds grew mid-channel suggesting little scouring of the bed in recent high flows. The river regularly overtops the lower right bank at this point. To initiate bed scour and cleansing of fine sediment, the bed needs to be raised with gravel and stone. It is also possible that the river is impounded by the Environment Agency's (EA's) gauging station at Burnt Mill.



Pic 28 – The view looking upstream from Clock Holt.



Pic 29 – The river immediately downstream of Clock Holt (end of visit).

4.0 Recommendations

Excess fine sediment is a significant problem for the river, with high turbidity indicating a high suspended sediment load in addition to large volumes upon the riverbed. Measures to mitigate really require action at source (i.e. upstream) but action creating better bankside vegetation and less bank collapse will reduce fine sediment input direct to the reach.

Better floodplain connection (along the whole of the Rhee valley) will allow fine sediment and nutrients to be deposited on the floodplain and will reduce erosive flood flows. "Slowing the Flow" ([Wild Trout Trust, Helping Norfolk's River Nar](#)) and "Making Space for Water" ([New film: Reconnecting the River Witham to its floodplain | Wild Trout Trust](#)) are both philosophies that would benefit the Rhee.

The incised channel offers little cover to fish and aquatic invertebrates during floods. The fallen timbers currently represent the most important cover against wash-out. Banks could be re-graded to allow animals to find cover in varying water heights and backwaters could be created (such as at Clock Holt). The re-grading of steep banks could make them less susceptible collapse through crayfish burrowing.

Restoration of the river's bedform using large volumes of mixed grade gravel and stone should be a medium-term aspiration for Friends of the River Rhee. The nearby delivery of East West Rail (including a crossing of the Rhee) may present opportunities to demand large-scale habitat restoration. Restoration should also consider the river's true planform. Downstream of the reach visited the historic parish boundary enters the left bank field (refer to map 1). The boundary would have followed the river. The course of the river has been altered and should also be investigated before embarking on restoration.

If not already doing so, the Friends should undertake aquatic invertebrate monitoring through the application of the Riverfly Partnership's *Riverfly Monitoring Initiative* (RMI). By monitoring aquatic invertebrates and making an estimate of their abundance, trends in invertebrate numbers may be observed. More information can be found at [Riverfly Monitoring Initiative \(RMI\) — The Riverfly Partnership](#). Among other variables, aquatic invertebrates are influenced by nutrient loading and fine sediment.

The Friends should undertake a riparian tree survey to:

1. Record the number of veteran pollard willows, including those that would benefit from management and those that should be left untouched.
2. Record new standard willow trees.
3. Record other riparian tree and shrub species.

By considering the results of a survey it may be possible to decide on areas of trees to reduce (or remove) to allow marginal cover to re-establish or to undertake bank grading, and to know where new tree planting (with some new species) is needed. Ultimately a tree-management regime should protect the very best of the veteran willow trees and create diversity amongst the remaining and new stock.

The Friends may wish to commission of topographical survey of the river and its floodplain to inform restoration approaches. Before this is done contact should be made with the EA's Catchment Co-ordinator to see if a flood model exists for the Rhee. The Friends should try to work in a strategic direction that results in data collection to allow the approach of significant bed restoration to be achieved.

Subject to time availability and funding, the WTT may be able to assist with some tree management in the coming winter to demonstrate how fallen wood can be winched to desirable positions and secured to reduce flood risk.

With permissions from landowners and the EA it may be possible for the WTT to train the Friends on habitat enhancement measures such as installing woody features, brush ledges and flow deflectors.



Pic 30 – Tethered and pinned wood in river margins can deflect flow creating small areas of scour, whilst the bulk of the woody material slows the flow and encourages fine sediment to be held. The complex cover also provides excellent protection for trout.



Pic 31 - Tree hinging, a simple and effective technique for increasing cover and flow deflection.



Pic 32 - A flow deflector used to focus flow and scour beneath a tree hinge-cut into the margins, providing excellent cover.

5.0 Making it Happen

It is a legal requirement that works to a Main River require an Environmental Permit or Flood Risk Activity Exemption from the EA.

The Wild Trout Trust can provide further assistance in the following ways:

- Investigation of potential impoundments downstream.
- Walking the river to undertake project scoping, followed by the production of a Project Proposal report.
- Assisting with the preparation and submission of an Environmental Permit, or by identifying appropriate exemptions to take forward small-scale habitat improvement works.
- Running training days to demonstrate the techniques described in this report.

We have 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 material, enhancing fish stocks and managing invasive species.

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

The WTT website library has a wide range of materials in video and PDF format on habitat management and improvement:
www.wildtrout.org/content/library

6.0 Acknowledgement

The WTT would like to thank the Environment Agency for supporting the advisory and practical visit programme in England, through a partnership funded using rod licence income.

7.0 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.

Legal permissions may be required before commencing work on site. These are not limited to landowner permissions but may also involve regulatory authorities such as the EA, lead local flood authority and any other relevant

bodies (e.g. Natural England and Forestry Commission) or stakeholders. Alongside permissions, risk assessment and adhering to health and safety legislation and guidance is also an essential component of any interventions or activities in and around your river.