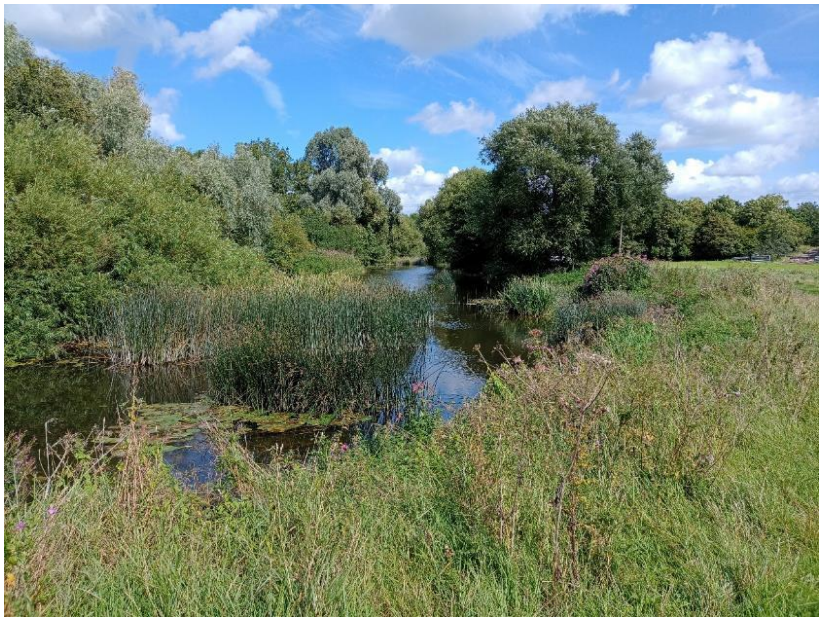
WILD TROUT TRUST

wildtrout.org

**Advisory Visit**

**River Arrow, Alcester, Warwickshire**

**August 2023**



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## 1.0 Introduction

This report is the output of a site visit undertaken by Tim Jacklin of the Wild Trout Trust (WTT) to the River Arrow, near Alcester, Warwickshire on 11th August, 2023. Comments in this report are based on observations on the day of the site visit and discussions with representatives of Alcester Trades & Labour Angling Club (ATLAC).

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

## 2.0 Catchment Overview

The River Arrow is a tributary of the Warwickshire Avon, flowing south from Redditch, past Alcester and joining the Avon near Bidford-on-Avon. The catchment is within the low-lying areas of the Midlands Plateau natural area, the underlying geology being soft Mercia Mudstone of the Triassic period; this is overlain with significant glacial deposits of sands, gravels and clays.

Table 1 summarises the most recent environmental data compiled by the Environment Agency for the Arrow waterbody between the Alne and Avon confluences. The last assessment was in 2022 and recorded an overall *moderate* ecological status, with the individual elements for fish and invertebrates rated *good* and *high* respectively. Water quality elements are rated *high* or *good*, apart from phosphate (*poor*) and the virtually ubiquitous 'forever chemicals', PFOS and PBDE (*fail*).

The section of river inspected is crossed approximately halfway along by the A435 Alcester bypass, the construction of which was completed in 1990. Upstream of that point is the site of Oversley Mill on the south bank. The Historic Environment Record states there was a mill on this site in 1086 and a corn (then needle) mill from the mid-1800s up to its disuse in 1925. The arrangement of channels, mill races, weirs and sluices (Figure 1) stayed in place until the mid-C20th, when the headrace and upper tailrace was infilled. Subsequently, the river was realigned to its present course, reportedly during the construction of the bypass in 1990. In 2011, the Environment Agency removed a weir from the channel upstream of the mill site.

| | |
|---|---|
| **River** | River Arrow |
| **Waterbody Name** | Arrow - conf R Alne to conf R Avon |
| **Waterbody ID** | GB109054043680 |
| **Management Catchment** | Avon Warwickshire – Avon Urban Rivers & Lakes |
| **River Basin District** | Severn |
| **Current Ecological Quality** | Overall status of **Moderate** ecological status, last assessed in 2022 |
| **U/S Grid Ref inspected** | SP0870356752 |
| **D/S Grid Ref inspected** | SP0830556106 |
| **Length of river inspected** | ~1km |

**Table 1 Summary of Water Framework Directive data from https://environment.data.gov.uk/catchment-planning/WaterBody/GB109054043680**

The lower end of the mill tailrace remains as a backwater known as the Back Brook on the SE side of the main river channel. The former river course on the NW side (not inspected) is visible as a cut-off meander on satellite photographs and maps, which receives water from the Spittle Brook.

At the downstream end of the reach is a weir providing a head of water via a headrace to Arrow Mill, a former watermill now converted to a pub/restaurant. The weir is owned by the Environment Agency and in 2012 was modified into a rock-ramp fish pass. Weir removal or lowering was pursued at the time, but the existing water rights associated with Arrow Mill prevented this (C. Grzesiok, pers. comm.).

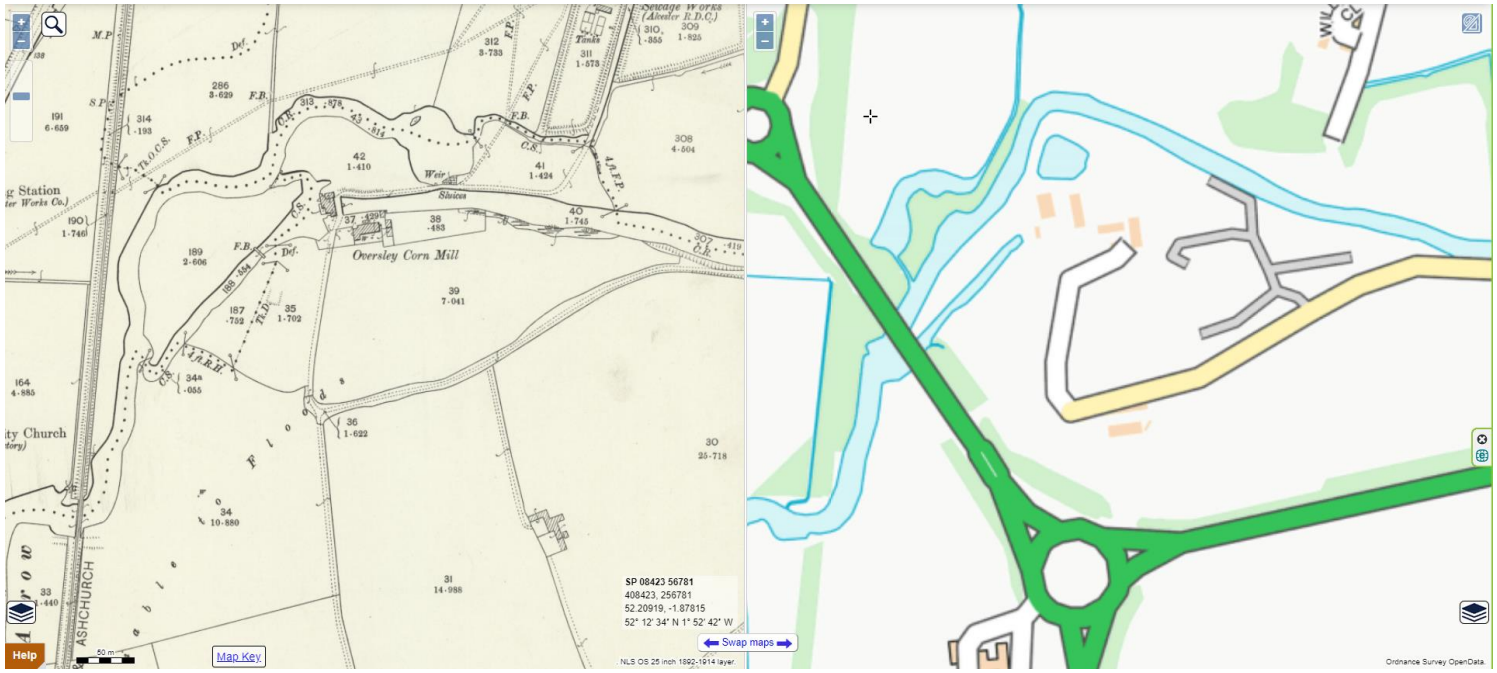


**Figure 1 Ordnance Survey map from 1892-1914 (left) at 1:25000 scale alongside present-day OS Open Source map (From https://maps.nls.uk/geo/explore/side-by-side), showing the area upstream of the A435 Alcester bypass and the site of Oversley Mill. The layout of channels on the left remained until the second half of the 20th century, when the headrace and upper tailrace of the mill was infilled (as shown on 1967 OS map). Subsequently, the river was realigned (possibly during the construction of the bypass, completed 1990) to its present course, leaving the former course as a cut-off meander on the north-west side. The downstream section of the former tailrace of the mill remains as a backwater (known as Back Brook) on the south-east side of the river.**

## 3.0 Habitat Assessment

The overriding influence on river habitat quality here is the impoundment of water by the weir at Arrow Mill at the downstream extent of the reach (Photo 1 - Photo 3). The water level difference across the weir is approximately 2.2m (from LiDAR levels); the stilling effect is visible throughout the reach to the upstream point inspected and the habitat is more akin to a canal than a river.

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The downstream sections are reported to be deep, with scour holes below pinch points such as the former railway bridge. With progress upstream, the river becomes shallower and beds of common club-rush (*Schoenoplectus lacustris*) are prolific, pinching the channel in places and creating some discernible flow (Photo 7). Other aquatic vegetation includes water lilies, reed sweet-grass (*Glyceria* sp.), reedmace (*Typha latifolia*) and common reed (*Phragmites* sp.); along with abundant overhanging bankside willows, these provide good cover for fish from predation (Photo 3, Photo 6).

The fish species recorded by ATLAC in catches include barbel and chub, a few roach, dace, gudgeon and occasional carp; no minnows are seen in contrast to other sections of the Arrow. Catches are generally poor and the reach is colloquially known as 'cyanide straight' due to the lack of fish.

Sections of river impounded by weirs are often poor-quality fisheries for a number of reasons, including:

- The slow flow does not favour drift-feeding species such as trout, dace, chub (and other species to varying extents) which seek out more flowing habitat.
- The slow flow may lead to increased warming of the water (with associated lower oxygen levels); this may also influence fish with higher oxygen requirements (river species) to seek out more favourable habitat found beyond the fishery.
- The natural features of a river (pool, riffle and glide) are drowned out by the weir, making the habitat homogenous.
- Sediment settles out upstream of the weir, tending to smother gravels and reduce the variety of invertebrate life (fish food).

- Fish (particularly smaller ones) may be washed downstream over the weir during floods and are unable to return, leading to a net downstream loss.

Lowering (or removal) of the weir at the downstream extent of the reach would greatly improve habitat upstream, but this is not currently possible due to the constraint of water rights owned by Arrow Mill, as noted above.

During the colder months of the year, deeper sections of river upstream of weirs may be used by fish shoals for overwintering and can provide good (if localised) angling opportunities. It is important to have good cover in these areas at this time to provide refuge from predators such as cormorants, the numbers of which increase dramatically in winter (through migration). Retention of overhanging, trailing and particularly submerged tree roots, limbs and fallen trunks is important in this respect.

The Back Brook (former tailrace of Oversley Mill) provides backwater habitat alongside the main channel which could be valuable for the recruitment of juvenile fish (Photo 4 - Photo 5). Shallow backwaters warm-up early in spring and generate vital planktonic food for fish fry in their early development. Backwaters also provide refuge for fish from flood 'washout' and predation.

Back Brook is currently heavily shaded by trees; in many contexts, tree shading is valuable to keep rivers cool, but here it would be beneficial to reduce the shading (particularly on the southern aspect); this would promote warming of the backwater benefiting the production of plankton and fish fry. The brash from tree trimming could be laid in the margins of the backwater and secured with stakes and fencing wire to provide cover for fish fry. ATLAC are planning a similar initiative to the Avon Roach Project and the Back Brook has potential as a rearing area for roach eggs harvested from elsewhere in the river.

The connection between the Back Brook and main river channel is very silted and overgrown and it appears the exchange of water is limited; it would benefit from clearance and regular maintenance to keep the connection open. The former river channel on the right (NW) bank may provide a similar benefit, subject to the levels being suitable.

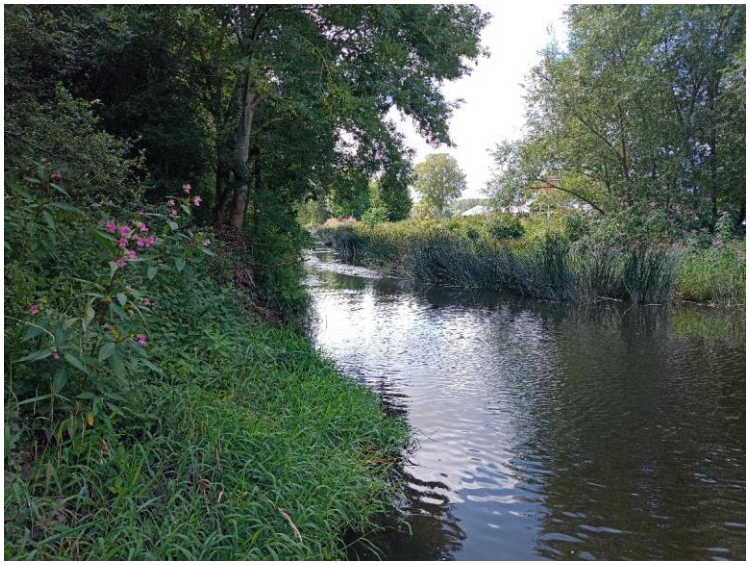

**Photo 1 View downstream below Arrow Mill weir showing the free-flowing nature of the river.**

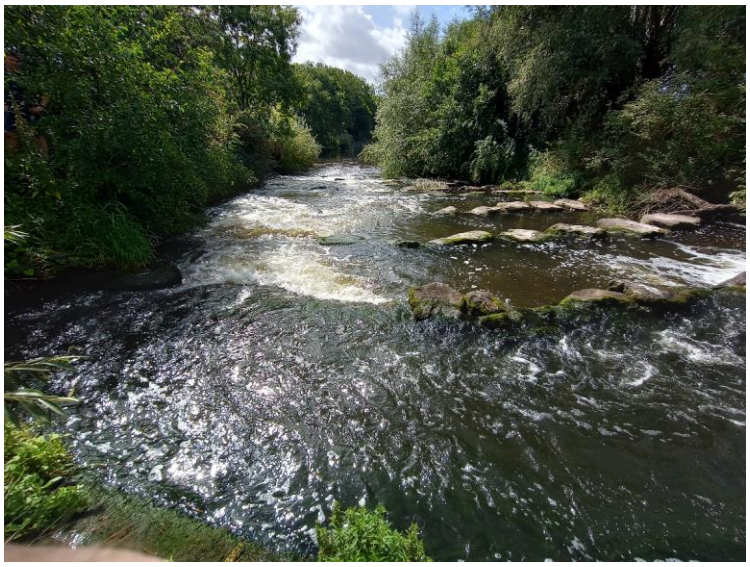

**Photo 2 Rock-ramp fish pass at Arrow Mill weir, constructed in 2012 (see Appendix).**

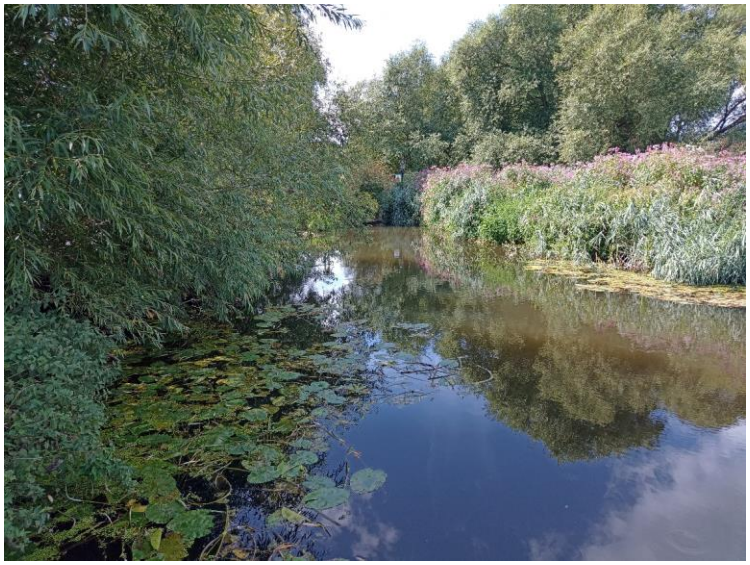

**Photo 3 Immediately upstream of Arrow Mill weir.**

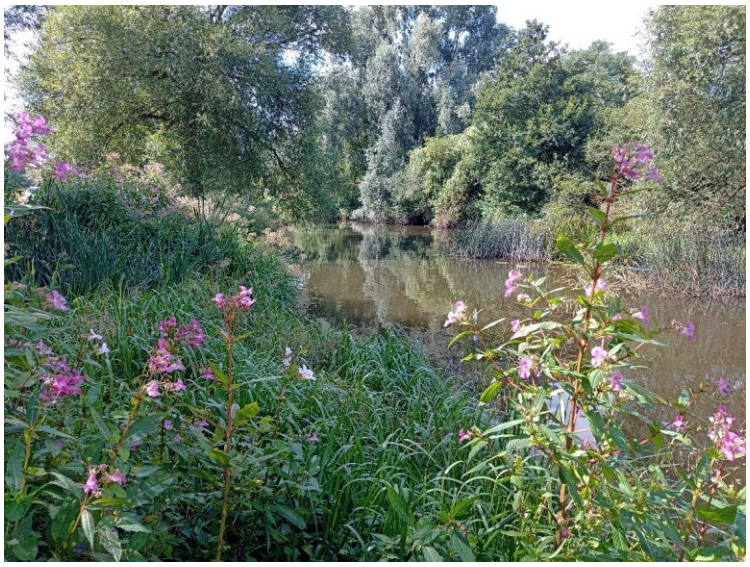

**Photo 4 The connection between the river and Back Brook backwater (foreground) is blocked by silt and vegetation.**

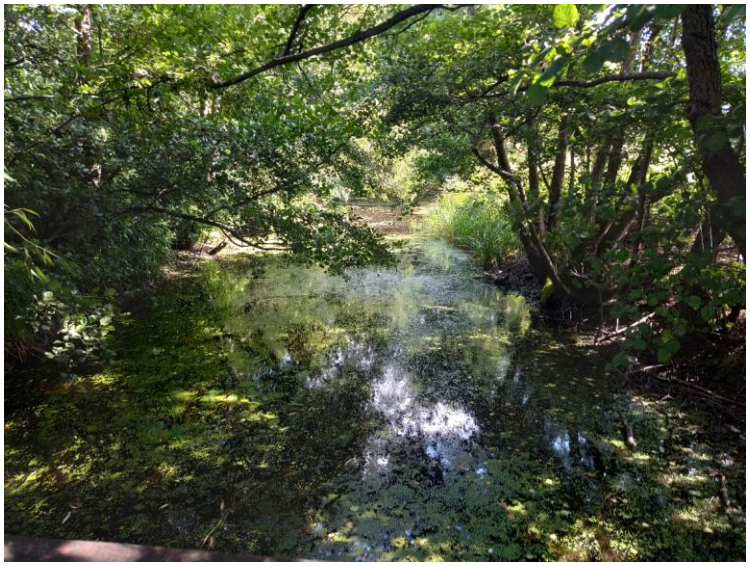

**Photo 5 Back Brook backwater.**

**Photo 6 River channel upstream of A435 – still impounded, but with good cover on the far bank which should be retained.**

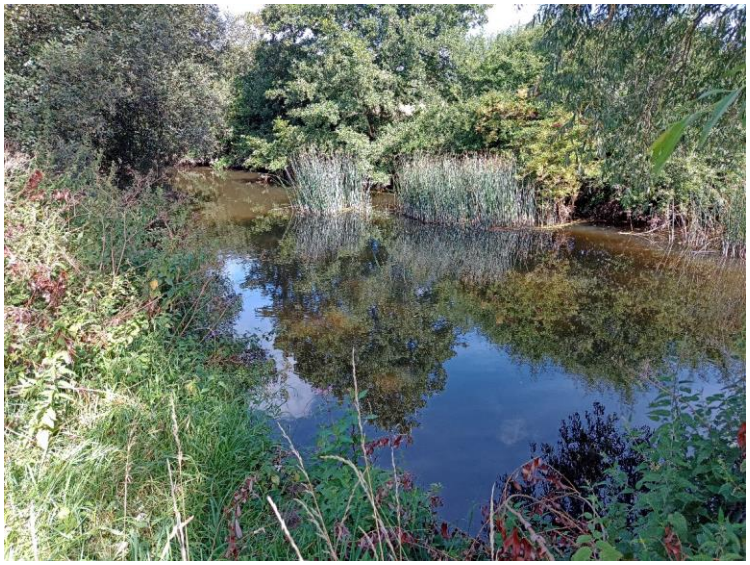

**Photo 7 Towards the upstream end of the reach, the river becomes shallower and is pinched in places by beds of club-rush.**

## 4.0 Recommendations

- Thin the trees alongside the Back Brook and introduce and secure the thinnings to the margins as cover. Improve the connection between the main river channel and the Back Brook backwater; keep the connection open through regular maintenance.
- Investigate the opportunity to connect the former river channel on the right bank. Check the relative water and bed levels between the old and new channels.
- Retain fallen trees, submerged and overhanging branches and weedbeds within and alongside the river channel as vital cover for fish from predation.
- Control the non-native invasive plant Himalayan balsam by hand-pulling before it sets seed.

## 5.0 Further Information

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 debris, enhancing fish stocks and managing invasive species.

The DVD is available to buy for £10.00 from our website shop http://www.wildtrout.org/product/rivers-working-wild-trout-dvd-0 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: http://www.wildtrout.org/content/library

## 6.0 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 must be sought before commencing work on site. These are not limited to landowner permissions but will also involve regulatory authorities such as the Environment Agency, local flood risk authority (often the County Council) – and any other relevant bodies 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 site.

## 7.0 Appendix

Photographs of before and during construction of rock ramp fish pass at Arrow Mill (source: C. Grzesiok, Environment Agency).

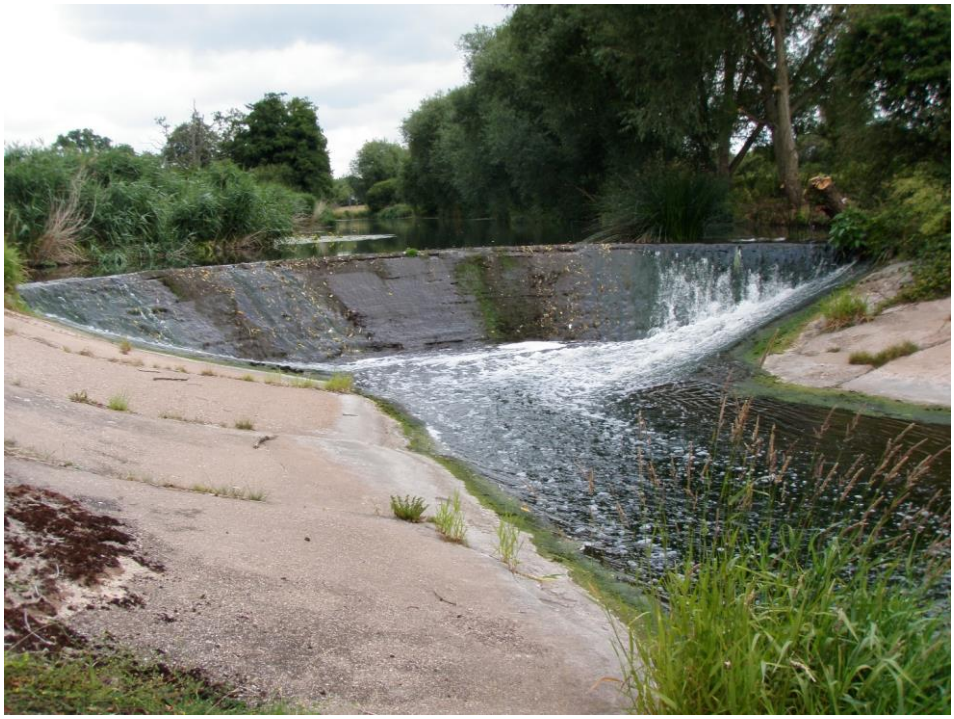

**Photo 8 Weir above Arrow Mill before fish pass construction.**

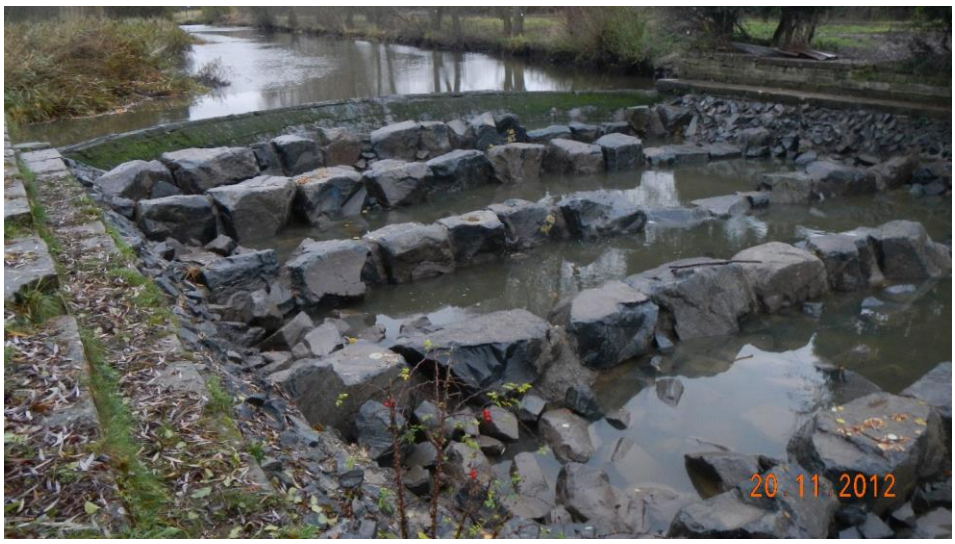


**Photo 9 Rock ramp fish pass construction.**