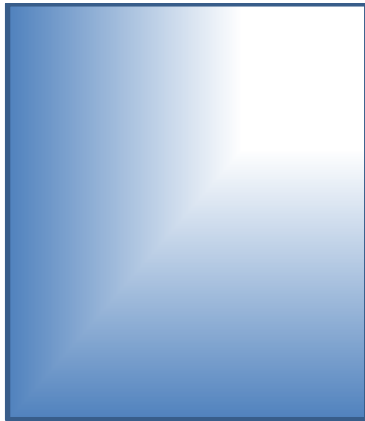


HalpinRobbins

Ecology & Environmental Services

Old Walls Hydro, West Webburn River Comparative Macroinvertebrate Assessment



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HalpinRobbins Ltd

Suite 12

Swallow Court

Devonshire Gate

Tiverton

Devon

EX16 7EJ

01823 299066

info@halpinrobbins.co.uk

www.halpinrobbins.co.uk

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1 INTRODUCTION

Old Walls Hydro abstracts water from the West Webburn River at Old Walls Weir. Water is conveyed through an established leat to the hydroelectric turbine and is returned to the river downstream through the tailrace. The section of river between the abstraction point and the return of the tailrace flow is referred to in this report as the deprived reach.

The ecological condition of the deprived reach is relevant to the assessment of the effects of the abstraction and to the proposed variation of the abstraction licence for Old Walls Hydro. Aquatic macroinvertebrates provide useful evidence of the biological condition of a river because the composition of the community can reflect water quality, flow conditions and the availability of suitable aquatic habitat.

In 2018, the Environment Agency's Devon Analysis and Reporting Team undertook macroinvertebrate surveys to investigate whether an ecological effect attributable to the Old Walls abstraction could be detected. Surveys were completed in May and July 2018 at three locations: upstream of Old Walls Weir, within the deprived reach and downstream of the hydroelectric discharge. Three one-minute replicate samples were collected at each site. The samples were preserved and identified in the laboratory to species level where possible, and the assessment included Biological Monitoring Working Party, Average Score Per Taxon and Lotic-invertebrate Index for Flow Evaluation metrics, together with statistical and multivariate analysis.

The 2018 report recorded Average Score Per Taxon values above 6 and LIFE scores above 8 at each of the surveyed locations. It concluded that the surveys did not identify an ecological effect attributable to the abstraction under the conditions examined, that water quality remained high and that the wetted part of the deprived reach continued to support flowing-water macroinvertebrate habitat, including during a prolonged period of dry weather. Those conclusions relate to the locations, dates and conditions surveyed and should not be interpreted as demonstrating conditions under every possible flow or abstraction scenario.

A further comparative macroinvertebrate assessment was undertaken on 22 May 2026. The purpose of the assessment was to obtain current site-specific evidence of the macroinvertebrate assemblages present in the West Webburn and to consider whether the broad ecological pattern remained consistent with that recorded by the Environment Agency in 2018.

Four locations were examined during the 2026 assessment:

- a. upstream of Old Walls Weir;
- b. at Jordan Bridge;
- c. within the deprived reach downstream of Old Walls Weir; and
- d. downstream of the hydroelectric discharge.

Three separate one-minute samples were collected at each location, following the broad field-sampling structure adopted in the 2018 survey.

The principal objectives of the 2026 assessment were to:

- a. record the macroinvertebrate taxa present at each survey location;
- b. compare the broad taxonomic richness and composition of the survey locations;
- c. consider whether the deprived reach showed an evident reduction in taxonomic richness or the loss of important flowing-water groups when compared with the other locations; and
- d. compare the broad ecological indications from the 2026 assessment with those reported in 2018.

The 2026 assessment was intended to provide comparative field evidence rather than an exact replication of the Environment Agency's 2018 study. Organisms were identified principally in the field to at least family level and, where practicable, to a lower taxonomic level. Specimens were not retained for full laboratory identification, and the complete laboratory and statistical methodology used in 2018 was not repeated. The results should therefore not be treated as directly interchangeable with, or as a precise numerical continuation of, the 2018 dataset.

The 2026 survey was undertaken on a single date while the hydroelectric scheme was operating. The river appeared to be at low to moderate flow, although discharge was not measured. The assessment consequently provides a snapshot of conditions at the time of survey and cannot, on its own, establish ecological conditions throughout the year, during major spates or droughts, or under every possible abstraction regime.

This report describes the survey locations and methodology, presents the macroinvertebrate observations, compares the results between locations and with the 2018 survey, and explains the conclusions that can reasonably be drawn from the available evidence.

2 SITE CONTEXT AND SURVEY LOCATIONS

The West Webburn is a small, steep and hydrologically responsive upland watercourse within the River Dart catchment. The channel in the vicinity of Old Walls is predominantly shaded by riparian woodland and is characterised by coarse substrates, including cobbles, boulders and exposed bedrock, with a sequence of shallow runs, riffles, glides and pools.

At Old Walls Weir, part of the river flow is diverted into the Old Walls leat and conveyed approximately 600 metres to the hydroelectric generating facility. Water passing through the scheme is subsequently returned to the West Webburn through the tailrace. The intervening section of the natural river channel is referred to in this report as the deprived reach.

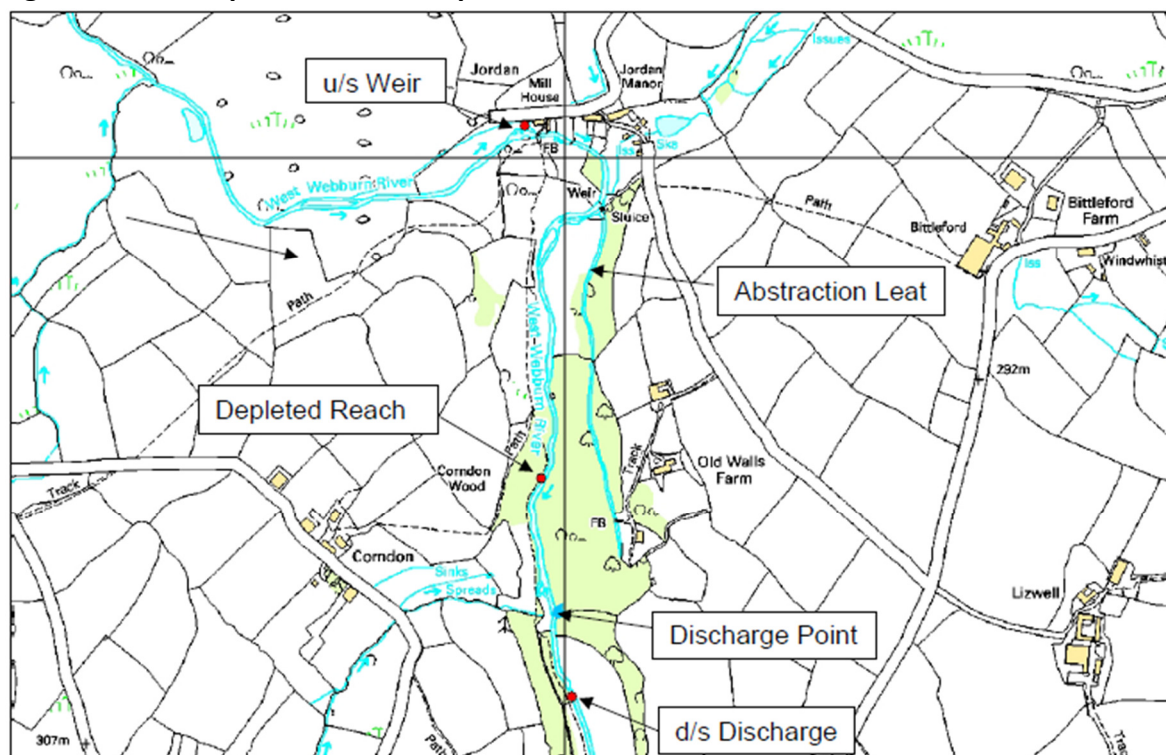
The quantity of water within the deprived reach depends on the natural flow arriving at the weir, the amount abstracted into the leat, leakage and overtopping at the weir, operation of the fish pass and any local inflows entering the river downstream. Conditions within the reach are therefore variable and may change rapidly in response to rainfall and operation of the hydroelectric scheme.

The Environment Agency's 2018 assessment examined three locations:

- upstream of Old Walls Weir;
- within the deprived reach downstream of the weir; and
- downstream of the hydroelectric discharge.

The location map of the 2018 report shows the relationship between the weir, abstraction leat, deprived reach, turbine discharge and downstream monitoring location.

Figure 1. 2018 Report Location Map



The 2026 assessment adopted the same general upstream–impact–downstream comparative approach. An additional location upstream of Jordan Bridge was included to provide further information on variation within the river upstream of the abstraction and to assist interpretation of differences between individual sampling locations.

- Site 1 West Webburn upstream of Old Walls Weir (SX 69729 74942)
Upstream comparison location, not directly affected by abstraction at Old Walls (additional location).
- Site 2 West Webburn at Jordan Bridge (SX 69964 75028)
Upstream comparison location, not directly affected by abstraction at Old Walls
- Site 3 West Webburn within the deprived reach (SX 69979 74603)
Assessment of the river reach affected by abstraction
- Site 4 West Webburn downstream of hydroelectric discharge (SX 70028 74246)
Downstream comparison location after return of the abstracted flow

Site 1 — upstream of Old Walls Weir

Site 1 was situated upstream of the influence of Old Walls Weir and the abstraction intake. This location was not included as a separate sampling site in the Environment Agency's 2018 survey. It was selected as an additional upstream comparison location representing the macroinvertebrate assemblage supported by the West Webburn before water is diverted into the leat.

The channel at this location comprised a shaded upland-river habitat with coarse mineral substrate, boulders and areas of relatively fast-flowing water. The site provided a range of potential macroinvertebrate microhabitats, including stone surfaces, interstitial spaces, marginal vegetation and accumulations of organic material.

Site 2 — Jordan Bridge

Site 2 was located at Jordan Bridge, upstream of Old Walls Weir. It was added in 2026 to provide a second upstream comparison and to indicate the extent of natural spatial variation within the macroinvertebrate community over a relatively short length of river.

Site 3 — deprived reach

Site 3 was located within the deprived reach between Old Walls Weir and the return of the hydroelectric discharge. It was selected to assess the macroinvertebrate community within the section of river most directly affected by the diversion of water into the leat.

The channel remained wetted and contained visibly flowing habitat at the time of the survey. Coarse substrates, including cobbles and boulders, provided habitat for taxa associated with running water.

Site 4 — downstream of the hydroelectric discharge

Site 4 was situated downstream of the point at which water conveyed through the hydroelectric scheme is returned to the West Webburn. It was selected to provide a downstream comparison after restoration of the abstracted flow to the natural river channel.

Conditions at this location may be influenced by the combined natural river flow, the returned turbine discharge, local tributary or drainage inputs and any effects associated with the tailrace. The location therefore provides evidence of the macroinvertebrate community downstream of the scheme as a whole, rather than a wholly independent reference condition.

2.1 *Comparability with the 2018 survey*

The 2026 upstream, deprived-reach and downstream sites correspond to the same broad river sections assessed in 2018. The coordinates were not identical, and the 2026 survey included the additional site upstream of Jordan Bridge. The assessment should therefore be regarded as a comparison of broad spatial and ecological patterns rather than a precise resampling of exactly the same areas of riverbed.

Differences between the 2018 and 2026 results may reflect several factors in addition to any change in ecological condition, including:

- a. differences in the precise sampling locations and microhabitats sampled;
- b. seasonal and annual variation in macroinvertebrate emergence and life cycles;
- c. river flow and weather preceding each survey;
- d. differences in taxonomic identification and sample processing; and
- e. the greater laboratory and statistical resolution applied to the 2018 samples.

Those limitations are considered further in the methodology and discussion sections. They do not prevent a broad comparison of taxonomic richness, community composition and the occurrence of flowing-water taxa, but they limit the extent to which small numerical differences between the two surveys can be interpreted as evidence of ecological change.

3 METHODOLOGY

3.1 *Survey date and conditions*

The macroinvertebrate survey was undertaken on 22 May 2026. The weather was dry and sunny with a light breeze, and the preceding days had also been generally dry.

The hydroelectric scheme was operating during the survey. The West Webburn appeared to be at low to moderate flow, although river discharge, water depth and current velocity were not measured. The survey therefore records the biological conditions present on that date rather than the full range of conditions experienced by the river.

The four locations described in Section 2 were surveyed:

- a. upstream of Jordan Bridge;
- b. Jordan Bridge;
- c. within the deprived reach; and
- d. downstream of the hydroelectric discharge.

3.2 *Field sampling*

Three separate one-minute macroinvertebrate samples were collected at each survey location. This followed the broad sampling structure used in the Environment Agency's 2018 assessment, in which three one-minute replicate samples were collected at each site.

The use of three separate samples at each location was intended to reduce the influence of any single patch of riverbed and to provide an indication of variation within each site. Sampling effort was standardised by duration.

Sampling was undertaken within the wetted channel at each location. The assessment focused on the macroinvertebrates present in the accessible aquatic habitats at the time of the survey.

The survey was comparative in purpose. The upstream and Jordan Bridge locations provided information on the macroinvertebrate assemblage above the abstraction. The deprived-reach location was used to examine the assemblage within the section affected by abstraction, and the downstream location provided a comparison after the abstracted water had been returned to the river.

3.3 *Taxonomic identification*

Macroinvertebrates collected during the survey were examined and identified in the field to at least family level and, where practicable, to a lower taxonomic level.

No specimens were retained or preserved for subsequent laboratory analysis. Photographs were taken of some specimens to assist the survey record.

The results were used to describe:

- a. the number of taxa recorded at each location;
- b. the broad composition of the macroinvertebrate assemblage;
- c. the occurrence of taxa associated with flowing water;
- d. the occurrence of pollution-sensitive groups; and
- e. any evident differences between the deprived reach and the comparison locations.

3.4 *Comparison with the 2018 assessment*

The Environment Agency's 2018 samples were preserved in 100% industrial denatured alcohol and analysed in the laboratory to species level where possible. The 2018 assessment calculated Biological Monitoring Working Party, Average Score Per Taxon and Lotic-invertebrate Index for Flow Evaluation scores. It also included t-tests and multivariate analysis using PRIMER.

The 2026 assessment did not repeat that laboratory or statistical methodology. Formal BMWP, ASPT and LIFE scores were not calculated from the 2026 field observations, and no direct statistical comparison with the 2018 dataset was undertaken.

The 2026 results should not therefore be treated as an exact replication or numerical continuation of the 2018 survey. In particular, differences in taxonomic resolution may cause the 2026 assessment to record fewer taxa than would have been identified through full laboratory analysis.

The comparison with 2018 is consequently limited to broad ecological patterns, including:

- a. whether the deprived reach continued to support a varied macroinvertebrate assemblage;
- b. whether flowing-water and pollution-sensitive groups remained present;
- c. whether taxonomic richness in the deprived reach was broadly similar to that at the other 2026 locations; and
- d. whether there was any evident indication of marked deterioration within the sampled wetted habitat.

3.5 *Interpretation of the results*

Macroinvertebrate communities are influenced by several interacting factors, including flow, water quality, substrate, shading, organic material, seasonal life cycles and preceding weather. Differences between locations cannot therefore be attributed to abstraction solely because they occur upstream or downstream of the weir.

Conversely, the presence of a varied assemblage within the deprived reach does not demonstrate that abstraction has no ecological effect. Macroinvertebrate sampling describes the condition of the habitats that remained wetted and were sampled. It does not directly quantify whether abstraction has reduced the total wetted area, depth, hydraulic diversity or overall quantity of available habitat.

The assessment was undertaken on one date and does not represent conditions during all seasons, prolonged drought, major spates or other abstraction and flow conditions. Macroinvertebrate emergence and life-cycle timing may also affect which taxa are detectable on a particular survey date.

The conclusions in this report are therefore confined to the broad condition and composition of the macroinvertebrate assemblages observed on 22 May 2026 and their general consistency, or otherwise, with the ecological pattern reported in 2018.

4 RESULTS

Macroinvertebrates were recorded at each of the four survey locations on 22 May 2026. A total of 166 individuals was recorded across the survey.

The number of individuals recorded at each site ranged from 33 downstream of the water return to 48 at Jordan Bridge. The deprived reach contained 45 individuals, compared with 40 at the upstream comparison location.

Table 4.1: Summary of macroinvertebrate records

Survey location	Recorded individuals	Identification categories
Upstream of Jordan Bridge	40	10
Jordan Bridge	46	11
Deprived reach	45	10
Downstream of water return	33	9
Total	166	—

The number of identification categories was similar between sites, ranging from nine to eleven. The deprived reach did not show a marked reduction in either the number of recorded individuals or the number of identification categories when compared with the upstream locations.

Mayflies, stoneflies and caddisflies were well represented across the survey. These groups included several taxa associated with flowing water and coarse river substrates.

4.1 Upstream of Jordan Bridge

Table 4.2: Records upstream of Jordan Bridge

Taxon or field-identification category	Number recorded
Stonefly nymphs	7
Alderfly larvae	6
Mayfly nymphs	5
Ecdyonurus sp.	3
Silo pallipes	2
Rhyacophila sp.	3
Chironomidae	4
Lepidostoma hirtum	2
Other cased caddisflies	5
Other species	3
Total	40

Forty individuals were recorded upstream of Jordan Bridge across ten field-identification categories. The assemblage included seven stonefly nymphs, eight mayfly nymphs comprising the general mayfly and Ecdyonurus records, and twelve caddisfly larvae.

The caddisfly records included *Silo pallipes*, *Rhyacophila* sp. and *Lepidostoma hirtum*, together with five other cased caddisflies. Alderfly larvae and non-biting midge larvae were also present.

The assemblage was varied and included several groups characteristic of flowing upland streams. It provides an appropriate upstream comparison for the deprived-reach results.

4.2 Jordan Bridge

Table 4.3: Records at Jordan Bridge

Taxon or field-identification category	Number recorded
Alderfly larvae	9
Flattened mayfly nymphs	6
<i>Ecdyonurus</i> sp.	3
Other mayfly nymphs	20
<i>Silo pallipes</i>	2
<i>Sericostoma personatum</i>	2
<i>Rhyacophila dorsalis</i>	3
Stonefly nymphs	2
Chironomidae	1
Leptoceridae	2
<i>Gammarus</i> sp.	1
Total	51

A total of 51 macroinvertebrate individuals was recorded at Jordan Bridge across 11 field-identification categories. The assemblage included mayflies, stoneflies, alderflies, caddisflies, non-biting midge larvae and freshwater amphipods.

Mayflies were the most numerous component of the assemblage, with 29 individuals recorded. Three visually distinct forms of mayfly nymph were recognised in the field: 20 general mayfly nymphs, six flattened mayfly nymphs and three specimens identified as *Ecdyonurus* sp. The observations indicate variation within the mayfly assemblage, although field identification does not establish that the three forms represented three separate species.

Nine alderfly larvae and two stonefly nymphs were recorded. The caddisfly assemblage comprised two *Silo pallipes*, two *Sericostoma personatum*, three *Rhyacophila dorsalis* and two Leptoceridae, giving a total of nine caddisfly larvae.

One Chironomidae larva and one *Gammarus* specimen were also recorded. These groups can occupy a range of aquatic microhabitats and add to the overall breadth of the assemblage observed at the site.

The abundance of mayflies and the presence of stoneflies and several caddisfly taxa are consistent with flowing, well-oxygenated habitat containing coarse substrate. The Jordan Bridge sample therefore represents a varied running-water macroinvertebrate assemblage and provides a useful upstream comparison for the deprived reach.

The terms “flattened mayfly nymph”, “other mayfly nymph” and *Ecdyonurus* describe three visibly distinguishable field forms. As *Ecdyonurus* is itself a flattened mayfly, these records should be presented as separate field-identification categories rather than assumed to represent three taxonomically independent groups without laboratory confirmation.

4.3 Deprived reach

Table 4.4: Records within the deprived reach

Taxon or field-identification category	Number recorded
Stonefly nymphs	11
Alderfly larvae	5
Mayfly nymphs	8
<i>Beraea pullata</i>	2
<i>Adicella reducta</i>	1
<i>Drusus annulatus</i>	2
Chironomidae	6
<i>Lepidostoma hirtum</i>	3
<i>Potamophylax latipennis</i>	3
<i>Goera pilosa</i>	4
Total	45

Forty-five individuals were recorded within the deprived reach across ten identification categories. This was the second-highest total recorded during the survey and was similar to the totals at the two upstream locations.

Stonefly nymphs were the most numerous individual category, with eleven recorded. Eight mayfly nymphs and fifteen caddisfly larvae were also present.

The caddisfly assemblage was comparatively varied and included *Beraea pullata*, *Adicella reducta*, *Drusus annulatus*, *Lepidostoma hirtum*, *Potamophylax latipennis* and *Goera pilosa*.

The presence and abundance of stoneflies, mayflies and multiple caddisfly taxa demonstrate that the sampled part of the deprived reach retained a varied running-water macroinvertebrate assemblage under the conditions present on 22 May 2026.

These results do not establish that abstraction has no ecological effect. They describe the organisms occupying the wetted habitats that were sampled, but do not quantify whether abstraction has reduced the overall area, depth or hydraulic diversity of available habitat.

4.4 Downstream of the water return

Table 4.5: Records downstream of the water return

Taxon or field-identification category	Number recorded
Stonefly nymphs	7
Alderfly larvae	3
Mayfly nymphs	8
Chironomidae	3
Goera pilosa	2
Lepidostoma hirtum	1
Drusus annulatus	2
Other caddisflies	5
Gammarus sp.	2
Total	33

Thirty-three individuals were recorded downstream of the water return across nine identification categories. Although this was the lowest numerical total among the four sites, the assemblage remained varied and included stoneflies, mayflies, alderflies, caddisflies, Chironomidae and Gammarus.

Ten caddisfly larvae were recorded, including *Goera pilosa*, *Lepidostoma hirtum* and *Drusus annulatus*, together with five other caddisflies.

The lower number of individuals at this site should not, on its own, be interpreted as evidence of ecological deterioration. The survey comprised a limited field sample, and recorded abundance may be affected by local substrate, microhabitat, sampling efficiency and the patchy distribution of macroinvertebrates.

4.5 Comparison between locations

The deprived reach supported 45 individuals across ten identification categories. This was comparable with the 40 individuals and ten categories recorded upstream of Jordan Bridge and the 48 individuals and eleven categories recorded at Jordan Bridge.

Individuals assigned to mayfly, stonefly or caddisfly categories were strongly represented at every site. The corresponding descriptive totals were:

- 27 individuals upstream of Jordan Bridge;
- 36 individuals at Jordan Bridge;
- 34 individuals within the deprived reach; and
- 25 individuals downstream of the water return.

These figures are descriptive totals rather than calculated biological indices. They nevertheless show that the deprived-reach sample was not characterised by the loss or marked reduction of the principal running-water insect groups.

Differences in the particular taxa recorded were evident between sites. Some of this variation is likely to reflect differences in substrate, water velocity, organic material and other local microhabitat conditions. The results do not show a simple pattern of declining richness or abundance downstream of the abstraction weir.

Overall, the 2026 results demonstrate that the sampled wetted habitat within the deprived reach supported a varied macroinvertebrate assemblage broadly comparable in recorded abundance and richness with the upstream comparison locations.

5 DISCUSSION

5.1 *Comparison of the 2026 survey locations*

The 2026 results show that a varied macroinvertebrate assemblage was present at each of the four survey locations. Recorded abundance ranged from 33 individuals downstream of the water return to 51 individuals at Jordan Bridge, while the number of field-identification categories ranged from nine to eleven.

The deprived reach supported 45 individuals across ten identification categories. This was comparable with the 40 individuals and ten categories recorded upstream of Jordan Bridge and the 51 individuals and eleven categories recorded at Jordan Bridge. It was also higher than the 33 individuals and nine categories recorded downstream of the water return.

There was therefore no simple pattern of declining abundance or recorded diversity downstream of the abstraction weir. In particular, the deprived-reach sample was not numerically impoverished when compared with the upstream locations.

The figures should be treated as descriptive rather than as precise measures of population density. Macroinvertebrates are distributed unevenly within river habitats, and the number collected can be affected by local substrate, water velocity, organic material and sampling efficiency. Nevertheless, the similarity of the results between sites provides no indication of a marked reduction in the macroinvertebrate assemblage within the sampled part of the deprived reach.

5.2 *Composition of the assemblages*

Mayflies, stoneflies and caddisflies were recorded at all four survey locations. These groups were strongly represented within the deprived reach as well as at the upstream comparison sites.

At Jordan Bridge, mayflies were the most abundant component of the sample. Three visibly distinct mayfly nymph forms were recorded, comprising general mayfly nymphs, flattened mayfly nymphs and specimens identified as *Ecdyonurus* sp. The presence of these different forms indicates variation within the mayfly assemblage, although the field survey does not establish that each form represented a separate species.

The deprived reach contained eleven stonefly nymphs, eight mayfly nymphs and fifteen caddisfly larvae. The caddisfly records comprised six separate identifications: *Beraea pullata*, *Adicella reducta*, *Drusus annulatus*, *Lepidostoma hirtum*, *Potamophylax latipennis* and *Goera pilosa*.

The occurrence of stoneflies, mayflies and several caddisfly groups within the deprived reach is consistent with the continued presence of flowing, oxygenated habitat containing coarse substrates. The assemblage did not appear to have been replaced by a restricted community composed principally of organisms associated with slow-flowing, heavily deposited or poor-quality conditions.

This interpretation is qualitative. No formal biological index was calculated from the 2026 observations, and the results do not provide a Water Framework Directive classification or a numerical measure of flow or water-quality status.

5.3 *Ecological condition of the deprived reach*

The principal finding from the 2026 assessment is that the wetted habitat sampled within the deprived reach supported a varied macroinvertebrate assemblage broadly comparable with those recorded at the upstream locations.

The deprived reach contained the highest recorded number of stonefly nymphs and a comparatively varied caddisfly assemblage. Its total number of individuals and identification categories was also similar to the upstream results. These observations do not indicate marked deterioration within the habitat that remained wetted and was available for sampling on 22 May 2026.

5.4 *Comparison with the 2018 assessment*

The broad pattern recorded in 2026 is consistent with the Environment Agency's 2018 assessment. The 2018 survey recorded Average Score Per Taxon values above 6 at all three sites during both spring and summer and LIFE scores of approximately 8 or above. The report concluded that water quality remained high and that no ecological effect attributable to the abstraction could be demonstrated from the macroinvertebrate results.

The 2018 results did not show lower LIFE scores within the deprived reach. During the summer survey, the average LIFE score in the deprived reach was slightly higher than the upstream score, despite the prolonged dry-weather period. The 2018 report considered the differences between sites to be marginal and concluded that suitable flowing-water habitat remained present throughout the surveyed reach.

The 2026 findings provide further site-specific evidence of the same broad pattern. Mayflies, stoneflies and caddisflies remained present within the deprived reach, and there was no marked reduction in recorded abundance or number of identification categories relative to the upstream comparison locations.

The two datasets are not directly numerically comparable. The 2018 samples were preserved and analysed in a laboratory to species level where possible, and formal BMWP, ASPT, LIFE and multivariate analyses were undertaken. The 2026 assessment relied principally on field identification and did not repeat those calculations. The comparison is therefore one of broad ecological composition and condition rather than exact changes in individual taxa or biological scores.

5.5 *Interpretation of differences between sites*

Differences in the identities and numbers of organisms recorded between the four locations are expected. Macroinvertebrate communities can vary over short distances in response to changes in substrate, current velocity, shading, marginal vegetation, leaf litter and other organic material.

The two upstream locations themselves differed. Jordan Bridge contained a greater number of mayfly nymphs, while the location upstream of Jordan Bridge contained more stoneflies and a different combination of caddisfly records. This demonstrates natural spatial variation within the river before the abstraction point is considered.

Similarly, the lower numerical total downstream of the water return cannot, on its own, be interpreted as evidence of an adverse effect from the hydroelectric scheme. The site still supported mayflies, stoneflies, alderflies, caddisflies, Chironomidae and Gammarus. Local habitat differences or the patchy distribution of organisms may explain part or all of the numerical variation.

A robust attribution of differences to abstraction would require repeated seasonal sampling, consistent laboratory identification and statistical comparison over a longer period. The present data do not demonstrate a pattern that would justify attributing the observed site-to-site differences to abstraction.

5.6 *Limitations and level of confidence*

The survey was undertaken on one date during dry weather while the hydroelectric scheme was operating. It does not represent the full range of seasonal, hydrological and operational conditions experienced within the West Webburn.

River discharge, water velocity, depth, wetted width and the quantity abstracted were not measured during sampling. The biological observations cannot therefore be related quantitatively to a specific flow or abstraction rate.

Identifications were made principally in the field and were recorded at mixed taxonomic levels. Some entries represent species, some genera or families, and others visually distinct field forms. The reported number of identification categories should not therefore be treated as equivalent to a fully resolved species-richness total.

The absence of a taxon from an individual sample does not establish that it was absent from the site. Low abundance, patchy distribution or failure to collect an organism during the limited sampling period may affect detection.

5.7 *Overall interpretation*

Within those limitations, the 2026 assessment provides reasonable evidence that the wetted part of the deprived reach continued to support a varied running-water macroinvertebrate assemblage at the time of survey.

The deprived reach was broadly comparable with the upstream sites in both recorded abundance and number of identification categories. It supported abundant stoneflies, mayflies and a varied caddisfly assemblage, and no marked deterioration was evident.

The findings are consistent with the broad conclusions of the 2018 assessment, which also found high biological water-quality and flow-related scores and did not identify deterioration within the deprived-reach samples.

The combined evidence supports the conclusion that the abstraction has not been shown to cause material deterioration in the macroinvertebrate community occupying the wetted channel. It does not, however, determine whether abstraction has reduced the overall extent or hydraulic diversity of available river habitat.