IN THE MATTER OF THE WATER RESOURCES ACT 1991

PLANNING INSPECTORATE REFERENCE ENV/3378112

OLD WALLS HYDRO

WEST WEBBURN RIVER

PROOF OF EVIDENCE FOR THE OBJECTOR

ADAM ROBBINS BSC MSc MCIEEM – DIRECTOR OF HALPINROBBINS

Ecological and environmental assessment of the proposed variation of the Old Walls Hydro abstraction licence

14 JULY 2026

EXECUTIVE SUMMARY OF MY OPINIONS ON THE EVIDENCE PRESENTLY AVAILABLE

Issue	My opinion on the evidence presently available
River character	I characterise the West Webburn as a small, steep and flashy upland river with rapid responses to rainfall and naturally variable flows. CD14 reported good water-quality and flow-related macroinvertebrate indicators in 2018. My May 2026 comparative assessment recorded a varied running-water macroinvertebrate assemblage within the wetted deprived reach, broadly comparable in recorded abundance and number of field-identification categories with the upstream comparison locations. Taken together, the evidence does not demonstrate material deterioration within the wetted channel, although it does not quantify whether abstraction has reduced the total extent, hydraulic diversity, density or biomass of available river habitat.
6 mm intake screen	Effective intake screening is capable of reducing fish entrainment risk. However, the evidence does not demonstrate that a permanent 6 mm screen at the head of the leat would provide a material net ecological benefit over the existing 10 mm forebay screen or an improved set-back screen with a permanently operating bywash. A fine river-frontage screen would be vulnerable to debris loading and blinding during spates, and its benefit cannot be assessed without a site-specific design, hydraulic assessment, debris-management strategy and construction method.
25 mm tailrace screen	The present voluntary and periodic tailrace-screening arrangement does not ensure that the tailrace will be screened whenever migratory fish could enter it. A defined and enforceable arrangement would therefore provide a precautionary benefit. However, the evidence does not demonstrate that a permanently installed 25 mm screen is necessary: CD5 identifies 30 mm as the ordinary standard where sea trout are present and 25 mm as an exceptional requirement where many small sea trout occur. A seasonal, event-triggered or turbine-interlocked arrangement may provide equivalent protection if it can be operated reliably.

Issue	My opinion on the evidence presently available
Flow conditions	The Q95 hands-off flow and 35% proportional take are the elements most likely to provide a material local ecological change. They would be expected to increase residual flow, wetted habitat, depth and hydraulic diversity within the approximately 600-metre deprived reach. These physical changes are likely to improve local habitat availability and may improve the conditions in which fish approach the weir and attempt passage. However, the extent to which they would increase successful passage through the unchanged fish pass is uncertain, and the available evidence does not permit a scientifically defensible forecast of any resulting increase in fish abundance. The proposal also does not remedy the structural limitations of the existing fish pass identified in CD29. A local habitat benefit is therefore probable, but the magnitude and spatial extent of any fish-population response remains unknown.
Annual volume	I agree with the EA that reducing the annual licensed quantity provides no independent ecological benefit.
Outfall velocity	I do not consider the evidence establishes that a universal 0.5 m/s maximum would provide a material benefit at this outfall. Site-specific hydraulic and fish-behaviour evidence is required.
Overall and cost-benefit	Taken as a whole, the proposals are likely to provide a material ecological change at the local scale, principally through the proposed flow regime. However, the evidence does not demonstrate that the proposal is necessary or proportionate, nor does it prove ecological benefit or detriment. The reported benefit-cost ratio of 7.2 is not sufficiently robust because it assumes a fish-status benefit over 18.7 km, uses generic costs, excludes hydroelectric generation losses, values the measures as a bundle and contains no sensitivity analysis.

1.0 Instructions, scope and approach

1.1 I have been instructed on behalf of the Objector, Mr M R Fursdon, to provide independent expert opinion on the ecological and environmental effects of the Environment Agency's proposed variation of abstraction licence 14/46/004/0685 for Old Walls Hydro. My instructions cover the proposed intake and tailrace screening arrangements, abstraction quantities and flow controls, the outfall-velocity condition and the EA's assessment of ecological benefit.

1.2 Although I have been instructed by Mr Fursdon, the opinions in this proof are my own. My duty is to provide objective opinion within my expertise.

1.3 My opinions are based on the documents identified below and independent site visits and surveys.

2.0 Documents reviewed

- Objector's Statement of Case and Appendices
- EA's Statement of Case and Appendices
- Objector's Response and Appendices
- EA's Response and Appendices
- CD1 Copy of licence
- CD2 Copy of licence in its original form
- CD3 NRA Screening Relocation Agreement
- CD4 Map and photographs of abstraction site
- CD5 EA Guidance for Run of River Hydropower Development, December 2017
- CD6 Hydrology Report- 'Old Walls RSA Scheme Hydrological Modelling' June 2025
- CD7 EA's Environmental Flow Indicator Position Statement
- CD8 EA's Catchment Planning Waterbody Data
- CD9 River Basin Management Plan South- West River Basin District 2009
- CD10 2024 England Sea Trout Fishery Performance Results
- CD11 Salmon Stocks and Fisheries in England and Wales in 2024- Report
- CD12 Old Walls Options Appraisal Report, October 2025
- CD13 Draft of the proposed licence
- CD14 Restoring Sustainable Abstraction Ecology Report 2018
- CD15 Licence Change Proposal Report
- CD16 EA's Cost Benefit Analysis
- CD17 Screening for Intakes and Outfalls- a best practice guide February 2005
- CD18 EA's Response to third party representations
- CD19 Objector's Objection Letter
- CD20 Smolt Trial Report (unsigned)
- CD21 Restoring Sustainable Abstraction – Fish Investigation Report
- CD22 South Devon WFD Management Area Abstraction Licensing Strategy
- CD23 Section 52 notice
- CD24 Hydrological information needed for your application – Section 2
- CD25 Hydrological information needed for your application – Section 3.1.3 and 3.2
- CD26 Survey Data – Cator Bridge and Mistresses Piece
- CD27 Applying time limits to new and varied abstraction licences
- CD28 Restoring Sustainable Abstraction – Section 52 mandatory licence changes
- CD29 Assessment of barriers to migration on the River Dart, March 2011
- CD30 Determining water resources licence applications
- Comparative Macroinvertebrate Assessment – Old Walls Hydro, West Webburn River, HalpinRobbins, 14 July 2026

3.0 Experience and qualifications

3.1 I am an environmental consultant with professional experience in professional environmental consultancy since 2004. My academic training is in zoology, freshwater and marine biology, and environmental impact assessment.

3.2 My work has included surface-water ecology and assessment, Water Framework Directive assessments and flood-alleviation infrastructure. Working for regulators, private clients and specialist water-engineering contractors.

3.3 My experience includes ecological and environmental assessment of surface-water projects, interpretation of aquatic ecological evidence and consideration of the effects of engineering works on rivers and associated habitats.

3.4 I hold a Bachelor of Science (BSc) Honours degree in Zoology from Aberystwyth University, undertaken between 1996 and 1999. The degree included freshwater and marine biology. I also hold a Master of Science (MSc) in Environmental Impact Assessment from Aberystwyth University, undertaken between 2002 and 2004.

3.5 I am a Full Member of the Chartered Institute of Ecology and Environmental Management (MCIEEM). My relevant project experience includes Water Framework Directive assessments of rivers including Sites of Special Scientific Interest (SSSI) such as Kennet, Nadder and Avon, and work on Flood Alleviation Schemes such as Norton Fitzwarren Halse stream. These projects required consideration of surface-water conditions, ecological receptors, potential effects of engineering works and appropriate mitigation.

3.6 During my career I have undertaken work for the Environment Agency, private individuals and water-engineering and environmental contractors. This has given me experience of regulatory, client and contractor perspectives.

3.7 My expertise is in environmental consultancy, ecology and environmental impact assessment. I am not a structural, mechanical or hydraulic engineer. Where the ecological consequence depends on these skills and knowledge I seek advice and input from the appropriately qualified expert.

4.0 Site visits, data and methodology

4.1 I visited Old Walls Hydro and the West Webburn on 20 March 2026 and 22 May 2026. The purposes of the visits were to understand the physical arrangement and operation of the hydroelectric scheme, inspect the river and associated aquatic habitats, and obtain site-specific ecological evidence relevant to the proposed licence variation.

4.2 On 20 March 2026, I undertook an initial walkover inspection of:

a. Old Walls Weir and the point at which water enters the leat;
b. the leat, including its general dimensions, physical character and associated habitats;
c. the forebay, existing intake screen and bywash arrangements;
d. the hydroelectric generating facility;
e. the tailrace and its point of discharge to the West Webburn; and
f. the full deprived reach of the West Webburn between the abstraction point and the return of the tailrace flow.

4.3 I was accompanied by B. Rigg of HalpinRobbins, H. Norman of Michelmores, G. Fursdon and M. Fursdon, and C. Elliott. Where information concerning the history or operation of the scheme was provided by the Objector or other persons present, I have treated that information as contextual evidence and have sought to distinguish it from matters that I observed or independently verified.

4.4 The weather during the visit was dry and sunny, with a light breeze.

4.5 During the visit, I made visual observations only.

4.6 On 22 May 2026, I undertook a further inspection of:

a. the leat and the hydroelectric infrastructure;
b. the full deprived reach;
c. approximately 500m upstream of Old Walls Weir; and
d. approximately 500m downstream of the tailrace discharge.

4.7 The weather was dry and sunny, with a light breeze. The preceding days had also been generally dry. The hydroelectric scheme was operating during the survey. The river appeared to be at low/moderate flow, although I did not measure discharge or flow rate.

4.8 On 22 May 2026, I undertook a comparative macroinvertebrate assessment at the same three general locations used in the Environment Agency's 2018 survey reported in CD14, plus one additional location:

a. upstream of Old Walls Weir (OS Grid Reference SX 69729 74942);
b. Jordan Bridge ((OS Grid Reference SX 69964 75028);
c. within the deprived reach downstream of Old Walls Weir (OS Grid Reference SX 69979 74603); and
d. downstream of the hydroelectric discharge (OS Grid Reference SX 70028 74246).

4.10 At each location, I collected three separate one-minute samples, following the field-sampling structure described in CD14.

4.11 The organisms collected were identified principally in the field to at least family level and, where practicable, to a lower taxonomic level. No specimens were retained, although some were photographed. A total of 169 individuals was recorded across the four locations. The site totals were 40 individuals across ten field-identification categories upstream of Jordan Bridge, 51 individuals across eleven categories at Jordan Bridge, 45 individuals across ten categories within the deprived reach and 33 individuals across nine categories downstream of the hydroelectric discharge. Because the records were made at mixed taxonomic levels, the number of field-identification categories should not be treated as a confirmed measure of species richness.

4.14 I have used my May 2026 results to assess whether the broad taxonomic composition and ecological indications were consistent with the Environment Agency's 2018 findings. I do not rely on them as a precise numerical replication of the 2018 dataset.

4.15 During the 22 May 2026 fieldwork, I made incidental observations of brown trout at several locations upstream of Old Walls Weir, within the deprived reach, downstream of the discharge and within the leat. The fish appeared to include several visibly different size classes.

4.16 These observations were not made as part of a formal fish survey. The fish were not captured, measured, aged or individually counted using a standard quantitative method. My observations demonstrate presence and use of the site at the time of the visit, but they cannot be used to estimate population density, recruitment, migration success or population structure.

4.17 I reviewed local Ordnance Survey maps and aerial imagery to consider the course of the West Webburn, the approximate upstream catchment and the distribution of mapped tributaries and inflows. There is approximately 8.5 km of river channel upstream of Old Walls, approximately 15 km² of upstream catchment and approximately 30 mapped tributaries, drains or inflow features. These are approximate estimates. Not all mapped features are necessarily perennial watercourses or make an equal contribution to flow.

4.18 My site visits represent conditions on two dates. They do not encompass the full seasonal or interannual range of flows experienced by the West Webburn, including major spates, prolonged drought or the principal periods of salmonid migration.

4.19 I did not undertake continuous flow monitoring, discharge gauging, hydraulic modelling, quantitative fish monitoring, fish telemetry, a wetted-width time series or a formal assessment of macroinvertebrate biomass.

4.20 My macroinvertebrate assessment was undertaken on one occasion in May 2026. It provides useful site-specific comparative evidence, particularly when considered alongside CD14, but it cannot independently establish ecological conditions throughout the year or under all flow and abstraction scenarios.

4.24 My opinions concerning screen blinding, approach velocity, hydraulic performance and engineering practicability are limited to their ecological implications.

A. General

A1. Characterisation of the West Webburn River

A1.1 The West Webburn is an upland tributary within the River Dart catchment. The Environment Agency describes it as a fast-flowing and "flashy" river, characterised by a rapid response to rainfall, relatively limited baseflow support, and spate flows that rise and recede quickly. I concur with that general characterisation. In my opinion, these characteristics are consistent with a relatively steep upland catchment in which direct rainfall runoff makes a substantial contribution to river flow.

A1.2 Old Walls Weir is situated at approximately 210 metres Above Ordnance Datum ("m AOD"). The headwaters of the West Webburn rise on Dartmoor, in the area between Birch Tor and Hookney Tor, approximately 8.5 kilometres upstream of Old Walls when measured along the river course. Between its headwaters and Old Walls Weir, the river descends through an upland catchment before reaching the abstraction point.

A1.3 Based on my review of the available mapping, the catchment upstream of Old Walls Weir extends to approximately 1,500 hectares, equivalent to approximately 15 square kilometres. I have identified approximately 30 mapped tributaries, drains and other potential inflow features between the headwaters and the weir. I do not assume that all these features are perennial watercourses. Some are likely to be small or intermittent, while others may provide a more sustained contribution to the West Webburn.

A1.4 The number, distribution and hydrological character of these tributaries and inflows are relevant to any assessment of flow at Old Walls, including the use of flow data transposed from a gauging station c.14km downstream. Flow at Old Walls is not determined simply by the length of the main river channel. It reflects the combined influence of catchment area, spatial rainfall distribution, tributary inputs, elevation, gradient, geology, soil conditions, vegetation, land drainage and catchment storage.

A1.5 The upstream catchment is therefore capable of generating rapid and spatially variable runoff responses. During rainfall events, individual tributaries may respond at different rates and contribute flow to the main channel at different times. Conversely, during dry periods, some smaller tributaries and surface-water inflows may provide little or no flow, while others may continue to contribute because of local geology, soils, habitats or groundwater storage.

A1.6 These factors mean that flow at Old Walls may vary substantially over relatively short periods, particularly during the rising and falling limbs of a spate. A flow measurement taken on a particular date represents the conditions at that time, but may not adequately characterise the magnitude, timing or duration of flows experienced during other rainfall events, recession periods or prolonged dry conditions.

A1.7 In my opinion, the West Webburn at Old Walls should therefore be characterised as a relatively small, steep and hydrologically responsive upland river. Its natural flow regime including rapid increases following rainfall, relatively short-duration high-flow events, rapid recession and potential for naturally low flows during prolonged dry weather. This natural variability is an important component of the river's physical and ecological character.

A1.8 The ecology of the West Webburn must be considered in the context of that naturally variable flow regime. Changes in flow can affect water depth, current velocity, hydraulic diversity, habitat availability, longitudinal connectivity and the ability of fish to move through the catchment. Equally, observations or measurements made on a limited number of dates are unlikely, on their own, to represent the full range of conditions experienced over a year or between years.

A2. Old Walls Hydro scheme and ecological context

A2.1 At Old Walls, water is diverted from the West Webburn at Old Walls Weir into a leat and returned to the river downstream. The Environment Agency describes the intervening deprived reach as approximately 600 metres long. The hydroelectric scheme was first developed in 1936, and the present arrangement has operated in substantially its current form since approximately 1996. The existing infrastructure includes a set-back screen at the forebay, a bywash and a tailrace-screening arrangement.

A2.2 The long history of operation is relevant to the definition of the ecological baseline. The aquatic communities currently present in the river, leat and deprived reach have developed under conditions influenced by abstraction over several decades. The present ecological condition cannot therefore be treated as equivalent to a pre-scheme or wholly natural condition.

A2.3 Equally, the fact that the scheme has operated for a long period does not establish that it has no ecological effect. It does, however, mean that any assessment must distinguish between:

a. the ecological quality and functioning of the habitats that presently remain;
b. any reduction in the spatial extent or hydraulic diversity of river habitat attributable to abstraction; and
c. the ecological value that has developed within the long-established leat.

A2.4 The principal fish receptors relevant to my assessment are Atlantic salmon *Salmo salar*; brown trout and sea trout *Salmo trutta*; and European eel *Anguilla anguilla*. Aquatic macroinvertebrates are relevant, both as ecological receptors in their own right and as indicators of water quality, flow conditions and habitat function.

A2.5 CD26 contains Environment Agency electric-fishing records for Lower Cator Bridge, upstream of Old Walls, and Mistresses Piece, downstream. At Lower Cator Bridge, Atlantic salmon were recorded in surveys up to 2014. Fish recorded under the combined category "brown/sea trout" were present in each of the listed surveys, including 29 fish in 2024. The use of that combined category does not, without individual fish measurements or life-history information, establish whether the fish were resident brown trout or juvenile migratory trout.

A2.6 At Mistresses Piece, the data record Atlantic salmon and European eel on a number of survey occasions. These records demonstrate that the relevant species occur within the wider West Webburn system. They do not directly quantify abundance, migration behaviour, entrainment, injury or delay at Old Walls.

A2.7 The absence of recorded Atlantic salmon at Lower Cator Bridge after 2014 is relevant, but it should not be attributed to Old Walls without further evidence. The Environment Agency itself identifies a combination of potential pressures, including wider salmon decline, water chemistry, historic mining, forestry, geology, physical barriers and abstraction. It describes Old Walls as a contributing local pressure rather than the sole cause of the waterbody's fish classification.

A2.8 During my fieldwork on 22 May 2026, I observed brown trout at several locations upstream of Old Walls Weir, within the deprived reach, downstream of the tailrace discharge and within the leat. The fish were of visibly different sizes.

A2.9 These were incidental observations rather than the results of a formal fish survey. The fish were not systematically counted, captured, measured or aged. My observations cannot therefore be used to estimate density, population size, recruitment success, age structure or the proportion of fish successfully passing the weir.

A2.10 The observations nevertheless provide direct site-specific evidence that trout are using habitats associated with Old Walls at the time of the observations. The presence of visibly different sizes of trout is consistent with more than one size class, but I cannot infer age classes or successful local recruitment without measurements or a formal survey.

A2.11 My observations do not demonstrate that Old Walls Weir or the abstraction causes no delay. Nor do they demonstrate injury, mortality or material impediment. They should be treated as evidence of presence and habitat use, not as a quantitative assessment of passage performance.

A2.12 CD14 reports macroinvertebrate surveys undertaken by the Environment Agency in May and July 2018. Three one-minute replicate samples were taken at each of three locations:

a. upstream of Old Walls Weir;
b. within the deprived reach; and
c. downstream of the hydroelectric discharge.

A2.13 The Environment Agency preserved the samples and identified organisms to species level where possible. It calculated Biological Monitoring Working Party scores, Average Score Per Taxon values and Lotic-invertebrate Index for Flow Evaluation scores. It also undertook statistical comparison and PRIMER community analysis.

A2.14 CD14 reported ASPT values above 6 and LIFE scores above 8 at all three sites. It found no statistically identified difference attributable to the abstraction and concluded that:

a. none of the tests demonstrated an ecological impact caused by the abstraction;
b. water quality remained high;
c. the deprived reach showed no evidence of deterioration; and
d. water remained present in the deprived reach following a prolonged period of dry weather.

A2.15 Those findings are important because they are site-specific and were obtained at both the beginning of and during a prolonged dry period. They demonstrate that the wetted part of the deprived reach supported a macroinvertebrate community indicative of good water quality and flowing-water habitat under the conditions surveyed.

A2.16 On 22 May 2026, I undertook a further comparative macroinvertebrate assessment using the same three one-minute replicate sampling approach adopted in CD14. Four locations were sampled:

a. upstream of Jordan Bridge and Old Walls Weir, at SX 69729 74942; Jordan Bridge, at SX 69964 75028;
b. within the deprived reach downstream of Old Walls Weir, at SX 69979 74603; and
c. downstream of the hydroelectric discharge, at SX 70028 74246.

A2.17 The first location was an additional upstream comparison site. The other three corresponded to the same broad upstream, deprived reach and downstream sections examined in 2018, although the precise sampling coordinates were not identical.

A2.18 My assessment used a field design comparable with that used by the Environment Agency in 2018. It was not a complete replication of the Environment Agency's analytical methodology. In particular, my specimens were identified principally in the field rather than through full preserved laboratory analysis.

A2.19 My May 2026 results should be used as comparative field evidence. They should not be presented as numerically or statistically identical to the 2018 dataset unless the underlying taxon records and calculations demonstrate that conclusion.

A2.20 The 2026 assessment recorded 40 individuals across ten field-identification categories upstream of Jordan Bridge, 51 individuals across eleven categories at Jordan Bridge, 45 individuals across ten categories within the deprived reach and 33 individuals across nine categories downstream of the hydroelectric discharge.

A2.21 Mayflies, stoneflies and caddisflies were recorded at all four locations. The deprived reach contained eleven stonefly nymphs, eight mayfly nymphs and fifteen caddisfly larvae, including six separate caddisfly identifications. It contained the highest recorded number of stonefly nymphs and a comparatively varied caddisfly assemblage.

A2.22 There was no simple pattern of declining recorded abundance or number of identification categories downstream of the abstraction weir. The deprived reach was broadly comparable with the two upstream locations in both respects and did not show an evident loss of the principal running-water insect groups.

A2.23 The presence and abundance of mayflies, stoneflies and several caddisfly groups are consistent with the continued presence of flowing, oxygenated habitat containing coarse substrates. The sampled part of the deprived reach therefore supported a varied running-water macroinvertebrate assemblage under the conditions present on 22 May 2026.

A2.24 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 water-quality or flow status. The 2026 records were also made at mixed taxonomic levels and should not be treated as directly equivalent to the preserved, laboratory-identified 2018 dataset.

A2.25 Taken together, CD14 and the May 2026 assessment provide evidence that the sampled wetted part of the deprived reach supported a varied macroinvertebrate assemblage broadly comparable with the comparison locations on three survey occasions over an eight-year period. I regard this as evidence of continuing ecological function within the wetted channel, rather than proof of ecological stability under every flow or abstraction condition.

A2.26 In my opinion, this is evidence of continuing ecological function within the wetted channel. I would describe the findings as broadly consistent over time rather than as proof of ecological stability under all flow conditions.

A2.27 My May 2026 survey was undertaken on a single date and does not represent the full seasonal or interannual range of conditions. Neither my survey nor CD14 assessed macroinvertebrates under every flow, abstraction or spate condition.

A2.28 Both assessments sampled the portion of the channel that was wetted at the time. They did not quantify:

a. the total area of wetted habitat;
b. the area of exposed or dry riverbed;
c. changes in wetted width through time;
d. total macroinvertebrate density or biomass throughout the reach; or
e. the carrying capacity of the reach under alternative abstraction regimes.

A2.29 The Environment Agency argues that a river channel can adjust to a long-standing reduced-flow regime while retaining similar habitats and community composition within a narrower wetted channel. It therefore considers that LIFE and community indices may not identify a loss of total habitat area or biomass. That is a reasonable limitation to identify. However, the EA has not presented a site-specific measurement of the claimed reduction in macroinvertebrate biomass or carrying capacity at Old Walls.

A2.30 The appropriate conclusion is therefore not that the abstraction has no effect of any kind. The evidence supports the narrower conclusion that no material deterioration in macroinvertebrate community composition or water-quality indication has been demonstrated within the wetted deprived reach.

A2.31 Whether abstraction has materially reduced total habitat area or macroinvertebrate production would require additional evidence, such as repeated wetted-width measurements, hydraulic habitat mapping, quantitative density or biomass sampling and defined measurements under different river-flow and abstraction conditions.

A2.32 I have reviewed Assessment of Barriers to Migration on the River Dart, prepared by Fishtek Consulting for the Dart Fisheries Association in March 2011 (CD29). The study assessed 20 barriers or migratory points of interest in the River Dart catchment.

A2.33 CD29 classified the weir and fish pass at Old Walls as a Moderate barrier. In the classification used by the report, a Moderate barrier was one considered likely to cause delays, particularly under certain flow conditions. It was not classified as a Severe or Very Severe barrier. The report recorded a total head drop of approximately 1.1 metres and placed Old Walls approximately 25.5 kilometres from the tidal limit.

A2.34 The principal physical deficiencies identified by CD29 were:

a. a relatively large upper head drop of approximately 0.8 metres;
b. shallow water in the pool within the fish pass; and
c. shallow water below the lower drop.

A2.35 Fishtek considered the pass to be suboptimal and recommended modifying or rebuilding it by dividing the upper drop, creating an additional pool and providing pool and tailwater depths greater than 0.5 metres.

A2.36 CD29 stated that reduced flow in the deprived reach might contribute to migration delay. That conclusion was expressed as a potential effect. The study did not include fish-counter data, telemetry, trapping or behavioural monitoring quantifying the number of fish delayed or prevented from passing.

A2.37 CD29 recorded good numbers of juvenile salmon upstream of Old Walls at that time. This indicates that some successful adult passage and spawning upstream had occurred before those juvenile surveys. It does not establish the proportion of migrating fish that passed, the duration of any delay, or whether passage performance was optimal.

A2.38 The targeted mitigation recommended in CD29 was improvement of the fish pass, at an indicative 2011 cost of £5,000–£10,000.

A2.39 CD29 did not recommend the present licence-variation package. I recognise, however, that its purpose was principally to assess barriers to upstream migration. It was not a detailed assessment of intake screening, downstream fish passage or abstraction licensing.

A2.40 In my opinion, CD29 demonstrates that fish-pass geometry is a potential contributor to migration delay at Old Walls. An assessment attributing delay to reduced flow must therefore distinguish, so far as possible, between:

a. the effect of flow in the deprived reach;
b. the physical performance of the fish pass;
c. attraction towards the leat or tailrace; and
d. wider catchment and marine pressures.

A2.41 The evidence presently available does not quantify the relative contribution of these factors. Improvement of the fish pass should therefore be considered as a targeted alternative or complementary measure when assessing the proportionality of the proposed licence changes.

A2.42 In my opinion, the West Webburn at Old Walls supports functioning aquatic habitats and communities. The deprived reach is not ecologically sterile, and the available site-specific macroinvertebrate evidence does not demonstrate deterioration in community composition or water-quality indication within the wetted channel.

A2.43 The evidence confirms the presence of trout at Old Walls and the wider historic and continuing use of the West Webburn by salmonids. It does not quantify the degree to which the hydroelectric infrastructure or abstraction affects fish passage, survival or population status.

A2.44 Abstraction is capable, in principle, of reducing wetted area, water depth and hydraulic diversity relative to a less abstracted condition. The ecological magnitude of that effect should be assessed using site-specific flow and habitat evidence rather than inferred solely from general guidance or catchment-scale fish trends.

A2.45 The leat is a long-established artificial aquatic habitat and was being used by trout during my May 2026 visit. Its ecological function should be included in a balanced comparison of options. Measures that increase river flow but reduce or intermittently remove habitat within the leat may produce both benefits and disbenefits.

A2.46 My overall conclusion is that the evidence demonstrates functioning ecology within the present river–leat system, while leaving uncertainty concerning the loss of total river habitat and the degree of fish-passage delay. That uncertainty should be addressed by targeted site-specific evidence and should not be treated as proof either that no effect exists or that the full proposed licence package is necessary.

B. Screening arrangements

B1. Proposed 6 mm screen at the head of the leat

B1.1 The ecological purpose of a screen at the head of the leat is to prevent fish from entering the artificial channel. In principle, excluding fish at the point of abstraction would avoid their diversion along the leat, possible delay at the forebay, exposure to predation or unsuitable conditions, and the risk of turbine passage if the downstream screen or bywash were ineffective.

B1.2 The potential benefit of screening at the head of the leat must, however, be considered alongside the particular hydrological and physical characteristics of the West Webburn. As set out above, the river is a steep and flashy upland watercourse that responds rapidly to rainfall. During spate conditions, it is capable of transporting sediment, grit, stones, woody material, leaves and other organic debris. A fine screen installed directly at the river frontage would therefore be exposed to substantially greater and more variable debris loading than the existing set-back screen at the forebay.

B1.3 I understand that a screen was previously attempted at or near the head of the leat when the present scheme was installed, but that the accumulation of stones, grit and other material during high-flow events made it difficult to operate and maintain reliably. The screen was consequently relocated to the forebay. The Environment Agency disputes aspects of the historical explanation but accepts that debris accumulation and screen blinding are relevant matters that must be addressed at the design stage. It also accepts that an improved set-back screen and bywash remain a potentially compliant alternative.

B1.4 The present 10 mm forebay screen prevents larger fish from entering the penstock and turbines. Its ecological limitation is that fish may first travel approximately 450 metres within the leat before reaching the screen. The bywash can return fish to the river, but its effectiveness depends on continuous operation, an adequately attractive flow, safe geometry and a suitable downstream return point. The Environment Agency describes the current bywash as capped and operated at the discretion of the site operator.

B1.5 For macroinvertebrates, neither a 10 mm nor a 6 mm screen would act as a complete biological barrier, because most drifting aquatic invertebrates would be capable of passing through either aperture. I have not identified evidence demonstrating that changing from a 10 mm to a 6 mm aperture would provide a material benefit to the macroinvertebrate community of the West Webburn. The more relevant ecological considerations are the effects of construction, altered local hydraulics, the interception of coarse organic material and any resulting change in the established aquatic habitat of the leat.

B1.6 CD5 is general guidance rather than a site-specific assessment of Old Walls. It allows alternative apertures, designs or operating arrangements where equivalent protection can be demonstrated. For cross-flow turbines, the guidance identifies a high risk of mortality where fish enter the turbine. Its default aperture for salmon and sea-trout smolts and adult eels is 10 or 12.5 mm, and Table S1 specifies no more than 10 mm for migratory salmonids in Devon and Cornwall. Where salmonid parr or young-of-year fish require protection, the guidance identifies a 6 mm aperture, which may be applied during the relevant seasonal period. The guidance therefore supports effective fish exclusion, but it does not establish that a permanent 6 mm screen at the head of the leat is the only means by which adequate protection can be achieved.

B1.7 A 6 mm aperture would be capable of excluding smaller juvenile salmonids than a 10 mm aperture. CD26 supports the presence of salmonids in the wider West Webburn system, and I observed brown trout of several sizes during my May 2026 fieldwork. However, the available information does not provide a quantified length-frequency distribution at the intake or identify how many fish would pass through a 10 mm screen but be excluded by a 6 mm screen. The evidence therefore supports consideration of juvenile fish protection, but it does not quantify the additional ecological benefit obtained by reducing the aperture from 10 mm to 6 mm.

B1.8 A reduction in aperture from 10 mm to 6 mm would also increase the amount and range of material retained by the screen. In a flashy river, the loading on the screen may change rapidly during a rainfall event. Leaves and small organic material may partially block the screen before larger debris arrives. This may reduce the effective open area of the screen and increase the velocity of water through the remaining unobstructed apertures.

B1.9 CD5 expressly recognises that screen apertures can become blocked by debris and that blockage increases the velocity of water approaching the remaining open screen area. This may reduce the ability of fish to escape or to be safely deflected. The guidance requires an automatically cleaned screen, as currently on site, to be sized on the assumption that at least 10% of the screen may be blocked. It gives maximum approach velocities of 0.60 m/s for salmonids and 0.50 m/s for eel.

B1.10 In my opinion, those standard allowances should not simply be assumed to be adequate at Old Walls; it should be properly informed by site specific detail and assessment. Without site-specific assessment, it is not possible to determine whether the screen would be suitable or adequate or provide the intended benefits.

B1.11 If the screen became substantially blinded, the potential consequences could include:

a) increased approach velocity through the remaining open screen area;
b) an increased risk of fish impingement against the screen face;
c) increased local turbulence and non-uniform hydraulic conditions;
d) difficulty in maintaining flow;
e) intermittent reduction of water and aquatic habitat within the leat;
f) increased frequency of cleaning and maintenance; and
g) a risk that the screen would not remain continuously effective during high-flow events.

B1.12 The Environment Agency itself explains that partial blinding reduces functional screen area, increases approach velocity and can result in fish becoming impinged on the screen, with a consequent risk of injury or mortality.

B1.9 In my opinion, the evidence presently available does not demonstrate that a permanent 6 mm screen at the head of the leat would provide a material ecological benefit over the existing maintained 10 mm screen. The Environment Agency's own guidance allows equivalent alternative protection, and the ecological balance cannot be completed without the site-specific assessment.

B2. Proposed permanent 25 mm tailrace screen

B2.1 Condition 9.4(ii) of the draft proposed licence, CD13, would require the installation of a screen with a maximum aperture spacing of 25 mm at point Q to prevent fish entering the tailrace.

B2.2 There is not presently a permanent screen installed across the tailrace. A removable rotating screen is kept at the site and is installed periodically by the operator. When it is not required, it is removed from the tailrace and stored on the bank.

B2.3 I understand that the timing of deployment is associated with anticipated conditions. Those conditions coinciding with periods when upstream migration by salmon and sea trout is more likely.

B2.4 CD12 states that a rotating drum screen was added to the tailrace in 2006 and is operated seasonally in autumn and winter to prevent upstream-migrating fish entering the attraction flow from the tailrace. It states that this is undertaken voluntarily and is not a requirement of the current licence. Elsewhere, CD12 describes the deployment periods as undefined high-risk periods selected by the operator.

B2.5 The tailrace is a short channel through which turbine discharge returns to the West Webburn. When the turbines are operating, the discharge may create a local attraction flow. Upstream-migrating salmon or sea trout may enter that flow rather than continuing along the principal river route.

B2.6 If fish enter the tailrace, the potential effects include temporary diversion, delay, expenditure of energy and repeated attempts to progress towards the turbine discharge. If fish enter while the turbines are stopped, there may also be a risk of their remaining within the channel when the machinery restarts.

B2.7 CD5 recognises that upstream-migrating fish may be attracted into tailrace channels and that this can delay or stop migration. It states that the need for a screen should be based on the layout of the scheme and the migratory species present. CD5 recommends that physical barriers should generally be placed close to the point where turbine flow returns to the river.

B2.8 I accept that this is a credible potential risk. However, I have not been provided with site-specific evidence showing:

a. fish entering the Old Walls tailrace;
b. the numbers, species or sizes of fish involved;
c. the duration of any delay;
d. injury or mortality associated with entry;
e. the velocity or discharge at the tailrace under relevant operating conditions; or
f. the relative attraction of the tailrace compared with the main river.

B2.9 The present arrangement relies on the operator anticipating when risk is likely to arise and physically installing the screen. The benefit of that approach is that the channel remains unobstructed outside the perceived risk periods and the screen is not continuously exposed to debris, wear and maintenance requirements.

B2.10 Its limitation is that fish migration does not occur only within fixed calendar periods. The West Webburn is a flashy river, and rainfall may create suitable migration conditions rapidly. Sea trout and salmon may therefore move during individual spates outside a narrowly defined autumn or winter period.

B2.11 A voluntary arrangement depends on the operator correctly predicting those events and being able to install the screen safely and promptly. The EA's concern that the current arrangement is not defined or enforceable is therefore understandable.

B2.12 That does not necessarily mean that a physical screen must remain installed throughout the year. The ecological objective is to prevent fish entering the tailrace when a material risk of entry exists. That objective might also be achieved through an enforceable operating protocol linked to:

a. turbine operation;
b. river flow or rainfall triggers;
c. recognised migration seasons;
d. shutdown and restart procedures; and
e. inspection and recording requirements.

B2.13 The EA proposes a maximum aperture of 25 mm. The existing removable screen aperture should be measured and recorded before any comparison is made. I have not identified reliable evidence confirming its present aperture.

B2.14 CD5 gives default physical tailrace-screen spacings of:

a. 40 mm for Atlantic salmon;
b. 30 mm where sea trout are present; and
c. exceptionally, 25 mm where many small sea trout are present.

It permits a different screening regime where a site-specific risk assessment demonstrates appropriate protection.

B2.15 The available data demonstrate that *Salmo trutta* occurs within the West Webburn. However, they do not provide a length-frequency distribution of upstream-migrating sea trout at the Old Walls tailrace. I have not identified evidence demonstrating that many unusually small adult sea trout approach this tailrace or that the exceptional 25 mm requirement is necessary.

B2.16 In my opinion, the evidence supports consideration of the ordinary 30 mm sea-trout standard. A requirement for 25 mm should be supported by site-specific evidence concerning the size distribution of fish likely to approach the tailrace or another identified reason why the ordinary standard would not provide adequate protection.

B2.17 A permanently installed screen may provide more consistent fish exclusion, but its effects depend on its precise design and location. Relevant matters include:

a. whether it is placed at the river–tailrace confluence or further inside the channel;
b. local flow velocity and turbulence;
c. bar shape and orientation;
d. debris loading and the risk of partial obstruction;
e. maintenance access;
f. whether fish could become trapped or delayed against the screen; and
g. whether the main river route remains readily identifiable and passable.

B2.18 A permanently installed screen would be exposed to all flow conditions, including spates. It may therefore intercept debris and require inspection and cleaning. The Environment Agency has not yet provided a site-specific design or assessment showing how the proposed screen would perform during high flows or how debris would be managed.

B2.19 The effect of the proposed abstraction changes should also be considered. The Q95 hands-off flow and 35% proportional take are intended to increase flow within the main river. A stronger main-channel flow may reduce the relative attraction of the tailrace, although it may not remove the risk entirely. No comparison of tailrace attraction under the current and proposed flow regimes has been presented.

B2.20 In my opinion, the current voluntary and periodic arrangement does not provide certainty that the tailrace will be screened whenever upstream-migrating fish could enter it. Formalising a reliable operating requirement would therefore provide a precautionary ecological benefit.

B2.21 I do not consider that the evidence presently demonstrates that a permanently installed screen is the only means of achieving that protection or that it is beneficial beyond the current arrangement. An enforceable seasonal, event-triggered or turbine-interlocked arrangement could potentially provide equivalent protection.

B2.22 I do not consider that the Environment Agency has demonstrated the need for the exceptional 25 mm aperture. CD5 identifies 30 mm as the ordinary standard where sea trout are present and 25 mm where many small sea trout occur. The evidence necessary to establish that exceptional circumstance has not been provided.

B2.25 My overall opinion is that reliable tailrace exclusion may be appropriate, but the material benefit and proportionality of a permanently installed 25 mm screen have not been demonstrated without:

a. a site-specific assessment of fish entry and attraction;
b. a hydraulic comparison under the existing and proposed abstraction regimes;
c. a design and debris-management assessment; and
d. comparison with an enforceable seasonal or event-triggered alternative.

C. Abstraction quantities and flow conditions

C1. Q95 hands-off flow, 35% take and 20 l/s sweetening flow

C1.1 The current licence requires a minimum residual flow of 0.025 m^3/s downstream of Old Walls Weir. It authorises abstraction at an instantaneous rate of up to 0.80 m^3/s but contains no condition requiring the amount abstracted to vary as a fixed proportion of the river flow.

C1.2 The draft licence in CD13 proposes a materially different regime. It would:

a. increase the hands-off flow from 0.025 m^3/s to 0.146 m^3/s;
b. restrict abstraction to 35% of the available flow above that hands-off flow;
c. retain the existing maximum instantaneous abstraction rate of 0.80 m^3/s;
d. permit a sweetening flow of up to 0.020 m^3/s into the leat when river flow is between 0.040 and 0.146 m^3/s; and
e. require all available flow to remain in the river when flow is below 0.040 m^3/s.

C1.3 The Environment Agency reports that, under its modelled current licensed scenario, residual flow is below Q95 for either 225 or 255 days per year, depending on which part of its evidence is used. Under the proposed conditions, it predicts that residual flow would be below Q95 for approximately 30 days per year.

C1.4 The Environment Agency predicts that the number of days on which residual flow is below the Environmental Flow Indicator would reduce from approximately 336 days to 197 days per year. It states that, under the proposed regime, flows would generally be only marginally below the EFI on those remaining days. The discrepancy between the EA's figures of 225 and 255 current days below Q95 should be resolved by reference to CD6 before the modelled results are relied upon quantitatively.

C1.5 On the Environment Agency's modelling, the proposed regime would therefore produce a substantial change in the hydrology of the deprived reach. I accept the predicted direction of that change. More water would generally remain in the river, and the residual flow would more closely reflect variations in the natural flow regime.

C1.6 It is important to distinguish between the current licence as modelled and the scheme's actual operation. The Environment Agency's model does not use continuous measurements of the total quantity entering the leat at Old Walls.

C1.7 The Environment Agency considers that the fully licensed scenario reasonably represents actual operation because reported annual abstraction has averaged approximately 90% of the licensed annual quantity and because the returns may omit water returned through the overflow or otherwise not passing through the turbines. Nevertheless, the comparison remains one between modelled licence scenarios rather than a continuous measured record of present residual flow.

C1.8 The modelled comparison is therefore suitable for identifying the likely direction and broad scale of change. In my opinion, it is less certain as a basis for precise claims about the number, timing and duration of individual ecological opportunities, particularly in a flashy upland river where flows can rise and recede rapidly.

C1.9 Increased residual flow would be expected to change several physical characteristics of the deprived reach, including:

a. wetted width and habitat area;
b. water depth in shallow sections;
c. hydraulic diversity;
d. connectivity between pools, runs and riffles;
e. duration of very shallow or poorly connected conditions; and
f. stronger and more variable flow cues for migratory fish.

C1.10 I accept that the proposed regime is likely to provide a habitat change within the deprived reach, the benefit or otherwise is however currently assumed.

C1.11 The site-specific macroinvertebrate evidence indicates that the wetted channel already supports a varied running-water macroinvertebrate assemblage. CD14 additionally reported biological indicators of good water quality and flowing-water habitat. The likely benefit of additional residual flow to macroinvertebrates is therefore principally a potential increase in the amount, continuity or hydraulic range of available habitat, rather than a demonstrated transformation of a degraded community into a good-quality community.

C1.12 Increased residual flow is also likely to improve the opportunity for fish to move through the deprived reach. Greater depth may reduce shallow hydraulic constraints, while flow variability may provide cues that stimulate the upstream movement of salmon and sea trout.

C1.13 The proposed licence variation does not include removal or substantial alteration of Old Walls Weir, nor does it require the structural deficiencies of the existing fish pass identified in CD29 to be remedied. The proposal instead seeks to increase the quantity and variability of water within the deprived reach while retaining the existing weir and fish-pass structure. Any ecological assessment must therefore distinguish between improvements attributable to increased residual flow and the continuing constraints associated with the existing fish-pass.

C1.14 More water may improve approach conditions, attraction flow and tailwater depth at the existing pass. It would not, however, directly remedy the large upper drop, inadequate pool dimensions or shallow tailwater identified in CD29. The extent to which the proposed flow regime would improve passage through the unchanged structure therefore remains uncertain without a site-specific hydraulic assessment.

C1.15 In contrast, modification or rebuilding of the existing fish pass would address the physical limitations identified in CD29 directly. Measures such as dividing the upper drop, creating an additional pool and increasing pool and tailwater depths could reduce the effort required to negotiate the structure, provide resting opportunities and improve the range of fish sizes and flow conditions under which successful passage could occur.

C1.16 A more effective fish pass could therefore improve the probability that adult salmon and sea trout reach upstream spawning habitat without undue delay or repeated unsuccessful passage attempts. That would not necessarily result in a directly proportionate increase in fish abundance, because the resulting population response would continue to depend on the other interacting factors set out below. Nor can it be assumed that increased residual flow alone would provide the same benefit as remedying the physical limitations of the pass.

C1.17 Fish abundance is the outcome of a series of interacting factors. For Atlantic salmon and sea trout, these include:

a. the number and condition of adults returning from the sea;
b. marine survival;
c. access through barriers elsewhere in the catchment;
d. attraction to and passage through the Old Walls reach;
e. the availability and quality of spawning habitat;
f. egg survival and juvenile recruitment;
g. water quality, temperature and sediment conditions;
h. disease, predation and extreme events; and
i. downstream survival during smolt migration.

CD29 similarly identified climate change, marine survival, barriers and flow regulation as possible contributors to salmon decline in the Dart catchment.

C1.18 Improving one of those factors may increase the probability of successful migration or survival, particularly where that factor is limiting. It does not follow that fish numbers will increase in direct proportion to the additional flow. If adult returns, marine survival, spawning habitat or another barrier is the principal limiting factor in a particular year, the population response to greater flow at Old Walls may be small or may not be detectable.

C1.19 There has been no before-and-after fish monitoring, fish counting, telemetry or controlled passage study comparing the current and proposed flow regimes. The Environment Agency confirms that direct physical fisheries monitoring was not undertaken because it considered the hydrological assessment and guidance sufficient.

C1.20 CD21 was unable to assign a level of impact to Old Walls from the available fish data. The Environment Agency's later explanation is that this reflected insufficient evidence rather than proof of no effect. That limitation applies in both directions: the absence of demonstrated harm is not proof of no harm, but the hydrological prediction is also not direct evidence of a specified increase in fish abundance.

C1.21 The evidence does not demonstrate that the proposed flow conditions would cause a measurable improvement in fish status over the full 18.7 km waterbody. Such an outcome would depend on the relative importance of Old Walls compared with the other pressures affecting the fish population.

C1.22 The proposed 20 l/s sweetening flow would maintain a wetted channel and some aquatic habitat within the long-established leat when river flow is below Q95. This should not be confused with facilitating fish entry into the leat, because the proposed 6 mm screen is intended to exclude fish at the point of abstraction. The remaining ecological function would principally comprise maintenance of wetted habitat for macroinvertebrates and other aquatic life, most of which would not be excluded by a 6 mm aperture.

C1.23 I have not seen a site-specific assessment identifying the particular ecological receptors that the sweetening flow is intended to protect, demonstrating that 20 l/s is the minimum flow required to sustain the ecological function of the leat, or quantifying the effects of complete cessation when river flow falls below 40 l/s. Nor has it been established whether fish would continue to occupy the leat following installation of a screen intended to prevent their entry. The benefit of retaining additional water in the river should therefore be considered alongside any loss, fragmentation or seasonal reduction of the established aquatic habitat within the leat.

C1.24 In my opinion, the proposed flow conditions are likely to produce a positive physical change within the approximately 600-metre deprived reach. They would be expected to increase the quantity and variability of residual flow and, depending on the prevailing river conditions, increase wetted area, water depth, connectivity and hydraulic diversity. I therefore accept that a local habitat benefit is probable.

C1.25 However, the degree of confidence reduces at each stage of the ecological response. More residual flow may improve the conditions in which fish approach the weir and may increase the frequency or duration of potential passage opportunities. Whether that produces more successful passage will depend on the hydraulic performance and structural limitations of the existing fish pass, which the proposed variation does not remedy.

C1.26 A further distinction is required between successful passage by individual fish and a measurable increase in fish abundance. For an increase in residual flow to produce additional adult or juvenile fish upstream, several events would have to follow:

a. fish must be present and attempting to migrate;
b. flow must currently be a material constraint;
c. the existing pass must be negotiable under the altered conditions;
d. adults must reach and use suitable spawning habitat; and
e. eggs and juveniles must subsequently survive and recruit.

Each stage is affected by factors other than the abstraction regime at Old Walls.

C1.27 The available evidence does not quantify any of those relationships. There is no fish counter, telemetry study, quantified estimate of existing or predicted pass efficiency, before-and-after fish survey, spawning assessment or recruitment study from which a numerical uplift in salmon, sea trout, brown trout or eel abundance could be calculated. Nor is there a site-specific hydraulic assessment demonstrating how the unchanged fish pass would perform across the relevant migration-flow range.

C1.28 The plausible ecological outcomes therefore range from a detectable improvement in local habitat with little or no detectable population response, through to some increase in passage and upstream habitat use in years when residual flow at Old Walls is a material limiting factor. A larger population response is possible only if Old Walls is presently an important constraint and other factors do not remain limiting. The evidence does not allow probabilities, or numerical fish increases to be assigned to those outcomes.

C1.29 It would therefore be inappropriate to predict a particular percentage increase in fish numbers or to equate the predicted increase in flow automatically with a change in fish status from moderate to good. The appropriate conclusion is that a local habitat benefit is probable, an improvement in fish-passage opportunity is unclear and but the magnitude and spatial extent of any resulting fish-population response is unknown.

C1.30 Resolving the uncertainty would require, as a minimum, site-specific hydraulic assessment of the existing pass and appropriately designed monitoring of passage and fish populations over a sufficient period before and after implementation. In the absence of that evidence, no scientifically defensible numerical forecast can be made.

C1.31 This uncertainty is material to the cost-benefit assessment. That assessment does not merely value the certain physical increase in flow over the deprived reach. It assumes a change in the fish component from moderate to good over 18.7 kilometres of the West Webburn waterbody. No quantitative passage or population evidence is provided to demonstrate that the proposed local flow change would produce an improvement of that magnitude or spatial extent. The assessment also values the measures as a bundle and contains no sensitivity analysis testing a smaller, delayed or absent fish-status response.

C2. Reduction in annual abstraction volume

C2.1 The annual maximum would be reduced to 10,502,497 m3. The Environment Agency states that this figure is the modelled maximum available under the proposed HoF and 35% take, with a 10% buffer.

C2.2 The Environment Agency (EA) expressly agrees that the annual-volume reduction provides no additional environmental benefit; the environmental restriction is produced by the HoF and percentage take. The annual figure is therefore principally an administrative and enforceability consequence.

C2.3 In my opinion the reduction in annual quantity is not likely, independently, to produce a material ecological benefit.

C3. Maximum outfall velocity

C3.1 Condition 9.7 would limit discharge velocity at point Q to 0.5 m/s. The Environment Agency describe this as a standard condition intended to prevent upstream migrants being attracted into or distracted by the discharge.

C3.2 There has been no assessment of the current outfall velocity and the duration for which it exceeds 0.5 m/s or observed fish behaviour at the outfall. Without those facts, the benefit cannot be quantified.

C3.3 The supplied guidance supports managing attraction at outfalls but does not establish 0.5 m/s as a universal maximum. CD17 notes that upstream-migrating elvers can achieve an average burst speed of about 0.5 m/s and suggests 0.7-0.8 m/s may prevent elver ascent, while warning that such velocity may attract larger migratory fish. The ecological consequence therefore depends on the geometry, direction and competing river flow, not the numerical velocity alone. Without measured present and proposed velocities and fish-behaviour evidence, condition 9.7 has not been shown to provide a material benefit at Old Walls.

D. Conclusion

D1. Ecological effects of the proposed licence changes taken as a whole

D1.1 I have considered each element of the proposed licence variation separately and in combination. In my opinion, the proposal should not be treated as a single united ecological measure. The individual conditions have different purposes, different evidential foundations and different potential benefits and disbenefits.

D1.2 The available site-specific evidence demonstrates that the existing river–leat system supports functioning aquatic habitats. CD14 and my May 2026 assessment found a varied macroinvertebrate community within the wetted deprived reach, broadly comparable with that recorded upstream and downstream. I also observed trout within the river, deprived reach and leat. The present evidence does not demonstrate that the deprived reach is ecologically sterile or that its macroinvertebrate community is materially degraded.

D1.3 That evidence does not establish that the abstraction has no ecological effect. In particular, abstraction is capable of reducing the total area, depth, connectivity and hydraulic diversity of river habitat compared with a less abstracted condition. Neither CD14 nor my May 2026 assessment was designed to quantify the total amount of habitat lost or the carrying capacity of the reach under alternative flow regimes.

D1.4 Of all the considerations, increased residual flow is likely to result in the most noticeable change.

D1.5 The magnitude and precise timing of that change remains uncertain. The hydrological assessment is based on transposed flows and a modelled licensed scenario rather than continuous measurements of river flow and total abstraction at Old Walls. That does not invalidate the predicted direction of change, but it limits the confidence that can be placed on precise estimates of the number of days below particular flow thresholds.

D1.6 Increased flow is likely to improve some aspects of fish passage, including approach depth, connectivity and flow cues. I do not suggest that additional water would provide no benefit to fish.

D1.7 However, Old Walls Weir and the existing fish pass would remain in place. CD29 identified the fish pass as a Moderate barrier and recorded structural limitations including a large upper drop, shallow pool depth and insufficient depth below the pass. The proposed licence variation does not require those structural limitations to be remedied.

D1.8 More residual flow may improve the hydraulic conditions at the pass at some flows. At other flows, increased discharge through an unchanged structure could increase velocity, turbulence or energy dissipation. A site-specific hydraulic assessment is required before it can be concluded that the existing pass would become suitable across the full migration-flow range.

D1.9 I therefore cannot quantify the success or otherwise of the proposed changes in relation to fish migration, spawning or success within the River upstream of the weir.

D1.10 Fish abundance and population status are affected by several interacting factors, including marine survival, adult returns, barriers elsewhere in the catchment, spawning habitat, juvenile survival, water quality, temperature and downstream smolt survival. No fish-counter, telemetry or before-and-after monitoring has been undertaken to establish a relationship between residual flow at Old Walls and fish numbers.

D1.11 The evidence does not demonstrate that the proposed changes would improve fish status from moderate to good across the West Webburn waterbody. A local improvement in habitat or passage opportunity may benefit fish using habitats farther upstream, but the magnitude and spatial extent of that response have not been established.

D1.12 Effective intake screening is capable of reducing the risk of fish entering the leat and subsequently approaching the turbines. A screen at the head of the leat would have the advantage of excluding fish at the point of abstraction and removing reliance on the set-back screen and bywash.

D1.13 I do not consider that the evidence demonstrates that a permanent 6 mm screen at the head of the leat would provide a material net ecological benefit over the existing maintained 10 mm forebay screen, or over an improved set-back screen and permanently operating bywash.

D1.14 CD5 supports screening for migratory salmonids and identifies finer screening where juvenile salmonids require protection. It also allows alternative designs or arrangements where equivalent environmental protection can be demonstrated.

D1.15 A permanent 6 mm river-frontage screen would be exposed to sediment, leaves, woody material and other debris transported during the rapid spate conditions characteristic of the West Webburn. Partial blinding could reduce effective screen area, increase local approach velocities and create risks of fish impingement or interruption of flow into the leat.

D1.16 Those risks do not establish that a 6 mm screen could not be designed to operate effectively. They do mean that the ecological benefit cannot be determined from aperture and location alone. A site-specific design, hydraulic assessment, debris-management strategy and construction method are required.

D1.17 The existing voluntary and periodic tailrace-screening arrangement does not provide certainty that the tailrace will be screened whenever upstream-migrating fish could enter it. A defined and enforceable operating requirement would therefore provide a precautionary ecological benefit.

D1.18 I do not consider that the evidence demonstrates that a permanently installed physical screen is the only means of achieving that protection. An enforceable seasonal, event-triggered or turbine-interlocked arrangement could potentially provide equivalent protection, subject to demonstrating that it would respond reliably to the rapid and sometimes unseasonal spate conditions of the West Webburn.

D1.19 I also do not consider that the Environment Agency has demonstrated the need for a maximum aperture of 25 mm. CD5 identifies 30 mm as the ordinary physical-screen spacing where sea trout are present and 25 mm as an exceptional requirement where many small sea trout occur. The site-specific length-frequency evidence necessary to demonstrate that exceptional circumstance has not been provided.

D1.20 The proposed flow regime may also increase the proportion and attractiveness of flow remaining in the main river relative to the tailrace. No hydraulic comparison has been presented to establish the residual tailrace-attraction risk under the proposed regime.

D1.21 The Environment Agency accepts that reducing the annual licensed quantity would provide no ecological benefit independently of the hands-off-flow and proportional-take conditions. I agree. The annual quantity is principally an administrative consequence of the proposed operating restrictions.

D1.22 I have not identified site-specific evidence demonstrating that the proposed maximum outfall velocity of 0.5 m/s would provide a material ecological benefit.

D1.23 The ecological consequences of an outfall depend on its geometry, its relationship with the main river flow and the species and sizes of fish involved. The numerical limit should therefore be supported by a site-specific hydraulic and fisheries assessment rather than applied solely as a standard condition.

D1.24 The leat is a long-established artificial aquatic habitat. During my May 2026 visit, I observed trout within it. The proposed sweetening flow may retain some habitat within the leat at low river flows, but no assessment has demonstrated whether 20 l/s is sufficient to maintain its ecological function.

D1.25 Any reduction or interruption of flow to the leat could cause loss or fragmentation of aquatic habitat. That potential disbenefit should be assessed alongside the predicted benefit to the natural river channel.

D1.26 The construction of new intake controls, measurement structures and screens could also cause temporary ecological effects through access, bed or bank disturbance, dewatering, sediment release and accidental pollution. The scale of those effects cannot be assessed until the designs and construction methods are available.

D1.27 Taking the proposed licence changes as a whole, I do not consider that the evidence demonstrates that every individual condition would provide a material benefit. In particular:

a. the permanent 6 mm head-of-leat screen has not been demonstrated to provide a material net benefit over equivalent alternative screening arrangements;
b. the need for a permanently installed 25 mm tailrace screen has not been demonstrated by site-specific evidence;
c. the annual-volume reduction provides no independent ecological benefit; and
d. the 0.5 m/s outfall-velocity limit has not been supported by measurements or fish-behaviour evidence.

D1.28 The benefit arising from increased river flow should also be distinguished from the continuing structural limitations of the fish pass. Increasing residual flow does not necessarily remedy those limitations.

D1.29 My overall conclusion is therefore that there may be an ecological case for changing the present flow regime, but the Environment Agency has not demonstrated that the complete package in the precise form proposed is necessary or proportionate to secure that benefit.

D1.30 In my opinion, a more proportionate package would retain the beneficial flow objectives while allowing site-specific and demonstrably equivalent solutions for intake screening, tailrace exclusion and outfall operation. It should also take account of the ecological function of the leat and the physical performance of the existing fish pass.

D2. Cost-benefit analysis

D2.1 My expertise is in ecology, environmental assessment and the interpretation of ecological evidence. I am not a valuation economist, quantity surveyor or hydropower engineer. My opinion on CD16 is therefore directed principally to the ecological assumptions on which the stated benefits depend and to whether the assessment transparently compares those benefits with the complete range of likely costs and alternatives.

D2.2 CD16 applies the National Water Environment Benefit Survey methodology. It assigns:

a. a fish-status improvement from moderate to good over 18.7 km of the West Webburn waterbody; and
b. a flow improvement from bad to good over 0.6 km of the deprived reach.

D2.3 The assumption of a moderate-to-good fish-status improvement over 18.7 km requires particular scrutiny. The RSA driver is described as local, and the direct hydrological effect occurs principally within the approximately 0.6 km deprived reach.

D2.4 A local improvement in passage opportunity could benefit migratory fish using habitat farther upstream. However, the available evidence does not demonstrate that Old Walls is responsible for moderate fish status across the whole waterbody or that implementing the proposed conditions would raise fish status to good over 18.7 km.

D2.5 The fish evidence identifies several potential pressures, including marine survival, catchment-wide salmon decline, other barriers, habitat conditions and flow regulation. The relative contribution of Old Walls has not been quantified.

D2.6 CD21 was unable to assign a level of fish impact at Old Walls from the available data. The Environment Agency explains that this was due to insufficient evidence rather than proof of no effect. That limitation also means that the scale of the predicted benefit cannot be assumed without further evidence.

D2.7 The assumed flow improvement over the approximately 0.6 km deprived reach is more closely aligned with the direct physical effect of the abstraction. However, the description of a change from “bad” to “good” should be reconciled with:

a. the prediction that residual flows would remain marginally below the EFI on approximately 197 days per year;
b. the good macroinvertebrate and water-quality evidence recorded in CD14;
c. my comparable May 2026 observations; and
d. the absence of a site-specific quantitative assessment of habitat area or biomass under the current and proposed regimes.

D2.8 Those matters do not mean that increased residual flow would provide no benefit. They mean that the ecological baseline and the magnitude of the predicted class improvement require clearer justification.

D2.9 CD16 values the proposed conditions as a bundle. It does not identify the separate benefit attributable to:

a. the Q95 hands-off flow;
b. the 35% proportional take;
c. the 20 l/s sweetening flow;
d. moving the intake screen to the head of the leat;
e. reducing the intake aperture to 6 mm;
f. formalising tailrace screening;
g. specifying a 25 mm tailrace aperture;
h. reducing the annual volume; or
i. imposing the 0.5 m/s outfall-velocity limit.

D2.10 The assessment therefore does not demonstrate that the complete package is more cost-beneficial than a more targeted option that secures improved residual flows and reliable fish protection through less onerous or site-specific measures.

D2.11 The cost figures are generic rather than based on a completed design, contractor quotation or site-specific assessment. At the time of CD16, the dimensions and engineering arrangements for the head-of-leat screen, automatic cleaning, control structures, measurement equipment and permanent tailrace screen had not been agreed.

D2.12 The assessment does not appear to include the full potential costs of:

a. access and temporary works;
b. riverbed and bank works;
c. design and approval;
d. automatic cleaning and debris handling;
e. maintenance during spate conditions;
f. downtime and operational interruption;
g. compliance monitoring;
h. future replacement; or
i. ecological mitigation during construction.

D2.13 CD16 also expressly excludes loss of hydroelectric generation. Whatever the legal treatment of compensation, that loss is a real economic consequence of the proposed option and is relevant to any assessment described as a comparison of benefits and costs.

D2.14 No sensitivity analysis was undertaken despite uncertainty concerning:

a. the 18.7 km fish-benefit length;
b. the assumed ecological status changes;
c. the risk that the anticipated fish response may not occur;
d. the final engineering design;
e. the capital and maintenance costs;
f. loss of generation; and
g. the feasibility and cost of alternative measures.

D2.15 The reported benefit-cost ratio of 7.2 is therefore dependent on inputs that have not been tested against reasonable lower-benefit or higher-cost scenarios.

D2.16 In my opinion, the fact that the central estimate is greater than one is not, by itself, a sufficient reason not to undertake sensitivity analysis. Sensitivity analysis is particularly important where both the ecological benefit and engineering cost remain uncertain.

D2.17 I do not conclude that the proposed changes have no economic or ecological benefit. My opinion is that CD16 does not presently provide a sufficiently robust basis for relying on the stated benefit-cost ratio of 7.2 as proof that the complete licence package is proportionate.

D2.18 The ecological benefits appear to be overstated or insufficiently evidenced in relation to the assumed 18.7 km fish-status improvement, while the costs are incomplete because they are generic and exclude generation losses and other site-specific consequences.

5.0 Expert declaration and statement of truth

5.1 I understand that my duty is to assist the decision-maker on matters within my expertise and that this duty overrides any obligation to the party instructing or paying me.

5.2 I have made clear which facts and matters referred to in this proof are within my own knowledge and which are derived from other sources.

5.3 I have indicated the qualifications and limitations affecting my opinions. Subject to those matters, the opinions expressed in my final signed proof will represent my true and complete professional opinion.

Signed: 

Dated: 14-July-2026