

25_02583_FUL - Parish Council - Objection

Application Reference: 25_02583_FUL

Proposal: Wetland enhancement works upstream of Sherborne Broadwater to reconnect river with floodplain, manage silt, preserve open water, improve biodiversity, and mitigate flood risk.

Objector: Sherborne Parish Council

Address: c/o Brook Cottage, Sherborne, GL54 3DU

Date: 21 November 2025

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Appendix 2 – Hydrological Review Report

This document should be read in conjunction with all documents submitted by Sherborne Parish Council.

Because the Parish Council lacks the necessary expertise to judge the efficacy of the scheme and the potential for additional flood risk, we have commissioned a Hydrological Review report in order to fully understand the technical details of the scheme and to make an informed consultation response.

The report has been undertaken by Dr Paul Webster (Principal Hydrologist at Corylus Planning & Environmental Ltd) and was funded via 18 donations received from members of the community.

1 *Introduction*

This letter is v2 of a hydrological review of the captioned planning application, as instructed by Sherborne Parish Council. The scheme is described in the Design & Access Statement and shown in drawing JPD-JBAU-XX-XX-DR-C-1002 Rev P01 (Sherborne Brook Restoration – General Arrangement) undated. A Report by JBA has also been submitted; it is a Flood Risk Analysis report and describes the use of a flood model to investigate the proposed scheme.

This response has been informed by site visits on 5th November 2019 and 2nd July 2025 when I met with local residents and undertook inspections of the river, lakes and weirs.

I have appended my mini CV to this letter to illustrate my experience and credentials for undertaking this review.

In my opinion, this is an ill-conceived scheme. It is unlikely to deliver the intended benefits and may even exacerbate existing problems. The justification for this statement is presented in this letter:

- Section 2 in which I review aspects of the scheme
- Section 3 in which I review the Flood Risk Analysis Report referred to as the JBA Report.

My findings and recommendations are summarised in Section 4.

2 *Review of the Scheme*

Poor explanation of physical processes at play

- The JBA Report provides the following explanation of processes in #1.2. *“This leads to unnatural sediment sinks (i.e. sediment accumulation) because the flow within the brook does not have sufficient energy to carry and transport sediment downstream. Overtime, vegetation has embedded itself within the deposited material and encroached from the channel margins, reducing the width of the Broadwater Lakes”.*
- However, there is no context for this explanation, no supporting data and no reference to the timeline of the emergence of this problem and its relationship with historic maintenance activity.
- This is an oversight given the nature and scale of the proposed interventions by the Applicant.

The JBA Report assumes that the growth of vegetation follows from the deposition of silt. This mechanism is supported in part by the sequence of photos shown in

- *Figure 1.* However, the postulated mechanism fails to acknowledge the encroachment by marginal vegetation which is evident, particularly on the northern bank of Broadwater. This is unlikely to be dependent upon siltation and would not therefore be affected by the proposed scheme.

Figure 1: View upstream of Broadwater

(a) February 2013



(b) 27th June 2025



Photos provided by Sherborne Parish Council. Note that the Poplar plantation to the left on the left-hand photo was felled in November 2024

It is also important that the sediment sources are clearly understood prior to any intervention. Whilst there is no baseline data nor observations in the JBA Report, local residents, to their credit, have undertaken some Citizen Science investigations. Some of their work is summarised in

- *Figure 2* and shows how the main flow in the Brook is clear (Sample B) whilst the inflow from the highway drains to both banks is turbid (Samples A & C) during November 2023. The same effect was also observed in September 2024 (*Figure 3*).
- These observations have led the local residents in conjunction with the Trust to install silt traps and to maintain road grips as direct ways of reducing sediment runoff to the Brook.
- Anecdotally, these measures appear to have been very effective in reducing the amount of direct road run-off into the Brook. However, these measures will require regular maintenance by the community and the Trust. Proposals for an enhanced community scheme involving the construction of some shallow swales and a few small interceptor

ponds / basins on NT land have been prepared and were shared with the Trust 5 to 6 years ago, but without response.

Figure 2: Citizen Science investigation of water quality - November 2023

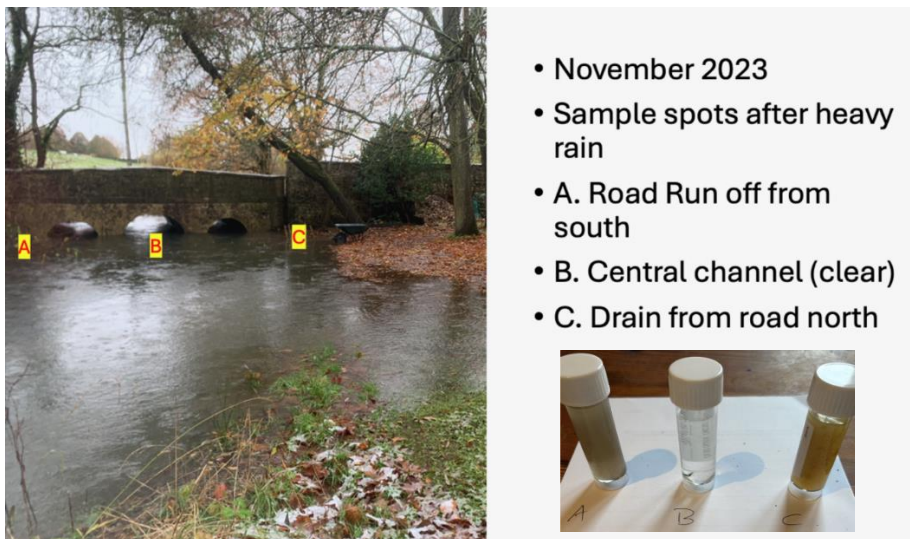


Figure 3: Citizen Science investigation of water quality - September 2024



Would the scheme actually work?

- The supporting documentation is completely lacking in any performance analysis of the scheme. This is a serious omission given its likely cost.
- An elementary hydrological analysis is given in Appendix B, from which it is deduced that the threshold flow at which the scheme would operate would be exceeded on just 4.9% of the time. Furthermore, the volume of flow above this threshold would be just **2.7% of the total flow volume**. The percentage actually spilling into the scheme would be lower still, since there would still be some onward flow into Broadwater above the flow threshold.
- It is accepted that silt concentrations are higher during floods, higher percentages of silt would be transferred into the scheme. However, it seems patently clear that the bulk of the silt load would continue to flow into the Broadwaters.

What is the purpose of infilling the ditch that flows across the Site?

The ditch conveys water from a spring on the south side of the valley towards the Brook (

- *Figure 4* and 5). It flows continuously, with enhanced flows in winter and spring. Lack of maintenance in recent years has led to colonisation by aquatic and marginal vegetation. This reduction in conveyance has led to the ditch spilling onto adjacent woodland/meadow area which is now seasonally wet; previously it was dry throughout the year.
- In the scheme, it is proposed that the ditch is infilled. The likely consequences, aside from loss of habitat, would be twofold. Flow from the spring would be directed towards the areas of “floodplain lowering” where they would lead to elevated groundwater levels and marshy conditions. Secondly, the Brook would be deprived of the flow contribution from the spring – a largely “clean” source with low silt concentrations.
- The second impact seems to be contrary to the principles of sustaining open water in Broadwaters.

Figure 4: The ditch to the south of the Brook

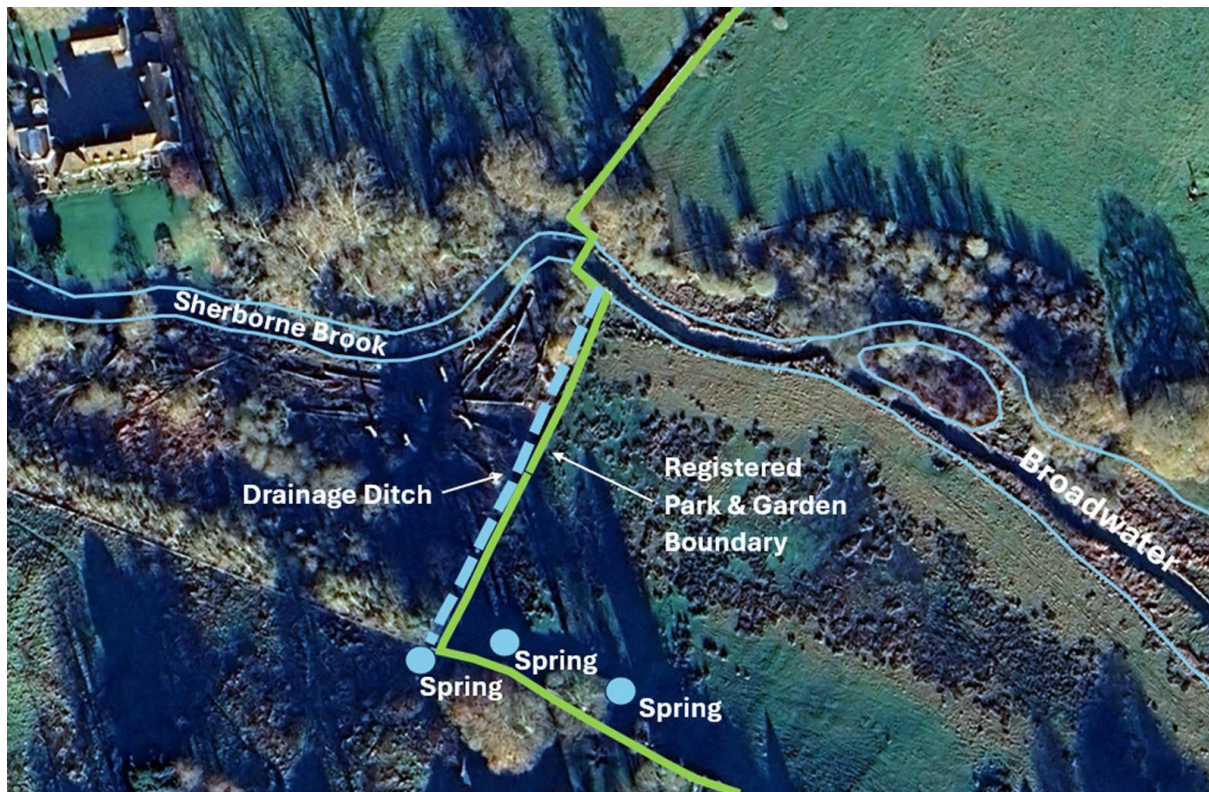


Figure 5: View of ditch

(a) July 2025



(b) Oct 2025



(c) Oct 2025



Will the in-channel “timber blockages” have the desired effect?

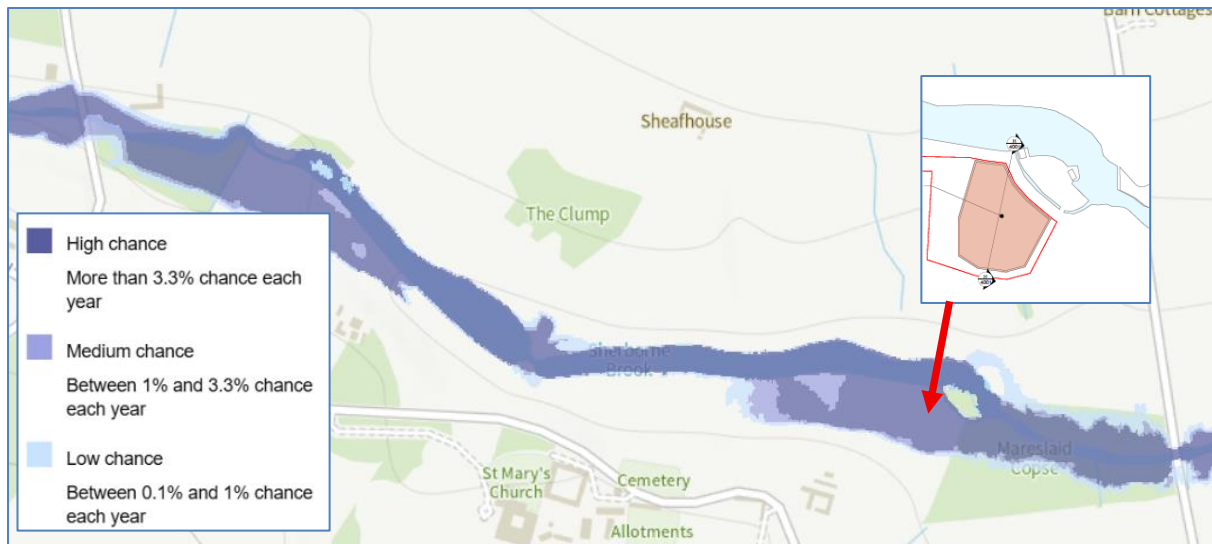
- These barriers are intended to slow the flow, so as to increase water levels and promote spill onto the floodplain. However, as noted above, a substantial proportion of the river flow will remain in the channel. This portion will be subject to the effects of the barriers; it will be slowed which will encourage it to deposit its load within the channel.
- Such action is liable to create a new problem of channel incapacity which may have flood risk implications.

Why is the deposition area in the floodplain?

It is proposed that the excess soil from the scheme will be deposited at the location shown in

- *Figure 6* on the downstream bank of the Lower Lake. This is in an area with a “high chance” of flooding, with an annual probability of greater than 1 in 30. This is classed as flood Zone 3b which is “**functional floodplain**”.
- This is contrary to the NPPF and associated guidance where there is no provision for such activity. Even if it was to be an acceptable activity, the Environment Agency would expect to see flood storage compensation on a level for level basis.
- It is remarkable that of all of the available areas within the Estate, that the Applicant has selected such an unsuitable location for deposition and that JBA should have not advised them properly.

Figure 6: Location of deposition area



How will the scheme be maintained?

- The proposed scheme will require maintenance of the scrapes and lowered areas of floodplain as well as the Brook, where it has been noted that additional sedimentation is likely to occur.
- The supporting documents make no mention of how the scheme will be maintained.

3 **The JBA Report - Flood Risk Analysis**

This is NOT a Flood Risk Assessment

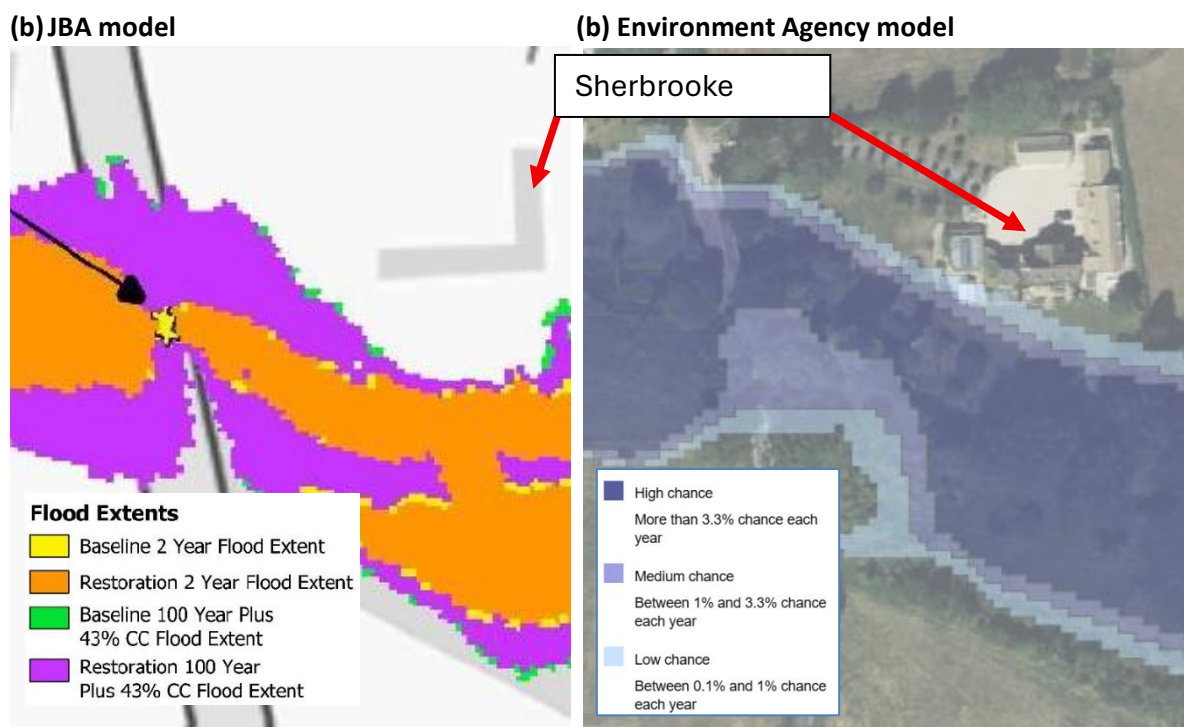
- Rather confusingly, the document is referred to on the Planning Application web site as a Flood Risk Assessment. It is clearly NOT a Flood Risk Assessment, failing as it does to address the issues in the checklist for a site-specific FRA in NPPG Guidance ¹.
- Rather, the report describes the results from the modelling of the Brook and largely comparing the impacts of the scheme with baseline conditions. The description of the model is very limited and is not sufficient to enable any sensible audit of the assumptions.

There is no attempt to validate the model

- Whilst calibration of flood models is not usually possible, some attempt should be made to compare baseline results with historic extents (e.g. July 2007) and Environment Agency flood model extents. Neither of these is presented.
- *Figure 7* compares the flood extents from the JBA and the Environment Agency model, as accessed on their website (4th October 2025). There are some notable differences in extent, especially adjacent to the principal flood receptor of Sherbrooke House.

¹ [Flood risk and coastal change - GOV.UK](https://www.gov.uk/government/publications/flood-risk-and-coastal-change)

Figure 7: Comparison of modelled flood extents



On the impacts of the proposed scheme on flood extents

The JBA model results in

- Figure 7a show that post restoration flood extents (in orange and blue) are slightly smaller than the baseline conditions (in yellow and green) near Sherbrooke House – this for the 1 in 2 and 1 in 100 with 43% CC.
- This suggests that the proposed scheme will not lead to an increase in water levels. The increases in levels due to the timber blockages will be more than offset by the lowered sections of bank which will encourage flow onto the floodplain.

The impacts of the deposition are less clear from the modelled extents (

- *Figure 8*); however, since individual pixels of yellow and green for the baseline are visible on the margins, it appears as if the impacts of the scheme are negligible, as is suggested in the text.
- It would have been useful to the community to provide design flood levels in tabular form in the report for key locations, especially Sherbrooke House. Further, this should reflect the fact that the range in river levels between peak flood flows and drought flow is likely little more than about 50 cm.

Figure 8: Impacts of restoration on flood extents



4 Summary and Recommendation

This Report is a brief review of the proposed river restoration scheme for the Sherborne Brook upstream of the Broadwaters Lakes on the Sherborne Park Estate. It has been undertaken on behalf of the Sherborne Parish Council as part of their response to the Planning Application. The main findings are as follows:

- i. The JBA Report provides an incomplete explanation of the physical processes thought to be responsible for the loss of open water. Observations of the Broadwaters coupled with observations through Citizen Science projects highlight the need for a more complete explanation of the processes.

- ii. Elementary flow analysis using data from a similar adjacent catchment has shown that only 2.7% of the flow volume is above the suspected flow threshold for the scheme. Even allowing for the higher concentrations of silt during floods, this suggests that the scheme is unlikely to be effective in reducing silt concentrations.
- iii. The proposed scheme features flow baffles to slow the flow and raise water levels. The consequences of such baffles on in-river deposition has not been addressed, nor has the overall maintenance of the scheme.
- iv. Under the proposed scheme, the arisings from the lowering of the floodplain are to be deposited adjacent to the Lower Lake, which is in flood zone 3b and would be contrary to the NPPF Guidance.
- v. The JBA Report, identified as a Flood Risk Assessment on the CDC web site but which it is not, describes the application of a flood model to investigate the flood levels for baseline and post-restoration conditions. The modelling shows that the proposed scheme will not lead to an increase in flood levels upstream of the scheme nor of the main area of deposition. Whilst this is an encouraging finding, further validation work is needed to compare the model results with those provided on the EA web site.

The recommendations to the Applicant are as follows:

- i. The Applicant should go back to the beginning. They should seek an improved understanding of the mechanisms utilising baseline information. This should include reference to the silt concentrations in time and space and the timeline of the vegetation/open water mix for the Broadwaters.
- ii. Having established a sound conceptual model, the Applicant should then undertake an Options Appraisal. This should be supported by relevant hydrological and hydraulic analysis. The Options to be considered should include the proposed scheme as well as a range of conventional vegetation maintenance strategies.
- iii. Engagement should be undertaken with the local Community, who are likely to be supportive in making observations, gathering data, providing labour and generally contributing to the development of a viable, sustainable scheme for the Broadwaters.

In summary, this is an ill-conceived scheme which, in its current form, should be rejected.

Yours sincerely,

Dr Paul Webster, BSc, MSc, DIC, PhD, FCIWEM, C.WEM

for Corylus Planning & Environmental Ltd

Appendix A – Short CV for Dr Paul Webster



DR PAUL WEBSTER

BSc, MSc, PhD, DIC, FCIWEM, C.WEM

Principal Hydrologist

Corylus Planning & Environmental Ltd

Specialisations

Hydrology, Flood Management, Hydrometry & Water Resources

Education

BSc, Physical Geography, University of Bristol (1979);
MSc, DIC, Engineering Hydrology, Imperial College (1980);
PhD University of Birmingham (1998).

Career

Principal Hydrologist, Corylus (2019 to date)
Consultant, Hydro-Logic Services (2017 to 2019); Director & Head of
Consultancy, Hydro-Logic Services / Hydro-Logic Ltd (2000 to 2016);

	Lecturer and MSc (Water Resources Technology & Management) Course Leader, School of Civil Engineering, The University of Birmingham (1991 to 2000) Senior Hydrologist, Mott MacDonald (1986 to 1991); Hydrologist, Department of Water Affairs, Namibia, (1981 to 1984); Senior Hydrologist (1984 to 1986) International experience in Namibia, Botswana, China, Singapore, Hong Kong, Ghana, Nigeria, Pakistan and Malawi with analysis/modelling using data sets from Ethiopia, South Africa, Yemen and Somaliland.
Other positions	Hon. Lecturer, School of Civil Engineering, The University of Birmingham. Volunteer hydrologist to Dorset Wildlife Trust & National Flood Forum.
Previous positions	Member of BHS National Committee (1992 to 2000); Member of CIWEM Rivers and Coastal Group Committee (2004 to 2008) Chaired steering group on revisions and developments for the Flood Estimation Handbook (2001 to 2007).
Key experience	Experienced hydrologist with capability to provide advice and consultancy services on a wide range of projects. Experienced Project Manager Expert witness at public inquiries plus Expert Reports.
Publications	Over 20 papers published on water resources and flood management.
Presentations	Presented papers at national and international meetings. Has organised numerous regional and national meetings for BHS and CIWEM.

Appendix B – Flow frequency analysis

There is no flow measurement station on the Sherborne Brook. However, there is an Environment Agency river flow gauge on the Windrush at Bourton on the Water (39142). This has operated since 1995 and has a contributing catchment area of 65.5 km² which is similar to the Sherborne Brook at the downstream end of the Broadwater of 56.6 km². Crucially, the catchments are very similar in terms of their underlying geology. The gauge at Bourton is thus a suitable analogue for the Sherborne Brook.

39142 - Windrush at Bourton on the Water

Station info	Daily flow data	Live data	Catchment info
Grid reference:	SP160209		
Hydrometric area:	39 - Thames		
Catchment area:	65.5 km ²		
Measuring authority (local station number):	Environment Agency - Thames (1020TH)		
Station summary description:	Gauging station located in the upper reaches of the River Windrush.		
NHMP index site:	No		
General description:	Crump weir. U/s and d/s levels monitored.		
Flow record description:			
Hydrometric description:	The structure rarely drowns but submerged during exceptional floods.		
Flow regime description:	Baseflow-dominated regime with significant groundwater abstraction.		

It is clear from Figure 1-1 of the JBA Report that a 1 in 2 annual probability flow (QMED) is the threshold flow at which the Sherborne Brook scheme receives sufficient water to inundate the proposed excavations, but not to spill back into the Brook.

Whilst QMED is not available directly for the Windrush at Bourton, it is similar to the 5% exceedance flow. This is based on the nearby and hydrologically similar catchments of the Coln at Bibury (39020) and the Leach at Lechlade (39042).

The 5% exceedance flow at Bourton is 1.66 m³/s based on the NRFA web site.

Daily flow data has been extracted from the NRFA web site from 1995 to 2024, the analysis of which confirms the following:

- That QMED (5% exceedance flow) would have been exceeded on 4.9% of the days;
- The flow “volume” that exceeds this threshold is just 2.7% of the total flow volume.