

## Berwick Upon Tweed Storm Overflows Scheme – Assurance Report

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Northumbrian Water  
SN024/3954

Berwick Upon Tweed Storm Overflows AID Scheme Assurance  
28 February 2025



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## 1. Background

Northumbrian Water's Drainage and Wastewater Management Plan (DWMP) identified 31 storm overflows in the Berwick Upon Tweed catchment as requiring interventions to meet the targets outlined in the Storm Overflows Discharge Reduction Plan (SODRP). Under its accelerated infrastructure delivery programme, in June 2023 Ofwat granted Northumbrian Water final approval for acceleration of work to progress a 'concept and definition' feasibility phase to understand the full range of interventions required to reduce storm overflow spills at 31 locations in the Berwick Upon Tweed catchment. The work is being delivered by Stantec and includes verification of the model to identify the root cause of spills and propose solutions to reduce spill frequency.

The regulatory requirements for the scheme are set out by Ofwat in Section 2.3, Page 18 of the publication: 'Accelerated infrastructure delivery project Appendix 2: price control' (Ofwat, June 2023)<sup>1</sup>. The relevant extract is provided below.

*"The allowance is conditional on the company demonstrating to Ofwat that all of the named storm overflows have undergone further investigation to determine the root cause of spills and to identify the best value solutions required to address them. This work must be undertaken within AMP7.*

*The allowance is conditional on the company evidencing to our satisfaction that all funding is for enhancing the functioning of the asset beyond permit compliance. This includes demonstrating that: the company is operating the assets in compliance with its permits, the funding is for enhancing functioning beyond the level which could be achieved through maintenance, and relevant outcomes should not have been already delivered through funding under past enhancement schemes. The test for this "compliance" is for the purposes of the Berwick storm overflow scheme only. Whether a company is actually compliant or no with the conditions in its environmental discharge permits is a matter for the EA, not Ofwat. Similarly this test should not be read as in any way indicating Ofwat's views on the compliance standards required by section 94 of the Water Industry Act 1991 as supplemented by the provisions of Regulation 4 of the Urban Waste Water Treatment (England and Wales) Regulations 1994 (which Ofwat and the Secretary of State enforce).*

*The company must set out its method of providing this evidence for our approval either before or at the time of the submission of its strategic business plan in October 2023. The evidence must include, but may not be limited to, hydraulic simulation modelling of the asset operation pre and post completion of the enhancement scheme and an explanation of the methodology and assumptions underpinning both sets of modelling. If there is currently no permit in place, then the company should evaluate the enhancement scheme on the basis of an assumed set of permit conditions that may typically be expected, e.g. the pass forward flow being set using formula A. It should provide the reasoning underpinning these assumptions.*

*The company, through the process of progressing the feasibility work, must continue to consider opportunities for inclusion of nature-based and surface water management at source type solutions. The company must work towards developing a best value solution to meet all investment drivers and provide detailed evidence to show how the company has assured itself that the solution chosen is best value, including but not limited to evidence that the company assessed the compliance status of the asset in advance and evaluated options on the basis of that assessment. Insufficient evidence may be grounds for clawback.*

*Where an element of the scheme is to address either maintenance or regain compliance then the company must proportionally allocate costs between base and enhancement and explain the apportionment, as allowances will only be made for those elements considered enhancement expenditure, with any residual funds clawed back."*

Northumbrian Water commissioned Jacobs as the third-party assurer to undertake a peer review of the work being undertaken by Stantec to further understand the interventions required to reduce present and future spill frequency at the identified storm overflows, including the verification of the model to identify the root cause of spills and propose best value interventions to reduce spill frequency.

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<sup>1</sup> <https://www.ofwat.gov.uk/wp-content/uploads/2023/04/Appendix-2-Accelerated-Delivery-Project-Final-Decisions-2023.pdf>

## 2. Our assurance approach

We have conducted agreed-upon procedures assurance focusing on the requirements of the price control deliverables. This has included undertaking staged assurance reviews aligned with key project delivery stages as shown in Figure 1.

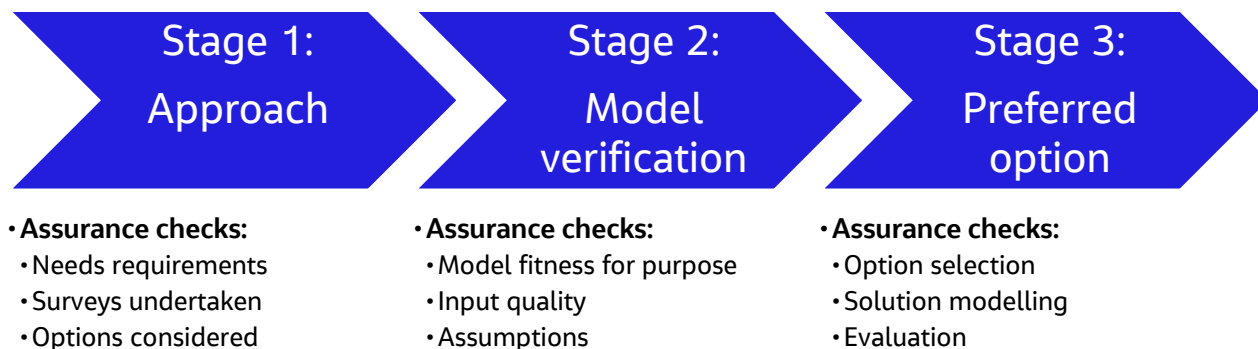


Figure 1: Project delivery stages assured

Our audit approach at each stage included a virtual meeting with the Company at which a summary of the approach and progress to date was presented using summary slides prepared by the delivery team in advance. Supporting documentation was provided by the Company where requested. We also undertook desktop reviews of outputs where available, and carried out limited spot checks on a small sample of data and outputs to check for potential weaknesses, issues, or errors in the application of the process.

The auditee provided a copy of the summary slides for each meeting, and we were given limited access to specific areas of the project SharePoint for file sharing. Several additional calls with the modelling team were held to discuss the model update and verification process.

We have considered alignment of processes and outputs with the requirements of the price control deliverables at each stage of project development, providing feedback and recommendations for each stage.

## 3. Overall feedback against regulatory requirements

Based on the information that we have seen, our assurance indicates that the Berwick CSO concept design scheme is being delivered in a way that aligns with the regulatory requirements as defined in the price control appendix ('Accelerated infrastructure delivery project Appendix 2: price control', Ofwat, June 2023).

The conditions require the Company to deliver an initial 'Concept and Definition' phase to seek to validate best value solutions to reduce spills and environmental impact at 31 overflows in the Berwick catchment, based on model verification and root cause analysis.

The evidence we have seen demonstrates that the Company has used a verified hydraulic model to develop and test potential solutions to reduce spills at the named overflows. They have undertaken root cause analysis, informed by surveys and modelling, to inform the development of appropriate solutions, and used best value principals underpinned by an options hierarchy approach to identify preferred options.

The Company is required to demonstrate that all the named storm overflows have undergone further investigation (within AMP7) to determine the root cause of spills and to identify the best value solutions required to address them. Our assurance confirmed that all the named overflows have been included in a root cause analysis exercise based on the principles of the Storm Overflow Assessment Framework (2018), and that this analysis is underpinned by an appropriate evidence base of survey data and hydraulic modelling. This work has been completed within AMP7 as required. The Company has produced root cause analysis

workbooks as a record of this work, which have undergone internal checking and sign-off. Our high-level review and limited sample checking of the root cause analysis outputs identified no material concerns.

The conditions state that the Company must evidence that all funding is for enhancing the functioning of the asset beyond permit compliance. The Company has implemented the following measures (above and beyond its regular maintenance programme) to address this requirement:

- The Company informed us that it has a number of planned preventative maintenance initiatives in Berwick in addition to regular inspections, including its Pledge 5 regional storm overflow reduction project and a bathing waters maintenance programme.
- Root cause analysis has been undertaken for all storm overflow assets in the catchment to identify and rule out any maintenance issues that could be contributing to spills. Where potential maintenance issues have been identified we were informed that these have been (or are being) addressed separately through base spend. The root cause analysis workbooks show evidence to support this assertion.
- A permit compliance assessment has been undertaken to identify any compliance issues. Two sewage pumping stations (SPS7 and SPS9) were identified as non-compliant and we were informed that works required to address the above compliance issues will be clearly identified in the final report and a “payment mechanism” proposed, which at this stage is considered likely to be a deduction from the overall agreed enhancement funding.

The Company provided an update note to Ofwat in October 2024 setting out its approach to assessing current compliance and summarizing the findings of its review. We note that it has assessed each overflow on an individual basis assuming no downstream hydraulic restrictions, and this is clearly stated in the note to Ofwat. The hydraulic modelling identifies compliance issues relating to hydraulic capacity of the downstream network and/or surcharging, and the Company informed us that it has commenced dialogue with the Environment Agency regarding how to manage these issues. The Company has requested feedback from Ofwat on whether their approach is sufficient but had not received a response at the time of writing.

The Company is required to demonstrate that relevant outcomes have not been already delivered through funding under past enhancement schemes. We were informed that this is the case, and our assurance checks on previous catchment schemes using the model history did not identify any relevant previous schemes. The requirement is a new one from the Storm Overflows Discharge Reduction Plan (2023) and therefore it is reasonable to infer that it would not have been covered by any previous enhancement funding.

The price control deliverables state that the evidence presented by the company must include hydraulic simulation modelling of the asset operation pre and post completion of the enhancement scheme, along with an explanation of the methodology and assumptions underpinning this. We found that the Company has used its hydraulic model of the Berwick catchment (updated and verified for this project) to carry out a baseline assessment of spills and to run simulations to assess the performance of the preferred options in reducing spills. Our assurance of the model verification process found that the modelling methodology and assumptions were reasonable and appropriate, and we did not identify any material issues.

The conditions state that the Company must consider opportunities for inclusion of nature-based and surface water management at source type solutions throughout scheme development and must work towards developing a best value solution to meet all investment drivers. The range of solution types considered includes nature-based and surface water management at source type solutions, and a totex hierarchy has been applied to ensure that all options are considered fairly. Wider benefits have been included in the cost benefit appraisal to support best value decision-making. A high-level assessment of the catchment has been undertaken using GIS mapping to identify potential opportunities for surface water removal and this has informed feasibility assessment of options. We were also informed that the scope for detailed design will include specifications regarding inclusion of green/blue options. Results from the Company's post-enhancement modelling, as summarised in the evidence we have seen, predict that all assets will be compliant with their spill targets under the storm overflows discharge reduction plan.



Where an element of the scheme is to either address maintenance or to regain compliance then the Company is required to proportionally allocate costs between base and enhancement. The evidence presented indicates that this is being addressed through the measures described above and as noted previously, we have been informed that works required to address the above compliance issues will be clearly identified in the final report and a “payment mechanism” proposed. The final report was not available at the time of our assurance, so we are unable to comment on the specific apportionment of costs. Based on the evidence we have seen it appears that the Company is in the process of taking reasonable and appropriate steps to meet this condition.

## 4. Limitations and exclusions

Our findings are based upon the information made available to us. At the time of our assurance, work to finalise the preferred options and costs was ongoing. As a result, our assurance covers the approach and scheme development up to and including draft preferred options and costs, but we are unable to comment on the final deliverables that will be submitted to Ofwat.

This is a concept design scheme and as such the Company has informed us that there will be further development and refinement of the preferred options as they progress to construction stage. We therefore note that specific details of the solutions implemented may differ, although it is not expected that the preferred solution types will change significantly. The requirement is to identify the type of best value interventions that will ultimately be delivered, and it is reasonable to expect that there would be some variation from concept through detailed design as specific local constraints and buildability are accounted for. As noted above, however, the Company has informed us that specifications for detailed design will include expectations around prioritisation of blue/green solutions.

We have had sight of the draft cost estimate, which at the time of writing remains subject to the Company's final internal review and sign-off process. We have reviewed the approach and assumptions underpinning cost estimate development, but it is not in our scope as third-party assurers to undertake detailed checking of cost estimates.

Some non-material actions and recommendations from our assurance remain unresolved at time of writing this report. We recommend the issues identified in the outstanding actions and recommendations are resolved prior to submission to Ofwat.

During interviews the Company confirmed that the inputs are drawn from existing business-as-usual processes, the 2024 price review (PR24) business plan, and data and information from other strategic plans (including the Water Resources Management Plan (WRMP) and DWMP). Our assurance does not cover those other business processes, the majority of which are already covered by other internal and/or external assurance.