WSX-C11 – Enhancement costs – storm overflows

Response to Ofwat's PR24 draft determination

Wessex Water
YTL GROUP

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Representation reference: WSX-C11

Representation title: Enhancement costs – storm overflows

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1. Summary

This document sets out our view on Ofwat's cost allowances for our storm overflow improvement programme. In the round, we accept Ofwat's assessment of the costs of our submitted programme. However, we request that Ofwat updates its proposed cost allowance to reflect the changes to improvement programme since October 2023, which in part reflects additional regulatory requirements.

Frequent discharges from storm overflows are no longer acceptable and we recognise the government's, Environment Agency's (EA) and Ofwat's ambitions for a major programme of improvements over the next 25 years, as required by the storm overflow discharge reduction plan (SODRP)[1]. Our proposed AMP8 programme is the start of a major investment journey in the process of eliminating harm from storm overflows.

In our October 2023 PR24 business plan submission, we constrained our 2025 to 2030 storm overflow improvement plan to an affordable, financeable, and deliverable core plan. This was agreed by our regulators (EA and Ofwat).

Over the last year, through improved dynamic modelling, we now have refined our view of the storage requirements for some of our storm overflow solutions. Our revised plan includes those revised volumes and has applied a cost curve to develop robust and efficient costs.

Since then, the EA has added new drivers and associated additional lines into the WINEP. In line with EA and Ofwat guidance, we have sought to reflect this in our draft determination response. This includes:

- Requirements to improve storm overflows 5km upstream of 3 newly designated inland bathing waters
- 'No regret' requirements to improve storm overflows upstream of Poole Harbour shellfish waters by 2030.

Table 1 shows the difference in storage volumes and costs between our October 2023 submission and our final determination proposal. The total storm overflow improvement programme has grown from 128 improvements to 143 improvements, with a further 17 lines to achieve the additional tighter shellfish water targets. There is a 35% increase in storage volume compared to the October 2023 submission, due to these additional schemes as well as updates using the latest data. Our updated requested totex allowance is £445m, which is an increase in 10% over the original business plan submission.

Table 1 – Summary of changes in Storage Volume requested

Cost data table line	October 2023 submission	Ofwat draft determination	Our DD response	Further details
Storage volume (m^3)	161,758	161,758	218,934	Increased volumes due to more schemes in AMP8 and increased confidence in volume assessments. See Sections 3 and 4.
Cost (Totex)	£404.912 m	£401.119 m	£444.752m	Increase in costs due to additional schemes. See Sections 3 and 4.

This programme of 143 schemes is a significant step change from the 13 improvements to address frequent spilling overflows in the period 2020 to 2025. This is a challenging investment programme to investigate all priority location

[1] https://www.gov.uk/government/publications/storm-overflows-discharge-reduction-plan

overflows by 2027 and deliver the AMP8 improvements by 2030, but we have commenced scheme designs and continuing to gain further knowledge to better inform this long-term investment programme to improve the performance of storm overflows over the coming AMPs.

Documents ***WSX-O01 - Performance and outcomes*** and ***WSX-O02 - Price Control Deliverables*** also provide more narrative covering storm overflows.

2. Ofwat's approach to setting allowances

Our storm overflows programme consists of grey solutions (primarily additional storage capacity) and wetlands solutions used to treat groundwater-induced overflows. Ofwat has assessed cost allowances for our storm overflows programme using a combination of econometric benchmarking and unit cost comparisons.

Grey and grey-hybrid solutions

For PR24, Ofwat has developed a set of econometric models to estimate scheme-level costs for grey and grey-hybrid storm overflow solutions. This is a similar approach to that taken at PR19.

In the draft determination the costs for all grey and grey-hybrid solutions were considered together, distinguishing only between improvements on the network and improvements at Water recycling centres (WRCs), also known as Sewage treatment Works (STW). For WRC improvements, Ofwat has applied a scheme level log model with a single cost driver – storage volume. For network improvements, Ofwat has applied both a log and a linear model, also with storage volume as the single cost driver, and triangulated between the two models. Ofwat has used these models to estimate allowances for each individual storm overflow improvement in our programme.

Ofwat then identified outliers using Cook's distance method and assessed these schemes via a deep dive. This process identified several of our storm overflow schemes, for which we provided updated information to Ofwat as part of its query process. This updated information demonstrated that these schemes were efficient when compared to the modelled allowance.

Finally, Ofwat applied an upper-quartile efficiency challenge for network solutions and a median challenge for WRC solutions. Ofwat considered this to be necessary to ensure that efficient expenditure allowances are in line with the range of benchmarks it considered.

Overall, our requested costs for grey solutions are in line with Ofwat's modelled allowances based on the approach set out above.

Wetlands solutions

Ofwat assessed wetlands costs for treatment of groundwater inundated overflows through a separate approach based primarily on a simple comparison of unit costs and outturn data. Ofwat assessed our requested costs as being broadly in line with expected costs indicated from outturn data. It therefore allowed our request in full, partly to encourage the use of green solutions.

2.1. Fit of Ofwat's chosen model

2.1.1. Grey and grey-hybrid solutions

In principle, we are supportive of the use of cost benchmarking where it can be shown to produce reliable estimates of efficient costs, and where the results are interpreted alongside other relevant information. Overall, we consider that Ofwat has taken a reasonable approach to using cost benchmarking to set modelled allowance for storm overflow grey / grey-hybrid solutions, though we have concerns with the basis for its efficiency challenge for network solutions (as set out in more detail below).

Functional form and cost drivers

We agree that storage volume is a key driver of the cost of a storm overflow scheme. All other things equal, a scheme which involves a larger storm tank solution will be costlier than a smaller storm tank, due to the additional materials required and the extended excavation and mobilisation times.

The relationship between storage volumes and costs is also likely to be non-linear due to the presence of economies of scale. This reflects that many of the components involved in the delivery of grey solutions are required per location (depth of existing sewer and associated scale of excavation required, site mobilisation for construction, overflow chamber, screening chamber, pump requirement, power, land purchase etc.), regardless of the mobilised storage volume achieved. We therefore agree that it is appropriate to capture this relationship through the use of log models, particularly for WRCs where there is a clear engineering rationale.

In line with this, to estimate scheme costs for PR24, we used a cost curve with mobilised storage volume (as estimated above) as the sole variable, with site specific adjustments where required for known factors. This was derived by undertaking a bottom-up assessment of the costs of underground storage schemes of various sizes (6 different sizes ranging between 100m^3 and 1000m^3). We then used this information to plot a cost curve for the construction element of all grey solution schemes under standard conditions, based on information about storage volumes at each location. The resulting cost curve is non-linear with respect to storage capacity, which reflects the presence of scale economies in this programme.

Overall, we consider Ofwat's approach to be in line with our view of key cost drivers and our internal costing approach for grey solutions. This is reflected in the outcome of Ofwat's benchmarking, where our overall modelled allowance is very similar to our requested allowance.

Goodness of fit

Ofwat's models report an adjusted R squared value of around 0.6. This is higher than for Ofwat's models in other major enhancement areas such as nutrients (historical models) or WRC growth. This indicates that storage volume explains a proportion of the variation in companies' scheme-level costs, though there is still some variation that is not being explained by the modelling approach. This could be due to some of the factors discussed below, which may explain the presence of some outliers in Ofwat's modelling approach.

Efficiency challenge

We disagree with Ofwat's application of an upper-quartile efficiency challenge for network solutions. Ofwat said it considered an upper quartile challenge to be necessary to ensure that efficient expenditure allowances are in line with the range of benchmarks it considered, as well as on the basis of engineering judgement, but it provided no information about what this engineering judgement showed. For the reasons set out in WSX-C02, we consider the uncertainty that is present in the PR24 models, as well as the available evidence from PR19 and AMP7, clearly demonstrates that there are significant risks to basing efficiency challenges on upper quartile forecasts, as differences to the "average" may be a result of modelling error and not efficiency. We consider a median efficiency challenge is more appropriate for all storm overflow solutions (network and storage), and we suggest that this is taken into account when setting final allowances for grey solutions on the network side.

2.1.2. Wetlands solutions

We support Ofwat's approach to assessing wetlands costs. We are confident that our proposed costs are efficient, when considered alongside other companies' requests and the available outturn data. We also consider that a lighter-touch approach to cost assessment in this area is appropriate at PR24, given the need to encourage nature-based solutions and also reflecting that wetlands solutions are relatively novel for treating intermittent discharges. Along with other companies' wetland proposals for groundwater inundated overflows, this will provide a good range of evidence for future price controls.

2.2. Additional factors not considered

As explained above, under Ofwat's modelling approach, volume of storage is the only explanatory variable included in their scheme level model.

While we agree that storage volume is the most significant driver of grey and grey-hybrid storage costs, we have highlighted in our business plan and via the query process other factors which may drive variation in costs for a scheme of a given size. In particular:

- Adverse ground conditions: For sites located in areas of adverse ground conditions there will be requirements for specialist piling which can significantly impact costs plus additional costs for dewatering during construction in locations of high groundwater tables.

- Storage volumes are reported as mobilised storage which is the storage provided to be utilised before spilling to the environment. When mobilised storage is in the network it requires new volume to be constructed at or below the depth of the sewers, and so requires large excavations to construct it. In some cases, the excavated or constructed volume is significantly larger than the mobilised storage.

- Connection costs to transfer flows into the network may vary when larger tanks mean they are located away from the overflow discharge. This could result in higher pipework costs or requirements for the purchase of additional land to implement the scheme or pumping.

- We consider that above ground tanks, normally only possible at WRC under permitted development, are not always the most cost-effective solution. Steel tanks do not have the long-life expectancy as underground concrete tanks, and will need replacing more frequently than concrete tanks, so the whole life cost needs to be considered, as this could promote solutions with higher initial capex.

These are in addition to other highly site-specific issues unique to each location that reflect complexity of buildability for factors beyond management control e.g. power requirements for pumping, planning and access.

Where there is clear evidence of factors driving specific scheme-related costs that aren't captured purely by storage volume, it is important that these are given due consideration e.g. through identification of outliers followed by a deep dive assessment. The factors set out above are highly site-specific and, aside from excavated storage volumes, are likely to be difficult to capture in any cost benchmarking approach. As such, it seems appropriate to consider these factors on a case-by-case basis where the evidence suggests a modelled approach does not explain cost variation so well.

3. Required adjustment to cost allowance

3.1. Storm overflow improvement programme

We are requesting an allowance of £445 million in enhancement funding for our final determination for storm overflows improvements, as detailed in Table 2 below. This is an increase of £41 million on our requested allowance at our October 2023 business plan submission. This is primarily due to including 32 additional storm overflow improvement needs since our business plan submission following:

- new WINEP drivers of shellfish water improvements at Poole Harbour
- new WINEP drivers due to three newly designated inland bathing waters in our area.
- minor changes to the WINEP storm overflow programme.

The first two will require additional storm overflows improvements to be added to our AMP8 programme, as detailed in Section 4. This will significantly increase the total volume of storage being delivered (by over 33,000m^3 which is a 20% increase).and also the overall cost of our storm overflows programme (by 16%).

Thirty-seven schemes listed in our October 2023 submission have also been reviewed, and using updated information from the latest modelling appraisals we have a more certain storage volume for these schemes which has resulted in an increase in the storage requirements at these sites, as detailed in Section 4.4.

We are not requesting any material changes to our cost allowance for wetlands solutions. We note that Ofwat's PCD for wetlands assumes we will build 32 hectares of wetlands. Our latest estimate of the wetland hectarage, detailed in data table ADD20, is nearer to 30 hectares based on our latest engineering appraisals, subject to further refinement in this estimate as each scheme progresses. As our unit cost remains in line with expected costs indicated from outturn data, we have not amended our proposed costs for the wetlands.

Similarly, the 8 separation schemes have not changed materially since the previous PCDWW5 submission.

Table 2 summarises the changes to our programme since our October 2023 submission.

Table 22 – Summary of changes in Storage volumes and our latest cost estimates

Cost data table line	October 2023 Storage volume (m3)	Revised storage volume (m3)	Revised CWW3 costs
CWW3.16 - CWW3.18	39,188	61,620	£120.5 m
CWW3.22 - CWW3.24	53,338	87,467	£198.6 m
CWW3.37 - CWW3.39	6,232	6,847	£23.5 m
CWW3.19 - CWW3.21	43,750	43,750	£72.0 m
CWW3.25 - CWW3.27	19,250	19,250	£30.2 m
CWW3.40 - CWW3.42	0	0	£0.0 m
CWW3.34 - CWW3.36	0	0	£0.0 m
Total	**161,758**	**218,934**	**£444.8m**

The above table shows our revised programme has a 35% increase compared to the October 2023 submission, with the increased accuracy of the modelled information available, and an additional number of improvement schemes. The total cost estimate of £445m has increased by 10% from our original submission.

Table 3 shows a more detailed breakdown, including some minor differences in or CWW3 and PCDWW5 data tables from our October 2023 submission. Our revised figures are more aligned with ADD20 data table.

The costs for the revised programme are demonstrably more efficient according to Ofwat's modelling approaches and we request that Ofwat allows them in full.

Table 33 – Cost differences from CWW3 and PCD tables and volumes from PCD data

Cost data table line	October 2023 submission CWW3	October 2023 submission PCDWW5	October 2023 PCDWW5 storage volume (m3)	Revised costs (ADD20)	Revised volumes (ADD20)
CWW3.16 - CWW3.18 WRC Grey storage	£91.32 m	£88.07 m	39,188	£118.89 m	61,620
CWW3.22 - CWW3.24 Network Grey storage	£212.38 m	£189.40 m	53,338	£195.90 m	87,467
CWW3.37 - CWW3.39 SW separation / hybrid	£11.65 m	£23.07 m	6,232	£23.05 m	6,847
CWW3.19 - CWW3.21 WRC Wetland green	£70.96 m	£70.51 m	43,750	£70.67 m	43,750
CWW3.25 - CWW3.27	£18.61 m	£29.61 m	19,250	£29.79 m	19,250

Network Wetland green					
CWW3.40 - CWW3.42 Infiltration	£0.00 m	£0.00 m	0	£0.00 m	0
CWW3.34 - CWW3.36 SuDS Green	£0.00 m	£0.00 m	0	£0.00 m	0
Total	**£404.92 m**	**£400.67 m**	**161,758**	**£438.30 m**	**218934**

Note: The purpose slit in the original CWW3 was not reflective of the more detailed PCDWW5 data table. The opex allowance in the PCD table is slightly lower than that included in CWW3 as explained in the ADD20 table commentary.

Section 4 details the increase in volume requirements and provides further evidence.

3.2. Storm overflow investigations

The storm overflow investigations programme is still uncertain, due to the final guidance not being issued by the EA.

Our interpretation of the requirements is lower than it was in our October 2023 submission, as described in Section 4.

The costs of the storm overflow investigations in AMP8 have therefore reduced from £29.9m in our original submission to £12.4m in our draft determination response. Please refer to Document 'WSX-C16 - Enhancement costs - wastewater investigations' for more detail.

3.3. Emergency overflow monitoring

The emergency overflow monitoring programme has not changed since the original submission. It is to monitor 25% of the EOs by 2030, as requested by the EA.

We are aware there are discussions about increasing monitoring to 50% of EOs by 2030, though the WINEP has not been updated to reflect this. We have only included c25% monitoring in our updated plan.

4. Rationale

In this section we provide more information about the changes to our storm overflow programme underpinning the requested change to our cost allowance as set out above. This includes:

- a larger storm overflow improvement programme, due to 3 new designated inland bathing waters in the Wessex region.
- a larger storm overflow improvement programme due to Poole Harbour shellfish waters improvement requirement being added onto the WINEP.
- updated storage volume requirements for some schemes.

In addition to providing more evidence in the document, please also see document 'WSX-C16 - Enhancement costs - wastewater investigations' where we also discuss storm overflow investigations.

4.1. Inland Bathing Waters additional schemes

There are 3 newly designated inland Bathing Waters in the Wessex area as explained in Document 'WSX-C09 - Enhancement costs - wastewater treatment'. The EA has added improvements (EnvAct_IMP3 driver) to Storm overflows that are within 5km of these onto the WINEP as holding lines for improvement by 2030. These are:

- 08WW102231a Newly designated bathing water at River Tone at French Weir Park
- 08WW102234a Newly designated bathing water at River Frome at Farleigh Hungerford
- 08WW102238a Newly designated bathing water at River Avon at Fordingbridge

Please see Document 'WSX-C09 - Enhancement costs - wastewater treatment' for further details on these newly designated inland bathing waters, including the associated bathing water investigations of the water quality of these rivers. These investigations will extend the current near real time monitoring of relevant water bodies in the Wessex region that we have already started monitoring and reporting.

Figure 1 shows customers bathing in the River Avon at Fordingbridge before the site was designated as a bathing water.

Figure 1 – Newly designated inland bathing water at Fordingbridge

We have assessed our storm overflow assets that are within 5km of these new bathing waters and identified 4 storm overflows that will require improving by 2030 (under driver EnvAct_IMP3). Due to the late addition of this new requirement, we have not yet been able to undertake a detailed assessment of the improvements required, so we have used the 'ranked volume' method using the latest dynamic computer predictions of a 10 year time series rainfall to derive the volume of storage needed to capture the 10th ranked bathing season discharge volume, to achieve less than 1 discharge per bathing season on average. These required storage volumes were costed using our cost curve for the storage solutions and infiltration sealing in the catchments that are vulnerable to groundwater inundation (e.g. Fordingbridge).

The estimated storage requirement for these totals 1825m^3 as listed in Table 4 below. The cost for these 4 new schemes is estimated to be £9.8m. Details of these schemes are also in data table ADD20.

Table 44 – Summary of new inland bathing water schemes

Site number and name	WRC or Network	SOAP ref	Storage (m^3)	Totex (£m)
13256S RODE WASTEWATER TREATMENT WORKS	WRC	WSX0396	575	2.63
17212C FORDINGBRIDGE CSO	Network	WSX0509	600	3.22
15718C BISHOPS HULL SHUTEMEAD SPS	Network	WSX0848	50	0.74
15450B LANGFORD LANE PUMPING STATION	Network	WSX0259	600	3.22
Total			**1825**	**9.81**

4.2. Poole Harbour Shellfish Water aggregation additional scheme

The EA has recently added another line onto the WINEP for storm overflow improvements in Poole Harbour to achieve shellfish water (SW_IMP driver) improvements of 10 significant discharges in the entire aggregation per year. This is:

- 08WW103159a Poole Harbour shellfish water CSO assessment and improvement

This is a new driver which has material implications. The required improvement outputs are not yet confirmed as they require bespoke approaches to aggregation in consultation with the EA, and so solutions have not yet been through a detailed appraisal.

We are in discussions with the EA to include ‘no regrets’ improvements in AMP8. These ‘no regrets’ improvements are those within 5km of the Shellfish waters that require improvement plus overflows that discharge frequently that are further upstream and not groundwater related. Schemes that cannot be constructed by 2030, such as the improvement at Poole WRC, and other schemes that are more than 5km from the shellfish waters are proposed for improvement by 2035. We are engaging with the EA to update the WINEP to define the AMP8 improvements and include a holding line for AMP9 improvements.

The number and type of schemes as well as the estimated storage requirements (new and additional) and costs (new and additional) of our current proposed AMP8 ‘no regrets’ programme are detailed in Table 5, subject to agreement with the EA. This includes 12 new storm overflows that need improving, and improvements at a further 17 storm overflow locations that are already on the WINEP under Environment Act drivers but will need making larger to achieve the more stringent shellfish water standards. There are efficiencies in making the schemes larger and addressing all drivers at the same time, such as only having to construct the scheme once which avoids returning in a few years’ time causing more disruption to our customers and extra mobilisation and design costs.

Table 55 – Summary of 'no regrets' additional storm overflow volumes and costs in Poole Harbour shellfish waters in AMP8

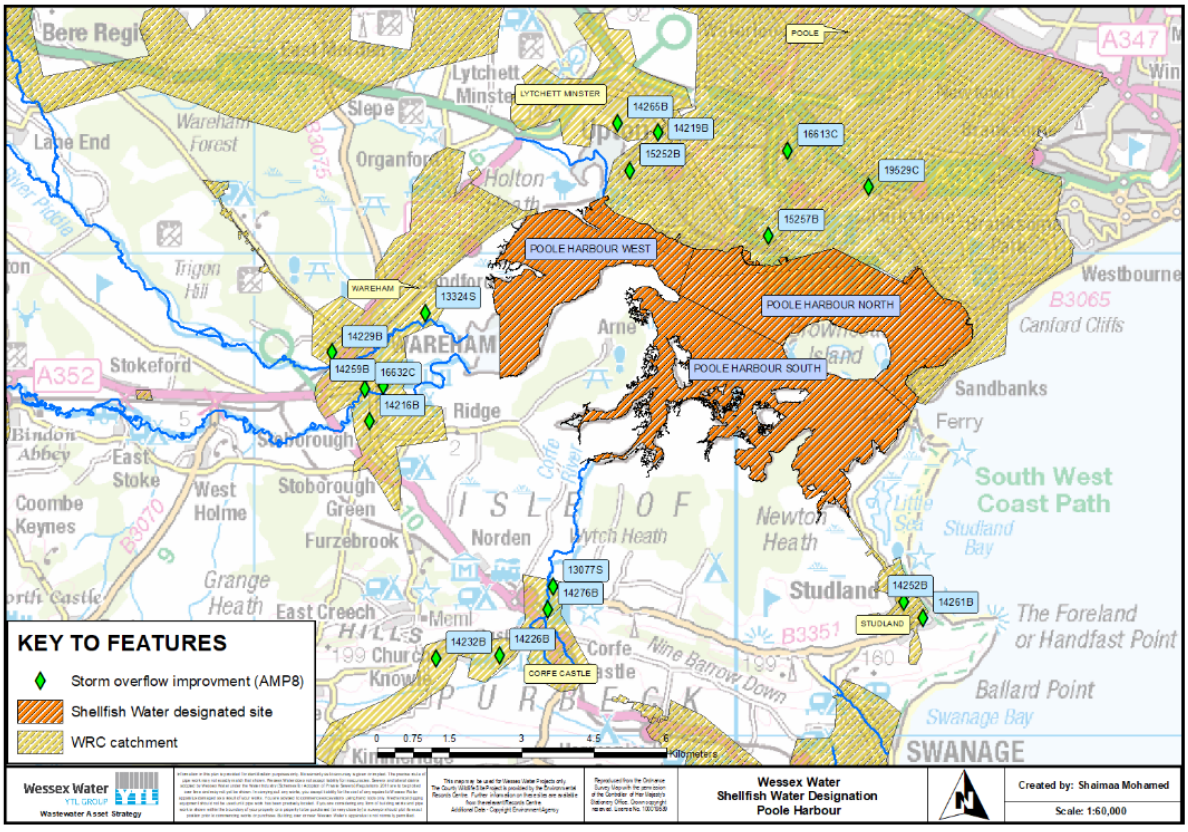
Description	WINEP drivers	Number	Storage (m^3)	Totex (£m)
New WINEP improvement schemes	SW_IMP driver only	12	17,171	36.607
Additional volume to enhance existing WINEP schemes to meet Shellfish requirements	SW_IMP and EnvAct_IMP drivers	17	14,261	19.712
Total		**29**	**31,432**	**56.319**

Note: In data table CWW20 we have not included these 17 duplicate location schemes in the 'number of schemes delivered' to prevent double counting.

The AMP8 'no regrets' costs for Poole Harbour shellfish waters are estimated to be £56.3m. As noted, this is subject to ongoing discussions with the EA. The WINEP currently has one Action ID line for Poole Harbour storm overflow improvements. We anticipate this will be split into multiple lines for each proposed improvement in AMP8. The list of these additional storm overflow improvements included in our AMP8 plan is detailed in data table ADD20.

This includes 12 new storm overflow improvements and 17 lines that provide additional storage at originally listed improvement schemes. The original schemes are retained to improve the overflow to the SODRP target of 10 times per year (with some assumed to be 5 times per year for 'no harm'). However, the SW_IMP driver is more onerous, requiring improvement to a tighter standard. These new lines include the difference in storge volume and costs to deliver to the tighter SW_IMP standard.

Figure 2 – Storm overflows close to Poole Harbour shellfish waters

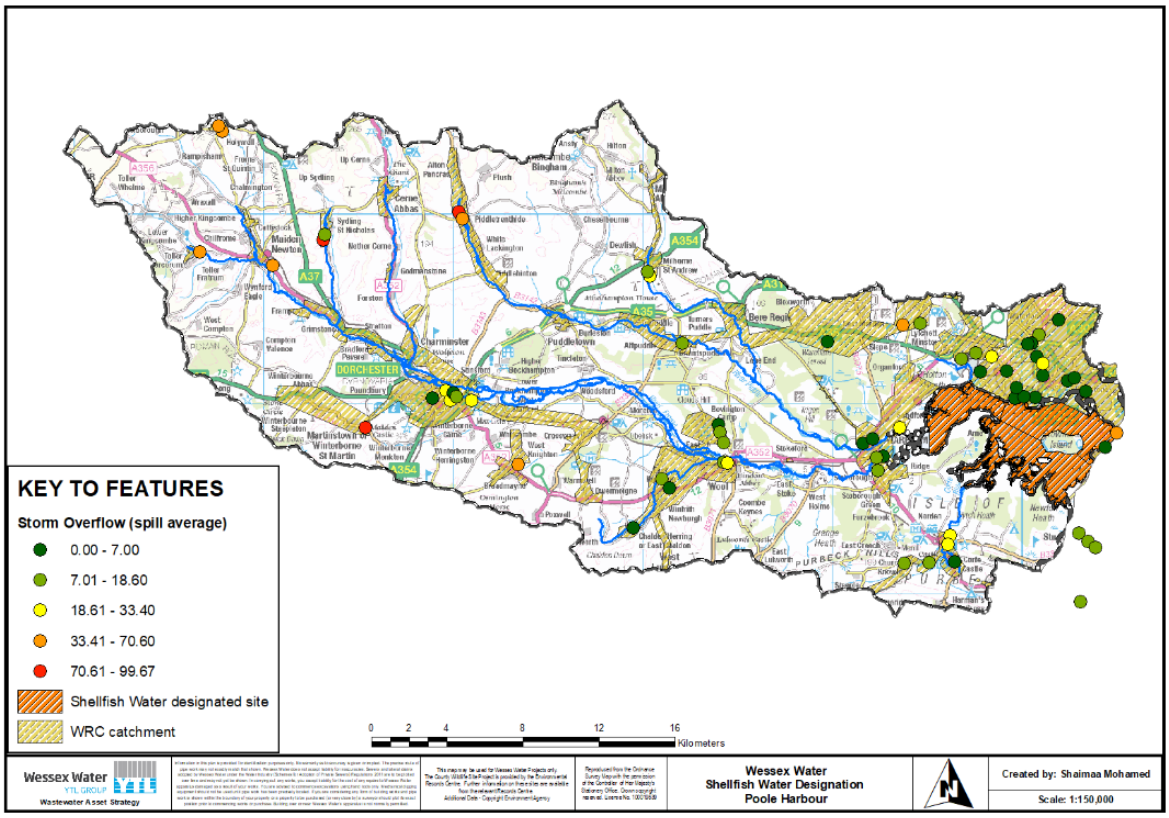


The shellfish water driver (SW_IMP) requires improvements to all overflows in Poole Harbour to achieve 10 significant discharges per years as an aggregation. This means that overflows in the Poole Harbour can only discharge on 10 days a year on average when considering all overflows together. As some overflows operate in short sharp storms and some operate only in long duration rainfall events, this makes the 10 discharges per year aggregation considerably more onerous than if evaluating each overflow individually (as the SODRP does).

There are more uncertainties in the requirements, such as the distance that overflows are upstream of the shellfish water that require improvement, and the agreement of what constitutes a significant discharge volume. The upper reaches of the Poole Harbour waterbody are known to suffer groundwater inundation, so if they are captured within the requirements for improvements to protect the Shellfish waters a large sealing programme (Wessex Water and Private assets) could be required.

Figure 3 below shows all the storm overflows in the Poole Harbour waterbody. These include villages like Piddletrenthide which has the two permitted groundwater relief pumping stations installed, which operate during times of high groundwater inundation.

Figure 3 – All storm overflows in the waterbody upstream of Poole Harbour shellfish waters



To deliver every improvement in the Poole Harbour waterbody potentially required to meet the Shellfish improvements could require a material increase in investment above what has been estimated, including significant infiltration sealing. We propose these improvements should be included in the scope of our proposed uncertainty mechanism, which is set out in our separate representation WSX-M07 - Uncertainty mechanism. This could be based on Ofwat's PR24 storage model, which will also need to include an allowance for infiltration sealing to make assets watertight.

We propose the 'no regrets' programme of £56m investment in AMP8 is funded and delivered by 2030 and we investigate the wider requirements. These wider requirements can then be put forward for delivery in AMP9.

4.3. Minor changes to the WINEP

Our October 2023 submission was based on the most up to date interpretation of the draft WINEP, at the time.

We have since identified 3 sites that were listed on the WINEP that the latest EDM data shows do not require improvements. The EDM data at these sites previously showed them as needing improvement, but this EDM contained errors in calibration – the sites did not operate in 2023, which was a wet year. The Environment Agency has removed 2 of these already, and we are requesting a further one to be removed. The 3 sites are:

- Spring Lane, Weymouth (removed from WINEP)
- Wardcliffe Road (removed from WINEP)
- Newstead Road (to be removed from WINEP)

The volume in the original PCDWW5 table for these 3 schemes (2 average volumes of 847m^3 and 33m^3 for Wardcliffe Road) was 1727 m^3.

These have formally been replaced by 2 other schemes on the WINEP:

- Hengisbury Head
- Wadmore Lane

These schemes have larger volumes than the removed schemes in terms of likely storage volume required. The estimated volume for these 2 schemes is 9,280 m^3.

Wadmore Lane has a stringent spill reduction target to achieve ‘no harm’ and in addition has a Habitats Directive improvement driver to ‘eliminate’ the overflow from discharging into its currently permitted discharge location. There are two feasible options; storage to prevent the overflow from spilling in a typical year or relocating the outfall to discharge to the sea. The relocation option is very unlikely to progress, as our qualitative assessment shows it is likely to be more expensive and is likely to encounter resistance from the local residents. We have therefore included a storage volume which should result in no spills in a typical year.

4.4. Updated information on storage requirements and efficient costs

Our submission in October 2023 was informed by the best information we had at the time. We had 47 solutions appraised out of the 92 grey or grey-hybrid solutions. Thirty-seven other schemes used top-down assumptions, either the DWMP ranked volume data (from a 10 year rainfall series) or assumed default or average volumes/costs.

Since then, we have carried out more detailed appraisal of a further 37 scheme requirements using updated network models and applied our standard cost curve to these new target volumes. The average default storage volumes are no longer used.

We have reviewed further information from our preliminary design work and cost modelling from our updated hydraulic computer models. These computer models have been updated to better reflect all available EDM data and then we developed options using the updated models. We then applied our cost curve based on the required volume to develop a more robust cost estimate. The model predictions are typically generating larger required volumes than we assumed in the ranked or average volumes we included in the 2023 original submission. By applying our cost curve to these new volumes, the costs for the same schemes are in total slightly less than our original submission.

Our latest plan uses the results from dynamic computer models to predict the storage requirement for the 91 grey storage and grey-hybrid solutions proposed in our latest core plan (excluding inland bathing waters and Poole Harbour improvements).

By updating the computer modelling stock to better match or EDM data, our predicted average discharge count (all available models) is now 22.0, not 17.1 as was the case over a year ago. Many of our models still do not include groundwater inundation or slow response during very wet winters, during which the discharge count would be far higher. Groundwater influence is discussed further in Section 13 of WSX-O01 (Performance and outcomes).

4.5. Storm overflow investigations

We have reduced our cost request for storm overflow investigations, based on our latest understanding and advice from the Environment Agency.

The draft WINEP has 392 storm overflows listed for investigations to be completed by April 2027.

Our October 2023 business plan submission did not include costs for all 392 investigations, but included a programme to investigate 148 storm overflows in AMP8 with an understanding that a large proportion of these would need detailed urban pollution modelling (UPM).

Since then, the EA has been working with the industry to develop a more deliverable investigation programme, reflecting a recognition that the industry could not deliver their initial requirements. A more pragmatic screening process based on dilution is being proposed by the EA and the industry to filter out overflows from the requirements for detailed UPM appraisal. Based on these discussions with the EA, we are expecting most of the 392 investigations to require simple desk top appraisals to estimate the storage volume to achieve a target of 10 discharges per year, and document the associated costs, direct benefits and wider environmental benefits. We have updated our cost estimates to reflect this updated assumption (see WSX-C16 for more details).

Overall, for these reasons, the costs of the storm overflow investigations in AMP8 have reduced from £28m in our original submission to £12.4m in our updated plan.

4.6. Emergency overflow monitoring programme

Our October 2023 submission included a programme of monitoring c25% of our Emergency Overflows (EO) by 2030, as instructed by the Environment Agency in their phasing letter dated July 2023. Our plan included slightly more than 25% (as agreed with the EA) and included costs to survey all EOs, so that our PR29 plan would be informed by more evidence. Our plan includes £10.7m for monitoring c25% of our EOs by 2030.

We are aware that recent discussions between Defra and the industry has explored increasing the level of monitoring in AMP8 to 50% coverage. We estimate that this 50% coverage would be c£20.0m total investment required. If all the EOs require monitoring by 2030 then the total cost will be c£34.7m.

The monitoring of c25% scenario is included in our updated plan. If the EA change the WINEP requirement from 25%, then additional funding will be required, so we request Ofwat includes the scope of EO monitoring within an uncertainty mechanism. We discuss this further in our separate representation ‘WSX-M07 - Uncertainty mechanism’.

4.7. Price Control Deliverable (PCD)

Ofwat has proposed a set of PCDs covering companies’ storm overflow programmes.

We have concerns with the design of Ofwat’s PCD for storm overflows, in particular: the potential for changes to companies’ storm overflows programmes to deliver the best possible solutions for customers and the environment; and the delivery profile used to set time-incentive payments. We set out our full views on these proposals in our separate representation WSX-O02 (Price Control Deliverables).

5. Why the change is in customers' interests

We consider our updated storm overflow programme is in the best interest of customers. In particular, the changes to our plan reflect that:

- Many of our customer want to swim in our rivers, as well as the sea. The new inland designated bathing waters are in our customers interest, and we need to improve frequent summer spilling overflows that are within 5km upstream. We also need to provide a real-time reporting system, which we have developed already and can be found here: Coast and rivers watch | Wessex Water.

- Our plan in Poole, includes making 17 schemes that were on our original plan bigger, so they achieve the tighter standard required for the Shellfish Waters directive.

We are also confident that our proposed delivery profile best balances deliverability and affordability considerations. Storm overflow improvements take several years to implement, so it is not possible to deliver rapid improvements early in the AMP. The size of our programme, and the delivery profile, is stretching but achievable and puts us on the path to achieving SODRP requirements as well as our longer-term ambitions for sewerage, as set out in our Long-Term Delivery Strategy.