Anglian Water: PR24 Cost Change Proposal

Storage Points

1 May 2026

Cost Change proposal 2026 Storage points

Storage points: Cost Change 2026

1 Overview of cost area proposal

Overview of our storage points proposal

We supply more than one billion litres of drinking water every day to over five million customers. Every litre passes through at least one treated water storage point (service reservoirs, balancing tanks, contact tanks, or water towers) which collectively provide essential disinfection contact time, enable blending, buffer the system against demand fluctuations, and maintain hydraulic stability across the distribution network.

Current asset condition

There has been a material and accelerating impact from storage point deterioration on water quality outcomes, most clearly demonstrated by rising coliform detection rates. Based on our analysis of recent inspection findings and current run rates of civil maintenance expenditure, without intervention we expect the number of storage related coliform incidents to continue increasing.

These structures were designed to be robust and long-lived. However, the underlying condition of these assets has now entered a fundamentally different phase of their lifecycle where failures are more sudden and critical. Several converging factors explain why the need for investment has crystallised now:

1. A large proportion of our storage points (c.85%) have reached, or exceeded, the point at which concrete degradation processes become far more rapid. Carbonation, chloride ingress, reinforcement corrosion and freeze-thaw cycles accelerate non-linearly once the protective alkalinity of concrete falls below certain thresholds. We can now see clear evidence that many structures have passed these thresholds .
2. Population growth, higher peak demands, and the increasing utilisation of network capacity has increased the potential consequences of taking assets out of supply for extended inspection or refurbishment. This has created longer inspection intervals for some assets and significantly increased utilisation stress across the system .
3. Environmental conditions themselves have become more challenging. More frequent extreme rainfall events increase the likelihood of surface water loading on roofs. Hotter summers and sharper freeze-thaw transitions introduce thermal movements that accelerate cracking, all of which contribute to the higher rate of deterioration observed in recent years.

Alongside this, changes in material standards and the withdrawal of some Regulation 31 approved products have constrained refurbishment options, meaning that repairs which were durable 15-20 years ago no longer provide long-term resilience. In some cases, this has resulted in deterioration re-emerging sooner than it would have done historically.

The need for additional investment in AMP8

Together, these factors explain why pressure on our storage points has accelerated sharply. Inspection evidence demonstrates that the majority of assets require intervention before they can safely return to service. This represents a structural shift in risk in AMP8 and beyond. The deterioration we observe is both progressive and nonlinear, meaning that without timely intervention, the likelihood, frequency and severity of water quality failures will increase over time. Historic levels of capital maintenance activity are not sustainable any longer.

Our PR24 base allowances do not reflect this forward-looking risk. Without additional investment, the number of storage-related water quality failures will rise as asset condition declines. To safeguard drinking water quality, maintain supply resilience, comply with regulatory obligations and avoid further deterioration of critical public health assets, we seek £176 million of additional allowances through the Cost Change process. This additional investment is critical given the potential impact on the provision of safe drinking water to customers under increasing seasonal demand and wider growth pressures.

The benefits of our storage points proposals include:

- Reduction in coliform failure risk
- Improved supply resilience
- Extended asset life
- Reduced safety risk
- Avoidance of a future “bow wave” of asset failures

Table 1 Investment proposals (Water Network + £m, 22/23 price base))

	2027/28	2028/29	2029/30	AMP8
Capex	41.3	79.5	54.8	175.6
Opex	0.0	0.0	0.4	0.4
Totex	**41.3**	**79.5**	**55.2**	**176.0**

Table 2

Benchmarking	
Method	We benchmarked our storage point costs using internal benchmarks derived from historical outturn costs for comparable storage point refurbishments, supported by external industry benchmarking datasets (WRc TR61) and model validation where there was sufficient comparability of scope.
Findings	Our internal benchmarking shows that the low complexity tranches, which make up the majority of the programme, perform well against historic cost benchmarks and show lower unit rates. We adopted a more bottom-up approach to costing our more complex interventions and, as a result, the internal and external cost benchmarking datasets are less comparable. We show marginally higher unit rates on these tranches compared to our benchmarks but the benchmark datasets do not capture the cumulative impact of industry-wide regulatory, safety, and delivery changes experienced in recent years. Overall, the programme is within a reasonable range of uncertainty around our cost benchmarks.
Customer protection	
PCD	We propose a three-part PCD covering: base allowance activity; a programme of mainly uncertain, reactive, expected lower cost interventions post inspection; and a programme of higher cost, more known, site specific interventions. We use a mix of unit rate and time incentives, and annual ex-post assurance, to support efficient, flexible, delivery that will bring the reductions in water quality and supply risks that are in the best interests of customers and long-term asset health.

1.1 Asset health is critical to deliver resilient services to customers

The health of our assets underpins everything we do. Our ability to deliver our societal objectives - healthy rivers, economic growth and resilient services, all depend upon our infrastructure. Stewarding our existing assets is viewed by our customers as one of our most basic responsibilities, alongside the provision of safe, clean drinking water[1].

For drinking water services in particular, treated water storage points play a critical role. Every litre of water supplied to customers passes through at least one storage point, which provides essential disinfection contact time, enables blending, buffers the system against fluctuations in demand and maintains hydraulic stability across the network. The integrity of these assets is fundamental to protect public health and maintain secure supplies.

Recent asset failures, such as Pembury water treatment works in Kent at the end of last year, demonstrate the real-world consequences when critical infrastructure stops working. Such events leave large numbers of customers without water or exposed to contamination risk. For storage points, failure exposes customers to immediate public health risks, emergency supply interruptions and high remediation costs.

1.1.1 Our approach to asset management

Asset stewardship is a key focus for our business. We were one of the first companies in the world to achieve ISO55001 Asset Management Standard, and Ofwat's 2021 AMMA analysis, assured by Arup, identified Anglian as the highest scoring company for asset management maturity in the sector [2]. In 2024, we proactively developed an Asset System Resilience Appraisal (ASRAP). The ASRAP is an in-depth holistic review of our entire asset base that uses advanced digital tools, including a predictive analytics module, to forecast our long term asset needs and is a robust foundation for the new approaches being discussed for PR29, particularly NARM.

For storage points, the ASRAP and subsequent inspection evidence demonstrate that the risk profile of this asset class has changed materially. Once these assets pass key deterioration thresholds, the likelihood,

1 Anglian Water State of the Nation Survey 2026 April 2026 ANH-CC26-07
2 Anglian Water, March 2025, PR24 CMA Redetermination Statement of Case, pages 84 and 85

frequency and severity of failures increase rapidly. This forward-looking risk is not adequately captured in base allowances or backward-looking models, as a result of which we have insufficient funding to undertake a proactive maintenance and refurbishment programme of meaningful scale across the asset class.

1.1.2 Ofwat's current approach to capital maintenance allowances

We have long been concerned that Ofwat's current approach to setting capital maintenance allowances, based on backwards looking econometric models, has resulted in persistent and significant underfunding and driven short-term, reactive 'fix on fail' management strategies. This is not sustainable for long-lived asset classes such as treated water storage points, where deterioration can remain latent for decades before crystallising rapidly, and where we are at risk of storing up increasing costs to be recovered from future customers via steeper price rises.

Not only is this a deep concern to our customers, it is also undermining the sector's ability to attract essential investment, as leaving companies without funding to maintain assets produces disproportionate, unfunded risks that contribute to the equity challenge facing the sector.

Given the importance of this issue we have been active in advocating for a change of approach, for example, in our 2007 Strategic Direction Statement, at the CMA in PR19, the development of PR24 methodology, and again at the CMA in PR24.

Our concerns are now widely shared. The need for an alternative approach has been recognised by multiple organisations, including the CMA at PR19[3] and the National Infrastructure Commission[4]. Both Scotland and Northern Ireland's water regulators have taken action to reform their approaches. More recently the IWC concluded that 'the current regulatory approach to infrastructure resilience is not adequate'[5] and recommended the development of statutory resilience standards to 'drive the action and funding necessary to ensure these assets are fit for the future[6]. Finally, the DWI's draft water sufficiency guidance highlights its concerns over asset health, and reinforces the need for good asset data and forward looking risk assessments to drive funding for aging assets. This has been recognised in the Water White Paper, which sets out a clear intention to 'shift to a system where assets are properly maintained … with the right funding and incentives to ensure the long-term resilience of asset bases'[7].

1.1.3 The role of Ofwat's Asset Health Roadmap and Cost Change process

Despite the urgency of the asset health concerns across the industry, Ofwat's Asset Health Roadmap was introduced relatively late in the PR24 process. Given the lack of certainty at that time about how the Roadmap would lead to additional funding, we and the other disputing companies raised the need for additional base allowances as part of our case to the CMA during the PR24 redeterminations. Against the backdrop of the Independent Water Commission and the growing expectation of significant future reform in this space, the CMA decided that it would not be appropriate to address asset health concerns through the redetermination, noting instead that these issues are better considered through Ofwat's asset health roadmap and in-period reopeners. The CMA therefore focused its assessment on defined individual claims and modelling issues, rather than undertaking a broader reassessment of underlying asset health needs during AMP8[8].

For treated water storage points, this places particular importance on the Asset Health Roadmap and Cost Change process. We welcome Ofwat's increased focus on asset health in the Asset Health Roadmap, and hope it will prove to be a step in the right direction, addressing urgent needs ahead of a fundamental reset at PR29. Consequently we have engaged fully and constructively throughout the process and will continue to do so. But it is critical that we unlock additional funding for storage points now, and in Section 2 we set out the evidence which shows that deterioration has accelerated during AMP7 and early AMP8, with a step change in the proportion and severity of defects identified.

3 At PR19 the CMA called for Ofwat to develop forward-looking asset health metrics
4 See NIC, Developing resilience standards in UK industry (September 2024), page 9
5 IWC, July 2025, Final Report, page 382
6 IWC, July 2025, Final Report, page 8
7 A New Vision for Water, January 2026, Defra, page 37
8 Final decision summary and volume 1 para 4.176

The Cost Change process should be viewed within the long-term trajectory of increasing investment requirements, and as such it is an opportunity to both bring forward investment and smooth bill increases for customers over a longer period. During the cost change process Ofwat will need to balance short-term affordability concerns against the longer-term risks to asset resilience and increased operational failures. We urge Ofwat to place appropriate weight on the longer-term context in its decision, and explicitly consider how its decision may impact upon future customers.

2 Need for additional investment

2.1 Historical Analysis

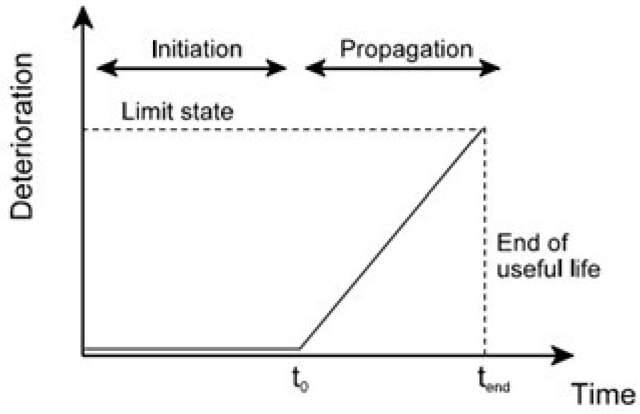
***Ofwat assessment criteria:** historical investment and how risk and asset health has changed over time, to underpin the 'as is' position. If historical health or risk data is not available, an explanation of how the assets have been managed should be provided*

A long-lived asset class is now entering its period of highest failure risk

Our 377[9] treated water storage sites (amounting to roughly 800 tanks, compartments and cells) have been constructed over a period of over 150 years. A large cohort of assets (c.85%) has now entered the point on the deterioration curve where key failure mechanisms accelerate dramatically: carbonation-induced reinforcement corrosion, chloride ingress, repeated thermal cycling, and loss of structural waterproofing integrity.

These deterioration pressures are nonlinear. Concrete structures often experience decades of stable condition before reaching a "tipping point" where carbonation, reinforcement exposure or membrane failure cause deterioration to progress much more rapidly. This tipping point occurs when the alkalinity of the concrete is no longer able to regulate the pH of any water that comes in to contact with the reinforcement steel and metal corrosion is no longer prevented this process is known as carbonation. Carbon dioxide in the atmosphere reacts with the calcium hydroxide in the concrete forming calcium carbonate. This reaction will reduce the pH from around 12 to 9 or lower. The carbonation starts on the surface and slowly penetrates the concrete of the structure. The tipping point occurs when this process reaches the reinforcement steel and the resultant pH encourages degradation of the steel reinforcement. It can also result in spalling as the rust takes up more space and the pressure developed blows layers of concrete out of the structure. This mechanism is illustrated by the Tutti model for the deterioration of reinforced concrete.

Figure 1 Tutti's model for deterioration of reinforced concrete

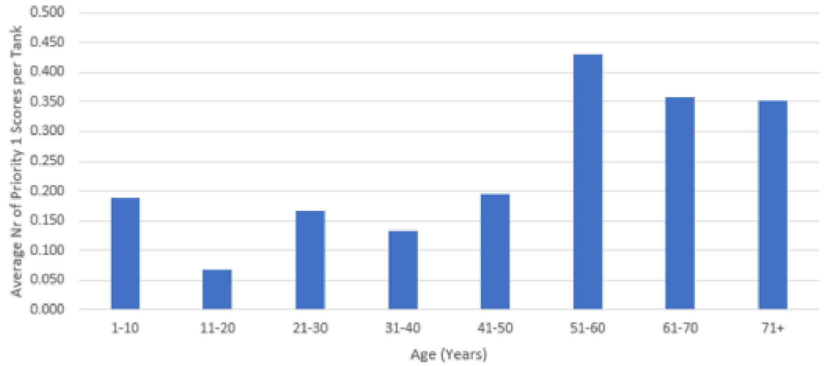


This effect is evident in the detailed analysis of asset condition plotted vs age completed by Northumbrian Water for similar structures at PR24, which showed an exponential relationship between asset condition and age for concrete structures in the survival curves derived from their inspection reports[10].

The concentration of construction in the 1960s-70s has resulted in a significant proportion of our assets passing that tipping point within a short period. This is illustrated by our own data below showing the proportion of tanks by age with priority 1 [11] scores for structural elements of the tank. This shows a clear divide between assets over 50 years old with failure scores almost double that of assets which are less than 50 years old.

9 APR line 6B.21&22
10 A3-21 Northumbrian Asset Health Investment see section 4.2.3.
11 Defects are graded as priority 1-3, with Priority 1 = Intervene before tank returned to service, Priority 2 = Intervene before next inspection, Priority 3 = Monitor at next inspection

Figure 2 Average number of priority 1 scores for structural elements per tank



Includes Priority 1 scores for walls, roofs and floors. Numbers presented on a per tank basis to account for different number of tanks in each age band. based on data for 580 tanks.

Crucially, it is the observed service impacts, that are highlighting the need for intervention. Age correlates strongly with the failures now being routinely identified during inspections. Analysis of our inspection records indicates a statistically significant relationship between age cohort and the severity of defects found. We have recently completed 50 condition scores based on the new industry standard method produced by Binnies as per the data request from Ofwat. This has been sent to Ofwat separately to this business case. The exercise shows that roughly one fifth of the storage points scored are in the worst condition grades 4/5 - supporting the recent experience of our inspecting engineers and delivery teams. We are amending our operational processes to ensure that in future, routine inspections record a condition score in line with the new industry method.

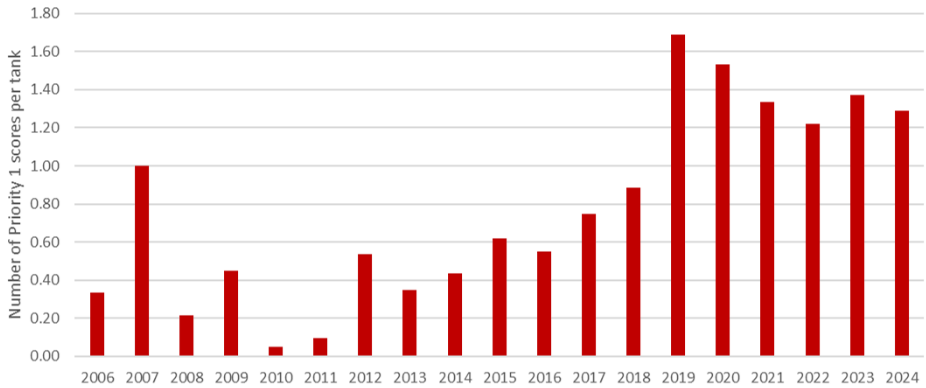
Early analysis of the priority one failures of concrete tanks show an increase over time. This work is ongoing and clearer correlations and profiling of failure modes will be available for future work.

The most significant change in the asset class is the rapid increase in observed defects that pose a direct risk to water quality or structural integrity.

Historically, around half of inspected assets required some form of remedial action. Over the past two years, however, this has risen to more than 90%. This reflects the reality of the assets that have reached the end of their asset lifespan. Between April 2025 and March 2026, 104 inspections were completed under the accelerated programme to meet DWI obligations, and 98% of these assets required intervention before they could safely re-enter service.

The nature of defects has also changed: from superficial cracking and joint deterioration ten years ago, to significantly more severe failures such as widespread spalling, membrane breakdown, structural cracking with visible ingress pathways, and reinforcement exposure. Several sites presented immediate public health risks requiring urgent intervention or temporary shutdowns. Priority One inspections scores as shown below are a direct threat to water quality and the storage point is not returned to service until the remedials are undertaken and proved to be effective.

Figure 3 Number of priority 1 scores by year



Presented as a number per tank to account for different number tanks in each year (data not available for all tanks).

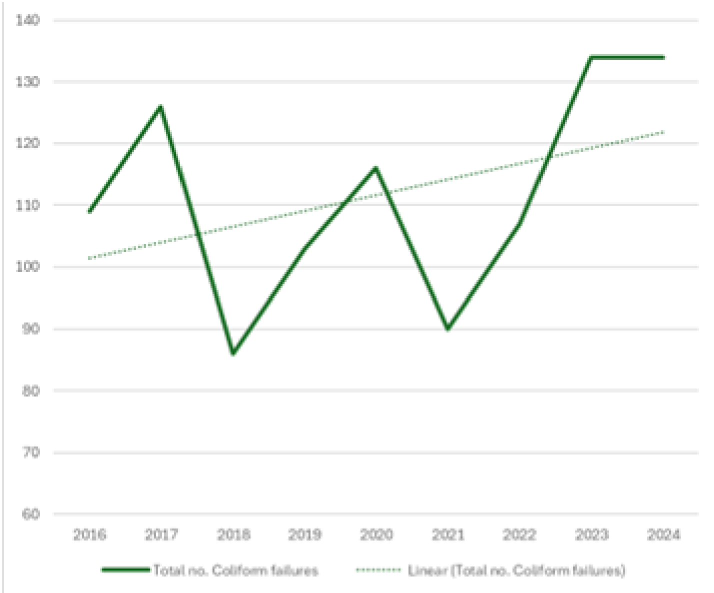
The Newmarket service reservoir exemplifies this shift. Repeated remediation attempts failed to arrest the deterioration, and the asset ultimately reached a point where replacement was the only safe option.

This pattern (multiple cycles of repair delivering diminishing returns) is increasingly prevalent across the portfolio and is strong evidence of assets moving beyond economic repair thresholds.

2.1.1 Our experience reflects wider national patterns of rising water quality failures

Ofwat's guidance states that there should be evidence of a sector-wide condition issue. This is evidenced in the DWI's Chief Inspector's annual reports, which show a national increase in coliform failures originating from storage points over the past decade. Failures rose from around 100 per year in 2016 to more than 120 in 2024. In the annual report *Drinking Water 2024*, the DWI Chief Inspector states that, "*during 2024, there were 80 compliance failures for coliforms at water treatment works and 122 at reservoirs.* [...] *Ingress into contact tanks and service reservoirs is a recurrent problem and represents a residual risk as these results show.*" It goes on to state that, "*The Inspectorate remains committed to strengthening the integrity of service reservoirs and treated water tanks*" demonstrating that the DWI is supportive of an increase in asset health related investment in treated water storage points.

Figure 4 Number of coliform bacteria tests not meeting the standard for service reservoirs in England and Wales



While this evidence is not Anglian Water-specific, it provides important independent corroboration that the mechanisms we are now observing on the ground translate into real and increasing public health risk. We face specific challenges in relation to these assets. Due to our flat region we have over a third (36%) of all operational water towers in England and Wales (124 out of 342). Water towers generally cost more to maintain than ground level reservoirs because they have a large surface area of structure fully exposed to the elements. Moisture infiltration caused by rain and humidity, and temperature fluctuations caused by sun and heat or freezing and thawing cause deterioration of coatings and structural materials. Concrete towers undergo cracking and spalling of the concrete surface.

Refurbishment of external water tower surfaces involves specialist removal of degraded concrete, repair or replacement of reinforcement, reinstatement of concrete and application of concrete protection. This entails working at height requiring costly specialised equipment such as scaffolding and fall protection to carry out the work safely. Repairing the interior and roof of water tower tanks will also incur additional costs over and above those for ground level storage points due to the safety and access needs of working at height.

2.2 What base buys

Ofwat assessment criteria: *an assessment of 'what base buys' to provide confidence that the requested additional investment is to address risk above and beyond what existing base expenditure allowances cover*

2.2.1 Estimating the base implicit allowance for storage points

We set out our views and approach to What Base Buys in Section 12 of our main PR24 Cost Change Proposal document. Whilst the principle of protecting customers from paying twice is appropriate, evidencing with any meaningful accuracy the level of capital maintenance activity that is implicitly funded in base allowances (and therefore evidencing the need for additional investment) is exceptionally challenging in practice. There are multiple potential methods for estimating What Base Buys which can return materially different (and occasionally perverse) results. The differences between methods creates regulatory risk. But the more fundamental concern is that each of these methods relies on the flawed assumption that trends in historical expenditure will continue in future periods, when in practice capital maintenance expenditure has been insufficient to fund sustainable long-term asset renewal rates.

More fundamentally, base allowances are not designed to be disaggregated in this way. They are set and regulated as a single holistic envelope, giving companies the flexibility to deploy funding to the highest risk assets. This position is supported by the CMA's PR24 redetermination, which emphasised that companies must decide how best to allocate base funding to address the risks in front of them. The methods for estimating What Base Buys, by contrast, attempt to impose a retrospective asset by asset breakdown that cannot reflect how companies actually manage risk across their systems.

In this proposal, we have adopted a triangulated approach to What Base Buys between the standard 'econometric' approach that Ofwat has adopted previously and various approaches based on historical industry and company expenditure rates over the last 9-10 years, based on data gathered from the Workload and Expenditure dataset. Although these methods produce a wide range of results of What Base Buys (from £22m to £61m over AMP8) we calculate the average result of £41.6m.

Recognising that neither of these approaches produces robust estimates, and noting the conceptual flaws in any approach to estimating What Base Buys, this is a relatively pragmatic interpretation of What Base Buys. The recent CMA redetermination reduced our base allowance further, meaning that the implicit allowance calculated from Ofwat's PR24 models overstates the funding actually available in AMP8. Whilst there are other methods which could be explored, we consider that there is little value to be gained from increasingly sophisticated analytical decisions to minimise the risk of customers paying twice to a spurious degree of precision, compared to the urgent need to address the health of our storage point assets.

Our estimate of £41.6m stands in marked contrast to the forecast investment requirement of approximately £220 million needed to address current asset condition and risk. While we have historically spent more than the implicit allowance each AMP, this has been achieved only through re-prioritisation within the broader base envelope. The deterioration pressures now affecting this asset class far exceed what can be absorbed in this way. In that context, it is essential that Ofwat also applies a proportionate and pragmatic approach.

2.3 Risks from current 'as is' asset health status

Ofwat assessment criteria: *identified risks posed to service or the environment as a result of the asset's current health. Where there is no historical precedent, companies should use expert judgement to determine risk*

We assess the health of storage points using physical condition inspections, structural assessments, operational data, hydraulic modelling, and availability and criticality analyses that go beyond the regulatory condition data request.

This holistic assessment reveals several interconnected risks.

2.3.1 Public health risk

The primary and most acute risk relates to the potential for ingress of surface water, contaminants or pathogens caused by structural defects such as cracked walls, deteriorating roofs, failed joints, and damaged membranes. The frequency and severity of such defects have risen sharply. The increasing incidence of coliform failures sector wide, combined with near-universal deterioration findings in recent inspections, demonstrates that the risk to drinking water quality is real and growing.

2.3.2 Risk of supply interruptions

Removing storage points from service has become increasingly difficult as networks operate closer to hydraulic limits, particularly during peak periods. Any structural failure, emergency contamination event, or unplanned outage can therefore have a more significant impact on customer supply. The removal of the Newmarket reservoir from service exemplifies how loss of storage directly reduces resilience.

2.3.3 Safety and reputational risk

For water towers in particular, external spalling has become both a safety hazard and a source of reputational concern. Falling concrete poses a public safety issue. Visibly deteriorating structures also undermine customer confidence in the company's stewardship of vital public assets.

2.3.4 Regulatory compliance risk

The DWI's Provisional Enforcement Order requires Anglian Water to bring all storage point inspections within a ten-year frequency by March 2027 and then to maintain evidence based inspection frequencies thereafter. Meeting this requirement is dependent on delivering a sustained programme of inspection and refurbishment, which cannot be achieved within current base allowances.

2.4 Forecast future asset health

Ofwat assessment criteria: *forecast of future asset health, how health and risk will change over time showing a change in quantified risk requiring a step-change in asset investment. If quantified risk information is not available, qualitative risk information and expert judgement should be used*

Our Asset System Resilience Appraisal (ASRAP) represents the most detailed modelling of storage point deterioration undertaken to date. It evaluates risk at component level (walls, floors, roofs, columns etc.) and combines predicted likelihood of failure with consequences such as potential coliform failures.

2.4.1 Deterioration will accelerate sharply without intervention

ASRAP forecasts that, without increased maintenance, the rate of ingress and associated water quality failures would increase by roughly ten-fold over 15 years.

Figure 5 Storage points coliform failures

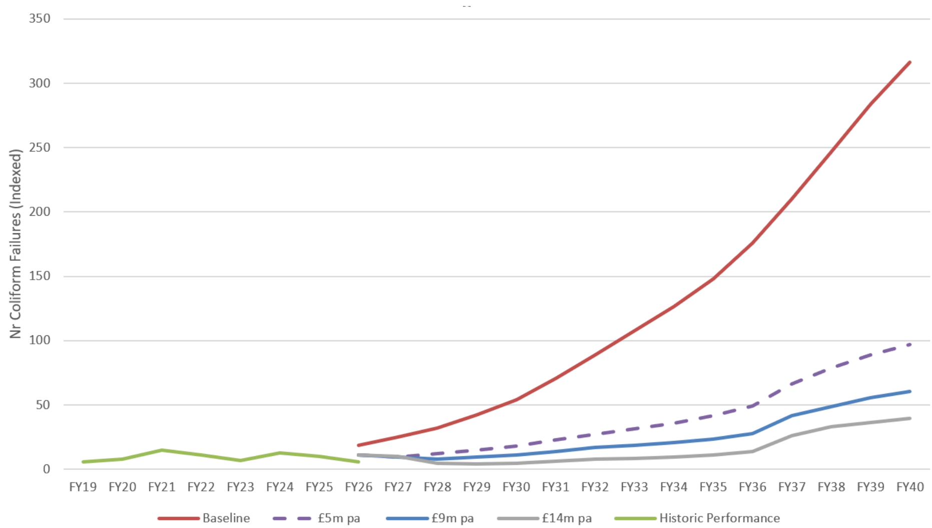


Figure 6 extract from ASRAP

Asset class		Unmitigated			Mitigated		
		5 year	10 year	25 year	5 year	10 year	25 year
Storage	1.9 Storage points	↘	↓	↓	↔	↘	↓

Subsequent inspections completed since the publication of the ASRAP suggest deterioration is progressing faster than predicted and shown in the above figure, meaning that risk projections are conservative and the investment required to prevent increases in coliform failures is greater than expected at the time of ASRAP publication.

2.4.2 Climate change will increase pressures

Climate change will increase pressures further. More intense rainfall events increase the likelihood of surface water ingress. More severe heat cycles heighten thermal stress on concrete. Longer drought periods increase dependency on buffer storage. Future regulatory standards may mandate minimum storage levels to provide resilience during peaks, further emphasising the need to maintain and replace ageing assets.

2.4.3 The future is fundamentally different from the past

For decades, deterioration progressed slowly enough that incremental maintenance and repairs could preserve functionality. The current data demonstrates that this pattern has broken down. Continued reliance on historical investment levels would result in more assets becoming beyond repair, higher public health risk, and increased operational failures.

2.5 Strategic alignment

Ofwat assessment criteria: *alignment to long-term asset class strategies that demonstrate why the future is different from the past for the priority asset type, and why the investment is required now. For example, evidence that the asset is posing a greater risk in the future due to asset deterioration. Future uncertainties are taken into account for example. climate change impacts*

The proposed programme aligns closely with the direction Ofwat and the DWI have set for the sector. Ofwat's Asset Health Roadmap identifies treated water storage assets as a priority class requiring deeper, more consistent condition data and improved deterioration insight. Our accelerated inspection and refurbishment programme responds directly to these priorities and will generate the asset condition data and improved modelling capability Ofwat expects for PR29.

The programme also aligns with the DWI's focus on drinking water sufficiency and contamination risk, reflected in both the Final Enforcement Order and the broader emphasis on maintaining secure, resilient treated water storage as part of safe drinking water supply. Similarly, our WRMP sets out increasing requirements for treated water storage to support strategic interconnectors and RAPID schemes, making it essential that the existing asset base is stabilised and resilient before new assets come online.

The proposed investment therefore aligns directly with the regulatory and strategic direction of the sector: improved asset health insight, proactive long-term asset management, strengthened water quality protection, and greater resilience in the treated water system.

2.6 Stakeholder engagement

Ofwat assessment criteria: *engagement with stakeholders, where appropriate (e.g. Environment Agency, Drinking Water Inspectorate and local authorities)*

Our engagement on the condition and performance of treated water storage points has taken place over several years and has involved not only the DWI but also wider regulatory, strategic and operational partners, including Ofwat, Water Resources East and other water companies. This reflects the critical role these assets play in protecting drinking water quality, ensuring supply resilience and enabling long-term regional water planning.

2.6.1 Longstanding engagement with the DWI on asset condition and risk

Our engagement with the DWI on the performance and management of storage points has intensified.The DWI put in place enforcement action for Anglian in 2022 outlining a "minded to enforce" position before issuing individual regulation 28 notices for individual tanks that were out of the 10 year inspection period. Throughout 2025, we have engaged substantively sharing detailed inspection results, deterioration trends, and operational challenges–particularly the implications of taking tanks out of supply. This engagement has culminated in a series of meetings across the summer followed by the issuance of the Provisional Enforcement Order covering the whole company rather than individual tanks in January 2026.

We continue to engage with DWI who on 30 April 2026 issued a letter of support [12] with regards to our proposals. Following a detailed assessment of our proposal, they confirm they support our request for additional investment to be delivered by 31 May 2030.

2.6.2 Engagement through sector working groups

We have has also participated extensively in Ofwat's asset health workshops, including sessions on priority asset classes, deterioration modelling and data improvement. These workshops, which form part of Ofwat's Asset Health Roadmap, have reinforced the view that treated water storage is a nationally significant asset class requiring improved data, consistent inspection regimes and long-term investment planning. Participation in these sessions has directly shaped the design of our programme, ensuring that it supports the sector wide aims of better data, greater consistency and improved risk forecasting. At a local level, engagement with public health authorities, local resilience forums and emergency planners reinforced the importance of secure treated water storage in supporting multiagency incident responses.

12 ANH-CC26-19

3 Best option for customers

3.1 Optioneering

Ofwat assessment criteria: *an unconstrained set of potential credible options over a range of intervention types to meet the identified need*

To address the accelerating deterioration across treated water storage points and the associated rising risks to public health and supply resilience, we began with an unconstrained long list of credible intervention options. These were developed collaboratively with operational teams, engineering specialists, asset strategists and supply system planners to ensure that all technically feasible solutions were considered before any filtering or prioritisation took place. The long list encompassed the full range of potential interventions typically applicable to concrete service reservoirs, water towers, contact tanks and balance tanks.

The unconstrained long list included:

- Operational management measures, such as crack width monitoring ("tell tales"), changes to operating levels to reduce structural loading, increased sampling frequencies, and the introduction of shorter inspection intervals where feasible.
- Targeted refurbishment, including concrete repairs, overbanding of cracks, resealing of joints and hatches, and roof or wall remediation where structural degradation was identified.
- Roof membrane renewal or first time installation, recognising that membranes are often the most effective barrier against infiltration and that many roofs now lack adequate protection.
- Network reinforcement and hydraulic reconfiguration, used to create outage windows where tanks cannot otherwise be removed from service without materially increasing supply interruption risk.
- Full structural replacement, used only where refurbishment can no longer provide a safe or durable outcome, for example, at Clapham where repeated overbanding had failed due to external hydrostatic pressures
- Asset decommissioning or disposal, considered where storage is no longer operationally required or where alternative capacity exists.
- Innovative inspection technologies, including the trialling of Remote Operated Vehicles (ROVs) and 3D mapping techniques, which may allow inspection of some structures without full drainage.

Beginning with this broad scope ensured the optioneering process was not biased toward any particular investment type. The long list was then systematically narrowed using technical, regulatory and operational constraints. In particular:

- Withdrawal of certain Regulation 31 -approved materials has significantly reduced the number of viable refurbishment options, with several historical products no longer approved for contact with potable water.
- Structural viability ruled out refurbishment for assets like Clapham and Haddenham, where further repair would not provide long-term assurance.
- Hydraulic outage restrictions meant that many sites could not be removed from supply for the duration required for refurbishment without risking supply interruptions.
- Environmental and access constraints, particularly on elevated towers or sites located adjacent to watercourses, limited the feasibility of certain construction techniques.
- Cost effectiveness, ensuring that higher cost options were only taken forward where lower cost interventions could not sufficiently reduce risk.

This optioneering process ensured that only technically deliverable, safe and value for money interventions were shortlisted for whole life cost and benefit appraisal.

3.2 Decision-making

Ofwat assessment criteria: robust decision making and robust whole life cost-benefit appraisal that clearly shows best value for customers and the environment to inform the selection of the proposed solution(s)

Following the narrowing of the long list, we applied a robust, whole life cost-benefit appraisal to evaluate the refined set of options. This appraisal was applied consistently across all asset types and interventions.

The appraisal assessed:

- Defect recurrence likelihood, based on the recent inspection dataset which shows that ~98% of assets require remediation following inspection.
- Failure probability using deterioration curves derived from ASRAP, including the likelihood of ingress, structural cracking and membrane failure.
- Public health risk, capturing both the probability and consequence of coliform events associated with asset degradation.
- Resilience impacts, including the risk of supply interruptions caused by tanks being out of service or by unforeseen failures.
- Whole life capital and operational expenditure, including future maintenance frequency, access and safety requirements, and expected life extension.
- Delivery feasibility risks, such as working at height on water towers, proximity to watercourses, and requirements for extensive temporary works.

For all sites where full replacement was an option (notably Clapham and Haddenham), we have applied our Risk, Opportunity and Value (ROV) process to assess technical viability and value for money on a whole life basis. This ensured that high cost options were only selected where all lower cost alternatives had been exhausted.

The analysis for Haddenham produced the following outputs [13]

Table 3 Comparison of options for Haddenham water tower

Alternative name [a]	Capex	RICS	Base opex	NPV (Discounted WLC)	EAB	EAC	EAV	ROV indicative lifecycle cost	Mitigated risk	Risk index value
Replace with reservoir & pumps	6.27	0.01	0.00	5.40	0.45	0.34	0.10	5.65	0.55	9.84
Storage point refurbishment	4.24	0.00	0.00	5.47	0.46	0.27	0.18	5.94	0.57	9.65

a all values in £m

The table above highlights similar whole life cost benefits for these two options. Experience onsite of refurbishments have shown this to be an unsustainable solution. We have therefore selected the option to replace with reservoir and pumps option as this will mitigate ongoing maintenance needs of the tower.

The table below sets out a similar cost-benefit analysis of Nedging tower. In this case it is only an external refurbishment that is required. In this case the replacement of the tower with ground level storage and a pumping station do not stand up against the refurbishment.

13 For an explanation of EAB/EAV/EAC see page 53 in this reportCost water data table commentary

Table 4 Comparison of options for Nedging water tower

Alternative name [a]	Capex	RICS	Base opex	NPV (Discounted WLC)	EAB	EAC	EAV	ROV indicative lifecycle cost	Mitigated risk	Risk index value
External refurbishment	1.74	0.00	0.00	1.74	0.36	0.09	0.28	1.74	0.41	4.29
Replacement with ground level storage and a pumping station.	5.00	0.00	0.00	5.93	0.32	0.28	0.04	6.09	0.38	15.55

a all values in £m

In this case, refurbishment is the most efficient option and the distance between the analysis values provides a preferred pathway.

Where monetised benefits could not be determined cost effectiveness and risk reduction frameworks were applied. This ensured a consistent and proportionate approach that prioritised the lowest whole life cost solution capable of achieving the required risk reduction.

3.3 Details of the proposed solution

Ofwat assessment criteria: *the proposed solution, including scale and timing of the investment. Including how it meets customer preferences*

The outcome of the optioneering and whole life appraisal process is a targeted, risk based programme of investments to be delivered during AMP8.

We have grouped our proposed investments into four packages (reflected in the cost breakdowns provided in the robust and efficient costs section of this document).

- Service reservoirs internal remediation (£77m)
- Service reservoir roof membrane installation (£36m)
- Water tower - external condition (£7m)
- Storage points extensive intervention (£56m)

Below we provide a description for each of these packages. Further details on the solutions which have been costed are available in our cost breakdown sheets provided at ANH-CC26-15.

3.3.1 Service reservoirs internal remediation (£77m)

This programme is designed to restore and protect the integrity and long-term performance of treated water storage assets. It ranges from low-intrusive enabling works through to complex internal refurbishment. Delivery is phased from 2027/28 across AMP8 enabling integration with outage planning while minimising customer disruption.

The enabling schemes (I048169 and I048043 in the cost breakdown tables) provide region-wide drain-down, inspection, cleaning and inundation testing across hundreds of reservoirs, tanks and towers. These works remove sediment and biofilm, allow internal concrete and joints to be inspected and confirm water tightness following refill. These interventions are essential in identifying defects and ensuring more substantial refurbishment is correctly timed and targeted.

Building on this, we have made assumptions on the type and scale of work required to develop our cost change proposal. This is required given the uncertainty of the precise work involved following inspection. Assumptions are informed by desktop assessments, high-level site information, operational data and recent delivery experience across multiple internal stakeholders.

The medium complexity refurbishment programmes (I047670 and I047671) have been costed to deliver packaged internal repairs including access hatch and ladder replacement, joint overbanding, targeted concrete repairs, membrane patching and improved drainage. Such works will support asset health and extend asset lives of assets through efficient, repeatable delivery while avoiding the need for disruptive reconstruction.

The high and very high complexity refurbishment programmes (I047673 and I047674) reflect the expected works required at assets with more advanced and complex condition risks. These involve extended outages and comprehensive internal remediation such as extensive joint overbanding to walls, floors and roofs; concrete repairs; renewal of upstands and access systems and; selective membrane replacement. For the most complex interventions, remediation is expected to be required across the entire internal envelope to provide a durable, long-term solution restoring water-tightness, protecting water quality and safeguarding strategic storage capacity. These investments avoid the far greater cost, carbon and customer impact of full asset replacement.

Targeted major refurbishments will deliver more extensive structural and mechanical works for the most deteriorated assets where lower tier interventions are no longer sufficient (I046061 and I047955).

A smaller targeted programme (I047491) applies similar techniques at limited scale where proportionate high-end intervention is required without full complex refurbishments.

3.3.2 Service reservoir roof membrane installation (£36m)

This package focusses on the replacement of deteriorated external reservoir membranes at treated water storage assets where membrane failure presents a risk to water quality.

This investment involves the replacement of existing membranes where inspection and condition evidence confirms loss of integrity, increased permeability or risk of contamination pathways. In delivery this involves a full drain down of the reservoir, safe removal and disposal of the existing membrane, preparation of the underlying concrete substrate, and installation of a new membrane system. Where required, this will be complemented by remedial activities such as roof drain replacements, access hatch upgrades, joint treatments and security improvements.

3.3.3 Water tower - external condition (£7m)

These investments (I048113 Roade, I047615 Mursley, I047619 Mundesley and I048121 Nedging) focus on addressing advanced external deterioration at treated water towers. These target assets with pronounced concrete spalling and reinforcement exposure that, if left unaddressed would increase risk of structural degradation, safety issues and serviceability constraints. The proposed solution involves comprehensive external remediation works including the removal of damaged concrete, treatment or replacement of corroded steel, reinstatement of concrete to design cover, and application of protective anti-carbonation and cathodic protection systems.

These interventions will help stabilise the structural condition of these water towers, preserving their role and avoiding escalation to more disruptive and costly rebuilding. By extending asset life, improving structural resilience and ensuring continued safe operation. This supports customer expectations for reliable service and prudent stewardship of water infrastructure.

3.3.4 Storage points extensive intervention (£56m)

This package focusses a set of site-specific, higher value schemes that address discrete, specific risks to treated water capacity and resilience. These focus on where asset condition requires bespoke engineering solutions.

Some of the proposed solutions (I047770 Sapley WR, I047679 Haddenham WT Asset Health, and I047797 Clapham WTW CT and FW Storage) include new internal dividing walls to improve operational flexibility, new or upgraded treated water storage, pumping and supply infrastructure, standby power and supporting civil, electrical and control systems. These works will enable continued supply during outages, improve system redundancy and ensure assets can operate safely under both normal and stress conditions.

Other investments (I047702 Boughton Reservoirs, I030909 Warren Hill WR2 rebuild, and I028481 West Pinchbeck WTW new treated water tank schemes) represent major asset renewal/ replacement where existing structures have reached the end of their operational life or where future demand cannot be met through refurbishment alone. These schemes involve the construction of new storage tanks or reservoirs, significant new pipework, access roads, drainage, electrical infrastructure and environmental mitigation measures.

3.4 Benefits of the proposed solution

Ofwat assessment criteria:*what additional benefits the proposed solution will provide compared to the current situation, with clarity on the assumptions underpinning the cost benefit analysis (CBA)*

The proposed programme delivers a material uplift in public health protection, resilience and long-term asset performance compared with the status quo. The benefits include:

- Reduction in coliform failure risk, addressing the increasing trend of ingress related detections and preventing escalation of public health incidents.
- Improved supply resilience, as fewer tanks fail unexpectedly and more can be taken out of service safely for planned maintenance.
- Extended asset life, with membranes, structural repairs and full replacements providing long term assurance and reducing future capital requirements.
- Reduced safety risk, particularly on elevated water towers where spalling presents a direct hazard to operators and the public.
- Avoidance of a future "bow wave" of asset failures, by spreading investment across multiple AMPs and avoiding costly emergency interventions.
- Reputational protection, reducing the likelihood of visible degradation or high profile water quality failures.
- Avoidance of external flooding of circa 20 properties within 5 years as a result of extensive leaking of water tower in close proximity to domestic properties.

All benefits flow directly from the deterioration modelling and whole life appraisal. They represent risk reduction outcomes that cannot be achieved under current maintenance run rates.

3.5 Customer engagement

Ofwat assessment criteria: *customer engagement to understand customer preferences for final options where appropriate*

Our customer engagement draws on a consistent and triangulated evidence base across multiple sources, including long-term PR24 engagement, the Customer Engagement Synthesis Report (August 2024) (ANH_DD_056), the State of the Nation Survey 2026 (ANH-CC26-07) and targeted Online Community research (March 2026) (ANH-CC26-08).

3.5.1 Storage points as critical infrastructure for customers

The State of the Nation Survey 2026 shows that, while customers' broader concerns are dominated by cost of living, economic pressures and global issues, their expectations of us are focused on core service delivery–reliability, infrastructure and maintaining the network.

Customers explicitly identify infrastructure improvements and affordability as the most common priorities for us, and rank ensuring water and sewerage systems can cope with demand as the clear top priority. There are also recognised gaps between importance and performance in areas such as maintaining infrastructure and fixing leaks, reinforcing expectations for increased investment in asset health.

This aligns with PR24 engagement evidence, where 92% of customers support proactive maintenance of assets (Customer Engagement Synthesis Report, p.67), and customers consistently prioritise high-quality drinking water and reliable supply (pp.13-16, 28). Customers also emphasise the need to future-proof infrastructure to avoid disruption and future risk (p.110).

Taken together, this evidence demonstrates that customers expect us to act early to prevent service failure, rather than respond reactively once issues arise.

3.5.2 Strong customer support through Online Community insight

Our targeted Online Community research (March 2026) undertaken to inform our Cost Change proposals provides direct evidence of customer preferences when making trade-offs between investment areas.

When asked to allocate relative importance across investment categories, water storage points ranked highest overall, receiving the greatest share of customer prioritisation (31 points), ahead of gravity sewers, power supplies and growth-related investment .

Customers prioritise storage because they see it as:

- essential to supply resilience and drought protection;
- critical to long-term system security in the context of climate change and population growth; and
- necessary to avoid future shortages and system-wide disruption .

Customers allocating the highest scores consistently describe storage as "critical infrastructure" and frame investment in preventative terms, emphasising the importance of avoiding failure rather than responding after the event .

Importantly, the research also shows that support for investment is strongest where risks are perceived as immediate and system-wide, which is particularly true for storage assets

3.5.3 Alignment with attitudes to affordability and bill impacts

Customer support for storage investment is consistent with broader attitudes to affordability.

The State of the Nation Survey 2026 highlights that cost of living is the dominant concern, and that customers will judge companies through a value-for-money lens, expecting bills to be clearly linked to tangible outcomes and future infrastructure investment (Summary and implications).

This is reinforced by Online Community evidence, where:

- 88% of customers prefer “smooth and steady” bill increases, citing predictability, manageability and avoidance of future “bill shock”
- customers emphasise the importance of gradual, planned investment to support budgeting and fairness; and
- support for investment remains strong where it is clearly linked to protecting essential services and avoiding future risk .

Customers support the investment in principle, but want costs to be introduced in a fair, predictable way and clearly linked to outcomes.

Customers explicitly associate reactive or delayed investment with higher long-term costs, disruption and reduced trust. In contrast, proactive investment in critical infrastructure, such as storage, is viewed as good stewardship–protecting customers from avoidable future risks while maintaining long-term value for money.

3.5.4 Protection of the environment alongside customers

Customers also expect us to deliver environmental protection alongside core service outcomes.

The State of the Nation Survey 2026 identifies environmental protection and cleaner water as key expectations, alongside infrastructure resilience (Priorities for Anglian Water - open responses). Similarly, PR24 engagement highlights that customers prioritise water quality and environmental outcomes as core to service delivery (Customer Engagement Synthesis Report, pp.13-16).

Investment in storage points supports both objectives. By reducing the risk of system stress, emergency interventions and service disruption, storage investment contributes to:

- maintaining safe, high-quality drinking water, and
- supporting stable environmental performance, including reduced risk of contamination or reactive system operation.

Customers therefore view investment in storage not as a standalone intervention, but as part of delivering safe, reliable and environmentally responsible services.

Across all sources of engagement, there is strong and consistent evidence that customers:

- prioritise reliable core services and resilient infrastructure;
- support proactive, preventative investment over reactive responses;
- expect investment to be delivered in a fair and predictable way; and
- place highest value on investment that protects health, supply security and long-term resilience.

Investment in storage points directly aligns with these expectations and represents a customer-supported, evidence-based response to managing long-term risk while maintaining value for money.

4 Robust and efficient costs

Ofwat can be confident that the Storage Point programme represents efficient costs because it is grounded in actual outturn delivery data, tested against external benchmarks, and built using the same cost models and benchmarking methodologies that underpinned the PR24 enhancement cost build-up which was assessed by Ofwat as being efficient.

Across the programme, estimated costs fall within observed historical cost ranges for equivalent Anglian Water interventions, and where external benchmark data (e.g. WRc TR61) allows comparison, the modest variance to these benchmarks is fully explainable through scheme-specific constraints, operational realities and regulatory obligations unique to live treated water storage assets.

The programme therefore represents an efficient and deliverable suite of interventions, consistent with both historic performance and the wider industry's cost profile, and supported by a transparent and auditable cost-modelling approach aligned with Ofwat's expectations for PR24 solution costing.

4.1 Methodology to determine costs

Ofwat assessment criteria: *the costing methodology and approach being applied to derive the cost of options and chosen solution*

We have developed cost estimates using standardised cost models derived from previously delivered schemes, with clear documentation of assumptions, scope boundaries, and cost drivers.

Where direct historical analogues exist, unit rates, productivity norms, and construction methodologies are drawn from completed reservoir, service tank, membrane, contact tank, and baffle wall schemes (e.g. Abberton, Bexwell, Sapley). Where site-specific data is limited, costs are tested against parametric benchmarks and complexity-based templates to ensure proportionality and consistency.

Estimates include all relevant capital components, covering civil, mechanical, electrical, instrumentation, commissioning, access, enabling works, contractor preliminaries, and indirect on costs.

4.1.1 Uncertainty in post-inspection scope and assumptions

A material proportion of the proposed storage points programme is necessarily defined at an early stage in order to develop cost estimates and support the cost change process. This is ahead of assets being taken out of service, drained and inspected to understand what the actual asset needs are. The precise extent of deterioration cannot be known with certainty at the point of setting allowances.

To address this uncertainty in a proportionate way we have:

- Developed cost assumptions based on recent inspection outcomes;
- Used package-based scope definitions (e.g. medium, high complexity) informed by historic outturn data, rather than worst case assumptions at asset level;
- Applied a mid-down cost estimation techniques calibrated to actual delivery experience;
- Designed the programme and PCDs to flex between interventions as inspection evidence is obtained.

This approach ensures the allowance reflects a realistic expected level of intervention across the portfolio, while avoiding systematic optimism or pessimism at a scheme level.

4.1.2 Rationale for a Mid-Down Cost Estimation Technique

For Storage Point investments, scheme definition is inherently variable at the programme development stage. Design maturity is typically limited to desktop assessments and high-level site information, informed by operational data and recent delivery experience across multiple internal stakeholders.

Given this context, a mid-down cost estimation technique has been selected as the most appropriate and proportionate approach. This method enables:

- Early-stage cost certainty without false precision
- Consistent treatment of a large and diverse programme
- Transparent linkage between scope assumptions and cost outputs

This approach is consistent with industry good practice for early-stage investment planning and complies with Ofwat expectations for proportionate costing at this stage of solution development.

4.1.3 Cost Build-Up and Work Element Structure

Costs are constructed by breaking each Storage Point investment into major construction and refurbishment elements, estimated individually and then aggregated to form the total scheme cost.

Typical high-level work elements include:

- Storage resilience assets: tanks, reservoirs, roofs, membranes
- Hydraulic and network elements: pumps, pipework, directional drilling where required
- MEICA systems: valves, instrumentation, MCCs, telemetry, SCADA integration
- Ancillary and enabling works: access, reinstatement, safety systems, environmental mitigation

Each work element is costed using cost models calibrated with historical delivery data, reflecting scale (e.g. m3 capacity), complexity, access constraints, and asset condition

4.1.4 Use of cost models and historical evidence

Cost models underpin the estimation of individual work elements, using drivers such as:

- Storage capacity (m^3)
- Asset type and size
- Construction constraints (e.g. restricted access, hand-dig requirements)
- Refurbishment extent (roof, wall, floor, joint replacement)

These models are populated with validated cost data from historic delivered schemes, including:

- Reservoir and service tank construction
- Membrane installation and replacement programmes
- Contact tanks and baffle wall installations
- Water tower replacement schemes

This ensures that cost estimates reflect actual delivery performance, not theoretical rates, and are fully auditable back to prior schemes.

4.1.5 Water tower refurbishment - cost estimation approach

The works comprise extensive concrete repair and structural protection to arrest deterioration and extend asset life. This includes removal of concrete to fully expose reinforcement (typically 40-60 mm depth, with over 60% of concrete removal anticipated on most towers), treatment of existing reinforcement with corrosion inhibitors, and replacement of damaged rebar where required. The concrete profile will then be reinstated to provide the original design cover to reinforcement. Long-term protection will be delivered through the application of anti-carbonation coatings and the provision of a cathodic protection system, including anode coatings to all external tower surfaces. All temporary works and access requirements, including scaffolding and associated equipment, are included to enable safe delivery of the works.

Due to the specialist nature and scale of the works required, water tower refurbishment of this type has not been delivered in Anglian Water within the last ten years. As a result, there is no recent internal delivery data that can be reliably used to inform a top-down or benchmark-based estimate.

Given this lack of recent comparable schemes, we have adopted a bottom-up cost estimation approach, developed in collaboration with our framework partners, who were appointed through a competitive procurement process. These partners have demonstrable experience in specialist concrete repair and structural remediation works of a similar nature and complexity.

This approach ensures that costs are robust, evidence-based, and reflective of current market conditions, while providing transparency over labour, materials, access requirements, and specialist techniques. It also aligns with Ofwat's expectations that, where historical cost data is unavailable, solution costs should be derived using appropriate alternative methodologies supported by competent, competitively selected delivery partners.

4.2 Efficient costs

Ofwat assessment criteria: *efficient costs for options and the chosen solution; cost benchmarking, including comparison to historical outturn costs and external benchmarks, where available (for related/alike schemes)*

4.2.1 Overview of cost efficiency approach

We have applied a structured and proportionate approach to demonstrate that the costs of the short listed storage point intervention options, including the chosen solutions, are efficient. Cost efficiency has been tested through a combination of internal historical benchmarking, external industry benchmarking, and model validation.

Given the early stage of design development and the inherent variability in storage point condition and scope, the focus has been on demonstrating that costs are reasonable, evidence-based, and proportionate when compared to both historic delivery experience and available external benchmarks.

4.2.2 Internal benchmarking against historical outturn costs

To understand our efficiency against historical performance, a comprehensive internal benchmarking exercise was undertaken using recently completed storage point refurbishment schemes where the primary driver for intervention was deterioration of the civil structure.

The methodology comprised:

- Identification of completed treated water storage refurbishment schemes
- Grouping of schemes by severity of deterioration to ensure like-for-like comparison
- Analysis of total outturn spend, including preliminaries and inflation
- Assessment of asset-level scope inclusion, identifying elements present in benchmarked schemes (i.e. Upstand banding, Wall roof Joint, Roof joint)

This process allowed us to confirm that the scope and scale of work assumed in the cost estimates are consistent with what has historically been delivered for similar storage point interventions.

In each investment for storage point generic refurbishment works we had an average of 20 projects to benchmark against providing a robust and statistically meaningful internal dataset. This gave confidence that the estimated costs reflect efficient delivery rather than overspecification or optimistic under scoping.

A known constraint for storage point investments is that assets are typically live and cannot be fully inspected at the early planning and estimation stage. As a result, the precise extent of deterioration–and therefore final scope–cannot be confirmed until construction.

The internal benchmarking exercise explicitly addressed this uncertainty by:

- Identifying standard scope components typically required across historic schemes
- Ensuring that cost estimates allow for a reasonable and representative level of intervention rather than worst-case assumptions
- Testing both cost proportions and scope quantities against historical outturns

This approach ensures that costs are efficient while remaining deliverable and resilient to site-specific variability.

Table 5 Unit rates for each package

Intervention type group	Number of storage point estimated in cost change	Cost change average unit rate £k assets only excl. on cost	Number of Storage point outturn cost within the cost band used for benchmarking	Average benchmarked rate (£k)- Asset Only excl on cost
Storage Points Refurb Medium complexity (1) (£50-100k)	139	73.06	26	95.19
Storage Points Refurb Medium complexity (2) (£ 100-200k)	105	100.29	29	153.58

Intervention type group	Number of storage point estimated in cost change	Cost change average unit rate £k assets only excl. on cost	Number of Storage point outturn cost within the cost band used for benchmarking	Average benchmarked rate (£k)- Asset Only excl on cost
Storage Points High Complexity (1) (£200-400K)	51	268.39	25	250.65
Storage Points High Complexity (2) (£400-600k)	23	500.65	6	427.60

4.2.3 External benchmarking with industry comparison

In addition to internal benchmarks, we tested the outputs of our cost models against external industry benchmarking data, WRc TR61 where applicable. TR61 is used as a high-level reference point and is not suitable for direct efficiency adjustments where scope, regulatory standards and delivery context materially differ. Using available mappings, it has been possible to align approximately 42% of the Storage Point asset with TR61 benchmarks. These assets predominantly comprise combinations of storage tanks, security-related ancillary works such as kiosks, and associated water main connections.

Figure 7 Storage points - asset direct scheme costs benchmarked to industry data WRC TR61

The analysis indicates that, for the assets where comparison was possible, our estimated costs are within the upper range of historic industry benchmarks. Given this discrepancy between the TR61 and our cost change asset costs, we have undertaken an assessment of what is causing the difference in cost.

On detailed review of our costs and the TR61 benchmark, we found that a key driver of the variance relates to the water main installation elements, which are increasingly subject to more stringent requirements than those reflected in historical benchmark data. The TR61 dataset includes cost information up to Q2 2020 and therefore does not fully capture the cumulative impact of industry-wide regulatory, safety, and delivery changes experienced over the last three years.

These changes include:

- Increased use of Ground Penetration Radar (GPR) - GPR is now routinely deployed to reduce the risk of utility strikes, improving safety and reducing asset damage, but increasing upfront survey and investigation costs.

- Enhanced plant and equipment safety standards - There has been greater use of advanced plant and equipment, including excavators with human-movement detection and proximity warning systems, as well as vacuum excavation techniques, reflecting improved health and safety expectations across the industry.
- Changes to supervision and site management requirements - Updated health and safety standards have reduced supervisor-to-operative ratios, increasing the level of supervisory resource required on site.
- Stronger security compliance at water sites - Water assets are now subject to more stringent Security and Emergency Measures Direction (SEMD) compliance than in previous AMP periods, leading to additional requirements for controlled access, supervision, and site security provision during construction activities.

Taken together, the internal outturn benchmarking, scope-level testing and adjusted external comparisons provide consistent evidence that the costs in this submission reflect efficient delivery of the required scope. While certain elements sit above unadjusted historical benchmarks, this variance is fully explained by demonstrable changes in scope, standards and delivery constraints which are unavoidable for live treated water storage assets. On this basis, we consider the storage points cost change proposal to be efficient.

4.3 Cost breakdown

Ofwat assessment criteria:*Cost breakdowns for individual schemes*

The costs for this proposal are summarised in the table below. This also includes the allocation of each line to part of the PCD (explained further in the 'Customer Protection' section):

Table 6 Summary of the cost for our proposal

Category	Investment ID	Title	AMP8 Capital Cost £m	AMP8 opex £m	Benchmark methodology	Proportion	PCD allocation
Service Reservoirs internal remediation	I047670	Storage Points Refurb Medium complexity (1) (£50-100k)	11.946		Schemes outturn cost	44%	LEP
	I047671	Storage Points Refurb Medium complexity (2) (£ 100-200k)	13.041				LEP
	I047673	Storage Points High Complexity (1) (£200-400K)	15.955				LEP
	I047674	Storage Points High Complexity (2) (£400-600k)	13.514				LEP
	I048169	AMP8 Revised storage point enabling	3.150				LEP & HEP
	I048043	Storage Point Enabling Year SMD (2)	1.333				LEP & HEP
	I048037	Storage Point Refurb AVG SMD (2)	5.518				LEP
	I046061	Storage Point Complex Refurb	3.375				LEP
	I047955	Storage Point Complex Refurb (1)	8.736				LEP
	I047491	Storage Point Refurbishment IOS	0.779				LEP

Category	Investment ID	Title	AMP8 Capital Cost £m	AMP8 opex £m	Benchmark methodology	Proportion	PCD allocation
Service Reservoir Roof membranes installation	I048181	Storage Point Membranes	32.054		Industry benchmark models TR61	20%	LEP
	I047756	Abberton WR No Membrane	0.220				LEP
	I047757	Alton WTW Tanks No Membrane	0.593				LEP
	I047759	Bexwell Res Contamination Risk	1.039				HEP
	I047760	Chesterton OR Contamination Risk	1.245				HEP
	I047372	Leziate #2 WR St2 Full Roof Membrane	0.565				LEP
Water Tower - External Condition	I048113	Roade WT External Condition	1.326		Framework partners	4%	HEP
	I047615	Mursley WT External Condition	2.199				HEP
	I047619	Mundesley WT External Condition	1.796				HEP
	I048121	Nedging Watrer Tower External Condition	1.741				HEP
Storage Points Extensive intervention	I047770	Sapley WR Lack of resilience	1.131		Industry Benchmark models TR61	32%	HEP
	I047797	Clapham WTW CT and FW Storage AH	22.283	0.371			HEP
	I047679	Haddenham WT Asset Health	6.267	0.007			HEP
	I047702	Boughton Res 2 and 3 Condition	13.498				HEP
	I030909	Rebuild Warren Hill WR2	4.074	0.001			HEP
	I028481	West Pinchbeck WTW WR; New Treated Water Tank	8.209	0.005			HEP
		Total cost	175.6	0.384			

The full, scheme level cost breakdowns underpinning the Storage Points Programme estimates are provided in ANH-CC26-15. These include detailed asset level costs, location specific adjustments, oncosts and overheads for each individual scheme, ensuring full transparency and auditability of the submitted costs.

5 Customer protection

5.1 PCD design

We accept the need for a PCD for this increased level of activity and provide our detailed definition in the ANH-CC26-17. We have designed our proposed PCD to reflect both: the implicit allowance and associated activity (i.e.: what base buys); and the two parts of our cost change proposal (named schemes, and provision for reactive works). It is built in line with the PR24 principles and cost change PCD guidance. Each component of the PCD reflects the delivery and risk profile associated with the programme of activity.

- **Base modelled allowance (what base buys)** - this component focuses on the number of network storage points we will renew through our assumed base modelled allowance over 2027-30. Our 'What base buys' section, under 'Need for a additional investment', sets out how we arrived at the implicit expenditure allowance. Our estimate of the associated outputs is based on our 2015-25 annual average refurbishment and replacement activity (as captured in the November 2025 asset health data return/share) and is profiled in line with the assumed implicit allowance expenditure profile.

  This component has a unit rate non-delivery incentive and asymmetrical time incentives calculated in line with the PR24 approach (updated for the CMA's final determination WACC).

- **Lower expenditure programme (LEP)** - this component focuses mainly on the number of network storage points we will renew through our aggregated reactive work programmes. It also includes a limited number of expected storage point renewal interventions at specific sites. All of the renewals associated with this PCD component are anticipated to be relatively lower cost - though as many of the outputs will be reactive following inspection, there is some inherent uncertainty in the intervention and outturn cost. Table 6 above sets out which of our investments align to this PCD component.

  This component carries a non-delivery unit rate incentive and asymmetrical time incentives calculated in line with the PR24 approach (updated for the CMA's final determination WACC). We have included a time incentive as we recognise it provides appropriate, proportionate protection for customers in the delivery of these groups of mainly reactive programmes and the associated reductions in water quality and supply risks.

- **Higher expenditure programme (HEP)** - this component focuses on our programme of larger, more extensive, storage point renewals where the expected intervention at 12 sites is more known and expected to be relatively higher cost (compared to the programmes aligned to the lower expenditure component of this PCD). The table above sets out which of our investments align to this PCD component.

  Given the multi-year delivery period at many of these sites, and factors such as site complexity, outage dependencies and land & planning acquisition where required, we have focused the unit rate incentive on non-delivery and the end of the period. And, consistent with PR24 PCDW11b (supply interconnectors), as there are only a limited number of sites related to this component to manage delivery risk across (including risks outside our control), we have also included a 12-month grace period for us to demonstrate delivery. This ensures proportionate protection whilst recognising the likely delivery complexity and window for sites in this component.

The design of our PCD provides proportionate protection for customers and flexibility to deliver the best outcome for customers as:

- For each component, under-delivery triggers the return of the applicable allowance at the unit rate.
- We have clearly delineated between a lower cost programme of work and a higher one to support fair and proportionate incentives.
- We have included time incentives for two of the components to support timely delivery. For the higher expenditure programme component, which focuses on more know interventions, we expect delivery to occur

mainly at the end of the period. Interim milestones and associated incentives are therefore not applicable, appropriate, or proportionate.

- We have built an annual ex-post review mechanism into the PCD, supported by independent assurance, that will confirm that our proposed allowances have been spent in line with the PCD conditions. Where we deliver alternate solutions to those originally envisaged (including in relation to the initial list of named sites), the assurance will also consider whether our overall investment decisions have been efficient and appropriate and that the storage points renewed are those that are the most cost beneficial to customers and those with the highest history of customer incidents driving service issues. This is consistent with the changes to the mains renewal PCD which occurred after the Final Determination.

In table 6 above, we set out that our cost change proposal includes allowances for enabling works. These are essential to deliver the cost change component outputs set out in our PCD and so the PCD reflects their cost in the incentive rates (allocated proportionally by value between the LEP and HEP components), but the delivery profiles exclude such works and interim outputs. This keeps delivery and incentives targeted on the outcomes that matter to our customers.

We consider there are no overlaps between this PCD and investment, and the incentives through existing PCs, PCDs, and investment proposals.

Overall, our proposed PCD protects customers from late or non delivery, while giving our delivery teams the ability to prioritise work flexibly within programmes to maintain robust asset health, support delivery on regulatory commitments and compliance, and deliver the best value risk reduction for customers

6 Investment delivery plan

6.1 Delivery risks

While we have stepped up our delivery of storage point inspections, we recognise the DWI expects us to go further in terms of frequency of inspections and any maintenance that results from the inspections. The storage points programme is deliverable but faces a number of recognised technical, regulatory and operational risks that have been explicitly considered in the design of the investment strategy and delivery approach.

As set out above in the stakeholder engagement section we have engaged closely with the DWI on our recovery plan for its Provisional Enforcement Order, which is grounded in the data on the number of inspections possible per year, and the likely level of remedial works to be generated.

Maintenance of treated water storage points has always been a feature of our capital maintenance programmes. At PR19 we estimated the allowance allocated to storage points was c.£40m and we spent more than 10% above this during AMP7. In Year 1 of AMP8, we have already spent c£40m, demonstrating our acceleration of this important programme.

6.1.1 Delivery risks and mitigations

Delivery of storage points are subject to heightened technical risks. The nature of needing to take these assets out of service means that the exact scope of work is not clear until the asset is isolated and inspected. We have also identified risks with the supply chain, as there is a smaller resource pool than in other areas, given the particular expertise required.

We also have to manage risks due to weather conditions. For example, we have made robust assumptions about the impact of potential drought on which storage points could be taken out of service while maintaining network resilience, and timing outages to periods of lower demand.

We are mitigating these risks via close engagement with our existing suppliers. We are engaging closely to provide strong confidence of both increasing volume of work, and a clear future pipeline of work. This engagement allows suppliers to recruit additional resources. Our close engagement with our supply chain partners has led to benefits already for our AMP8 delivery. Our partnerships are robust, and ringfenced for our delivery. We have trialled innovative delivery approaches, including having multiple contractors on site to enable appropriate specialisms to work together and deliver projects most efficiently.

We are also engaging with the wider supply chain to bring in more suppliers. We are engaging with more delivery vehicles, as this approach can introduce competition and innovation to the supply chain. This approach has already yielded benefits in the form of new techniques, such as using external membranes rather than internal sealing works.

In addition, we are also engaging with existing suppliers to amend contractual terms with a trusted partner, to support us with additional labour resource, which can improve resource skills, and quality control.

To manage network resilience risks we have developed the storage points programme to be fully integrated. We evaluate supply risks with operational colleagues on a weekly basis, and we can dynamically flex the programme to reduce risk to customer supplies.

To increase overall delivery efficiency, we are also looking at non-traditional refurbishment of storage points. Where possible, we will take alternative approaches, such as deploying temporary storage, or removing unnecessary assets, to make delivery more efficient.

6.1.2 Future Delivery programme

We expect to develop a comprehensive PR29 submission for storage points that will see the new higher rate of expenditure continue beyond 2030. Our long term strategy will also address the issue of the choice to replace compared to refurbish, and when is the right time to “write off” existing assets, and reflect any available updated policy on statutory minimum resilience standards such as those for peak demand and single source of supply.

7 Assurance

The proposed investment in storage points has been subject to independent technical assurance by Jacobs in accordance with ISAE (UK) 3000 standards. Jacobs concluded that the approach to identifying, assessing and prioritising interventions is structured, methodical and underpinned by a clear and consistent framework. The use of the investment system, Copperleaf, supported by PR24-aligned unit rates, whole-life costing methodologies and a customer-informed value framework, provides a robust basis for option development and appraisal. The incorporation of Risk, Opportunity and Value (ROV) assessments for each intervention further strengthens decision-making by enabling transparent comparison of options and ensuring that selected investments deliver measurable risk reduction and long-term value.

Jacobs found that data governance was reliable and consistent, with clear traceability between internal systems and Ofwat reporting outputs, and no material issues identified through sample testing of schemes across a range of complexity. The overall methodology was assessed as technically robust, with clear processes supporting cost consistency and investment planning.

Overall, this independent assurance provides confidence that the storage points investment proposals are robust, evidence-based and aligned with regulatory expectations, supporting resilient and cost-effective management of asset condition and risk. Jacobs full reports can be found at ANH-CC26-10 and ANH-CC26-11.

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THE QUEEN'S AWARDS FOR ENTERPRISE: SUSTAINABLE DEVELOPMENT 2020

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