UUW30

Performance Commitments Technical Document

October 2023

Chapter 5 supplementary document

This document sets out the detail of our performance commitments for AMP8. This includes how the measure will be calculated and the evidence to demonstrate that our target is stretching.

United Utilities

Water for the North West

Contents

Appendices

1. PR24 UUW Performance Commitments

1.1 Key messages

- **We are building on a strong track record of performance on AMP7 PCs and ODIs:** Our drive to deliver against our AMP7 performance commitment levels has delivered one of the strongest performances in the sector.
- **Stretching improvement targets for AMP8:** We are targeting stretching performance levels based on historical performance and historical targets across the industry, in line with Ofwat's final methodology expectations.
- **An ambitious plan that delivers on customer and environmental priorities:** We propose ambitious levels of performance – supported by compelling evidence – targeting significant improvements in key areas such as storm overflows, sewer flooding and water supply interruptions, alongside frontier performance in pollution incidents by 2030.
- **We have consulted widely with customers and stakeholders**: understanding their priorities for performance on common PCs and also identifying areas not covered by common measures where they want to see action. We therefore propose three bespoke PCs focusing on North West customers and the environment, with stretching targets and well evidenced financial incentives.

1.2 Structure

1.2.1 The purpose of this document is to demonstrate how our suite of common and bespoke performance commitments, and their performance commitment levels (PCLs) set stretching and ambitious targets for areas of service prioritised by customers and stakeholders. We offer an ambitious level of service – stretching but achievable - when considered in the round with our efficient cost proposals put forward in Chapter 8.

1.2.2 This document is structured as:

- Section 2 describes an overview of our common and bespoke performance commitments;
- Section 3 describes the common performance commitments for the "Customers receiving excellent service everyday" outcome and provides the detail of our proposals for the PCLs and associated under or out performance restrictions (cap, collar or deadband);
- Section 4 describes the common performance commitments for the "Environmental" outcome and provides the detail of our proposals for the PCLs and associated under or out performance restrictions (cap, collar or deadband);
- Section 5 describes the performance commitments for the "Asset Health" outcome and provides the detail of our proposals for the PCLs and associated under or out performance restrictions (cap, collar or deadband); and,
- Section 6 describes our suite of bespoke performance commitments and provides the justification for each with detail of the proposed PCLs and associated under or out performance restrictions (cap and collar) and Outcome Delivery incentive (ODI) rates.

1.2.3 This document is also supported by an appendix, which includes:

- Appendix A.1: Completed compliance checklist for all performance commitments where it was included in Ofwat methodology issued December 2022;
- Appendix A.2: the reporting requirements for each of the AMP8 performance commitments;
- Appendix A.3: Additional information to support Operational Greenhouse gas emissions W and Ww PCs; and,

- Appendix B1: Projects included in the Embodied greenhouse gas emissions PC baseline.

1.3 Overview

1.3.1 This document contains the supporting evidence for our performance commitments and outcome delivery incentive proposals.

1.3.2 Common performance commitments focus on:

- The key outcomes of importance to customers (which are also likely to be important in future price control periods);
- Metrics that are suitable for financial incentives; and
- Outcomes that are common across companies.

1.3.3 Bespoke performance commitments are proposed in line with the key outcomes and have been developed in line with Ofwat final methodology for PR24 – Appendix 7 Performance Commitments, December 2022. The bespoke performance commitments that we propose are based on:

- Local circumstances that do not apply to most other companies and we give compelling evidence of this need for a performance commitment to drive benefits for customer, communities and the environment; and/or
- Company-specific circumstances which mean the bespoke performance commitment will lead to significant additional benefits for customers and the environment that are unlikely to be realised without it.
- We also include a bespoke performance commitment on embodied greenhouse gas emissions, in response to Ofwat's strong guidance on this matter.

1.3.4 A full list of common and bespoke performance commitments with proposals is included in Table 1 and Table 2 with the proposed performance improvement.

2. Performance Commitments

2.1 Overview

2.1.1 Performance commitments are the metrics used to measure the service water companies deliver for customers and the environment. Common performance commitments have been selected by Ofwat to address three outcomes:

- Outcome A: Customers receiving excellent service every day
- Outcome B: Reducing the Environmental Impact
- Outcome C: Improving Asset Health and operational resilience

2.1.2 All three categories are required to protect the interests of customers and secure the resilience of companies both in the short and the long term. The categories are aligned with UUW's healthier, greener and stronger values.

Table 1 UUW common performance commitments

Customers receiving excellent service everyday			
Measure	Service highlights	Performance commitment	Notes on PC design
Water supply interruptions	Delivering a significant improvement in water supply interruptions	12.7% performance improvement [1]	PCL reflects a duration threshold for certain planned interruptions of 8 hours or greater. Penalty collar proposed
Compliance Risk Index (CRI)	Sustaining our dedication to the high standards of water quality as highlighted in the DWI Chief Inspector's July 2023 report	100% compliance target	Proposed performance deadband
Customer contacts about water quality	Best ever performance, following on from our step change 42% improvement in AMP7	25.9% performance improvement [1]	
Internal sewer flooding	Ambitious performance levels proposed which take account of our operating circumstances and are consistent with our PR19 2-AMP strategy, with a proposed 55% improvement in performance since AMP6	31.9% performance improvement [1]	We propose 'environmentally adjusted' PCLs for each company that take account of regional operating differences. Penalty collar proposed
External sewer flooding	Targeting upper quartile performance and a significant performance improvement despite our operating circumstances	12.8% performance improvement [1]	
Customer (C-MeX) Developer (D-MeX) Business Retail (BR-MeX)	Engaged and committed to Ofwat's reform and development of these measures to make sure that they incentivise companies to provide the experience customers want	Final definitions not yet published, but we expect to build on our strong AMP7 performance.	

[1] Improvement stated is from 2024/5 forecast to 2029/30 PCL

Environmental			
Measure	Service highlights	Performance commitment	Notes on PC design
Biodiversity	Proposing ambitious plans to protect and enhance biodiversity through WINEP	New	ODI rate proposed based on Defra's net gain market average values
Operational GHG (W)	Significant reduction in operational GHG emissions, minimising the impacts of substantial growth pressures (particularly Ww WINEP), by embracing efficiency, the newest technologies and innovation	12.37% (W) -10.66% (Ww) performance improvement[2]	ODI rate proposed aligned to latest government values for the relevant period, from figures published in 2021
Operational GHG (Ww)			
Leakage	After achieving the lowest ever level of leakage in the North West in AMP7 we intend to deliver a further 13.0% improvement in AMP8 to meet or beat progress required for our 2050 long term ambitions	13.0% performance improvement [3]	
Per Capita Consumption (PCC)	Building on our AMP7 achievements, we will continue working with customers to deliver a further 4.5% reduction in water demand in line with long term government targets	4.5% performance improvement [3]	
Business demand	Supporting businesses and water supply retailers to reduce demand by a further 5.8%, conserving vital water supplies to make the North West stronger and greener	5.8% performance improvement [3]	
Total pollution incidents	Targeting frontier performance by 2030, driving industry performance further forward through the use of technology and smart networks	25.0% performance improvement [1]	
Serious pollution incidents	Eliminate serious pollution incidents with a stretch target to deliver zero incidents two years running	100% compliance target	Reward gateway proposed for consistent track record of zero serious pollutions
Discharge permit compliance	Targeting 100% compliance at our wastewater treatment works	100% compliance target	Deadband proposed in line with environmental regulator's approach to performance measurement
Bathing water quality	Delivering an improvement to bathing water quality within base cost allowance	1.9% performance improvement [4]	
River water quality (phosphorus)	Improving river water quality and the aquatic environment by going significantly above and beyond required permit levels	21.25% performance improvement [5]	
Storm overflows	Aiming to deliver both the biggest percentage improvement and the biggest absolute improvement by any company in the industry	32.9% performance improvement[1]	Company specific PCL proposed to account for regional operating circumstances and aligned with WINEP investment programme

[2] Improvement stated is from 2021/22 baseline to 2029/30 PCL

[3] Improvement stated is from 2024/5 forecast to 2029/30 PCL, from the 2019/20 baseline

[4] Calculated as the number of bathing waters that will be improved from the current classification (excluding those that are already Excellent quality and cannot improve any more)

[5] Improvement stated is from 2020 calendar year baseline to 2029/30 PCL

Asset Health			
Measure	Service highlights	Performance commitment	Notes on PC design
Mains repairs	Delivering upper quartile performance by ensuring robust asset health and resilience as custodians of the water network	Stable performance to the end of AMP8	
Unplanned outage	Meeting or beating upper quartile performance building on a strong track record in AMP7 to deliver water system resilience	82.5% performance improvement [1]	PCL reflects continuation of raw water quality exclusion
Sewer collapses	Driving further significant performance improvements, capitalising on our AMP7 step change in performance, through tech-driven proactive collapse detection and prevention	5.0% performance improvement [1]	

2.1.3 In addition to common performance commitments, a set of three bespoke performance commitments are proposed. The bespoke performance commitments have been developed building from customer priorities for action in certain performance areas and where there is a significant additional benefit to customers and the environment that cannot be delivered without a strong strategic steer.

Table 2 UUW bespoke performance commitments

Bespoke performance commitments	
Embodied greenhouse gas emissions	Delivering a reduction in our embodied greenhouse gas emissions compared to that forecast in our plans.
Wonderful Windermere	Working in partnership to help improve the health of England's largest lake – Windermere – a nationally significant water body, harnessing UUW's expertise in wastewater treatment and environmental management.
Improving water bill affordability for socially important non-household community groups	Helping the North West's local groups and communities to improve their water efficiency and reduce their bill by working with customers and undertaking activities, including water efficiency audits.

2.2 Reporting methodology

2.2.1 We propose to align with Ofwat's PR24 Performance Commitment definitions and the associated reporting requirements with the exception of:

- Unplanned Outage where we propose that exclusions are retained as part of the reporting methodology (as with the AMP7 reporting requirements); and,
- Water supply interruptions where we propose to extend the duration threshold for supply interruptions associated with planned works related to the proposed leakage enhancement to eight hours.

External/third party guidance and methodologies

2.2.2 Where there are changes to external guidance or methodologies such as the Environmental Performance Assessment (EPA) that are issued outside of the submission timeframe and change reporting requirements, we will continue to report performance in AMP8 against the existing regulatory guidance and the PCLs set by Ofwat at Final Determination. An example of when this could have an

impact is the recent proposal to change all category four pollution incidents to category three for future reporting. This will change the total pollution incident performance commitment in a number of ways

(i) The current proposed PCL will be significantly more difficult to achieve due to the additional number of pollution incidents that will be included in the measurement.

(ii) The historic industry performance is difficult to assess and the forecast upper quartile calculation will be inaccurate. Data issued to calculate a PCL does not include category four incidents, therefore a reasonable PCL aligned with this data is not representative of future performance.

2.2.3 Therefore, if the Environment Agency guidance changes within the AMP8 period then the targets and methodology to categorise pollution incidents will remain aligned to this existing regulatory guidance[6] and the PCLs set at Final Determination.

2.2.4 All third party material that is included in the reporting requirement for each performance commitment is included in Appendix A.2.

2.3 Performance Commitment Levels (PCLs) and restrictions

2.3.1 We propose alignment with the allocation of common and company specific performance commitment levels as proposed in Ofwat's final methodology for PR24 – Appendix 7 Performance Commitments, December 2022 with the exception of:

- Internal sewer flooding where we propose that 'common (environmentally adjusted)' PCLs are instead set using a common methodology that takes account of the relevant environmental differences (principally urban rainfall, the proportion of combined sewers and food service establishment (FSE) density) between company regions, thereby setting specific PCLs for each company that are equally stretching for all companies : and,
- Storm overflows due to a combination of factors including UUW's unique operating circumstances including the legacy design and configuration of infrastructure, the frequency and intensity of rainfall in the North West and the large number of combined sewers in the wastewater network.

2.3.2 In addition to the above, we would expect a company specific PCL for Unplanned outage if the exclusion we propose to the methodology is not agreed.

Outperformance caps and underperformance collars

2.3.3 We propose to align with Ofwat's final methodology for PR24 – Appendix 7 Performance Commitments, December 2022 on the addition of outperformance caps and underperformance collars for all new common measures and asset health measures.

2.3.4 We propose additional collars for:

- Water supply interruptions to account for extreme events, such as regional freeze-thaw impact. This is in line with Ofwat's guidance that it considered a collar to account for extreme events was appropriate; and,
- Internal sewer flooding to reflect extreme events that might cause sewer flooding. An example of such an extreme event was a storm in the Manchester and Stockport region over a two day period in September 2016 which alone resulted in 933 hydraulic and severe weather incidents. Based on a percentage of RoRE, whilst set at a very unlikely level, we consider that the collar would represent an extreme event outside of management control. Whilst we recognise Ofwat's view that companies are best placed and therefore should be incentivised to mitigate the impact of exogenous events on customers, there is also strong evidence that weatherproofing the network to take account of all possible events would be cost prohibitive. Therefore, consistent with the approach Ofwat has set

[6] For the Total pollution incidents PC, the existing regulatory guidance is EPA v9; Recording and categorising water industry self-reported pollution incidents 16_02 v6; and, the current version of the Common Incident Classification Scheme (CICS)

out on water supply interruptions, we consider a similar collar should apply to internal sewer flooding. Otherwise, dealing with storms with such exceptional return periods would have an unacceptable impact on customer bills and, whilst UUW is proposing significant investment to increase resilience against severe weather, reasonable protection should be in place to mitigate exposure to low probability high consequence exceptional events.

2.3.5 In addition, changes in the volume of water used by a small number of very large users has the potential to materially alter performance against the Business Demand PC in a way which is wholly outside of company control. Should these high impact situations not be excluded from the measurement of the PC then we propose that the penalty collar should be set at a rate to account for such situations.

Deadbands

2.3.6 A deadband is applied to protect from extenuating circumstances beyond company control, and set at a level that reflects these circumstances in the future. We propose a level for the CRI deadband which is in line with this tenet.

2.3.7 We also propose a deadband for the Discharge permit compliance PC to mitigate the risk from external factors leading to non-compliance. Similarly to the impact that external factors beyond company control (customer fittings) can have on the CRI performance, external factors can also impact DPC performance, for example extreme septicity in networks following a long hot dry spell. Very hot weather is not an exemption allowable under the EPA's unusual weather exemption – this only applies to very cold weather – yet this can cause significant issues with the wastewater treatment process which are beyond company control.

2.3.8 To align this PC with the Environmental Performance Assessment Version 10 Discharge permit compliance (numeric) measure, the deadband should be set at 99.0% compliance, a level which is categorised as 'Green' in EPA. We also note that Discharge Permit Compliance is a core metric for EPA and that 99.0% compliance is a prerequisite to companies achieving 4 star status, even if all their other metrics are green. Historic evidence shows that this is an upper quartile level of performance which is accepted by the Environment Agency. As the responsible environmental regulator, we consider that the Environment Agency is well placed to be able to judge top tier performance on this measure and we consider that Ofwat's approach should embrace this.

Performance commitment levels (PCLs)

2.3.9 PCLs have been calculated in line with Ofwat information requirements (Appendix 9 page 67) to be stretching from both base and enhancement expenditure. Table 3 categorises each PC with the type of PCL that has been developed as part of this document (common or company specific) and where that is aligned with the Ofwat methodology.

Table 3 Common Performance Commitment Levels (PCLs)

In line with Ofwat methodology		Where Ofwat proposes a common PCL
Common PCLs	**Company specific PCLs**	**Company specific PCLs proposed**
Water supply interruptions (propose collar)	Biodiversity	Internal sewer flooding propose environmentally adjusted PCL proposed with underperformance collar
Compliance Risk Index (CRI)	Operational greenhouse gases (water and wastewater)	Storm overflows
Customer contacts about water quality	Leakage	Unplanned Outage if proposal to maintain exclusion is not accepted
External sewer flooding	Per Capita Consumption (PCC)	

In line with Ofwat methodology		Where Ofwat proposes a common PCL
Common PCLs	**Company specific PCLs**	**Company specific PCLs proposed**
Total pollution incidents	Business demand	
Serious pollution incidents	Bathing water quality	
Discharge permit compliance (propose deadband)	River water quality (Phosphorus)	
Mains repairs	Sewer collapses	
Unplanned outage with exclusion		

2.3.10 Further information on the calculation of each PCL is included in the individual performance commitment summary. A summary graph (shown in Figure 1 with definitions Table 4) is provided including relevant historic and forecast values has been created (where applicable) for each performance commitment to demonstrate the PCL in context with historic and industry performance.

Figure 1: Example of a graph with an AMP8 PCL (and ODI restrictions) in context of historic and forecast industry performance

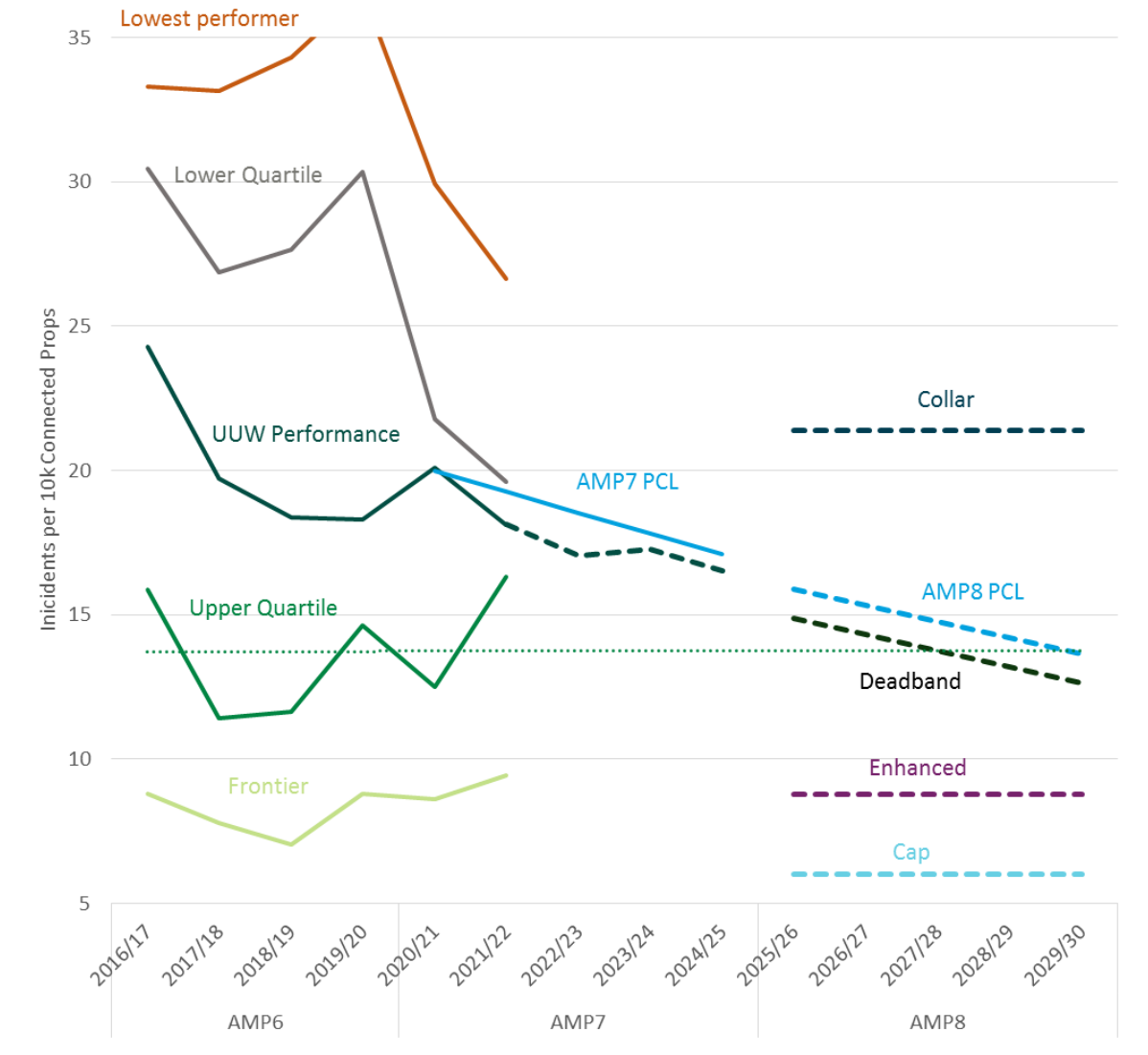


Table 4 Performance commitments graph data definitions

Data set title	Definition(s)
Frontier, Worst performer, Upper Quartile and Lower Quartile	Historic values are calculated using industry data issued by Ofwat (Historical performance trends for PR24 v 2.0, 5/04/23) from 2011-12 where available, up to 2022-23. For Water measures, this includes Water only Companies (WoCs). Frontier is the highest performing position in the industry for that year and lowest performer is the lowest performance in the industry for that year. Lowest performer is not included for all PCs, but is used to highlight measures where there is a wide range of performance across the industry. Forecast quartile and frontier values are projected using historic data (as above) with additional assumptions applied with justification if the historic upper quartile or frontier is not representative of predicted future performance. All assumptions applied to the forecast quartiles and frontier are documented in the individual sections Note that complete data may not be available consistently for new performance commitments unless it is reported externally for other reporting requirements e.g. EPA.
Cap	The existing outperformance cap for AMP7 (if applicable) and proposed threshold for AMP8 outperformance cap. The cap is the limit up to which outperformance can be applied.
Collar	The existing underperformance collar for AMP7 if applicable and proposed threshold for AMP8 underperformance collar. The collar is the limit up to which an underperformance payment can be applied.
Deadband	The existing deadband for AMP7 (if applicable) and the proposed deadband threshold for AMP8. Underperformance payments are only applied to performance outside of the deadband.
UUW Performance	Historic (up to 2022/23) is reported performance data, 2023/24 and 2024/25 is forecast performance.
AMP7 PCL	Existing AMP7 performance commitment level applied in PR19 final determination. This is not available for new PR24 performance commitments.
AMP8 PCL	Proposed performance commitment level for UUW to be measured against from 2025/26 to 2029/30. Justification for these levels and an explanation of how they have been calculated are included in the individual sections.
Enhanced	Proposed enhanced incentive rate threshold from which an enhanced incentive rate is applied.

2.4 Outcome Delivery Incentives (ODIs)

Company specific ODIs

2.4.1 We have incorporated Ofwat's proposals for company specific ODI rates for measures to reduce water demand (leakage; PCC and business demand). Table 5 provides a summary of the type of rates we have included.

Enhanced ODIs

2.4.2 We have also incorporated Ofwat's final methodology proposals for enhanced ODI rates for water supply interruptions; total pollution; flooding (internal and external); and the measures to reduce water demand (leakage and PCC) and propose an additional enhanced rate gateway for serious pollution incidents, where companies achieve zero incidents for two consecutive years. More information on this proposal is included in section 4.15.

Table 5: Proposed common and company specific ODIs

Common ODI	Enhanced	Company Specific ODI	Enhanced
Water supply interruptions	✓	Leakage	✓
Compliance Risk Index (CRI)		Per Capita Consumption (PCC)	✓
Customer contacts about water quality		Business Demand	
Internal sewer flooding	✓	Wonderful Windermere	

Common ODI	Enhanced	Company Specific ODI	Enhanced
External sewer flooding	✓	Improving water bill affordability for socially important non-household community groups	
Biodiversity			
Operational Greenhouse gases (Water and Wastewater)			
Total pollution incidents	✓		
Serious pollution incidents	Proposed (WaSCs)		
Discharge permit compliance			
Bathing water quality			
River water quality			
Storm overflows			
Mains repairs			
Unplanned outage			
Sewer collapses			
Embodied greenhouse gas emissions			

2.4.3 The associated challenges to the Ofwat methodology are discussed in more detail in the individual sections for each performance commitment in this document and summarised in chapter 5.

3. Outcome A: Customers Receiving Excellent Service Every Day

3.1 Overview

3.1.1 Outcomes in this category provide a direct benefit to customers, such as a reliable water supply, preventing sewer flooding and great customer service.

Table 6: Outcome A - Customers receiving excellent service every day performance commitments

Outcome	Measure	Units	Service W	Service Ww
Customers receiving excellent service everyday	PR24_WSI Water supply interruptions	Hours: minutes: seconds (HH:MM:SS) per property per year		
	PR24_CRI Compliance Risk Index (CRI)	Numerical CRI score		
	PR24_WQC Customer contacts about water quality	Number of consumer contacts per 1,000 population		
	PR24_ISF Internal sewer flooding	Number of incidents per 10,000 sewer connections		
	PR24_ESF External sewer flooding	Number of incidents per 10,000 sewer connections		
	PR24_CMEX Customer Measure of Experience (C-MeX)	Under development		
	PR24_DMEX Developer Measure of Experience (D-MeX)			
	PR24_BrMEX Business Retail Measure of Experience (BR-MeX)			

3.2 PR24_WSI_Water Supply Interruptions

3.2.1 UUW supports Ofwat's proposal for a common performance commitment level (PCL) for water supply interruptions. UUW's proposed PCL continues the improvement trend in this measure with a year on year improvement with a forecast 51% improvement during AMP7 and a further 12.7% improvement by end of AMP8. This is more stretching than the forecast industry upper quartile performance.

3.2.2 Investment in asset health, including mains replacement as part of the leakage enhancement, proactive maintenance, focus on restoration, and a move to a dynamic network management capability will underpin the continued improving performance trend in this measure. This is, however, a measure where single year performance can be significantly influenced by exogenous factors that can lead to major events, such as a freeze-thaw period. This can cause widespread pipe bursts and loss of supply across the UUW and private network. Hot-dry summers can contribute to ground movement and additional mains bursts. As such it is important to review the overall performance trend as a single year does not always represent underlying performance trends.

3.2.3 Table 7 outlines a summary of these proposals.

Table 7: WSI Water Supply Interruptions – summary, definition and parameters

Purpose and benefits	To incentivise companies to minimise the number and duration of supply interruptions, improve reliability of supply and reduce the impact on customers having no water supply
Definition	The average number of minutes lost per customer for the whole customer base for interruptions that lasted three or hours or more. Ref: *Water supply interruptions - PC definition, 9th May, 2023.*
Specific Exclusions	We note that there are no longer exclusions based on civil emergency, previously these have been applied for this performance commitment. AMP8 reporting does not separate the methodology, reporting and incentive rate for planned and unplanned interruptions. The duration threshold for supply interruptions associated with planned works related to the proposed leakage enhancement will be extended to 8 hours.
Exceptions to Ofwat methodology	As above for planned interruptions - This allows the programme to be delivered using innovative methods providing cost and time efficiencies for the programme.
Compliance Checklist	We have completed the compliance checklist provided by Ofwat as part of the performance commitment definition and are confident in meeting all of the reporting requirements (aligned to regulatory reporting confidence grade B2)

Units: Hours: minutes: seconds (hh:mm:ss) per property per year	**Forecast**	**Common performance commitment level**					**Long term**
	2024-25	**2025-26**	**2026-27**	**2027-28**	**2028-29**	**2029-30**	**2049-50**
UUW PCL	00:05:00	00:04:52	00:04:45	00:04:37	00:04:30	00:04:22	00:01:30
Underperformance collar	00:22:45	00:13:45	00:13:45	00:13:45	00:13:45	00:13:45	
Deadband				N/A			
Outperformance cap				N/A			
Enhanced threshold		00:01:53	00:01:47	00:01:42	00:01:37	00:01:32	
Enhanced cap		00:00:00	00:00:00	00:00:00	00:00:00	00:00:00	

ODI Rates	
Rate per minute per property per year	
Marginal benefit	£2.94 million
Benefit sharing factor	70%
ODI rate	£2.06 million
Enhanced rate	£4.12million

Source: Ofwat Excel file "United Utilities - Indicative ODI rates - Jun23 - v3"

Basis for PCL	This PCL continues our improving performance trend and sets a target that is more stretching than forecasted industry upper quartile. A collar is proposed to protect against extreme events caused by external factors such as regional freeze-thaw. Investment in asset health including mains replacement as part of the leakage enhancement, proactive maintenance, focus on restoration, and a move to a dynamic network management capability proactive network will underpin the continued improving performance trend in this measure.

Data table reference lines - AMP7: OUT8.2, AMP8: OUT1.1, Long Term: LS1.1

3.3 Evidence to support Water Supply Interruptions proposals

Performance Commitment Levels

3.3.1 We align with Ofwat's methodology to assign a common PCL to this measure. This section outlines:

- How we have calculated our proposed PCL using industry models and how we justify its suitability with reference to the tests given in Ofwat's final methodology Appendix 9 section 4.4.3 on determining stretching performance improvements;
- Industry and comparative performance, and
- Further details on how we have calculated a limit for a collar.

3.3.2 The proposed performance commitment levels are summarised in Table 8 below, shown in the context of historic performance and expenditure; what can be delivered from base expenditure; industry performance and accounting for transformational improvements. The proposed underperformance collar is included. Each element of this table is discussed in more detail in the following section.

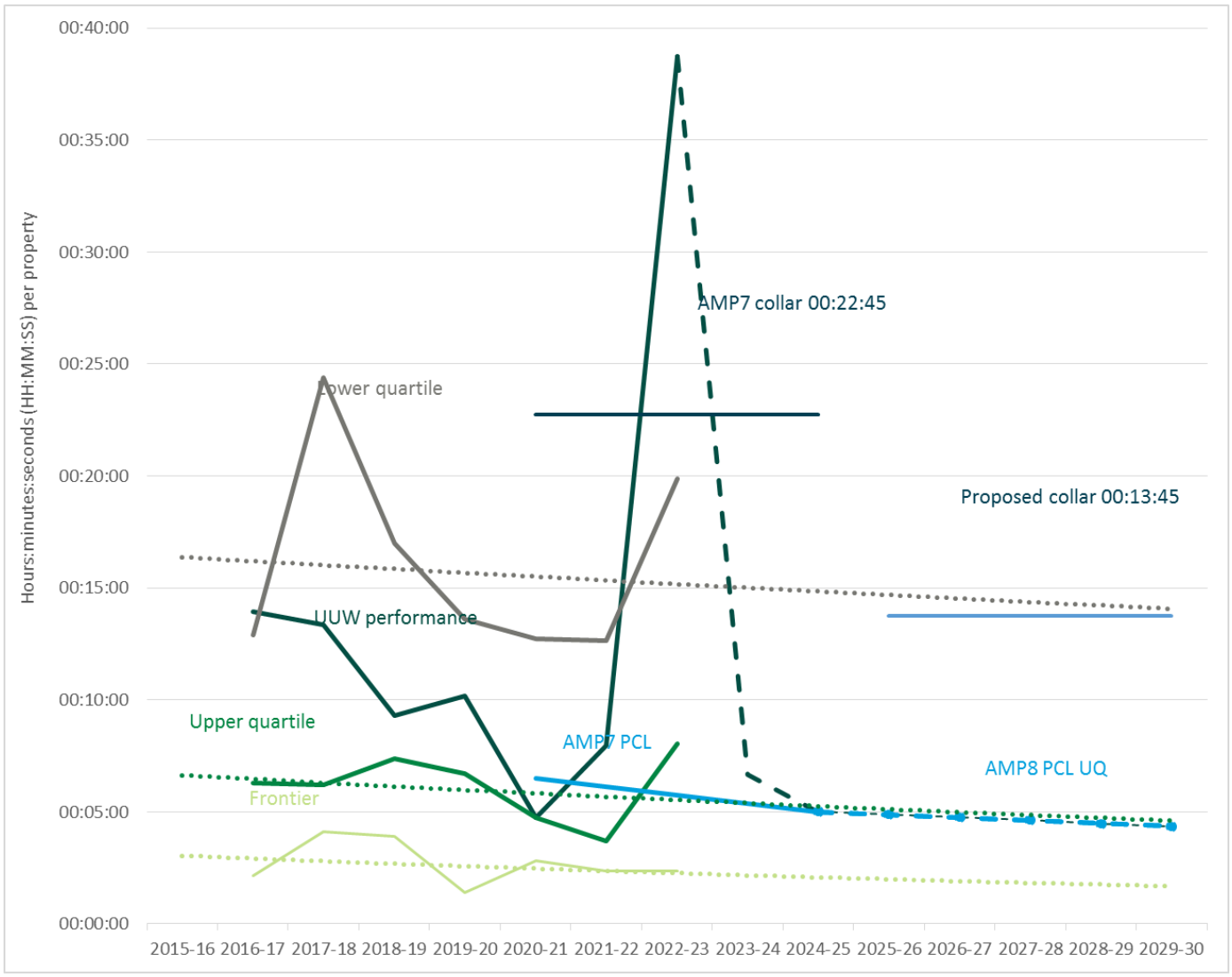
Table 8: Water Supply Interruptions AMP8 Performance Levels achievable from base and enhancement expenditure with comparative industry information

	2025-26	2026-27	2027-28	2028-29	2029-30
PCL	00:04:52	00:04:45	00:04:37	00:04:30	00:04:22
Performance from base (note1)	00:05:00	00:05:00	00:04:59	00:04:57	00:04:55
Performance from enhancement (note2)	00:00:08	00:00:15	00:00:22	00:00:27	00:00:33
Industry upper quartile	00:05:07	00:04:59	00:04:52	00:04:44	00:04:37
Industry frontier	00:02:00	00:01:55	00:01:50	00:01:45	00:01:41
Outperformance cap			N/A		
Underperformance collar	00:13:45	00:13:45	00:13:45	00:13:45	00:13:45
Deadband			N/A		
Enhanced outperformance threshold	00:01:53	00:01:47	00:01:42	00:01:37	00:01:32

Data Table References: note 1. OUT2.1, note 2. OUT3.1

3.3.3 Figure 2 includes the calculated industry historic and forecast upper quartile performance and demonstrates the significant improvement proposed for UUW to meet the PCL in AMP8. It is stretching but achievable and the application of the collar provides protection from extreme events.

Figure 2 - Historic and forecast Water supply interruptions and the application of a common PCL in line with this data



Source: APR data shares 2015/16 to 2022/23

PCLs set at PR19

3.3.4 The current AMP7 PCL set at PR19 is a reduction from 00:06:30 to 00:05:00 by 2025.

3.3.5 At PR19 we proposed company specific targets, based on a glide path from performance in the previous AMP.

3.3.6 The end of AMP6 position for UUW was 00:10:11 showing an overall improvement during the AMP and setting the foundations in processes and approach to continue this approach into AMP7.

3.3.7 At PR19, we proposed a 2-AMP approach with continued improvement path into AMP8. The PCL proposed for AMP8 accelerates from this approach and proposes a more stretching target compared to predicted industry upper quartile.

Historical outturn performance

Individual company performance

3.3.8 Individual year performance in this measure is influenced by a number of exogenous factors that can contribute to significant events and contribute to variances and peaks but are underpinned by continuing performance improvements over the AMP. Performance to date this AMP has been impacted by a number of trunk main bursts that were difficult to mitigate with our normal operational response and use of Alternative Supply Vehicles (ASVs), especially in year 3.

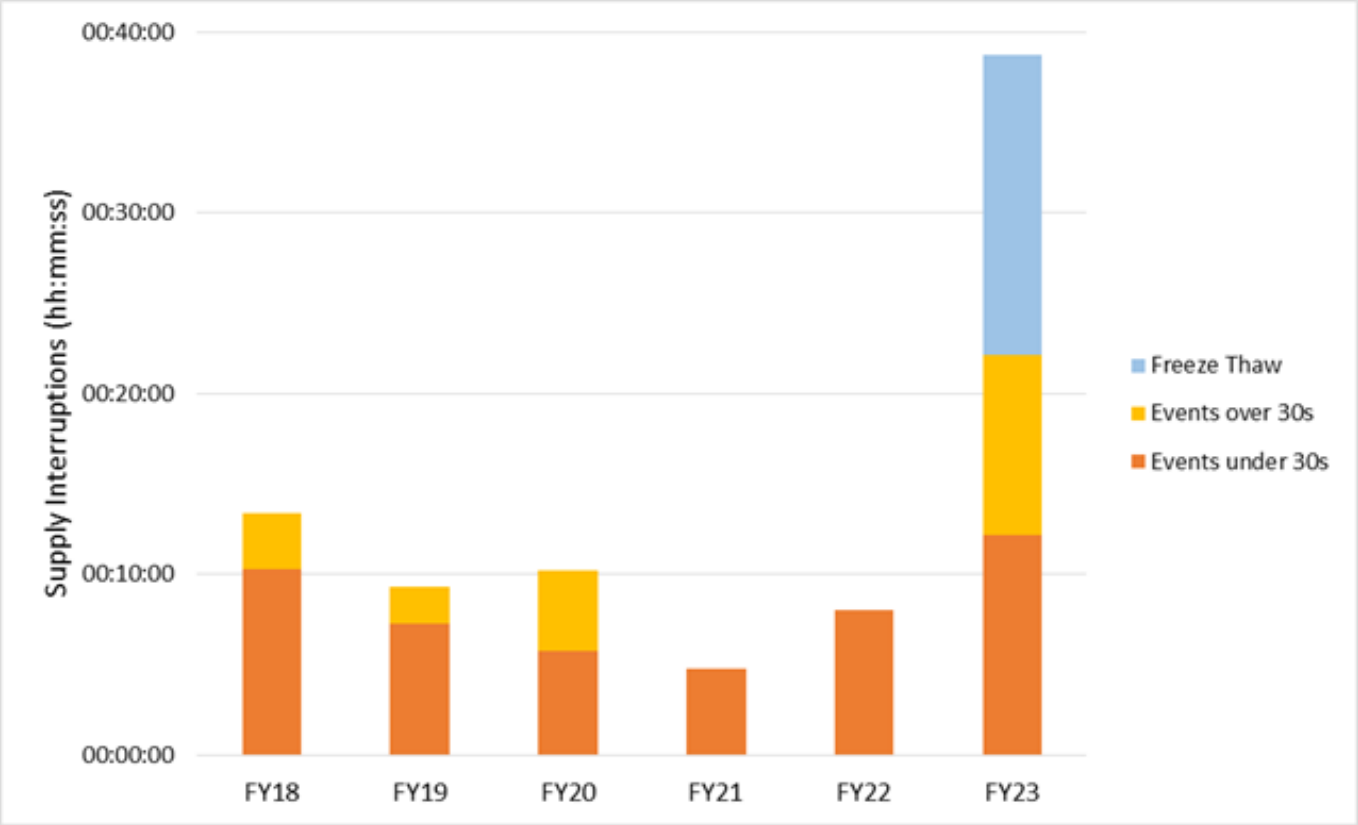
3.3.9 Year 3 performance has also been impacted by a significant freeze-thaw event in December 2022. Although challenging, our underlying response to events continues to improve and with additional targeted transformation activities, we plan to outturn AMP7 at the PC target of 05:00. This provides the grounding for further improvements in AMP8 in line with the proposed targets.

AMP7 summary:

3.3.10 As illustrated in Figure 3 below, performance this AMP has been challenging and influenced by a number of significant events. Year 1 and 2 performance notably had an absence of any major events greater than 30 seconds. Performance in year 2 was influenced by a number of trunk mains bursts (DMA level supply interruptions were well controlled by pressure management/optimisation and ASV support).

3.3.11 Year 3 performance reached the maximum underperformance collar. The extreme freeze-thaw event in December 2022 added significant time to an already challenging year including a number of large events. The prolonged dry weather in summer 2022 has also resulted in more leaks and bursts impacting on performance due to soil drying out and ground movement.

Figure 3: Breakdown of event types and contribution to CML

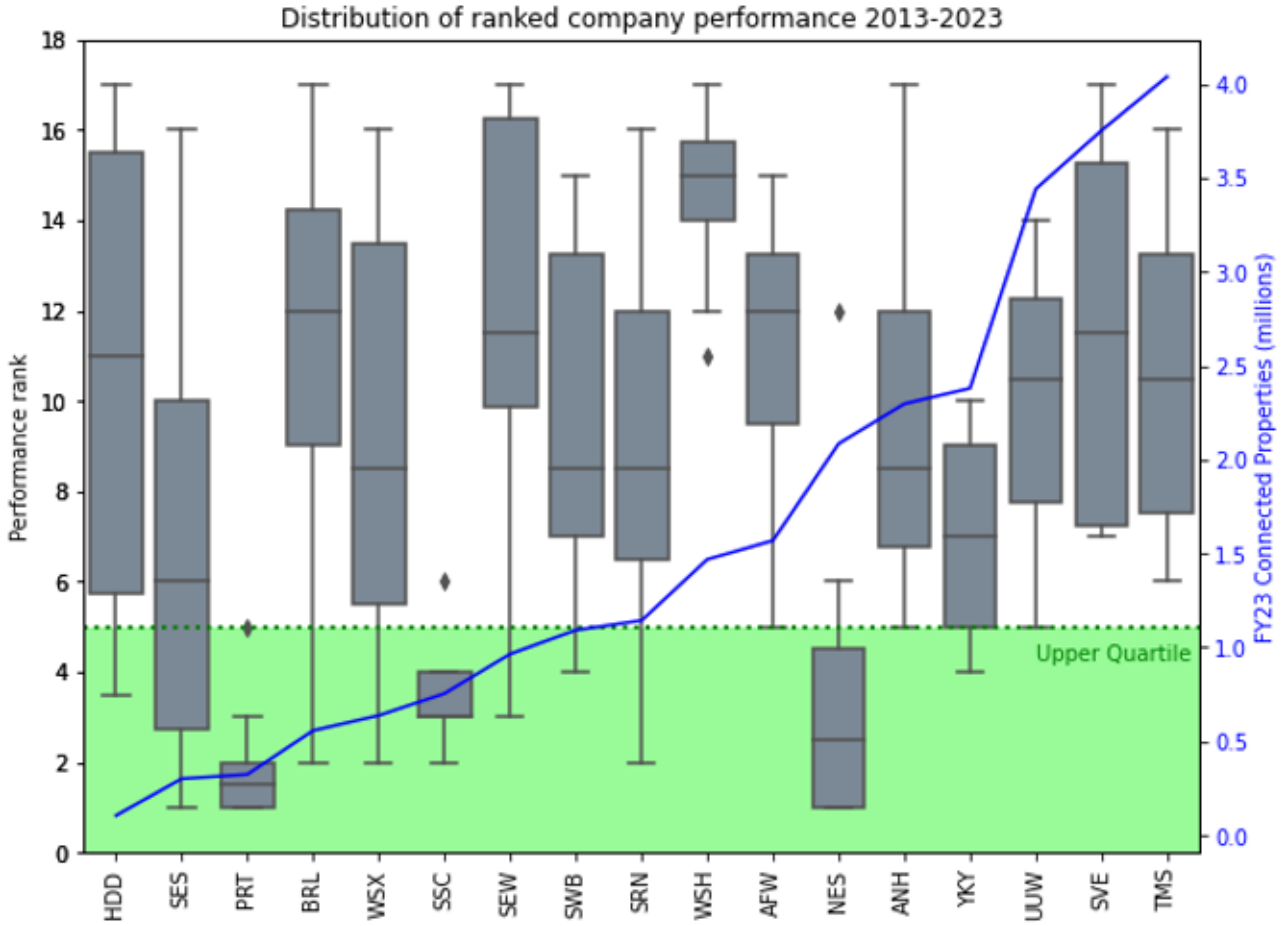


Source: Regulatory reporting data for supply interruptions

Industry performance

3.3.12 Historical performance reflects the link between supply interruptions and high impact, infrequent events (such as extreme weather or third party damage to critical assets like trunk mains). Company size is an important factor when considering normalised year to year performance. A small company's performance will be severely affected by a high impact event in a given year but high impact events rarely occur on their limited sample of assets so they perform well in many years. This is illustrated in Figure 4; the performance rankings of most companies with one million or fewer connected properties is very volatile. In contrast, a company operating a larger asset base is likely to experience a high impact event in most years. This, however, is normalised by a larger property count so their ranking is more consistently in the middle range. As a consequence, it is highly stretching for a large company to achieve upper quartile performance.

Figure 4: Distribution of ranked performance



Source: Historical APR data share 2023

3.3.13 We work collaboratively with other water companies in order to benchmark performance and to discuss good practice and our approach to responding, restoring supplies and repairs. An example of this is the recent UKWIR project on 'Identifying the root cause of failures that lead to interruptions' and 'Trunk mains preventative maintenance to reduce major incident risk' that illustrated the 'benefits of a collaborative knowledge sharing approach'.

Table 9: Water Supply Interruptions AMP7 UUW and industry performance and forecast data

	Actual				Forecast		Percentage Improvement		
	2019-20 (AMP6)	2020-21	2021-22	2022-23	2023-24	2024-25	AMP6 to 2023	AMP6 to 2025	AMP8 (PCL)
AMP7 PCL	00:10:11	00:06:30	00:06:08	00:05:45	00:05:23	00:05:00	44%	51%	
Performance	00:10:11	00:04:46	00:08:01	00:38:45	00:06:40	00:05:00			
Industry upper quartile		00:04:46	00:03:43	00:08:03	00:05:24	00:05:15		-10.1%	**12.7%**
Industry frontier		00:02:49	00:02:21	00:02:21	00:02:10	00:02:05		26%	

Historical expenditure included in the base expenditure models at PR24

3.3.14 Base allowances are set by reference to statistical models, which use a set of explanatory variables (cost drivers) to allocate levels of expenditure incurred by companies historically. In this way, base allowances

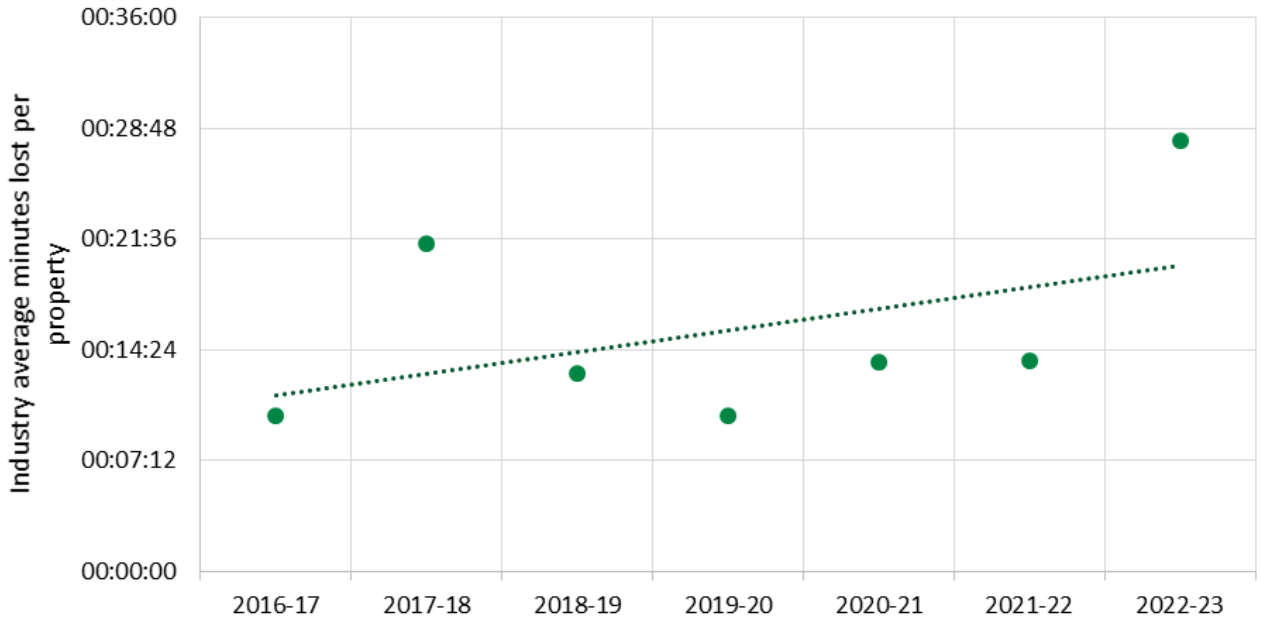
are inherently backward-looking. Additionally, the nature of botex modelling also means that allowances are top-down, and are difficult to disaggregate into sub-components in any meaningful way.

3.3.15 A report commissioned by UUW[7] and a subsequent UUW contribution to the Future Ideas Lab[8] sought to establish a theoretical framework that could underpin analysis on how much of a certain activity or service level is funded from base allowances. These studies found that a series of factors affect the service level 'funded' by base expenditure, including:

- Historical performance across the industry. Companies incur costs in moving to better service levels and vice versa. Therefore, this will be reflected in the botex allocation provided by the models – as noted above, the models are inherently backwards-looking;
- Whether the expenditure benchmark has been set by a company with relatively poor performance (and therefore lower costs);
- Whether historical enhancement expenditure has been excluded from the botex assessment; and
- Whether there are regional circumstances that drive differences in performance and cost but which are not reflected in the regulatory framework.

3.3.16 Historical performance data shows that average performance across the industry has been variable since 2016-17, and suggests that performance is slightly worsening over this period. This worsening trend can be seen in Figure 5. As such, we consider that it is unlikely that historical base expenditure will reflect the service improvements we are targeting in AMP8.

Figure 5: Industry average minutes lost per property indicates a slight deterioration in performance



Source: Historical industry data

Company forecast of performance levels that can be delivered from base expenditure

3.3.17 Maintaining performance is attributed to base expenditure, both reactive and proactive expenditure. During AMP8, significant focus on asset health will start to move to increasing proactive expenditure.

[7] Reckon (2022) *The opportunities for a more coherent regulatory approach for Ofwat's funding of base expenditure and enhancements*. https://static1.squarespace.com/static/5ff89bfefe0aa250928022e3/t/6316025899029e0cf3b76e69/1662386784854/2022+09+01+Base-enhancements+report.pdf

[8] UUW (2022) *Making the cost assessment framework resilient to future challenges.* https://www.unitedutilities.com/globalassets/z_corporate-site/about-us-pdfs/uuw-future-ideas-lab-submission---making-the-cost-assessment-framework-resilient-to-future-challenges.pdf

Replacement of water mains associated with the Leakage Enhancement case (UUW61) will deliver performance improvements associated with supply interruptions from enhancement expenditure.

3.3.18 As per data table OUT2 performance from base was calculated by estimating the benefits derived from our actual and projected enhancement expenditure and adding this to observed or predicted levels of performance, thereby creating a counterfactual for if that expenditure had not occurred.

Performance levels of efficient companies

3.3.19 Due to the number of exogenous factors that can affect the volatility in this measure in a single year, it is important to review underlying trends in performance that can be more representative than single year upper quartile. This has been analysed as part of benchmarking analysis and is illustrated in Figure 4.

Opportunity for transformational performance improvements

3.3.20 The proposals for AMP8 to support improving performance are:

- Asset health mains replacement programme to address long-term asset deterioration as part of a move to proactive rather than reactive interventions. This will include the replacement of mains to address multiple performance drivers including supply interruptions, bursts, leakage and water quality. This will also include additional sensors related to monitoring critical trunk mains. This is critical to addressing the larger events where the ASV can struggle to provide an alternative supply. This will include critical valves and crossings, resilience of mains for re-zones and flexibility, focus on monitoring, event recognition and modelling.
- Mains replacement associated with the leakage enhancement will have associated benefits for supply interruptions, this has been accounted for when calculating the PCL.
- Introduction of Dynamic Network management (DNM) will provide the ability to identify trends and intervene before an event develops, supported by the Integrated Control Centre (ICC). This will enable more timely interventions to reduce customer minutes impact.
- Ancillary inspection including inspection and proactive maintenance of pressure management valves (PMVs) and air valves to prevent failure of these assets that could lead to unplanned interruption. This inspection regime will be implemented in AMP8.
- Pumping station inspection and maintenance – identification of potential pumping station issues, failures and identification of transients that could be monitored/resolved prior to causing a burst that may interrupt supplies.

Sources of information used to set the PCL

3.3.21 Sources of data used to support this measure are:

- Historical data trends and forward forecasting
- Data share from APR
- Benchmarking/forums with other water companies such as through UKWIR.

Dependencies or overlap with other PCs

3.3.22 This performance commitment does not overlap with others.

Application of outperformance cap, underperformance collar or deadband

3.3.23 The collar is applied to account for the impact for extreme events such as significant regional freeze-thaw. The collar has been calculated at 00:13:45, this provides UUW with an equivalent risk exposure in penalty to AMP7 when adjusted for inflation.

3.3.24 A freeze-thaw event can significantly impact performance, for example the impact of the freeze-thaw in December, illustrated in Figure 3 has been estimated at greater than 15 minutes.

In line with this analysis, the AMP8 collar accounts for sustained improvements to performance but includes the limit of protection for the impact of significant events caused by external factors.

Application of an enhanced incentive rate threshold

3.3.25 This performance commitment is eligible for enhanced incentives. This has been proposed in line with forecast frontier performance.

3.4 PR24_CRI_Compliance Risk index (CRI)

3.4.1 We implemented the Water Quality First programme to embed a water quality culture within our organisation, and to similarly influence the culture of our partners. This enabled us to successfully exit Drinking Water Inspectorate (DWI) transformation which we achieved in February 2023. The Water Quality First programme delivered transformational change relating to water quality. The programme is a combination of asset health/improvement intervention and internal best communication and training. Some key activities have included the delivery of our start up to waste programme at the majority of our water treatment works, roll out of the robust flood testing for over 99% of our service reservoirs and acceleration of the cleaning of over 15,000 km of mains to reduce the risk of discolouration. But the focus hasn't just been on assets. A key part has been raising awareness of water quality amongst our employees with our first ever Water Quality First week in September 2022 (repeated again in September 2023), and now over 5,000 colleagues and many of our key supply chain partners have completed an e-learning module on water quality.

3.4.2 We propose a PCL of 0.00 CRI score (equating to 100% compliance) in line with customer and regulators' views. We also propose that a deadband should be set for this measure.

3.4.3 We plan to adhere to a CRI deadband as proposed by Ofwat/DWI. We suggest an appropriate deadband would be set at 1.75 CRI points. We consider this to be appropriately stretching and ambitious. This is a lower deadband than the current AMP7 CRI deadband of 2.00, while also within a broader context of worsening nationwide CRI performance.

3.4.4 Additionally CRI performance across the industry is deteriorating (with scores trending upwards) with the most recent data published on the DWI website showing an even more pronounced upwards trend. The industry average is also skewed by water only companies and smaller water and sewerage companies. Performance in this area will continue to be more challenging in future years, with the broader context of climate change-driven disruptions to raw water quality which disproportionately impacts surface water fed companies such as UUW.

3.4.5 Table 10 outlines a summary of these proposals.

Table 10 PR24_CRI Compliance Risk Index– summary, definition and parameters

Purpose and benefits	To incentivise companies to fully comply with statutory obligations to promote customer confidence in drinking water quality and to mitigate any issues affecting performance.
Definition	Set in line with the Drinking Water Inspectorate (DWI) in collaboration with the industry CRI of August 2018, as published on Ofwat's website. It is a measure designed to illustrate the risk arising from treated water compliance infringements and it aligns with the current risk based approach to regulation of water supplies used by the DWI. Ref: *CRI - PC definition 9th May, 2023.*
Specific Exclusions	In line with section 1.3 CRI – PC definition. Exclusions are in line with DWI CRI guidance.
Exceptions to Ofwat methodology	None
Compliance Checklist	Ofwat has not provided a compliance checklist in the performance commitment definition, however, as this is an existing measure reported annually, we have confidence that the reported data will be reliable accurate and complete.

	Forecast		Common performance commitment level				Long term
Units: incidents per 10,000 Km	**2024-25**	**2025-26**	**2026-27**	**2027-28**	**2028-29**	**2029-30**	**2049-50**
UUW PCL	2.74	0.00	0.00	0.00	0.00	0.00	0.00
Underperformance collar				N/A			
Deadband	2.00	1.75	1.75	1.75	1.75	1.75	
Outperformance cap				N/A			
Enhanced threshold				N/A			
Enhanced cap				N/A			

ODI Rates	
Rate per Numerical CRI score	
Marginal benefit	£2.71 million
Benefit sharing factor	70%
ODI rate	£1.90 million
Enhanced rate	N/A
Source: Ofwat Excel file "United Utilities - Indicative ODI rates - Jun23 - v3"	

Basis for deadband	An appropriate deadband would be set at 1.75 CRI points. We consider this to be appropriately stretching and ambitious. This is a lower deadband than the current AMP7 CRI deadband of 2.00, while also within a broader context of worsening nationwide CRI performance. Additionally CRI performance across the industry is deteriorating (with scores trending upwards) with the most recent data published on the Drinking Water Inspectorate (DWI) website showing an even more pronounced upwards trend. The industry average is also skewed by water only companies and smaller water and sewerage companies. Performance in this area will continue to be more challenging in future years, with the broader context of climate change-driven disruptions to raw water quality which disproportionately impacts surface water fed companies such as UUW.

Reported annually on a calendar year basis. For example, 2025-26 value will be based on the calendar year 2025.
Data Table reference lines - AMP7: OUT8.1, AMP8: OUT1.2, Long Term Ref: LS1.2

3.5 Evidence to support CRI proposals

3.5.1 UUW proposes the application of a common PCL at zero and proposes the application of a deadband of 1.75.

3.5.2 This section outlines historic data using industry models and how we justify its suitability with reference to the tests given in Ofwat's final methodology Appendix 9 section 4.4.3 on determining stretching performance improvements for the application of a deadband limit.

Performance Commitment Levels

3.5.3 The proposed performance commitment levels are summarised in Table 11 below, shown in the context of historic performance and expenditure; what can be delivered from base expenditure; Industry performance and accounting for transformational improvements. Each element of this table is discussed in more detail in the following section.

Table 11: CRI AMP8 Performance Levels achievable from base and enhancement expenditure with comparative industry information

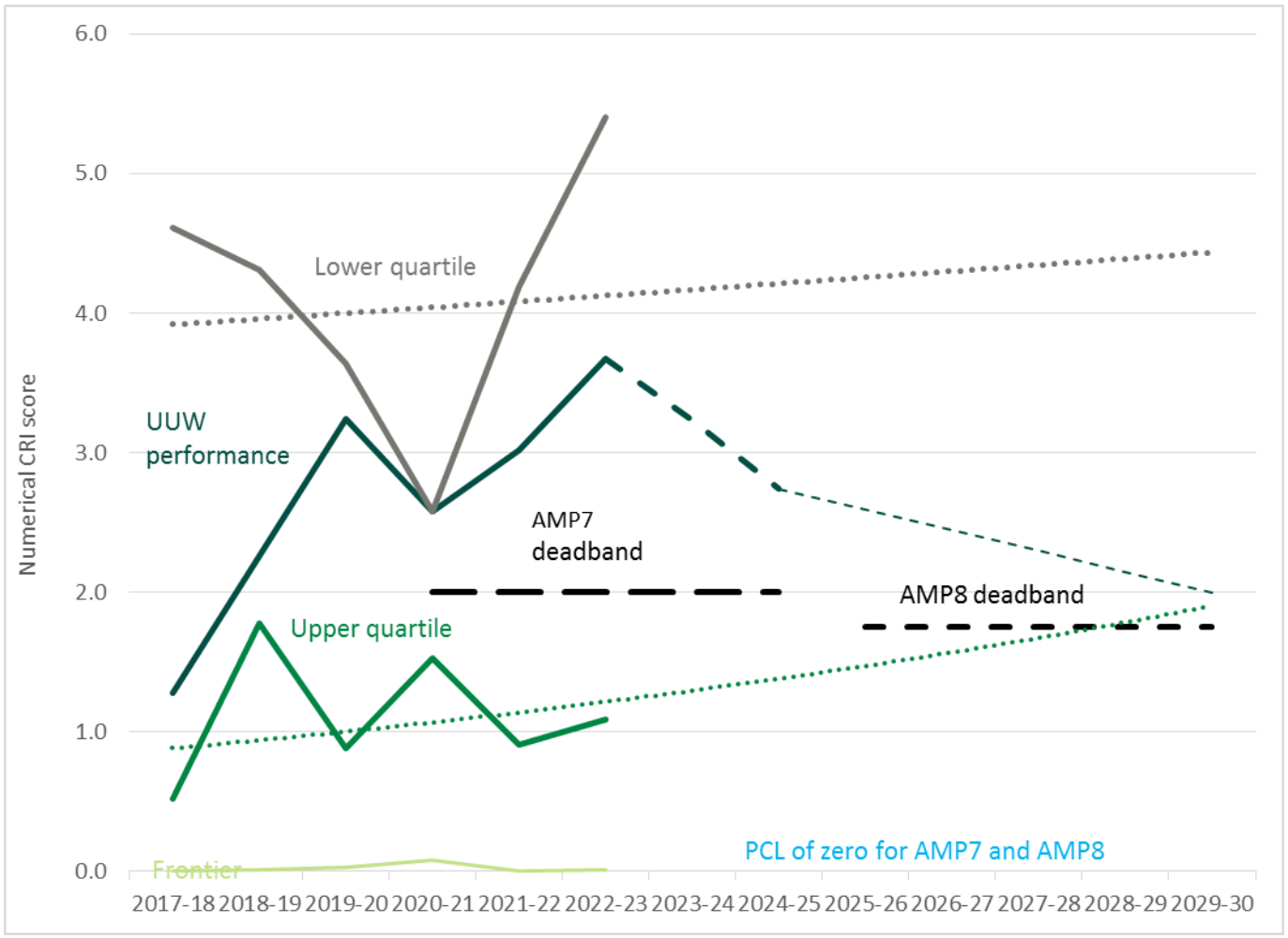
	2025-26	2026-27	2027-28	2028-29	2029-30
PCL	0.00	0.00	0.00	0.00	0.00
Performance from base[1]	0.00	0.00	0.00	0.00	0.00
Performance from enhancement[2]	All performance improvements will be delivered through base expenditure				
Industry upper quartile	1.83	2.02	2.22	2.45	2.70
Industry frontier	0	0	0	0	0
Outperformance cap			N/A		
Underperformance collar			N/A		
Deadband	1.75	1.75	1.75	1.75	1.75
Enhanced outperformance threshold			N/A		

Data Table References[: 1.] OUT2.2,[2.] OUT3.2

Reported annually on a calendar year basis. For example, 2025-26 value will be based on the calendar year 2025

3.5.4 The graph below (Figure 6) shows historic and forecast performance with the proposed (and existing) PCL, this data is presented to illustrate why the deadband limit is proposed at this level and how it relates to industry performance.

Figure 6: Industry and UUW Historic and forecast performance for CRI



Source: APR data share 2023

PCLs set at PR19

3.5.5 The existing (AMP7) PCL is 0.00, with a deadband of 2.00 to mitigate the risk from external factors outside of company control.

Individual Company performance

3.5.6 Based on current performance, achieving the AMP8 PCL of zero will be stretching (it has not been achieved).

Table 12 CRI AMP7 UUW and industry performance and forecast data

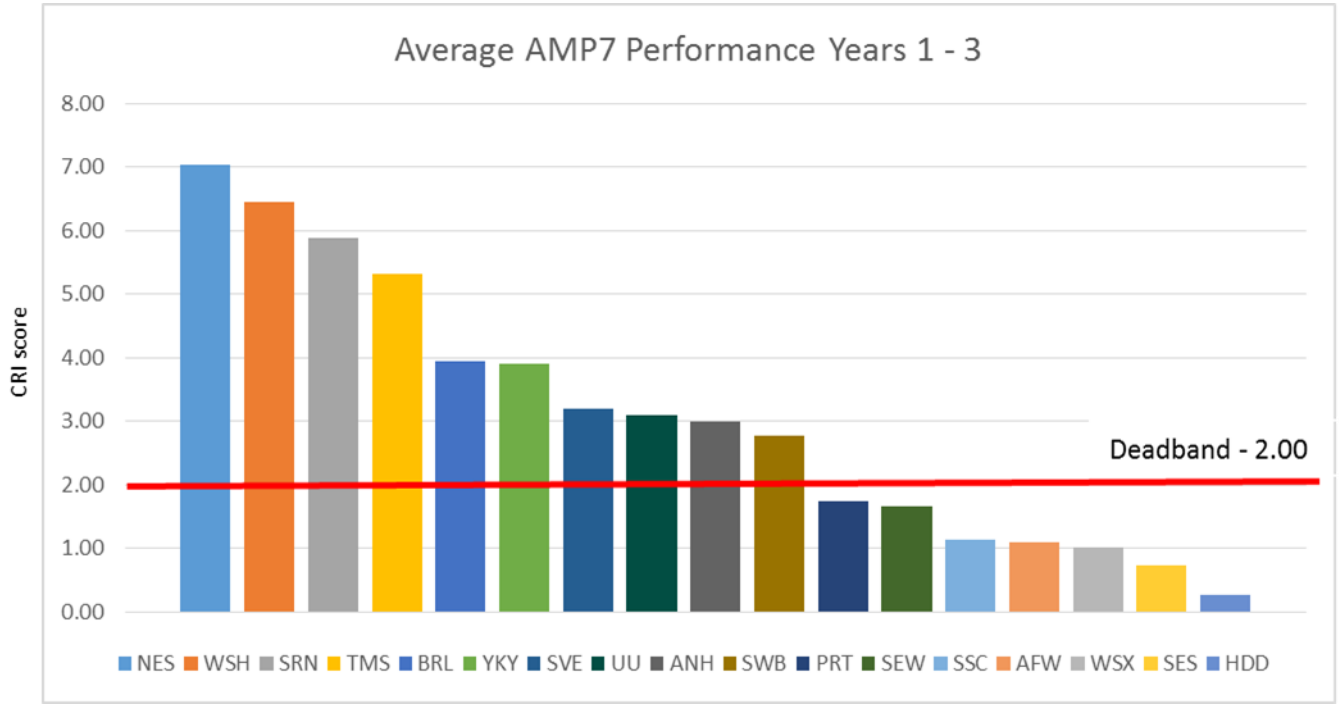
	Actual				Forecast		Percentage Improvement		
	2019-20 (AMP6)	2020-21	2021-22	2022-23	2023-24	2024-25	AMP6 to 2023	AMP6 to 2024	AMP8 (PCL)
AMP7 PCL		0.00	0.00	0.00	0.00	0.00			
Performance		2.58	3.02	3.67	3.23	2.74			12.5%
AMP7 Deadband		2.00	2.00	2.00	2.00	2.00			
Industry upper quartile		1.53	0.91	1.09	1.30	1.38	Variable performance		
Industry frontier		0.08	0.00	0.01	0.03[9]	0.03[9]			

Reported annually on a calendar year basis. For example, 2025-26 value will be based on the calendar year 2025

Sector level performance

3.5.7 Industry wide, CRI scores are showing deteriorating performance (increasing scores) indicating the majority of companies will incur an underperformance payment during AMP8. There is a wide range between companies (2020 to 2023 values) between 0.00 and 10.96 (Figure 7).

Figure 7: CRI average AMP7 industry performance (Years 1 - 3)

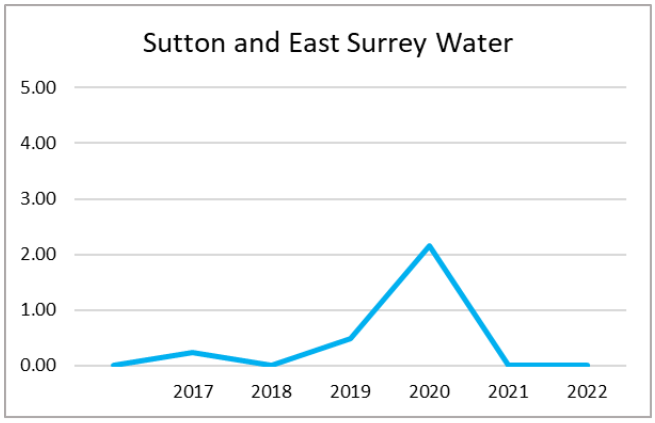


Source: Industry datashare 2020/21 to 2022/23

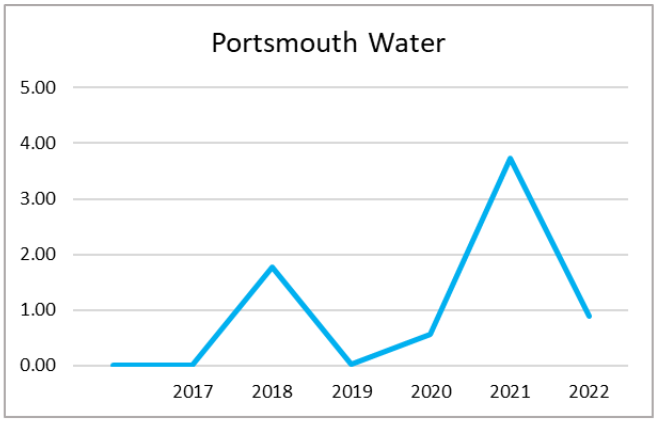
[9] Average Years 1 - 3

3.5.8 Inherent within the CRI PC is a level of volatility. We can see this demonstrated by further examining a smaller sample size. Figure 8 below shows performance of four water only companies for years 2017 to 2022.

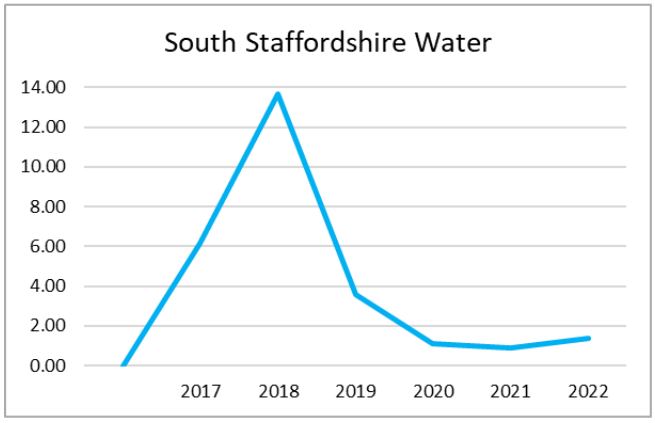
Figure 8: Performance of four Water Only Companies for years 2017 to 2022



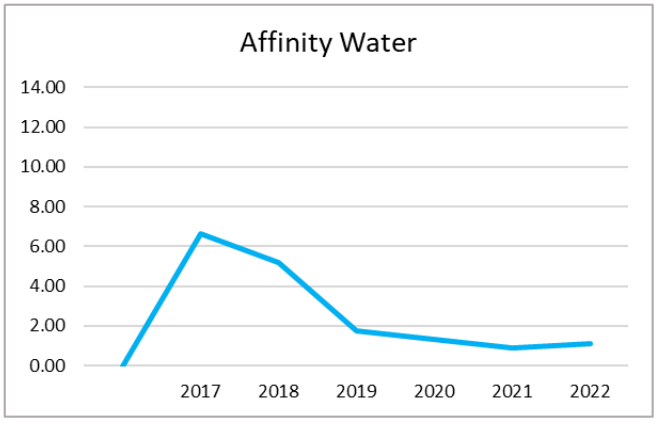
SES		
Median	0.12	
Peak	2.16	
Difference	2.04	1700%



PRT		
Median	0.74	
Peak	3.74	
Difference	3.01	409%



SSC		
Median	2.50	
Peak	13.69	
Difference	11.20	449%

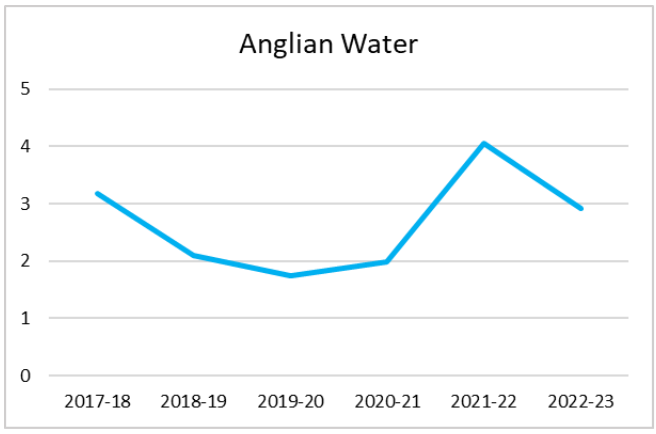


AFW		
Median	1.52	
Peak	6.66	
Difference	5.14	338%

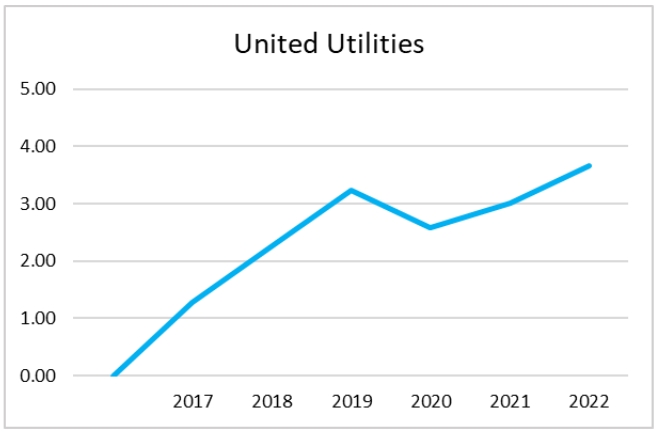
Source: Industry datashare 2017/18 to 2022/23

3.5.9 This performance data demonstrates typically consistent CRI performance, with intermittent performance spikes as a result of compliance infringements. This inherent volatility of CRI is mitigated, when a larger sample size is used. We can see this within data from WaSCs; where the number of water treatment works, service reservoirs and customers is an order of magnitude greater.

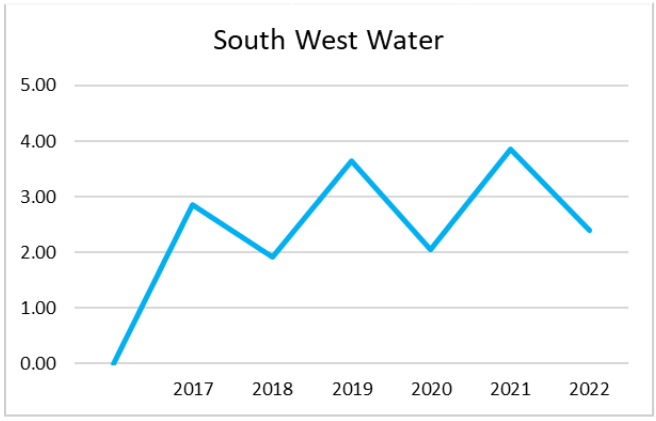
Figure 9 - Performance of four WaSCs for years 2017 to 2022



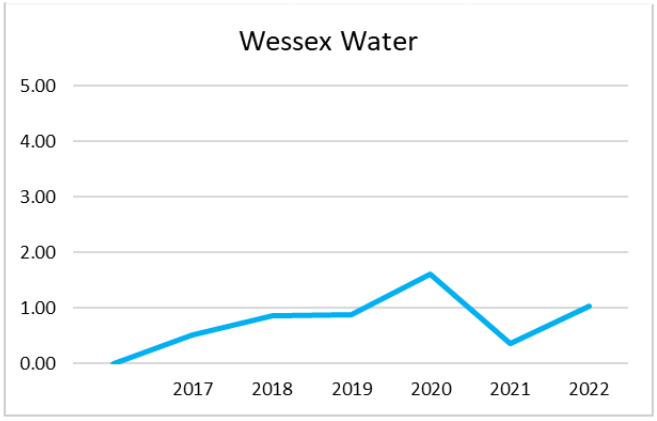
ANH		
Median	2.51	
Peak	4.05	
Difference	1.55	62%



UU		
Median	2.80	
Peak	3.67	
Difference	0.87	31%



SWB		
Median	2.62	
Peak	3.86	
Difference	1.24	47%



SES		
Median	0.88	
Peak	1.61	
Difference	0.74	84%

Source: Industry datashare 2017/18 to 2022/23

3.5.10 As a result of this broader sample size, WaSCs are statistically more likely to perform at a stable CRI level - as evidenced above. Across the industry average WaSC variance median to peak CRI score is 102%, compared to 504% average Water only Company performance.

3.5.11 Consequently, we propose a deadband is appropriate to more fairly balance this PC. Both of these above factors - the unpredictable profile of Water only Companies, and the persistent underlying CRI level of WaSCs. We therefore propose a deadband of 1.75 is appropriate. A deadband will eliminate the unfair burden of both peaks in performance in the event of an infringement at a smaller company and help mitigate the greater risk of a greater number of operational water sites within larger companies.

Historical expenditure included in the base expenditure models at PR24

3.5.12 Historical expenditure is in line with DWI expectations to exceed a deadband of 2% per annum.

3.5.13 This allowance will not, however be sufficient to meet Ofwat's proposed 2025-30 PCL of zero. No wastewater companies with predominantly upland water sources have achieved performance consistent with this, this means the cost of achieving the PCL is not present within the historical data set and therefore cannot be allocated by the current cost models.

Company forecasts of performance levels that can be delivered from base expenditure

3.5.14 The levels of performance delivered through base expenditure are indicated in Table 11.

Performance levels of efficient companies

3.5.15 Years 1 - 3 have averaged 0.03 for frontier position. Typically there is significant variation year on year due to the high potential impact of a single compliance infringement.

Opportunity for transformational performance improvements

3.5.16 Our Water Quality First programme has been established to deliver transformational change relating to water quality. The programme is a combination of asset health/improvement intervention and internal best practise communication and training.

3.5.17 Some key activities have included the delivery of our start up to waste programme at the majority of our water treatment works, implementation of robust flood testing for over 99% of our Service Reservoirs and acceleration of the cleaning of over 15,000 km of mains to reduce the risk of discolouration.

3.5.18 The focus hasn't just been on assets. A key activity has been raising awareness of water quality amongst our employees with our first ever Water Quality First week in September 2022, and now over 5,000 colleagues and many of our key supply chain partners have completed an e-learning module on water quality. We have also held 'back to basics' sessions with our water network teams and network partners, sent over 2.17 million messages to customers, both domestic and commercial, and continued to inform thousands of customers about our flushing activities across the network to keep water flowing and discolouration free.

Figure 10: Example Internal UUW Communication

Source: WQF Programme detail

Sources of Information used to set the PCL

3.5.19 The PCL is set at zero

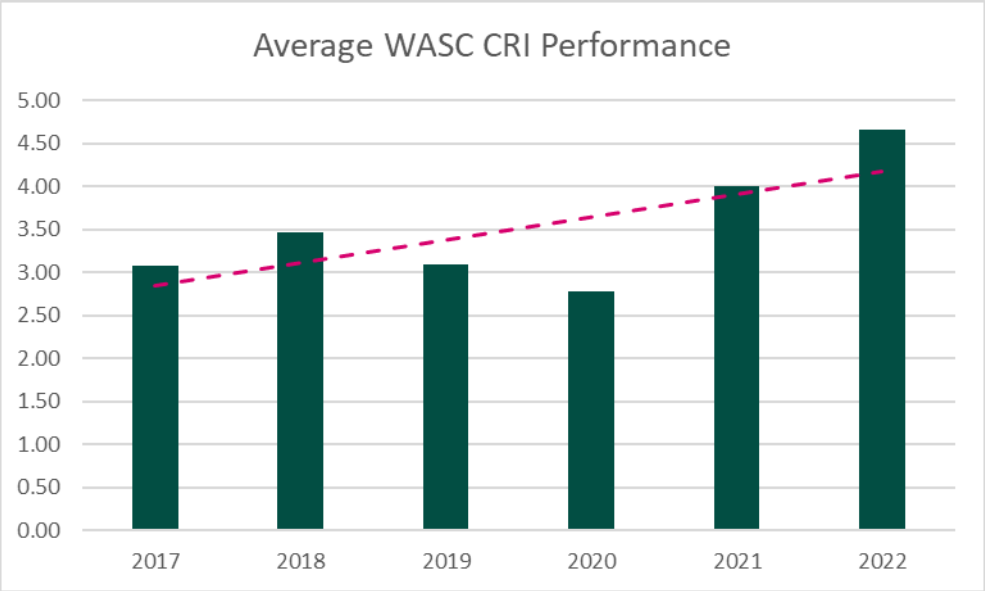
Dependencies or overlap with other PCs

3.5.20 None.

Application of the deadband

3.5.21 We propose a deadband of 1.75 be applied to AMP8 CRI performance. We believe this allows the PC to remain appropriately challenging for the duration of AMP8. 1.75 represents a 12.5% reduction from the AMP7 deadband of 2.00. This is within the broader context of national level challenges - including deteriorating raw water quality, and increasing climate change driven extreme weather events.

Figure 11 - Industry average CRI performance (WaSCs only)



Source: Industry datashare 2017/18 to 2022/23

3.5.22 These challenges, alongside the inherent volatility of the CRI measure highlighted above make the inclusion of a deadband a logical approach. The reduction from 2.00 to 1.75, represents an appropriate level of challenge to water companies; incentivising continual improvement.

3.6 PR24_WQC_Customer contacts about water quality

3.6.1 Customer contacts about water quality is proposed by Ofwat as a common performance commitment for PR24 and we include it in our submission.

3.6.2 Table 13 outlines a summary of these proposals.

Table 13: PR24_WQC Customer contacts about water quality – summary, definition and parameters

Purpose and benefits	To incentivise companies to reduce the number of customer contacts about water quality from customers relating to taste, odour and appearance. This increases the acceptability of water to customers and reduces disruption and other negative social impacts.
Definition	The number of times the company is contacted by customers due to the taste and odour of drinking water or because the drinking water is not clear, reported per 1,000 population. Ref: *Customer contacts about water quality - PC definition 9th May, 2023*.
Specific Exclusions	In line with section 1.3 of the document 'Water Quality Contacts – PC definition' (defined in the DWI Information letter 04/2022 Revised).
Exceptions to Ofwat methodology	None
Compliance Checklist	Ofwat has not provided a compliance checklist in the performance commitment definition (date Dec 2022) indicating the components used for reporting customer contacts about water quality and our confidence in the accuracy of each when reviewing our performance. Reporting on this measure is completed annually, so confidence is high that the information provided will be reliable accurate and complete. We also report customer contacts separately for appearance, taste and odour on the Discover Water website.

Units: incidents per 10,000 Km	Forecast		Common performance commitment level				Long term
	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2049-50
UUW PCL	1.08	1.02	0.97	0.91	0.86	0.80	0.40
Underperformance collar				N/A			
Deadband				N/A			
Outperformance cap				N/A			
Enhanced threshold				N/A			
Enhanced cap				N/A			

ODI Rates	
Rate per number of consumer contacts per 1,000 population	
Marginal benefit	£27.23 million
Benefit sharing factor	70%
ODI rate	£19.06 million
Enhanced rate	N/A

Source: Ofwat Excel file "United Utilities - Indicative ODI rates - Jun23 - v3"

Basis for PCL

UUW proposes to align to a common upper quartile target methodology for this measure for the business plan period 2025-2030.

This has been calculated based on the five year rolling average upper quartile forecast in order to represent an overall improvement trend that allows for exogenous challenges and variability within an AMP period. UUW has made significant improvements during AMP7, and the proposed plan will now build on this step change in performance in order to make long-term and sustainable improvements.

This will continue our improvement journey to achieve reductions in customer contacts, particularly given challenges associated with upland water sources. This target will be challenging to achieve and will be underpinned by source to tap interventions focused on continuing our programme of improvements that impact on taste, smell and appearance.

Reported annually on a calendar year basis. For example, 2025-26 value will be based on the calendar year 2025

Data Table reference lines - AMP7: OUT8.11, AMP8: OUT1.3, Long Term Ref: LS1.3

3.7 Evidence to support Customer contacts about water quality proposals

3.7.1 UUW proposes to align to a common PCL approach for this measure. This sections outlines:

- How we have calculated the PCL and how we justify its suitability with reference to the tests given in Ofwat's final methodology Appendix 9 section 4.4.3 on determining stretching performance improvements.

Performance Commitment Levels

3.7.2 The proposed performance commitment levels are summarised in Table 13 below, shown in context of historic performance and expenditure; what can be delivered from base expenditure; Industry performance and accounting for transformational improvements. Each element of this table is discussed in more detail in the following section.

3.7.3 Table 14 shows the application of the above principals to define the PCL for 2025- 2030.

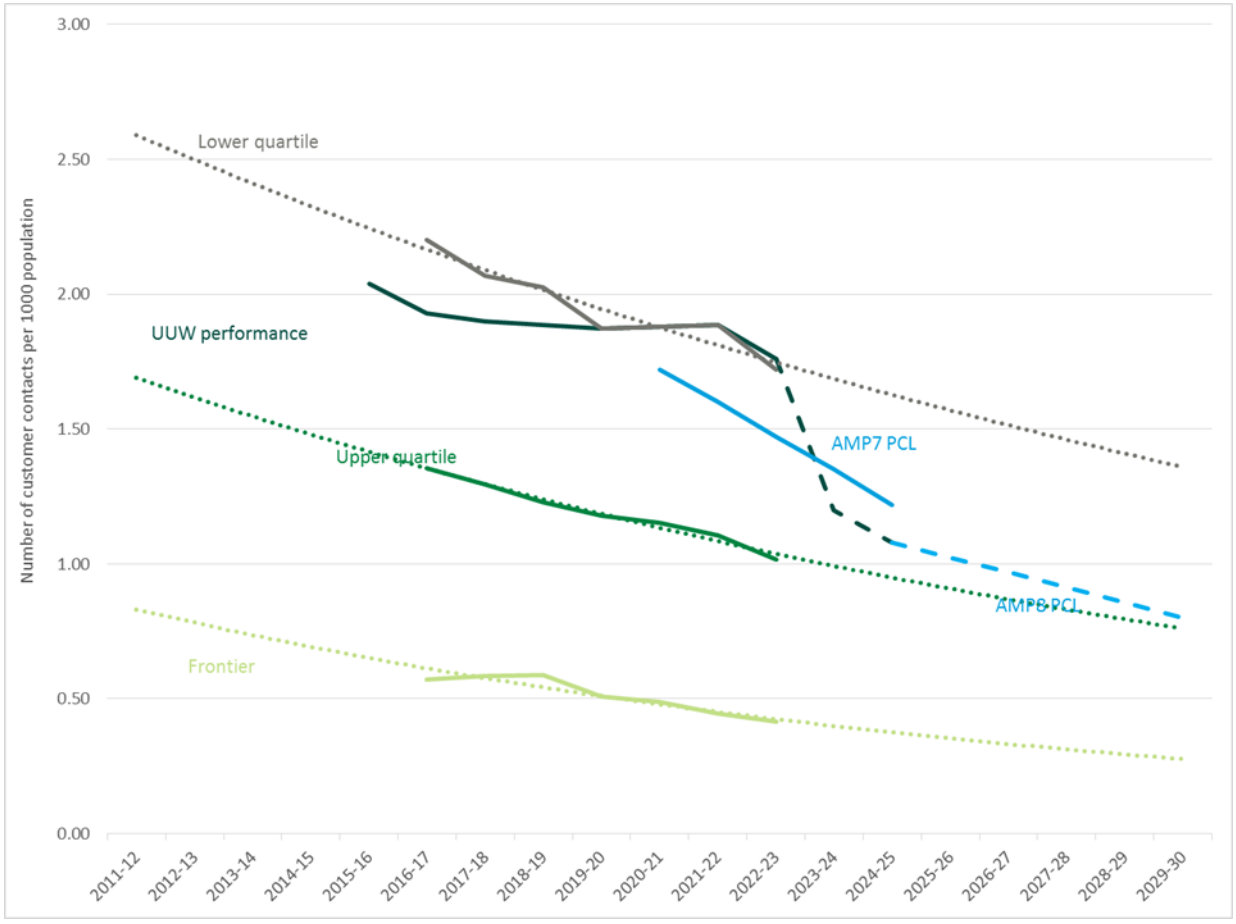
Table 14: Customer contacts about water quality AMP8 Performance Levels achievable from base and enhancement expenditure with comparative industry information

	2025-26	2026-27	2027-28	2028-29	2029-30
PCL	1.02	0.97	0.91	0.86	0.80
Performance from base[1]	1.39	1.24	1.09	0.99	0.93
Performance from enhancement[2]	0.37	0.27	0.18	0.13	0.13
Industry upper quartile (5 year average)	0.91	0.87	0.83	0.79	0.76
Industry frontier (5 year average)	0.35	0.33	0.31	0.29	0.28

Data Table References: 1. OUT2.3, 2. OUT3.3

Reported annually on a calendar year basis. For example, 2025-26 value will be based on the calendar year 2025

Figure 12 Historic and forecast water quality contact performance, UUW and industry with proposed PCL



Source: Historic APR data share 2023

3.7.4 The proposed target is calculated based on forecast upper quartile position for all companies (based on a 5 year rolling average). This helps to overcome variability in year on year performance whilst aligning to an overall improving trend through an AMP cycle, acknowledging that each company has challenges and variability within an AMP. This methodology also reduces the influence associated with company size.

PCLs set at PR19

3.7.5 The PR19 PCL was company specific with a forecast 42% improvement rate from 2020 to 2025

Historical outturn performance

3.7.6 We have made significant improvements during AMP7, with a step change in performance driven by our Water Quality First transformation programme and key programmes to complete DWI notices. This has been underpinned by source to tap interventions funded from the taste, smell and appearance programme. UUW will now build on this step change in performance in order to make long-term and sustainable improvements.

Individual company performance

3.7.7 During AMP7, we have made a step change in this measure, significantly improving performance. We are forecasting to meet our company specific target in this measure showing 23% improvement to the taste, smell and appearance 5 year average.

3.7.8 We have made significant progress against the DWI notice for discolouration with 22% of Water Supply Zones within notice compared to 40% in when the notice was issued in 2021.

3.7.9 We have completed a transformation programme realising significant improvements in water quality performance and approach. The Water Quality First programme has led to recognition by the DWI

marking the end of a transformation period to show commitment and success of improvement in this and related measures.

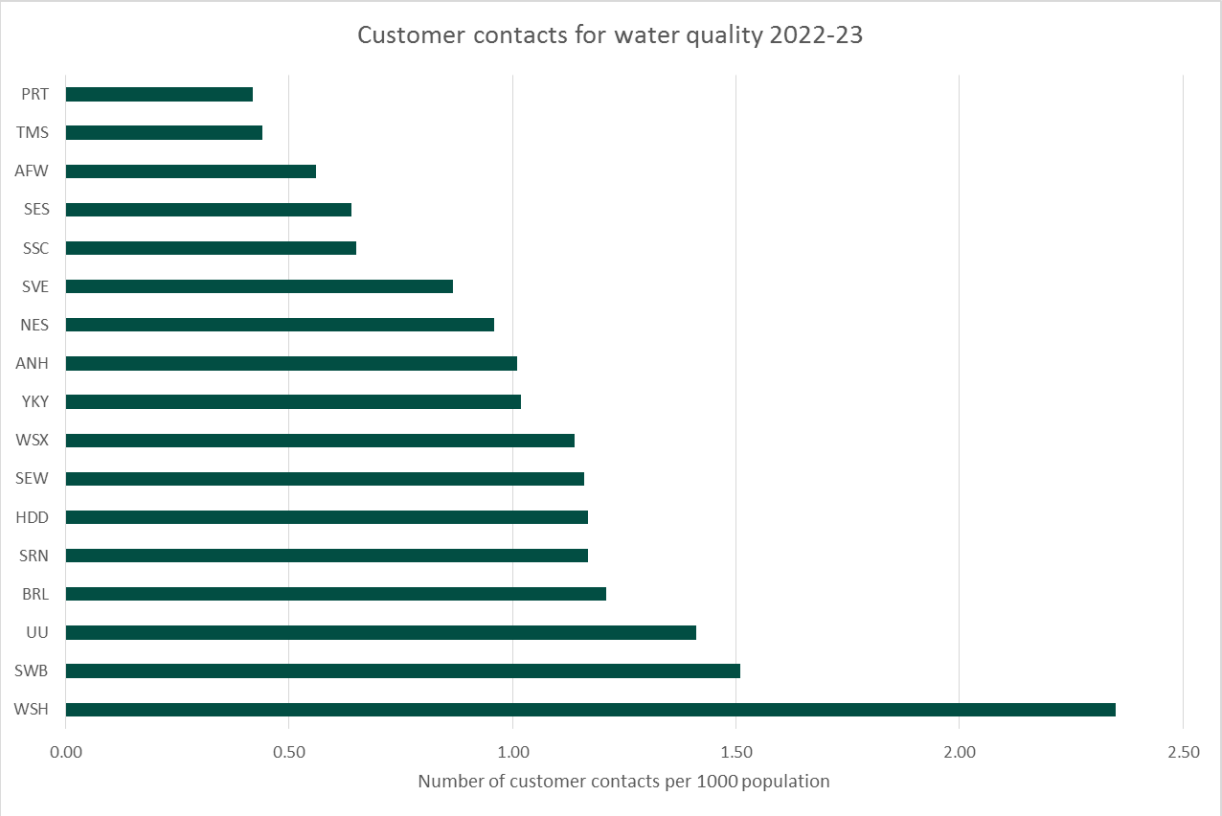
3.7.10 This improvement in performance is based on:

- Water Quality First focus, as described above.
- Catchment interventions - managing the quality of water runoff from catchment land through a combination of best practice land management on UUW estates, and engagement with non-UUW landowners within the areas surrounding our reservoirs.
- Treatment interventions - including installation of Granular Activated Carbons (GAC)/Powdered Activated Carbons (PAC) at high risk Geosmin sites, plus our Water Quality First programme of asset maintenance and internal training/communications.
- Network interventions – including mains cleaning programme, mains replacement programme, knowledge reviews and training, and applying the concept of calm networks

Industry performance

3.7.11 It is difficult to compare historic performance across the industry as a common definition had not been used until the industry has aligned to the DWI definitions letter. The industry had company specific targets for AMP7. For each company, the latest published APR data is used. Figure 13 shows the latest comparative position for single year performance. Table 15 shows comparative improvement with the latest comparative rank in terms of percentage improvement and performance for 2022. Although UUW does not rank in the highest performing companies, the percentage improvement since 2018 shows the significant transformation and step change that has been made, and the proposed PCL sets the path to continue this.

Figure 13: WoC and WaSC performance 2022 (Jan-Dec)



Source: APR data share 2023

Table 15: Comparative performance and % rank

	2022/23 Rank	Percentage improved (2018-19 - 2022/23)	Percentage Rank
ANH	8	7.7%	14
WSH	17	29.3%	6
HDD	12	79.6%	2
NES	7	31.9%	4
SVE	6	81.9%	1
SWB	16	27.4%	8
SRN	13	4.9%	15
TMS	2	28.3%	7
UU	15	29.5%	5
WSX	10	17.7%	13
YKY	9	24.9%	10
AFW	3	26.4%	9
BRL	14	23.1%	11
PRT	1	3.4%	16
SEW	11	20.0%	12
SSC	5	51.1%	3
SES	4	-12.8%	17

Source: APR data share 2023

3.7.12 Significant improvements have been made over recent years, particularly 2022 for UUW as highlighted in Figure 13. Although as highlighted in Figure 13, further improvements are required to close the gap to upper quartile performance.

3.7.13 The proposed target will be challenging to achieve for UUW due to the underlying difference in source waters, in comparison with other regions of England and Wales. Within the North West our water is primarily supplied from upland, surface water (i.e. reservoir and river intake) sources. This results in many challenges which may impact the aesthetic parameters of our drinking water. Primarily;

- Discolouration - In particular a risk in areas where peat or other high colour catchment soils can discolour reservoirs during high rainfall periods. Also impacting discolouration of our water sources is the relatively high levels of iron found in the North West's geology.
- Algal/Cyanobacteria activity - common within reservoirs during summer. While our advanced treatment processes make water safe to drink, our water is sometimes left with an unpalatable earthy/musty taste.

3.7.14 Both factors are significantly challenging, and regulatory performance is managed through operational excellence, and robust treatment processes resulting in compliant regulatory performance.

3.7.15 Surface water companies such as UUW receive more contacts for water quality due to the water chemistry associated with upland sources of water being more susceptible to taste, smell and appearance changes.

3.7.16 This challenge has been acknowledged through research and information sharing as part of our membership of the PODDS (Prediction of Discolouration in Distribution Systems) consortium, with supporting informal data sharing and academic research:

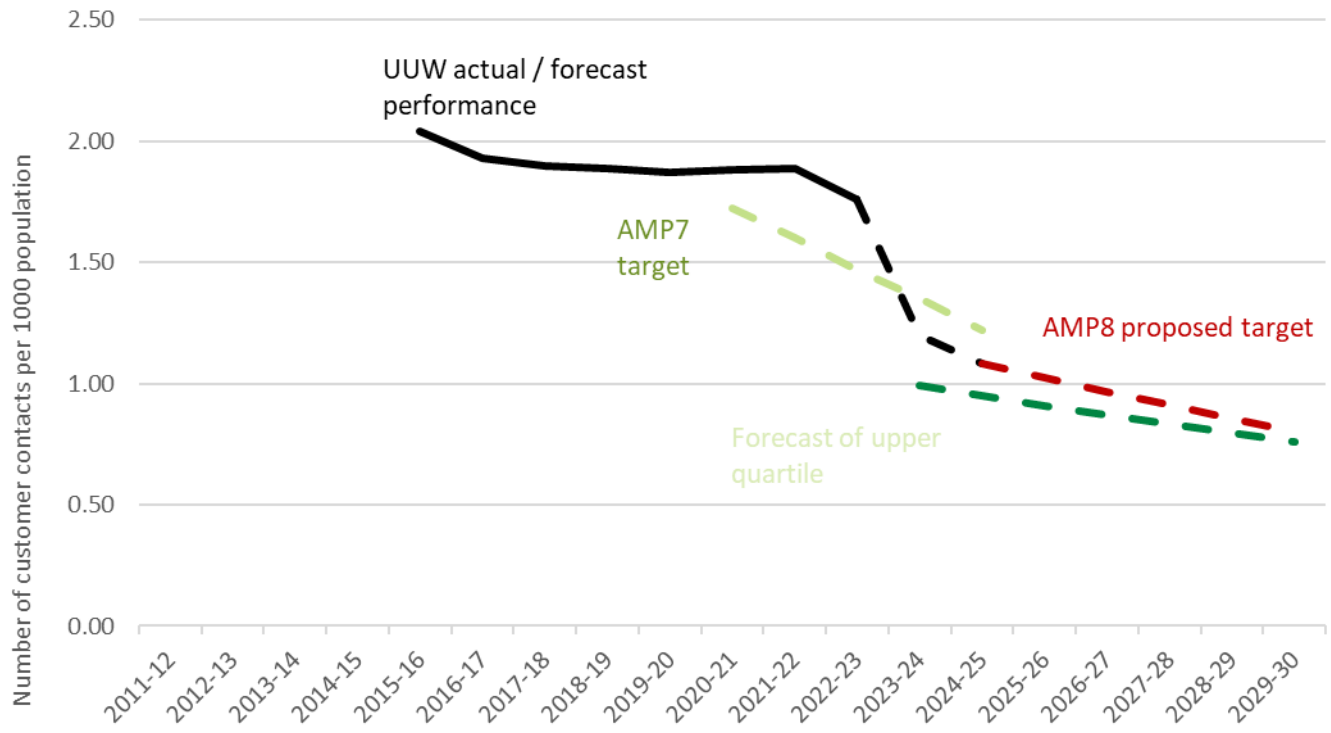
'The difference in material accumulation rate between systems that have similar layouts, pipe lengths, flow velocities etc. is largely determined by the difference in incoming water quality' (Blokker 2015)[10]

'..The sites with the greatest regeneration rates ….are surface source water sites' (Mounce 2014)[11]

3.7.17 UUW will continue to be actively involved in this research to inform approaches to the most appropriate interventions.

3.7.18 UUW has used the forecast 5 year average upper quartile to inform the proposed PCL. Figure 14 shows the step change in performance that has been made during AMP7, the proposed PCL is to continue this improvement at a sustainable rate in order to close the gap to meet forecast upper quartile performance. This is in line with DWI expectations as stated in Discolouration Notice (UUT-2020-00005).

Figure 14: Upper quartile analysis



Source: Historic APR datashare 2023

Historical expenditure included in the base expenditure models at PR24

3.7.19 Historical customer contacts about water quality performance has been identified for enhancement investment. We will continue to seek performance improvements in base expenditure in AMP8, however, extrapolating AMP7 performance improvements into AMP8 without any recognition within base allowances of the higher costs required will impose an efficiency challenge upon companies, beyond the already substantial stretch created by the AMP7 regulatory contract. Our cost assessment proposals and industry performance to date provide compelling evidence that the AMP7 settlement was particularly stretching. Such a level of stretch in base cost and performance creates a risk that the AMP8 cost and service package is likely unobtainable, even for an efficient company. We consider our proposed PCLs to be achievable only with both enhancement and base expenditure, this does rely upon the assumption that the AMP8 regulatory contract does not also impose additional and undue stretch on base totex allowances.

[10] Blokker E, Schaap P (2015) "Particle accumulation rate of drinking water distribution systems determined by incoming turbidity"
[11] Mounce SR et al, (2014) "Multivariate Data Mining for Estimating the Rate of Discoloration Material Accumulation in Drinking Water Systems"

3.7.20 Given our understanding of the Ofwat cost models, we expect an element of the cost of delivering our historical improvements in water quality contacts performance will therefore be contained within Ofwat's base expenditure models at PR24.

Company forecast of performance levels that can be delivered from base expenditure

3.7.21 As per OUT2, performance from base was calculated by estimating the benefits derived from our actual and projected enhancement expenditure and adding this to observed or predicted levels of performance, thereby creating a counterfactual for if that expenditure had not occurred. We took a cumulative view of enhancement expenditure, assuming that any benefits calculated for programmes of work in previous year(s) would continue to be felt in future years.

3.7.22 The leakage enhancement has a forecast benefit for this measure associated with the replacement of cast iron mains. There are additional enhancement benefits associated with the Vyrnwy relining scheme and the raw water colour enhancement. Mains cleaning is assumed to have a two year benefit associated with regeneration of discolouration material over time.

Performance levels of efficient companies

3.7.23 We have completed analysis of the performance of other companies and used the five year rolling average as a benchmark to show improvement across an AMP. This acknowledges that some performance improvements particularly catchment and treatment interventions, and some network mains replacement can take a number of years to provide benefit.

Sources of information used to set the PCL

3.7.24 Regulatory reporting company data shares have been used to analyse performance trends and set upper quartile targets.

3.7.25 Academic research (that we actively contribute to) is used to review key factors that contribute to customer contacts for taste, smell and appearance. Consortium work such as PODDS and benchmarking has been used to inform good practice and the interventions that will improve performance.

Opportunity for transformational performance improvements

3.7.26 There are further opportunities to improve our performance to meet our challenging targets, these include:

- Our Water Quality First Programme - A dual approach of asset maintenance/management and internal communication/training to ensure water quality is at the heart of our corporate activities.
- Building on the taste, smell and appearance programme successes of AMP7, recognising where this will continue and where the approach needs to evolve to enhance performance in AMP8. This will include additional cleaning and conditioning activities targeted at trunk mains, and some mains replacement activity.
- This will be supported by continued research and practical application including PODDS and specific discolouration regeneration research to allow refined targeting of cleaning programme
- Trunk mains resilience - use of managed flow increases to condition mains to receive higher flows to allow for unexpected or planned changes.
- Dynamic Network Management (DNM) – a capability to support a proactive approach to network management. This will include sensor deployment and event recognition technology to mitigate and manage potential events on the water network.
- Raw water quality deterioration enhancement (supplementary document UUW60 – case 5) - enhance removal processes of the secondary metabolites geosmin and 2-methylisoborneol (2-MIB) at five water treatment works (WTW).
- Vyrnwy re-lining in AMP8 enhancement (supplementary document UUW60 – case 2) - final phase of the Vyrnwy aqueduct relining programme which will improve downstream water quality for

customers through improved compliance with the iron standard and reduced risk of discolouration (water appearing black / brown / orange).

- Further proactive maintenance of assets to prevent reactive network events, such as inspections and proactive maintenance of pumping stations, pressure management valves, strategic valves and air valves.
- Further research and data analytics to quantify the relationship between source water and customer contacts. This will help to inform future improvements and ensure we are setting the most appropriate and challenging targets in the long-term.

Dependencies or overlap with other PCs

3.7.27 There is a link with Compliance Risk Index (CRI) if there is a water quality infringement associated with the contact.

3.7.28 There is an overlap with DWI notice for discolouration (UUT-2020-00005 Discolouration Notice) which sets zone specific targets. Water Supply Zones with a customer contact rate greater than 1.15 are included in this notice. This notice specifies the proportion of black, brown and orange contacts that can meet the overall taste, smell and appearance PC.[12]

3.7.29 UUW will fully align with the latest DWI reporting methodology.

Application of outperformance cap, underperformance collar or deadband

3.7.30 There is no proposal for a cap or collar for this measure

Application of an enhanced incentive rate threshold

3.7.31 None

[12] By 2025 a reduction in consumer contacts for discolouration to below the target of 1.15 per 1000 population per zone and to reach an overall company contact rate of 66% of the defined company PC for Taste, Smell and Appearance (0.81 contacts for BBO per 1000 population)

3.8 PR24_ISF_Internal Sewer Flooding

Overview

3.8.1 At PR19, Ofwat set a common target for internal sewer flooding based on the simple upper quartile of industry sewer flooding incident levels. Ofwat is proposing the same approach for PR24. We raised substantive concerns regarding this approach in our Future Ideas Lab Paper 'What lessons can we learn from cost assessment at PR19[13]' and build upon those concerns here. Specifically, a common target set at an unadjusted industry upper quartile fails to account for the significant environmental differences between company regions and how that impacts on attainable performance. As such, Ofwat's proposed approach does not lead to an equivalent level of stretch being applied to each company, with some companies being penalised for not being able to deliver unachievable targets, whilst others are rewarded for outperforming targets that are insufficiently stretching to attain within their regional operating circumstances. We propose that PCLs are instead set using a common methodology that takes account of those environmental differences (principally urban rainfall, the proportion of combined sewers and food service establishment (FSE) density) between company regions, thereby setting PCLs that are equally stretching for all companies. Such environmental differences are included in our June 2023 PR24 "Cost Adjustment Claim: Drainage" Document Reference ID: UUW_CAC_002 which we will withdraw if this approach to setting appropriate environmentally-adjusted PCLs is taken.

3.8.2 UUW has undertaken a reproducible econometric modelling analysis to define PCLs **for all companies** on a common basis, by adjusting for regional environmental operating circumstances, namely urban rainfall, the proportion of combined sewers and FSE density. Specifically, we propose that PCLs for all companies are set at the 'environmentally-adjusted upper quartile', i.e. an upper quartile that is adjusted for the above environmental operating circumstances in each region. UUW is not seeking a company-specific, more lenient PCL than other companies – rather, UUW is seeking that PCLs for all companies fairly reflect the different operating challenges arising in each company region.

3.8.3 Indeed, recognising that sewer flooding is one of the worst service failures customers can experience, we are committed to pushing ourselves even further to the boundaries of what is achievable and honouring targets published in our PR19 draft business plan submission. We are therefore proposing that UUW's PCL delivers a step change from the environmentally-adjusted upper quartile to a position of 1.96 incidents per 10,000 sewer connections, equivalent to the 2030 outturn position of 715 incidents we proposed in this submission. Such an outturn position is beyond the environmentally-adjusted frontier i.e. the minimum number of flooding incidents modelled to be achievable within the environmental operating circumstances of the North West, and will see us deliver a highly stretching **31.9% reduction in internal sewer flooding incidents** over the course of the AMP**.**

3.8.4 We are concerned by Ofwat's proposal to remove the penalty collar for this performance commitment owing to the sensitivity of internal sewer flooding to exogenous factors. Without a collar, companies are exposed to an unacceptable level of financial risk for severe weather events that are largely outside of their control. For example, in September 2016, UUW experienced exceptionally severe weather in the Manchester and Stockport region over a two day period, with localised return periods in excess of 1 in 1000. This two-day period alone resulted in 933 hydraulic and severe weather incidents; over 60% of the total number of incidents of this type reported in the whole year. Whilst we support Ofwat's view that companies should be incentivised to mitigate the impact of exogenous events on customers, designing solutions to cope with storms with such exceptional return periods is infeasible and would have an unacceptable impact on customer bills. As a result, UUW proposes a penalty collar for this measure set at a level equivalent to ±0.5% return on regulatory equity (RoRE). We consider that such a collar would only be exceeded during years of extreme rainfall and therefore will not discourage companies from

[13] https://www.ofwat.gov.uk/wp-content/uploads/2022/04/United-Utilities-What-lessons-can-we-learn-from-cost-assessment-at-PR19.pdf

driving performance improvements but solely protect against significant financial risk exposure from exogenous events.

3.8.5 This type of “spike” in incidents over a very limited time period is analogous to the situation that might arise during a “freeze thaw” event and its impact on water supply interruptions; whereby a significant proportion of the full year performance against the target is driven by one-off, exogenous events. Ofwat considers that an underperformance collar is appropriate in order to mitigate the impact of extreme events on water supply and the same approach appears valid on flooding metrics. It would be prohibitively expensive to seek to weatherproof the drainage system against extreme weather events.

3.8.6 Table 16 outlines a summary of these proposals.

Table 16: PR24_ISF Internal Sewer Flooding - summary, definition and parameters

Purpose and benefits	To incentivise companies to reduce the number of internal sewer flooding events to help minimise disruption to customers
Definition	The number of internal sewer flooding incidents normalised per 10,000 sewer connections. Ref: *Internal sewer flooding - PC definition 9th May, 2023*
Specific Exclusions	In line with section 1.3 Internal sewer flooding - PC definition.
Exceptions to Ofwat methodology	We propose an environmentally adjusted PCL that reflects the operating circumstances of a given region. Internal sewer flooding is highly sensitive to regional operating circumstances, with exogenous factors interacting to make sewer flooding more or less likely in a given region. It is therefore highly inappropriate to set a common PCL at an unadjusted upper quartile as this is premised on the inaccurate assumption that an equivalent number of flooding incidents equates to companies having equivalent performance, irrespective of substantial variations in regional operating circumstances. We also propose to maintain a penalty collar and consider removing it would expose companies to unacceptable level of financial risk for severe weather events that are largely outside of their control. We therefore propose that performance commitment levels for all WaSCs are set using a common methodology that takes account of those environmental differences between company regions, thereby setting targets that are equally stretching for all companies. We also propose a penalty collar for this measure, set at a level equivalent to ±0.5% return on regulatory equity (RoRE).
Compliance Checklist	We have completed the compliance checklist provided by Ofwat as part of the performance commitment definition and are confident in meeting all of the reporting requirements.

Units: incidents per 10,000 sewer connections	Forecast	Proposed company specific performance commitment level					Long term
	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2049-50
UUW PCL	2.88	2.32	2.23	2.14	2.05	1.96	1.43
Underperformance collar	4.00	3.56	3.48	3.39	3.30	3.21	
Deadband				N/A			
Outperformance cap				N/A			
Enhanced threshold	N/A	1.92	1.84	1.75	1.66	1.57	N/A
Enhanced cap	N/A	0.87	0.78	0.69	0.60	0.52	

ODI Rates	
Rate per number of incidents per 10,000 sewer connections	
Marginal benefit	£21.6 million
Benefit sharing factor	70%
ODI rate	£15 1 million
Enhanced rate	£30.2 million

Source: Ofwat Excel file "United Utilities - Indicative ODI rates - Jun23 - v3"

Basis for PCL	We have developed an econometric model capable of calculating upper quartile and frontier levels of performance for all companies that are adjusted for a region's operating circumstances, namely urban rainfall, proportion of combined sewers and FSE density. UUW's proposed PCL represents a step change of 31.9% from the environmentally-adjusted UQ to a position of 1.96 incidents per 10,000 sewer connections, in line with the end of 2030 target we proposed in our PR19 business plan. Such an outturn position is beyond the environmentally-adjusted frontier.

Data table reference lines - AMP7: OUT8.7, AMP8: OUT1.4, Long Term Ref: LS1.

3.9 Evidence to support proposals summarised above

3.9.1 UUW presents compelling evidence that PCLs must be adjusted to reflect the environmental operating circumstances of each company if incentives to outperform are to be comparable across the industry. We also propose that the penalty collar should be maintained for this measure and present compelling evidence that a penalty collar is required to protect companies from exposure to an unacceptable level of financial risk from extreme weather events outside of their control.

3.9.2 This section outlines:

- why the application of a common PCL is highly inappropriate;
- how we have used econometric models to calculate environmentally adjusted PCLs on a common and replicable basis across the industry;
- how we justify the suitability of UUW's PCL with reference to the tests given in Ofwat's final methodology Appendix 9 section 4.4.3 on determining stretching performance improvements; and
- how we justify the application of a collar and the appropriate level for it to be set.

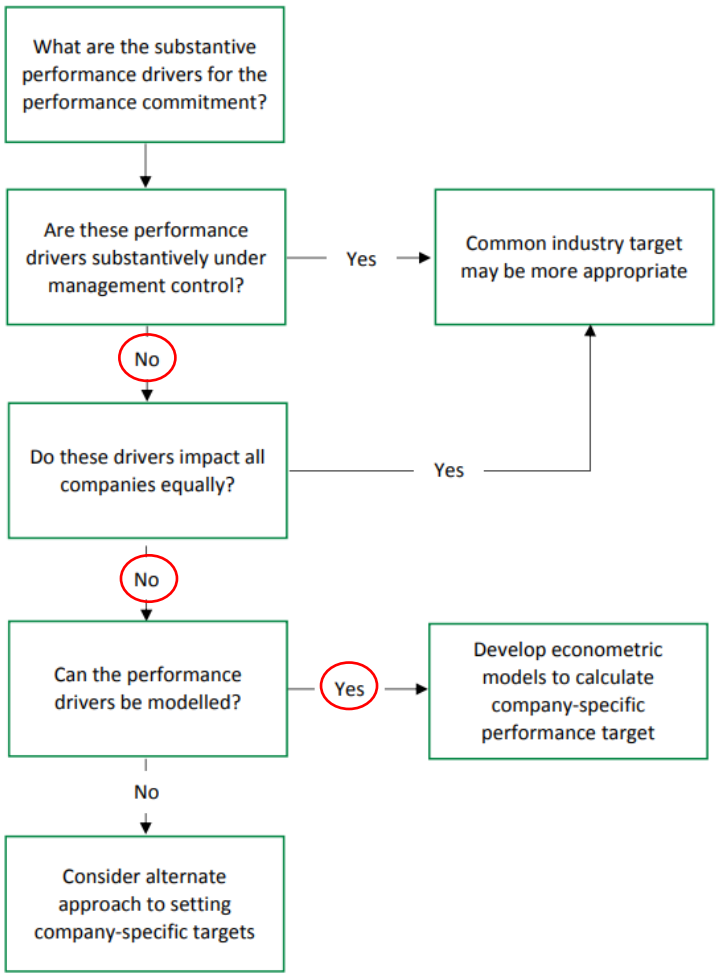
Why an Unadjusted Common PCL is Inappropriate

3.9.3 UUW considers that Ofwat's proposed approach of setting unadjusted common PCLs for internal sewer flooding is inappropriate if all companies are to be subject to a comparable level of stretch. At PR19, Ofwat asked companies to provide a forecast upper quartile level of incidents, and then set a common PCL at the upper quartile of these estimates. The assumption underpinning this approach was that an equivalent number of flooding incidents equates to companies having equivalent performance, irrespective of substantial variations in regional operating circumstances. However, as key exogenous factors such as urban rainfall, proportion of combined sewers and food service establishment (FSE) density have been demonstrated to be material drivers of flooding incidents and are not equally distributed across operating areas, the implication of this simplifying assumption was to create inequitable stretch and distort incentives across the industry.

3.9.4 UUW defined a common framework for setting PCLs in our Future Ideas Lab Paper[14] (Figure 15) and we apply this framework here to demonstrate why environmentally adjusted PCLs are appropriate and subsequently develop econometric models to calculate environmentally adjusted PCLs on a common and replicable basis across the industry.

[14] ofwat.gov.uk/wp-content/uploads/2022/04/United-Utilities-What-lessons-can-we-learn-from-cost-assessment-at-PR19.pdf

Figure 15: Our framework for assessing whether a company-specific target is more appropriate than a common industry target



Source: UUW Future Ideas Lab Paper[15]

What are the substantive drivers for the performance commitment?

3.9.5 We engaged in a wide variety of activities to better understand the substantive drivers of flooding performance, including conducting a multi-disciplinary 'sewer flooding hackathon'. The flooding hackathon was a multi-disciplinary sprint that brought together subject matter experts, developers, interface designers and others to improve our understanding of the risk drivers for flooding using new and pre-existing datasets, including open data where available.

3.9.6 Through such extensive data analysis, we were able to demonstrate that engineering, operational and economic rationale dictates that a suite of exogenous factors compound to influence internal sewer flooding performance (Table 17). The first three factors are particularly significant and therefore included in our June 2023 PR24 contingent "Cost Adjustment Claim: Drainage" Document Reference ID: UUW_CAC_002. However, as demonstrated in our Future Ideas Lab Paper[14] common framework (Figure 15) the best option for customers is to set an environmentally adjusted PCL for internal sewer flooding that reflects the operating circumstances of a given region. If an appropriate environmentally-adjusted PCL is adopted, UUW will withdraw the cost adjustment claim. If, however, the sewer flooding PCL is not adjusted in this way, we consider the cost adjustment claim to be the next best option for customers.

[15] https://www.ofwat.gov.uk/wp-content/uploads/2022/04/United-Utilities-What-lessons-can-we-learn-from-cost-assessment-at-PR19.pdf

Table 17 Exogenous factors drive internal sewer flooding performance

Factor	How does this influence internal flooding performance?
Urban rainfall	Rainfall in urban areas falls onto non-permeable ground and then flows into the sewer system, increasing the risk of surcharging and resultant flooding
Proportion of combined sewers	Combined sewers convey foul and surface water flows and therefore have less hydraulic capacity than separate systems at times of heavy rainfall, increasing the likelihood of flooding
Food Service Establishment (FSE) density	FSEs discharge fat, oil and grease (FOG) into the network. FOG can cause blockages that lead to flooding
Property density	A flooding event in a densely populated area is more likely to impact more than one household. Densely populated areas may also have older housing stock with poorer quality sewage infrastructure and/or cellars
Local topography and cellar density	Our hackathon demonstrated that a combination of low spots and an inability to drain effectively increase flood risk

Source: UUW analysis

Are these performance drivers substantively under management control?

3.9.7 The above factors are all entirely, or largely, outside of management control:

- **Urban rainfall** – Management cannot control the amount of rainfall falling within a region, nor the degree of urbanisation. We can, however, exert some degree of control over the way in which rainwater is managed. Part of UUW's long-term ambition is therefore to increase attenuation of rainwater, within both urban areas and the wider catchment, through measures such as SuDS and natural flood management (NFM). However, the scale of the operational change and total investment necessary to fundamentally reconfigure our network and control rainwater at source means that rainwater management investment must be staggered across multiple AMPs. Urban rainfall is therefore outside of short-term management control.
- **Proportion of combined sewers** – Combined sewers are legacy assets inherited at privatisation. Companies cannot control the asset base inherited and whilst at UUW we are looking to increase surface water separation, this is an expensive and complex process to conduct at scale. Indeed, Defra's consultation on the Government's Storm Overflows Discharge Reduction Plan[16] states

"This evidence project estimates that the complete elimination of all storm overflows at coastal and inland waters by completely separating the sewer network would cost between £350 billion and £600 billion. It would also cause significant disruption. For example, most of the combined system runs under our towns and cities and would have to be dug up".

- We therefore consider that separation at the scale necessary to reduce the combined sewer variable in this claim would be prohibitively expensive and disruptive for our customers and therefore this variable is outside of short to medium term management control.
- **FSE density** - Numbers and location of FSEs are outside of management control, although we do have an active programme of engagement with FSEs to improve their understanding of appropriate FOG disposal practices and thereby decrease discharges to the network.
- **Property density** – Management cannot control the density of properties in a given region.
- **Local topography and cellar density** – Topography and cellar density are entirely outside of management control.

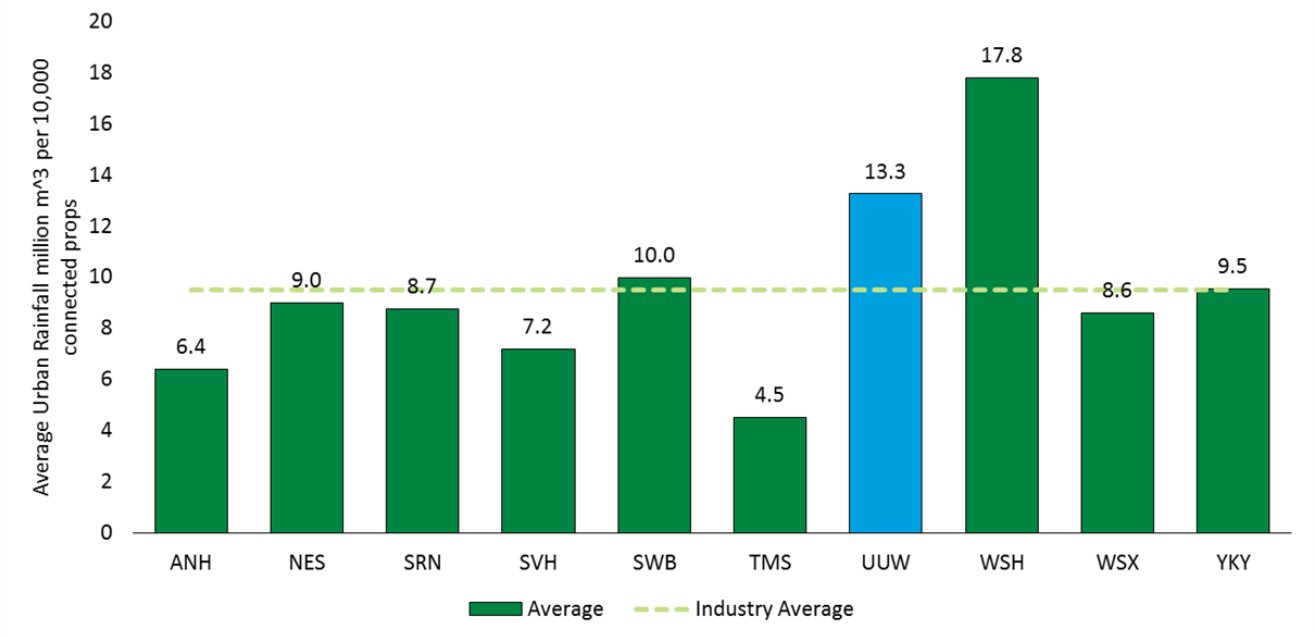
[16]Defra (2022) *Consultation on the Government's Storm Overflows Discharge Reduction Plan.* Available here

Do these drivers impact all companies equally?

3.9.8 These exogenous performance drivers are not equally distributed across operating regions:

- **Urban rainfall** - Ofwat's own 'urban rainfall calculations (October 2022) dataset'[17] (BN4505) demonstrates that, when normalised per 10,000 sewer connections, UUW's urban rainfall is 40% higher than the industry average (Figure 16). Therefore, as high rainfall coincides with the urban conurbations of the North West, more rainwater falls onto hard, impermeable urban surfaces and so enters the sewer system relative to in other companies' areas;

Figure 16 Urban rainfall (million m3) (wastewater – LAD) per 10,000 connected properties.

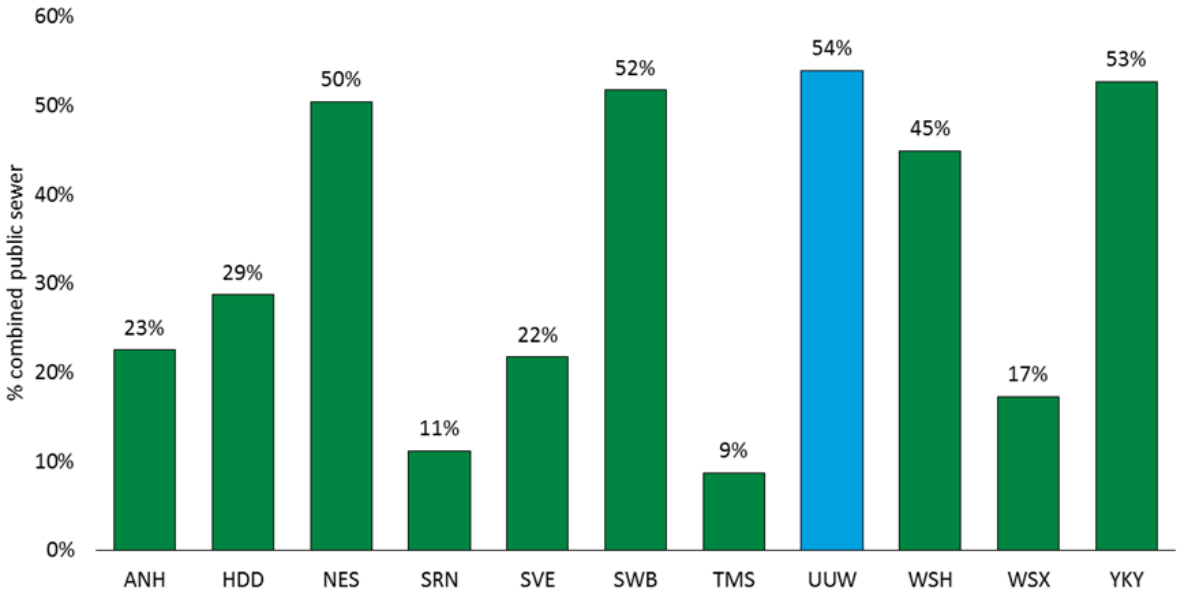


Source: Ofwat, urban rainfall calculations[16].

(a) **Proportion of combined sewers** - UUW has the highest percentage of combined public sewers in the industry at 54% (Figure 17) compared to an industry average of 33%. Combined sewers convey both foul and surface water flows, resulting in a reduced hydraulic capacity in periods of high rainfall and increased risk of sewer flooding. The effect of combined sewers therefore cannot be considered independently of urban rainfall;

[17] Ofwat (2022) *Urban rainfall calculations.* https://www.ofwat.gov.uk/publication/urban-rainfall-calculations/

Figure 17: UUW has the highest % of combined public sewers in the industry

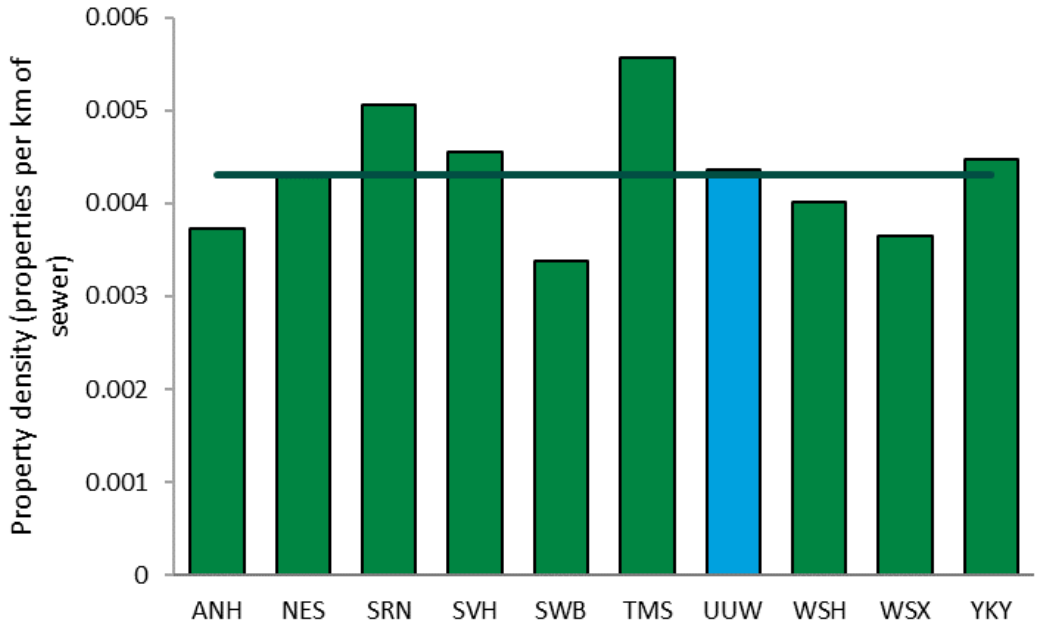


Ofwat, PR24 wastewater cost assessment master dataset[18]

(b) **FSE density** - The North West has a higher FSE density (118.2 per 100,000 population) than the national average (90.8 per 100,000 population) (Public Health England, 2018). FSEs have been demonstrated to be a major cause of flooding events due to their discharge of fats, oil and grease (FOG) into the sewer network;

(c) **Property density** – The North West has a property density that is in line with the industry average. However, property density is not equally distributed across the industry (Figure 18). A higher property density increases the likelihood that a given flooding event will affect more than one household.

Figure 18: 2021/22 property density across the industry.

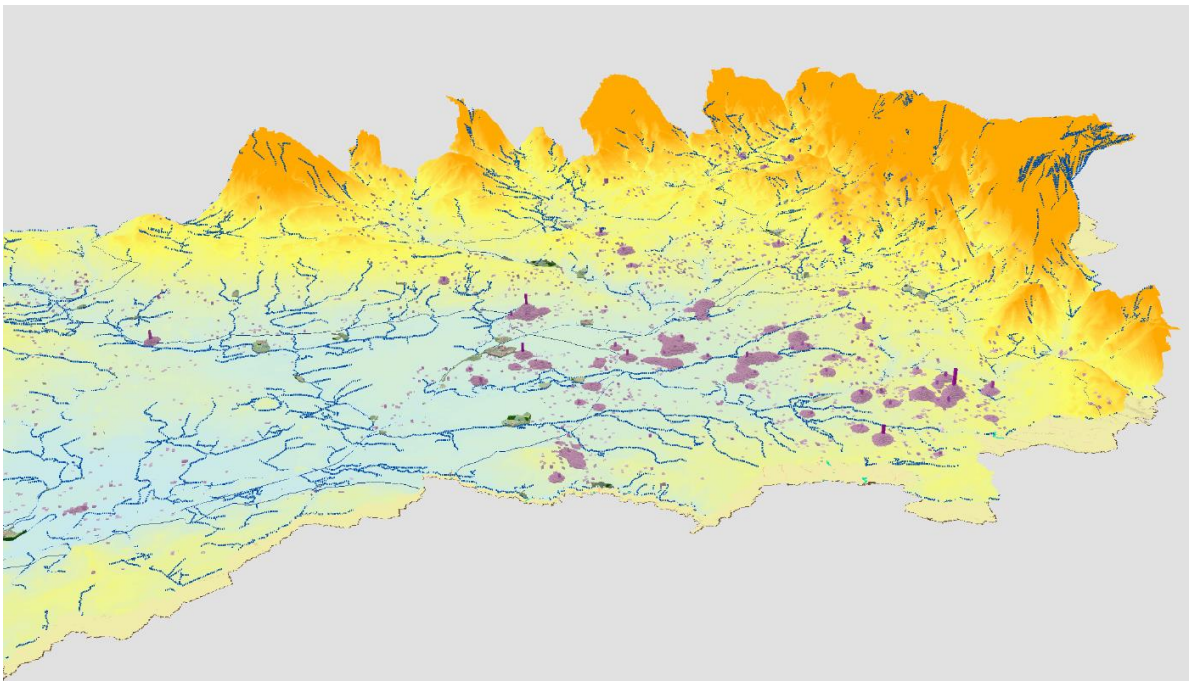


[18] ofwat.gov.uk/wp-content/uploads/2023/04/PR24-Cost-Assessment-Master-Dataset-Wholesale-Wastewater-Base-Costs-v4.xlsx

Source: Ofwat, PR24 wastewater cost assessment master dataset.

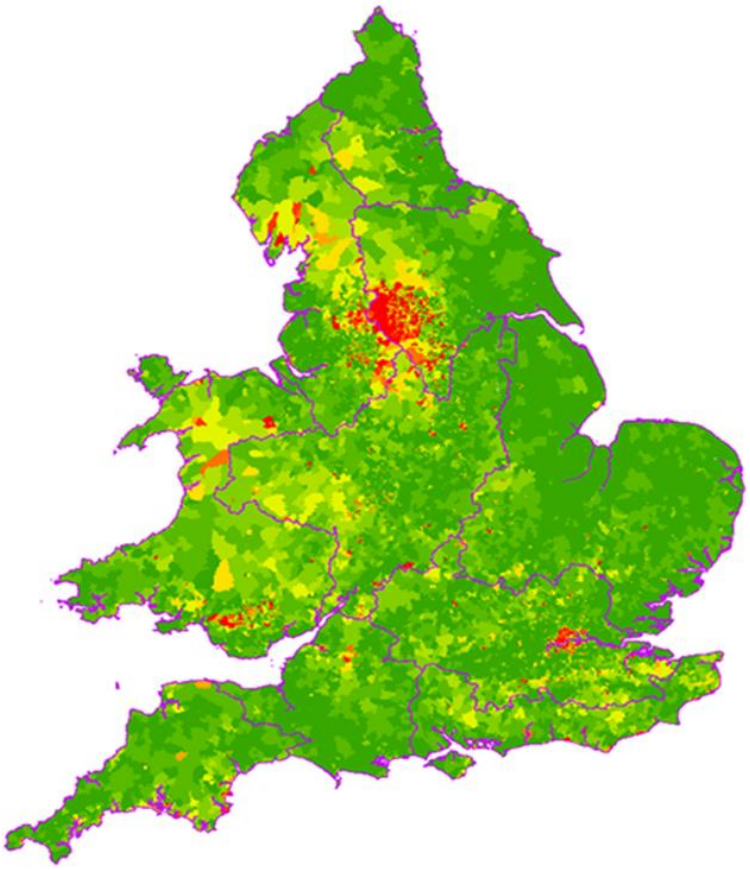
(d) **Local topography and cellar density** - Unique local topographies interact with surface water runoff to increase system surcharging and flood risk, especially in areas of high cellar density. Specifically, our flooding hackathon demonstrated that Manchester's unique geography and its topography as a 'bowl' holds water and directs it towards our network (Figure 19). Manchester is situated at the base of the Pennines and therefore, when moist air from the Atlantic hits the Pennines, the moisture condenses to produce orographic rainfall that then falls back into the 'bowl'. As the base of the bowl is flat, the system remains surcharged for longer. Additionally, Manchester has a high cellar density (Figure 20), exacerbating the effect of topography. As it is not possible to compare all regional topographies, we do not include topography in our proposed performance model.

Figure 19 – A 3D topographic representation of the Manchester Drainage Area



The Manchester drainage area has a 'bowl' topography whereby orographic rainfall generated by the Pennines is forced to runoff and enter the sewerage system in the urban centre of Manchester. Purple areas represent internal flooding clusters.

Figure 20: Cellar density across the UK. Red clusters correspond to areas of high cellar density.



Source: 2001 census data[19]

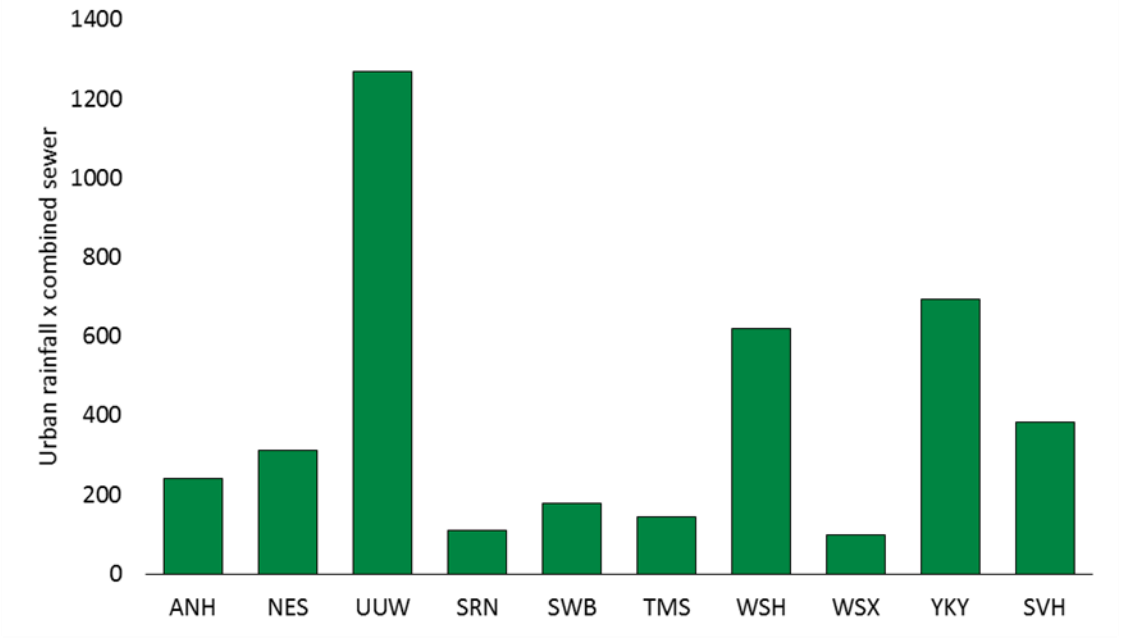
Can the performance drivers be modelled?

3.9.9 It is therefore clear that these exogenous factors are material drivers of internal sewer flooding performance and are not equally distributed across operating regions. The next step of the framework was therefore to understand whether these drivers can be modelled with reference to the availability of comparative data and the suitability for modelling:

- **Urban rainfall and combined sewers** – Ofwat has published comprehensive comparative data for these variables and therefore they can be modelled. In modelling these performance drivers, however, it must be recognised that they cannot be considered independently. Combined sewers have less hydraulic capacity than separate systems during periods of high rainfall with the result that a high prevalence of combined sewer **compounds** the effect of urban rainfall on network performance (and vice versa). Engineering and operational rationale therefore dictates that there is a strong interrelationship between rainfall and combined sewers and we therefore consider that an interaction term, i.e. a term multiplying urban run-off with the percentage of combined sewers, is a superior explanatory variable than a standalone urban rainfall or combined sewers variable. The inclusion of urban rainfall and combined sewers within an interaction term means that the effect on performance of each variable now depends upon the relative size of the other. For example, urban rainfall will have a more pronounced impact on internal sewer flooding when there is a high prevalence of combined sewers. Conversely, if these variables were treated separately, the model would consider the impact on performance of each variable, while holding the other constant. Clearly, this does not align to the engineering and operational rationale that suggests a compounding relationship between the two factors.

[19] ons.gov.uk/census/2011census/2011censusdata/2001censusdata

Figure 21 Creating a combined variable allows us to consider the joint effect of urban run-off and combined sewers



Source: Ofwat PR24 wastewater cost assessment master dataset and Ofwat urban rainfall calculations

- **FSE density –** Public Health England (PHE) has published a dataset of the density of fast food outlets by local authority[20] which can be aggregated to the WaSC operating area level and used as a model variable.
- **Property density -** Ofwat has published comprehensive comparative data for this variable and therefore it can be modelled.
- **Local topography and cellar density** – It is not possible to model the complex surface-water terrain interactions operating across all catchments and therefore local topography was not included as a variable in our performance models. Cellar density data is available for use from the 2001 census and therefore could be introduced into a performance model.

3.9.10 It is therefore clear that several of the substantive drivers of internal sewer flooding performance, namely the interaction between urban rainfall and combined sewers, FSE density, property density and cellar density can be modelled.

Developing econometric models to calculate environmentally adjusted PCLs

3.9.11 Continuing on from our work first outlined in our Future Ideas Lab paper[21], we used econometric models to define PCLs that are adjusted to reflect the operating characteristics of a given region ('environmentally adjusted PCLs') using a method analogous to the way Ofwat currently uses econometric models to set cost targets.

3.9.12 The exogenous factors outlined above were introduced into a series of econometric models. Each model underwent a robust model selection process and was tested for predictive power and statistical significance. The models chosen performed well, were robust and aligned to the hackathon's findings, which provides strong evidence that exogenous factors contribute to determining the number of internal sewer flooding incidents. For more details on the model development and selection process, please see section 2.9 of our Future Ideas Lab publication[21].

[20] Public Health England (2018) *Fast food outlets: density by local authority in England.* Available https://www.gov.uk/government/publications/fast-food-outlets-density-by-local-authority-in-england

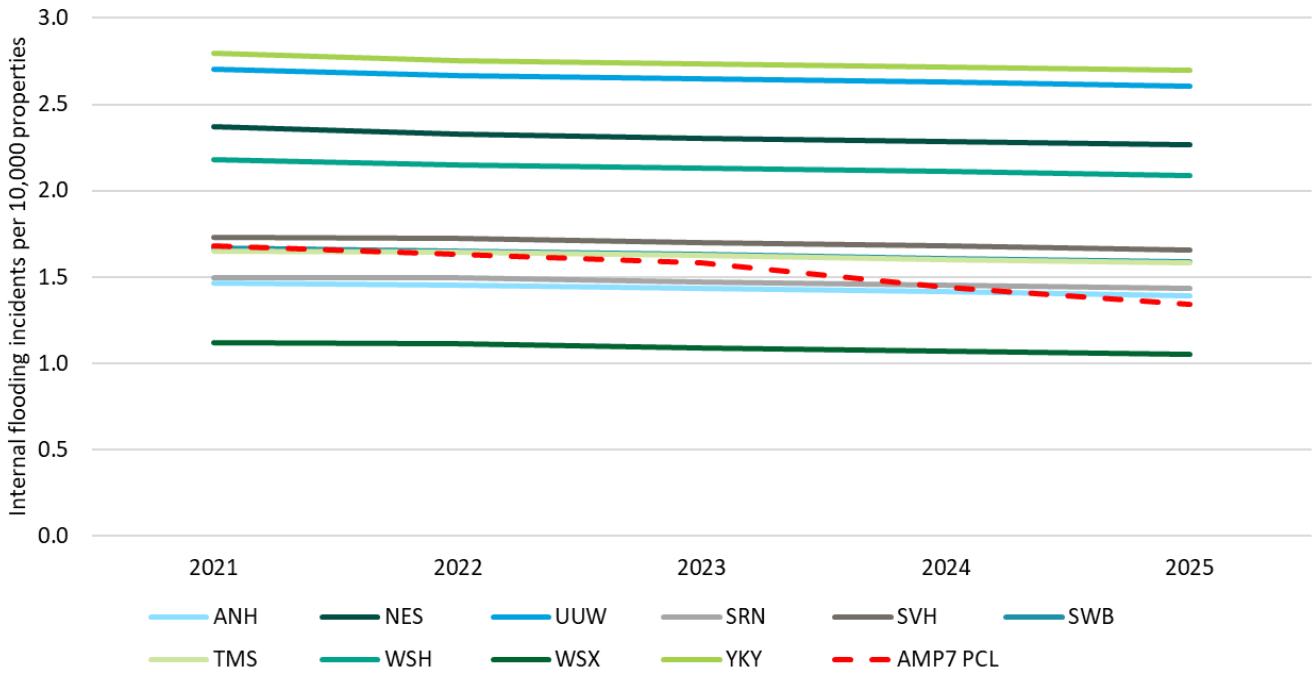
[21] UUW (2022) *Future Ideas Lab: What lessons can we learn from cost assessment at PR19?* Available https://www.ofwat.gov.uk/wp-content/uploads/2022/04/United-Utilities-What-lessons-can-we-learn-from-cost-assessment-at-PR19.pdf

3.9.13 The best performing model contained the urban rainfall and combined sewer interaction term and FSE density as performance drivers. The model that included the cellar density term failed the statistical validity test as the coefficient on cellars is statistically insignificant at the 10% level and therefore was discounted. The effect of property density was statistically significant. However, we recognise that density measures are already included within Ofwat's cost model suite and, therefore, to avoid the risk of double counting, property density was excluded from the performance model used to define environmentally adjusted PCLs. We note that the exclusion of density results in more stretching targets for UUW. The model used to define environmentally adjusted PCLs therefore contained both the urban rainfall/combined sewer interaction term and FSE density as dependent variables. It should be noted that 2022/23 rainfall data had not been published by Ofwat at the time of writing (August 2023) and therefore the model could not be updated with 2022/23 data. We will re-run the model once this data becomes available.

3.9.14 This model allowed us to forecast both upper quartile and frontier (i.e. maximum achievable) levels of performance for all companies in exactly the same way Ofwat forecasts costs for future periods as part of the price control. However, crucially, this approach means that the performance levels vary to account for the volume of urban rainfall, proportion of combined sewers and FSE density within a region. Hereafter, upper quartile and frontier levels of performance that have been adjusted will be referred to 'environmentally-adjusted UQ' and 'environmentally-adjusted frontier', respectively.

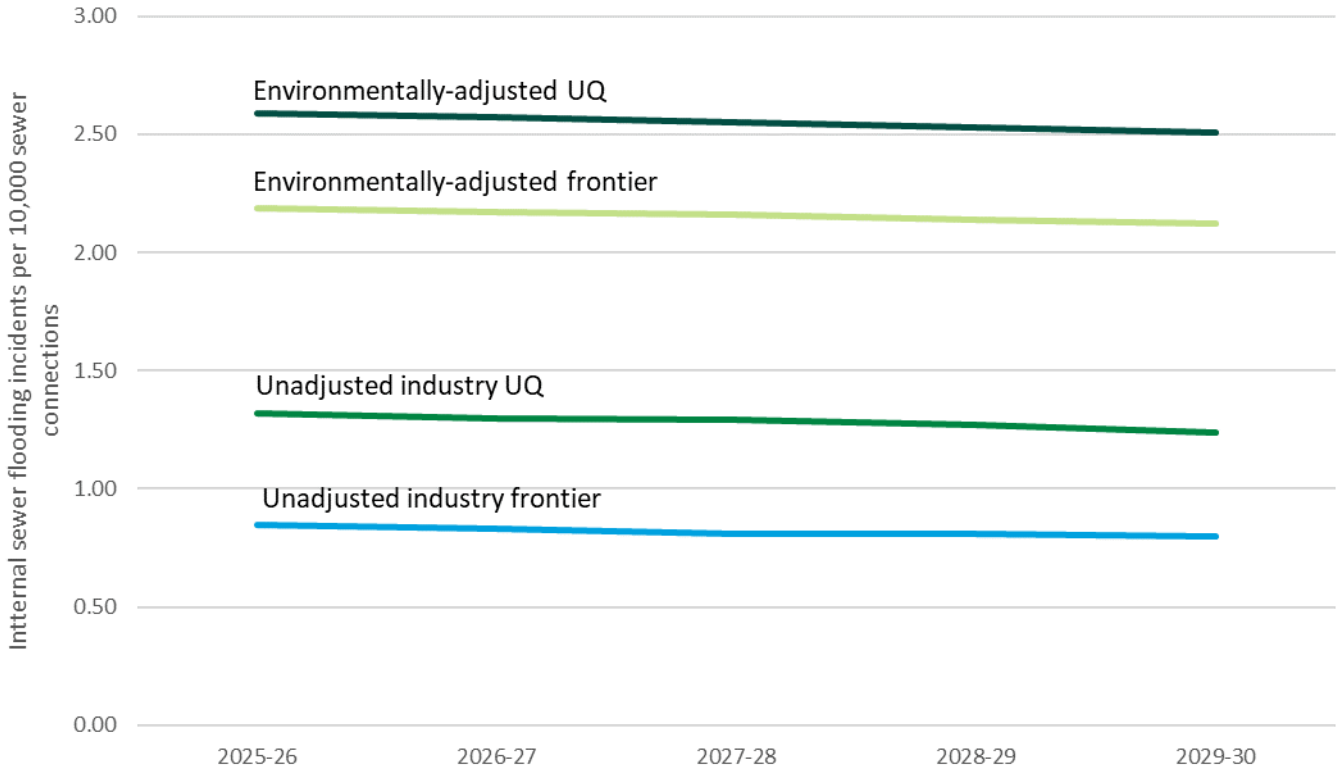
3.9.15 Figure 22 demonstrates how the environmentally-adjusted UQ varies for each company, relative to the existing AMP7 PCL. It is clear that a common industry PCL results in some companies having a target that is easy to hit, whilst others have an unachievable target. Projecting forward to AMP8, for UUW the implication is that there is a significant discrepancy between both the simplistic unadjusted UQ and frontier levels of performance and their environmentally adjusted equivalents (Figure 23). It can therefore be observed that setting PCLs at a standard-calculated industry UQ or frontier level of performance is highly inappropriate and has a particularly pronounced impact on incentives for UUW.

Figure 22: The upper quartile level of performance for internal sewer flooding varies with a company's operating circumstances. Comparison with the AMP7 PCL demonstrates that Ofwat's current approach of setting common PCLs results in inconsistent levels of stretch across the industry



Source: UUW analysis of industry APR data share and company performance data

Figure 23: Econometric modelling of UUW's upper quartile performance when adjusted to account for our unique operating circumstances ('environmentally-adjusted UQ'), alongside the equivalent 'environmentally-adjusted frontier'. There is a large discrepancy between the environmentally-adjusted UQ and frontier and the simplistic unadjusted industry equivalents.



Source: UUW analysis of industry APR data share and company performance data

3.9.16 As a result, we use outputs from this econometric modelling to set more appropriate environmentally adjusted PCLs to allow performance to be assessed on a common basis. We therefore propose that PCLs for all companies are set at the environmentally-adjusted UQ as outlined in Table 17. In this way, Ofwat can facilitate genuine comparison of performance across companies and thereby create equal incentives for outperformance across the industry.

3.9.17 Whilst an entirely valid approach may be to also set our own AMP8 PCL at the environmentally-adjusted UQ, we recognise that, owing to our significant investment in reducing the risk of internal sewer flooding in AMP7, a PCL set at the environmentally-adjusted UQ may not be sufficiently stretching for UUW. UUW is instead proposing a PCL that represents a step change from the environmentally-adjusted UQ position at the start of the AMP to a position of 1.96 incidents per 10,000 sewer connections, or 715 incidents, (Table 18) in order to honour the AMP8 outturn position we proposed in our PR19 business plan submission.

3.9.18 Indeed, this trajectory and the 2030 PCL we propose is in step with the two-AMP strategy which we proposed in our PR19 submission; a 57% reduction over two AMPs, AMP7 and AMP8, targeting a 2030 outturn position of 715 incidents. The PCLs we propose for 2025-30 are part of what was – and still is – a very ambitious strategy. 1.96 incidents per 10,000 sewer connections is beyond the environmentally-adjusted frontier i.e. the minimum number of flooding incidents modelled to be achievable within the environmental operating circumstances of the North West, demonstrating significant stretch and ambition.

Table 18: The proposed PCLs for all companies, set at the environmentally-adjusted UQ, alongside UUW's proposed PCL which represents a step change from environmentally-adjusted UQ to 1.96 incidents per 10,000 sewer connections, i.e. the proposal we set out in our in our PR19 business plan submission

	ANH	NES	SRN	SVH	SWB	TMS	WSH	WSX	YKY	UUW (UQ)	UUW (proposed PCL)
2025-26	1.37	2.25	1.41	1.64	1.57	1.56	2.07	1.03	2.68	2.59	2.32
2026-27	1.35	2.23	1.39	1.62	1.55	1.54	2.05	1.01	2.66	2.57	2.23
2027-28	1.33	2.21	1.37	1.60	1.53	1.52	2.03	0.99	2.64	2.55	2.14
2028-29	1.31	2.19	1.35	1.58	1.51	1.50	2.01	0.97	2.62	2.53	2.05
2029-30	1.29	2.17	1.33	1.56	1.49	1.48	1.99	0.95	2.60	2.51	1.96

Source: UUW analysis of industry APR data share and company performance data

3.9.19 Whilst going beyond the environmentally-adjusted frontier represents an extremely stretching position, and is substantially beyond anything that we have historically been able to deliver, we know that sewer flooding is one of the worst service failures our customers can experience. It is therefore important to demonstrate to our customers that we are stretching ourselves to the limit of what is achievable and honouring proposals made in previous business plan submissions.

Performance Commitment Levels

3.9.20 Table 18 outlines our proposed performance commitment levels within the context of the performance levels achievable from base expenditure and wider industry performance. The proposed penalty collar is also included. In the following sections, with reference to the tests specified in Ofwat's final methodology Appendix 9 section 4.4.3., we apply this data to evidence how our proposed PCLs are stretching but achievable.

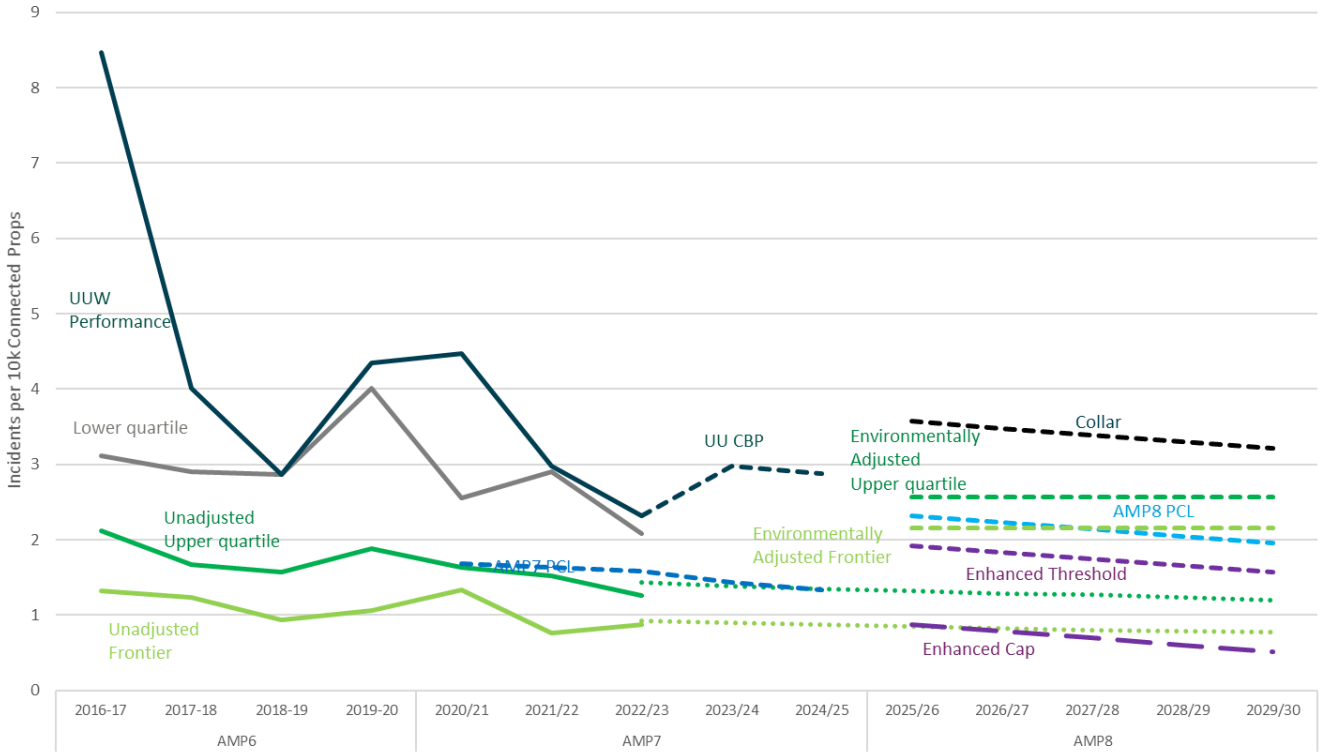
Table 19 Internal Sewer Flooding AMP8 Performance Commitment Levels achievable from base and enhancement expenditure with comparative industry information

	2025-26	2026-27	2027-28	2028-29	2029-30
PCL (normalised)	2.32	2.23	2.14	2.05	1.96
PCL (incidents)	815	790	765	740	715
Performance from base[1] (normalised)	2.32	2.23	2.15	2.07	1.99
Performance from base (incidents)	816	792	769	748	727
Performance from enhancement[2] (normalised)	0.00	0.00	0.01	0.02	0.03
Performance from enhancement (incidents)	1	2	4	8	12
Unadjusted Industry upper quartile (normalised)	1.32	1.29	1.27	1.24	1.20
Environmentally-adjusted upper quartile (per 10,000 sewer connections)	2.59	2.57	2.55	2.53	2.51
Unadjusted industry frontier (normalised)	0.85	0.82	0.80	0.79	0.77
Environmentally-adjusted frontier	2.19	2.17	2.16	2.14	2.12
Enhanced incentive rate threshold	1.92	1.84	1.75	1.66	1.57
Reward cap	N/A	N/A	N/A	N/A	N/A
Penalty collar	3.56	3.48	3.39	3.30	3.21
Deadband	N/A	N/A	N/A	N/A	N/A

*Data table reference: [1.]*OUT2.4*, [2]OUT3.4, note: "normalised" is per 10,000 sewer connections*

3.9.21 Figure 24 summarises the above, showing UUW's proposed PCL within the context of historic performance, our historic PCL, industry upper quartile and environmentally-adjusted upper quartile.

Figure 24 Proposed Internal Flooding AMP8 PCL, with consideration of the AMP7 PCL, historic company and industry incident levels



Source: UUW analysis

PCLs set at PR19

3.9.22 The PR19 PCL was set as a simplistic unadjusted industry upper quartile, giving UUW an end of AMP7 PCL of 459 incidents, or 1.34 incidents per 10,000 sewer connections. For the reasons outlined above, we consider an unadjusted upper quartile target to be a poor and inconsistent mechanism for assessing performance across companies operating under very different environmental circumstances. It is clear that it will not be possible for UUW to achieve such a PCL without unacceptable increases to customers' bills as a result of our unique regional operating circumstances. Indeed, such a PCL is well beyond the environmentally-adjusted frontier level of performance.

3.9.23 Thus, whilst we have calculated the unadjusted UQ again for PR24 using Ofwat's historical dataset and provide that in Table 20 below for consistency, we do not consider it appropriate to propose a PCL based on an unadjusted industry UQ.

Historical outturn performance

Table 20: Internal Sewer Flooding AMP7 UUW alongside industry and forecast data

	Actual				Forecast		Percentage Improvement		
	2019-20 (AMP6)	2020-21	2021-22	2022-23	2023-24	2024-25	2019-20 to 2022-23	2019-20 to 2024-25	AMP8 (PCL)
AMP7 PCL (per 10,000 sewer connections)	N/A	1.68	1.63	1.58	1.44	1.34	N/A	N/A	
Actual/forecast incidents (per 10,000 sewer connections)	4.35	4.47	2.98	2.32	2.98	2.88	46.6%	33.8%	
Incidents	1,494	1,533	1,023*	801*	1035	1007			
Unadjusted Industry upper quartile (per 10,000 sewer connections)	1.89	1.64	1.52	1.26	1.38	1.35	33.3%	28.6%	
Environmentally Adjusted Upper quartile (per 10,000 sewer connections)	2.74	2.70	2.67	2.65	2.63	2.61	3.3%	4.7%	31.9%
Unadjusted Industry frontier (per 10,000 sewer connections)	1.06	1.33	0.76	0.87	0.89	0.86	17.9%	18.9%	
Environmentally Adjusted Frontier (per 10,000 sewer connections)	2.32	2.29	2.26	2.24	2.22	2.21	3.5%	4.7%	

**Note: Both 2021-22 and 2022-23 were atypically dry years so this level of performance would not be expected in a wetter year*

Individual company performance

3.9.24 UUW's proposed PCL sees a 31.9% reduction in internal sewer flooding incidents over the course of AMP8, relative to our predicted incident level in 2025. Over the equivalent period in AMP7, UUW forecasts to deliver a 33.8% improvement on our 2020 internal sewer flooding incident numbers (Table 20). Our proposed AMP8 PCL therefore almost matches the rate of improvement we are forecasting to achieve over AMP7. This is especially stretching when it is understood that our performance improvement in AMP7 has largely been enabled by the introduction of our Dynamic Network Management (DNM) operating model.

3.9.25 DNM has involved the installation of over 17,500 intelligent sensors, alongside enhanced monitoring on more than 1,500 point assets, across 160 drainage areas with the aim of developing an intelligent

wastewater network. By improving the monitoring capabilities in 'hot spot' areas of our network and applying artificial intelligence to detect deviations from 'normal' flow signatures, we have been able to identify and resolve key causes of sewer flooding, such as blockages, before customers are even aware of the problem. The proactive alerts generated by this network of sensors have detected over 2,500 blockages which have subsequently been cleared by our resolution teams. The position from which we launch in AMP8 has therefore already been enabled by a step change in our operating model in AMP7 and as such achieving a 31.9% additional improvement in AMP8 is extremely stretching and ambitious.

3.9.26 It should be noted that DNM is focused largely on managing 'controllable', i.e. flooding and other cause (FoC) flooding, not hydraulic flooding. The previous three years have been relatively dry years relative to the North West's usual precipitation trends and, as a result, hydraulic and severe weather flooding numbers have been lower than usual. It must therefore be recognised that, whilst DNM has significantly contributed to decreases in FoC flooding, customers in the North West remain especially vulnerable to hydraulic and severe weather flooding as a direct result of our unique operating circumstances. Indeed, in 2023/24, we have seen successive summer storms hit the region, with July being declared the wettest July on record for Greater Manchester, Lancashire and Merseyside[22]. High-intensity storms have resulted in an upsurge of hydraulic/severe weather incidents, with nearly 7 times the number of hydraulic/severe weather flooding incidents reported in the **whole of 2022/23** observed in a two-day period in 2023/24. Met Office forecasts predict that the frequency and intensity of winter storms will increase with climate change, exacerbating our exposure to severe storm events. An additional layer of stretch within the proposed PCL therefore results from the vulnerability that UUW is exposed to.

Sector Level Performance

3.9.27 Whilst we recognise that, in absolute terms, based on our 2022/23 incident numbers, UUW ranks tenth out of 11 companies, these figures do not reflect the differences in the regional operating circumstances of each company and are therefore a poor representation of actual performance. As outlined above, UUW considers that a multitude of exogenous factors interact to increase UUW's sewer flooding risk above that of other regions. Indeed, when using the environmentally UQ as the performance metric, in 2021/22 and 2022/23 UUW actually outperform the environmentally-adjusted UQ position for the first time. However, we are still some way from achieving the environmentally-adjusted frontier position (Table 19) and therefore believe that setting ourselves the ambition to exceed this level of performance by the end of AMP8 is a stretching target reflecting significant ambition. In relative terms, UUW's performance improvement of 46.7% between 2020 and 2023 far exceeds that seen in the industry where improvement in the upper quartile over the equivalent period is 33.3% (Table 19).

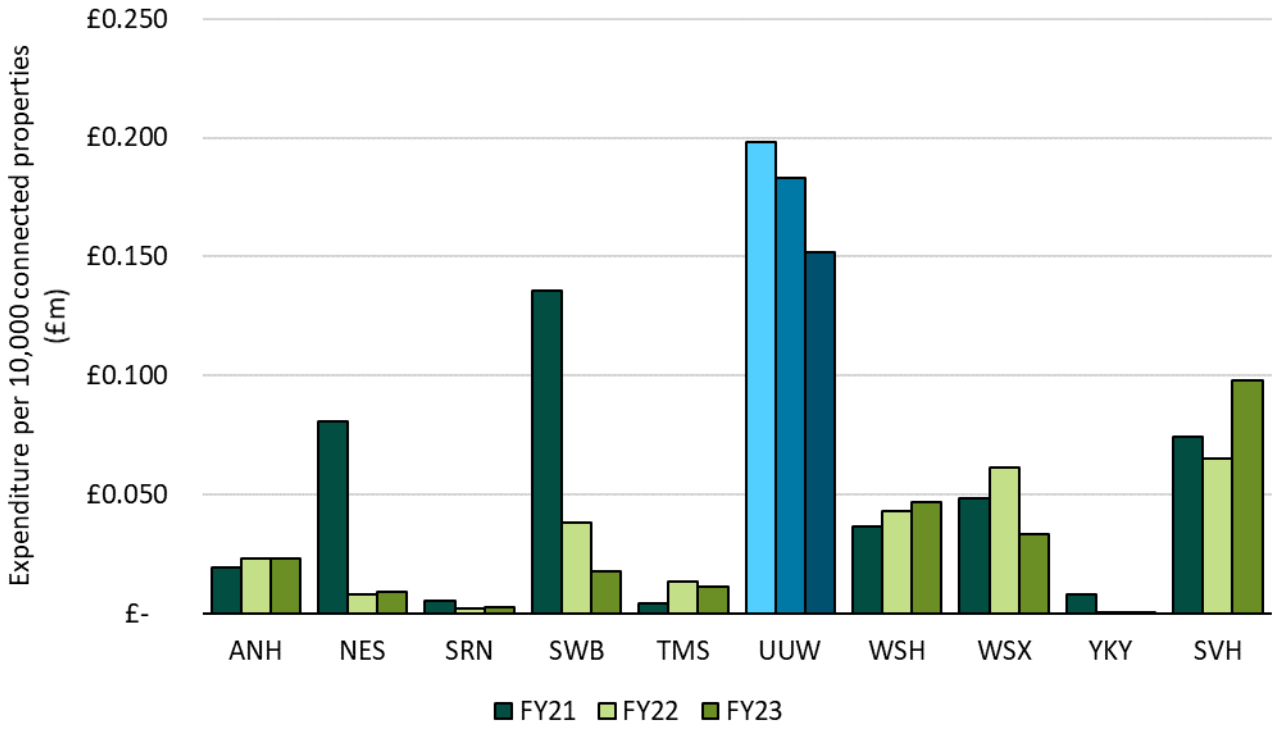
3.9.28 We have historically raised our concerns regarding under-reporting of incidents reactively identified during onsite investigation by other companies, which we believe may have elevated our reported internal sewer flooding incidents relative to those of other companies. UUW has a long-standing process for identifying properties affected in this way through our well-established flood extent assessment (FEA) process, where we proactively investigate to uncover the full extent of an incident by visiting properties to the front, rear and either side of a flooded property until dry properties are established in all four directions. We are pleased to see that other companies have recently made advances in the number of properties identified via onsite investigation but we encourage Ofwat to ensure this trend is continued during wetter years.

Historical expenditure included in the base expenditure models at PR24

3.9.29 UUW considers that our historical expenditure has been appropriate for our operating circumstances. Indeed, UUW has had by far the largest total expenditure on 'reducing flood risk for properties' per 10,000 sewer connections (Figure 25) within AMP7 to date and expenditure 27.9% above the industry average over the period 2011-12 to 2021-22.

[22] Met Office (2023) *Wettest July on record for Northern Ireland.* Available here.

Figure 25: Expenditure on 'reducing flood risk for properties' per 10,000 sewer connections for 2020/21 to 2022/23



Source: Ofwat, PR24 wastewater cost assessment master dataset[23]

3.9.30 Further, we consider our expenditure on sewage collection to be efficient within the constraints imposed by the unique operating circumstances in the North West. Increasing base expenditure beyond our current level would not yield a cost beneficial improvement in performance. Above our current level of botex expenditure on sewage collection, we judge that the improvements delivered by a given unit of expenditure begin to plateau, and thus expenditure above this optimum level becomes inefficient and uneconomic for our customers.

3.9.31 Therefore, we consider that our historical expenditure has been appropriate for our circumstances. By extension, in projecting forward our historical expenditure into the PR24 base expenditure models, we consider the delivery of our proposed PCL to reflect the level of performance achievable with a continued efficient level of expenditure.

3.9.32 This allowance will not, however, be sufficient to hit Ofwat's unadjusted upper quartile target for internal sewer flooding. No company with UUW's characteristics (high levels of urban rainfall, high prevalence of combined sewers) has achieved Ofwat's upper quartile target. This means that the costs of hitting the unadjusted upper quartile target are not present within the historical dataset and therefore cannot be allocated by the cost models. Indeed, order to be able to achieve an unadjusted upper quartile PCL, a fundamental reconfiguration of our system would be necessary, including large-scale separation of combined sewer systems; activities that will cost several billions. We therefore consider the most appropriate outcome to be an environmentally adjusted PCL that reflects the level of performance achievable with an efficient level of expenditure.

Company forecast of performance levels that can be delivered from base expenditure

3.9.33 When forecasting performance levels that can be delivered from base expenditure in OUT2.4, we assumed the base allowance to be inclusive of the historical enhancement expenditure on 'reducing flood risk for properties', as per Ofwat's proposed PR24 base cost models. Therefore, the performance

[23] https://www.ofwat.gov.uk/wp-content/uploads/2023/04/PR24-Cost-Assessment-Master-Dataset-Wholesale-Wastewater-Base-Costs-v4.xlsx

from base counterfactual was calculated by estimating the benefits derived from any enhancement programmes that fall outside of this implicit allowance, namely those enhancement cases being submitted for PR24 for which there are flooding benefits. We took a cumulative view of enhancement expenditure, assuming that any benefits calculated for programmes of work in previous year(s) would continue to be felt in future years.

3.9.34 UUW is submitting a £132.3 million enhancement case for Rainwater Management in line with the need identified through our DWMP. The aim of this enhancement case is to **prevent deterioration** in sewer flooding performance due to climate change by initiating a multi-AMP programme of investment in sustainable blue green solutions, such as SuDS and sewer disconnection activities. The historic costs for such activities are not contained within the PR24 base cost models as the enhancement programme represents a fundamental shift from the traditional activities, such as property-level flood mitigation, deployed historically towards implementation of nature-based solutions at a scale not observed historically. These activities therefore cannot be funded from the 'reducing flood risk for properties' allowance.

3.9.35 The rainwater management enhancement case will instead help offset deterioration in baseline performance due to climate change and improve resilience across future AMPs. The in-AMP net benefits for internal sewer flooding are therefore limited, at an estimated 4 incidents across the AMP, and have been incorporated into our proposed PCL. We have also modelled some minor internal sewer flooding co-benefits from hybrid schemes delivered through our WINEP and Advanced WINEP enhancement cases, c.8 incidents over the course of the AMP. These benefits have similarly been incorporated into the PCL.

3.9.36 UUW's AMP8 PCL will therefore largely be delivered through our base expenditure allowance (inclusive of the reducing risk of sewer flooding enhancement allowance) (Table 19), with the rainwater management enhancement case offsetting performance deterioration due to climate change.

Performance levels of efficient companies

3.9.37 Our econometric modelling approach allowed us to understand how performance levels for efficient companies vary based on regional operating circumstances, specifically when the proportion of combined sewers, levels of urban rainfall and FSE density are accounted for. This modelling suggests that UUW's performance in 2022/23 is consistent with the environmentally-adjusted upper quartile. UUW's proposed PCL sees us targeting a level of performance beyond the environmentally-adjusted frontier largely from base expenditure, demonstrating an efficient use of our cost allowance.

3.9.38 Conversely, Figure 22 demonstrates how Ofwat's current approach to setting PCLs results in other companies being expected to achieve a level of performance that is not stretching when their favourable operating conditions are taken into account. Therefore, customers in some operating regions may be paying too much for the level of service they receive. Because of this we propose appropriately stretching targets for the rest of the industry.

Opportunity for transformational performance improvements

3.9.39 UUW recognises that achieving environmentally-adjusted frontier performance is going to be extremely stretching and will require continued transformational change. Throughout AMP8, we will continue to mature the machine learning capabilities of DNM, to reduce the volume of false alerts and refine our response to blockage and high level alerts. We plan to expand our network of sensors to additional drainage areas to improve coverage across the region and we intend to conduct trials to understand how we can use DNM to optimise our storage availability to reduce hydraulic flood risk. In this way, continued investment in DNM will enable us to further build on our approach and place us on track to achieve frontier performance.

3.9.40 Alongside this, we are proposing a large-scale proactive inspection and rehabilitation programme for our sewer network. This will allow UUW to proactively identify and rehabilitate defects that may ultimately lead to blockages or collapses that cause internal sewer flooding. Such a programme will be largely

enabled by our partnership with VAPAR, a company that specialises in using AI technology to automate defect detection from CCTV imagery, which is increasing the rate at which we can process CCTV imagery and standardise prioritisation of rehabilitation.

3.9.41 Further, we plan to extend our flood mitigation programme to protect over 1,000 additional properties from internal sewer flooding, through installation of property-level flood devices, including non-return valves and flood barriers. This will require a significant upscaling of our current rate of rollout to enhance resilience against both FoC and hydraulic flooding.

3.9.42 Together, these transformational improvements, will support us in achieving what is a very stretching PCL for UUW.

Sources of Information used to set the PCL

3.9.43 In conducting our econometric modelling analysis, we relied upon comparative industry data on exogenous variables, including:

- Ofwat's own urban rainfall variable as published as part of its base cost modelling consultation[24]
- PR24 Cost Assessment Master Dataset, Wholesale Wastewater Base Costs v4[25]
- Public Health England (2018) data on FSE density[26]

3.9.44 In relying upon sources of open data, we have been able to create a robust view of the distribution of exogenous variables across operating regions.

3.9.45 The econometric modelling analysis to derive the environmentally adjusted PCLs has been provided to Ofwat within supporting Stata files to allow Ofwat to replicate the analysis.

Dependencies or overlap with other PCs

3.9.46 As storm overflow discharges are ultimately symptoms of the same underlying issue, namely hydraulic incapacity during periods of high rainfall, UUW also considers that Ofwat's proposed approach of adopting common PCLs for storm overflows is inappropriate. We are therefore proposing a company-specific trajectory to an average of 19.6 spills per overflow by the end of AMP8.

3.9.47 It should, however, be noted that whilst the underlying mechanism for storm overflow activations and internal sewer flooding is similar, the solutions proposed for reducing storm overflow activations have limited benefit for internal sewer flooding. A step-change in storm overflow performance will be delivered through the WINEP enhancement programme. A significant proportion of the most cost-beneficial solutions for delivering spills reductions comprise of grey storage solutions, as would be expected based on the findings of the Storm Overflow Evidence Project[27] completed by Stantec on behalf of Water UK.

3.9.48 Grey storage solutions simply prevent spills from storm overflows to watercourse by capturing them within a tank and therefore do not provide upstream flood alleviation beyond that offered by the existing storm overflow. Alongside these traditional solutions, we are proposing an ambitious programme of blue-green or hybrid solutions to attenuate rainwater, including the removal over 160 hectares of impermeable area. However, as the WINEP is optimised for spills drivers, the locations proposed demonstrate limited overlap with our highest areas of hydraulic flooding risk. Best estimates of modelled annualised flood risk reduction as a by-product of the WINEP overflows investment are therefore small at 2.77 internal sewer flooding incidents.

3.9.49 Alongside our main WINEP submission, we will also be submitting our c. £198 million 'Advanced WINEP'. The Advanced WINEP accelerates a sample of future drivers into AMP8 to demonstrate how rainwater

[24] Ofwat (2022) *Urban rainfall calculations.* Available here

[25] Ofwat (2023) *PR24 Cost Assessment Master Dataset, Wholesale Wastewater Base Costs v4.* Available here.

[26] Public Health England (2018) *Fast food outlets: density by local authority in England.* Available here.

[27] Stantec (2021) *Storm Overflow Evidence Project.* Available here.

management is critical to delivering multiple benefits and efficient spend, when partnership funding can be leveraged to change grey to green. The programme is therefore entirely comprised of hybrid or blue-green solutions and is specifically targeted at delivering wider environmental outcomes alongside spill reduction, including hydraulic flooding benefits. However, the scale of the reduction is ultimately limited by the geographical area to which the Advanced WINEP is constrained as an innovative new framework for delivering upon regulatory enhancement. It is therefore estimated that the annualised flood risk benefit is 4.84 internal sewer flooding incidents.

3.9.50 The internal sewer flooding benefits delivered through the WINEP and Advanced WINEP enhancement programmes are therefore limited and any benefit has already been incorporated into the 'performance from enhancement' figures outlined in Table 19.

Application of outperformance cap, underperformance collar or deadband

3.9.51 Whilst we recognise Ofwat's concerns that caps and collars can distort company behaviour, we raise substantive concerns with Ofwat's proposal to remove the penalty collar for this measure. As internal sewer flooding has been demonstrated to be highly sensitive to exogenous factors, without a collar companies can be exposed to an unacceptable level of financial risk for severe weather events that are largely outside of their control. The financial risk that companies are exposed to has been exacerbated by the indicative ODI rate more than doubling from AMP7 rates.

3.9.52 The sensitivity of internal sewer flooding to severe weather events can be illustrated with reference to UUW's historical data (Figure 26). Figure 26 displays the total number of internal sewer flooding incidents reported by UUW dating back to 2014-15 broken down by type of flooding, namely severe weather, hydraulic and FoC. There is large variability in the severe weather component, with peaks observed even as the number of flooding events we can exert more control over, i.e. FoC incidents, has been continually declining, by 44% since the beginning of AMP6.

3.9.53 This sensitivity can be further demonstrated by closer analysis of the peaks in severe weather incidents observed in 20216/17 and 2020/21 (Figure 26). The most pronounced peak is in September 2016, when exceptionally severe weather[28], with localised peak return periods exceeding 1 in 1000 year, hit Manchester and Stockport, regions known to be particularly susceptible to rainfall as a result of local topographic constraints and the density of cellars. The result was that two days in September, 13 and 14 September, together accounted for 933 hydraulic and severe weather internal sewer incidents; over 60% of the total number of incidents of this type reported in the whole year. A similar event occurred over a similar geographical area during a three-day period (15, 16 and 17 June) in 2020. In this instance, 70% of the total hydraulic and severe weather incidents for the year were observed over a 3-day period. UUW considers that it is unacceptable for companies to incur an unconstrained level of financial exposure due to such low likelihood, high consequence events that management cannot be reasonably expected to control.

3.9.54 Whilst we recognise Ofwat's view that companies are best placed to, and therefore should be incentivised to, mitigate the impact of exogenous events on customers, designing solutions to cope with storms with such exceptional return periods would have an unacceptable impact on customer bills. Indeed, further billions of pounds of investment would be required to protect against such events and it is therefore cost-prohibitive to weatherproof the network to take account of all possible events. We consider that this level of expenditure and the associated disruption would be uneconomic and not in the best interests of customers. As a result, we do not believe that the application of a penalty collar discourages investment in resilience measures, but rather allows us to promote a sustainable and affordable programme of rainwater management staggered across multiple AMPs whilst protecting against financial exposure resulting from exceptional exogenous events.

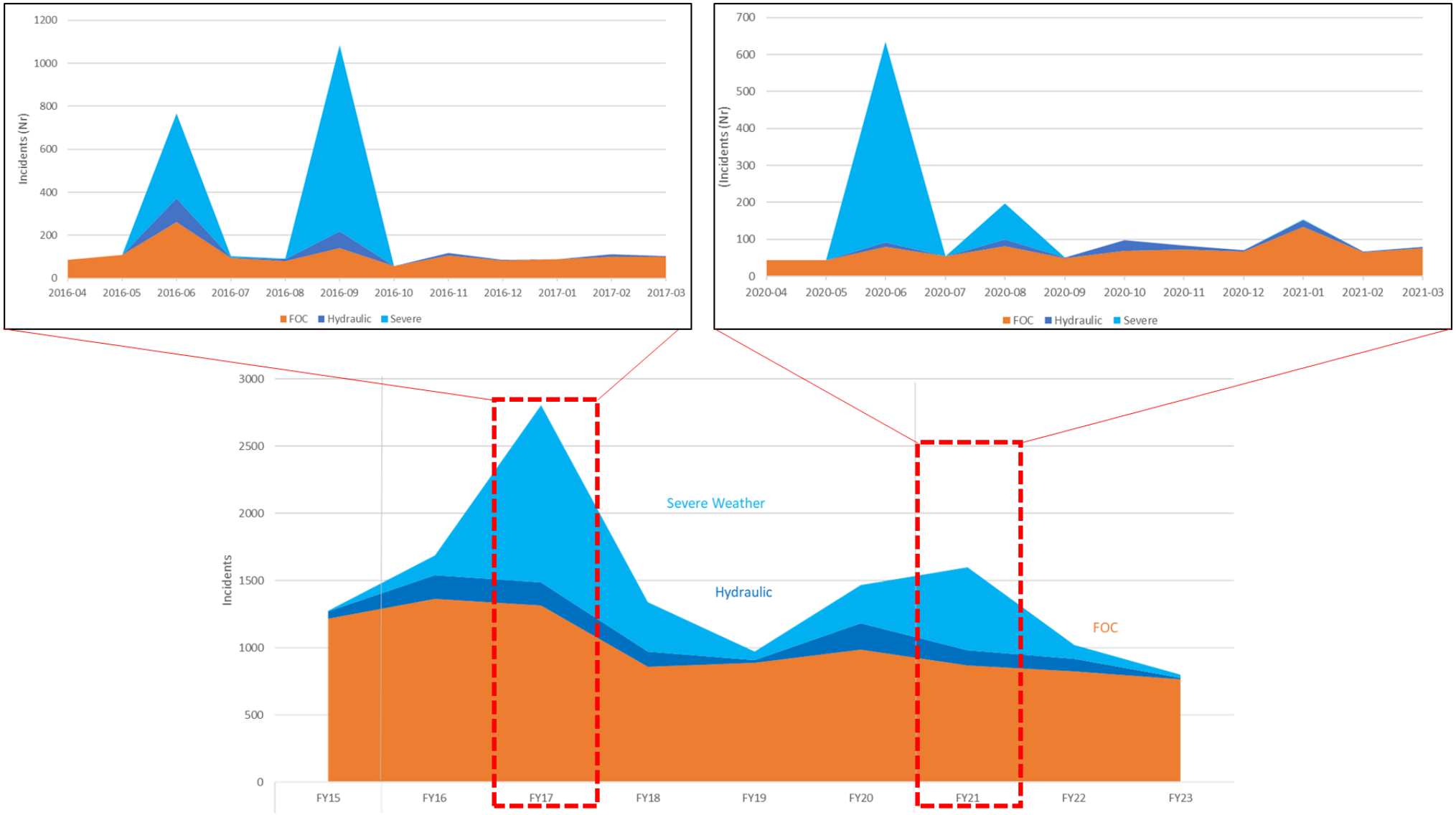
3.9.55 As a result, UUW proposes a penalty collar for this measure set at a level equivalent to ±0.5% return on regulatory equity (RoRE) (Table 16). Such a collar is sufficiently high that it would only be exceeded

[28] BBC News (2016) *Storms strike transport and football in Manchester.* Available here.

during years of extreme rainfall and therefore will not discourage companies from driving performance improvements but solely protects against significant financial risk exposure from exogenous events. Indeed, whilst UUW, and all other companies, have had a collar on this measure in AMP7, this has not disincentivised us from delivering performance improvements – as highlighted in Figure 25 UUW has had by far the largest total expenditure of all companies on 'reducing flood risk for properties' per 10,000 sewer connections within AMP7 to date. Instead, the penalty collar has had the effect of mitigating the financial exposure that would have otherwise resulted from a single localised exceptional rainfall event observed in 2020/21; an event of a magnitude that UUW cannot be reasonably expected to protect against.

3.9.56 We consider that this rationale for a collar is consistent with the approach adopted for the water supply interruptions performance commitment where a significant proportion of the full year performance against the target is also driven by one-off, exogenous events, such as freeze-thaw events. For this measure, Ofwat considers that an underperformance collar is appropriate in order to mitigate the impact of extreme events and the same approach appears valid on flooding metrics. In both instances it would be prohibitively expensive to seek to weatherproof the drainage system against extreme weather events.

Figure 26: The number of internal sewer flooding incidents recorded by UUW (2014/15-2022/23) broken down by type of flooding, namely FoC (orange), hydraulic (dark blue) and severe weather (light blue).



Source: UUW analysis

Application of an enhanced incentive rate threshold

3.9.57 The internal sewer flooding performance commitment is eligible for enhanced incentives. To set the enhanced incentive rate threshold, Ofwat proposes to use a company's PCL as a starting point and apply a common improvement factor to all companies with a cross-check against historical and forecast performance, long-term and statutory targets. Provided the baseline to which the improvement factor is applied is UUW's proposed PCL, as opposed to a common unadjusted PCL, we support this approach.

3.9.58 A suggestion of an appropriate threshold is set out in Table 19. The threshold represents a step change beyond the proposed PCL of an equivalent magnitude to that step change required to move from the environmentally-adjusted UQ to frontier level of performance (Figure 24). We consider that it is highly unlikely that UUW will ever attain this level of performance as it is well beyond the maximum level of performance modelled to be achievable. We therefore consider that such a threshold meets Ofwat's aim to "only reward companies for performance that is delivered through genuine innovation". We propose setting the cap for enhanced payments at a level equivalent to 1% of a company's water or wastewater regulatory equity as per Ofwat's PR24 final methodology.

3.10 PR24_ESF_External Sewer Flooding

Overview

3.10.1 UUW supports Ofwat's proposal for a common performance commitment level (PCL) for external sewer flooding. Sensitivity analysis demonstrates that whilst external sewer flooding performance is responsive to exogenous factors, namely urban rainfall and the proportion of combined sewers, it is less so than internal sewer flooding performance. It is for this reason that we consider a common PCL is appropriate for this measure.

3.10.2 However, we consider that it is very challenging to forecast a robust industry upper quartile owing to the bespoke nature of the performance commitment in AMP7 and the application of outperformance caps and underperformance collars influencing levels of performance. Indeed, a forecast based on a logarithmic projection of historic upper quartile would result in an upward trend in AMP8, a profile that is unacceptable to UUW and customers. We therefore propose setting a common PCL that represents a continually decreasing trajectory to 13.65 external sewer flooding incidents by the end of AMP8, an outturn position that sees us being within the best available estimate of the upper quartile and represents a continuation of the AMP7 performance improvements projected for UUW.

3.10.3 UUW's proposed PCL delivers a **stretching 12.8% improvement** upon our forecast end of AMP7 performance. This is especially ambitious when considered within the context of the wider industry, where performance against this measure has been deteriorating as measured by an increase in the upper quartile level of incidents. Further, customers in the North West remain especially vulnerable to hydraulic and severe weather flooding as a result of our unique operating circumstances, albeit to a lesser extent than for internal sewer flooding. Delivering a common PCL in spite of compounding exogenous factors therefore demonstrates significant stretch and ambition.

3.10.4 We will deliver this improvement by continued transformational improvements, focussing on reducing 'controllable' flooding and other causes (FoC) incidents through our base expenditure allowance whilst offsetting deterioration due to climate change by initiating a multi-AMP programme of investment in sustainable blue green solutions. Throughout AMP8, we will continue to mature the machine learning capabilities of our Dynamic Network Management (DNM) operating model, refining our response to blockage and high-level alerts such that we can continue identify and resolve key causes of sewer flooding, such as blockages, before customers are even aware of the problem

3.10.5 Table 21 outlines a summary of these proposals.

Table 21 PR24_ESF External Sewer Flooding – summary, definition and parameters

Purpose and benefits	To incentivise companies to reduce the number of external sewer flooding events to help minimise disruption to customers.
Definition	The number of external sewer flooding incidents normalised per 10,000 sewer connections. Ref: *External sewer flooding - PC definition 9th May, 2023.*
Specific Exclusions	In line with section 1.3 External sewer flooding - PC definition
Exceptions to Ofwat methodology	None
Compliance Checklist	We have completed the compliance checklist provided by Ofwat as part of the performance commitment definition and are confident in meeting all of the reporting requirements.

Units: incidents per 10,000 sewer connections	Forecast		Common performance commitment level				Long term
	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2049-50
UUW PCL	15.66	15.20	14.75	14.40	14.07	13.65	10.90
Underperformance collar				N/A			
Deadband				N/A			
Outperformance cap				N/A			
Enhanced threshold		12.03	11.58	11.23	10.90	10.48	
Enhanced cap		10.82	10.37	10.02	9.69	9.27	

ODI Rates	
Rate per number of incidents per 10,000 sewer connections	
Marginal benefit	£9.66 million
Benefit sharing factor	70%
ODI rate	£6.76 million
Enhanced rate	£13.52 million
Source: Ofwat Excel file "United Utilities - Indicative ODI rates - Jun23 - v3"	

Basis for PCL

We applied our econometric modelling process as outlined in PR24_ISF_Internal Sewer Flooding to determine the impact of exogenous variables on external sewer flooding. This demonstrated that whilst external flooding performance is responsive to exogenous factors, namely urban rainfall and the proportion of combined sewers, it is less so than internal sewer flooding performance. It is for this reason that we consider a common PCL is appropriate for this measure.

However, forecasting a truly representative upper quartile for this measure is difficult due to the bespoke nature of this performance commitment in AMP7, with company-specific PCLs and the application of outperformance caps and underperformance collars influencing levels of performance. We instead propose a PCL based on a logarithmic projection of UUW's forecast performance improvement over the course of AMP7. Such a PCL is within the best available estimates of the industry upper quartile.

Data table reference lines - AMP7: OUT8.37, AMP8: OUT1.5, Long Term Ref: LS1.5

3.11 Evidence to support external sewer flooding proposals

3.11.1 Ofwat proposes a common PCL for external sewer flooding. In line with the approach adopted in PR24_ISF_Internal Sewer Flooding, UUW applies our econometric modelling framework to validate whether a common PCL would be appropriate within the context of our unique operating circumstances. This modelling analysis demonstrates that whilst statistically significant, external sewer flooding is less sensitive to exogenous factors than internal sewer flooding.

3.11.2 UUW is therefore supportive of a common PCL and set out the proposed levels for such a PCL below.

3.11.3 A full overview of our econometric modelling analysis can be found in section 3.9. This section will detail:

- how we have calculated our proposed PCL; and
- how we justify its suitability with reference to the tests given in Ofwat's final methodology Appendix 9 section 4.4.3 on determining stretching performance improvements.

Calculation of the PCL

3.11.4 We apply our econometric modelling process as outlined in section 3.9 to determine whether a common PCL is appropriate within the context of our unique circumstances. Specifically, we test the sensitivity of external sewer flooding performance to the introduction of an interaction term reflecting the inter-relationship between urban rainfall and the proportion of combined sewers (note: Food Service Establishment (FSE) density was not determined to be a statistically significant driver of external sewer flooding performance).

3.11.5 As per the internal sewer flooding PCL, we modelled 'environmentally-adjusted' upper quartile and frontier levels, i.e. levels of performance that have been adjusted to reflect the volume of urban rainfall and proportion of combined sewers in a given region. Comparison of the profiles for both internal and external sewer flooding leads to the conclusion that external flooding performance has a lower sensitivity to exogenous factors than internal sewer flooding. Specifically, the discrepancy between both the simple unadjusted UQ and frontier levels of performance and their environmentally adjusted equivalents is less pronounced for external sewer flooding.

3.11.6 It must, however, be noted that forecasting a truly representative upper quartile for external sewer flooding is difficult as a result of the bespoke nature of the performance commitment in AMP7 and the application of caps and collars influencing levels of performance. Indeed, a forecast based on a logarithmic projection of historic upper quartile would result in an upward trend in AMP8. There is therefore a large uncertainty band surrounding the position of the upper quartile.

3.11.7 We consider that a deteriorating or flat rate of improvement would be unacceptable to customers and for this reason, we do not consider the forecast upper quartile to be an appropriate PCL. We instead propose a PCL that sustains a continuous rate of improvement to a position of 13.65 external sewer flooding incidents per 10,000 sewer connections as substitute. This PCL is based on a logarithmic projection of UUW's forecast performance improvement over the course of AMP7. Such a PCL is within the best available estimates of the industry upper quartile, forecast based on a logarithmic projection of 2016-17 to 2023-23 upper quartile data, and we therefore consider the PCL is suitably stretching to be applied as a common PCL across all WaSCs.

Performance Commitment Levels

3.11.8 Table 22 outlines our proposed performance commitment levels within the context of the performance levels achievable from base expenditure and wider industry performance. The upper quartile and frontier incident levels were calculated by applying a logarithmic projection to the 2016-17 to 2022-23 in-year upper quartile and frontier figures, respectively, as calculated from Ofwat's 'Historical

Performance Trends for PR24 v2.0'[29] and companies' 2022-23 APR data. It should be noted that the forecast industry upper quartile does not include Thames Water's 2022-23 data as this was not available at the time of submission.

3.11.9 In the following sections, with reference to the tests specified in Ofwat's final methodology Appendix 9 section 4.4.3, we apply this data to evidence how our proposed PCLs are stretching but achievable.

Table 22: External Sewer Flooding AMP8 Performance Levels achievable from base and enhancement expenditure with comparative industry information

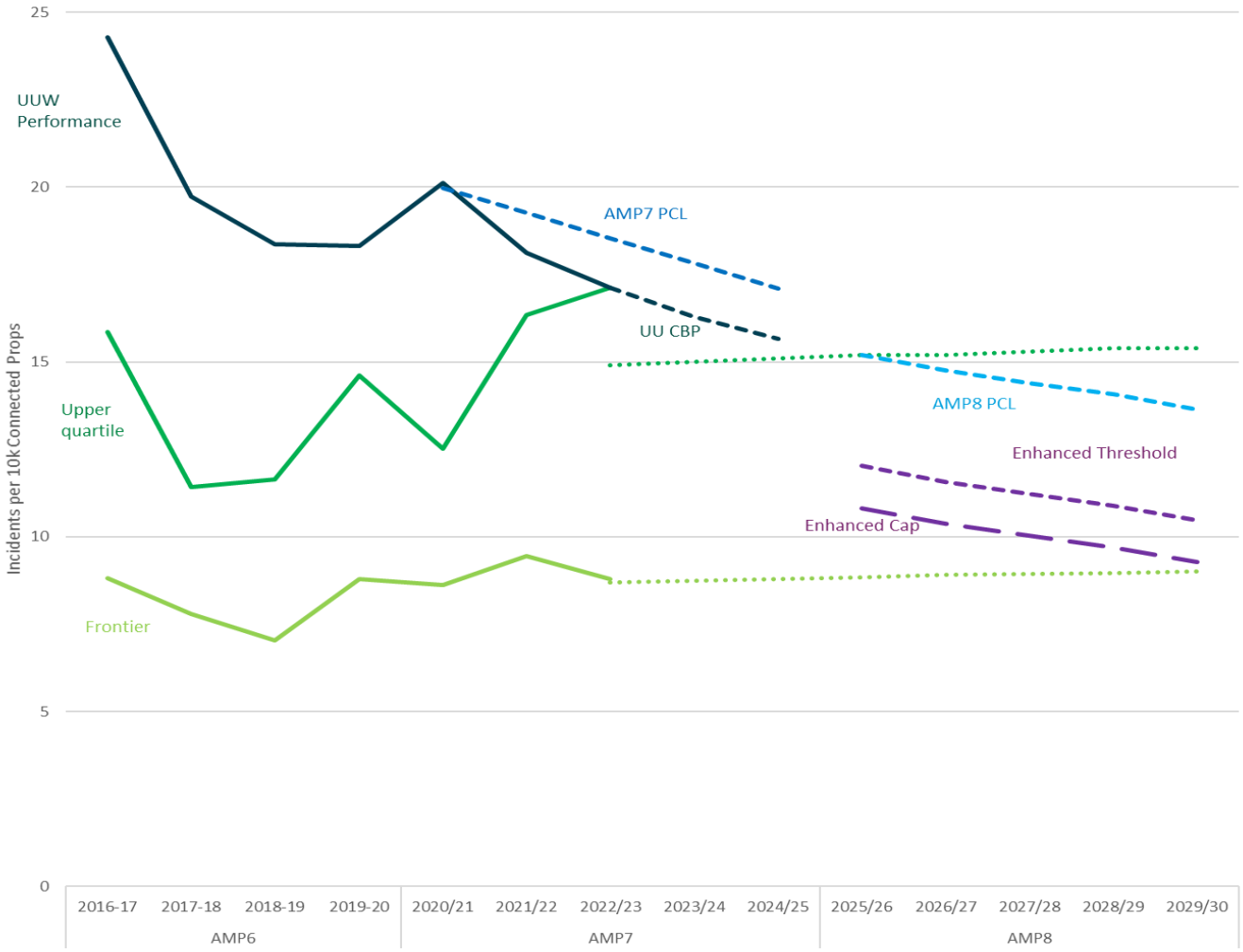
	2025/26	2026/27	2027/28	2028/29	2029/30
PCL	15.20	14.75	14.40	14.07	13.65
PCL (incidents)	5,350	5,231	5,153	5,082	4,975
Performance from base[1]	15.20	14.76	14.41	14.11	13.72
Performance from base (incidents)	5,351	5,233	5,156	5,097	5,002
Performance from enhancement[2]	0.00	0.01	0.01	0.04	0.07
Performance from enhancement (incidents)	1	2	3	15	27
Industry upper quartile	15.20	15.20	15.30	15.40	15.40
Industry frontier	8.85	8.92	8.94	8.96	9.00
Reward cap			N/A		
Penalty collar			N/A		
Deadband			N/A		
Enhanced reward threshold	12.03	11.58	11.23	10.90	10.48

Data table reference: [1]OUT2.5, [2]OUT3.5

3.11.10 Figure 27 summarises the below, showing UUW's proposed PCL within the context of historic performance, our historic PCL and the industry upper quartile.

[29] https://www.ofwat.gov.uk/publication/historical-performance-trends-for-pr24-v2-0/

Figure 27: Proposed External Sewer Flooding AMP8 PCL, with consideration of the AMP7 PCL, historic company and industry performance



Source: APR data share 2023

PCLs set at PR19

3.11.11 The PR19 PCL was set as a predicted industry upper quartile. However, for reasons outlined above, we consider it challenging to forecast a robust upper quartile from historical industry performance trends and therefore propose a stretching common PCL that maintains a continuous rate of improvement upon UUW's projected AMP7 performance. We consider this to be an appropriately stretching PCL to be adopted as common across the industry and is within the uncertainty range of best available upper quartile projections.

Historical outturn performance

Table 23 External Sewer Flooding AMP7 UUW and industry performance and forecast data

	Actual				Forecast		Percentage Improvement		
	2019-20 (AMP6)	2020-21	2021-22	2022-23	2023-24	2024-25	2019-20 to 2022-23	2019-20 to 2024-25	AMP8 (PCL)
AMP7 PCL	N/A	19.97	19.26	18.54	17.82	17.10	N/A		
AMP7 PCL (incidents)	N/A	6,845	6,599	6,352	6,106	5,859	N/A		
Performance	18.32	20.11	18.12	17.13	16.30	15.66	6.5%	14.5%	12.8%
Incidents	6,188	6,849	6,223	5,916	5,663	5,476			
Industry upper quartile	14.62	12.52	16.34	17.13	15.00	15.10	-17.1%	-3.28%	
Industry frontier	8.80	8.61	9.45	8.79	8.75	8.80	0.11%	0.00%	

Individual company performance

3.11.12 UUW's proposed PCL sees a 12.8% reduction in external sewer flooding incidents over the course of AMP8, relative to our predicted performance in 2024-25. This is an especially stretching position when compared to the performance improvements we have been able to achieve historically. Over an equivalent period in AMP7, i.e. from a 2020 baseline, our performance improvement is predicted to be 14.5% (Table 23 above). Our proposed AMP8 PCL therefore almost matches the rate of improvement we are forecasting to achieve over AMP7. This is especially stretching when it is understood that our performance improvement in AMP7 has largely been enabled by the introduction of our Dynamic Network Management (DNM) operating model.

3.11.13 DNM has involved the installation of over 17,500 in-sewer monitors across 160 strategic drainage areas with the aim of developing an intelligent wastewater network. By improving the monitoring capabilities in 'hot spot' areas of our network and applying artificial intelligence to detect deviations from 'normal' flow signatures, we have been able to identify and resolve key causes of sewer flooding, such as blockages, before customers are even aware of the problem. The proactive alerts generated by this network of sensors have detected over 2,500 blockages which have subsequently been cleared by our resolution teams. The position from which we launch in AMP8 has therefore already been enabled by a major transformation in our operating model and as such achieving an additional 12.8% improvement in AMP8 is extremely stretching and ambitious.

3.11.14 It should be noted that DNM is focused largely on managing 'controllable', i.e. flooding and other cause (FoC) flooding, not hydraulic flooding. The previous three years have been relatively dry years relative to the North West's usual precipitation trends and, as a result, hydraulic and severe weather flooding numbers have been lower than usual. It must therefore be recognised that, whilst DNM has significantly contributed to performance improvements in FoC flooding, customers in the North West remain especially vulnerable to hydraulic and severe weather flooding as a result of our unique operating circumstances, albeit to a lesser extent than for internal sewer flooding. An additional layer of stretch within the proposed PCL therefore results from this vulnerability which UUW is exposed to.

Industry performance

3.11.15 At a sector level, the upper quartile level of performance actually deteriorated by 17.1% over the period 2019/20-2022/23. As the upper quartile level for internal sewer flooding showed a 33.3% improvement over the same period, it is difficult to conclude that such a deterioration is solely due to annual variability in precipitation but rather likely represents an industry-focus on internal sewer flooding and

the limitations associated with the upper quartile for external sewer flooding as outlined in section 3.11.6. In the context of a wider industry decline in external flooding performance, aiming for a performance improvement of 12.8% across AMP8 from a 2025 baseline is very stretching.

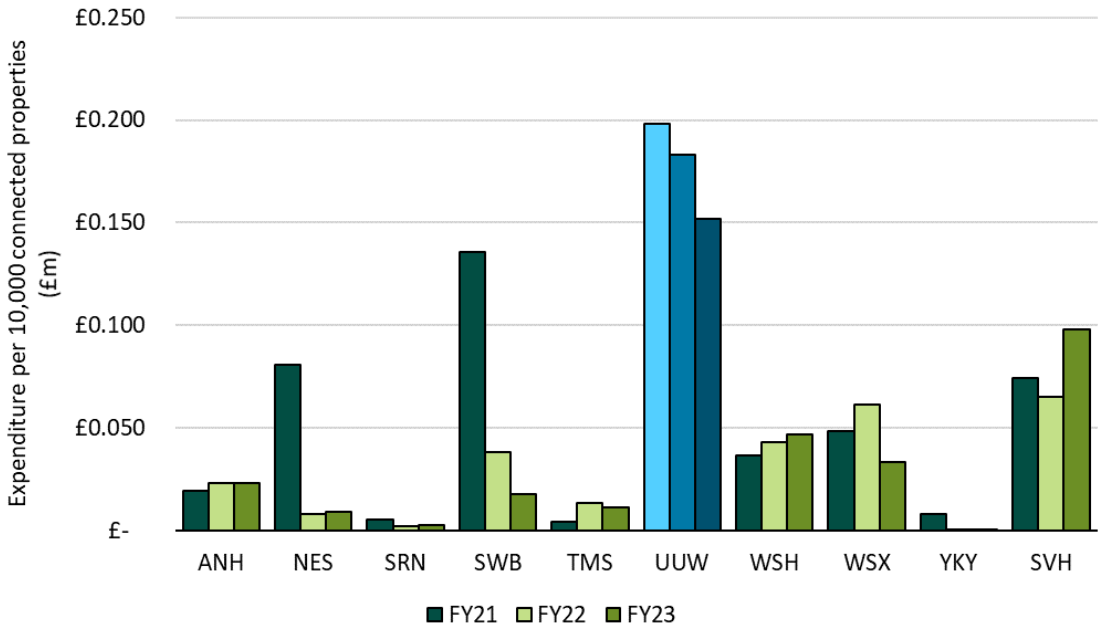
3.11.16 We note that due to the bespoke nature of this performance commitment in AMP7, Ofwat has not historically required companies to apportion external sewer flooding incidents into 'company reactively identified (i.e. neighbouring properties)' and 'customer proactively reported' when reporting, unlike for the internal sewer flooding performance commitment. Without disclosure of this information, it is impossible to compare historical performance between companies on a standardised basis.

3.11.17 UUW has a long-standing process for identifying neighbouring properties affected by flooding through our well-established flood extent assessment (FEA) process, where we proactively investigate to uncover the full extent of an incident by visiting properties to the front, rear and either side of a flooded property until dry properties are established in all four directions. It is unclear whether other companies conduct have such a robust process for identifying external sewer flooding affecting neighbouring properties during onsite investigations. Indeed, for internal sewer flooding, we have historically raised our concerns regarding under-reporting of incidents reactively identified during onsite investigation by other companies. Although we are pleased to see that other companies have recently made advances in the number of properties identified via onsite investigation for internal sewer flooding, it is unclear whether this trend has been replicated for external sewer flooding. Thus, whilst we welcome Ofwat's requirement, as set out in its *External sewer flooding - PC definition 9th May, 2023* document, for all companies to report the percentage of properties identified via onsite investigation in AMP8, we call on Ofwat to ensure that this is reported on a consistent basis across all companies to enable a true comparison of performance.

Historical expenditure included in the base expenditure models at PR24

3.11.18 UUW considers that our historical expenditure has been appropriate for our operating circumstances. Indeed, UUW has had by far the largest total expenditure on 'reducing flood risk for properties' per 10,000 sewer connections (Figure 28) within AMP7 to date and expenditure 27.9% above the industry average over the period 2011-12 to 2021-22.

Figure 28: Expenditure on 'reducing flood risk for properties' per 10,000 sewer connections for 2020/21 to 2022/23.



Source: Ofwat, PR24 wastewater cost assessment master dataset[30].

3.11.19 Further, we consider our expenditure on sewage collection to be efficient. Increasing base expenditure beyond our current level would not yield a cost beneficial improvement in performance. Above our current level of botex expenditure on sewage collection, we judge that the performance improvements delivered by a given unit of expenditure begin to plateau, and thus expenditure above this optimum level becomes inefficient and uneconomic for our customers.

3.11.20 Therefore, we consider that our historical expenditure has been appropriate for our circumstances. By extension, in projecting forward our historical expenditure into the PR24 base expenditure models, we consider the delivery of our proposed PCL to reflect the level of performance achievable with a continued efficient level of expenditure.

Company forecast of performance levels that can be delivered from base expenditure

3.11.21 When forecasting performance levels that can be delivered from base expenditure in OUT2.5, we assumed the base allowance to be inclusive of the historical enhancement expenditure on 'reducing flood risk for properties', as per Ofwat's proposed PR24 base cost models. Therefore, the performance from base counterfactual was calculated by estimating the benefits derived from any enhancement programmes that fall outside of this implicit allowance, namely those enhancement cases being submitted for PR24 for which there are flooding benefits. We took a cumulative view of enhancement expenditure, assuming that any benefits calculated for programmes of work in previous year(s) would continue to be felt in future years.

3.11.22 UUW is submitting a £132 million enhancement case for Rainwater Management in line with the need identified through our DWMP. The aim of this enhancement case is to **prevent deterioration** in sewer flooding performance due to climate change by initiating a multi-AMP programme of investment in sustainable blue green solutions, such as SuDS and sewer disconnection activities. The historic costs for such activities are not contained within the PR24 base cost models as the enhancement programme represents a fundamental shift from the traditional activities, such as property-level flood mitigation, deployed historically towards implementation of nature-based solutions at a scale not observed historically. These activities therefore cannot be funded from the 'reducing flood risk for properties' allowance.

3.11.23 The rainwater management enhancement case will instead help offset deterioration in baseline performance due to climate change and improve resilience across future AMPs. The in-AMP net benefits for external sewer flooding are therefore limited, at an estimated 22 incidents across the AMP, and have been incorporated into our proposed PCL. We have also modelled some minor external sewer flooding co-benefits from hybrid schemes delivered through our WINEP and Advanced WINEP enhancement cases, c.5 incidents over the course of the AMP. These benefits have similarly been incorporated into the PCL.

3.11.24 UUW's AMP8 PCL will therefore largely be delivered through our base expenditure allowance (inclusive of the reducing risk of sewer flooding enhancement allowance), with the rainwater management enhancement case offsetting performance deterioration due to climate change.

Performance levels of efficient companies

3.11.25 UUW's proposed PCL sees us targeting a level of performance that we believe to be an appropriate proxy for an upper quartile efficiency benchmark, equivalent to a 12.8% improvement upon our predicted end of AMP7 position, predominantly from base expenditure (inclusive of the 'reducing the risk of flooding for properties' enhancement allowance). We believe this to represent an efficient use of our allowance, particularly when it is considered that the position from which we launch in AMP8 has therefore already been enabled by a major transformation in our operating model.

[30] Ofwat (2023) *PR24 Cost Assessment Master Dataset, Wholesale Wastewater Base Costs v4.* Available here.

3.11.26 Further, whilst external sewer flooding displayed a lower sensitivity to exogenous factors than internal sewer flooding, this does not mean performance is not influenced by these factors. Indeed, whilst being mindful of the shortcomings outlined above in undertaking a true industry comparison for this measure, econometric modelling demonstrated that urban rainfall and the proportion of combined sewers did have a statistically significant impact on external sewer flooding performance. Customers in the North West therefore remain especially vulnerable to hydraulic and severe weather flooding as a result of our unique operating circumstances. We therefore consider that delivering a common PCL in spite of compounding exogenous factors therefore demonstrates a highly efficient use of our allowance, especially compared to companies with less urban rainfall and combined sewers.

Opportunity for transformational performance improvements

3.11.27 UUW recognises that achieving a common PCL is going to be extremely stretching and will require continued transformational change. Throughout AMP8, we will continue to mature the machine learning capabilities of DNM, to reduce the volume of false alerts and refine our response to blockage and high level alerts. We plan to expand our network of sensors to additional drainage areas to improve coverage across the region and we intend to conduct trials to understand how we can use DNM to optimise our storage availability to reduce hydraulic flood risk. In this way, continued investment in DNM will enable us to further build on our approach and place us on track to achieve our highly ambitious PCL.

3.11.28 Alongside this, we are proposing a large-scale proactive inspection and rehabilitation programme for our sewer network. This will allow UUW to proactively identify and rehabilitate defects that may ultimately lead to blockages or collapses that cause external flooding. Such a programme will be largely enabled by our partnership with VAPAR, a company that specialises in using AI technology to automate defect detection from CCTV imagery, which is increasing the rate at which we can process CCTV imagery and standardise prioritisation of rehabilitation.

Sources of Information used to set the PCL

3.11.29 In conducting our econometric modelling analysis, we relied upon comparative industry data on exogenous variables, including:

- Ofwat's own urban rainfall variable as published as part of its base cost modelling consultation[31]
- PR24 Cost Assessment Master Dataset, Wholesale Wastewater Base Costs v4[32]

3.11.30 The industry upper quartile performance projections were also calculated using the PR24 Cost Assessment Dataset, with the results highlighting the shortcomings of using a logarithmic projection of historic upper quartile performance to define a common PCL.

Dependencies or overlap with other PCs

3.11.31 The econometric modelling approach adopted was comparable to that used for internal sewer flooding as there are overlaps in the exogenous factors driving performance. Our sensitivity analysis did, however, demonstrate that whilst still statistically significant, external flooding is less sensitive to the influence of such exogenous factors. A common PCL is therefore suitably stretching for external sewer flooding but inappropriate for internal sewer flooding where a common PCL would create a highly inequitable stretch across the industry.

Application of Reward Collar, Penalty Cap or deadband

3.11.32 N/A

[31] Ofwat (2022) *Urban rainfall calculations.* Available here

[32] Ofwat (2023) *PR24 Cost Assessment Master Dataset, Wholesale Wastewater Base Costs v4.* Available here.

Application of an enhanced incentive rate threshold

3.11.33 The external sewer flooding performance commitment is eligible for enhanced incentives. To set the enhanced incentive rate threshold, Ofwat proposes to use a company's PCL as a starting point and apply a common improvement factor to all companies with a cross-check against historical and forecast performance, long-term and statutory targets. UUW supports this approach.

3.11.34 We set out a suggestion for an appropriately stretching enhanced threshold in Table 20. Such a threshold starts from a position that is midway between a logarithmic projection of the upper quartile and frontier levels of performance, and thereafter decreases at a rate in line with the improvement in the PCL. In order to exceed this threshold, we will need to make a significant step change in performance to attain an improvement rate that is equivalent to a further 23% improvement beyond our proposed PCL. We therefore consider that it is highly unlikely that UUW will ever attain this level of performance and thereby conclude that such a threshold meets Ofwat's aim to "only reward companies for performance that is delivered through genuine innovation".

3.12 Customer measures of experience

3.12.1 These include: PR24_CMEX_Customer Measure of Experience (C-Mex), PR24_DMEX_Developer Services Measure of Experience (D-Mex) and PR24_BRMEX_Business Customer Measure of Experience (BR-Mex).

3.12.2 In line with Ofwat's extended timelines for definition of customer experience measures for AMP8 we are working with Ofwat and the industry to develop and improve the MeX incentive suite. We will determine our relative performance targets for this measure as and when the details of it are finalised. We will be aiming to build on our improving customer service performance to deliver an excellent service experience for all customer groups.

4. Outcome B: Reducing the Environmental Impact

4.1 Overview

4.1.1 These include outcomes that help protect the environment, such as encouraging water efficiency, or enhancements to the environment as part of core water company services. It also includes wider environmental outcomes such as greenhouse gas emissions.

Table 24 Outcome B – reducing the environmental impact performance commitments

Outcome	*Measure*	Units	Service	
			W	Ww
Reducing the Environmental Impact	PR24_BIO Biodiversity	Biodiversity units per 100km2 of land in the company's area		
	PR24_OGW Operational greenhouse gases (Water)	Percentage reduction from baseline (tCO2e)		
	PR24_OGWW Operational greenhouse gases (Wastewater)	Percentage reduction from baseline (tCO2e)		
	PR24_LEA Leakage	Percentage reduction from 2019-20 baseline	**Water Demand**	
	PR24_PCC Per capita consumption (PCC)	Percentage reduction from 2019-20 baseline		
	PR24_NHH Business demand	Percentage reduction from 2019-20 baseline		
	PR24_POL Total pollution incidents	Number of incidents per 10,000 km sewer length		
	PR24_SPL Serious pollution incidents	Number of serious pollution incidents		
	PR24_DPC Discharge permit compliance	Percentage compliance		
	PR24_BWQ Bathing water quality	Percentage		
	PR24_RWQ River water quality (Phosphorus)	Percentage reduction in phosphorus		
	PR24_SOF Storm overflows	Annual average number of spills (regional)		

4.2 PR24_BIO_Biodiversity

4.2.1 The biodiversity performance commitment is new for AMP8 and utilises the Defra metric for biodiversity assessment which is in itself a relatively new assessment tool. As a result of this there is no information on past performance for this measure across the industry and little comparative information to assess levels for upper quartile performance.

4.2.2 Through the development of AMP8 investment plans such as the WINEP we have identified opportunities where biodiversity may be improved through our activities and included these in the Wider Environmental Outcome (WEO) assessments. Whilst these assessments have been conducted on a desk based assessment for comparative purposes between different options to support decision making we have used these values to form the basis of our performance commitment levels for AMP8. The WINEP development process identified the units that would be delivered over a 30 year period. For this performance commitment we have identified projects where we have predicted a biodiversity delivery over and above the requirements of biodiversity net gain and profiled the expected unit delivery over the 30 year period. This has been used as our performance commitment level for this performance commitment.

4.2.3 The nature of biodiversity delivery is that it is very site specific and impacted by many factors which require detailed site assessment to truly understand the unit value of the baseline and the likely impact of any interventions. Factors such as condition and extent of specific habitats within land parcels can only be fully assessed with onsite assessments, and the nature of our investments – with delivery often focused on specific targets such as species preservation or improving SSSI's – may deliver significant ecological enhancement but little benefit when assessed purely through the Defra metric. This means that the actual delivery may occur on different projects to those identified through the WINEP process but we are committing to the delivery of this overall benefit for customers.

4.2.4 The desk based assessment of biodiversity delivery and the profiling of this over time have all been completed by suitably qualified ecologists. In line with the principles of the final methodology published in May 2023 we will also use suitably qualified ecologists to complete the detailed baseline assessments as the projects deliver and reassess to measure actual unit delivery. All of these assessments will also be validated by our external biodiversity assessment group.

4.2.5 Table 25 outlines a summary of these proposals.

Table 25: PR24_BIO Biodiversity – summary, definition and parameters

Purpose and benefits	This performance commitment incentivises the company to conserve and enhance biodiversity in the exercise of their functions. The benefits are reduced extinction risk, increased resilience to climate and water resources changes and enhancements in ecosystem service provision such as water quality, localised climate regulation, pollination, clean air and physical and mental health benefits
Definition	This measures the net change in the number of biodiversity units on nominated land per 100km2 of land in the company's area. Ref: *Biodiversity - PC definition 17th May, 2023.*
Specific Exclusions	In line with section 1.3 Biodiversity - PC definition.
Exceptions to Ofwat methodology	None
Compliance Checklist	We have completed the compliance checklist provided by Ofwat as part of the performance commitment definition and are confident in meeting all of the reporting requirements.

Units: Biodiversity units per 100km^2 of land in the company's area	Forecast	Company specific performance commitment level				Long term
	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2049-50
Biodiversity units (cumulative from base year)	0.00	0.00	0.00	19.53	111.14	187.84	35.82
PCL (normalised)	0.00	0.00	0.00	0.07	0.38	0.64	35.82
Underperformance collar		-£1.00 m	-£1.00 m	-£1.65 m	-£7.00 m	-£6.00 m	
Deadband				N/A			
Outperformance cap		£1.00 m	£1.00 m	£1.65 m	£7.00 m	£6.00 m	
Enhanced threshold				N/A			
Enhanced cap				N/A			

ODI Rates	
Rate per Biodiversity units per 100km^2 of land in the company's area	
Marginal benefit	£32,600
Benefit sharing factor	70%
ODI rate	£22,800
Enhanced rate	N/A
Proposed: Aligned to the Biodiversity Net Gain market	

Basis for PCL	Through the development of AMP8 investment plans we identified opportunities where biodiversity may be improved through our activities and included these in the Wider Environmental Outcome (WEO) assessments. These are desk based assessments but for comparative purposes between different options we used these values to form the basis of our performance commitment levels for AMP8. The WINEP development process identified the units to be delivered over 30 years. We identified projects with a predicted biodiversity delivery over and above the requirements of biodiversity net gain and profiled the expected unit delivery over the 30 year period to define the PCL. The cap and collar reflect the delivery profile of the PCL. This assumed a maximum reward rate in line with the maximum achievable under the Enhancing natural capital for customers PC in AMP7 and uplifted this to 2022/23 CPIH FYA. This value was then applied to give a low cap and collar in the first two years of the AMP to reflect the low expected delivery and then the remaining value profiled in line with the PCL delivery targets.

Data table reference lines - AMP8: OUT1.6, Long Term Ref: LS1.6

4.3 Evidence to support Biodiversity proposals

Performance Commitment Levels

4.3.1 Through the development of AMP8 investment plans such as the WINEP we have assessed solutions against Wider Environmental Outcomes (WEO's), one of which is biodiversity and identified opportunities where biodiversity may be improved through our activities and included these in the Wider Environmental Outcome (WEO) assessments. Whilst these assessments have been conducted on a desk based assessment for comparative purposes between different options to support decision making we have used these values to form the basis of our performance commitment levels for AMP8. The WINEP development process identified the units that would be delivered over a 30 year period. For this performance commitment we have identified projects where we have predicted a biodiversity delivery over and above the requirements of biodiversity net gain and profiled the expected unit delivery over the 30 year period. This has been used as our performance commitment level for this performance commitment.

4.3.2 The nature of biodiversity delivery is that it is very site specific and impacted by many factors which require detailed site assessment to truly understand the unit value of the baseline and the likely impact of any interventions. Factors such as condition and extent of specific habitats within land parcels can only be fully assessed with onsite assessments and the nature of our investments – with delivery often focused on specific targets such as species preservation or improving SSSI's – may deliver significant ecological enhancement but little benefit when assessed purely through the Defra metric. This means that the actual delivery may occur on different projects to those identified through the WINEP process but we are committing to the delivery of this overall benefit for customers.

Table 26 Biodiversity AMP8 Performance Levels achievable from base and enhancement expenditure with comparative industry information

	2025-26	2026-27	2027-28	2028-29	2029-30
Biodiversity units (cumulative from base year)	0.00	0.00	19.53	111.14	187.84
PCL (normalised)	0.00	0.00	0.07	0.38	0.64
Performance from base (normalised)	0.00	0.00	0.00	0.00	0.00
Performance from enhancement (normalised)	0.00	0.00	0.07	0.38	0.64
Industry upper quartile	Data is not available to calculate Industry levels of performance				
Industry frontier					
Outperformance cap	£1.00m	£1.00m	£1.65m	£7.00m	£6.00m
Underperformance collar	-£1.00m	-£1.00m	-£1.65m	-£7.00m	-£6.00m
Deadband	N/A				
Enhanced outperformance threshold	N/A				

Source: *OUT1.6, OUT4.115*

4.3.3 To arrive at the normalised figures in line with the performance commitment definition published in May 2023 we have calculated this based on the sum of our water monopoly services area and our

wastewater monopoly services area. The monopoly services area for water is reported in table CW6.28. The monopoly area for wastewater is not a reported line in the data tables but UUW has calculated this from our GIS records in line with Ofwat's table guidance to utilise our sewerage services area (provided by Ofwat) and subtracted the area of NAVs as they have been introduced.

4.3.4 Units delivered divided by the area of water monopoly service provision plus the area of wastewater monopoly service provision divided by 100 (Units delivered / ((15045km^2 + 14468km^2)/100)).

PCLs set at PR19

4.3.5 This is a new performance commitment for AMP8, therefore PCLs were not determined at PR19.

Historical outturn performance

4.3.6 As the biodiversity PC is new for AMP8 and the Defra metric that is used to assess performance is also relatively new, there are no historic or industry comparative figures available.

Historical expenditure included in the base expenditure models at PR24

4.3.7 UUW has a long history of delivering biodiversity improvements through our activities. We have pioneered catchment approaches through our SCaMP programme since 2005 which has been focused on restoring catchments for the benefit of raw water quality and biodiversity. We continue to drive these activities today through schemes such as our Thirlmere resilience programme and the work at Haweswater which has received the IUCN accreditation for nature-based solutions. These activities have typically been delivered through enhancement expenditure. As such, we do not consider base expenditure to contribute materially to biodiversity performance.

Company forecast of performance levels that can be delivered from base expenditure

4.3.8 The proposed biodiversity improvements predicted through our performance commitment levels are projected to be delivered through enhancement activities. There is biodiversity delivered through base expenditure such as the ongoing maintenance and maturation of habitats delivered through schemes such as SCaMP. These benefits won't be captured through this performance commitment however and we don't require the incentivisation of the performance commitment to continue with this activity. As a result of this there is no expected improvements as a result of base expenditure.

Performance levels of efficient companies

4.3.9 As the biodiversity PC is new for AMP8 and the Defra metric that is used to assess performance is also relatively new there are no historic or industry comparative figures available.

Opportunity for transformational performance improvements

4.3.10 UUW recognises the need to drive an improvement in biodiversity across the region and through this PC we believe we can deliver some of this increase. To facilitate this it is essential that robust, realistic and stretching targets are set, against which we can be measured but also have the opportunity to outperform. As a result of this we have set our performance commitment level based on the initial assessments from the WINEP. As this has not been validated by onsite assessment the opportunities predicted may not be achievable, but by setting this as a PCL we can ensure the biodiversity benefit is delivered for customers and it will start to drive transformational performance improvement in this area.

Sources of Information used to set the PCL

4.3.11 In setting the PCL we considered the biodiversity assessment data available through the development of enhancement programmes and used expert ecologists to predict reasonable but stretching profiles for when these benefits would be realised. As part of the process used to demonstrate delivery of these commitments we will complete detailed baseline assessments and post interventions assessments using the Defra metric with assessments completed by suitably trained and experienced assessors, validated by our external biodiversity advisory group.

Dependencies or overlap with other PCs

4.3.12 We do not foresee any significant overlap with other PCs.

Application of outperformance cap, underperformance collar or deadband

4.3.13 Ofwat's PR24 final methodology proposes targeted use of caps and collars such as on those performance measures which are new and therefore more uncertain. As the Biodiversity PC is one of the new performance commitments we therefore propose caps and collars for it. We also note Ofwat's view that has previously been expressed that this measure is not expected to drive significant financial gain. As a result of this, we propose a reward cap set at £16.65m for all of AMP8 spread across the period as indicated in Table 25 and Table 26. This level is in line with the maximum reward achievable through UUW's "Enhancing natural capital for customers" AMP7 PC. At the time of the relevant price reviews (PR19 and PR24), both PCs were (and are) being newly developed, both seeking to drive greater uptake of nature restoration therefore this seems to be an appropriate alignment and basis for the cap. In line with the principle of symmetrical financial incentives potential we also propose a penalty collar of £16.65m.

4.3.14 We have also validated this against the proposed ODI rates included and believe this still leaves potential for outperformance so allowing the ODI to achieve its objective to incentivise delivery of increased biodiversity whilst balancing the potential to expose customers to higher bill impacts.

Application of an enhanced incentive rate threshold

4.3.15 N/A

ODI rates

4.3.16 Through Ofwat's PR24 biodiversity PC working group it has been expressed that the ODI rates should be aligned to the expected trading values for biodiversity units when markets for Biodiversity Net Gain become active. Although Ofwat has not provided indicative ODI rates for the Biodiversity PC, in order to include the financial impact of the PC in our RoRE calculations (and data table RR30), we must propose an ODI rate for this PC. As a result of the PR24 working group guidance, we propose ODI rates based on the assessment completed for Defra by Eftec - BNG Market Analysis[33] using the market rates expected per biodiversity unit referenced in this report. The report outlines a low scaled price per unit of £20,000/unit based on expert judgment of the average cost of unit creation and maintenance over 30 years. The report also has an expected higher level cost of £25,000/unit which represents a premium expected for local planning authority (LPA) areas that have a unit scarcity. Based on the proportion of LPAs expected to have a shortage of units an overall average rate of £22,800/unit has been proposed as the ODI rate for this PC.

4.3.17 It is important that the unit rate proposed for the ODI rate is aligned to the unit rate of the Biodiversity Net Gain market as any discrepancy between them would impact the decisions on how to use biodiversity units created and risk undermining this competitive market. As full trading of units is not yet live, the report currently completed to assess the potential market conditions represents the best view of likely rates available. Proposing an ODI rate in line with the recommendations from this report should therefore ensure that there is no specific incentive to utilise biodiversity units through any specific schemes and allows the opportunity for private funding to deliver biodiversity benefit, reducing this cost burden on customers as the markets establish themselves.

Long term ambition and future price reviews

4.3.18 Due to the long term nature of biodiversity establishment and the need to continually maintain these habitats to ensure they mature and deliver their full potential we believe this PC needs to have longevity. This will encourage delivering in the best long term interest of the landscape and allow improvement plans to show benefits that will be delivered over a 30 year period aligned to habitats

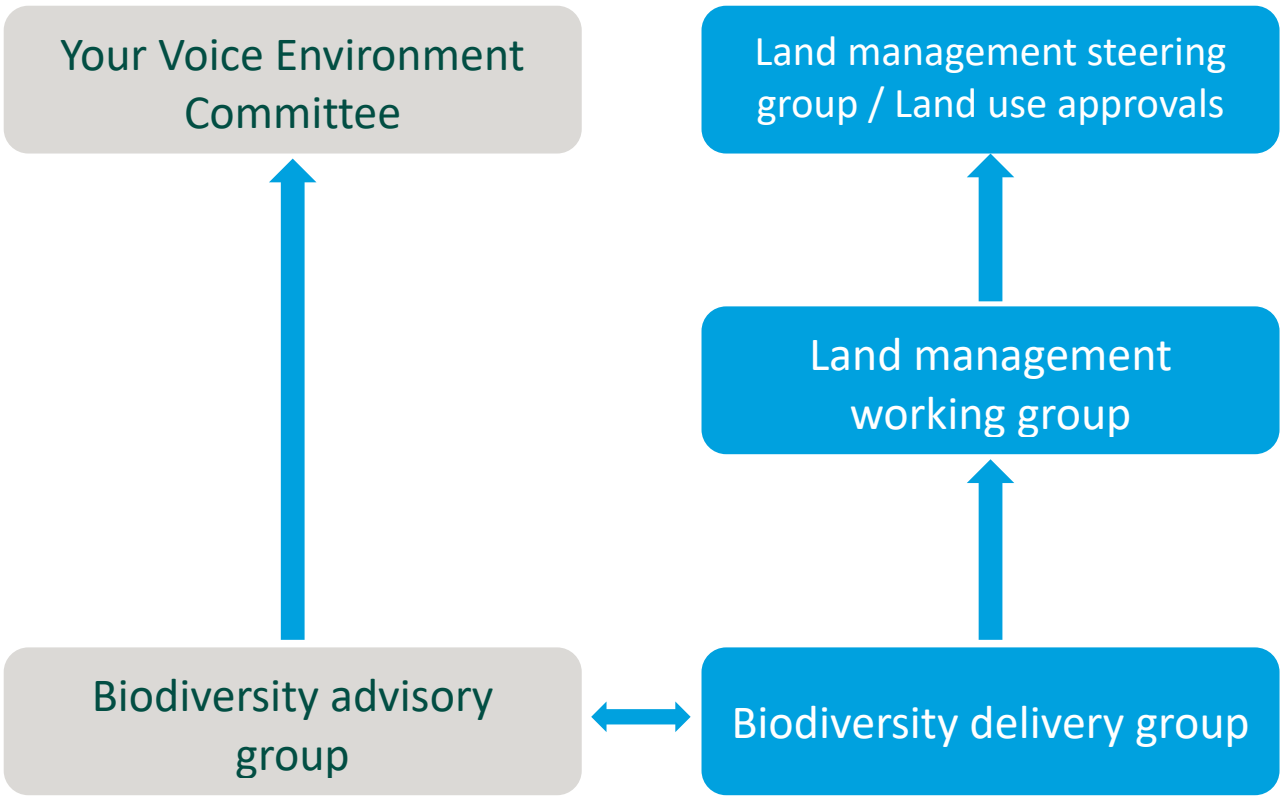
[33] https://randd.defra.gov.uk/ProjectDetails?ProjectID=20608

maturity. Maintaining this incentive into the future by allowing outperformance to be recognised as investments mature and deliver their expected units will support long term land planning and delivery to ensure the best results for customers.

Verification of the measure by others

4.3.19 As part of the assurance of this PC and in line with the Ofwat Methodology published in December 2022 we will be establishing an external biodiversity advisory group which will report into the Your Voice customer challenge group environment committee. The structure of this group and how it sits within UUW's internal biodiversity focus is shown in Figure 29 below.

Figure 29: Structure of UUW and external biodiversity challenge groups



Source UUW governance approach

4.3.20 The biodiversity advisory committee will comprise of representatives from regulators such as the Environment Agency and Natural England, eNGO's such as the wildlife trusts or RSPB and local authorities' ecological teams such as the Greater Manchester Ecology Unit. The group will be responsible for advising and agreeing on potential sites to include in the scope of this PC, scrutinising proposed activity to ensure it is in the best ecological interest of the site, ensuring that people conducting site surveys are suitably qualified and experienced in the relevant habitats they are working in, and assessing and validating delivery in line with AMP8 commitments to agree and confirm UUW's delivery.

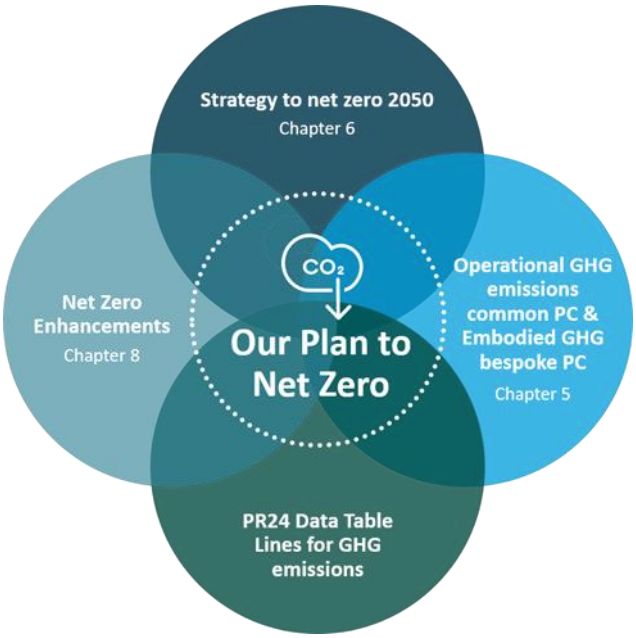
4.3.21 In order to be able to demonstrate outperformance it is also a requirement of the methodology that UUW can demonstrate that we have not degraded biodiversity on any of the sites that we own but which are not included in this performance commitment. This advisory group will also be the group that validates this. To do this we propose to share details of land management plans across our estate, where applicable, and evidence of delivery in line with this. We also propose to trial new ecological assessment techniques such as utilising satellite imagery to give an overall picture of our estate to compare against in future years. This approach is new and will therefore be trialled to see if it is both an effective and efficient way of validating our broader biodiversity performance and it will only be used more widely if this is proven to be the case.

4.4 PR24_OGWW_Operational Greenhouse Gas (GHG) Emissions – water and wastewater

Net zero in our PR24 business plan

4.4.1 The affordability and resilience of our operations and services fundamentally rely on a stable climate and a healthy natural environment. Consequently, greenhouse gas (GHG) emissions management and reduction is of exceptional importance to United Utilities and our customers. We have therefore integrated the goal for net zero throughout our PR24 business plan. Figure 30 summarises the core elements of our plan to net zero in our PR24 submission.

Figure 30 - Our plan to net zero



4.4.2 We have built on our advanced track record of reductions and disclosures to produce an ambitious plan for net zero by 2050 across scopes 1, 2 and 3. Our ambition and commitments are based on international best practice and climate science trajectories, striving for the overall UK legal duty to be net zero by 2050.

4.4.3 Our approach builds on the progress we have already made by deploying cost effective solutions, such as investment to build new renewable energy facilities and moving to use only certified green electricity throughout our operations. This has reduced our scope 1 and 2 emissions by more than 70% since 2010, assessed using the best practice market-based reporting method that recognises the emissions benefits of purchasing certified renewable energy.

4.4.4 Over the past decade, our focus on green energy has enabled us to outpace growth pressures and reduce scope 1 and 2 emissions. However, it is now significantly more challenging for us to achieve net zero with the large increase in investment needed to comply with latest legal and regulatory requirements. The new Environment Act will make it much harder to deliver further absolute reductions in the face of substantial growth in emissions from building new infrastructure and the energy and chemicals required to achieve higher treatment standards.

4.4.5 The pace and scale of change in policy expectations was not visible when setting our Science-Based Targets (SBTs) only a few years ago. Despite the challenges, we have innovated and optimised to minimise emissions growth where we can, and we have identified options to further reduce emissions at the same time as providing wider benefits. However, we cannot entirely mitigate the substantial growth pressures and achieve required emissions reductions within existing base allowances.

4.4.6 Our new plan to manage and reduce GHG emissions is our most advanced and comprehensive yet. Our approach to GHG emissions is fully integrated in our overall business plan to deliver a wide range of substantial improvements in water and wastewater services in the most sustainable ways. Measured using global best practice GHG reporting methods, and with support from Ofwat, our plan will:

(1) Reduce operational emissions by around 43% during AMP8, mitigating growth pressures and going further to deliver overall reductions to support our operational emissions SBT.

(2) Avoid and defer approximately 858,000 tCO_2e of operational and embodied emissions during AMP8, reducing the emissions of our plan by nearly 40% from what they would have been without our focus on efficiency and innovation.

(3) Deliver essential enablers for further reductions in the longer-term, enabling more than 2 million tCO_2e benefits by 2055.

(4) Inform the new best practice standard for the measurement, reporting and management of emissions which are challenging to the whole sector, including innovative proposals for process emissions and a bespoke performance commitment for scope 3 emissions from many large infrastructure projects.

(5) Enable wider complimentary benefits for: water, resource and cost efficiency; public health improvements from better air quality and recreation; and nature.

4.4.7 We will work with our partners and strive to go even further during delivery in AMP8.

4.4.8 Our integrated approach achieves these outcomes through two inter-related areas of focus:

4.4.9 **Optimising GHG emissions throughout our business plan –** We applied our carbon assessment framework with support from expert third parties to forecast, reduce and avoid emissions by valuing them throughout our decision making. With substantial new legal requirements and other factors, there are many upward pressures on emissions. However, we have focused on efficiency and innovation to keep emissions as low as possible while maintaining and further improving infrastructure and services for customers. For example, we expect emissions reductions from base and enhancement programmes for sludge treatment, biosolids recycling, leakage reduction, demand management and measures to help customers be water efficient. We have embraced nature based approaches, surface water removal and hybrid solutions where they have lower emissions than traditional solutions.

4.4.10 **Focusing specifically on GHG emissions through our net zero enhancement programme -** To retain a science-based trajectory in AMP8 and beyond will require transformation and substantial investment beyond our historic base allowances. We have developed a £196.3million net zero enhancement programme that, if supported by Ofwat, prioritises the most cost effective deployable projects with emissions reduction as the primary driver, and which also deliver many wider benefits. As well as immediate reductions by 2030, this programme provides essential enablers to longer-term benefits that will accelerate decarbonisation for both us and the sector, as we are committed to sharing our learning from new innovations and ways of working.

4.4.11 We have rigorously applied the GHG preference hierarchy to optimise further emissions reductions as we strive to keep our emissions on a science-based trajectory despite the substantial growth pressures. We are pursuing a wide range of opportunities, striving for efficiency first and using purchased offsets only as a last resort and not at all before 2030.

4.4.12 Our plan includes a stretching target in the operational GHG PCs that Ofwat is introducing for water and wastewater in AMP8, outlined below, as well as an innovative and challenging bespoke performance commitment for embodied emissions, outlined in section 6.2 later in this document.

4.4.13 Using Ofwat's methodology for the common GHG PCs, our plan shows a 12.37% decrease in water and 10.66% increase in wastewater operational emissions in 2029/30 from a 2021/22 baseline. Ofwat's methodology for these PCs is different to our standard reporting approach that aligns to international best practice, for example it uses static emissions factors to avoid reporting changes associated with GHG accounting updates. This means that emissions reported using the PC methodology will

increasingly diverge through AMP8 from 'actual' emissions in our company GHG reporting and will require careful communication to stakeholders.

4.4.14 The common GHG PCs provide incentives for certain types of operational GHG emissions reduction that will support aspects of our strategy to net zero. However, the current methodology also limits and excludes certain approaches, including a financial disincentive for some actions which are supported by the Government's net zero strategy. This could act as an obstacle to securing the most sustainable, value adding approaches for customers and wider society. For example, we observe opportunities to create more renewable biogas but we have so far excluded this from our business plan submission because of a financial disincentive in the PC. We discuss this in section 4.5.14 and the bioresources price control.

4.4.15 This is an area we would like to review in the spirit of effective regulation that supports the most sustainable long term solutions for society. We discuss this opportunity further in the Bioresources price control document.

Operational Greenhouses Gas (GHG) Emissions – water and wastewater overview

4.4.16 Operational GHG emissions for water and wastewater are proposed by Ofwat as two new common PCs for PR24 and we include them in our submission based on the definition documents provided by Ofwat in June 2023. Due to the similarities across the two PCs we have included them within a single document and referenced anything which is specific to only one measure.

4.4.17 The relevant emissions proposed by Ofwat can be found in A.3.1 (Figure 67), A.3.2 (Figure 68) and include:

- Scope 1 emissions from fossil fuel usage, process emissions, owned transport and emissions from sludge to land;
- Scope 2 emissions from purchased electricity (location-based), heat and electric vehicles; and
- Scope 3 emissions from fuel and energy, business travel, outsourced activities, use of chemicals and disposal and treatment of waste (sludge disposal).

4.4.18 These PCs have been calculated using the methodology as set within the definition documents. A summary of the water PC is provided in Table 27 and the wastewater PC in Table 28.

Table 27 PR24_OGW Operational Greenhouse Gas (GHG) Emissions - Water – summary, definition and parameters

Purpose and benefits	To incentivise companies to reduce GHG emissions, with a view to achieving UK government and Welsh Government's interim and final net zero emission targets by 2050.
Definition	GHG emissions expressed in tonnes CO_2e (Carbon dioxide equivalent) and the percentage change since 2021-22. This is also reported as $kgCO_2e$ per megalitre of volume of input (pre-MLE). Ref: *PR24 operational greenhouse gas emissions performance commitment (water) June, 2023.*
Specific Exclusions	No specific exclusions are defined by Ofwat in section 1.3 of Operational GHG Emissions– PC definition. However as part of the consultation on PR24 operational GHG emissions performance PCs released in February 2023 Ofwat stated the following exclusions: (1) Offsets, (2) Green tariff energy purchases. The company's consumption of renewable energy delivered through the grid, including where this is due to a direct or corporate power purchase agreement. Note: in the consultation Ofwat proposed the use of insets but they must be linked to nature based solutions and not account for more than 1% of our gross location-based emissions.
Exceptions to Ofwat methodology	None
Compliance Checklist	Ofwat has not provided a compliance checklist in the PC definition indicating the components used for reporting operational GHG emissions and our confidence in the accuracy of each when reviewing our performance.

Units: Percentage reduction from baseline (tCO_2e to calculate %)	**Forecast**		**Company specific performance commitment level**				**Long term**
	2024-25	**2025-26**	**2026-27**	**2027-28**	**2028-29**	**2029-30**	**2049-50**
UUW PCL	9.56	10.17	10.54	11.14	11.96	12.37	26.14
Underperformance collar	N/A	9.97	10.34	10.94	11.76	12.17	N/A
Deadband				N/A			
Outperformance cap	N/A	12.17	12.54	13.14	13.96	14.37	N/A
Enhanced threshold				N/A			
Enhanced cap				N/A			

ODI rates	
Rate per Percentage reduction from baseline (tCO_2e)	
Marginal benefit	£185.71
Benefit sharing factor	70%
ODI rate	£130
Enhanced rate	N/A
Source: : Valuation of GHG emissions: for policy appraisal and evaluation policy paper, BEIS	

Basis for PCL	Representative of a stretching position to reduce emissions whilst delivering a large AMP8 programme. PCL includes net zero enhancement projects outside of the challenge fund and has been reduced by a further 1,296 tCO_2e over AMP8 against our plan (equivalent to 1% of a year's emissions).

NB: in the PCL the reduction is due to a reduction of electricity and fuels and in the longer term our peatland net zero enhancement establishes.

Data table reference lines - AMP8: OUT1.7, OUT2.7, OUT3.7, OUT4.24 to 4.31 and OUT7.7. Long Term Ref: LS1.7

Table 28: PR24_OGWw Operational greenhouse gas emissions (wastewater) – summary, definition and parameters

Purpose and benefits	This incentivises a reduction in GHG emissions arising from operational activities. This also supports attainment of UK and Welsh Government's 2050 and interim net zero targets
Definition	GHG emissions expressed in tonnes CO_2e (Carbon dioxide equivalent) and the percentage change since 2021-22. This is also reported as $kgCO_2e$ per megalitre of volume of wastewater received at sewage treatment works. Ref: *PR24 operational greenhouse gas emissions performance commitment (wastewater) June, 2023.*
Specific Exclusions	No specific exclusions are defined by Ofwat in section 1.3 of Operational GHG Emissions– PC definition. However as part of the consultation on PR24 operational GHG emissions PCs definitions released in February 2023 Ofwat stated the following exclusions: (1) Offsets, (2) Green tariff energy purchases. the company's consumption of renewable energy delivered through the grid, including where this is due to a direct or corporate power purchase agreement. Note: in the consultation Ofwat proposed the use of insets but they must be linked to nature based solutions and not account for more than 1% of our gross location-based emissions.
Exceptions to Ofwat methodology	None
Compliance Checklist	Ofwat has not provided a compliance checklist in the PC definition indicating the components used for reporting operational GHG emissions and our confidence in the accuracy of each when reviewing our performance.

Units: Percentage reduction from baseline (tCO_2e to calculate %)	**Forecast**	**Company specific performance commitment level**				**Long term**
	2024-25	**2025-26**	**2026-27**	**2027-28**	**2028-29**	**2029-30**	**2049-50**
UUW PCL	-13.19	-15.03	-15.17	-15.32	-10.22	-10.66	-40.76
Underperformance collar	N/A	-15.23	-15.37	-15.52	-10.42	-10.86	N/A
Deadband				N/A			
Outperformance cap	N/A	-13.03	-13.17	-13.32	-8.22	-8.66	N/A
Enhanced threshold				N/A			
Enhanced cap				N/A			

ODI Rates	
Rate per Percentage reduction from baseline (tCO2e)	
Marginal benefit	£185.71
Benefit sharing factor	70%
ODI rate	£130
Enhanced rate	N/A
Source: Valuation of GHG emissions: for policy appraisal and evaluation policy paper, BEIS	

Basis for PCL	Representative of a stretching position to reduce emissions whilst delivering a large AMP8 programme. PCL includes net zero enhancement projects outside of the challenge fund and has been reduced by a further 2,988 tCO_2e over AMP8 against our plan (equivalent to 1% of a year's emissions).

NB: in the PCL growth is due to AMP7 and AMP8 WINEPs, population increases impacting process emissions and changes within the bioresources price control.

Data table reference lines - AMP8: OUT1.8, OUT2.8, OUT3.8, OUT5.278 to 5.33 and OUT7.8. Long Term Ref: LS1.8

4.5 Compelling evidence to support operational greenhouse gas proposals

4.5.1 This section outlines:

- How we have calculated our proposed PCL and how we justify its suitability with reference to the tests given in Ofwat's final methodology Appendix 9 section 4.4.3 on determining stretching performance improvements;
- How we have calculated the limit for which a cap and collar is applied; and
- AMP8 and long term context relating to PCL setting and application of carbon assessment methodologies for these PCs.

4.5.2 All detail associated with these PCs is submitted in draft and is still subject to final decision at final determination. We propose to set company specific PCLs. We have used carbon assessments from Water, Wastewater, Bioresources and Retail Price Control programmes, completed with and assured by third party consultants, to forecast our future emissions in line with the PC definition documents. These in turn will create a company specific PCL, measured as level of change from the Ofwat proposed 2021/22 baseline year. To do this, we will use the Ofwat definitions supported by our own documented assumptions where necessary.

4.5.3 It is within our company control to mitigate some operational emissions in scope proposed by Ofwat in the consultation, however, some areas sit outside our operational control, in particular process emissions (reporting currently derived from population equivalent) and scope 3 emissions (strong reliance on the supply chain options and data which can be highly limited). Our carbon assessments to calculate operational GHG emissions aligned to the common PC have used version 17 of the industry's carbon accounting workbook (CAW).

4.5.4 Our net zero enhancement programme costs circa £196m to deliver circa 210,000 tCO_2e reportable benefit in AMP8, rising to circa 225,000 tCO_2e with pending issuance units (PIU) for peatland and woodland projects implemented in AMP8 for longer term benefit. This programme includes schemes, across water and wastewater, three of which we propose to be included in the net zero challenge. The net zero enhancement programme prioritises the most cost effective deployable projects with emissions reduction as the primary driver, and which also deliver many wider benefits. The programme is a critical part of our plan to strategic goals in and before 2030, as outlined in supplementary document *UUW37 - Our strategy to net zero 2050*.

4.5.5 Our understanding from the final methodology documents provided by Ofwat is that the tCO_2e benefit approved in the net zero challenge will amend our PCL (where methodologies are comparable) for operational GHG emissions to provide customer protection. The remaining eight net zero enhancement schemes, they have been included in our PCL calculation and have a price control deliverable (PCD). We have identified in our net zero enhancements submission where this relationship to the PCL is not possible.

4.5.6 Appendix 9, page 96 in Ofwat's PR24 draft methodology states *"the reduction funded through the bidding competition would be factored into performance commitment levels"*. Appendix 9, page 91 in Ofwat's PR24 final methodology states Ofwat *"will benchmark the proposed GHG emissions impact of common enhancement activities between companies to ensure an efficient impact is represented in adjusted performance levels"*. We have therefore only included the net zero enhancement schemes which are not included in the challenge and have reportable emissions in AMP8 within our forecast emissions in OUT data tables for these PCs.

4.5.7 These PCs incentivise us to stretch within planned base and standard enhancement programmes. We have pushed efficiency and innovations to support this goal while recognising that absolute reductions are very challenging given the scale and costs of programmes required in AMP8 across all price controls. We have built in reductions of 9,651 tCO_2e in base and a further 9,873 tCO_2e in our standard

enhancement programme. We have also built in an additional stretch across water and wastewater of 4,283 tCO_2e to incentivise on-going reductions, this is equivalent to 1% of a year's AMP8 emissions.

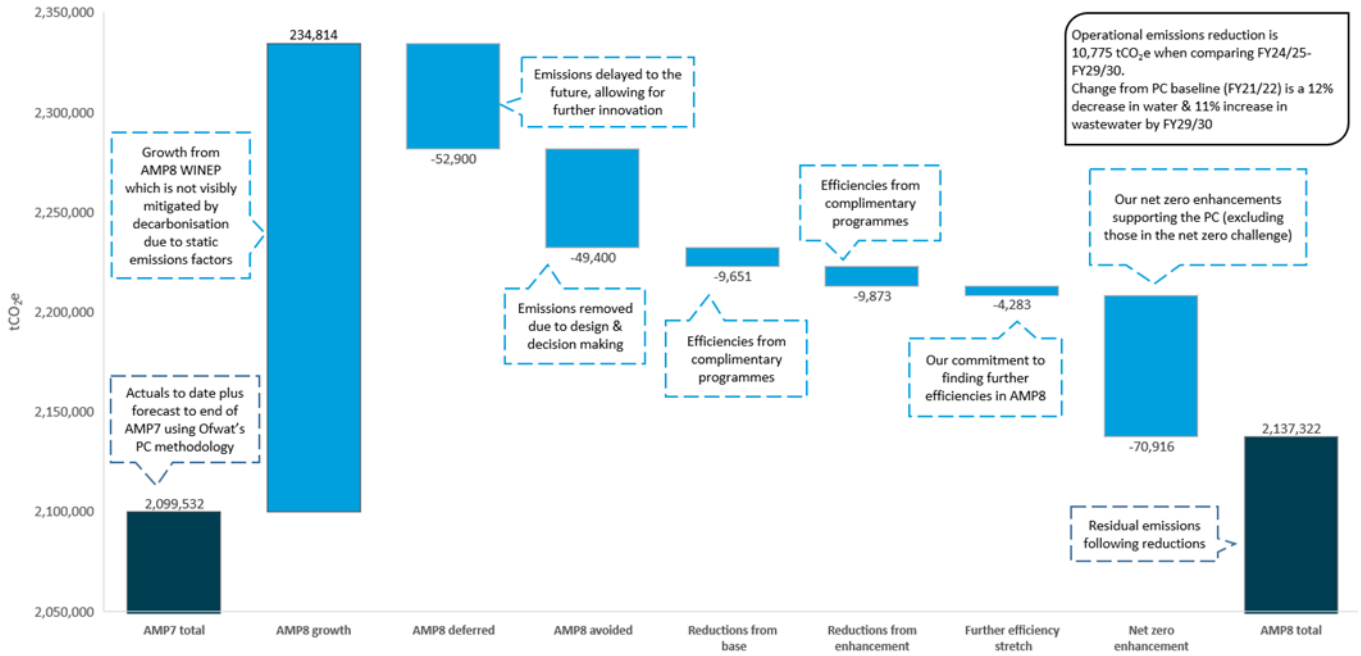
4.5.8 In designing our plan to 2030, we have reduced emissions across all programme areas and where possible avoided emissions in design and decision making, selecting nature based solutions where technically achievable limits allows. Without this activity to avoid emissions, our AMP8 operational emissions growth would have been 49,400 tCO_2e higher.

4.5.9 All of these activities go some way to mitigating the growth we are expecting in AMP8, resulting in a reduction of circa 10,000 tCO_2e in operational emissions (against the PC definition) during AMP8. However, as environmental schemes become operational during AMP8 we expect emissions to increase by circa 21,000 tCO_2e between 2030 and 2035.

4.5.10 Figure 31 below, demonstrates how our emissions profile will change as a result of delivering our five year programme. We anticipate a reduction in operational GHG emissions during AMP8 of circa 210,000 tCO_2e (using project specific methodologies) if all of our net zero enhancements projects are awarded. Even, without the projects put forward to the challenge, we see emissions reduction over AMP8 of 70,916 tCO_2e. However, despite this, an increase in emissions is forecast in wastewater as a result of the baseline year, PC methodology, population growth and our AMP7 and AMP8 WINEP.

4.5.11 As can be seen in our OUT data tables, our emissions reduce between the end of AMP7 and the end of AMP8, despite total emissions in AMP8 increasing. Using our standard corporate emissions reporting methodology, aligned with global best practice rather than the PC methodology, we forecast a decrease over time in line with our net zero ambitions. The combined Water and Wastewater PC targets include the stretch we are making within these PCs as well as within our base, standard enhancement and net zero enhancement programmes (projects not included in the challenge). Using the PC methodology, our forecast for GHG emissions in the last year of AMP7 is 429,685 tCO_2e, reducing to 418,910 tCO_2e at the end of AMP8. This shows significant improvement given the stretch we have already taken in our historic emissions and the large growth pressures being mitigated.

Figure 31:- AMP7 to AMP8 forecast operational greenhouse gas (GHG) emissions profile using PC methodology



Source: UUW analysis of PR24 forecast operational emissions calculated using Ofwat's performance commitment definition methodology

4.5.12 Our proposal put forward in this PC is that the PCL should be based on the estimated emissions position in each year of the 2025-2030 period as a result of delivering all of the interventions between now and 2030 as agreed in our FD plus our additional stretch, as noted above.

4.5.13 This baseline position will include all innovation and growth we expect to deliver by 2030 and has been proposed in draft in this document and in our PR24 data tables but will need to be reviewed and updated before the start of the 2025-2030 period. This PCL and associated 2021/22 baseline has been verified by a suitably qualified third party and will need to be confirmed at FD when final projects and scope of AMP8 has been agreed with Ofwat. This can be verified by a suitably qualified third party.

4.5.14 We are continually exploring latest options to recover more value from under used resources by embracing the principles of the circular economy. As part of our clean energy strategy, and in light of the UK Government's new Biomass Strategy (August 2023), we have been reviewing the financial and technical viability of creating biomethane to grid plants at two of our largest sludge treatment centres. We have not yet included this specific option in our plan to net zero while we continue to work up detailed plans, but our initial analysis has shown strong potential to unlock this sustainable source of low carbon energy that has many applications and benefits. However, Ofwat's methodology for the common operational GHG PC provides a financial disincentive for this type of action, and this is an area we would like to review in the spirit of effective regulation that supports the most sustainable long term solutions for society. We discuss this opportunity further in supplementary document *UUW58 - Bioresources price control document*.

4.5.15 Process emissions are a sector priority because they form a large portion of overall wastewater emissions, but they are difficult to measure and manage with poor scientific understanding and localised variability. While Ofwat's methodology for the common GHG PCs uses the best reporting method currently available for estimating process emissions, this is determined by population equivalent and does not therefore reflect the impact of management choices. With a large proportion of the reportable emissions not capable of being influenced by companies in the wastewater GHG PC, it is very stretching to deliver reportable improvements in the remaining areas of emissions. We recommend Ofwat supports water company proposals to improve the measurement and management of process emissions, such as the relevant projects in our net zero enhancement programme. This will enable a more effective approach to this PC in the longer term.

Customer support

4.5.16 We integrated net zero into the consultation, engagement and customer research we undertake to shape our plans and decisions. We included a series of qualitative and quantitative research studies that ensured specific examination of support and relative priority for our action to reduce GHG emissions, integrated within the context of our overall business plan. A clear majority of customers confirmed that achieving net zero is important and supported our plans.

4.5.17 In our continual tracking of customer priorities we have seen a growth in environmental priorities, shown the strongest by future customers. In quantitative customer priorities research in 2021, a diverse mix of more than 3,000 customers ranked a top three priority the need to 'play our part in protecting the environment (e.g. reducing carbon footprint)'. In 2022, we asked customers about net zero and the vast majority of participants felt action should be taken towards achieving it. When given a list of priorities for UU, participants ranked GHG emissions as a 'tier 1' concern.

4.5.18 In 2023, customer research to test long term ambitions concluded that achieving net zero is important, and achieving this by 2050 was ambitious enough but action needed to be taken sooner rather than later to avoid future problems. Other quantitative studies found that a clear majority of customers agreed investment to reduce GHG emissions was important: 69% of household customers agreed, 64% of non-household customers, and 71% of future bill payers.

4.5.19 Affordability and acceptability testing in 2023 sought feedback on our plan for GHG emissions and our overall business plan. 78% of a representative mix of household customers confirmed support for our overall business plan in the qualitative stage and 70% in the quantitative stage. This research included specific reference to our net zero proposals and the percentage reduction being targeted in AMP8.

4.5.20 Our overall approach to customer research and engagement is detailed in Chapter 3 of our business plan and the supplementary document *UUW21 Customer Research Methodology*.

Long term context

4.5.21 Our approach follows international best practice and climate science. We are working towards a long term ambition to be net zero by 2050 across scope 1, 2 and 3 emissions, with SBTs validated by the Science Based Target initiative (SBTi). Our ambitions match the global goal in the Paris Agreement and the national legal requirements in the UK Climate Change Act for net zero 2050 and intermediate five year carbon budgets. Customers and stakeholders tell us that working to this goal is one of their priorities and expectations of us, and we forecast this expectation to grow as communities increasingly experience climate change over time.

Measurement and reporting

4.5.22 Ofwat has confirmed that version 17 of the industry's (CAW) will be used for reporting and baseline setting against these PCs for the full reporting period, meaning emissions factors are static. This will enable a consistent comparison between the baselines and performance reporting.

4.5.23 Within these PCs, Ofwat require a location-based method to be used for calculating scope 2 emissions (those from energy), using the fixed national grid emissions factor for 2021-22 as set out in version 17 of the CAW. There is on-going dialogue between the industry, via UKWIR, and Ofwat to create a PC reporting tool, based on version 17 CAW, for reporting against these measures during AMP8. This bespoke reporting tool would be used for PC reporting only, in AMP8, which should be used in parallel to the annually updated CAW for annual reporting. We are leading the industry, working with UKWIR and Ofwat to help create this.

4.5.24 We have assessed the data available for reporting under this common PC using the PC definition for the relevant emissions outlined in Appendix A, using CAW v17 and provided this data within the PR24 OUT data tables.

4.5.25 We are reasonably confident on the types of data in scope for these PCs, and we will use confidence grades to transparently reflect areas of strength and weakness in PC reporting as part of our Annual Performance Reporting (APR). For example, for data with an established methodology for regulatory reporting, CAW v17 uses standard emissions factors including the annual published UK Government factors for GHG company reporting. We have less confidence in the data sources we have not been required to report to Ofwat using CAW v17 before this year, for example use of chemicals and disposal and treatment of waste (sewage sludge).

4.5.26 In addition to the new PC reporting, we will continue to report our scope 1, 2 and 3 emissions in line with international best practice such as SBTs and the GHG Protocol. Our long standing company GHG reporting has a different scope and boundary and discloses our footprint using both the location-based and market-based methods. Our reporting methods are summarised in Appendix A.3.

4.5.27 Table 29 for Water and Table 30 for Wastewater have been completed using Ofwat's proposed definition parameters as per Ofwat's GHG emissions PC definition documents.

Table 29: Reporting parameters for the Operational GHG Emissions performance commitment - Water

Parameters	
Measurement Unit and decimal place	Tonnes CO_2e reported to two decimal places and the percentage reduction since 2021-22; and this is also reported as kgCO2e per megalitre of distribution input (pre-MLE).
Measurement timing	Reporting year
Incentive form	Revenue
Incentive type	Outperformance and underperformance payments
Timing of underperformance and outperformance payments	In-period

Parameters	
Price Control allocation	15% water resources, 85% water network plus – based on industry allocation of costs and revenue.
Frequency of reporting	Annual
Any other relevant information	N/A
Links to relevant external documents	N/A

Table 30: Reporting parameters for the Operational GHG Emissions performance commitment - Wastewater

Parameters	
Measurement Unit and decimal place	Tonnes of CO_2e reported to two decimal places and the percentage reduction since 2021-22; and this is also reported as $kgCO_2e$ per megalitre of volume of wastewater received at sewage treatment works.
Measurement timing	Reporting year
Incentive form	Revenue
Incentive Type	Outperformance and underperformance payments
Timing of underperformance and outperformance payments	In-period
Price Control allocation	85% wastewater network plus, 15% bioresources – based on industry allocation of costs and revenue.
Frequency of reporting	Annual
Any other relevant information	N/A
Links to relevant external documents	N/A

4.5.28 Performance as a % change will be calculated as follows using tCO_2e data:

Change in tonnes CO_2e from 2021/22 baseline = *(Tonnes CO_2e, programme baseline in year) – (Tonnes CO_2e programme actual in year)*

PCL Calculation – Percentage reduction from baseline = *(Reduction in tonnes CO_2e from 2021/22 baseline*) / *(Tonnes CO_2e, programme baseline in year) * 100*

PCLs set at PR19

4.5.29 This is a new PC so there was no PCL for PR19. We do have historic performance data for our operational GHG emissions, however the emissions boundary is different to that proposed by Ofwat for this common PC so shouldn't be used as a comparable reference.

Historical outturn performance at an individual company and sector level

Individual company performance

4.5.30 We have a strong track record of playing our part to mitigate climate change and have reduced our scope 1 and 2 emissions by over 70 per cent since 2005/06, largely through our substantial investment in renewable power generation and green electricity procurement. However, this historical reduction is not reflective of what can be achieved in the future. To reduce the remaining emissions, will require extensive innovation, technological enhancements and investments.

4.5.31 The proposals in our business plan submission, if approved, should reduce emissions during AMP8 in the PCs for both water and wastewater. However, the baseline year of the PCs in 2021-22 is notably ahead

of the performance period (starting 25-26) and our wastewater emissions are expected to increase in comparison. This is because there is emissions growth in late AMP7 from increased energy and chemical use associated with completion of improvement schemes in the current WINEP.

4.5.32 The PC performance reportable emissions are linked to delivery of our AMP7 and AMP8 WINEP projects becoming operational, population growth and our net zero enhancement programme reductions delivery timeline.

Table 31: UUW's predicted AMP7 performance for Operational GHG (water and wastewater) NB: a negative PCL number relates to an increase in emissions and a positive PCL number relates to a reduction in emissions

		Actual			Forecast		Percentage Improvement		
	2019-20 (AMP6)	2020-21	2021-22	2022-23	2023-24	2024-25	2019-20 to 2022-22	2019-20 to 2024-25	2024-25 to 2029-30
AMP7 PCL				N/A					
% reduction (wastewater and water combined)	412,221 tCO_2e	-2.59	3.32	-1.66	-1.63	-1.72	0.81	-4.24	-4.24
% reduction (water)	146,171 tCO_2e	-1.94	2.23	2.82	4.91	2.13	0.34	9.86	3.11
% reduction (wastewater)	266,050 tCO_2e	-2.95	3.91	-4.13	-5.01	-3.52	1.07	-11.98	2.24

Sector level performance

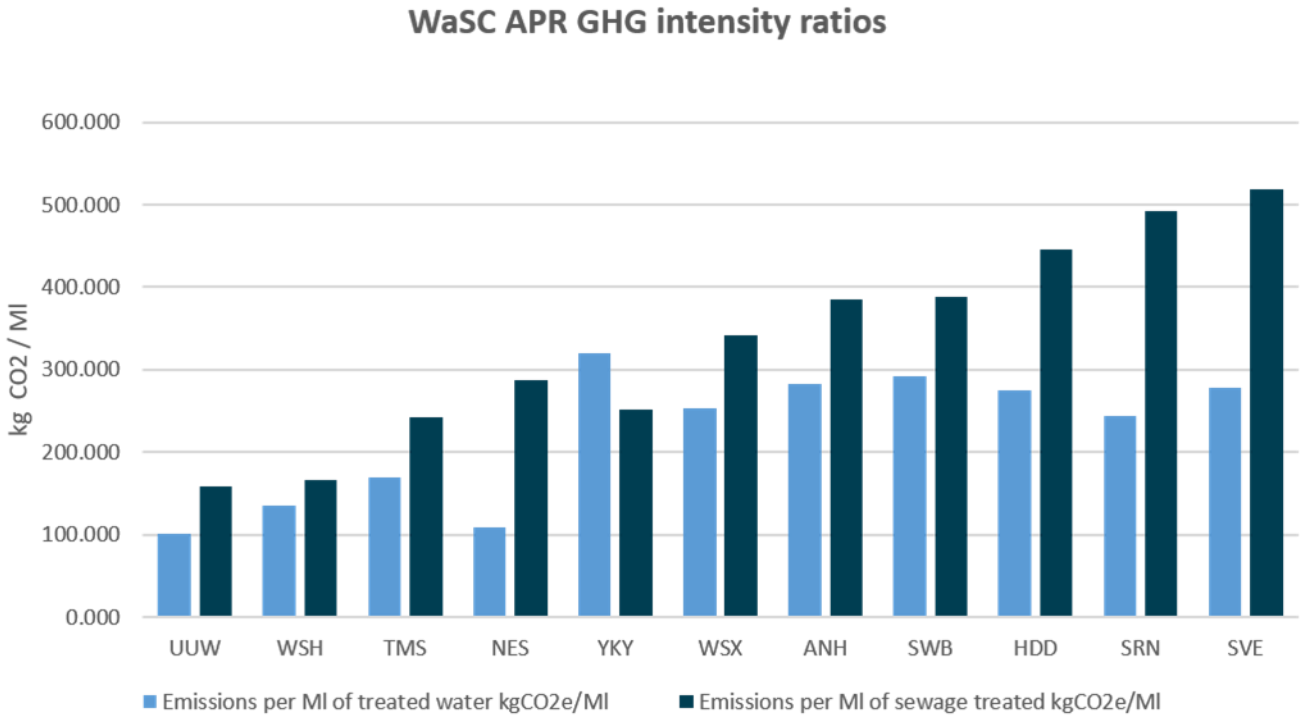
4.5.33 We have an important role in a leading approach to GHG emissions in the sector. Whilst we have made good progress in the past it would be unrealistic to expect that the historic emissions reduction trend, or cost-benefit positions, will continue into the future. Keeping emissions as they currently are will become increasingly stretching.

4.5.34 Sector performance data which relates specifically to this PC is not available. The data relating to this PC has been requested for the first time this reporting year (2022/23) and therefore direct comparison is not yet available.

4.5.35 Figure 32 shows the current sector level performance as reported in the 2023 APR, however, as highlighted above this graph cannot be compared on a like for like basis against these PCs because companies may not have reported consistently. For example, UUW's chemical data used our estimate for emissions from chemicals and gases based on an analysis of our annual spend using an extended-environmental input output (EEIO) model called CEDA Global 2022. Our forecast for these PCs at PR24 uses version 17 of the CAW.

4.5.36 Performance below shows that in the 2023 APR, our GHG emissions in the wastewater price control are on average a third higher than water. We anticipate this trend will continue into the 2025-30 period as outlined in Table 33, which forecasts our wastewater operational GHG emissions will have increased by 10.66% by 2029-30, from 2021-22. This is generally in line with the trend across all other WaSCs. The below also shows, when compared to other WaSCs our overall GHG intensity as reported in the APR is lower. We are starting from an overall lower baseline position than others due to successful interventions already undertaken in historic years to reduce our scope 1 and 2 emissions, focused primarily on electricity efficiency and renewable generation. This means we have fewer options for further emissions reductions in AMP8, under the PC reporting methodology.

Figure 32 - Sample of Water and Sewerage Company (WaSC) reported GHG emissions (April 2023). Please note this is not comparable with the PC definition as data did not necessarily use version 17 CAW



Source: APR datashare 2023

Historical expenditure included in the base expenditure models at PR24

4.5.37 Since 2011, 100% of historical performance has been driven by base expenditure, supported with grants where available e.g. woodland creation. However, it is highly unrealistic to expect the resulting historic emissions reduction trend to continue into the future, simply because a large proportion of the interventions that have achieved this reduction, by their nature, can't be repeated (e.g. grid decarbonisation).

4.5.38 There have been upward growth pressures, such as extending our services to a growing population, and treating wastewater to higher standards to meet latest statutory and regulatory requirements to continue improving the water environment. Looking ahead, our AMP8 WINEP will be much larger than programmes in the past, and our analysis shows this will increase operational GHG emissions in AMP8 and beyond, despite our best efforts to minimise the growth pressures. This is because more energy and chemicals will be needed to meet higher treatment standards.

4.5.39 There have also been downward pressures. Externally, national investment to decarbonise the electricity system has supported our operational emissions. However, the rate of decarbonisation will slow over time as proportionately less of the system is left to switch. The costs of buying certified green electricity are also increasing.

4.5.40 Hitting net zero by 2050 will require substantial, early and ongoing investment with reducing GHG emissions as a primary driver. In the future, we're expecting emissions reduction costs to increase from those we have explored in the past. There will also be a continued challenge just to stand still against substantial growth pressures, and then to go further to deliver the required overall reductions. Having already undertaken many of the most commercially attractive options and having benefitted from grid decarbonisation, we anticipate that enhancement expenditure will be required to deliver reductions in operational GHG emissions.

Company forecasts of performance levels that can be delivered from base expenditure

4.5.41 As referenced above, substantial investment is needed to deliver the transformational change required to achieve our role in national targets for net zero 2050 and the interim carbon budgets, including a 78% reduction by 2035. Forecast upward growth pressures, such as extending our services to a growing population, and treating wastewater to higher standards to meet statutory requirements to continue improving the water environment, as set out by the Environment Act, make it increasing difficult to deliver a reduction in operational GHG emissions. Operational cost efficiency has been a primary driver to date, but also delivering emissions reductions and resilience benefits. We have invested heavily to expand our own renewable energy generation facilities, primarily to support more efficient and effective sludge management.

4.5.42 In the future, we're expecting GHG emissions reduction costs to increase along with the continued challenge of substantial growth pressures, which means we need to go further to deliver the required overall reductions. Having already undertaken many of the most commercially attractive options we anticipate not being able to deliver the required reductions in operational GHG emissions without increased expenditure. To address this, we have put forward a circa £196m net zero enhancement programme to deliver circa 210,000 tCO_2e reportable emissions benefit in AMP8, and enabling over 2m tonnes of benefits by 2055. Table 32 and Table 32 show our expected performance against the water and wastewater PCs, including how that delivery is split between base and enhancement.

Table 32: Operational GHG (Water) AMP8 Performance Levels achievable from base and enhancement expenditure with comparative industry information. NB: a negative PCL number relates to an increase in emissions and a positive PCL number relates to a reduction in emissions.

	2025-26	2026-27	2027-28	2028-29	2029-30
Water PCL (change from 2021/22 baseline)	10.17	10.54	11.14	11.96	12.37
Performance from base[1]	101	102	103	104	105
Performance from enhancement[2] (including net zero enhancements which are excluded from PCL)	-1	-2	-3	-4	-5
Industry upper quartile			N/A		
Industry frontier			N/A		
Reward cap	12.17	12.54	13.14	13.96	14.37
Penalty collar	9.97	10.34	10.94	11.76	12.17
Deadband			N/A		
Enhanced reward threshold			N/A		

Data Table References:[1] OUT2.7,[2]OUT3.7

4.5.43 Performance from base is delivering an overall increase in emissions which is then mitigated by reductions in enhancement.

Table 33 – Operational GHG (Wastewater) AMP8 Performance Levels achievable from base and enhancement expenditure with comparative industry information. NB: a negative PCL number relates to an increase in emissions and a positive PCL number relates to a reduction in emissions

	2025-26	2026-27	2027-28	2028-29	2029-30
Wastewater PCL (change from 2021/22 baseline)	-15.03	-15.17	-15.32	-10.22	-10.66
Performance from base[1]	101	102	102	103	99
Performance from enhancement[2] (including net zero enhancements which are excluded from PCL)	-1	-2	-2	-3	1
Industry upper quartile			N/A		
Industry frontier			N/A		
Reward cap	-13.03	-13.17	-13.32	-8.22	-8.66
Penalty collar	-15.23	-15.37	-15.52	-10.42	-10.86
Deadband			N/A		
Enhanced reward threshold			N/A		

Data Table References:[1] OUT2.8,[2]OUT3.8

4.5.44 Performance from base is delivering an overall increase in emissions which is then mitigated by reductions in enhancement in all but the last year of AMP8 where WINEP schemes begin to be operational which increases emissions further, beyond base.

4.5.45 It was stated in final methodology that Ofwat will take an alternative incentive approach for this operational GHG emissions PC using credible external valuations (Green Book etc.) as collaborative research is unlikely to give meaningful customer valuations. The GHG PC has not been included in the outcomes working group so we expect incentive approach to also be provided after submission which causes challenges for these common PCs.

4.5.46 To resolve this, we provide our proposal for the basis on which the GHG emissions ODI rates should be set. We propose the marginal benefit and incentive rate for this PC is aligned to the latest government values from 2021, shown in Table 34. Our proposal is that this relates to the low value (sensitivity) from 2025 (£130/tCO_2e). While not perfect, this will go some way to reducing the perverse incentive created from the PC static emissions factors which has the potential to over incentivise projects related to the use of some renewables, more so than market factors as these take in to account the decarbonisation of the grid.

4.5.47 Ofwat has not yet published a marginal benefit sharing factor for this PC. We therefore have assumed have a percentage of 70% in line with the other common PCs that have been confirmed by Ofwat.

Table 34 -UK Government carbon prices (£) per tonne of CO_2.[34]

Year	Low series	Central series	High series
2025	130	260	390
2026	132	264	396
2027	134	268	402
2028	136	272	408
2029	138	276	414
2030	140	280	420

4.5.48 As per the PC definition document, we will ensure that ODI payments linked to this commitment only relate to absolute performance improvements and not relative improvements due to changes in PC definitions or methodology.

4.5.49 Any under or over performance calculations will be based on the following calculations:

Change in tonnes CO_2e from 2021/22 baseline = *(Tonnes CO_2e, programme baseline in year) – (Tonnes CO_2e programme actual in year)*

NB: Any increases will be reported as a negative number and any decreases will be reported as a positive number.

Over performance payment value = *Change in tonnes CO_2e from baseline x Incentive rate (£130/tCO_2e)*

Performance levels of efficient companies

4.5.50 As stated above, it is difficult to compare performance levels when looking at operational GHG emissions reductions as this has not been a PC in previous reporting periods or in annual performance reporting until this year and therefore operational emissions boundaries and reporting methodologies may differ between companies and years.

4.5.51 Our ambition and commitments are based on international best practice and climate science towards meeting the overall UK legal duty to be net zero at 2050, including nationally legally binding interim carbon budgets every five years to 2050. We are committed to the science-based approach and were the first UK water company to have verified SBTs for emissions in scope 1, 2 and 3.

4.5.52 Since October 2021, we have only used renewable electricity. The move to a 100% green electricity tariff was secured with minimal additional cost in our latest energy procurement contract with third party suppliers, enabled by a low market price at the time for Renewable Energy Generation of Origin (REGO) certificates. Our current energy contract will need to be renewed in 2025 and the price of REGOs has increased markedly recently.

4.5.53 Additionally, we have focused on land management and fleet, including partnership working to deliver large scale peatland restoration and woodland creation. The impact of land management is not currently reflected in our GHG emissions reporting with limited options to enable this, but we are an early adopter of new mechanisms to allow this in the future, such as the Woodland Carbon Code. We have also recently delivered substantial enabling infrastructure, in readiness to achieve our pledge for 100% green fleet by 2028.

4.5.54 We aim to continuously innovate and explore new solutions to better understand how we can reduce areas that contribute to significant proportions of our emissions, such as process emissions and

[34] https://www.gov.uk/government/publications/valuing-greenhouse-gas-emissions-in-policy-appraisal/valuation-of-greenhouse-gas-emissions-for-policy-appraisal-and-evaluation.

embodied GHG emissions. For example, by piloting projects such as hydrogen and carbon capture and storage.

Opportunity for transformational performance improvements

4.5.55 To achieve the transformational change required to support net zero 2050 it will require substantial and ongoing investment with GHG emissions reduction as a primary driver for the activities that support longer term reductions. We anticipate needing additional enhancement funding to reduce our operational GHG emissions further to achieve transformational improvements. We have identified circa £196m of net zero enhancements to deliver circa 210,000 tCO_2e of reportable AMP8 benefit.

Sources of Information used to set the PCL

4.5.56 If any changes are made to the methodology by regulators which change the definition of this PC then we would reassess the PCL.

4.5.57 Table 35 below presents our 2025-2030 operational GHG emissions as per PR24 data tables OUT4.24 and OUT5.27.

Table 35: UUW's Proposed AMP8 PCLs. NB: a negative percentage relates to an increase in emissions and a positive percentage relates to a reduction in emissions

	End of AMP7	2025/26	2026/27	2027/28	2028/29	2029/30	Improve-ment from baseline
tCO_2e (wastewater and water combined)	429,684.65	433,634.17	433,448.09	432,976.52	418,352.97	418,910.13	-3,262.39
Percentage (%) reduction from 2021/22 baseline (wastewater and water combined)	-5.09	-6.05	-6.01	-5.89	-2.32	-2.45	-2.45
tCO_2e (water)	131,753.22	130,864.60	130,324.97	129,441.87	128,245.10	127,652.27	13,920.55
Percentage (%) reduction from 2021/22 baseline (water)	9.56	10.17	10.54	11.14	11.96	12.37	12.37
tCO_2e (wastewater)	297,931.43	302,769.57	303,123.12	303,534.65	290,107.87	291,257.86	-17,182.94
Percentage (%) reduction from 2021/22 baseline (wastewater)	-13.19	-15.03	-15.17	-15.32	-10.22	-10.66	-10.66

NB: Water values are calculated in OUT4, wastewater values are calculated in OUT5 and combined values are calculated outside of Ofwat's data tables.

4.5.58 Despite the WINEP and expected population increases we anticipate a reduction in operational emissions, in AMP8. For example, more stringent environmental requirements in the wastewater network price control requires increased chemical dosing to meet technically achievable limits, this in turn causes increases in the volume of sludge produced and sludge processing required. This means our operational emissions will increase, however, as many projects will complete later in the AMP, we expect a larger increase in emissions towards the end of AMP8 and into AMP9. This has been the same pattern from our AMP7 WINEP projects, becoming operational towards the end of AMP7.

4.5.59 Our target is stretching with the aim of minimising the impact of growth pressures in line with the sector and aiming to go beyond that of our peers. We anticipate this will be defined through benchmarking as Ofwat state they will look to benchmark the proposed GHG emission impact of common enhancement activities between companies within Appendix 9 of their final methodology.

4.5.60 We agree with Ofwat that although "not a perfect measure" there is value in also reporting the emissions intensity ratios (water emissions per megalitre of distribution input) (Wastewater emissions per megalitre of volume of wastewater received at sewage treatment works) to provide useful insight into company management of their emissions and to allow comparison between companies. However, we do not support the use of either intensity ratios or change in intensity ratios from baseline as the performance measure for the PC as this would compound performance in other business operational activity with that of GHG management. We would encourage use of the simpler and consistent metric of tonnes CO_2e.

4.5.61 The methodology required for the common PC, over-reports our operational emissions in comparison to how we report them elsewhere. For example, there are big disparities between the carbon intensity of the UK's grid regions; the North West's factors are around four times less than other areas of the country using latest estimates from National Grid's Carbon Intensity API[35].

4.5.62 The current PC definition states a location based methodology should be used when reporting scope 2 emissions, however electricity from private wire and behind the meter renewables generation is an eligible activity under the PC and can be used to reduce a company's scope 2 emissions as ultimately less grid electricity will be purchased. We already have a mature renewable portfolio, as evidenced in the publically available APRs, creating a potential disadvantage for us compared to others who are late adopters and not as advanced in their renewables strategy.

4.5.63 As referenced above, we have company-level SBTs across all emissions scopes and a Public Interest Commitment to reach net zero with the rest of the industry by 2030 across scope 1 and 2 emissions. The operational emissions boundaries are different to those proposed by Ofwat for the PCs. Our net zero enhancements proposal will enable us to continue to work towards this goal and this PCL should be aligned to our long term goals of reaching net zero, whilst also taking into consideration the pressures outlined above and potential emissions increase towards the end of AMP8.

4.5.64 For additional technical detail see PR24 data table accompanying commentaries for OUT1, OUT2, OUT3, OUT4, OUT5 and OUT7 for operational GHG emissions.

Dependencies or overlap with other PCs

4.5.65 These common PCs are focused on operational emissions and therefore we don't expect there to be any direct overlaps or double counting of emissions with other PCs, including our bespoke PC. These PCs are, however, reliant on the programmes being delivered by all price controls to forecast performance.

Application of Cap and Collar

4.5.66 Ofwat's PR24 final methodology proposes targeted use of caps and collars such as on those performance measures which are new and therefore more uncertain. As the two operational GHG PCs are new performance commitments we therefore propose caps and collars for them. We propose that they are the same for the water and the wastewater PCs as we expect the challenges and opportunities in AMP8 to be similar between the price controls.

4.5.67 Collar: We propose that under performance payments are capped at 1% increase (over AMP8) from our forecast position or PCL. This would prevent the company from being unfairly penalised from actions outside of management control. Any growth beyond our forecast position is likely to be as a result of higher than forecast population growth or changes in schemes included in the WINEP which we are not able to be forecast at this point.

[35] https://carbonintensity.org.uk/

4.5.68 Cap: We propose that over performance payments are limited to 10% reduction (over AMP8) from our forecast performance position. Those reduction projects put forward in our net zero enhancement submission represent our most cost beneficial and feasible, any additional stretch beyond these and our PCL would represent real innovation and change in technology which should be rewarded.

4.6 PR24_LEA_Leakage

4.6.1 The need for reductions in leakage is a consistent theme across our conversations with customers, regulators and other stakeholders. We, therefore, propose a stretching performance commitment level (PCL) that delivers a **23.8% reduction in leakage from the 2019-20 baseline**. Our proposed PCL sustains our projected rate of improvement over AMP7, but also incorporates the impact of the rapid advances in leakage awareness, predication and prevention.

4.6.2 We continue to make best use of available technologies, flexing our strategy to ensure that we can embrace the heightened level of innovation in this area, as we refine approach to reducing leakage and deliver our Dynamic Network Management (DNM) capability.

4.6.3 Table 36 outlines a summary of these proposals.

Table 36 - PR24_LEA Leakage – summary, definition and parameters

Purpose and benefits	To incentivise companies to reduce leakage. To improve water resources supply/demand balance and reduce need for water abstraction and increase water supply network resilience.
Definition	Defined as percentage reduction of three-year average leakage in Ml/d from 2019-20 baseline. Incentive payments relate to performance changes expressed in megalitres per day (Ml/d). Ref: *Leakage - PC definition 17th May, 2023.*
Specific Exclusions	In line with section 1.3 of the Leakage – PC definition.
Exceptions to Ofwat methodology	None – however, the information and assumptions made for leakage, per capita consumption and business demand PCs will be consistent and be based on the same water balance calculations. If any information is restated for one of the PCs, the others will also be restated if there is any impact on them.
Compliance Checklist	We have completed the compliance checklist provided by Ofwat as part of the performance commitment definition and are confident in meeting all of the reporting requirements.

Units: Percentage reduction from 2019-20 baseline	**Forecast**	**Company specific performance commitment level**				**Long term**
	2024-25	**2025-26**	**2026-27**	**2027-28**	**2028-29**	**2029-30**	**2049-50**
UUW PCL	10.8	14.8	17.3	19.6	21.7	23.8	49.4
Underperformance collar				N/A			
Deadband				N/A			
Outperformance cap				N/A			
Enhanced threshold		16.2	20.1	23.8	25.9	27.9	
Enhanced cap		18.3	24.2	29.5	31.0	32.2	

ODI Rates	
Rate per mega litres/day (Ml/d)	
Marginal benefit	£0.52 million
Benefit sharing factor	70%
ODI rate	£0.36 million
Enhanced rate	£0.72 million

Source: Ofwat Excel file "United Utilities - Indicative ODI rates - Jun23 - v3"

Basis for PCL	Several sources of information were used to determine the leakage PCL: Our Water Resources Management Plan 2024 (WRMP24) has assessed the supply-demand requirements to ensure water resources resilience, as well as meeting the long-term and interim leakage targets in the Government's Environmental Improvement Plan[36] 2023; We have used the data on historical performance trends for PR24 data published by Ofwat[37] to forecast upper quartile performance; and we have used the Annual Performance Report (APR) Datashare 2023 to update our forecast of upper quartile performance using the reported data for 2022-23. Enhanced performance threshold has been calculated as a two year acceleration of the PCL, and the enhanced cap as a five year acceleration of the PCL

Data table reference lines: AMP7: OUT8.3, AMP8: OUT1.9, Long Term Ref: LS1.9

[36] https://www.gov.uk/government/publications/environmental-improvement-plan

[37] https://www.ofwat.gov.uk/regulated-companies/price-review/2024-price-review/pr24-cost-assessment-datasets/

4.7 Evidence to support leakage proposals

4.7.1 A company specific PCL, cross-checked against historical and forecast performance, is proposed in line with Ofwat's methodology issued in December 2023. In the following sections, we have presented evidence for the calculation of the company specific PCL.

4.7.2 The sections outline:

- How we have calculated our proposed PCL and how we justify its suitability with reference to the tests given in Ofwat's final methodology Appendix 9 section 4.4.3 on determining stretching performance improvements.
- The PCL is linked to the WRMP projections for demand reduction with dependencies on PCC and Business Demand as part of the water balance calculation.

Performance Commitment Levels

4.7.3 The proposed performance commitment levels are summarised in Table 37 below, shown in the context of historic performance and expenditure; what can be delivered from base expenditure; Industry performance and accounting for transformational improvements. UUW proposes a PCL for the business plan period 2025-2030 in line with our WRMP24 and the efficient glide path to the longer term (2050) target. Each element of this table is discussed in more detail in the following sections.

Table 37: Leakage AMP8 Performance Levels achievable from base and enhancement expenditure with comparative industry information (figures may not sum due to rounding)

	2025-26	2026-27	2027-28	2028-29	2029-30
UUW PCL (three year average)	381.1	369.8	359.5	349.9	340.5
UUW PCL (% reduction from 2019-20 using three-year average)	14.8	17.3	19.6	21.7	23.8
Performance from base[1]	1.6	1.6	1.6	1.6	1.8
Performance from enhancement (this is the benefit of AMP8 enhancement plus the cumulative benefit of enhancements from prior AMPs)[2]	13.2	15.7	18.0	20.1	22.0
Industry upper quartile (% reduction from 2019-20 using three-year average applied to UUW end of AMP7 position)	14.0	16.7	18.9	21.0	23.3
Industry frontier (% reduction from 2019-20 using three-year average applied to UUW end of AMP7 position)	15.4	18.5	20.7	22.4	24.9
Outperformance cap			N/A		
Underperformance collar			N/A		
Deadband			N/A		
Enhanced outperformance threshold	16.2	20.1	23.8	25.9	27.9
Enhanced outperformance cap	18.3	24.2	29.5	31.0	32.2

Data Table References: [1]OUT2.9, [2]OUT3.9

PCLs set at PR19

4.7.4 The PR24 PCL goes further than our Water Resources Management Plan 2019 (WRMP19) projections for leakage in AMP8, as shown in Table 38.

Table 38: Comparative WRMP projections for leakage

Total annual leakage (Ml/d)	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30
WRMP19	380.6	374.0	367.4	360.9	354.3	335.9
Revised Draft WRMP24 projection that informs our PR24 PCL	380.6	369.9	358.9	349.8	341.1	330.7

Leakage figures do not include the marginal leakage benefit of the proposed lead enhancement case.

Source: UUW WRMP submission 2019 and revised submission 2024

Historical outturn performance

Individual company performance

4.7.5 We have met our leakage targets in the first three years of AMP7 and we continue in our efforts to reduce leakage levels. To achieve this performance, a number of key activities/interventions have been implemented:

- Increased advertisement of our efforts on leakage and online channels for customers to use to report leaks (e.g. using tools, such as our App);
- Used our fleet of nearly 70,000 acoustic sensors to identify and pinpoint leaks more efficiently;
- Managed network pressures using our ~4,000 pressure management valves (PMVs), around 1,000 of which can now be controlled remotely;
- Increased resources for detecting and repairing leaks, as well as increasing our logger teams (installing an increased number of 'lift and shift' loggers in our network to detect leaks that wouldn't be found using traditional manual techniques);
- Worked with our partners and supply chain to speed up leak repairs; and
- Used our partner and UUW vehicles with digital messaging capability to run specific messaging across the region, alongside existing partner and United Utilities livery which now carries all-year round leakage related messaging.

4.7.6 Certain weather patterns (dry weather and freeze-thaw events) can have a substantial impact on leakage levels. Severe freeze-thaw events cause increases in customer-side and distribution-side leakage levels. Customer-side leakage can be identified where leakage levels in an area decrease with no company action – this is particularly prominent in freeze-thaw events. Customer action can have a significant impact on leakage and we actively engage with customers through campaigns on freeze-thaw preparedness (promoting pipe lagging and tap covers), as a critical part of tackling leakage. We saw in the freeze-thaw event that severely impacted the North West in December 2022 that customer action to address leakage on their own pipes made a significant impact on leakage performance over this period, negating the identification or need for mains repairs on our own assets to combat the spike in leakage that we saw during this event. This effect is one of the key drivers in pursuing our customer education campaigns about the need for customers to lag their pipes and use garden tap covers to prevent freeze-thaw issues on their own pipes.

Industry performance

4.7.7 Upper quartile and frontier performance have been calculated and included in Table 39.

Table 39: Leakage AMP7 UUW and forecast data

	Actual			Forecast		Percentage Improvement		
	2019/20 (AMP6)	2020/21	2021/22	2022/23	2023/24	2024/25	AMP6 to 2023	AMP6 to 2025	AMP8 (PCL)
AMP7 PCL (% reduction from 2019-20 using three-year average)		0.8	1.9	3.7	6.6	10.8	3.7	10.8	
UUW Performance (% reduction from 2019-20 using three-year average)		1.9	4.7	5.9	8.3	10.8	5.9	10.8	13.0
AMP7 PCL (Ml/d, three-year average)	447.1	443.5	438.6	430.6	417.6	398.8	3.7	10.8	
UUW Performance (Ml/d, three-year average)	447.1	438.8	426.1	420.5	409.9	398.8	5.9	10.8	

Historical expenditure included in the base expenditure models at PR24

4.7.8 Base allowances are set by reference to statistical models, which use a set of explanatory variables (cost drivers) to allocate levels of expenditure incurred by companies historically. In this way, base allowances are inherently backward-looking. Additionally, the nature of botex modelling also means that allowances are top-down, and are difficult to disaggregate into sub-components in any meaningful way.

4.7.9 A report commissioned by UUW[38] and a subsequent UUW contribution to the Future Ideas Lab[39] sought to establish a theoretical framework that could underpin analysis on how much of a certain activity or service level is funded from base allowances. These studies found that a series of factors affect the service level 'funded' by base expenditure, including:

- **Historical performance across the industry**. Companies incur costs in moving to better service levels and vice versa. Therefore, this will be reflected in the botex allocation provided by the models – as noted above, the models are inherently backwards-looking. Simplistically, the botex allowance can be thought to provide an allowance equivalent to the average level of service over the historical period covered by the models.
- **Whether the expenditure benchmark has been set by a company with relatively poor performance** (and therefore lower costs).
- **Whether historical enhancement expenditure has been excluded from the botex assessment.** A company that has benefitted from historical enhancement expenditure may have better

[38] Reckon (2022) *The opportunities for a more coherent regulatory approach for Ofwat's funding of base expenditure and enhancements*. Available here.

[39] UUW (2022) *Making the cost assessment framework resilient to future challenges.* Available here.

performance than a company that hasn't. However, this clearly doesn't mean that base expenditure has bought the better quality of service.

- **Whether there are regional circumstances that drive differences in performance and cost but which are not reflected in the regulatory framework**. A company operating in an adverse region would be funded for a lower level of performance, all else equal. This is because achieving equivalent performance is more expensive for that company.

Table 40: What service level is funded from base allowances?

Factor	Assessment
Industry historical performance	Average industry performance over the historical period was 0.11 Ml/d per 1000 households. UUW is targeting performance of 0.09 in 2029-30. This is materially better performance relative to that seen historically in the industry.
Performance of benchmark company	PR19 benchmark (SWB) ranks 9th in leakage per 1000 households (Ml/d per household, PR19 methodology) over the historical period covered by the models. This suggests PR19 base allowances are funding average leakage performance.
Effect of enhancement expenditure	Upper quartile companies at PR19 received enhancement allowances. This will facilitate better performance, but will not be reflected in base expenditure at PR24.
Regional circumstances	Unclear

Source: UUW APR data 2023, OUT8, and UUW interpretation of Ofwat historical performance trends data share 2023

4.7.10 Overall, this assessment suggests that UUW is proposing expenditure significantly beyond that funded through base allowances.

Company forecast of performance levels that can be delivered from base expenditure

4.7.11 As per PR24 table OUT2, performance from base was calculated by estimating the benefits derived from our actual and projected enhancement expenditure and removing this from observed or predicted levels of performance, thereby creating a counterfactual for if that enhancement expenditure had not occurred.

4.7.12 In AMP7, we committed to delivering a 15% annual leakage reduction (assessed against 2017-18 leakage levels) and a three-year average leakage reduction of 10.8% (assessed against 2019-20 leakage levels). Our PR19 business plan proposed £42m of enhancement expenditure relating to "leakage loggers". However, Ofwat did not include any leakage-related expenditure in its final determination, meaning that UUW's enhancement allowance for reducing leakage was zero. Notwithstanding that Ofwat had set a zero enhancement allowance for leakage activity, UUW proceeded to make the incremental investments in leakage loggers in order to deliver the required performance improvements. The investment in leakage loggers played an important role in helping us to improve leakage performance. UUW has clearly had to increase expenditure above that assumed in the PR19 determination to drive this performance improvement.

Performance levels of efficient companies

4.7.13 Refer to upper quartile and frontier performance in Table 39.

Opportunity for transformational performance improvements

4.7.14 The key proposals for AMP8 that support transformational performance improvements are:

Dynamic Network Management (DNM) and smart metering

4.7.15 Building on the additional network sensors we installed in our water network in AMP6 and AMP7, and incorporating the learnings from the deployment our wastewater DNM operating model, water DNM will be transformative to the way we operate and manage our water network. Predictive analytics applied to the vast amount of data we have on our water network will support improved leakage detection targeting and a resulting efficiency. Combining this information with the "game changer" that is smart metering will allow us to truly understand if the water demand in our district metered areas (DMAs) is consumption/usage or leakage.

Mains renewal/replacement

4.7.16 Delivered in a targeted way, using the insights we've gained from the additional network sensors we installed in AMP6 and AMP7, mains renewal/replacement is critical in enabling us to reduce leakage in a way that can be sustained over the longer term. In the short-term view, this could be seen as a more expensive option for leakage reduction, but it is one of the only options that will allow us to deliver the ambitious leakage reductions we are planning.

Sources of Information used to set the PCL

4.7.17 Several sources of information were used to determine the leakage PCL:

- Our Water Resources Management Plan 2024 (WRMP24) has assessed the supply-demand requirements to ensure water resources resilience, as well as meeting the long-term and interim leakage targets in the Government's Environmental Improvement Plan[40] 2023;
- We have used the data on historical performance trends for PR24 data published by Ofwat[41] to forecast upper quartile performance; and
- We have used the Annual Performance Report (APR) Datashare 2023 to update our forecast of upper quartile performance using the reported data for 2022-23.

Dependencies or overlap with other PCs

4.7.18 As the three water demand performance commitments (leakage, per capita consumption and business demand) are all reported from the same water balance, there are inevitably dependencies between them. However, these dependencies are managed in the water balance and, when the water demand components are reported, they are independent.

4.7.19 There is a direct link between mains repairs and certain leakage interventions, e.g. active leakage control (i.e. proactive leakage detection) will drive additional mains repairs in order to maintain and/or reduce leakage. Please see Figure 5-1 in Chapter 5.

4.7.20 Our strategy is to achieve an optimal balance across the leakage and mains repairs performance commitments, delivering stretching reductions in leakage levels while maintaining upper quartile performance in mains repairs.

4.7.21 The duration threshold for supply interruptions associated with planned works related to the proposed leakage enhancement will be extended to 8 hours. This allows the programme to be delivered using innovative methods providing cost and time efficiencies for the programme.

4.7.22 We have spoken to customers in the North West to get their views on "planned interruptions[42]". Customers have told us they were supportive of longer duration planned supply interruptions if the additional time allowed for greater innovation and reduced general disruption (e.g. traffic disruption).

[40] https://www.gov.uk/government/publications/environmental-improvement-plan

[41] https://www.ofwat.gov.uk/regulated-companies/price-review/2024-price-review/pr24-cost-assessment-datasets/

[42] InSites Consulting on behalf of United Utilities, "Expectations of Service", October 2021, https://www.unitedutilities.com/corporate/about-us/our-future-plans/listening-to-our-customers/insight-and-research-library#serviceresponse

Application of outperformance cap, underperformance collar or deadband

4.7.23 No cap, collar or deadband is proposed for this measure, although there is an enhanced incentive rate cap in line with Ofwat methodology.

Application of an enhanced incentive rate threshold

4.7.24 Provided the baseline to which the improvement factor is applied is UUW's proposed PCL, as opposed to a common PCL, then we do not propose deviating from Ofwat's approach of applying a common improvement factor to all companies, cross-checked against historical and forecast performance.

4.7.25 Applying a common incentive rate cap to all companies, cross checked against historical and forecast performance is proposed in line with Ofwat's methodology issued in December 2023.

4.8 PR24_PCC_Per Capita Consumption (PCC)

4.8.1 This is a continuation of the UUW AMP7 performance commitment.

4.8.2 The PCL aligns with WRMP24 forecasts and therefore assumes full delivery of the AMP7 PCL by 2024/25.

4.8.3 As the measure is a company specific measure, stretching performance between 2025 and 2030 is set to ensure a trajectory towards achieving longer term government targets for demand reduction is maintained.

4.8.4 We propose an enhanced incentive rate threshold at the projected industry frontier. We propose an enhanced incentive rate cap, in line with government long-term targets to bring PCC down to 110l/p/d.

4.8.5 Table 41 outlines a summary of these proposals.

Table 41 PR24_PCC Per Capita Consumption (PCC) – summary, definition and parameters

Purpose and benefits	To incentivise companies to help customers reduce consumption. To improve water resources supply/demand balance and reduce need for water abstraction and increase water supply network resilience.
Definition	The percentage reduction of three-year average PCC in litres per person per day (l/person/d) from the 2019-20 baseline. Incentive payments relate to performance changes expressed in litres/person/day (l/p/d). Ref: *Per capita consumption - PCC definition 17th May, 2023.*
Specific Exclusions	In line with section 1.3 of the PCC – PC definition. Including Supply Pipe Leakage (SPL) and plumbing losses. Supply pipe leakage is excluded from consumption data. For measured households which are externally metered supply pipe leakage allowances will be deducted from the metered data. For unmeasured households externally metered as part of IHM surveys supply pipe leakage shall also be excluded from the data. For SAMs estimates of supply pipe leakage must also be removed from the data.
Exceptions to Ofwat methodology	None however the information and assumptions made for leakage, per capita consumption and business demand PCs will be consistent and be based on the same water balance calculations. If any information is restated for one of the PCs, the others will also be restated if there is any impact on them.
Compliance Checklist	We have completed the compliance checklist provided by Ofwat as part of the performance commitment definition and are confident in meeting all of the reporting requirements.

Units: Percentage reduction from 2019-20 baseline	**Forecast**	**Company specific performance commitment level**				**Long term**
	2024-25	**2025-26**	**2026-27**	**2027-28**	**2028-29**	**2029-30**	**2049-50**
UUW PCL	5.1	6.7	7.4	8.1	8.9	9.7	24.7
Underperformance collar				N/A			
Deadband				N/A			
Outperformance cap				N/A			
Enhanced threshold		12.2	13.9	14.3	14.7	15.1	
Enhanced cap		23.6	23.6	23.6	23.6	23.6	

ODI Rates	
Rate per litres/person/day (l/p/d)	
Marginal benefit	£3.67 million
Benefit sharing factor	70%
ODI rate	£2.57 million
Enhanced rate	£5.14 million
Source: Ofwat Excel file "United Utilities - Indicative ODI rates - Jun23 - v3"	

Basis for PCL	The proposed PCL for the business plan period 2025-2030 is an efficient glide path to the longer term (2050) target. This is in line with our Revised WRMP24.

Data table reference lines: - OUT8.4, OUT1.10, OUT7.10, Long Term Ref : LS1.10

4.9 Evidence to support per capita consumption proposals

4.9.1 A company specific PCL, cross checked against historical and forecast performance, is proposed in line with Ofwat's methodology issued in December 2023 and we present below evidence for the calculation of this.

4.9.2 The sections outline:

- How we have calculated our proposed PCL and how we justify its suitability with reference to the tests given in Ofwat's final methodology Appendix 9 section 4.4.3 on determining stretching performance improvements.

4.9.3 The PCL is linked to the WRMP projections for demand reduction with dependencies on Leakage and Business Demand as part of the water balance calculation.

Performance Commitment Levels

4.9.4 The proposed performance commitment levels are summarised in Table 42 below, shown in the context of historic performance and expenditure; what can be delivered from base expenditure; Industry performance and accounting for transformational improvements. UUW proposes a PCL for the business plan period 2025-2030 in line with our WRMP24 and the efficient glide path to the longer term (2050) target. Each element of this table is discussed in more detail in the following sections.

Table 42: Per capita consumption AMP8 Performance Levels achievable from base and enhancement expenditure with comparative industry information (l/person/day)

	2025-26	2026-27	2027-28	2028/29	2029/30
PCL (three year average)	134.4	133.4	132.3	131.2	130.1
%age reduction from 2019/20 baseline	6.7%	7.4%	8.1%	8.9%	9.7%
Performance from base[1]	6.5%	6.9%	7.1%	7.2%	7.4%
Performance from enhancement[2]	0.2%	0.5%	1.0%	1.7%	2.3%
Industry upper quartile	137.8	136.3	135.4	134.7	133.8
Industry frontier	127.7	126.7	125.5	124.3	122.9
Outperformance cap			N/A		
Underperformance collar			N/A		
Deadband			N/A		
Enhanced outperformance threshold	126.4	124.0	123.4	122.8	122.3
Enhanced outperformance cap	110.0	110.0	110.0	110.0	110.0

Data Table References: [1]OUT2.10, [2]OUT3.10

PCLs set at PR19

4.9.5 The PR19 PCL was not informed by the WRMP19 projections for household consumption, but was instead proposed by Ofwat, and accepted by United Utilities as part of the PR19 process.

Historical outturn performance

Individual company performance

4.9.6 We have not met our PCC targets in the first three years of AMP7 due to increased household demand as a result of Covid19 related impacts. The ongoing changes in demand patterns, and impact on working locations has introduced substantial uncertainty to future demands. We nevertheless have risen to the challenge of this impact on consumption, with substantial investment in individualised customer engagement campaigns, roll out of water saving devices and an increased focus on identifying and resolving customer side leakage. As a result we are on track to achieve the AMP7 closing target position by 2024-25. We anticipate that the three year average value will remain above target in 2024/25 as higher usage in 2022-23 and 2023-24 impacts final year values.

Industry performance

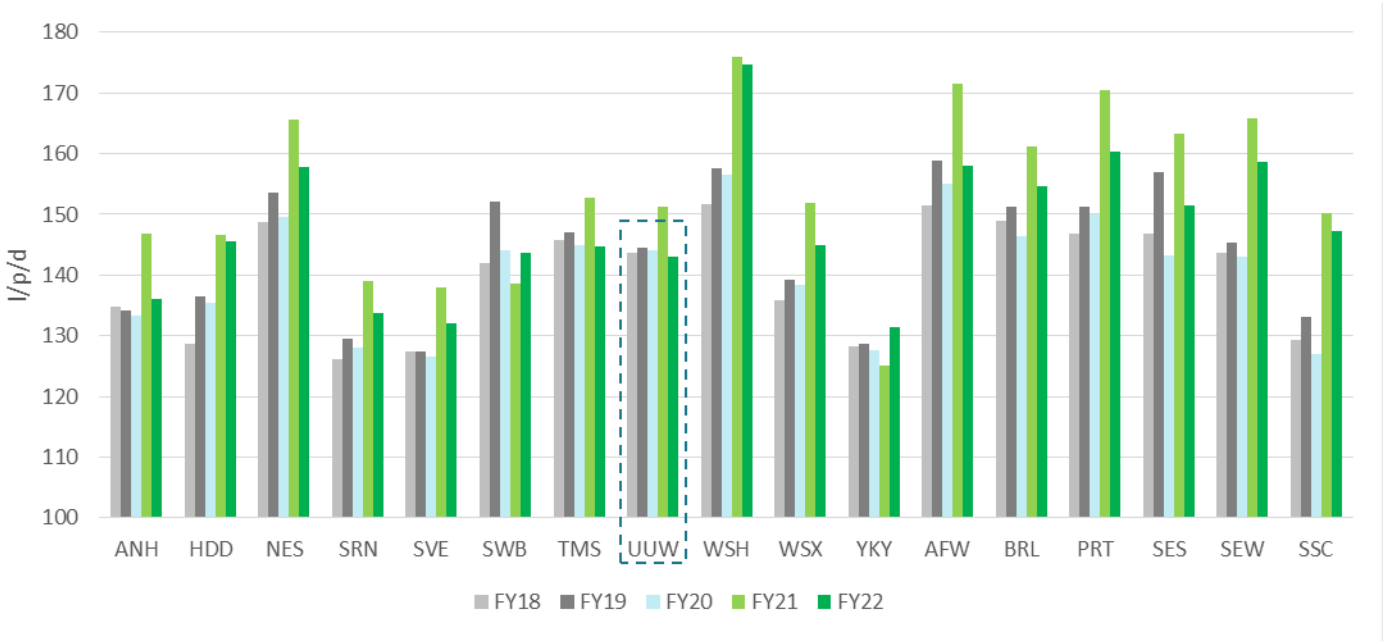
4.9.7 Upper quartile and frontier performance have been calculated and included in Table 43.

Table 43: Per capita consumption AMP7 UUW and industry performance and forecast data (l/person/day and 3 year average unless specified)

	Actual				Forecast		Percentage Improvement		
	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	AMP6 to 2023	AMP6 to 2025	AMP8 (PCL)
AMP7 PCL as % improvement from 2019-20 (three-year average)		1.3%	2.6%	3.9%	5.1%	6.3%	3.9%	6.3%	
UUW Performance (annual)	144.0	151.2	143.0	140.0	135.5	134.4			**9.7%**
AMP7 PCL	144.0	146.5	146.1	144.7	139.5	136.6			
UUW performance %age improvement from 2019/20 baseline		-1.7%	-1.4%	-0.5%	3.1%	5.1%			
Industry upper quartile	134.2	139.3	140.4	143.1	N/A	N/A			
Industry frontier	128.0	130.6	132.2	132.2	N/A	N/A			

4.9.8 UUW is performing close to industry upper quartile on a three year rolling average basis, with annual performance in 2022-23 better than upper quartile positions following better than average recovery from COVID-19 impacts.

Figure 33: Historic industry performance of Per Capita Consumption (PCC)



Source: UUW interpretation of Ofwat historical performance trends data share 2023

Historical expenditure included in the base expenditure models at PR24

4.9.9 We consider that the majority of performance improvement for PCC has been delivered by enhancement expenditure. For example:

- Through metering programmes
- Through demand-side supply/demand balance interventions.

4.9.10 As a result of this, in our response to Ofwat's data request on *'Performance improvements from base, enhancement and ODIs'*, we suggested that base expenditure delivered 10% of performance improvement. We consider that this allocation remains appropriate.

Company forecast of performance levels that can be delivered from base expenditure

4.9.11 The Revised WRMP baseline projections include changes in average annual PCC, based on trends in population, housing stock, and underling changes in household usage patterns. It also considers the impact of ongoing UUW water efficiency efforts as part base expenditure.

4.9.12 Traditional UUW base expenditure into water efficiency efforts has included, amongst other activities:

- Customer information and communication campaigns
- Information provision through UUW websites and school visits
- Targeted high measured usage and leakage notifications
- Free or subsidised water efficient device promotion, and
- Promotion of free meter options.

Performance levels of efficient companies

4.9.13 Based on 2022/23 industry APRs we estimate industry three year rolling average upper quartile performance at 143.1 l/p/d and frontier performance at 132.2 l/p/d. However PCC is a company specific measure, and as such efficient performance is judged through alignment of PCLs with our best value Revised Draft WRMP.

Opportunity for transformational performance improvements

4.9.14 Government targets call for a transformational reduction in PCC to 110 l/p/d by 2050. To achieve this level of change UUW will need to roll out water meters more widely, introduce new technologies such as smart meters, maximise customer engagement tools, develop new customer incentives and tariffs, work with industry and regulators to alter household appliance and plumbing rules and guidelines, support the setting of new standards for home building, and otherwise radically alter the way in which households consume water on a day to day basis.

Sources of Information used to set the PCL

4.9.15 Several sources of information were used to determine the PCC PCL:

- Our Water Resources Management Plan 2024 (WRMP24) has assessed the supply-demand requirements to ensure water resources resilience, as well as meeting the long-term and interim leakage targets in the Government's Environmental Improvement Plan[43] 2023;
- We have used the data on historical performance trends for PR24 data published by Ofwat[44] to forecast upper quartile performance; and
- We have used the Annual Performance Report (APR) Datashare 2023 to update our forecast of upper quartile performance using the reported data for 2022-23.

Dependencies or overlap with other PCs

4.9.16 No anticipated overlap with other PCs. Overall demand reduction will be dependent on delivery of Revised WRMP demand reduction programme, including smart meter fitting programmes.

Application of outperformance cap, underperformance collar or deadband

4.9.17 No cap, collar or deadband is proposed for this measure, although there is an enhanced incentive rate cap in line with Ofwat methodology.

Application of an enhanced incentive rate threshold

4.9.18 Provided the baseline to which the improvement factor is applied is UUW's proposed PCL, as opposed to a common PCL, then we do not propose deviating from Ofwat's approach of applying a common improvement factor to all companies, cross-checked against historical and forecast performance.

4.9.19 We propose a threshold for enhanced incentive rates at projected industry Frontier performance. We propose setting an enhanced incentive rate cap, in line with government long-term targets to bring PCC down to 110 l/p/d.

4.9.20 Applying a common incentive rate cap to all companies, cross checked against historical and forecast performance is proposed in line with Ofwat's methodology issued in December 2023

[43] https://www.gov.uk/government/publications/environmental-improvement-plan

[44] https://www.ofwat.gov.uk/regulated-companies/price-review/2024-price-review/pr24-cost-assessment-datasets/

4.10 PR24_NHH_Business Demand

4.10.1 This is a new performance commitment for AMP8 and the proposed PCL aligns with Revised Draft WRMP forecasts.

4.10.2 As the measure is not normalised across companies, stretching performance between 2025 and 2030 is set to ensure a trajectory towards achieving longer term government targets for business demand reduction is maintained.

4.10.3 We believe that changes in the volume of water used by a small number of very large users has the potential to materially alter performance against this measure in a way which is wholly outside of company control. A methodology for accounting for these high impact situations should be considered, as they are not related to the impact of investment or company action to reduce business demand. If they are not excluded then we propose that the penalty collar should be set at a rate to account for these high impact situations.

4.10.4 Table 44 outlines a summary of these proposals.

Table 44 PR24_NHH_Business Demand – summary, definition and parameters

Purpose and benefits	To incentivise companies to promote water efficiency to business customers to improve water resources supply/demand balance, reduce the need for water abstraction and increase water supply network resilience.
Definition	The percentage reduction of three year average business demand in Ml/d from the 2019-20 baseline. Incentive payments relate to performance changes expressed in Mega litres/day (Ml/d). Ref: *Business demand - PC definition 17th May 2023.*
Specific Exclusions	Specific exclusions defined by Ofwat in section 1.3 of the document 'Business demand – PC definition' v.01 in Dec 22.
Exceptions to Ofwat methodology	None however the information and assumptions made for leakage, per capita consumption and business demand PCs will be consistent and be based on the same water balance calculations. If any information is restated for one of the PCs, the others will also be restated if there is any impact on them.
Compliance Checklist	We have completed the compliance checklist provided by Ofwat as part of the performance commitment definition and are confident in meeting all of the reporting requirements.

Units: Percentage reduction from 2019-20 baseline	**Forecast**	**Company specific performance commitment level**				**Long term**
	2024-25	**2025-26**	**2026-27**	**2027-28**	**2028-29**	**2029-30**	**2049-50**
UUW PCL	2.5	4.0	4.9	6.1	7.2	8.3	14.1
Underperformance collar (Ml/day)		365.8	362.6	358.1	353.8	349.6	
Deadband				N/A			
Outperformance cap (Ml/day)		326.0	326.0	326.0	326.0	326.0	
Enhanced threshold				N/A			
Enhanced cap				N/A			

ODI Rates	
Rate per Mega litres/day (Ml/d)	
Marginal benefit	£0.52 million
Benefit sharing factor	70%
ODI rate	£0.36 million
Enhanced rate	N/A
Source: Ofwat Excel file "United Utilities - Indicative ODI rates - Jun23 - v3"	

Data table reference lines - AMP8: OUT1.11, Long Term Ref: LS1.11

4.11 Evidence to support business demand proposals

4.11.1 A company specific PCL, cross checked against historical and forecast performance, is proposed in line with Ofwat's methodology issued in December 2023 and we present evidence below for the calculation of this.

4.11.2 The sections outlines:

- How we have calculated our proposed PCL and how we justify its suitability with reference to the tests given in Ofwat's final methodology Appendix 9 section 4.4.3 on determining stretching performance improvements.

4.11.3 The PCL is linked to our WRMP projections for demand reduction with dependencies on Leakage and PCC as part of the water balance calculation.

Performance Commitment Levels

4.11.4 The proposed performance commitment levels are summarised in Table 45 below, shown in the context of historic performance and expenditure; what can be delivered from base expenditure; Industry performance and accounting for transformational improvements. Each element of this table is discussed in more detail in the following section.

Table 45 Business demand AMP8 Performance Levels achievable from base and enhancement expenditure with comparative industry information

	2025-26	2026-27	2027-28	2028-29	2029-30
PCL	360.3	357.1	352.6	348.4	344.1
Performance from base[1]	3.7%	3.9%	4.2%	4.4%	4.6%
Performance from enhancement[2]	0.3%	1.0%	1.9%	2.8%	3.7%
Industry upper quartile	Unable to calculate industry upper quartile or frontier as the measure is not normalised				
Industry frontier					
Outperformance cap	326.0	326.0	326.0	326.0	326.0
Underperformance collar	365.8	362.6	358.1	353.8	349.6
Deadband	N/A				
Enhanced outperformance threshold	N/A				

Data Table References: [1]OUT2.11, [2]OUT3.11

PCLs set at PR19

4.11.5 There was no AMP7 PCL, this is a new measure for AMP8

Historical outturn performance

Individual company performance

4.11.6 Historically business demand has been stable with a temporary reduction due to the impact of Covid19, and subsequent return to more typical demand levels in 2022/23. Following non-household retail market separation UUW stopped investment in business demand reduction activity, in line with market guidelines in place at the time. Following updates and clarifications to non-household retail market codes UUW has begun engagements with non-household customers and retailers to develop demand reduction propositions for 2025/26 onwards.

Industry performance

4.11.7 There is a wide range (Ml/day) of industry performance, depending on the number and type of businesses in the individual areas so it is not possible to compare percentage reductions or provide a normalised view across water companies.

Table 46 Business demand AMP7 UUW performance and forecast data Ml/day

	Actual				Forecast		Percentage Improvement		
	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2019/20 to 2022	2019/20 to 2024	AMP8 (PCL)
UUW Performance (3 year average)	375.4	361.2	353.5	351.7	364.7	365.9	5.9%	2.9%	**8.3%**

Source: OUT4.73

Historical expenditure included in the base expenditure models at PR24

4.11.8 Since 2011, changes in business demand have principally been driven by retailer interventions and external factors. External factors are a major driver of annual change, with issues such as prevailing weather patterns, economic trends, new business connections, and changes in standards and regulations all impacting usage. UUW (as the business is currently constituted) has made limited interventions over this period, with activity only taking place since 2020.

4.11.9 For the period 2011 to March 2017 (when retail markets opened) all activity was undertaken by non-household retail functions which are no longer part of UUW, and as such not included in historic base expenditure. Between April 2017 and March 2020 our understanding of regulatory guidance was that direct wholesaler activity to promote water efficiency with non-household customers risked breaching competition law, and as such no activity took place. Between April 2020 and March 2022, following a change in guidance around Competition Act implications we have undertaken a number of trials to assess opportunities for wholesaler-led water efficiency interventions.

4.11.10 Due to this, we have allocated water savings associated with demand reduction trials after 2020 to base. We have included all business demand reduction intervention as base investment as no wholesaler driven business demand reduction interventions were identified in WRMPs. This means we consider base expenditure has delivered 100% of performance improvements.

4.11.11 We note that as part of developing the Revised Draft WRMP we have forecast changes in underlying base demand to reflect the effects of changes in underlying business usage absent UUW enhancement investment.

Company forecast of performance levels that can be delivered from base expenditure

4.11.12 As there is no ongoing base expenditure for business demand reduction activity expected performance change is forecast based on underlying changes in business usage absent any UUW expenditure.

Performance levels of efficient companies

4.11.13 Business Demand is a company specific measure, and as such efficient performance is judged through alignment of PCLs with our best value Revised Draft WRMP.

Opportunity for transformational performance improvements

4.11.14 Government guidelines call for a transformational reduction in water demand, including Non-household demand. To achieve the desired level of change UUW will need to introduce new technologies such as smart meters, maximise customer engagement tools, develop new customer incentives and tariffs, work with industry and regulators to alter plumbing rules and guidelines, support the setting of new building standards, and otherwise radically alter the way in which water is used on a day to day basis.

Sources of Information used to set the PCL

4.11.15 Our Water Resources Management Plan 2024 (WRMP24) is the principle source of information used to determine the Business Demand PCL. It has been used to determine the supply-demand requirements to ensure water resources resilience, as well as meeting the long-term and interim demand reduction targets in the Government's Environmental Improvement Plan 2023.

Dependencies or overlap with other PCs

4.11.16 No anticipated overlap with other PCs. Overall demand reduction will be dependent on delivery of Revised WRMP demand reduction programme, including smart meter fitting programmes.

Application of outperformance cap, underperformance collar or deadband

4.11.17 Ofwat's PR24 final methodology proposes targeted use of caps and collars such as on those performance measures which are new and therefore more uncertain. As the Business Demand PC is one of the new performance commitments we therefore propose caps and collars for it.

4.11.18 In calculating a penalty collar we have had regard to the degree of financial risk/reward exposure experienced by UUW in AMP7. The Business Demand common PC is a new measure for AMP8, and is more exposed to uncontrollable external factors than most other PC measures. As such we propose a relative tight penalty collar for AMP8 to help mitigate the impact of large external events outside of company control that might affect company performance against the measure.

4.11.19 As a guideline to help calibrate the scale of acceptable exposure to external events we have used the impact on PCC performance experienced by UUW in AMP7 following COVID related restrictions. This large, uncontrollable event has potentially exposed UUW to financial penalties in the region of c. £10m over the course of AMP7 (dependent on performance over the remainder of the AMP). Using this as a broad guide to indicate maximum extreme event exposure we propose a penalty cap for Business Demand of £10m over AMP8 (£2m/yr). Using Ofwat indicative incentive rates, this gives a penalty collar which is 5.5Ml/d higher than annual PCLs.

4.11.20 To establish a reward cap we have considered the long term demand reduction targets set out in UUW's WRMP14. We propose that demand reduction beyond that required to maintain the long term supply demand balance in the UUW region does not deliver additional sustainability benefits, and as such does not need to be incentivised. Therefore we propose a reward cap set at the long term (2049/50) Business Demand targets in the revised draft WRMP24.

Application of an enhanced incentive rate threshold

4.11.21 Business Demand is a new measure for AMP8 and the measure is not normalised across companies. We therefore have reduced confidence in relative performance, and cannot reliably determine at this stage a frontier level of performance. As a result we do not think it would be appropriate to put in place enhanced incentive thresholds at this stage.

4.12 PR24_POL_Total Pollution Incidents

4.12.1 We put a lot of hard work into improving our performance on pollution, as we know it is a priority for customers and stakeholders. We are the leading company and have made great improvements over the past few AMPs. Our ambition is to maintain the leading position throughout AMP8. Reductions in numbers of pollution incidents have been across all types of pollution including 'serious pollutions' further detail of which can be found in section 4.15. Our ambition is to maintain the frontier position throughout AMP8.

4.12.2 In line with Ofwat's methodology we have proposed a common PCL, aligned with projected upper quartile to encourage the continued improvement in pollution incidents that has been achieved in the initial years of AMP7.

4.12.3 We have proposed a stretching target for AMP8 based on existing regulatory guidance[45] and using historical data published by Ofwat. This in itself is evidence of stretch because we are aware that there are proposed upcoming changes which could significantly impact future reporting and measurement of pollution incidents, and which if enacted now, would stretch the upper quartile of performance even further. The main pressures on the upper quartile position include: revision of the EA's operational instruction 16 02; improvements in storm overflows/retrospective spill reporting; and, roll-out of additional monitoring and increased situational awareness.

4.12.4 All assumptions are based on EPA v9; Recording and categorising water industry self-reported pollution incidents 16_02 v6; and, the current version of the Common Incident Classification Scheme (CICS) as specified in the Ofwat PR24 methodology (although note that version 10 of the EPA has since been issued). We will therefore report performance in AMP8 against this guidance and the PCLs set by Ofwat at Final Determination. If the Environment Agency guidance changes within the AMP8 period then the targets and methodology to categorise pollution incidents will remain aligned to this.

4.12.5 We have a robust pollution reduction plan[46] which details our approach to driving down pollution incidents including our investment in Dynamic Network Management (DNM) that uses real time information from the network to identify potential issues before they cause pollution.

4.12.6 As well as DNM we ensure effective maintenance of assets, alarm management, responding quickly when we are aware of an incident to protect the environment and having a robust reporting procedure to ensure we understand the root cause of pollution when it does happen, so steps can be put in place to prevent a reoccurrence.

4.12.7 Table 47 outlines a summary of these proposals.

[45] For the Total pollution incidents PC, the existing regulatory guidance is EPA v9; Recording and categorising water industry self-reported pollution incidents 16_02 v6; and, the current version of the Common Incident Classification Scheme (CICS)

[46] https://www.unitedutilities.com/corporate/responsibility/environment/reducing-pollution

Table 47: PR24_POL Total Pollution Incidents – summary, definition and parameters

Purpose and benefits	To incentivise the reduction in the number of pollution incidents that impact the environment and improve environmental quality.
Definition	Total pollution incidents is reported as the total number of pollution incidents (categories 1 to 3) in a calendar year emanating from a discharge or escape of a contaminant from a water company sewerage asset affecting the water environment. Ref: *Total pollution incidents - PC definition 9th May 2023.* This is in line with total pollution incidents metric set out in the reporting guidance from the Environment Agency's water and sewerage company Environmental Performance Assessment (EPA) methodology v9; Recording and categorising water industry self-reported pollution incidents 16_02 v6; and, the current version of the Common Incident Classification Scheme (CICS)
Specific Exclusions	In line with section 1.3 Total pollution incidents - PC definition. This metric includes incidents from the sewerage system and assets only and not the water supply (clean water) service (e.g. from the water distribution system and water treatment works).
Exceptions to Ofwat methodology	We will report performance in AMP8 against guidance in EPA v9 and the PCLs set by Ofwat at Final Determination. If the Environment Agency guidance changes within the AMP8 period then the targets and methodology to categorise pollution incidents will remain aligned to EPA v9 and the PCLs set at Final Determination.
Compliance Checklist	Ofwat has not provided a compliance checklist in the performance commitment definition. Reporting is in line with EPA, and has associated governance so there is high confidence that results are reliable and accurate.

Units: incidents per 10,000 Km sewer length	**Forecast**	**Common performance commitment level**				**Long term**
	2024-25	**2025-26**	**2026-27**	**2027-28**	**2028-29**	**2029-30**	**2049-50**
UUW PCL[47]	16.03	16.03	15.69	14.80	13.79	12.02	10.70
Underperformance collar				N/A			
Deadband				N/A			
Outperformance cap				N/A			
Enhanced threshold		13.96	13.54	13.16	12.65	12.02	
Enhanced cap		4.40	4.05	3.29	2.66	1.39	

ODI Rates	
Rate per number of incidents per 10,000 km sewer length	
Marginal benefit	£2.54 million
Benefit sharing factor	70%
ODI rate	£1.78 million
Enhanced rate	£3.56 million
Source: Ofwat Excel file "United Utilities - Indicative ODI rates - Jun23 - v3"	

Basis for PCL	The PCL is proposed in line with forecast upper quartile with the enhanced threshold at forecast frontier performance.

Reported annually on a calendar year basis. For example, 2025-26 value will be based on the calendar year 2025
Data table reference lines: AMP7: OUT8.8, AMP8: OUT1.12, OUT7.12, Long Term: LS1.12

[47] Performance has been calculated in line with the Ofwat's PR24 data table guidance for OUT5.32 to OUT5.41, this differs from the EPA v9 and Ofwat methodology

4.13 Evidence to support total pollution incidents proposals

Performance Commitment Levels

4.13.1 In line with the Ofwat methodology, we have proposed a common PCL for total pollution incidents with enhanced incentive rates that cannot be claimed unless zero serious pollution incidents has been achieved in that year.

4.13.2 This section outlines:

- How we have calculated the PCL and how we justify its suitability with reference to the tests given in Ofwat's final methodology Appendix 9 section 4.4.3 on determining stretching performance improvements.
- The dependency of changes to EPA guidance on the industry performance against this measure.

4.13.3 The information summarised below is shown in Table 48 below and Figure 34 demonstrate the proposed PCL in the context of the historic performance and forecast improvements that have been used to allocate the common target. Each of the elements is discussed in more detail in the following sections. It shows a continuation of high historic performance for UUW and the improvement of industry upper quartile.

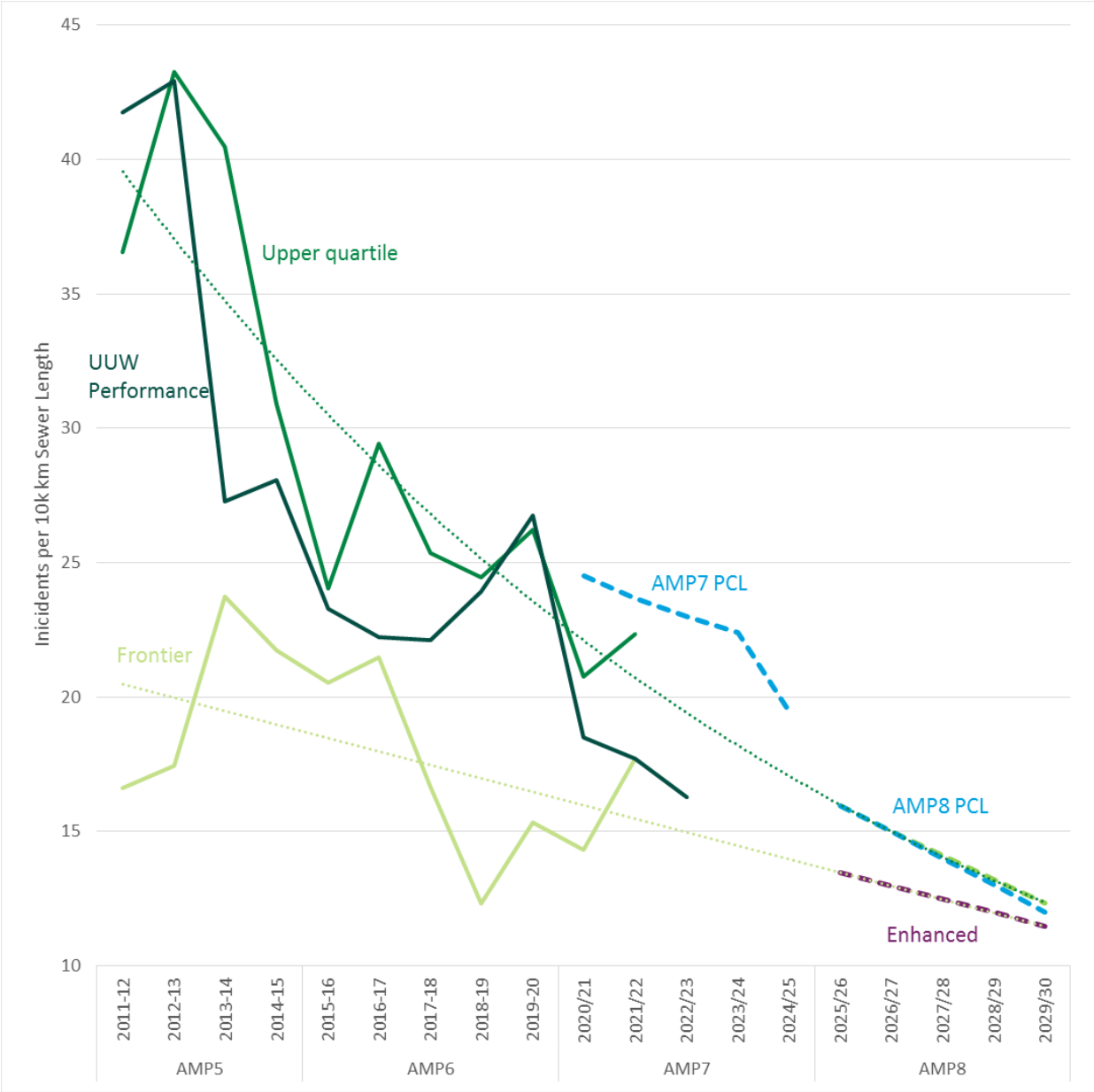
Table 48: Total pollution incidents AMP8 Performance Levels achievable from base and enhancement expenditure with comparative industry information

	2025-26	2026-27	2027-28	2028-29	2029-30
PCL	16.03	15.69	14.80	13.79	12.02
PCL (Incidents)	124	124	117	109	95
Performance from base[1]	16.03	15.69	14.80	13.79	12.02
Performance from base (incidents)	124	124	117	109	95
Performance from enhancement[2]	No forecast improvement as a result of enhancement expenditure				
Performance from enhancement (incidents)					
Industry upper quartile	16.60	15.70	14.75	13.85	13.05
Industry frontier	13.96	13.54	13.16	12.65	12.02
Outperformance cap			N/A		
Underperformance collar			N/A		
Deadband			N/A		
Enhanced incentive rate threshold (industry frontier)	13.96	13.54	13.16	12.65	12.02

Reported annually on a calendar year basis. For example, 2025-26 value will be based on the calendar year 2025.

Data Table References: [1]OUT2.12, [2]OUT3.12

Figure 34: Historic and forecast total pollution incidents performance and the application of the common PCL in the context of this



Source: Ofwat historic data share 2023 (v2.2.)

4.13.4 The PCL does not account for the potential risks or potential methodology changes highlighted in 4.13.13 such as the influence of weather, customer behaviour and increased public awareness. In addition to this, changes in how incidents are classified, the potential for retrospective reporting of EDM data during long duration spills as incidents and other as yet unknown risks that could lead to an increase in reported incidents cannot be accounted for in the design of the PCL.

4.13.5 This is an existing performance commitment and the methodology in line with current EPA reporting requirements. UUW's historical outturn performance compared to industry performance is shown in Figure 34.

4.13.6 Figure 34 shows that UUW is exceeding the current PCL (as are other WaSCs), and this has been accounted for when allocating the AMP8 PC, although it is expected to align with AMP7 target performance by the end of 2025.

Historical outturn performance

Individual company performance

4.13.7 UUW's proposed PCL delivers a 32% improvement in total pollution incidents comparative to our 2021/22 position. This is equivalent to a 71% improvement from our 2011/12 position. Comparative performance data can be seen in Figure 34. UUW has become a leading company for driving a reduction in total pollution incidents, and it is our ambition to maintain this position in AMP8. The AMP8 PCL goes beyond the current frontier position to deliver further improvement to the North West.

4.13.8 UUW has seen a step change in performance which has delivered frontier performance in 2021/22 and 2022/23, this has largely been enabled by the deployment of our industry leading Dynamic Network Management (DNM) initiative.

4.13.9 DNM has involved the installation of over 17,500 intelligent sensors, alongside enhanced monitoring on more than 1,500 point assets, across 160 drainage areas with the aim of developing an intelligent wastewater network. By improving the monitoring capabilities in 'hot spot' areas of our network and applying artificial intelligence to detect deviations from 'normal' flow signatures, we have been able to identify and resolve key causes of pollution, such as blockages, before customers are even aware of the problem. The proactive alerts generated by this network of sensors have detected over 2,500 blockages which have subsequently been cleared by our resolution teams. The position from which we launch in AMP8 has therefore already been enabled by a step change in our operating model in AMP7 and as such have been able to set the AMP8 target beyond the best industry performance to driver a further reduction in category 1 to 3 pollution incidents.

4.13.10 The roll-out of DNM has enabled a step change in pollution performance which supports a stretching target for AMP8, the improvements delivered by this technology are not cumulative and therefore will maintain the current position and only though optimisation and further deployment will additional benefits be seen. In addition there remains exogenous factors that influence annual performance. Figure 34 shows the variability of results based on historic data and the overall trend shows significant improvement across the industry.

Sector level performance

4.13.11 Recent industry performance has exceeded the performance forecast at PR19 (based on data within PR19 data table APP1), however annual performance is variable and is expected to align with predictions by AMP8.

Table 49 Total pollution incidents AMP7 UUW and industry performance and forecast data for AMP7

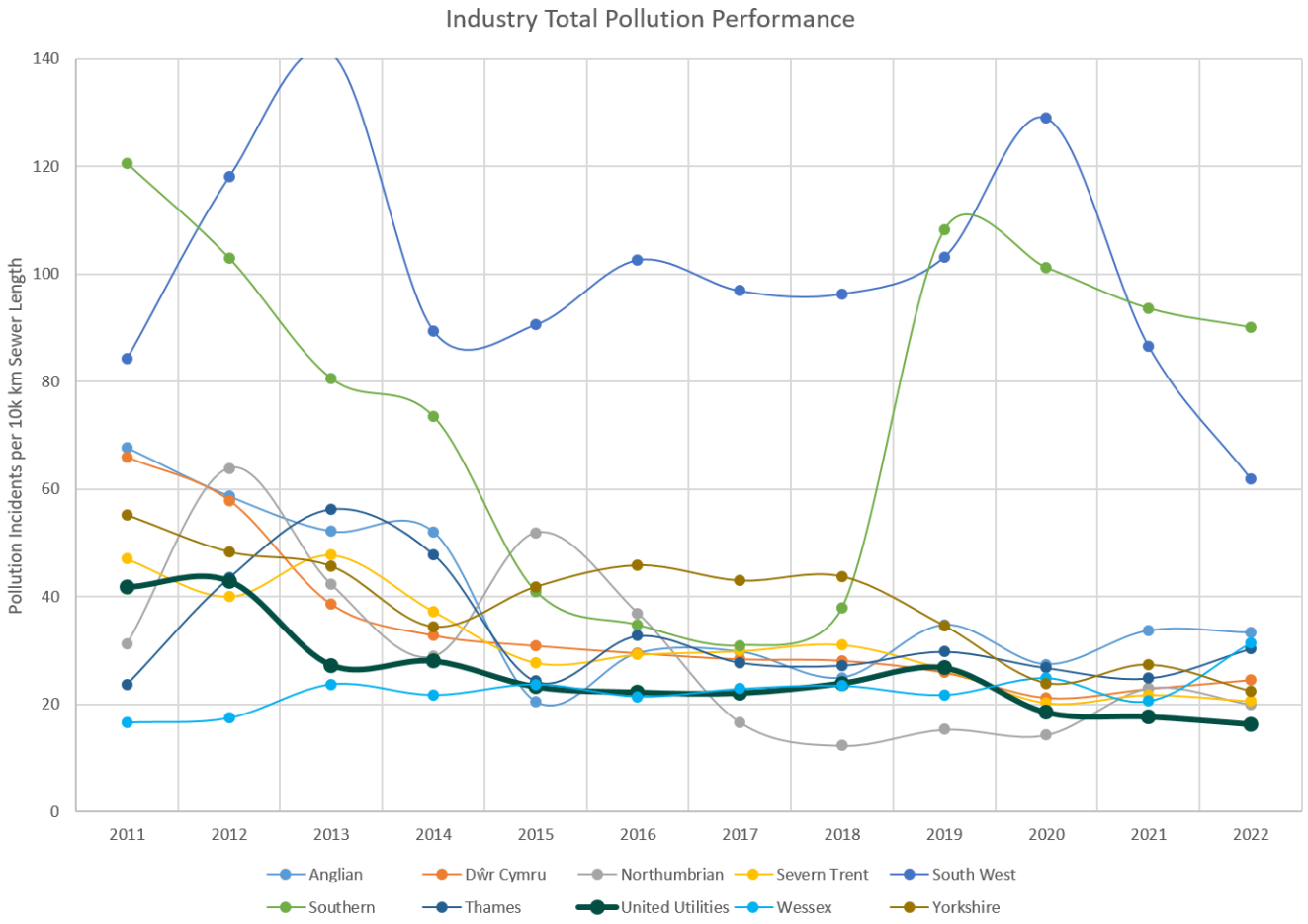
	Actual				Forecast		Percentage Improvement		
	2019 (AMP6)	2020	2021	2022	2023	2024	AMP6 to 2022	AMP6 to 2024	AMP8 (PCL)
AMP7 PCL		24.50	23.70	23.00	22.40	19.50	14%	27%	25%
Performance[1]	26.77	18.49	17.71	16.29	16.03	16.03	39%	40%	
Incidents	207	143	137	126	123	124			
Industry upper quartile	26.22	20.78	22.4	21.51	18.80	17.70	18%	32%	54%
Industry frontier	15.32	14.32	17.71	16.29	14.90	14.50	-6%	5%	22%

[1] Data table line reference: OUT8.8

These numbers align to Ofwat's historic reporting sheet as specified in PR24 guidance, rather than previous APR reporting.

4.13.12 Industry performance is reflected in Figure 35 and Figure 36 where performance for individual companies is variable year on year. There is significant improvement in performance from AMP5 for almost all companies, despite year on year variability (with exceptions).

Figure 35: Industry performance



Source: Ofwat historic data share 2023 (v2.2.)

Figure 36: WaSC historic pollution performance

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Anglian	LQ	LMQ	LMQ	LQ	Frontier	UMQ	LMQ	UMQ	LQ	LQ	LQ
Dŵr Cymru	LMQ	LMQ	UQ	UMQ	LMQ	UMQ	UMQ	LMQ	UQ	UMQ	UMQ
Northumbrian	UQ	LQ	UMQ	UQ	LQ	LQ	Frontier	Frontier	Frontier	Frontier	UMQ
Severn Trent	UMQ	UQ	LMQ	LMQ	UMQ	UQ	LMQ	LMQ	UMQ	UQ	UQ
South West	LQ	Worst	Worst	Worst	Worst	Worst	Worst	Worst	LQ	Worst	LQ
Southern	Worst	LQ	LQ	LQ	LMQ	LMQ	LQ	LQ	Worst	LQ	Worst
Thames	UQ	UMQ	LQ	LMQ	UMQ	LMQ	UMQ	UMQ	LMQ	LMQ	LMQ
United Utilities	UMQ	UQ	UQ	UQ	UQ	UQ	UQ	UQ	UMQ	UQ	Frontier
Wessex	Frontier	Frontier	Frontier	Frontier	UQ	Frontier	UQ	UQ	UQ	LMQ	UQ
Yorkshire	LMQ	UMQ	UMQ	UMQ	LQ	LQ	LQ	LQ	LMQ	UMQ	LMQ

Source: Ofwat historic data share 2023 (v2.2.)

Future risks and potential impacts

4.13.13 Proposed changes in regulation and categorisation are likely to increase the risk of category 1-3 pollution incidents recorded within a year and could lead to a deterioration of this UQ position. Some of the potential pressures are:

- **Revision of operational instruction 16 02** – The Environment Agency produce guidance on the recording and categorisation of water industry self-reported incidents, this is operational instruction 16 02 and is used by the EA and water companies. The industry categorise pollution events based on

16 02 version 6 (January 2012). In April 2022 the Environment Agency published new, draft guidance in 16 02 version 7, this was later withdrawn following industry feedback. Version 7 detailed additional duties on water companies to report events regardless of categorisation and impact and to report events to the Agency within unachievable timescales. UUW believes that this guidance, if adopted, would result in discharges to water course that have no environmental impact being categorised as category 3 pollution incidents therefore increasing the number of events reported within a calendar year. Discharges that have no environmental impact are currently reported and categorised as a level 4. In PR24 data table OUT5.39 175 category 4 incidents have been reported on average over the past 5 years. The number of category 4 incidents is difficult to predict as they are impacted by multiple factors we have used the current extrapolation of 2022/23 data to forecast the number incidents to 2035. If the guidance is updated it is likely that these category 4 incidents, that do not cause environmental harm and are not included within this performance commitment, will be categorised as a category 3 and there will contribute towards this performance commitment.

- We will report performance in AMP8 against guidance in EPA v9 and the PCLs set by Ofwat at Final Determination. If the Environment Agency guidance changes within the AMP8 period then the targets and methodology to categorise pollution incidents will remain aligned to EPA v9 and the PCLs set at Final Determination.
- **Storm overflows/ retrospective spill reporting** – knowledge of storm overflow operation has increased as a result of successful deployment of event duration monitors, these monitors detect discharge events and duration. Work is ongoing to develop analytical tools to identify potential data errors or operational issues resulting in premature activation, this is a significant task due to the volume of data. The Environment Agency has identified that water companies should report operation of storm overflows where a spill occurs in dry weather. UUW is working with our data analytics teams to develop this ability however the Agency has not provided water companies with the definition or methodology for assessing performance in this way. There is a risk that these events, which may not necessarily have an environmental impact, are categorised as pollutions. This has not been accounted for within our baseline or forecast.
- **Increased monitoring (emergency overflows)** – all emergency overflows will receive event duration monitoring (EDM) in AMP8, this will provide water companies with visibility of when these assets operate. UUW has more than 600 emergency overflows. If the newly installed EDM identifies assets spilling during storm events the Environment Agency may categorise these events as pollutions. This is currently an unknown as EDM data is not available. Resolution of any identified issues can take years as they would require investigation, potential significant investment to reduce infiltration and/or increase network capacity and potential permit variation. This risk is unquantified and has not been accounted for within our baseline.
- **Public awareness** – storm overflows and other discharges to the environment such as final effluent outfalls and culverts have been the subject of significant media attention within recent years. This has the potential to change public perception of discharges to watercourses. UUW will publish our EDM portal in 2023 which provides near real time data on all storm overflow discharges to the environment. This information will help customers to make informed decisions about how they use recreational waters in the North West, it will also provide data that can be used by educational research institutions and local activists. The increased awareness and availability of data may, in combination with the above points, result in more third party reported incidents.

4.13.14 This list is not exhaustive, and other potential pressures or changes in environmental reporting could impact performance against this measure.

Historical expenditure included in the base expenditure models at PR24

4.13.15 We consider that the majority (around 90 percent) of historical pollution performance has been driven by base expenditure. We will continue to seek performance improvements in base expenditure in

AMP8. However, we note that service improvements beyond historical levels are not reflected within historical expenditure. As such, this represents additional stretch in our plan.

Company forecasts of performance levels that can be delivered from base expenditure

4.13.16 Table 47 indicates the level of performance expected to be delivered from base that - with applied efficiencies to delivery - will meet the proposed PCL. There is currently no forecast improvements to be delivered from the enhancement programme.

Performance levels of efficient companies

4.13.17 The change in upper quartile demonstrates the industry improvement over time and outperformance of the AMP7 PCL is reflected in the AMP8 proposal.

Opportunity for transformational performance improvements

Dynamic Network Management (DNM)

4.13.18 UUW rolled out dynamic network management (DNM) in AMP7, this has seen the introduction of 17,500 wastewater monitors across the North West to inform predictive analytics to help identify blockages, collapses and other events before they can be detected by our customers or cause an environmental impact. The delivery of this system has been transformative to the way we operate and manage our wastewater network and has resulted in a significant improvement in performance. This is reflected in our frontier performance for reduction in total pollution events. Throughout AMP8 we will further develop and refine DNM to improve our analytical ability and maintain the performance that has been achieved through deployment of this system.

4.13.19 Building on the success of DNM, UUW propose to trial the concept at Windermere wastewater treatment works. The trial will explore how operation of wastewater treatment works can be altered to react to changes in weather, tourism and performance of nearby treatment work to further protect and enhance the environment in the North West. Due to the variable nature of treatment assets, dynamic management is not possible at all sites, however if the trial is successful, UUW will develop the concept further in AMP8 and AMP9 and will tailor activities to wastewater treatment works for the greatest environmental benefit.

Pollution Incident Reduction Plan (PIRP)

4.13.20 The Environment Agency introduced a requirement for WaSCs to produce a Pollution Incident Reduction Plan (PIRP) to drive improvement in industry performance. This plan details activities that will be undertaken by water companies to reduce pollution events and deliver benefit in AMP7. A number of these initiatives are long term activities that will continue and develop in AMP8 to drive additional improvement[48].

Table 50 Pollution Incident Reduction Plan activities

Initiative type	Initiative
Detect	Improve monitoring and control
	Recruitment of River Rangers
	Facilitate direct reporting to company by members of public
Investigate & Report	Improve procedures, governance and clarity of reporting
	Licence to operate scheme
	Role specific training on prevention, detection, response, investigation or reporting.
Prevent	Separation of surface water
	Customer awareness on blockage causes
	Maintenance task review

[48] More details and our PIRPs can be found on our website: https://www.unitedutilities.com/corporate/responsibility/environment/reducing-pollution/

Initiative type	Initiative
	Reduce misconnections
	Asset performance information to enable faster response and mitigation
	Asset availability information to enable mitigation and response
	Improve resilience to power loss
	Identify and remove blockages before they cause impact to customers or the environment
	Effective identification of causes and reduction in repeat events
	Retain expert third party services to quantify environmental impact after serious pollution
Respond	Plans to mitigate impact of climate change and extreme weather
	Designated response vehicles to limit pollution entry to watercourse
	Reduce risk and improve incident response time through enhanced monitoring and control and alarm management

Source: UUW Further details are included in our latest pollution incident reduction plan[49]

Sources of information used to set the PCL

4.13.21 Industry performance data (2011-2022) for total pollution incidents has been provided by Ofwat[50]. Using historic performance trends and FY23 APR data UUW has forecast the industry upper quartile and frontier performance for AMP8.

4.13.22 Assumptions from AMP7 performance commitment level has also been applied to the AMP8 PCL. The PCL has been set at industry upper quartile or better for 2025-26 to 2028-29 and frontier in 2029-30.

Dependencies or overlaps with other performance commitments

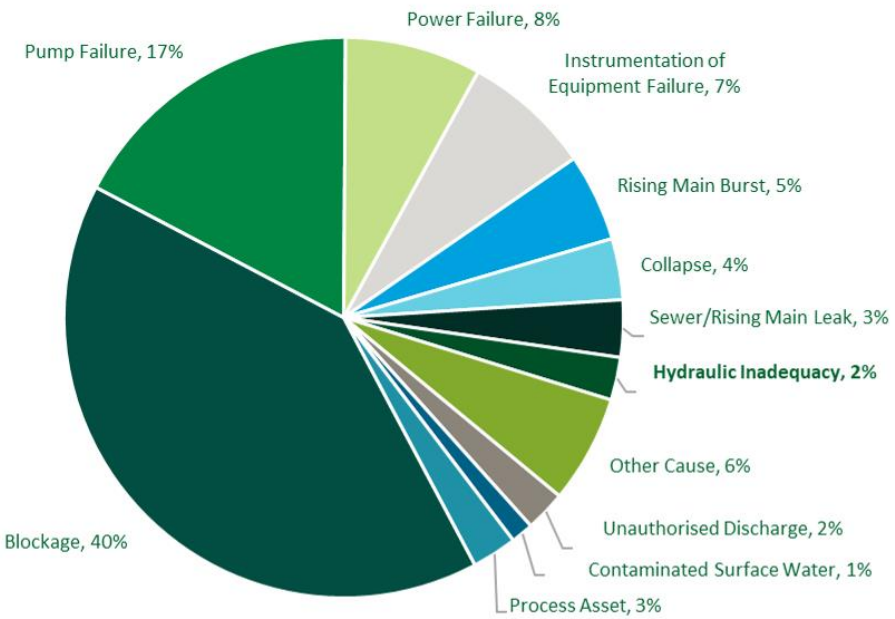
4.13.23 Improvements in performance can be directly attributed to initiatives that have been delivered from our base maintenance programme such as the implementation of smart networks though dynamic network management (DNM) and improved operational activities highlighted within our pollution incident reduction plan (PIRP), including power outage resilience. Future improvements have been forecast from the optimisation of DNM and further roll-out of this technology to more areas within the North West.

4.13.24 Figure 37 shows the causes of category 1 to 3 pollution incidents since 2018. The data shows the link between operation improvements and pollution performance, and highlights areas of opportunity such as blockages which account for 40% of all category 1 to 3 pollution events since 2018. Through DNM we are able to monitor sewer levels to identify the build-up of blockages before they result in a pollution. Due to similar root causes operational measures there may be some overlap in performance in which operational interventions may reduce the risk against multiple performance commitments, specifically flooding and pollution.

[49] https://www.unitedutilities.com/globalassets/z_corporate-site/responsibility-pdfs/pollution-incident-reduction-plan-2023.pdf

[50] Historical-performance-trends-for-PR24_V2.0-2: https://www.ofwat.gov.uk/publication/historical-performance-trends-for-pr24-v2-0/

Figure 37: 3 causes of category 1 to 3 pollution incidents (2018-2023)



Source: UUW analysis of incident data

4.13.25 Hydraulic incapacity accounts for 2% of all category 1 to 3 polluting incidents since 2018. There may be some overlap with the storm overflow reduction plan however this plan focusses on reduction of activations from storm overflows and not environmental impact as defined by the common incident classification system used for pollution incidents. Whilst there may be some improvement to hydraulic capacity this may only impact upon a small number of incidents and will not result in a step-change in performance.

4.13.26 Improvements in performance have been factored into the PCL where UUW has set the target at our AMP8 upper quartile forecast, all improvements are forecast from the base maintenance and not enhancement.

Application of outperformance cap, underperformance collar or deadband

4.13.27 No cap, collar or deadband are proposed for this measure in line with the Ofwat methodology.

Application of an enhanced incentive rate threshold

4.13.28 An enhanced incentive rate threshold is proposed at the forecast frontier performance, this is demonstrated as stretching and will encourage companies to exceed upper quartile performance and push the frontier level of performance.

4.13.29 An enhanced incentive rate cap has been applied, calculated at 1% of RORE, in line with Ofwat guidance. This can be found in Table 46.

4.14 PR24_SPL_Serious Pollution Incidents

4.14.1 Serious pollution incidents is a common performance commitment for PR24, reporting category 1 and category 2 pollution incidents from water and wastewater discharges in accordance with the Environment Agency's environmental performance assessment (EPA). UUW recognises the impact that these discharges can have on the receiving water environment and have set the PCL at zero, in addition our proposal aligns with the guidance that enhanced outperformance for total pollution incidents is dependent on achieving zero serious pollution incidents in the year.

4.14.2 The water industry strategic environmental plan (WISER) sets out government's environmental expectations for the water industry and achieving zero serious pollution incidents is a priority for PR24. We propose an additional reward gateway where zero pollution incidents is achieved for two consecutive years to driver continuous performance of zero.

4.14.3 As with total pollution incidents, all assumptions are based EPA v9; Recording and categorising water industry self-reported pollution incidents 16_02 v6; and, the current version of the Common Incident Classification Scheme (CICS) as specified in the Ofwat PR24 methodology (although note that version 10 of the EPA has since been issued). We will therefore report performance in AMP8 against this guidance and the PCLs set by Ofwat at Final Determination. If the Environment Agency guidance changes within the AMP8 period then the targets and methodology to categorise pollution incidents will remain aligned to this.

4.14.4 Table 51 outlines a summary of these proposals.

Table 51: PR24_SPL Serious Pollution Incidents – summary, definition and parameters

Purpose and benefits	To incentivise the reduction in the number of serious pollution incidents that impact the environment and improve environmental quality.
Definition	This commitment measures the number of serious pollution incidents (categories 1 and 2) for both water and wastewater discharges. The measure is not normalised. Ref: *Serious pollution incidents - PC definition 9th May, 2023.*
Specific Exclusions	In line with section 1.3 Serious pollution incidents - PC definition.
Exceptions to Ofwat methodology	In line with serious pollution incident methodology, we will report performance in AMP8 against guidance in EPA v9 and the PCLs set by Ofwat at Final Determination. If the Environment Agency guidance changes within the AMP8 period then the targets and methodology to categorise pollution incidents will remain aligned to EPA v9 and the PCLs set at Final Determination. We have also proposed the addition of an enhanced incentive applied following two consecutive years of zero serious pollution incidents.
Compliance Checklist	Ofwat has not provided a compliance checklist in the performance commitment definition (date Dec 2022) indicating the components used for reporting serious pollution incidents and our confidence in the accuracy of each when reviewing our performance. Reporting is in line with EPA version 9 and data is submitted annually, so there is high confidence that results are reliable accurate and complete.

Units: Number of serious pollution incidents	Forecast		Common performance commitment level				Long term
	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2049-50
UUW PCL	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Underperformance collar				N/A			
Deadband				N/A			
Outperformance cap				N/A			
Enhanced threshold				Proposed to apply for two years with zero incidents			
Enhanced cap				N/A			

ODI Rates	
Rate per number of serious pollution incidents	
Marginal benefit	£1.63 million
Benefit sharing factor	70%
ODI rate	£1.14 million
Enhanced rate	£2.28 million

Source: Ofwat Excel file "United Utilities - Indicative ODI rates - Jun23 - v3"

Basis for PCL	A target of zero serious pollution incidents with an enhanced reward gateway if zero serious incidents are achieved for two consecutive years. This gateway is based on historic performance of WaSCs where two consecutive years without a serious incident is rare.

Reported annually on a calendar year basis. For example, 2025-26 value will be based on the calendar year 2025.
Data table reference lines - AMP8: OUT1.13, Long Term Ref: LS1.13

4.15 Evidence to support serious pollution incidents proposals

Performance Commitment Levels

4.15.1 Applying a common PCL of zero serious pollution incidents is proposed in line with Ofwat's methodology issued in December 2023.

4.15.2 This section outlines:

- Why the application of a common PCL of zero pollution incidents is stretching but appropriate with reference to the tests given in Ofwat's final methodology Appendix 9 section 4.4.3 on determining stretching performance improvements;
- Why an enhanced incentive rate gateway is appropriate for this measure

4.15.3 The performance commitment levels are summarised in Table 52 below, shown in the context of what can be delivered from base expenditure; industry performance and accounting for transformational improvements. Each element of this table is discussed in more detail in the following section.

Table 52: Serious pollution AMP8 Performance Levels achievable from base and enhancement expenditure with comparative industry information

	2025-26	2026-27	2027-28	2028-29	2029-30
PCL	Zero serious pollution incidents				
Performance from base[1]	Zero serious pollution incidents				
Performance from enhancement[2]	No forecast improvement as a result of enhancement expenditure				
Industry upper quartile[51]	2	1	1	1	1
Industry frontier	Zero serious pollution incidents				
Outperformance cap	N/A				
Underperformance collar	N/A				
Deadband	N/A				
Enhanced outperformance threshold	To be applied following two consecutive years of zero serious pollution incidents				

Data Table References: [1]OUT2.13, [2]OUT3.13

Reported annually on a calendar year basis. For example, 2025-26 value will be based on the calendar year 2025.

PCLs set at PR19

4.15.4 There was no equivalent measure in AMP7

Historical outturn performance

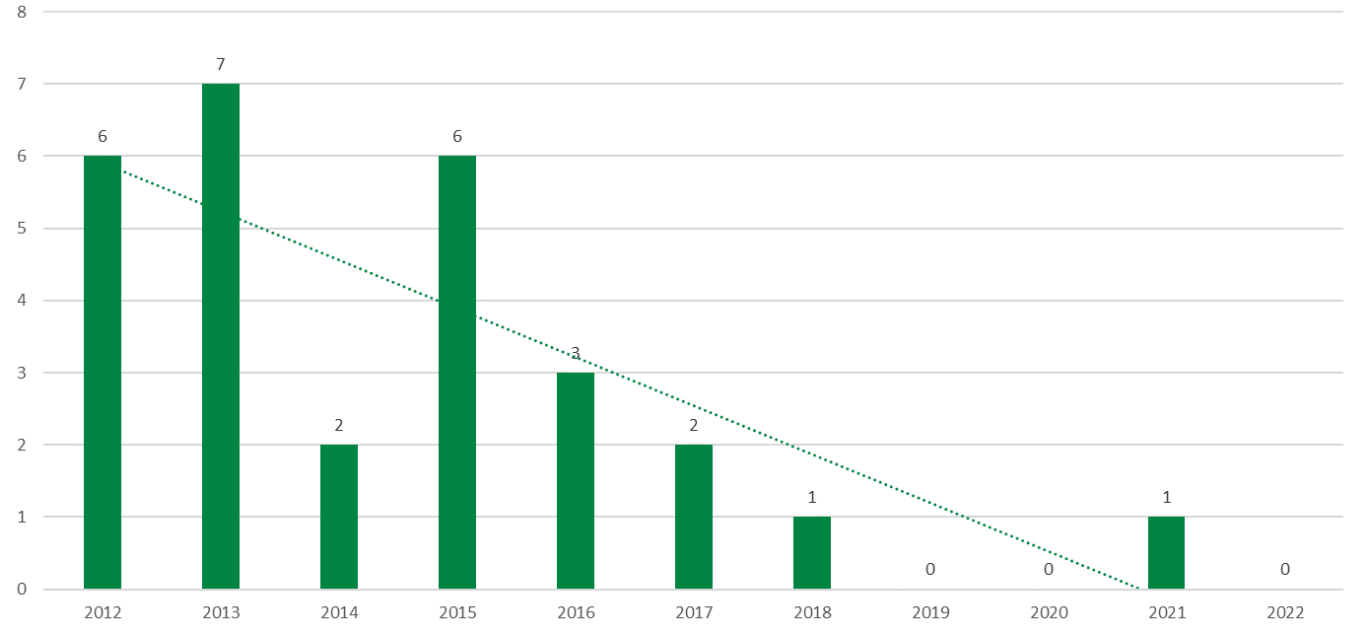
Individual company performance

4.15.5 UUW performance has improved significantly for serious pollution incidents in line with the industry, achieving zero for 2019, 2020 and 2022 (Figure 38). Pollution incidents have reduced as a result of operational improvements, enhancing our review process, investing in our people, assets and systems,

[51] *Upper quartile performance based on Ofwat data share for wastewater companies only.*

to create a smarter network (infrastructure and non-infrastructure). Through enhanced monitoring and improved operational responses, smart networks can identify changes to normal operation which can be proactively investigated before an incident occurs. This is helping UUW to reduce number of pollution events and deliver on our commitments to customers and regulators.

Figure 38 - Number of serious pollution events recorded by UUW from 2012-2022



Source: UUW analysis

Industry performance

4.15.6 Sector performance has improved since 2011 with the average number of serious pollution incidents from wastewater companies falling by over 50% and frontier companies achieving zero incidents, see Table 53 which shows the number of serious pollution incidents recorded by UUW in AMP7 comparative to the industry upper quartile and frontier (WaSCs only), in addition the table indicates the forecast upper quartile and frontier position based on data trends. UUW and HDD are the only wastewater companies to achieve zero serious pollution incidents in AMP7 and we are pushing the industry frontier to consistently achieve zero serious pollution events.

4.15.7 Water only companies have consistently achieved zero serious pollution incidents since 2011-12 with upper quartile and frontier both zero for this period

Table 53: Serious pollution AMP7 UUW and industry performance and forecast data

	Actual				Forecast	
	2019-20 (AMP6)	2020-21	2021-22	2022-23	2023-24	2024-25
UUW Performance	0	0	1	0	1	0
Industry upper quartile (wastewater)*	1	3	3	2	2	2
Industry frontier (wastewater)*	0	0	1	0	0	0

**Upper quartile and frontier performance based on Ofwat data share for wastewater companies only.*

Performance against this measure is impacted by external factors such as weather and customer behaviour. Changes in regulation or methodologies for categorisation of pollution incidents may also impact future performance, see section 4.13.13.

Historical expenditure included in the base expenditure models at PR24

4.15.8 Historical pollution performance has been driven entirely by base expenditure and we will continue to seek performance improvements in base expenditure in AMP8.

Company forecast of performance levels that can be delivered from base expenditure

4.15.9 As per OUT2, UUW will maintain zero serious pollution incidents through base expenditure and pollution incident management. Our plan to reduce total pollution incidents and eliminate serious pollution incidents is published on our website, here.

4.15.10 Environmental benefits of the WINEP and Advanced WINEP are not forecast to delivery any direct benefit to this measure as these programmes predominantly focus on nutrient reduction and spill frequency reduction to meet Water Framework Regulation and Environment Act requirements. Maintaining current operational service levels is managed though base expenditure.

Performance levels of efficient companies

4.15.11 The upper quartile and frontier performance for wastewater companies has been calculated from Ofwat's data share. Table 53 shows historic performance recorded by UUW comparative to the industry upper quartile and frontier, this data shows that UUW has been key in delivering improving performance which has helped drive down the industry upper quartile and frontier. UUW achieved two consecutive years of zero pollution incidents and has set the target at zero in AMP8 in line with the WISER priority to achieve zero serious pollution incidents.

Opportunity for transformational performance improvements

4.15.12 The benefits of Dynamic Network Management (DNM) is reflected in our frontier performance for pollution incidents over AMP7, this will continue into AMP8 to enable us to achieve zero serious pollution incidents.

Sources of Information used to set the PCL

4.15.13 This is not relevant for the PCL at zero, however historic performance has been used to determine the application of an outperformance gateway following two consecutive years of zero serious pollution incidents. Historic data shows that this is stretching (for WaSCs) but less so for WoCs, due to the additional assets that contribute to the risk of a pollution incident, and lack of normalisation in the reporting methodology.

Dependencies or overlap with other PCs

4.15.14 The enhanced outperformance for the total pollution incidents performance commitment can only be achieved if zero serious pollution incidents are recorded in the same year.

4.15.15 Due to the very small number of serious pollution incidents that occur within an AMP there is limited overlap with other measures. Investment in our workforce and wastewater systems through training, implementation of smart networks, improving asset health and optimising hydraulic capacity will all contribute to the elimination of serious pollution events however it is not possible to define the exact benefit of these interventions.

Application of outperformance cap, underperformance collar or deadband

4.15.16 A collar is not proposed for this measure.

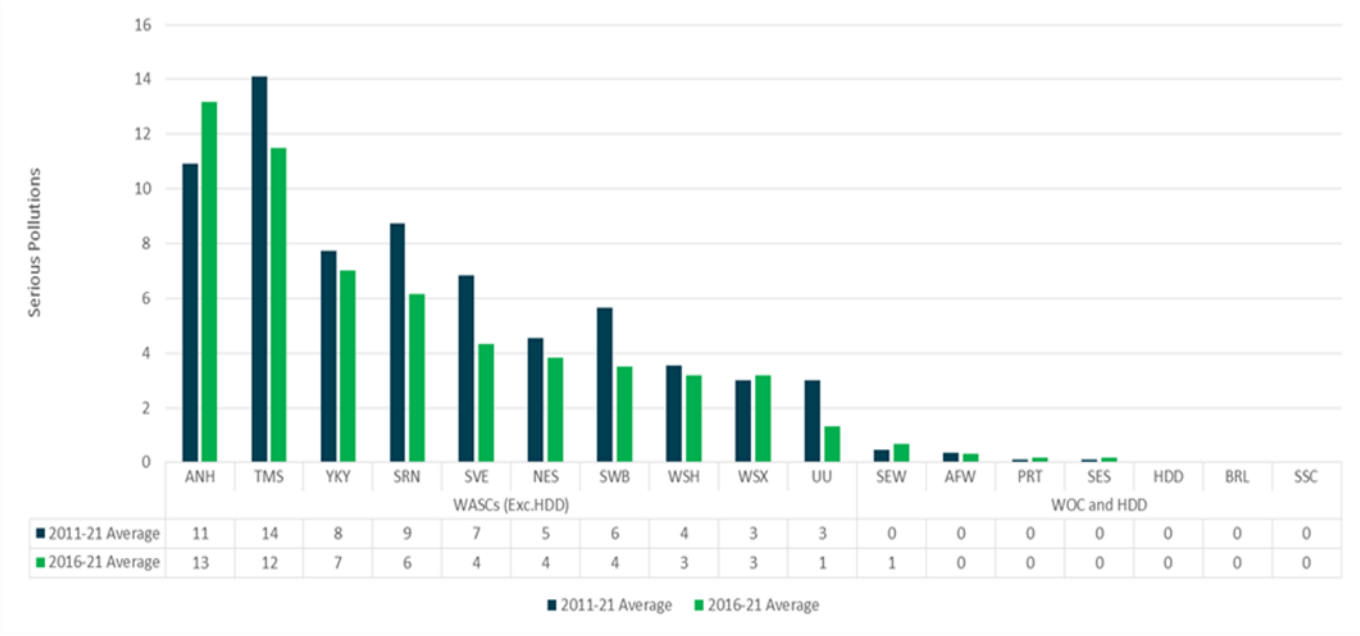
Application of an enhanced incentive rate threshold

4.15.17 An enhanced incentive is proposed for wastewater companies that achieve zero serious pollution incidents for two consecutive years.

4.15.18 Whilst sector performance has improved significantly since 2011, there is a clear need for wastewater companies to improve further. Figure 39 shows the average number of serious pollution incidents recorded by each company since 2011, this data identifies that water only companies have consistently

achieved zero serious pollution incidents where wastewater companies have reduced the number of serious pollution incidents only two companies have achieved zero pollution incidents in AMP7 (based on Ofwat's data share).

Figure 39: The average number of serious pollution incidents recorded by individual companies over time

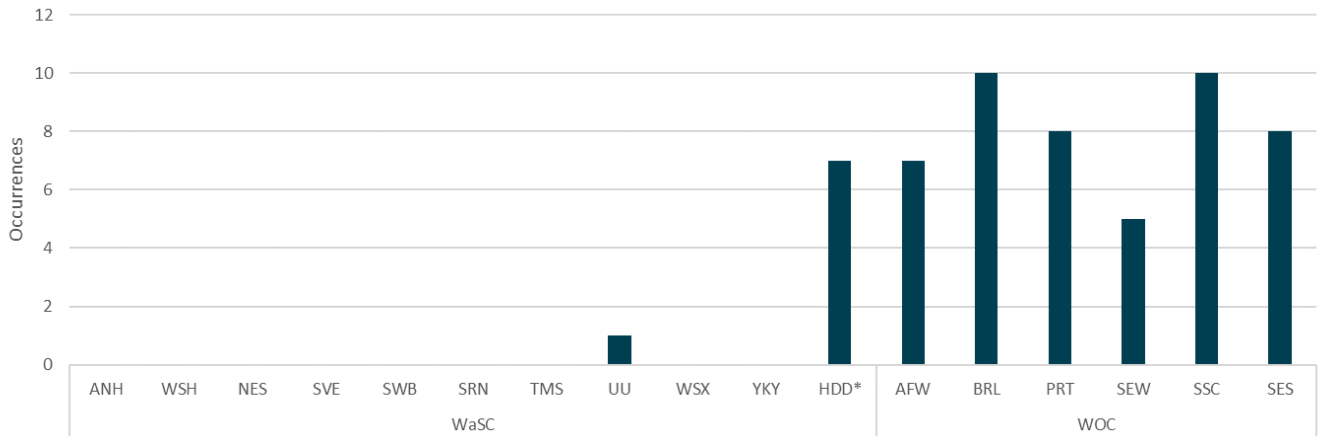


Source: APR data share 2023

4.15.19 Since 2011 only two wastewater companies (or WaSCs) have achieved two consecutive years of zero serious pollutions whereas all water only companies have achieved this, as shown in Figure 40.

4.15.20 Variation in performance can be due to a variety of factors, one explanation could be down to the number of potentially polluting assets within the asset base, water only companies have fewer network and process assets that could contribute towards this performance commitment and where data is usually normalised by sewer length to enable comparative assessment, this is not possible for water only companies. In addition the very small number of incidents recorded also makes it difficult for relative comparison.

Figure 40: The number of occurrences of two consecutive zero incident report years by individual companies



Source: APR data share 2023. Note: time period is 2011 to 2021 but HDD only has data back to 2014.

4.15.21 Historic data shows that frontier performance for wastewater companies has remained below three (since 2011) and is rarely held by the same company for multiple consecutive years. The water industry should continue to drive improvements in performance to consistently achieve zero serious pollution events.

4.15.22 UUW proposes an enhanced incentive rate for wastewater companies that achieve zero pollution incidents for two consecutive years. This timeframe would account for variations in external circumstances that may benefit this measure for any given year. This has only been achieved by two WaSC since 2011 and will promote continued improvements in risk management and response times for pollution events.

4.15.23 We propose an incentive rate at double the value given for one serious pollution incident at £1.14 x 2 = £2.28 million. Where this is achieved continuously, the reward will be implemented for each year it is achieved.

4.16 PR24_DPC_Discharge Permit Compliance

4.16.1 The target for this PC is 100 per cent which is extremely challenging but will drive improvement in river water quality.

4.16.2 The large WINEP in AMP8 with a focus on phosphorus removal is critical; with many new permit conditions set at the lowest level that is technically achievable; this follows on from the low phosphorus schemes in AMP7 which have seen the application of 17 permit limits at the lowest limit of 0.25mg/l by the end of the AMP. This requires innovative approaches in terms of solution development, and monitoring and control of our operational sites to help manage risk of discharge permit failure. For example UUW has made a move in AMP7 towards new technologies in terms of biological phosphorus removal rather than a reliance on chemical treatment, including the delivery of a Mobile Organic Biofilm (MOB) solution at Macclesfield Wastewater treatment works.

4.16.3 We propose setting a deadband for this measure of 99.0 per cent in line with the Environment Agency's (EA) Environmental Performance Assessment (EPA) methodology to reflect risks from external factors such as climate change and to align this performance commitment to the EPA, giving consistency and clarity.

4.16.4 Table 54 outlines a summary of these proposals.

Table 54: PR24_DPC Discharge Permit Requirements – summary, definition and parameters

Purpose and benefits	To incentivise companies to fully meet all discharge permit limits and help protect the environment.
Definition	The discharge permit compliance metric is reported as the percentage of wastewater treatment works (to treat and dispose of sewage) and water treatment works (for the water supply service) in line with their numeric discharge permit conditions. Ref: *Discharge permit compliance - PC definition 9th May, 2023.*
Specific Exclusions	In line with section 1.3 of discharge permit compliance – PC definition. Currently unusual weather exemptions to instances of exceptional hot weather impacting compliance are not part of the EPA methodology. We continue to work with the EA on this, but believe the extremely high temperatures we have seen in recent years as a result of climate change will become more prevalent in the future, and leads to increased septicity in networks on the wastewater treatment process and failure of electronic equipment due to ambient temperature above the design operating range. This supports the inclusion of a deadband to mitigate future risk.
Exceptions to Ofwat methodology	In line with discharge permit compliance – PC definition (unless EPA guidance changes reporting requirements for performance), We propose the inclusion of a deadband at 99% in line with EPA methodology for achieving 4* Environmental status.
Compliance Checklist	Ofwat has not provided a compliance checklist in the performance commitment definition. Reporting is in line with EPA, and has associated governance so there is high confidence that results are reliable and accurate.

Units: Percentage Compliance	Forecast	Common performance commitment level					Long term
	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2049-50
UUW PCL	99.0 (98.93 2dp)	100.0	100.0	100.0	100.0	100.0	100.0
Underperformance collar				N/A			
Deadband		99.0	99.0	99.0	99.0	99.0	
Outperformance cap				N/A			
Enhanced threshold				N/A			
Enhanced cap				N/A			

ODI Rates	
Rate per percentage non-compliant	
Marginal benefit	£4.11 million
Benefit sharing factor	70%
ODI rate	£2.88 million
Enhanced rate	N/A
Source: Ofwat Excel file "United Utilities - Indicative ODI rates - Jun23 - v3"	

Basis for Deadband	A target for 100% compliance with the addition of a deadband at 99% to align with the current Environmental Performance Assessment (EPA) methodology, version 10. This is necessary to mitigate the risk to compliance from external factors.

Reported annually on a calendar year basis. For example, 2025-26 value will be based on the calendar year 2025.
Data table reference lines – AMP7: OUT8.10, AMP8: OUT1.14, Long Term Ref: LS1.14

4.17 Evidence to support discharge permit compliance proposals

4.17.1 We have aligned our proposals to Ofwat's methodology for the application of a common PCL for this measure.

4.17.2 This section outlines:

- The potential impact on other performance commitments and business processes
- Why the application of a common PCL is stretching but appropriate with reference to the tests given in Ofwat's final methodology Appendix 9 section 4.4.3 on determining stretching performance improvements.
- Why a deadband is appropriate for this measure and the level to apply it at.

Performance Commitment Levels

4.17.3 The proposed performance commitment level and deadband is summarised in Table 55 below. There are no Penalty collar and Reward caps proposed for this measure. Each element of this table is discussed in more detail in the following section.

Table 55: Discharge permit compliance AMP8 Performance Levels achievable from base and enhancement expenditure with comparative industry information

	2025-26	2026-27	2027-28	2028-29	2029-30
PCL	100.0	100.0	100.0	100.0	100.0
PCL (number of failures)	0	0	0	0	0
Performance from base[1]	100.0	100.0	99.7	99.5	98.1
Performance from base (number of failures)	0	0	2	3	10
Performance from enhancement[2]	0	0	0.3	0.5	1.9
Industry upper quartile	99.4	99.4	99.4	99.4	99.4
Industry frontier	100.0	100.0	100.0	100.0	100.0
Reward cap			N/A		
Penalty collar			N/A		
Proposed deadband	99.0	99.0	99.0	99.0	99.0
Enhanced reward threshold			N/A		

Reported annually on a calendar year basis. For example, 2025-26 value will be based on the calendar year 2025. Reported to 1 decimal place (d.p.) in line with the EPA, the AMP7 performance commitment is to 2 d.p. Values in this table are to 1 d.p., PR24 data tables displayed to 2 d.p.

[1] See data table OUT2.14

[2] Performance from enhancement is as a result of delivering the supply and demand programme to accommodate growth within AMP8 at 12 locations. The number of failing works given in the above table is profiled based on current project delivery programme, and assumes 2 of the 12 projects within the S&D scheme won't attract numeric permits due to remaining under the 250 population equivalent threshold as per the urban wastewater treatment directive (UWWTD).

PCLs set at PR19

4.17.4 The PR19 PCL was 100 per cent, with a deadband set at 99.0 per cent. EPA performance target is 100 per cent; the threshold for 'green' in the discharge permit compliance (numeric) metric is 99.0 per cent.

4.17.5 We have calculated the UQ for PR24 using Ofwat's historical data set and provide that in Table 56 below. This shows that 100 per cent compliance is rarely achievable for WaSCs, despite significant investment.

Historical outturn performance at an individual company and sector level

Individual company performance

4.17.6 Historically, 100 per cent has been very difficult to achieve with the existing number of discharge permits.

Table 56- Discharge permit discharge compliance AMP7 UUW and industry performance and forecast data

	Actual				Forecast		Percentage Improvement		
	2019 (AMP6)	2020	2021	2022	2023	2024	AMP6 to 2022	AMP6 to 2024	AMP8 (PCL)
AMP7 PCL	N/A	100	100	100	100	100	100	100	
AMP7 PCL (Failing works)	0	0	0	0	0	0	0	0	
Performance	98.47	99.75	98.98	98.45	98.96	98.96	-0.1	0.5	**100%**[1]
Performance (Failing works)	6	1	4	6	4	4	0	0	
AMP7 Deadband	-	99.00	99.00	99.00	99.00	99.00			
Industry upper quartile	99.20	99.70	99.01	99.38	99.38	99.39	0.2		

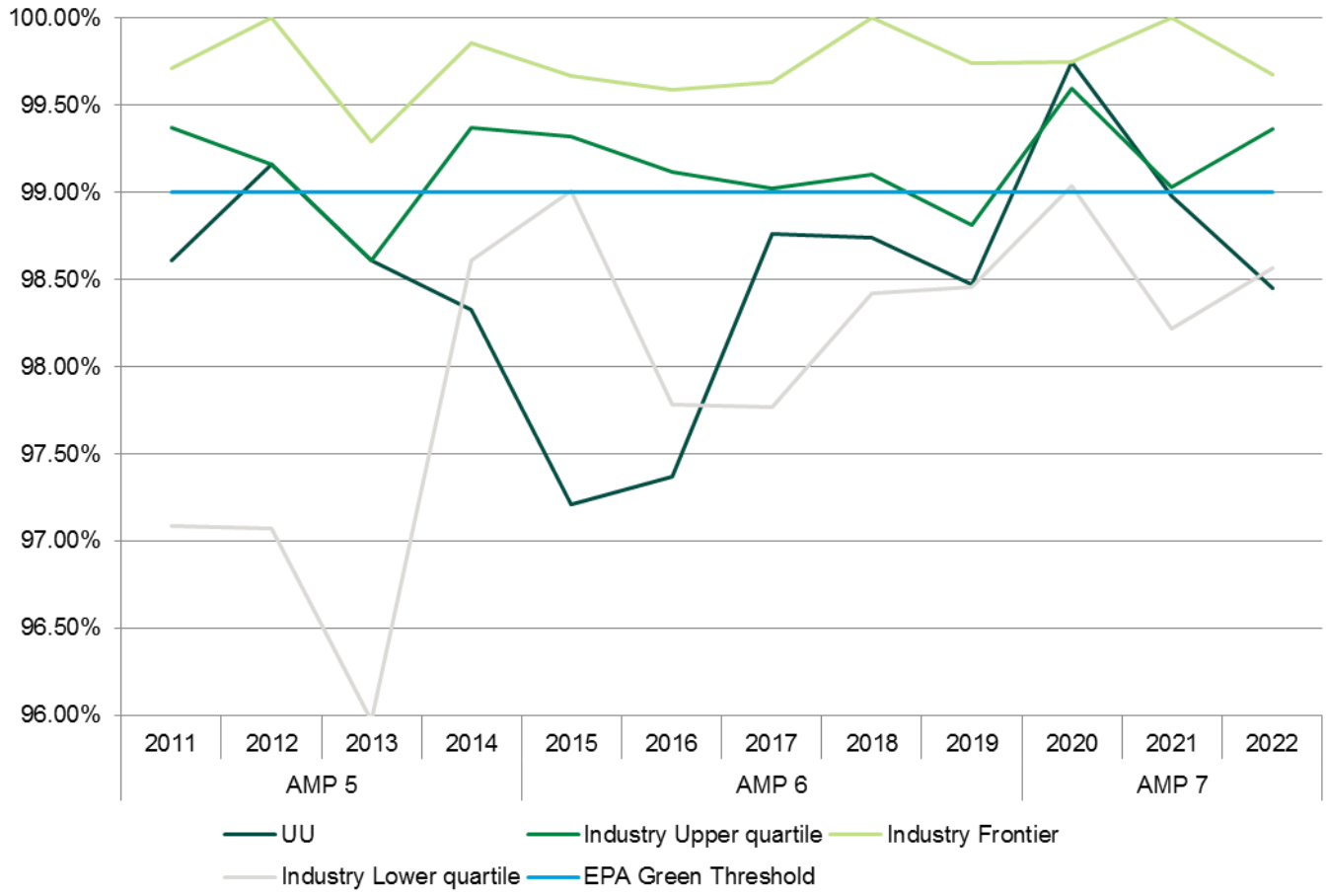
Reported annually on a calendar year basis to 2 d.p. For example, 2025-26 value will be based on the calendar year 2025

[1]Calculated as reduction in number of failing works

4.17.7 Historic Performance is variable, but has been generally improving since 2015, with 2020 resulting in our best performance of 99.75 per cent and one failing treatment works. The number of numeric permit conditions has increased each year throughout AMP7, with around 1 per cent of the total being non-compliant. Permit limits continue to tighten, with many of the new limits at the boundaries of technical feasibility, phosphorus limits of 0.25 mg/l for example. We have been able to achieve these new limits by innovations in treatment and improving operating procedures. Section 4.17.20 goes into more detail about some of the activities undertaken in AMP7 to drive improvements in performance for this measure.

4.17.8 Figure 41 below shows UUW's historic performance compared with the rest of the industry.

Figure 41 UUW Historic Compliance Performance (%)



Source: UUW APR data 2023, OUT8, and UUW interpretation of Ofwat historical performance trends data share 2023

4.17.9 UUW achieved 4 star EPA rating for five of the eight years since 2015, with the remaining years achieving 3 star status. We dropped to a 3 star rating in 2022 as a result of not achieving the newly categorised core metric of 99.0 per cent for discharge permit compliance, despite having a green rating for all other measures. This dip in performance is disappointing as we were proud of our leading company status in the industry for EPA 4 star rating.

4.17.10 Plans are in place to recover this position for the rest of the AMP and beyond, with 'at risk' works subject to intensive care plans, and we are forecasting an improved performance of 99.0 per cent for this measure for the remaining two years of AMP7. This is part of our focus to regain our 4 star EPA status and our drive forward for improved compliance. Performance deterioration was caused by having 6 failing works in 2022; of these, we have raised a complaint lodged with the EA regarding the rejection of abnormal weather waivers for two of the sites classed as failing. Two of the other failing works were as a result of one off incidents with no further regulatory failures after they became a failing works in early April of 2022.

4.17.11 This deterioration in performance does highlight how difficult it is to maintain 100 per cent compliance at all times, and why a deadband would be appropriate for this performance measure to mitigate against one off operational incidents as well as aligning to the EPA.

Sector level performance

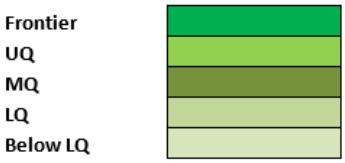
4.17.12 The industry range of performance is variable. Table 57 below shows percentage compliance and comparative position in terms of performance. No one company has consistently maintained a frontier position, although the general trend is an improvement in performance from 2016 to 2022, with the gap between companies closing compared to performance at the start of AMP6. Table 57 shows that even

those companies achieving the frontier position one year slipped to below low quartile in subsequent years, Severn Trent in 2017, and Wessex in 2018.

4.17.13 The upper quartile metric has decreased slightly over AMP7 to date, illustrating how difficult it is to maintain performance consistently.

Table 57 Industry % discharge compliance historic performance

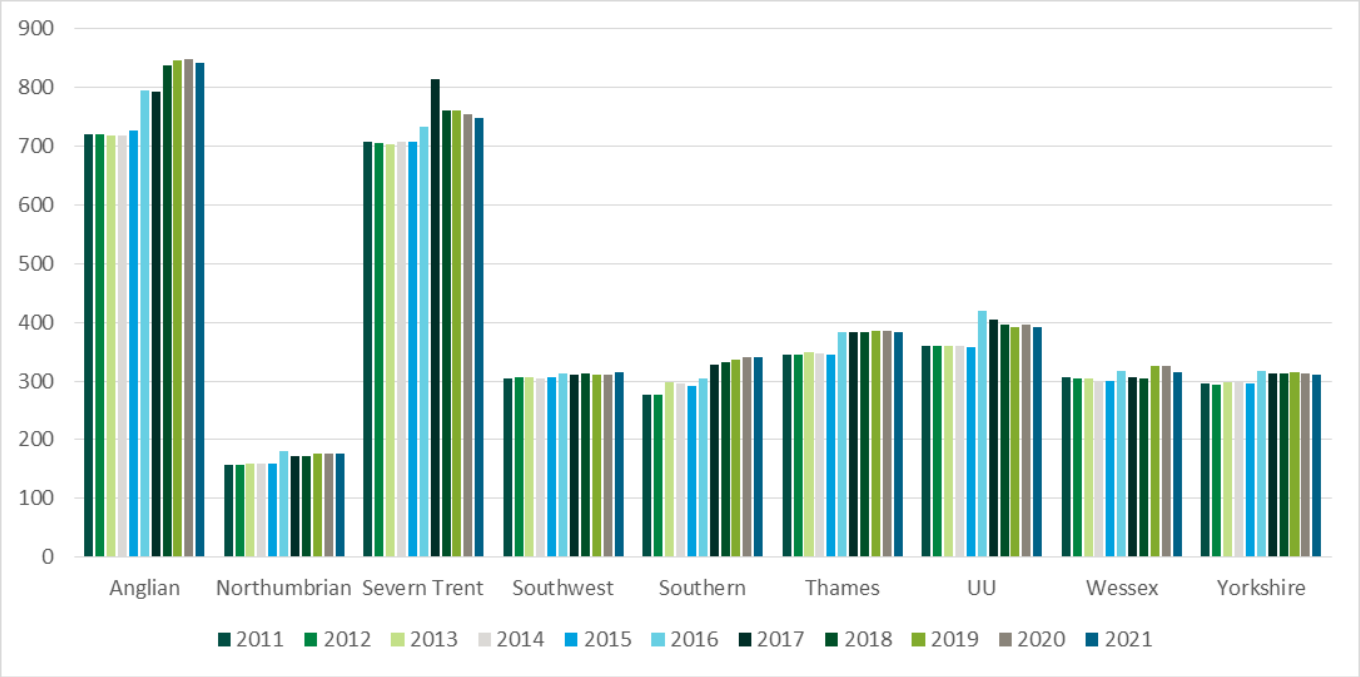
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Anglian	97.09	98.06	97.49	98.61	99.04	99.12	98.61	98.21	98.58	99.29	98.22	98.57
Northumbrian	99.37	100.00	98.11	99.37	99.37	97.78	95.95	99.42	96.59	99.44	98.30	98.87
Severn Trent	97.46	99.15	99.29	99.86	99.01	99.59	99.63	98.42	99.61	99.60	99.33	99.33
Southwest	90.13	97.07	92.48	96.07	95.77	98.08	97.10	98.72	98.71	99.04	97.46	99.37
Southern	96.03	96.75	95.97	98.98	99.31	98.68	98.17	99.10	98.81	97.06	97.94	98.22
Thames	99.71	99.13	95.71	98.85	99.13	97.91	99.48	98.96	99.74	99.74	98.96	99.48
UU	98.61	99.16	98.61	98.33	97.21	97.37	98.76	98.74	98.47	99.75	98.98	98.45
Wessex	99.67	99.67	99.02	99.67	99.67	99.37	99.02	100.00	98.46	99.08	100.00	99.35
Yorkshire	97.29	95.24	97.98	99.33	99.32	97.17	97.77	97.45	97.47	99.04	99.03	99.68



Source: EA Environmental Performance Report 2021

4.17.14 EPA data is available prior to AMP 6, however the metric did not include water treatment works discharges until 2016, see Figure 42 below to see the impact across the industry. As such, earlier data is not consistent with the AMP7 performance commitment nor the proposed AMP8 performance commitment definition. AMP8 will include water only companies in this measure. This is a new measure for Water only Companies (WoCs), so it is unknown how their inclusion will impact the industry average and upper quartile performance statistics as there is no historic EPA data available to use to calculate this.

Figure 42: Industry Number of total discharges included in assessment



Source: EA Environmental Performance Report 2021

4.17.15 Water treatment asset waste discharges are a recurring factor in the variability of industry performance, with companies averaging one failing water discharge per year despite the number of water discharges being the smaller proportion of the overall total number of discharges. In 2021, only two companies achieved 100 per cent compliance at water treatment works.[52]

4.17.16 Water discharge permitting limits reflect that the nature of the discharge is trade effluent to controlled waters, rather than treated sewage effluent. The common use of absolute limits rather than percentile limits means that treatment deterioration more readily creates failing works. UUW has progressively sought to mitigate water discharge asset risk by removing discharges to environment where practicable or by operational intervention where this is not possible. The number of water treatment works permits held by UUW has reduced from 50 in 2016 to 12 in 2022 as a result of this focus. Based on these action we are assuming we will have zero failing water treatment works for the remainder of AMP7 and beyond.

Historical expenditure included in the base expenditure models at PR24

4.17.17 Historical expenditure is in line with EPA requirements to meet >99% compliance of wastewater and water permits in order to protect the environment.

4.17.18 This allowance will not, however, be sufficient to hit Ofwat's proposed 2025-30 PCL of 100% compliance target for wastewater treatment permit requirements. No wastewater companies have consistently achieved this performance consistent with this. This means that the costs of achieving the 100% compliance target are not present within the historical dataset and therefore cannot be allocated by the current cost models. Indeed, in order to be able to consistently achieve 100% compliance, a fundamental reconfiguration of our wastewater treatment processes would be necessary – such cost allowances or historic operating costs are not included in the current cost models.

4.17.19 For AMP7 we said we would gain

- Ability to remotely forecast failure of critical assets.

[52] https://www.gov.uk/government/publications/water-and-sewerage-companies-in-england-environmental-performance-report-2021/water-and-sewerage-companies-in-england-environmental-performance-report-2021#compliance-with-licences-and-permits

- Asset analytics with near real time information to inform interventions
- Improved competencies across maintenance value chain.

4.17.20 We did this by:

- Further developing our maintenance excellence programme, with a focus on preventative maintenance and condition based monitoring of our assets. This focus allows us to intervene before assets fail, reducing the risk of discharge compliance issues.
- Operationally we have set up regional control hubs across the region, coordinated by our central remote monitoring and control centre. Dashboards have been created to provide better visualisation of asset availability, and the ability to remotely reset some assets.
- The improved level of central coordination and data gathering has allowed for more trend based data analysis, which in turn provides field teams with better monitoring data to help optimise treatment processes. Communication of information and data trends being made to field operational teams by means of a weekly 'comm cell' meeting.
- A critical spares warehouse has been set up to provide a quicker replacement system when assets fail, another initiative designed to reduce asset downtime, in turn reducing the risk of discharge permit compliance failure.

4.17.21 Maturation and further development of these initiatives towards and throughout AMP8 is discussed further in section 4.17.27.

Company forecasts of performance levels that can be delivered from base expenditure

4.17.22 We believe base expenditure will allow us to achieve the performance as shown in Table 54 but enhancement expenditure from the supplementary document *UUW65 Wastewater quality enhancements (Ww Supply Demand)* is also required in order to achieve this PCL 100% target.

4.17.23 100 per cent is an extremely stretching target, with the increased number of more stringent permit conditions we will have to comply with in AMP8. The number of sites with a phosphorus (P) permit limit is expected to increase from 64 in 2020 to 167 by 2030 due to additional environmental improvements. Sites with new phosphorus limits will also receive additional permit limits for iron or aluminium where chemical dosing is used as the treatment solution, thereby increasing the number of conditions to comply with. By the end of AMP8 we anticipate we will have 27 per cent more numeric permit conditions to comply with.

4.17.24 External factors such as climate change are increasing the risk of being able to comply with permit conditions and whilst we believe water companies are better able to mitigate against this than our customers, operating our treatment works in extreme weathers increases risk. Unusual weather exemptions apply to cold weather only, and in 2022 we experienced issues caused by extreme hot weather that we had never previously seen. We continue to learn from these experiences and put mitigation in place where possible but there may be future risks we haven't yet anticipated.

4.17.25 The spill programme to address storm overflow discharges is likely to result in our treatment works receiving at times of heavy rainfall, more dilute effluent and at higher flow rates for longer duration. The ability to adapt our treatment processes to deal with extremes of climate and the resulting changes in sewage composition is challenging, and will become more so as permits limits become lower.

Performance levels of efficient companies

4.17.26 For the first two years of AMP7 upper quartile performance was 99.7 and 99.01 respectively.

Opportunity for transformational performance improvements

4.17.27 We continue to drive improvements in the way we manage compliance at treatment works, and have a number of initiatives underway:

4.17.28 Monitoring and control centre: monitors assets 24-7. We continue to develop our systems operating strategy to provide enhanced monitoring control and planning capability. This involves using robotics to manage high level alarms in wet weather for example and we continue to develop derived alarms to aid decision making to help manage the compliance risk.

4.17.29 Maintenance excellence: We recognise that asset failure is commonly a root cause of compliance failure and to mitigate against this we are continuing to focus on preventative maintenance. As we further develop our maintenance excellence programme. In addition we are able to react more quickly to asset failure by having localised stores to minimise asset downtime, and are standardising our asset base wherever possible to reduce the number of critical spares we need to hold.

4.17.30 Modular treatment: By investing in modular treatment assets we are able to increase speed of deployment where we need to react quickly to unplanned issues, and further moves towards standardisation of equipment and operations for planned maintenance leading to efficiencies.

4.17.31 Following the success of our Dynamic Network Management (DNM) programme we will be taking the DNM concepts and applying them more widely to wastewater treatment

Sources of information used to set the PCL

4.17.32 The PCL of 100 per cent has been proposed by Ofwat.

4.17.33 Data share information provided by Ofwat has been used to understand industry comparative performance.

Impact on other performance commitments

4.17.34 Failure to achieve compliance at wastewater treatment works can also have a negative impact on four other common performance commitments.

- **Serious pollution incidents and total pollution incidents:** While the majority of total pollution incidents is driven by performance of the wastewater network, pollution incidents at wastewater treatment works are also recorded and included in the metric. Environment Agency guidance also requires companies to report a discharge as a pollution event if it becomes aware that a controlled discharge is significantly deviating from the permitted limits. This could be included in both the total and serious pollution performance commitments depending upon level of Impact. Conversely, maintaining high discharge compliance performance has a positive effect on the pollution performance commitments by lowering the number of potentially reportable incidents.
- **River water quality (phosphorus)**: This new measure is aimed at incentivising additional phosphorus removal over and above permit limits in order to remove more of this nutrient from the environment. Permitting limits for phosphorus are typically introduced as annual average or rolling 12 month average compliance. Performance against these limits will influence the reportable load of total phosphorus removed and the under or out performance of this performance commitment. Failure to achieve the phosphorus permit limits could contribute to under performance of this measure as well as discharge permit compliance.
- **Bathing water quality**: Historic drivers for improvement of bathing water quality were in part met through the introduction of UV disinfection plants as tertiary treatment at wastewater treatment works discharging to a designated bathing water. Annual performance against UV compliance conditions and daily minimum dosing conditions is included within the discharge compliance performance commitment criteria. A failure in these assets would impact the discharge compliance metric and have a potential detrimental effect on the receiving bathing water.

Application of Deadband

4.17.35 We propose a deadband should be set at 99.0 per cent compliance to align this PC with the EPA methodology. This is now a core metric, required to achieve four star 'Industry leading Company' categorisation. Without achieving at least 99.0 per cent discharge compliance, a company is unable to

achieve the highest 4 star status even if all other metrics are green. As this is the standard set by the environmental regulator it is an appropriate deadband for companies. Failing to achieve 99.0 per cent compliance caps EPA performance rating at three star (Good Company categorisation) even if all other measures are green.

4.17.36 Further to this point, with no deadband and a target of 100 per cent, a company would still be penalised via this performance commitment even when performance assessed as 4 star by the environmental regulator.

4.17.37 The RAG thresholds set are based on the EA Water Industry Strategic Environmental Requirements (WISER) expectations. The trigger limits are based on statistical analysis of the dataset and the EA expectations of the sector. We therefore consider it appropriate for a deadband to be maintained and aligned to the Environmental Regulator's expectations. We also consider that alignment to the well-established performance threshold ensures clarity and consistency for customers whilst still incentivising progressive improvement to 100 per cent. We anticipate that the periodic data reviews by the EA to inform the RAG thresholds set in the EPA metrics ensures that continuous improvement is targeted and consider the use of the 'core metric' mechanic to be reflective of the priority of discharge compliance within the wider suite of EPA measures.

4.17.38 Defining discharge permit compliance as a core metric with effect from 2022 resulted in United Utilities and Northumbrian Water failing to achieve 4 star status in 2022 so it is a powerful EPA tool to incentivise improved performance. The increasing number of technically achievable permit limits together with the increased number of numeric permits requires a step change and stretch for the industry to achieve this.

4.17.39 Treating effluents to a much higher standard is made possible by innovation and improving operating methods, however operating at these levels brings inherent risk as there is minimal margin for error. To manage the risk requires continuous ongoing improvements in our monitoring and operating capability.

4.17.40 The size of our WINEP in AMP8 is significantly bigger than any previously delivered, and is the biggest in the industry. Delivery of a programme of this size increases risks to permit compliance. Any site solutions not delivered by the regulatory due date would increase risk of failing to comply with any new permits coming into force, particularly those with very low phosphorus limits so the scale of the programme will add additional risk to achieving this target for all WaSCs.

4.17.41 With regard to water treatment works, the biggest risk to achieve compliance against the permits at water treatment works is the limits of the analytical equipment. For discharges where the chlorine permit is at or below the limit of detection of the analytical equipment, this makes a pass/fail dependent on analysis. The equipment can analyse to a lower limit of 0.02 mg/l. One of our permits is set at 0.005 mg/l. (Not all sites have this quality permit, and the level of risk is dependent on the limits set in the permits.)

4.17.42 These factors, together with external factors such as climate change in terms of differing rainfall profiles and extremes of temperature support our proposal that a 99.0 per cent deadband is appropriate for this performance commitment whilst still providing an appropriately stretching target for companies as they strive to achieve 100 per cent compliance, to meet the increasingly challenging environmental standards demanded by our customers.

4.18 PR24_BWQ_Bathing Water Quality

4.18.1 This is a new common performance commitment it is designed to improve water quality at bathing waters. In the North West we have wide diversity of bathing waters from traditional seaside towns such as Blackpool to the beautiful inland bathing waters at Windermere. Each one of the bathing waters has a unique set of factors which influence and impact them. At UUW we understand our role and impact we have on the region's bathing waters and are committed to protecting them. Whilst there are no enhancements projects in AMP8 to drive improvement in classification of bathing water we are investing £597 million in bathing water projects to protect the region's bathing waters. This performance commitment goes beyond this by targeting an improvement of one bathing water by one classification the equivalent of 1.2% improvement in the bathing water quality PC score. This improvement will be delivered from base and achieved through operational optimisation and partnership working.

4.18.2 Since 2012 we have invested £610 million in assets that impact bathing waters plus another £597.11 million forecast from 2023 to 2030 this means a predicted total investment of £1,207 million. As a result of the investment in AMP5 the North West saw a significant improvement in bathing water performance from 24.3% in 2012 to 62.1% in 2016, since then performance has remained stable. All historic funding has been to achieve Defra classification of Sufficient, however in 2022 72% of the North West bathing waters achieved a Good or Excellent Defra classification.

4.18.3 The AMP8 PCL of 1.2% increase from 2022/23 performance is based on an improvement of one bathing water by one classification. This is an ambitious target as although the WINEP includes schemes to improve discharges to bathing waters, modelling has shown that this will not result in a change of classification to the bathing waters. Therefore, by targeting an improvement in bathing water quality under this measure we are going beyond our committed enhancement programme. This PCL will build on the latest bathing water results at the time of FD (Bathing Season 2024), therefore an improvement of one classification at one bathing water should be included in the PCL for AMP8.

4.18.4 Ofwat has proposed a company-specific target for the business plan period 2025-2030, this will take into account past performance and funding to achieve different performance levels.

4.18.5 Table 58 outlines a summary of these proposals. .

Table 58: PR24_BWQ Bathing Water Quality – summary, definition and parameters

Purpose and benefits	To incentivise companies to improve water quality at surface waters designated for swimming, to help enhance the environment and support the creation of social and economic value.
Definition	Bathing water quality provides a measure of whether the condition of bathing waters within a company's area will improve or deteriorate over a season. It determines the overall score (%) for the bathing waters in a company's region. Each classification is assigned a score: Poor = 0%, Sufficient = 33%, Good = 66%, Excellent = 100%. The overall score is the average of scores for all bathing waters in the company's region. Ref: *Bathing water quality - PC definition 9th May, 2023.*
Specific Exclusions	In line with section 1.3 of Bathing water quality – PC definition. Bathing waters which cannot be impacted by a water company in the discharge of its functions are excluded from this measure. Determining if/ when this applies will be undertaken in conjunction with the Environment Agency/ Natural Resources Wales prior to the start of the 2025-30 period.
Exceptions to Ofwat methodology	None
Compliance Checklist	A compliance checklist has not been provided for this measure as this is a new performance commitment. Bathing Water sample results are available through the Defra Data Services Platform: Swimfo. The methodology used to calculate the classification is existing and well established and there is a high degree of confidence in calculating historic and current scores using the weighted scoring methodology.

Units: Percentage score	Forecast	Company specific performance commitment level					Long term
	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2049-50
UUW PCL	61.8	61.8	61.8	61.8	61.8	63.0	66.4
Underperformance collar		56.1	56.1	56.1	56.1	57.3	
Deadband				N/A			
Outperformance cap		67.5	67.5	67.5	67.5	68.7	
Enhanced threshold				N/A			
Enhanced cap				N/A			

ODI Rates	
Rate per percentage score	
Marginal benefit	£2.34 million
Benefit sharing factor	70%
ODI rate	£1.64 million
Enhanced rate	N/A

Source: Ofwat Excel file "United Utilities - Indicative ODI rates - Jun23 - v3"

Basis for PCL	The proposed PCL assumes an improvement of one classification at one bathing water. Since 2016 there has been over £475 million invested in the bathing waters in the North West by United Utilities. Despite this huge investment we have not seen an improvement in percentage score. Each of these historic projects achieved its required outcome, however sample results do not reflect this due to the external influences. This commitment will be wholly funded from base. The collar is set at the lowest score for each bathing water in the last 3 years and is mirrored to produce a symmetrical cap. This mitigates the large number of factors outside of our control that have a significant impact on the performance of the bathing waters.

Data table reference lines – AMP8: OUT1.15, Long Term Ref: LS1.15

4.19 Evidence to support bathing water proposals

4.19.1 A company specific PCL, cross checked against historical and forecast performance, is proposed in line with Ofwat's methodology issued in December 2023 and we present evidence below for the calculation of this.

4.19.2 This section outlines:

- the calculation of the baseline position, including historic investment to improve bathing waters;
- how we have calculated our proposed PCL using industry models and how we justify its suitability with reference to the tests given in Ofwat's final methodology Appendix 9 section 4.4.3 on determining stretching performance improvements;
- how we have accounted for the impact from weather, wildlife and third-party discharges on performance that are difficult to control or influence. This is a high risk in locations where UUW's discharges are not the main contributor to bathing water quality;
- inclusion of the risk that new inland designations may not meet minimum standards, even with investment.

Performance Commitment Levels

4.19.3 The proposed performance commitment levels are summarised in Table 59 below, shown in the context of historic performance and expenditure; what can be delivered from base expenditure; and accounting for transformational improvements. The proposed underperformance collar and outperformance cap are also included.

4.19.4 Industry performance is subject to historic funding and customers' acceptance to go beyond the statutory requirement. This performance commitment will reflect past performance and funding, it is therefore not appropriate to compare the PCL against industry or upper quartile performance.

Table 59: Bathing Water Quality AMP8 Performance Levels achievable from base and enhancement expenditure

	2025-26	2026-27	2027-28	2028-29	2029-30
PCL	61.8%	61.8%	61.8%	61.8%	63.0%
Performance from base[1]	0.0%	0.0%	0.0%	0.0%	1.2%
Performance from enhancement[2]	0.0%	0.0%	0.0%	0.0%	0.0%
Outperformance cap	67.5%	67.5%	67.5%	67.5%	68.7%
Underperformance collar	56.1%	56.1%	56.1%	56.1%	57.3%
Deadband	N/A	N/A	N/A	N/A	N/A

Data table line references: [1, 2] Ofwat guidance indicated that base and enhancement data table lines (i.e. OUT2.15 and OUT3.15) were not required to be completed for this PC

PCLs set at PR19

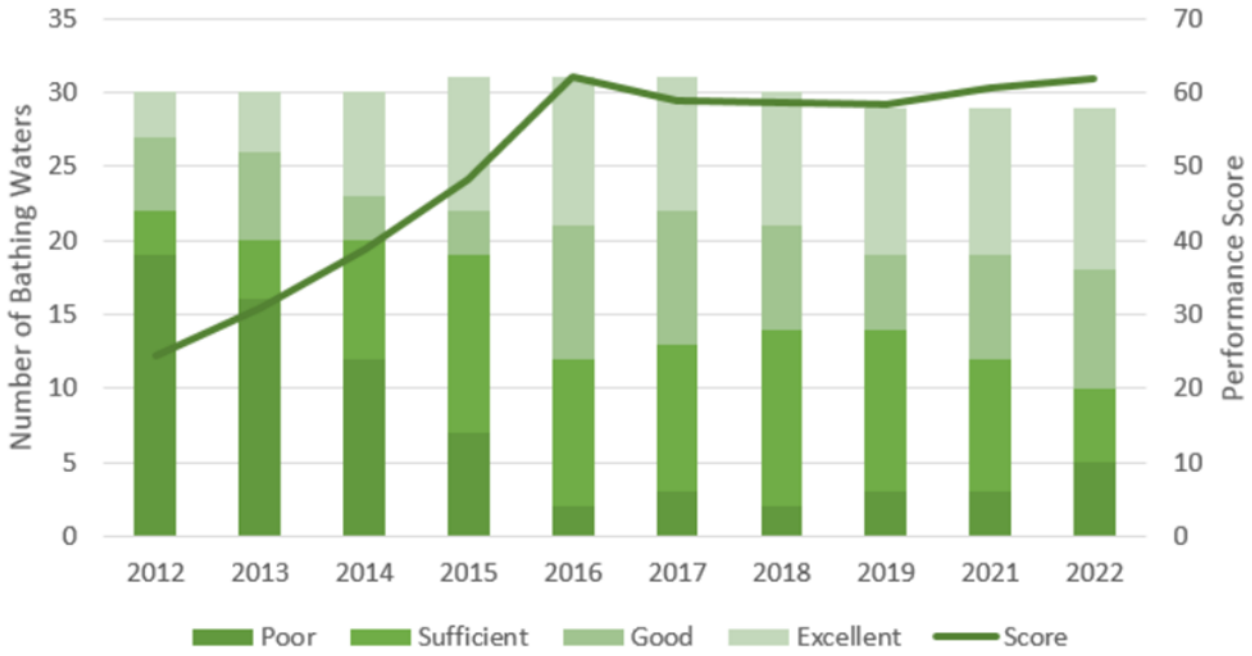
4.19.5 This is a new measure, there was no equivalent in PR19.

Historical outturn performance

Individual company performance

4.19.6 There has been a substantial improvement in bathing water classification in the North West since 2012, see Figure 43. The average score has improved from 24.3% to 62.1% from 2012 to 2016 as a result of improvements at 23 designated bathing waters. These improvements follow a significant investment programme for the North West coastline.

Figure 43: Bathing Water classification and performance using common PC definition



Source: UUW analysis of EA Swimfo bathing water data and Met Office rainfall data

4.19.7 In 2016 bathing water performance reached the highest score since assessment began. Despite a large bathing water investment programme in AMP6, bathing water classification in the North West has remained relatively stable. The performance remained stable over AMP6 and into AMP7.

4.19.8 In 2022 five applications for designation of new inland bathing waters within the North West region were submitted to Defra. One on the River Ribble at Edisford Bridge and four at Coniston Water. None of these applications were successful and therefore have been excluded from the programme and target. It is expected that some or all applications will be re-submitted once further data has been collected. This is reflected in the AMP8 wastewater WINEP build where schemes to improve these bathing waters have been included. We would only trigger investment at these locations if they are designated as bathing waters and have included a price control deliverable within the WINEP enhancement case to protect customers if they are not designated in AMP8. The targets and forecasts will need to be reviewed in the event of a successful application within the next two years.

4.19.9 If new designation occurs after business plan submission but before bathing water season 2025 the PCL will be retrospectively updated to include the new designation. It is anticipated that as these sites have not had investment programmes to improve bathing water quality, that the classification will be poor.

Table 60: AMP7 UUW and industry performance and forecast data for bathing water quality

	Actual (%)				Forecast (%)		Percentage Improvement		
	2019 (AMP6)	2020	2021	2022	2023	2024	AMP6 to 2022	AMP6 to 2024	AMP8 (PCL)
Performance	58.4	Note	60.7	61.8	61.8	61.8	3.4	3.4	1.2
Number of bathing waters included	29	29	29	29	29	29	29	29	29
Highest score in last 3 years (2019-2022)	64.1	64.1	64.1	64.1	64.1	64.1			
Lowest score in last 3 years (2019-2022)	56.1	56.1	56.1	56.1	56.1	56.1			

Note: 2019, no score for 2020 due to COVID

Sector level performance

4.19.10 The Bathing Water Directive requires all designated bathing waters to meet a minimum requirement of sufficient classification. Any bathing water identified as poor in any given year will require special measures such as do not swim notifications, to inform potential bathers.

4.19.11 UUW has had funding to enhance assets which discharge to bathing waters to achieve the minimum statutory requirement under the Bathing Water Directive. Going beyond this requirement would require support from North West customers to demonstrate their willingness to fund further improvements. Some companies have received this and have been funded to achieve good or excellent status at designated bathing waters. The WINEP3 March 2020 shows three water companies had the IMP3 driver to improve bathing water to good or excellent. The bathing water performance commitment has a company specific target to reflect past and future investment in our coastal regions to improve bathing water quality.

4.19.12 Bathing water quality can deteriorate over the long term, or during short-term incidents, due to a range of factors, some of which are under our control. These include:

- Weather conditions – particularly heavy rainfall triggering overflow operation and run off of animal waste from agricultural land including grazed salt marshes;
- drainage misconnections;
- birds/wildlife;
- dog fouling;
- growth in demand exceeding the capacity of the system;
- non flushable objects causing blockages or damage to the sewerage system or treatment works; and,
- asset failure at either treatment works or on the sewerage system.

4.19.13 The sewerage system in coastal areas is at risk of causing pollution, which can result in loss of public amenity as discharges are in close proximity to bathing waters. This is a particular concern to local authorities and businesses in coastal areas where there is a risk to the reputation of the beach. Parts of the North West coast are heavily urbanised which is a contributory factor to the risk. Blackpool in

particular has a high population density with 4,046 people per km^2, which is on a par with many cities in the UK such as Birmingham, Liverpool and Nottingham. This results in a significant pollutant load, which needs to be managed in order to avoid an adverse impact on public health or loss of amenity value. Tourist visitors further add to the load that we must manage at a time when amenity value is at its highest in the summer months.

Historical expenditure included in the base expenditure models at PR24

4.19.14 N/A

Company forecast of performance levels that can be delivered from base expenditure

4.19.15 The PCL has been set at 63.0% by 2030 to reflect our ambition to improve bathing water performance in the North West. This target assumes an improvement of one classification at one bathing water. Since 2016 there has been over £475 million invested in the bathing waters in the North West by United Utilities. Despite this huge investment we have not seen an improvement in percentage score (Score in 2016 = 62.1%, score in 2022 = 61.8). Each of these historic projects achieved its required outcome, however sample results do not reflect this due to the external influences previously mentioned in 4.19.12. The forecast investment in AMP8 for projects with a bathing water driver is £597.11 million totex however our coastal modelling shows that this will maintain performance or provide an 'in-class' improvement. We do not anticipate that this investment will improve any classifications on its own. We are therefore committing to an ambitious target of delivering a 1.2% improvement in the PC score with significantly reduced investment compared to the 2016-2022 result. As stated in Table 58 this improvement will be wholly funded from base, none of the AMP8 enhancement projects are expected to deliver an improvement in classification.

4.19.16 Our plan for achieving this improvement in performance will focus on opportunities to work in partnership such as with the established Turning Tides partnership as well as the newly formed Fylde Hub. We will also ensure our continued cyclical maintenance of all assets which have the potential to impact a bathing water.

4.19.17 There are no enhancement schemes that will deliver a bathing water class change however there will be some in-class benefit as a result of the WINEP investment. It is not possible to quantify the impact on bathing water quality as these projects have been designed to meet a spill frequency driver only, none of the projects in WINEP have been identified from the AMP7 bathing water investigation.

4.19.18 As custodians of the environment in the North West, UUW takes its responsibility seriously to protect and enhance our environment including designated bathing waters. In 2012 UUW became a founding member of Turning Tides[53] partnership, which was set up to tackle poor bathing water performance. This partnership continues to deliver proactive media campaigns such as 'Love my Beach' and brings together local stakeholders including councils and the Environment Agency with the shared goal to provide 'Bathing waters we can be proud of, that are valued by communities and that support a vibrant economy'.

4.19.19 In addition to our work in partnership we also focus on our own operation. Prior to every bathing season we carry out specific pre-season checks on all treatment and sewerage assets which could have an impact on the receiving bathing water should an issue occur. This is in addition to our regular cyclical maintenance, which ensures we have these assets in the best possible condition ahead of the bathing season. Operational teams are also briefed at the start of every season to highlight the specific risk around bathing waters and to ensure they are clear on the importance of raising and escalating risks when they occur.

[53] https://www.blackpool.gov.uk/Your-Council/Creating-a-better-Blackpool/Regeneration/Coastal-and-water-improvements/Turning-Tides.aspx#:~:text=The%20Turning%20Tides%20vision,sector%20and%20the%20wider%20community

4.19.20 In AMP7 UUW will deliver a near real time reporting system for all storm overflows, this will build on the existing report that focusses on designated coastal bathing waters. This platform will provide information on recent storm discharges to enable visitors of bathing waters and other recreation sites to make informed decisions about their use. This data will be available to download to provide increased data transparency and support others who wish to access this data such as media outlets, universities and campaign groups like Surfers Against Sewage.

4.19.21 Continued investment though our base programme will contribute towards stable bathing water performance however UUW cannot do this alone. The AMP7 bathing water investigation identified the highest contributing sources for each bathing water assessed. Where UUW assets were a key contributor an improvement solution was costed and benefits reviewed in line with the Bathing Waters Regulations 2013, no schemes were identified for implementation in AMP8.

4.19.22 Table 61 shows that there is not always a direct link between UUW contribution and the classification of the bathing water, for example, at Ainsdale. UUW is modelled to contribute over 90% of the load yet both bathing waters are classified as Good with a long-term 2050 prediction to improve. This however will depend on the size of the total load entering the bathing water. Some of the Bathing Waters in the North West cannot be improved through investment at UUW assets alone. At seven bathing waters, if all UUW discharges were removed, our investigation shows that the bathing water classification could not achieve excellent status therefore identifying the need to work in partnership to improve bathing water performance and to set a performance level that reflects the North West.

Table 61: Bathing water model results for Ainsdale bathing water

2022 Class	Pre-AMP 6 Calibration scenario 2015-2018	2050 Model	Average classification 2015-2018
Good	Excellent	Excellent	Good
Good BWD threshold Contributors			
E.coli		Intestinal enterococci	
Ainsdale WwTW FE	92	Ainsdale WwTW FE	60.2
Southport WwTW ST	0.9	River Ribble	7.3
Southport Gr8 SWs	0.8	Southport WwTW ST	3
River Ribble	0.6	Blackburn Group4 SWs	2.4
Manchester Sq PS	0.6	Preston WwTW ST	1.6
Modelled to achieve Excellent			

Source: UUW Bathing waters Model output as part of AMP7 investigations

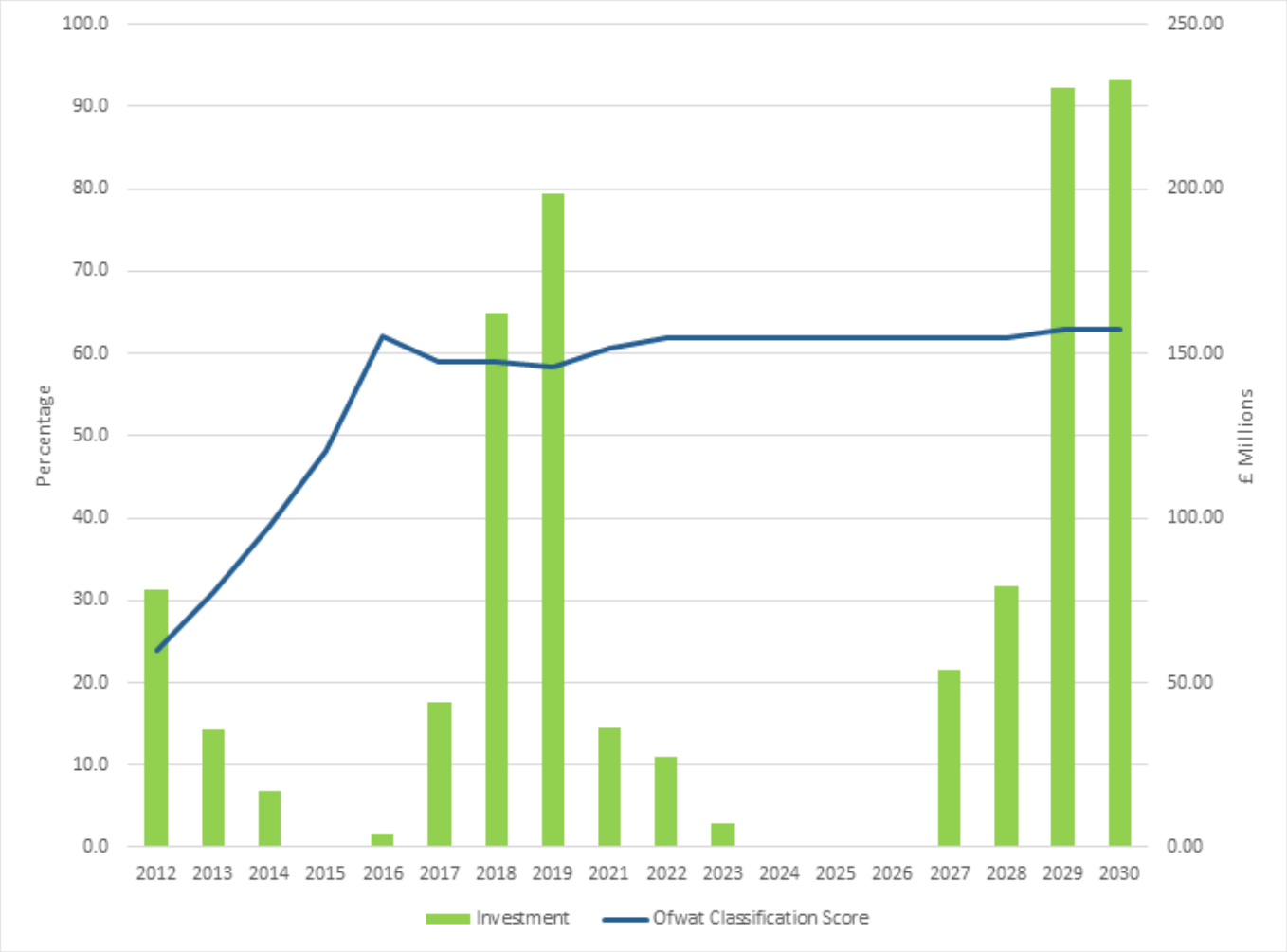
Performance levels of efficient companies

4.19.23 Since 2012 UUW has invested £610m in bathing water assets, improving 23 bathing water classification between 2012 and 2016.

4.19.24 Figure 44 shows performance against investment. Despite a significant bathing water investment programme in AMP6, bathing water performance has remained relatively stable. This demonstrates that bathing waters are impacted by a range of different factors and investment in one area alone may not be sufficient to achieve continuous improvements in bathing water quality. As stated throughout this document, recent investment is not linked with an improvement in bathing water quality performance score. Each of the projects within the investment achieved its outcome, however as the bathing waters are hugely impacted by external factors which may hide this improvement provided by the project. One example of this is rainfall. Figure 45 shows average score for all samples over the last 3 years per month against the average rainfall by month for North West England and Wales. Figure 44 shows a clear correlation between rainfall and bathing water sample results suggesting that rainfall, or the

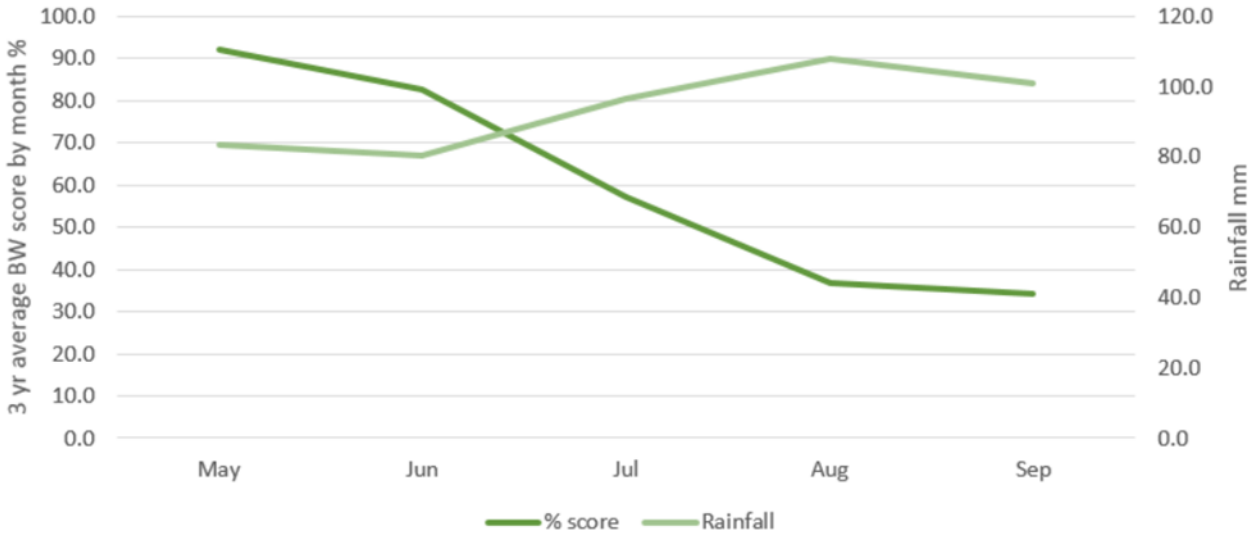
consequences of rainfall, does have an impact on the classification of these sites. Increased rainfall may result in more factors such as overland run off from agricultural areas, increased flows from sewage discharges (continuous and intermittent) and agitation of sediment – all of which could impact bathing water quality.

Figure 44: Bathing Water performance plotted against investment 2012-2030



Source: Bathing waters score and UUW internal

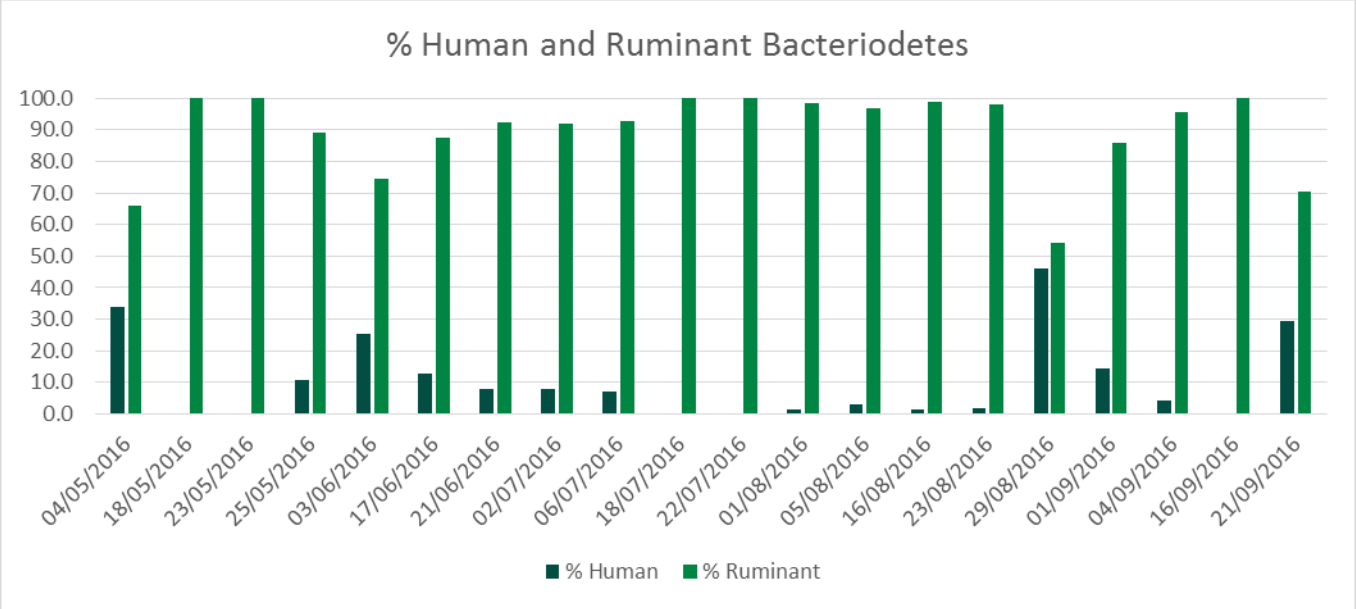
Figure 45: Bathing Water performance by month against average monthly rainfall for the North West and Wales



Source: UUW analysis of EA Swimfo bathing water data and Met Office rainfall data

4.19.25 Wildlife can also have a significant impact on the bathing waters for example DNA analysis carried out by the EA in 2016 on samples taken at Haverigg (Haverigg MST analysis 2016 season) shows for the majority of samples taken the source of the DNA is predominantly ruminant.

Figure 46: EAs DNA analysis of bathing water samples from Haverigg in 2016

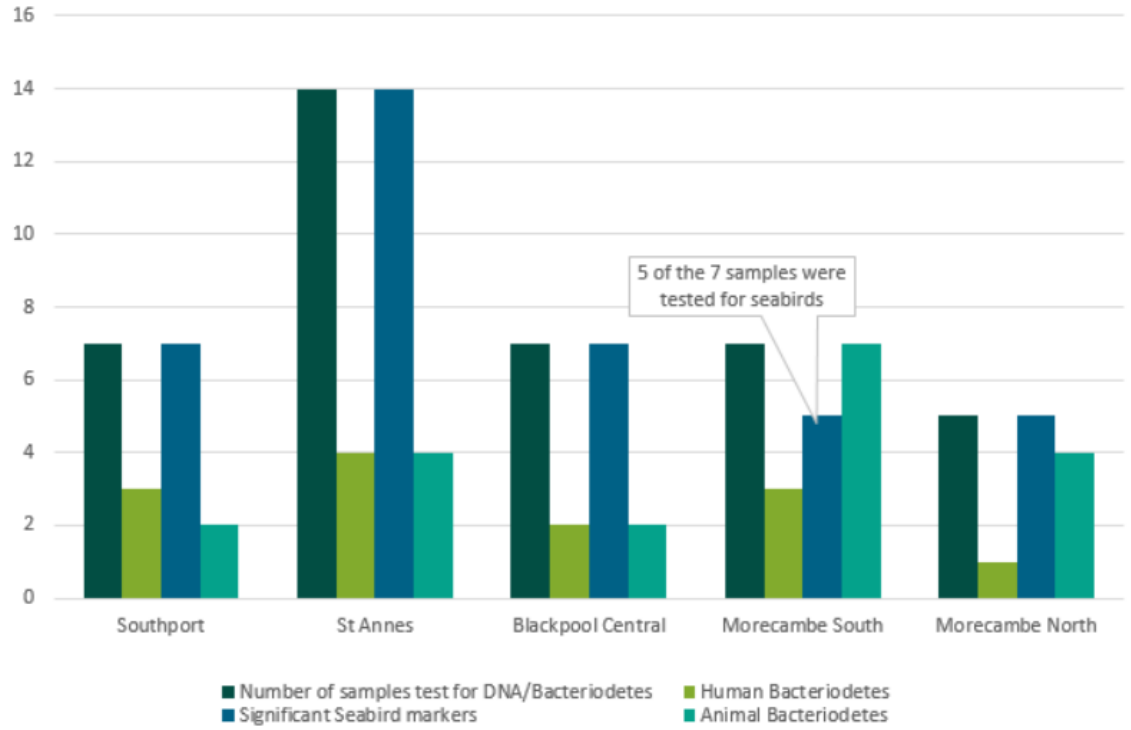


Source:

4.19.26 Another example is the impact of birds and this is particularly relevant to the Blackpool coastline. The bathing water investigations carried out in AMP7 show that the most significant contributors at the excellent threshold for the Blackpool North bathing water are birds, with the birds accounting for 80% of the load. It is modelled that, because of the bird load, this bathing water will never achieve excellent.

4.19.27 This is supported by recent DNA analysis carried out by the EA at 5 bathing waters in the region which shows that, where tested, all samples had a significant seabird load (significant is >3log10).

Figure 47 - Summary of DNA and bacteriodetes analysis carried out by the EA in 2022



Source: UUW analysis of EA shared data

4.19.28 In AMP8 UUW will invest £597.11m totex in assets which discharge to designated bathing waters to achieve spill frequency reduction at high priority storm overflows, this investment will provide some in-class improvement but will not result in a change in bathing water classification.

4.19.29 Despite effective solutions for spill reduction and installation of UV at multiple sites with costs totalling hundreds of millions of pounds, since 2016 there has been no improvement in the total percentage score for North West bathing waters. This is due to a number of factors outside of the control of the water company. With factors such as weather with higher rainfall in the North West region we see an increased impact of diffuse sources at a number of our bathing waters for example Allonby and Seascale over 75% of the contributors (at the Good threshold) are from diffuse sources.

Opportunity for transformational performance improvements

4.19.30 A key aspect of delivering the predicted performance improvement will be our ability to work proactively and effectively with key partnership and third-party stakeholders to drive improvements at bathing waters

4.19.31 There are no specific WINEP schemes to target class improvement however there is substantial investment in 36 assets which discharge to North West bathing waters.

Sources of Information used to set the PCL

4.19.32 The sample data used to calculate the PCL had been taken and analysed by the Environment Agency and is publically available from the Defra website Swimfo. All historic sample data is available for bathing waters from this site. The existing EA methodology is applied to all samples taken within the bathing season. In AMP8 UUW is targeting an improvement of 1.2% in the PC score, this assumes an improvement in classification at one bathing water. Bathing water performance is difficult to predict and is influenced by a variety of external factors and third parties, we do not believe that it is appropriate to penalise or outperformance companies for under-performance or out-performance achieved by factors outside of management control. UUW does not have any drivers to improve classifications at bathing

waters in AMP8, bathing water performance has remained relatively stable for the past 8 years and therefore UUW has set this PCL at 1.2% improvement. This improvement will be achieved through our partnership working and continuing BAU activities.

Dependencies or overlap with other PCs

4.19.33 The storm overflows performance commitment is a common measure in AMP8. The PCL takes into account the benefits that will be delivered though the base programme and the WINEP enhancement programme, therefore any spill reduction schemes required under our statutory programme detailed within the WINEP are included within this measure. This is inclusive of any spill reduction schemes at sites discharging within 1 km of a bathing water. The benefit delivered by these schemes is already accounted for within the storm overflows baseline and the delivery of these schemes is not modelled to drive an improvement in bathing water classification, as a result there is no risk of double counting benefits delivered though the delivery of our statutory programme.

Application of outperformance cap, underperformance collar or deadband

4.19.34 Ofwat's PR24 final methodology proposes targeted use of caps and collars such as on those performance measures which are new and therefore more uncertain. As the Bathing Water Quality PC is one of the new performance commitments we therefore propose caps and collars for it, to account for factors that are outside of management control.

4.19.35 The collar has been set by taking the lowest classification for each bathing water over the last three years and calculating the overall worst performance over this time period. This gives a performance level of 56.1% which is 5.7% from the 2022 baseline of 61.8%. The cap is designed to mirror the variance in performance from the baseline set by the collar providing a cap of 67.5%.

4.20 PR24_RWQ_River Water Quality (phosphorus)

4.20.1 This is a new performance commitment aimed at incentivising phosphorus removal over and above that required as part of our statutory obligations in order to further improve water quality. This will be delivered as a result of wastewater treatment works performance and catchment schemes delivered via partnership working.

4.20.2 This performance commitment will cover 165 treatment works which already have or will receive a phosphorus limit in future AMPs and nine catchment schemes. At UUW we are committed to not only comply with our permits but ensuring this by out-performing them. As a result we are removing an average of 37.52% - (based on the last 5 years data for current limits) - more phosphorus than we are required to do. In 2020 this equated to more than 240,000 kg less being discharged to the environment

4.20.3 The proposed PCL locks in this level of performance delivered to date, and commits us to repeat that performance each year. It also commits us to deliver outperformance of 37.52% against new permits set at 0.5 mg/l and above that are delivered through WINEP from their date of commissioning. In addition to this, we commit to a further 0.5 per cent stretch for these sites to be achieved from base via operational optimisation, this is an additional circa 8000 kg per year more phosphorus that we will remove from the environment over and above what we are required to do via our discharge permit. There will also be a further phosphorus reduction from our nine catchment solutions built in the PCL.

4.20.4 The performance commitment is measured in percentage reduction from the baseline total phosphorus load discharged to the environment. The baseline is set as per the methodology using 2020 data, including all sites identified as requiring a phosphorus permit by 2038. The load is calculated using annual mean concentration of regulatory phosphorus samples and annual daily mean measured flow data. Where the annual mean concentration of phosphorus is not available, then 5mg/l is assumed as the concentration and where the annual daily mean flow is not available then permitted dry weather flow (DWF) multiplied by 1.2 is used.

4.20.5 A stretching PCL has been set by using historic data and calculating outperformance of current permits. This builds in a percentage performance from base expenditure relating to optimising site performance, and modelled reduction in phosphorus from catchment interventions delivered.

4.20.6 Table 62: River Water Quality P Summary Table is a summary of UUW's River Water Quality P commitments.

Table 62: River Water Quality P Summary Table

Measure	
Baseline load (2020)	2227237.8184 kg/yr
AMP8 PCL load (2030)	1753967.6221 kg/yr
AMP8 PCL reduction from Baseline (2030)	21.25%
Long Term load (2050)	251287.1696 kg/yr
Long Term reduction from baseline (2050)	88.74%
Cap	+3% PCL (kg)
Collar	-3% PCL (kg)
Incentive Rate	£661

Source:OUT5, OUT1, LS1, UUW analysis, Ofwat indicative ODI rate

4.20.7 Table 63 outlines a summary of these proposals.

Table 63: PR24_RWQ River Water Quality (phosphorus) – summary, definition and parameters

Purpose and benefits	To incentivise companies to remove greater amount of phosphorus over and above that required by environmental permits to improve water quality
Definition	The performance commitment is measured in percentage reduction of phosphorus from the baseline. The baseline is set in 2020 using annual mean concentration of regulatory phosphorus samples and annual daily mean measured flow data. Where the annual mean concentration of phosphorus is not available, then 5mg/l shall be assumed and where the annual daily mean flow is not available then permitted dry weather flow (DWF) multiplied by 1.2 shall be used. River water quality is calculated as the percentage reduction in phosphorus to two decimal places. The performance commitment levels are expressed as percentage reduction will be applied to the 2020 baseline and Outcome delivery incentives will be applied on a kg of phosphorus basis. Ref: *River water quality - PC definition 14th June, 2023.*
Specific Exclusions	
Exceptions to Ofwat methodology	None
Compliance Checklist	A compliance checklist has not been provided for this measure as this is a new performance commitment. The phosphorus concentration data is taken from the EA reporting system and in line with reporting for discharge permit compliance. This is a well-established methodology with high confidence. Flow data is taken as the mean daily flow taken from the MCERTS (monitoring certification scheme) data for sites with this requirement in their permits, and for those without, calculated as permitted DWF multiplied by 1.2. Partnership schemes as per the methodology will be subject to external verification which will include assurance that: the company has followed the method agreed with the appropriate agency; all data used in the method, unless otherwise stated in the method, has been accurately inputted from measured sources where practicable or otherwise are robust estimates; and the reduction in phosphorus from partnership working in the base period is a fair comparison with the reduction of phosphorus in the latest reporting year.

Units: Percentage reduction in phosphorus	Forecast	Company specific performance commitment level					Long term
	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2049-50
UUW PCL	N/A	15.01	15.33	20.90	21.01	21.25	88.74
Underperformance collar		12.46	12.78	18.53	18.64	18.89	
Deadband				N/A			
Outperformance cap		17.56	17.86	23.27	23.38	23.61	
Enhanced threshold				N/A			
Enhanced cap				N/A			

ODI Rates	
Rate per kg phosphorus	
Marginal benefit	£944
Benefit sharing factor	70%
ODI rate	£661
Enhanced rate	N/A

Source: Ofwat Excel file "United Utilities - Indicative ODI rates - Jun23 - v3"

Basis for PCL	The proposed PCL sets out a reduction of 473,347 kilograms of phosphorus from baseline which achieves a target of 21.25% by 2030. The target includes two elements, a stretch on the existing phosphorus permit limits at wastewater treatment works plus phosphorus removed from catchment interventions. The Cap/collar is calculated as 3 per cent of the PCL in terms of kg reduction and will change slightly each year in line with the PCL target

Data table reference lines - AMP8: OUT1.16, Long Term Ref: LS1.16

4.21 Evidence to support River Water Quality proposals

Performance Commitment Levels

4.21.1 We have proposed a company specific PCL in line with Ofwat's methodology issued in December 2023. This section outlines how we have calculated our proposed PCL and how we justify its suitability with reference to the tests given in Ofwat's final methodology Appendix 9 section 4.4.3 on determining stretching performance improvements.

4.21.2 The proposed performance commitment levels are summarised in Table 64 below, this includes the proposed underperformance collar and outperformance cap. Each element of this table is discussed in more detail below.

Table 64: River water quality (phosphorus) AMP8 Performance Levels achievable from base and enhancement expenditure with comparative industry information

	2025-26	2026-27	2027-288	2028-29	2029-30
PCL % reduction from baseline	15.01	15.33	20.90	21.01	21.25
PCL kg/yr reduction from baseline	334,350.2390	341,300.5487	465,475.0739	467,934.6560	473,270.1963
Performance from base[1]	Enhancement expenditure for P removal is built into the PCL				
Performance from enhancement[2]	Guidance indicates that this is not required for this PC				
Industry upper quartile	Not applicable company specific				
Outperformance cap	17.56	17.86	23.27	23.38	23.61
Underperformance collar	12.46	12.78	18.53	18.64	18.89
Deadband	N/A				

Reported annually on a calendar year basis. For example, 2025-26 value will be based on the calendar year 2025

Data Table References: [1] Ofwat guidance indicated that base and enhancement data table lines (i.e. OUT2.16 and OUT3.16) were not required to be completed for this PC

Detail on the calculation of PCL levels

4.21.3 The PCL target for river water quality includes two elements, a stretch on the existing phosphorus permit limits at wastewater treatment works plus phosphorus removed from catchment interventions.

Wastewater treatment works performance

4.21.4 Historic wastewater treatment works performance makes up the main proportion of this performance commitment level. Data analysis of historic performance against permit limit gives an average performance of 37.52 % beyond the permit limit based on our last 5 years data. This has been calculated based on all permits with phosphorus limits of 0.5mg/l and above. We have not included analysis of data from permits below 0.5mg/l as there were too few data points for this to be representative of future performance.

4.21.5 When calculating phosphorus load we have used the same flow data as that used to calculate the 2020 baseline. We note the comments in the errata log -published by Ofwat following publication of version 6 of the data tables- regarding future flow forecasts, but have decided to use the flow figures from 2020 despite it being a wetter than average year. This does result in a higher PCL and thus a more stretching target for ourselves than if we use flow data from an average rainfall year.

4.21.6 We have also included an additional outperformance beyond the 37.52 per cent reduction of an additional 0.5 per cent, a stretch on performance, for wastewater treatment works receiving a new or tighter permit. This additional 0.5 percent equates to removing an additional 43,500 kg of phosphorus more than required from the environment over the AMP. This, in addition to the current outperformance of permit for sites with current phosphorus permits is a stretching target providing significant environmental benefit over and above that we are required to deliver.

Catchment interventions

4.21.7 The second element of this performance commitment relates to partnership delivery of phosphorus reduction schemes. Within AMP8 UUW currently proposes to deliver nine schemes using a catchment intervention solution which will be delivered in partnership with third parties. These schemes will be delivered in line with the catchment nutrient balancing (CaBA) approach employed on UUW's successful River Petteril catchment partnership scheme. This is an example published by UUW and shared with the rest of the industry. We are currently developing our delivery plans for AMP8 working with stakeholders within the identified catchments.

Sustainable long term solutions

4.21.8 UUW recognises the need for sustainable long term solutions to phosphorus removal in response to the challenges of delivering long term operational resilience and responding and adapting to climate change. Although our current plan for the delivery of AMP8 WINEP includes chemical phosphorus removal for the majority of sites, we are focusing on biological phosphorus removal where there are additional drivers at site that make the significant capital expenditure to allow biological phosphorus removal cost beneficial. We recognise that shortages of chemicals used to remove phosphorus via traditional chemical dosing solutions, and the impact on carbon are driving a focus towards more innovative solutions such as those being trialled as a result of funding secured through the Ofwat Innovation fund. In the project we are leading on 'Alternative approaches to phosphorus removal on rural wastewater treatment works[54]'. The project is trialling three alternative solutions to chemical phosphorus removal in order to gain a comprehensive life cycle analysis of each option. The intention is then to incorporate these within AMP8 delivery plans where appropriate to meet new or reduced phosphorus permits.

PCLs set at PR19

4.21.9 This is a new measure for PR24.

Industry performance

4.21.10 This is a new measure and there is no data share in relation to this performance commitment that allows this to be determined.

Historical expenditure included in the base expenditure models at PR24

4.21.11 This is not applicable as it is a new performance commitment for PR24.

Company forecast of performance levels that can be delivered from base expenditure

4.21.12 As per guidance published by Ofwat on 2 August 2023, PR24 Business plan data table queries and responses, this information is not required in the data tables, although most expenditure is related to WINEP enhancement expenditure.

Performance levels of efficient companies

4.21.13 Not applicable for this performance commitment.

Opportunity for transformational performance improvements

4.21.14 We recognise that there are potential opportunities for performance improvements in relation to this performance commitment. We believe that the way we have set the PCL with a 37.5% over performance

[54]Ofwat (2023) Alternative approaches to phosphorus removal on rural wastewater treatment works, available here

on current permits plus an additional 0.5% provides a stretching performance commitment. However, for the benefit of the environment and to potentially start moving towards AMP9 phosphorus requirements through the optimisation of existing treatment works performance, potential areas of focus for this PC could include:

- New technologies and solutions not solely reliant on chemicals. Examples of this could include: electrocoagulation, the use of natural or plant based coagulants and absorptive or reactive media.
- We have built in an additional 0.5% above the current over performance of phosphorus limits into out PCL to represent further operational optimisation. Potential opportunities could include improved solids removal and sludge management.

4.21.15 An improved catchment position as a result of increased phosphorus removal during AMP8 has the potential to reduce the permit requirements for sites in the AMP9 and AMP10 WINEP for phosphorus removal. This could potentially result in lower costs for these future projects, having a positive benefit for customers.

Sources of Information used to set the PCL

4.21.16 Sources of data used to support this measure are:

- Verified and amended Ofwat data; data verified using all regulatory sample data taken from EA database in order to calculate the 2020 baseline
- Phosphorus sample results regulatory data
- MCERTS flow measurement data
- WINEP for AMP8 and beyond to determine phosphorus permit limits for wastewater treatment works
- The PCL aligns with our delivery plan for WINEP phosphorus removal schemes as detailed in data table CWW20 and schemes within CWW19. In some instances this does not mirror the current regulatory dates within the WINEP. We are in discussion with the EA over currently non-achievable regulatory dates and how we work together to resolve this.

Dependencies or overlap with other PCs

4.21.17 This performance commitment has some overlap with the discharge permit compliance performance commitment. Penalty could be incurred via this performance commitment even if we achieve the discharge permit compliance standard due to PCL levels being beyond those of the individual WwTW permit limits. Failure to achieve WwTW phosphorus permit compliance could have an adverse impact on the river water quality performance commitment.

4.21.18 Phosphorus removal also features within the Wonderful Windermere performance commitment. Hawkshead Wastewater treatment works has a Habitats driver in AMP8 to reduce the phosphorus permit. This site is included in this performance commitment with reduction targets included in the PCL. Remaining treatment works within the Windermere catchment are excluded as the Wonderful Windermere performance commitment is targeting improvement explicitly beyond that expected for the catchment. As per the methodology, for the purposes of reporting this performance commitment the phosphorus discharged from treatment works across a catchment will not be less than that expected by the appropriate agency in the long term. If it is less, the load expected by the appropriate agency will be used instead. Therefore no benefit can be claimed from these treatment works via the river water quality performance commitment.

Application of outperformance cap, underperformance collar or deadband

4.21.19 Ofwat's PR24 final methodology proposes targeted use of caps and collars such as on those performance measures which are new and therefore more uncertain. As the River Water Quality PC is one of the new performance commitments we therefore propose caps and collars for it. UUW proposes a symmetrical cap and collar of three per cent of the PCL, in terms of kg of phosphorus removed. This

provides sufficient opportunity for over achieving the performance commitment, but also with a level of penalty of a magnitude to reflect the potential adverse impact on river water quality if the performance commitment is not achieved.

4.21.20 UUW does not propose a deadband for this measure.

Application of an enhanced incentive rate threshold

4.21.21 Not applicable for this performance commitment

4.22 PR24_SOF_Storm Overflows

4.22.1 Storm overflows overview

4.22.2 Storm overflows is a new common performance commitment in AMP8 measuring the average number of discharges to the environment from storm overflows. UUW proposes a company specific performance commitment level (PCL) for the business plan period 2025-2030 which reflects our ambition to significantly reduce storm discharges to the environment though the delivery of one of the largest spill reduction programmes in the sector.

4.22.3 Our plan, if supported by Ofwat, will deliver a sustained, annual spill reduction of over 16,000 spills, increasing the capacity of our wastewater network by delivering improvements at 437 storm overflows. This is equivalent to a 32.9% reduction in spill frequency over AMP8 (based on Ofwat's assessment of performance as reported in OUT5.77).

4.22.4 Investment in storm overflows has been targeted to protect the environment from the impacts of storm overflow discharges as required under Urban Waste Water Treatment Regulations 1994, Bathing Water Regulations 2013, and Water Environment Regulations (also referred to as Water Framework Directive). These regulations do not require companies to reduce spill frequency, as such the current starting position for storm overflow discharges will differ by region depending on the environmental needs and future spill level required to comply with these statutory drivers. This starting position is critical in identifying the level of investment required to reduce spill frequency to a common level. In view of this, we do not consider that a common target is appropriate for this performance commitment.

4.22.5 Ofwat has set out that:

"Companies should set themselves a stretching company specific performance level, where appropriate, going beyond the initial 2025 target of 20 spills per overflow we proposed in our draft methodology. Companies should provide compelling evidence if they do not consider that they can meet this target by 2025."[55]

4.22.6 In *UUW64 – WINEP Overflows enhancement case* we set out details of our storm overflows programme and provide evidence as to why we do not consider that a common target is appropriate for this performance commitment. We identify that our current spill frequency is a direct result of current regulatory frameworks and as such UUW has a significantly larger programme required to reduce spill frequency. The five year period covered by our PR24 submission will see the largest reduction in spills of any future AMP, aimed to deliver the maximum benefit to the North West.

4.22.7 The storm overflows PCL takes into account the benefits that will be delivered though our base and the WINEP enhancement programmes. To ensure that UUW is delivering the most benefit in AMP8, our enhancement programme targets high priority and high spilling storm overflows. In addition UUW is challenging our delivery expectations and promoting early delivery of our storm overflow reduction programme in AMP8 to enable early delivery against the WINEP regulatory date. Our acceleration of the WINEP enhancement programme is reflected within our storm overflow reduction plan (SODRP) and AMP8 performance commitment.

4.22.8 The PCL sets an even more ambitious delivery target than our enhancement plan, this will be met through delivery of short-term mitigation measures to reduce storm discharges during the delivery of the permanent enhancement solutions to increase capacity. The mitigation measures will deliver spill reductions during the design and construction of the long-term permanent solution. Our AMP8 plan will deliver a 60% reduction by 2030 based on the 2020 baseline.

4.22.9 Failure to meet the performance commitment will result in outcome delivery incentive (ODI) payments.

4.22.10 Table 65 outlines a summary of these proposals.

[55] https://www.ofwat.gov.uk/wp-content/uploads/2022/12/PR24_final_methodology_Appendix_9_Setting_Expenditure_Allowances.pdf

Table 65 - PR24_SOF Storm Overflows – summary, definition and parameters

Purpose and benefits	To incentivise a progressive reduction in the adverse impacts of discharges from the company's storm overflows to reduce the impact on public health and the environment.
Definition	The measure is reported as the average number of spills per storm overflow. Ref: *Storm overflows - PC definition 14th June, 2023*.
Specific Exclusions	None
Exceptions to Ofwat methodology	We propose a company specific Performance Commitment Level to reflect the impact of the current regulatory framework on our current spill frequency and to account for level of investment required to reduce spill frequency as a result of unique operating circumstances in the North West. More information on storm overflows, our forecast, plans and ambition to achieve this commitment is given in *UUW64_WINEP Overflows.*
Compliance Checklist	Ofwat has not provided a compliance checklist in storm overflows - PC definition (date 14 June 2023). There will be 100% coverage of Event Duration Monitors (EDMs) on storm overflows by December 2023, making January-December 2024 the first full year of data for total reported spills, this will be reported in the EDM annual return 2025. As we do not have a full set of either modelled or EDM data, a combined approach is required to understand the baseline from which improvements will be made. Confidence in the data can then be assessed and will increase over time as more data is collected and companies advance their capabilities to analyse vast amounts of data.

Units: Annual Average number of spills (regional)	Forecast	Proposed company specific performance commitment level					Long term
	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2049-50
UUW PCL	29.21	26.20	25.60	24.20	22.40	19.60	8.50
Underperformance collar		18.34	17.92	16.94	15.68	13.72	
Deadband				N/A			
Outperformance cap		34.06	33.28	31.46	29.12	25.48	
Enhanced threshold				N/A			

ODI Rates	
Rate per number of spills	
Marginal benefit	£1.85 million
Benefit sharing factor	70%
ODI rate	£1.29 million
Enhanced rate	N/A

Source: Ofwat Excel file "United Utilities - Indicative ODI rates - Jun23 - v3"

Basis for PCL	Against Ofwat's measure of spills we are setting a stretching target performance improvement of 32.9% and an average spill frequency of 19.6 by 2030. This builds on the significant spill reduction anticipated in AMP7 as a result of our accelerated programme and short-term measures to reduce spill frequency during the design and construction of long-term capacity enhancement solutions. The PCL takes into account the benefits that will be delivered though the base programme and the WINEP enhancement programme and is likely to deliver the biggest spill reduction programme in the industry. UUW agrees with Ofwat's proposal to apply a cap and collar for new measures and propose a cap and collar set at +/-30% of the performance commitment based on analysis carried out by UUW.

Data table reference lines – AMP8: OUT1.17, Long Term Ref: LS1.17

Note: forecasts and PCL are reported annually on a calendar year basis.

4.23 Evidence to support storm overflow proposals

Performance Commitment Levels

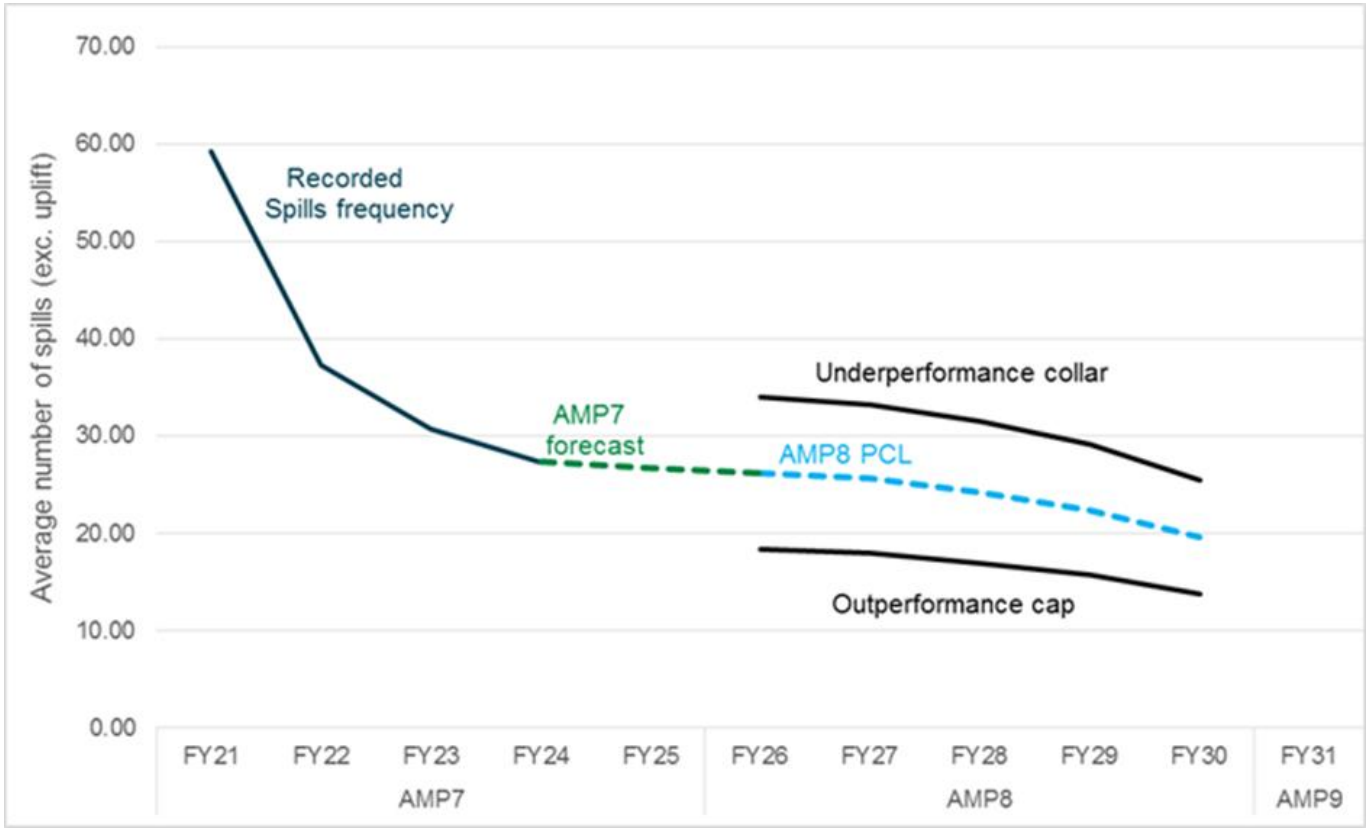
4.23.1 The proposed performance commitment levels are summarised in Table 66 below, shown in context of historic performance and expenditure; what can be delivered from base expenditure; Industry performance and accounting for transformational improvements. The proposed underperformance collar and outperformance cap are also included. Each element of this table is discussed in more detail in the following sections.

Table 66: Storm overflows AMP8 Performance Levels achievable from base and enhancement expenditure with comparative industry information

	2025-26	2026-27	2027-28	2028-29	2029-30
PCL	26.20	25.60	24.20	22.40	19.60
PCL (incidents)	59,736	58,368	55,176	51,072	44,688
Deadband			N/A		
Outperformance cap	34.06	33.28	31.46	29.12	25.48
Underperformance collar	18.34	17.92	16.94	15.68	13.72
Performance from base[1]	29.26	29.26	29.26	29.26	29.26
Performance from base (incidents)	66,722	66,722	66,722	66,722	66,722
Performance from enhancement[2]	3.06	3.66	5.06	6.86	9.66
Performance from enhancement (incidents)	6,986	8,353	11,546	15,650	22,034
Industry upper quartile			N/A		
Industry frontier			N/A		

Data Table References: [1] OUT2.17, [2] OUT3.17

Figure 48 Storm overflows performance commitment



Source: PR24 Data Tables and supporting calculations. Note: AMP7 forecast based on average number of spills, excluding operability uplift and therefore forecast differs to that reported in OUT1. AMP8 PCL is consistent with OUT1.

Stretching performance - Investing in a stronger, greener, healthier North West

4.23.2 UUW has proposed an ambitious enhancement programme for overflows to meet new requirements, and we have started early on that work. Additionally we have launched our Better Rivers Better North West programme that puts customers and the environment at the heart of what we do. As a direct result of our operational activity, we are also reducing spill frequency from storm overflows in the short term whilst permanent solutions are delivered.

4.23.3 UUW has heard from customers that they want to see major improvements to reduce the number of storm overflow spills and to prevent untreated sewage going into our rivers and seas, no matter how diluted by rainfall it may be. This has also been reflected in the new SODRP requirements. UUW has submitted an ambitious plan to Defra to tackle storm overflows and meet these new requirements. If agreed by our regulators, our plan will deliver the largest investment in storm overflows since privatisation of the water industry. We will target 437 sites in the next 5 year planning period and circa 1,500 in our long-term (25-year) plan, reducing spills by over 56,000 per year by 2050 relative to our AMP7 modelled baseline.

4.23.4 In addition to our enhancement plan we are making changes on the ground today endeavouring to deliver spill reduction and other benefits as soon as possible. This includes an early start programme on overflow enhancements, which was agreed with the regulators and is underway, with ongoing work under our 'Better Rivers Better North West' programme. Launched in 2022 our Better Rivers programme includes our roadmap to improve accessibility and river health in our region. Our pledges can be found on our website[56].

[56] unitedutilities.com/corporate/newsroom/latest-news/united-utilities-publishes-road-map-to-better-river-health/

4.23.5 As part of our Better Rivers plan UUW has employed a new team of six River Rangers to patrol the river banks of the North West, engaging with local communities, checking on company assets and prioritising maintenance and the clean-up of litter and debris. They will also be carrying out sampling to allow the company to better understand river water quality across the region. Our River Rangers have been promoting the importance of river health and what UUW is doing to play our part. This has captured the interest of local radio stations and national news outlets which in turn raises awareness. This is just a part of our wider plan; in addition we are:

- Using specially trained dogs to identify surface water that has been contaminated with additional drainage, for example were washing machines have been connected to the wrong drainage system;
- Working in partnership with local community groups to organise local volunteering events including litter picking, balsam bashing and pennywort removal;
- We have planted 500 new trees;
- Working with farms and agriculture to reduce over-land run off to help protect river health;
- Trialling new innovative measures at WwTW to target spill reduction. If successful these intervention types could be used as part of future mainstream enhancement solutions; and
- Increasing transparency of data through development of a new EDM portal to view discharges from storm overflows in near real time and hosting our first Environmental AGM in 2022.

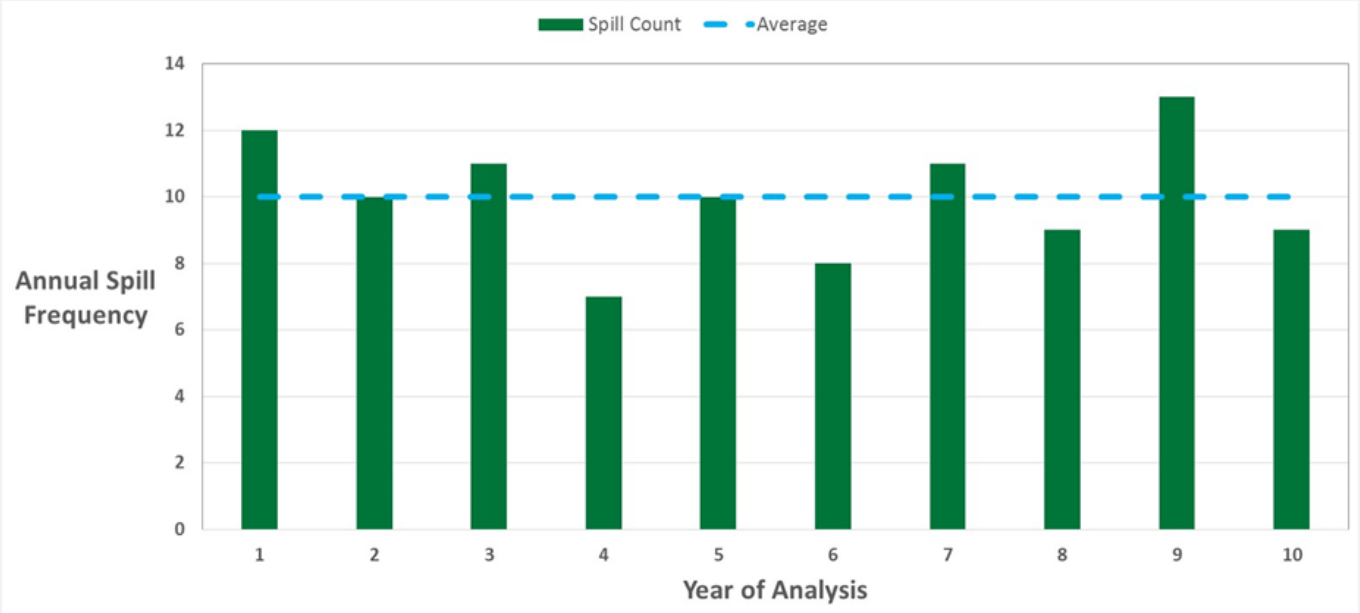
Figure 49 - Activities carried out as part of Better Rivers Better North West Programme

Our delivery plan

4.23.6 The AMP8 enhancement programme is targeting spill reductions at 437 storm overflows in AMP8 at a cost of £3089.4m. It is anticipated to deliver over 600,000m3 of new storage capacity, an increase in treatment capacity at 37 WwTWs, and implementation of over 170 sustainable drainage solutions (SuDs). To design and deliver a programme of this size and scale will take a huge amount of resource and time.

4.23.7 We have used hydraulic network model outputs to design and forecast the modelled spill reduction of our AMP8 programme. This approach is based on the annual average spill frequency (using ten-year time series rainfall) and therefore the annual observed spill frequency will vary according to actual rainfall year-on-year – see Figure 50.

Figure 50: Illustrative example showing the variation of annual spill frequency due to rainfall whilst still meeting the average spills target



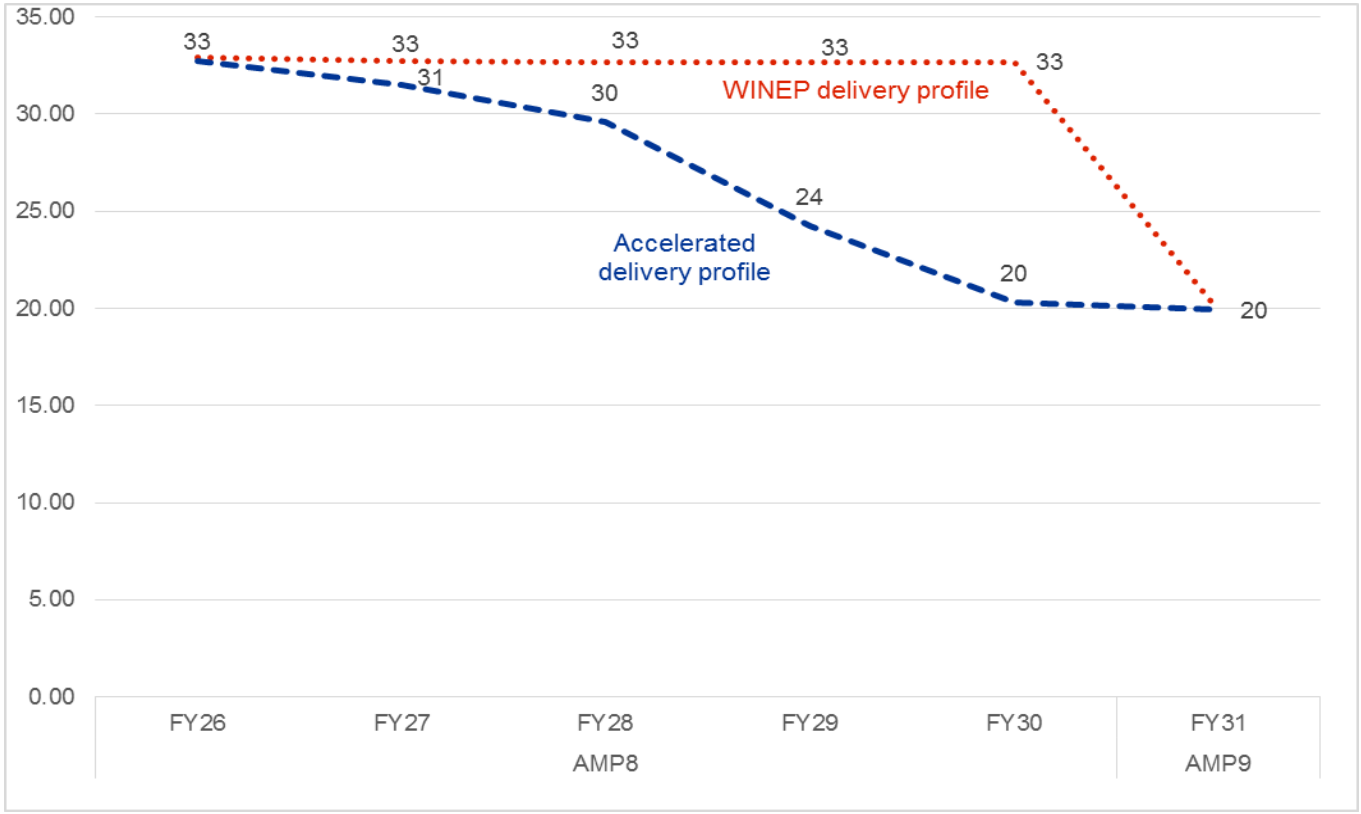
Source: N/A - Illustrative example only

4.23.8 UUW recognises the importance of reducing discharges from storm overflows as soon as possible and so has challenged our delivery teams to put in place new streamlined processes that will enable more efficient delivery of our AMP8 programme. This includes:

- Early investment through the accelerated programme which will help to bring forward project delivery of 154 sites;
- Starting detail project design in AMP7 (2023) to ensure rapid deployment of assets, teams and contracts in AMP8; and
- Maximising design standardisation and modularisation and the use of global markets for an enhanced delivery model.

4.23.9 Our plan accelerates our AMP8 programme ahead of the WINEP delivery dates to bring forward over 28,000 spill reductions into AMP8. Figure 51 represents the difference between the WINEP delivery profile and the accelerated profile included within our business plan.

Figure 51: AMP8 spill reduction delivery profile based on modelled spill reduction in the year of delivery



Source:

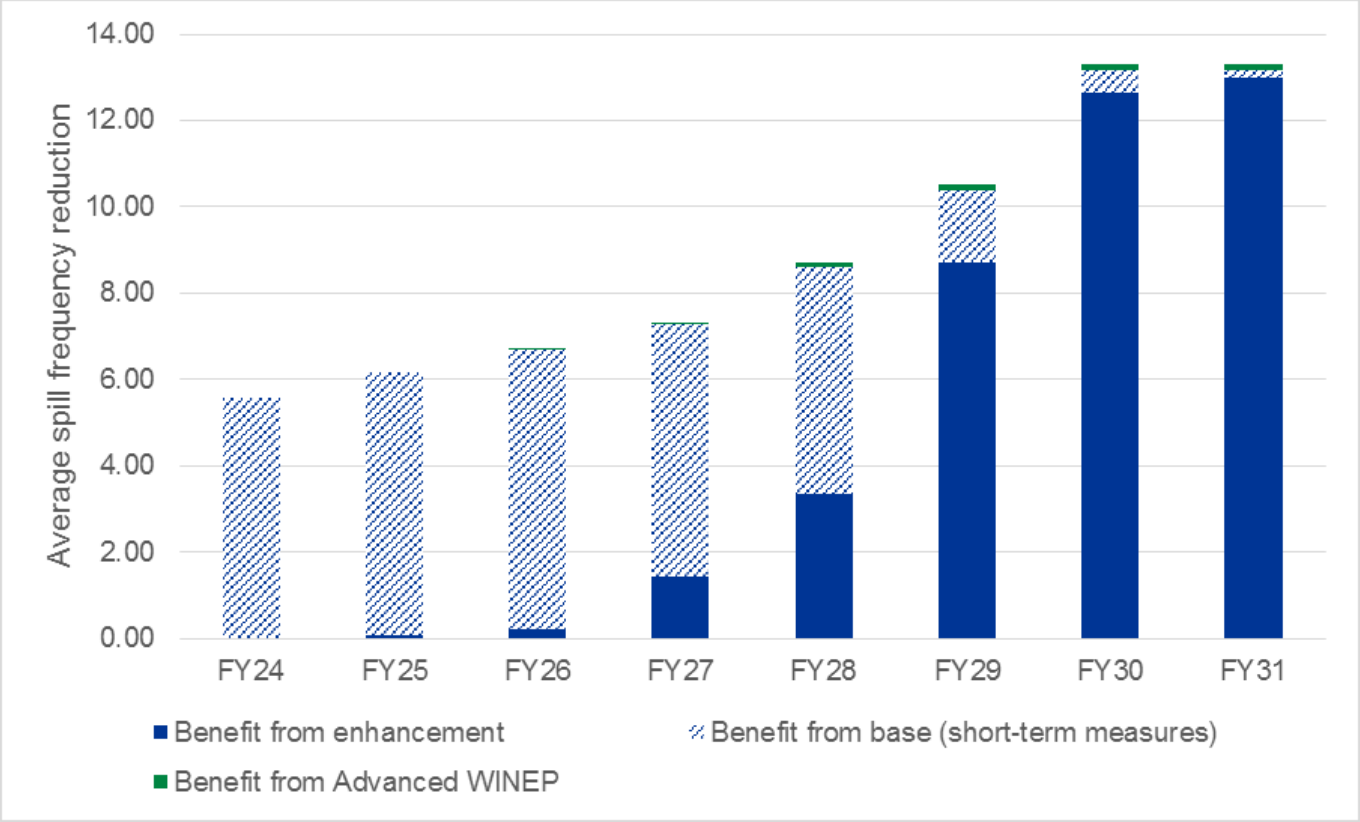
4.23.10 With our accelerated delivery profile UUW will deliver a steady spill reduction throughout AMP8 to achieve a modelled spill frequency of 20 spills per overflow, using Ofwat's measure of spills, by the end of 2029/30. This is a significant improvement from the WINEP programme that would deliver an average modelled spill frequency of 33 in the same period. However, alongside the accelerated delivery of additional capacity through the WINEP, we have also mobilised a team within our Better Rivers programme to develop short-term mitigation measures to deliver immediate reductions to spills frequency, ahead of our AMP8 infrastructure enhancements (which are still required). The accelerated programme and interventions delivered through our Better Rivers programme aims to deliver the stretching performance commitment level for storm overflows.

4.23.11 Whilst these are short-term mitigations measures they can provide a reduction in spills through the deployment of innovative equipment and additional operational support. These measures are often operationally intensive and whilst they would not meet our new long term regulatory requirements we acknowledge the need to restore customer confidence in water companies and to deliver immediate environmental improvements. These short-term mitigation measures are delivering from our base capital.

Figure 52 - Examples of short-term temporary interventions

4.23.12 These measures have short life spans and are only suitable for some sites. The deployment of short-term mitigation measures doesn't change the scale of enhancement needs required for the permanent solutions as these provide a long term, resilient and reliable solution that replaces and exceeds the short-term measures. Due to physical size and/or storage capacities in question, the deployability of these types of short-term mitigation measures is limited to sites with very high frequency, but low volume spills. They are not a replacement for large scale infrastructure solutions (either blue-green or conventional grey solutions). However, they have an important role to play in our commitment to reduce spills as quickly as possible.

Figure 53 - Spill frequency improvement from modelled baseline over time as a result of base and enhancement investment



Source: UUW analysis based on PR24 Data Tables and Advanced WINEP

4.23.13 Figure 53 illustrates the relationship between the short-term mitigation measures and the permanent enhancement solutions. In AMP7 the vast majority of the spill reduction benefit is from short-term mitigation measure, whilst in AMP8 the benefit from the short-term mitigation measures reduces as the permanent enhancement investment is delivered.

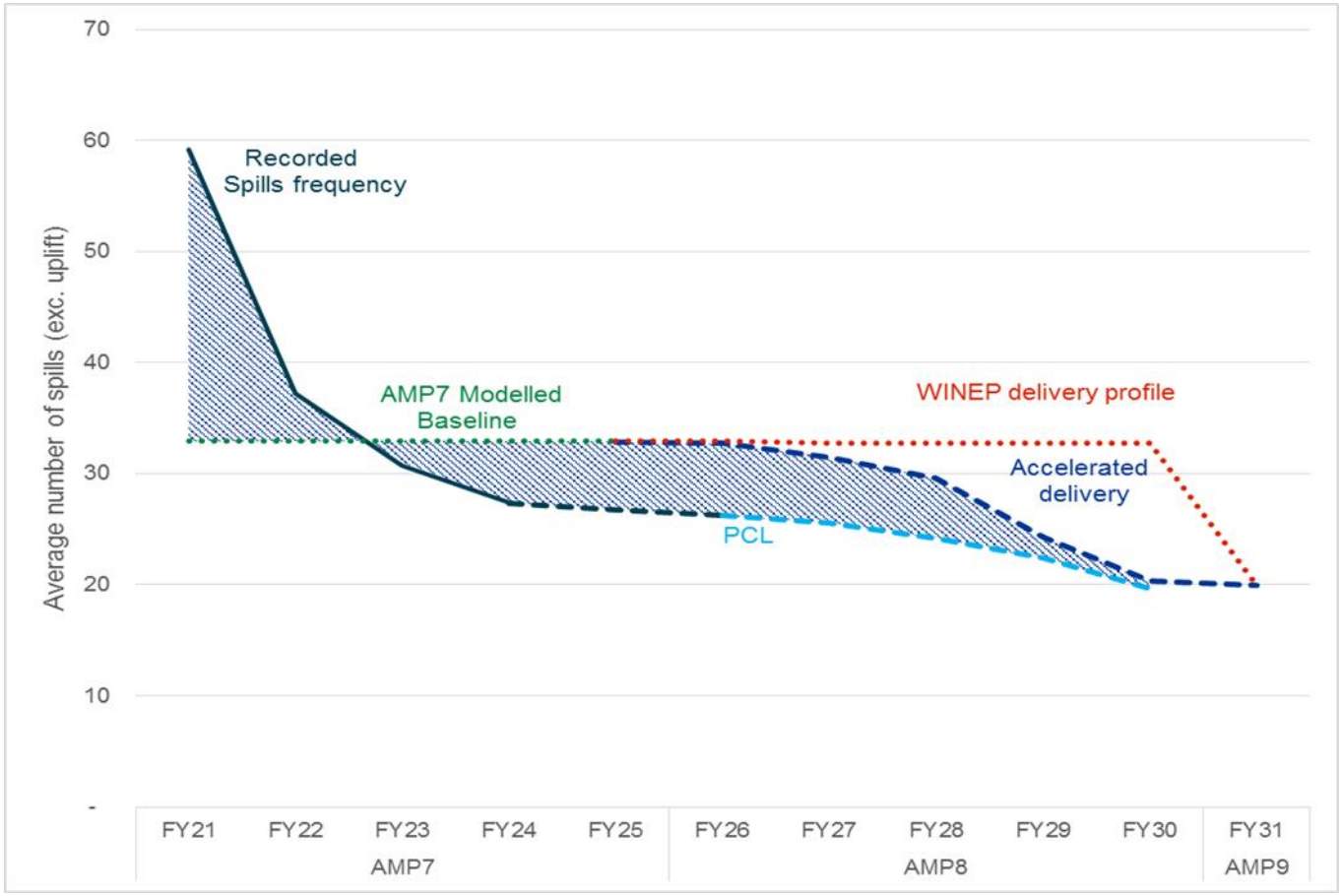
4.23.14 Additional capacity will be delivered progressively throughout AMP8 as a result of our enhancement programme, this will replace and exceed the short-term measures and will deliver the long term spill reduction requirement. The short-term mitigation measures and permanent enhancement solutions both contribute towards the same annual spill frequency improvement, the benefits are not compounding.

4.23.15 Ofwat has specified that companies should stretch themselves on what can be delivered from base but that companies should not show a deterioration in base performance[57]. To ensure that the spill reduction is not double counted the majority of spill reduction benefit in AMP7 has been allocated to base enhancement, whilst all spill frequency improvement in AMP8 has been allocated to enhancement expenditure in the PR24 data tables (OUT2 and OUT3). In reality the benefit from short-term mitigation measures will be present in AMP7 and continue into AMP8, but will be superseded by the permanent capacity enhancement solution as shown in Figure 53.

4.23.16 UUW has reflected the additional/immediate environmental benefit from short-term mitigation measures within the AMP8 performance commitment level, providing a more stretching target than would otherwise be possible though the enhancement programme alone, see Figure 54.

[57] PR24 final methodology submission table guidance – Section 1: Outcomes. https://www.ofwat.gov.uk/wp-content/uploads/2023/08/PR24-BP-table-guidance-part-1-OutcomesV5.pdf

Figure 54 - Performance improvement identified from short-term measures



Source: PR24 Data Tables and supporting calculations. Note: AMP7 forecast based on average number of spills, excluding operability uplift and therefore forecast differs to that reported in OUT1. AMP8 PCL is consistent with OUT1.

4.23.17 The historic and AMP7 forecast spill levels presented above do not include an uplift for unmonitored storm overflows or operability (where operability is less than 100%).

4.23.18 UUW will continue to look for additional opportunities for spill reduction outside of the enhancement programme delivering incremental reductions in spill frequency and where possible we will endeavour to take the same approach, on short-term mitigation measures ahead of enhancement, in AMP9.

Why a common PCL is inappropriate for UUW

4.23.19 Past improvement to increase wastewater capacity has been driven by legislation to prevent adverse impacts from storm overflows. These past requirements have not required companies to meet a level of spill reduction and has therefore resulted in differing levels of spill reduction being delivered as a result of differing levels of spill reduction being needed to remove harm (wetter areas having higher residual spills than dry areas once harm has been removed).

4.23.20 UUW disagrees with the application of a common PCL for this performance commitment. In the case of discharges from storm overflows we have set out how our ability to influence the number of spills to date has been limited by:

- Past legislation;
- Greater than average rainfall within our region; and
- Our legacy asset base including the proportion of combined sewers.

4.23.21 We observe that long-term, step-changes in performance can only be achieved with significant investment within our wastewater system to increase storage and treatment capacity. In the

development of our AMP8 WINEP we looked for the lowest cost and best value solutions to reduce spill frequency and meet the requirements of SODRP – this has resulted in the largest enhancement investment programme in our history at a cost of over £3 billion. This is more than the botex allowance for the entire wastewater price control which demonstrates the size and scale of the challenge in the North West and step-change in performance requirements driven by the SODRP.

4.23.22 Figure 60 shows the combination of urban rainfall and combined sewers by creating a composite variable which multiplies the two together. For example, a company with low levels of urban run-off and low levels of combined sewers will have a lower value, a company with low levels of urban run-off and high levels of combined sewers a medium value and a company with high levels of both will have a high value. The combination of these two factors is likely to have an even greater impact on overflow discharges than for sewer flooding, as overflows will act to some degree to temper some of the effects of rainfall on sewer flooding.

A summary of limitation is shown below, for more detail see supplementary document *UUW64_Wastewater Quality Overflows Enhancement Case.*

1) Past legislation

4.23.23 The water industry is a tightly regulated industry, duties on water companies have been set out in European and subsequently UK legislation. Contemporary legislation has set the requirements for storm overflows. Historically this has driven improvements where assets were identified as causing harm to the receiving water course with solutions designed to protect the environment, in addition investment at sites impacting designated bathing waters has contributed to the protection of the public.

4.23.24 Prior to the Government's 2022 Storm Overflows Discharge Reduction Plan, the specific requirements of overflows and therefore the quality requirements for overflows were set through three main pieces of legislation, all of which were originally EU directives which are now transposed into UK law:

4.23.25 **Urban Waste Water Treatment (England and Wales) Regulations 1994** ("UWWTR") – supplements the duty imposed on every sewerage undertaker by section 94 of the Water Industry Act. Requires water companies to provide appropriate wastewater collection and treatment facilities that comply with regulatory requirements, for all agglomerations with a population of greater than 2000.

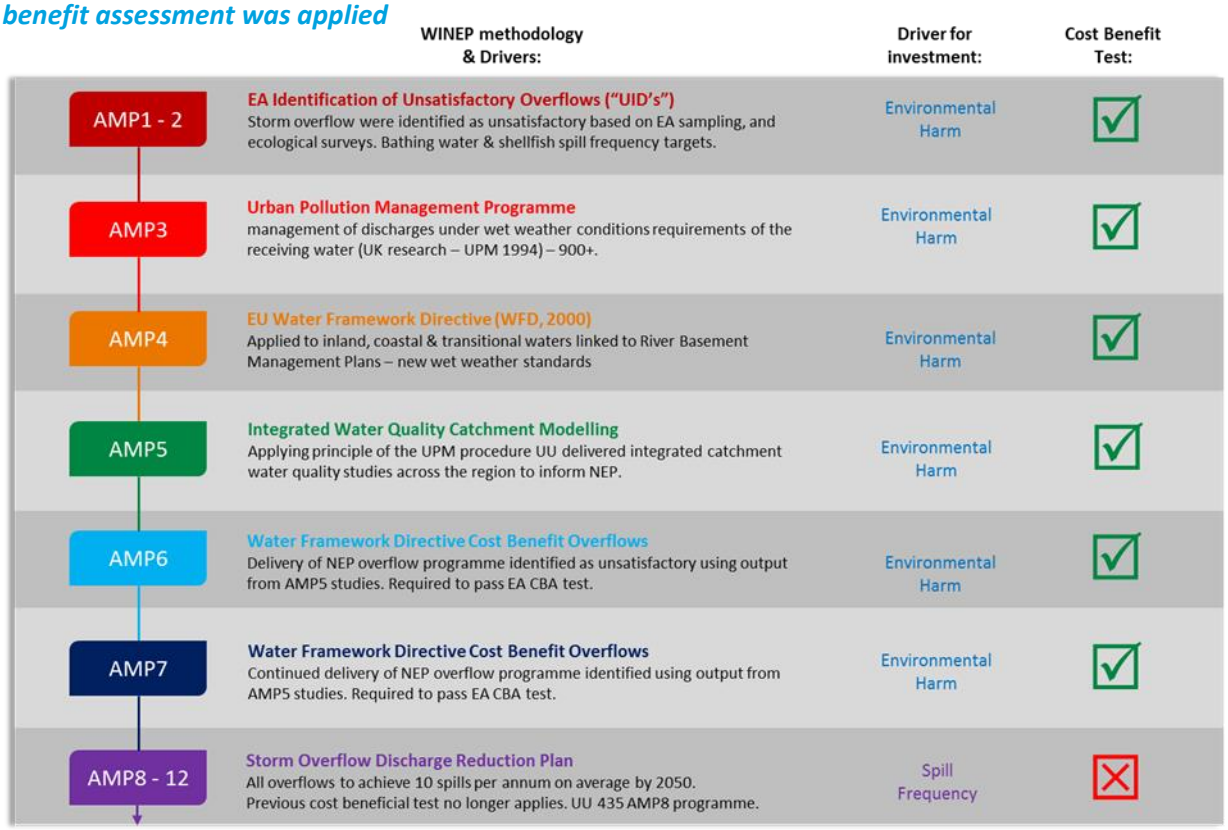
4.23.26 **Bathing Water Regulations 2013** – Establishes water quality objectives for bathing waters and requires permits to be set to meet these objectives.

4.23.27 **Water Environment (Water Framework Directive) Regulations** – requires the Environment Agency to set environmental objectives and programmes to achieve "good" ecological and chemical status in all rivers.

4.23.28 Implementation of a scheme under any of these statutory regulations has focussed on preventing environment harm from storm overflow discharges and has been subject to cost benefit analysis to protect customers and to ensure that the benefit they receive is greater than or equal to the cost of the intervention. Environmental improvement (or harm) cannot be directly measured through storm overflow spills as spill frequency alone does not indicate the volume or environmental impact that a discharge may have on the receiving watercourse. A single annual large-volume discharge into a small brook maybe many times more harmful than daily small discharges into a large estuarine river.

4.23.29 Figure 55 shows how past legislation has influenced investment in storm overflows since privatisation of the water industry.

Figure 55: Implementation of statutory requirements by AMP, the driver for investment and whether a cost vs benefit assessment was applied



4.23.30 The Environment Act 2021 set out new and government's storm overflow discharge reduction plan (SODRP) sets out new, long-term ambitions for storm overflows. This 25-year plan requires all storm overflows to achieve 10 spills by 2050 or less where storm overflows are identified to cause harm or discharge to a designated bathing water. The investment has been programmed to at least meet the phasing and prioritisation requirements of the SODRP and strive to reduce spills as fast as possible where possible.

4.23.31 The scale of intervention required to meet new statutory drivers for storm overflows is related to current spill frequency and the initial starting position has been governed by past investment to comply with Urban Waste Water Treatment Regulations 1994, Bathing Water Regulations 2013, and Water Environment Regulations (also referred to as Water Framework Directive or WFD). The starting position for overflow discharges will differ by region depending on the environmental needs and future spill level required to comply with these statutory drivers.

2) Greater than average rainfall within our region

4.23.32 UUW's position to the west of the UK results in a high exposure to prevailing winds from the south west bringing warm air that is laden with moisture from the Atlantic Ocean. This air cools as it is forced to rise over the West Pennines high ground resulting in large totals for orographic rainfall. Indeed, as acknowledged by Ofwat at PR19, ranked by average annual rainfall, 17 out of the top 26 wettest cities in England and Wales fall within UUW's operating area.

4.23.33 Furthermore, Ofwat's urban rainfall calculations (October 2022) dataset (BN4505) demonstrates that, when normalised per 10,000 sewer connections, UUW's urban rainfall is 40% higher than the industry average. Therefore, as high rainfall coincides with the main urban conurbations of the North West, more rainwater falls onto hard, impermeable urban surfaces and so enters the wastewater system relative to in other companies' areas. High rainfall results in higher flooding risk and drives increased overflows spills to alleviate such risk.

4.23.34 UUW has conducted a sensitivity analysis to test how rainfall alone influences storage volume required to address storm overflow spill frequency drivers.

4.23.35 Using an example catchment, hydraulic network models were run to determine the impact of regional rainfall on the modelled storage volume required to achieve the Government's Storm Overflow Discharge Reduction Plan (SODRP) ten spills driver. The analysis has shown significant regional variation across all spill analysis criteria assessed with UUW's average spill frequency shown to be 28% more than an equivalent 2021 national average.

4.23.36 To achieve the ten spills target for UUW this translates as an overall storage volume that is 70% above average and costs 51% above average, based on the example catchment analysis. This analysis demonstrates that long-term sustainable spill reduction will require significantly more investment in some regions based on rainfall alone. Delivery of any improvement should be considered in line with bill increases and deliverability of the programme.

3) Legacy asset base including the proportion of combined sewers

4.23.37 The North West has the highest proportion of combined sewers in the industry. Combined sewers convey both foul and surface water flows, resulting in a reduced hydraulic capacity in periods of high rainfall. Normalised urban rainfall within the North West is 40% higher than the industry average across other regions[58]. Companies with higher levels of both combined sewers and rainfall will be particularly affected by hydraulic overload resulting in sewers reaching capacity more frequently resulting in more frequent storm overflow discharges.

4.23.38 UUW has a number of unique regional operating circumstances that compound to result in the application of a common PCL being inappropriate.

4.23.39 We have investigated broadly to better understand the challenges we face when operating a wastewater service in the North West. When developing the performance commitment level for spill reduction there are some clear differentiators that should be taken into account, including:

- The design and configuration of the infrastructure
- The frequency of rainfall and the amount of heavy rainfall
- Ground water levels that impact the amount of infiltration of ground water into a sewer network

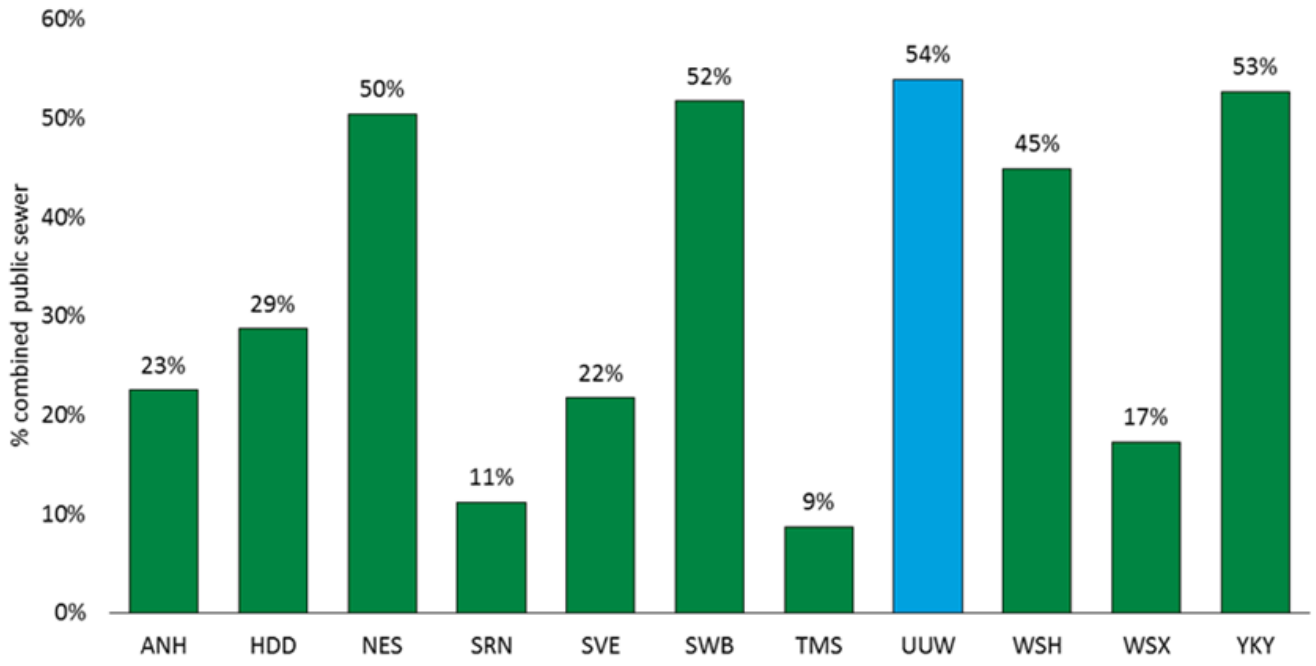
Proportion of combined sewers

4.23.40 A significant proportion (54% versus an industry average of 33%, UWW has the highest in the industry, see Figure 56) of the North West sewer network is combined, consequently sewage and surface water (i.e. rainfall from gutters and roads) are drained in shared, combined, sewer networks. This characteristic means that drainage systems in the North West are more vulnerable (responsive) to climate change impacts than areas with lower proportions of combined systems and lower rainfall.

4.23.41 Storm overflows have historically been constructed and permitted to act as hydraulic relief points within the combined sewer network and discharge when storm water runoff results in the hydraulic capacity of the sewer being exceeded. These storm discharges allow water to leave the sewer in a controlled location to prevent localised flooding of properties through surcharge of the hydraulic sewer network.

[58] Ofwat's Urban rainfall derivation v2.0. Accessed on 26.05.23 at: https://www.ofwat.gov.uk/publication/urban-rainfall-calculations

Figure 56 - UUW has the highest % of combined public sewers in the industry.



Source: Ofwat, PR24 wastewater cost assessment master dataset[59]

4.23.42 In practice there is a compounding relationship between combined sewers and rainfall which impacts different companies to different extents. Companies with high levels of both combined sewers and high levels of rainfall will be particularly affected by hydraulic issues.

PCLs set at PR19

4.23.43 There was no equivalent performance commitment in AMP7, however UUW has committed to a Better River Better North West plan in AMP7 which will deliver a one third spill reduction from a 2020 baseline.

Historical outturn performance at an individual company and sector level

4.23.44 The Environment Agency require companies to report all storm overflow discharges to the environment within the EDM annual return. 2020/21 was the first year of reporting following the major AMP6 programme to install event duration monitors (EDM) on the majority of storm overflows. This programme required over 2,000 monitors to be installed on our assets and was the first time that we had data to show the number of times our storm overflows discharged to the environment. 2020/21 was also the first year in which most water companies published their EDM data.

4.23.45 The total number of historic spills recorded by UUW's EDMs are reported in the Environment Agency's EDM annual return and published on our website.

4.23.46 In the latest EDM annual return (2022/23) UUW reported that 89% of all storm overflows had spill monitoring leaving 11% to be installed by the end of 2023. 2024/25 (calendar year 2024) will be the first full reporting year with 100% of storm overflows monitored.

4.23.47 As we do not have a full set of either modelled or EDM data, a combined approach is required to understand the baseline from which improvements will be made. Confidence in the data can then be assessed and will increase over time as more data is collected and companies advance their capabilities to analyse vast amounts of data.

[59] https://www.ofwat.gov.uk/wp-content/uploads/2023/04/PR24-Cost-Assessment-Master-Dataset-Wholesale-Wastewater-Base-Costs-v4.xlsx

Individual company performance

4.23.48 Full measured historic industry performance is not available as EDM monitors are still being installed. Model data is available and has been used to develop the PCL. UUW has put in place challenging targets in AMP7 and AMP8 to provide short-term and sustainable long-term solutions for spill frequency reduction. This ambitious target goes above and beyond our committed delivery programme to deliver spill reduction as soon as possible.

4.23.49 With a 39% improvement from 2020 to 2022 and a proposed 61% improvement over ten years from 2020 to 2030.

Table 67: UUW's predicted AMP7 performance for storm overflows, alongside the actual industry upper quartile and average

	Actual				Forecast		Percentage Improvement		
	2019 (AMP6)	2020	2021	2022	2023	2024	2020 to 2022	2020 to 2024	AMP8 PCL
Number of Spills		113,940	81,650	69,245	62,321	61,029	39%	47%	
% of EDM coverage	92	92	92	89	100	100			**32.9%**
Average spill rate[60]		59.19	37.25	30.72	27.33	26.77			
Industry upper quartile		25.09	24.89	17.92					
Industry frontier		20.93	20.23	15.26					

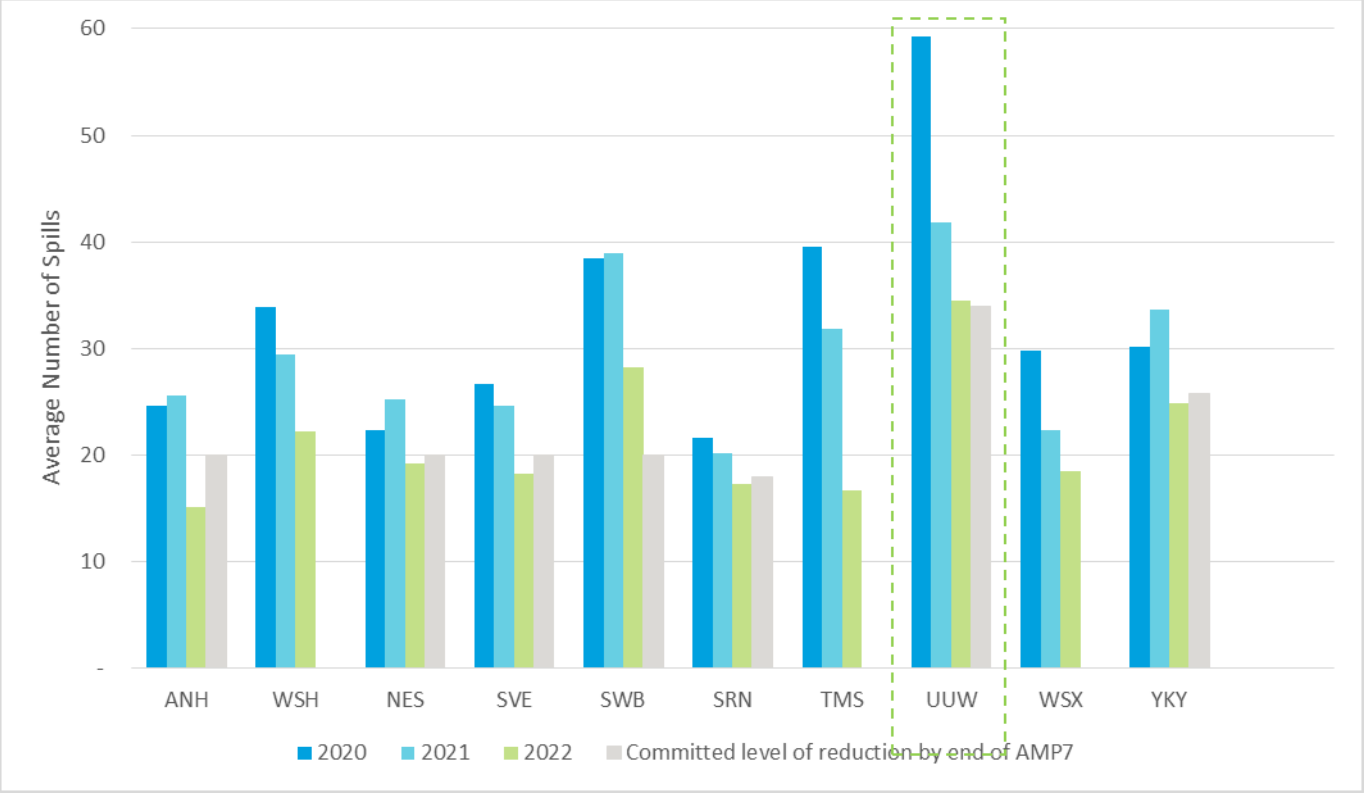
Reported annually on a calendar year basis. For example, 2025-26 value will be based on the calendar year 2025

Sector level performance

4.23.50 Figure 57 shows the average number of spills recoded by each company in 2020, 2021 and 2022 based on published EDM data. Included on this graph is the level of spill reduction companies have committed to in AMP7. The graph shows that UUW is an outlier to the industry but also highlights that a common performance commitment level would almost certainly be easily met by some companies and impossible for others which further supports that companies should have specific targets to drive improvement within their region.

[60] This is average number of spills per monitored overflow and does not include any adjustment for unmonitored overflows

Figure 57: Industry average numbers of spills 2020-2022



Source: Environment Agency's EDM annual return

Historical expenditure included in the base expenditure models at PR24

4.23.51 Past enhancement investment has been targeted at reducing the impact of storm overflow discharges on the environment (rather than spill numbers as a target). The past investment has resulted in additional sewer capacity usually through the addition of a storm water storage.

4.23.52 In AMP7 the modelled spill frequency reduction as a result of our AMP7 enhancement programme provides a regional average spill reduction of 0.7 per annum by the end of the AMP, all solutions within our AMP7 programme were subject to a cost-benefit assessment to ensure that we are delivering the best value for customer. The level of spill reduction is reflective of our programme that is not being driven by spill frequency reduction but by the ambition to eliminate harm. The AMP7 modelled baseline (encompassing of AMP7 enhancement improvements) shows a ten-year average spill frequency of 75,060 annual spills, equivalent to 32.9 average spills per storm overflow.

Performance levels of efficient companies

4.23.53 Whilst the average numbers of spills for the industry is reviewed in Figure 57, the historic reduction in spills demonstrates significant improvements for UUW in comparison to others (Figure 58)

Figure 58 - Reduction in spills per overflow for all WaSCs from 2020 to 2022

Source: Environment Agency's EDM annual return

Company forecasts of performance levels that can be delivered from base expenditure

4.23.54 In our delivery plan we identify opportunities for accelerating spill reduction in AMP7 and AMP8 through:

- Early investment and acceleration of AMP8 enhancement programme to deliver ahead of the WINEP regulatory dates;
- Short-term benefits from short-term mitigation measures to reduce spill frequency during design and delivery phases of permanent WINEP schemes; and
- Advanced WINEP initiative to deliver rainwater management schemes in partnership, unlocking funding, innovation and harnessing expertise in order to meet long term SODRP targets.

Dependencies or overlap with other PCs

Bathing waters

4.23.55 All storm overflows with a bathing water or shellfish water driver have been taken into account when setting the storm overflow baseline. Six bathing water schemes have been identified in AMP8, and these spill reduction schemes are modelled to achieve an in-class benefit and therefore will not impact the overall bathing water classification nor the performance commitment baseline.

Pollutions

4.23.56 Reducing the number of discharges to the environment could reduce the risk of a pollution occurring, however pollution incidents caused by hydraulic capacity are a very small proportion of our overall incidents accounting for 2% of total pollutions since 2018 and therefore the risk reduction benefit is limited. In addition UUW has proposed a stretching target for pollution performance, relative to our frontier position on pollution incidents. This reflects our desire to protect and enhance the North West's rivers and wider environment.

WINEP

4.23.57 All WINEP enhancement schemes for spill frequency reduction have been taken into account when developing the performance commitment target for storm overflows. To ensure that we are delivering the spill frequency reduction that customer's expect, we intend to deliver short-term mitigation measures from base during the implementation of our enhancement programme. In addition, Ofwat accepted our ambition to accelerate delivery of AMP8 storm overflow projects, this funding will enable the detailed design to be developed in AMP7 so that delivery can start in early AMP8 therefore delivering spill reduction sooner. The benefit of the accelerated programme has been taken into

account when developing the storm overflow PCL, we have assumed early delivery of the AMP8 enhancement programme to deliver spill reduction as soon as possible, the performance commitment reflects our very ambitions delivery plan and commitment to reducing storm overflow discharges.

Advanced WINEP

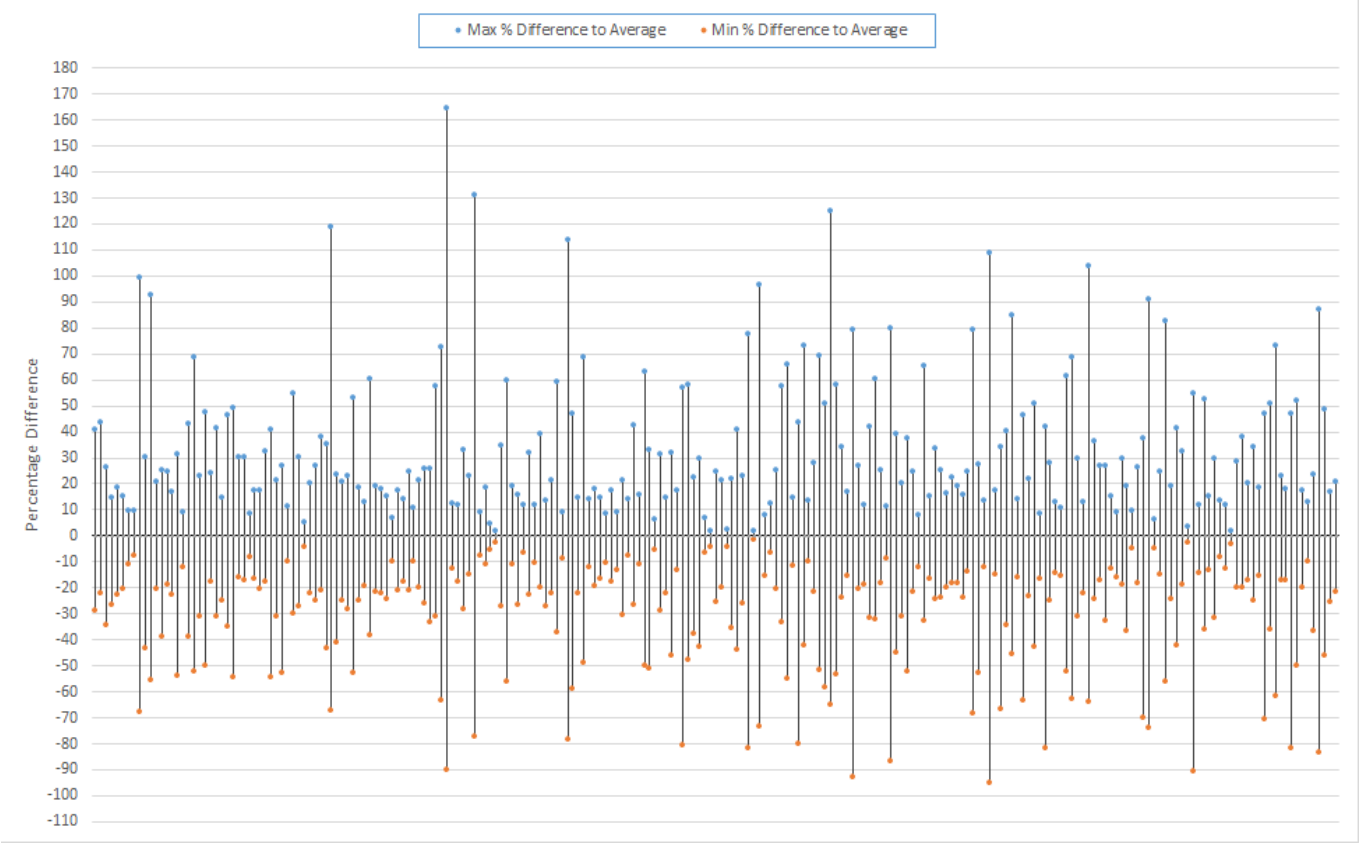
4.23.58 Our Advanced WINEP accelerates work on future overflow drivers into AMP8 to allow time to deliver the rainwater management component of solutions. This approach is critical to delivering multiple benefits and efficient spend, when partnership funding can be leveraged to change grey solutions to blue-green. The programme is therefore entirely comprised of hybrid or blue-green solutions and is specifically targeted at delivering wider environmental outcomes alongside spill reduction. A small benefit in average spill reduction has been identified in AMP8 as a result of Advanced WINEP, this has been taken into account when setting the PCL.

Application of cap and collar

4.23.59 UUW agrees with Ofwat's proposal to apply a cap and collar for this new common performance commitment as the solutions designed spill performances are based on an average from a 10-year time-series of rainfall. Actual annual rainfall will have a significant impact on this measure so it is appropriate to protect against large annual variations from the designed solution due to rainfall alone.

4.23.60 Analysis conducted by UUW in 2018 looked to identify annual variations in performance due to rainfall. The analysis was carried out at storm overflows where both EDM and modelled data was available at the time of completion. Three years of EDM data was assessed from 227 overflows and the data plotted to review the variation. Figure 59 below shows that there is significant annual variation in data as rainfall is the most significant factor affecting spill frequency.

Figure 59 - Annual variation in EDM data where spill frequency exceed SOAF threshold of 40 spills per annum. Analysis based on three years of data



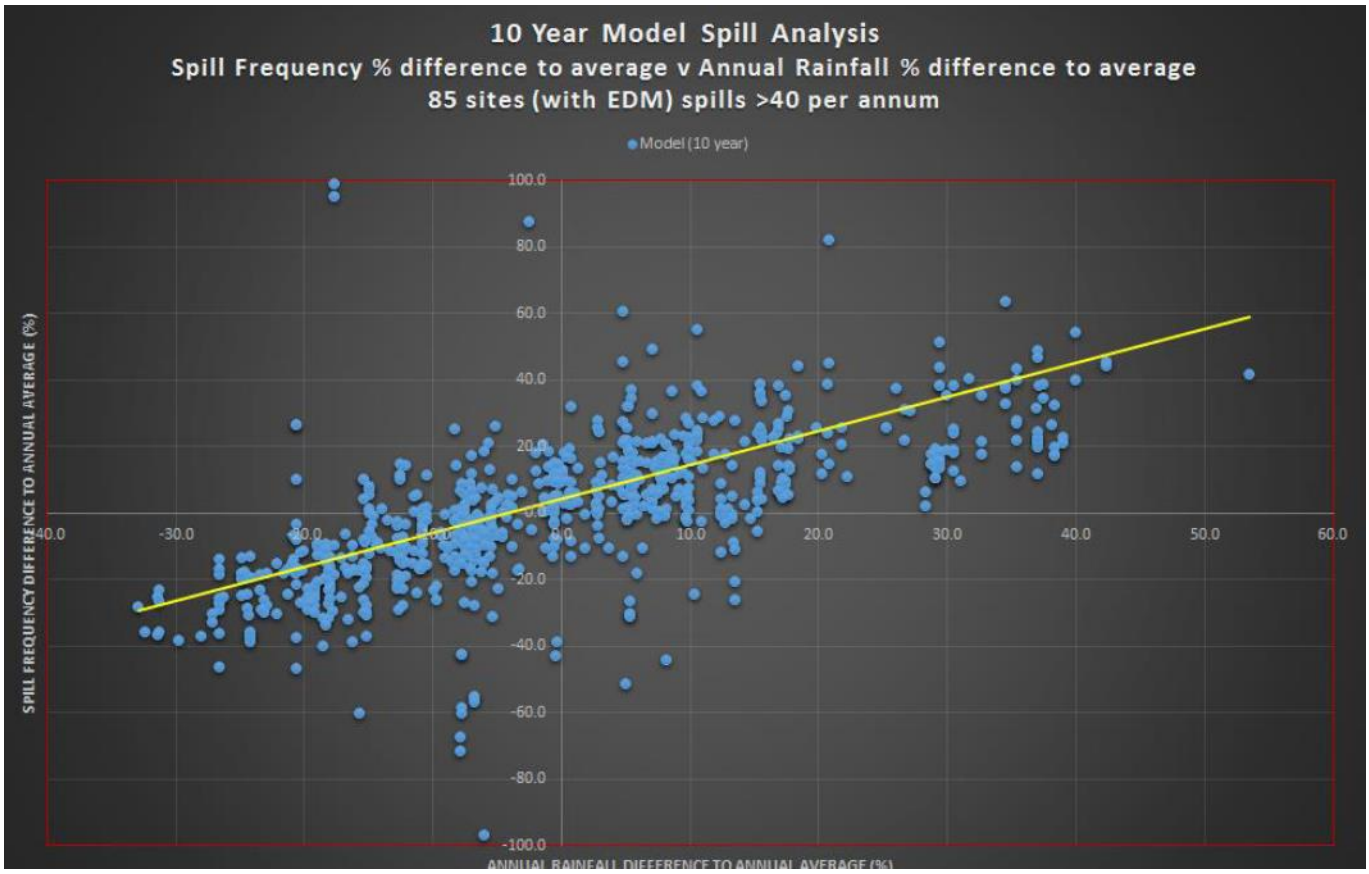
Source: EDM historical data

4.23.61 Similar analysis was undertaken using modelled data; a sample of 82 sites were run through hydraulic network models using 10 years' time series rainfall data. Variation in rainfall data resulted in an

observed annual spill frequency deviation of +/- 30% when compared to the average, see Figure 60 below.

4.23.62 Using this analysis, UUW proposes a cap and collar, set at +/-30% of the forecast annual average spill frequency/ proposed PCL, to protect against the effects of extreme weather.

Figure 60 - Percentage variation in modelled spill frequency (based on 10 years of rainfall data) vs the percentage variation in rainfall compared to the average



Source: UUW analysis using modelled data

5. Outcome C: Asset Health and operational resilience

5.1 Overview

5.1.1 These outcomes track our ability to continue to perform functions for the benefit of customers, the environment and wider society, now and in the future. The outcomes demonstrate that stewardship of the assets is adequate and levels of resilience are sufficient.

Table 68 Outcome C Performance Commitments

Outcome	Measure	Units	Service	
			W	Ww
Asset health	PR24_MRP Mains Repairs	Number of repairs per 1,000 km of mains		
	PR24_UNO Unplanned outage	Percentage of peak week production capacity		
	PR24_SCO Sewer collapses	Number of collapses per 1,000 of sewer network		

5.2 PR24_MRP_Mains Repairs

5.2.1 UUW recognises that mains repairs can be disruptive and reducing the requirement to repair mains is part of our longer term strategy to transition from “find and fix” to Dynamic Network Management, predicting and preventing leaks to drive continual improvement in our leakage performance and water network asset health.

5.2.2 We therefore propose a highly stretching performance commitment level (PCL) that targets upper quartile performance over AMP8. Our proposed mains repairs PCL achieves an optimal balance, maintaining upper quartile performance for mains repairs while delivering stretching leakage reductions.

5.2.3 Table 69 outlines a summary of these proposals.

Table 69: PR24_MRP_Mains Repairs – summary, definition and parameters

Purpose and benefits	To incentivise companies to appropriately maintain and improve the asset health of its infrastructure or below-ground water assets and demonstrate its commitment to its asset stewardship responsibility.
Definition	The number of mains repairs per thousand kilometres of the company's entire water main network (excluding communication and supply pipes). Ref: *Mains repairs - PC definition, 9th May 2023.*
Specific Exclusions	In line with section 1.3 of the Mains repairs – PC definition.
Exceptions to Ofwat methodology	None
Compliance Checklist	We have completed the compliance checklist provided by Ofwat as part of the performance commitment definition and are confident in meeting all of the reporting requirements.

Units: Number of repairs per 1,000 km of mains	**Forecast**	**Company specific performance commitment level**				**Long term**
	2024-25	**2025-26**	**2026-27**	**2027-28**	**2028-29**	**2029-30**	**2049-50**
UUW PCL	106.5	106.5	106.5	106.4	106.4	106.4	89.3
Underperformance collar		134.4	134.3	134.3	134.3	134.2	134.4
Deadband				N/A			
Outperformance cap		92.6	92.5	92.5	92.5	92.4	92.6
Enhanced threshold				N/A			
Enhanced cap				N/A			

ODI Rates	
Rate per Number of repairs per 1,000 km of mains	
Marginal benefit	£0.53 million
Benefit sharing factor	70%
ODI rate	£0.37 million
Enhanced rate	N/A
Source: Ofwat Excel file "United Utilities - Indicative ODI rates - Jun23 - v3"	

Basis for PCL	The cap and collar are calculated in line with Ofwat's final methodology which proposed a cap and collar at +0.25% and -0.5% of RoRE. We have calculated these figures for this submission using 2022/23 RoRE.

Data table reference lines – AMP7: OUT8.5, AMP8: OUT1.18, Long Term Ref: LS1.18

5.3 Evidence to support mains repairs proposals

5.3.1 A company specific PCL, cross-checked against historical and forecast performance, is proposed in line with Ofwat's methodology issued in December 2023. In the following sections, we have presented evidence for the calculation of the company specific PCL.

5.3.2 The sections outline:

- How we have calculated our proposed PCL and how we justify its suitability with reference to the tests given in Ofwat's final methodology Appendix 9 section 4.4.3 on determining stretching performance improvements.

Performance Commitment Levels

5.3.3 The proposed performance commitment levels are summarised in Table 70 below, shown in the context of historic performance and expenditure; what can be delivered from base expenditure; industry performance and accounting for transformational improvements. UUW proposes a PCL for the business plan period 2025-2030 in line with our WRMP24 and the efficient glide path to the longer term (2050) target. Each element of this table is discussed in more detail in the following sections.

Table 70: Mains Repairs AMP8 Performance Levels achievable from base and enhancement expenditure with comparative industry information

	2025-26	2026-27	2027-28	2028-29	2029-30
UUW PCL	106.5	106.5	106.4	106.4	106.4
Performance from base[1]	106.5	106.5	106.4	106.4	106.4
Performance from enhancement[2]	0.0	0.0	0.0	0.0	0.0
Industry upper quartile	117.6	117.5	117.5	117.4	117.4
Industry frontier	59.9	59.6	59.2	58.9	58.5
Outperformance cap (0.25% RoRE)	92.6	92.5	92.5	92.5	92.4
Underperformance collar (-0.5% RoRE)	134.4	134.3	134.3	134.3	134.2
Deadband			N/A		

Data Table References: [1] OUT2.18, [2] OUT3.18

PCLs set at PR19

5.3.4 The PR19 PCL was proposed by Ofwat and accepted by United Utilities as part of the PR19 process.

Historical outturn performance

Individual company performance

5.3.5 We have met our targets in the first three years of AMP7 and we continue to manage water network asset health.

Industry performance

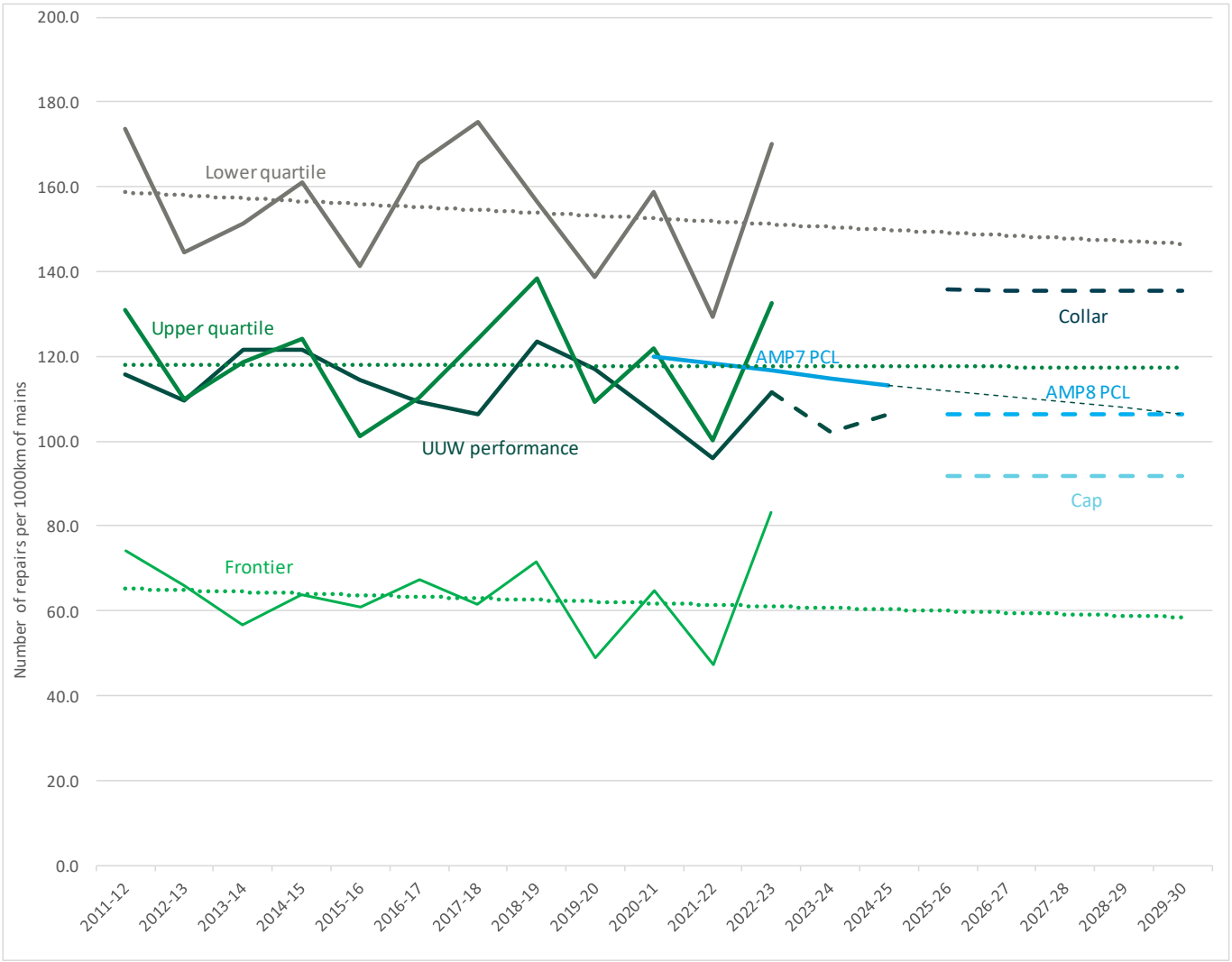
5.3.6 Upper quartile and frontier performance have been calculated and included in Table 71.

Table 71: Mains repairs AMP7 UUW and industry performance and forecast data

	Actual				Forecast		Percentage Improvement		
	2019/20 (AMP6)	2020/21	2021/22	2022/23	2023/24	2024/25	AMP6 to 2023	AMP6 to 2025	AMP8 (PCL)
AMP7 PCL	N/A	119.9	118.2	116.3	114.9	113.3			0.1%
UUW Performance	117.1	106.6	96.0	111.6	102.0	106.5	5%	9%	
Industry upper quartile	109.3	122.0	100.2	132.5	117.6	117.6			
Industry frontier	48.9	64.7	47.3	83.3	60.7	60.3			

Source: UUW interpretation of Ofwat historical performance trends data share 2023

Figure 61: Historic industry performance of mains repairs



Source: UUW interpretation of Ofwat historical performance trends data share 2023

Historical expenditure included in the base expenditure models at PR24

5.3.7 We consider that the vast majority (99 per cent) of historical performance was delivered via base expenditure allowances and is therefore reflected in the cost models – this is because this activity is

associated with keeping service levels constant. We do not consider that 100 percent of performance is delivered through base because there will be some marginal benefits attributable to leakage loggers. However, we note that service improvements beyond historical levels is not reflected within historical expenditure. As such, this would represent additional stretch in our plan.

Company forecast of performance levels that can be delivered from base expenditure

5.3.8 UUW forecasts that, with efficient and targeted mains renewal programme, we will be able to deliver our PCL entirely from base expenditure. This will, however, be stretching to achieve while reducing leakage and will require continued underlying transformation of our operating model (see sections 5.3.10 to 5.3.12).

Performance levels of efficient companies

5.3.9 Refer to upper quartile and frontier performance in Table 71.

Opportunity for transformational performance improvements

5.3.10 The key proposals for AMP8 that support transformational performance improvements are:

Dynamic Network Management (DNM) and smart metering

5.3.11 Building on the additional network sensors we installed in our water network in AMP6 and AMP7, and incorporating the learnings from our wastewater DNM deployment, water DNM will be transformative to the way we operate and manage our water network. Predictive analytics applied to the vast amount of data we have on our water network will support improved leakage detection targeting and improved asset understanding. This will support proactive interventions (e.g. network and pressure optimisation) and should, over time, support a reduction in mains repairs.

Mains renewal/replacement

5.3.12 Delivered in a targeted way, using the insights we've gained from the additional network sensors we installed in AMP6 and AMP7, mains renewal/replacement is critical in enabling us to reduce leakage without the needs for a substantial increase in mains repairs.

Sources of information used to set the PCL

5.3.13 Several sources of information were used to determine the mains repairs PCL:

- Our Revised Draft Water Resources Management Plan 2024 (WRMP24) has assessed the supply-demand requirements to ensure water resources resilience, as well as meeting the long-term and interim leakage targets in the Government's Environmental Improvement Plan[61] 2023;
- We have used the data on historical performance trends for PR24 data published by Ofwat[62] to forecast upper quartile performance; and
- We have used the Annual Performance Report (APR) Datashare 2023 to update our forecast of upper quartile performance using the reported data for 2022-23.

Dependencies or overlap with other PCs

5.3.14 There is a direct link between mains repairs and certain leakage interventions, e.g. active leakage control (i.e. proactive leakage detection) will drive additional mains repairs in order to maintain and/or reduce leakage.

5.3.15 Our strategy is to achieve an optimal balance across the leakage and mains repairs performance commitments, delivering stretching reductions in leakage levels while maintaining upper quartile performance in mains repairs.

[61] https://www.gov.uk/government/publications/environmental-improvement-plan

[62] https://www.ofwat.gov.uk/regulated-companies/price-review/2024-price-review/pr24-cost-assessment-datasets/

Application of outperformance cap, underperformance collar or deadband

5.3.16 Ofwat proposes the application of caps and collars on incentive payments for mains repairs, setting caps at +0.25% RoRE and collars at -0.5% RoRE. UUW proposes caps and collars for this PC, calculated for this submission using 2022/23 RoRE.

Application of an enhanced incentive rate threshold

5.3.17 We do not propose deviating from Ofwat's approach of applying a common improvement factor (as opposed to a common PCL) to all companies, cross-checked against historical and forecast performance, provided the baseline to which the improvement factor is applied is UUW's proposed PCL.

5.3.18 Applying a common incentive rate cap to all companies, cross checked against historical and forecast performance is proposed in line with Ofwat's methodology issued in December 2023.

5.4 PR24_UNO_Unplanned Outage

Unplanned outage overview

5.4.1 Unplanned Outage is proposed by Ofwat as a common performance commitment for PR24 and we include it in our submission. Unplanned Outage is proposed by Ofwat as a common performance commitment for PR24 and we include it in our submission.

5.4.2 UUW recognises the importance of Unplanned Outage as a key indicator of asset health. It is in the interests of our customers that we are responsible stewards of our assets; ensuring appropriate maintenance and investment in order to deliver efficient operation of our water treatment works.

5.4.3 As an endorsement of our support for this PC we are proposing a highly stretching Performance Commitment Level (PCL), in-line with forecast industry upper quartile position for the duration of AMP8. This represents a step-change in performance targets from AMP7.

5.4.4 In order to achieve this performance, it is the recommendation of UUW that Ofwat reinstates the raw water quality exclusion, to allow raw water quality outages to be excluded from the Unplanned Outage PC.

5.4.5 The North West region of England is an area with significant variation in raw water quality, driven by weather and climatic factors, which can impact surface water reservoirs. In order to deliver high quality potable water to our customers, we occasionally throttle or halt water production at our treatment sites in order to manage raw water quality variability. We ensure continuous supply to our customers through high baseline capacities at our water treatment facilities, and a robust, integrated network.

5.4.6 By removing allowable exclusions to raw water quality, from the Unplanned Outage PC, UUW is exposed to an unreasonable performance risk. Disallowing the flexible operation of our water treatment works introduces possibility of penalty from either the Unplanned Outage PC (in the reduction of maximum production flows) or the Customer Contacts about Water Quality PC (by providing water which customers are dissatisfied with).

5.4.7 We agree with the aim of this PC to promote asset health. It is our intention to operate efficiently, in order to deliver the best value service to customers. In order to enable this, we recommend that Ofwat sustains the approach taken to this PC in AMP7, regarding allowable exclusion as a result of raw water quality.

5.4.8 Table 72 outlines a summary of these proposals.

Table 72: PR24_UNO_Unplanned Outage – summary, definition and parameters

Purpose and benefits	To incentivise the company to appropriately maintain and improve the asset health of non-infrastructure or above ground assets and demonstrate commitment to asset stewardship responsibility.
Definition	Measures the unplanned loss of peak week production capacity and reports this loss as a percentage of the overall company peak week production capacity. Ref: *Unplanned outage - PC definition 9th May 2023.*
Specific Exclusions	The Unplanned outage – PC definition includes the removal of allowable exclusions for this ODI in AMP8.
Exceptions to Ofwat methodology	UUW disagrees with the removal of specific exclusions defined by Ofwat in section 1.3 of the Unplanned outage – PC definition. In AMP7 we excluded non-asset health related outages including instances of raw water quality, extreme events, dry weather and third party activities which have limited production capacity. There are a number of specific challenges relating to managing raw water quality, which are unique to Water and Sewerage Companies (WaSC) primarily supplied from upland sources. Many of these will not impact other WaSCs which are primarily supplied by groundwater sources (as groundwater sources do not experience significant raw water quality variability). Therefore it is imbalanced to expand the definition of Unplanned Outage to incorporate raw water quality and other non-asset health impacts to Water Production.
Compliance Checklist	We have completed the compliance checklist provided by Ofwat as part of the performance commitment definition and are confident in meeting all of the reporting requirements.

Units: % of peak week production capacity (PWPC)	Forecast	Common performance commitment level (with exclusions)					Long term
	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2049-50
UUW PCL	2.34	0.65	0.58	0.52	0.46	0.41	0.21
Underperformance collar		3.21	3.15	3.08	3.03	2.98	
Deadband				N/A			
Outperformance cap		0.00	0.00	0.00	0.00	0.00	0.00
Enhanced threshold				N/A			
Enhanced cap				N/A			

ODI Rates	
% of peak week production capacity (PWPC)	
Marginal benefit	£5.80 million
Benefit sharing factor	70%
ODI rate	£4.06 million
Enhanced rate	N/A

Source: Ofwat Excel file "United Utilities - Indicative ODI rates - Jun23 - v3"

Basis for PCL	The PCL is aligned with forecast industry Upper Quartile performance. However, this is conditional on the continuation of raw water quality as an allowable exception for the Unplanned Outage PC. If raw water quality is not permissible as an allowable exception within the PC methodology, we recommend company specific PCLs to account for the major difference in scale of challenge associated with variable raw water quality. The cap and collar are calculated in line with Ofwat's final methodology which proposed a cap and collar at +0.25% and -0.5% of RoRE. We have calculated these figures for this submission using 2022/23 RoRE.

Data table reference lines – AMP7: OUT8.6, AMP8: OUT1.19, Long Term Ref: LS1.19

5.5 Evidence to support unplanned outage proposals

Performance Commitment Levels

5.5.1 We propose that the PCL should align with an Industry upper quartile position, only in the instance that previously allowed exceptions remains within the methodology.

5.5.2 Should the methodology change in AMP8 UUW recommends the application of a company specific PCL.

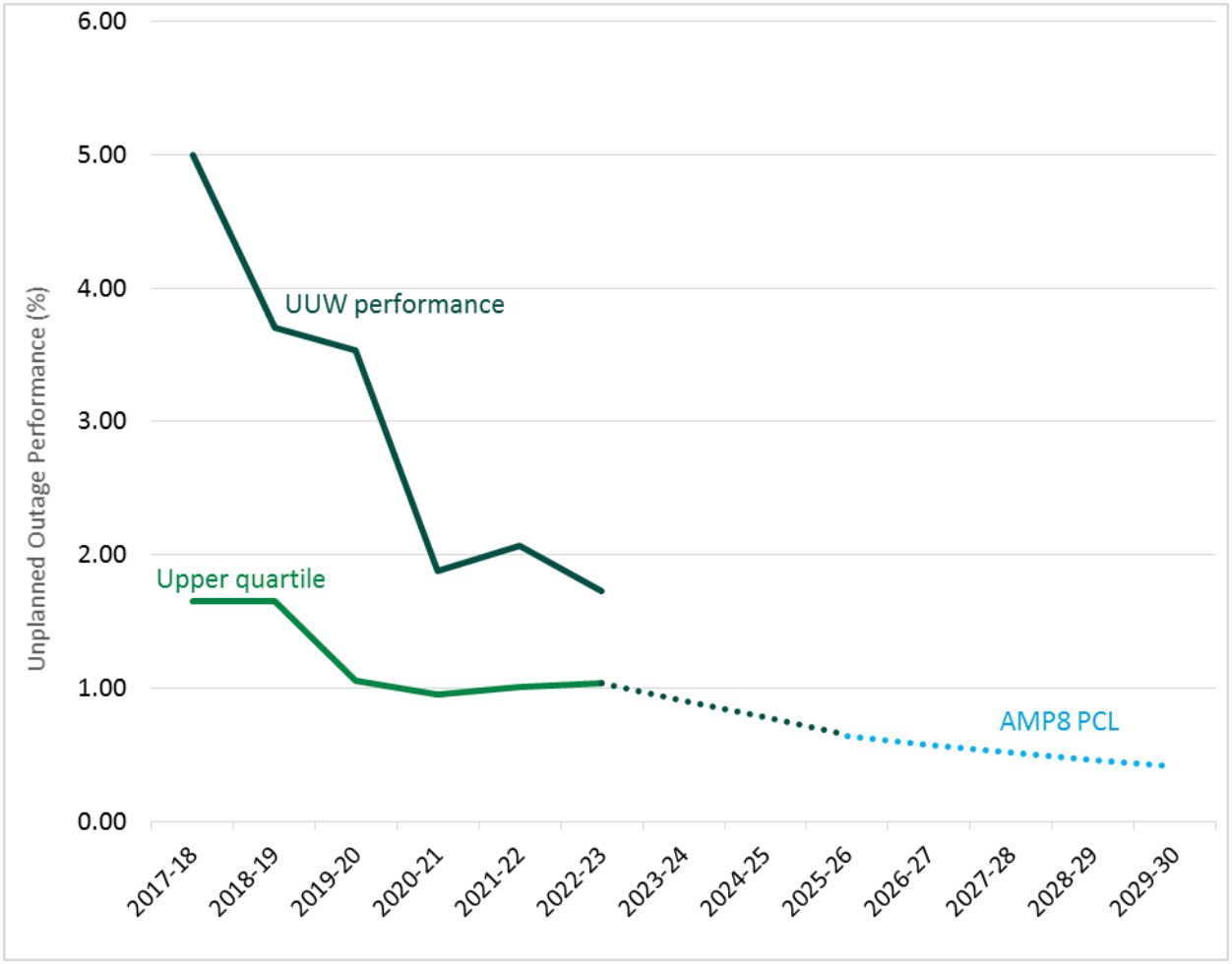
5.5.3 The proposed performance commitment levels are summarised in Table 73 below, shown in context of historic performance and expenditure; what can be delivered from base expenditure; Industry performance and accounting for transformational improvements. Each element of this table is discussed in more detail in the following sections.

Table 73: Unplanned outage AMP8 Performance Levels achievable from base and enhancement expenditure with comparative industry information

	2025-26	2026-27	2027-28	2028-29	2029-30
PCL	0.65	0.58	0.52	0.46	0.41
Performance from base[1]	0.65	0.58	0.52	0.46	0.41
Performance from enhancement[2]	All performance to be delivered through base expenditure				
Industry upper quartile	0.65	0.58	0.52	0.46	0.41
Outperformance cap	3.21	3.15	3.08	3.03	2.98
Underperformance collar	0.00	0.00	0.00	0.00	0.00
Deadband	N/A				
Enhanced outperformance threshold	N/A				

Data Table References:[1]OUT2.19, [2]OUT3.19

Figure 62- Unplanned Outage PCL in the context of historic and forecast industry performance data

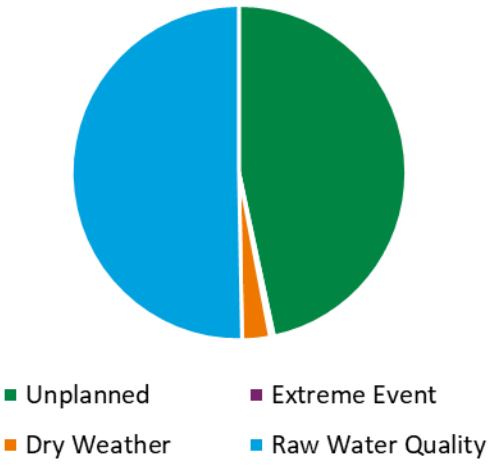


Source: APR data share 2023

PCLs set at PR19

5.5.4 There was a company specific PCL for PR19. The primary difference in AMP8 is the removal of allowable exclusions for this PC. In AMP7 we have removed non-asset health related outages - including instances of extreme events, dry weather and third party activities which have limited production capacity.

Figure 63: Average Root Cause of Outage – 2019/20 to 2022/23



Source: UUW outage data for Regulatory Reporting 2020 to 2023

5.5.5 Figure 63 demonstrates the root cause of outages at water treatment works from 2019 to 2023. As per the AMP7 Unplanned Outage methodology, non-asset health outages - including raw water quality may be discounted from performance reporting.

5.5.6 This chart makes evident the importance of a flexible, proactive approach to production availability as a method to efficiently manage variable water quality. Including raw water quality in performance reporting, would result in an 89% uplift in recorded outage. At present we have a well developed operating strategy, in order to make use of our integrated network. This enables efficient delivery of palatable drinking water to customers.

5.5.7 Removal of raw water quality as an allowable exclusion presents a double jeopardy scenario; compelling the choice between penalty as a result of the Unplanned Outage PC, or penalty as a result of the Customer Contacts about Water Quality PC.

5.5.8 It is the recommendation of UUW that raw water quality exclusions remain allowable under the AMP8 methodology for Unplanned Outage, in order to avoid unnecessary restrictions of efficient business operation.

Historical outturn performance at an individual company and sector level

Individual Company performance

5.5.9 Historic performance has exceeded targets set for AMP7. This is due to concerted effort within UUW to closely manage outages relating to asset failure, and enabling the prompt reinstatement, repair and recommissioning of assets in the event that they do fail.

5.5.10 The broader AMP8 definition has proven to be more challenging. This new definition removes previously allowed outage exclusions. These exclusions have historically allowed removal of any disruptions to peak week production capacity (PWPC) as a result of factors outside of the control of UUW, or which detract from the ODI focus on Asset Health. We therefore recommend that this exclusion remains for AMP8.

Table 74: Unplanned outage AMP7 UUW and industry performance and forecast data (AMP7 methodology with exclusions, AMP8 methodology without exclusions)

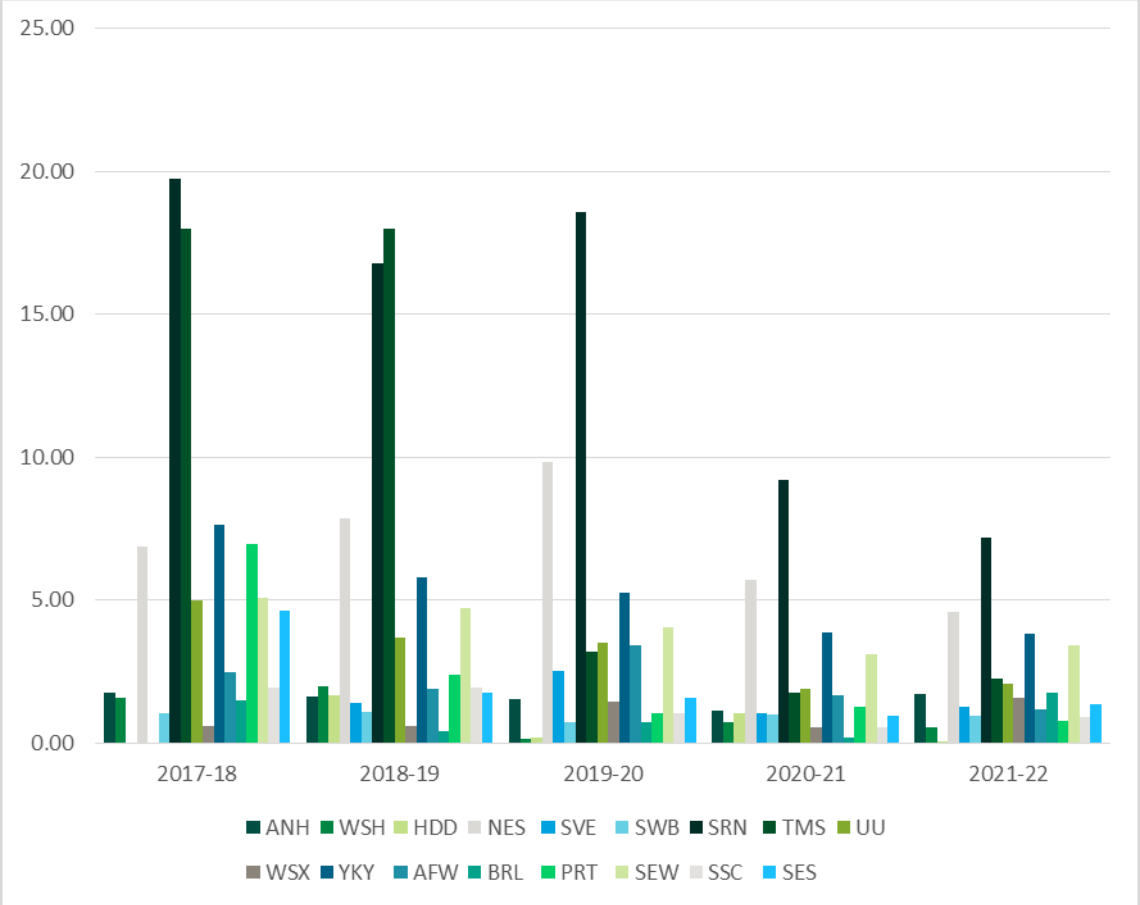
	Actual				Forecast		Percentage Improvement		
	2019/20[3] (AMP6)	2020/21	2021/22	2022/23	2023/24	2024/25	AMP6 to 2023	AMP6 to 2025	AMP8 (PCL)
AMP7 PCL	N/A	3.56	3.26	2.95	2.65	2.34	N/A	N/A	
UUW	N/A	1.88	2.07	1.73	2.65[1]	2.34[1]			
Industry upper quartile (AMP7 definition)	N/A	0.95	1.01	1.04	0.81	0.72	N/A		**37%**
Industry upper quartile without exclusions (proposed AMP8 definition)	N/A	1.03	1.36	1.05*	0.89	0.76	N/A		

[1] 2022 Forecast *Forecast data

Sector level performance

5.5.11 Performance across the sector has been good, with all companies exceeding targets for the first three years of the AMP. We have calculated the upper quartile for PR24 using Ofwat's historical data set and provide that in Figure 64.

Figure 64 - Historic industry performance for Unplanned Outage (proposed AMP8 definition)



Source: Industry datashare

Historical expenditure included in the base expenditure models at PR24

5.5.12 The AMP7 PC definition includes an exclusion for unplanned outages related to raw water quality. Ofwat's AMP8 PC definition signals a change in methodology to remove this exclusion although we propose PCLs based on the continuation of this exclusion through 2025-30.

5.5.13 Based on Ofwat's AMP8 methodology without the raw water quality exclusion, our historic performance would have been volatile, varying between 6.22% and 3.21%. A significant contribution to that rate of outage is represented by outages due to raw water quality. In many cases, we opted to shut down water treatment works when the raw water was affected by 2-MIB and geosmin (algal by-products) to prevent these taste and odour compounds from affecting customer supplies. Due to the AMP7 PC definition exclusion, the impact of unpredictable surface-fed water sources did not impact our unplanned outage performance according to the methodology pertaining at the time.

5.5.14 Based on the AMP7 methodology, our performance was 5.00% to 1.88% with an underlying improvement over time. Our focus was on using base investment to address alarm based outages (those caused by asset health and operation) to improve our performance. There was not a focus on addressing outages related to raw water quality, as this issue was excluded from the reporting methodology in place at the time. Therefore, while base expenditure has historically driven an improvement in performance, due to the change in regulatory methodology, base expenditure will not be able to deliver future improvements in performance at the same rate (or any improvement at all in all likelihood). Rather, enhancement expenditure will be required to address underlying variability in water quality.

Company forecasts of performance levels that can be delivered from base expenditure

5.5.15 We expect that no benefit will be delivered for this PC as a result of enhancement projects. This position is based on the assumption that outages as a result of raw water quality will not be included within the AMP8 PC definition. If we are required to include outages as a result of raw water quality, within the Unplanned Outage performance metric, there will be a slight benefit as a result of the GAC installation at five water treatment works as per the proposed Raw Water Quality Enhancement programme.

Performance levels of efficient companies

5.5.16 Within the first three years of AMP7 upper quartile has been 1.00%.

Opportunity for transformational performance improvements

5.5.17 The opportunities for transformational performance improvement are limited, but include significant capital investment in new assets, or under the proposed AMP8 definition, long term investment in catchment management.

Sources of Information used to set the PCL

5.5.18 The PCL was set using forecast performance data, based on industry shared performance data.

Dependencies or overlap with other PCs

5.5.19 Not applicable

Application of a cap and collar

5.5.20 Ofwat proposes the application of caps and collars on incentive payments for unplanned outage, setting caps at +0.25% RoRE and collars at -0.5% RoRE. UUW proposes caps and collars for this PC, calculated for this submission using 2022/23 RoRE. Given the indicative ODI rate and proposed PCL, if the cap were to be set at 0.25% RoRE this would equate to a performance level of less than zero unplanned outages – we have therefore proposed a cap limited to zero.

5.6 PR24_SCO_Sewer Collapses

Overview

5.6.1 We recognise that sewer collapses can be disruptive to customers' livelihoods and are one of several indicators of the underlying asset health of our sewer network. We therefore propose a company-specific performance commitment level (PCL) that targets a **5.0% reduction in sewer collapses over the course of AMP8**. Our proposed PCL builds upon the advances we have made in proactive collapse detection and prevention. Indeed, the position from which we launch into AMP8 has been enabled by the implementation of our highly successful dynamic network management (DNM) operating model, which has involved the deployment of an extensive network of sensors to 'learn' normal flow signatures and detect deviations from the baseline to proactively alert us to deterioration in the network. As such, achieving a further 5.0% performance improvement is stretching. Further, our proposed PCL sees us attaining an 2029/30 outturn position of 12.41 collapses per 1000 km of sewer, a target that puts us well on track to attain our long-term (2049/50) target of 11.32 collapses per 1000 km of sewer, the optimum level of performance modelled to be achievable in our preferred Drainage and Wastewater Management Plan (DWMP).

5.6.2 Delivery of this improvement will require continued transformational improvements. We will continue to mature the machine learning capabilities of DNM to improve our ability to detect changes in levels that may be indicative of defects within the network, as well as extending the service provision offered by DNM to additional drainage areas. We will use artificial intelligence to allow us to rapidly code CCTV survey imagery, providing a standardised assessment of structural risk and ultimately increasing the volume of sewers we can inspect by reducing the need for manual interpretation. Analysis of asset condition data in CWW21 highlights rising main asset health as an area of priority for AMP8, so we plan to install pressure transient monitoring in our highest risk mains to detect burst pre-cursors, improving the way in which we inspect and maintain air valves and replacing failing mains that are beyond their asset lives.

5.6.3 Overall, UUW is supportive of Ofwat's proposal for a company-specific PCL for sewer collapses. We consider that industry performance trends are difficult to interpret as pre-AMP7 there were large inconsistencies in the reporting methodology adopted by different WaSCs. Whilst direct comparison to other WaSCs is therefore difficult, we strongly believe that achieving a 5.0% decrease in collapses over the course of AMP8 is a suitably ambitious target for UUW when balanced across the overall AMP8 performance commitments package.

5.6.4 Table 75 outlines a summary of these proposals.

Table 75 PR24_SCO Sewer Collapses – summary, definition and parameters

Purpose and benefits	To incentivise companies to appropriately maintain and improve the asset health of its infrastructure or below-ground wastewater assets and demonstrate its commitment to its asset stewardship responsibility.
Definition	The number of sewer collapses per 1,000 kilometres of all sewers that have not been identified proactively by the company causing an impact on customers or the environment. Ref: *Sewer collapses - PC definition 9th May, 2023.*
Specific Exclusions	In line with section 1.3 of sewer collapses – PC definition.
Exceptions to Ofwat methodology	None
Compliance Checklist	We have completed the compliance checklist provided by Ofwat as part of the performance commitment definition and are confident in meeting all of the reporting requirements.

Units: Number of collapses per 1,000 km of sewer length	Forecast		Company specific performance commitment level				Long term
	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2049-50
UUW PCL	13.07	12.94	12.80	12.67	12.54	12.41	11.32
Underperformance collar		23.97	23.84	23.71	23.57	23.44	
Deadband							
Outperformance cap		7.42	7.29	7.16	7.03	6.89	
Enhanced threshold				N/A			
Enhanced cap				N/A			

ODI Rates	
Rate per Number of collapses per 1,000 km of sewer length	
Marginal benefit	£2.44 million
Benefit sharing factor	70%
ODI rate	£1.71 million
Enhanced rate	N/A

Source: Ofwat Excel file "United Utilities - Indicative ODI rates - Jun23 - v3"

Basis for PCL	In line with Ofwat's PR24 final methodology, we propose a company-specific PCL for this measure. Our proposed PCL will see us deliver a 5.0% reduction in sewer collapses, relative to 2024-25. We used multiple sources of data to determine an appropriate rate of improvement, including historical performance trends delivered from base expenditure, asset condition data and outputs from our Drainage and Wastewater Management Plan (DWMP). The cap and collar are calculated in line with Ofwat's final methodology which proposed a cap and collar at +0.25% and -0.5% of RoRE. We have calculated these figures for this submission using 2022/23 RoRE.

Data Table Definition Lines - AMP7: OUT8.9, AMP8: OUT1.20, Long Term Ref: LS1.20

5.7 Evidence to support sewer collapses proposals

5.7.1 A company specific PCL, cross checked against historical and forecast performance, is proposed in line with Ofwat's methodology issued in December for sewer collapses. We present compelling evidence below that our proposed PCL is highly stretching.

5.7.2 This section outlines:

- how we have calculated our proposed PCL;
- how we justify its suitability with reference to the tests given in Ofwat's final methodology Appendix 9 section 4.4.3 on determining stretching performance improvement; and,
- how we have applied the cap and collar.

Performance Commitment Levels

5.7.3 Table 76 below outlines our proposed performance commitment levels within the context of the performance levels achievable from base expenditure and wider industry performance. The upper quartile and frontier incident levels were calculated by applying a logarithmic projection to the 2016-17 to 2022-23 in-year upper quartile and frontier figures, respectively, as calculated from Ofwat's 'Historical Performance Trends for PR24 v2.0'. The penalty collar and reward cap are also included.

5.7.4 In the following sections, with reference to the tests specified in Ofwat's final methodology Appendix 9 section 4.4.3.

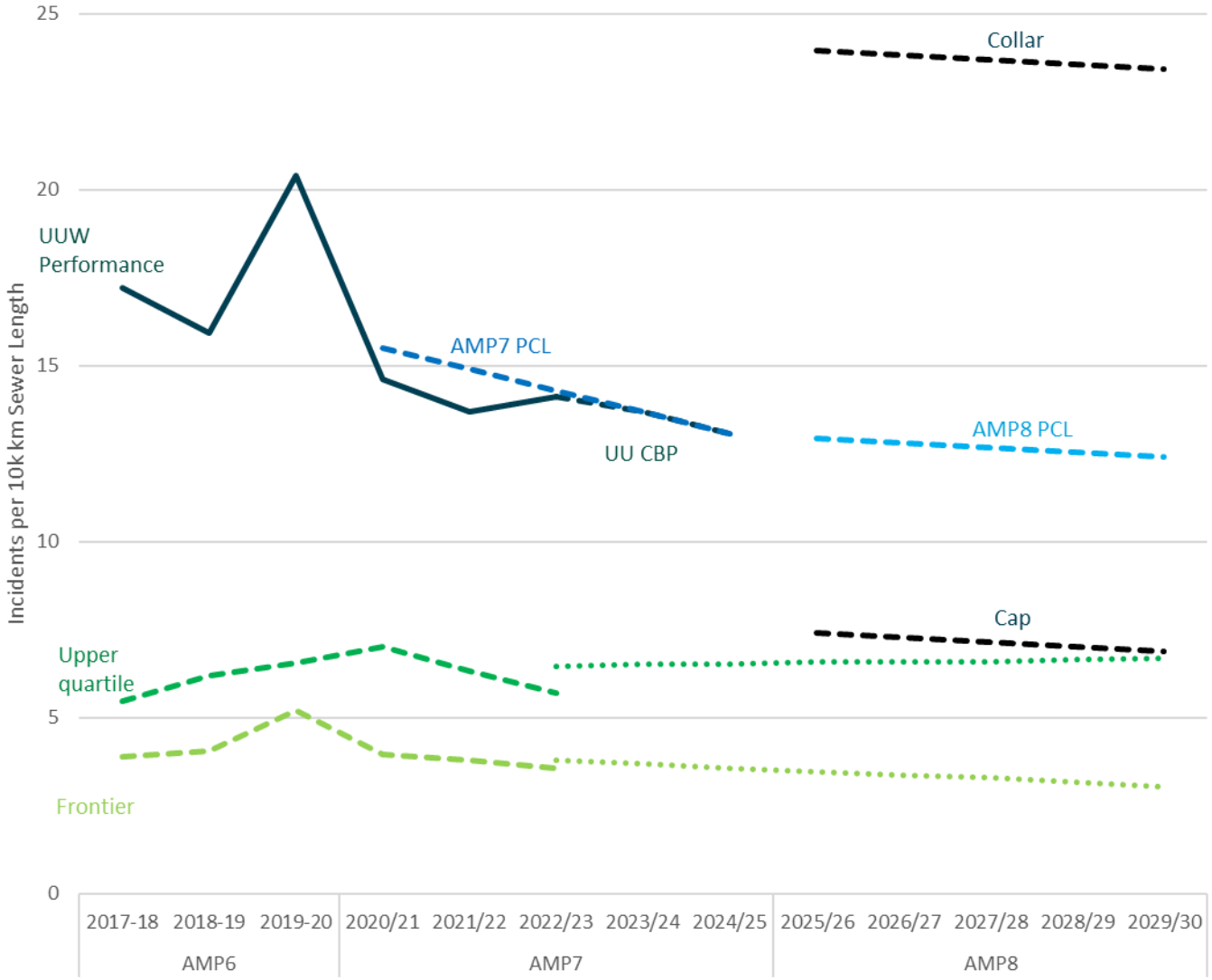
Table 76: Sewer Collapses AMP8 Performance Levels achievable from base and enhancement expenditure with comparative industry information

	2025-26	2026-27	2027-28	2028-29	2029-30
PCL	12.94	12.80	12.67	12.54	12.41
PCL (incidents)	1027	1018	1009	1000	991
Performance from base[1]	12.94	12.80	12.67	12.54	12.41
Performance from base (incidents)	1027	1018	1009	1000	991
Performance from enhancement			N/A		
Performance from enhancement (incidents)			N/A		
Industry upper quartile	6.59	6.60	6.60	6.65	6.70
Industry frontier	3.46	3.36	3.30	3.18	3.05
Reward cap	7.42	7.29	7.16	7.03	6.89
Penalty collar	23.97	23.84	23.71	23.57	23.44
Deadband			N/A		
Enhanced Reward threshold			N/A		

1. *OUT 2.20*

5.7.5 Figure 65 summarises the above, showing UUW's proposed PCL within the context of historic performance and the industry upper quartile.

Figure 65: Proposed Sewer Collapses AMP8 PCL, with consideration of the AMP7 PCL, historic company and industry performance



Source: APR data share 2023

PCLs set at PR19

5.7.6 The PR19 PCL was set to achieve an upper quartile level of reduction of 19% by 2024-25. We do not consider that it is possible to sustain such a rate of improvement indefinitely, as more of our assets come towards the end of their asset lives and we are required to invest more to offset deterioration. For this reason, in their PR19 business plan submissions, several companies proposed PCLs for sewer collapses that solely aimed to maintain stable performance, i.e. targeting a 0% improvement in collapse performance over the AMP. Within this context, UUW's proposal to not only offset deterioration but drive a further 5.0% improvement in performance is ambitious.

5.7.7 In its PR19 final determinations, Ofwat stated that 'the company (UUW) is a poor performer on sewer collapses'. We do not consider this statement to be appropriate as we consider our higher sewer collapses on a normalised basis to be reflective of our comprehensive operating model, whereby it is standard practice for our resolution teams to conduct a CCTV survey following job attendance. Discussions held as part of industry working groups indicate that we are unique in this sector in this regard, with the implication being that UUW identifies more collapses as the root cause of serviceability

issues than other companies (see section 5.7.6). UUW's baseline level of collapses will therefore be higher than that for most other companies as a result of our improved detection rate.

5.7.8 Taken together, these factors mean that a 5.0% improvement is an appropriately stretching but achievable PCL that builds upon the significant performance improvements we have driven in AMP7 through intelligent collapse detection and prevention.

Historical outturn performance

Table 77 Sewer Collapses AMP7 UUW and industry performance and forecast data

	Actual				Forecast		Percentage Improvement		
	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2019/20 to 2022/23	2019/20 to 2024/25	AMP8 (PCL)
AMP7 PCL	N/A	15.51	14.90	14.29	13.68	13.07	N/A		5.0%
AMP7 PCL (Incidents)	N/A	1,200	1,152	1,105	1,083	1,017	N/A		
Performance	20.42	14.61	13.70	14.13	13.68	13.07	30.8%*	36.0%*	
Incidents	1,606	1,156	1,080	1,117	1,083	1,036	30.4%*	35.5%*	
Industry upper quartile	6.57	7.02	6.31	5.70	6.51	6.53	13.2%	0.6%	
Industry frontier	5.21	3.96	3.78	3.55	3.70	3.57	31.9%	31.5%	

**AMP6 figures cannot be directly compared to AMP7 figures owing to substantive changes in the methodology introduced in AMP7*

Note: Percentage improvement varies between performance and incidents line as a result of the change in the normalising factor (sewer length) with time

Individual company performance

5.7.9 UUW's proposed PCL achieves a 5.0% reduction in sewer collapses over the course of AMP8, relative to our FY25 forecast position. In the context of our historical performance, it would appear that UUW expects to deliver a 36.0% reduction over the course of AMP7, when 2020 is taken as the baseline (Table 77 above). However, substantive changes in the methodology between AMP6 and AMP7 mean the performance figures are not directly comparable across the AMPs. Thus, taking 2021 as the baseline is more appropriate. When measured in this way, our predicted performance improvement across AMP7 is 10.5%. We believe that this rate of performance improvement cannot be sustained indefinitely and it is stretching for us to not only offset any deterioration in sewer collapses, by stabilising asset health, but drive further improvements such that replacement/repair rates exceed predicted failure rates. Within this context, achieving a 5.0% reduction across AMP8 is stretching.

5.7.10 Further, our performance this AMP has been enabled by our pioneering Dynamic Network Management (DNM) operating model, whereby we have installed over 17,500 in sewer monitors across 160 key strategic drainage areas. Through the application of machine learning capabilities, this network of sensors 'learns' normal flow signatures and detects deviations from the baseline to alert us to deterioration in the network. In this way, we have been able to increase proactive collapse detection and reduce reportable reactive collapses. The position from which we launch in AMP8 has therefore been enabled by a step change in our operating model and as such achieving a 5.0% additional improvement is very stretching.

Industry performance

5.7.11 Comparative information for the industry is difficult to interpret as pre-AMP7 there were large inconsistencies in the reporting methodology adopted by different WaSCs. As outlined in Table 77, if interpreted in isolation it would appear that between 2019/20 and 2022/2023 UUW's collapses reduced by 30.4% whilst over the same period the industry upper quartile decreased by 13.2%. However, due to differing historical assumptions regarding the level of deformation that constitutes a collapse, these numbers provide a poor cross-sector comparison.

5.7.12 Nevertheless, it is clear that UUW has more sewer collapses on a normalised basis than the industry upper quartile. UUW does not consider this to be reflective of poorer performance but rather is a result of our comprehensive operating model, whereby it is standard practice for our resolution teams to conduct a CCTV survey following job attendance. We believe we are unique in this sector in this regard, with the implication being that UUW identifies more collapses as the root cause of serviceability issues than other companies. Whilst inflating our collapse numbers relative to other WaSCs, we consider this to be the correct approach; allowing us to determine root cause, improve understanding of the asset health of our network and prioritise rehabilitation programmes more effectively.

5.7.13 It is for these reasons that we set our proposed PCL at a level that builds upon our own historic improvement rather than relative to the poorly comparable industry performance trends.

Historical expenditure included in the base expenditure models at PR24

5.7.14 Historical sewer collapses performance has been driven entirely by base expenditure and we will continue to seek performance improvements in base expenditure in AMP8. Extrapolating AMP7 performance improvements into AMP8 without any recognition within base allowances of the higher costs required will impose a substantial efficiency challenge upon companies, beyond the already substantial stretch created by the AMP7 regulatory contract. Our cost assessment proposals and industry performance to date provide compelling evidence that the AMP7 settlement was particularly stretching. Such a level of stretch in base cost and performance creates a risk that the AMP8 cost and service package is likely unobtainable, even for an efficient company. Therefore, while we consider our proposed PCLs to be achievable from base expenditure, this does rely upon the assumption that the AMP8 regulatory contract does not also impose additional and undue stretch on base totex allowances.

5.7.15 Given our understanding of the Ofwat cost models, we expect an element of the cost of delivering our historical improvements in sewer collapses performance will therefore be contained within Ofwat's base expenditure models at PR24.

Company forecast of performance levels that can be delivered from base expenditure

5.7.16 UUW forecasts that, with efficient and targeted asset health programmes, we will be able to deliver our PCL entirely from base expenditure. This is stretching when the level of activity we are funded to deliver through the base cost models is considered. The base models fund companies to attain the annual average improvement rate observed across the industry within the historical record. Noting that direct comparison between AMP6 and AMP7 data is inappropriate due to the historical inconsistencies in methodologies across the industry as outlined in section 5.7.6, we have not sought to compare performance improvements across the two AMPs but rather looked at the average year-on-year in-AMP performance improvement. The average year on year performance improvement delivered historically is -1%, i.e. performance has worsened by 1%. Achieving a 5.0% improvement over the course of AMP8 therefore demonstrates a significant stretch upon what we are funded to deliver within our base allowance.

5.7.17 Our PCL therefore demonstrates significant ambition and will require continued underlying transformation of our operating model, including improving detection of defect development through expansion of DNM and applying artificial intelligence to automate and accelerate the coding of CCTV imagery. Full details of these transformational initiatives can be found in section 5.7.19.

Performance levels of efficient companies

5.7.18 Ofwat's approach to identifying efficient companies has largely been predicated on the assumption that companies that are efficient will be able to achieve upper quartile. UUW contends that efficiency cannot be defined in such a way for sewer collapses owing to the methodological inconsistences outlined above. We strongly believe that achieving a 5.0% decrease in collapses over the course of AMP8 entirely from base expenditure demonstrates efficient use of our allowance and sets us on track to achieve our 2049/50 DWMP target.

Opportunity for transformational performance improvements

5.7.19 UUW recognises that our proposed PCL is stretching and will require us to undergo continued transformational change to achieve it. Throughout AMP8, we will continue to mature the machine learning capabilities of DNM to improve our ability to detect changes in levels that may be indicative of defects within the network. In addition, we are proposing a large-scale proactive sewer inspection and rehabilitation programme to enable us to better understand the asset health of our gravity network and prioritise repair appropriately. This programme will be largely enabled by our partnership with VAPAR, a company specialising in automation of condition assessments from CCTV footage using artificial intelligence. Automating defect detection will provide a standardised assessment of structural risk, drive efficiency through a reduced need for manual interpretation and provide us with a repository of information that can be used to validate our asset investment forecasting and decision support tool, PIONEER. In this way, we can improve our ability to predict where collapses are most likely to occur and intervene accordingly.

5.7.20 The sewer collapses measure includes rising main bursts. Rising main asset health is one key focus area that we have identified for improvement in AMP8. We are ultimately seeking to transform the way in which we manage our rising mains, including installing pressure transient monitoring in our highest risk mains to detect burst pre-cursors, improving the way in which we inspect and maintain air valves and replacing failing mains that are beyond their asset lives.

5.7.21 Taken together, these renewed efforts to slow the rate of deterioration of asset health across our most vulnerable linear asset stocks, will be imperative in helping us to achieve such an ambitious PCL.

Sources of Information used to set the PCL

5.7.22 Multiple sources of information were used to determine a stretching but achievable rate of improvement, including:

- AMP7 PCL
- The performance achievable from base expenditure as predicted by the optimiser in our DWMP preferred plan
- Our asset investment forecasting and decision support tool, PIONEER
- Ofwat's Historical Performance Trends for PR24 v2.0'

Dependencies or overlap with other PCs

5.7.23 N/A

Application of Reward Collar, Penalty Cap or deadband

5.7.24 Ofwat proposes the application of caps and collars on incentive payments for sewer collapses, setting caps at +0.25% RoRE and collars at -0.5% RoRE. UUW proposes caps and collars for this PC, calculated for this submission using 2022/23 RoRE.

6. Bespoke performance commitments

6.1 Overview

6.1.1 The bespoke Performance Commitments that we include in our business plan reflect Ofwat's feedback on our 14 April Early Submission. We received feedback from Ofwat in June 2023. The feedback we received and how we have addressed it is detailed in the sections below and in table 5-26 in Chapter 5.

Table 78 - Bespoke Performance Commitments

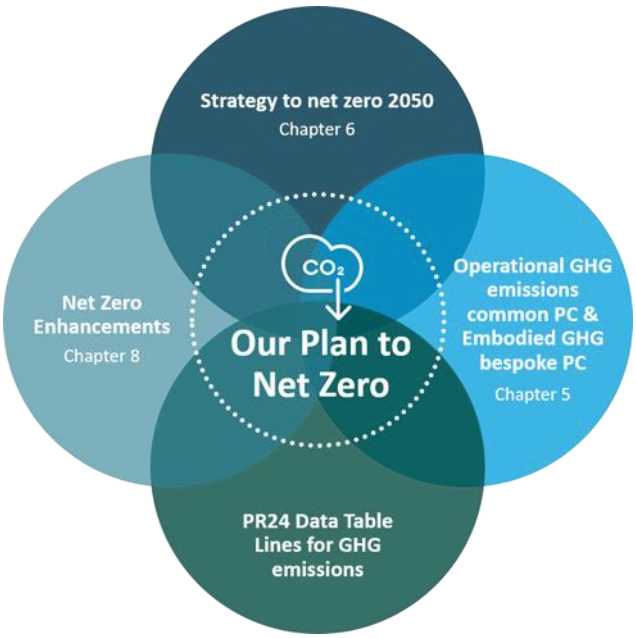
Measure	Units	Service	
		W	Ww
PR24_EGG Embodied greenhouse gas emissions	Tonnes CO_2e		
PR24_WIN Wonderful Windermere	Kg of phosphorus equivalents		
PR24_IBA Improving water bill affordability for socially important non-household community groups	Number of schools and other key non-household community groups receiving water efficiency visit and leak repair (as applicable)		

6.2 PR24_EGG_Embodied greenhouse gas emissions

Net Zero in our PR24 business plan

6.2.1 Greenhouse gas (GHG) emissions management and reduction is a priority to United Utilities and our customers because the affordability and resilience of our operations and services fundamentally rely on a stable climate and a healthy natural environment. We have therefore integrated the goal for net zero throughout our PR24 business plan. Figure 66 summarises the core elements of our plan to net zero in our PR24 submission.

Figure 66: Our plan to net zero



6.2.2 We have built on our advanced track record of reductions and disclosures to produce an ambitious plan for net zero by 2050 across scopes 1, 2 and 3. Our ambition and commitments are based on

international best practice and climate science trajectories, striving for the overall UK legal duty to be net zero by 2050.

6.2.3 Over the past decade, our focus on green energy has enabled us to outpace growth pressures and reduce scope 1 and 2 emissions. In recent years we have also been improving the measurement and management of scope 3 emissions in partnership with the supply chain to inform sustainable approaches. The proposed bespoke GHG PC is focused on emissions associated with priority areas within our capital investment programme. The PC has built on our latest advances in scope 3 emissions and will support further progress for the whole sector as well as our own approach.

6.2.4 It is now significantly more challenging for us to achieve net zero with the large increase in investment needed to comply with latest legal and regulatory requirements. The requirements of the new Environment Act will make it much harder to deliver further absolute reductions in the face of substantial growth in emissions from building new infrastructure and the energy and chemicals required to achieve higher treatment standards.

6.2.5 In developing our AMP8 business plan, we have innovated and optimised to minimise emissions growth where we can. Our approach to GHG emissions is fully integrated in our overall business plan to deliver a wide range of substantial improvements in water and wastewater services in the most sustainable ways. In addition to more progress on operational emissions, our plan also includes further focus on wider scope 3 'embodied' emissions. Mott MacDonald estimated that we avoided and deferred approximately 858,000 tCO_2e of operational and embodied emissions during AMP8, reducing the emissions of our plan by nearly 40% from what they would have been without our focus on efficiency and innovation. Our bespoke PC is designed to support ongoing focus on embodied emissions during delivery in AMP8.

Ofwat feedback

6.2.6 Following feedback from Ofwat, we are submitting this PC relating to embodied GHG emissions. This PC was omitted from the submission in April 2023 as we thought the PC did not meet Ofwat's criteria in relation to 'company specific circumstances'. However, by including this within our suite of bespoke PCs we are pleased to be able to support Ofwat and the sector's priority to improve this area of reporting during AMP8, as part of developing the required maturity for AMP9 and beyond.

6.2.7 We escalated our focus on scope 3 emissions after setting our science based targets (SBTs) in 2020. Adding this focus on embodied emissions within UUW and our suppliers will be a benefit by incentivising further focus on efficiency, innovation and the required development of systems and processes. We will continue our active leadership role in the sector on net zero by sharing our learning in this PC and helping co-develop the reporting tools and practices for the long term success of the sector in this area. We propose stretching and ambitious PCLs for this bespoke PC, recognising that whilst we have some activity currently underway in this area, it is the financial incentivisation offered by the bespoke PC mechanism which will mean we can go further, faster, in 2025-30. This PC is an innovative and transitional approach for AMP8 that will support our long term strategy to achieve net zero GHG emissions, across all scopes, in line with national government targets.

Overview

Purpose

6.2.8 This PC will aid in mitigating the impacts of climate change through the reduction of GHG emissions arising from construction activities from some of our most intensive embodied emissions wastewater treatment, non-infrastructure projects within the Water Industry National Environment Programme (WINEP). The proposed programme reflects £693m of our total proposed WINEP, approximately 184,000 tCO_2e in embodied emissions and 40% of our total wastewater WINEP embodied emissions (excluding storm overflow projects).

6.2.9 Customer research undertaken in 2023 showed a strong level of support for this bespoke PC, with customers valuing the reduction of embodied GHG emissions as 'important' and that the perceived impact of the PC would be 'high' for customers across the region[63].

6.2.10 Table 79 sets out the relevant definitions associated with this PC.

Table 79: – Embodied GHG Emissions PC Definitions

Title	Definition
AMP8 WINEP, wastewater treatment, non-infrastructure delivery programme	Specific AMP8 WINEP, wastewater treatment, non-infrastructure projects, set out in Appendix B.1. In general, wastewater treatment projects are only included if they do not meet the following criteria: – Have bathing water or shellfish water improvements as their primary driver; – Have a preferred solution that is centred around investigation, monitoring or not requiring construction as part of the PR24 submission; – Involve improvements to septic tank discharges to surface waters; – Are part of the storm overflow improvement programme; – Are expected to be delivered via the Direct Procurement for Customers (DPC) model; – Have a proposed blue/green preferred solution as part of the PR24 submission; – Solutions where the estimated embodied GHG emissions at PR24 submission is < 400 tCO_2e. – Projects where the project-in-use date is later than the 31 March 2030. – Projects where we are discussing with regulators the regulatory compliance date due to deliverability concerns.
BS EN 17472:2022 Sustainability of construction works - Sustainability assessment of civil engineering works – Calculation Methods	This standard establishes the requirements and specific methods for the assessment of environmental, economic and social performances of a civil engineering works while taking into account the civil engineering works' functionality and technical characteristics. The standard provides boundaries for embodied GHG emissions, also known as A1-A5 modules as detailed in Appendix B.2.
Embodied emissions (cradle-to-built)	Direct and indirect emissions resulting from the extraction, transportation, processing of raw materials, construction and off-site disposal of waste in creating or refurbishment of an asset. Inclusive of modules A1-A5 defined in BS EN 17472:2022.
PAS2080:2023	A publicly available standard (PAS) published in 2023 which specifies requirements for the management of whole-life GHG emissions in buildings and infrastructure – in the provision, operation, use and end-of-life of new projects or programmes of work as well as the management or retrofit of existing assets and networks.
Project In Use	Project In Use (PIU) is the point at which the project outputs are delivered and evidence to that effect is submitted to the business, and if applicable, to a regulatory body, prior to the completion date. The assets delivered as part of the project at PIU may be subject to final optimisation and modification, prior to final contract completion.

Benefits

6.2.11 Managing climate change is essential to the long term affordability and resilience of water and wastewater services for customers. This PC supports our ongoing and long term strategy to achieve net

[63] Trinity McQueen on behalf of United Utilities, "Bespoke Performance Commitments Testing Report", September 2023, https://www.unitedutilities.com/corporate/about-us/our-future-plans/listening-to-our-customers/insight-and-research-library#PCtesting

zero GHG emissions by 2050 in line with national legal requirements that are designed to ensure we and the UK play our role in keeping rates of climate change to manageable levels.

6.2.12 The PC will incentivise us and our supply chain partners to measure, manage and reduce priority areas of scope 3 GHG emissions; a widely recognised priority for the sector. As well as supporting the improved management of emissions in the short and long term, this compliments our on-going focus on financial and resource efficiency through innovation and collaboration.

6.2.13 This PC supports Ofwat's and the sector's aim to better understand and consistently measure and report embodied emissions associated with the delivery of capital programmes. By sharing the learning, our approach to this PC will support the development of a related common PC in AMP9.

Customer support

6.2.14 We integrate net zero into the consultation, engagement and customer research we undertake to shape our plans and decisions. We included a series of qualitative and quantitative research studies that ensured specific examination of support and relative priority for our action to reduce GHG emissions, integrated within the context of our overall business plan. A clear majority of customers confirmed that achieving net zero is important and supported our plans.

6.2.15 In our continual tracking of customer priorities we have seen a growth in environmental priorities, shown the strongest by future customers. In quantitative customer priorities research in 2021, a diverse mix of more than 3,000 customers ranked a top three priority the need to 'play our part in protecting the environment (e.g. reducing carbon footprint)'. In 2022, we asked customers about net zero and the vast majority of participants felt action should be taken towards achieving it. When given a list of priorities for UU, participants ranked GHG emissions as a 'tier 1' concern.

6.2.16 In 2023, customer research to test long term ambitions concluded that achieving net zero is important, and achieving this by 2050 was ambitious enough but action needed to be taken sooner rather than later to avoid future problems. Other quantitative studies found that a clear majority of customers agreed investment to reduce GHG emissions was important: 69% of household customers agreed, 64% of non-household customers, and 71% of future bill payers.

6.2.17 Affordability and acceptability testing in 2023 sought feedback on our plan for GHG emissions and our overall business plan. 78% of a representative mix of household customers confirmed support for our overall business plan in the qualitative stage and 70% in the quantitative stage. This research included specific reference to our net zero proposals and the percentage reduction being targeted in AMP8.

6.2.18 In 2023, specific research[63] was conducted by an independent third party on behalf of UU to understand the level of customer support for the bespoke PCs being proposed within our PR24 submission. This research concluded that embodied GHG emissions were important to customers and the proposed PC should be progressed as a priority. In particular, the perceived impact of the commitment was scored 'high', with the relevance to customer groups across the region also scoring 'high'.

6.2.19 Our overall approach to customer research and engagement is detailed in Chapter 3 of our business plan and the supplementary document *UUW21 Customer research methodology.*

Performance commitment definition and parameters

Detailed definition of performance measure

6.2.20 This PC has been developed to measure, manage and reduce the GHG emissions (expressed in tonnes of carbon dioxide equivalent, tCO_2e) related to our AMP8 WINEP wastewater treatment, non-infrastructure programme.

6.2.21 An Environment Agency (EA) letter received 18 August 2023 confirmed that select WINEP projects have been moved into AMP8. These particular projects have not been included in this PC because the delivery date remains under discussion with regulators as we are highlighting concerns over deliverability in AMP8.

6.2.22 Our focus will be on managing and reducing emissions in line with the GHG reduction hierarchy, including the avoidance and minimisation of emissions through, for example, re-use of assets and optimisation of existing processes. The PC will focus on efficient material usage, design optimisation and switching to low carbon alternatives, where technology and innovation allows. We will collaborate with, and incentivise, our supply chain partners to support the delivery of UU's strategic themes for the AMP8 capital programme, including our net zero transition plan and the proposed PC.

6.2.23 The performance commitment level (PCL) will be to deliver the embodied GHG emissions, measured in tCO_2e, associated with our planned PC programme (set at PR24 Final Determination, FD). The draft emissions forecast has been assured by a third party. This will be repeated at FD with the final forecast position. This target is a highly stretching target because we have already reduced emissions significantly through innovative planning and designs for our AMP8 programmes, already avoiding c.398,000 tCO_2e embodied GHG emissions across WINEP.

6.2.24 Any further reduction in embodied emissions beyond this PCL would be eligible for outperformance reward. As part of this PC, we propose to report our cumulative annual emissions each financial year (for projects that achieve PIU within that year) to Ofwat throughout the 2025-30 period, for monitoring and learning purposes. Our PCL will represent the total cumulative position at the end of year 5 (2029/30), for schemes included in Appendix B (subject to FD), at the PIU gateway. This year 5 target reflects the full PC programme in scope in AMP8.

6.2.25 We have proposed that this measure is outperformance only to recognise the on-going development of consistent and accurate reporting and measurement across the sector, and high level nature of design undertaken for PR24 submission. We also believe this PC will promote innovative working and learning across the industry, which can be incentivised through an outperformance measure.

6.2.26 Table 80 presents our proposed definition parameters for this embodied GHG emissions PC.

Table 80: Definition Parameters

Parameters	Definition
Measurement unit and decimal places	Tonnes CO_2e reported to the nearest whole number. PCL represented as percent change (%) to two decimal places, change from programme baseline (set at final determination).
Measurement timing	Reporting year, financial ODI applicable in Year 5 only.
Incentive form	Revenue
Incentive type	Outperformance only
Timing of underperformance and outperformance payments	PCL with financial incentive applicable in Year 5 only.
Price control allocation	100% Wastewater Network Plus
Frequency of reporting	Reporting annually each year through AMP8. PCL with financial incentive applicable in Year 5 only.
Any other relevant information	N/A
Links to relevant external documents	N/A

Additional detail on measurement units

Baseline - Draft

6.2.27 The baseline (expressed in tonnes of embodied CO_2e) for this PC is submitted in draft here and will be finalised prior to the start of the 2025-30 period, based on projects included in our FD which are within the AMP8 WINEP wastewater treatment non-infrastructure programme and meet this PC definition. The draft version of the baseline has been included in Appendix B.

6.2.28 For all projects included in the draft baseline, embodied GHG emissions have been estimated using a carbon assessment framework which has been used across our PR24 submission. The carbon assessment framework uses the following methodologies to estimate embodied GHG emissions:

(a) Carbon Models;

(i) Our approach, where sufficient project detail is available, is a bottom up approach using asset (i.e. pumps, valves, tanks) and process (i.e. activated sludge process) level carbon models, developed and assured by an independent third party. These carbon models align to BS EN 17472:2022 A1-A5 modules (see table 1) and draw on industry recognised data sets for emissions factors, such as Inventory of Carbon and Energy (ICE), Civil Engineering Standard Method of Measurement (CESSM), etc.

This approach was used on the majority of projects in the programme, however, due to time constraints and availability of site data, other tools based on extrapolation were utilised - further detail can be found on these in the sections below.

(b) Drainage and Wastewater Management Plan Tool;

(i) For a number of projects it was necessary to use a Drainage and Wastewater Management Plan (DWMP) tool which was developed by an independent third party. It is based on embodied GHG emissions against population equivalent for a wide range of treatment processes and allows quick extrapolation to be undertaken for low complexity or repeatable projects.

(c) Extrapolation.

(i) On a small number of projects, it was necessary to use a methodology developed in conjunction with an independent third party to extrapolate embodied GHG emissions from capex of similar projects in scope. Where this was undertaken, embodied GHG emissions was extrapolated using trend lines from the '2.3.8a Carbon Models' methodology listed above. Whilst these projects are extrapolated, they align to BS EN 17472:2022 A1-A5 modules and use the same emissions factors as the 'Carbon Models' methodology.

Programme Baseline – Final Determination

- For AMP8 FD, we will endeavour to have all projects included in the PC baseline to be forecast using the '2.3.8a Carbon Models' methodology detailed above, in combination with a GHG emissions accounting tool (currently in procurement) to ensure consistency, accuracy and standardisation across all projects. All projects in the baseline will align to BS EN 17472:2022 A1-A5 modules and use consistent industry recognised emissions factors.

PCL Built solutions at PIU (AMP8)

- Emissions for our built solutions at PIU will be estimated by our internal estimating team or our supply chain partners, using the same GHG emissions accounting tool as the baseline at AMP8 FD.
- Embodied GHG emissions for our built solutions will be estimated based on 'bottom up' quantities of materials used, construction activities undertaken etc., using the same Scope 3 boundaries, BS EN 17472:2022 A1-A5 modules and emissions factors consistent with the Final Determination baseline. This methodology broadly aligns with 'Level 1 and 2 assessment using embodied GHG emissions factors for materials and work items' as per UKWIR Framework for Accounting for Embodied Carbon 2012. Emissions factors and data sources will be fixed throughout the AMP to ensure consistent and comparable reporting. We may add to this fixed approach with new products and corresponding emissions factors where we are able to effectively deploy new low carbon products, such as concrete or steel for example.

6.2.29 This PC measures emissions associated with the cradle-to-build lifecycle stages. Emissions beyond this phase, such as those associated with 'in-use' or 'end of life' emissions (i.e. BS EN 17472:2022 B – D modules) are not included. This approach avoids duplication with the common operational GHG emissions PCs for water and wastewater operations which cover the 'in use' phase GHG emissions.

6.2.30 Performance will be measured as GHG embodied emissions expressed in tonnes CO_2e of the built solutions at PIU stage. All projects included in scope have a regulatory compliance date before 31 March 2030. Emissions for the built solutions at PIU will be compared against the FD baseline at the end of financial year 2029/30 to derive the total tCO_2e saved across the PC programme, and percentage change from the forecast position.

Specific exclusions

6.2.31 There are no specific exclusions proposed for this bespoke PC.

Reporting and assurance

6.2.32 The carbon assessment framework has been used to create the PC baseline and PCL. This is supported by written methodologies, using data which is externally verified by an independent third party with expertise in assurance of GHG emissions information. Following FD when the final PC programme is confirmed and projects are re-baselined, this third party verification and audit can be repeated on the final data.

6.2.33 During the project lifecycle we will track and update GHG emissions estimates at select project gateways as the design matures. Final performance will be reported for solutions at PIU stage. We will ensure a third-party independent verification (by those with appropriate qualifications and experience) is undertaken as part of our Annual Performance Report (APR) each year.

Compliance checklist

6.2.34 GHG emissions management and reduction is a priority for us and in the last two years we have included regulatory reporting to Ofwat. We are highly experienced in following global best practice and adhering to national and regulatory requirements to measure, disclose and reduce GHG emissions. We openly report our emissions annually across all relevant areas of scopes 1, 2 and 3. Our reporting covers both our operational and embodied emissions. For example, we were an early adopter of the Taskforce for Climate-related Financial Disclosures (TCFD) and have benchmarked our performance for many years in the CDP, last year securing a leading "A-"rating.

6.2.35 We have been reporting a full scope 3 emissions inventory in our annual report for many years using a spend-based methodology. Asking our supply chain partners to report 'embodied' emissions at project level is a new way of working which we are maturing in line with new APR reporting requirements. We have created the checklist presented in Table 81 and we will report to Ofwat if any element is not green.

Table 81: Embodied Greenhouse Gas Emissions Checklist

	Component / Element	Component R/A/G	Element R/A/G	Reason for any non- compliant component	Confidence grade
1	Methodology statement				
2	Data records				
2a	Baseline project list				
2b	Cradle-to-build emissions – baseline (tCO_2e)				
2c	Cradle-to-build emissions – 'actual' at PIU (tCO_2e)				
3	Third party assurance statement				

6.3 Evidence to support proposals

Ofwat bespoke performance commitment criteria:

6.3.1 This performance commitment represents an industry challenge to improve reporting of embodied GHG emissions. However, there are relevant local and company specific circumstances, captured below.

Local circumstances

6.3.2 The North West has unique characteristics; it has a unique climate with a wetter than average region, we have unique assets with more combined sewers and more reliance on reservoirs and aqueducts. Latest data from Office for National Statistics and regional plans also suggests relatively strong population growth with a million more people expected in the North West by 2050. Coupled with a substantial escalation in asset investment to comply with latest legal and regulatory requirements from the Environment Act, this requires additional infrastructure which in turn will see additional embodied emissions. This larger emissions profile presents a unique opportunity to reduce emissions from our AMP8 projects which will enable us to champion low carbon approaches, further grow our renewables and circularity, therefore making this bespoke PC effective, targeted and a priority for our plan.

Company specific circumstances

6.3.3 Our purpose is to provide great water for a stronger, greener and healthier North West. This drives us to deliver our services in an environmentally sustainable, economically beneficial, and socially responsible manner and create sustainable long-term value for all. Our activities are so reliant on the natural environment that assessing and managing the risks, opportunities, dependencies and impacts we have in relation to climate change and nature is integral to our business model. As highlighted by Ofwat, the preference would be to have a common PC for embodied GHG emissions during AMP8, however, this is not currently possible due to challenges across companies' different recording and reporting systems and so a bespoke PC is appropriate. We support this approach as it aligns with our scope 3 SBTs and our plan to achieve net zero across scope 1, 2 and 3.

Performance commitment levels

6.3.4 Table 82 presents our proposed performance commitment levels (PCL), collar and cap for this embodied GHG emissions PC.

Table 82: Performance Commitment Levels

	2025/26 (2026)	2026/27 (2027)	2027/28 (2028)	2028/29 (2029)	2029/30 (2030)
PCL	0%	0%	0%	0%	0%
Penalty collar	N/A	N/A	N/A	N/A	N/A
Reward cap	N/A	N/A	N/A	N/A	70%

PCLs set at PR19

6.3.5 This is a new and innovative PC for PR24, therefore PR19 PCLs were not determined and cannot be used in the assessment of PR24 PCLs. The data, measurement tools, processes and proposed solutions for scope 3 emissions at PR24 are also new, therefore embodied emissions data cannot be compared with previous AMPs.

Historical outturn performance

6.3.6 As this is a new PC for PR24 consideration of historic performance in the context how we have calculated stretching AMP8 PCLs is not applicable. The programme which is associated with this PC is new for AMP8 and the specific projects which make up our PCL are only relevant to AMP8. Therefore embodied emissions data cannot be compared with previous or future AMPs.

6.3.7 PR24 is the first time we have an embodied assessment associated with our full AMP8 programme.

Historical expenditure included in the base expenditure models at PR24

6.3.8 As this is a new PC for PR24 consideration of historic performance in the context how we have calculated stretching AMP8 PCLs is not applicable. The programme which is associated with this PC is

new for AMP8 and the specific projects which make up our PCL are only relevant to AMP8. Therefore embodied emissions data cannot be compared with previous or future AMPs.

6.3.9 PR24 is the first time we have an embodied assessment associated with our full AMP8 programme.

Company forecast of performance levels that can be delivered from base expenditure

6.3.10 Not applicable - this PC relates to delivery of the WINEP which is enhancement expenditure.

Performance levels of efficient companies

6.3.11 As this is a new bespoke PC for PR24 data for other companies is not available. The programme which is associated with this PC is new for AMP8 and specific to UUW's WINEP wastewater treatment, non-infrastructure programme, therefore embodied emissions data cannot be compared directly between companies.

6.3.12 This PC will look to compare forecast positions at PR24 FD with built solutions at PIU in AMP8. Historic embodied emissions reductions seen by other companies may be showing greater reductions by comparing against a baseline further in the past, enabling them to show progress over many AMPs and including the efficiencies we have already achieved in the early planning stages as described above. This PC is therefore not comparable. However, we believe the learning gained from undertaking this PC can be used by the whole industry in AMP9 and help to mature the industry's reporting in this area.

Opportunity for transformational performance improvements

6.3.13 This PC does not constrain us to a method, material or innovation change to reduce embodied emissions. Instead we want to be an ambassador in following the overarching principles of GHG management, focussing on "no-build" and "build less" opportunities such as re-using assets or improving existing processes to achieve the same regulatory outcome. Where this is not possible, we will strive to challenge existing standards, practices and procedures to optimise design and reduce material and fuel usage. Finally we may look at low carbon alternatives and innovation to further reduce embodied GHG emissions as part of the built solution.

Sources of information used to set the PCL

6.3.14 Our draft PCL submitted in October 2023 uses forecast embodied GHG emissions data created by a carbon assessment framework which has been applied to all of our PR24 submission. This takes a best practice emissions approach across our embodied emissions using expert third party support from our technical partners. Our approach where possible, uses a bottom up approach taking into consideration the project type, assets included in the build, the assessment boundary and the baseline. This is aligned to industry best practice and well known standards such as PAS 2080, BS EN 17472:2022 and has been internally and externally verified.

Dependencies of overlap with other PCs

6.3.15 Not applicable. This PC focuses on embodied emissions only and does not include any operational emissions to avoid any overlap with the two operational GHG emissions PCs.

Application of reward cap, penalty collar or deadband

6.3.16 As shown in Table 81 above, we do not propose a deadband. We propose this PC should not have a collar, as it is an outperformance only measure, and that the cap should be 70% in year 5 to incentivise us to work differently to prioritise embodied emissions reduction, whilst recognising the on-going maturity in this area. As this is a newer area of reporting for the industry, we propose that any stretch beyond PR24 forecast positions (up to a maximum of 70%) should be rewarded as it represents innovative ways of working with our supply chain approaches to reduce embodied emissions.

6.3.17 We have proposed that this measure is outperformance only to recognise the on-going development in reporting and measurement of embodied GHG emissions across the sector and supply chain, and high level nature of design undertaken for PR24 submission.

ODI rates

6.3.18 For the common PC for operational GHG emissions, Ofwat stated in the PR24 final methodology that it will take an alternative incentive approach for this operational GHG emissions PCs using credible external valuations (Green Book etc.), as collaborative research is unlikely to give meaningful customer valuations. The Operational PCs have not been included in the outcomes working group so we expect the incentive approach to also be provided after submission which causes challenges for the common PCs.

6.3.19 To resolve this, we provide our proposal for the basis on which the GHG emissions ODI rates should be set for the common GHG emissions PCs. We understand that the incentive rates for our common and bespoke GHG PCs should be consistent, we therefore propose to replicate the common PCs marginal benefit and incentive rate for this bespoke PC. This is aligned to the latest government values from 2021, shown in Table 83 below. Our proposal is that this relates to the low value (sensitivity) from 2025 (£130/tCO_2e). We have assumed we have a benefit sharing factor percentage of 70% in line with the other common PC indicative ODI rates calculated by Ofwat.

Table 83: UK Government carbon price (£) per tonne of CO_2e

Year	Low series	Central series	High series
2025	130	260	390
2026	132	264	396
2027	134	268	402
2028	136	272	408
2029	138	276	414
2030	140	280	420

6.3.20 Any over-performance calculations will be based on the following calculation:

Reduction in tonnes CO_2e from baseline = *Programme baseline, cumulative, Tonnes CO_2e -Built solutions at project-in-use gateway (AMP8), cumulative programme, Tonnes CO_2e*

Over-performance payment value = *Reduction in tonnes CO_2e from baseline x Incentive rate (£130/tCO_2e)*

6.3.21 The PCL will be reported as percentage (%) change from baseline.

Table 84 Embodied GHG emissions ODI rates

ODI Rates	
Marginal Benefit	£185.70/tCO_2e
Benefit Sharing Factor	70%
Outperformance ODI Rate	£130 per tCO_2e
Underperformance ODI Rate	N/A

Long term ambition and future price reviews

6.3.22 This bespoke PC supports our independently verified Science-Based Target (SBT) for scope 3 emissions reduction by 2030, and our long-term ambition to be net zero by 2050 for scope 1, 2 and 3. We aim to continually innovate and look at new solutions, learning more about how we can further reduce our embodied GHG emissions. We will capture lessons learned and best practice to ensure continuous improvement during AMP8. We will share learning and best practice across the industry with the aim of achieving a consistent approach to recording and reporting of embodied GHG emissions. In future price reviews, we will seek to apply an embodied GHG emissions PC to the whole AMP programme, whether this remains a bespoke PC or becomes a common PC.

Verification of the measure

6.3.23 The embodied GHG emissions assessments to form our draft baseline and PCL have been completed by an independent third party, and their use in this PC, assured by another independent third party. Once programmes have been agreed at FD, this baseline and PCL position will need to be will be reassessed and verified by suitably-qualified third parties prior to submission. Our approach will complement and extend our rigorous and mature use of third party assurance in our long standing annual GHG emissions and climate disclosures.

6.4 PR24_WIN_Wonderful Windermere

6.4.1 As the largest lake in England, Windermere is a nationally significant water body often referred to as the 'jewel in the crown' of the Lake District. With UNESCO world heritage status, receiving around 7 million visitors per year and contributing over £750 million to the local economy, Windermere is an iconic site that customers, communities and stakeholders alike expect to be leading in water quality.

6.4.2 In keeping with this unique environment, UUW has invested significantly to reduce phosphorus and nutrient inputs from assets, and we have currently met our long-term target for phosphorus reduction in this catchment as set by the Environment Agency.

6.4.3 Under the Water Environment (Water Framework Directive) Regulations 2017, Windermere is classed as having 'moderate' ecological status. This is below the legally binding target set by Defra whereby all water bodies in England must achieve a minimum standard of 'good' ecological potential. Phosphorus is cited as one of the reasons for not achieving 'good' status in this water body. In conjunction with the effects of climate change, including a temperature increase of +1.5°C over the past 50 years, water quality in Windermere is not to the standard expected by customers and communities, and more needs to be done to address this.

6.4.4 More than 60 per cent of the phosphorus in Windermere comes from a range of sources, including inputs from over 80 permitted discharges (non-water industry) into Windermere (or its tributaries) and approximately 1,800 private septic tanks within the catchment. These assets are dispersed across a largely rural catchment, are often unidentified and less commonly monitored compared to diffuse phosphorus inputs.

6.4.5 Through this performance commitment, we will harness our expertise to act as a catchment convenor and work in partnership to target phosphorus reduction by driving solutions in hotspot areas, taking an evidence-based approach to where interventions will deliver greatest improvements.

6.4.6 The primary focus of this performance commitment will be to deliver solutions on wider catchment phosphorus inputs, such as third party septic tanks, private sewage treatment works (for example treating waste from campsites) and from catchment runoff. Additionally, UUW has achieved required phosphorus reduction targets within the catchment for Water Environment (Water Framework Directive) Regulations 2017, but we will explore what opportunities and technologies can be developed to remove phosphorus from UU assets beyond the current technically achievable limit, and where not already covered by the River Water Quality common PC. Hawkshead WwTW has an AMP8 driver for Habitat Directives, and therefore has further phosphorous reduction requirements, as such Hawkshead WwTW will be excluded from this performance commitment. This performance commitment will look to push the frontier on treatment capabilities at other sites to deliver the greatest benefits to the Windermere catchment.

6.4.7 Although United Utilities is a committed partner of the Love Windermere partnership and supportive of activities being delivered by partner organisations, we recognise that with the right mechanisms in place we could provide greater support and expertise to deliver interventions, particularly within this catchment and at a scale and pace that may otherwise not be achievable without. As such, this performance commitment is stretching in that our ability to deliver specific monitoring and associated interventions, particularly on third party assets, will be greatly limited without it. However with this

performance commitment we will be able to much further support the partnership to deliver wider environmental benefits as well as co-finance activity to maximise nutrient reduction and work towards improving water quality.

6.4.8 We have received support for this bespoke PC proposal from our Love Windermere partners – including the partnership chair, the Environment Agency – after discussing our proposals with them.

6.4.9 This PC provides the unique focus that Windermere requires, but it is important to ensure that there is no double-counting of performance with other PCs. This PC will not include any additional benefit from the reduction of phosphorus from UUW WwTW that could be included within the River Water Quality P Performance commitment. This excludes Hawkshead WwTW which, due to a Habitats Directive driver in AMP8, is likely to require further phosphorus reduction. As UUW has met its long term phosphorus targets at remaining treatment works in the Windermere catchment, further improvements to these sites is excluded from being included within the River Water Quality performance commitment, following the common PC methodology. This performance commitment is explicitly designed to go beyond our phosphorus requirements in order to maximise the environment benefit in such as a high profile, nationally significant water body. Nor will there be any benefit to the bathing waters quality PC as all bathing waters on Windermere are already at the highest Excellent bathing waters standard. It also does not have any benefit to the Storm Overflows PC as the bespoke PC is focused on phosphorus in the lake and not storm spills.

6.4.10 Research undertaken in 2023 showed that customers were happy to support this bespoke PC and wished to see it proposed in our business plan submission[64]. Almost all customers included in the research recognised that Windermere is an integral part of the North West's tourism, with many customers either living near or visiting the area on a regular basis. They believe that it is important that the lake and surrounding catchment areas are well looked after. They believe that maintaining the health of the lake is vital in ensuring the Lake District as an area that remains an attractive place to visit.

Overview - pushing the frontier on treatment capabilities

Purpose

6.4.11 This performance commitment will incentivise UUW to support the water quality, long-term resilience and heritage of Windermere, one of England's most significant and iconic waterbodies, through the stewardship of catchment-wide solutions. Harnessing the expertise that UUW has developed in wastewater treatment and innovative network management, UUW will apply this within the Windermere catchment to drive improvements that customers and communities expect to see.

6.4.12 Taking a whole catchment approach to Windermere, UUW will look beyond its own assets to comprehensively understand the nutrients input into the system from multiple sources, and act as a catchment convenor to facilitate and support the reduction of phosphorus inputs into the lake from third party asset owners, such as septic tanks and land management, and will be used to push the frontier on wastewater treatment capabilities, incorporating a suite of interventions in order to deliver the greatest benefit to the environment and customers.

Benefits

6.4.13 Windermere is a unique catchment, supporting a strong local economy by harnessing the water body and surrounding landscape. With national and international significance, protecting and enhancing this water body against the effects of climate change and excess nutrients, is paramount to ensure that it thrives for future generations.

6.4.14 UUW is in a unique position to be able to support this challenge on a catchment scale. With a long history of delivering catchment based solutions, in partnership, as well as technical expertise in wastewater treatment, UUW can act as a system convenor with established partners within the Love Windermere partnership to drive necessary changes in phosphorus inputs from catchment runoff and

[64] Trinity McQueen on behalf of United Utilities, "Bespoke Performance Commitments Testing Report", September 2023, https://www.unitedutilities.com/corporate/about-us/our-future-plans/listening-to-our-customers/insight-and-research-library#PCtesting

assets such as septic tanks. More still, with this performance commitment, UUW will be able to drive these improvements at a pace that would not be possible without.

6.4.15 In addition to supporting nutrient reduction into Windermere, UUW's industry-leading network management platform, with machine learning and artificial intelligence (AI) capabilities, could be extended beyond its own assets with the use of extensive catchment monitors that could integrate data to identify key issues from multiple sources, and support in the delivery of proactive solutions.

6.4.16 With enhanced catchment monitoring, stronger collaboration across stakeholders and communities, action from this performance commitment can support to transform the Windermere catchment into a more digitally-enabled system. Data can be harnessed and progressed towards an open data platform to provide an overview of the catchment including water quality within the lake and surrounding tributaries. With a growing momentum of citizen science initiatives in Windermere, communities can be at the heart of an open data platform, with citizen-led data blended with technology-generated data to create a holistic catchment view. Open data can then be used with communities to help drive more targeted interventions.

Benefit to the wider environment

6.4.17 Taking a whole system view of the water quality challenges in Windermere will provide an integrated approach to catchment-wide risk management. Following UUW's ambitions for innovative wastewater network and treatment management, this performance commitment will support it to progress a highly innovative approach and trial the ability to integrate the performance of its assets with wider catchment data. This should support the delivery of appropriate and cost-effective solutions for phosphorus reduction. Subject to the success of this ambitious pilot, it is an approach that could be scaled up across further water bodies, and best practice shared more widely.

6.4.18 Collectively, this performance commitment would support UUW in:

- Monitoring a wider range of catchment inputs to develop a comprehensive understanding of phosphorus inputs from multiple sources;
- Integrating data with network and treatment platforms to support understanding catchment challenges in greater detail;
- Blending data from monitors with citizen science-led data to create a comprehensive view of water quality in Windermere and tributaries, that can be used to support an open data platform;
- Working in partnership to drive solutions in hotspot areas, taking an evidence-based approach to where interventions will deliver greatest improvements; and
- Reducing phosphorus inputs, supporting to enhance water quality, needed for Windermere to thrive.

Performance commitment definition and parameters

Detailed definition of performance measure

(6) By December 2024, UUW will set a baseline of modelled phosphorus inputs into the Windermere system. To set the baseline UUW will:

(a) Work with partners to develop an agreed model, including inputs from UUW's assets, septic tanks, land management and any other notable sources; and

(b) Develop a hotspot map of inputs and contributors, indicating early priority locations for interventions.

1. To measure performance, the model will be re-run at the end of each year and compared to the 2024 baseline. This would be externally assured.
2. UUW will demonstrate working in partnership and/or providing a direct intervention e.g. monitor or modular treatment. Included in this will be:

a. An evidence-based approach to driving solutions including the deployment of monitors strategically across the catchment, to develop a holistic, integrated model.
b. An intelligence-based approach, working in partnership to deploy solutions to identified issues, such as on septic tanks causing greatest local impact. The toolkit of interventions will include, but is not limited to:
    i. Providing modular treatment systems and installation;
    ii. Driving septic tanks co-operatives;
    iii. Intensive online monitoring on key point source assets, as well as in-network monitoring to track changes in water quality;
    iv. Localised engagement with key partners such as the tourism sector to promote positive behaviours;
    v. Engineering consultancy to support getting septic tanks to approved standards;
    vi. Support of land management practices to reduce agricultural runoff.
    vii. Innovative approaches to maximise reduction of phosphorus delivering leading wastewater treatment capabilities
c. Our toolkit will expand to providing support and solutions that are appropriate to identified issues, however it will exclude the adoption of private and third-party assets.

Additional detail on measurement units

6.4.19 This performance commitment will measure the reduction in phosphorus equivalents into Windermere. This will be calculated from:

- Modelled phosphorus reduction from catchment baseline – this will be a modelled reduction (measured in kg) with each intervention delivered. This will include:
- Where interventions are delivered against non-UUW assets: modelled phosphorus reduction from specific third party interventions, for example catchment based solutions would have an appropriate modelled reduction value, as would septic tank inventions
- We will deliver innovative, frontier leading wastewater treatment interventions and measure performance against this baseline. .
- Non-UUW asset interventions (theoretical phosphorus load) will be added to UUW asset interventions to give the total Kg phosphorus reduction.

Table 85 - Interventions

Intervention type	Intervention description	Source	Phosphorus removed per yr per unit
Woodland planting	Creation of new woodland areas (Ha)	Literature	1.83
Wetland and pond creation	Creation of new wetland areas (Ha)	Literature	0.74
Farming Interventions	Farming interventions to reduce Phosphorus emissions. P equivalent removed will be modelled using 'Farmscoper'.	Modelled – Farm scope	Intervention specific
Treatment interventions	Reduction of phosphorus equivalents from domestic septic tanks. Measured per septic tank (number).	Literature	0.85
	Reduction of phosphorus equivalents from commercial septic tanks or small treat facilities without P limits. Measured per population equivalent.	Literature	0.34
	Reduction of phosphorus equivalents from small treatment facilities with phosphorus limits (1mg/l or greater). Measured from sample data.	Measured or modelled	Intervention specific

Intervention type	Intervention description	Source	Phosphorus removed per yr per unit
	Using innovation to reduce catchment load from wastewater treatment works with existing phosphorus limits of <1mg/l to beyond the current technically achievable limit (0.25mg/l). Measured as actual or modelled (if not measured) reduction beyond TAL.	Measured or modelled	
	Number of local campaigns to raise awareness of individual or commercial impacts to water quality and ways to help.	0.5% of total P	9.5
	Number of monitors installed to measure water quality to provide evidence of improvements and target worst affected areas.	0.5% of total P	
	Open data – creation of data platform to share local data to improve knowledge and create opportunities	0.5% of total P	
	Number of co-operative partnerships – e.g. citizen science or septic tank co-operatives	0.5% of total P	
	Re-wetting of peat – long term project to reinvigorate hectares of peat land which lock in nutrients and slow land run off and creating habitats.	0.5% of total P	

Specific Exclusions reporting and assurance

6.4.20 None

Reporting and assurance

6.4.21 UUW's standard APR reporting and assurance processes are to be applied to this bespoke performance commitment, including board review and approval and third-party assurance if deemed necessary through our standard risk review procedures.

6.4.22 The company shall ensure that its outcome delivery incentive payments only relate to real performance changes and not definitional, methodological

Table 86: Reporting parameters for Wonderful Windermere

Parameters	
Measurement Unit and decimal place	Kg of phosphorus equivalents to two decimal places
Measurement timing	Calendar year
Incentive form	Revenue
Incentive type	Underperformance and outperformance
Timing of underperformance and outperformance payments	In-period
Price Control allocation	100% wastewater network plus
Frequency of reporting	Annual, on a calendar year basis. For example, performance assessment for 2025–26 will be based on the calendar year 2025, whereas 2029–30 assessment will be based on the calendar year 2029.
Any other relevant information	N/A
Links to relevant external documents	N/A

6.5 Evidence to support Wonderful Windermere proposals

6.5.1 Wonderful Windermere has been developed as a performance commitment to improve the water quality, long term resilience and heritage of Windermere, one of England's most significant and iconic waterbodies, through stewardship of a catchment-wide approach.

6.5.2 This sections outlines:

- How the performance commitment meets the Ofwat criteria set out in Ofwat's PR24 final methodology and Ofwat's subsequent Information Notice 23/02 (IN 23/02), how this is appropriate in bringing benefits to customers and the environment and why this is not accounted for by other performance commitments
- How we have calculated our proposed PCL using industry models and how we justify its suitability with reference to the tests given in Ofwat's final methodology Appendix 9 section 4.4.3 on determining stretching performance improvements.

Ofwat bespoke performance commitment criteria

Local circumstances

6.5.3 Windermere is a unique and iconic water body for the North West. As outlined in section 6.4.1 Windermere is nationally significant as the largest lake in England, a UNESCO world heritage site and supports a thriving local economy, attracting around 7 million visitors a year, generating over £750 million in economic impact. This performance commitment will mean that we will support the water quality, long-term resilience and heritage of Windermere through stewardship of catchment-wide solutions.

6.5.4 Despite meeting our long-term Water Environment (Water Framework Directive) Regulations 2017 target for phosphorus reduction in this catchment, as well as efforts from partners, Windermere is still not seeing the water quality expected for a nationally significant water body. The overall ecological classification of Windermere is 'moderate', and the lake at times suffers from water quality-related issues, such as algal blooms.

6.5.5 Over 60 per cent of phosphorus inputs come from a range of sources, including inputs from circa 1,800 private septic tanks and over 80 permitted discharges (non-water industry) across the catchment. These assets are dispersed across a largely rural catchment, are often unidentified and less commonly monitored compared to diffuse phosphorus inputs. The majority of third-party systems are located significant distances from the mains sewer network and due to the complex geology and landscape of the catchment, it is currently not cost effective, and at times feasible, to connect all of these discharges onto mains sewer.

6.5.6 As such, an appropriate and well-functioning decentralised system is required to manage this challenge. This PC will provide the financial incentive necessary for UUW to take a whole catchment view of this challenge, delivering appropriate solutions based on data and evidence.

6.5.7 Although there is a strong partnership in place with Love Windermere to address these particular catchment challenges, this PC will provide the additional incentive to UUW to act in this area at scale and pace to help tackle this local issue. By going beyond our asset base, we can utilise our unique position as local technical experts in wastewater to act as a steward for the environment and support water quality improvements that customers and communities expect to see for an iconic water body.

Performance Commitment Levels

6.5.8 The proposed performance commitment levels are summarised in Table 87 below, alongside the proposed penalty collar and reward cap. Each element of this table is discussed in more detail in the following sections.

Table 87: Wonderful Windermere AMP8 Performance Commitment Levels achievable from base and enhancement expenditure with comparative industry information

	2025-26	2026-27	2027-28	2028-29	2029-30
PCL	9.5	38.0	38.0	57.7	77.4
Performance from base	9.5	38.0	38.0	57.7	77.4
Performance from enhancement[1]	0.0	0.0	0.0	0.0	0.0
Industry upper quartile	Measure is not normalised and so cannot be compared across companies				
Industry frontier	Measure is not normalised and so cannot be compared across companies				
Reward collar	1899.9	1899.9	1899.9	1899.9	1899.9
Penalty cap	0.0	0.0	0.0	0.0	0.0
Deadband	Measure is not normalised and so cannot be compared across companies				

PCLs set at PR19

6.5.9 This is a new and innovative PC for PR24, therefore PR19 PCLs were not determined and cannot be used in the assessment of PR24 PCLs.

Historical outturn performance

6.5.10 As this is a new PC for PR24 consideration of historic performance (individual company or industry) in the context how we have calculated stretching AMP8 PCLs is not applicable.

Historical expenditure included in the base expenditure models at PR24

6.5.11 As this is a new PC for PR24 consideration of historic performance in the context how we have calculated stretching AMP8 PCLs is not applicable.

6.5.12 This is not applicable for this bespoke performance commitment.

Performance levels of efficient companies

6.5.13 As this is a new bespoke PC for PR24, data for other companies is not available

Opportunity for transformational performance improvements

6.5.14 UUW has a long history of delivering catchment based interventions in partnership. The opportunity in Windermere through this PC is an expansion of this approach, blending multiple asset types such as non-UUW decentralised wastewater systems (namely third party septic tanks), and larger WwTW assets as well as catchment land, to take a truly integrated and holistic view of a challenge.

6.5.15 Our industry leading network management platform, with machine learning and artificial intelligence (AI) capabilities, could be extended beyond our assets with the use of extensive catchment monitors that could integrate data to identify key issues from multiple sources, and support delivering proactive solutions across assets, to deliver the greatest benefits. This, combined with our technical and technological expertise in wastewater treatment, could be harnessed to support making improvements to drive phosphorus reductions in Windermere.

6.5.16 Additionally, this performance commitment will look to incorporate a range of data sources into decision making, including the use of citizen science initiatives. With citizen-led data blended with technology-generated data, we will be able to create a system with community input embedded into decision making.

6.5.17 Collectively this action can support to transform the Windermere catchment into a more data-enabled system. This data can be harnessed and progressed towards an open data platform to provide an overview of the catchment including water quality within the lake and surrounding tributaries. An open data approach can then be used with communities to help drive more targeted interventions.

6.5.18 This performance commitment is innovative and a step change in how UUW can play a role in holistic nutrient management in a catchment, working with third party asset and land owners to deliver nutrient reductions. As we trial this approach in the Windermere catchment, we can look to expand learning to other water bodies making this PC not only transformational in Windermere but potentially more broadly across the North West.

Sources of information used to set the PCL

6.5.19 UUW has invested within the Windermere catchment to reduce phosphorus and, as a result, has met the long-term target for phosphorus as set out by the Environment Agency. This performance commitment goes beyond this to target improvements at Lake Windermere.

6.5.20 The Environment Agency's SIMCAT-SAGIG inputs will be used in the development of a phosphorus baseline which will be used in target setting.

6.5.21 The performance commitment level will take into account key deliverables such as monitoring in which the data will be used to target interventions and measure long-term benefits to the lake which can be compared to the model.

Dependencies of overlap with other PCs

6.5.22 This PC provides the unique focus that Windermere requires, but it is important to ensure that there is no double-counting of performance with other PCs such as the 'River Water Quality (phosphorus)' PR24 common performance commitment. Therefore, we propose any double count would be removed by adjusting the bespoke PC measurement – rather than through adjustment of the common PC – to ensure that benefits are only counted once.

6.5.23 This PC will not include any additional benefit from the reduction of phosphorus from UUW WwTW that could be included within the River Water Quality PC. This excludes Hawkshead WwTW which, due to a Habitats Directive driver in AMP8, is likely to require further phosphorus reduction. As UUW has met its long term phosphorus targets at remaining treatment works in the Windermere catchment, any further improvements to these sites could not be included in the River Water Quality performance commitment, this PC is explicitly designed to go beyond our phosphorus requirements in order to maximise the environment benefit in such as a high profile, nationally significant water body.

Application of reward cap, penalty collar or deadband

6.5.24 We propose a cap and collar and do not propose a deadband in line with the requirements of Ofwat's PR24 final methodology.

ODI Rates

Table 88 Wonderful Windermere ODI rates

ODI Rates per kg Phosphorus	
Marginal Benefit	£13,615.16
Benefit Sharing Factor	70%
ODI Rate	£9,530.61
Enhanced ODI Rate	N/A

Long term ambition and future price reviews

6.5.25 Lake Windermere is a nationally significant water body, it is the largest lake in England, a UNESCO world heritage site and supports a thriving local economy. However, this iconic lake is under threat from nutrient rich waters and climate change resulting in isolated incidents such as algal blooms being recorded. The water quality or ecological status of this lake is 'moderate', this is below the statutory requirement for water bodies in England.

6.5.26 UUW has invested significantly to reduce phosphorus and nutrient inputs from assets, and we have met our long-term target for phosphorus reduction in this catchment with no further reduction currently required in future AMPs. However, there remains significant customer, stakeholder and media attention focused on this area. Therefore in order to achieve the water quality improvements expected by customers and communities, developing greater resilience to the risks of climate change in the area, there is a need for further collaboration across the catchment to target other sources of pollutions and nutrient input. UUW is in a unique position to lead this collaboration between stakeholders in the catchment.

6.5.27 This performance commitment will mean that we will support the water quality, long-term resilience and heritage of Windermere through stewardship of catchment-wide solutions. Taking a whole catchment approach to Windermere, we will look beyond our assets to comprehensively understand the nutrients that are input into the system from multiple third party sources, and act as a catchment convenor to facilitate and support the reduction of phosphorus inputs into the lake. This performance commitment will support UUW in accelerating overall water quality improvements by driving partnerships working on a scale that we otherwise may not be able to achieve without it. Our longer term target is to remove at least 77.4 kg of phosphorus equivalents per year within the Windermere catchment, and this approach could be expanded to water bodies beyond Windermere to deliver the widest possible benefits from this innovative PC.

Verification of the measure

6.5.28 This performance commitment will measure phosphorus reduction into Windermere. Phosphorus reduction will be calculated using a verified model or theoretical reduction to also include interventions not identified within the model such as monitoring and engagement.

6.6 PR24_IBA_Improving water bill affordability for socially important non-household community groups

6.6.1 This measure is structured to incentivise UUW to target water efficiency and other customer facing interventions at socially important non-household community groups, beyond levels already enabled through AMP8 enhancement allowances and common PCs for non-household water efficiency. This measure will ensure that efforts to reduce water demand also deliver high social benefit by enabling lower water use, and therefore water charges for non-household community groups that are least able to meet the cost of rising charges.

6.6.2 Affordability challenges are a common and repeated concern raised by customers. In establishing current concessionary charges arrangements for schools and key non-household community groups we engaged extensively with stakeholders and customers on which groups are most in need of support to pay for water charges. Joint Ofwat/CCW research identified that addressing bill affordability challenges is a top priority for customers[65]. These results align with our own research looking at water customer priorities in the North West[66]. This measure seeks to address these concerns for socially important non-household customers, providing enhanced support for the 2025–30 period.

> "The school my kids go to hasn't even had enough money for all the books and pens the kids might need, so I know that anything that can be done to save a bit of money would help and make a difference."
> **HH customer, Lancashire**

6.6.3 We propose stretching and ambitious PCLs for this bespoke PC, recognising that whilst we have some activity currently underway in this area, it is the financial incentivisation offered by the bespoke PC

[65] 'Understanding customers' preferences for Performance Commitments at PR24', CCW, 11 April 2022, https://www.ccwater.org.uk/research/understanding-customers-preferences/

[66] unitedutilities.com/globalassets/z_corporate-site/about-us-pdfs/p107-customer-priorities/final-report.pdf

mechanism which will mean we can go further, faster, in 2025-30. Our PCLs are ambitious as we seek to significantly ramp up activity in this area, an area in which there are limited statutory obligations to act but where we want to act to address local needs and priorities. Without this bespoke PC in place UUW would have to artificially constrain non-household water efficiency activity, with WRMP-related enhancement investment supporting engagement with higher consuming end users. Without additional bespoke PC incentives the scale and pace of water efficiency work will be lowered, and interventions will be targeted solely based on demand reduction opportunities, without consideration of wider social and affordability benefits. This would mean that opportunities to reduce water demand, further social value and address customer affordability concerns might be missed in 2025–30.

Overview

Purpose

6.6.4 The bespoke measure will incentivise efforts to reduce water demand at schools and socially important community groups, delivering high social benefits through lower charges for non-household community groups that are least able to meet the cost of rising charges.

6.6.5 This measure is designed to provide meaningful help to a group of customers that would not receive help otherwise. By further extending water efficiency support to those customers that currently qualify for one of the 2022/23 UUW concessionary schemes for schools and other non-household community groups, we will enable reduced water usage and therefore lower water charges for those non-household customers that are least able to meet the cost of rising charges and provide confidence to all customers that we are addressing bill affordability challenges across all customer groups.

Customer support

6.6.6 This measure is designed to directly address specific concerns about non-household water bill affordability raised by both non-household and household customers.

6.6.7 As part of Affordability and Acceptability testing 30% of business customers expressed concern about future bill affordability, a marked increase from PR19[67] when only 15% of non-household customers were concerned about proposed future water charges.

"I think it should just be support for more public services, and it shouldn't be for private companies or commercial business."
HH customer, Lancashire

6.6.8 As part of our testing of a range of potential bespoke PC options[68] customers made it clear that there is strong support for a measure focussed on non-household affordability support, provided that it is appropriately designed and targeted. Support for the measure grew amongst those that are reliant on the organisations listed.

- Most customers recognised that some organisations are struggling at the moment due to rising costs, and that helping these organisations was seen as a good way of helping the wider area.
- There was support for the focus on schools and local community groups. Customers do not want privately funded, or for profit organisations targeted.
- They wanted more clarity on the volume and value of savings schools and other originations might realise.

6.6.9 Overall, customers felt that the introduction of an affordability focussed non-household measure was judged to be a medium priority, just behind affordability support for households and rainfall management measures.

[67] Boxclever for United Utilities, "PR19 Acceptability Testing Research Debrief: Stage 1, Document Reference: T1028", 2018 https://www.unitedutilities.com/globalassets/z_corporate-site/pr19/supplementary/s1001_customer_research_summaries.pdf

[68] Trinity McQueen on behalf of United Utilities, "Bespoke Performance Commitments Testing Report", September 2023, https://www.unitedutilities.com/corporate/about-us/our-future-plans/listening-to-our-customers/insight-and-research-library#PCtesting

6.6.10 In response we have developed a measure which tightly defines eligibility criteria to schools and socially important community groups, and assessed expected annual savings from each visit to be relatively large at over 3,000l/d, saving customers over £3,500/yr.

Benefits

6.6.11 Anticipated benefits from the incentive include:

- Immediate reduction in water and wastewater charges for socially important for non-household community groups through reduced usage, with financial savings estimated at over £3,500/yr/customer;
- Longer term reduction in charges for this same group through utilisation of water smart meters and associated water saving guidance; and
- Reduced non-household water demand and leakage, with savings on average exceeding 3,000 l/d from each visit.

6.6.12 The incentive will be targeted at key non-household community groups that currently qualify for one of the 2022/23 UUW concessionary schemes for schools and other non-household community groups[69].

6.6.13 The performance commitment consists of an activity-based metric, measuring non-household water efficiency and affordability interventions for socially important non-household community groups. Each qualifying intervention will consist of:

- A water efficiency visit (including water efficiency advice);
- Fitting of free water efficient devices and flow regulators (if appropriate);
- Free internal leak repair (if appropriate); and
- Providing a new smart-enabled water meter and assistance in understanding usage patterns and identifying water efficiency opportunities (if not already provided).

6.6.14 The incentive payment for these interventions will be a fixed payment per intervention. The incentive rate will be calculated based on an assessment of assumed water bill savings in the year of intervention, minus incentive payments already covered by common performance commitments (PCs) for business demand. Incentive payments would only be attracted if the supported customer is already in receipt of the existing community concessionary scheme at the time water efficiency and affordability interventions are completed.

Performance commitment definition and parameters

Detailed definition of performance measure

6.6.15 Within each reporting year, performance is calculated as:

6.6.16 Total performance = Number of qualifying water efficiency visits + Number of onsite leak repairs

6.6.17 A qualifying water efficiency visit is defined as consisting of:

- A water efficiency visit (including water efficiency advice) – Including but not limited to a qualified plumber visiting the property, reviewing water using fixtures and fittings, providing advice on appropriate water saving interventions, testing for potential leaks and attempting to locate and fix any onsite leakage.
- Fitting of free water efficient devices and flow regulators (if appropriate).

6.6.18 Only properties that have a smart meter installed (or are assessed as being economically unsuitable for a smart meter installation) and are offered a full set of free water efficient devices will qualify as having had a completed water efficiency visit.

[69] https://www.unitedutilities.com/Business-services/wholesale-charges/?WSCharges=2023-24

6.6.19 Only those that qualify for the UUW concessionary schemes applicable to community groups or eligible schools will count towards reported performance. This would cover the following types of premises:

- An educational establishment which:
  - is used exclusively or nearly exclusively for delivering education and tuition of students for any or all of Key Stages 1 – 5 or equivalent; and also
  - has a playground facility attached.
- Places of worship;
- Scout and guides halls;
- Sea cadets units;
- Community amateur sports clubs;
- Village hall or community centres;
- Cemeteries; and
- Local authority parks.

Additional detail on measurement units

6.6.20 Incentive payments would only be attracted if the supported customer is in receipt of an existing schools or community concessionary scheme at the time of the water efficiency visit. Customers removed from the concessionary scheme after water efficiency interventions take place, but before the intervention is reported as part of year end performance assessment will not qualify for an incentive payment. Any new customers added to the UUW concessionary scheme would become eligible for this incentive.

Specific exclusions

6.6.21 None

Reporting and assurance

6.6.22 UUW's standard APR reporting and assurance processes are to be applied to this bespoke performance commitment, including board review and approval and third-party assurance if deemed necessary through our standard risk review procedures.

6.6.23 The company shall ensure that its outcome delivery incentive payments only relate to real performance changes and not definitional, methodological or data changes in performance commitments.

Compliance checklist

6.6.24 The company shall complete the checklist below and report to Ofwat if any element is not green. Where an element is not green, we may intervene to protect customers and ensure that the company does not benefit from insufficient data quality.

Table 89 Compliance checklist for Improving water bill affordability for socially important non-household community groups

	Component / elements	Component R/A/G	Element R/A/G	Reason for any non- compliant component	Confidence grade
1	Number of qualifying water efficiency audits				
2	Number of onsite leak repairs				
3	Schools and other key non-household community groups qualification check				
4	Validation that properties have a smart meter installed (or are assessed as being economically unsuitable for a smart meter installation)				

Table 90 Definition parameters

Parameters	
Measurement unit and decimal places	Number of schools and other key non-household community groups receiving water efficiency visit and leak repair (as applicable), to zero decimal places
Measurement timing	Reporting year
Incentive form	Revenue
Incentive type	Underperformance and outperformance
Timing of underperformance and outperformance payments	In-period
Price control allocation	100% water network plus
Frequency of reporting	Annual, on a reporting year basis
Any other relevant information	–
Links to relevant external documents	United Utilities wholesale charges scheme[70]

6.7 Evidence to support improving water bill affordability proposals

6.7.1 Improving water bill affordability for socially important non-household community groups has been developed as a performance commitment to target water efficiency and other customer-facing interventions at socially important non-household community groups. Ensuring that efforts to reduce water demand also deliver high social benefit by supporting lower charges for non-household community groups that are least able to meet the cost of rising charges, beyond the support already offered to them through the existing concessionary tariffs.

6.7.2 This section outlines:

- How the performance commitment meets the Ofwat criteria set out in Ofwat's PR24 final methodology and Ofwat's subsequent Information Notice 23/02 (IN 23/02), how this is appropriate in bringing benefits to customers and the environment and why this is not accounted for by other performance commitments.

[70] https://www.unitedutilities.com/Business-services/wholesale-charges/?WSCharges=2023-24

- How we have calculated our proposed PCL using industry models and how we justify its suitability with reference to the tests given in Ofwat's final methodology Appendix 9 section 4.4.3 on determining stretching performance improvements.

Ofwat bespoke performance commitment criteria:

Local circumstances

6.7.3 Additional affordability support measures are needed in the North West. For households it is established that North West levels of income deprivation are the highest in England, with 60 of the 100 most deprived English neighbourhoods in the North West[71]. In addition the impacts of cost of living related inflation on schools and socially important non-household community groups has been substantial. For example the Education Policy Institute has built on IFS analysis to identify a growing real terms gap in the costs schools face and the funding they are likely to receive per pupil[72].

6.7.4 Schools are becoming increasingly dependent on additional support to cover their core costs, for example Parent Teacher Association (PTA) fundraisers[73]. Where there are schools with high proportions of pupils from low income families they may not have PTA support. In January 2023, the proportion of pupils eligible for free school meals in England was 23.8% and the proportion of pupils eligible for free school meals in the North West was 26.8%, the third highest in the country[74].

Company specific circumstances

6.7.5 After 15 years of average customer bills that will have (overall) fallen in real terms by 20 per cent, bills are projected to increase over the 2025–30 period, representing a marked change.

Performance Commitment Levels

6.7.6 Performance commitment Levels (PCLs) for this bespoke PC, as well as associated leakage reduction and business demand reduction PCLs, will be set in line with activity levels and demand reduction targets set out in UUW's revised draft water resources management plan (dWRMP). This ensures that the PC level required will be aligned with stretching government and regulatory demand reduction targets that form the basis of this statutory planning exercise.

[71] English Indices of Deprivation 2019 - https://www.gov.uk/government/statistics/english-indices-of-deprivation-2019

[72] Education Policy Institute 'Current estimates of school funding pressures' https://epi.org.uk/publications-and-research/current-estimates-of-school-funding-pressures/

[73] https://www.theguardian.com/education/2022/sep/17/schools-urge-parents-to-help-plug-funding-gaps-as-costs-soar

[74] Schools, pupils and their characteristics - https://explore-education-statistics.service.gov.uk/find-statistics/school-pupils-and-their-characteristics/2022-23#dataBlock-ff2fe9aa-c2bc-439c-3c25-08db5b843ba5-tables

Table 91: Improving water bill affordability for socially important non-household community groups AMP8 Performance Commitment Levels achievable from base and enhancement expenditure with comparative industry information

	2025-26	2026-27	2027-28	2028-29	2029-30
PCL	333	333	333	333	333
Performance from base	0	0	0	0	0
Performance from enhancement	333	333	333	333	333
Industry upper quartile	Measure is not normalised and so cannot be compared across companies				
Industry frontier	Measure is not normalised and so cannot be compared across companies				
Reward cap	3,059	3,059	3,059	3,059	3,059
Penalty collar	0	0	0	0	0
Deadband	N/A	N/A	N/A	N/A	N/A

PCLs set at PR19

6.7.7 This is a new and innovative PC for PR24, therefore PR19 PCLs were not determined and cannot be used in the assessment of PR24 PCLs.

Historical outturn performance

6.7.8 As this is a new PC for PR24 consideration of historic performance (individual company or industry) in the context how we have calculated stretching AMP8 PCLs is not applicable.

6.7.9 In line with previous Household Retail Market guidance non-household water efficiency activity in AMP7 has been limited to research projects and trials.

Historical expenditure included in the base expenditure models at PR24

6.7.10 There is no historic expenditure in base models related to this performance commitment.

6.7.11 Following non-household retail market separation UUW stopped investment in non-household demand reduction activity, in line with market guidelines in place at the time. As a result no base expenditure on business demand activity took place during years included within base expenditure models.

6.7.12 As part of developing the Revised Draft WRMP we have forecast changes in underlying base demand to reflect the effects of changes in underlying business usage absent UUW enhancement investment.

Company forecast of performance levels that can be delivered from base expenditure

6.7.13 As there is no ongoing base expenditure for business demand reduction activity, performance change is forecast based on underlying changes in business usage absent any UUW expenditure.

Performance levels of efficient companies

6.7.14 As this is a new bespoke PC for PR24, data for other companies is not available.

Opportunity for transformational performance improvements

6.7.15 The design of this bespoke performance commitment is inherently stretching, as improving water bill affordability for socially important non-household community groups has not been a focus of the industry in the past. Actively seeking to identify and support key groups of non-household customers that customers believe should be provided with additional affordability support is a new approach, and one which will stretch UUW's capabilities.

Sources of information used to set the PCL

6.7.16 Performance commitment Levels (PCLs) for this bespoke PC, as well as associated leakage reduction and business demand reduction PCLs, have been set in line with activity levels and demand reduction targets set out in UUW's revised draft water resources management plan (dWRMP). This ensures that the PC level required will be aligned with stretching government and regulatory demand reduction targets that form the basis of this statutory planning exercise.

Dependencies of overlap with other PCs

6.7.17 This PC has some overlap with leakage and business demand common PCs, as noted by Ofwat in their June 2023 feedback. To prevent duplication of incentivisation, the associated ODI rates have been adjusted to remove incentives already covered by common PCs. In this submission, we have used the indicative ODI rates published by Ofwat June 2023. We expect that these will be updated for final ODI rates in final determinations.

Application of reward cap, penalty collar or deadband

6.7.18 As shown above we do not propose a deadband. As this is a newer area of activity we propose that a reward cap is appropriate to help manage risk/reward ranges. We propose this PC should not have a collar as it is effectively already mitigated by a floor of zero performance in any given year. We propose the cap should be set at 3,059 audits a year, reflecting our current assessment of the maximum number of customers that could be effectively provided with a water efficiency audit in any given year.

ODI rates

6.7.19 A full description to the calculation of bespoke PC incentive rates can be found in supplementary document UUW31 – Customer Research Triangulation.

6.7.20 Our triangulation framework was the basis of the methodology for triangulating evidence to produce a robust and fair financial incentive rate. Eight pieces of potentially relevant evidence were identified, with three pieces of evidence included in the final rate valuation.

6.7.21 The risk of overlap and double counting with common performance commitments was assessed, and it was determined that there was a risk of double-counting with the business demand and leakage performance commitments. To prevent duplication of incentivisation, the associated marginal benefit rate has been adjusted to remove incentives already covered by common PCs. In this submission, we have used the indicative rates published by Ofwat June 2023. We expect that these will be updated for final marginal benefit and ODI rates in final determinations.

6.7.22 Both the business demand and leakage performance commitments have an indicative rate of £0.52 per litre per day. We have calculated that the average water savings per a completed visit is 3,142 l/d. To resolve any double count of financial incentive we have therefore deducted:

$$3{,}142 * £0.52 = £1{,}638$$

from the indicative marginal benefit value from the calculated value of water saved to the customer.

Table 92 Improving water bill affordability for socially important non-household community groups ODI rates

ODI Rates	
Marginal Benefit	£3,552 / visit completed
Removal of leakage and Business demand incentive overlap	-£1,638 / visit completed
Marginal Benefit after removal of overlap	£1,915 / visit completed
Benefit Sharing Factor	70%
Outperformance ODI Rate	£1,341 / audit completed
Underperformance ODI Rate	£1,341 /audit completed

ODI Rates	
Enhanced ODI Rate	N/A

Long term ambition and future price reviews

6.7.23 Affordability challenges are a common and repeated concern raised by schools and key community groups, and one that is likely to continue beyond 2030. Joint Ofwat/CCW research identified that addressing bill affordability challenges is a top priority for customers. This measure seeks to address these concerns, providing enhanced support for the 2025–30 period, and setting foundations for further support beyond this period.

6.7.24 Whilst non-household water efficiency visits form part of our long term WRMP we have not, at this stage included a continuation of this bespoke PC in our long term plans. We need to develop a track record of delivery against this new PC in AMP8 to demonstrate that continuation of this measure into future AMPs is justified.

Verification of the measure

6.7.25 Customer qualifying criteria is aligned with the published concessionary charging arrangements published annually on the United Utilities website[75].

[75] unitedutilities.com/Business-services/wholesale-charges/?WSCharges=2023-24).

Appendix A

A.1 Performance Commitments compliance checklists

A.1.1.1 This section provides the completed compliance checklists for the relevant performance commitments.

A.1.2 Water supply interruptions

A.1.2.1 Water Supply interruptions are currently reported annually so confidence is high that the information provided for this measure is reliable, accurate and complete.

A.1.2.2 Ofwat has provided a compliance checklist in the performance commitment definition (date 9 May 2023) indicating the components used for reporting Water Supply Interruptions and our confidence in the accuracy of each when reviewing our performance. Our completed compliance checklist is shown in Table 93.

A.1.2.3 Alongside the checklist, the proportion of start/stop times informed by each data source is reported (customer contact/pressure and flow data/modelled data/valve operation) to inform validity assessments for company data comparison.

Table 93 - Water Supply Interruptions compliance checklist

	Component	Component R/A/G	Element R/A/G	Confidence Grade
2	Start Time	G		B2
2a	Evidence to support start time		G	B2
2b	Treatment of 3m pressure definition		G	B2
2c	Treatment of blocks of flats		G	B2
3	Stop Time	G		B2
3a	Evidence to support stop time		G	B2
3b	Treatment of 3m pressure definition		G	B2
3c	Treatment of blocks of flats		G	B2
4	Short Term Restoration of Supply	G		B2
5	Exclusions	G		B2
6	Calculation of performance	G		A2
7	Application of Precautionary Principle	G		B2
8	Records	G		A2
9	Properties affected >1 interruption in year	G		A2

A.1.3 Compliance Risk Index

A.1.3.1 Ofwat has not provided a compliance checklist in the performance commitment definition (date 9 May 2023).

A.1.3.2 However, as this is an existing measure reported annually, we have confidence that the reported data will be reliable accurate and complete.

A.1.4 Customer contacts about Water Quality

A.1.4.1 Ofwat has not provided a compliance checklist in the performance commitment definition (date 9 May 2023) indicating the components used for reporting Water quality contacts and our confidence in the accuracy of each when reviewing our performance.

A.1.4.2 Reporting on this measure is completed annually, so confidence is high that the information provided will be reliable accurate and complete.

A.1.4.3 We also report consumer contacts separately for appearance, taste and odour on the Discover water website.

A.1.5 Internal sewer flooding

A.1.5.1 Ofwat has provided a compliance checklist in the performance commitment definition (date 9 May 2023) indicating the components used for reporting sewer flooding and our confidence in the accuracy of each when reviewing our performance. Our completed compliance checklist is shown in Table 94. UUW has a robust process for reporting internal sewer flooding performance through our existing regulatory reporting process for this metric, as reflected in the compliance checklist.

Table 94: Internal Sewer Flooding compliance checklist

	Component	R/A/G	Reason for Non-Compliant Component	Confidence grade
1	Assets causing flooding	G		A3
2	Repeat incidents	G	.	A3
3	Neighbouring properties	G		A3
4	Records	G		A3

A.1.6 External sewer flooding

A.1.6.1 Ofwat has provided a compliance checklist in the performance commitment definition (date 9 May 2023) indicating the components used for reporting sewer flooding and our confidence in the accuracy of each when reviewing our performance. Our completed compliance checklist is shown in Table 94. UUW has a robust process for reporting external sewer flooding performance through our existing regulatory reporting process for this metric, as reflected in the compliance checklist.

Table 95: External Flooding compliance checklist

	Component	R/A/G	Reason for Non-Compliant Component	Confidence grade
1	Assets causing flooding	G		A3
2	Repeat incidents	G	.	A3
3	Neighbouring properties	G		A3
4	Records	G		A3

A.1.7 Biodiversity

A.1.7.1 Ofwat has provided a compliance checklist in the performance commitment definition (date 17 May 2023) indicating the components used for reporting biodiversity and our confidence in the accuracy of each when reviewing our performance. Our completed compliance checklist is shown in Table 96.

Table 96: Biodiversity compliance checklist

	Component	R/A/G	Reason for Non-Compliant Component	Confidence grade
1	**Appropriate actions are taken to conserve and enhance biodiversity**			A
1a	Stakeholders help direct areas of land that are nominated			A
1b	Management interventions are guided by appropriate expert ecological advice			A
2	**Assessments are undertaken to assess changes in biodiversity on nominated sites**			B2
2a	Assessors are selected that have training/experience appropriate to the habitat being surveyed			A
2b	Information is collected so that assessments on each site can be undertaken in as similar way as possible across a pair of surveys over time			B
2c	Site surveys are carried out at four-year intervals using the baseline pre-intervention assessment of the biodiversity metric (and, where necessary, any earlier version of this metric in accordance with section 1.1).			A
2d	Appropriate management is in place to conserve biodiversity and the company has no information that there may have been a loss in biodiversity, that it has not taken proportionate action to address.			A
2e	For any land in Wales the company follows the advice issued by NRW			A
3	**Overall biodiversity across sites not included in the biodiversity metric is not deteriorating**			C5
3a	The company follows the assurance processes set out in its 2024 business plan and in line with any guidance Ofwat issues.			A
3b	For any land in Wales, the water company has prepared a 'Net Benefits for Biodiversity Report' in line with the guidance issued by the Welsh Government			A

A.1.8 Operational greenhouse gases

A.1.8.1 Ofwat has not provided a compliance checklist in the performance commitment definitions (date 31 May 2023) indicating the components used for reporting operational GHG emissions and our confidence in the accuracy of each when reviewing our performance.

A.1.9 Leakage

A.1.9.1 Ofwat has provided a compliance checklist in the performance commitment definition (date 17 May 2023) indicating the components used for reporting leakage and our confidence in the accuracy of each when reviewing our performance. Our completed compliance checklist is shown in Table 97.

Table 97: Leakage compliance checklist

	Component	Comp-onent R/A/G	Element R/A/G	Reason for Non-Compliant Component	Confidence grade
1	**Coverage**	G	G		
1a	At least 95% of all properties have continuous night flow monitoring throughout the year	G	G		
2	**Availability**	A	A		
2a	Above 90% of all properties within continuous night flow monitoring networks available for reporting night data throughout the year.	A	A	Our availability during 2021/22 was 86.34%, as we had issues with our existing flow loggers reaching the end of their asset life and the implementation of a new procurement framework to install new flow loggers.	
3	**Properties**	G	G		
3a	All properties mapped to defined zones or DMAs (District Meter Area) using geolocation or similar methods	G	G		
3b	Consistency of property numbers contained within DMAs or zones within company billing system. Valid differences explained.	G	G		
3c	Properties that are defined as void excluded from night use allowances unless evidence for use of losses from illegal occupation is available.	G	G		
3d	Leakage allowance for properties not within DMAs or monitored zones consistent with other leakage estimates.	G	G		
3e	Property data updated at least annually.	G	G		
4	**Night flow period and analysis**	G	G		
4a	Night flow data frequency at least every 15 minutes	G	G		
4b	Leakage derived from a fixed period during the night of at least a one hour period and up to two hours.	G	G		

	Component	Comp-onent R/A/G	Element R/A/G	Reason for Non-Compliant Component	Confidence grade
4c	If the fixed period is varied during the year for some or all DMAs or zones to address significant changes to night use patterns, such as during Ramadan, evidence for this is provided.	G	G		
4d	Leakage allowance applied for properties not within DMAs or monitored zones consistent with other leakage estimates.	G	G		
4e	Data infilling for a single DMA or zone does not use more than six months of historic data before moving to area average	G	G		
4f	Data infilling where historic data is not available uses the area average in which the DMA is located.	G	G		
4g	When a DMA is restored to operability, the subsequent leakage data is used to retrospectively update the data infilling interpolating between pre- and post- data over at least one month.	G	G		
4h	Where NHH (non-household) properties are continuously monitored, the actual values of flow over the night flow period are used in place of estimates within the night flow analysis.	G	G		
4i	Weekly leakage estimates are used for annual reporting with no exclusions for summer months	G	G		
4j	Negative leakage values are used in compiling values of annual average leakage	G	G		
4k	The reasons for any prolonged periods of negative leakage are investigated and explained.	G	G		
5	**Household night use (HHNU)**	G	G		
5a	The night time period for HHNU is the same time period as used for night flow and NHHNU.	G	G		
5b	Own data or shared data with proximate companies is used for HHNU.	G	G		
5c	Plumbing losses are included and based on own data.	G	G		
5d	Evidence that survey is representative (based on demography, property type or other factors) of the company as a whole.	G	G		
5e	Sample size is sufficient to capture continuous and intermittent night use with reasonable confidence.	G	G		
5f	Continual monitoring and maintenance of IHM (individual household monitor) and SAMs (small area monitors) monitors.	G	G		
5g	HHNU is derived daily with regular adjustment of values on a weekly or monthly frequency to reflect actual seasonal use. This may be done retrospectively.	G	G		
6	**Non household night use (NHHNU)**	G	G		

	Component	Comp-onent R/A/G	Element R/A/G	Reason for Non-Compliant Component	Confidence grade
6a	The time period for NHHNU is the same time period as used for night flow and HHNU.	G	G		
6b	Own data or shared data with proximate companies is used for NHHNU.	G	G		
6c	1999 UKWIR methodology with the appropriate time window as used for the night flow and the published outcome of further methodology development is applied.	G	G		
6d	Stratification of non-households to a number of groups and consumption bands is representative of the varying characteristics of commercial and industrial properties.	G	G		
6e	Sample size is sufficient to capture night use by stratification with reasonable confidence.	G	G		
6f	Reliable and representative average billed volume (ABV) model based on data logging of the representative sample sufficient to capture demand variations with further seasonal logging where relevant. Continuously logged properties not part of the sample.	G	G		
6g	ABV model linked to billing system or replacement database of billed volumes. Average billed volumes updated at least annually.	G	G		
6h	Continuous monitoring of selected NHH is carried out where average demand of an individual non-household has a material impact on the ability for a DMA or zones to provide valid and consistent data within operability limits.	G	G		
7	**Hour to day conversion**	G	G		
7a	The hour-to-day factor is derived separately for each DMA or zone using pressure logging within each DMA or zone. The factors are updated at least annually or where there are any significant changes to pressure regimes.	G	G		
7b	As an alternative, hydraulic models reflecting latest network configuration and pressure changes, are used if they disaggregate in sufficient detail at subzone level.	G	G		
7c	Evidence based N1 value used. Expected range is 1.0 to 1.20	G	G		
8	**Annual distribution leakage**	G	G		
8a	Average weekly data is derived from valid daily values of leakage using data points which are representative of the week. Backfilling using the methods described in night flow analysis – is done when valid data is not available for three or more data points.	G	G		

	Component	Comp-onent R/A/G	Element R/A/G	Reason for Non-Compliant Component	Confidence grade
8b	The annual value of leakage expressed as Ml/d (Mega-litres per day) is to be derived from an average of the 52 week data.	G	G		
9	**Trunk main losses (only applicable if DMA level leakage assessment used).**	G	G		
9a	Company-specific data is used to assess the value of trunk main leakage, using either physical surveys and inspections or a mass balance approach.	G	G		
9b	Proactive leakage monitoring approach applied where trunk main losses form a significant element of total leakage, or the MLE (maximum likelihood estimation) water balance gap is greater than +/-2%.	G	G		
9c	If trunk main losses greater than 5% of total leakage estimates reviewed annually.	G	G		
10	**Service reservoir losses (only applicable if DMA level leakage assessment used).**	G	G		
10a	Company specific data is used to assess the value of service reservoir losses.	G	G		
10b	Reservoirs with known high leakage, structural deficiencies or at risk of water quality failures are investigated on an individual basis.	G	G		
10c	Drop tests (12 hour duration depending on size) carried out every five or ten years. All valves checked for tight close; and losses through overflows investigated. Appropriate monitoring arrangements in place to control and minimise overflow events.	G	G		
11	**Distribution input (DI)**	G	G		
11a	Distribution input to the system is metered with at least daily readings at all defined locations	G	G		
11b	Meters are appropriate size for the flow to be measured and located at appropriate inputs to the network confirmed by record plans. Any treatment works take-off downstream of a meter are excluded from the DI calculations.	G	G		
11c	Data validity checks are carried out at least monthly.	G	G		
11d	Missing data is infilled using both pre- and post- data for the location over at least one month, extrapolated from pump hours or used of upstream or downstream meters.	G	G		
11e	The data transfer systems from meter output to central database are checked and validated on a risk-based frequency from one up to two years.	G	G		
11f	Flow checks are carried out on DI meters consistent with the principles of the document 'EA Abstraction Good Metering Guide' and in particular the frequency of flow checking defined in Table 6.2 of the Environment Agency guide.	G	G		
12	**MUR**	G	G		

	Component	Comp-onent R/A/G	Element R/A/G	Reason for Non-Compliant Component	Confidence grade
12a	Meter under-registration (MUR) is applied consistent with own estimates. Evidence of MUR available and is compelling for MUR above 3%.	G	G		
13	**Company own water use**	G	G		
13a	All sewage treatment sites, and other sites and assets supplied downstream of the DI meters using greater than 10m3/d (0.01 Ml/d) are metered.	G	G		
13b	An estimate of total company own use is included in the water balance, based on a clear methodology and actual data.	G	G		
13c	Estimate of distribution operational use is evidence based and not greater than 0.6% of distribution input.	G	G		
14	**Other water use**	G	G		
14a	Other use components are based on own data.	G	G		
14b	Estimate of water delivered unbilled (legally and illegally) is evidence based and not greater than 1.8% of distribution input.	G	G		
14c	Estimates are updated when there is a material increase or decrease to volumes.	G	G		
15	**Water balance and MLE**	G	G		
15a	Fully measured components have a range within 2% to 4% or there is compelling evidence of an alternative range.	G	G		
15b	Mainly measured with some estimated adjustments have a range within 2.5% to 5% or there is compelling evidence of an alternative range.	G	G		
15c	Estimated using detailed and reliable methods have a range within 8% to 12% or there is compelling evidence of an alternative range.	G	G		
15d	Broad estimates not fully detailed or reliable have a range within 20% to 50% or there is compelling evidence of an alternative range.	G	G		
15e	Water balance discrepancy: <2% = G, >2% and <3% = A, >3% =R	G	G		
16	**The information and assumptions made for leakage, per capita consumption and business demand PCs is consistent and be based on the same water balance calculations.**	G	G		

A.1.10 Per capita consumption

A.1.10.1 Ofwat has provided a compliance checklist in the performance commitment definition (date 17 May 2023) indicating the components used for reporting PCC and our confidence in the accuracy of each when reviewing our performance. Our completed compliance checklist is shown in Table 98.

Table 98: Per Capita Consumption compliance checklist

	Component	Comp-onent R/A/G	Element R/A/G	Reason for Non-Compliant Component	Confidence grade
1	Household population estimates	G	G		
2	Household premises estimates	G	G		
3	Measured household consumption	G	G		
4	Unmeasured household consumption	G	G		
5	The information and assumptions made for leakage, per capita consumption and business demand PCs is consistent and be based on the same water balance calculations.	G	G		

A.1.11 Total pollution incidents

A.1.11.1 Ofwat has not provided a compliance checklist in the performance commitment definition (date 9 May 2023) indicating the components used for reporting pollutions incidents but reporting is in line with EPA, and has associated governance so there is high confidence that results are reliable and accurate.

A.1.12 Serious pollution incidents

A.1.12.1 Ofwat has not provided a compliance checklist in the performance commitment definition (date 9 May 2023) indicating the components used for reporting serious pollution incidents and our confidence in the accuracy of each when reviewing our performance.

A.1.12.2 Reporting is in line with EPA version 9 and data is submitted annually, so there is high confidence that results are reliable accurate and complete.

A.1.13 Discharge permit compliance

A.1.13.1 Ofwat has not provided a compliance checklist in the performance commitment definition (date 9 May 2023), indicating confidence in the accuracy of the components used for reporting discharge permit compliance. Compliance is reported annually and is aligned with the published EPA performance report giving high confidence that the information provided is reliable, accurate and complete.

A.1.13.2 Compliance assessment data for numeric parameters is provided to the Environment Agency via a digital submission portal, in line with the reporting frequency detailed in schedule 4 of the respective Environmental permit for each of the sites included within the measure. The Environment Agency confirm exemptions in writing via Letter, Compliance Assessment Record (CAR form) or National Compliance Assessment Database form (NCAD).

A.1.13.3 Reporting of Compliance with UV Disinfection efficacy requirements is done reactively in line with schedule 5 of the Environmental Permit and quarterly in a format as specified by the Agency. Alignment between WASCs and the EA of the recorded number of applicable sites and discharges is performed annually in line with the Environment Agency methodology.

A.1.14 Bathing water quality

A.1.14.1 A compliance checklist has not been provided for this measure (PC definition date 9 May 2023) as this is a new performance commitment. Bathing Water sample results are available through the Defra Data Services Platform: Swimfo. The methodology used to calculate the classification is existing and well established and there is a high degree of confidence in calculating historic and current scores using the weighted scoring methodology.

A.1.14.2 There is a high level of risk in forecasting future performance as there are a number of external factors which contribute the bacterial loads within the individual bathing waters. As our historic performance shows, even when there has been significant investment, this is not reflected in significant improvements in performance.

A.1.14.3 The classification of each bathing water is based on 20 samples per bathing water per bathing season which are taken by the Environment Agency. Statistically this is a small dataset in which the impact of outlying samples, missing data and sampling bias may have disproportionate impact on the classification, and make it difficult to forecast future performance.

A.1.15 Storm overflows

A.1.15.1 Ofwat has not provided a compliance checklist in the performance commitment definition (date 14 June 2023) indicating the components used for reporting storm overflows and our confidence in the accuracy of each when reviewing our performance.

A.1.15.2 There will be 100% coverage of Event Duration Monitors (EDMs) on storm overflows by December 2023, making January-December 2024 the first full year of data for total reported spills, this will be reported in the EDM annual return 2025. As we do not have a full set of either modelled or EDM data, a combined approach is required to understand the baseline from which improvements will be made.

A.1.15.3 Confidence in the data can then be assessed and will increase over time as more data is collected and companies advance their capabilities to analyse vast amounts of data.

A.1.16 Mains repairs

A.1.16.1 Ofwat has provided a compliance checklist in the performance commitment definition (date 9 May 2023) indicating the components used for reporting PCC and our confidence in the accuracy of each when reviewing our performance. Our completed compliance checklist is shown in Table 99.

Table 99: Mains Repairs reporting compliance checklist

	Component	Comp-onent R/A/G	Element R/A/G	Reason for Non-Compliant Component	Confidence grade
1	Mains bursts repair work	G	G		
2	Mains length	G	G		
3	Records	G	G		
4	Methodology Statement	G	G		

A.1.17 Unplanned outage compliance checklist

A.1.17.1 Ofwat has provided a compliance checklist in the performance commitment definition (date 9 May 2023) indicating the components used for reporting unplanned outage and our confidence in the accuracy of each when reviewing our performance. Our completed compliance checklist is shown in Table 100.

Table 100: Unplanned outage compliance checklist

	Component	Component R/A/G	Reason for Non-Compliant Component	Confidence grade
1	**PWPC**	G		
1a	Annual reviews	G		
1b	PWPC by production site	G		
1c	Water resource zone PWPC	G		
2	**Asset failure/unplanned outage**	G		
2a	Source data	G		
3	**Planned Outages**	G		
3a	Source data – programme of works	G		
4	**Duration**	G		

A.1.18 Sewer collapses

A.1.18.1 Ofwat has provided a compliance checklist in the performance commitment definition (date 9 May 2023) indicating the components used for reporting sewer flooding and our confidence in the accuracy of each when reviewing our performance. Our completed compliance checklist is shown in Table 101.

Table 101: Sewer collapses compliance checklist

	Component	Component R/A/G	Reason for Non-Compliant Component	Confidence grade
1	Number of Collapses	G		A3
2	Sewer Length	G	.	B4

	Component	Component R/A/G	Reason for Non-Compliant Component	Confidence grade
2a	Length excluding transferred sewers	G		B4
2b	Length of sewers transferred under the Private Sewer Regs 2011	G		B4

A.2 References

A.2.1.1 This section provides the references to the performance commitment definition and also the appropriate third party definitions that are applicable to these PCs.

- Ofwat final methodology for PR24 – Appendix 7 Performance Commitments, December 2022
- Ofwat final methodology for PR24 – Appendix 8 Outcome delivery incentives, December 2022
- Ofwat final methodology for PR24 – Appendix 9 Setting expenditure allowance, December 2022
- Table 102 Ofwat PR24 Performance commitment definitions

Table 102 Ofwat PR24 Performance commitment definitions

Ref	Common performance commitment (PC) for PR24	Link to performance commitment definition	Link to third party material
CMEX	C-MeX	Work is ongoing to review this definition prior to our draft determinations.	
DMEX	D-MeX	Work is ongoing to review this definition prior to our draft determinations.	
BrMEX	BR-MeX	Work is ongoing to review this definition prior to our draft determinations.	
	Business customer experience in Wales	Work is ongoing to review this definition prior to our draft determinations.	
WSI	Water supply interruptions	Water supply interruptions – PC definition	
CRI	Compliance Risk Index (CRI)	CRI – PC definition	DWI Compliance Risk Index (CRI) definition
WQC	Customer contacts about water quality	Customer contacts about water quality – PC definition	DWI Information letter 04/2022 Revised
ISF	Internal sewer flooding	Internal sewer flooding – PC definition	
ESF	External sewer flooding	External sewer flooding – PC definition	
BIO	Biodiversity	Biodiversity – PC definition	Biodiversity Metric v3.1

Ref	Common performance commitment (PC) for PR24	Link to performance commitment definition	Link to third party material
OGW	Operational greenhouse gas emissions (water)	PR24 operational greenhouse gas emissions performance commitment (water)	
OGWW	Operational greenhouse gas emissions (wastewater)	PR24 operational greenhouse gas emissions performance commitment (wastewater)	
LEA	Leakage	Leakage – PC definition	
PCC	Per capita consumption (PCC)	Per capita consumption – PC definition	
NHH	Business demand	Business demand – PC definition	
POL	Total pollution incidents	Total pollution incidents – PC definition	Environment Agency Environmental Performance Assessment (EPA) methodology v9 Environment Agency Environmental Performance Assessment (EPA) methodology v8 Common Incident Classification Schemes (CICS) – Environment Agency Incident Categorisation – Natural Resources Wales Briefing note – Natural Resources Wales
SPL	Serious pollution incidents	Serious pollution incidents – PC definition	Environment Agency Environmental Performance Assessment (EPA) methodology v9 Environment Agency Environmental Performance Assessment (EPA) methodology v8 Common Incident Classification Schemes (CICS) – Environment Agency Incident Categorisation – Natural Resources Wales Briefing note – Natural Resources Wales

Ref	Common performance commitment (PC) for PR24	Link to performance commitment definition	Link to third party material
DPC	Discharge permit compliance	Discharge permit compliance – PC definition	Environment Agency Environmental Performance Assessment (EPA) methodology v9 Environment Agency Environmental Performance Assessment (EPA) methodology v8
BWQ	Bathing water quality	Bathing water quality – PC definition	Bathing water regulations 2013
RWQ	River water quality	River water quality – PC definition	
SOF	Storm overflows	Storm overflows – PC definition	
MRP	Mains repairs	Mains repairs – PC definition	
UNO	Unplanned outage	Unplanned outage – PC definition	
SCO	Sewer collapses	Sewer collapses – PC definition	

Source: https://www.ofwat.gov.uk/regulated-companies/price-review/2024-price-review/final-methodology/pr24-performance-commitment-definitions/

A.3 Operational Greenhouse gas emissions appendix

A.3.1 Relevant emissions for Water PC:

A.3.1.1 Figure 67 is taken from the water definition document for the Operational GHG emissions common PC. It sets out the relevant scope areas for inclusion.

Figure 67: Table 1 Relevant emissions (Water)

Table 1 Relevant emissions

Scope 1[1]
Direct emissions from burning of fossil fuels (location-based)
Process and fugitive emissions (incl. refrigerants)
Emissions from vehicle transport (owned or leased)
Emissions from land
Scope 2[2]
Purchased electricity (location-based)
Purchased heat
Electric vehicles
Removal of electricity to charge electric vehicles
Scope 3[3]
Business travel on public transport and private vehicles used for company business
Outsourced activities
Purchased electricity: extraction, production, transmission and distribution[4] (location-based)
Purchased heat: extraction, production, transmission and distribution
Purchased fuels: extraction, production, transmission and distribution
Chemicals
Emissions reductions
Exported renewables (generated onsite and exported)
Exported biomethane (generated onsite and exported)

A.3.2 Relevant emissions for Wastewater PC:

A.3.2.1 Figure 68 is taken from the wastewater definition document for the Operational GHG emissions common PC. It sets out the relevant scope areas for inclusion.

Figure 68: - Table 1 Relevant emissions (Wastewater PC)

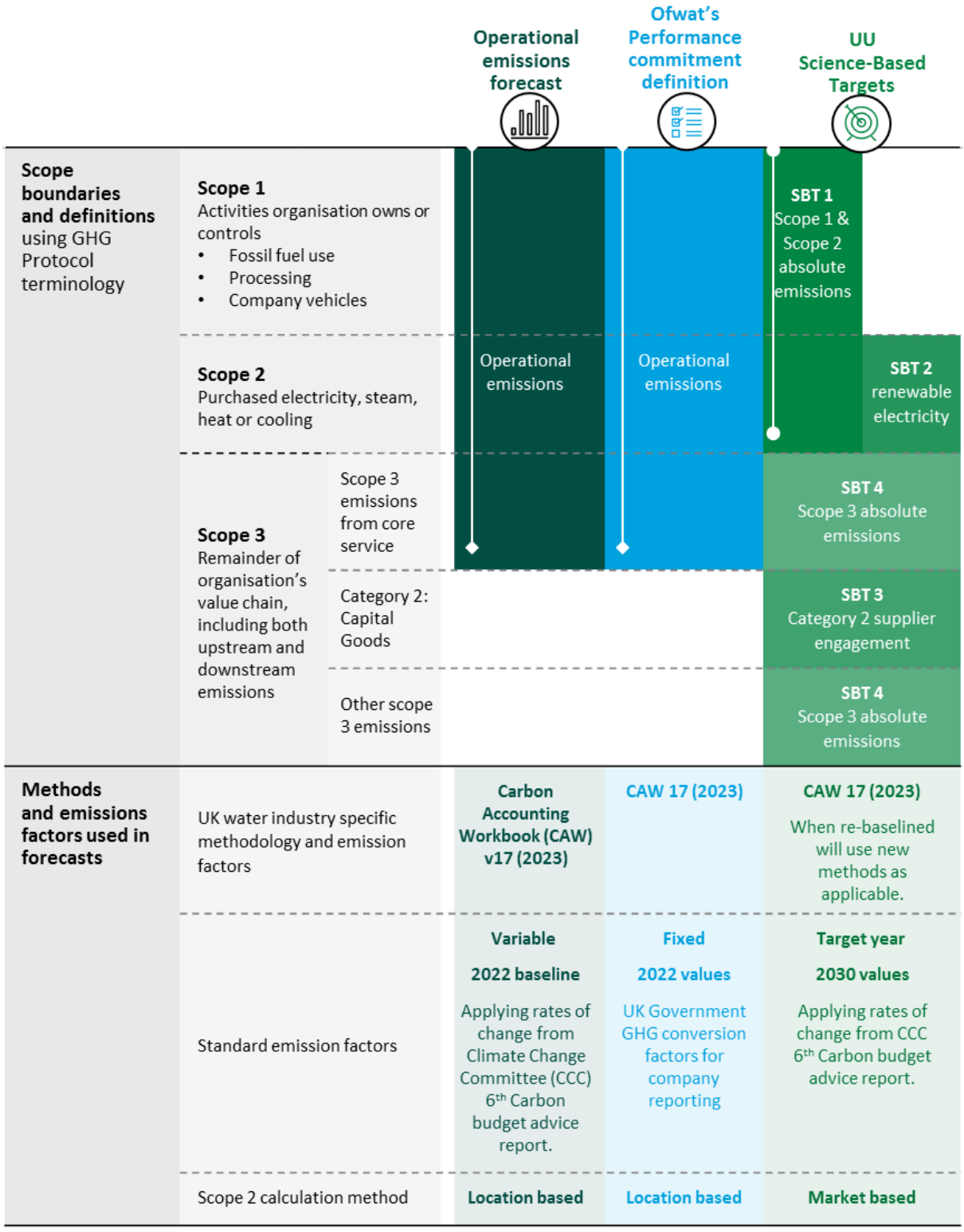
Table 1 Relevant emissions

Scope 1[1]
Direct emissions from burning of fossil fuels (location-based)
Process and fugitive emissions (incl. refrigerants)
Emissions from vehicle transport (owned or leased)
Emissions from land
Scope 2[2]
Purchased electricity (location-based)
Purchased heat
Electric vehicles
Removal of electricity to charge electric vehicles
Scope 3[3]
Business travel on public transport and private vehicles used for company business
Outsourced activities
Purchased electricity: extraction, production, transmission and distribution[4] (location-based)
Purchased heat: extraction, production, transmission and distribution
Purchased fuels: extraction, production, transmission and distribution
Chemicals
Disposal of waste
Emissions reductions
Exported renewables (generated onsite and exported)
Exported biomethane (generated onsite and exported)
Insets

A.3.3 Summary of reporting methodologies used in PR24 documents

6.7.26 Figure 69 summarises the different GHG emissions reporting methodologies used across our PR24 submission. This document focuses on the 'Ofwat's performance commitment definition'.

Figure 69 - Summary of the GHG emissions reporting methodologies



Appendix B

B.1 Embodied GHG Emissions Forecast Position

B.1.1.1 This section provides an overview of the projects within the proposed draft PC baseline.

Table 103 - Proposed draft PC baseline

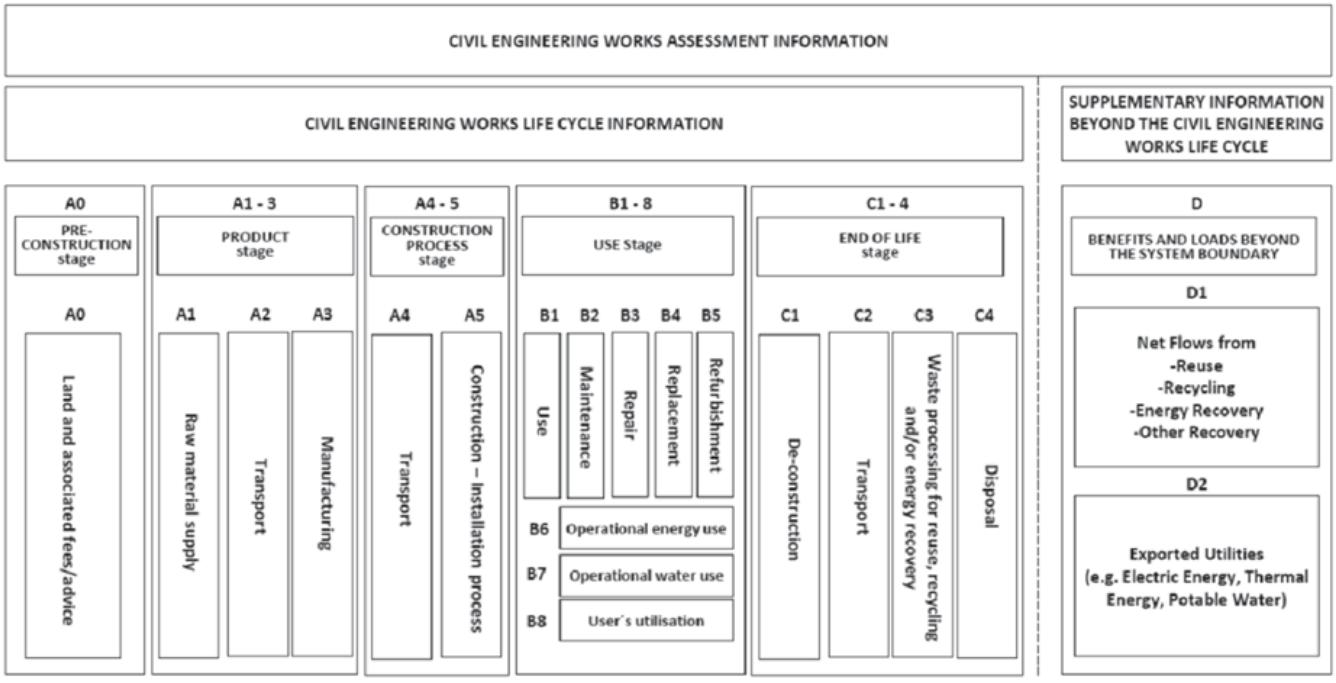
Project ID	Project Name	Project In Use Date	Embodied Carbon (tCO_2e)
E00000009	Ravenstonedale WwTW - Habitats	13/10/2028	2630
E00000010	Kirkby Stephen WwTW - Habitats	31/01/2027	2595
E00000011	Shap WwTW - Habitats	21/03/2029	635
E00000013	Brampton (Carlisle) WwTW - Habitats	31/01/2027	2982
E00000014	Dufton WwTW - Habitats	07/05/2028	848
E00000015	Embleton WwTW - Habitats	09/08/2029	2879
E00000016	Rosthwaite WwTW - Habitats	09/08/2029	850
E00000071	WARWICK BRIDGE WWTW - Nutrient Neutrality	31/01/2027	2093
E00000073	PENRITH WwTW - WINEP Habitats	15/02/2027	438
E00000074	APPLEBY WwTW - WINEP Habitats	31/01/2027	1262
E00000076	BASSENTHWAITE WwTW - WINEP Habitats	10/04/2028	1886
E00000077	Barton WwTW	09/01/2030	8344
E00000079	Garstang WwTW (Chemicals standalone)	30/04/2029	7127
E00000122	Oldham WwTW P	12/02/2030	2270
E00000124	DAVYHULME WwTW - P	19/09/2028	40263
E00000129	St Helens WwTW P	12/02/2030	985
E00000339	ALPRAHAM WwTW - UWWTD - SD	09/08/2029	913
E00000344	WINEP Habitats - LORTON WwTW	09/08/2029	586
E00000345	WINEP Habitats - DALSTON WwTW	10/10/2028	2167
E00000346	WINEP Habitats - GRAYRIGG WwTW	21/03/2029	561
E00000347	WINEP Habitats - THRELKELD WwTW	09/11/2029	2234
E00000348	WINEP Habitats - MILBURN WwTW	10/04/2028	1151
E00000349	WINEP Habitats - CALDBECK WwTW	09/02/2030	1053
E00000350	WINEP Habitats - GLENRIDDING WwTW	09/11/2029	1910
E00000384	WINEP Habitats - Morland WwTW	10/01/2028	1331
E00000394	WINEP Habitats - BRANTHWAITE WwTW	09/02/2030	2008
E00000434	No Det - Orton WwTW	10/01/2028	1381
E00000442	No Det - TORPENHOW WwTW	20/08/2027	757
E00000443	Low Marple WwTW - Phosphorus	13/01/2030	4507
E00000445	No Det - Warrington South WwTW	05/03/2029	5771
E00000448	No Det - POOLEY BRIDGE-EAST WwTW	10/04/2028	2140
E00000449	WINEP Habitats - KESWICK WwTW	09/11/2029	2115
E00000451	No Det - Nether Kellet WwTW	20/08/2027	600
E00000452	No Det - Over Kellet	20/08/2027	659
E00000455	Irwell B5 - ROSSENDALE WwTW	15/07/2029	3694
E00000457	No Det- Nether Peover WwTW - P	10/01/2028	900
E00000461	Long Marton West WwTW	10/04/2028	947
E00000462	Long Marton East WwTW	10/07/2028	1299
E00000831	No Det - Crewe WwTW	13/11/2028	7526
E00000838	Hazel Grove WwTW - Phosphorus - River Goyt	25/01/2029	7667
E00000839	Altrincham WwTW - Phosphorus	15/10/2029	8504
E00000841	No Det - Carlisle WwTW	31/01/2029	2742

E00000850	Lane Bottom - No Det	09/08/2029	450
E00000881	DUKINFIELD WwTW - Ammonia	18/12/2029	13550
E00000882	ASHTON-U-LYNE WwTW - Ammonia	28/05/2029	5965
E00000914	Eaglesfield WwTW	09/11/2029	1949
E00000915	Grange-in-Borrowdale WwTW	21/03/2029	511
E00000916	Kirkby Thore WwTW	09/08/2029	559
E00000918	Warcop WwTW	09/11/2029	1132
E00000924	Murton East WwTW	09/08/2029	699
E00000926	WINEP Habitats - COCKERMOUTH WwTW	09/11/2029	2751
E00000929	GREAT ASBY WwTW	10/01/2028	1932
E00000942	Hyde WwTW	31/03/2030	6898
E00001368	Fazakerley - EnvAct_IMP1	09/08/2029	2079
E00001369	Ainsdale - EnvAct_IMP1	09/08/2029	2427

B.2 Extent of Modules (A1-A5) included in this bespoke PC

B.2.1.1 This section provides boundaries for embodied GHG emissions, also known as A1-A5 modules.

Figure 70: Extent of Modules (A1-A5) included in this bespoke PC (final determination)



United Utilities Water Limited

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Water for the North West