Chapter SRN04

Costs and Outcomes Approach

4. Costs and Outcomes Approach

4.1. Executive summary

Our plan for 2025 to 2030 is our largest ever investment programme. It is driven by our customers' priorities and will improve our resilience, enhance our environment and secure sustainable water supplies for the future. The total cost of our wholesale plan is £7.5 billion[1]. We will deliver £6.3 billion in-house and £1.3 billion will be delivered through alternative delivery routes, including Direct Procurement for Customers (DPC).

We have set ambitious performance commitment (PC) targets – aiming to achieve an average of about 47% improvement by 2030 from our current performance. Our largest improvements will be in our customers' highest priorities – reducing water supply interruptions (95% improvement), pollution incidents and our use of storm overflows (83% improvement), improving water quality compliance (69%), internal sewer flooding (50%) and leakage (35%).

Our customers want us to be ambitious and to do more to protect the environment – but not at the expense of our core services. They expect ambitious but deliverable targets. Our approach to setting these performance targets considers a variety of factors.

It starts with our customers' priorities which we align with our long-term strategy and government targets. We also consider our forecast baseline performance position in 2024/25, our expected performance improvements from base and from enhancement expenditure and past, present and future industry and upper quartile performance.

We have accepted most of Ofwat's indicative Outcomes Delivery Incentives (ODI) rates, based on equity return at risk. The exceptions are in four areas – water supply interruptions, per capita consumption (PCC), business demand, and total pollution incidents.

In these cases, we are proposing alternative ODI rates based on our own analysis of equity return at risk (see SRN574: Risk technical annex), as Ofwat's incentive rates significantly skew the overall range of potential payment. Our proposed ODI rates are:

- **Supply interruptions proposed ODI:** £126,000 per minute of supply interruptions
- **PCC proposed ODI rate:** £179,000 per litre, per household, per day
- **Business demand proposed ODI rate:** £69,000 million litres per day
- **Total pollution incidents ODI rate:** £398,000 per pollution incident per 10,000km sewers

In line with Ofwat's PR24 methodology, we are proposing targeted caps and collars on:

- Business consumption, serious pollution incidents, bathing water quality, river water quality and storm overflows, because these are new PCs
- Abstraction Incentive Mechanism (AIM), because this is a bespoke PC
- Mains repairs, unplanned outage and sewer collapses, because these are asset health metrics
- Water supply interruptions and external sewer flooding, to reflect our analysis of the potential they may have to skew the outcomes package

Our approach to setting efficient cost allowances is influenced by our approach to delivery. We are setting a realistic target of achieving an industry-average level of cost efficiency between 2025 and 2030. This is because our water costs are more efficient than average, but our costs in wastewater are less efficient.

We have assessed our planned base expenditure against modelled allowances, where they are comparable, based on Ofwat's econometric specifications to give us an expected cost envelope. We have added in our estimated allowances for cost adjustments claims, non-controllable costs (mainly energy), and unregulated costs, to assess whether our plan is below or above the funding we expect to receive. At wholesale level, our proposed base costs are about £300 million below our estimated regulatory allowance, assuming all our CACs are accepted in full and there are no adverse symmetrical CAC adjustments based on claims made by other companies.

We have assessed our enhancement expenditure through a combination of robust optioneering, cost estimation techniques and benchmarking. We use optioneering to find the best solution from a range of possible choices. We weigh up the relative costs and benefits, considering the interests of various stakeholders and needs including economic, environmental, customers and resilience. We produce a long list of options, which we constrain to form a short list from which we identify a preferred solution.

1 Values are post RPEs and frontier shift, net of grants and contributions and include third party services and in 2022/23 prices.

We have established our cost stack using a robust build-up of direct costs, indirect costs, risk and corporate overheads. This approach enables us to test each component of the cost stack, undertake benchmarking and challenge ourselves to be efficient. Our costs are built up using our cost curves, historical performance and supplier quotations. These methods have given us confidence in the costs that we expect to incur in AMP8.

Our customers expect us to protect the most vulnerable from the biggest impacts of increased bills and make sure we are as efficient as possible. We have challenged the efficiency of our costs beyond the levels indicated by our benchmarks – and applied a further efficiency challenge in the round to our wholesale totex plan of 1% per year.

We have also employed alternative funding techniques where possible to spread costs over time – allowing us to keep our plan more affordable for our customers. It also increases confidence our plan is deliverable.

This chapter sets out the approach we have followed to set out our ambitious performance commitment targets and our efficient expenditure requirements for AMP8, covering our wholesale water and wastewater services. Performance and cost requirements to cover our retail services are covered in chapter SRN07: Customer – Household and Non-Household (costs and outcomes).

4.2. Our approach to outcomes

This section sets out our approach to setting ambitious performance targets for AMP8 in the context of our long-term strategy.

In line with Ofwat's Final Methodology[2], our proposed set of PCs for PR24 comprises the 20 common performance commitments (PCs) for water and wastewater with one bespoke PC – Abstraction Incentive Mechanism (AIM). The performance commitments we are proposing are listed in the next section. They follow the definitions for the common PCs in line with Ofwat's methodology.

Our proposed AIM PC is a continuation of our PR19 AIM with adjustments to address feedback received from Ofwat in response to our early submission in April 2023. The revised AIM definition and the rationale for proposing it again in PR24, including evidence of support from our customers.

The PCs for our retail services (C-MeX and BR-MeX) and developer services (D-MeX) are covered in chapter SRN07: Customer – Household and Non-Household (costs and outcomes).

More detail about all aspects of our approach to outcomes covered in this chapter can be found in SRN18: Performance Commitment Methodologies technical annex.

2 https://www.ofwat.gov.uk/publication/creating-tomorrow-together-our-final-methodology-for-pr24/

4.2.1. Our performance forecast

The table below summarises our performance targets for 2029/30 and how much we will improve compared to our current performance.

We are aiming to achieve, on average, about 47% performance improvement across all of our common PCs from our current performance levels in 2022/23.

Table 1: Summary of our performance targets for 2029/30 and improvement from current position

Performance commitment	Metric	2022/23 performance	2029/30 target	% improvement by 2030
Water				
Water supply interruptions	hh:mm:ss	01:28:10	00:04:30	94.9%
Compliance risk index (CRI)	score	6.4	2	68.6%
Customer contacts about water quality	per 1,000 contacts	1.17	0.8	31.6%
Operational GHG emissions water	Tonnes CO2e	58,327	72,120	(23.6%)[3]
Leakage	3 year average Ml/d	99.7	68.4	31.4%
Per capita consumption	3 year average l/h/d	133.7	122.4	8.4%
Business demand	3 year average Ml/d	100.8	106.1	(5.3)%
Mains repairs	repairs per 1,000km	152.8	152.9	(0.1%)
Unplanned outage	% of peak capacity	6.44%	3.13%	3.3%
Wastewater				
Internal sewer flooding	Incidents per 10k connections	2.25	1.12	50.2%
External sewer flooding	Incidents per 10k connections	18.46	14.02	24.1%
Operational GHG emissions waste	Tonnes CO2e	156,885	159,727	(1.8)%
Total pollution incidents	Incidents per 10k sewer lengths	89.6	15.5	82.7%
Bathing water	%	86.3%	88.3%	2.3%
River water quality	% of p-removal from 2019/20	0	58.5%	58.5%
Storm overflows	Average spills	25.7	18.5	28.3%
Sewer collapses	Collapses per 1k sewer lengths	6.2	5.7	8.3%
Combined water and wastewater				
Serious pollution incidents	Incidents	5	0	100.0%
Discharge permit compliance	%	98.2%	99.1%	(0.9%)
Biodiversity	Biodiversity units	n/a	0	n/a
Bespoke				
AIM	Ml/d abstraction reduction	-14	-15	7.1%

3 Numbers in brackets mean a deterioration in performance

4.2.2. Factors we considered in setting our performance targets

The figure below shows the different factors we considered to set our performance targets.

Figure 1: Factors considered in setting out our performance targets

This shows a clear link between the performance we are committing to deliver and the efficient cost allowances we are requesting. As we build from our 2024–25 baseline and take account of our PR19 performance commitment levels (PCLs), our approach avoids the risk customers pay twice.

In the remainder of this section, we discuss each of the above factors with further details available in SRN18: Performance Commitment Methodologies technical annex.

4.2.2.1. Customer views

More than 25,000 customers spent over 8,000 hours telling us what they think to help us develop our plan. We used this deep, robust insight to inform our investment programmes and performance commitments. The figure below shows our customers' priorities. See chapter SRN03: Customer Acceptability and SRN14: Customer technical annex insight for our full methodology.

Our Customer Priorities

Southern Water Customers

All areas are of importance to customers. However, when triangulated this shows relative importance of the top 19 customer defined priorities when traded-off.

Indexed Score	Description	Rank
100.0	**Current Water Supply-** Continuous supply of clean wholesome water	1
89.8	**Pollution -** Prevent waste water entering the environment	2
87.7	**Internal Flooding**	3
85.8	**Water Quality & Restrictions**	4
81.0	**External Flooding**	5
79.1	**Future Water Supplies**	6
75.9	**Leakage**	7
75.4	**Wastewater Infrastructure**	8
74.4	**Bathing Waters & Rivers**	9
72.8	**Protect Infrastructure from Growth**	10
72.8	**Nature Based Solutions**	11
66.4	**Support Vulnerable Customers**	12
65.9	**Bill Affordability**	13
57.9	**Carbon Emissions**	14
55.3	**Water Efficiency**	15
52.4	**Customer Service**	16
44.7	**Regulatory Compliance**	17
42.8	**Working with Developers**	18
21.5	**Community Engagement**	19

Priority Level 1: Seen as the basic fundamental service from a water company. Pollution, and in particular the association with storm overflows, as a priority has increased since 2021. There can be a distinction between 'priority' and 'improvement'. Water supply is critical to maintain and Improve resilience, pollution and leakage are top areas to improve.

Priority Level 2: Southern Water customers are particularly connected to the sea and communities are concerned with all infrastructure keeping up with housing growth. Supporting vulnerable customers has become increasingly relevant following the pandemic and cost of living crisis. Many customers are feeing the financial squeeze so want to ensure bills are affordable while investing to ensure we don't pass things down to future generations.

Priority Level 3: Carbon emissions are felt to be more of a wider government and business responsibility. Water efficiency needs to follow leadership from Southern Water. Customers service needs to be good and consistent, but excel when things do go wrong. Compliance is something felt to be managed by regulators. Working with developers is key, especially for some non-household groups. Engaging the community is needed to help build stronger relationships and most want us to share more widely the good work that is done.

Figure 2: Our list of customer priorities

4.2.2.2. Baseline performance for 2024/25

To set our performance forecasts for 2029/30, we first considered our starting position in 2022/23 and our forecast performance for 2024/25. Where relevant, we also considered the performance commitment level for 2024/25 as set out in our PR19 final determination.

As the table below shows, we have made significant progress since 2020, most noticeably reducing unplanned outage, external sewer flooding and pollution incidents – all of which are high priorities for our customers. SRN59: Past performance (PR19 reconciliation mechanisms) technical annex sets out in more detail how we have performed against our PR19 PCLs.

In April 2023 we published our Turnaround Plan to rapidly improve performance between 2023 and 2025. However, there is a risk we may not achieve the levels of performance we set for 2025 as events outside our control can have large impact on the improvements we can deliver. We are, therefore, forecasting an achievable level of performance for 2024/25 that puts us on a sustainable trajectory from our position in 2022/23 to a stretching performance ambition in 2029/30.

Table 2: Our performance in AMP7

Performance commitment	Metric	2020/21	2021/22	2022/23	2023/24 (F)	2024/25 (F)
Water						
Water supply interruptions	hh:mm:ss	00:12:43	00:09:22	01:28:10	00:45:40	00:07:23
Compliance risk index (CRI)	score	4.61	6.69	6.38	5.39	3.23
Customer contacts about water quality	per 1,000 contacts	1.15	1.04	1.17	0.99	0.88
Operational GHG emissions water	Tonnes CO2e	52,347	54,274	58,327	69,116	69,523
Leakage	3 year average Ml/d	98.5	97.9	105.2	105.3	97.3
Per capita consumption	3 year average l/h/d	132.2	133.6	133.7	130.6	128.5
Business demand	3 year average Ml/d	109.4	102.3	100.7	104.1	107.3
Mains repairs	repairs per 1,000km	150.0	101.6	152.8	149.8	150.0
Unplanned outage	% of peak capacity	9.2%	7.2%	6.4%	4.4%	3.1%
Wastewater						
Internal sewer flooding	Incidents per 10k connections	2.0	3.0	2.3	1.8	1.3
External sewer flooding	Incidents per 10k connections	21.9	19.5	18.5	18.1	17.0
Operational GHG emissions waste	Tonnes CO2e	152,111	152,686	156,885	153,154	152,867
Total pollution incidents	Incidents per 10k sewer lengths	101.9	93.2	89.6	57.4	48.1
Bathing water	%	89.4%	86.3%	86.3%	86.3%	87.1%
River water quality	% of p-removal from 2019/20	n/a	n/a	n/a	n/a	35%
Storm overflows	Average spills	29.7	28.4	25.7	25.7	21.0
Sewer collapses	Collapses per 1k sewer lengths	7.9	7.9	6.2	6.2	6.2
Combined water and wastewater						
Serious pollution incidents	Incidents	4	12	5	4	2
Discharge permit compliance	%	97.1%	98.0%	98.2%	99.1%	99.1%
Biodiversity	Biodiversity units	n/a	n/a	n/a	n/a	n/a
Bespoke						
AIM	Ml/d abstraction reduction	-0.4	-1.9	3.9	-15.0	-15

4.2.2.3. What base buys

To understand how we will improve our performance for most PCs between 2025 and 2030 we have estimated the level of performance our customers can expect from base expenditure (Botex) using a bottom-up approach. This includes:

- Performance that can be achieved by maintaining the long-term capabilities of our assets
- Expected performance improvements from catch-up and frontier-shift efficiencies
- Expectations of performance levels expected from base expenditure set by Ofwat in the PR24 methodology
- Considering the adverse effect on performance from naturally occurring asset deterioration

We have built a bottom-up Botex 'risk bow-tie framework' linking asset risks, activities (or interventions) in the base cost plan and performance benefits. The figure below shows a generic 'risk bow tie' framework and explains its key components. We have developed individual 'risk bow ties' for each performance commitment.

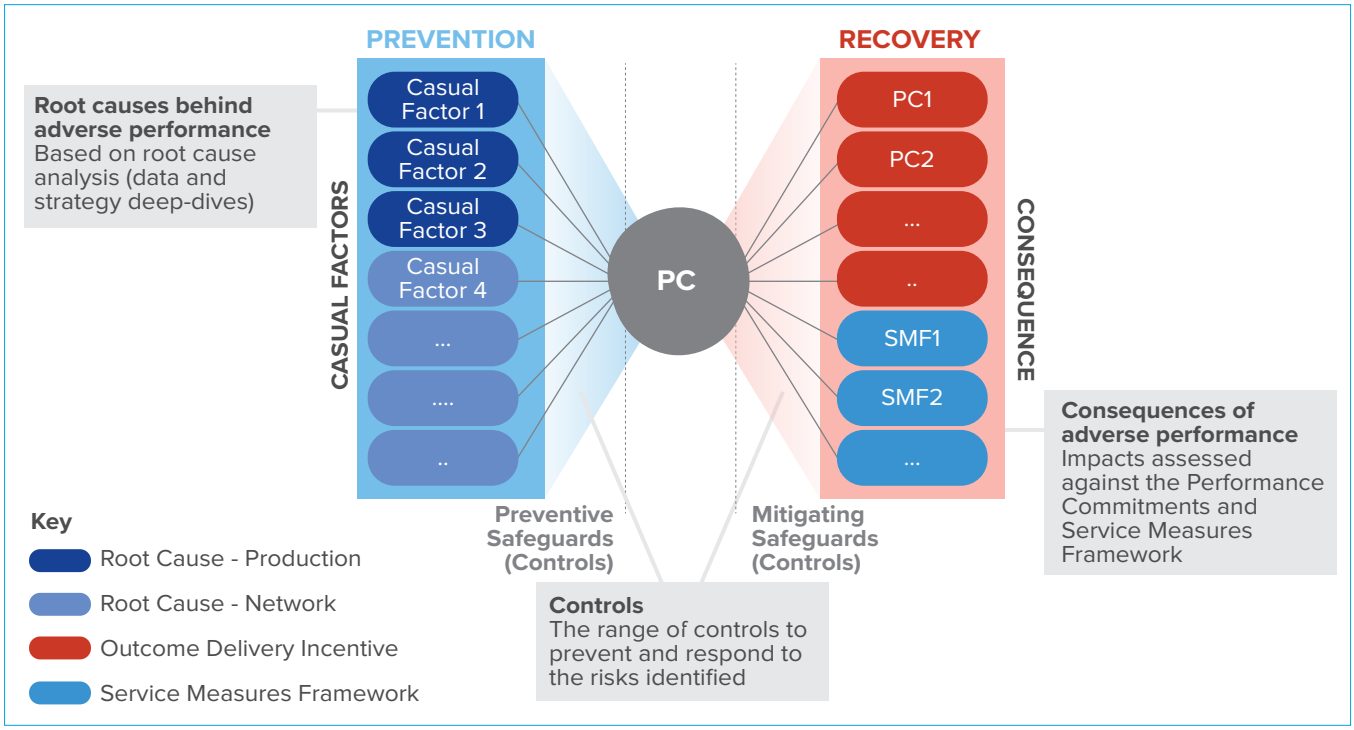


Figure 3: Our risk bow tie framework to estimate benefits from base expenditure

We have identified potential day-to-day risk-reduction interventions, based on existing investment plans, that either maintain or improve network condition. We have used the risk bow tie frameworks to link asset performance risks and benefits that would result from these interventions.

The risk bow tie framework helps us capture the effects of two types of interventions aimed at preventing network deterioration: prevention interventions, such as proactive mains replacement, and recovery interventions, such as reactive maintenance to restore service.

We have taken two approaches to determining our level of performance improvement from base expenditure.

Firstly, where feasible, we run our asset deterioration model without interventions. This gives us an understanding of the correct level of deterioration of our assets and our performance if we did not maintain our assets. We then run our asset deterioration model with the base-funded interventions and use the difference in performance between them to determine the level of base improvement. We then refine the results through workshops with experts.

In cases where our asset deterioration model did not capture the relevant variables, we used a top-down estimation based on expert judgement and informed by past performance. We have iterated and calibrated the benefit calculations through expert workshops.

In the PR24 methodology, Ofwat set its expectations of performance levels expected from base for three performance commitments: serious pollution incidents, discharge permit compliance and compliance risk index. We consider our business-as-usual base expenditure will be sufficient to reach the expected performance for serious pollution incidents.

However, given the gap between our starting position and Ofwat's performance expectations, we will need enhancement expenditure to meet the expectations for discharge permit compliance and compliance risk index. The table below summarises our proposals for benefits delivered from base against Ofwat's expectations for these three PCs.

Table 3: Performance commitments for which Ofwat set an expectation of performance level to be delivered through base expenditure versus our proposal

Performance commitment	Ofwat expectation of performance level from base expenditure	Our position on performance deliverable from base expenditure
Serious pollution incidents	Zero incidents by 2025/26 with zero level maintained throughout the 2025–30 period	In line with Ofwat PR24 methodology, we are proposing to reach zero serious pollution incidents by 2025/26 and keep this performance throughout the 2025–30 and will do so through base expenditure.
Discharge permit compliance	100% compliance	We forecast a performance level flat at the starting 2022/23 position of 99.1%, which is within the deadband to 99% that Ofwat set at PR19. We consider that given our current performance position and estimated deterioration rate, keeping the level of performance flat will require enhancement expenditure to enhance the level and quality of the service provided. These include some WINEP interventions, which are inherently enhancement expenditure.
Compliance risk index	0.00	We forecast reaching a performance level of 2.00 by 2029/30, which is within the deadband to 2.00 that Ofwat set at PR19. This will require a significant improvement from our starting performance position of 6.38 in 2022/23 and a forecast position of 3.23 in 2024/25. We consider that the performance gap is too big for us, a turnaround company, to close only through base expenditure. We are, therefore, proposing to contribute to close this gap also with enhancement expenditure.

4.2.2.4. Impact of enhancement expenditure

We also consider the additional performance improvements we can deliver from enhancement expenditure by:

- Running expert workshops to identify the interventions in our PR24 enhancement programme that impact our PCs
- Developing methodologies specific to each PC to quantify benefits from the enhancement expenditure

Our methodologies for quantifying enhancement benefits across the various PCs fall into three broad categories.

For most of the existing PCs which we have historic performance information for, we ran our asset deterioration model in a 'do nothing / pre-investment scenario' and then in a 'post-investment' scenario. The difference in performance is the improvement from enhancement. We moderated and calibrated the results through expert workshops.

In cases where our asset deterioration model did not capture the relevant performance variables, such as internal and external sewer flooding, we used top-down estimations using unit rates of improvement based on expert judgement and informed by past performance. We validated the results through expert workshops.

For new PCs where past performance was not available, such as storm overflows, river water quality, biodiversity and operational carbon, we developed specific bottom-up benefit quantification methodologies aligned with the PC definition.

4.2.2.5. Delivering our long-term ambition and government targets

Our proposed performance targets for 2029/30 keep us on track to achieve our long-term ambition (see chapter SRN02: Long-term Delivery Strategy and SRN12: Long-term Delivery Strategy technical annex for details). This is based on our customers' priorities, our statutory obligations and government's long-term targets.

The table below shows our performance ambition trajectory between 2029/30 and 2049/50.

Table 4: Our performance trajectory to meet our 2049/50 ambition

Performance commitment	Metric	2029/30	2034/35	2039/40	2044/45	2049/50
Water						
Water supply interruptions	hh:mm:ss	00:04:30	00:03:12	00:02:48	00:02:24	00:02:00
Compliance risk index (CRI) deadband	score	2.00	1.33	1.22	1.11	1.00
Customer contacts about water quality	per 1,000 contacts	0.80	0.65	0.57	0.49	0.40
Leakage	3 year average Ml/d	68.4	63.9	58.7	53.7	48.4
Per capita consumption	3 year average l/h/d	122.4	114.5	115.5	109.5	105.6
Business demand	3 year average Ml/d	106.1	103.6	100.3	101.0	102.4
Mains repairs	repairs per 1,000km	152.9	152.9	134.6	116.3	98.1
Unplanned outage	% of peak capacity	3.13	3.07	2.71	2.36	2.00
Wastewater						
Internal sewer flooding	Incidents	240	235	214	193	172
External sewer flooding	Incidents	3011	2791	2194	1597	1000
Total pollution incidents	Incidents	63	50	0	0	0
Bathing water	%	88.3%	89.5%	100%	100%	100.0%
River water quality	% of p-removal from 2019/20	58.5%	66.5%	80%	80%	80%
Storm overflows	Average spills	18.5	13.9	9.8	7.0	5.9
Sewer collapses	Collapses	230	230	230	230	230
Combined water and wastewater						
Operational GHG emissions (water and wastewater)	kt CO2e	232	227	183	139	95
Serious pollution incidents	Incidents	0	0	0	0	0
Discharge permit compliance deadband	%	99.1%	99.1%	99.4%	99.7%	100%
Biodiversity	Biodiversity units	0	163	326	489	652
Bespoke						
AIM	Ml/d abstraction reduction	-15	-15	-15	-15	-15

4.2.2.6. Industry performance

For 11 PCs where historic industry performance data was available, we forecasted the industry upper quartile performance by considering historic trends and expected improvements from each companies' business plan – assuming a logarithmic time trend forecast to 2029/30.

We considered the industry upper quartile information as a reference to set our level of ambition to either keep our performance above industry upper quartile, such as per capita consumption, or to reduce our performance gap with the industry upper quartile.

4.2.2.7. Setting the performance profile towards the 2029/30 destinations

We are proposing our performance targets while continuing our transformation and turnaround. We are delivering our ambitious Turnaround Plan which will significantly improve performance by 2025 so our AMP8 starting position reflects our commitments at PR19.

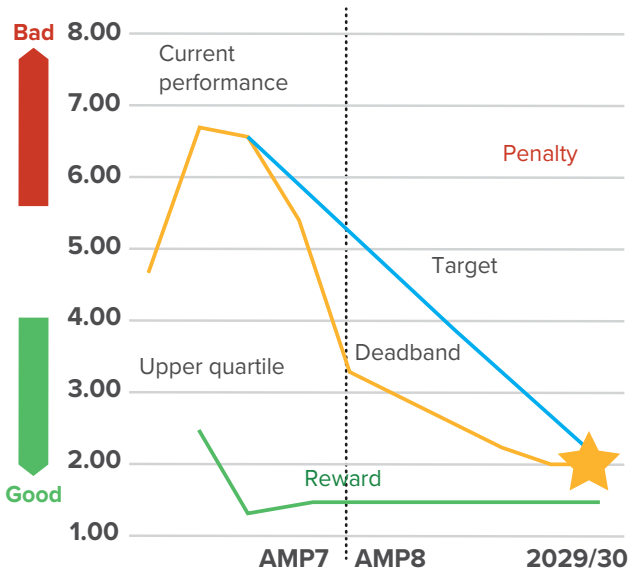
Our transformational effort creates material risk in forecasting future performance, as events outside our control can have large impact on the improvements we can deliver. This is why we have used a dual approach in setting the profile of the proposed performance targets.

Generally, we propose to adopt the performance improvement required to achieve our 2029/30 performance level, having considered all the factors discussed above. For seven of our PCs where there is a step change improvement in the final years of AMP7 we are proposing a slight variation in approach:

- A straight-line profile for the performance target by 2029/30, starting from the expected 2024–25 baseline achieved via a successful Turnaround Plan
- Stretch AMP8 targets, based on straight-line improvements from our current levels of performance in 2022/23 to reach the same destination in 2029/30

Effectively, this approach creates a "deadband" where the ODI penalty is reduced in case our actual performance in AMP8 falls between the two profiles – the Turnaround Plan trajectory and our proposed straight-line trajectory. This is to ensure performance improvements by 2030 are not penalised because we did not achieve the forecasted improvements by 2025.

Our approach is aligned with Ofwat's policy rationale for the ODI framework to reward genuine performance improvements. The figure below illustrates how this approach operates in practice.



- The yellow line is our Turnaround Plan trajectory with ongoing performance improvements to reach our stretch destination in 2029/30
- The blue line is our proposed straight line trajectory from our current performance in 2022/23 to reach the same stretching destination in 2029/30
- Where our performance is worse than the blue line (our proposed trajectory) we will be penalised
- Where our performance is better than the yellow line (Turnaround Plan trajectory) we will be rewarded
- Where performance is between the blue and yellow, we will have a deadband

Figure 4: Our approach to reach the 2029/30 target and interplay with our Turnaround Plan

4.2.3. Output Delivery Incentives

4.2.3.1. Setting indicative ODI rates

In the early stages of PR24, Ofwat set out its intention to use the collaborative customer research to set indicative Outcome Delivery Incentive (ODI) rates across all companies for PR24. As a result, our customer engagement programme was not required to investigate the impact of service incidents on customers, or the compensation they would require.

However, unforeseen challenges in mapping customer evaluations to PC definitions, combined with marginal benefit estimations materially outside the expected ranges, led Ofwat to reconsider and change its original approach.

Ofwat's new approach is to set all indicative ODI rates using a 'top-down' approach based on equity return at risk. In August 2023, Ofwat set out the indicative ODI rates for each company[4].

4 See Appendix 3 of PR24: using collaborative customer research to set outcome delivery incentive rates

As a result of this significant methodological change at such a late stage, we have been unable to carry out our own customer engagement on the impact and compensation value of service incidents. Ofwat's indicative rates appear reasonable, so we propose to accept most of them for our Business Plan submission.

The exceptions are in four areas – water supply interruptions, per capita consumption (PCC), business demand, and total pollution incidents. In these cases, we are proposing alternative ODI rates based on our own analysis of equity return at risk (see SRN57: Risk technical annex), as Ofwat's incentive rates significantly skew the overall range of potential payment. For these PCs, our proposed ODI rates are:

- **Supply interruptions proposed ODI:** £126k per minute of supply interruptions;
- **PCC proposed ODI rate:** £179k per litre per household per day;
- **Business demand proposed ODI rate:** £69k per megalitre per day
- **Total pollution incidents ODI rate:** £398k per pollution incident per 10,000km sewers

For our proposed bespoke PC (AIM), we are proposing to use an ODI rate consistent with our PR19 incentive rate adjusted to 2022/23 prices – this equates to £748,000 for underperformance and £603,000 for outperformance per million litres per day.

There are two PCs Ofwat has not defined indicative ODIs for – biodiversity and operational carbon. For biodiversity we are proposing an ODI of £15,000 per biodiversity unit. Given the uncertainty around the proposed operational carbon ODI we will await Ofwat's view before setting an ODI.

4.2.3.2. Caps and collars

Ofwat's PR24 Final Methodology states it will make a targeted use of caps and collars on individual PCs:

- That are new or bespoke and therefore more uncertain;
- That measure asset health;
- Where the benefits from high outperformance are uncertain;
- That can significantly skew the outcomes package

Therefore, we are proposing caps and collars on the following PCs:

- Business consumption, serious pollution incidents, bathing water quality, river water quality and storm overflows – because these are new PCs
- AIM – because this is a bespoke PC
- Mains repairs, unplanned outage and sewer collapses – because these are asset health metrics
- Water supply interruptions, PCC and external sewer flooding – to reflect our analysis of the potential they may have to skew the outcomes package

4.2.3.3. Our approach to Price Control Deliverables

For PR24, Ofwat introduced Price Control Deliverables (PCDs) for material investments where the outputs do not map neatly to performance commitments. PCDs are used to ensure funding is returned to customers where defined outputs are reduced in scope, delivered later or not delivered. Ofwat has not considered PCDs add a material downside skew to the risk exposure for companies. However, we consider PCDs do add a material downside skew to our risk exposure due to:

- Reducing innovation and the risk of 'locking in' companies to certain outputs, even if they are not what is best for customers and the environment
- The potential for companies to be penalised twice, through cost sharing and the PCD, when they overspend and under-deliver
- PCD penalties being more likely to be based on average costs and not on the marginal costs of outputs
- The outcome focused regulatory framework means that all our activities will impact our performance commitments in the round and, therefore, there will be a double count of penalties when under delivering

Despite our concerns, we have followed Ofwat's methodology in setting PCDs and have set them on material enhancements where there is no direct link to our performance commitments.

From our risk analysis (see SRN57: Risk technical annex), the maximum coverage of our enhancement expenditure we can apply PCDs to is 30%. This is to keep a balanced level of equity return at risk. If PCDs cover more than 30% of our enhancement expenditure, there would have to be an equivalent upside adjustment to our risk exposure.

The table below summarises the PCDs that we are proposing.

Table 5: Summary of our proposed Price Control Deliverables

Price control deliverable	Unit of delivery	Maximum penalty	Delay penalty
WINEP wastewater – overall	% of WINEP actions completed	£182 million	n/a
Water supply – overall	Ml/d of supply benefit	£160.3 million	£0.105m per each month late proportionate to the Ml/d late
Bioresources IED	% completion	£138.4 million	n/a
Bioresources – WINEP	Storage built (m^2)	£51.1 million	£0.013k per m2
Water supply resilience enhancement programme	% completion	£319 million	n/a
WINEP – water abstraction	% completion	£74.4 million	n/a
Water quality enhancement	Delivery of DWI notices	£94 million	n/a

We have proposed three material price control deliverables, one for our supply side schemes enhancement business case, one for our water supply resilience enhancement programme on our four sites strategy and the other for our overall wastewater WINEP programme. For our supply side enhancements we have applied the PCDs on 30% of our total enhancement expenditure because:

- The majority of these schemes will improve our performance commitments – so greater coverage through PCDs would skew our risk exposure downwards
- The supply-side schemes are needed to balance our supply and demand – therefore if there are alternatives to reach the same balance, the PCD limits the expenditure
- This ensures the risk of PCDs can be spread over the whole delivery programme

In our water supply resilience enhancement programme we have set a PCD in order to return money to customers in the event of potential non, partial or delayed delivery of investment across the four sites to ensure customers only pay for the improvement that they will benefit from.

For our wastewater WINEP programme we have set a PCD on actions that do not link to our common performance commitments. Rather than designing individual PCDs to protect customers for different sub-elements of WINEP, we are proposing one overarching PCD. This ensures the risk of PCDs can be spread over the whole delivery programme.

Our PCDs take into consideration of the impact of non-delivery on our RoRE. Therefore, any downward diversion from the PCDs we have set would materially increase the level of our risk exposure and would need to be an equivalent upside adjustment applied.

4.3. Our approach to efficient wholesale cost allowances

4.3.1 Our current wholesale totex performance relative to the industry

In January 2023, we participated in a benchmarking exercise operated by the Water Services Association of Australia[5] which included nine companies from the UK. The exercise assessed opex (direct, indirect, and corporate costs), capex (base, enhancement, and developer services expenditure), and totex across all participants on a cost per property basis. The results suggest we are close to the median benchmark in water but above in wastewater.

We have replicated this cost per property benchmark exercise using data for all companies between 2015 and 2022. The table below shows the comparative results for the wholesale controls between us and the industry median.

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Table 6: Historic £ per property spend, wholesale controls, 2015–16 to 2021–22

2022/23 prices	Water	Wastewater
Southern Water	£236	£279
Industry median	£220	£231
Difference to median (£)	£16	£48
Difference to median (%)	7%	21%

We are slightly above the median cost per property for water and more so above the median in wastewater. However, there are some one-off catchup investments as part of the Turnaround Programme included in our costs. Removing these brings us close to the industry median in both water and wastewater. This gives us confidence we are operating at an average level of efficiency in wholesale and the innovations we are adopting will allow further future efficiencies.

4.3.2 Wholesale totex over PR24

Between 2025 and 2030 we will invest £7.5 billion to deliver the services and improvements our customers and regulators expect. We will deliver £6.3 billion ourselves, with the remaining £1.3 billion delivered through alternative delivery routes[6].

Table 7: Wholesale totex position for AMP8

2022/23 prices	Water	Wastewater	Total
Wholesale totex delivered in house*	£2,586m	£3,569m	£6,155m
Alternative delivery routes (including DPC)**	£818m	£497m	£1,315m
Wholesale totex with alternative delivery routes	£3,404m	£4,066m	£7,470m

Notes: (*) Tables CW1.15 (water) and CWW1.15 (wastewater). (**) Table SUP12. Figures are net of grant and contributions and include third party services. Wastewater includes bioresources.

4.3.2.1. Efficiency in the round

We have challenged the efficiency of our costs beyond our benchmarks and applied a further efficiency challenge to our wholesale totex plan of 1% per year.

This has cut £182 million from our wholesale totex across both water and wastewater. The table below shows the impact of this efficiency challenge on our wholesale totex.

Table 8: Wholesale totex delivered in house before and after our 1% efficiency in the round challenge

2022/23 prices	2025/26	2026/27	2027/28	2028/29	2029/30	TOTAL
Wholesale totex pre efficiency in the round (1)	£1,285m	£1,497m	£1,323m	£1,199m	£1,033m	£6,337m
Efficiency per annum	1%	1%	1%	1%	1%	-
Efficiency factor (2)	0.99	0.98	0.97	0.96	0.95	-
Efficiency reduction (3) = (1) x [1-(2)]	£13m	£30m	£40m	£48m	£52m	£182m
Wholesale totex post efficiency in the round* (4) = (1) – (3)	£1,272m	£1,467m	£1,283m	£1,151m	£981m	£6,155m

Notes: (*) Tables CW1.15 (water) plus CWW1.15 (wastewater). Figures are net of grant and contributions and include third party services. Wastewater includes bioresources.

6 Values are post RPEs and frontier shift, net of grants and contributions and include third party services and are in 2022/23 prices

We applied our efficiency challenge in the round on top of the level of efficiency we set to our enhancement programme through benchmarking. In base expenditure, this efficiency in the round is applied on top of our assumption of catch-up efficiency challenge and frontier shift. More details on our catch-up efficiency and frontier shift assumptions are below.

We are confident this additional efficiency challenge is achievable and deliverable – and is beneficial for our customers. We are working to an action plan that will improve our cost position as we:

- See the benefits of the operational efficiencies from our Turnaround Plan
- Benefit from further efficiencies through new delivery models and approaches – and by streamlining our optioneering process
- See the benefits of planned innovations in process technology and construction methods

An example of efficiency improvements is our asset management approach. Since 2020, we have been running three programmes to establish foundational capabilities in Asset Maintenance, Digitalisation and Logistics. The objective of the programmes was to establish three lines of defence including:

- Proactive maintenance to reduce asset failures
- Real-time monitoring of assets to prioritise proactive response before problems occur
- More effective and efficient response to reactive events

This has substantially improved our asset register information allowing us to prevent issues before they arise, reducing lead times for materials by 35 days and cutting our water tankering activities – all of which have reduced our costs.

4.3.2.2. Base vs enhancement

About 58% of our AMP8 wholesale totex falls under wastewater and reflects the relative sizes of our water and wastewater operations.

Our base expenditure reaches £3.2 billion, including around £500 million of cost adjustment claims. Our enhancement programme totals £3 billion[7] and, for the first time, it reaches about 50% of our wholesale plan. Historically, enhancement expenditure accounted for an average around 30% of our totex costs[8].

Table 9: Breakdown of our wholesale totex AMP8 delivered in house

2022/22 prices	Water	Wastewater	Total
Base expenditure*	£1,145m	£2,005m	£3,149m
*of which, CACs**	*£110m*	*£343m*	*£453m*
Enhancement expenditure*	£1,442m	£1,564m	£3,005m
Wholesale totex delivered in house	**£2,586m**	**£3,569m**	**£6,115m**

Notes: (*) Tables CW1.1 plus CW1.8 (water) and CWW1.1 plus CWW1.8 (wastewater). Figures are net of grant and contributions and include third party services. (**) Tables CW18 (water) and CWW18 (wastewater).

7 Numbers include RPEs and frontier shift net of grants and contributions and include third party services and are in 2022/23 prices

8 Source: Ofwat, Long term data series of company costs (1989–90 to 2021–22), July 2022. Available at https://www.ofwat.gov.uk/publication/long-term-data-series-of-company-costs/

The size of our enhancement programme in AMP8 is unprecedented. As the figure below shows, our AMP8 enhancement programme is three times higher than our historic enhancement expenditure since AMP4.

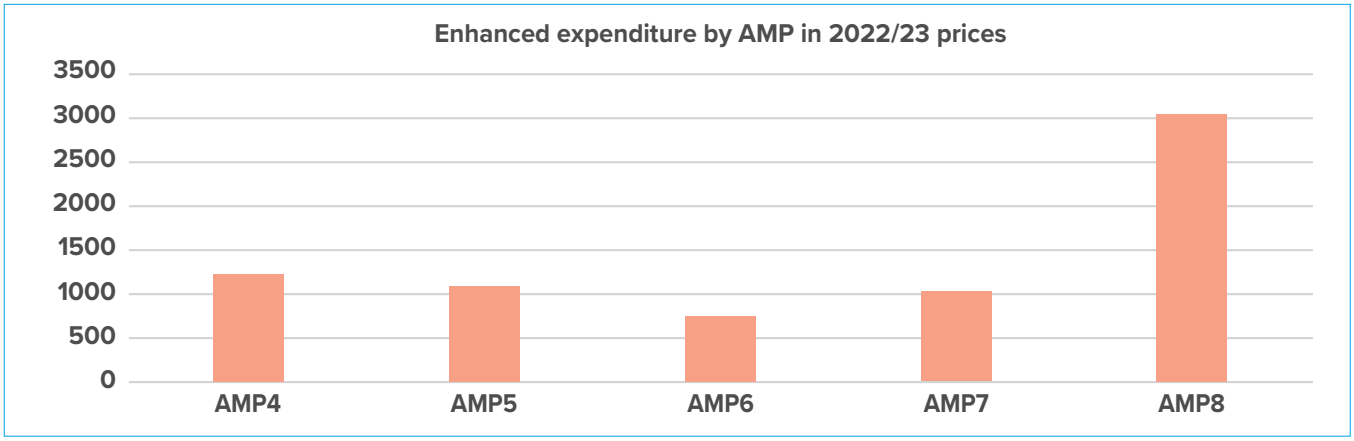

Figure 5: Total enhancement expenditure trend since AMP4, in £m, 2022–23 prices.
Source: Southern Water analysis. AMP7 refers to final determination. AMP8 figures reflect tables CW3.147 (water) plus CWW3.195 (wastewater).

The step-change in our enhancement expenditure is driven by large investment programmes to meet higher expectations from our customers and regulators, comply with our statutory obligations and secure sustainable water supplies. These investments come under our WINEP, WRMP, and bioresources programmes. WRMP accounts for 57% of our water enhancement expenditure and WINEP accounts for 71% of our wastewater enhancement expenditure.

Table 10: AMP8 enhancement expenditure split by programmes

2022/23 prices	Water	Wastewater	Total
WINEP (including storm overflows)	£74m	£1,155m	£1,229m
WRMP	£843m	-	£843m
Bioresources	-	£146m	£146m
DWI	£52m	-	£52m
Growth at treatment works	-	£238m	£238m
Resilience	£358m	£94m	£452m
Other	£140m	-£14m	£126
Total	**£1,466m**	**£1,619m**	**£3,086m**

Notes: Sourced from tables CW3 (water) and CWW3 (wastewater). Enhancement total differs from Table 9 due to CW1/CWW1 including RPEs and frontier shift effects, which CW3/CWW3 tables do not include. Our 1% efficiency in the round applied to our enhancement programme is reflected in tables CW3.138 and CWW3.183 as a negative adjustment hence the 'other' category being lower than the sum of 'other' enhancement investment lines and reaching a negative value in wastewater.

4.3.3 Setting our base expenditure in PR24

We have used both a top-down model and a bottom-up approach to establish our efficient base expenditure requirements. The top-down model aims to replicate Ofwat's base cost models and is used as a sense-check against our own view of cost.

The bottom-up approach uses historic run rates, deterioration model outputs, risk analysis and detailed cost assessments from our subject matter experts. Bottom-up expenditure was set to ensure performance levels are met in AMP8.

Our top-down models use the econometric specifications from Ofwat's spring 2023 consultation. We have applied a frontier shift of 0.5% and a range of catch-up efficiency challenges, as detailed in SRN19: Botex technical annex (efficiency section). As forecasting is an uncertain task, we have varied these parameters to provide a range of modelled costs. In the following sections, we have used the mid-point of our modelled allowance estimates.

4.3.3.1. Cost adjustment claims

We took a bespoke approach to cost adjustment claims, depending on the unique circumstances we face not being properly captured by Ofwat's models. We started from the modelled cost position and looked at what this would enable us to deliver (such as meter replacement) or provide (such as staffing).

By comparing these figures with our known position (such as the level of meter replacement required and regional wage levels) we were able to assess whether the models represented a realistic position. We then verified any differences using industry data. The table below summarises the value of the claims we are submitting.

Table 11: Summary of our cost adjustment claims

Claim	Water
Meter replacement	£89m
Regional wages	£21m
Total CACs	**£110m**

Claim	Wastewater
Coastal variable effect	£66m
Regional wages	£66m
AAD Ashford and Ham	£113m
Wastewater growth	£98m
Total CACs	**£343m**

Notes: Values are the net value once any implicit allowance has been removed. The values are sourced from tables CW18 (water) and CWW18 (wastewater).

For wastewater, we claim for elevated costs from operating in a coastal environment, upgrading technology to Advanced Anaerobic Digestion at sites in Kent and expanding wastewater assets to support high levels of population and housing growth. For water, we claim for a higher-than-average meter replacement to support our programme to install more than 1 million smart meters.

For both we claim for operating in a region with high wages. Wherever possible, we seek to manage regional differences. Our cost adjustment claims cover the areas where we feel there is a substantial issue that means the models do not adequately fund the necessary action on our part.

4.3.3.2. Reconciling the bottom-up and top-down approaches

We have assured ourselves our base cost plan is robust through a three-step process.

Firstly, for our top-down cost estimates we have estimated a sensible regulatory allowance using Ofwat's econometric models and the most up-to-date input information capturing the 2023 APR data.

Secondly, for our bottom-up cost estimates we have implemented processes that meet industry best practice to assess key input costs around labour and procured services to ensure we can deliver both current and future efficient levels of costs.

Lastly, we have explained the difference between the top-down estimated regulatory allowance and our proposed bottom-up base costs through the CACs we have submitted and key non-controllable costs, namely energy cost uplift to reflect the energy price increase over the period of 2021–22 to 2022–23 which we are proposing as a model uplift; and the RPE adjustments for energy, labour, chemicals and materials from 2023–24 onwards. (See SRN16: Real Price Effects and Frontier Shift technical annex for details).

The table below reconciles our wholesale base cost plans against what we expect to be funded. At a headline level, it would appear our proposed base costs are about £200 million below our estimated regulatory allowance. However, this is assuming all our CACs are accepted in full and there are no adverse symmetrical CAC adjustments based on claims made by other companies.

Table 12: Reconciliation of wholesale regulatory modelled base costs with proposed base costs

2022/23 prices	Water	Wastewater	Wholesale total
Modelled base costs including growth at STWs	£909m	£2,154m	£3,063m
CACs	£110m	£343m	£453m
Energy base cost uplift	£125m	£144m	£269m
RPEs adjustments 2023–24 onwards	-£89m	-£106m	-£195m
Total forecast regulatory allowance (a)	£1,055m	£2,535m	£3,590m
Proposed bottom-up base costs, including growth at STWs (b)	£1,145m	£2,243m	£3,387m
Differences (c) = (a) – (b)	-£90m	£292m	£203m

Notes: A positive difference implies that the BP proposed botex is less than our forecast regulatory allowance and a negative difference implies that the BP proposed botex is greater than our forecast regulatory allowance. See SRN19: Botex technical annex (efficiency section) for details on the reconciliation and modelled base cost estimates. See SRN16: Real Price Effects and Frontier Shift technical annex for details on energy cost model uplift and RPEs adjustment. CACs are sourced from tables CW18 (water) and CWW18 (wastewater). The proposed bottom-up costs are net of grants and contributions and include growth a sewage treatment works to allow a like-for-like comparison with the modelled base costs. The bottom-up costs for water are sourced from CW1.1 plus CW1.8 (water). For wastewater, the bottom-up costs are sourced from CWW1.1 plus CWW1.8 (wastewater) plus CWW3.155 (growth a sewage treatment works).

Our proposed base costs for wholesale water are £90 million above the forecast regulatory allowance (inclusive of CACs). We believe that the difference can be partly explained through adjustments for non-controllable, or only partly controllable, costs which have increased substantially between AMP7 and AMP8 but which the regulatory allowance does not adequately capture. We are making a specific claim for energy costs, one of those we consider to be non-controllable, which is explained in the SRN19: Botex technical annex (efficiency section). However, other non-controllable costs have increased and specific claims have not been raised. The increase in rates, for example, is at least £25 million across AMP8 for the combined wholesale businesses. In addition the higher BP numbers reflect sustainable capital maintenance levels required for the Water asset base to maintain levels of required service. Our proposed costs for wastewater are £292 million below the forecast regulatory allowance (inclusive of CACs).

Given the scale of the difference, and the fact that some of this can be explained through changes in non-controllable costs, we believe this reinforces the fact our proposed base costs are set at the efficient level of costs for us.

This combination of robust methodology, underlying processes and consistency with the estimated regulatory cost envelope means that we are confident that our plan is efficient[9].

4.3.4 Setting our enhancement expenditure at PR24

Our enhancement cost proposals have been taken through the industry processes and agreed with all stakeholders. We know we can improve our cost efficiency and have employed various techniques to assure ourselves the enhancement costs we are planning for are efficient.

4.3.4.1. Optioneering

We use optioneering to find the best solution from a range of possible choices. We weigh up the relative costs and benefits, considering the interests of various stakeholders and needs including economic, environmental, customers and resilience. We produce a long list of options, which we constrain to form a short list from which we identify a preferred solution. For more detail, see SRN15: Optioneering and Cost Methodology technical annex.

In our cost benefit appraisal, we compared the lowest cost option, the one with the lowest Whole Life Cost whilst still meeting the design need, with the best value option, which is the most cost beneficial option. We select the lowest cost option as the default unless we have a strong case to justify the best value option from a customer acceptability and affordability viewpoint.

We aim to form strong partnerships where possible to deliver better or more innovative solutions and keep costs down for customers – particularly where options are beneficial to our communities and stakeholders.

9 See SRN19: Botex technical annex (efficiency section) for further details

We will try to form partnerships and delivery teams with third parties who would share in the benefits. We do this to ensure our customers only fund the benefits they receive and to keep affordability at the centre of our approach to project delivery.

We have also employed Ofwat's guidance on DPC to assess each project and determine if alternative routes would improve delivery. We apply this process after our normal short listing and preferred option approach.

We are confident our optioneering and enhancement process provides robust costs.

4.3.4.2. Cost estimation

We established our cost stack using a robust build-up of direct costs, indirect costs, risk and corporate overheads. This approach enables us to test each component of the cost stack, undertake benchmarking and challenge ourselves to be efficient. Our costs are built up using our cost curves, historical performance and supplier quotations.

For PR24, we have specifically improved our estimate of indirect costs and approach to risk. Our indirect costs include a larger number of data points and the most recent, high quality and relevant data sets. We have benchmarked against our peers to test our costs and have found we are efficient.

Our risk approach uses both historical AMP7 data and best practice – and allows us to use a bespoke risk multiplier on a scheme-by-scheme basis. This means we use a consistent methodology to capture appropriate risk for each project.

SRN15: Optioneering and Cost Methodology technical annex sets out more detail on how we have progressed costs through a three-level approach:

- Level 1 – project information is used to estimate costs using asset level cost curves. Data is sourced from across the UK water industry. This is reliable for large programmes and where scope is similar to previous work delivered
- Level 2 – more detailed project information and more mature design enable the use of function level cost curves which capture costs of whole processes. These curves are developed using our historic data and actual delivery costs. We have used this approach across a number of our Bioresources projects
- Level 3 – detailed costing of all scheme elements, typically in conjunction with delivery partners. This is carried out as schemes move forward to delivery. We have used this approach for elements of the Supply Resilience Enhancement Programme to enable informed decision making

To improve our understanding of cost, where appropriate, we have used trial projects (such as our storm overflow pathfinders), early supplier quotes and greater supplier and contractor engagement to develop our plans. Where costs are more uncertain, our risk methodology dictates we make an allowance for uncertainty in our cost stack.

Our Cost Intelligence Team (CIT) benchmarked our costs against industry peers. We used this process to test our costs relative to known Ofwat econometric models and data from our peers. This process has identified where we are efficient and where our programmes are demonstrably different to those put forward in PR19.

Our process pushes us towards finding the leanest scope possible for any enhancement solution. We do not believe customers should pay more than is required to achieve the desired outcomes. One example is where we refined the design of our phosphorus removal projects. By removing unnecessary tertiary treatment through the early design process, we reduced the need for additional building work on five sites – and by utilising spare capacity in chemical dosing we have achieved several no-build solutions.

More broadly, we are working to standardise our designs across projects to generate benefits from economies of scale in purchasing and cost and speed benefits from modular implementation of solutions.

4.3.5 Alternative Delivery models

Alternative Delivery routes (including Ofwat's DPC), employ a third party to fully finance a project and assume responsibility for design, construction, operation, and maintenance over a defined period. These arrangements provide cost-effective ways to finance, deliver and manage significant projects efficiently.

Alternative Delivery allows us to use Competitively Appointed Providers (CAP) to deliver large, discrete projects. Payment to the CAP only commences when the asset is built and customers are receiving services, which allows us to defer costs until the benefits are being seen. The CAP is selected through a competitive tender process, which allows us to harness the cost benefits of competitive markets.

This means we can smooth bill impacts, provide better value for customers and incentivise timely delivery of key projects, while alleviating pressure on internal resources.

We intend to use Alternative Delivery models for a wide range of our enhancement programmes. For example, our Havant Thicket Water Transfer and Water Recycling Project will use DPC to deliver the majority of the work through a Competitively Appointed Provider (CAP). This means the payments will be spread over the life of the contract, which will help smooth bill increases. The competitive nature of the process will introduce scope for innovation, which will provide better value for our customers.

Through Alternative Delivery methods and rational phasing we intend to tailor our delivery programme to make bills more affordable for customers. SRN17: Direct Procurement for Customers and Alternative Delivery model technical annex details the projects we have identified for alternative delivery routes, including those identified to be delivered under DPC.