2 – Combined Sewers

2.1. Executive Summary

This document sets out the case for an upward adjustment of **£15.5m p.a**. (**£77.5m over the 2025-2030 period)** of costs for operating and maintaining a wastewater (WW) network with a materially higher proportion of combined sewers than the industry average (Figure 2.1).

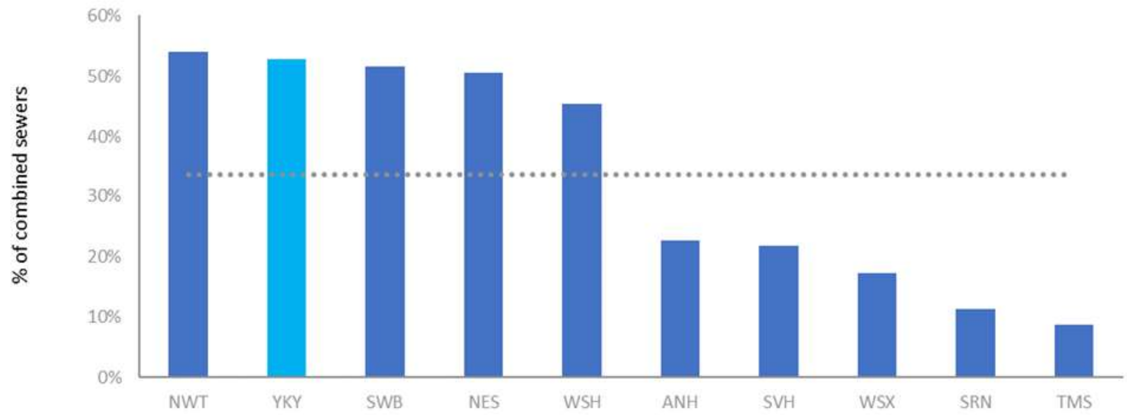

Figure 2.1 Industry proportion of combined sewers (legacy assets)

Combined sewers carry both foul and surface water and hence are more susceptible to causing sewer flooding and overflow spills than separated systems. We believe this drives significant differences between the level of performance companies are achieving[9] and following the decision to set common internal sewer flooding performance commitment levels, materially impacts the costs that impacted companies are incurring as they implement operational strategies to minimise penalties.

Cost Adjustment Claims (CACs) are in place to capture company specific factors not reflected in Ofwat's econometric base models. We believe that there are a variety of factors that impact our Internal Sewer Flooding (ISF) performance that may have led to this CAC to be larger but the *Percentage of Combined Sewers* is the factor that is both supported by economic and engineering rationale and by robust high-quality data available in Ofwat's PR24 dataset.

The value of this claim is driven by the difference between the inclusion and exclusion of this driver in Ofwat's base econometric models. This calculated value does not provide YW with sufficient allowance to overcome the differences in operating circumstances that impact on performance levels (current relative performance is not included in the models)

[9] We are currently developing an evidence base that demonstrates that the current performance differences (not reflected in the cost models) are driven by a combination of exogenous factors and that it is appropriate to

but it describes the cost impact of this factor given the current performance differences (excluding penalty payments).

Table 2.1 below points to the locations in the document where we address Ofwat's cost adjustment claim assessment criteria.

Cost Adjustment Claim Assessment Criteria	Sections
Need for adjustment	2.2, 2.3, 2.4, 2.7
Cost efficiency	2.5, 2.6
Need for investment	2.3,
Best option for customers	n/a
Customer protection	n/a

Table 2.1 References in Document to Ofwat's Cost Adjustment Claim Criteria.

2.2. Introduction

Yorkshire Water has both overall poorer performance and higher costs than the industry average in its wastewater networks. The performance (and therefore cost) issues are not however spread evenly across our region and are primarily focused in the far west as shown in Figure 2.2.

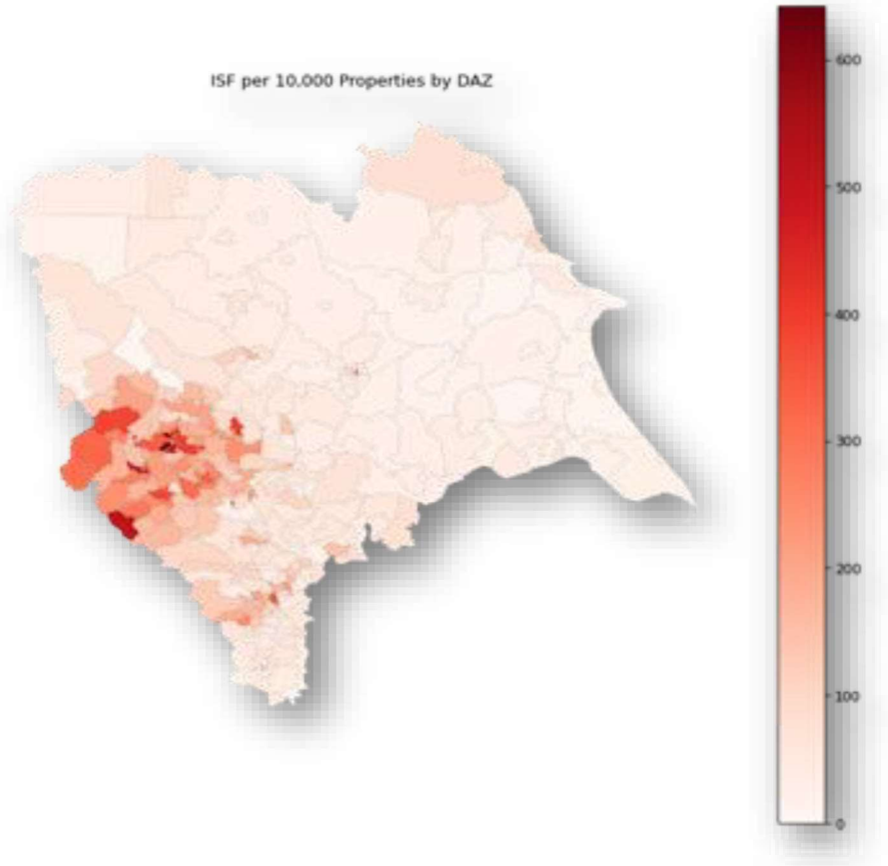

Figure 2.2 Geographical representation of Internal Sewer Flooding per 10,000 properties in individual Drainage Area Zones

Our analysis shows that the cost of operating a sewer network within a fixed performance envelope is directly impacted by a variety of exogenous factors that have historically not been captured in Ofwat's econometric modelling. These include, but may not be limited to:

- the prevalence of **combined sewers** – sewerage and surface water entering the same system.
- the propensity of the area to experience blockages (e.g. **food service establishments** adding fats, oils and greases to the sewer network)
- the prevalence of **cellared properties** impacting internal sewer flooding)
- the **age and material of the network** (exogenous in the short and medium term) increasing the propensity of a sewer to block (due to a combination of minor imperfections and solids from the toilet naturally depositing on the invert) and collapse.
- heavy rainfall in urban areas – meaning more surface water requiring removal.

These factors work in tandem to materially impact company cost and performance in sewage networks (and at the receiving STW assets.). An event (for example an internal sewer flooding) is often the culmination of factors – an example causal flow is set out below.

- A rainfall event meaning there is water landing on roofs and roads that enter the sewerage system.
- A combined sewer which means that sewerage and rainwater are carried into the same system.
- A partial blockage of the sewer due to the natural deposition of solids (e.g. wipes) that catches on slight gap between pipes (e.g. 2mm) that leads to further solids collecting and when combined with rainfall leads to an escape.
- A property with a cellar which receives the escaped diluted sewerage.

We believe that Yorkshire Water is impacted by all of the above factors in a way that negatively impacts both our costs and performance in sewerage networks. See Figure 2.3 below.

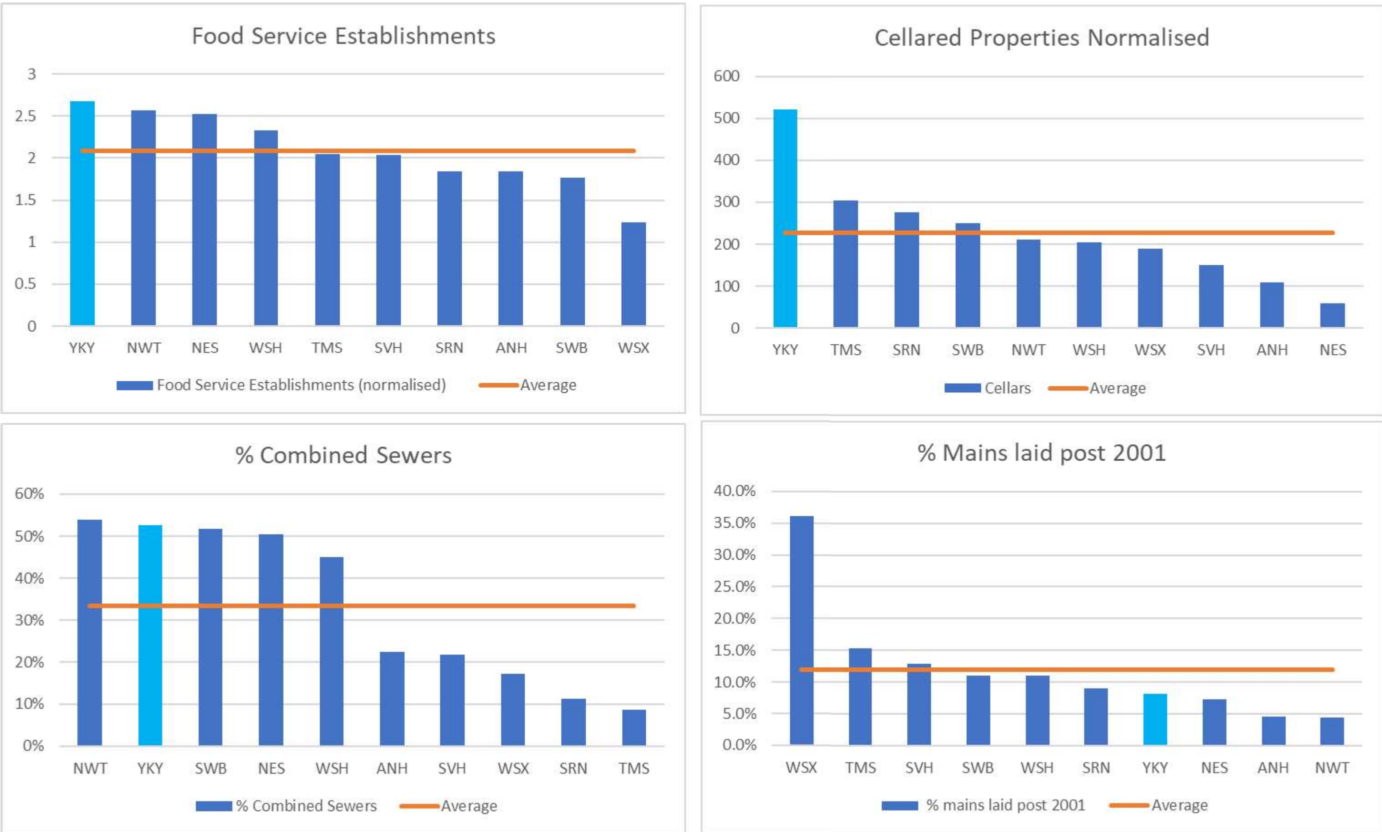

Figure 2.3 Industry comparison of key factors influencing network performance

We believe that all of the above factors in combination lead to the overall higher costs and lower relative performance experienced by Yorkshire Water in managing its network performance. For the purpose of this cost adjustment claim, we have currently focused on *percentage combined sewers,* because: (i) it is an operationally relevant driver of expenditure that can readily be incorporated into Ofwat's cost models; (ii) it performs well in such models from a statistical perspective; and (iii) the data is readily available in Ofwat's PR24 cost modelling dataset.

We are also developing an evidence base that demonstrates that the current performance differences in internal sewer flooding (not reflected in the cost models) are driven by multiple combination of exogenous factors and that it is appropriate to adjust PC targets to reflect exogenous factors where it is in customer interest to do so.

2.3. Combined Sewers – The Basis of our Claim

Many sewer systems were designed to carry stormwater and wastewater in separate pipes. However, in older towns & cities, combined sewers were commonly installed. This practice was stopped for new development post-World War 2.

A key challenge associated with combined sewers compared with separated sewers is that when it rains stormwater and wastewater flow into the combined sewer system simultaneously. In heavy rainfall events, this can lead to the system exceeding its designed capacity (hydraulic flooding), but more commonly the sewer does not have the capacity to convey the surface water from smaller rainfall events when there is a blockage (which does not have to fully block the pipe) or partial collapse. This event leads to flows backing up.

Depending on the location of these events, it can cause internal and external sewer flooding, property damage, and pose a risk to public health and the environment.

The combined sewers, when built, were not designed to a consistent rainfall return period unlike newer developments which utilise drainage models to inform their design.

To manage hydraulic overload in the combined sewer network, historically pre-privatisation storm overflows were built to protect the main sewer network from flooding. Typically, since privatisation, new storm overflows have not been built and additional infrastructure, such as storage tanks, has been required to temporarily store and divert excess flows, increasing the complexity and cost of the sewer network.

A further challenge is that the age and location of the combined sewers that receive wastewater and surface water in and around properties leads to more flooding. For example, the formation of more partial or full blockages leading to flooding. Proportionally flooding occurs significantly more from combined sewers compared with fouls sewers, compared with our combined sewer and foul sewer percentage spilt.

The below diagrams (Figure 2.4 and Figure 2.5) show analysis across Yorkshire Water's Drainage Area Zones (DAZ) on the link between ISF performance and percentage combined sewers. They demonstrate that we do observe a correlation between these factors.

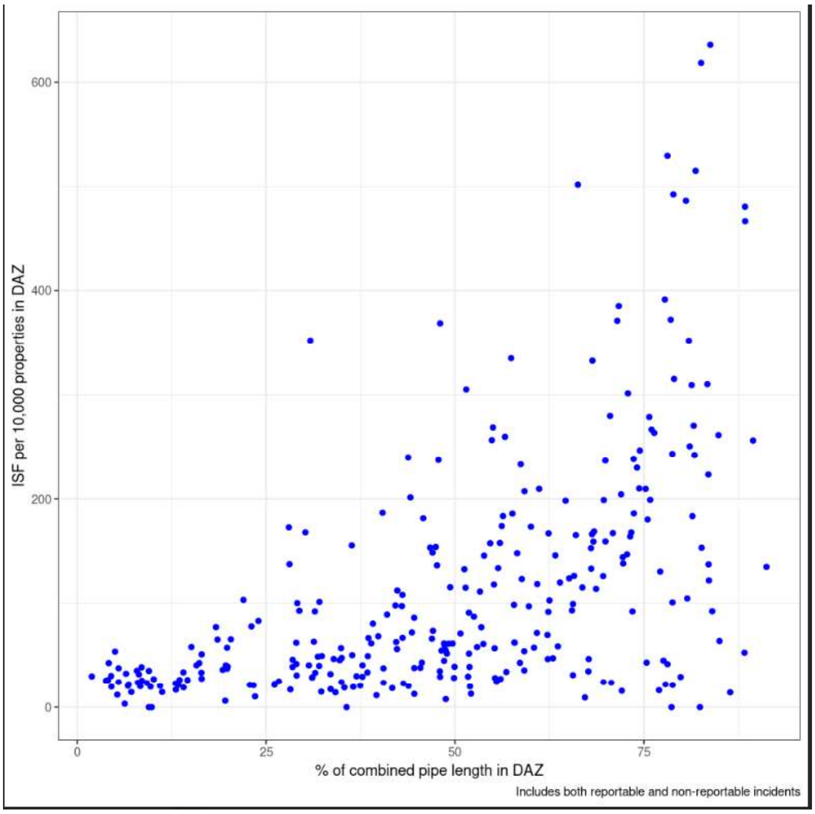

Figure 2.4 Combined Sewers v Internal Sewer Flooding in each YW Drainage Area Zone

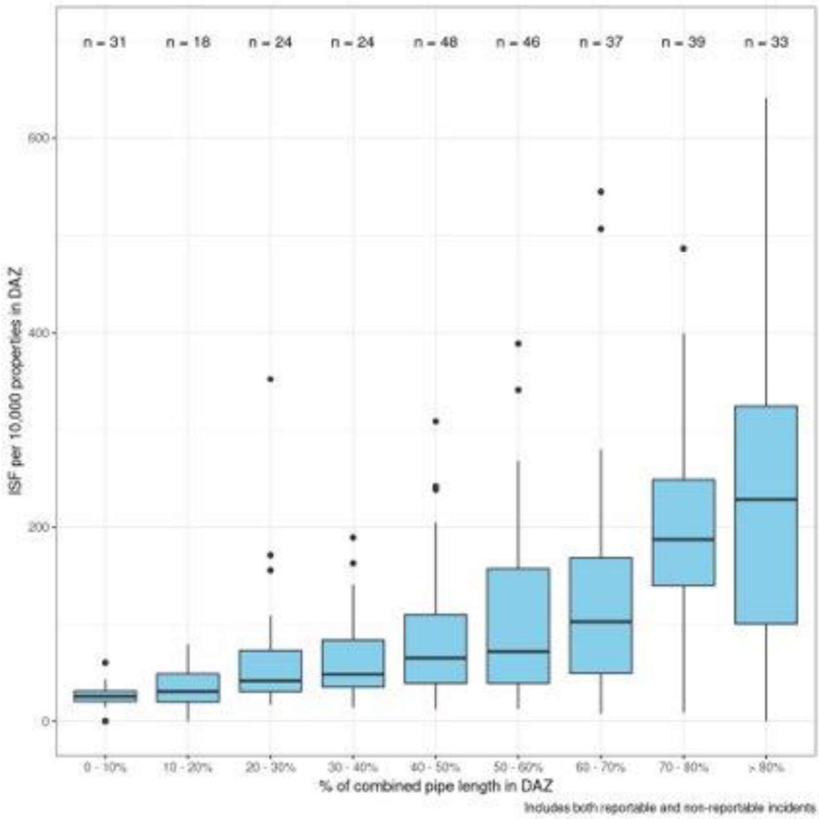

Figure 2.5 YW Combined Sewers v Internal Sewer Flooding Further Analysis

Several companies submitted models that control for combined sewers as a cost driver in the PR24 modelling consultation. However, Ofwat assessed that its inclusion could 'perversely incentivise companies not to separate sewers into surface water and foul'.[10] Therefore, Ofwat prefers to use another cost driver, namely urban rainfall, and argues that it captures a similar impact while qualifying it as being more exogenous in nature.

Ofwat's arguments for exclusion of combined sewers are incorrect as (i.) Companies cannot influence their asset base in the short run. (ii.) Urban rainfall is not a substitute driver for combined sewers to explain sewage flooding, storm overflow performance and costs. Each driver captures a different characteristic (i.e. the inclusion of urban rainfall in the cost models does not preclude the inclusion of combined sewers as an additional driver).

On the first point, Ofwat uses 'asset-based' cost drivers across its modelling suite, where companies have some control of the driver in the long run but not in the short run, including:

- the length of the water network in Ofwat's TWD models;
- the length of the sewer network in Ofwat's SWC and WNPW models.

We consider Ofwat's argument that companies may be incentivised to invest in combined sewers to receive higher cost allowances to be unrealistic. In the current context, combined sewers are associated with higher costs, yet these high costs are not reflected when setting cost allowances. Therefore, if combined sewers were indeed endogenous in the short run, companies would have had strong incentives to reduce the percentage of combined sewers of their asset base in order to perform better in the cost assessment models.

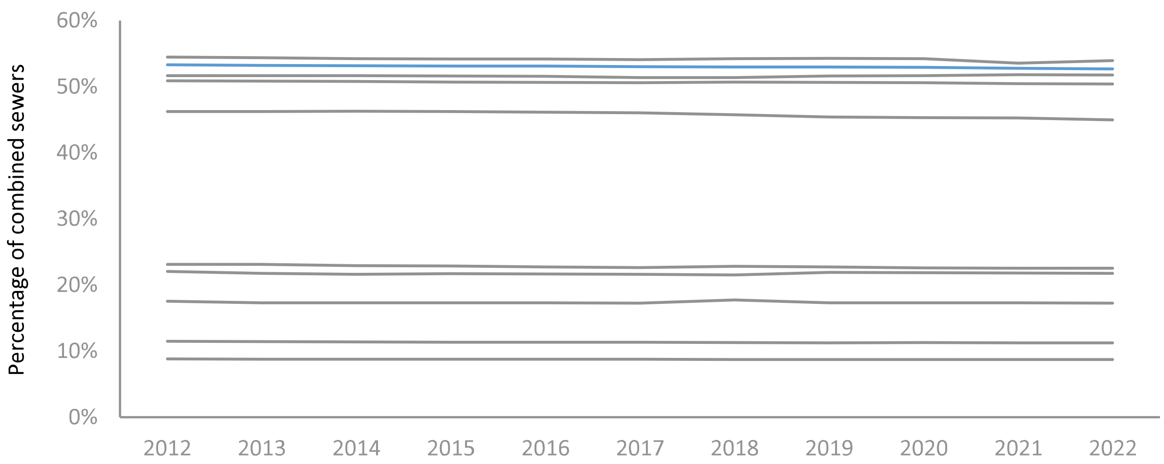

Figure 2.6 below shows how the proportion of combined sewers has evolved in the modelling period (2012–22).

[10] 'Econometric base cost models for PR24' Ofwat. April 2023. p. 45.

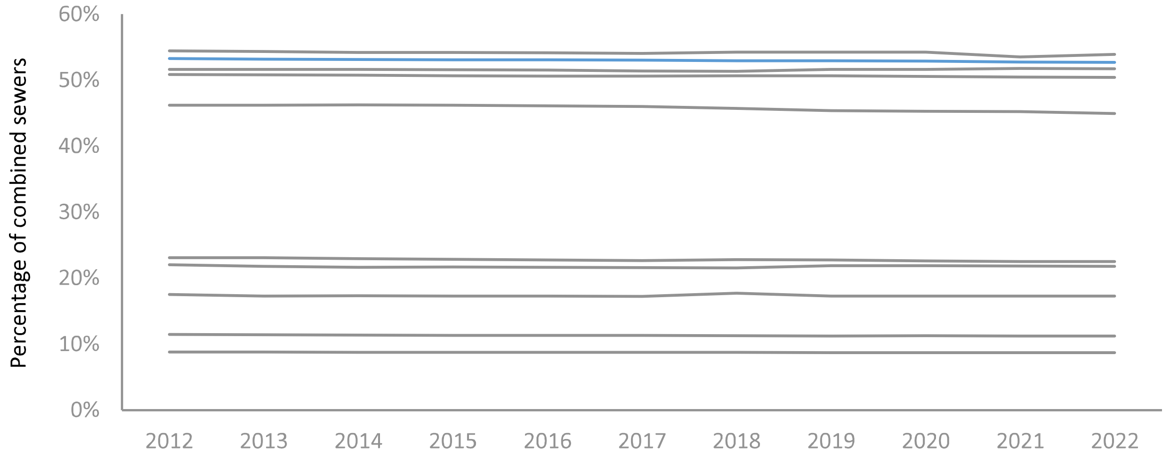

Figure 2.6 Evolution of the percentage of combined sewers over time

Note: YWS is highlighted in blue.

Source: Oxera analysis.

The evolution of the percentage of combined sewers in the last eleven years of available data is very small, with 8 of the 10 wastewater companies showing a change smaller than one percentage point in this ten-year period. Therefore, the extent to which companies will have any substantial control (and, by implication, the extent to which the models may lead to perverse incentives) is limited.[11]

The stability of combined sewers levels is not a choice for companies as replacing combined sewers with separate systems piecemeal is not an option. Large proportions of a network would need redesigning and replacing at once or in substantial stages – over multiple AMPs. If we have a collapsed combined sewer, it cannot just be replaced with a separated sewer, it needs to match with the surrounding sewers, which are likely combined.

The new obligations and performance commitment related to spill frequency provide companies with further incentives not to increase the lengths of combined sewers. Companies are investing significantly to keep water out of the network as a primary option (through SUDs etc.) rather than extending the combined sewer network and creating additional challenges to downstream compliance.

We typically invest in smaller lengths of the higher risk sewers and as we are not redesigning whole sewerage systems, it would also not be economic or in customers interests for us to do so.

[11] Note that we are exploring alternative methods of assessing the hypothesised endogeneity of combined sewers, such as formal statistical tests.

On the second point, Ofwat argues that the inclusion of other cost drivers, such as urban rainfall, has a similar impact to the inclusion of percentage of combined sewers. [12] The rationale behind Ofwat's argument is not clear, but we consider that Ofwat may have applied the following logic.

1. Combined sewers are more prone to sewer flooding. As such, the costs associated with having combined sewers are typically related to dealing with sewer flooding.
2. Urban rainfall is also intended to capture (among other things) the costs relating to sewer flooding.
3. As there is already a cost driver that captures a characteristic that leads to increased sewer flooding (urban rainfall), there is no need to include another cost driver that also captures costs associated with increased sewer flooding (combined sewers).

This line of reasoning is incorrect. The observation that urban rainfall increases sewer flooding says nothing about whether combined sewers also increase sewer flooding — the two cost drivers are not intrinsically related to each other, nor can they be treated as proxies or substitutes. Two companies that operate in a region with similar urban rainfall may experience different levels of sewer flooding depending on the composition of their assets (e.g. the number of combined sewers). Similarly, two companies that operate a similar composition of assets may experience different levels of sewer flooding depending on the level of urban rainfall. We note that, Ofwat controlled for both population density and STW size in its bioresources models at PR19, despite the fact that both cost drivers were intended to capture different aspects of the cost-impact of STW-level economies of scale.[13]

We also noted in our base cost consultation response Ofwat's comment that the 'variable does not take into account that the volume of rainfall may differ within a company's operating area'. This is crucial in our understanding of the risks of escapes in our region. As seen previously in Figure 2.2 it is the west of the region where we experience the greatest service issues and this is where we have significantly higher daily rainfall. The east of our region performs relatively well but is much more sparsely populated and much drier.

We believe that Ofwat's urban rainfall driver could be improved to be more granular to capture where the rainfall occurs and to effectively account for the size of surface connected to each sewer and hence the additional flow carried.

[12] 'Econometric base cost models for PR24' Ofwat. April 2023. p. 45.

[13] See Ofwat (2019), 'PR19 final determinations: Securing cost efficiency technical appendix', December, Table A2.2. Note that Ofwat has presented similar models as part of the PR24 modelling consultation. See Ofwat (2023), 'Econometric base cost models for PR24', April, Table 7.15.

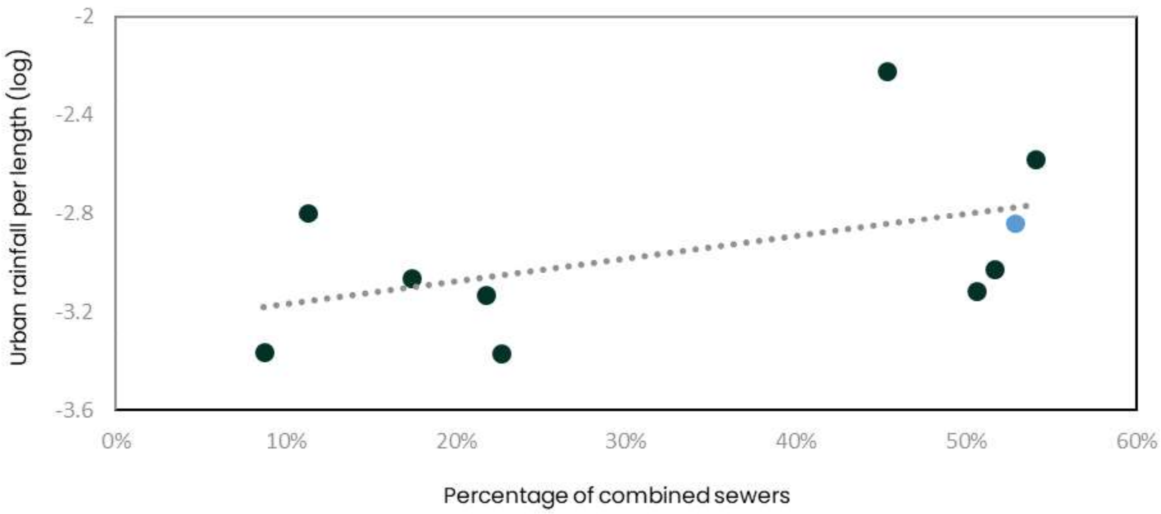

Figure 2.7 below shows the correlation between urban rainfall and combined sewers in the last five years.

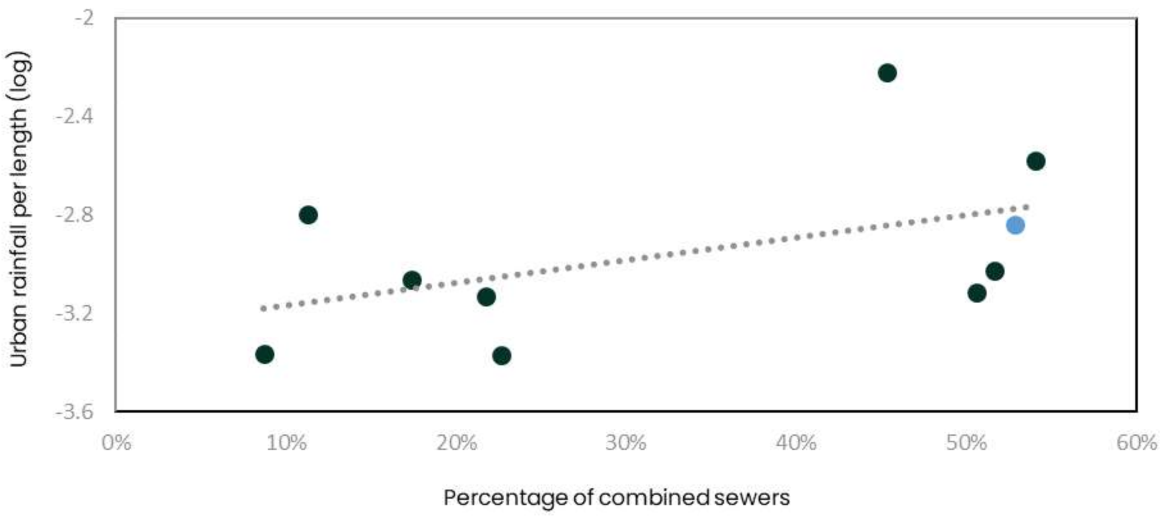

Figure 2.7 Relationship between percentage of combined sewers and urban rainfall

Note: The dots represent each company's average for the last five years of data. YWS is shown in blue. The trendline is shown in a dotted grey line.
Source: Oxera analysis.

The chart shows that urban rainfall and combined sewers should not be seen as substitute cost drivers. Although there is a correlation between the two drivers, urban rainfall does not perfectly capture all of the differences between companies with respect to combined sewers (in other words, the correlation is 'noisy' and imprecise, even ignoring the limitations of a simple correlation analysis). Therefore, the omission of one driver could lead to biased estimations.

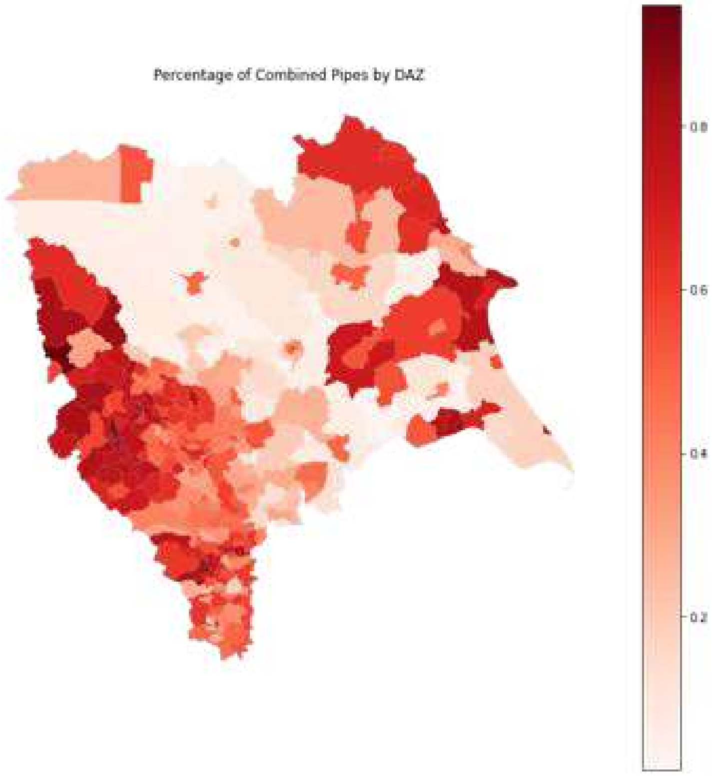

Figure 2.8 Percentage of Combined Pipes by DAZ

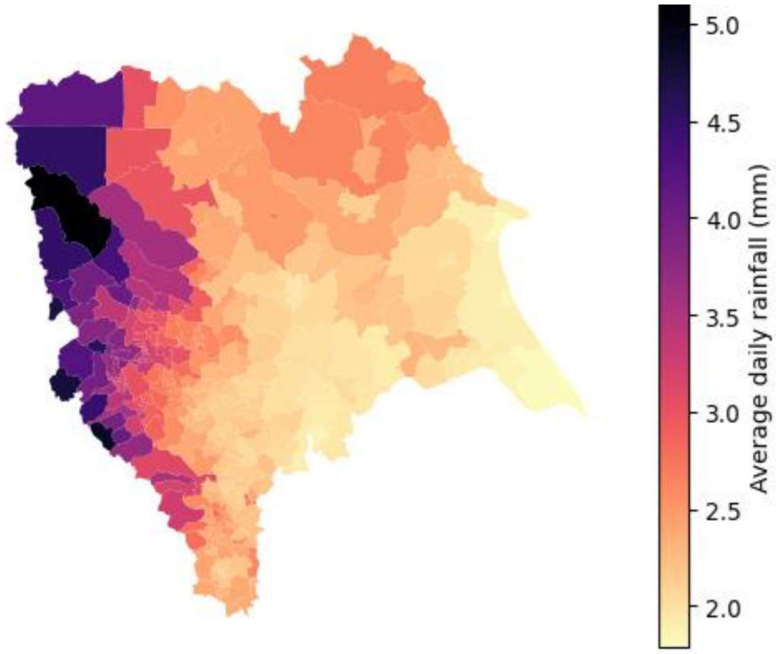

Figure 2.9 Rainfall by DAZ (01.01.2020-31.03.2023)

Visually this can be seen in Figure 2.8 and Figure 2.9 above where it is the combination of combined sewers and rainfall location within the region that drive the service issues represented in Figure 2.2.

2.4. Why is an adjustment required?

Figure 2.10 shows the percentage of combined sewers for each of the companies offering the wholesale wastewater service. YWS stands out second in the industry with c. 53% of combined sewers, behind NWT with 54%. In contrast, the industry average is c. 34%. This implies that YWS's percentage of combined sewers is around 20 percentage points above the average.

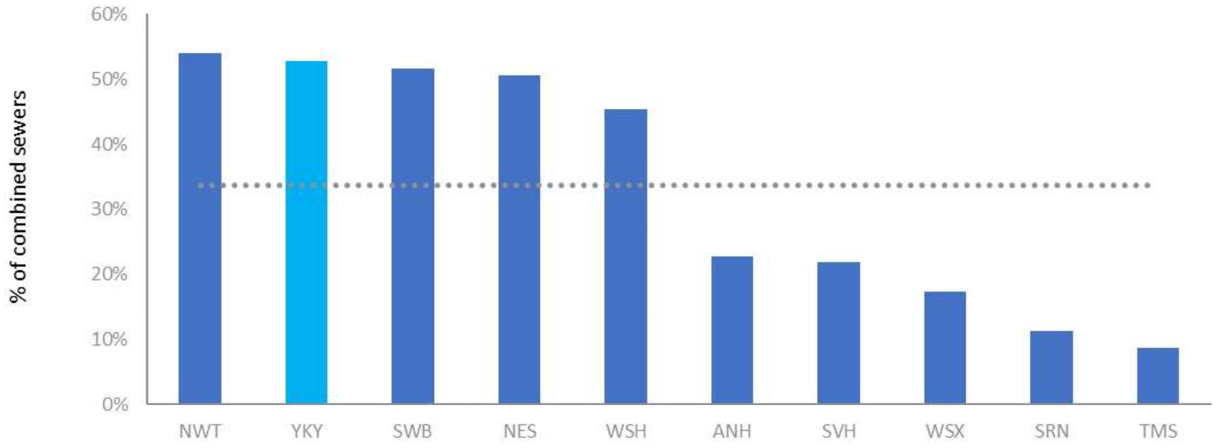

Figure 2.10 Industry proportion of combined sewers (legacy assets) Note: The chart shows the average percentage of combined sewers for each company in the last five years (2018–22). The industry average is shown in a dotted grey line.
Source: Oxera analysis.

We have used legacy assets to develop these percentage values. We do not have industry data to estimate the splits between combined, foul and surface water for adopted assets and hence we believe the most appropriate assumption is to assume the splits across legacy assets are proportional across the whole sewer asset base.

We believe the combination of a nationally available, accepted data set, industry level analysis and internal YW evidence alongside the economic rationale set out in section 2.6 mean that *% Combined Sewers* is the most appropriate factor to include in a Cost Adjustment Claim at this stage.

2.5. Cost Efficiency

Yorkshire water has optimised and invested significantly in recent years in order to maintain and improve internal sewer flooding. We are confident that, whilst we can continue to improve, we are not doing anything substantially different to the rest of the industry. It is the exogenous factors discussed above that explain our cost (and performance) positions.

We describe below some of the initiatives and investment we have undertaken to drive service improvements in recent years.

As part of our plan to improve sewer flooding performance from AMP6 to AMP7, we developed processes to reduce internal flooding other causes in discrete, higher risk zones across our region (e.g. targeting cellared properties for internal sewer flooding) as well as significantly increasing proactive sewer network investigation CCTV and increasing repair programmes of work supported by the introduction of larger scale defects rectification programmes for more complex solutions.

The Company insourced all non-civils work into the business in May 2019 and also at that time purchased additional vans, CCTV units and tankers; this allowed us to spend longer investigating individual jobs, therefore providing a better-quality service with more detailed investigations meaning improved raising of follow-on work, which in turn leads to less re-work.

During AMP7 we have engaged with multiple WASCs including Northumbrian Water, United Utilities and Severn Trent to identify commonalities in driving improvements in operational efficiency; learning that we are implementing many similar initiatives.

Key activities implemented throughout AMP7[14] include:

- Elimination at source:
  - Increased proactive programme of work (Sewer Maintenance Programme, SMP), including improved targeting of this programme to prevent initial flooding incidents occurring
  - Installation of circa 40,000 Customer Sewer Alarms by 2025 (22,000 already installed by May 2023), to provide alerts on the formation of blockages which can then be resolved prior to any impacting flooding incidents
  - Dedicated customer campaigns and focus on education via the network protection team (including for example visiting all Food Service Establishments (FSEs) in Yorkshire's high-risk areas)
- Enhanced initial response:
  - Focus on initial action following notification of a flooding incident, response times to customers have improved significantly.
  - Restructuring our customer field services flooding teams to give more dedicated focus where required
  - Improved tracking of key metrics including process reviews and competency levels.
- Reduction in repeat incidents:
  - Dedicated hubs supported by dynamic data to allow increased scrutiny of incidents and quicker resolution

[14] See YW's APR assurance documentation on Sewer Flooding (2020-2023)

    - Escape Report Assurance process implemented which again improves the length of time it takes to resolve incidents and therefore minimised repeats
- Management information & governance
    - Escape Optimisation Engineers giving training roadshows for operational colleagues, to improve competence around sewer flooding and data capture
    - Continued improvement of regular reporting processes from the Sewer Flooding Team and Data Science to ensure standardised information to every level of the business from practitioner to director level.

Overall, the improvements made over the last three years have been delivered through sustained, coordinated efforts across the business and with our service partner, Avove. We continue to drive additional improvements through further optimisation of all the above, along with our ongoing transformational approach (Wastewater Networks 2.0) and further reduction of private demand, to enable reinvestment/targeting of resources to proactive activities and improving first time response.

2.6. Cost Efficiency – Empirical analysis

As Ofwat's base modelling consultation dataset contains data on combined sewers, the net value of the CAC can be estimated by comparing YW's cost allowance under Ofwat's PR24 models to YW's cost allowance under models that control for combined sewers. The most straightforward approach is to compute the implicit allowance as YW's allowance under Ofwat's PR24 models, and the gross value of the claim as YW's allowance under alternative models that account for combined sewers.

The table below shows how Ofwat's SWC models perform when combined sewers is included as an additional cost driver.

	SWC1	SWC2	SWC3	SWC4	SWC5	SWC6
Dependent variable						
Sewer length (log)	0.875***	0.973***	0.952***	0.888***	0.960***	0.941***
	(0)	(0)	(0)	(0)	(0)	(0)
Pumping capacity per length (log)	0.432***	0.714***	0.669***	0.423***	0.672***	0.625***
	(0.000841)	(1.46e-06)	(1.13e-06)	(0.00711)	(0.000110)	(0.000211)
Density (log)	1.050***			0.993***		
	(3.93e-06)			(0.000116)		
WAD MSOA to LAD population (log)		0.260***			0.277***	
		(0.00463)			(0.000573)	

WAD MSOA population (log)			0.424*** (0.000398)			0.445*** (6.61e-05)
Urban rainfall per length (log)				0.0983*** (0.000962)	0.134*** (0.00176)	0.130*** (0.00225)
Percentage of combined sewers	0.335*** (0.00179)	0.580*** (0.00275)	0.609*** (0.00140)	0.239* (0.0762)	0.451* (0.0786)	0.483* (0.0532)
Constant	-8.903*** (0)	-8.131*** (0)	-9.374*** (0)	-8.507*** (0)	-7.652*** (9.40e-09)	-8.962*** (4.72e-09)
Model fit	0.924	0.912	0.915	0.922	0.920	0.921
VIF	3.072	2.313	2.358	3.074	2.359	2.393
Observations	110	110	110	110	110	110

Table 2.2 PR24 models for sewage collection with the introduction of combined sewers and associated efficient allowances

Note: ***, **, * indicate statistical significance at the 0.01, 0.05 and 0.1 levels. The VIF has been computed using OLS with the same specification.
Source: Oxera analysis.

The inclusion of combined sewers increases the model fit in all six SWC specifications, with the improvement ranging from 0.3 percentage points to 2.6 percentage points. Moreover, the coefficient on combined sewers is positive in all specifications, statistically significant at the 1% level in models SWC1–SWC3, and statistically significant at the 10% level in models SWC4–SWC6.

Note that models SWC4–SWC6 include urban rainfall, which Ofwat argued captured a similar effect in the models. Nevertheless, the coefficient on combined sewers is still statistically significant in all three of the models. Moreover, the VIF statistic (Ofwat's preferred measure of multicollinearity) for these models is always below three (and materially below Ofwat's threshold of 10), pointing to little collinearity among the independent variables. As such, the empirical evidence suggests that combined sewers and urban rainfall capture different operational characteristics.

The table below shows the equivalent analysis for Ofwat's network plus (WWN+) models.

	WWN+1	WWN+ 2	WWN+ 3	WWN+ 4	WWN+ 5	WWN+ 6	WWN+7	WWN+8
Dependent variable								
Load (log)	0.723*** (0)	0.819*** (0)	0.833*** (0)	0.775*** (0)	0.706*** (0)	0.802*** (0)	0.820*** (0)	0.764*** (0)
Pumping capacity per	0.462*** (0)	0.491*** (0)	0.478*** (0)	0.392*** (0)	0.430*** (5.24e-09)	0.461*** (0)	0.446*** (0)	0.350*** (5.72e-09)

length (log)								
pctbands13		0.0226***				0.0231***		
		(2.52e-05)				(0.000237)		
pctnh3below3mg	0.00473***	0.00435***	0.00453***	0.00493***	0.00496***	0.00466***	0.00481***	0.00521***
	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Percentage of load treated at works with a population equivalent >=100,000			-0.0044***				-0.0046***	
			(6.01e-07)				(2.87e-05)	
WATS (log)				-0.0773***				-0.0862***
				(2.19e-07)				(2.34e-05)
Urban rainfall per length (log)					0.0589**	0.0545***	0.0605**	0.0671**
					(0.0190)	(0.00982)	(0.0261)	(0.0218)
Percentage of combined sewers	0.366***	0.395***	0.461***	0.344***	0.289***	0.322***	0.386***	0.255***
	(0.000263)	(9.50e-06)	(2.08e-10)	(2.37e-05)	(0.00157)	(2.18e-06)	(8.14e-07)	(0.00120)
Constant	-4.106***	-5.427***	-5.300***	-3.991***	-3.690***	-5.026***	-4.917***	-3.525***
	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Model fit	0.960	0.967	0.967	0.966	0.960	0.967	0.968	0.968
VIF	4.669	6.131	6.722	4.855	5.035	6.429	6.882	5.114
Observations	110	110	110	110	110	110	110	110

Table 2.3 PR24 models for wholesale wastewater network plus with the introduction of combined sewers and associated efficient allowances

Note: ***, **, * indicate statistical significance at the 0.01, 0.05 and 0.1 levels. The VIF has been computed using OLS with the same specification.

Source: Oxera analysis.

Including combined sewers as a cost driver in the WWN+ models generally leads to an improvement in model quality. First, its inclusion increases the model fit across specifications. Moreover, the coefficient is highly significant in all of the models: the coefficient is significant at the 1% level in the eight models.

This is also the case in the models that already account for urban rainfall (WWN+5 – WWN+8).

Similarly, the VIF statistic is still materially below Ofwat's threshold of 10. This suggests that urban rainfall should not be considered as a substitute to combined sewers. There is no compelling evidence to suggest that either combined sewers is endogenous or that it is not a relevant driver of costs in additional to rainfall.

The table below shows how YW's allowance under models with and without combined sewers as a cost driver.

	PR24 models (£m p.a.)	PR24 models with combined sewers (£m p.a.)	Difference (£m p.a.)
YWS's estimated allowances	328	344	**15.5**

Table 2.4 YW's yearly average estimated allowances for AMP8

Note: Allowances are presented in 2022/23 prices. The allowances estimated using the PR24 models with the inclusion of combined sewers constitutes the gross value of the claim. We subtract allowances associated with the PR24 models and the difference of £15.5m corresponds to the net value of the claim.
Source: Oxera analysis.

Ofwat's PR24 consultation models predict YW's cost allowance to be c. £328m p.a. in AMP8. The inclusion of combined sewers in the SWC and WWN+ models increases YW's predicted allowance to c. £344m p.a., an average increase of c. £15.5m p.a. Therefore, the analysis indicates that the net value of the CAC relating to combined sewers is c. £15.5m p.a.

2.7. Claim Value and Materiality

Combined sewers is a material driver of expenditure that Ofwat has omitted from its PR24 consultation models. The driver is sufficiently exogenous in the short-term to pass Ofwat's exogeneity criterion, and its inclusion in the cost assessment models leads to an improvement in the statistical quality of the models across a range of metrics. As such, Ofwat should consider including combined sewers in its cost assessment models at PR24.

On the basis of the current evidence, we estimate the net value of the CAC to be c**. £15.5m** p.a. in AMP8, or **£77.5m** over the full AMP. This will clearly meet Ofwat's materiality criteria for WWN+ which was £25m for the whole period at PR19.

2.8. Symmetrical Adjustments

As this CAC relates to an omission in Ofwat's cost models, we consider an appropriate solution is for Ofwat to amend its PR24 models to account for combined sewers.

The table below shows the impact of including combined sewers in Ofwat's models on companies' allowances on an outturn basis, based on cost predictions in the last five years (2018–22).

	Gross value of the claim	Implicit allowance	Net value of the claim
ANH	£1,781m	£1,798m	-£18m
NES	£838m	£824m	£15m
NWT	£2,347m	£2,191m	£156m
SRN	£1,645m	£1,668m	-£23m
SVH	£2,248m	£2,297m	-£49m
SWB	£706m	£698m	£8m
TMS	£3,458m	£3,575m	-£117m
WSH	£1,098m	£1,080m	£18m
WSX	£854m	£919m	-£64m
YKY	£1,639m	£1,562m	£77m

Table 2.5 Symmetrical Adjustments by Company due to this claim

Note: The values are presented in 2022/23 prices. Source: Oxera analysis

2.9. Customer Protection

This claim is not a discrete piece of activity rather an adjustment to the cost modelling so it is therefore not applicable for a customer protection mechanism beyond the existing process of setting appropriate stretching performance commitments and ODIs.

2.10. Data Table Commentary

	Title	Commentary
CWW18.1	Description of cost adjustment claim	This claim is due to the non-inclusion of a combined sewers variable in the base cost modelling.
CWW18.2	Type of cost adjustment claim	This claim is related to a regional operating circumstance.
CWW18.3	Symmetrical or non-symmetrical	Symmetrical
CWW18.4	Reference to business plan supporting evidence	Refers to this document as this is the Early submission.
CWW18.5	Total Gross Value of Claim	We have used totals identified through the modelling and split these costs across the SWC value chain using the average splits across YW's last 7 APRs
CWW18.6	Implicit Allowance	We have not included an implicit allowance as the value of the claim has been derived from the difference between models including and excluding the % combined sewer driver so already excludes implicit allowance.
CWW18.7	Total Net Value of Claim	Calculated from above two lines
CWW18.8	Historic Base Expenditure	We have used our modelling to estimate historic implicit combined sewer allowances from 2012-2022. See Appendix 2. We have used the net values from this to populate the 'historic total expenditure' in the CWW18 data table and split the costs across the value chain using a) the in-year value chain split as reported in APR or b) the average value chain split for 2016-2022 if a is not available (or is a forecast cost).
CWW18.9	Totex for the control	We are not required to populate Totex value but identify that the claim sits in the WWN+ price control.
CWW18.10	Materiality	N/A We note that the size of the claim is significantly higher than 1% of WWN+ Totex historically.

Table 2.6 CWW18 - Cost Adjustment Claim 2 Commentary

Appendix 2 – Combined Sewers claim values (historic and forecast)

The table below shows the model outputs including and excluding the % combined sewers variable and the net CAC value for combined sewers. We consider that this claim relates entirely to the SWC value chain, although the specific aspect of the value chain (i.e. foul, surface water drainage or highway drainage) is not indicated by the modelling. We have used the net values from 2012-2022 to populate the 'historic total expenditure' in the CWW18 data table and split the costs across the value chain using a) the in-year value chain split as reported in APR or b) the average value chain split for 2016-2022 if a is not available (or is a forecast cost)

	Model output including %CS	Model output excluding % CS	Net value of the claim
2012	£281m	£267m	£13.7m
2013	£286m	£274m	£12.4m
2014	£302m	£289m	£12.5m
2015	£304m	£291m	£13.0m
2016	£307m	£295m	£12.6m
2017	£310m	£296m	£14.3m
2018	£308m	£295m	£13.7m
2019	£308m	£294m	£14.4m
2020	£329m	£316m	£13.1m
2021	£335m	£320m	£14.9m
2022	£359m	£338m	£20.8m
2023	£334m	£319m	£15.1m
2024	£337m	£321m	£15.2m
2025	£338m	£323m	£15.3m
2026	£340m	£325m	£15.4m
2027	£342m	£327m	£15.4m
2028	£344m	£328m	£15.5m
2029	£346m	£330m	£15.6m
2030	£348m	£332m	£15.6m

Note: The values are presented in 2022/23 prices.
Source: Oxera analysis.