

IAP Technical Annex 8

# Accounting for past delivery



## Accounting for Past Delivery – Summary

Our focus in this response is on demonstrating our understanding of the common root causes identified in our business to build confidence in the deliverability of our AMP7 plan

We have not demonstrated to Ofwat’s satisfaction that we understand the reasons for our poor performance in the past.

The Accounting for Past Delivery chapter in our September 2018 Business Plan (*BP\_CH17\_Accounting for Past Delivery\_Pg289*) focused on the proposed adjustments to regulatory parameters (ODIs), in line with the PR14 reconciliation rulebook methodology. This document sets out what we have learned from our past delivery and the actions we are pursuing to address historical issues.

Over the past two years, and again in response to Ofwat’s IAP, we have been developing our understanding and learning from our experience of delivering our performance commitments (PCs) and responding to incidents. From our detailed analysis, we have identified root cause issues that need to be addressed to enable the effective delivery of the AMP7 plan. We have established six transformation programmes that cut right across the business and that will, over time, enable us to address the underlying root causes of our past performance.

We are making progress in addressing historical problems. Our transformation programmes are delivering significant improvements. For example, our Customer programme has delivered improvements in our cost efficiency with reduced customer complaints (as set out in *BP\_CH13\_Retail Controls\_Pg233*). Other programmes are at earlier stages of development, e.g. in our wholesale programme, we are currently developing processes to more effectively plan and deliver our capital programmes by building a better balance between risk, value and outcomes into decision-making.

In this summary, we have set out the common causes behind our past performance.

### We have undertaken a systematic assessment of our past performance

Over time, we have brought together the thinking and learning from across the business to form a view of the common causes of historical issues. This work has spanned Water, Wastewater and Retail and by adopting a more systematic approach than we have in the past, we now have deep insights to draw upon to improve.

We have approached this from both a top-down and a bottom up perspective. Our top down assessment draws upon experts from across our business through a process of interviews and workshops. We also gathered the Senior Management Teams in order to understand their insights of the known drivers of performance. Our bottom up assessment (set out in *IAP\_TA8\_Accounting for past delivery\_PD.A6* and *IAP\_TA8\_Accounting for past delivery\_PD.A8*) includes analysing available data on underlying drivers of performance (e.g. customer complaints and pollution incidents) to look for root cause issues coupled with the “five whys” root cause analysis technique to understand trends.

Bringing our top down and bottom up analysis together, we have drawn out the key common underlying issues.

In the next section we set out the common root causes identified as well as examples of some of the work we are doing in our transformation programmes that are starting to address the issues.

## Through our assessment of past performance we have identified six common root cause issues

Our assessment identified several common issues that drive performance. These are:

1. Reactive customer focus
2. Inconsistent approach to planning and decision making
3. Inconsistent processes and process control
4. Fragmented systems and data
5. Fragmented view of risk to aid decision making processes
6. Incentives are not linked to outcomes

### 1. Reactive customer focus

In the past, we have focused on improving our service when customers made direct contact with us, fixing issues as and when they arose. As described in *BP\_CH9\_Great Customer Service* and *BP\_CH13\_Retail Controls* of the September Plan, we are working to ensure that we: build in our customers views into our decision making in to our wholesale and retail operations, take account of the impact our actions have and clearly communicate with customers on issues that they care about most. We have seen good results from the work we have done to educate our customers on sewer blockages, and we are planning to do more through AMP7, and via our Proactive team in retail, who call customers ahead of them receiving their bill, where we have identified that their bill has materially increased since their last.

As we prepare for AMP7 we have started to shift our focus further towards becoming a customer-led business through involving customers in our decision making. One of our customer outcomes in AMP7 is to ensure we provide a refreshingly easy customer experience, measured through C-Mex. This will put customers at the heart of our decision-making and culture. The redesigned business planning processes strengthen the link to our customer outcomes into our planning and decision-making process.

### 2. Inconsistent approach to planning and decision-making

In the past, we have not always had a consistent approach to making decisions. Further, our planning cycles have tended to focus on the short term, as opposed to longer term goals. We have also been inconsistent in the way we communicate our basis for decision making effectively to all of the teams concerned. For example, during the freeze/thaw our planning procedures did not facilitate a fully coordinated response. In addition, more effective preparation may have limited the incident from escalating.

In Wholesale, we are redesigning our operating model including work to make our planning processes more robust and to develop an integrated business planning approach, which involves developing a series of regularly updated long, medium and short-term investment plans. This will allow us to address the balance between totex, outcomes and the level of risk. Further, we are improving how we monitor and report performance commitments and leading performance indicators to enable better planning and decision making. On incidents, we have developed incident management plans that define the processes we follow in identifying and planning and executing our responding to incidents with clarity on roles and responsibilities (see the incident action plan in *IAP\_TA8\_Accounting for past delivery\_PD.A9*).

### 3. Inconsistent processes and process control

We have clearly documented processes and as our business has evolved over time, we have amended the way we do things to respond to the changing needs of our customers. However, new and more optimised processes have not been consistently recorded and communicated and therefore adhered to in full (e.g. our end-to-end regulatory reporting processes which triggered the development of our Modern Compliance Framework to address this). Through our review, we have also identified that some processes are no longer fit for purpose and some are driving complexity that is not required, which is causing inefficiency and delays (e.g. our control and sign off thresholds).

We have reviewed key processes and are redesigning them to drive efficiency and robustness of delivering services to customers, for example, we have reworked our debt management processes to optimise and tailor the way we collect debt from customers. In addition, we are ensuring effective collaboration with the supply chain in optioneering and design to optimise the way we work with them.

### 4. Fragmented systems and data

In the past, we have maintained and stored data in multiple forms and across many systems. In some instances, we have manual workaround processes or off-system data analysis. We are working to centralise data and build in improved reporting, analytics and visualisation of data to aid performance monitoring and reporting. We have made good progress in our reporting procedures, particularly in our retail division and are continuing to improve our management information within wholesale.

As part of our operating model redesign in wholesale, we are developing new and improved management reporting dashboards to give the latest view, based on single sourced data with a view to developing a data warehouse in the longer term. In addition, we have an IT programme to transition to an insourced model while looking at longer term investment in systems to support business transformation. An example is our plan to implement a new enterprise asset management system to consolidate and further improve our asset data capture.

### 5. Fragmented view of risks to aid decision making process

We have a process for identifying and managing our key operational, compliance and corporate level risks. However, information currently exists in disparate systems and is manually linked which limits effective communication and escalation of risks. As a result, we have not had a systematic approach to assessing externalities such as supply chain or weather risks. One example of this is that we did not foresee the level of impact that the freeze/thaw event was going to have, however, we are now developing models to help us forecast issues through techniques such as more advanced weather modelling.

As part of our wholesale transformation programme, we are embedding the balance of risk, value and outcomes into our decision-making processes to be able to improve the way we prioritise investment decisions. Further, one aspect of our longer-term resilience planning is the development and implementation of a new framework to capture risks, impacts and mitigations.

### 6. Some incentives are not linked to outcomes

In the past, a number of the metrics that we have monitored and through which we have managed the business have been orientated towards financial performance, including ODI penalties and rewards. As part of our business transformation we are rebalancing our approach towards measures that work for the benefit of customers.

As part of this, we have refreshed the KPIs we present to our Board and Executive to include reputational ODIs, aligning these with the expectations of our customers and other stakeholders. Our employee

incentivisation is also aligned to the delivery of outcomes. As we establish new contractual arrangements with external service providers for the next AMP period - we are also taking the opportunity to ensure that the incentives they face are fully aligned with our commitments and the need to deliver at efficient costs.

## We have mapped our bottom up analysis on performance commitments and incidents to our identified common causes

PD\_Accounting for Past Delivery Summary\_Table 2 – Mapping of PCs to root cause issues and transformational activities below maps the common cause issues identified above to the detailed examples identified in our assessment of performance commitments and incidents (see response to IAP\_TA8\_Accounting for past delivery\_PD.A6 and IAP\_TA8\_Accounting for past delivery\_PD.A8). This demonstrates the linkages between the root cause issues and where they have affected our performance in the past.

### PD.Accounting for Past Delivery Summary.Table 2 – Mapping of PCs to common cause issues and transformational activities

#	Common causes identified	Mapping to performance commitments (PC) and incidents (I) - bottom up identification of common cause issues and successes	Key transformation programmes improving on past performance and enablers of AMP7 delivery*
1	Reactive customer focus	<ul style="list-style-type: none"> <li>■ Sewer blockages (PC)</li> <li>■ Billing queries (PC)</li> <li>■ Freeze/thaw (I)</li> <li>■ [REDACTED] (I)</li> <li>■ Southampton discolouration) (I)</li> </ul>	<ul style="list-style-type: none"> <li>■ Vision purpose and values</li> <li>■ End-to-end customer experience</li> <li>■ Wholesale (Retail B2B)</li> <li>■ C-Mex readiness</li> <li>■ Environment+</li> <li>■ Water First</li> </ul>
2	Inconsistent approach to planning and decision-making	<ul style="list-style-type: none"> <li>■ Water asset health (PC)</li> <li>■ Drinking water quality (PC)</li> <li>■ Odour complaints (PC)</li> <li>■ Bathing waters with 'excellent' water quality (part 3) (PC)</li> <li>■ Freeze/thaw (I)</li> </ul>	<ul style="list-style-type: none"> <li>■ Wholesale operating model including integrated business planning process</li> <li>■ Governance and controls in the capital programme</li> <li>■ Procurement and commercial contacts</li> <li>■ Emergency response plan</li> </ul>
3	Inconsistent processes and process control	<ul style="list-style-type: none"> <li>■ Wastewater treatment compliance (PC)</li> <li>■ Serious pollution incidents (Cat1/2) (PC)</li> <li>■ Billing queries (PC)</li> <li>■ [REDACTED] WSW ingress (I)</li> <li>■ Southampton Discolouration (I)</li> </ul>	<ul style="list-style-type: none"> <li>■ Operations excellence</li> <li>■ Procurement and commercial contacts</li> <li>■ Modern Compliance Framework</li> <li>■ Water First</li> <li>■ Environment+</li> <li>■ Ethical Business practice</li> </ul>
4	Fragmented systems and data	<ul style="list-style-type: none"> <li>■ Water asset health (PC)</li> <li>■ Water use restrictions (PC)</li> </ul>	<ul style="list-style-type: none"> <li>■ MI and reporting</li> <li>■ IT transition and transformation</li> </ul>

		<ul style="list-style-type: none"> <li>External flooding incidents (PC)</li> <li>Billing queries (PC)</li> <li>First time resolution of contacts (PC)</li> </ul>	
5	Limited view of risk in decision making process	<ul style="list-style-type: none"> <li>Leakage (PC)</li> <li>Interruptions to supply (PC)</li> <li>Odour complaints (PC)</li> <li>Serious pollution incidents (PC)</li> <li>██████████ (I)</li> <li>Wastewater treatment compliance (PC)</li> </ul>	<ul style="list-style-type: none"> <li>Wholesale operating model</li> <li>Governance and controls in the capital programme</li> <li>Integrated Business Planning and Asset Lifecycle planning - building in risk, value, outcomes</li> <li>Water First: Hazard Review</li> <li>Risk and resilience framework</li> </ul>
6	Incentives are not linked to outcomes	<ul style="list-style-type: none"> <li>Interruptions to supply (PC)</li> <li>Wastewater treatment compliance (PC)</li> </ul>	<ul style="list-style-type: none"> <li>Governance and controls in the capital programme</li> <li>Leadership and engagement Ethical Business practice</li> <li>Environment+</li> <li>Water First</li> </ul>

\*For further information on the objectives of our transformation programmes see *IAP\_TA8\_Accounting for Past Delivery\_Appendix 1*. Further information has been provided on our Water First and Environment+ programmes in *IAP\_TA8\_Accounting for Past Delivery\_Appendix 2* to demonstrate examples of the progress and improvements that we are making in our business.

## We have made good progress, but there is still more to do to put the right processes in place to ensure we embed a culture of continuous learning in our organisation

We recognise that the process of looking to understand and learn from the drivers of past performance should not be done on a one-off basis – it should be embedded as part of business as usual. While we do this in our business today, we have also identified and are putting in place a large number of actions to improve the way that we do this, with a focus on driving rigour and consistency across the business.

In line with Ofwat’s Actions *IAP\_TA8\_Accounting for past delivery\_PD.A7* and *IAP\_TA8\_Accounting for past delivery\_PD.A9*, we have developed two action plans to hold ourselves to account to improve our performance monitoring and the way we learn lessons, and to implement change on a continuous basis. The action plan relating to performance commitments is documented in *IAP\_TA8\_Accounting for past delivery\_PD.A7*, and the action plan relating to incidents is documented in *IAP\_TA8\_Accounting for past delivery\_PD.A9*. We have defined a set of business goals for key improvements. These goals are set out below, and, as explained further in the section that follows, these will be supported by a comprehensive ongoing process for assurance within Southern Water and regular reporting to Ofwat.

### Goals for monitoring and continuous improvements in PCs

1. Improve robustness and quality of data
2. Have a catalogue of detailed metrics to support effective monitoring of our performance commitments
3. Mature processes that underpin our reporting



4. Fully implemented hubs and consistency in managing operational performance
5. Have a systematic approach to identifying root cause issues and solutions
6. Integrated plans and work schedules to deliver outcomes and enable effective prioritisation
7. Clear governance structures embedded in the performance improvement cycle

### Goals for monitoring and continuous improvements in incidents performance

1. To have a comprehensive and coordinated approach to managing all incidents, including having the right team in place to strategically monitor the incident, and the right processes in place to escalate the incident
2. Further operationalise existing processes and procedures
3. Record incident data in real time to improve our ability to monitor and respond more quickly
4. Monitor service recovery KPIs and pre-empt causal issues
5. Consistently monitor the dissemination of communications to customers and ensure our incident response communications team is appropriately trained
6. Ensure that our alternative supply response is effective through consistently monitoring the availability and delivery of alternative supplies
7. Ensure effectiveness of the support provided to customers during an incident
8. Include incident root cause analysis as part of the incident debrief and integrate KPIs as an input into the debrief process
9. Tests in place to check effectiveness of our process at identifying the correct improvement measures and compare our procedures with international best practice from a range of industries
10. Assessment of communication and support is integrated into the incident debrief
11. Process in place for embedding improvement measures that tackle the root causes of incidents
12. Prove our resilience and make changes based on tests and exercises
13. Continue to define processes and establish further governance

## We are committed to improvement actions to deliver the business goals set out in our incidents and performance commitments action plans and are putting in place independently assured maturity assessments in order to report progress, quarterly, to our Board, CCG and Customers

We have set out detailed action plans for improved performance monitoring and continuous improvement processes for both performance commitments and incidents in *IAP\_TA8\_Accounting for past delivery\_PD.A7* and *IAP\_TA8\_Accounting for past delivery\_PD.A9*.

Our Board is committed to demonstrating our improvement against the business goals identified in the action plans and outlined in the section above. Therefore, we are putting a process in place to report to our Board, CCG, Customers and Ofwat on a quarterly basis, on the improvements we have made and the level of maturity reached against each of our business goals set out in our action plans. This is to complement our plans set out in our Final Assurance Plan.

In this 1st April IAP response, we have set out the business goals we intend to progress towards. We have also set out the actions that we intend to complete to reach those goals. In order to be able to report the level of maturity to Ofwat, we are currently in the process of engaging with a third party assurer to work with us to develop a maturity assessment framework. Our timeline, as outlined in both action plans, is to conduct our baseline maturity assessment in April/May 2019 to then be updated quarterly up to April 2021. We hope that this will help build trust and confidence in our delivery for our Board, Customers and Ofwat and confidence in

our commitment to improvement. It is also intended as clear recognition that we need to demonstrate that we have, and are continuing to, put the right transformational activities in place to be able to deliver on our AMP7 plan and commitments to our customers.

Our plan for the maturity assessment framework will build on our understanding of best practice performance in achieving our business goals. We are developing a five point scale from very low maturity at one end of the scale to best practice at the other end of the scale, in order to be able to report our progress in a rigorous and on a consistent basis.

We intend to put this process and framework in place for each of the action plans we are currently developing in our IAP response.

## Conclusion

As stated, we are committed to improving our business to address issues from the past. We are much clearer on what these issues are and the drivers of our performance. We have made great progress in retail and in our emergency response procedures and are 18 months in to transforming our wholesale operations. The improvements in this area, specifically in engaging and empowering our operational staff have demonstrated efficiencies through greater visibility of risk and maintenance priorities. We have an established company-wide transformation programme that will enable us to get the basics right in AMP6 to deliver our plan through AMP7 and beyond.

# 1.SRN.PD.A1 - Outcome Delivery Incentive rate for 'Interruptions to supply'

Ofwat action	How we have responded
PR14 Outcome delivery incentives: Southern Water is required to use the correct outcome delivery incentive rate for 'Interruptions to supply' and update table App27 accordingly.	Plan updated

## Our detailed response

In the submission last year, the penalty rate from the Final Determination was used. This was incorrect as there was a later change to the incentive rate due to an altered cost-sharing rate. This changed the incentive rate for Interruptions to Supply from -£58,875 per minute lost to -£57,403 per minute lost. In 2017-2018, Southern Water's interruptions to supply exceeded the deadband by 5 minutes. This would therefore incur a penalty of £287,015 and not the originally stated penalty of £294,375.

We have updated *App27* accordingly.

## PD.A1.Table 1 - Changes in ODI penalty

2017- 2018 Performance	Minutes above penalty deadband (mins)	Rate (per minute lost) £	2017-2018 penalty £
Initial submission	5	58,875	294,375
Updated submission	5	57,403	287,015

## 2.SRN.PD.A2 – Performance Commitments forecast updates

Ofwat action	How we have responded
<p>PR14 Outcome delivery incentives: Southern Water is required to update its forecast for 2019-20 performance to take account of the actual 2018-19 performance for all its performance commitments. We expect the company to pay particular focus where we found the evidence provided in its business plan for the 2018-20 forecasts to be insufficient which was for:</p> <ul style="list-style-type: none"> <li>8: Per capita consumption (PCC) - five-year average target</li> <li>4: Interruptions to supply</li> <li>5: Odour complaints' (Portswood and Tonbridge treatment works</li> <li>5: Mean Zonal Compliance (MZC)</li> <li>5a: Drinking water quality - discolouration contacts</li> <li>3: Leakage (including customer supply-pipe leakage) - five-year average target</li> <li>6: Wastewater treatment works numeric compliance</li> <li>8: Bathing waters with 'excellent' water quality (part 1)</li> <li>9: Bathing waters with 'excellent' water quality (part 2)</li> <li>10: Bathing waters with 'excellent' water quality (part 3)</li> <li>13: Thanet sewers</li> <li>14: Woolston STW</li> <li>15: Millbrook sludge</li> </ul>	<p>Accepted</p>

### Our detailed response

We have updated our forecasts for 2018/19 and 2019/20 where we expect material deviations from what we set out in our initial Business Plan submission in September 2018. The detail for each PC and the updates made to the forecasts are set out in *IAP\_TA8\_Accounting for past delivery\_PD.A6*.

As requested as part of the IAP Actions, we will update actuals for 2018/19 and fully update forecasts for 2019/20, as well as the evidence to support our revised updates, as per the action deadline of 15th July 2019.

### 3.SRN.PD.A3 – R9 forecasts

Ofwat action	How we have responded
PR14 Residential retail: Southern Water is required to provide further evidence to explain its table R9 forecasts which depart from the trend in the first three years of the control period; and, provide further clarity on the reasons for the difference between reforecast customer numbers and actual customer numbers in 2018-2019.	Further information provided

#### Our detailed response

There are three sets of customer numbers referred to in table R9:

- A: Forecast customer numbers (the original PR14 forecast)
- B: Reforecast customer numbers
- C: Actual customer numbers

The customer data presented in Table R9 - PR14 reconciliation of household retail revenue in September 2018 is reproduced in the table below, with totals added for metered customers, unmetered customers, and the combined total. The customer numbers refer to chargeable properties.

PD.A3.Table 1 – Table R9 September 2018 submission

Line description	2015-16	2016-17	2017-18	2018-19	2019-20	
<b>A Forecast customer numbers</b>						
1	Unmetered water-only customer	6,630	6,597	6,563	6,530	6,496
2	Unmetered wastewater-only customer	347,059	312,099	277,139	242,179	207,219
3	Unmetered water and wastewater customer	72,531	72,164	71,798	71,431	71,065
4	Metered water-only customer	70,581	71,195	71,843	72,456	73,047
5	Metered wastewater-only customer	533,218	575,549	618,348	661,530	704,107
6	Metered water and wastewater customer	856,177	863,706	871,655	879,170	886,410
	Total	1,886,196	1,901,310	1,917,346	1,933,296	1,948,344
	Total unmetered	426,220	390,860	355,500	320,140	284,780
	Total metered	1,459,976	1,510,450	1,561,846	1,613,156	1,663,564
<b>B Reforecast customer numbers</b>						
7	Unmetered water-only customer	19,549	16,893	14,610	15,770	15,951
8	Unmetered wastewater-only customer	356,238	318,566	285,135	279,662	288,295
9	Unmetered water and wastewater customer	133,466	116,204	107,376	109,141	114,183
10	Metered water-only customer	61,436	65,277	68,121	68,927	67,978
11	Metered wastewater-only customer	527,772	568,835	611,312	628,966	671,323
12	Metered water and wastewater customer	790,739	814,607	830,824	832,224	830,063
	Total	1,889,200	1,900,382	1,917,378	1,934,690	1,987,793
	Total unmetered	509,253	451,663	407,121	404,573	418,429
	Total metered	1,379,947	1,448,719	1,510,257	1,530,117	1,569,364
<b>Variance to Forecast - numbers</b>						
	Total	3,004	-928	32	1,394	39,449
	Total unmetered	83,033	60,803	51,621	84,433	133,649
	Total metered	-80,029	-61,731	-51,589	-83,039	-94,200
<b>Variance to Forecast - percent</b>						
	Total	0.2%	0.0%	0.0%	0.1%	2.0%
	Total unmetered	19.5%	15.6%	14.5%	26.4%	46.9%
	Total metered	-5.5%	-4.1%	-3.3%	-5.1%	-5.7%
<b>C Actual customer numbers</b>						
13	Unmetered water-only customer	19,465	16,372	15,736	15,886	15,951
14	Unmetered wastewater-only customer	355,033	329,526	301,811	295,524	288,295
15	Unmetered water and wastewater customer	132,887	117,694	113,083	113,848	114,183
16	Metered water-only customer	61,169	64,799	65,986	67,156	67,978
17	Metered wastewater-only customer	525,986	557,734	591,109	610,332	671,323
18	Metered water and wastewater customer	787,308	809,101	817,207	829,460	830,063
	Total	1,881,846	1,895,226	1,904,932	1,932,206	1,987,793
	Total unmetered	507,384	463,592	430,630	425,258	418,429
	Total metered	1,374,463	1,431,634	1,474,302	1,506,948	1,569,364
<b>Variance to reforecast - numbers</b>						
	Total	-7,354	-5,156	-12,446	-2,484	0
	Total unmetered	-1,870	11,929	23,509	20,685	0
	Total metered	-5,485	-17,085	-35,955	-23,169	0
<b>Variance to reforecast - percent</b>						
	Total	-0.4%	-0.3%	-0.6%	-0.1%	0.0%
	Total unmetered	-0.4%	3.1%	6.6%	6.5%	0.0%
	Total metered	-0.4%	-1.1%	-2.3%	-1.4%	0.0%

## Departure from historic trends in forecast period in Section B

In each case the variance to the original forecast is given in absolute and percentage terms. In total, both the reforecast customer numbers (B) and the actual (plus forecast) customer numbers (C) differ from the original forecast by less than +/- 1% in every year.

At the level of individual customer types, there are differences between the original PR14 and new forecasts for both metered and unmetered customers, for each type of service: water only customers, waste only customers and water and waste customers.

We are experiencing a higher proportion of unmetered customers (and consequently a lower proportion of metered customers) compared the original PR14 submission. This applies to all three service types. The main reason behind this is the difference between target and actual meter penetration.

Our Universal Metering Programme planned to reach 92% penetration of domestic properties connected for water service ('water only' + 'water and waste') during AMP5. The programme was delayed and continued into 2015-16 and it achieved 87% meter penetration upon completion. This is reflected in the numbers in section B.

The most significant factor in us falling short of the target was the difficulty in securing customer appointments in cases where meters could not be installed externally and we needed access to install meters internally (i.e. within the property). In addition new connections to date in AMP6 are slightly lower than originally forecast, by about 4,000. As all new connections are likely to be metered, there will be a corresponding reduction in the completion of additional metered properties. We rely on data provided by WoCs in our region for information on metered waste only customers, of which we have more than 0.5 million. It appears that WoCs in our area are also seeing fewer meter installations than planned.

Section B contains historic data on billed properties for the first three years derived from our billing calculations, and for 18/19 and 19/20 for forecasts influenced by the above factors. In each case it is data that reflects the position at the beginning of the year, as required in the guidance to the data table R9. We have maintained our forecast for total customer numbers but the proportions between different customer types is based on the actual unmetered/metered split in the most recent year available, and therefore the numbers for remainder of the AMP continue to be different from the original forecast. However, as mentioned above, the difference between total billed properties is less than 1%.

## Differences in 18-19 data between sections B and C

The reasons for the differences between sections B and C for 18/19 reflects our interpretation of the guidance accompanying table R9. We note that a number of other companies also have differences between section B and C for the 18/19 data. On reflection we consider that a better interpretation would be for the forecast years in sections B and C to be the same, as show below. We will reflect this change in our revised data tables.

PD.A3.Table 2 – Table R9 September 2018 submission as amended for the IAP response

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	Total unmetered	426,220	390,860	355,500	320,140	284,780
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11	Metered wastewater-only customer	527,772	568,835	611,312	628,966	671,323
12	Metered water and wastewater customer	790,739	814,607	830,824	832,224	830,063
	Total	1,889,200	1,900,382	1,917,378	1,934,690	1,987,793
	Total unmetered	509,253	451,663	407,121	404,573	418,429
	Total metered	1,379,947	1,448,719	1,510,257	1,530,117	1,569,364
<b>C Actual customer numbers</b>						
13	Unmetered water-only customer	19,465	16,372	15,736	15,770	15,951
14	Unmetered wastewater-only customer	355,033	329,526	301,811	279,662	288,295
15	Unmetered water and wastewater customer	132,887	117,694	113,083	109,141	114,183
16	Metered water-only customer	61,169	64,799	65,986	68,927	67,978
17	Metered wastewater-only customer	525,986	557,734	591,109	628,966	671,323
18	Metered water and wastewater customer	787,308	809,101	817,207	832,224	830,063
	Total	1,881,846	1,895,226	1,904,932	1,934,690	1,987,793
	Total unmetered	507,384	463,592	430,630	404,573	418,429
	Total metered	1,374,463	1,431,634	1,474,302	1,530,117	1,569,364

## 4.SRN.PD.A4 – Transitional expenditure

Ofwat action	How we have responded
PR14 Totex: Southern Water is required to amend the value it has reported for transitional expenditure to match actual spend in tables WS15/WWS15 and model; ensure it has reported the correct values for third party costs in the tables and model; and, provide a detailed and numerically supported explanation to accompany its forecasted performance for years 2018-19 and 2019-20.	Plan updated

### Our detailed response

#### Transitional expenditure

As requested by Ofwat in *IAP\_TA8\_Accounting for past delivery\_PD.A4*, we have amended our transitional expenditure to match actual spend in tables WS15/WWS15. However, we believe the model requires us to submit our actual expenditure in line with the “Updated 20 10-2015 reconciliation” document (<https://www.ofwat.gov.uk/wp-content/uploads/2017/12/Updated-2010-2015-reconciliation.pdf>), as previously included in our September submission, rather than the projected expenditure assessed in the final determination of PR14, which is what our IAP submission now reflects.

#### Third party costs

The expenditure reported in tables WS15 and WWS15 for 2015-16 and 2016-17 is pre-populated from the APR tables 4D and 4E. We believe that this should have been reported from table 4B from the APR in order to reflect the fact that certain third party services (e.g. diversions) are offset by contributions. As a result the value in the totex reported is nil and no adjustment to totex is required.

We have not corrected these pre-populated figures in the tables, in water the impact nets off to nil and in wastewater the value is relatively small £1.4m. A reconciliation is shown below.

The expenditure reported for third party services for 2017-18, 2018-19 and 2019-20 in tables WS1 and WWS1 has been adjusted to reflect the fact that certain third party services (e.g. diversions) are offset by contributions. As a result the value in the totex reported is nil and no adjustment to totex is required. A reconciliation is shown below.

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PD.A4.Table 1 – Third-party cost reconciliation

		APR		WS1		
3rd party costs	Water	2015-16	2016-17	2017-18	2018-19	2019-20
	Opex	2.165	2.205	3.125	2.791	2.764
	Capex	0.000	3.702	3.746	4.137	4.177
<b>Adjustments required for table WS15</b>						
Remove third party services where totex cost is offset by a contribution	Capex			-2.360	-2.967	-3.999
<b>3rd party costs</b>						
	Table WS15	2015-16	2016-17	2017-18	2018-19	2019-20
	Opex	2.165	2.205	3.125	2.791	2.764
	Capex	0.000	3.702	1.386	1.170	0.178
<b>Adjustments not made for table WS15</b>						
APR data pre-populated not adjusted in WWS15	Capex	1.100	-1.102			
		APR		WWS1		
3rd party costs	Waste	2015-16	2016-17	2017-18	2018-19	2019-20
	Opex	0.000	0.000	0.000	0.000	0.000
	Capex	0.000	1.448	1.913	2.130	5.631
<b>Adjustments required for table WS15</b>						
Remove third party services where totex cost is offset by a contribution	Capex			-1.913	-2.130	-5.631
<b>3rd party costs</b>						
	Table WS15	2015-16	2016-17	2017-18	2018-19	2019-20
	Opex	0.000	0.000	0.000	0.000	0.000
	Capex	0.000	1.448	0.000	0.000	0.000
<b>Adjustments not made for table WWS15</b>						
APR data pre-populated not adjusted in WWS15	Capex		-1.448			

## Totex analysis from tables WS1 and WWS1

The table below shows the summary total expenditure forecast for water and wastewater for the years 2018-19 and 2019-20 together with the actual performance reported for 2017-18. An explanation of significant movements is provided below.

**PD.A4.Table 2 – Total expenditure forecast for water and wastewater for the years 2018-19 and 2019-20 and the actual performance reported for 2017-18**

	Water Total			Wastewater Total			Wholesale Total		
	2017-18	2018-19	2019-20	2017-18	2018-19	2019-20	2017-18	2018-19	2019-20
<b>Operating expenditure</b>									
Power	15.125	18.355	17.903	26.988	28.913	31.956	42.113	47.268	49.859
Income treated as negative expenditure	0.000	0.000	0.000	-3.559	-3.620	-3.565	-3.559	-3.620	-3.565
Service charges / Discharge Consents	5.039	4.605	4.281	3.184	4.165	4.238	8.223	8.770	8.519
Bulk discharge	0.080	0.311	0.147	0.000	0.000	0.000	0.080	0.311	0.147
Other operating expenditure									
- Renewals expensed in year (Infrastructure)	17.341	18.634	21.738	22.180	21.769	21.776	39.521	40.403	43.514
- Renewals expensed in year (Non-Infrastructure)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
- Other operating expenditure excluding renewals	38.910	41.590	41.409	91.202	103.289	93.612	130.112	144.879	135.021
Local authority and Cumulo rates	11.521	12.327	12.095	15.198	14.628	15.198	26.719	26.955	27.293
<b>Total operating expenditure (excluding third party services)</b>	<b>88.016</b>	<b>95.822</b>	<b>97.573</b>	<b>155.193</b>	<b>169.144</b>	<b>163.215</b>	<b>243.209</b>	<b>264.966</b>	<b>260.788</b>
Third party services	3.125	2.791	2.764	0.000	0.000	0.000	3.125	2.791	2.764
<b>Total operating expenditure</b>	<b>91.141</b>	<b>98.613</b>	<b>100.337</b>	<b>155.193</b>	<b>169.144</b>	<b>163.215</b>	<b>246.334</b>	<b>267.757</b>	<b>263.552</b>
<b>Capital expenditure</b>									
Maintaining the long term capability of the assets ~ infra	11.184	17.668	26.541	14.505	24.694	9.997	25.689	42.362	36.538
Maintaining the long term capability of the assets ~ non-infra	79.744	64.639	64.248	143.850	153.824	159.938	223.594	218.463	224.186
Other capital expenditure ~ infra	17.610	15.203	7.318	40.058	43.818	60.800	57.668	59.021	68.118
Other capital expenditure ~ non-infra	31.695	22.036	23.189	60.415	62.174	76.414	92.110	84.210	99.603
Infrastructure network reinforcement	0.258	0.221	0.085	15.045	14.120	5.357	15.303	14.341	5.442
<b>Total gross capital expenditure excluding third party services</b>	<b>140.491</b>	<b>119.767</b>	<b>121.381</b>	<b>273.873</b>	<b>298.630</b>	<b>312.506</b>	<b>414.364</b>	<b>418.397</b>	<b>433.887</b>
Third party services	3.746	4.137	4.177	1.913	2.130	5.631	5.659	6.267	9.808
<b>Total gross capital expenditure</b>	<b>144.237</b>	<b>123.904</b>	<b>125.558</b>	<b>275.786</b>	<b>300.760</b>	<b>318.137</b>	<b>420.023</b>	<b>424.664</b>	<b>443.695</b>
<b>Totex</b>									
Grants and contributions ~ operating expenditure	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Grants and contributions ~ capital expenditure	12.355	10.048	10.421	10.715	13.402	17.352	23.070	23.450	27.773
<b>Totex</b>	<b>223.023</b>	<b>212.469</b>	<b>215.474</b>	<b>420.264</b>	<b>456.502</b>	<b>464.000</b>	<b>643.287</b>	<b>668.971</b>	<b>679.474</b>
<b>Cash expenditure</b>									
Pension deficit recovery payments	0.537	5.077	5.251	1.172	11.077	11.457	1.709	16.154	16.708
Other cash items	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<b>Totex including cash items</b>	<b>223.560</b>	<b>217.546</b>	<b>220.725</b>	<b>421.436</b>	<b>467.579</b>	<b>475.457</b>	<b>644.996</b>	<b>685.125</b>	<b>696.182</b>
<b>Atypical expenditure</b>									
Hants Abstraction Enquiry	2.962						2.962		
Oftwat and EA investigations including Legal Defence costs				3.309	3.100	4.000	3.309	3.100	4.000
Discolouration Fine	0.550						0.550		
<b>Total atypical expenditure</b>	<b>3.512</b>	<b>0.000</b>	<b>0.000</b>	<b>3.309</b>	<b>3.100</b>	<b>4.000</b>	<b>6.821</b>	<b>3.100</b>	<b>4.000</b>
<b>Total expenditure</b>									
<b>Total expenditure</b>	<b>227.072</b>	<b>217.546</b>	<b>220.725</b>	<b>424.745</b>	<b>470.679</b>	<b>479.457</b>	<b>651.817</b>	<b>688.225</b>	<b>700.182</b>

## Forecast operating costs for 2018-19

Across the wholesale price controls our 2018-19 forecasted total opex performance (excluding atypical costs) is higher than that for 2017-18 by £21.4m and our September submission by £9.4m.

The increase from September is reflective of increased levels of investment in our transformation programme, including the creation of a dedicated innovation hub at Petersfield and innovation lab in

Brighton, the impact of the very hot weather over the summer and additional costs associated with the price review process.

In Water specifically, our total opex spend is £7.5m higher than 2017-18 and £1.3m higher than the September submission. This is primarily due to increased power costs, mainly from pumping water at Yalding to fill Bewl and for the increased volumes of water supplied this year across the region. The hot weather also impacted renewals and other costs with increased leakage activity, the provision of bottled water, tankering of water and associated communications costs. In addition our corporate charges, in particular for IT services, have increased as we are in the process of transitioning our IT support back in-house.

We have also reflected the correct rates value with a corresponding change in other operating expenditure.

In Wastewater, our submission for total opex is £13.9m higher than 2017-18 and £8.0m more than September. Of this £1.8m relates to increased power costs as a result of lower than expected performance of our CHP engines. This is expected to continue into 2019-20 until the estate is upgraded in AMP7. The majority of the other operating expenditure movement is due to a range of activities as we increase the amount of mechanical and engineering work that we are undertaking to maintain our assets. We also incurred extra costs due to weather conditions and the resultant asset related network repairs, plus increases in associated flow management tankering and a number of asset failures which resulted in increased hire of equipment costs. As mentioned above our corporate charges, in particular for IT services, have also increased as we are in the process of transitioning our IT support back in-house.

### Forecast operating costs for 2019-20

Across the wholesale price controls our 2019-20 forecast total opex performance (excluding atypical costs) is lower than our 2018-19 forecast by £4.2m and higher than our September submission by £25.4m.

Our revised 2019-20 forecasted performance in opex is reflective of our investment in transforming the business in order to underpin future efficiency savings. This desire to be more efficient has resulted in the creation of a specific transformation function that will support the enhancement of our commercial, capital delivery and support functions.

The activities of this function ramp up significantly in 2019-20 and will co-ordinate a range of programmes in wholesale including improvement to our field operations with a clear focus on operational excellence and ensuring we have an efficient operating model across the business in order to deliver the challenging AMP7 plan.

The above will incur additional costs in 2019-20, compared to our September plan, and will provide some limited benefits in the same year but more importantly lay the foundation for efficient delivery of AMP7. In addition, we plan to continue to invest in the transformation of our IT estate as well as insourcing a range of activities to provide a stable platform for the proposed technology enhancements in AMP7.

There is also further investment planned in our Compliance and Health and Safety teams to help improve and enhance our performance in these areas.

The sum of the above contribute £15m to the increase in our wholesale costs which are then allocated to the water and waste price controls as described below.

## Water

In Water specifically our total opex spend is £13.8m higher than the September submission and this is primarily due to a major increase in investment to tackle leakage reduction of an additional £9m.

The freeze/thaw event in spring 2018 closely followed by an extended hot summer severely affected leakage performance and the investment is needed for enhanced find and fix activity and also to keep the business on track for the starting position for AMP7. Using our allocation methodology, water is also allocated approximately one third, about £5m, of the wholesale transformation and other costs mentioned above, and this makes up the remainder of the increase.

## Wastewater

In Wastewater our submission for total opex is £11.6m more than September with £2.6m increase in our power costs, this is primarily due to a general increase in unit prices as well as lower performance in our CHP engines as described for 2018-19. As mentioned above, using our allocation methodology wastewater is allocated approximately two thirds, about £10m, of the above mentioned wholesale transformation and other costs and this makes up the remainder of the increase.

## Forecast capital expenditure for 2018-19 and 2019-20

The next 2 years capex forecasts are best viewed together and combined there has been a net reduction in capital expenditure of £39m over the 2 remaining years of the AMP. We have re-profiled our capex forecasts resulting in a £75.7m reduction in 2018-19, in part offset by a £36.7m increase in 2019-20.

The overall reduction of £39m through commercial negotiation and improved contract management reducing spend by £11m together with a reduction in the value of risk retained in the forecast of £14m as delivery of the AMP6 forecast has become more certain.

While some additional expenditure has been brought into the latest forecast, as a result of emerging pressures arising from Health and Safety or compliance drivers (at Woolston, [REDACTED] and [REDACTED] for example), there are other schemes which have been subject to delay or reprioritisation. These include the eel screening scheme where discussions are ongoing with the Environment Agency, the Chichester Growth scheme and the Water Resource Management Plan where efforts are being put into consideration of a more efficient solution.

Significantly the movement between 2018-19 and 2019-20 is increased by a revised timeline for the delivery of some major IT infrastructure projects with £20m moved from 2018-19 into 2019-20. Our IT operating model is being re-evaluated to ensure that the best model is in place to support both customer and business needs and provide us with the platform for the proposed technological spend in AMP7.

Details of our enhancement expenditure plans are provided in more detail in table WS2 and WWS2.

## 5.SRN.PD.A5 – PR14 reconciliations

Ofwat action	How we have responded
PR14 reconciliations: Further to the actions we have set out to address our concerns over the evidence provided in its business plan for the individual reconciliations, we will require the company to refresh all of its PR14 reconciliations to replace its 2018-19 forecast performance with 2018-19 actual performance and update the evidence for its forecast 2019-20 performance taking into account of the actual 2018-19 performance.	Accepted

### Our detailed response

As requested as part of the IAP Actions, we will refresh all PR14 reconciliations to replace 2018-19 forecasts with 2018-19 actual performance, and update the evidence for forecast 2019-20 performance as per the Ofwat deadline of 15th July 2019

## 6.SRN.PD.A6 – Review of our past performance on performance commitments

Ofwat action	How we have responded
<p>Southern Water should produce and provide additional evidence that it has identified:</p> <ul style="list-style-type: none"> <li>the drivers of its past and current outcomes performance, including financial and reputational performance commitments;</li> <li>lessons learnt from good and poor past and current performance;</li> <li>the performance gap between current performance and proposed performance in the 2020-25 business plan; and</li> <li>the measures planned or already in place to ensure deliverability of the 2020-25 business plan.</li> </ul>	<p>Further information provided</p>

### Our detailed response

The response to this action should be read in conjunction with the *IAP\_TA8\_Accounting for past delivery\_Summary* and our responses to:

- IAP\_TA8\_Accounting for past delivery\_PD.A7 – Action plan on performance monitoring and continuous learning*
- IAP\_TA8\_Accounting for past delivery\_PD.A8 – Review of our past performance on incidents*
- IAP\_TA8\_Accounting for past delivery\_PD.A9 – Action plan on incident monitoring and continuous learning*

We understand the drivers of our past performance; we have used this understanding to ensure that, for each performance commitment we have made for AMP7, we have a robust delivery plan. Where we have succeeded in the past, we have understood what drivers enabled this so that we can continue to improve to meet our AMP7 commitments.

The purpose of this document is to provide detailed evidence of the analysis that went into our planning process so as to provide confidence to Ofwat and our customers.

To create a clear link between past and planned performance, we have provided answers to two key questions for each AMP6 PC:

- What are the drivers of past and current performance and the lessons learned from that performance?
  - We define the root cause of our outcomes performance to draw out what we learned from it, what we did as a result, and what the impact of those actions were.
- What is the performance gap to proposed performance, and what are the required measures to ensure deliverability in AMP7?
  - We identify the improvement actions that we will take, and the expected impact that will enable us to reach our performance commitments in AMP7.

We have analysed drivers of performance for AMP6 PCs. As some PCs are not carried forward to AMP7 and others will change, below is a mapping of commitments across the two periods.

In the analysis that follows, we have included forecast data for AMP7 only when:

- the PC remains in AMP7, and
- the measurement methodology remains the same across AMPs or AMP6 data is recast in AMP7 methodology (as per Table App1 – Performance commitments (PCs) and outcome delivery incentives (ODIs)).

**PD.A6.Table 1 – Mapping of PR14 PCs to PR19 PCs**

PR14 PC	PR19 PC
<b>Water PCs</b>	
Water asset health	Asset Health: Mains bursts
	Asset Health: Unplanned outage
Water use restrictions	
Leakage	Leakage
Interruptions to supply	Water supply interruptions
Mean Zonal Compliance (MZC)	Water quality compliance (Compliance Risk Index - CRI)
Drinking water quality – Discolouration contacts	Drinking water appearance
Water pressure	Properties at risk of receiving low pressure
Distribution input	Distribution input
Per capita consumption (PCC)	Per capita consumption (PCC)
	Drinking water taste and odour
	River water quality
	Abstraction Incentive Mechanism
	Target 100
	Water saved from water efficiency visits
	Access to daily water consumption data
	Replace lead customer pipes
	Community engagement
	Schools visited and engagement with children
	Risk of severe restrictions in a drought
	Water supply resilience
<b>Wastewater PCs</b>	
Category 3 pollution incidents	Pollution incidents (categories 1, 2 and 3)
Serious pollution incidents	
Internal flooding incidents	Internal sewer flooding
External flooding incidents	External sewer flooding
Sewer blockages	
Odour complaints (Portwood and Tonbridge treatment works)	
Wastewater treatment works numeric compliance	Asset Health: Treatment works compliance
Proportion of energy from renewable sources	Renewable Generation
Bathing waters with 'excellent' water quality (part 1)	Maintain Bathing waters at 'Excellent'

Bathing waters with 'excellent' water quality (part 2)	Improve the number of Bathing waters to at least 'Good' (Cost Adjustment Claim)
Bathing waters with 'excellent' water quality (part 3)	Improve the bathing waters at 'Excellent' quality (Cost Adjustment Claim)
Wastewater asset health	Asset Health: Sewer collapses
Avoiding blocked drains	
Thanet sewers	Thanet Sewers
Woolston STW	
Millbrook sludge	
	Effluent re-use
	Satisfactory bio-resources recycling
	Risk of sewer flooding in a storm
	Combined Sewer Overflows (CSO) monitoring
	Surface water management
	Enhancing value of our natural and social capital
<b>Retail PCs</b>	
First time resolution of customer contacts	
Dealing with customers' individual needs	
Awareness of water hardness measures	
Where your money goes	
Billing queries	
Take up of assistance schemes	Effectiveness of Financial Assistance
Value-for-money	
Service Incentive Mechanism (SIM)	Customer measure of experience (C-MeX)
	Customer satisfaction with vulnerability support
	Developer services measure of experience (D-MeX)
	Void properties
	Household gap sites

PD.A6.Table 2 – Wholesale Water Performance Commitment analysis

AMP6 Water performance commitments													
Water asset health - Mains Bursts; Turbidity, Iron and Manganese (TIM); Water Supply Works (WSW) & Water Supply Reservoirs (WSR); Coliform compliance; Turbidity compliance													
<b>AMP6 Overview</b> Years hit target: 3 Years missed target: -	Along with the full analysis of the current (AMP6) PC for Water asset health, we have also split out our analysis of Mains Bursts specifically. This has been done to reflect the AMP7 PC – where Mains Bursts becomes its own performance commitment and the remaining elements are largely covered by the new Compliance Risk Index (CRI) performance commitment.												
<b>Water asset health – Mains Burst, TIM, WSW &amp; WSR, Coliform compliance, Turbidity compliance</b> (Mixed measure aggregating compliance across a range of sub measures) Methodology between AMP6 and AMP7: PC amended to Mains Bursts and Unplanned Outage; Adjusted forecast year(s): No adjustment from September business plan													
<b>AMP6 Overview</b> Financial ODI  <b>Actuals</b> Years hit target: 3 Years missed target: -  <b>Forecast</b> Years hit target: 2 Years miss target: -  — AMP6 Commitment ■ AMP6 Actuals ■ AMP6 Forecast ■ AMP7 Commitment	<b>AMP6 – Asset Health</b> (Measurement shows performance including Mains burst – performance commitment is measured on a calendar year basis)  <table border="1"> <caption>AMP6 – Asset Health Data</caption> <thead> <tr> <th>Year</th> <th>Performance</th> </tr> </thead> <tbody> <tr> <td>2015</td> <td>Stable</td> </tr> <tr> <td>2016</td> <td>Stable</td> </tr> <tr> <td>2017</td> <td>Stable</td> </tr> <tr> <td>2018</td> <td>Stable</td> </tr> <tr> <td>2019</td> <td>Stable</td> </tr> </tbody> </table> <p>Source: App5 – PR14 reconciliation ~ performance commitments</p>	Year	Performance	2015	Stable	2016	Stable	2017	Stable	2018	Stable	2019	Stable
Year	Performance												
2015	Stable												
2016	Stable												
2017	Stable												
2018	Stable												
2019	Stable												
<b>Drivers of past and current performance and lessons learnt</b> <ul style="list-style-type: none"> <li>We have included detail for Mains bursts in the section below</li> <li>Excluding Mains bursts, water asset health performance is driven by the performance of four other measures. We are confident in our ability to deliver against Turbidity, iron and manganese and Turbidity compliance, though less confident that we will meet our performance targets for Water Supply Works and Service Reservoir compliance – however, overall we forecast to meet our target.                         <ol style="list-style-type: none"> <li>Turbidity, iron and manganese (TIM) - performance has been stable through AMP6 and this is driven by the condition of our assets, supported by improved water quality monitoring. For example, our SMART network monitoring within [redacted] which the DWI consider industry leading. In AMP5, performance was driven lower by poor asset health over a 110km stretch of mains in [redacted];</li> <li>Turbidity compliance – is a measure that has not represented a delivery challenge for us in the past. This is largely due to the implementation of control and shutdown on our water supply works, and the provision of run-to-waste facilities;</li> <li>Water service reservoir and coliform compliance - compliance has been stable. Whilst the metric is stable, we have recognised there has been an underlying deterioration in coliform compliance, caused by the WSR asset condition. We have therefore been actively working with the DWI to develop an enhanced programme of reservoir inspection and remediation;</li> <li>Water supply works compliance – whilst the aggregate measure is stable we have recognised an underlying deterioration in coliform compliance at WSW. The key driver of this deterioration is the lack of a systematic risk identification process resulting in ineffective investment decision making. We have been working with the DWI to embed a systematic hazard review process which will be deployed across all our WSW by December 2019 with half of the site assessments completed so far.</li> </ol> </li> </ul> <p><i>In summary the root causes are 5) Fragmented view of risk to aid decision making process, and 2) Inconsistent approach to planning and decision making: affecting long term investment which drives good and poor performance across these sub-measures.<sup>1</sup></i></p>													

<sup>1</sup> Note: each summary of root cause is linked to the six common root causes as set out in IAP\_TA8\_Accounting for Past Delivery\_Summary with full definitions of each root cause.

**Measures to improve and ensure deliverability in AMP7**

- For AMP7, these measures of performance are being dropped. Instead, performance will be measured by the new Compliance Risk Index (CRI) PC. This measure will be impacted by our wholesale transformation programme which is further strengthening our long term planning and investment decision making. We are developing and refining our Asset Lifecycle Process (for further detail, see Wholesale transformation within *IAP\_TA8\_Accounting for past delivery\_Appendix 1*) which will improve the line of sight from long term planning through to shorter term delivery, with greater integration of Totex planning aligned to achievement of the performance outcomes.
- We have taken the learning from our successful SMART network monitoring trials, and we will be looking to roll this out across our network in AMP7 to achieve benefit across a range of performance commitments.
- See analysis on Mean Zonal Compliance PC below for further detail on the deliverability of the CRI measure.

**Mains burst**

(Number of mains burst per 1000km of mains)

Methodology between AMP6 and AMP7: NA - PC established in AMP7; Adjusted forecast year(s): No adjustment

**AMP6 Overview**

Financial ODI

**Actuals**

NA – no AMP6 target set as this is not a PC

**Forecast**

NA – no AMP6 target set as this is not a PC



**AMP6 & AMP7 – Main Bursts**



Source: App1 – Performance commitments (PCs) and outcome delivery incentives (ODIs)

**Drivers of past and current performance and lessons learnt**

- We are on track to continue to deliver against our target and have an AMP7 PC set to measure against formally. Although we experienced a decline in performance in 2016-17 from which we are improving (see below), our long term trend since 2009/10 indicates we have, through investment in mains replacement, driven a compound annual decrease in the rate of mains burst of 11.5% through to 2015-16 (see *PD.A6.Figure 1 – Asset Health – Mains Bursts* in the *Further Analysis* section).
- We have identified four key drivers of burst mains in our water network:
  1. Weather is a key driver of mains bursts. We saw an increase in bursts during 2016-17, primarily due to the cold weather that we experienced over that period and the associated increase in demand; we have forecasted to reflect average weather conditions going forward.
  2. Historic investment in mains replacement clearly influences the rate of bursts. We began a programme of replacing 500km of mains in the late 1990s, which we completed in 2002. This investment has been the driving force for the long term improvement we've seen. We can clearly see a correlation between mains replacement and bursts in our data (see *PD.A6.Figure 1 – Asset Health – Mains Bursts* in the *Further Analysis* section). We also have replaced mains at a level above long term trend (45.2 km per year; 1994-2017) for 4 out of 5 years in AMP6 and so expect to be well positioned for AMP7;
  3. Transient pressure events (high energy event, e.g. caused by valve operations) are a trigger of bursts due to rapid changes in pressure, while representing a factor that we can control. We have learned that roughly a third of burst mains, are a result of transient events. The root cause of this problem, is a lack of detailed hydraulic information and precise automated control of the network; control over this would enable us to reduce the number of these trigger events, and
  4. There has also been an indirect positive impact of leakage pressure management initiatives on the burst rate. These measures have reduced pressure in the network and so led to a reduced likelihood of a burst occurring.

**In summary, the root causes are 2) Inconsistent approach to planning and decision making: as long term investment in mains replacement explains long term improvements in performance; and 4) Fragmented systems and data: as a lack of precise control and information about our network continue to drive bursts.**

**Measures to improve and ensure deliverability in AMP7**

- Our AMP7 promise is to improve – reducing burst mains per 1000km from a forecast of 130 in 2019-20 down to 86 by 2024-25. We are responding to our lessons learned and drivers of past performance in 3 key ways:
  - We have assessed the risk of every km of our network against leakage, bursts, interruptions to supply and discolouration, and have developed an integrated and optimised programme of District Metered Area (DMA) scale mains replacement. The revised programme for AMP7 consists of ~330 km of mains replacement. We expect this to enable us to achieve quartile 2 performance for mains bursts (See BP\_CH11\_Wholesale Water\_Pg179 and BP\_CH4\_Customer and Stakeholder Engagement and Participation\_Pg60 for detail).
  - We are investing in smart, transient monitoring technology that will enable us to identify and respond to transient trigger events. Deployment of pressure transient monitors across the trunk main network will improve transient identification and mitigation and so enable us to reduce the events which trigger bursts (See BP\_CH11\_Wholesale Water\_Pg196).
  - We will have live control and optimisation of over 2,000 Pressure Reduction Valves to better regulate pressure by 2030, further minimising the likelihood of bursts.

*In summary, we are investing in mains replacement, and in smart monitoring and controls of our network, to enable us to make decisions to reduce burst trigger events.*

**Water use restrictions**

(Number of water use restrictions)

Methodology between AMP6 and AMP7: PC removed in AMP7; Adjusted forecast year(s): No adjustment from September business plan

**AMP6 Overview**

Financial ODI

**Actuals**

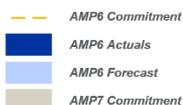
Years hit target: 3

Years missed target: -

**Forecast**

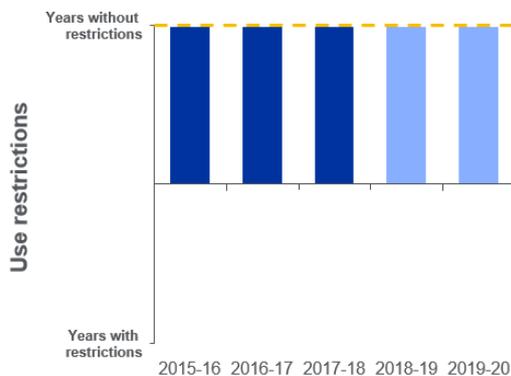
Years hit target: 2

Years missed target: -



**AMP6 – Water use restrictions**

(Measurement based on AMP6 methodology)



Source: App5 – PR14 reconciliation ~ performance commitments

**Drivers of past and current performance and lessons learnt**

- We have not had to implement water use restrictions since 2012. Following implementation of license changes, with respect to abstractions from the [redacted] and [redacted], the likelihood of having to apply for drought permits has increased; however, we are currently forecasting to not have any water use restrictions in the remainder of the AMP.
- There is one direct driver of this, and three further contributors to performance:
  - Weather, namely sufficient rainfall to replenish our resources (mostly through winters) has meant that our water supplies have not been pushed to critical levels where restrictions are necessary – there have been no classified droughts in AMP6. We understand this to be the most important driver of AMP6 performance, and accept that our drought planning and other procedures have not been fully tested over the period. However, in light of the license reductions on the [redacted] and [redacted], we undertook a mock drought permit application in late 2018, in partnership with the Environment Agency to ensure the end-to-end process is effective.
  - The contributory factors to water use restriction performance are within our control and we have been actively working to minimise risk of restrictions:
    - Leakage levels – reduced leakage eases the demand on our water supplies and so cuts the likelihood that use restrictions are necessary. We have performed well on leakage compared to our peers (see supporting evidence submitted with our business plan BP\_TA11.1 – Water AMP7 Comparative Industry Performance Assessment) – more detailed analysis of leakage and measures to improve leakage can be found below in the analysis for Leakage PC;
    - Underlying per capita consumption is another demand side factor that influences restriction risk – Our five-year programme to install nearly 450,000 meters across Kent, Sussex, Hampshire and the Isle of Wight concluded in late 2015. It has helped bring down our PCC by 16% and so assists us in ensuring long term balance of supply and demand. More detail can be found with the per capita consumption performance commitment, and;
    - The level of source outage (production and reservoir sources not utilisable as expected), and management of recovery of these outages, influences our level of available supply, and so the need to implement restrictions. We know that we have faced issues arising from source outage in AMP6. Outage levels had increased as we started major capital maintenance activity on several of our largest supply works (including [redacted], [redacted], [redacted], [redacted]). However, over the last 12 months, our outage recovery plan has delivered a 60 MI/d improvement.

*In summary, we have targeted leakage (with a root cause of 4) Fragmented systems and data), PCC and Outage (both linked to 2) Inconsistent approach to planning and decision making) to ensure that water use restrictions are not implemented, but we understand that due to favourable weather we have not been tested.*



**Measures to improve and ensure deliverability in AMP7**

- For AMP7 the water use restrictions challenge is much greater. We have committed to imposing no severe supply restrictions (for example, standpipes or rota cuts) to any of our customers when a 1-in-200 year drought occurs.
- We have identified six improvement measures to ensure that we will deliver this, focusing on the key performance levers identified above:
  1. Our Water Resource Management Plan (WRMP) ensures that we have the resources to maintain supply during a 1 in 200 year drought. While our plan has been assured, we acknowledge that there are improvements that can be made in delivering a more efficient regional solution; and we are actively participating in the SRS (Strategic and Regional Solutions) group in order to develop these improvements.
  2. Supply side initiatives are required in AMP7 to provide sufficient headroom, accommodate population growth and accommodates sustainability reductions. Our greatest current drought risk is in Hampshire due to the new abstraction licence conditions on the River [redacted] and [redacted]. These represent severe restriction of abstraction during drought compared to the current licences. Our plan highlights that it will take at least ten years to implement permanent new supply resources and that in the meantime, supply reliability is only with enhanced reliance on drought permits and drought orders;
  3. We are investing in our asset base to reduce leakage. This programme of work will cut leakage from a forecast 105.4 MI/d in 2019-20 down to 89.6MI/d in 2024-25 (note: these figures do not directly link to the chart below due to the methodology change);
  4. We are working hard to reduce our customers' consumption levels through our Target 100 programme. See PCC PC analysis below for details. This programme of work will reduce PCC by 5.5% through AMP7;
  5. We are working hard to reduce outage and will invest ~£70m in AMP 6. Our minimum deployable output outage position has already dropped from 170MI/d to 110MI/d, and we are aiming to bring this down to 76MI/d by the end of the AMP. We also understand the importance of being able to quickly return site
  6. We are putting measures in place to make areas more resilient to drought through catchment management. This includes habitat improvements to make rivers and streams more resilient to drought and preventing deterioration in source water quality which can lead to a loss of water resources. Currently we have two projects underway aimed at reducing nitrate pollution to groundwater around Brighton and Worthing: The Brighton Chalk Management Project (ChaMP) and the Arun to Adur Farmers Group (AAFG) project. Both projects involve liaising with farmers on the South Downs to reduce the risk of nitrate leaching to aquifers over winter. We have further catchment management plans for AMP7. For example, working with the Environment Agency to develop an integrated catchment-monitoring project to produce a very detailed picture of how our catchments are performing.

*In summary, by continuing to target leakage, PCC, and Outage and by investing in new water resources, as outlined in the WRMP, we are confident that we can deliver our Performance commitment through AMP7.*

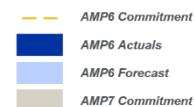
**Leakage (including customer service pipe leakage)**

(end of AMP, 5 year average – leakage in MI/d)

Methodology between AMP6 and AMP7: Amended; Adjusted forecast year(s): 2018-19, 2019-20

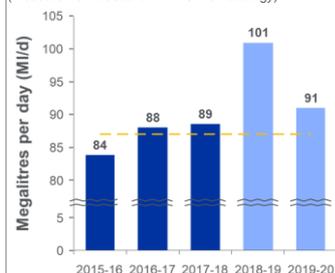
**AMP6 Overview**  
*Financial ODI*

**Forecast**  
The leakage target is to achieve a 5 year average of 87 MI/d – we are not forecast to achieve this



**AMP6 – Leakage**

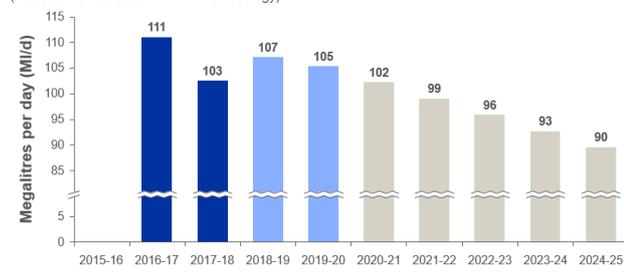
(Measurement based on AMP6 methodology)



Source: App5 – PR14 reconciliation – performance commitments

**AMP6 & 7 – Leakage**

(Measurement based on AMP7 methodology)



Source: App1 – Performance commitments (PCs) and outcome delivery incentives (ODIs)

**Drivers of past and current performance and lessons learnt**

- Historically, we have performed well on leakage compared to our peers (our 2017-2018 performance was 80l per property per day compared to an industry average of around 123l, as detailed on [www.discoverwater.co.uk](http://www.discoverwater.co.uk)). However, we are seeing a deterioration in performance in 2018-19 which leads us to forecast that we will underperform against our 5 year average AMP6 target of 87MI/d, with a predicted 5 year average of 91MI/d at end of AMP6.
- We had believed the damage to our network caused by the freeze/thaw to be the root cause of our underperformance, however we are not seeing the recovery we were expecting if this was the case (see our *Letter to Ofwat regarding Leakage and Resilience dated 22/03/19* for further detail). We are therefore undertaking a further review of root cause which will look at the following factors:
  1. Reassessment of the impact of the freeze/thaw event in 2017-18 on both our network and our customers pipes; since the freeze/thaw event in 2017-18, we have seen an increase in the number of leaks, primarily in customer supply pipes.
  2. Further independent investigation into a potential issue with a number of meters under-stating customer water usage.
  3. Review of our process and procedures for leakage detection and resolution (this will include embedding a new Network Management System).
- Over the long term, there are 2 further key drivers of performance:
  1. The speed at which a leak can be found – once leaks are found, they are fixed quickly; the majority of water lost to leakage is lost before leaks are discovered. Minimising the time in which leaks are detected, will contribute to a reduction in leakage. This can be achieved through improvements in the collection of data on our network, including with respect to flows, pressures and acoustics. The data requirements are outlined in more detail in *BP\_Ta11.WN04\_Water Networks\_Pg22*.



- The health of our water network assets. As with the majority of our water performance commitments, asset health is a key driver, in this case, asset health influences the likelihood of a leak forming.

**In summary, the key root causes are 4) Fragmented systems and data: as network data improves the identification of leaks, and 5) Fragmented view of risk to aid decision making processes: causing the negative effects on asset health of the freeze/thaw event.**

**Measures to improve and ensure deliverability in AMP7**

- We have set a stretch target for leakage improvement through AMP7 - cutting leakage from a forecast 105.4 MI/d in 2019-20 down to 89.6MI/d in 2024-25.
- We will invest in our assets and resources through the rest of AMP6 to set ourselves up for success in AMP7. The AMP6 turnaround actions for this PC are still being operationalised, although a number of in-AMP initiatives are already confirmed:
  - As of year 5 in AMP6 we will have upgraded our leakage detection tools. This will enable improvements in leak detection, and enable us to begin to resolve the challenge that freeze/thaw triggered;
  - We are reviewing all the assumptions used within the water balance, including meter-under-registration, via independent assessment to ensure we report leakage as accurately as possible; as well as putting in place a new leakage management system (Water Net – allowing improved visibility and granularity to identify zones of concern);
  - As a response to our 2018-19 leakage performance, we are further expanding our leakage team from 120 FTE in 2017-18 to 150 FTE, up from 80 FTE at the start of AMP6. We forecast that this will result in an additional 3,250 leak repairs per year;
  - To accelerate our leak detection capabilities, we are deploying 10,000 acoustic loggers through AMP7 to help us more quickly identify leaks so that they can be fixed;
  - We are also deploying active leakage control to drive down leakage in AMP7; we will utilise a Network Management Platform which we are implementing in AMP6 in combination with new intelligent network hardware to increase find and fix efficiency (enabling more leaks fixed) – we are spending £65m on this and expect it to drive the downward trend through AMP7;
  - We are also deploying approx. 1,000 additional pressure monitors across the network to reduce bursts and leakage;
  - To address the health of our water assets, we are planning a £70m District Metered Area (DMA) scale mains replacement programme targeting reducing leakage, bursts, interruptions to supply and discolouration; the revised programme for AMP7 consists of ~330 km of mains replacement.

**In summary, we are investing in our network assets and in our leak detection technologies so that we can tackle the underlying issues in our past performance.**

**Interruptions to supply**

(minutes of interrupted supply >3 hours)

Methodology between AMP6 and AMP7: Amended; Adjusted forecast year(s): No adjustment from September business plan

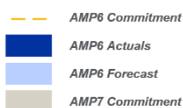
**AMP6 Overview**  
**Financial ODI - Forecast penalty (£m): (0.3)**

**Actuals**

Years hit target: 2  
 Years missed target: 1

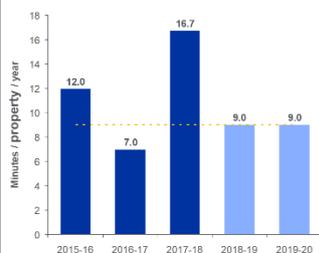
**Forecast**

Years hit target: 2  
 Years miss target:



**AMP6 – Interruptions to supply**

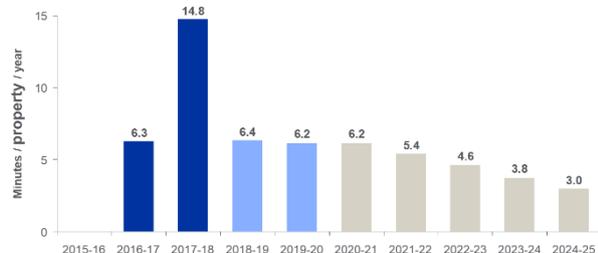
(Measurement based on AMP6 methodology. Note that decimal point does not show seconds but tenth of a minute)



Source: App5 – PR14 reconciliation ~ performance commitments

**AMP6 & 7 – Interruptions to supply**

(Measurement based on AMP7 methodology. Note that decimal point does not show seconds but tenth of a minute)



Source: App1 – Performance commitments (PCs) and outcome delivery incentives (ODIs);

**Drivers of past and current performance and lessons learnt**

- Interruptions to supply minutes can be split into two categories:
  - Minutes due to major events are the first key contributor. The freeze/thaw event is the major example, and explains the peak that can be seen clearly in the graph above. The freeze/thaw major incident accounts for roughly 5 minutes in 2017-18 (however, further incidents in that period impacting minutes, include the burst on the [redacted] Main and the [redacted] Reservoir outage following a burst on the inlet main). This major incident was due to a lack of resilience in our network and lack of preparation. More detail on this event and events like it can be seen in our analysis of incidents (IAP\_Accounting for past delivery\_PD.A8 – Review of our past performance on incidents);
  - Background property minutes are the second component – Overall, we have seen an improvement in performance. We have improved processes and procedures reducing risk of self-inflicted minutes lost (e.g. via property minutes as a PDP target ensuring team focus), developed contingency plans (e.g. the Winter Action Plan), improved understanding of criticality, better incentivised our contractors to perform as our customers require (e.g. same property minutes as a PDP target – aligned KPIs), and quicker response (e.g. via the use of Always in Supply systems) and better incident management, when things do go wrong.



*In summary, the root cause of poor performance as 5) Fragmented view of risk to aid decision making processes: creating a lack of resilience to shock events. The root cause of success in the background level of minutes lost is 6) Incentives are not linked to outcomes: through our strong delivery partner relationship and effective incentive structure.*

**Measures to improve and ensure deliverability in AMP7**

- We are committed to deliver a decrease in interruptions to supply from 6 minutes and 20 seconds down to 3 minutes by the end of AMP7. This represents a serious delivery challenge (industry average is 22min per property per year). To achieve this we are:
  - Improving the resilience of our network – we have already learned important lessons from the freeze/thaw event, and have implemented changes within emergency planning procedures and forecasting and monitoring capabilities. Those have successfully enabled us to maintain supply during a period of extreme demand due to a serious warehouse fire. More detailed analysis on this factor can be found in our analysis of incidents (*IAP\_Accounting for past delivery\_PD.A8 – Review of our past performance on incidents*). We continue to work on our enterprise resilience framework and have committed to Ofwat that we will, by 22 August 2019, prepare and provide an action plan to develop and implement a systems based approach to resilience.
  - We are seeking further marginal improvements through our investments in a smarter network (see *BP\_Ta11.WN04\_Water Networks\_Pg22*). To reduce burst mains which drive interruptions, we are deploying pressure transient monitors across the trunk main network. This will improve transient identification and mitigation and so enable us to reduce the events which trigger main bursts.

*In summary, we are developing our resilience to shock events through the lessons we have already learned from freeze/thaw and our further work on our resilience framework. We are seeking further marginal improvements to operational performance through our investments in a smarter network.*

**Mean Zonal Compliance (MZC)**

(% compliance score)

*Methodology between AMP6 and AMP7: Amended to Water quality compliance (Compliance Risk Index CRI); Adjusted forecast year(s): No adjustment from September business plan*

**AMP6 Overview**

**Financial ODI**

**Actuals**

**Years hit target: 3**  
**Years missed target: -**

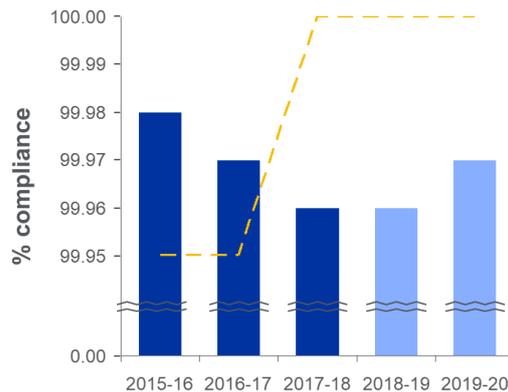
**Forecast**

**Years hit target: 2**  
**Years miss target:**

- AMP6 Commitment
- AMP6 Actuals
- AMP6 Forecast
- AMP7 Commitment

**AMP6 – MZC**

(Measurement based on AMP6 methodology)



Source: App5 – PR14 reconciliation ~ performance commitments

**Drivers of past and current performance and lessons learnt**

- Under MZC, in the majority of zones there were some failures (e.g. 12 failures across 10 out of 74 zones in 2018); compliance issues are concentrated in a limited number of zones, as the MZC methodology averages across zones, the compliance score averages out these issues.
- We maintain levels in MZC due to mains flushing, targeted investment in high impact water quality assets, operational excellence (which is driving operational improvements such as the increased use of process scientists), and improvements in network control and operation.
- We know that MZC is being replaced in AMP7 with CRI, which we agree provides a better view of risk to the consumer. We have proactively been applying the DWI methodology using our operational performance data to assess our compliance against the new measure.
- The CRI performance is impacted by operational and maintenance activities as well as asset investment.
- We have established a source-to-tap approach to water quality via our Water First programme. In addition, working with the DWI we have recognized the need for investment at a number of our large treatment works, including [redacted] and [redacted].
- [redacted] represents the most significant problem site for us, and we expect it to contribute 4.5 CRI points in 2020. These sites now have multi AMP improvement programmes in place, developed with the DWI.
- We have transformed our Drinking Water Safety Plan tool and ensured that water quality risk is at the heart of our investment decision making.

*In summary, the root cause of our good performance in MZC has been 2) Inconsistent approach to planning and decision making: with improved operational planning and procedures driven through Water First, and targeted investment planning and delivery.*



**Measures to improve and ensure deliverability in AMP7**

- MZC will cease to act as a metric in AMP7 - instead the new Compliance Risk Index will measure water quality compliance for the Drinking Water Inspectorate. We need to deliver against a stretching CRI target of 0 through AMP7. Under this new measure, the performance at our three largest sites will become relatively more important.
- In order to address the risk against CRI performance a number of improvements are planned:
  1. We have been working with the DWI, with monthly liaisons, to embed a systematic hazard review process which will be deployed across all our WSW by December 2019 (with half of the site assessments completed so far), as part of our Water First programme. This will ensure a holistic view of risk against CRI and enable effective investment decision making.
  2. We have worked with the DWI to develop multi-AMP improvement plans for a number of our larger supply works including [REDACTED], [REDACTED], and [REDACTED]. These improvements will significantly reduce the risk of compliance failures at these sites.
  3. Our Wholesale transformation programme is further strengthening our long term planning and investment decision making. We are developing and refining our Asset Lifecycle Process which will improve the line of sight from long term planning through to shorter term delivery, with greater integration of Totex planning aligned to achievement of the performance outcomes. It will also simplify and speed up the process, from risk assessment through to delivery and handover into operations, and introduce risk and value interventions to deliver the best value for money for our customers within a Totex and whole life cost context. For further detail on the impact of our transformation programme, see our *IAP\_TA8\_Accounting for Past Delivery\_Appendix 1*.

*In summary, we are improving our systematic risk identification, and now have clarity over the sites that have been driving our challenges, and will deliver the necessary improvements at those sites into AMP7.*

**Drinking water quality - Discolouration contacts**

(number of customer contacts per 1000 connections)

Methodology between AMP6 and AMP7: Amended; Adjusted forecast year(s): No adjustment from September business plan

**AMP6 Overview**

*Financial ODI*

**Actuals**

Years hit target: 3

Years missed target: -

**Forecast**

Years hit target: 2

Years miss target:



**AMP6 – Drinking water quality**

(Measurement based on AMP6 methodology - performance commitment is measured on a calendar year basis)



Source: App5 – PR14 reconciliation ~ performance commitments

**Drivers of past and current performance and lessons learnt**

- We are confident that we will continue to deliver through AMP6 and achieve our performance commitment. The variation seen in the graph reflects normal operating tolerances (see *PD.A6.Figure 2 – Drinking water quality – Discolouration contacts* in the *Further Analysis* section) and our forecasts for the end of the AMP reflect normal inter-year performance variability.
- There are three main drivers of our discolouration contacts:
  1. The internal condition of water pipes, in which we have invested over the long term in order to maintain performance. Around half of our discolouration contacts are from the [REDACTED] area in Southampton, where unique hydraulic conditions that can lead to resuspension of mains deposits has been a key direct driver of discolouration;
  2. The operational control of our network has also driven resuspension. For example during our Southampton discolouration incident in May 2016, we received 20 discolouration calls. This was due to sediment that had been mobilised as a mains was recharged following repair;
  3. The distribution input affects discolouration of water - we have been investigating alongside Sheffield University the hydraulic, chemical and biological implications of a reduced distribution input, and associated decreased water velocity. We have found that our mains are operating with a reduced distribution input compared to the input for which they were designed. This leads to reduced water velocity and particles falling out of the water. When a change affects the network, for example an increase in velocity, these particles are picked up and distributed to customers.

*In summary, the root cause is 2) Inconsistent approach to planning and decision making: as long term investment decisions and our control over our network drive good and poor performance respectively.*



**Measures to improve and ensure deliverability in AMP7**

- We have set an ambitious target for AMP7 – to reduce contacts per 1000 connected population from 0.82 down to 0.46. To realise this decrease, we’re doing a number of things;
  - We will improve the internal condition of water pipes by introducing conditioning of pipes, by undertaking mains flushing and improved network control (see *BP\_TA11.WN04\_Water Networks\_Pg19,22* for detail on expenditure and interventions), driving out any particles that could cause discolouration.
  - To address issues in the [redacted] area of Southampton, and to increase network control, we have been trialing water quality monitors. The monitors are one part of our smarter network proposals. They will allow us to understand the network to a greater extent and so optimize flows and control water quality more effectively. Our control room also now monitors 'dirty water' contacts and uses geo-spatial mapping to determine the nature and spread of discolouration. This can help to identify the most effective locations to flush and resource in order to manage the network.
  - To address the distribution input effects, our DMA mains replacement programme will use narrower pipes, increasing the velocity of water and working against the effects described in the section above. Detail on this can be seen alongside our analysis of mains burst.

*In summary, our investment in mains will address the DI effects on discolouration, conditioning of pipes will reduce mains deposits, and our smarter networks will allow us to better control discolouration.*

**Water pressure**

(number of properties on the DG2 low water pressure register)

Methodology between AMP6 and AMP7: No change; Adjusted forecast year(s): No adjustment from September business plan

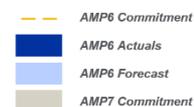
**AMP6 Overview**  
*Financial ODI*

**Actuals**

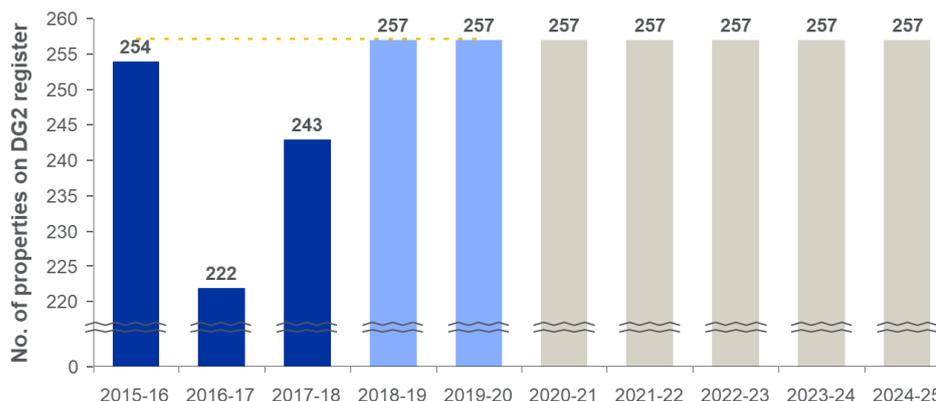
Years hit target: 3  
Years missed target: -

**Forecast**

Years hit target: 2  
Years miss target: -



**AMP6 & 7 – Water pressure**



Source: App1 – Performance commitments (PCs) and outcome delivery incentives (ODIs); App5 – PR14 reconciliation ~ performance commitments

**Drivers of past and current performance and lessons learnt**

- The number of customers that are exposed to possible low pressure is determined by the volumetric demand and relative altitude of our water resources and customer homes, as well as water pressure assets such as pumps – the last of these is the key controllable variable
- New developments can lead to more properties at risk of low pressure – new connections, which increase demand, can affect a high number of properties (e.g. all properties on a street).
- The way we operate our network, along with the freeze/thaw incident resulted in low pressures in 2017-18. Through refurbishment of pressure reducing valves, pumps and re-zoning we have removed most of these additional properties from the list of properties at risk of low pressure.
- Increased leakage levels may affect properties at risk of low pressure in a similar way to demand – increasing demand on the network and so reducing pressure.
- Our customer engagement shows that water pressure is not a high priority issue for customers – it is ranked 39th out of 41 AMP7 PCs (as set out in *BP\_TA.4.3 - Triangulation of customer priorities*).

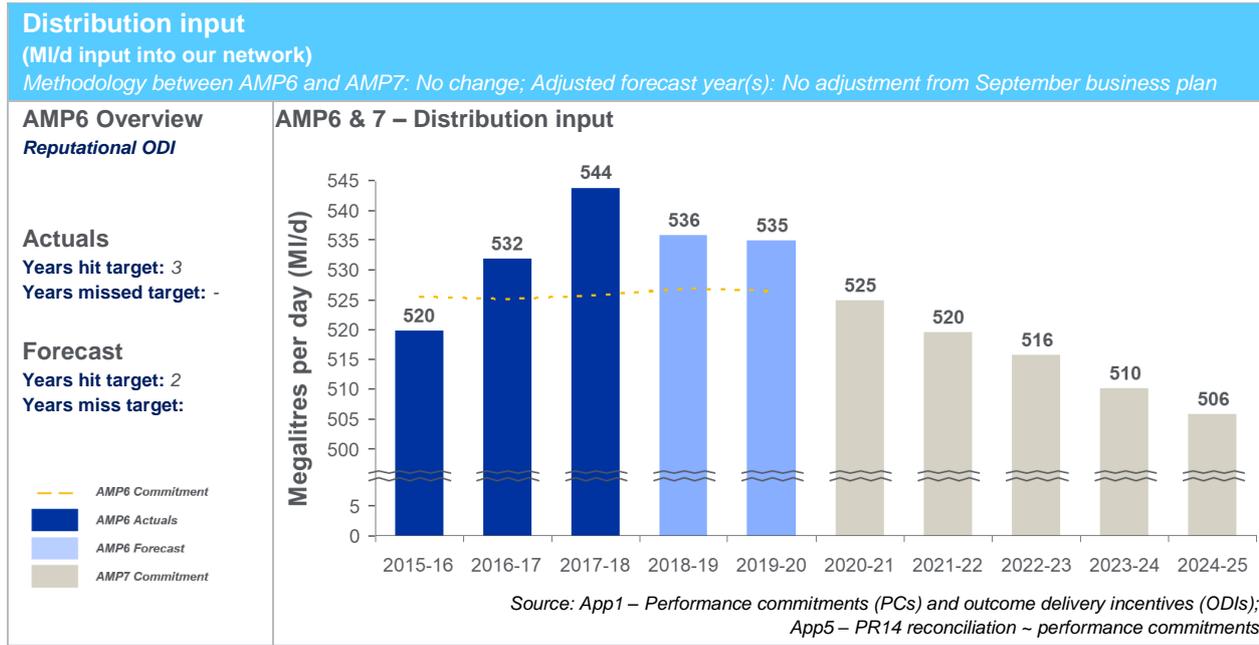
*In summary, the root cause is 2) Inconsistent approach to planning and decision making: as investment to accommodate growth is the key driver of performance.*

**Measures to improve and ensure deliverability in AMP7**

- Our target for AMP7 is to not see more than 254 properties on the low pressure register.
- Although customers are not willing to pay for improvements in overall performance levels (see supporting evidence submitted with our business plan *BP\_TA4.3 – Triangulation of customer priorities*), they do need us to maintain current levels of performance; without investment in network infrastructure, the additional new connections in AMP 7 would result in an increase in properties at risk of low pressure.
- We are therefore planning to invest £1.3m maintaining our network so that current performance can be sustained.

*In summary, due to lack of customer priority, we are investing to sustain performance in this area.*





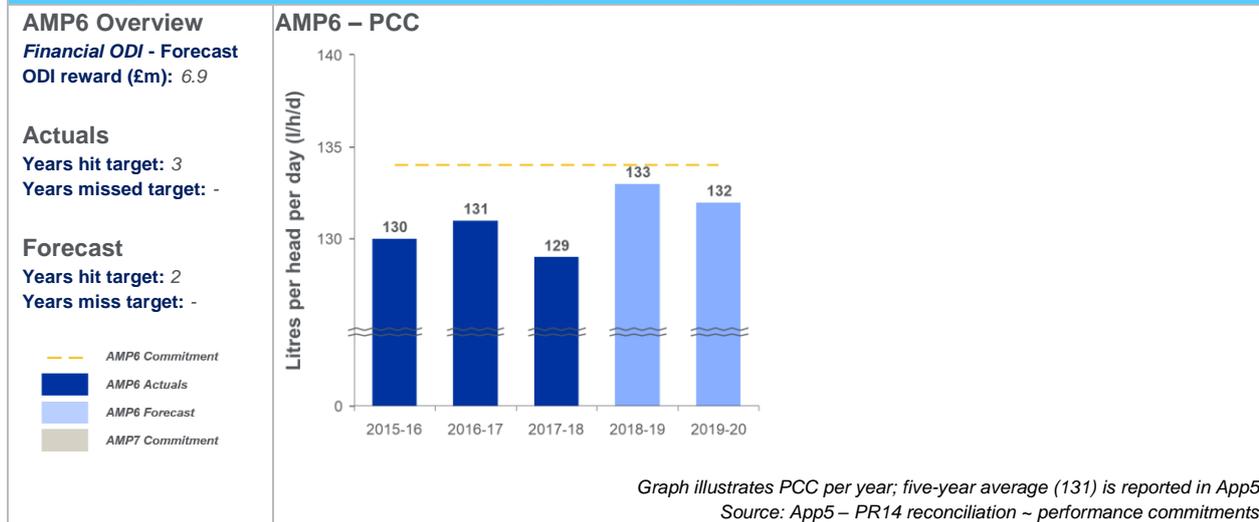
**Drivers of past and current performance and lessons learnt**

- Distribution input is principally determined by the drivers of:
  - 1) Per capita consumption
  - 2) Leakage from our network
- There is a further factor outside of our control:
  - 3) Population growth
- For details on the drivers, lessons learned and measures to improve and assure deliverability for distribution input, see below for Per Capita Consumption and above for Leakage. For details of how we have forecasted DI see *BP\_Ta.17.1\_Performance Commitment Forecasting\_Pg5*

### Per capita consumption (PCC)

(Five-year average – MI/d)

Methodology between AMP6 and AMP7: Amended; Adjusted forecast year(s): 2018-19



**Drivers of past and current performance and lessons learnt**

- We are confident that we will continue to deliver frontier PCC performance through the remainder of AMP6.
- Our strong past performance on PCC is driven by successful customer behaviour change, supported by high meter penetration. Our five-year programme to install nearly 450,000 meters across Kent, Sussex, Hampshire and the Isle of Wight concluded in late 2015. We embedded water efficiency messaging within our metering programme and this has helped bring down our PCC by 16%. We are aware previous metering has now delivered many of its benefits – to see further improvements in AMP7 additional initiatives are required to change behaviour.

*In summary, the root cause is 2) Inconsistent approach to planning and decision making: as robust long term planning and delivery of the metering programme drives performance success in this area.*



#### Measures to improve and ensure deliverability in AMP7

- We have set a commitment for AMP7 to reduce PCC from 130 to 121 l/d– as well as this we have set a long term goal of reducing customer per capita daily consumption below 100l.
- We are undertaking a major behaviour change programme consisting of 4 pillars as detailed in Technical Annex WN01:
  1. Smart Metering – we are developing a more advanced smart meter that aims to provide customers with a greater depth of information and so build on the success of the original metering programme. We are looking at options as to how to deliver this, but anticipate installing 100,000 of these devices through AMP7;
  2. Home water & leakage visits - Our current water efficiency home water saving visits are delivering a further 6-10% saving on top of previous meter savings. We want to ensure that a high level of visits continue targeting particularly those customers that lost out going onto a meter, have regular high consumption and have ageing toilets and high flowing showers. Our plan is to combine our water efficiency and leakage detection work into one visit for the resident and work in partnership with neighbouring water only companies to expand the scheme to more customers in the South East;
  3. Customer contact journey – we will ensure water efficiency messaging is embedded within all our contacts with customer. The plan is to use the latest gamification techniques to communicate with each sub group of customers proactively involving water efficiency, FOG advice, support and products;
  4. Community incentives and individual incentives - With strong support from customers and stakeholders for rewards or incentives, a large scheme in conjunction with Eastleigh Borough Council in Hampshire will be undertaken. A personal and community scheme for all 58,000 residents is to be rolled out in early AMP 7 followed by the rest of Hampshire and Sussex. Alongside Portsmouth water, we are offering rewards for recycling waste and water efficiency with each month every participating resident being shown whether higher or lower usage has occurred.

***In summary, we recognise that to drive further improvements we need to form a new long term plan to change behaviour.***

PD.A6.Table 3 – Wholesale Wastewater PCs analysis

Wastewater performance commitments													
<b>Category 3 pollution incidents</b> (including transferred assets and excluding private pumping stations) (Number of Category 3 pollution incidents) <i>Methodology between AMP6 and AMP7: Amended to Pollution incidents (Categories 1, 2 and 3);</i> <i>Adjusted forecast year(s): 2018-19, 2019-20</i>													
<p><b>AMP6 Overview</b></p> <p><b>Actuals</b>                      Years hit target: 3                      Years missed target: -</p> <p><b>Forecast</b>                      Years hit target: 2                      Years miss target: -</p> <p> <span style="color: yellow;">---</span> AMP6 Commitment  <span style="color: blue;">█</span> AMP6 Actuals  <span style="color: lightblue;">█</span> AMP6 Forecast  <span style="color: grey;">█</span> AMP7 Commitment                 </p>	<p><b>AMP6 – Category 3 pollution incidents</b>                      (Measurement based on AMP6 methodology and in calendar years)</p> <table border="1" style="margin-top: 10px;"> <caption>AMP6 – Category 3 pollution incidents (No. of incidents)</caption> <thead> <tr> <th>Year</th> <th>No. of incidents</th> </tr> </thead> <tbody> <tr> <td>2015-16</td> <td>160</td> </tr> <tr> <td>2016-17</td> <td>143</td> </tr> <tr> <td>2017-18</td> <td>131</td> </tr> <tr> <td>2018-19</td> <td>144</td> </tr> <tr> <td>2019-20</td> <td>128</td> </tr> </tbody> </table> <p style="text-align: right; font-size: small;">Source: App5 – PR14 reconciliation – performance commitments</p>	Year	No. of incidents	2015-16	160	2016-17	143	2017-18	131	2018-19	144	2019-20	128
Year	No. of incidents												
2015-16	160												
2016-17	143												
2017-18	131												
2018-19	144												
2019-20	128												
<p><b>Drivers of past and current performance and lessons learnt</b></p> <ul style="list-style-type: none"> <li>• We expect to continue meeting AMP6 targets in the remaining forecast year. Overall, there has been a positive performance regarding pollution incidents due to several drivers that we will continue to apply:                     <ul style="list-style-type: none"> <li>○ Performance improvements by planned maintenance having a different way of working – with an electrician and operator dispatched to the site simultaneously (where previously separately which could cause significant delays). In addition, a general increase in activity and a decrease in response time led to Maintenance Scheduled Tasks (MSTs) delays reducing from ca. 65 days in 2014, down to circa 10 days in 2018.</li> <li>○ Quicker response to incidents in order to reduce or stop the impact on the environment.</li> <li>○ Alarm handling has been improved through giving sites with a history of pollution a higher priority.</li> <li>○ We installed 500 event duration monitors, which equates to 99% CSO (combined sewer outfall) coverage. Planned to increase this to 100% in AMP7.</li> <li>○ However, the increase in incidents in 2018-19 bucked the trend, due partly to an awareness campaign for our staff and customers, especially in wastewater treatment, providing clarity on the definitions of pollutions to field teams and contractors. This is reflected in our number of self-reported incidents (2018-19) which has improved.</li> </ul> </li> <li>• We are expecting to continue seeing the impact of increased awareness of our staff and customers and therefore increased reporting in 2019-20.</li> <li>• With the above measures, we’ve been able to manage the symptoms of pollution incidents by intervening faster; the root cause issue however, is the typical faults in asset health; analysis shows (see PD.A6.Figure 3 – Category 3 pollution incidents, Serious pollution incidents – Fault sources and PD.A6.Figure 4 – Category 1-3 pollution incidents – Fault analysis in the Further Analysis section for details) that the majority of incidents are fundamentally caused by mechanical and electrical issues at pumping stations (causing 80% of faults) and wastewater treatment centres (79% of faults). The main cause of network-related pollution incidents however, is Sewer Blockages (see below for Sewer Blockages PC and the measures taken to impact this PC).</li> <li>• 2019 will see the next phase of our Environment+ transformation programme benefits. This will see a range of improvement activities that tackles both the root cause and the symptoms including:                     <ul style="list-style-type: none"> <li>○ Applying a more robust root cause investigation methodology by incorporating CAST (Casual Analysis based on Systems Theory) analysis of priority sites, and moving toward the use of leading indicators (such as pump-efficiency, repeat repairs within a three month period or number of hours spent repairing a site, plant out of action, % maintenance complete).</li> <li>○ Increased spill reporting; we have increased spill reporting data from 15 minute intervals to 2 minute intervals at our high risk sites which comprise 220 sites.</li> <li>○ Reviewing maintenance strategy to take greater account of high criticality sites and lessons learnt from root cause analysis.</li> <li>○ Application of the “Go big, go early” incident response process, which encourages operatives to report potential incidents before they escalate into more serious cases.</li> <li>○ Introduction of daily operator calls and hub meetings.</li> <li>○ Change in the process of how to deal with high wet well alarms, with priority flags in the alarm centre and actions on high consequence sites.</li> <li>○ This increased focus in AMP6 on achieving the critical success factors outlined by our Environment+ programme (See IAP_TA8_Accounting for past delivery_Appendix 2 for detail on the programme) will continue the long term downward trend in incidents that we’ve achieved as the programme develops.</li> </ul> </li> </ul>													

- However, the impact of the pollution reduction programme through Environment+ will not be fully established within the year given the implementation is still in flight, impacting our 2019-20 forecast.

**In summary, the overall trend is improving and the root causes are 3) Inconsistent processes and process control: with improved processes to prevent incident escalation, and 5) Fragmented view of risk to aid decision making processes: with our risk management through prioritisation of activities and quicker response to incidents.**

**Measures to improve and ensure deliverability in AMP7**

In AMP7 Category 3 pollution incidents will be captured along with Category 1 and 2 incidents, combining these two individual PCs from AMP6. Pollution remains a priority for our customers and stakeholders and therefore we have set our target for AMP7 at the upper quartile level each year which exceeds the 40% reduction from current levels recommended by the EA. We will do this due to the following initiatives:

- As part of our Environment+ programme, which is a transformation programme that seeks to improve environmental performance by putting compliance at the centre of what we do, we have determined eight critical success factors (CSFs) which we will pursue in order to achieve our pollution incident targets and get to the root cause issues (see *IAP\_TA8\_Accounting for Past Delivery\_Appendix 2*). Relevant example factors include: CSF2 understanding our asset risks & improving resilience – the outcome being targeted and prioritised investment and interventions based on risk and consequence; CFS4: Fast & effective emergency response – the outcome being a reduced environmental impact; CSF5: trusted analysis and reporting: the outcome being robust and reliable information underpinning continual improvement; see *IAP\_TA8\_Accounting for past delivery\_Appendix 2* for details on the other factors and the programme.
- Delivery of each of the CSFs will have an impact on performance via several planned deliverables, for example: CSF2: environmental consequence modelling, proactive health check for high risk sites, lead indicators understood and tracked, mitigation and fast fix strategy for high risk sites; CSF4: alarm transformation, enhanced response coordination and resources; enhanced automation; CSF5: spill reporting automation, better dashboard reporting with lead indicators by July 2019).
- Establishment of Environment+ within this AMP will be a key driver of meeting our commitments for AMP7.

**In summary, we intend to further decrease our pollution incidents by transforming existing processes to meet our eight critical success factors and applying rigorous root cause analysis that will coordinate the implementation of preventative actions.**

**Internal flooding incidents**

(Number of sewer flooding incidents inside homes and businesses)

Methodology between AMP6 and AMP7: Amended; Adjusted forecast year(s): No adjustment from September business plan

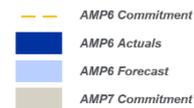
**AMP6 Overview**

**Actuals**

Years hit target: 3  
Years missed target: -

**Forecast**

Years hit target: 2  
Years miss target: -



**AMP6 – Internal flooding incidents**

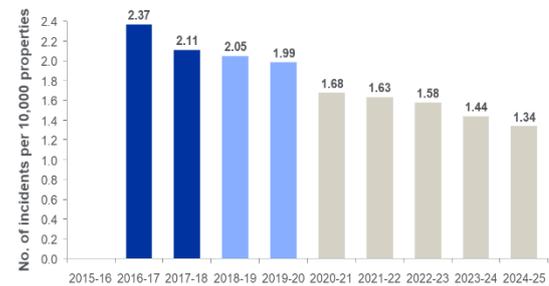
(Measurement base on AMP6 methodology)



Source: App5 – PR14 reconciliation – performance commitments

**AMP6 and AMP7 – Internal flooding incidents**

(Measurement base on AMP7 methodology)



Source: App1 – Performance commitments (PCs) and outcome delivery incentives (ODIs)

**Drivers of past and current performance and lessons learnt**

- We are confident of continuing our positive AMP6 trajectory and meeting the performance target for the remainder of the AMP. This improved performance over the period is due to 4 key drivers:
  1. Improved operational processes (including improved investigations to help capture more detailed information on root causes) and management focus (for example through daily calls with operational site management teams and a revised maintenance strategy).
  2. Increased flood mitigation installations (from 45 in 2015 to 100 in 2018), for example Anti-Flood Devices, which are one way flood valves.
  3. Targeting of 10 hotspot areas of repeat incident (focusing resources in mitigation activities such as, proactively monitoring sewer CCTV and registering any building that a customer calls about) via the Zero Floodzone Project; the project has, for example, led to property flood alarms – eight installed to date - having successfully prevented two internal flooding incidents. A narrow targeting of resources on hotspot areas has had a greater than proportional impact – there is significant opportunity to widen this impact with a wider rollout.
  4. Education initiatives, such as visiting 60,000 customers at home, 2,300 businesses and organising preventative action campaigns have been a key factor in decreased sewer blockages from 23,000 in 2012-13 to 19,000 in 2017-18 (decrease of ~20%). They target various types of customer behaviours, for example wet wipe disposal by end users, wet wipe production by manufacturers and food disposal by food establishments. The impact from our customer education initiatives has been positive such that competitors have been seeking our advice on our learnings on education - we have therefore led the industry and helped train them. The education initiatives will now be rolled out across customer types. A “fail fast” approach led to testing of innovative ideas for prevention – such as restaurant fat traps and fat-eating chemicals – however, these have not been as effective as planned, and so other initiatives have been focused on with learning taken to other initiatives.



- The underperformance in the initial years of the AMP were due to delays in planning for the flood mitigation processes and activities; however, the long term trend from 2014-15 (551 incidents) and through the current AMP demonstrates the positive impact of the measures taken. Our learning from this has led to the planning for AMP 7 already being underway.

**In summary, the root causes are 3) Inconsistent processes and process control: with enhanced operational processes and installation activity, and 5) Fragmented view of risk to aid decision making processes: through targeting and prioritisation as well as targeted customer engagement and education to reduce blockages.**

**Measures to improve and ensure deliverability in AMP7**

- In AMP7 we have set the target of 350 internal incidents for 2024-25. Preventing internal sewer flooding is seen by our customers as the most important wastewater priority; 88% say it is essential the network stops homes being flooded with sewage (as set out in our September business plan in *BP\_CH4\_Customer and Stakeholder Engagement and Participation\_Pg54*).
- We are aiming to deliver a decrease in sewer flooding per 10,000 connected homes from 1.99 to 1.34. To do this, we are going to:
  - Expand the lessons learnt from Zero Floodzone areas (currently only 10) to other targeted areas across the region.
  - Further pursue new innovations, such as sewer level monitors feeding data into a real time system. The intelligent sewer alarms, which recognise detail and accuracy in sewer flooding readings, coupled with real time predictive modelling, are expected to reduce 200 flooding incidents per year.
  - We are looking to halve blockages in AMP7; to achieve this, increasing customer participation through our ambitious customer change programme via education initiatives is key (See Sewer blockages below for further detail), as well as further measures such as enhanced blockage analytics, which are currently in flight as part of Environment+, and enables us to identify properties at risk of flooding due to blockages.

**In summary, we intend to improve our already good performance with respect to internal flooding by focusing on the identified root causes: Risk management and information technology. Prioritisation of target zones and an intelligent solution for predictive modelling will drive these enhancements.**

**External flooding incidents**

(Number of sewer flooding incidents affecting outside areas)

Methodology between AMP6 and AMP7: Amended; Adjusted forecast year(s): 2018-19

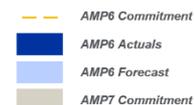
**AMP6 Overview**

**Actuals**

Years hit target: 3  
Years missed target: -

**Forecast**

Years hit target: 2  
Years miss target: -



**AMP6 – External flooding incidents**

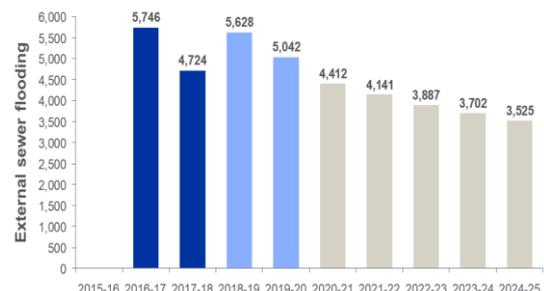
(Measurement base on AMP6 methodology)



Source: App5 – PR14 reconciliation ~ performance commitments

**AMP6 and AMP7 – External flooding incidents**

(Measurement base on AMP7 methodology [curtilage only])



Source: App1 – Performance commitments (PCs) and outcome delivery incentives (ODIs)

**Drivers of past and current performance and lessons learnt**

- We are confident of continuing our positive AMP6 performance and meeting the target for the remainder of the AMP despite a potential increase in incidents (as explained below). Though our target was to maintain performance, our more positive performance over the period is due to 3 key drivers:
- External flooding caused by blockages has declined (22,000 blockages in 2015 vs 19,000 in 2018) due to increased spend on education (£261,000 per year), and planned jetting of sewers (~750km in 2014-15 to 850 km in 2016-17) (correlation between education and blockages, and jetting and blockages illustrated in Sewer Blockages PC – see below).
- In addition, we have increased flood mitigation installations - such as Anti-Flood Devices (AFD), pump AFDs, manhole cover seals - from 18 in 2016, to 109 in 2018.
- External flooding is sensitive to wet weather; the lower rainfall in recent seasons (e.g. in 2013 and 2014 around 1000mm versus in 2017 and 2018 around 700mm) is the primary driver of lower flooding in 2017-18. Our forecasts assume average rainfall levels – which is the key reason for a forecast increase in incidents. Ongoing improvement will therefore require concerted effort and resources to continue beating commitments.

**In summary, the root cause within out control is 5) Fragmented view of risk to aid decision making processes: through targeting and prioritisation of flood mitigation activities.**



**Measures to improve and ensure deliverability in AMP7**

- The External flooding performance commitment changes for AMP7. Over this period, we plan to reduce external flooding incidents from 5,042 in 2019-20, down to 3,525 in 2024-25.
- The trend in this AMP is largely an associated benefit of our targeted success in reducing blockages.
- We have identified that, currently, data for root cause analysis in external flooding is not captured consistently; this is an area we have started to address. Going forward, we will increase resourcing to widen our incident investigation capabilities, further pursue new innovations, such as sewer level monitors feeding data into a real time system and intelligent sewer alarms, which recognise detail and accuracy in sewer flooding readings in order to capture data for root causes. Coupled with real time predictive modelling, this underlines the declining trend of external flooding within our forecasts for AMP7. This is consistent with the approach used for internal flooding, and will become the driver of further performance in the next AMP.
- Increased installation of further flood mitigations (18 in 2015-16, 53 in 2016-17, 109 in 2017-18 – Cumulative 443 in 2017-18), e.g. with greater focus on surface water removals, infiltration reduction etc.
- Further increased spending to support activities relating to external flooding reduction in AMP7 (£5m) includes developing collaborative, multi-agency drainage plans, resourcing for investigations, education and planned jetting of sewers; the education programme in particular aims to prevent flooding caused by sewer blockages, which in turn are mostly caused by wet wipes and fat.

*In summary, we intend to improve our already good performance with respect to external flooding by focusing on the identified root causes: risk management and predictive analytics. Prioritisation of target zones and an intelligent solution for predictive modelling will drive these enhancements.*

**Sewer blockages**

(Number of blockages in our sewer network)

Methodology between AMP6 and AMP7: PC removed in AMP7; Adjusted forecast year(s): 2018-19

**AMP6 Overview**

**Actuals**

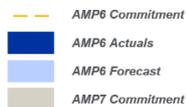
Years hit target: 3

Years missed target: -

**Forecast**

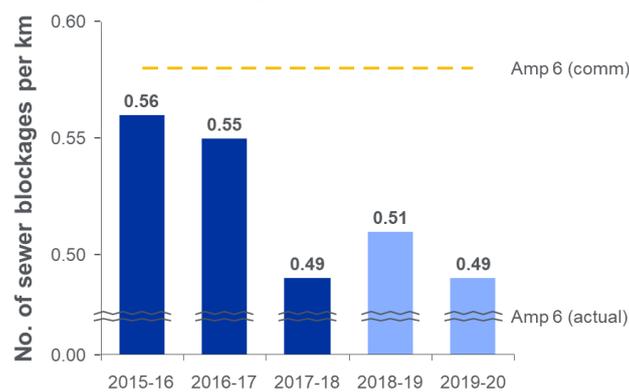
Years hit target: 2

Years miss target: -



**AMP6 – Sewer blockages**

(Measurement based on AMP6 methodology)



Source: App5 – PR14 reconciliation – performance commitments

**Drivers of past and current performance and lessons learnt**

- We are confident of continuing our positive AMP6 performance to at least meet the target for the remainder of the AMP. The positive performance over the period so far is due to three key drivers:
  1. The length of annual sewer jetting increased from ~750km in 2014-15 to 850 km in 2016-17 and directly drives the decrease in sewer blockages.
  2. Education initiatives, such as visiting 60,000 customers at home, 2,300 businesses and organising preventative action campaigns have contributed to the decrease of sewer blockages from 23,000 in 2012-13 to 19,000 in 2017-18. They target various types of sewer blockage preventative customer behaviours, for example wet wipe disposal by end users, wet wipe production by manufacturers and food disposal by food establishments. The impact from our customer education initiatives has been very positive, such that targeting of customer behaviour change is an increasing focus; for example, we procured behaviour consultant services to support with targeting of specific customer segments (e.g. young mothers using wet wipes) and identifying effective communication techniques per segment.
  3. We have seen an increase in blockages in 2018-19 due to it being a dry year, which reduces the natural flushing of a sewer from rainfall. The increase in blockages strongly correlates with the decrease in rainfall.
- We are forecasting based on average rainfall in 2019-20 which, in combination with our jetting and education activities, drives our expected decline in 2019-20.

*In summary, the root causes within our control are 2) Inconsistent approach to planning and decision making, and 5) Fragmented view of risk to aid decision making processes: our effective planning and targeting via risk management of activities in jetting and education.*

**Measures to improve and ensure deliverability in AMP7**

- For AMP7 the sewer blockages performance commitment has been dropped as the customer impact are already covered through commitments on flooding and pollution. Blockages remain an important driving factor of sewer flooding and we therefore have a robust plan to continue to drive down blockage occurrences:
  - Rollout of educational initiatives in order to drive behavioural change across different customer types (for example, food businesses and young families) to expand education coverage.
  - Application of data driven targeting, for example, of areas that use wet wipes and FOG for preventative jetting.
  - Driving maintenance change through the development of predictive analytics to identify sewers at most risk, part of our Environment+ transformation programme.

*In summary, we will ensure to maintain the positive trend within sewer blockages by continuing our education campaign and improving our data analytics.*

**Odour complaints (Portswood and Tonbridge treatment works)**  
 (Number of complaints about odour at Portswood and Tonbridge wastewater treatment works)

Methodology between AMP6 and AMP7: PC removed in AMP7; Adjusted forecast year(s): 2018-19

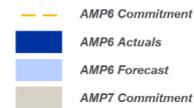
**AMP6 Overview**

**Actuals**

Years hit target: n/a  
 Years missed target: -

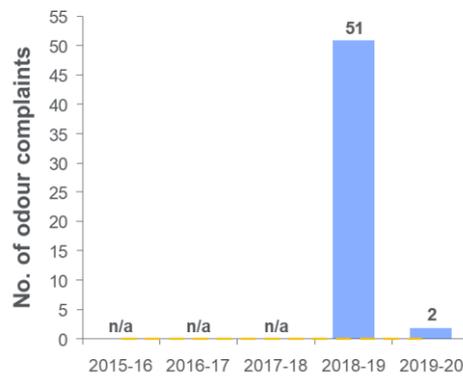
**Forecast**

Years hit target: n/a  
 Years miss target: 2



**AMP6 – Odour complaints**

(Measurement based on AMP6 methodology)



Source: App5 – PR14 reconciliation ~ performance commitments

**Drivers of past and current performance and lessons learnt**

- This performance commitment relates to the non-delivery of odour management schemes at Tonbridge and Portswood. The schemes were planned to be completed by March 2018, with potential penalties being applied from that date. We failed to meet the performance target in 2018 due to delays with delivery of the Portswood odour control schemes. The delays were caused by a key supplier ceasing trading partway through delivery. Poor performance was exacerbated by the hot and dry summer.
- Odour performance at Tonbridge was delivered ahead of time due to odour cover filters and improved operational practices, reducing the need for significant upgrade to the odour control systems. Early delivery also provided confidence that performance was sustainable.
- We have learnt that early delivery reduces the risk of project delays and provides space for operational solutions in reducing complaints to be tested and proved. It also reinforces the importance of risk assessments including an assessment of external factors such as weather and supplier risks.

*In summary, the root causes are 2) Inconsistent approach to planning and decision making, and 3) Inconsistent processes and process control: leading to poor planning and late delivery increasing the risk of customer impact.*

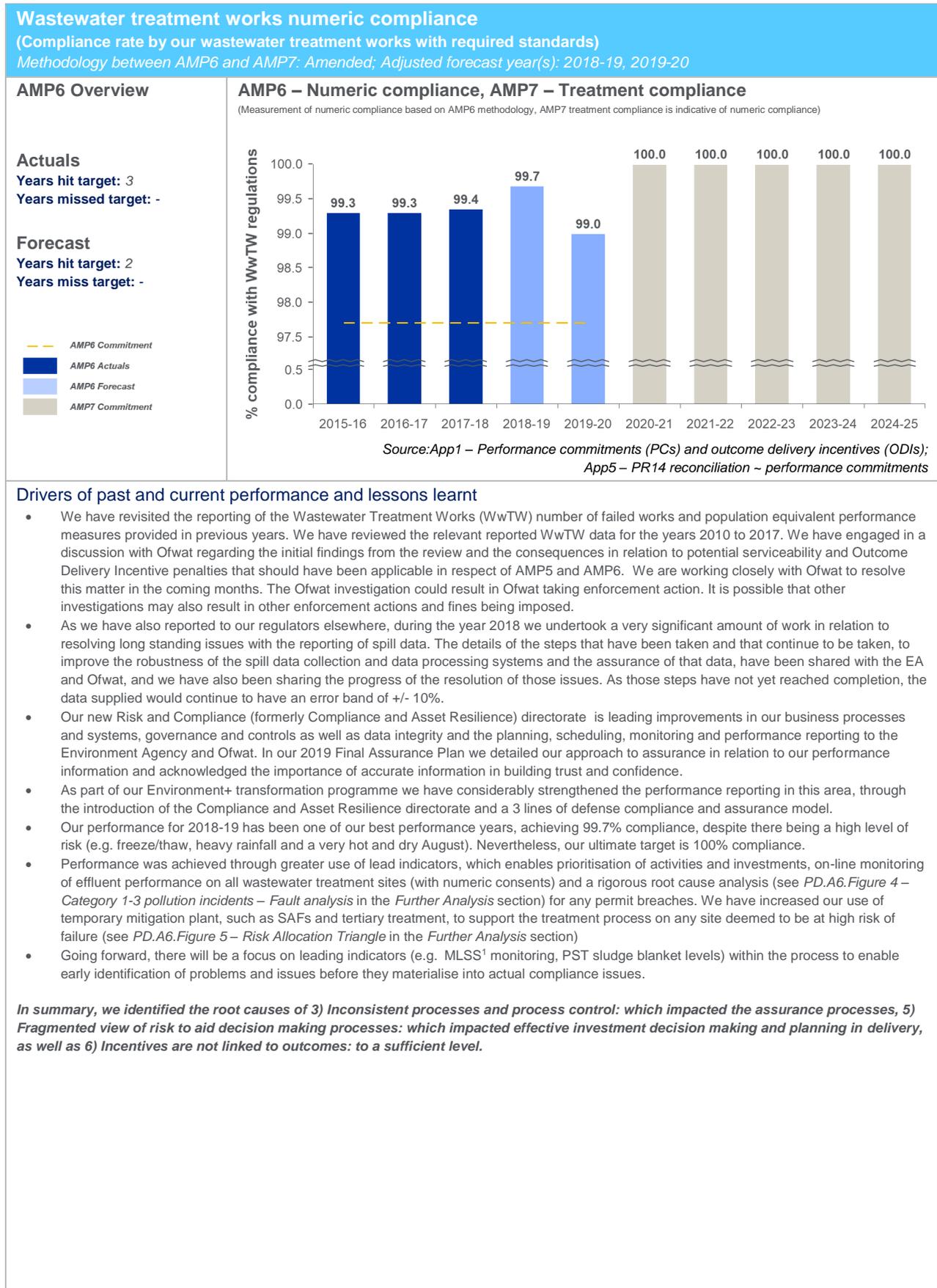
**Measures to improve and ensure deliverability in AMP7**

The AMP6 performance commitment specifically related to scheme delivery at Tonbridge WTW and Portswood WTW and targeted zero odour complaints for either site by March 2018. Tonbridge has received zero odour complaints in 2018-19 to date. Late delivery of the Portswood scheme has resulted in 51 odour complaints received against the site during 2018-19. The capital scheme Portswood was completed during 2018-19 and going forward we anticipate a significant reduction in odour complaints, although it was never intended to guarantee zero incidents (for that reason, we forecast 2 complaints).

- Odour management and reducing nuisance to customers is the subject of a substantive workstream in our Environment+ transformation programme. As part of the programme, there is a monthly odour governance session which is used to produce mitigation and customer engagement plans for known issues and to manage and escalate emerging risks – across all our treatment sites.
- As a function of our odour management system we constantly monitor customer contacts relating to odour and collate data for internal reporting on a monthly basis. We prioritise sites for intervention based on the frequency and impact (in terms of properties affected) of reported odour issues. For odour issues that, upon investigation, are not found to be related to an isolated incident, we create plans to permanently resolve through operational or capital interventions. We risk assess proposed capital works for odour impacts and conduct odour surveys on sites that are considered to be high risk.
- We are developing a proactive contact system that will inform customers and residents of potential odour risks in the event of planned maintenance activities or other plant interventions. Trials conducted in AMP6 have been shown to this to be an effective way of reducing nuisance caused to customers.

*In summary, we intend to achieve our good performance by emphasising risk management and effective planning.*





**Drivers of past and current performance and lessons learnt**

- We have revisited the reporting of the Wastewater Treatment Works (WwTW) number of failed works and population equivalent performance measures provided in previous years. We have reviewed the relevant reported WwTW data for the years 2010 to 2017. We have engaged in a discussion with Ofwat regarding the initial findings from the review and the consequences in relation to potential serviceability and Outcome Delivery Incentive penalties that should have been applicable in respect of AMP5 and AMP6. We are working closely with Ofwat to resolve this matter in the coming months. The Ofwat investigation could result in Ofwat taking enforcement action. It is possible that other investigations may also result in other enforcement actions and fines being imposed.
- As we have also reported to our regulators elsewhere, during the year 2018 we undertook a very significant amount of work in relation to resolving long standing issues with the reporting of spill data. The details of the steps that have been taken and that continue to be taken, to improve the robustness of the spill data collection and data processing systems and the assurance of that data, have been shared with the EA and Ofwat, and we have also been sharing the progress of the resolution of those issues. As those steps have not yet reached completion, the data supplied would continue to have an error band of +/- 10%.
- Our new Risk and Compliance (formerly Compliance and Asset Resilience) directorate is leading improvements in our business processes and systems, governance and controls as well as data integrity and the planning, scheduling, monitoring and performance reporting to the Environment Agency and Ofwat. In our 2019 Final Assurance Plan we detailed our approach to assurance in relation to our performance information and acknowledged the importance of accurate information in building trust and confidence.
- As part of our Environment+ transformation programme we have considerably strengthened the performance reporting in this area, through the introduction of the Compliance and Asset Resilience directorate and a 3 lines of defense compliance and assurance model.
- Our performance for 2018-19 has been one of our best performance years, achieving 99.7% compliance, despite there being a high level of risk (e.g. freeze/thaw, heavy rainfall and a very hot and dry August). Nevertheless, our ultimate target is 100% compliance.
- Performance was achieved through greater use of lead indicators, which enables prioritisation of activities and investments, on-line monitoring of effluent performance on all wastewater treatment sites (with numeric consents) and a rigorous root cause analysis (see PD.A6.Figure 4 – Category 1-3 pollution incidents – Fault analysis in the Further Analysis section) for any permit breaches. We have increased our use of temporary mitigation plant, such as SAFs and tertiary treatment, to support the treatment process on any site deemed to be at high risk of failure (see PD.A6.Figure 5 – Risk Allocation Triangle in the Further Analysis section)
- Going forward, there will be a focus on leading indicators (e.g. MLSS<sup>1</sup> monitoring, PST sludge blanket levels) within the process to enable early identification of problems and issues before they materialise into actual compliance issues.

**In summary, we identified the root causes of 3) Inconsistent processes and process control: which impacted the assurance processes, 5) Fragmented view of risk to aid decision making processes: which impacted effective investment decision making and planning in delivery, as well as 6) Incentives are not linked to outcomes: to a sufficient level.**



### Measures to improve and ensure deliverability in AMP7

In AMP7, we aim to meet our performance commitment of being 100% compliant in terms of wastewater treatment works, with no more than 3 failed works in any one year. We intend to achieve this through:

- A focus on early identification and subsequent mitigation / aversion of arising problems by closely monitoring leading indicators builds on our lessons learned around cost efficient and effective risk management.
- We are re-writing our maintenance strategy through the review our asset lifecycle processes, investment decision making, escalation processes, and pursuit of operational excellence as part of our wholesale transformation (see our Overarching IAP response document for more detail on the Transformation programme).
- We have proposed a simplified ODI that is fully aligned to the Environment Agency’s Environmental Performance Assessment methodology, and enables clarity on requirements from operators (for further detail see updates to our ODIs – BP\_TA6.2\_Our package of PCs and ODIs\_Pg111).

*In summary, our Environment+ programme will continue to drive a compliance culture and we intend to build on our lessons learned around early identification of potential issues by closely monitoring key indicators.*

1) MLSS - Mixed liquor suspended solids, PST - Primary settlement tank

### Proportion of energy from renewable sources

(Proportion of renewable energy we use)

Methodology between AMP6 and AMP7: No change; Adjusted forecast year(s): 2018-19

#### AMP6 Overview

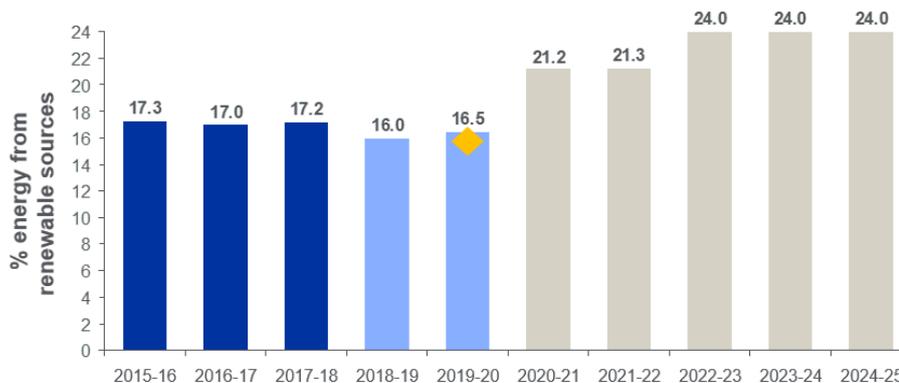
##### Forecast

The proportion of energy from renewable sources target is to reach 16.5% by the end of 2019-20 – we are expecting to achieve this

- AMP6 Commitment
- AMP6 Actuals
- AMP6 Forecast
- AMP7 Commitment
- ◆ AMP6 Final target

#### AMP6 & AMP7 – Renewable energy

(Coherent methodology across AMP6 & 7)



Source: App1 – Performance commitments (PCs) and outcome delivery incentives (ODIs); App5 – PR14 reconciliation – performance commitments

### Drivers of past and current performance and lessons learnt

We expect to meet our commitments in the remainder of AMP6 (min. 16.5% renewable energy sources by the end of AMP6).

- The drivers of positive performance have been the increasing use of biogas converted to electricity in CHP engines, significant operational efficiencies targeting power consumption, as well completion of successful solar projects in 2015-16. Energy generated is consumed on our operational sites with surplus exported to the national grid.
- We achieve better than average performance from our use of conventional anaerobic digestion technologies.
- We have built new CHP capacity in AMP6, however delays in securing environmental permits have resulted in delays to commissioning new items of plant; delays which were driven by a gap in commercial permitting capability. This capability gap has been addressed by the appointment of a Head of Environmental Quality and Compliance, a role that requires commercial permitting expertise, as well as by allowing for risk in the permit application process and better early engagement with permitting agencies in the future. These lessons were derived from the Millbrook CHP case, which was not operational due to an air quality permit.
- New regulations concerning the use of medium combustion plants and specified generators present new challenges for industry. Having gained experience of operating within the new requirements we will address permitting provision more efficiently in AMP7.
- Future performance improvements require a step change in our use of non-conventional technologies and enhanced operational capabilities.

*In summary, the root cause is 2) Inconsistent approach to planning and decision making: which enabled effective investment decision making and operational efficiency.*

### Measures to improve and ensure deliverability in AMP7

Our AMP7 targets are to achieve up to 24% renewable energy sources. This is supported by:

- The partial realisation of our transformative Resource Hub vision: embracing a zero-waste approach by transforming wastewater treatment works into community assets capable of recycling water and generating energy for local use, centered around our flagship Peacehaven site.
- Working collaboratively with regional stakeholders and local waste management authorities to streamline and enhance the provision of wholesale waste services in the South East.
- Renewing and upgrading end-of-life CHP engines and further investment in solar technology.
- Access to a diversified suite of products and capabilities leveraged by Bioresources market arrangements.
- Wider trials and applications of innovative and advanced technologies (e.g. heat recovery from sewers, enhanced anaerobic digestion, provision of energy and heat for use in the community).

- Active participation with shaping groups and industry influencers working to modernise and simplify the existing regulatory framework to create maximum value.
- Assessing options to organisationally separate Bioresources activities from Wastewater Networks+ activities to remove constraints in investment decision making associated with a conventional operating model.
- We have also built a biosolids / energy model for PR19 which will be turned into a production system for planning, outage management and optimisation for energy, transport and cost.

*In summary, we have met our targets historically and intend to do so in AMP7, exploiting opportunities provided by the Bioresources market, working collaboratively to create value in our communities and leveraging new renewable energy technologies.*

### Bathing waters with ‘excellent’ water quality (part 1)

(Number of beaches with ‘excellent’ bathing water quality)

Methodology between AMP6 and AMP7: Amended; Adjusted forecast year(s): 2018-19

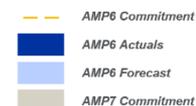
#### AMP6 Overview

##### Actuals

Years hit target: -  
Years missed target: 3

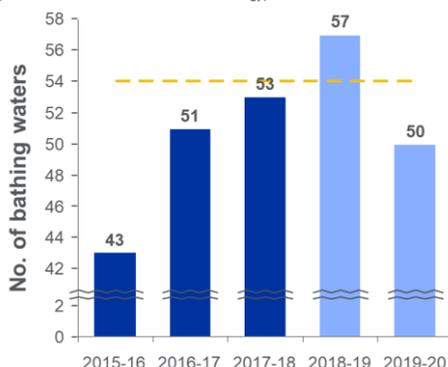
##### Forecast

Years hit target: -  
Years miss target: 2



#### AMP6 – Bathing waters with ‘excellent’ (part 1)

(Measurement based on AMP6 methodology)



Source: App5 – PR14 reconciliation – performance commitments

#### Drivers of past and current performance and lessons learnt

- Our target of 54 bathing waters at “excellent” was based on performance in 2014/15. The primary driver of performance in early AMP6 was the weather but as our enhancement programme and understanding of root cause has developed, management control has had an increasing influence on performance. Good weather has a significant impact as sunlight kills bacteria in the sea, whereas rainfall causes agricultural and urban runoff. Performance in 2018-19 was very good, although the hot, dry summer had a strong influence. Recognising the impact of weather we are proposing to move to the 4 year assessment of performance for AMP7.
- The 7 bathing waters that are part of the enhancement programme in AMP6 are excluded from this part of the measure from 2018-19. For the remaining bathing waters, performance has improved through a number of actions:
  - The adoption of smaller scale asset improvements on bathing waters that were not included in the main enhancement programme (see part 2) but had undergone investigations as part of the original 21 potential bathing waters. Actions include: repairs to sewers or pumping stations, established an in-house team for identifying and removing misconnections where foul sewage was entering directly into the watercourses, improved signage and working with local authorities to improve control of dog fouling.
  - A pre-bathing water season maintenance review of any critical pumping stations identified as having the potential to impact bathing waters.
  - Recruitment of a bathing water manager to work proactively with local authorities to identify opportunities and manage storm risks signage.
  - Working in partnership with the EA to run the ‘beauty of the beach’ campaigns to engage with local authorities and the public to identify ways to improve the beach environment.
- More broadly, the establishment of our bathing water management group in 2016 which meets every fortnight and identify bathing water issues and potential resolutions has further supported the improvement in number of sites rated as “excellent”. This group also takes sampling by the EA to identify problem locations or emerging risks in bathing water quality.
- Although the overall performance for “excellent” bathing waters in 2018-19 is 62, the number quoted for part 1 of our performance commitment is 57. This is because it excludes any bathing water that is part of our enhancement programme, which are measured via part 2 of the performance commitment. However, our forecast for 2019-20 remains 50, accounting for the strong influence of weather on a single year assessment.

*In summary, the root cause being 5) Fragmented view of risk to aid decision making processes: borne out by effective and targeted risk mitigation, effective engagement with local authorities and other stakeholders.*

#### Measures to improve and ensure deliverability in AMP7

For AMP7 we aim to maintain those bathing waters at “excellent” levels and lift further areas (including the remaining 3 from Part 2) into this category to meet our overall requirements. To achieve this we will:

- Further develop and integrate the relatively new team for identifying misconnections that cause bathing water issues, searching for public as well as private misconnections.
- Identify and target particular vulnerable areas for misconnections (characterised by separate sewer systems, close by property development).

- Continue to deliver the mitigation plans for the impact of storms. This includes wastewater storage tanks close to the bathing waters to reduce the impacts of storms by minimising the amount of spills into the environment and wet wells in pumping stations being cleaned in bathing pre-season enabling maximisation of capacity to deal with flow.
- We continue to improve visibility of spills with a 100% coverage of combined sewer overflows.

*In summary, we will maintain those bathing waters at ‘excellent’ levels and lift further areas, which is driven by bringing targeted risk mitigation in house and installing preventative.*

### Bathing waters with ‘excellent’ water quality (part 2)

(Seven specific beaches with ‘excellent’ bathing water quality)

Methodology between AMP6 and AMP7: Amended; Adjusted forecast year(s): 2018-19

#### AMP6 Overview

##### Actuals

Years hit target: -  
Years missed target: 3

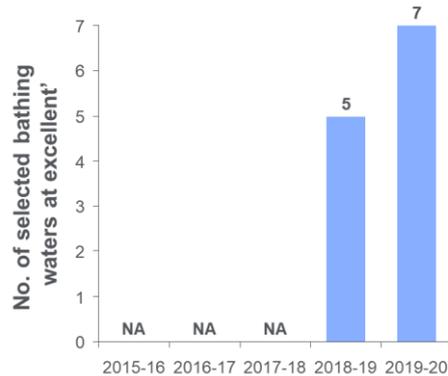
##### Forecast

Years hit target: 1  
Years miss target: 1

- AMP6 Commitment
- AMP6 Actuals
- AMP6 Forecast
- AMP7 Commitment
- ◆ AMP6 Final target

#### AMP6 – Bathing waters with ‘excellent’ (part 2)

(Measurement based on AMP6 methodology)



Source: App5 – PR14 reconciliation ~ performance commitments

#### Drivers of past and current performance and lessons learnt

- We remain on track to deliver the 7 bathing water enhancement schemes designed to deliver the target bathing waters. Five of the seven locations achieved “excellent” in 2018-19 but this may have been partly down to the hot, dry summer in 2018. These bathing water enhancement programmes relate to Minster Leas, Leysdown, Deal Castle, Worthing, Middleton-on-Sea, Selsey and Shanklin.
- The key drivers of positive performance are our enhancement programmes and improved bathing water management capabilities. The enhancement programmes have focused on activities such as preventing sewer overflows with the installation of storage; removing misconnections; engagement with farmers, developers, and the local councils (regarding runoff, misconnections etc.), pre-bathing water season engagement etc.
- Specific activities leading to performance outcomes at specific sites include:
  - Misconnected sewers corrections at Deal Castle
  - Sewer upgrades, such as relining, at Leysdown (2 caravan parks in particular)
  - Improved resilience at the pumping station Minster Leas
  - Mains replacement programme at Leysdown, and Minster Leas
  - Storage installation at Selsey and Shanklin
  - Liaising with farmers on runoff education and providing fencing keep cattle back from the waters at Minster Leas and Shanklin
- The remaining sites are expected to deliver “excellent” water quality by 2020.

*In summary, the root cause of good performance being 3) Inconsistent processes and process control: that enable a understanding of root cause of issue at each of the bathing waters, with targeted enhancements then delivered to improve performance ( via risk management, processes and effective investment decision making).*

#### Measures to improve and ensure deliverability in AMP7

Measures taken are as per Bathing waters with “excellent” water quality (part 1).

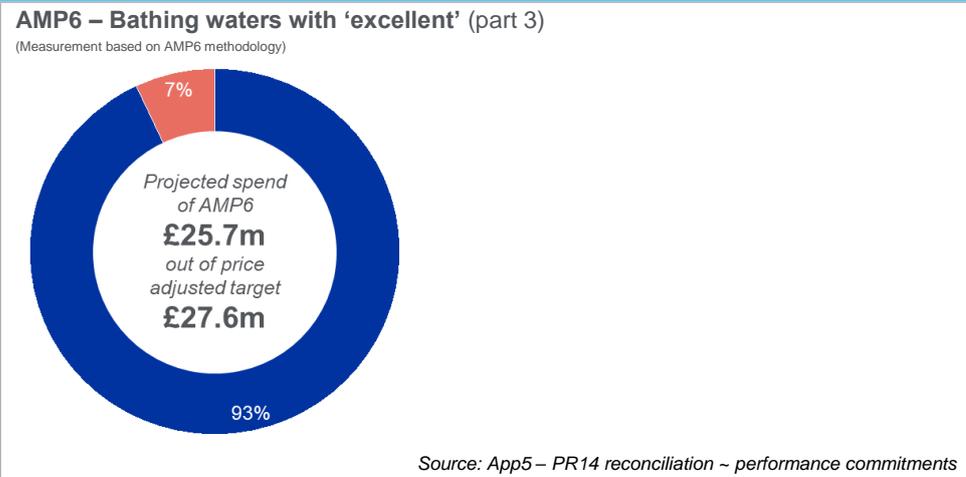
**Bathing waters with ‘excellent’ water quality (part 3)**  
 (Spend on achieving beaches with ‘excellent’ bathing water quality)  
 Methodology between AMP6 and AMP7: Amended; Adjusted forecast year(s): 2019-20

**AMP6 Overview**

**Actuals**  
 Years hit target: -  
 Years missed target: 3

**Forecast**  
 Years hit target: -  
 Years miss target: 2

■ Approved spend  
■ Unapproved spend



**Drivers of past and current performance and lessons learnt**

The current projection of overall investment in AMP6 to deliver this enhancement programme is forecast at £25.7m, which is lower than the price-adjusted threshold of the FD of £27.6m (£24.6m at 2012-13 price bases).

- Circa £3.2m has been spent across 2015-16 to 2017-18, which means the majority of the allowance will be spent throughout the last two years of AMP6 (projected £15.05m in 2018-19 and £7.3m in 2019-20). The ~£22million still projected to be spent will be directed at:
  - Investing in new assets to improve performance and service levels (£11m) across 5 locations
  - Enhanced sewer rehabilitation (£2m) across many locations
  - Proactive identification and rectification of misconnected sewers (£1m) across 5 locations
  - Enhancement investment in WPS assets to improve performance and service levels (£2m) across 15 locations
  - Surveys and investigations (£6m)
- We identified the need to work with additional stakeholders (e.g. farmers, developers and council) to ensure that sewage does not impact bathing water. This collaboration is necessary because many causal factors of bathing water contamination are driven by external parties and cannot be directly controlled (e.g. behavior and environmental awareness of people, misconnections during construction work, weather etc.).
- Where previously stakeholder engagement was outsourced, this activity is being brought in-house to retain the knowledge and exercise tighter control over these relationships.
- Due to the largest portion of the amount being invested during the last two years, most of the impact is expected to be seen in 2019-20 and AMP7.

**In summary, the root cause is 2) Inconsistent approach to planning and decision making: that enables risk management, processes and effective investment decision making which have all been addressed by our targeted investment**

**Measures to improve and ensure deliverability in AMP7**

In AMP7, this PC has been dropped, however, customers are protected with a further ODI in AMP7 (For detail, see Business Plan *BP\_CH6\_Outcomes, Performance Commitments and Outcome Delivery Incentives*). Further investments to improve bathing waters are proposed and are forecast to be £21.3m (at 2018-19 price basis). Our delivery of Bathing Water improvement schemes over the last two AMPs has enabled us to improve our AMP7 cost forecasting, deliverability and, based on our lessons learned, to build in efficiencies. We have used the evidence gained over AMP6 to ensure our AMP7 costs represent a cost-efficient proposal to deliver the specified bathing water improvements.

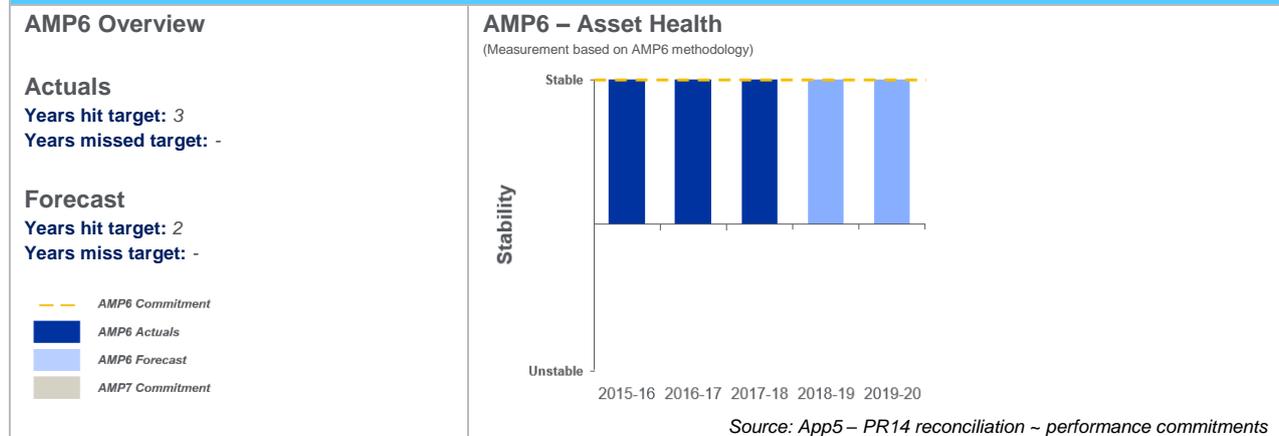
AMP7 investments will address the following areas:

- Deliver targeted enhancement investment in WPS, CSO/WPS storage and WTW to improve capacity, performance and service levels as a key enabler to improving bathing water quality.
- Pro-active, rather than reactive, maintenance of sewers and pumping stations.
- Relationship management with third parties (i.e. farmers, developers and council).
- Developing the capability of identifying misconnections across the sewage system network.
- Furthermore, AMP7 is expected to benefit greatly from the large investment expenditure from the last two years of AMP6.

**In summary, in AMP6 we have identified the drivers impacting bathing water quality at named sites and are addressing the root causes. We have built on the lessons learnt in AMP6 to create a cost-efficient programme for AMP7 with a high degree of confidence in deliverability, which will be further validated following the AMP7 Investigation stage. Our AMP6 lessons learned have also helped us develop our internal risk management capability, which will in turn allow us to ensure our investment decisions prioritise proactive interventions to secure and sustain improvements to bathing water quality.**



**Wastewater asset health (external flooding - other causes, sewer collapses, WwTW PE compliance)**  
 (Mixed measure aggregating compliance across a range of sub measure)  
 Methodology between AMP6 and AMP7: Amended to Asset Health - Sewer collapses; Adjusted forecast year(s): No adjustment from September business plan



**Drivers of past and current performance and lessons learnt**

- Performance of certain wastewater sites and the reporting of relevant compliance information faces investigations by the Environment Agency focused on 2010 to 2017, as disclosed in our Annual Report for 2017–18. We are working proactively with the Environment Agency and Ofwat to resolve their ongoing investigations. We have revisited the reporting of the Wastewater Treatment Works number of failed works and population equivalent performance measures provided in these previous years, performing a review of the relevant reported wastewater data for 2010 to 2017. Whilst we have had that review independently verified, the process is not yet completed.
- For the other two components, we have met our AMP 6 targets to date and are expecting to continue meeting the commitments in the remainder of the AMP. These are the two measures of asset health and are therefore discussed:
  1. External flooding (in this case all causes excluding hydraulic overload) has seen improvements with a compound annual decrease of 12% in 2013/14- 2017-18. A driver for this improvement has been the reduction in blockages, driven by an increase in annual sewer jetting (~750km in 2014-15 to 850 km in 2016-17) and an education initiative (visiting 60,000 customers at home and 2,300 businesses). This approach is being applied by targeting the number of incidents as opposed to the number of properties.
  2. Sewer collapse rates have been stable, which is supported by a targeted sewer renewal and rehabilitation programme. We expect this trend to continue for the remainder of AMP6.
- External flooding was a lower customer priority for AMP6, but has now increased for AMP7. As such, we have set more ambitious targets and will need to extend our root cause analysis for external flooding. For example, apply the process currently in use for managing *internal* flooding which has had a positive impact on that measurement.
- We have targets for Sewer collapses of 232 (2019-20).

***In summary, the root cause is 3) Inconsistent processes and process control: that enables improved operational processes, in particular with management of external flooding.***

**Measures to improve and ensure deliverability in AMP7**

- In AMP7 wastewater asset health is measured by two performance commitments: Sewer Collapses per 1000km of sewer and Treatment Works Compliance. Our AMP7 commitment on these measures is to reduce sewer collapses from 5.78 to 5.48 per 1000km and to achieve 100% treatment work compliance
- To do this we will:
  1. Sustain our decrease in external flooding and further decrease sewer collapses by pursuing the tactics that proved to be successful in the past (education and jetting).
  2. As part of our wholesale transformation programme we are redesigning our Asset Lifecycle Process (ALP) with the aims of:
    - Improving the line of sight from long term planning through to shorter term delivery, with greater integration of opex and capex planning.
    - Putting a greater emphasis on longer term planning, recognising that the balance of activity has been too focused on in-AMP delivery
    - Simplifying and speeding up the process, from risk assessment through to delivery and handover into operations.
    - Introducing risk and value interventions to deliver the best value for money for our customers within a totex and whole life cost context.
    - Using greater collaboration and placing greater certainty around chosen solutions through early supply chain engagement in the form of Integrated Teams.
    - ‘Teaming’ around solutions and adopting the ‘right person, right job’ mantra to enable quick decision making and break down silos across the business.
    - Encouraging greater collaboration with external stakeholders, improving our developer services processes and building in our drainage and wastewater management planning approaches.
- 1. We are developing a decision making framework (DMF) to support the redesigned Asset Lifecycle Process and Risk and Value interventions. The DMF will provide a consist approach to decision making, with clear criteria, robust governance and clear delegations of authority. The redesigned ALP will be governed by five Investment Decision points to enable early decision making. Decisions that are



based on a detailed understanding of the statement of need and root cause; based on the evaluation of options taking into account all costs and benefits over the life of the proposed solution and remaining residual risk; and decisions that deliver improved outcomes to meet our customer, business and regulatory requirements.

2. Although we have good risk processes in some areas, we recognise that we need a more systematic, enterprise-wide risk and resilience framework. Our plans to deliver this are currently being reviewed following the IAP, with detailed plans to be completed by August 2019 or earlier.
3. Focus on early identification and subsequent mitigation of treatment compliance issues by closely monitoring leading indicators in line with the UKWIR research (e.g. MLSS<sup>1</sup> monitoring, PST Sludge Blankets, power consumption). More detail on how we will improve our treatment compliance can be found in our analysis of the AMP6 wastewater numeric compliance PC.

**In summary, we expect to deliver future improvements through driving our transformational programmes and emphasise our proven levers to drive flooding performance, and to sustain the stable trend of sewer collapses.**

1) MLSS - Mixed liquor suspended solids, 2) PST - Primary settlement tank

## Serious Pollution Incidents

(Number of 'serious pollution incidents' affecting local rivers, streams and beaches caused by our operations)

Methodology between AMP6 and AMP7: Amended to Pollution incidents (categories 1, 2 and 3);

Adjusted forecast year(s): 2018-19

### AMP6 Overview

#### Actuals

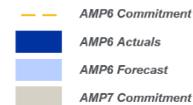
Years hit target: 3

Years missed target: -

#### Forecast

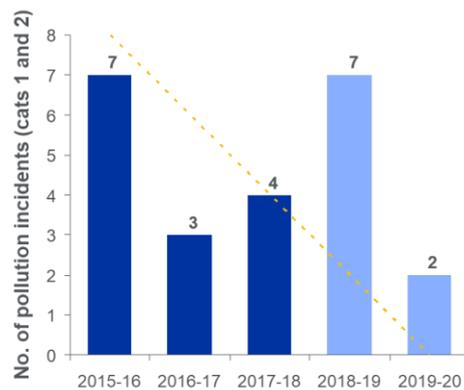
Years hit target: -

Years miss target: 2



### AMP6 – Serious pollution incidents

(Measurement based on AMP6 methodology)



Source: App5 – PR14 reconciliation ~ performance commitments

### Drivers of past and current performance and lessons learnt

- We have performed to target in the years to date, however, we are expecting to underperform in 2018-19 and 2019-20.
- The driver of performance and lessons learned are the same as those detailed in Category 3 pollution incidents; see above for details.
- We are expecting to see a reduction in serious incidents in 2019-20 due to our Environment+ transformation programme. However, we may not achieve our target of zero during the coming year as implementation is ongoing.

### Measures to improve and ensure deliverability in AMP7

Measures to improve and ensure deliverability in AMP7 are the same as those detailed in Category 3 pollution incidents; see above for details.

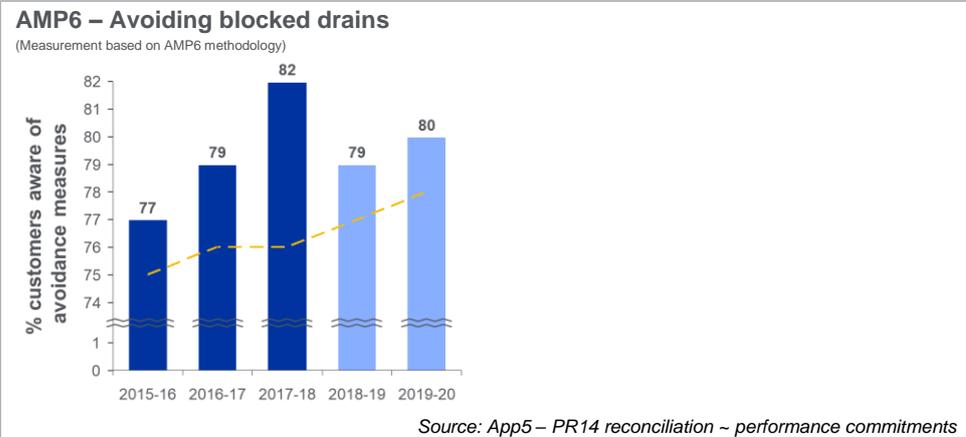
**Avoiding blocked drains**  
 (% of customers who know how to help prevent blockages in drains and sewers)  
 Methodology between AMP6 and AMP7: PC removed in AMP7;  
 Adjusted forecast year(s): No adjustment from September business plan

**AMP6 Overview**

**Actuals**  
 Years hit target: -  
 Years missed target: 3

**Forecast**  
 Years hit target: -  
 Years miss target: 2

— AMP6 Commitment  
█ AMP6 Actuals  
█ AMP6 Forecast  
█ AMP7 Commitment



**Drivers of past and current performance and lessons learnt**

The results from our Customer Promises Surveys, which illustrate our customer’s knowledge around the causes of blocked drains, have exceeded our expectations and are expected to continue doing so until the end of AMP6. The slightly lower forecast (80%) for 2019-20 is of conservative nature.

- The PC results are based on a survey that is being sent by post to circa 8000 random customers across the region and has a response rate of around 16%.
- The survey results serve as an assessment of our education initiatives, such as visiting 60,000 customers at home, 2,300 businesses and organising preventative action campaigns and presentations with 360 different customer groups. They have resulted in decreased sewer blockages from 23,000 in 2012-13 to 19,000 in 2017-18 (decrease of ~20%), which is in line with the increased awareness of causes for blockages from 2015-16 to 2017-18.
- The impact from our customer education initiatives has been very positive (evidenced by the correlation between awareness and number of blocked drains), such that competitors have been seeking our advice on our learnings on education; the education initiatives will be rolled out across customer types.

*In summary, the root cause of customer awareness captured by this PC is 2) Inconsistent approach to planning and decision making, and 5) Fragmented view of risk to aid decision making processes: as these drive the effectiveness of our educational campaign and impacts the correlation between education and the reduction of blocked drains.*

**Measures to improve and ensure deliverability in AMP7**

For AMP7, this measure of performance will no longer be captured. The success of our education initiatives, demonstrated by constantly meeting our customer awareness of avoidance commitment, is expected to be sustained in AMP7. The benefits for our blockages numbers will be reaped throughout AMP7 and will drive the continuous positive trend of sewer blockages.

**Thanet sewers, Woolston STW and Millbrook sludge**  
 (Enhancement projects)  
 Methodology between AMP6 and AMP7: Woolston STW and Millbrook sludge PCs removed in AMP7, Thanet sewers not changed;  
 Adjusted forecast year(s): No adjustment from September business plan

- These are three scheme-specific Performance Commitments.
- Woolston STW and Millbrook sludge schemes are due to be delivered in 2019-20 with no subsequent related PC.

**Drivers of past and current performance and lessons learnt**

*Woolston STW*

- Woolston has a financial impact in non-delivery; if not delivered this AMP, the funding will be returned. The project is forecast to deliver within the bounds of the ODI.
- The plant has been under-performing since 2015, however the work delivered at the plant is compliant with regulatory requirements; to date, the project has achieved 5/7 regulatory steps, with two regulatory dates remaining (8<sup>th</sup> May 2019 by which point last treatment facility will be brought into use, and 15<sup>th</sup> May by which point we will achieve the targeted effluent nitrogen levels of 15mg / litre / year).
- The primary driver for this successful operational performance is the culture of collaborative working with the contractor; the contractor optimisation team and our operators have weekly meetings to discuss delivery, issues and solutions.
- The project has been delayed several times, with the programme revised in 2015 and 2017, due to external factors (technical issues with weather, unexpected discovery of ground contamination) and sub-contractor related factors (delays from the supplier of cabling connections); the solutions, however, came from collaborative working borne out of trust.
- The need for well-developed stakeholder relationships is also critical, from the Environmental Agency (EA), to the local council, and customers (who are located close to the site) – our good relationships with stakeholders, e.g. the council, was based on the developed trust in collaboration.



- The key challenge that has been experienced relates to the structure of the contract with the delivery partner. The contract with the partner was not effectively funded with the consequence that the contractor's maximum financial exposure under the contract ('pain cap') has now been reached, with the contractor's fee and financial incentives having been lost. The contractor is therefore delivering on the basis of its reputational integrity.
- Although this project has no AMP7 PC, procurement and commercial contracts is a component of focus of the Wholesale transformation; a component of the transformation is to review contract strategy in order to ensure commercial success in the supply chain.

#### *Millbrook sludge*

- Millbrook has financial ODI for non-delivery; the project purpose is to increase dry-solid sludge process capacity from 12,000 tonnes per year to 18,000 the project is forecast to complete on time.
- The drivers of successful performance on this project are twofold. Firstly the project was well scoped in the pre-feasibility stage of development. The operations team ensured proper understanding at the beginning of the strategic drivers for capacity needs (as this influences the design, e.g. growth related vs. contingency) as well as operationally important inputs – overall this led to effective design. The engineering and design team built upon the feasibility study developed by 4D, a contractor used within AMP5 work; this circumvented the need for some optioneering work and ensured no rework – this enabled efficiency in project start up.
- Secondly, we worked in close collaboration with the delivery partner, who integrated someone into our engineering and design team. This smoothed the transition from design to the partner and enabled access to the supply chain, as the partner engaged suppliers on our behalf. The contractor continued to work with site ops closely, delivering work efficiently through good cooperation.
- Although there were minor issues (old buried structures at the sites, CHP plant installation), these were effectively managed with the relevant PMs of the scheme and so did not cause major delays.

#### *Thanet Groundwater Protection Scheme*

- The project is a National Environment Programme (NEP) scheme to prevent the risk of pollution of groundwater sources.
- Phase 1 of the Thanet Groundwater Protection Scheme was completed in AMP5. Delivery of Phase 2 is ongoing in AMP6 and is subject to an AMP6 ODI which protects customers in the event of non-delivery and delay. Phase 2 is on track to be completed at its committed date. Third party review has deemed this an efficient cost delivery of the project in Phase 2.
- Drivers on Phase 2 performance include asset condition, and how an improved understanding of asset condition influences programme planning and delivery. The Phase 2 investigations stage facilitated successful delivery through innovative use of technology (panoramic scanning technology) which enabled project efficiencies to be realised in the delivery stage. An improved understanding of asset condition allowed for unit costing and risk assumptions to be revised.
- During AMP6 we have routinely encountered non-standard situations where sewer shape, sewer condition or number and orientation of laterals/conduits meant additional cost had to be incurred to fit full contact liners effectively. It was found that similar levels of efficacy could be achieved with the use of circular liners (which are less labour-intensive to install), and now the use of circular liners in Phase 2 has led to accelerated programme delivery.

#### **Measures to improve and ensure deliverability in AMP7**

- Thanet Phase 3 is forecast for completion 2024-25 and has a related PC which protects customers in the event of non-delivery or late delivery (refer to Customer protections in Thanet Sewers CAC response for more detail).
- We have used the insight gained from the previous two phases of this programme to improve our cost forecasting for Phase 3 and to develop a cost-efficient programme which will fully realise the benefits of the Thanet Groundwater Protection scheme. An independent review has confirmed the robustness and efficiency of Phase 3 programme.
- Following the completion of proactive surveys, we have already collected valuable data on 3% of manholes across the Phase 3 area. This insight into asset condition will inform the planning and delivery of an efficient and representative programme of Phase 3 surveys. In addition, this insight has already helped us refine the variables on which Phase 3 costs are based and will inform our approach to Phase 3 delivery. Additional efficiencies will be realised during Phase 3 where possible by consolidating manhole, CCTV surveys and other planned and enabling work.
- The continued successful application of innovative technology and efficient delivery techniques will promote effective delivery in AMP7, such as the use of circular liners rather than full contact liners for efficient programme delivery. In addition, our standard application of best practice project management principles will enable delivery on time, to cost and quality requirements.

PD.A6.Table 4 – Retail PCs analysis

Retail Performance Commitments													
<b>First time resolution of customer contacts</b> (Proportion of customer contacts resolved first time as measured by a third party)													
<p><b>AMP6 Overview</b> Reputational ODI</p> <p><b>Actuals</b> Years hit target: - Years missed target: 3</p> <p><b>Forecast</b> Years hit target: - Years miss target: 2</p> <p> <span style="color: yellow;">—</span> AMP6 Commitment  <span style="color: blue;">█</span> AMP6 Actuals  <span style="color: lightblue;">█</span> AMP6 Forecast  <span style="color: grey;">█</span> AMP7 Commitment                     </p>	<p><b>AMP6 - First time resolution of customer contacts</b> (Measurement based on AMP6 methodology)</p> <table border="1" style="margin-top: 10px;"> <caption>AMP6 - First time resolution of customer contacts</caption> <thead> <tr> <th>Year</th> <th>% first time resolution</th> </tr> </thead> <tbody> <tr> <td>2015-16</td> <td>67</td> </tr> <tr> <td>2016-17</td> <td>67</td> </tr> <tr> <td>2017-18</td> <td>67</td> </tr> <tr> <td>2018-19</td> <td>68</td> </tr> <tr> <td>2019-20</td> <td>69</td> </tr> </tbody> </table> <p style="text-align: right; font-size: small;">Source: App5 – PR14 reconciliation – performance commitments</p>	Year	% first time resolution	2015-16	67	2016-17	67	2017-18	67	2018-19	68	2019-20	69
Year	% first time resolution												
2015-16	67												
2016-17	67												
2017-18	67												
2018-19	68												
2019-20	69												
<p><b>Drivers of past performance</b></p> <ul style="list-style-type: none"> <li>The measure used as a proxy for First Contact Resolution rate has been the percentage of contacts where the customer did not contact us again within 21 days (in billing) or 30 days (in operations).</li> <li>FCR performance has remained relatively flat since 2015. Our billing FCR is lower than our operational FCR, 64% and 89% respectively</li> <li>There are two key drivers of performance for this PC:                         <ol style="list-style-type: none"> <li>Billing underperformance has mainly been driven by the number of touchpoints our customers experience in our current delivery model. Billing issues, which represent 74% of all customer contacts, cannot be tracked uniquely in our CRM system. Consequently, all billing contacts by the same customer occurring within a 21 day period are recorded as failures in resolving the issue at first contact, even if they are contacting us about a new enquiry. We have found that customers often call multiple times to handle different administrative tasks, particularly around home moves. In addition, we currently have multiple touchpoints our customers experience because our delivery model drives multiple outsource providers that manage fragmented parts of the overall customer journey.</li> <li>Issues reported for operational contacts, which can be tracked uniquely, have a FCR of 86% which is above target. This supports our view relating to billing contact resolution noted above as, due to the relative complexity of operational contacts, our assumption is that these are less likely to be resolved first time when compared to billing contacts. Therefore, if our systems enabled us to identify unique billing queries, as we can for operational contacts, the rate would be above the target level for these commitments.</li> </ol> </li> <li>As part of our retail transformation programme, we have trained call agents and teams to be multi-skilled so customers don't have to be passed from team to team to get their query resolved. This leads to more informed responses, quicker and more accurate resolutions with less hand offs between teams which has increased our monthly FCR rate</li> </ul> <p><b>In summary, the root cause is 3) Inconsistent processes and process control: our FCR performance has underperformed for billing issues which is driven by customer touchpoints and has exceeded expectations for operational contacts due to different levels of complexity of average queries.</b></p> <p><b>Measures to improve and assure deliverability in AMP7</b></p> <ul style="list-style-type: none"> <li>Our channel shift strategy, which is to move to a target of 70% transaction online by 2024/25, will also increase FCR as customers are able to self-serve and resolve their query which otherwise would have required additional contact. This will reduce total call volumes. In addition, customers who do not use the self-service options will get through to skilled and experienced agents, who will deliver better advice the first time around. For 2018-19 we set a target of reaching 30% and have outperformed by reaching 34%.</li> <li>We are reducing the number of customer touchpoints through improving our customer journeys reducing the need for customers to be transferred across different systems and third parties, and will receive a quicker and more accurate service from their first point of contact. For more information, please see our original business plan submission <i>BP_CH13 – Retail Controls</i>.</li> </ul> <p><b>In summary, multi-skilled call agents, self-service and a system transformation lead to a decline in customer touchpoints thus improving the customer journey.</b></p>													

**Dealing with customers' individual needs**  
 (The proportion of customers agreeing with the statement that we 'dealt with their individual needs and those of their community', measured by surveys)

<p><b>AMP6 Overview</b> Reputational ODI</p> <p><b>Actuals</b> Years hit target: 1 Years missed target: 2</p> <p><b>Forecast</b> Years hit target: - Years miss target: 2</p> <p> <span style="color: orange;">—</span> AMP6 Commitment  <span style="color: blue;">■</span> AMP6 Actuals  <span style="color: lightblue;">■</span> AMP6 Forecast  <span style="color: grey;">■</span> AMP7 Commitment         </p>	<p><b>AMP6 - Dealing with customers' individual needs</b>              (Measurement based on AMP6 methodology)</p> <table border="1" style="margin-top: 10px; width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Year</th> <th>% of customers who agree</th> <th>Type</th> </tr> </thead> <tbody> <tr> <td>2015-16</td> <td>66</td> <td>Actuals</td> </tr> <tr> <td>2016-17</td> <td>66</td> <td>Actuals</td> </tr> <tr> <td>2017-18</td> <td>64</td> <td>Actuals</td> </tr> <tr> <td>2018-19</td> <td>65</td> <td>Forecast</td> </tr> <tr> <td>2019-20</td> <td>66</td> <td>Forecast</td> </tr> </tbody> </table> <p style="text-align: right; font-size: small;">Source: App5 – PR14 reconciliation – performance commitments</p>	Year	% of customers who agree	Type	2015-16	66	Actuals	2016-17	66	Actuals	2017-18	64	Actuals	2018-19	65	Forecast	2019-20	66	Forecast
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2016-17	66	Actuals																	
2017-18	64	Actuals																	
2018-19	65	Forecast																	
2019-20	66	Forecast																	

**Drivers of past performance**

- This PC measures, by surveys, the proportion of customers agreeing with the statement that we 'dealt with their individual needs and those of their community'.
- The PC was re-baselined and split into two independently measured components in 2015-16 with approval from Ofwat. The 2015-16 baselines are comprised of 66% of the individual needs component and 33% of the community needs component.
- For meeting individual needs we are not on track to meet our PR14 performance commitments. As outlined in our Business Plan (See *BP\_CH9 – Great Customer Service*), we have we have focused in AMP6 on improving our service when customers make direct contact with us, fixing some of the basics on our way to becoming brilliant at the basics in AMP7 and have not necessarily focused on the individual needs of our entire customer base. We have also not delivered a constant provision of service during a period of transition in our customer service and contact teams and our expectation is that while this will improve through AMP6 it takes time for the result to feed through into customer perceptions of our service.
- It is also reflective of the broader relationship our customers have with us, i.e. our insight shows many customers have a distant relationship, which means it's hard for customers to say we deliver against their needs. Again, our retail transformation programme will help to ensure a stronger presence with customers, delivering a clear vision of who we are and the value water brings to our daily lives – building a positive reputation with our customers.
- For meeting community needs, we are not on track to meet our PR14 performance commitments. Whilst we have a strong presence in our local community and deliver a number of projects such as Learn to Swim and Water Efficiency roadshows, our AMP7 plan broadens this out to ensure members of the community or visitors from outside our region have the opportunity to understand and engage with the investment we make to enhance their lives.
- Our transformation, starting with the new brand launched in March 2019, and plans for much wider AMP7 customer engagement will help build a stronger reputation with our customers.

**In summary, the root causes are 2) Inconsistent approach to planning and decision making and 3) Inconsistent processes and process control: as we are not on track to meet our commitments for individual nor for community needs, which is partially driven by inconsistency due to the transition period.**

**Measures to improve and assure deliverability in AMP7**

- We believe that our performance around meeting individual needs and community needs will increase towards the end of AMP6 and into AMP7 due to the following factors:
  1. With a wider focus on the range of customers and stakeholders that we serve, including visitors to our region, our AMP7 plan is much more geared towards understanding all of our customers' needs and tailoring our service and support to them through multi-skilled call agents, self-service and an overall system transformation. Our approach to this was set out in the Great Customer Service chapter of our original business plan (See *BP\_CH9 – Great Customer Service*) and demonstrates how we will drive up customer participation.
  2. Currently, the majority of our contacts are dealt with over the phone, and we have changed the way in which we handle some of these calls. Greater volumes of calls are now dealt with by our service delivery partner than at the beginning of AMP6, which has involved a process of training agents to handle enquiries at the point of contact.
  3. The introduction of our Online Portal in 2017 has enabled many more options for customers to interact with us online. Due to the portal being relatively new, we do not believe the 17/18 survey will have been heavily influenced by this introduction, but it will influence ease of interaction in the future through enabling greater choice, which increases the opportunity for dealing with individual needs.
  4. Similarly, correspondence around the Home Move journey has been brought back in house as we see this as one of the key 'moments that matter'. We have established a specialised Home Move team, which will enable us to move effectively handle customer enquiries, making it easier for customers to interact with us.
  5. We have already and are establishing partnerships with third parties to support the way we manage vulnerable customers and communities.
- By increasing participation through measures such as those outlined, our customers will understand the work we do, the value water brings to their daily lives and we will build a stronger reputation with them, enabling us to increase performance of meeting individual needs.

**In summary, we expect an improved performance in AMP7 due to more narrow focus on individualised service and less overall touchpoints driven by increased online/self-services.**

### Awareness of water hardness measures

(The percentage of customers with an awareness of how to deal with hard water)

<p><b>AMP6 Overview</b> Reputational ODI</p> <p><b>Actuals</b> Years hit target: 1 Years missed target: 2</p> <p><b>Forecast</b> Years hit target: 1 Years miss target: 1</p> <p> <span style="color: orange;">—</span> AMP6 Commitment  <span style="color: blue;">■</span> AMP6 Actuals  <span style="color: lightblue;">■</span> AMP6 Forecast  <span style="color: grey;">■</span> AMP7 Commitment                 </p>	<p><b>AMP6 - Awareness of water hardness measures</b> (Measurement based on AMP6 methodology)</p> <table border="1" style="margin-top: 10px; width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Year</th> <th>% of customers aware</th> </tr> </thead> <tbody> <tr> <td>2015-16</td> <td>57</td> </tr> <tr> <td>2016-17</td> <td>56</td> </tr> <tr> <td>2017-18</td> <td>55</td> </tr> <tr> <td>2018-19</td> <td>57</td> </tr> <tr> <td>2019-20</td> <td>57</td> </tr> </tbody> </table> <p style="text-align: right; font-size: small;">Source: App5 – PR14 reconciliation – performance commitments</p>	Year	% of customers aware	2015-16	57	2016-17	56	2017-18	55	2018-19	57	2019-20	57
Year	% of customers aware												
2015-16	57												
2016-17	56												
2017-18	55												
2018-19	57												
2019-20	57												

**Drivers of past performance**

This PC measures the percentage of customers with awareness of how to deal with hard water, measured by surveys.

- The target for this PC was originally yearly improvement from the 2014/15 baseline of 61.7% however the PC was re-baselined in 2015-16 to 57%. The agreed measures used to track performance on customer awareness of measures to take against hard water is the percentage of people who respond positively to following question: 'how much do you feel you know about how to deal with the effects of high levels of limescale in your water?'
- We set a target to improve on our previous year's performance during the AMP, but our performance has remained largely stable around the 55-57% range. Some of the measures implemented was clearer signposting to our website on information and advice, promotion of water hardness and advice to limit the impacts of it across our community roadshows and improved literature issued in bills.
- We conducted a survey in 2018 to understand the drivers behind our performance in this metric. The results are as follows:
- Just under a third (32%) of respondents felt that they knew everything or most of what they wanted to know about how to deal with the effects of high limescale in their water. These respondents only just outnumbered the proportion of respondents (30%) who felt that they knew little or nothing of what they wanted to know.
- There were no significant differences between the 2017 and 2018 results, but 2016 respondents were significantly more likely than those in 2018 to feel that they knew everything or most of what they wanted to know (36%, vs 32% in 2018), and significantly less likely to feel that they knew little or nothing of this (26%, vs 30% in 2018).
- Males were significantly more likely than females to claim they knew everything they wanted to know about the effects of high limescale levels (14% vs 8% respectively).
- Respondents who were keeping up with their bills with no difficulty were significantly more likely than others to feel they knew all they wanted to know about the effects of high limescale levels (14% stating this, vs 6% of those for whom keeping up is a struggle from time to time and 7% of those for whom it is a constant struggle or who are falling behind).

*In summary, we have seen stable performance despite our target to improve during the AMP, operational processes on how to deal with customer's not familiar with their issues.*

**Measures to improve and assure deliverability in AMP7**

- We know that hard water can affect customers' household appliances so we offer advice about how to address the issues caused on our website, which includes a postcode tracker. Our water distribution teams also offer 'Water in the Home' booklets to customers that contain practical tips and useful contacts for homeowners.
- In our annual survey to track customer awareness of our performance against our business plan commitments, 55% of customers said they were aware of how to deal with hard water. This percentage has decreased slightly from our recorded 2016–17 levels, despite an awareness campaign on social media directing customers to advice at [www.southernwater.co.uk/how-hard-is-your-water](http://www.southernwater.co.uk/how-hard-is-your-water).
- We aim to improve this level of awareness by increased customer engagement via our social media and website through targeted campaigns, building advice into the conversation with customers at the point of moving house and improving the content on our bills and online billing portal.

*In summary, despite a social media campaign, customer's awareness has decreased slightly. This is to be addressed by increasing the engagement through our improved customer journeys and more targeted campaigns.*

**Where your money goes**  
(The percentage of customers with an awareness of ‘where your money goes’)

<p><b>AMP6 Overview</b> Reputational ODI</p> <p><b>Actuals</b> Years hit target: 1 Years missed target: 2</p> <p><b>Forecast</b> Years hit target: - Years miss target: 2</p> <div style="font-size: small; margin-top: 10px;"> <p>— AMP6 Commitment</p> <p>■ AMP6 Actuals</p> <p>■ AMP6 Forecast</p> <p>■ AMP7 Commitment</p> </div>	<p><b>AMP6 - Where your money goes</b> (Measurement based on AMP6 methodology)</p> <table border="1" style="margin-top: 10px; width: 100%; border-collapse: collapse; font-size: x-small;"> <thead> <tr> <th>Year</th> <th>% of customers aware</th> </tr> </thead> <tbody> <tr> <td>2015-16</td> <td>60</td> </tr> <tr> <td>2016-17</td> <td>57</td> </tr> <tr> <td>2017-18</td> <td>56</td> </tr> <tr> <td>2018-19</td> <td>58</td> </tr> <tr> <td>2019-20</td> <td>59</td> </tr> </tbody> </table> <p style="text-align: right; font-size: x-small;">Source: App5 – PR14 reconciliation – performance commitments</p>	Year	% of customers aware	2015-16	60	2016-17	57	2017-18	56	2018-19	58	2019-20	59
Year	% of customers aware												
2015-16	60												
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2017-18	56												
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2019-20	59												

**Drivers of past performance**

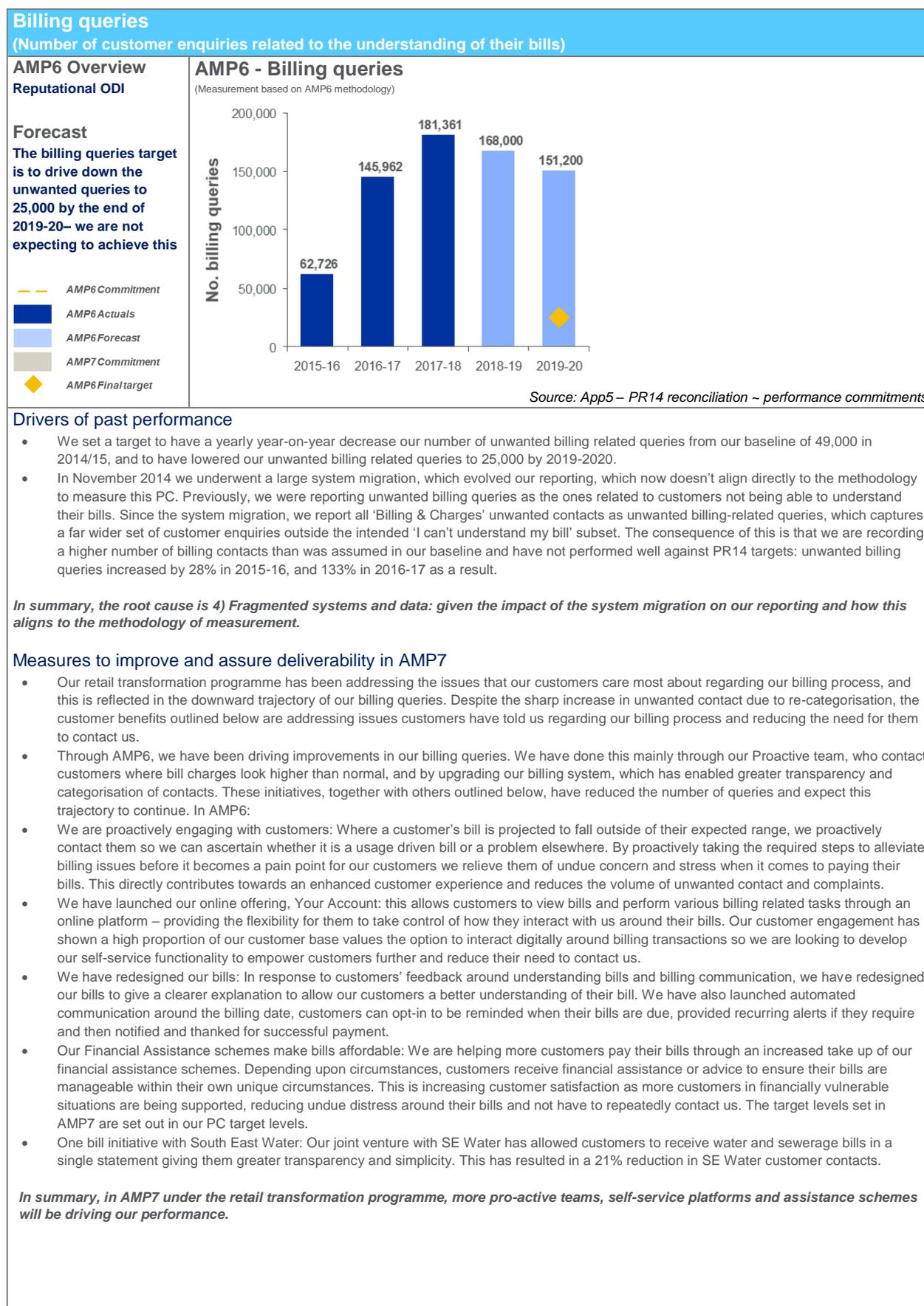
- We set a target to improve on our previous year’s performance during the AMP, but our performance decreased from 60% of our customers agreeing they had awareness of “where your money goes” in 2015-16 to 57% and 56% in 2016-17 and 2017-18 respectively.
- We have conducted in-depth customer surveys to understand our performance in this metric. We have understood that:
- Most respondents (60%) felt that Southern Water provided all or most of what they wanted to know about how money from their bill was spent. This percentage has not varied significantly over the three waves of the survey, and neither has the proportion who felt that they were given only little or nothing of what they wanted to know (8%).
- Females were significantly more likely than males to answer that Southern Water provided everything they need to know about how the money from their bill was spent (33% of females vs 27% of males).
- Households with one or two adults were significantly more likely than those with three or more to answer that Southern Water provided everything they need to know about how the money from their bill was spent (34% of single-adult households, 30% of two-adult households, but only 21% of three-adult households).
- The household’s financial situation had a significant impact on views. While 36% of those keeping up without any difficulty felt that Southern Water provided everything they need to know about how the money from their bill was spent, this fell significantly to only 17% of those for whom keeping up with bills/commitments was a constant struggle or who had fallen behind. The proportion who felt that they were given only little or nothing of what they wanted to know increased significantly from only 7% of those keeping up without any difficulties to 15% of those for whom keeping up with bills/commitments was a constant struggle or who had fallen behind.

*In summary, our performance decreased slightly, despite the target to improve it. Customers feel less likely to know where their money goes according to our surveys.*

**Measures to improve and assure deliverability in AMP7**

- We aim to increase the awareness of “where your money goes” and to increase transparency by providing customers with:
- Regular updates against our promise commitments through annual reporting, our stakeholder newsletters and promotion on our website and social media channels.
- Clearly signposted information about our performance from our customers’ bills.
- Advice at community events about saving water, how to prevent blocked drains and how we can help customers struggling to pay their bills. During 2017–18, we attended 24 events, talking to more than 20,700 of our customers.
- Regular updates on our capital construction schemes, particularly for customers directly affected by our planned improvement work, as well as local media and key stakeholders. Our dedicated capital delivery communications team has sent more than 41,000 letters and dealt with more than 1,800 individual enquiries, linked to 86 different schemes under construction during 2017–18.
- We have also improved our annual reports and website information with clear infographics and language to make sure we are clear about our charges and how we spend the money customers pay us.

*In summary, regular updates, clear signposted information, community events and improved annual reports are aimed at improving our performance within this metric.*



Take up of assistance schemes (number of customers who are receiving support through one of our financial assistance schemes)																			
<p><b>AMP6 Overview</b> Reputational ODI</p> <p><b>Actuals</b> Years hit target: 3 Years missed target: -</p> <p><b>Forecast</b> Years hit target: 2 Years miss target: -</p> <p> <span style="color: yellow;">---</span> AMP6 Commitment  <span style="color: blue;">█</span> AMP6 Actuals  <span style="color: lightblue;">█</span> AMP6 Forecast  <span style="color: grey;">█</span> AMP7 Commitment                 </p>	<p><b>AMP6 - Take up of assistance schemes</b> (Measurement based on AMP6 methodology)</p> <table border="1"> <caption>AMP6 - Take up of assistance schemes (No. customers)</caption> <thead> <tr> <th>Year</th> <th>Actuals</th> <th>Commitment</th> </tr> </thead> <tbody> <tr> <td>2015-16</td> <td>142,040</td> <td>~140,000</td> </tr> <tr> <td>2016-17</td> <td>194,726</td> <td>~160,000</td> </tr> <tr> <td>2017-18</td> <td>229,843</td> <td>~180,000</td> </tr> <tr> <td>2018-19</td> <td>240,000</td> <td>~200,000</td> </tr> <tr> <td>2019-20</td> <td>260,000</td> <td>~220,000</td> </tr> </tbody> </table> <p style="text-align: right;"><i>Source: App5 – PR14 reconciliation – performance commitments</i></p>	Year	Actuals	Commitment	2015-16	142,040	~140,000	2016-17	194,726	~160,000	2017-18	229,843	~180,000	2018-19	240,000	~200,000	2019-20	260,000	~220,000
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2019-20	260,000	~220,000																	
<p><b>Drivers of past performance</b></p> <ul style="list-style-type: none"> <li>We have consistently met and expect to continue meeting our commitments in AMP6.</li> <li>For AMP6 we put in place a targeted intervention strategy which involved identifying customers needing support. In preparation for PR14 we modelled the affordability of our customer base to identify and target those that needed support. We implemented a prioritised set of financial assistance interventions for these customers. Throughout AMP6, these interventions have included water efficiency advice, bill discounts and benefits entitlement checks. We plan to continue to provide much of this assistance in AMP7, including social tariffs, debt matching scheme and water efficiency support. The detail is set out in the original business plan submission (See <i>BP_CH8 – Helping customers who need our support_Pg120-121</i>).</li> <li>We are on track to meet our PR14 performance commitments for AMP6 in this metric. Overall, we set a target to increase the take-up of our financial schemes to 172,300 by 2017-18 and to reach 217,100 by 2019-20. In total, we have made 229,843 financial assistance interventions in 2017-18, and conducted over 19,500 debt advice visits. In 2016-17, we had approximately 140 customers per 10,000 receiving support through our social tariffs, compared to the industry average (WASCs) of 80 customers per 10,000.</li> </ul> <p><b>In summary, the root cause is 2) Inconsistent approach to planning and decision making and 5) Fragmented view of risk to aid decision making processes: enabled us to target identification of appropriate customers and a prioritized set of interventions.</b></p> <p><b>Measures to improve and assure deliverability in AMP7</b></p> <ul style="list-style-type: none"> <li>Reach &amp; Support provides a range of support to customers who face a range of wider vulnerability circumstances. We primarily offer non-financial support to customers through our PSR. For AMP7, we are expanding the extent support is available from 29 types of support to 53 types. In doing so, we will exceed the assistance defined by the Consumer Council for Water (CCW) as 'core assistance', in order to offer all the support types that CCW identify.</li> <li>Customers' adherence to bill payments and payment plans has fallen from 70% in 2014/15 to 60% in 2016-17. This means we need to do more to ensure each intervention properly enables customers to continue to pay their bills. We need to increase our focus on the effectiveness of our financial assistance interventions by developing a more granular understanding of the barriers faced by individual customers, and working with them to keep their payments on track which we are doing through our Reach and Support proposition as set out in our September business plan (See <i>BP_CH8 – Helping customers who need our support_Pg132_1</i>).</li> <li>One way to achieve this is by placing more emphasis on the management of individual cases to better tailor interventions to customers' needs. This was a key factor when creating a dedicated affordability team (in 2017) and when determining how we evolve our strategy for AMP7 which is set out in the original business plan submission (See <i>BP_CH8 – Helping customers who need our support_Pg126_1</i>).</li> </ul> <p><b>In summary, we aim to target falling adherence to bill payments by fostering tailored management for individual cases.</b></p>																			

Value-for-money													
(The proportion of customers who feel they get value for money from our services)													
<p><b>AMP6 Overview</b></p> <p><b>Reputational ODI</b></p> <p><b>Actuals</b>                      Years hit target: 1                      Years missed target: 2</p> <p><b>Forecast</b>                      Years hit target: -                      Years miss target: 2</p> <p> <span style="color: yellow;">---</span> AMP6 Commitment  <span style="color: blue;">█</span> AMP6 Actuals  <span style="color: lightblue;">█</span> AMP6 Forecast  <span style="color: grey;">█</span> AMP7 Commitment                 </p>	<p><b>AMP6 - Value-for-money</b>                      (Measurement based on AMP6 methodology)</p> <table border="1"> <caption>Value-for-money Data</caption> <thead> <tr> <th>Year</th> <th>% of customers</th> </tr> </thead> <tbody> <tr> <td>2015-16</td> <td>61</td> </tr> <tr> <td>2016-17</td> <td>57</td> </tr> <tr> <td>2017-18</td> <td>55</td> </tr> <tr> <td>2018-19</td> <td>57</td> </tr> <tr> <td>2019-20</td> <td>57</td> </tr> </tbody> </table> <p style="text-align: right;"><i>Source: App5 – PR14 reconciliation – performance commitments</i></p>	Year	% of customers	2015-16	61	2016-17	57	2017-18	55	2018-19	57	2019-20	57
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<p><b>Drivers of past performance</b></p> <ul style="list-style-type: none"> <li>We set a target to improve on our previous year's performance during the AMP. Our performance increased from 53% to 61% in 2015-16, but has decreased since and was 55% in 2017-18.</li> <li>In AMP6, our customers' bills have fallen in real terms and our service has improved however our customers' perceptions of value for money have declined despite this. Reduced perceptions of value for money suggest our customers have increased expectations, and we need to more effectively communicate the improvements we make.</li> </ul> <p><i>In summary, the root cause is 3) Inconsistent processes and process control: as despite a fall in real term costs, our communication of the improvements we make were not effective enough to impact customer perceptions.</i></p>													
<p><b>Measures to improve and assure deliverability in AMP7</b></p> <ul style="list-style-type: none"> <li>In order to improve our customers' perception of value-for-money, we designed and delivered targeted communication campaigns to highlight the benefits of metering, our water efficiency initiatives, and the various affordability tariffs we supply to those in need of extra support. We have focused on promoting the breadth of service we offer our customers today, and to emphasize the planning we undertake to build a sustainable future.</li> <li>This is an area where we are still working to better understand how we can best effect customers' views in this area.</li> </ul> <p><i>In summary, we aim to manage the rise in expectations by pursuing strategies such as communication campaigns.</i></p>													
Service Incentive Mechanism (SIM)													
<p><b>AMP6 Overview</b></p> <p><b>Forecast</b>                      NA</p> <p> <span style="color: yellow;">---</span> AMP6 Commitment  <span style="color: blue;">█</span> AMP6 Actuals  <span style="color: lightblue;">█</span> AMP6 Forecast  <span style="color: grey;">█</span> AMP7 Commitment                 </p>	<p><b>AMP6 - Service Incentive Mechanism</b>                      (Measurement based on AMP6 methodology)</p> <table border="1"> <caption>SIM Score Data</caption> <thead> <tr> <th>Year</th> <th>SIM Score</th> </tr> </thead> <tbody> <tr> <td>2015-16</td> <td>0.73</td> </tr> <tr> <td>2016-17</td> <td>0.78</td> </tr> <tr> <td>2017-18</td> <td>0.79</td> </tr> <tr> <td>2018-19</td> <td>0.79</td> </tr> <tr> <td>2019-20</td> <td>0.79</td> </tr> </tbody> </table> <p style="text-align: right;"><i>Source: App5 – PR14 reconciliation – performance commitments</i></p>	Year	SIM Score	2015-16	0.73	2016-17	0.78	2017-18	0.79	2018-19	0.79	2019-20	0.79
Year	SIM Score												
2015-16	0.73												
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2017-18	0.79												
2018-19	0.79												
2019-20	0.79												
<p><b>Drivers of past performance</b></p> <ul style="list-style-type: none"> <li>In 2016-17 our SIM score is the second lowest performance across the sector, with a score of 78 relative to the sector average of 84. However our performance during the year showed the largest improvement. We were one of 10 companies who had improved scores in 2017-18 compared to the previous year. This trajectory highlights the progress we are making towards reaching the top tier companies in the sector against some of the components of SIM and future C-MeX.</li> </ul>													

- However, this low performance will result in a considerable financial penalty. This reconciliation is set out in our original submission of the business plan (See *BP\_CH17\_Accounting for Past Delivery\_Pg294*).
- As a result of an audit performed towards the end of 2015-16, in 2016-17 we implemented a training programme to re-categorise unwanted calls. This re-categorisation did not impact Customer Experience but explains the large spike in monthly unwanted contact in 2016-17 and our annual forecast for unwanted billing contacts in 2017-18. Unwanted billing contacts are the main driver in total unwanted contact.
- Since 2015-16 we have more than halved the number of written complaints customers have had to make about our service. This reduction has been driven mainly by a significant fall in billing related complaints due to:
  - Our joint billing initiative, where ~500,000 customers are now billed by South East Water;
  - Initiatives such as the introduction of the Proactive team whereby all Payment Scheme customer reassessments over £20 are contacted to avoid bill shock;
  - Improved meter reading routes, improving the quality of source billing data, resulting in more accurate bills.
- We have also reduced our operational complaints through:
  - Our dedicated case management team who build relationships with customers who have recurring operational issues, reducing associated complaints;
  - Improving our communications around planned works; we received just 19 complaints about our projects during the period 17/18, highlighting their effectiveness.
- Our reduction in written complaints was the largest across the water sector according to CCWater's review. However, while we have worked hard to provide a better experience for customers and reduce their need to raise a complaint, we acknowledge that our 2016-17 performance is still the worst in the industry. We are committed to continue on our improvement trajectory as we further develop the initiatives that have delivered greater customer experience around billing since the start of the AMP. Our customer propositions to improve overall, particularly in the context of the C-MeX measure are set out in our original business plan submission (See *BP\_CH9 – Great Customer Service\_Pg145-152*).
- Our escalated complaints have also decreased significantly to around a third of the volume in 2015-16 (5% of written complaints). We have improved our responsiveness to complaint resolution which is further driving escalated complaint reduction. We expect improvement to continue.

***In summary, we have had one of the lowest scores within the industry, but one of the largest improvements throughout AMP6. The root cause of decreases in complaints is 2) Inconsistent approach to planning and decision making: driven by joint billing initiatives, proactive teams, better meter reading routes and a dedicated case management team.***

#### Measures to improve and assure deliverability in AMP7

- Unwanted contacts: through our retail transformation programme, we have implemented a number of Customer Service changes which are reducing the need for customers to contact us. Our retail transformation initiatives are showing tangible results in our performance measures and customer feedback (as set out in our September business plan *BP\_CH9\_Great Customer Service\_Pg143*), and we expect the benefit to continue throughout the AMP and through AMP7 as they mature and evolve:
  - We are proactively engaging with customers to resolve their issues before they become a reason for concern and undue distress for the customer and thus contacting us;
  - We have built an online offering, Your Account, to provide customers with online self-service options to take control of how they wish to carry out transactions;
  - We have redesigned our website so customers can easily navigate around to find information they require;
  - We have expanded the range of channels we communicate through so customers can receive information they require down channels of their preference.
- A full review of SIM reconciliation is set out in the business plan *BP\_CH17\_Accounting for Past Delivery\_Pg294*. The full account of the transformations we are making to improve cost efficiency and improve performance in our retail business are set out in our original business plan chapters *BP\_CH13\_Retail Controls\_Pg233-234* and *BP\_CH9 – Great Customer Service\_Pg143*.

***In summary, to drive our performance during AMP7 we aim to decrease customer touchpoints through our retail transformation programme. This includes improvements in self-servicing.***

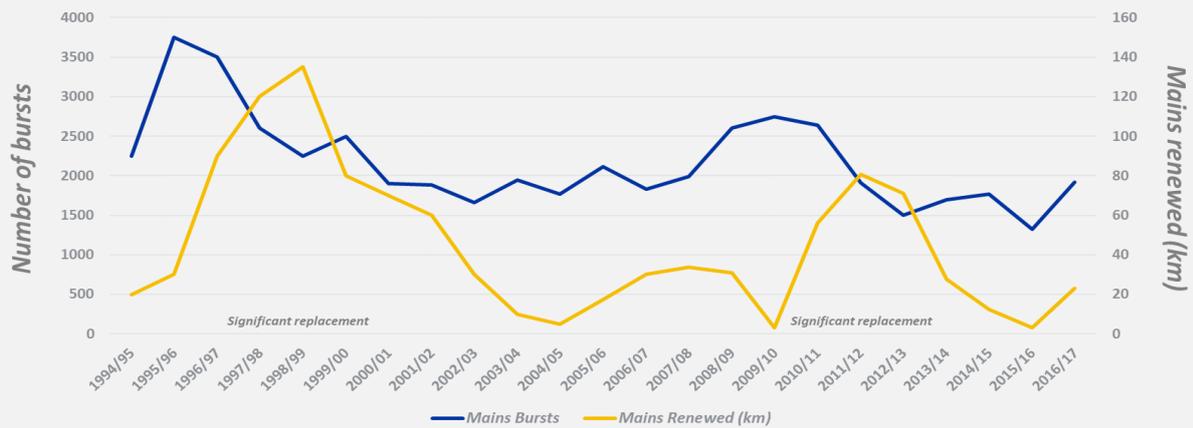
### Further Analysis: Review of our past performance on performance commitments

We carried out a wide range of analysis to support delivery against our performance commitments in Wholesale and Retail. This section provides further analysis in support of the Performance commitments analysis in the section above. Where a figure is relevant to a particular PC, it is referenced under the PC description.

#### PD.A6.Figure 1 – Asset Health – Mains Bursts (Water)

##### Significant mains replacement has driven reduced bursts

##### Mains replacement and bursts over time



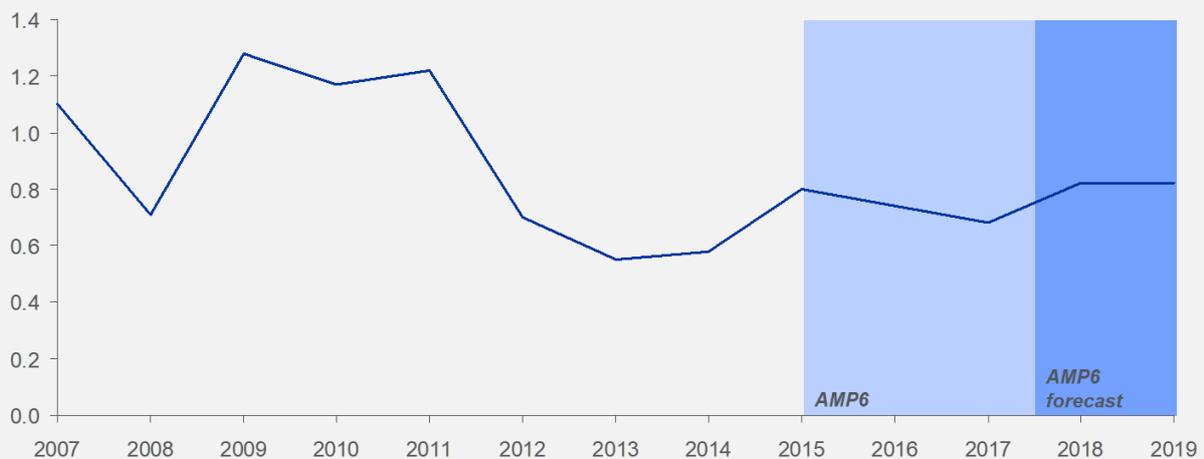
Source: June return and RCF data

The connection between mains burst and mains replacement is clearly demonstrated by the strong downward trend in bursts during periods of historical investment in the network.

#### PD.A6.Figure 2 – Drinking water quality – Discolouration contacts (Water)

##### Drinking water quality demonstrates variance that is considered within normal operating discrepancies

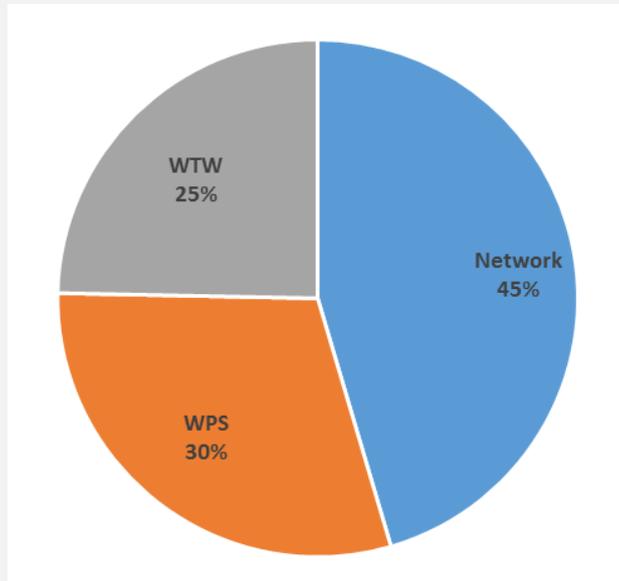
##### Customer contacts per 000 population associated with discolouration, 2007- Nov 2019



Source: June return and RCF data

**PD.A6.Figure 3 – Category 3 pollution incidents, Serious Pollution Incidents – Fault Sources (Wastewater)**

**Network incidents remain the highest contributor to pollution incidents**  
Proportion of pollution incidents across asset sources, 2018



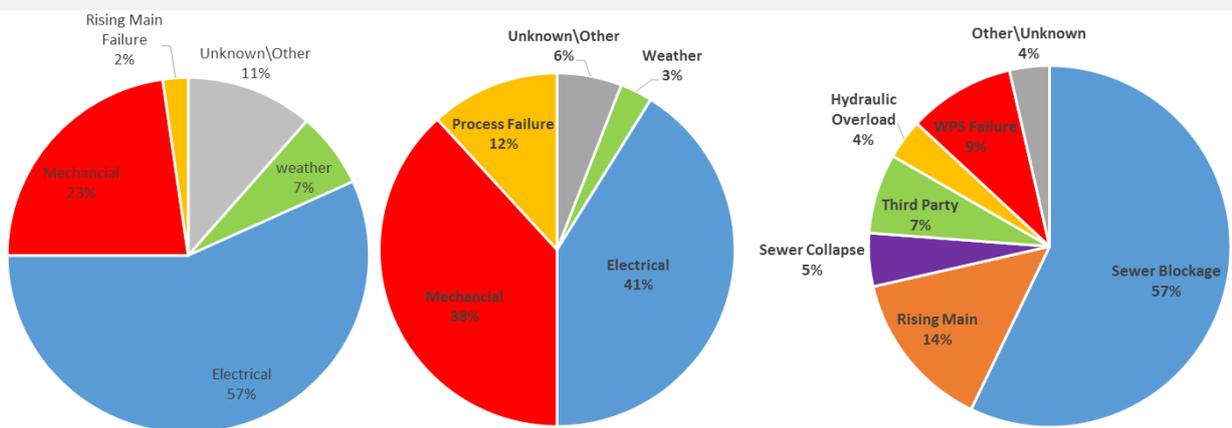
Source: Monthly "Protect the Environment Review"

**PD.A6.Figure 4 – Category 1 – 3 pollution incidents – Fault analysis (Wastewater)**

**Deeper fault analysis shows Mechanical & Electrical drives WWTW and WPS, whereas blockages dominates the network**

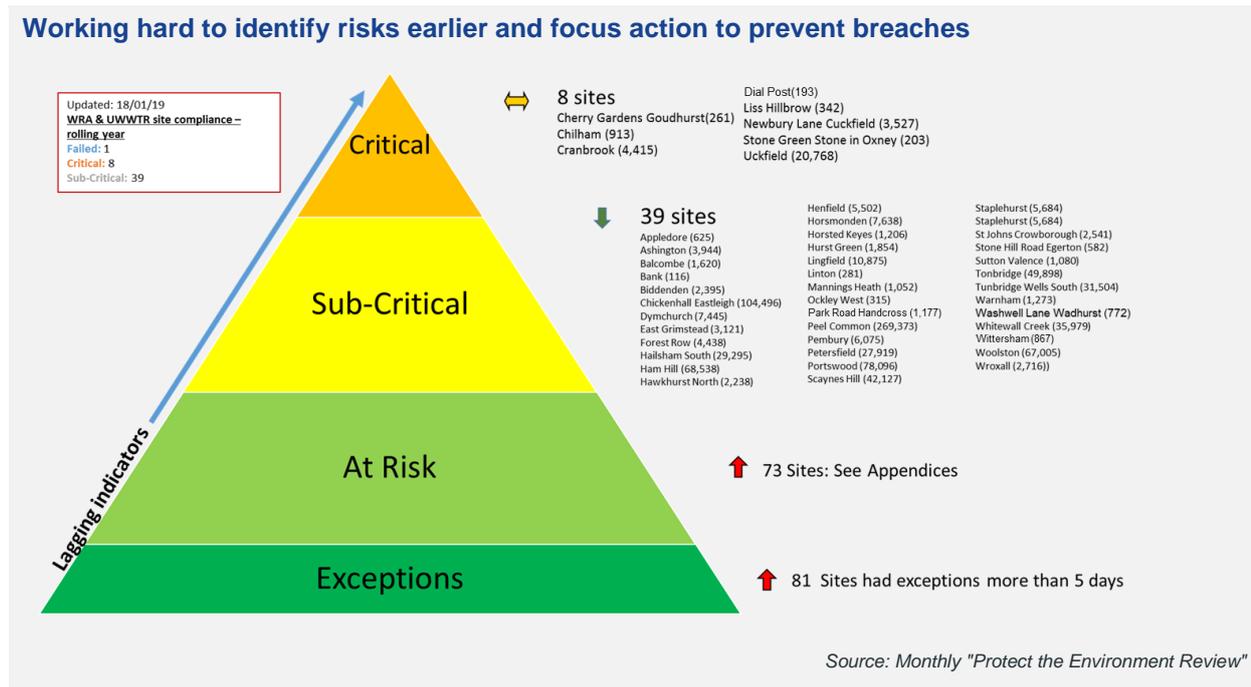
Proportion of Cat 1-3 pollution incidents faults by type across asset sources, 2018

Pumping stations    Wastewater Treatment    Network

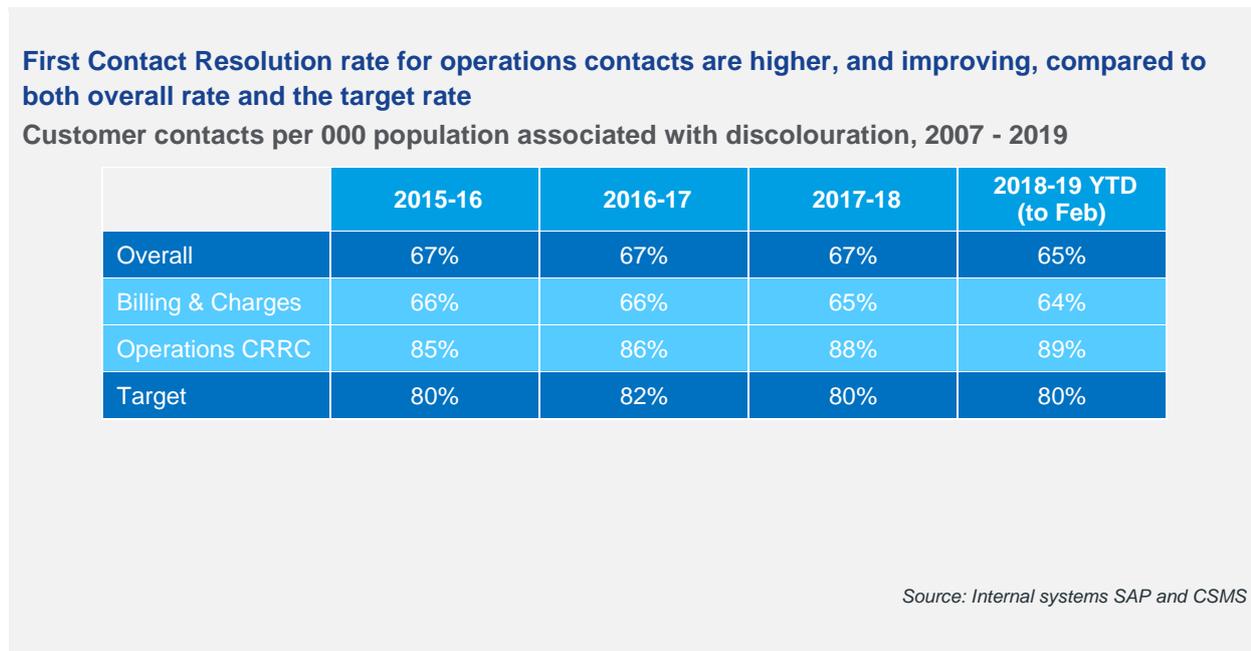


Source: Monthly "Protect the Environment Review"

PD.A6.Figure 5 – Risk Allocation Triangle (Wastewater)



PD.A6.Figure 6 – First Contact Resolution of customer contacts (Retail)



## 7.SRN.PD.A7 – Action plan on performance commitment monitoring and continuous improvement

Ofwat action	How we have responded
<p>Southern Water should produce and provide an action plan that sets out:</p> <ul style="list-style-type: none"> <li>• how we will continuously monitor performance against PR14 and PR19 performance commitments, including how this relates to section 3 of the Annual Performance Report and, including what evidence it will look for beyond itself and the sector;</li> <li>• how we will identify drivers of performance and lessons learnt from both good and poor performance;</li> <li>• how we will identify measures to improve performance and integrate these into its business; and</li> <li>• how we will ensure that this is a continuous rather than one-off process</li> </ul>	<p>Further information provided</p>

### Our detailed response

The response to this action should be read in conjunction with the *IAP\_TA8\_Accounting for Past Delivery\_Summary* and our responses to:

1. *IAP\_Accounting for past delivery\_PD.A6 – Review of our past performance on performance commitments*
2. *IAP\_Accounting for past delivery\_PD.A8 – Review of our past performance on incidents*
3. *IAP\_Accounting for past delivery\_PD.A9 – Action plan on incident monitoring and continuous improvement*

## Summary

We are committed to continuously improving in order to deliver on our promises to customers and achieve our performance commitment targets. In the *IAP\_TA8\_Accounting for Past Delivery\_Summary* and response to *IAP\_TA8\_Accounting for past delivery\_PD.A6*, we describe how we have learnt lessons from our past performance and what we are doing to transform our business to enable the improvement actions to be implemented. But there is more we will do to ensure the entire performance improvement cycle is effective.

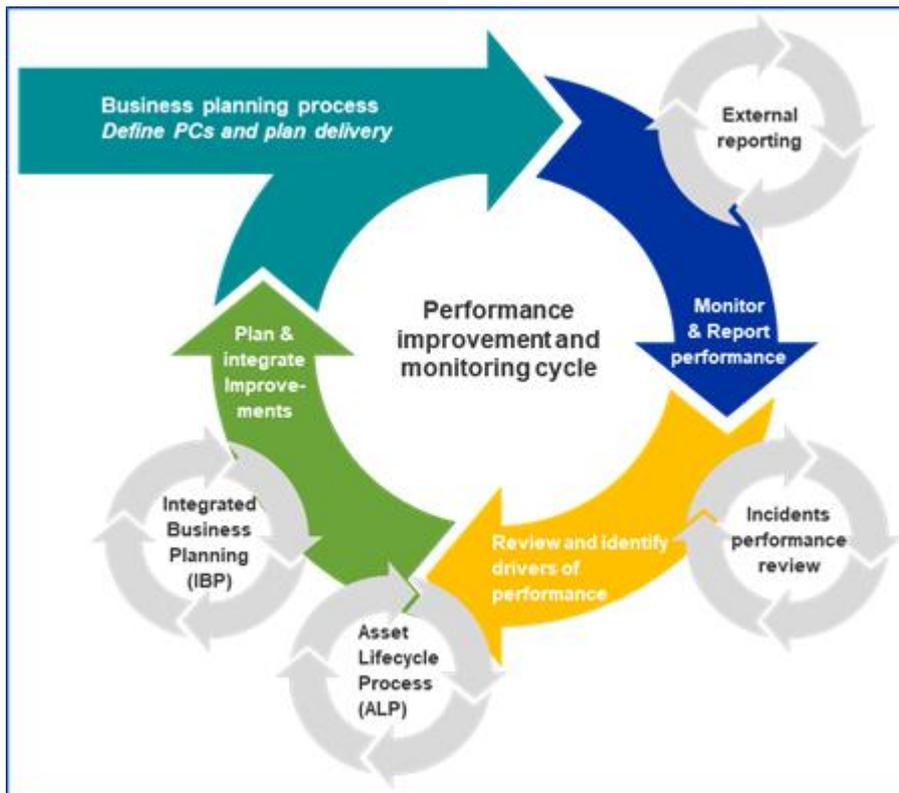
We do have a comprehensive set of processes and procedures already in place to report and monitor our performance against PCs, however, we have not always been good at quickly understanding poor performance and responding when our performance commitments, and their underlying drivers, are off track. Examples of this are set out in our response to *IAP\_TA8\_Accounting for past delivery\_PD.A6*. This has led to service interruptions as well as a number of incidents, impacting both consumers and the environment. We recognise that understanding root cause drivers of performance and learning lessons is key to being able to identify the measures that will affect and improve performance overall. We have not placed enough importance on this in the past, but are in the process of making significant improvements through our business transformation programmes. We are redesigning the processes that we will follow to track and

monitor risks holistically across the business, to identify the root cause drivers of performance and to select the most effective and efficient improvement solutions.

We have enhanced our approach to developing our capability and improving the quality of our monitoring and reporting. We are part way through a three year programme of improvement to align our reporting internally and to our regulators, in particular: Ofwat, the Environment Agency and the Drinking Water Inspectorate. At the end of the third year, our vision is that we will be operating a risk-based programme of end-to-end process reviews that ensure accurate data provision, good understanding of drivers of performance, effective decision making and integration of improvement measures to enable continuous improvement.

PD.A7.Figure 1 – Performance improvement cycle below sets out a performance cycle framework that we will use to ensure completeness in our improvements across our processes, capabilities, systems and governance. Additionally, we are looking at the interactions with all our processes, ongoing improvements programmes and action plans to ensure they link up and that it is understood how they are all being delivered together across the business. An example of this is the linkages between this performance action plan and our incidents action plan as well as key processes being worked on in our transformation programme. These linkages are demonstrated using examples in PD.A7.Figure 1 – Performance improvement cycle below.

PD.A7.Figure 1 – Performance improvement cycle



This action plan structure has been set up to discuss each of the elements of the performance improvement cycle in turn:

1. How we monitor and report performance against our PCs
2. How we identify drivers of performance and learn lessons
3. How we plan and integrate improvement actions into our business
4. How we ensure that this happens continuously.

In brief, we are:

- **Improving our data quality**, including centralising how we store and view and visualise data.
- **Improving our reporting processes**, to ensure that our performance data is reliable, accurate, and complete as well as produced in an efficient and timely manner.
- **Establishing a rigorous and consistent approach to root cause analysis to better understand performance drivers**, building on the analysis that we do already and incorporating into our evolving processes that are being developed in our transformation programmes.
- **Establishing a systematic approach to solution development and integrating solutions into business planning and decision making processes**, to include how improvement actions identified are incorporated into our forward planning processes.
- **Bolstering our executive management oversight and governance to ensure continuous improvement**, to control adherence to processes and procedures and be accountable for performance against our outcomes.
- **Embedding the Modern Compliance Framework** to drive structural and cultural change in order to provide sufficient trust and confidence in our performance reporting such that we are no longer in Company Monitoring Framework (CMF) 'prescribed status'.
- **Commissioning independent assurance of the progress of this action plan**, which will report on the progress we have made against defined business goals to our Board, Ofwat and our CCG. This will complement what has been set out in our Final Assurance Plan.

A summary of the actions described below is set out at the end of this section in *PD.A7.Table 1 – Action plan summary*, and includes target dates for the completion of each action.

## Approach

In order to set out our action plan for the continuous monitoring and learning from PC performance, we have undertaken detailed analysis, both internally and externally, and used this insight to shape what we will do.

### External Engagement

In developing our approach, we have looked at good practice performance improvement practices both within our own sector and outside the sector (including our understanding of examples within oil and gas and the nuclear sector). We have also drawn on good practice and experience from other sectors in developing some of the detailed processes discussed in this document (e.g. Asset Lifecycle Process and Integrated Business Planning). For example, we have benchmarked our programme management maturity within our Engineering and Construction department to the P3M3 maturity model (an established portfolio, programme and project maturity assessment framework which is based on Government best practice). We have also built an understanding of best practice within our own industry, for example, we conducted a review of the available root cause analysis methodologies and our benchmarking showed that our peers have, in some instances, adopted CAST (Causal Analysis based on Systems Theory).

## Internal Engagement

In 2017 we began a series of significant transformation programmes which has helped identify issues with our current performance cycle and has begun to resolve them. We have developed this plan by working closely with those that are developing the ‘to-be’ processes on how we will identify, prioritise and integrate performance improvements, as part of the Operational Excellence Programme, Wholesale Transformation Programme, and Modern Compliance Framework. The important conclusions of these reviews include:

- improvements can be made in the availability of management information and internal reports;
- that line of sight can be improved between site level operations and performance commitment delivery and that this is important to present consistent information;
- that we can be more systematic, across the business, in our use of and approach to root cause analysis;
- that because our planning processes are more capex focused we tend towards capex solutions, when opex solutions may be more effective and efficient;
- that we can improve the way in which our business plan integrates improvement measures and delivers them over the AMP; and
- strengthening our end to end reporting processes and rebuilding our internal assurance capability.

These are discussed in more detail through this action plan document.

We have also considered the lessons from our assessment of our past performance. Our full analysis of the issues that we have faced can be found in our response to *IAP\_TA8\_Accounting for past deliveryPD.A6*.

## To enable effective monitoring and reporting we need robust processes that draw on consistent data to have a single view of our performance against our performance commitments

This section outlines our current approach to monitoring and reporting our performance against PCs and details our action plan for continuing to improve how we do this.

### How we currently report and monitor our performance against PCs

At the most granular level, we are continuously monitoring our performance on a day to day basis, e.g. through alarms and monitors at each of our water and wastewater facilities, and live information drawn from our contact centre e.g. number of calls waiting, speed to answer, with summaries presented in daily reports. Where issues can be easily rectified at the operational level, these are actioned immediately. If issues require further investigation or investment, they will be escalated.

Our control centre allows us to remotely monitor our assets, however the current set-up is reactive, very manual, and its efficiency could be improved. This causes delays in responding to changes in asset state and results in customer and compliance issues. We recognise that there needs to be:

- a common understanding across the business of the remit of the control centre;
- defined roles and responsibilities and appropriate training for the staff involved;
- a large focus on proactive analysis of assets, sites, catchments and areas which brings together monitoring activities done across the business; and more intelligent alarms and alarm visibility.

We are in the process of reviewing the control centre in order to redesign it to better suit our needs.

In 2017, we established an Operational Excellence programme, which is designed to improve our culture in driving performance improvement within our wholesale business. The structure of this programme is similar to the programme we established in our retail business (using the ‘huddle’ process to gather teams to monitor and review performance metrics), where we have seen significant improvements in performance. As part of this programme we have developed ‘hubs’, which are cross-functional teams who gather to review performance and risks, and start to consider quick fixes for improvement measures. Hub outputs are monitored at three levels in the wholesale business: Sites (where monitoring is done weekly); Areas and; Senior Management Team (SMT) (where monitoring is done monthly). More detail on how they identify improvement measures can be found in the ‘How we currently identify drivers of performance and improvement measures’ section below.

In addition to day to day monitoring and improvements, we have a reporting process in place to monitor and report performance against our performance commitment targets. Our reporting process, for both internal and external audiences, is governed by the Regulatory Compliance Framework (RCF) which we have updated in the last year to make relevant to our business today. We have developed this framework to define the processes and procedures (approximately 80) which are followed to compile the data required to evaluate performance against our Performance Commitments; this has been reviewed and updated in support of the AMP7 Performance Commitments. We capture performance data on a monthly basis to report it to the ELT and the Board, and is published externally annually.

The RCF is made up of the following documents:

- RCF100: Overview of the framework and its policy and standards as well as governance
- RCF300: This series of documents sets out the processes and procedures for collecting and collating the data required to evaluate each business process
- RCF400: This series of documents captures the output data which is produced by the procedures detailed in the RCF300 series.

The RCF defines the roles and responsibilities for each PC including who is responsible for the delivery of the PC and who is responsible for monitoring and reporting against the PCs. There are three key roles for each of the PCs that involve different people and levels of seniority:

- Director: Executive in charge of the business unit responsible for the PC
- Promise Owner: Head of the function responsible for the PC, part of Senior Management Teams (SMT) and responsible for the relevant operational performance as well as reporting on it
- Business Process Owner: Manages the process through which the reporting data is collected and collated for each business process.

Monthly dashboards show how we are performing against each PC. These are compiled with input from the Area and SMT hubs and are presented, by the Promise Owner or Director, to both the Executive Leadership Team (ELT) and the Board. Any deviations from the expected value of the PC will be discussed in these forums, along with the plan to address any performance issues, which often involves the operational teams who are conducting the daily and weekly monitoring of drivers of performance. We are working to create greater consistency in the way we report across all PCs on a monthly basis. The Business Process Owner also monitors performance when they are collecting and compiling data for the monthly reporting cycle. This cycle typically involves accessing multiple systems following the processes which are similar to those set out in the RCF300 series. The way in which data is gathered is largely Excel based, meaning that the production

of the KPI outputs is manual and therefore can be prone to human error. In the longer term, we are working towards automating this so that human error is minimised.

If the Promise Owner identifies deviations from the expected result, they will investigate to understand the source of the deviation, including looking at information and data to understand the drivers of performance at a more detailed level than the PCs e.g. asset performance data. There are many systems that we use to record data across the different areas of our business, and this can create inconsistencies that take time to understand and adjust. Where inconsistencies in source data are identified, we are able to resolve this to monitor data, however, this takes time to do and is inefficient. If we cannot identify an isolated event that has driven performance data, this is escalated to the Area and SMT hub to review and instruct further root cause analysis.

Access to good data underpins our ability to really understand detailed drivers of performance and PC performance and we have already taken steps to improve this, but further work is needed with additional improvements included in this action plan.

The RCF has been established for several AMPs. An annual review against Ofwat's Regulatory Accounts Guidance is undertaken to ensure compliance against reporting requirements. As part of being in prescribed status in the CMF we are required to carry out risk based assurance of our key reporting to Ofwat. Our end of year performance reporting is subject to independent external assurance, which is reported to the board. Over the last year, we have strengthened the annual reporting process by moving to a continuous improvement process. This activity has been driven by the Board and through this we will continue to improve the structure and content of the RCF to ensure it remains an effective tool for AMP7 and in the longer term. So far, we have rebuilt over 80 data entry sheets and checked calculations, and rewritten over 80 process documents with focus on over 400 risks and controls. We are in a period where we are working to gain stability and ensure the current processes are working properly. Going forward, improvements will be targeted at data governance, data assurance and engaging with our teams to ensure they understand the importance of these reporting processes and that they are adhered to. Further detail of these improvements can be found in our Final Assurance Plan which is published in March each year.

## Our action plan for monitoring and reporting performance

### Goal 1: Improve the quality and availability of data

As part of the wholesale transformation programme, we are working on a number of initiatives to improve our data quality and availability. These are being delivered through:

- Information management review
- Asset data improvement
- Management information and reporting.

**Information Management review:** We have already made commitments to review and improve our asset data technology infrastructure. We have committed to an extensive programme of review and improvement through the Information Management Undertaking that we have in place with the DWI.

The programme includes the following key phases:

- Carry out reviews to identify risks associated with online monitoring instrumentation, SCADA, telemetry, network communications, IT infrastructure, core information management systems and data and information management
- Produce and action plan to address the risks uncovered through the activity above

- Deliver the action plan incrementally through to March 2025

We have already started reviewing levels of manual intervention on our data and are mapping data flows and system integration to understand data risks integrity. We have engaged a third party to carry out the initial phase of our Operational Asset Management project. This will look at how best to implement a new Enterprise Asset Management system.

Through this Undertaking, we will be delivering against a series of milestones and we will be reporting to the DWI on progress on a quarterly basis. The technological and process improvements delivered through this initiative will benefit both the wastewater and the water business as the asset management systems are communal to both.

**Asset data improvement:** We know that having quality asset data readily available will drive efficiency in our end to end asset lifecycle process and improve the reliability of our reporting and decision making. To improve our asset data, we are doing three things.

Firstly, we are undertaking a series of proactive asset data collection initiatives to improve the quality of our asset data. We are updating our asset data across the business involving our Engineering and Construction directorate, and Operations, in readiness for AMP7.

Secondly, to sustain the quality of our asset data over the long term, we are planning improvements to our asset data capture and data feedback processes. This includes how we receive asset data back from our capital project suppliers, and how we are improving the clarity of the requirements for data capture in our contracts with our supply chain. We are also planning changes to how we organise ourselves to enable improved asset data capture, storage, management and access. This includes role definitions for staff in relation to data, incentivising staff who are inputting data to prioritise quality, and greater definition around what asset data resides in which systems, with greater clarity around data classification, to improve ease of access.

Thirdly, we are making short term and long term changes to our asset data technology infrastructure. In the short term, we are planning to make greater use of the asset data systems that we currently have, by providing greater governance and clarity around what data is stored where, and we will consolidate our asset data into fewer data repositories to create a more consistent set of data available throughout all our business units. We have several programmes focussed on improving our monitoring of assets, e.g. abstraction meters, network monitors and telemetry kit through outstation replacement. This will enable better quality reporting as the data which is gathered will be of a higher quality.

In addition, we have also recently recruited an enterprise data architect to improve the overall management of our data across our various systems, thereby adding to our existing enterprise architecture capability to access and maintain the data.

**Management information and reporting:** We are designing a new suite of dashboards to underpin our renewed focus on delivering our performance commitments and managing the ongoing performance of the wholesale business. Our data and insight dashboards will display our performance across a number of key areas in a way that shows trends over time as well as current performance including any risks to meeting our performance commitments. Our aim is to have this data available to operational teams to ensure we have a consistent line of sight on performance data across the business enabling faster identification of issues and improvement measures to support effective decision making.

By having data and insight more readily available to those who rely upon it, we will encourage a cultural shift where all Southern Water staff can monitor PCs and feel personally accountable for improving performance.



## Goal 2: Have a catalogue of the detailed metrics to support effective monitoring of our performance commitments

Ahead of AMP7, we will ensure that KPIs that drive PC performance are monitored and that these are calculated using methodologies aligned to the RCF.

Some of our current performance commitments are reliant on lagging indicators, e.g. where we are monitoring if we have had to repeat contacts within 30 days from a particular customer as part of our first contact resolution monitoring. This limits our ability to respond proactively to changes as the information which is being reported is, by its nature, out of date. We are moving towards establishing leading indicators wherever possible in order to increase our capability to be more proactive. We have already made progress through our Water First and Environment+ programmes. For example, through the implementation of Environment+, in 2019 we will be using leading indicators (such as pump-efficiency, plant out of action, and % maintenance complete among others) to help identify priority sites in reducing pollution incidents. More information on our progress within these programmes is set out in the *IAP\_TA8\_Accounting for Past Delivery\_Appendix 2*.

Ahead of AMP7 and as part of our data improvement programme we will review existing data and task the Promise Owners to continue to identify the data required that will enable a deep understanding of the drivers of performance and for this to be captured in our reporting dashboards.

We are in the process of engaging with external consultants to support us in redesigning our operational control centre to support our wholesale business monitoring. We will design and establish a clear vision to be delivered through a reworked operating model, looking across the board at processes, people and capabilities, technology solutions and data requirements.

## Goal 3: Mature processes that underpin our internal and external monitoring and reporting

We are expanding the Promise Owner and Business Process Owner roles to include responsibility for understanding performance commitments but also the underlying KPIs that enable us to understand the drivers of performance more comprehensively. We will develop additional guidance and training on these roles and introduce reporting processes e.g. templates and to track over time.

We will continue to review our RCF documents to ensure they are as usable as possible. We will also support colleagues with training so they are better able to identify risks to the regulatory reporting processes and implement appropriate controls.

## We are in the process of delivering improvements to the way we identify drivers of performance and improvement measures

This section outlines our current approach to identifying root cause drivers of performance and, going forwards, our action plan for continuing to improve how we do this.

### How we currently identify drivers of performance and improvement measures

As described above, one element of performance monitoring is in the site hubs. If performance variances are noted as part of this review, the hubs identify the best actions to address potential performance issues. Some of the improvement actions may be straightforward and low cost adjustments, or alternatively they may identify larger scale work required to affect performance. Other elements of performance monitoring,

that feed into the hubs are through our Hazard Review, process science teams and Compliance and Asset Resilience (CAR) checks, which provide greater depth of information to understand performance.

To date, our Operational Excellence programme has delivered improvements in compliant service to our customers through implementation of stable, repeatable processes, simplified ways of working, removal of duplication and wasted effort and focusing of our attention where it matters the most. Within the first months, we have observed significant improvement in team engagement, the volume and quality of work completed and the effectiveness of problem solving by operational teams. We have improved resilience across our resourcing, asset condition, system and network performance. Further team improvements include maintenance productivity being up by over 30% and achievement of weekly plans up by 40%, Water Treatment Centre alarms activation reduced by 50% and the average age of unresolved alarm activations down by 60%. From a planning perspective we have greater visibility of critical asset condition which is improving and informing operational and maintenance priorities, achieved a 50% reduction in water quality shutdown events and improved adherence of water production plans to within 1% of target. While we have seen real improvements to date, we need to maintain the rigour of the structured hubs to ensure they are focusing on the key issues. In addition, these are not yet fully rolled out to all sites so we will continue to roll these out to the remaining sites.

Not all performance variances will be fully explained within the hubs where issues are more complex and take time, with analysis of data, to really understand. Where the driver of performance is not self-evident, or the solution does not represent a simple fix, hubs will escalate issues and risks through the hub structure up to functional leads. Operational teams within those functions will then conduct root cause analysis to understand the drivers of performance and identify a solution. At this stage, we have historically faced two key issues: insufficient resources to complete analysis and no systematic approach and methodology through which to conduct analysis. As a result, our understanding of drivers of performance has at times been only at a 'face-value' level. For example, we have often concluded that asset failure drives performance, without fully understanding the broader conditions that may have impacted the issue.

If an issue is particularly complex, or requires material capital expenditure, then it will be raised again and treated as part of a District Risk Meeting. This meeting is the first stage in our existing Risk Management Process, which is owned and run by the Risk and Compliance directorate (which owns the Enterprise Risk Management Process). The process is designed to take an issue through a structured procedure to identify the root cause driver of performance and to investigate and develop a solution. There are, however, a number of challenges with the root cause analysis completed as part of the Risk Management Process and we are striving to address these. Firstly, the way this is run is not the same within Water and Wastewater, and across different regions and districts. The process is also not closely monitored to ensure the policies and procedures are being correctly and consistently followed. As a result, this process does not always yield sufficiently deep root cause analysis and understanding of performance drivers. Secondly, our Planning and Resilience function focuses on capital investments and as such the solutions that are identified tend to be capex focused without necessarily a full consideration of the whole life cost.

In our retail division, as noted above, we already have fully functioning 'huddles' where our performance targets are reviewed. These short, focused daily meetings between teams were delivered through our retail transformation in AMP6 (as set out in *BP\_CH13 – Retail Controls\_Pg228*) and enable the close monitoring of a set of well-defined KPIs (drivers of PC performance). These huddles are a way to identify issues, understand drivers and learn lessons about where team performance is on or off track. Daily huddles are an approach to identifying improvement measures, in addition, where issues require more investigation and analysis, this is conducted and presented to the SMT through daily reports. Actions identified through these two forums are tracked for progress by the SMT.

Our action plan for improving our identification of drivers of performance and improvement measures

**Goal 4: Fully implemented hubs and consistency in managing operational performance**

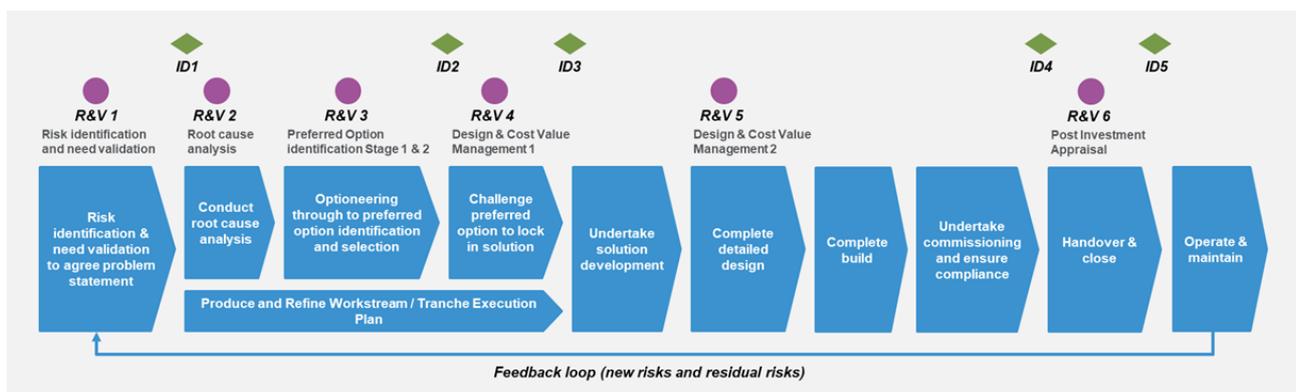
We are still embedding the Operational Hubs into our wholesale business as they are not yet fully rolled out across each of our operational sites. Our first priority is to complete the company wide roll out of site, area and SMT hubs. We will also begin to undertake half yearly quality checks to review that hubs are functioning as designed, that hub cadence and quality is maintained, that the correct stakeholders are regularly attending and that they are effective at identifying, raising and where appropriate solving issues that impact PC performance.

We are also providing training to those involved in the hubs to enable them to more effectively understand and resolve the issues that lie within their scope. This training provides those in the hubs with the same root cause analysis principles as described below in the Asset Lifecycle Process (ALP), Goal 5, below (Risk & Value 1 - 3), thus ensuring that a consistent and systematic approach is followed irrespective of the scale of the issue or level of risk identified.

**Goal 5: Have a systematic approach to identifying root cause issues and solutions**

We have recently redesigned the Asset Lifecycle Process (ALP) to prepare ourselves to deliver in AMP7. The ALP is the sequence of stages that our assets go through during the time span of their ownership including strategy, investment planning, design, build, operate, maintain and de-commission. The redesigned ALP applies to all asset risks and ensures the right totex decisions are being made along the process, with the right information by the right people. This will be achieved through the introduction of an integrated team, the Risk and Value (R&V) process and the Investment Decision (ID) points within the Decision Making Framework (DMF) which together make up the redesigned ALP. The figure below shows how the R&V stages are aligned to the ID points across the ALP lifecycle.

**PD.A7.Figure 2 – Redesigned ALP with Risk & Value (R&V) process and Investment Decision (ID) points**



The R&V process is at the heart of our new ALP. This is a methodology adopted by high performing water companies that will focus our technical decision making around informed and accurate asset investment decisions across all workflows, and is recognised by our Delivery Partners as a mechanism for improved collaboration and decision making. The R&V process is underpinned by a series of meetings or workshops at each stage. These meetings are checkpoints within the process to make the right decisions with the right people (this being the integrated team), ensure that the process is being adhered to and document key information using a standardised template to identify whether the criteria for progression to the next stage has been met. The meetings are reliant on accurate information, good facilitation and positive contribution from those involved. The stages of the R&V process are as follows:



- **R&V1: Risk identification and need validation.** Validates the evidence of a need to invest in current and future assets and the likelihood and impacts of business risks. This will deliver a holistic view of risks and issues across the business.
- **R&V2: Root cause analysis validation.** Validates root cause analysis of the needs and gathers evidence of why the risk is likely to occur or has been realised and moved to an issue or problem. This enables the team to define what the options are to address the root cause.
- **R&V3: Preferred option identification.** Identifies all the possible options that address the needs and root causes as identified through the above goals; compares the options against various constraints in an options scorecard to produce a short list of options; and finally applies a cost and benefit review process.
- **R&V4: Design and Cost Value Management 1.** Performs a design and cost value management intervention to develop, refine and challenge the highest cost design components of the chosen solution to deliver further efficiencies on the initial costs.
- **R&V5: Design and Cost Value Management 2.** Performs a design and cost value management intervention to sign off the detailed design and the Workstream and Tranche Execution Plan.
- **R&V6: Post Investment Appraisal.** Conducts financial closure of the project and assesses any residual risks to be integrated back into the ALP.

Each of these R&V stages are still in the process of being defined and our view of these continues to mature. Through this action plan we will complete the redesign of our ALP and embed it into business as usual operations.

For root cause analysis both within the ALP and outside of it, we have decided to adopt the CAST (Causal Analysis based on Systems Theory) methodology, alongside the 'Five Whys' approach. This decision is based upon our research into industry benchmarks and best practice from other water companies. CAST analysis recognises that some outcomes arise from complex interlinked processes, and are not best explained by a 'chain of events' explanation. This applies to a subset of the issues that we face, with the rest sufficiently explained by the Five Whys approach which is a simple, easy to follow approach to achieving a depth of understanding of drivers of performance. To embed this, we have identified a pool of staff from a number of our directorates that require training in these methodologies - including Operations, Planning and Resilience and selected elements of Engineering and Construction, and have already delivered training to the majority of these staff. As part of the formal ALP process, we have begun to specify the requirements of a 'facilitator role'. The lack of formal facilitation in the past was identified by the wholesale transformation team as a key limiting factor in previous attempts to embed root cause analysis. This facilitator will be trained in a similar way to the training received by the facilitators for incident debriefs. They will be impartial, will ensure that process is followed and that assumptions are not left unchallenged.

The Decision Making Framework (DMF) brings together the Investment Decisions and the redesigned ALP creating an integrated and consistent approach in decision making that is risk based, totex centric and outcome focussed.

- **Risk based decision making:** Decisions that are based on a detailed understanding of the need and root cause
- **Totex centric decision making:** Decisions based on an evaluation of options taking into account all costs and benefits over the life of the asset, and the remaining residual level of risk.
- **Outcome based decision making:** Decisions that deliver improved performance outcomes to meet customer, business and regulatory requirements.

Developing this standard approach will help drive confidence that the right decisions are made by the right people. This is enabled through earlier decision making in the ALP through the Investment Decision points and by establishing earlier collective ownership of the solution and identification of lower totex solutions.

The integrated team is a key enabler to the redesigned ALP and is made up of a number of stakeholders, e.g. Investment Planning and Resilience, Engineering & Construction, Operations and Delivery Partners. This new way of working will result in reduced solution design costs by eliminating waste from duplication, rework and handovers. We will use this team to drive towards greater collaboration and certainty around chosen solutions through early supply chain engagement and improved design innovation and constructability by drawing upon the experience of the Delivery Partners. This will facilitate greater business confidence in the end solution.

The redesigned ALP will feed into our new Integrated Business Planning (IBP) approach described in the section below. The link between the ALP and IBP is being finalised. We anticipate that an improvement measure would enter the plan after R&V3 (Preferred option identification) stage of the ALP. It will then feed into the plan at the appropriate time horizon, e.g. into the 2 week plan for immediate action, into 12 week plan for short term future, into the 8 Quarter plan for the medium term future, or into the 10 year plan/10+ year plan if it is a long term action.

## We are developing a systematic approach to plan and integrate improvement measures into our business, through our new Integrated Business Planning and Asset Lifecycle Planning programmes

This section outlines our current approach to planning and integrating improvement measures into our business and details our action plan for continuing to improve how we do this.

### How we currently plan and integrate improvement measures

Once improvement measures have been identified (as set out in the section above) and approved, these feed into our existing planning process for delivery. Multiple Opex and Capex plans are created and held independently across the business, e.g. in Microsoft Project, Excel, PowerPoint, and P6, which means there is a lack of alignment between maintenance and capital work being undertaken. As we do not have a clear view, in one place, of the improvement activities which are planned, there can be a lack of coordination in project delivery which can lead to duplication or misdirection of effort, e.g. extensive repairs might be made to an asset which is due to be replaced in the near future.

Action plans are usually delivered through the reallocation of staff and financial resources from other plans and budgets. If a large capital project is required as part of an improvement solution, more funding may be requested from the ELT and Board. In some cases, where a solution to an issue has been developed and approved, the head of the function will assemble a specific team of people to manage the project. They will develop a charter and project plan and attempt to resource the project to enable delivery. This focussed approach to the implementation of improvement measures has been followed inconsistently; usually this responsibility falls to existing operations teams to complete alongside their business as usual activities. This means that projects are sometimes not planned adequately and can fail to secure the resources they need at the right point in time, e.g. where operational resource is required for the commissioning of a capital project, if this is not properly planned from the outset, the resource may not be available when it is required.

We recognise that the strong focus we have on cost drives behaviours where long term consequences are not always properly considered as part of the planning process, e.g. where a decision was made to reduce the dosage to sewage pipes which reduces H<sub>2</sub>S emissions to save cost in the short term, but as H<sub>2</sub>S is a corrosive gas, the result of this was that the pipe needed to be replaced sooner than it should have been and therefore cost more in the long term. We know that this is not the most effective way to plan our resources and are committed to improving this with the Integrated Business Planning (IBP) programme already in progress, which will shift our focus away from cost to the expected benefit to the business.

Our action plan for planning and integrating improvements into the business

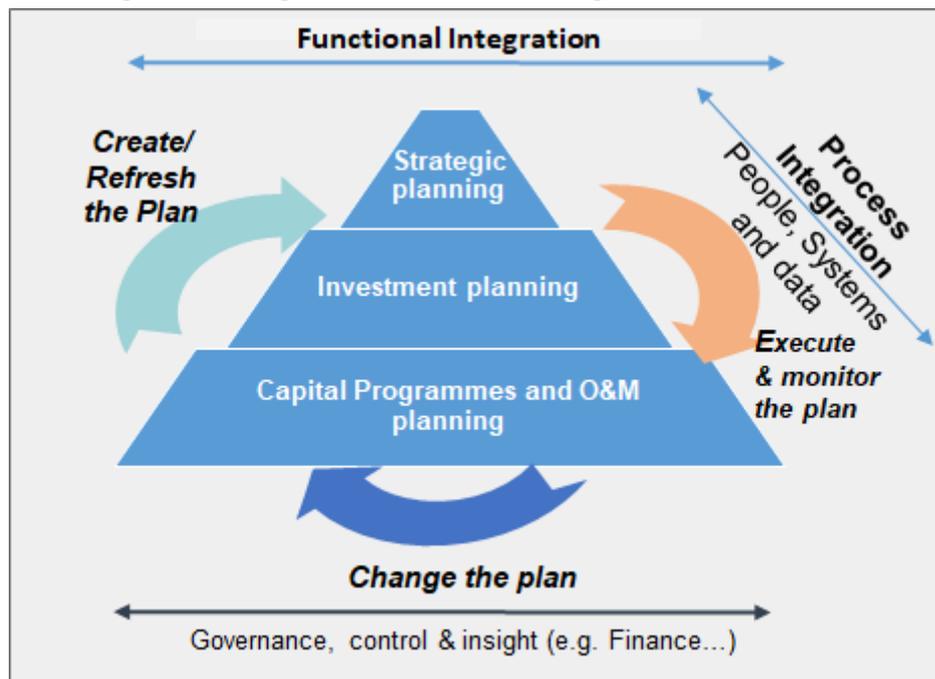
**Goal 6: Integrated plans and work schedules to deliver outcomes and enable effective prioritisation**

Our new Integrated Business Planning (IBP) approach will resolve many of the issues described above that we currently face whilst planning and integrating improvements into our business. The purpose of IBP is to integrate planning and decision making for the following types of activity into one centralised plan which will provide us with a single version of all future planned major and minor investments:

- Strategic planning
- Investment planning
- Capital programmes
- Operations and maintenance planning.

IBP will redesign the way in which work is planned, scheduled, and delivered to enable timely decision making by the accountable roles within the business. The plan will be developed across multiple time horizons from long term, to 10 year, 2 year, 12 week and 2 week, with the level of detail and certainty in the plan increasing as the activity gets closer to execution, which will ensure the plan is delivered on time and budget and achieves the desired benefits. It will be a rolling plan, meaning that for example, within the 2 year time horizon, every quarter another quarter will be added to the end of the plan. It will extend further than an AMP to encourage longer term, strategic decision making. All functional plans will be integrated to enable optimisation and removal of conflicts, and there will be full visibility of schedule, cost and outcomes to enable effective integrated business decisions.

PD.A7.Figure 3 – Integrated Business Planning overview



The plan will define the level of detail required depending on the time period as set out below. These planning cycles are all aligned and integrated and each provide a more granular look into the future as appropriate for the different users at each stage:

- Long term plan: Required for more strategic business planning and longer term focus
- 10 year plan: Allows a full AMP schedule to be extracted whilst having a view of what is planned for the subsequent AMP
- 8 Quarter (2 year) plan: This allows us to define real costs on a totex basis to enable us to effectively manage the plan and take into account demand and risk changes
- 12 week plan: Needed in order to undertake resource management and risk management; used to adapt to build in seasonal trends to plan maintenance schedules and to focus on readiness for execution of operations and maintenance, capital delivery and associated operations support
- 2 week plan: Detailed enough to provide clarity on a site-by-site basis of what work is being done, by when and by who, to deliver on our outcomes.

The planning cycles will ensure we only maintain one central plan, which is achievable and realistic. The different planning horizons will allow us to develop effective plans that can be integrated from the strategic level down to what is delivered at the site level. We are confident that this approach will provide confidence both internally and externally in our ability to deliver on our long term plans.

To enable the successful delivery of the IBP, we will need to consider system and data requirements to support the framework and develop and deliver training materials to those who will be responsible for working with the framework.

Over time, we will roll out IBP across the wholesale business. This will be a phased roll out which will include each of our operational site plans into the integrated business plan when they can evidence that they have a mature enough planning capability. This process is underway using the project charters already developed.

We will ensure that there are clear processes in place for handing over solution designs from the new ALP to IBP so that they can be sequenced and scheduled and prioritised appropriately according to their risk and value to the business and customer outcomes. These processes are already starting to be developed by the redesigned ALP as described in the ALP section above.

## We need improved governance to ensure adherence to new processes being implemented and to enable continuous improvement

We need to learn and improve our performance on a continuous basis. To ensure this continuity of change, governance has to be well established to make sure that defined procedures are followed.

### Our current approach to ensuring the continuity of the improvement cycle

It is our Executive Leadership Team who are responsible for ensuring that our business performance is monitored and reported accurately and that our business is adhering to process and continuously improving to reach our commitments to customers. Beneath this, there are governance structures in place that cover: reporting and monitoring; root cause analysis and the identification of improvement measures; and the delivery of improvements as part of our ongoing business operations.

The ELT has close oversight of reporting activities and it is their responsibility to ensure that the RCF processes are followed and that those with a role are engaged in the process and understand its importance, particularly as part of the RCF100 documentation. The current approach to the governance of monitoring and reporting is in a state of flux as we have been driving structural and cultural change. This is to support the development of a modern transparent and ethical compliance framework, including:

- A register of obligations which will capture all of the company's legal obligations and other commitments in a single place which, together with internal process, enables us to meet these obligations
- A change process to ensure that where an obligation is changed (or a new one is applied), our processes continue to enable us to meet them
- End to end process reviews to identify all risks to the successful delivery of that process and the controls that need to be in place to mitigate those risks
- Assurance over the effectiveness of those controls
- Developing an ethical business culture, including restating our Code of Ethics.

We have developed our Final Assurance Plan, which is part of our response to being in 'prescribed' status in the Company Monitoring Framework (CMF). Our assurance plans are developed from stakeholder feedback and from our own risk assessments. These plans are risk-based and include details of improvements in our internal assurance capability and outline in detail our external assurance plans for the coming year. The Board's Audit Committee monitors the integrity of our non-financial information reported by the company in fulfilment of its regulatory, legal and environmental obligations. This includes information required by Ofwat, the DWI and the EA, as well as non-financial information to be included in the company's financial statements. The assurance plans are approved by the Audit Committee, which is responsible for overseeing and challenging the effectiveness of our approach.

PD.A7.Figure 4 – Modern Compliance Framework shows, diagrammatically, an outline of our Modern Compliance Framework.

PD.A7.Figure 4 – Modern Compliance Framework



For root-cause analysis and improvement measure integration, we have not historically had a governance structure that completely brings together the processes that we follow. Instead, root cause analysis governance has been split across regions and functional areas. Equally, governance of the decision making that influences the integration of improvement measures has not been held centrally to give a single view of changes, priorities and investment decisions.

Our action plan for ensuring the continuity of the improvement cycle

**Goal 7: Clear governance structures embedded in the performance improvement cycle**

We have recently implemented a new governance structure in our business. OpComm brings together senior leadership concerned with the ongoing operations of the business and TransComm is the forum in which matters relating to the ongoing transformations in our business are governed. These two committees will continue to represent the group that is ultimately responsible for ensuring that we are continuously improving, with governance structures for monitoring and reporting; root cause analysis and improvement measure identification (our new ALP); and the implementation of improvement measures (our new IBP). For monitoring and reporting, we will continue to deliver and embed the Modern Compliance Framework and ensure that it delivers a transparent and ethical process.

For our root-cause analysis and improvement measure identification, we will ensure that a full structure is defined for governance over the Asset Lifecycle Process. We have already begun to define this through the Decision Monitoring Framework (DMF, as explained above). This structure will specify when decisions are made through each stage of the redesigned ALP, in what forums and with what level of delegated authority. As part of the DMF, we will also define the process, forums and authorities for the escalation of risks to the corporate level. We will ensure that the governance structures are designed to enable the right decisions to be made, with regard to risk, totex and outcomes.

The governance over the integrated business plan (IBP), which plans the implementation of identified improvement measures, is also being defined. We are developing a complete view of the key decisions across the IBP process, including: changes to the plan; investment decisions; and prioritisation decisions, as well as defining the delegated authority decision thresholds.

## We have developed an approach for reporting updates on our progress and maturity against our business goals to our Board, our CCG and Customers and Ofwat

To ensure we build confidence in the successful delivery of the action plans, we will report progress against our business goals in the action plan on a quarterly basis to our Board, CCG and Ofwat. We are currently engaging a third party assurer to develop a maturity assessment framework, against which they will assess the maturity of our performance on our business goals. These assurance plans are also reflected in our Final Assurance Plan.

Full details of our intentions and timing for establishing this reporting process are set out in our *IAP\_TA8\_Accounting for Past Delivery\_Summary*.

## Conclusion

To conclude, we know that in the past we have not always identified the drivers of our performance associated with our commitments to customers consistently. We are committed to improving in this area by putting in place a continuous process covering monitoring and reporting, identifying drivers of performance and improvement measures and making sure that we integrate these into our business planning processes and business as usual activities. This action plan builds on what we are doing in our transformation programmes and existing governance structure with the additional rigour that we need to ensure processes are clear and are adhered to. We are demonstrating our commitment to improvement through our approach to reporting to our Board, CCG, Customers and Ofwat on a quarterly basis.

## Action Plan Summary

This table outlines a summary of the action plan which we have described above, along with target dates for the completion of each action.

PD.A7.Table 1 – Action plan summary

Goal - what are we working towards?	Action - what are we doing?	Target end
<b>Measuring and reporting performance</b>		
1. Improve the quality and availability of data	Finalise contractual arrangements for receiving asset data back from capital project suppliers	July 2019
	Complete design and make available the management information dashboards for Water and Wastewater directorates	March 2020
	Carry out reviews to identify the risks associated with the following areas; a. Water Supply Works online water quality monitoring instrumentation and other monitoring infrastructure b. Water telemetry and SCADA systems c. Network communications IT infrastructure d. Core information management systems e. Data and information management	March 2020
	Produce an action plan in the following areas requiring capability and technology improvements; a. End-to-end information management capabilities b. Operational asset management systems c. Data and Information management strategy d. IT business continuity improvements e. Integrated monitoring and control capabilities	June 2020
	Deliver the action plan as developed in the action above	March 2025
2. Have a catalogue of the detailed metrics to support effective monitoring of our performance commitments	Review with Promise Owners the drivers of performance data required to understand their PCs	Ongoing
	Establish a set of leading indicators on priority PCs	March 2020
	Complete phase 1 redesign of operational control centre transformation	September 2019
3. Mature processes that underpin our internal and external monitoring and reporting	Complete definition of expanded promise owner and business process owner roles	March 2020
	Deliver training and guidance to promise owners and business process owners	March 2020
	Review our RCF documents to ensure they remain fit for purpose and usable	March 2020

Identifying drivers of performance and improvement measures		
4. Fully implemented hubs and consistency in managing operational performance	Undertake half yearly quality checks to review that hubs are functioning as designed	Ongoing
	Complete the company wide roll out of site, area and SMT hubs	September 2019
	Deliver root cause analysis training to those that are involved in the hubs	March 2020
5. Have a systematic approach to identifying root cause issues and solutions	Complete detailed Risk & Value design	May 2019
	Complete implementation of Risk & Value (training delivered to staff, define facilitator role and deliver training, etc.)	March 2020
Planning and integrating improvements in the business		
6. Integrated plans and work schedules to deliver outcomes and enable effective prioritisation	Complete the design of the integrated business planning framework	March 2019
	Agree IBP system and data requirements	April 2019
	Define clear processes for updating activities in the IBP based on activity outputs from the new ALP	April 2019
	Develop IBP implementation roadmap	May 2019
	Develop IBP training materials	June 2019
	Undertake a phased roll out of IBP across the business when each operational site is ready to be on the plan	March 2020
Embedding and broadening our governance		
7. Clear governance structures embedded in the performance improvement cycle	Complete detailed Decision Making Framework design - including the risk escalation process	December 2019
	Define and develop decision points and decision making authority through the integrated business plan process	December 2019
	Embed Decision Making Framework to enable governance	March 2020
	Embed decision points and decision making authority through the integrated business plan process	March 2020
	Continue to deliver and embed the Modern Compliance Framework	Ongoing

## 8.SRN.PD.A8 – Review of our past performance on incidents

Ofwat action	How we have responded
<p>Southern Water should produce and provide additional evidence that it has identified:</p> <ul style="list-style-type: none"> <li>• The drivers of incidents performance and customer communication and support performance during and after major incidents, pollution incidents and where statutory and licence obligations enforced by the EA/NRW, DWI and Ofwat have not been met;</li> <li>• Lessons learnt from good and poor past and current performance;</li> <li>• The performance gap between current performance and proposed performance in the 2020-25 business plan; and</li> <li>• The measures planned or already in place to ensure deliverability of the 2020-25 business plan.</li> </ul>	<p>Further information provided</p>

### Our detailed response

The response to this action should be read in conjunction with the *IAP\_TA8\_Accounting for Past Delivery\_Summary* and our responses to:

1. *IAP\_TA8\_Accounting for past delivery\_PD.A6 – Review of our past performance on performance commitments*
2. *IAP\_TA8\_Accounting for past delivery\_PD.A7 – Action plan on performance monitoring and continuous learning*
3. *IAP\_TA8\_Accounting for past delivery\_PD.A9 – Action plan on incident monitoring and continuous learning*

## Summary

Since the beginning of 2018, our approach to preventing and managing incidents has been significantly improved. Our transformation programme, in particular the Wholesale transformation and the Resilience and Compliance workstreams, are enabling us to better prevent incidents from occurring (see *IAP\_TA8\_Accounting for Past Delivery\_Appendix 1* for objectives of the Transformation programme). Furthermore, we have identified that our approach to managing emergency incidents when they occur had weaknesses, and so we undertook a best practice review in July 2017 through third party experts in emergency planning and response (OCOR Ltd.) to identify how we needed to change our business in order to prevent incidents from happening, to improve and standardise our management of incidents in the event that they do happen, and to ensure that lessons are systematically identified and actioned. We have evidenced how these changes were based on our understanding of what has driven our past performance, and on our understanding of the gap between AMP6 performance and expected AMP7 performance.

We have developed our Incident Management Framework with the approach being embedded into the organisation with test exercises having already been carried out (for further detail see *IAP\_TA8\_Accounting for past delivery\_PD.A9 – Action plan on incident monitoring and continuous learning*). In summary, we now manage incidents through:

- **Our Incident Management Framework procedures**, which enable us to monitor our performance during significant incidents.

- **Our Incident Debrief Procedure**, which enables the monitoring of incidents performance after significant incidents. This process captures lessons learnt and identifies improvement actions for incident management performance and incident prevention measures.
- **Action tracking and implementation**, which ensures targeted improvement actions are embedded into the business and successfully improve performance.
- **Our embedded processes and executive management oversight**, which together ensure that we are doing these things on a continuing basis.

To demonstrate our journey to this point, we have brought together the analysis that we have conducted over time to learn lessons and improve performance in relation to major or significant incidents, pollution incidents and incidents where statutory and licence obligations have not been met. Below, in the sub-sections, we have summarised the reviews that we have conducted on a sample of these incidents.

Through this exercise we have, in parallel, considered how effectively we have communicated with customers and supported them both during and after incidents. We recognise that our role is to prevent and subsequently minimise the impact on the customers affected by any incidents and so this is an important focus in our review of lessons learnt and action planning.

We have experienced 86 incidents requiring reporting since 2015, which comprised 65 major incidents (the freeze/thaw, and 64 other significant incidents leading to 20-day reports being reported to the DWI) and 21 serious pollution incidents.

In our review of incidents performance, we have identified three common root causes that have either led to incidents occurring, or the impact of incidents heightening, as well as causes that have meant our response has not been optimal. These are set out in the *IAP\_TA8\_Accounting for past delivery\_summary* and reiterated below:

- **Inconsistent approach to planning and decision making:** In the past, we have not always had a consistent approach to making decisions. Further, our planning cycles have tended to focus on the short term, as opposed to longer term goals. We have also been inconsistent in the way we communicate our basis for decision making, effectively, to all of the teams concerned. For example, during the freeze/thaw, our planning procedures did not facilitate a fully coordinated response. In addition, more effective preparation may have limited the incident from escalating.
- **Inconsistent processes and process control:** We have clearly documented processes and as our business has evolved over time, we have amended the way we do things to respond to the changing needs of our customers. However, new and more optimised processes need to be consistently recorded and communicated and therefore adhered to in full (e.g. our end-to-end regulatory reporting processes which triggered the development of our Modern Compliance Framework to address this). Through our review, we have also identified that some processes are no longer fit for purpose, and some are driving complexity that is not required; these are causing inefficiency and delays (e.g., our control and sign off thresholds).
- **Fragmented view of risks to aid decision making process:** We have a process for identifying and managing our key operational, compliance and corporate level risks. However, information currently exists in disparate systems and is manually linked which limits effective communication and escalation of risks. As a result, this has limited our ability in the past to identify longer-term risks and we have further to go, to make decisions taking a risk-based approach as part of our investment planning. One example of this is that we did not foresee the level of impact that the freeze/thaw event was going to have. However, we are now developing models to help us forecast issues through techniques, such as, more advanced weather modelling.

Of the 65 significant incidents identified, we have provided further information on a sample of them in the detail below and summarised in PD.A8.Table1- Summary of incidents we have reviewed.



## Major or significant incidents – Water Services

Since 2015, 65 major or significant incidents have occurred within Water services. We have conducted detailed reviews on all major incidents and selected a sample of these as case studies to evidence that we have understood and acted upon our learnings. In determining the sample, we have considered three factors:

1. The number of our customers affected,
2. The potential impact of the incident on public health and;
3. Investigations into compliance by DWI or Ofwat

These considerations have led us to six incidents for which we have compiled detailed case studies showing line of sight between incident drivers and our response.

**PD.A8.Table 2 – Summary of water service incidents reviewed**

Incident Description	Factor 1	Factor 2	Factor 3
[Redacted]	✓	✓	
[Redacted]	✓	✓	✓
[Redacted]		✓	✓
[Redacted]	✓	✓	
[Redacted]	✓		
[Redacted]	✓	✓	

### Freeze/thaw, March 2018

- In early March 2018, significant temperature fluctuations led to increased leakage, causing high demand which led to 7,700 of our customers being out of supply for up to four hours and 2,246 customers for up to three days.
- In summary, ineffective preparation from key staff in the business and weaker resilience in our network meant that we were unable to satisfy the exceptional increase in demand after the thaw. The root causes were identified as weaker planned and preemptive processes to identify and manage the incident as well as weak control and accountability to drive effective decision making.

### Drivers of performance and lessons learnt

- Supply resilience was at risk due to unavailability of a significant treatment works site which was undergoing refurbishment, unreliability of a treatment works site, storage restrictions (as older assets that suffered repeated outage were undergoing replacement), and a sudden loss of power. This made us vulnerable to the significant demand increase caused by leaks forming as a result of the freeze/thaw cycle.
- Our key lesson relates to neither sufficiently preempting the potential scale of the impact and consequence of the freeze/thaw event, nor closely monitoring key parameters to identify the areas where the supply system was starting to be put under strain. Time was lost in the early stages of the event, for example by not filling reservoirs or stopping maintenance activities earlier, resulting in firefighting rather than a fully planned approach. In response we have implemented a new horizon scanning process to assess risks of extreme weather events as part of our new incident management

framework. We have also designed and deployed a reservoir forecasting tool to predict declines in reservoir levels. In addition, we have invested in a smart networks scheme at [REDACTED] (as described in *BP\_CH11\_Wholesale water\_P196*) – with these measures, we will continue to improve overall performance within this AMP and beyond.

- Additionally, in the initial stages each region was managing the ongoing situations in their own area. Prior to declaring a major incident, there was no single person with clear overall accountability and control – we have fed this learning into the application of our new emergency planning procedures.

### Customer communications and support

- In general communications were too haphazard and disjointed. Initially there was no overall communications strategy or clear objectives for those managing the various communications channels to customers. This provoked internal coordination issues such as: customer contact centre not being informed about “water shut down” text messages to customers; the contact centre not being aware of additional staff brought in to Durrington to support; and information for customer updates being obtainable almost only in strategic conference calls (the invitees to which were reported to be inconsistent).
- No single person had overall responsibility for communications across all channels to ensure a consistent message to customers (for example, there was no-one in charge of answering individual social media messages – this needed to be assigned during the event). Appropriate importance was not given to providing timely and accurate information to those charged with communicating with the press and customers.
- During the event our customer support was impacted by the Emergency Planning and Response team not being able to access customer details - this affected the response times in contact with customers. However, subsequently we were proactive, being one of the first organisations to identify impacted customers and make compensation payments in excess of the GSS compensation levels.

### Measures to improve and ensure deliverability in AMP7

- In order to mitigate the impact of future refurbishment projects in our ability to supply, we are implementing fully integrated business planning through our Wholesale transformation programme, such that we have a full view of maintenance and operations activity from 2 weeks to 5 years out. This will enable visibility of planned outages and an ability to respond more rapidly if such external conditions occur again.
- Moreover, we have implemented changes within our emergency planning procedures, and forecasting and monitoring capabilities that have further improved the resilience of our network. While we had established an Emergency Planning and Response team in response to prior incidents, this was in its infancy at the time of the freeze/thaw event. As a result there was no dedicated 24/7 response team on hand to minimise the impact on our customers. Since this event, and building on our responses to prior events, our Incident Management Framework has been established and is being embedded into the organisation. There is now a dedicated Emergency Planning and Response team with clear accountability and control, clear processes and procedures to manage the response. Under the Incident Management Framework, the team will be mobilised when ‘Amber’ or ‘Red’ incidents occur and has to adhere to a comprehensive set of processes and procedures during an incident. We currently manage ‘Green’ incidents through our business as usual operational teams, however, there is always a readily available list of individuals from the incident response team on standby, who can be mobilised if further escalation is needed (see *IAP\_TA8\_Accounting for past delivery\_PD.A9 – Action plan on incident monitoring and continuous learning* for detail on incident categorization and escalation). This now provides the ability for the team to be mobilised 24/7. While we recognise that there is more to do in improving our approach both proactively and reactively, if an incident does occur, we are making good progress and have outlined in our action plan (see *IAP\_TA8\_Accounting for past delivery\_PD.A9 – Action plan on incident monitoring and continuous learning* for detail) the steps we are taking to improve resilience and integrate more robust processes into the way we manage incidents.
- This incident is a good example of where we have learnt and made changes. As a result of the changes within emergency planning procedures, and forecasting and monitoring capabilities implemented post freeze/thaw, our organisation was in a good position to respond to the Ocado warehouse fire incident, a

major fire requiring hundreds of firefighters at a warehouse in Andover which resulted in a significant increase in demand over several days (~4MI/d increase in a 22MI/d zone, an equivalent of an ~18% demand increase compared to the 20% total increase due to the freeze/thaw). Fundamentally, systems resilience was maintained such that no customers were negatively affected. Our Emergency Planning and Response team assembled quickly, allowing for dissemination of information during initial stages. The effective process and decision making meant that tanker mobilisation was swift and gave extra time to consider deployment options before the network reached a critical level. Their deployment directly to the location of the fire was more effective than tankering into the network, and the use of final effluent and river water at the location, helped reduce the draw on the network, and helped to prevent water quality risks.

- Our new approach to incident management has been implemented in order to achieve 6 outcomes identified as necessary by OCOR Ltd, which directly address the root cause issues outlined above: we have ensured and continue to ensure that (1) there are clearly defined and structured roles for all individuals involved; (2) relevant individuals have appropriate capability and competence; (3) we have proven our resilience through simulations; (4) we enable enhanced response using tools and technology; (5) we have embedded detailed response plans and procedures, and; (6) we have engaged external stakeholders in response planning. Separately, we are improving our communications approach and the support we provide for our customers. These are documented in more detail in the *IAP\_TA8\_Accounting for Past Delivery\_ Appendix 1* and *IAP\_TA8\_Accounting for past delivery\_PD.A9 – Action plan on incident monitoring and continuous learning*.

### Water Service Reservoir outage, February 2013

- In January 2013, a contractor drilled a borehole directly through the reservoir outlet main. The water leaking from this hole caused a series of landslips and bursts in the outlet and inlet mains. This led to water quality compliance failings in the area. We received 212 loss of supply calls from the supply area during the period 1st February to 30th August 2013 and 18 calls regarding dirty water / discolouration. We failed to notify the Drinking Water Inspectorate of the issue in 2013 and in 2018 we were prosecuted by the DWI and pleaded guilty to providing water unfit for human consumption.
- A major programme of improvement works led to the reservoir being reincorporated into the supply network in 2018, following its removal from supply in 2015.
- In summary, the root causes of this incident were weak risk assessment processes as well as poor governance in place to escalate and report the issue.

#### Drivers of performance and lessons learnt

- The operational cause of the problem was a borehole drilled through the main. The root cause of the incident was a weak risk assessment process. A stronger risk assessment process would have not allowed the contractor on site if they were not aware of the water quality and hygiene risks that their work posed. This could have prevented them changing the location of a bore hole without consulting our wider team and therefore stopped them from drilling into the outlet main and causing the landslip.
- Our response in the aftermath of the initial incident also demonstrated weak processes. We failed to respond correctly in a number of ways including identifying quickly, the open outlet valve of the WSR and investigating the leak properly when we became aware of it. This failure of response was again due to weak process; a stronger process would have supported decision making and likely prevented the errors that followed the initial trigger of the landslip.

#### Customer communications and support

- We did not respond effectively to customers during this incident; we unintentionally ignored information coming in from customers concerning water gushing out of WSR and so missed an opportunity to act more quickly to resolve the issue.
- Within our customer contact centre, we had weak processes relating to escalation during the incident and a lack of expertise in order to effectively manage any escalation of the issue and initiate the necessary actions.

### Measures to improve and ensure deliverability in AMP7

- We have already embedded changes that tackle the weak risk assessment that resulted in this incident. Our water quality risk assessment process and hygiene code of practice have been strengthened and our delivery partners must be aware of these before they are allowed on sites. Our wholesale transformation programme addresses the way we prioritise investments to be done according to levels of risk with a more systematic, enterprise-wide risk and resilience framework delivered via our Asset Lifecycle Process changes; this also ensures greater collaboration with delivery partners. Also, our Modern Compliance Framework has established internal checks ensuring compliance via end-to-end compliance process mapping.
- In addition, as an outcome of the ongoing embedding of our Incident Management Framework, we now have processes that will guide our decision making once the incident begins. This includes an incident categorisation and escalation process that standardises our approach and would have made a significant impact on effectiveness of response in the ██████████ case. We have also already amended procedures for Water Quality Event notification which will ensure that the event will be correctly reported to the DWI.

### Southampton Discolouration, May 2016

- In May 2016, discolouration of drinking water, caused by the recharging of a main after a burst had been repaired, and resulted in water unfit for human consumption being supplied to customers. An estimated 1,400 properties in the area were affected by this incident. In 2017, we were prosecuted by the DWI and pleaded guilty to the charge of providing water unfit for human consumption.
- In summary, this incident was caused by the sediment in our mains, and actions to recharge the main due to our weak network control process.

### Drivers of performance and lessons learnt

- The cause of the discolouration was identified as the mobilisation of mains sediments within the 12" trunk main due to a surge in flow.
- A deeper account of our understanding of discolouration can be found in our analysis of Water Performance Commitments (see *IAP\_TA8\_Accounting for past delivery\_PD.A6 – Review of our past performance on performance commitments* for detail). This analysis outlines 3 key drivers: (1) reduced distribution input leading to mains deposits; (2) operational control of our network leading to resuspension, and; (3) the internal condition of our water pipes.
- Around half of our discolouration contacts are from the ██████████ area in Southampton, where resuspension of mains deposits has been a key direct driver. We are aware of the risks that this area is subject to, and we are addressing and minimising these risks, by increasing our network control. This includes trialing water quality monitors which is one part of our smarter network proposals. They will allow us to understand the network to a greater extent and therefore, optimise flows and control water quality more effectively. Our control room also now monitors 'dirty water' contacts and uses geo-spatial mapping to determine the nature and spread of discolouration. This can help to identify the most effective locations to flush and resource in order to manage the network.

### Customer communications and support

- Vulnerable customers in the affected area were reviewed and provided with bottled water. We responded to the incident after receiving the 20th call by dispatching a Technical Inspector. This was 4.5 hours after receiving the first discolouration call. The customer call-backs were completed, ensuring we had engaged with every customer that made contact. Subsequently, all customers reported that the water was now clear, indicating that the issue was temporary and had been resolved.

### Measures to improve and ensure deliverability in AMP7

- As outlined in our analysis of the Drinking Water Quality – Discolouration contacts AMP6 PC (See *PD.A6.Table 2 – Performance commitments analysis - Wholesale* for detail), we plan to deliver

improvements through mains replacement and conditioning (for further detail, including timelines, see *BP\_TA.11.WN04\_Water Networks*), which will improve the condition of our pipes, and through roll out of water quality monitors, which have been successfully trailed in the [REDACTED] area. These will allow us to understand the network to a greater extent and therefore, optimise flows and control water quality more effectively. Our control room also now monitors 'dirty water' contacts and uses geo-spatial mapping to determine the nature and spread of discolouration.

#### [REDACTED] WSW ingress, October 2017

- In October 2017, water leaking from a meter found its way through an ingress in the contact tank at [REDACTED] WSW. This contaminated the tank and led to 2 total coliforms and 2 clostridia being found in a dip sample.
- In summary, the operational causes of the incident were failures in the tank and meter. The root cause was a weak maintenance process, which would have identified both of the failed assets.

#### Drivers of performance and lessons learnt

- We identified that the maintenance process could be improved. A better process, featuring regular inspections and cleaning would have ensured the proper working order of a leaking meter, which was the source of water in the chamber, and would have ensured that the ingress into the contact tank was discovered and resolved before an issue, such as the leaking water, revealed it.
- Historically, processes like these had been updated in a piecemeal way, and generally only when things went wrong. In the past, over time, we had not ensured sufficient governance over our documented processes, and we did not have a process management system that worked across the business and enabled oversight. This was likely due to a reactive culture in our organisation but a lack of quality data also meant that, in the past, we did not have good visibility of asset condition. Addressing this, is a key part of our transformational activities.

#### Customer communications and support

- There were 24 contacts for interruptions to supply, 6 pressure complaints and 3 dirty water complaints on the 5<sup>th</sup> of October.
- Notifications were provided to the DWI, the Consumer Council for Water, Isle of Wight PHE and Council.

#### Measures to improve and ensure deliverability in AMP7

- Our Water First programme is comprehensively addressing the root cause issue of weak processes (see the *IAP\_TA8\_Accounting for Past Delivery\_Appendix 2* for more detail on the programme). With respect to this incident, the programme has so far delivered 93 site manuals (21 so far approved) and a detailed set of plans and procedures aimed at ensuring that we understand asset condition and deterioration (for example, the systematic hazard review process and programme of risk-based inspections at service reservoirs) – these outputs could have directly influenced incidents such as this one.

#### [REDACTED] WSZ, Loss of Supply, October 2017

- In October 2017, approximately 7000 customers were left without water for 6 hours after [REDACTED] WSR was shut down. Water levels had fallen to very low and a burst was discovered ~1km outside of [REDACTED]. The site was shut down (after peak morning demand) and it took until 17:00 for the burst to be repaired.
- In summary, the operational cause of the incident was a mains burst, but the failure of a valve, resulting in the inability to prevent water level depletion, exacerbated the incident. The root cause of the valve failure was a weak maintenance process; a stronger process could have prevented its failure before the incident manifested.

### Drivers of performance and lessons learnt

- The loss of water supply to customers in the ██████ Water Supply Zone was due to a burst in the 14" transfer main between ██████ Water Supply Works and ██████ Water Service Reservoir and a seized valve that went undetected between the two sites. The seized valve resulted in the inability to shut the pipe between ██████ and ██████, and exacerbated the water level depletion in the ██████ WSZ. The key lesson learned is that the incident could have been prevented from escalating if the seized valve had been detected beforehand. A structured and documented 'valve inspection procedure' would have achieved that.
- Additionally, the ██████ WSR was running on only one cell. This added an additional risk factor and contributed to the deterioration of this particular incident. Water storage capacity was therefore negatively affected.

### Customer communications and support

- Bottled water was supplied to affected customers (approximately 7000) at three collection locations and were informed via text, email and social media statements.
- Customers were expected to run out of water by midday
- Water arrived around 13:00 for collection (first customer calls were around 11:00)
- Customers were updated on the incident via social and local media channels and the SW website.

### Measures to improve and ensure deliverability in AMP7

- The gap between current and proposed performance lies within the lack of structured procedure manuals and a culture of reactive behaviour to incidents. The Water Manual for Distribution (WMD) requires updating for both existing procedures and the inclusion of additional procedures (e.g. valve inspection procedure). The Water First Programme provides for valve inspection procedures to be included as part of the WMD, applying a preventive rather than reactive approach to incident management. Furthermore, we will have live control and optimisation of over 2,000 Pressure Reduction Valves to better regulate pressure by 2030, further minimising the likelihood of bursts.
- In addition, to mitigate the risk of mains bursts we have assessed every kilometer of our network against leakage, bursts, interruptions to supply and discoloration risks, and have developed an integrated and optimized programme of District Metered Area (DMA) scale mains replacement. The revised programme for AMP7 consists of ~330 km of mains replacement.
- The new incident management process includes scenario training (which was not in place prior to this incident), where such potential situations are illustrated and preventive measures as well as appropriate responses are communicated.

### Newport WSZ, "Do Not Use" Notice, July 2018

- A single customer alerted the company in July 2018, of a hydrocarbon taste and odour in their supply. A "Do Not Use" notice was subsequently issued to the customer, which persisted for almost a month. The case was the trigger for a redesign of the customer contacts procedure for hydrocarbon cases.
- In summary, the key issue in this case was a customer contact procedure that needed to be improved.

### Customer communications and support

- Correct classification of customer complaints and a tailored response would have driven better performance in this case. Potential hydrocarbon issues need to be addressed in a specific way – the chemical is usually only detectable in initial water usage (i.e. after water was 'resting' in the pipes). As a result, samples need to be taken straight away.
- Initial, false classification of customer issues was driven by front line (call centre) procedures. Our analysis at the time showed these to be complex (numerous stages and up to eleven parties involved in processing a customer contact), and they did not provide the specific guidance required for this category of case, i.e. specific escalation guidance associated with hydrocarbon.

### Measures to improve and ensure deliverability in AMP7

- As part of the Water First Programme, and as part of our structured approach to learning from incidents, we completely redesigned our hydrocarbon customer contact procedure to ensure that both false classification, and delayed response due to complex processes, no longer occur. We reduced the complexity for contact centre staff, by reducing the number of teams involved from up to eleven down to four, and by minimising the number of steps in processing incoming customer complaints. We also ensured awareness of hydrocarbon issues and embedded the new procedures in our systems. Educational training about hydrocarbons, their sources and their effects on the public health was designed to ensure awareness among employees.
- We are developing a proactive contact system that will inform customers and residents of potential odour risks in the event of planned maintenance activities or other plant interventions. Trials conducted in AMP6 have shown to this to be an effective way of reducing potential discomfort to customers.

### Interactive Voice Recognition system failure

- We experienced a significant IT failure on our Automated Payment Line, in which customers were failing in the payment process and being redirected to an agent, with the call getting cut off before completion.
- We identified this issue on Monday 4th February 2019 as call volumes were significantly above forecasts. As part of the investigation, it was clear that customers had been dropping out of the payment line since 29th January 2019, and over 80% of callers were being impacted. The incident was resolved by 6th February with the automated payment line being turned back on.

### Drivers of performance and lessons learnt

- The root cause of the issue was the failure of one of the ISDN30 circuits connected to the Nuance/Genesys Platform used for automated payments (an ISDN30 circuit has 30 channels which are used for voice calls, where one circuit can carry 30 voice calls simultaneously).
- There was insufficient reporting available to determine issues with the Nuance IT platform, and to identify where the customer journey was breaking. The lesson learnt was that additional IT functionality is needed to provide real-time monitoring of the Nuance payment journey to enable proactive identification of issues and better visibility of where failure resides, in order to facilitate appropriate recovery actions; relevant indicators would be daily reporting on “Nuance Offered” and “Drop Out” Rates to enable faster identification of issues.

### Customer communications and support

- Calls to Nuance-Genesys were disconnected if the faulty ISDN30 circuit on the Nuance-Genesys platform was selected. This resulted in repeat contacts to agents, poor customer experience and repeat call backs.
- The incident resulted in missed customer contacts, including inbound calls, texts and automated payments.

### Measures to improve and ensure deliverability in AMP7

- We have improved the available reporting to derive a better understanding of the customer journey once a call has arrived on the Nuance-Genesys platform. We now pull a daily report on “Customer Journey” and provide a breakdown of the daily calls received and the outcomes.
- Preparing these reports helps us understand the customer experience by looking at which stage the customer has decided to hang-up, if they do so. It will also help us in the future to troubleshoot possible call flow issues, database issues and issues with file transfer PRN data being corrupt.

## Serious pollution incidents – Wastewater services

The table below outlines the results of our analysis of serious (Category 1-2) and potentially serious (these have since been downgraded from Category 1-2) pollution incidents in 2018. We have sought to understand the drivers of each and demonstrate that we have targeted interventions to ensure we can deliver on the challenging targets we have set for pollution incidents in AMP7.

This learning is codified within our Environment+ Programme, currently being implemented, which has been designed to improve our operations performance to meet AMP7 environmental targets (see the *IAP\_TA8\_Accounting for Past Delivery\_Appendix 2* for detail on the programme). Environment+ takes into account the root cause assessment of all pollution incidents and near misses, including Category 4, of which there have been ~1400 during 2018; within this, 151 are Category 1-3 pollution incidents. The Environment+ programme is structured, through the delivery of eight Critical Success Factors (CSFs), to target the root cause issues of all of these pollution incidents that have been assessed. Given the deliberate development of the Environment+ programme to tackle these root cause issues, the eight CSFs of the programme align with the six common root cause issues identified (see the *IAP\_TA8\_Accounting for Past Delivery\_Appendix 2* for detail on common root causes). We are, therefore, able to demonstrate how this programme will mitigate the risk of serious pollution incidents in the future.

For most pollution incidents, the Environment Agency is the key environmental stakeholder and we proactively report any pollution event. As part of the Environmental Performance Assessment, the EA has set a target to self-report at least 75% of incidents. Through our Environment+ transformation programme we have been raising awareness of pollution risks and encouraged the reporting of near misses, in addition to reportable incidents. The number of self-reported Category 1-3 incidents increased from 70% in 2017 to 80% for 2018. Similarly, the number of internally reported incidents and near misses increased from 1758 in 2017 to 2597 in 2018, a significant increase that supports our understanding of root cause and increases the effectiveness of our pollution reduction plans.

**PD.A8.Table 3 – Summary of the serious pollution incidents reviewed**

Description	Drivers of performance and lessons learnt	Measures to improve and ensure deliverability in AMP7
<b>Tangmere WwTW (West Sussex)</b>		
A control fault on the trickling filter pumping station led to the flow being diverted to storm and then spilling to the watercourse.	<ul style="list-style-type: none"> <li>This site was controlled by contractors – who had disabled some alarms as part of a capital project scheme which prevented the incident from being avoided.</li> <li>The key root cause was a weak risk management process to identify critical alarms, along with ineffective understanding of the consequences of failure and a lack of end to end testing.</li> </ul>	<ul style="list-style-type: none"> <li>We reviewed and strengthened the COM4010 process to ensure that contractors are briefed on site alarms pre-takeover. We now clarify responsibilities for investigating alarms between the duty manager and site contractors. We check adherence to the COM4010 process.</li> <li>Feedback lessons now occur within our Incident Management Framework to ensure that Red incident leads have early warning of potential Category 1 or 2 incidents.</li> <li>We implemented starter and refresher training for the duty manager, providing clarity on the definitions of pollutions, to enable field teams and</li> </ul>

		<p>contractors to identify pollution incidents.</p> <ul style="list-style-type: none"> <li>■ We formalised the PIF and EPIR rota to improve availability of resources.</li> </ul>
<b>Green Lane, Lyndhurst WPS (Hampshire)</b>		
<p>Loss of main power which resulted in the release of untreated effluent into a watercourse via a CSO.</p>	<ul style="list-style-type: none"> <li>■ The initial trigger of this event was third party damage to the power supply.</li> <li>■ Prior to the incident, the watercourse had poor quality due to a private package plant and Forestry Commission work on the stream.</li> <li>■ Coincidentally, communication was lost with the site before the power failure and therefore notification of the power failure was not received by the control centre.</li> </ul>	<ul style="list-style-type: none"> <li>■ A business review of the OS COMMS procedure is underway.</li> <li>■ Installation of temporary comms line if permanent comms line is not available due to third party issues.</li> <li>■ Identifying sites with the potential of high environmental impact which will take account of watercourse sensitivity.</li> </ul>
<b>Manor Park, Uckfield</b>		
<p>Pumps were blocked on site and the alarm communications failed which resulted in a spill; 200m of watercourse was impacted by the spill.</p>	<ul style="list-style-type: none"> <li>■ This incident was due to a comms failure process as line fault and IT issues led to the system not being updated to enable planning for NRV and pump replacement.</li> <li>■ The comms issue was resolved with the replacement of the modem and BT socket interface.</li> <li>■ There is a need to improve the telemetry reliability in order to prevent such incidents - the wider business is therefore looking more generally, at Comms issues.</li> </ul>	<ul style="list-style-type: none"> <li>■ We have created an incident team for all comms failed sites (with Operations and IT function involvement), such that failed sites have been reduced by approximately 50%.</li> <li>■ We are reviewing IT and telecoms service provision – with the comms process being written and rolled out to ensure the wider business are aware of the process.</li> </ul>
<b>May Street, Herne Bay WwTW (Kent)</b>		
<p>A spill from a sludge tank due to a drain valve being left open. The spill flowed into the watercourse.</p>	<ul style="list-style-type: none"> <li>■ This incident was due to human error.</li> <li>■ A drain valve was left open by mistake and identified on morning attendance, leading to sludge entering a dry ditch.</li> <li>■ We therefore identified the need for process review.</li> </ul>	<ul style="list-style-type: none"> <li>■ We have reviewed the valve lock-off processes at sites.</li> <li>■ We will also review the security and CCTV at sites vulnerable to access to ensure that no outside interference is possible.</li> </ul>

Worthing bathing water		
Misconnections leading to the pollution of the bathing water area.	<p>Two external drivers that cannot be influenced, but only monitored:</p> <ul style="list-style-type: none"> <li>Separate sewage systems as opposed to combined ones; (prerequisite for misconnections)</li> <li>Expansionary developments (e.g. Hotels, apartment complexes being built) in the area.</li> </ul>	<ul style="list-style-type: none"> <li>Newly formed in-house team to identify misconnections and target areas, vulnerable for misconnections (characterised by separate sewer systems and nearby property developments).</li> <li>Collaboration with local council is necessary to address misconnection issues.</li> <li>Provisional communication with local authorities - informing them about the 'hotspot' situation in their area - could reduce the frequency of severe incidents.</li> </ul>
Hawkhurst South		
A network spill that was caused by blockage within the network.	<ul style="list-style-type: none"> <li>The root cause of the incident was ineffective training and coordination issues within a 3rd party contractor.</li> <li>We have learnt that there is a need to reinforce training with 3rd party jetting contractors.</li> </ul>	<ul style="list-style-type: none"> <li>We therefore, reiterated and revised training within our team, and with the contractor.</li> <li>Internally, we reiterated and revised flow checks awareness for our operations teams, ensuring understanding of which watercourses would be affected by a spill and how.</li> <li>With the contractors, we improved quality of contractor training on sewer jetting.</li> <li>Longer term, wider rollout of our highly effective educational initiatives (such as visiting 60,000 customers at home, 2,300 businesses and organising preventative action campaigns) across different customer types (for example food businesses, young families) will be a primary prevention for blockage related incidents.</li> </ul>
Tonford Manor, Canterbury (Kent)		
A sewer blockage caused back up in a public and private sewer.	<ul style="list-style-type: none"> <li>The pumping station design has no run data or analogue trends which would have given us an idea of when the blockage occurred due to the reduction in flows.</li> </ul>	<ul style="list-style-type: none"> <li>Ensure regular jetting of the sewer leading to the pumping station.</li> <li>Action to install an Anti-Flood Devices on the private sewer.</li> <li>Trialling the use of sewer level sensors in critical locations to identify blockages or pump failures</li> </ul>
High Halden WwTW, Ashford (Kent)		
Effluent spilled over a weir through an EMO and into the watercourse.	<ul style="list-style-type: none"> <li>Failure of the inlet screw pumps due to failure of a gearbox on pump 1, and failure of a drive shaft on pump 2. Effluent spilled over</li> </ul>	<ul style="list-style-type: none"> <li>We have installed low load alarms on both inlet screws to ensure we receive alarm notification in the future.</li> </ul>

	<p>a weir through an EMO and into the watercourse. The motors of both units continued to rotate despite no rotation of the screws; thus no alarms were activated for failure of screws due to the way the alarms were wired to motor rotation only.</p> <ul style="list-style-type: none"> <li>Further testing also revealed that the EMO spill alarm had an intermittent fault (loose wiring within the outstation) resulting in no alarm being received for the EMO spill.</li> </ul>	<ul style="list-style-type: none"> <li>Wiring issue has been resolved by a MEICA technician and ICA to check all outstation wiring. We will re-launch the end-to-end testing process for all above ground inlet pumping stations, intermediate wells, spill points and EMOs as this has not been happening. This will enable us to identify alarms which are not working or dialling in as they should.</li> <li>Emergency diesel over pumps has been installed to provide duty/standby arrangement. New gearbox, motor and coupling has been ordered for both screw pumps, plus an additional assembly to be held as a critical spare. Review of the MSTs being undertaken by MEICA as those tests were also not recorded on the end-to-end test reports.</li> </ul>
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**Stoke, Hayling Island WPS (Hampshire)**

<p>Spills from manholes into a ditch leading to Langstone Harbour.</p>	<ul style="list-style-type: none"> <li>One pump was air-locked and another pump was blocked with rag.</li> <li>Proportion of rag in the water is driven by consumer behaviour in disposing of wet wipes in particular; we are proactively working with customers to reduce this risk.</li> </ul>	<ul style="list-style-type: none"> <li>Full senior manager review of the incident to identify all areas for improvement in prevention, response and recovery.</li> <li>A major incident exercise is planned with the EA to simulate a catastrophic incident affecting Langstone Harbour.</li> <li>A review of telemetry alarms to support identification has taken place and work is underway.</li> <li>We will also further increase spending to support activities relating to flooding and blockage reduction in AMP7 (£5m), which includes resourcing for investigations, education and planned jetting of sewers. The education programme in particular aims to prevent flooding caused by sewer blockages, which in turn are mostly caused by wet wipes and fat.</li> </ul>
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## Conclusion

In our review of drivers of past performance in incidents, we have identified common root causes of Planning, Process and Risk management, which have impacted the outcomes seen. In addition to resolving site specific issues, we have taken learning from the identification of these root causes and undergone significant transformation in the way that we manage incidents.

For example, the common root cause issue of inconsistent processes and process control, which affected a number of incidents including the ██████████ WSW and Southampton Discolouration incidents, is being tackled by several of the sub-workstreams of our Transformation programme, including our Ops excellence workstream, Procurement and commercial contacts workstream, Modern Compliance Framework, Water First programme, Environment+ and Ethical Business practice *programme* (see the *IAP\_TA8\_Accounting for Past Delivery\_Appendix 1* for more detail).

Moreover, our Incident Management Framework standardises our management of incidents once they do happen and ensure that lessons are systematically identified and actioned, enabling us to bridge the gap between our AMP6 performance and expected AMP7 performance.

## 8.SRN.PD.A9 – Action plan on incident monitoring and continuous improvement

Ofwat action	How we have responded
<p>Southern Water should produce and provide an action plan that sets out:</p> <ul style="list-style-type: none"> <li>• how we will continuously monitor incidents performance and customer communication and support during and after major incidents and deliver targets set by the EA/NRW in the Environmental Performance Assessment (EPA), by DWI and by Ofwat’s regulations, including what evidence it will look for beyond itself and the sector;</li> <li>• how we will identify drivers of performance and lessons learnt from both good and poor performance;</li> <li>• how we will identify measures to improve performance and integrate these into its business; and</li> <li>• how we will ensure that this is a continuous rather than one-off process.</li> </ul>	<p>Further information provided</p>

### Our detailed response

The response to this action should be read in conjunction with the *IAP\_TA8\_Accounting for Past Delivery\_Summary* and our responses to:

1. *IAP\_TA8\_Accounting for past delivery\_PD.A6 – Review of our past performance on performance commitments*
2. *IAP\_TA8\_Accounting for past delivery\_PD.A7 – Action plan on performance commitment monitoring and continuous improvement*
3. *IAP\_TA8\_Accounting for past delivery\_PD.A8 – Review of our past performance on incidents*

## Summary

Our goal is to deliver a service experience that is refreshingly easy for all customers, one where every interaction with us is a positive experience. To achieve this goal, we are focused on improving our performance in both preventing incidents from occurring and quickly and effectively responding to them when they do occur to minimise the impact. We recognise that any incident can have a significant impact on our customers, irrespective of whether we class it as significant or minor, therefore, we are improving our processes and capabilities to respond to all incidents and improve the way we communicate and support customers throughout.

In July 2017, we commissioned third party experts in emergency planning and response (OCOR Ltd.) to review our performance and make observations and recommendations for focus areas for improvement, based on their views of best practice.

To address identified weaknesses and to respond to expert guidance, we recently implemented a step change in our approach to incident management which included setting up a new Emergency Planning Team and developing an Incident Management Framework. This sets out a management structure for ‘red’ and ‘amber’ incidents (previously categorised as significant incidents) and a comprehensive set of processes and procedures which will be adhered to during an incident. The response to any incident is the responsibility of the Executive Leadership Team (ELT). The ELT will be represented through the appointment of a lead director for all red and amber incidents, who is normally the director of the function most affected by an incident. We currently manage ‘green’ incidents through our business as usual



operational teams, however, we set out in this action plan, what we are doing to bring consistency to management and customer communications and support during green incidents too.

During the freeze/thaw event in 2018, our Emergency Planning Team was only just being developed and expanded, with new processes developed but not yet fully operationalised. As a result, our response during freeze/thaw was not up to the mark that our customers expect. More latterly, our team has expanded and are more advanced in terms of capability and structure, such that during the summer heatwave, we anticipated the level of impact and were far more prepared to respond to minimise the impact.

We have already made significant progress in our processes and capabilities, but there is still a lot to do to reach a level of maturity where all of our processes are fully operationalised with improvements being addressed on a continual basis. We have made reference throughout this document to the need for the processes we have already put in place to be further embedded. By this, we mean that we will work to raise awareness of these processes with the relevant teams and stakeholders through appropriate training and communications, and ensure they are adhered to through the governance provided by executive management oversight.

In order to reach our goal, we know we need to be better at monitoring performance, learning lessons and adapting our response to improve, while significantly improving our customer communications and support both during and after incidents. This document outlines how we intend to monitor future incidents to improve the quality of our response during the incident and ensure that there are mechanisms in place to capture the drivers of performance and lessons learnt so that these can be more effectively integrated into our business as usual activities.

In brief, we will do this through:

- **Our Incident Management Framework processes and procedures**, which enable us to respond effectively to red and amber incidents and expand to get greater consistency in managing green incidents.
- **Improving the experience that we provide to our customers**, such that, when things do go wrong, we respond quickly, communicate clearly and provide them with the support that they need, depending on their individual circumstances.
- **Continuous monitoring of a comprehensive set of KPIs**, which allow us to understand our performance in all aspects of incident response both during and after. We already monitor a selection of qualitative and quantitative data points but currently these are not consistently recorded and analysed, partly due to them only recently being introduced. As our Incident Management Framework is fully operational, tested and improved, the KPIs that we monitor and how we monitor them will also improve, and further enhanced by a new incident management system (the One Voice CIM® platform), with the investment signed off and integration to commence in May/June 2019.
- **Our Incident Debrief Procedure**, which enables the evaluation of incidents performance after red and amber incidents and incorporates root-cause analysis of the underlying causes of the incident as well as root causes linked to the nature and quality of our response. Currently, our Incident Debrief Procedure is largely qualitative; we are planning to incorporate more quantitative data. Our current process also focuses on identifying how we can improve our management of incidents; in the future it will also identify the root causes of incidents, across operations, emergency response processes, and customer communications and support.
- **Action tracking and implementation**, which ensures targeted improvement actions are implemented into the business to improve performance against our outcomes, across emergency response, wholesale operations and retail. Following an incident, we need to implement and operationalise the improvements (across operations, customer communications and support, and emergency planning) as part of the continuous performance improvement cycle. This will both reduce the future number of incidents, as we address incident root causes, and allow us to refine the processes and procedures which make up our Incident Management Framework as it becomes increasingly effective over time.

- **Executive management oversight**, which provides governance to ensure that we are adhering to these processes and procedures on a continuous basis. We need to continue to embed, and update our governance policies and processes on the way we measure performance and learn lessons and have identified this as an area of focus for the remainder of AMP6 and into AMP7.
- **Independent assurance of our maturity framework**, which will report the progress we have made against a set of defined business goals, to our Board, Ofwat and our CCG.

In *IAP\_TA8\_Accounting for past delivery\_PD.A8*, we describe what we have learnt from past incidents and the changes we have made to our business in response. In the remainder of this document we have outlined, our approach to identifying a set of business goals that we are working towards and detailed action plan, our assessment of where we currently are on our journey to improving the prevention and management of incidents and the activities we have identified to be less mature and need to be further developed to reach our business goals.

## Approach

In the past, we have demonstrated that whilst we capably respond to the “green” incidents which are more minor issues, dealt with by our business as usual activities, we have not effectively managed incidents which we have classified as “amber” and “red”.

In order to identify the weaknesses in our management of red and amber incidents, we have undertaken detailed analysis both internally and externally. We have used the insight which we gained from these analyses to define our action plan on incident monitoring and continuous learning.

### External engagement

In July 2017, we engaged an external expert, Jim O'Connor (OCOR Ltd.) who assessed our approach to managing incidents and provided recommendations for how to improve our response and monitoring during incidents. Jim had been instrumental in establishing incident response improvements in Scottish Water and his experience has been invaluable in bringing lessons learnt from another organisation.

Three major conclusions were drawn through this assessment:

- We should embed a structure through which to manage incidents along with a compatible system to improve monitoring and performance
- We should engage additional staff from within the management population to populate roles in the incident structure
- We should establish a larger pool of trained staff who can be mobilised by management during an incident.

These findings led to the development of the Incident Management Framework which is discussed in this document. This defines our incident response and monitoring processes and procedures. Following freeze/thaw, we asked OCOR Ltd. to undertake a detailed review of our management of the incident to allow us to further enhance the programme of transformation actions and activities already.

Wherever possible, we have drawn insight from industries other than water, such as oil and gas, nuclear, and law enforcement. These good practices have contributed towards the business goals which we have defined for both our incident response and how we learn from our past performance. We are going to continue to look beyond our sector to learn wherever possible and recognise that this will be an ongoing process as we work to further refine our incidents management approach.

- The Incident Management Framework is based on the Incident Command System approach developed in the USA and used by all US public bodies, including all utilities, as well as in the UK by the oil industry and in Canada by Fire and Rescue services
- Our new incident management system, the One Voice CIM® platform, has been implemented in over 700 organisations across a wide variety of industries, including energy production, offshore engineering, aviation, food production and transport
- We have based our performance evaluation and continuous performance review cycle on good practices in the oil and gas and nuclear industries
- We have brought in experts in debriefing from the police to train our Emergency Planning Team on how to do this most effectively.

We have also engaged with our customers through surveys and via our online community to understand their experiences during incidents and learn how we can serve them better. This has led to us refining our approach to managing customers during incidents, as the responses enable us to understand what is important to them, what we are doing well, and what we can improve. The key points noted from this research<sup>3</sup> are:

- There were a number of key questions that customers have when there is an issue that impacts their water supply at home:
  - The nature of the problem: whether it is impacting their home or wider supply
  - Reason for getting cut off: might it be because they have not paid their bill
  - Duration: how long will the issue last
  - Alternative options: Do they need to buy their own water to use
  - Customers: those with greatest concern were those with families.
- As a result, there are a number of key learnings that we have taken into account when determining our improvement actions:
  - We should prioritise young families in a similar way we do vulnerable customers
  - Due to the unexpected nature of these events, communications are key to address the customers key concerns to provide them with information
  - Customers use our website but in some instances they couldn't find the information they were looking for - we need to be providing information more proactively
  - Communications needs to be consistent across channels and provide up to date information
  - Drinking water was the main priority so our practices around alternative supply are important.

We have taken this customer research and perspective into consideration to further improve the way that we support customers to deliver a service that is refreshingly easy.

### Internal engagement

We have analysed the lessons learned and improvement actions taken from a sample of historical incidents, which is set out in *IAP\_TA8\_Accounting for past delivery\_PD.A8*.

<sup>3</sup> Relish research, Incident Management Customer Action Group, February 2019

For this action plan, we held internal review sessions with the senior leadership involved in developing the incident response plans and processes, to collate and consolidate the incident management improvement activities that are already underway throughout the business and to understand if there were further issues identified (based on expertise and benchmarking) that need to be addressed for improvement. In addition, our Emergency Planning Team's progress to date and development plan was used as a key input when defining the actions that still needed to be further embedded and developed.

## We have already taken action to improve our incidents performance and have established a systematic approach to incident management

Our incident management framework is a systematic approach to managing a range of incidents that would affect our service to consumers. It addresses some of the major drivers of poor incident performance which were identified by OCOR Ltd. during freeze/thaw e.g. our customer communications and support through alternative supplies.

This framework is based on the Incident Command System approach that was developed in the USA following disastrous fires in the 1970s. It is now embedded in the USA's National Incident Management System, NIMS, which is used by all US public bodies, including all utilities and most organisations that may have to interface with emergency responders. The process has been adopted on a similar basis in Canada. In the UK, the oil industry manage their incidents using ICS as do a number of Fire & Rescue services.

The framework we have established was recommended by OCOR, based on their experience of developing an ICS for Scottish Water from UK military planning principles adapted to the water industry. This was proven to be effective in dealing with a range of scenarios in terms of both type and scale at Scottish Water, and has already driven a step change in how we manage incidents, evidenced through our successful management of the Summer 2018 heatwave.

### Incident management framework

The new framework clearly defines the approach we take to managing an incident. The three areas of our incidents response are:

1. Service Recovery: Restoring our service
2. Customer Communications: Communicating with our customers and stakeholders
3. Alternative Response: Supporting our customers through the provision of alternative supply

PD.A9.Figure 1 below shows how these three response teams interact with the overarching strategic team. Strategic flows of information are communicated between the response teams and the strategic team. The following two sections of this document discuss how this structure operates during an incident in detail. Firstly, we describe the overarching strategic monitoring and oversight provided by the strategic team. Then, we outline the performance monitoring undertaken by each of the three response teams.

PD.A9.Figure 1 – Incident management information flows



The framework is made up of a set of documents which clearly describe the processes and procedures which will be followed during an incident. The key documents are as follows:

- IMPO 101: Overview of the Incident Management Plan
- IMPO 102: Incident Identification & Escalation
- IMPO 103: Formation of the Incident Management Team
- IMPO 104: Operation of the Incident Team (Briefings)
- IMPO 201: IMT Roles O&R Introduction
- IMPO 211: ELT & Lead Director Guidance

We have established an Emergency Planning Team who manage the incident management framework through developing and maintaining the supporting tools and documents (e.g. the briefing templates, escalation procedures), conducting the debrief process, and tracking actions to ensure they are integrated into the business. They also undertake proactive work to prevent incidents through horizon scanning, and engage with communities e.g. by establishing strong relationships with Local Resilience Forums (LRFs).

## The incident management structure includes an overarching strategic team which monitors our incident response

### Strategic incident oversight

In the past, we have not consistently delivered a coordinated response to incidents. For example, during the freeze/thaw event our communications team were not effectively updated with the status of the incident by those responsible for restoring the service, and therefore were not able to pass this message on to our customers and stakeholders. More detail on this specific issue can be found in *IAP\_TA8\_Accounting for past delivery\_PD.A8*, under the freeze/thaw analysis.

The strategic team in our new incident structure address this issue. During an incident, the strategic team controls and coordinates the three response teams, namely service recovery, communications, and

alternative response, through collating and analysing key performance indicators and qualitative feedback. The strategic team facilitates the effective communication of information across the different areas of our incident response and ensures that each response team has a holistic view of the incident. They do this by making calls to the leads on service recovery, communications and alternative response.

The strategic manager roles are filled by leadership with appropriate skills and experience to manage each of the response teams. These staff are recorded in a rota which is centrally accessible. This rota aims to ensure that whenever an incident occurs, an appropriate team is quickly mobilised. All roles in the structure are notified of the incident when it is classified as amber or red through a pre-planned call out cascade<sup>4</sup>. This ensures that during an incident, an appropriate incident structure is stood up systematically and that there is clarity on who is responsible for notifying who and taking on assigned roles and responsibilities.

The response to any incident is the responsibility of the Executive Leadership Team (ELT). The ELT will be represented by a lead director who is responsible for communicating the intent and objectives to the incident manager, receiving updates on progress, and communicating changes to the intent and/or objectives as the incident progresses. The lead director is responsible for keeping the ELT informed of progress and facilitating discussion as may be required with the appropriate members of the ELT on the intent and any changes to the strategy. The lead director will normally be the director of the function that is most affected by the incident. Where a number of directorates are significantly impacted, the chief executive will determine the lead director.

### How strategic monitoring informs the identification, classification, and escalation of an incident

We recognise the need to quickly identify an incident as it is developing and accurately understand its potential impact. The level of impact may change over time, and knowing this level at a given point in time will allow us to respond to the incident with the appropriate team structure for its severity.

The classification of the incident will be assessed regularly on the basis of changing impact and/or unforeseen circumstances by either the strategic team (amber and red incidents), or the area/duty manager (green incidents) by comparing key performance indicators from each of the response teams against pre-defined trigger points.

Incident Management Plan document 102 sets out the procedures that happen to identify an incident and to trigger our response. This is summarised as follows:

Events which have the potential to result in an operational incident can be reported into the business in a variety of ways including:

- Instrumentation, device, field network monitoring
- Ethernet, networks, server and station monitoring
- Rotating machinery monitoring
- Energy equipment monitoring

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<sup>4</sup> As referenced in S7.2 IMPO\_103, August 2018

- Telemetry (GRPS, PLC, Mesh) monitoring
- Analogue and digital alarms
- Site operators and field workers
- OT applications (SCADA, PI Historian, Leakage Management)
- Delivery partners and strategic partners
- Control room operators (forecasting) – Proactive and Reactive incident response units
- Scientific sample studies
- Customer calls
- Media
- External (Police / Local Authorities)
- Weather alerts

All events that have the potential to result in an operational incident must be reported to the Duty Manager who assesses the category of the incident. The Duty Manager assesses the potential scale of the incident and the likelihood that the event will result in an impact on the service to customers or the environment. The Duty Manager achieves this by:

- Assessing the category of the incident - based on a series of thresholds depending on the type of the incident - see *PD.A9.Table 1 – Principles underpinning incident categorisation* and *PD.A9.Table 2 – Example thresholds for flooding incidents* below.
- Assessing the Likelihood of the impact occurring - based on actual vs, high, medium and low impact, which drives how we form the incident team and put in place the right capabilities to manage the incident
- Initiating the escalation process - This is based on a decision tree diagram that looks at a series of factors to determine the right escalation track, set out in *PD.A9.Figure 2 – Incident escalation process* below.

The principles underpinning assessing the category of the incident are set out in the table below:

**PD.A9.Table 1 – Principles underpinning incident categorisation**

Rating	Description
Green	<ul style="list-style-type: none"> <li>■ Can readily be managed by the Duty Manager (DM) without impact on his other duties.</li> <li>■ DM can readily mobilise resources with certainty of availability.</li> <li>■ Media interest will be limited - local press, and minimal social media.</li> <li>■ Limited interaction with external agencies, (LAs, police, etc.).</li> </ul>
Amber	<ul style="list-style-type: none"> <li>■ Is beyond the DMs ability without impacting on his other duties.</li> <li>■ An AMBER Incident Management Team is required, operating at a regional level – managed by an Operations Manager.</li> <li>■ Resources readily available through standing arrangements.</li> <li>■ Deployment of resources will require careful management.</li> <li>■ Media (including social media) interest, of a regional / limited nature.</li> <li>■ Limited liaison, and a limited coordinated response, with external agencies.</li> </ul>

Red	<ul style="list-style-type: none"> <li>■ Is beyond the AMBER teams capability to deal with effectively.</li> <li>■ A RED Incident Management Team is required, operating SW wide as required. managed by a Functional Manager.</li> <li>■ Resources may be beyond what is readily available through partners and contractors. May require the mobilisation of additional staff and contracting resources as well as resources not usually engaged to deal with incidents.</li> <li>■ Likely to be significant press and media interest which may be at a national level.</li> <li>■ Likely to be significant liaison and coordination with external agencies.</li> </ul>
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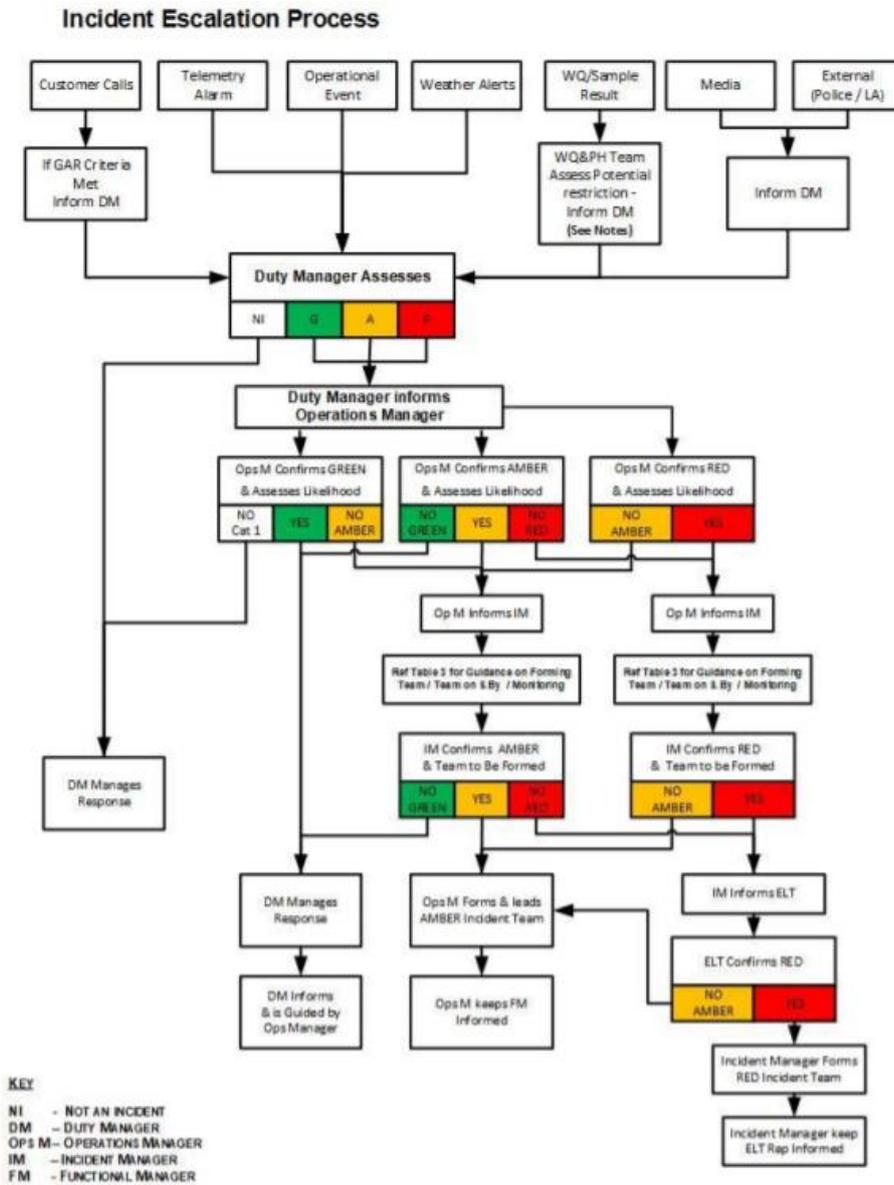
We have also developed thresholds for different types of incidents which determine the level of intervention required to manage the incident. For example, for a flooding event the incident would be classified according to the following thresholds:

**PD.A9.Table 2 – Example thresholds for flooding incidents**

Green	Amber	Red
Flooding: within the property impacts 1-5 properties only within curtilage impacts 1-20 properties	Flooding: within the property impacts 6-20 properties only within curtilage impacts 21-50 properties	Flooding: within the property impacts >20 properties only within curtilage impacts >50 properties

To ensure that these processes are adhered to, the processes need to be very clear and the roles and responsibilities need to be very clear to all.

PD.A9.Figure 2-Incident escalation process



## In addition to monitoring of incidents, we also have distinct processes for strategic monitoring and reporting against targets set by the EA and the DWI

The EA has targets for performance measurement set out within the Environmental Performance Assessment (EPA). The targets that relate to incidents are Total Pollution Incidents, Serious Pollution Incidents, Self-reporting of pollution incidents, and Numeric Treatment works compliance (given a breach of permit conditions could result in a pollution incident).

All category pollution incidents and near misses are monitored through our daily operational leadership calls and KPIs are then reported and reviewed on a weekly basis by our Pollution Reduction Team (for more detail on these measurements, see *IAP\_TA8\_Accounting for past delivery\_PD.A6* and *IAP\_TA8\_Accounting for past delivery\_PD.A7*). These monitoring processes, as well as processes for improving the effectiveness of our response to pollution incidents, are currently being improved through the implementation of our Environment+ transformation programme, for example through the application of leading indicators for the identification of potential incidents, including pump-efficiency, repeat repairs within a three month period, and plant out of action among a portfolio of 91 leading indicators. Monitoring these leading indicators and responding to them in a timely and effective manner, will help us deliver our targets set by the EA.

When an incident is identified, it is reported to the EA via a member of the Pollution team to the ICS desk (the EA's own call centre). Clear processes exist for capturing, investigating, categorising and self-reporting pollution incidents. Firstly, initial site visits for pollution investigations are attended by either a Southern Water operative or contractor (Cappagh Brown), with preliminary investigations including photos and ammonia readings. If the pollution is considered potentially serious, the site is visited by an Investigation technician to assess the impact. If determined as serious, we escalate the incident via amber or red emergency response procedures as part of our incident response framework; such incidents have a Directors review within two weeks (with root cause analysis). We report monthly to the EA (where they review, for example, incident categorisations), with a year-end report that is reviewed and agreed by the end of March.

In addition, the DWI has a key target for performance measurement in assessing the risk of impact on consumers of drinking water quality during incidents. The Event Risk Index (ERI) considers:

- the seriousness of each drinking water quality incident;
- a measure of the company performance in managing the event (the Assessment score); and
- the impact of each event, based on a measure of the population affected and duration in hours.

Three of the components included in the calculation of ERI<sup>5</sup> can be influenced by monitoring and managing our incident performance effectively, namely: 1) Duration; 2) Population affected, and 3) Assessment score, where the Assessment score considers the root cause of the event and whether a company's actions led to or increased the likelihood of the incident, and whether further remedial action is necessary. It is important to note that the effectiveness of incident monitoring and management will not contribute to the assessment

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<sup>5</sup> The formula for the calculation of the index is as follows:  $ERI = \frac{\sum[\text{Seriousness} \times \text{Assessment} \times \text{Impact} (\text{Population affected, Duration})]}{\text{Population served}}$ .

score where there is an existing notice against *Regulation 28 part 4 of water supply (water quality) regulations 2016, as amended*. In the case of such existing notices, monitoring of root causes of incidents which facilitate preventive measures for potential future incidents, and thereby lead to no incident occurrence, will contribute to a lower ERI score. Further, through our incident monitoring and management system, we will minimise the above mentioned three components of ERI to help us deliver targets set by DWI.

DWI calculate ERI scores and report this directly in the event assessment letter after the DWI investigation of the event has been completed; this happens within 3 days after the event.

As part of DWI assessment of performance against ERI targets, they may audit processes after an incident, taking into consideration contributing factors, for example quality of risk identification and management processes, and quality of advice to customers (such as on alternative water supply options, for example bottled or boiled water options).

We also monitor and report key parameters that affect water quality targets through relevant Performance Commitments, such as Mean Zonal Compliance (which will change to Compliance Risk Index in AMP 7) and Drinking water quality - Discolouration contacts (which will change to Drinking water appearance in AMP 7) – for more detail on these measurements, see *IAP\_TA8\_Accounting for past delivery\_PD.A6*.

## Our action plan for improving our overarching strategic monitoring

**Goal 1: To have a comprehensive and coordinated approach to managing all incidents, including having the right team in place to strategically monitor the incident, and the right processes in place to escalate the incident**

We recognise that our incident management framework is relatively new. As such we need to continue operationalising the incident management structure, training the staff who are on the rota for this in the different roles and responsibilities, and developing the processes for how this is stood up in the event of an incident, including the call out cascade.

We will continue embedding the incident identification and escalation processes and procedures, including ensuring adherence to the trigger points for reclassification of an incident. This entails clear and regular communications to ensure incident response processes are accessible and known to trained individuals as well as ad hoc incident drills where our teams respond as if a real life incident had occurred.

Currently, “green” incidents are managed as a business as usual activity. Although a green incident may only impact a small number of customers, we recognise that for these customers the incident is still significant. Currently, green incidents are not managed through the incident management framework; in order to ensure we have the correct response for the type of incident, we need to make sure that we differentiate correctly between green and amber incidents. We will review the current level of response rigour to green incidents and determine whether these incidents should be monitored differently in the future to ensure that we deal with them appropriately if they require escalation.

We will develop processes which allow the strategic team to link together the performance from each of the response teams. The strategic team needs to be able to identify when a threshold in one area of response has been met that means action must be taken by another response team. For example, how the progress of service recovery might impact on alternative supply response. This requires effective communication of key performance metrics during the event and effective dissemination of up to date information.

## Each of our incident response teams (service recovery, communications and alternative response) need KPIs to understand and monitor the incident more effectively

Historically, our approach to incident data collection has been inconsistent and not systematic and this can be seen in a number of the incidents sample that we have assessed in detail in *IAP\_TA8\_Accounting for past delivery\_PD.A8*. Our records have been either paper based or held in Excel or Word documents which aren't centrally accessible by others involved in the management of the incident. There has been a significant time delay in communicating information across the incident management structure leading to a slow, disjointed incident response.

These challenges have made monitoring our real time incident performance difficult, as well as impacting our ability to learn effectively from incidents after they have happened. To tackle these issues, we will define a comprehensive set of key performance indicators for each response team, and we will embed and further improve the performance monitoring processes which we recently developed as part of our Incidents Management Framework.

Our action plan to improve the monitoring of incidents performance relevant to all response teams

### **Goal 2: Further operationalise existing processes and procedures**

Although the existing procedure states that all data and logs should be collated and securely stored following the incident, this is done inconsistently. Where performance monitoring processes and procedures are currently in place, we will continue embedding them by ensuring those in the incident structure receive appropriate training and that we have effective governance in place which is designed to ensure adherence, for example, non-compliance will be taken seriously and called out in individuals performance reviews which may impact performance payments.

### **Goal 3: Record incident data in real time to improve our ability to monitor and respond more quickly**

We are in the final stages of procurement of our new incident management system, the One Voice CIM® platform which will centralise information collection and address the issues of inconsistent data collection noted above. The system has already received internal approval and we expect start to integrate it into our processes in May/June 2019. In order for the system to achieve its expected benefits, we need to fully train the users which is expected to commence when the system is being populated with information and data.

This system has been implemented in over 700 organisations across a wide variety of industries, demonstrating its inherent flexibility and focus on the core principles of incident and crisis management. Today, the system is used across diverse sectors such as energy, offshore engineering, aviation, food production and transport.

The key functionality of the system is in: decision making and action tracking; real-time information flow and management; mobilisation of teams; communications between teams in different locations; management of on-call rotas; document management; media handling; mobile access; recording data for post incident audits. We believe that this will drive a step change in our data collection and management, and will enable us to record, organise, and analyse our data more effectively. Ultimately, it will enhance our performance monitoring capability across the three response teams.

We will have a dedicated log keeper who will manage the system and ensure data is entered correctly. Each of our response teams will have access to the system and will therefore be able to review data from across the response teams in real time.



## Service recovery monitoring

Previously, we have operated on a reactive basis during incidents. We know, for example, that during freeze-thaw this was the case - we lost time firefighting rather than proactively or systematically responding to events (See *IAP\_TA8\_Accounting for past delivery\_PD.A8* for more detail). We recognise that proactive management of the network to isolate areas of excessive demand can accelerate the speed at which demand can be brought under control, and that we need to monitor our network more effectively to achieve this.

The effective monitoring of our progress towards recovering the service has a significant impact on the activities in communications and alternative supply. The communications team needs status updates in order to inform our customers and stakeholders, and the alternative supply team needs to be aware of the point at which their services will be required.

### How we currently monitor our service recovery performance

All response managers within service recovery collate performance data during an incident in order to monitor the situation. This data is crucial to determining the response required from the other response teams, as well as developing service recovery solutions.

It is recognised that this data will vary depending on the nature of the incident. Currently, the incident management framework specifies that a minimum of the following qualitative and quantitative data points should be monitored and recorded in the service recovery response situation report prior to each incident briefing.

#### Existing service recovery data points:

- Cause of the incident
- Impact on service to customers
- Impact on service to vulnerable customers
- Impact on the environment (including pollution)
- Area(s) affected
- Potential scale (Number of properties / Key premises)
- Breach of regulatory standards
- Severity / Likely Duration
- Outline of possible mitigation options
- Sample results
- Telemetry Information (flows / pressure / quality)
- Storage volumes / time of flow through system
- Asset Performance

### Our action plan for improving our monitoring of service recovery

#### Goal 4: Monitor service recovery KPIs and pre-empt causal issues

In addition to the service recovery data points already detailed, we will establish key performance indicators which will enable us to compare how successfully we have responded to distinct incidents, for example the percentage of customers which could have been impacted in a given area versus the percentage of customers who were impacted.

The OCOR freeze/thaw report highlighted that we have not been good at responding pre-emptively where there have been contributing factors which impact our ability to recover, such as:

- Operational issues
- Wider impact of incident beyond initial area affected
- Worsening weather conditions, i.e. rainfall, storms, snow, prolonged low temperature.

In response to this, in addition to the work we are doing to improve how we predict incidents e.g. through weather modelling, we will establish an input from our forecasting team and duty manager to the incident briefings. This will enable us to proactively predict the impact of contributing factors on the current incident and put mitigation plans in place.

### Customer Experience and communications monitoring

Our goal is for our customers to enjoy a refreshingly easy experience, they will find us easy to deal with and will be able to contact us through channels of their choice and receive a consistently supportive, fair and inclusive service across both our wholesale and retail activities. Our customers will feel they can trust us, because they are listened to and we act in a way that minimises our impact on them. They will experience us being responsive, proactive and going the extra mile to enhance their service. Our aim is for customers to feel this, even during incidents, because we are being proactive in keeping them well informed and supported.

We recognise that in the past, communication with our customers and stakeholders has been a weakness in our incident management performance. Our digital communications have been ineffective, with instances of contradictory information posted on different media channels. The communications team have previously found it difficult to obtain reliable information on the status of the incident and get timely sign off on press releases. Again, the most potent example of this was during freeze/thaw, where no one person took overall responsibility for communications across all channels. We set out in *BP\_CH9\_Great Customer Service\_Pg141* our key learnings relating to customer experience.

Poor quality communication with stakeholders exacerbates the frustration they feel when service is disrupted. During an incident, the primary goal of the communications response team is to sustain confidence in Southern Water through effective communications with customers, stakeholders, the public, and press and media utilising all appropriate communications channels. We have engaged with our customers through surveys to understand their experiences during incidents and learn how we can serve them better. This has led to us refining our approach to managing customers during incidents, as the responses enable us to understand what is important to them, what we are doing well, and what we can improve. An example of this is where customers have highlighted that they have received inconsistent messages from different communication channels during an incident, e.g. our website, Facebook and Twitter. The customer research that noted within the approach section has been used to identify the key improvement areas so we are focusing on the things that our customers care most about us getting right.

### How we currently monitor communications during an incident

We currently monitor the quantitative and qualitative data points below to enable us to respond better to the incident. For example, if there is a surge in call volumes, we will stop doing work outside of incident and reconfigure our contact centre teams to dedicate as many people to answering calls as possible. If necessary, we also have the ability to bring in third party contact centre support provided by our service delivery partners.

Existing communications data points:

- Contact Centre statistics
  - Call volumes
  - Call handling
  - Call type
  - Speed of answer
  - Abandonment
- Web / Social media contacts (volume / type)
- Significant issues being flagged by customers
- Requests for assistance from customers and stakeholders
- Nature of press enquiries
- Deployment of loudhailers
- Deployment of leaflets
- Feedback from stakeholders

Our action plan for improving our monitoring of communications during an incident

**Goal 5: Consistently monitor the dissemination of communications to customers through KPIs and ensure that our incident response communications team is appropriately staffed and trained**

We will review the existing data points which we track to monitor communications, and will implement additional key performance indicators to allow comparison between incidents, such as the proportion of all calls received which were abandoned rather than the discrete number of calls abandoned.

We recognise the need to ensure that the people who will be managing an incident from a communications perspective are familiar with the processes and procedures we have recently developed. We have already trained all our contact centre operatives as well as the Capita staff who we may draw on for support during an incident, which has massively increased our resilience and capacity to take calls from our customers during an incident. We will ensure that all those on the rota system who form part of our communications response team are trained appropriately, and that this is refreshed on an ongoing basis.

In addition to providing training for the staff already on the rota, we recognise that we lack resilience in some elements of our communications response, such as social media coverage. We know that we need to provide social media coverage to keep up with our customer's desire to be kept informed through many channels of communication and are committed to improving our out of hours social media capability through identifying additional staff who can be called on to support an incident.

We currently have a separate team for communications and customer experience in our incident management structure, with a facilitator to ensure that they are aligned with each other. We recognise that this may cause alignment challenges as opposed to a single communications response team. We are reviewing our communications response team structure and proactively addressing these challenges to support a strategy of consistent communication.

**Alternative supply monitoring**

Historically, in some instances, a lack of coordination in our provision of alternative supply has meant we haven't provided customers with a good level of service. For example, during an incident, water was shipped to locations which didn't experience loss of supply whilst areas that did lose supply didn't receive bottled water until their supplies were restored. Sites were only identified for the distribution of bottled water late on

during the incident, which led to unsuitable sites being selected which had issues such as being closed overnight and lacking welfare facilities for our staff.

During freeze/thaw, our post incident review showed that to begin with no one took overall responsibility for the provision of bottled water and as a result a significant quantity of bottled water was shipped to an area that didn't experience any loss of supply, while areas that did experience a loss of supply didn't quickly receive a supply of bottled water. More detail on this specific issue can be found in *IAP\_TA8\_Accounting for past delivery\_PD.A8*, under the freeze/thaw analysis.

During an incident where there is a loss of supply or contamination of supply, the goal of the alternative supply response team is to support our customers through the effective provision of an alternative supply of water.

### How we monitor the performance of our alternative water supply response

We have recently developed a comprehensive Alternative Water Supply Plan<sup>6</sup>, which defines the processes and procedures which we will follow if there is a loss of supply or contamination of supply. In order to evaluate how successful we are in delivering this plan, we currently monitor the key performance indicators below:

- The length of time since the loss of supply
- The number of customers affected by the incident
- The volume of alternative water which is available per customer, held by Southern Water and Water Direct
- The location and number of bottled water distribution points to serve the affected population
- The volume of potable alternative water delivered per customer per day.

Should the piped water supply fail, domestic customers must receive a minimum of 10 litres/head/day of potable alternative water. The requirement increases to 20 litres of water per person per day after the declared incident has been running for 5 days. In order to monitor whether we are meeting this target, we need to track the volume of potable alternative water delivered per customer per day.

### Mutual aid

In our Alternative Water Supply Plan, we have defined procedures for accessing mutual aid during incidents. This covers working with Water Direct and other water companies. We have a formal contract in place with Water Direct and there is a reciprocal agreement in place between water companies to share resources in an emergency when all contracted resources have been utilised.

The Water UK Security and Emergency Planning (Mutual Aid) Manual lists the emergency plant and equipment, including bottled water, held by all the UK water companies, the procedure to request any of the listed items and how it is paid for. There is industry agreement that unless a company is having its own emergency it is obliged to loan up to half its emergency resources.

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<sup>6</sup> Alternative Water Supply Plan V2, February 2019

Following the freeze/thaw incident, we upgraded and enhanced our existing cooperation with neighbouring water company communications managers, working through the WRSE network. During the heatwave, we held weekly scheduled calls with all companies in the South East (Portsmouth Water, South East Water, SES, Thames Water and Affinity Water), with additional calls as necessary. These were subsequently expanded to include Water UK.

As a result we:

- Shared and matched key messages to customers
- Cooperated on joint heatwave advertising campaigns
- Launched unbranded radio advertising which was swiftly taken up by other regions
- With South East Water and Affinity Water we jointly sponsor weather web pages on local news outlets with messaging tailored to fit weather and risks of issues emerging e.g. flooding.

### Vulnerable customers

Our goal is to provide a service which means that our vulnerable customers are not disadvantaged by the nature of their vulnerability and need. We maintain a Priority Services Register (PSR) that records customers for whom special consideration should be given in the event of a change in water supply or sewerage service because of some form of vulnerability. The PSR allows us to identify those customers who require additional support, and ensure they are prioritised for the delivery of alternative supplies. This is an area we are on a journey to improve, aligned to our response to action *IAP\_TA2\_AV.A2*.

For AMP7, we have developed the Reach & Support customer proposition. Through this approach, we will raise awareness of the non-financial support available to vulnerable customers and improve identification and accessibility. More detail on the extent of our Reach and Support proposition is set out in the September Business Plan (BP\_CH8\_Helping Customers who need our support – our response to the challenges of affordability and vulnerability\_P132).

In order to monitor how successfully we are supporting our vulnerable customers, we need to track the delivery of alternative supplies to them. This is currently done on an ad hoc basis; as part of this action plan we will commit to including our alternative supply to vulnerable customers as a separate key performance indicator.

As one of our performance commitments, we currently measure the proportion of customers that have received non-financial support who believe Southern Water's support addresses their specific requirements and needs (PC reference: PR19SRN\_RR05). This PC allows us to understand the quality of support provided to customers in vulnerable circumstances, and has been developed to hold us to account in providing excellent support to our customers in vulnerable circumstances. It is measured through a survey of customers who have received services provided through the PSR, e.g. through braille bills or talking bills, and therefore is not incident specific but will include incident related services driven by the PSR, such as the provision of alternative supplies.

Our action plan for improving our monitoring of the alternative water supply response

#### **Goal 6: Ensure that our alternative supply response is effective through monitoring the availability and delivery of alternative supplies**

The Alternative Water Supply plan should be reviewed to ensure that it covers a range of scenarios taking into account the anticipated length of time of the outage and the number of customers affected. There should also be a process for preservation of water supplies during a protracted event as identified in the OCOR review on the freeze/thaw.

We have engaged with Local Resilience Forums to prepare in advance for an incident by producing a water supply disruption plan for each region which includes pre-agreed bottled water distribution sites.

Our planning for the alternative supply of wastewater services is immature as currently we do not have well documented plans. We will develop a plan, similar to the Alternative Water Supply plan, for alternative wastewater services to ensure that we are well prepared in the event that we have an incident of this type. We intend to engage with our stakeholders and customers to ensure this meets expectations and needs. We are reviewing the existing data points which we track to monitor the delivery of alternative supplies e.g. number of bottles distributed, and will develop additional key performance indicators to allow comparison between incidents.

We will formalise the process for reporting the availability and delivery of alternative supplies to the strategic team to enable this to be managed holistically rather than on an ad hoc basis.

### **Goal 7: Ensure effectiveness of the support provided to customers during an incident**

We will continue embedding the process for compiling our PSR from billing data and information from Local Authorities; this will be supported by our planned approach to reach our performance commitment on the number of customers on the PSR.

We will review our monitoring of alternative supplies delivered to vulnerable customers and ensure this is tracked as a separate key performance indicator.

We will agree protocols e.g. how we reach them easily with communications and alternative supply, to enable us to deal correctly with vulnerable customers in the event of a change in water supply or sewerage service.

## **These KPIs will also improve our ability to evaluate performance - enabling us to identify improvements on a continuous basis**

Poor incidents performance in the past, as recognised by Ofwat, indicates that we need to improve by learning lessons more effectively and making changes. This section outlines our action plan on the first of these two things, setting out how we intend to learn lessons more effectively after an event. This will enable us to improve performance during incidents and to reduce the number of incidents that occur.

We are confident that we have a good foundation upon which to do these things - our plan incorporates an understanding of what caused previous incidents and our new incident management framework is informed by the lessons we learned during freeze/thaw. However, to ensure continuous improvement in performance, we must continuously learn from both success and failure. We have drawn on good practice in the oil and gas and nuclear industries in order to develop the processes and procedures which underpin our new performance evaluation and continuous performance review cycle, both for incidents and for our business as usual performance against performance commitments.

### **How we currently assess our performance and identify improvement measures**

Our Incident Debrief Procedure is the current process for analysing how well we did at managing an incident:

- After the occurrence of an incident where either a Red Incident Team or an Amber Incident Team has been formed, the Emergency Planning Team and Incident Duty Manager call for a debrief. Incident debriefs may also be called for on a discretionary basis for smaller incidents

- The debrief procedure is completed between 1 and 4 weeks after the incident and facilitated by an experienced and informed member of staff. Facilitators complete a specialist training course, including good practice experience from the Police services, which is delivered by an external expert. This equips them with the skills and knowledge required to facilitate a structured debrief and compose a subsequent improvements recommendation report
- Prior to the debrief, participants who were involved in the incidents will complete a “Debrief Participant Questionnaire”. This questionnaire aims to capture individual’s personal reflections and will be used by the facilitator to assist in providing structure to the debrief
- It is made clear to those involved, in the debrief process and at the beginning of the meetings, that the debrief is a blame free environment and that honest reflections are the most appropriate way to draw out lessons which can be responded to. The facilitator will encourage all to engage in the discussion, with the awareness that some participants may be inexperienced or intimidated and so be less forthcoming when sharing their learnings
- A debrief of the effectiveness of our customer communication and support is captured through impact assessments which are conducted by the customer experience team following an incident, however these do not currently feed into the overall incident debrief as this is not yet an established process.

The key output of the process is an incident debrief report which is based on mainly qualitative information. This report captures:

- Areas of good practice from the incident;
- Areas that need improvement, and;
- Recommendations and improvement actions.

### Our action plan for identifying improvement measures

#### **Goal 8: Include incident root cause analysis as part of the incident debrief and integrate KPIs as an input into the debrief process**

Currently the debrief procedure is concerned with learning lessons about how well we performed at managing an incident. It therefore is helpful for driving us to improve in this regard, but does not help us achieve our second major goal of reducing the number of incidents.

We already complete root cause analysis as part of our regulatory reporting, for example in 20 day reports for the DWI. However, we plan to centralise this activity as part of the debrief process. This means designing and embedding (through process and governance) procedures for the analysis of incidents and the key root causes, into the debrief. We also have to define procedures for the capture and reporting of these lessons e.g. documentation template, responsibilities, accountabilities. Our first intention is to amend our current debrief process to include a root cause analysis sub-process, rather than establishing a parallel debrief process for this matter, where the asset manager attending the debrief takes responsibility for feeding the outcome of the incident root cause analysis into the root cause analysis validation stage of the Asset Lifecycle Process (See *IAP\_TA8\_Accounting for past delivery\_PD.A7* for further detail on the redesigned ALP). We will also incorporate a review of the success of our proactive work, e.g. whether we should have been able to predict this event and stopped it from happening.

There are many well established methodologies for root cause analysis. We will look within the water sector and across industries, for example nuclear, oil and gas, to understand what processes are used as best practice. We will build reporting templates for root cause analysis, conduct further facilitator training and understanding which stakeholders are required to input into the process and which require the output. The key inputs into the debrief procedure are currently the responses to the incident debrief questionnaire and the contributions of participants during the debrief. The process can be improved by using as an input

the key incident KPIs. This will improve the quality of the analysis that feeds lessons learned for both our performance at managing an incident and the analysis of the incident root cause.

We will amend our current process to ensure it is using the data captured during the monitoring activities as an input into our debriefs. Our new incident management system will capture and present these KPIs. The primary purpose of this data will be to prove or disprove the hypotheses brought by those in the debrief. However, we will determine what analysis of these KPIs needs to be completed prior to the incident debriefs so that the data can yield its own hypotheses.

### **Goal 9: Tests in place to check the effectiveness of our process at identifying the correct improvement measures and compare our procedures with international best practice from a range of industries**

The first significant test of our Incident Management Framework and our Incident Debrief Procedure was the Andover Warehouse fire (more details on this can be found in the case study in *IAP\_TA8\_Accounting for past delivery\_PD.A8*). After this event the debrief procedure identified 19 learnings - for example that during ongoing incidents, role handover could be more clearly defined. However, the process is still new to the business and does not have a long history proving its effectiveness. We must ensure that it is identifying the correct improvement measures.

We will perform trend analysis across incidents to test the effectiveness of those measures that have been identified: if measures have been implemented to solve a given problem, repetition of those problems should not be a feature of our performance. If they are, then we will have to consider what changes need to be made to our improvement process.

We already intend to build our root cause analysis sub-process based on an understanding of best practice. However, we can go further and test our whole continuous improvement performance approach against international best practice from adjacent industries.

We have already integrated a number of good practice behaviours from the Police as part of our facilitator training. We will look to further understand the incident analysis approaches taken in a variety of industries and begin to evolve our process using this understanding.

### **Goal 10: Assessment of communication and support is integrated into the incident debrief**

Communications and support is a key element of our incident management performance. This is currently evaluated by the customer experience team through their impact assessments. We will continue to improve this assessment process to ensure it is as effective as possible, and continue to integrate the customer perspective into the incident debrief to ensure that the incident is assessed holistically.

## **Subsequently, we need to integrate improvements (across operations, customer experience and emergency planning) as part of the continuous performance improvement cycle**

Continued poor incidents performance, as recognised by Ofwat, suggests that we have not been sufficiently effective in learning lessons and in making changes to improve. While we do document this where it is required by external bodies, we need to improve how we translate lessons learned into real changes in our business in order to improve performance during incidents and to reduce the number of incidents that occur. This section outlines our action plan for embedding the improvement measures that we identify.

### How we currently integrate improvement measures

One of the key outputs of the debrief process is a list of recommendations and actions for improvement:

- The current process for identifying improvement measures (articulated in the section above) focuses on incident management performance, rather than incident root causes. Therefore our current process for embedding changes focuses on embedding improvement measures for incident management - e.g. customer experience and emergency planning procedures
- Identified improvement actions are automatically owned by the Emergency Planning Team and placed on their action tracker. The team identifies where the business changes need to be made, and drives business stakeholders to take control of their improvement measures
- Where the incident team faces resistance to the measures that have been identified, they will escalate to senior managers or the senior leadership of relevant teams

Our action plan for integrating improvement measures

#### **Goal 11: Process for integrating improvement measures that tackle the root causes of incidents**

Including incident root cause analysis as part of the incident debrief process is an important part of our action plan. This will yield improvement measures relating to operational elements of our business and so should be handled separately to the improvement measures handled by the Emergency Planning Team (due to a different set of stakeholders being involved) - which currently relate to incident management performance.

Our plan is to use the lessons learned about the root causes of incidents as an input into the root cause analysis validation stage of the Asset Lifecycle Process (See *IAP\_TA8\_Accounting for past delivery\_PD.A7* for further detail on the redesigned ALP). This means that all operational improvement measures will be realised through the same process. The detail of this process can be seen in *IAP\_TA8\_Accounting for past delivery\_PD.A7*.

#### **Goal 12: Prove our resilience and make changes based on tests and exercises**

We do not want to learn only after experiencing an incident. This means that customers will have been exposed to a real disruption in service and had potentially serious negative experiences.

We have already tested ourselves through exercises and will continue to do this - identifying improvement measures for incident management before they are exposed by an issue. We will run mock test incidents, and after they have been run, we will operationalise the recommendations and changes into our business, for example through building additional complementary plans, provide additional training or expanding our network of staff with the capability to work as part of the incident response team.

## To ensure continued adherence to processes and procedures at a critical time for our customers, we need to continue to embed, and broaden our governance on the way we measure performance and learn lessons

We need to learn and improve our incidents performance on a continuous basis. To ensure this continuity of change, processes have to be well defined and governance has to be established to make sure that they are followed. Our new set of processes, combined with a new company governance arrangements (set out below) means that we must be clear in defining proper oversight.

Our current approach to ensuring the continuity of the improvement cycle

The first key factor that will ensure continuous improvement is the operationalisation of clearly defined processes. We have learned from our wider past delivery analysis that without established processes we



struggle to manage incidents effectively and improve (see *IAP\_TA8\_Accounting for past delivery\_PD.A8* for details). We are already codifying and documenting the processes described in this document. For example, the 'Incident Debrief Procedure' documentation clearly outlines the procedures for running a post incident debrief. The Emergency Planning Team are responsible for these process documents.

We have a member of the Executive Leadership Team, currently the Director of Wholesale Water Services, who is responsible for the performance of the Emergency Planning Team. This person has close oversight of the team's activities and it is her responsibility to ensure that the processes are followed.

Where we have identified actions which are specifically targeted at improving our communications and customer experience response during incidents, the Director of Communications and Director of Customer Services will be responsible for ensuring that these actions are implemented.

Our action plan for ensuring the continuity of the improvement cycle

### **Goal 13: Continue to define processes and establish further governance**

Our approach to clear documentation of processes and procedures will continue as new processes are defined on the back of the action plans laid out within this document. All processes will be codified and by default owned by the Emergency Planning Team. Once our processes and procedures have reached a mature state, we will continue to review them on a regular basis to ensure they remain fit for purpose.

For governance, the Executive Leadership Team (ELT) will remain responsible for the continuous improvement process. We also must respond to recent changes in the way executive governance is structured in our business. OpComm brings together senior leadership concerned with the ongoing operations of the business and TransComm is the forum in which matters relating to the ongoing transformations in our business are governed. We will set out procedures for reporting to these committees in the event of an incident as part of our action plan. We will also define the procedures for tracking improvement measures to be reported into these forums.

Overall, we are confident that we have the governance and systematised approach that will ensure this process is a continuous one, leading to ongoing improvements in our performance.

## **We have developed an approach for reporting to our Board, our CCG and Customers and Ofwat an update on our progress and maturity against our business goals**

To ensure we build confidence in the successful delivery of the action plans, we will report progress against our business goals in the action plan on a quarterly basis to our Board, CCG and Ofwat. We are currently engaging a third party assurer to develop a maturity assessment framework, against which they will assess the maturity of our performance on our business goals. These assurance plans are also reflected in our Final Assurance Plan.

Full details of our intentions and timing for establishing this reporting process are set out in our *IAP\_TA8\_Accounting for Past Delivery\_Summary*.

## Conclusion

To conclude, we know that in the past we have fallen short of identifying potential incidents and effectively responding to them and are committed to implementing this action plan in order to continuously improve our incidents performance and our customer communications and support both during and after incidents. We intend to monitor future incidents continuously to improve the quality of our response during the incident and ensure that there are mechanisms in place to capture the drivers of performance and lessons learnt so that these can be more effectively integrated into our business as usual activities. This action plan builds on the improvement plan which we already have in place following our performance during the past incidents, particularly freeze/thaw, and draws on good practice from industries other than water, such as oil and gas, nuclear, and law enforcement. We are confident that it will stand us in good stead for managing incidents successfully in AMP7.

## Action Plan Summary

This table outlines a summary of the action plan which we have described above.

**PD.A9.Table 3 – Action plan summary**

Goal - what are we working towards?	Action - what are we doing?	Target end
<b>Strategic incident oversight</b>		
1. To have a comprehensive and coordinated approach to managing all incidents, including having the right team in place to strategically monitor the incident, and the right processes in place to escalate the incident	Continue embedding incident management structure for amber and red incidents and clear processes in place for when this is operationalised	Sept 2019
	Further develop call out cascade so it is clear who is responsible for mobilising who	Sept 2019
	Continue embedding strategic management team rota system to record accountability	Sept 2019
	Ensure rota is complete and resilient, with all roles filled with appropriately qualified staff	Sept 2019
	Develop and deliver training to staff with the capabilities required to respond to incidents so they understand their roles and responsibilities	Sept 2019 and ongoing
	Continue embedding incident identification and escalation processes and procedures, through clear and regular communications to ensure incident response processes are accessible and known	April 2020
	Review management of “green” incidents to determine whether these incidents should be monitored differently in the future to ensure they are classified correctly	Sept 2019
	Develop processes which allows and ensures the strategic team links together the performance from each of the response teams	July 2019
<b>Actions relevant to all response teams</b>		
2. Further operationalise existing processes and procedures	Continue embedding performance monitoring processes and procedures currently in place through providing training and effective governance	April 2020
3. Record incident data in real time to improve our ability to monitor and respond more quickly	Start of integration of the One Voice CIM® incident management system including population and testing in exercise events	May/June 2019
	Deliver training to users of One Voice CIM® incident management system	August - October 2019
	Formalise the log keeper rota within the One Voice CIM® incident management system	September 2019
<b>Service recovery monitoring</b>		
	Review KPIs which should be monitored for each type of incident	Sept 2019

4.	Monitor service recovery KPIs and pre-empt causal issues	Improve our ability to respond to contributing factors pre-emptively, such as adverse weather or operational issues	Dec 2019
<b>Communication and support monitoring</b>			
5.	Consistently monitor the dissemination of communications to customers and ensure our incident response communications team is appropriately trained	Review KPIs for each customer communication channel and key stakeholders and implement new KPIs where identified	Sept 2019
		Review communications incident response team structure	Sept 2019
		Define clear roles and responsibilities within incident response communications team	Sept 2019
		Develop and provide incident response training for all staff on the communications rota	Sept 2019
		Identify additional social media staff who can be called on to support an incident	Sept 2019
<b>Alternative supply monitoring</b>			
6.	Ensure that our alternative supply response is effective through consistently monitoring the availability and delivery of alternative supplies	Review and enhance Alternative Water Supply Plan	June 2019
		Develop and document alternative supply plan for wastewater services	Sept 2019
		Engage with stakeholders and customers to ensure that our wastewater plans meet their needs	Sept 2019
		Complete water supply disruption plan in conjunction with LRFs	April 2019
		Review alternative supply KPIs which will be monitored during an incident to evaluate performance	Sept 2019
		Formalise process for reporting the availability and delivery of alternative supplies to the strategic incident management team	Sept 2019
7.	Ensure effectiveness of the support provided to customers during an incident	Continue embedding process for compiling PSR taking into account billing data and information from third parties	April 2020
		Maintain PSR to enable identification of vulnerable customers through working with Local Authorities and other third parties	In line with response to IAP_TA8_Accounting for past delivery_AV.A2
		Develop protocol with Local Authorities to deal correctly with vulnerable customers in the event of an incident	April 2020
		Review our monitoring of alternative supplies delivered to vulnerable customers and ensure this is tracked as a separate key performance indicator	Sept 2019

Evaluating incident performance and identifying improvement measures		
8. Include incident root cause analysis as part of the incident debrief and integrate KPIs as an input into the debrief process	Continue to embed post-incident debrief to methodologically identify good and poor performance drivers of incident management performance	June 2019 and after all incidents
	Continue to embed post-debrief reporting to communicate good and poor performance drivers of incident management performance	June 2019 and after all incidents
	Amend incident debrief to include root cause analysis of incident and develop process to feed this into Risk & Value of the Asset Lifecycle Process (see IAP_TA8_Accounting for past delivery_PD.A7)	June 2019
	Complete review across sector and other industries, for example nuclear, oil and gas, to understand root cause analysis processes are used as best practice	Complete (see IAP_TA8_Accounting for past delivery_PD.A7)
	Conduct facilitator training for new scope of debrief procedure	May 2019
	Define key business stakeholders for incident root cause analysis as debrief procedure	June 2019
	Build template reports and define key reporting outputs for root cause analysis	August 2019
	Allocate reporting responsibilities	August 2019
	Understand the full extent of reporting audience	August 2019
	Define process and responsibilities for collating KPI data post incident (including from incoming One Voice CIM® system)	July 2019
	Define pre-debrief KPI analysis process	July 2019
	Amend debrief procedure to most effectively utilise captured KPIs	July 2019
	9. Tests in place to check the effectiveness of our process at identifying the correct improvement measures and compare our procedures with international best practice from a range of industries	Test that the correct improvements are being identified by checking that poor performance drivers are not consistently occurring
Test our debrief process against best practice from a range of industries		Sept 2019
10. Assessments of communication and support is integrated into the incident debrief	Ensure that debrief time and report writing templates include communications review by default (e.g. customers, councils, LRFs, etc.)	May 2019
	Ensure that debrief time and report writing templates include customer support review by default (e.g. alternative supply)	May 2019

Integrating identified incident root cause improvement measures		
11. Process for embedding improvement measures that tackle the root causes of incidents	Ensure that incident root cause lessons learned are used as an input into the root cause analysis validation stage of the Asset Lifecycle Process	May 2019
12. Prove our resilience and make changes based on tests and exercises	Suite of exercises designed that will complement plans to be delivered and learnings embedded	Sep 2019
Embedding and broadening our governance		
13. Continue to define processes and establish further governance	Ensure that new processes are clearly documented	At the point new processes are developed
	Ensure that senior governance exists and is exercised to promote the close adherence to processes and procedures for identifying lessons and improvements	May 2019
	Define reporting of lessons learned to senior management - e.g. OpComm & TransComm	May 2019
	Define reporting of improvement actions implementation progress for senior management - e.g. Operations committee	May 2019
	Define the procedures for tracking improvement measures to be reported into leadership forums	May 2019
	Once they reach maturity, continue to review processes and procedures on a regular basis to ensure they remain fit for purpose	Quarterly reviews

## Appendix 1 - Summary of our company wide transformation programme

We are delivering a business turnaround and transformation programme, governed by a transformation portfolio office, with 21 separate workstreams, that leaves no part of the business untouched.

Below is an overview of our programmes of work that are underway.

### Wholesale transformation

Our ongoing wholesale transformation programme is focused on establishing the right operating model with strong governance in place to enable effective and cost efficient deliverability of our plan. As part of establishing our new operating model we are designing / redesigning our critical processes, such as integrated business planning and our asset lifecycle process to enable us to more effectively take decisions. This is underpinned by a redesign of our management information.

The key objectives of each of the workstreams are:

- **Redesign of our wholesale operating model:** Our operating model is being transformed to establish and unlock the critical capabilities that will allow us to deliver the AMP7 plan with the required level of efficiency. This workstreams is improving our processes in integrated business planning and asset lifecycle planning which looks at the balance between risk, totex and outcomes.
- **Improved governance and controls in the capital programme:** We are increasing our maturity with regards to how we control and govern our capital programmes, specifically including improvements to programme data, processes, systems and people. This will support our Engineering & Construction (E&C) function to achieve level 3 P3M3 capability by the start of AMP7.
- **Redesigned technology, data and reporting:** We have already redesigned our MI and reporting within our retail division, in 2017, and we are now redesigning the MI and reporting for the end-to-end Wholesale business with identification of leading indicators to effect performance commitments and business outcomes.
- **Review of procurement and commercial contacts:** We are reviewing our contract strategy and commercial success with reference to the supply chain to optimise the way we work with our delivery partners based on aligned goals and commercial success.
- **Transformation programme governance:** To enable the above we have established programme governance arrangements for the transformation, including robust programme plans and close management of transformation risks and benefits. This affords us greater certainty that we will have the key capabilities required to successfully deliver our AMP7 plan.

### Operating model and cost efficiency

This programme is about creating a more cost efficient organisation by cutting potential wastage in opex while transforming the way we manage our operations through empowering our teams to manage and monitor performance, operational risks and compliance issues.

This programme is in part addressing the root cause issue of improving our planning and decision making while embedding the right incentives in our commercial contracts to align our organisation and our delivery partners to common goals and overall outcomes.

The key objectives of each of the workstreams are:

- **Design of our support services operating model and organisational design:** We are seeking to better understand the cost and value of support service activities (e.g. finance, HR etc.) and are redesigning for success at a more efficient level of cost.



- **Commercialise the business:** We are ensuring we have the right capabilities to get better value on our commercial contracts.
- **Pursuit of operational excellence:** This programme has been established in our wholesale business to improve our culture in driving performance improvement. This is an area of greater maturity which is also driving service resilience and improving regulatory compliance through our operational performance hubs (working in a similar way to our retail ‘huddles’) by reducing operational risk and ultimately operating costs through improved efficiency.
- **Improved asset management:** We are developing a multi-asset management plan transformation programme to address key observations identified by the DWI from legacy and unsupported systems to process improvements, including: geographical information systems; enterprise asset management; and information lifecycle management.
- **Greater opex efficiency:** improving cost efficiency by reducing 2019-20 opex and working with the directorates to develop new ideas and build delivery plans for the remainder of AMP6 and AMP7.

## Culture change programme

Following a review of our culture in 2017, we defined the culture we want to move towards; one that demonstrated our company values, collaborates through trust and respect, is able to make informed, transparent decision-making and is able to think in new ways. This informed the design of a connected culture change programme to ensure we deliver for our customers and create local pride in our work.

The key objectives of each of the workstreams are:

- **Clear vision purpose and values:** We are reviewing our policies, processes and systems across the organisation which define “how we do things here”; our vision purpose and values; and of the necessary ‘leadership-led’ cultural change, to ensure they are all aligned to our focus of putting customers at the heart of our decision making.
- **Leadership and engagement:** We have established a new Executive Leadership Team (ELT) governance structure with refreshed roles and responsibilities amongst our leadership, with a view to establishing a renewed focus on leadership and culture change to support improvement in employee engagement, business culture and customer focus.
- **Ethical Business practice:** We are refreshing our core values, refreshing our Code of Ethics and providing ethical decision-making support to colleagues, engaging an independent external assurer to provide annual, objective assessments available to the Board, regulators and wider stakeholders, including customers.

## Resilience and compliance

This programme ensures the embedding of a compliance and resilience capability to provide check, challenge and assurance across the incentives, decision-making and processes of our business. This is delivered with the implementation of a “3 line defence” model and the creation of our Modern Compliance Framework.

The 3 line defence model includes:

1. Delivering compliance from our frontline business units (Wholesale Water and Wastewater, Engineering & Construction, Customer Services);
2. Challenging frontline performance in process compliance and technical asset resilience with the implementation of Water First and Environment+; and
3. Auditing of Internal and external process and technical compliance.

The Modern Compliance Framework (MCF) enhances our compliance management reporting framework to provide visibility of compliance maturity across all management levels. It is composed of a statement of compliance, register of obligations, code of ethics and works in conjunction with our 3 line defence model.

The key objectives of each of the workstreams are:

- **Establishment of a Modern Compliance Framework:** The MCF was established around 18 months ago to provide internal checks, challenge, assurance to enable a compliant foundation for future; with key components of delivery being regulatory reporting improvements, business assurance improvement, end-to-end process mapping, and an ethical business practice.
- **Improvement in our water operations through ‘Water First’:** The Water First programme brings structure to the improvement of all operational aspects of water service. Designed to deliver improvement through focusing on doing the basics well, providing structure and control to the programme of improvement in policy, process and procedures, data and information, tasks and expectations, and finally people and training.
- **Improvement in our operations through ‘Environment+’:** The Environment+ programme will improve operational performance to meet AMP7 environmental targets. It focuses environmental compliance by doing the basics well; improving how we manage our risk and assets to improve our performance, capabilities and compliance; and embedding more collaborative, effective and transparent practices, alongside sustainable improvements to our policies, processes and reporting.

## IT transition and transformation

Our IT programme will deliver core capabilities for a stable, secure and integrated system. The system will provide the necessary data and processes to enable efficient delivery within our water and wastewater businesses to the end of AMP6 and through AMP7.

The key objectives of each of the workstreams are:

- Insourcing of core IT capabilities, data centre implementation, security resilience review & remediation and IT/OT network redesign; for PR19, readiness support is also provided to turnaround HR, procurement and developer services functions; Operational Asset Management (OAM) which will enable us to deliver the ‘basics brilliantly’ and transform the organisation by supporting our vision to become a best in class asset management organisation that delivers resilience in the round.

## Customer

This programme of work looks to ensure that through our understanding of our customers, our planning appropriately focuses on delivering a complete experience for our customer base – focused around what is most important to them and delivering this first time and every time. We are delivering this through a newly implemented operating model that defines the right customer-focused incentives (based on our customer research as set out in *BP\_CH9\_Great customer service and BP\_CH13\_Retail Controls* of our September Business Plan), which enables appropriate processes and decision-making in improved customer journeys where we focus on reaching greater levels of resolution and efficiency. In addition, our Reach and Support programme focuses on risk management and providing targeted support to customers who need our help and building awareness with all our customers on the support available.

The key objectives of each of the workstreams are:

- **Reducing debt and cost to serve:** Assessing debt recoverability options including tailored collections journeys.
- **End-to-end customer experience:** Documenting the end-to-end view of the Move In/Move out journey targeted at improving SIM score and overall customer experience through every interaction.

- **C-Mex Readiness:** Improving performance for C-MeX by working with expert service partners to improve the level and consistency of customer service and increase operational efficiencies. In addition, linking readiness through all operations to improve all customer interactions.
- **Wholesale (Retail B2B):** Improving the service to Non household retailers off the back of market opening in 2017.
- **Developer Services:** Improving the measure of experience (DMeX) performance, by re-engineering our growth planning and delivery approach, integrating our planning process with developers, local authorities and the EA to provide more resilient solutions.

We have also made significant progress in the way we prevent and respond to incidents by having stood up a new Emergency Planning team within the past year

We identified that our approach to managing emergency incidents could be better and thus commissioned OCOR Ltd, emergency planning experts, to undertake a review of our current approach. A comprehensive view is set out in the response to *IAP\_TA8\_Accounting for past delivery\_PD.A9*.

The assessment found that while there was a reasonable degree of resilience in providing an effective response up to a certain scale of incidents, there were issues with our ability to deal with large scale incidents (as set out in the response to *IAP\_TA8\_Accounting for past delivery\_PD.A9*).

The key objectives of this programme of work are:

- **Incident Management Framework:** Implementing an incident management framework based on the Incident Command System, and developing a compatible structure to manage incidents
- **Response team:** Engaging additional staff from the management population to undertake the roles within the incident structure, including improved communications structures
- **Role and responsibilities:** Establishing a pool of staff to take on various roles required to implement a response including delivering warning leaflets, answering customer calls, delivering bottled water and providing information to customers in the affected area

Our biggest tests of our incident management framework to date were the heat wave in 2018 and the Ocado warehouse fire. We were able to test new ways of working successfully during the hot weather in the summer through clear escalation and communication processes during the incident to contain it and share updates with customers.

## Appendix 2 - Additional update on our Water First and Environment+ programmes

### Water First

#### Purpose

Water First is our multi-AMP improvement programme, developed in collaboration with the DWI, to embed public health protection at the heart of our water services. It spans our people, processes, systems, culture, training, risk and information management – supported by asset improvements and expanded catchment management. In December 2017 our Board approved £50 million to develop and implement the programme.

The programme is designed to deliver improvement through: 1) focusing on doing the basics well, 2) providing structure and control to the programme, and 3) providing leadership and engagement from Heads of Function.

#### PD.Accounting for Past Delivery Appendix.Figure 1 – Water First Programme Drivers and Outcomes



#### Structure

The Water First programme brings structure to the improvement of all operational aspects of our water service

**PD.Accounting for Past Delivery Appendix.Figure 2 – Water First Programme Structure**

Catchment	Treatment	Disinfection	Network	Customer	Verification Monitoring
Catchment Management Risk Assessment/DWSP	New site manual framework	Policy statement and Disinfection standards	Resource and Distribution Manual alignment	New Incident Management Process	Compliant sample points and standard for Crypto sampling
AMP6 Nitrate and Pesticide Undertaking	Site condition and hygiene standards	Site specific disinfection policies	WQ Monitoring and Smart network analysis	WQ Scientific expertise escalation group	Public buildings policies and procedures
Champ	Operational work processes and MSTs	Tracer tests verification	WQ Protection within networks	WQ and PH content on SW Website	Online Monitoring and LabWar improvement
<b>Drinking Water Safety Plans and Hazard Review</b>					
<b>Information Management</b>					
<b>Public Health Culture and Training</b>					
<b>Culture Transformation – Simpler, Easier, Better</b>					

We are meeting the DWI on a monthly frequency to discuss progress with our Transformation Programme. We have received positive feedback from the DWI for working more openly and in recognising the effort to improve.

**Going forward**

The Water First programme is proving to be a successful approach to bringing about the change that is needed. We have achieved much progress to date in the programme and continue to progress. In the coming quarter, we will focus on:

- Disinfection / Treatment Plans refresh start
- Continuing Site Operating Manuals
- Developing a recognised DOMS system in networks
- Continuing HazRev Reports and start delivering critical actions
- Implementing incident management system
- Continuing training to achieve best practice NVQ level
- Developing data improvement strategy
- Improving real-time information for operational management.

**Environment+**

**Purpose**

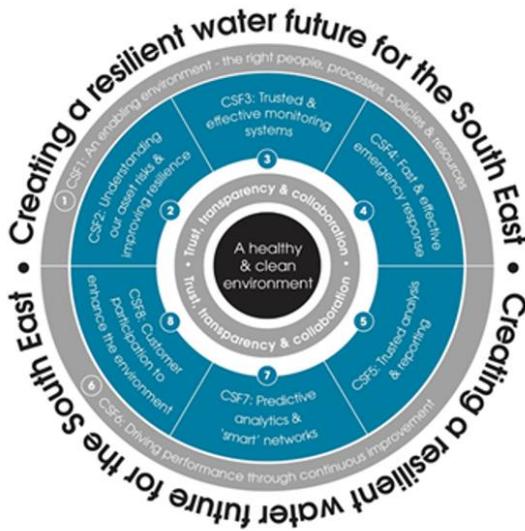
Our Environment+ programme is building on work already underway to provide a more structured approach across all our environmental outcomes. In common with Water First, the programme covers our people, processes, systems, culture, training, risk and information management, supported by asset improvements. It is also building in new capabilities we will require for AMP7 such as predictive analytics and customer participation. In December 2017 our Board approved £30 million to develop and implement the programme.

**Structure**

The programme is structured around eight critical success factors, which are shown below. Our initial focus has been on treatment works compliance, pollution reduction and abstraction management. The approach is being extended across our other environmental outcomes.



PD.Accounting for Past Delivery Appendix.Figure 3 – Environment+ Critical Success Factors (CSF)



- CSF1 Outcome is an environment (people, materials, policies, data, processes etc.) which facilitates/ encourages behaviours that reduce pollution.
- CSF2 Outcome is targeted & prioritised investment & interventions based on risk & consequence.
- CSF3 Outcome is visibility of emerging risks & appropriate interventions.
- CSF4 Outcome is reduced environmental impact.
- CSF5 Outcome is robust & reliable information underpinning continual improvement.
- CSF6 Outcome is continuous reduction of pollution incidents.
- CSF7 Outcome is pollution prevention by pre-warning.
- CSF8 Outcome is changed customer behaviour leading to a reduction of pollution incidents & an enhance environment.

For example, as part of CSF 2 we have audited 291 wastewater treatment works, surveyed the storm tank and assessed flow compliance. A total of 996 individual actions were raised from these surveys, of which 65% have been addressed. Further examples of activities in each of the critical success factors are illustrated below.

PD.Accounting for Past Delivery Appendix.Figure 4 – Environment+ Programme structure and outcomes

<b>CSF8: Customer participation to enhance the environment</b>	Further develop customer participation i.e. FOG	Develop wastewater catchment management		Treatment compliance and river quality
<b>CSF7: Predictive analysis and 'smart' networks</b>	Greater use of conditional alarms and alarm logic	Moving predictive pilots into business as usual (blockage)		
<b>CSF6: Driving performance through continuous improvement</b>	Best practice review	Plan, do, review – OE HUBs	Innovation sprints - 'Bluewave'	Pollution reduction
<b>CSF5: Trusted analysis and reporting</b>	End to end reporting processes, risks and controls	The right governance and assurance	Automation of process	Flooding reduction
<b>CSF4: Fast and effective emergency response</b>	Building response capability	Incident response training and resources	Visualisation of incident and progress	Waste Man. and energy
<b>CSF3: Trusted and effective monitoring systems</b>	End-to-end testing programme	The right coverage and effectiveness	Reliable communication and systems	Improving bathing waters
<b>CSF2: Understanding our asset risks &amp; improving service resilience</b>	Understanding the real root causes	Risk and value process	Aligning criticality in our maintenance strategy	Abstraction compliance
<b>CSF1: The right people, process, policies and resources</b>	The right policies and standards	Delivering extensive Ops Excellence programme	Targeted training and awareness	

## Going forward

In common with Water First, the programme aims to build strong foundations to improve our operational and environmental performance. In the coming quarter we will focus on:

- Continuing to resolve audit actions
- Driving pollution incidents down through our pollution reduction plans
- Replacing critical telemetry
- Rolling out the wastewater HazRev process, based on a review of the pilot recently completed
- Finalising plans for our waste management and energy workstream.

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