




South Staffs Water

incorporating



# Response to Ofwat's draft determination on our business plan for 2020 to 2025

South Staffs Water  
(incorporating Cambridge Water)



August 2019

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We have also submitted the following separate appendices alongside this document.

Appendix 5: Monte Carlo risk distribution

Appendix 6: Small company premium customer engagement

Appendix 7: Small company premium customer engagement method statement

Appendix 8: UKSCI July 2018 benchmarking report

Appendix 9: Customer benefits and cost of debt

Appendix 10: Email from David Young, 7 November 2017

Appendix 11: NERA report on leakage reduction funding

Appendix 12: WRc – treatment tests for groundwater containing Chlorthal

Appendix 13: ESI summary report – Cookley

Appendix 14: ESI summary report – Kinver

Appendix 15: ESI summary report – Ashwood

Appendix 16: Groundwater blend model

Appendix 17: IMTECH Chlorthal treatment options review

Appendix 18: PR19 DD risk and reward assurance

## Executive summary

We have read Ofwat's [draft determination](#)<sup>1</sup> on our business plan for 2020 to 2025 in detail. **The Board has serious concerns that it fails to allow us sufficient funding to fulfil our obligations to customers and investors.** Specifically, its resulting credit quality will not afford us ready access to the capital markets and is therefore inconsistent with Ofwat's legal duties to allow a normally efficient company to finance its functions.

This response does not deal with the broader sector-wide influences of this outcome, but focuses on the material elements of the draft determination that are of specific concern to us. There are four of these.

## Legacy developer services charges claim

In 2016, we raised with Ofwat the potential for there to be a significant increase in both costs and capital receipts in respect of connection and mains requisition charges. We suggested that as the increase in revenue is reflective of costs we actually incurred in providing the services to developers, and as household customers have not experienced any detriment as a result, it would be inappropriate to include this in the wholesale revenue forecasting incentive mechanism (WRFIM) adjustment and thereby refund to customers.

Despite much prompting by the company, Ofwat has not challenged that thinking until now when the draft determination makes a £15 million WRFIM adjustment. We believe this is inappropriate for the following reasons.

- The absence of economic gain or loss means the adjustment is a penalty not a claw back.
- The penalty amounts to around 14% of our actual revenue allowance. By any definition this is disproportionate.
- By making the adjustment through revenue the financeability of the business is further impaired and the potential for a significant price increase 2025 is created. Had Ofwat engaged with us and persuaded the Board of its approach at any point over the past three years, the Board would have taken other actions to mitigate the position which now exists.

Once again, we provide more information and **are asking Ofwat to allow the claim we submitted in full.**

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<sup>1</sup> 'PR19 draft determinations: South Staffs Water draft determination', Ofwat, July 2019.  
[www.ofwat.gov.uk/publication/pr19-draft-determinations-south-staffs-water-draft-determination/](http://www.ofwat.gov.uk/publication/pr19-draft-determinations-south-staffs-water-draft-determination/)

## Totex allowances

We have always considered that we are an upper quartile performer on the core efficiency metric of base total expenditure (botex). **We are pleased that Ofwat acknowledges this position in the botex allowances it has made.**

We have considered with care Ofwat's push back on new connection and development costs and capital receipts. But we are concerned that, at 20,409, Ofwat may be under-estimating the number of connections that will occur. Over recent history we have been making around 6,000 connections a year, with an upward trend caused primarily by development in and around Cambridge. **So, we invite Ofwat to revise the connection rate to 30,000 for AMP7.** We also believe that developer income should be outside of the price control.

In respect of enhancement expenditure, Ofwat has asked for additional information and made some useful challenges. We have supplied the additional information in chapter 7 and appendix 3 of this document. We have used the challenges to consider our bottom-up estimates of scheme costs. **This challenge has resulted in a reduction of £7.5 million.**

**We do not accept Ofwat's challenge in respect of leakage investment.** The proposed 23% reduction in leakage levels presents a significant challenge and moves us well below any notion of the economic level – the level to which companies have worked in the past. This cannot be achieved without additional investment.

## The balance of risk and reward

Ofwat's approach to outcome delivery incentives (ODIs) implies that a company must deliver upper quartile performance to earn the cost of capital. This seems at odds with Ofwat's legal duties. In our case, the overall risk profile of the package has substantially moved towards the downside. Even at P90 performance, we estimate penalties in the region of £3.8 million during the period 2020 to 2025. This is largely driven by the substantial and real penalties placed on the Compliance Risk Index (CRI) measure of water quality where our asset concentration and re-development programme leaves us the most exposed company in the sector.

Ofwat should **reconsider its approach to ODIs, reverse a number of its interventions, give specific dispensation in relation to our position on CRI**, and in doing so restore the incentive package's balance to that anticipated in the final methodology for the 2019 price review (PR19).

## The WACC and financeability

At the time of preparing our business plan, we considered asking Ofwat to adjust its assessment of the weighted average cost of capital (WACC) to reflect the fact that we, along with the other smaller water only companies, had significantly higher embedded debt costs than the overwhelming majority of companies. We noted at the time that the Competition and Markets Authority (CMA) has previously been sympathetic to this position. But the Board chose not to pursue this argument because:

- on Ofwat's assessment of WACC at the time, we were able to achieve credit metrics consistent with a Baa1 rating on an actual, but not a notional, basis; and
- were our plan accepted in its entirety, we would be raising sufficient new money to, moderately, reduce our embedded debt costs over the next two planning periods.

Subsequent to that decision, Ofwat has:

- reduced the allowed WACC further and raised the prospect of an additional downward shift, which – in our opinion – threatens the credit quality of the sector generally and South Staffs Water specifically;
- implemented a tougher ODI regime and increased the risk of penalties further. The consequent returns are below Ofwat's own assessment of what is necessary to fulfil its duty to allow such companies to finance their functions based on a P50 level of performance. This is made worse for South Staffs Water, which has exceptional exposure to CRI penalty during the time when we are upgrading our two main water treatment works; and
- substantially reduced enhancement totex to a level below what we required, inappropriately implemented the WRFIM claw back, and chosen to adopt an incorrect definition of the company's debt level, which will result in the potential for further penalties.

As a consequence, **the Board has no alternative than to seek an adjustment to the WACC to reflect the disadvantage we face in respect of embedded debt costs**. We have established customer support for such an increase. These costs are 125 basis points (bps) higher than allowed for in the WACC calculation. Correcting for this requires a 60bps adjustment to the WACC.

But at this stage, we are only seeking a WACC adjustment of 24bps, which aids financeability and is in line with that Ofwat's "plausible range".

## Conclusion

As the draft determination stands, the Board does not consider that Ofwat has fulfilled its legal duties to allow us, as an efficient company, to finance our functions. **It follows that the Board is unwilling to certify that it considers the business to be financeable**. But we hope for constructive engagement with Ofwat over the autumn so as to avoid the necessity of an appeal to the CMA.

## 1. Legacy developer services charges claim

### Key points of this chapter

- Under Ofwat's draft determination, we would be required to return around £13 million of revenue plus £2 million of financing adjustment (around 14% of our actual revenue allowance)<sup>2</sup> to customers because our AMP6 developer services revenue was much higher than had been taken into account at our PR14 final determination.
- Household customers have not experienced any detriment as a result of us providing these services to developers. The revenue is reflective of the costs we actually incurred when providing the relevant developer services.
- Ofwat's revenue adjustment is a significant factor in our draft determination being unfinanceable. It has the effect of a substantial financial penalty for activity that we have already carried out efficiently and for which we have incurred costs.
- We have sought to engage with Ofwat on this matter on a number of occasions since 2016. We have not received any substantive response to the issues we have raised until the draft determination.

### Our proposed resolution

- We consider the narrow approach Ofwat has taken in the draft determination to be unreasonable.
- As we consider that all of the adjustment we proposed in our April and September business plan submissions is volume related, we request that Ofwat reviews our case, taking the additional evidence we have provided into account and allows our claim in full.

At the 2014 price review (PR14), Ofwat included revenue and cash receipts from connection and infrastructure charges within the overall wholesale revenue control. It noted at the time that this was part of its 'single till' approach to price control regulation. A main driver for the change was to ensure consistency with the modification of water company licences that had taken place, while at the same time Ofwat was working with the sector and the Department for Environment, Food and Rural Affairs (Defra) on the introduction of new charging rules for connection and infrastructure charges.

We understood the change in methodology was not intended to have any incidence effects on customers, including developers. Ofwat clearly stated that if companies increased revenue by unduly reducing connection charges, it would look to take corrective action to ensure they returned these monies (with financing costs) to customers. Similarly, it committed to considering allowing extra revenue (on a case-by-case basis) to compensate for the loss of price control revenue if demand for connections was unexpectedly high.

However, under Ofwat's PR19 draft determination, **we would be required to return around £13 million of revenue to our customers because our 2015 to 2020 (AMP6) developer services revenue was much higher than had been taken into account in our PR14 final determination, as well as a further £2 million of financing adjustment on this amount.** (The £13 million being the

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<sup>2</sup> The 14% is based on our wholesale price control revenue for 2018/19.



£19 million<sup>3</sup> included in our claim less the £6 million allowed by Ofwat in the draft determination.) That is, we would have to pay out an amount equivalent to around 14% of our annual revenue allowance.

This £13 million comprises amounts recovered from developers in AMP6 through connection and requisition charges. In each case, those charges arose because we had provided the relevant developer with services (a new connection or 'on-site' network provision, for example), and the level of the charges that developers paid us was reflective of the actual costs we incurred to provide those services and was consistent with the charges published in our charges scheme.

Ofwat does not appear to have challenged the fact that the £13 million of revenue is reflective of costs we actually incurred when providing the relevant developer services, or the efficiency of our costs when providing the services, or that it was appropriate for us to provide the services. Nor would we have expected there to be a material challenge on any of these matters, because:

- our developer services charging methodologies provide for cost-reflective charging;
- Ofwat's comparisons of our developer services show them to be efficient; and
- the relevant services were all provided in response to developer requests.

That is, the £13 million is revenue that covered costs we incurred efficiently for customer-driven provision of services. So, there has been no economic gain to the company from this additional revenue.

In addition, household customers have not experienced any detriment as a consequence of us providing these services to developers. It has not caused their charges to have been 'too high', so it is not clear why this revenue should be 'refunded' to them. Also, refunding all this revenue to developers (the customers that have incurred these additional charges) would seem to be in conflict with developer charging rules requiring that consistent principles and approaches should be applied in calculating charges, and that the balance of charges between developers and customers be broadly maintained.

The draft determination appears to give no consideration to these substantive underlying facts. Instead, the only reasons Ofwat has given for requiring us to return £13 million to (the generality of) customers concern the fact that it was not factored into our PR14 submissions, and thus into our PR14 revenue allowances.

The total **£15 million revenue adjustment is a significant factor in our draft determination being unfinanceable**, as it has the effect of a substantial financial penalty in a context where we have already (efficiently) carried out this activity and incurred the associated costs. While we welcome that Ofwat has made a partial adjustment for what it considers to be the volume-related element of our claim, we consider that this would, however, fall a long way short of being a reasonable outcome.

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<sup>3</sup> In South Staffs Water's updated PR14 reconciliations published in July 2019 the claim has reduced to £18.1 million. We break down the claim into its component parts in appendix 2.

In the following sections, we provide further details on:

- why the over-recovery issue has arisen;
- why we think the £13 million should not be treated as over-recovery;
- our understanding of why Ofwat has so far considered it appropriate for the additional revenue to be returned to customers;
- why we think that approach is unreasonable; and
- how we think this issue should be addressed.

## 1.1 Why the over-recovery issue has arisen

There are natural variances that occur in this area because new development activity can be fast-changing and dependent on a range of factors, including:

- local and national housebuilding companies;
- local councils;
- national governments and planning policy; and
- the wider economy.

So, the variances in development activity that have underpinned our over-recovery of developer services revenue were outside of our control.

But they can also occur because of the inherent changes associated with forecasting five years or more into the future. At PR14, we proposed growth forecasts consistent with the data submitted in our draft WRMPs, with estimates of growth volumes based on our knowledge at the time. This was a forecast with implicit uncertainty caused by the factors outlined above that relate in particular to the:

- scale of greenfield and brownfield development;
- locations of schemes that go ahead and their proximity to infrastructure; and
- volumes of self-lay that materialises.

In both our original business plan submission in September 2018 and our April 2019 resubmission we explained that we have experienced a higher than expected volume of connections in the footpath and highway, and a significant increase in the volumes of non-standard activity (for example, developments on brownfield sites and in-fill of small numbers of properties) when compared with those assumed at PR14. This means we have had a significantly higher volume of overall connections and requisitions work than had been forecast at PR14, and a higher volume of costlier types of work (given the circumstances of the development) than had been forecast. We provide details of this in appendix 2.

As well as these volume-driven effects, a portion of the £13 million revenue that Ofwat has identified as over-recovery arose because no allowance at all was made at PR14 in allowed revenue for our expected requisition costs during AMP6, even though it was netted off totex and did not affect our customers' bills. This resulted in us taking what turned out to be a mistaken view of the costs that should be included in data table W9 as part of our PR14 submission. In the absence of an adjustment, all of the roughly £5 million requisition revenue that we expect to receive in AMP6 will be treated as 'over-recovery', and be returned to customers, even though only £2 million of this relates to the omission and £3 million relates to the increased volume of mains requisitions.

## 1.2 Why we think our claim should not be treated as over-recovery

In our previous PR19 submissions, we have set out in detail why we think all of the adjustment, including the £13 million, should not be treated as over-recovery. In summary:

- a role for a true-up mechanism was explicitly recognised at PR14, and a commitment was made that material volume-based adjustments would be considered on a case-by-case basis;
- the £13 million is clearly material within the context of our control, and most of the higher than expected revenue is because of outturn volumes being very different from what was forecast;
- the remainder of the £13 million resulted from a mistaken interpretation of data submission requirements, and it would be disproportionate to require the return of around £5 million simply because of such an interpretation issue in respect of £2.5 million of revenue. This is particularly so given the late stage at which guidance was provided on what the data submission should cover, and that the final guidance was open to reasonable interpretation that differed from what was ultimately required;
- all the £13 million of revenue arose from charging developers for costs we incurred efficiently when providing them with connection and requisition services they requested; and
- we have sought to engage with Ofwat on this matter since 2016 and until this draft determination have not had a substantive response to any of the issues we have raised. Had Ofwat engaged and persuaded the Board of its approach at any point over the past three years, the Board could have taken other actions to mitigate the position which now exists.

## 1.3 Our understanding of Ofwat's views in the draft determination

In the draft determination, Ofwat explained its reasons for its proposed approach of treating the £13 million as over-recovered revenue that must be returned to customers as follows.

"Some of the elements were not within the scope of the adjustment as set out at PR14 which related to the demand for new connections only. We have not accepted the elements of the claim where the variance has been driven by the cost or type of new connection.

"We also consider that claims due to errors companies made in completion of business plans at PR14 are outside the scope of the adjustment mechanism, so we have not accepted the element relating to main requisition charges."<sup>4</sup>

As presented in the draft determination, Ofwat's only reason for not accepting that an adjustment should be made so as to avoid treating the £13 million as though it were over-recovered revenue appears to be that it considers the claims to be outside of the scope of the adjustment mechanism. Indeed, in proposing that an adjustment of around £6 million should be made (rather than the requested £19 million), the draft determination explicitly states that:

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<sup>4</sup> 'PR19 draft determinations: South Staffs Water draft determination', Ofwat, July 2019.

“...the company has explained and evidenced the approach taken to develop its PR14 forecasts and demonstrated that the increase in connection volumes is due to brownfield development that was unexpected and is harder to forecast...”

So, Ofwat's assessment appears to be based solely on its view of what the scope of the adjustments covered by the adjustment mechanism should be.

## 1.4 Why we think that Ofwat's draft determination approach is unreasonable

In our view, the approach adopted in the draft determination is unreasonable, and would – if applied – result in an outcome that is both unfair and sends highly undesirable signals in terms of company behaviour. The draft determination approach appears to follow from a view that the PR14 adjustment mechanism should be applied only in a narrow way, and this narrow view appears to have been applied to the circumstances in our plan without any regard for the substantive implications of such an approach.

We note that the proposed PR14 true-up adjustment was never explained, with the exception of a commitment that material volume adjustments would be considered on a case-by-case basis. As set out in appendix 2, we show that the volumes for each of the types of connections that we assumed at PR14, compared with what we have incurred during AMP6 show a clear and material increase. When using the appropriate unit rate for each of these categories (rather than a single average unit rate) we consider that all of the additional connection charges income is volume related and, as a result, is not inconsistent with Ofwat's original policy proposal.

### **The assumption that a single unit rate must be applied is unfounded and out of line with Ofwat's own practice.**

We are unable to locate any publications implying that Ofwat would apply a single unit rate. Rather, we consider that it was clearly left open to the regulator to determine at PR19 how the adjustment mechanisms should be applied. As Ofwat is aware, we engaged with senior members of its staff on this matter on numerous occasions. At all points, Ofwat pointed to the PR19 process as providing an opportunity for the issues to be considered. In appendix 2, we set out details of the engagement we have had with Ofwat since 2016.

So, we do not accept that the PR14 policy was that there should only be a narrow basis for adjustment. Rather, it was that there should be a case-by-case assessment. In our view, the application of such an assessment to the circumstances we face clearly points to the appropriateness of not treating the £13 million as though it were over-recovered revenue.

We note that the idea that an adjustment for volume should rely on only a single unit rate is at odds with Ofwat's own proposed true-up mechanism for developer services revenue set out in its [final PR19 methodology](#)<sup>5</sup>. That mechanism showed a clear recognition that Ofwat expects company costs

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<sup>5</sup> 'Delivering Water 2020: Our final methodology for the 2019 price review', Ofwat December 2017. [www.ofwat.gov.uk/publication/delivering-water-2020-final-methodology-2019-price-review/](http://www.ofwat.gov.uk/publication/delivering-water-2020-final-methodology-2019-price-review/)

to vary depending on whether the activity is contestable or non-contestable, or on the scale of the developments. Companies were encouraged to provide data in their business plan submissions (App28) and a number of them, including us, submitted disaggregated information. We understand that Ofwat has subsequently (post-draft determination) proposed a change in methodology, recommending the application of a simple unit cost adjustment at the 2024 price review (PR24). But this appears to be because of the inconsistency of data submissions across the sector rather than an expectation of the suitability of a single unit rate by Ofwat.

We strongly disagree with the appropriateness of using a single unit rate, and note that it could have significant unintended incidence effects. As Ofwat knows, our requisition and connection charges must be set in line with expenditure to ensure compliance with Competition Act requirements. Requisition and new connections costs are subject to market testing because of the contestability of the activities; logically, this means we can only win work against self-lay providers if our unit costs are competitive (and compliant with the Competition Act).

Under Ofwat's own policy, if, during the period, there had been a challenge on our proposed charges, we understand that it would not use a single unit rate. Ofwat previously published an [independent comparison](#) of companies' new water supply connections<sup>6</sup>. This clearly seems to acknowledge different connection costs for different types of connections; it also highlights that our connection charges for both regions are not unreasonable.

**We believe the draft determination approach treats PR14 data submission errors in a wholly disproportionate way.**

A significant portion of the £13 million (£5.6 million) is mains requisitions revenue. Ofwat's draft determination takes the view that we should not be allowed to retain any of this revenue because of errors that it considers we made when completing our PR14 cost submissions. But even if it were accepted that we were entirely responsible for this 'error' of £2.5 million, we struggle to see how not allowing us to retain any requisitions revenue that we collected during AMP6 could be viewed as a proportionate response. In practice, there were substantial ambiguities over what data was supposed to be submitted – in a context where Ofwat guidance was a moving target and was subject to a critical (with respect to this issue), but far from clear-cut, very late change.

In appendix 2, we highlight the changes – and the timing of those changes – noting that the final change relating to this line occurred on 2 June 2014, which was only three weeks before we submitted our business plan. Given the ambiguity and all the other data line changes that were continually being issued during the PR14 process, we do not consider it is unreasonable that this late change was not picked up by the company. We also understand that there were other companies that interpreted the guidance as we did, which highlights the extent of this ambiguity.

As we mentioned earlier, we have seen a 178% increase in the volume of connections when compared with our PR14 forecast position. Even if we had included an amount for forecast requisitions revenue in the PR14 tables, we would still be requesting an adjustment to reflect the volume increase of £2.7 million. This further emphasises the inappropriateness of the draft determination approach that would allow £0 million for mains requisition.

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<sup>6</sup> IN 17/02, 'Ofwat publishes new independent comparison of monopoly water companies' new water supply connection costs', Ofwat, February 2017. [www.ofwat.gov.uk/publication/1702-ofwat-publishes-new-independent-comparison-monopoly-water-companies-new-water-supply-connection-costs/in-1702-new-connections-benchmarking-costs/](http://www.ofwat.gov.uk/publication/1702-ofwat-publishes-new-independent-comparison-monopoly-water-companies-new-water-supply-connection-costs/in-1702-new-connections-benchmarking-costs/)

We consider Ofwat's proposed position – that we be required to return all £5.6 million of this AMP6 requisition income because of an understandable mistake made in a PR14 data submission from which the company has not benefited (and customers have not been disadvantaged), and with no account even taken of the fact that there have been significant volume-driven increases in requisitions revenue over what was expected at PR14 – to be unreasonable and wholly disproportionate.

**The draft determination approach would send highly undesirable signals in terms of how Ofwat considers companies should behave when this kind of calibration and data entry issue arises.**

In our view, it also risks having highly undesirable incidence effects. Consistent with Ofwat's guidance, we did not distort our charges to developers, although from analysis it would appear that there was a range of approaches across the sector. Indeed, based on analysis of companies' submitted data, it is apparent that the costs they reported vary substantively and that this has continued into the business plan data. For example, when considering the PR19 data submitted for new connections, a number of companies reported zero forecast expenditure for new connections capital expenditure (capex), even though they have forecast connections.

We note that Ofwat has recognised that this is a complex area and has requested additional data, although this is only post-draft determinations. But, again, it highlights the complexities in this area and the issues of reporting guidance.

As discussed with Ofwat, we took the view that we could expect this matter to be dealt with reasonably at PR19, and continued to provide and charge for developer services in with our established processes and methodologies in good faith. We have not looked to rebalance charges, and consider that Ofwat's approach is unreasonable.

The draft determination amounts to us being heavily penalised for doing this and seems more akin in magnitude to a penalty for misreporting. Penalising us in this way would seem to strongly signal to companies that if faced with a similar situation, they should seek to use other means that may be available to them to avoid the situation arising, despite the potential risks of such actions having material unintended adverse effects (for example, by unduly shifting the balance of new development costs more onto existing customers).

## 1.5 How we think this issue should be addressed

We recognise that there are some good reasons for Ofwat to adopt a narrow approach to adjustments in this area as its default position. In particular, this can allow it to guard against 'cherry picking' (in a context where adverse features of the PR14 arrangements for developer services may be viewed as off-set by what turned out to be beneficial features in other areas for some companies) and allow it to take materiality considerations into account. But neither of these reasons apply in relation to the treatment of our AMP6 developer services revenue proposed in the draft determination: the highly material nature of the overall amount at issue is plain to see (as above, it is equivalent to around 3% of our annual revenue allowance), and cannot be explained away reasonably by reference to 'in the round' type considerations.

As we mentioned previously, this adjustment is one of the primary reasons for our plan on an actual basis now being unfinanceable. As well as disagreeing with how the adjustment has been applied, we do not consider that it should be made post the notional financeability assessment. We understand that an element of the adjustment is a penalty for mis-forecasting. While we do not consider this is reasonable given the movement in forecast was outside of our control, we do agree with the policy that any penalties should be post-financeability, consistent with previous price reviews. But we do not believe the adjustment was intended to be a penalty, and so consider any adjustment should be made pre-Ofwat's assessment of financeability of both notional and actual company structures.

We consider Ofwat's proposed approach to be an unreasonable one, and that a requirement to pay £13 million back to customers would be a wholly disproportionate response to any concerns it may have over the adequacy of our PR14 submissions. In our response, we have provided additional information to support our view that all of the proposed adjustment of around £18 million is volume related. So, we request that Ofwat:

- reviews our case, taking account of the additional evidence on the movements in volumes for the different types of development;
- considers the evidence we provide on both the data guidance and the proactive approach we have taken to engage on this issue over the past few years; and
- as a result, allows the claim in full.



## 2. Company-specific adjustment to the cost of debt

### Key points of this chapter

- In its draft determinations, Ofwat cut the nominal appointee WACC from 5.47% to 5.25% (or 22bps) and indicated the likelihood of a further cut at final determinations.
- We have followed Ofwat's three-stage approach for companies requesting an adjustment to the cost of capital and provide compelling evidence for each of these areas – customer support, customer benefit and the level of adjustment.
- We have overwhelming customer support (83%) for an additional bill impact of around £1 as a result of a company-specific adjustment to the cost of capital; our customers considered it was outweighed by the benefits of being served by a small, local company.
- While we strongly believe that Ofwat's customer benefit test requiring the efficient cost of debt to be recovered from customer benefits is not valid, we have commissioned Oxera to analyse and quantify the value of customer benefits in accordance with the approach set out in the IAP and draft determinations.
- We also believe that Ofwat's revised approach to setting the benchmark cost of embedded debt across the sector is to the further detriment of the four smaller water only companies, including South Staffs Water.

### Our proposed resolution

- While our analysis suggests an actual cost of debt premium of 125bps, the Board has taken the decision to request a company-specific adjustment to the cost of debt of 40bps (or 24bps in WACC terms) in line with Ofwat's "plausible range".

In its PR19 methodology, Ofwat recognised that there is evidence that the cost of embedded debt for the four smaller water only companies, including South Staffs Water, may be higher than for the larger water only companies (WoCs) and water and sewerage companies (WaSCs). It also admitted that: "This may suggest it is reasonable to allow a higher cost of debt for such companies."<sup>7</sup>

For both our original and revised business plan submissions, the Board discussed at length the merits of putting forward a company-specific uplift for the cost of debt. We ultimately decided not to go ahead with the claim as we believed it was not in our customers' interests at the time. But we also clearly stated in our business plan submissions that we would consider this again if Ofwat were to reduce the WACC further in its draft determinations.

### 2.1 Updated WACC in the draft determination

In its draft determinations, Ofwat updated the cost of capital from the "early view" set out in its PR19 methodology. This resulted in a cut of nominal appointee WACC of 22 bps from 5.47% to 5.25%. In addition, in its [technical appendix on the cost of capital](#)<sup>8</sup>, Ofwat hinted that the WACC that

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<sup>7</sup> 'Delivering Water 2020: Our final methodology for the 2019 price review', Ofwat, December 2017, page 180.

<sup>8</sup> 'PR19 draft determinations: Cost of capital technical appendix', Ofwat, July 2019. [www.ofwat.gov.uk/publication/pr19-draft-determinations-cost-of-capital-technical-appendix/](http://www.ofwat.gov.uk/publication/pr19-draft-determinations-cost-of-capital-technical-appendix/)



will be set as part of its final determinations in December 2019 may be reduced again by around 40bps as a result of the regulator taking more up-to-date market information into account.

**The Board has considered this update in the round and has decided to request an uplift of 40bps on our cost of debt, which translates to 24bps in WACC terms.**

## 2.2 Ofwat's approach to assessing company-specific adjustments

In its PR19 methodology, Ofwat set out the following three-stage approach for companies requesting an adjustment to the cost of capital.

- Is there compelling evidence of customer support for the proposed adjustment?
- Is there compelling evidence that there are benefits that adequately compensate customers for the increased cost?
- Is there compelling evidence that the level of the requested adjustment is appropriate?

We do not believe that the customer benefit test is appropriate. But, in any event, we set out compelling evidence below for each of these test areas, which we believe support our request for an uplift. We recognise that Ofwat sets a high evidential bar for such requests and commissioned external advisors to help us. The reports from these advisors can be found in appendix 6 and 7, and are referenced in the following sections where we refer to the three test areas.

## 2.3 Test area 1: customer support

Throughout the development of our business plan, we engaged extensively with our customers to ensure our plans reflect their needs and that they find them acceptable and affordable. To support our claim for a company-specific adjustment to the cost of debt of 40bps (or around £1 a year on the average household customer bill) we carried out robust engagement with our household customers. We set the following objectives for this engagement to ensure we gained an in-depth view of our customers' responses.

- Exploring the customer articulated benefits and disadvantages of being supplied by a small, local company - as well as understanding the benefits and disadvantages of being supplied by a larger water company.
- Understanding customers' spontaneous responses to contributing towards a company-specific adjustment to the cost of debt.
- Assessing customers' willingness to support – and pay for – such an adjustment.
- Understanding the reasons that drive support for or opposition to a company-specific adjustment.
- Exploring customers' response to alternatives to a company-specific adjustment.

The engagement covered two stages, two qualitative groups followed by a quantitative survey of 409 household customers, to allow for triangulation of the results. The engagement followed a best practice research approach. The Independent Customer Panel (CCG) also challenged key stages of the research and its review can be found in the independent report it submitted to Ofwat.

### 2.3.1 Stage 1: qualitative study methodology approach

- Two, two-hour focus groups – one in our South Staffs region and one in our Cambridge region. Both groups were held on 7 August 2019.
- Nine customers attended each group, and were recruited to be broadly representative of the supply area population by socio-economic group, life stage and gender. All those recruited paid a water bill.
- The main aim was to explore customers' views in-depth in the areas covered by the objectives outlined above. Also, to ensure that the subsequent quantitative survey question wording and supporting materials were clear and allowed customers to provide an informed response that was free of any bias.

### 2.3.2 Stage 1: qualitative groups – summary of customer feedback

Please refer to appendix 7 for the discussion guide and supporting stimulus materials used to inform customers so that they could provide an unbiased response.

At the groups, the independent moderators discussed with customers' their spontaneous awareness and views of South Staffs Water and then talked through the advantages and disadvantages of being served by small and then local company. They were then taken through water company comparative information around bill, levels, mains bursts and water quality performance. This was followed with showing them materials to explain to them about the need for a company-specific adjustment to the cost of debt, Appendix 6 details the detailed findings from this stage of the research.

Towards the end of the groups customers were then asked the following question to determine the level of customer support. We used the term 'small company premium' rather than 'company-specific adjustment to the cost of debt' in the research as the feedback was that it was more easily understood by our customers.

"If South Staffs/Cambridge Water was to implement a small company premium to help with the cost of borrowing, this would amount to up to £1 each year on the **typical** average household clean water bill. The typical clean water bill is likely to be £131 per year over the period 2020 to 2025.

- What's your initial response to this element of your bill? (Positive/Negative)
- Would you be prepared to pay up to £1 more a year to enable South Staffs/Cambridge Water to be able to continue their activities?"

After being informed about the impact of the company-specific adjustment, across both focus groups the vast majority of customers found the suggested amount of around £1 a year to be acceptable, and that it was significantly outweighed by the benefits of being served by a small, local company.

- In our Cambridge region, six participants found our proposal 'very acceptable', two participants found it 'acceptable' and one participant found it 'unacceptable';
- In our South Staffs region, all nine participants found our proposal 'very acceptable'. Indeed, the spontaneous response from a number of customers was that the bill impact would be much more than £1, and that some would be willing to pay a higher amount;

The key reasons that customers supported the additional amount on their water bill were mainly driven by rational responses, such as:

- the insignificance of the amount in the context of customers' overall water bill and other household bills;
- economic choice, with an assumption that merging with a larger company would result in higher bills (an assumption highlighted by show card C – see appendix 7); and
- a desire to see levels of customer service maintained.

However, the preference was also underpinned by a more emotional response centred on the positives of being served by a smaller company in that it would:

- provide a more personal service;
- look after the communities it serves; and
- better understand its customers.

In turn, these thoughts were underpinned by fears of a merger with a larger company and what that would entail in terms of lower standards of service.

The group finished with a discussion around an alternative of South Staffs Water being merged into a neighbouring, larger water company. In both our South Staffs and Cambridge regions, all participants opted to pay the additional £1. The main reasons given for this were:

- risk of increased bills;
- decreased levels of customer service;
- loss of personal service; and
- loss of community centric initiatives.

### 2.3.3 Stage 2: quantitative research study methodology approach

- A quantitative online survey of 289 customers in our South Staff region and 120 customers in our Cambridge region – 409 customers in total.
- 318 customers were recruited through a mix of online panel providers, with 91 taking part using trained independent researchers recruiting on street to complete the survey using iPads. The fieldwork took place between 16 and 24 August 2019.
- We applied quotas by age, gender and socio-economic group in line with the census figures for each region to ensure a representative response. The results were weighted where needed to reflect the regional demographics.
- Through profiling questions, we identified that 16% of the customers were classed as financially vulnerable and/or being on the Priority Services Register.
- Having attended both our focus groups in stage 1, the Independent Customer Panel robustly challenged the quantitative question wording and supporting materials to ensure they were clear to customers and free of bias. The survey was also thoroughly user tested before launch and a small pilot run with customers before full survey launch.
- The quantitative study provides the core evidence that customers support our company-specific adjustment on the cost of debt.

### 2.3.4 Stage 2: quantitative survey – summary of customer feedback

Please refer to appendix 6 for the quantitative survey questions and supporting materials used to inform customers so that they could provide an unbiased response.

The quant questionnaire followed a similar flow to the qualitative groups and included asking customers about the benefits of being served by a small or large company and being shown comparative information on our and other water companies' performance, which had been refined from feedback from the focus groups to improve clarity further. When asked in the survey, 95% of customers agreed that the comparative information was clear to them, with 93% saying they found all the survey questions very or quite easy to answer. This provides confidence that we have a considered response from our household customers.

The survey finished with a lead in to the need for a company-specific adjustment to the cost of debt before asking questions asking customers their views on the principal of paying extra on their bill and then testing how acceptable a specific amount (£1 each) a year would be to them.

We have found in our previous business plan submissions that Ofwat has made mistakes when reviewing our acceptability testing results and which customer responses count towards the acceptability score. In this study, as in both waves of our main business plan acceptability testing in July 2018 and March 2019, when analysing the results we followed best practice guidelines for acceptability testing developed by the Consumer Council for Water (CCWater). This involves coding customer responses as follows.

- The following responses were **counted towards** the acceptability score.
  - 'Very acceptable'.
  - 'Acceptable'.
  - 'Don't mind (this means your response will be recorded that you find the plan acceptable)'.
- The following responses were **not counted towards** the acceptability score.
  - 'Neither unacceptable nor acceptable'.
  - 'Unacceptable'.
  - 'Very unacceptable'.
  - 'Don't know'.

This approach provides a more robust scoring scale than the ones used by some other water only companies and so provides a truer reflection of customers' responses to the question asked.

As shown in the table below, we found that 83% of our customers found an additional bill impact of £1 to be acceptable, with only 7% saying that it was unacceptable. This mirrored the response seen in the qualitative focus groups, providing clear and consistent evidence that the vast majority of our household customers strongly support our claim for a £1 company-specific adjustment to the cost of debt. The reasons given in the quant survey for support by customers were consistent with those

from the focus groups and there was no variation in the response by customer age, gender or socio-economic group. However, there was a slightly lower level of acceptability in our Cambridge region (77%) than in our South Staffs region (84%). This was mainly driven by a higher number of neutral responses, rather than finding the £1 bill impact unacceptable – 9% in Cambridge responses.

We also have evidence that the majority of our customers (63%) support an additional bill increase of £2 a year for a company-specific adjustment to the cost of debt, with only 16% saying this amount is unacceptable. There was no significant variation in the response by customer age, gender, socio-economic group or by region.

Table 1 Customer acceptability on the company-specific adjustment to the cost of debt

Customer response – %	Company-specific adjustment additional bill impact – £1*	Company-specific adjustment additional bill impact – £2
Very acceptable	47%	24%
Acceptable	34%	35%
Don't mind	2%	4%
Neither unacceptable nor acceptable	10%	16%
Unacceptable	4%	11%
Very unacceptable	3%	5%
Don't know	1%	4%
Total	100%	100%
% of customers finding the amount acceptable (i.e. top three rows of the table)	83%	63%

\*Question wording used: If South Staffs Water/Cambridge Water was to implement a small company premium to help with the cost of borrowing, this would amount to around £1 each year on the **typical** household clean water bill. Please note that the maximum would be £1.05 a year. How acceptable do you find this additional amount (£1 per year) on the annual water bill?

Sample: 409 household customers.

Totals subject to rounding errors.

We also asked customers the following question to understand whether they would prefer to pay the additional £1 a year, or if they would rather we were merged with a larger water company.

“Question: There is an alternative to charging around £1 a year for the small company premium, which is shown below. Of the two options, please indicate which you would prefer?

- South Staffs/Cambridge Water could merge with a larger water company
- Introduction of a small company premium of around £1 on customer bills
- Don't know.”

The results show that 67% of household customers would prefer to pay the additional £1, with only 15% saying they would prefer South Staffs/Cambridge Water to be merged with a larger company - the remaining customers gave a 'Don't know' response. The only notable difference in response was the level of support by region with 72% of South Staffs customers preferring to pay £1, compared to 56% of Cambridge customers (although only 20% in this region wanted to be merged into a larger water company).

This provides further evidence that two-thirds of our household customers would still prefer to pay a small extra amount each year to remain served by a smaller, local water company when presented with this choice.

The key reasons for this response included:

- valuing the low prices currently being paid;
- valuing the current service levels provided;
- valuing the local connection and focus provided by a smaller company; and
- being happy to pay a small additional amount to retain their current water company.

## 2.4 Test area 2: customer benefit

Ofwat's second test area considers the net benefit of the increased costs resulting from the company-specific adjustment to the cost of capital. This is based on the assumption that not providing such an uplift would increase the probability of a merger with a larger water company, which in turn could impact on the benchmarks of efficient cost and service metrics across the sector as a whole.

In principle, and in light of Ofwat's legal duty to secure that an efficient company can finance its functions, we strongly believe that the regulator should not apply a customer benefit test that requires the efficient cost of debt to be recovered from customer benefits. This is also in line with the CMA's decision for Bristol Water in 2015, which did not consider Ofwat's benefits test to be valid.

Despite our concern with Ofwat's approach to this test area, we commissioned Oxera to analyse and quantify the value of customer benefits in accordance with the approach set out in the initial assessment of business plans (IAP).

Oxera mirrored Ofwat's dual approach in appraising the value of the benefits of small companies. The forward looking approach, which assesses the company's future contribution to Ofwat's ability to set stringent benchmarks beyond 2020/25, estimates that the net customer benefit of our company-specific adjustment to be £30.5 million. This is demonstrated in the table below. The draft determination indicates that our level of efficiency has improved since the IAP and as a result the benefit will have increase. So we consider this analysis to be a prudent valuation of benefit.

Table 2 Modelled benefits of South Staffs Water as a sector comparator

Metric	South Staffs Water at IAP
Benefits (changes approach)	38.6
Benefits (transition approach)	22.4
Benefits – mid-point	30.5

The second method, the single period analysis, shows significant volatility in the results, due to this we support that Ofwat should only use this method as a cross check, and not be the leading model. See appendix 9 for Oxera's full report.

Not only do we provide Ofwat a strong and meaningful financial industry comparator, we also drive service forward for the sector. We have driven forward sector-level improvements in key service measures, often driving industry upper quartile position – for example, the common performance commitment for supply interruptions. We also believe the agility enabled by our size has allowed us to react and respond to the stretching in-period challenge for acceptability of water, where we have delivered the greatest service improvement in the sector. In addition to this, we have a strong performance in the current customer service metric and are shifting the industry frontier for written complaints.

To highlight this, we have drawn on CCWater's 2018 ['Water Matters'](#)<sup>9</sup> report, which is publicly available and covers household customers' views of their water and sewage services.

Table 3 shows that, on average, that our customers rate us to be better than the average for the sector and also the average WaSC and WoC scores for a number of key areas that customers say they value – for example, trust, value for money, great customer service. In other areas our performance is in-line over the past eight years.

Table 3a Household customers' views of their water services, 'Water Matters' report 2018

Service area	Eight-year rolling average score					
	All water companies	All WaSCs	All WoCs	SSC score*	Cambridge Water**	South Staffs Water**
Trust (average score) – 1–10 rating	7.53	7.54	7.51	7.76	7.79 (++)	7.74 (+)
Value of money of water services – % agreement	72%	72%	72%	75.5%	76% (+)	75% (+)
Fairness of charges – % agreement	62%	62%	62%	66%	66% (+)	66% (+)

<sup>9</sup> 'Water Matters – Household customers' views of their water and sewerage services 2018', CCWater, July 2019.  
[www.cewater.org.uk/research/water-matters-householdcustomers-views-of-their-water-and-sewerage-services-2018/](http://www.cewater.org.uk/research/water-matters-householdcustomers-views-of-their-water-and-sewerage-services-2018/)

Service area	Eight-year rolling average score					
	All water companies	All WaSCs	All WoCs	SSC score*	Cambridge Water**	South Staffs Water**
Affordability of total water/sewage bill – % agreement	74%	n/a	74%	78%	80% (++)	76% (+)
Reliability of water supply – % agreement	97%	97%	97%	97%	97% (=)	96% (-)
Overall satisfaction with water supply – % agreement	92%	92%	92%	93.5%	95% (++)	92% (=)
Overall satisfaction with contact handling – % agreement	80%	80%	81%	84%	83% (+)	86% (+)

\* SSC score: regional figures for South Staffs and Cambridge, weighted by sample size. Sample base circa: 150 South Staffs/150 Cambridge household customers per year.

\*\*For South Staffs Water (SSW) and Cambridge Water (CW) the indicators in brackets after the figure relate to the following:

- ++ The SSW/CW score is significantly higher than the WoC average
- + The SSW/CW score is higher, but not significantly than the WoC average
- = The SSW/CW score is in-line with the WoC average
- The SSW/CW score is lower, but not significantly than the WoC average

Table 3b below highlights that we outperform, compared with the overall industry, WaSC and WoC averages in the vast majority of areas tracked around contact handling by the 'Water Matters' study over the past eight years.

Table 3b Household customers' views of their water company's contact handling performance

Service area – % agreement, 8-year rolling average	Ease of contacting someone who was able to help you	Quality/ clarity of information provided	Knowledge and professionalism of staff	Feeling that contact had been/would be resolved	Was kept informed of progress
All water companies	82%	81%	84%	80%	74%
All WaSCs	82%	81%	85%	81%	74%
All WoCS	80%	79%	81%	78%	73%
SSC score*	84%	83%	86%	82%	78%
Cambridge Water	84%	83%	86%	82%	78%
South Staffs Water	85%	84%	87%	81%	78%

\* SSC score: regional figures for South Staffs and Cambridge, weighted by sample size. Sample base circa: 150 South Staffs/150 Cambridge household customers per year.



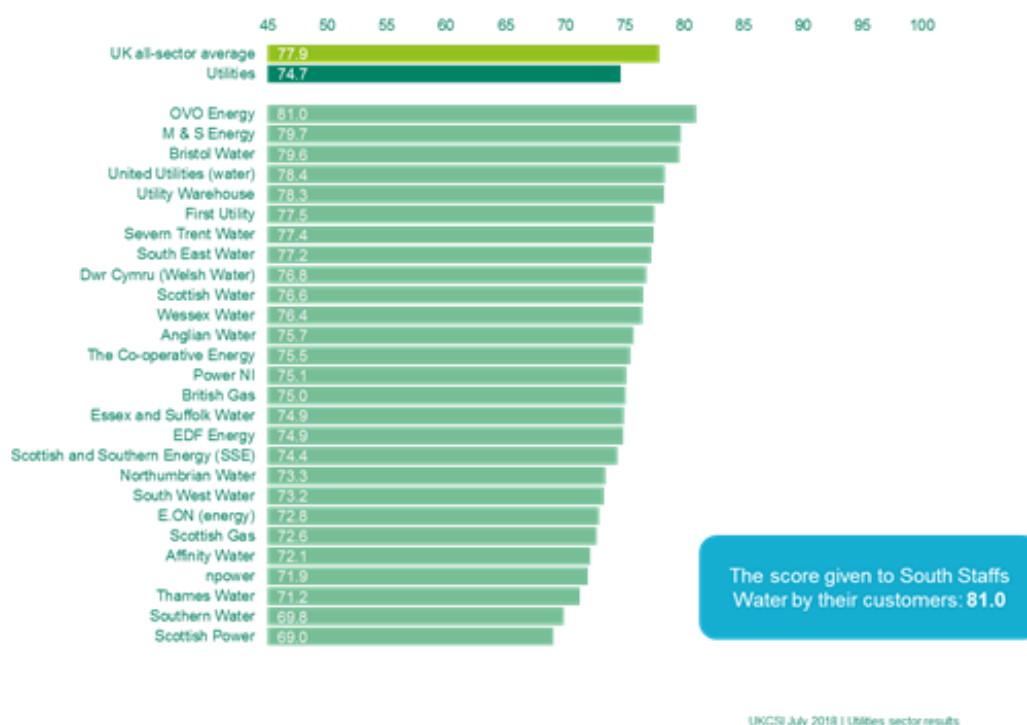
We have also referenced that in 2018 our own Independently run Institute of Customer Service business benchmarking survey results (using the UKCSI question set) showed that 158 customers in our South Staffs region rated our overall service as the joint highest of all the utility companies, when benchmarked against the national study – and the highest of any water company. This is illustrated in figure 1 below.

The UKCSI survey is carried out through an online panel of customers who have had contact with their supplier in the past three months. The South Staffs survey was carried out during August and September 2018 and is compared to the data collected in the UKCSI main national benchmarking study that was released in July 2018. See appendix 8 for more details about UKCSI's annual survey.

This customer survey was carried out as part of the UKCSI's accreditation review approach, and in April this year we gained the Institute of Customer Service's ServiceMark accreditation. Achieving this recognised national customer service standard validates our dedication to providing the highest levels of customer service. This evidence further supports our case that service performance benefits our customers and can also help to drive service improvements in the water sector over time.

Figure 1 UKCSI league table for overall customer satisfaction, 2018

**Business Benchmarking | South Staffs Water**  
**UK Customer Satisfaction Index (UKCSI)**



In summary, we believe there is strong evidence that a company-specific adjustment to the cost of capital has benefits not only for our customers, but also for the whole sector.

## 2.5 Test 3: level of adjustment

In its third test area, Ofwat considers if the level of requested adjustment is appropriate. We are asking for an uplift to the cost of debt of 40bps, which is 24bps in WACC terms. In determining this level of adjustment, we have taken into account the following factors, which we discuss in more detail below.

- The actual cost of debt incurred by the company.
- The precedent set at PR14 and the CMA's decision on Bristol Water's case in 2015.
- Ofwat's assessed "plausible range" from its IAP in January 2019<sup>10</sup>.

Table 4 Assumed cost of debt premium

Area	Assumed cost of debt premium (bps)
Analysis of actual cost of debt	125
Premium allowed by Ofwat at PR14	25
Premium allowed by the CMA in Bristol Water's case in 2015	37
Ofwat's assessed "plausible range" from the IAP	25–40

Our analysis suggests an actual cost of debt premium of 125bps. This is principally due to the cost of the Artesian index-linked loan we issued in 2005, which represents two-thirds of the company's total debt. However, we have brought the number in line with Ofwat's assessed "plausible range" of 25–40bps. This is because Ofwat has rejected requests from other companies that have exceeded this range at both the IAP and draft determinations. The difference between Ofwat's assumptions and our real cost of debt could be considered at a later point in time. We discuss our proposed level of uplift in more detail in Oxera's analysis in appendix 9.

### 2.5.1 Our actual cost of debt

In June 2017, we commissioned Oxera to review the evidence on what would be a sustainable approach to debt treatment in the sector in AMP7. We shared this review with Ofwat at the time. As part of this work, Oxera considered our effective nominal interest rate. Because a substantial portion of our debt is long-term Artesian financing from 2005, our debt profile has not changed substantially since then. As a result, we believe our cost of embedded debt would be stable at around this level throughout the coming five-year period. By comparing this with the overall cost of debt assumed in the updated WACC in Ofwat's draft determinations (4.38%), we concluded that the additional cost of embedded debt we incur is 125bps.

<sup>10</sup> 'Technical appendix 4: Company-specific adjustments to the cost of capital', Ofwat, January 2019, page 22.

Oxera's report also analysed whether our financial strategy has been efficient. In essence, the analysis concluded that the smaller companies, including us, inevitably face higher costs of debt because of the high hurdle in directly accessing the bond market and lower bargaining power compared with larger companies to securing bank loans. Both of these are attributable to the relative size of the smaller water only companies compared with others in the sector. In addition, the report concluded that the Artesian finance was a competitive and efficient funding choice at the time. This suggests that the increased cost is a pure premium of being a small water company and not driven by inefficiency in raising debt.

### 2.5.2 Precedent of PR14 and the CMA's decision on the Bristol Water case in 2015

At PR14, Ofwat allowed Portsmouth Water and Bournemouth Water an uplift of 15bps to the WACC, which equates to 25bps on the cost of debt. This allowance was in the lower range of 20–40bps set out by its own advisors. In addition, in 2015, the CMA estimated Bristol Water's cost of debt premium to be 37bps, which was also in line with its own estimate of 40bps back in 2010.

### 2.5.3 Ofwat's assessed "plausible range"

In its technical appendix to the draft determinations on [cost of capital adjustments](#)<sup>11</sup>, Ofwat set a range of 25–40bps as the likely premium of the cost of debt based on recent analysis at the time of writing and rejected one company's proposal for an adjustment beyond this range.

## 2.6 Challenging the cost of capital

In both our September and April business plan submissions, we adopted Ofwat's early view on the cost of capital and welcomed the certainty that Ofwat had introduced. But as we have already noted, Ofwat subsequently lowered the cost of capital in the draft determinations and also hinted at a further cut. The reduction at draft determinations appears to be due in part to latest market data, although there does appear to have been some cherry picking.

For example, we understand that Ofwat has altered the way it has calculated the embedded cost of debt and excluded our data and that of other smaller water only companies from its analysis. We consider this is a material flaw in the methodology and a factor in why we have now put forward a company-specific adjustment.

In addition, when calculating the risk-free rate, we understand that Ofwat now has more emphasis on the use of Retail Price Index (RPI) index-linked gilts and away from nominal gilts. This change in assessment appears to be a major factor in the reduction in the risk-free rate when compared with simply updating the early view with the latest data for nominal gilts. The change in approach to put sole reliance upon RPI-linked gilts seems at odds with Ofwat's firm position on the inadequacies of RPI.

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<sup>11</sup> PR19 draft determinations: Cost of capital technical appendix', Ofwat July 2019. [www.ofwat.gov.uk/publication/pr19-draft-determinations-cost-of-capital-technical-appendix/](http://www.ofwat.gov.uk/publication/pr19-draft-determinations-cost-of-capital-technical-appendix/)

We also have concerns over the approach being adopted with the assessment of beta. In the early view of the WACC, the beta estimate was based on daily returns data with a two-year trailing window up to 31 July 2017, using Ordinary Least Squares to regress FTSE All Share returns data on returns for Severn Trent Water and United Utilities. We would generally consider that it is appropriate to estimate un-levered betas over a long time frame – normally five years – which appeared to be true for Ofwat at PR14. We also understood that the reasonableness of Ofwat using a daily two-year un-levered beta estimate of 0.32 for its early view, was that this gave a figure that was also broadly in line with the longer-term daily five-year un-levered beta estimate. However, we do not believe this to be the case for the draft determinations and consider that this reasonableness cross check with the longer-term data should be performed.

While we understand the need to take account of the latest information available, we are disappointed with changes in assessment and data sources that Ofwat has introduced. We consider that these undermine the advantages that it was trying to achieve by providing the sector with an early view. Using the examples above would infer an element of cherry picking data as opposed to adopting a consistent approach.

In addition, since we submitted our September business plan we consider the risk facing our business and the also the sector have increased. Some of that is in part due to Ofwat's interventions – for example, its continued push on upper quartile performance and interventions in asymmetric downside skew on ODIs means an average company will face penalties. We provide further information in chapter 4 on how we have been negatively impacted and consider these interventions are inconsistent with Ofwat fulfilling its legal duties when a company will need to have upper quartile efficiency to earn the cost of capital.

In chapter 8, we provide further evidence on our key financial metrics. Based on the draft determination, we do not consider the plan to be financeable. We note some anomalies within Ofwat's modelling approach – for example, the draft determination financial model assumes a recovery of pension deficit through the price control revenues but does not deduct them as costs when assessing financeability, thereby inflating AICR ratios. We note that correcting for the anomalies would reduce key metrics to less than the lower bound of acceptable ranges on a notional basis before we even consider the position on an actual basis.

We consider that since Ofwat set out its early view, some of the risks we face have increased, not decreased. For example, we consider that the risks around the uncertain political situation and regulatory changes are putting greater risks on the sector and would imply the need for additional headroom on key financial metrics, instead of an approach that increases the halo effect from 15bps to 25bps. As a company with a significant investment programme, unprecedented efficiency challenges and asymmetric ODI incentives, we consider that the draft determination provides no headroom on the notional ratios.

## 3. Growth and new development

### Key points of this chapter

- We understand Ofwat's desire to standardise the approach for forecasting new connections, but have concerns over the ONS data used to do this.
- The projection of 20,409 in the growth of connected properties is around half of our projected total (in our WRMPs) of 41,049 properties. The run rate over the past two years, if continued for AMP7, would result in around 31,000 connections.
- Over the current period, we have seen the level of new connections running ahead of our PR14 projections and this is evident in the legacy developer services charges claim set out in chapter 1.

### Our proposed resolution

- We propose that Ofwat uses 30,000 new connections for the period. This is at least comparable with the actual number of connections we have seen over the past two years.
- We believe that developer income should be outside of the price control as there are already a number of regulatory tools in place to protect developers.
- If Ofwat still retains developer income within the price control, then the true-up mechanism we have proposed should be clear and effective. In particular, the mechanism should be applied on an annual basis to increase allowed revenue for changes in the number of connections to avoid potential bill volatility for customers and should incorporate different unit costs for bands of development work.

### 3.1 Growth forecasts

We believe Ofwat's forecast of 20,409 new connections over AMP7 is not representative of the expected growth in our South Staffs and Cambridge regions. Our original forecast of 41,049 connections was based on our WRMPs and took account of detailed local plans and specific information about our supply regions. Because of the problems we have had with our PR14 reconciliation in this area, we think Ofwat should consider carefully its approach to forecasting and the true-up mechanism.

On balance, we conclude that if the WRMP view is not adopted, then assuming that growth continues at a current rate resulting in around 30,000 connections during AMP 7 would seem to be the next reasonable conclusion. We set out the reasons for this below.

#### 3.1.1 Historic trends

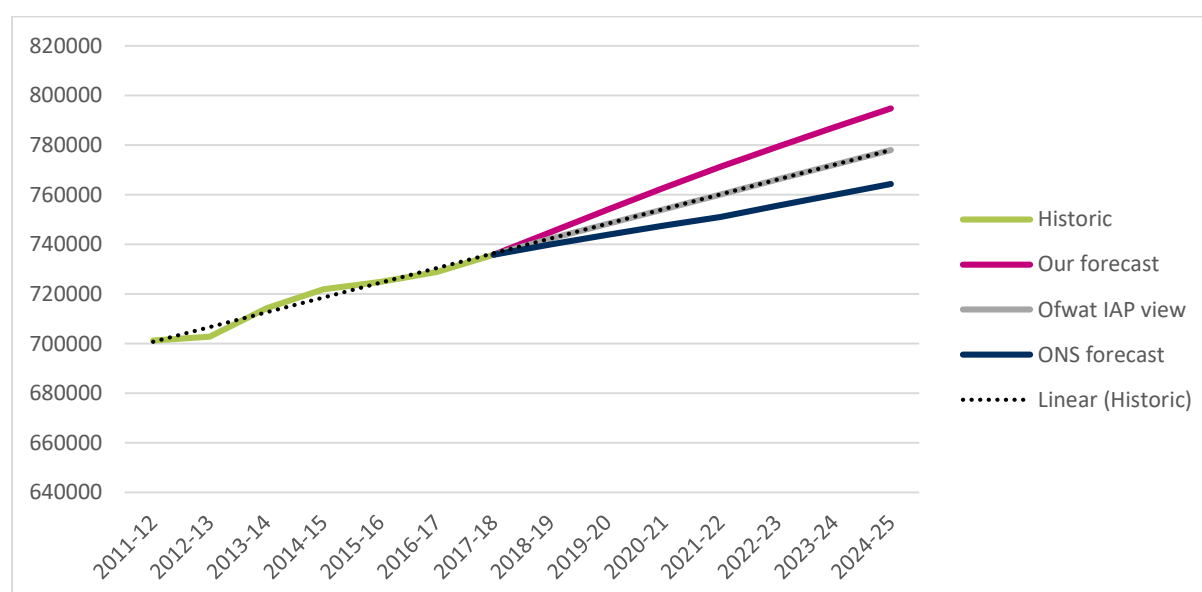
The method used to calculate our growth forecast was consistent with PR14, as we also used our WRMPs on that occasion. The table below shows that the estimate proved to be sensible for the first two years of the current period, with the number of connections exceeding the forecast by 10% or less. But, in 2017/18, we carried out 2,724 (65%) more connections than forecast and we experienced additional connections of 1,257 (29%) in 2018/19. This shows that the level of connections has increased significantly compared with the WRMP assumptions at PR14. As a result, we are concerned by Ofwat cutting our forecast in half for AMP7.

Table 5 Historic trends in connections

	2015/16	2016/17	2017/18	2018/19
Forecast connections	3,780	3,968	4,168	4,324
Actual connections	4,176	4,258	6,892	5,581
Difference	396	290	2,724	1,557
% difference	10%	7%	65%	36%

As shown in figure 2 below, the Office of National Statistics (ONS) projects a fall in the growth rate in both our South Staffs and Cambridge regions compared with the historic actual numbers. We have found no evidence to support this. In the IAP, Ofwat used the trend of our historic actual new connections to project the future growth rates across both regions. This gave a total forecast of 29,709 new connections between 2020 and 2025. We understand Ofwat's reasoning for this forecast and believe it gives a more accurate representation of our circumstances than the ONS data. But we still have confidence in our original higher forecast as it is based on supply area-specific information about future growth.

Figure 2 Total properties connected forecasts



In table 6 below, we set out some examples of the developments in our Cambridge region over the coming years. Although the approval and start dates of new developments are often unreliable, these are confirmed developments that contribute to our WRMP figures. The six outlined developments alone total 14,000 connections, and yet the ONS figures show Cambridge as an area with one of the lowest growth rates. As a result, we believe it is a weak data set to use for Ofwat's modelling.

Table 6 Planned developments in our Cambridge region

Site	Number of properties
Bourn Airfield	3,500
Northstowe, phase 2	3,500
Cambourne West (Swansley Wood)	2,356
Cherry Hinton North	1,800
Waterbeach, phase1	1,615
Wing Development, Newmarket Road, Cambridge	1,313

After receiving the draft determination, we commissioned Glenigan to run a similar piece of work that forecast the number of new connections over the next five years, based on detailed local plans and communicating with developers. Glenigan have built up a comprehensive database of UK construction planning leads from decades of impartial data gathering. They also have a specialist economics team with more than 30 years' experience of providing their clients with market forecasting and strategic planning insights. Although the timings and phasing of these schemes may vary, it shows a planned level of connections more consistent with our original forecast.

### 3.1.2 ONS forecast

We understand that Ofwat wants to mitigate the risks associated with unrepresentative forecasts in company business plans. So we recognise the benefits of standardising the approach across the sector by using a third party data source. But, the 2016-based projections of household data produced by the ONS is not a suitable data set for this, which leads to a significant under-estimate of our new connection numbers.

The time period used to create this projection is historic with the latest data point over three years old and there has been a significant increase in our run rates since then. Table 7 shows the most recent five-year period, which gives a total of 26,171 new connections and also shows the increasing trend in the number of connections with the past two actual years averaging more than 6,000. This demonstrates that the ONS data is outdated and not representative of our current circumstances.

Table 7 New connections figures for the past five years

	2015/16	2016/17	2017/18	2018/19	2019/20 (forecast)	Total
Actual connections	4,176	4,258	6,892	5,581	5,264	<b>26,171</b>

In its Statistical Bulletin, the ONS emphasises this data is household projections and not forecasts. The projections show how many additional households would form if the population of England kept growing as it did between 2011 and 2016 and keeps forming households as it did between 2001 and 2011. As a result, it does not account for:

- future government or local policy changes;
- changes in economic circumstances; or
- most importantly, the number of houses built.

As the data shows household increases and not new houses built, it is not representative of the number of connections we carry out. It is likely that increasing the supply of housing will increase the number of households depending on the existing capacity of an area. This is not accounted for. The ONS advises local authorities to use its data as a starting point for local planning, but that it should not be used in isolation as it does not take into account the many factors that affect growth. So, we believe Ofwat should not use this data as a forecast for future growth as it is unreliable.

### 3.1.3 Forecast variability

These forecasts are inherently inaccurate in that they are open to variability that is outside of our control. Local plans are frequently revised and quickly become out of date, so it is challenging to forecast five years in advance. We must allow new connections to our network and should not be penalised for doing more than the forecast amount – especially as our original forecasts had anticipated this.

Because of the issues we have encountered with our PR14 reconciliation, we understand the importance of accurate forecasting and appropriate reconciliation methodologies. If a suitable method of adjustment is in place to avoid placing too much emphasis on forecasts and assumptions, we are willing to accept a forecast of 30,000 connections. We detail these adjustment mechanisms in section 3.2 below. We also set out how we think this should be treated in terms of cost allowance in chapter 6. So, we recommend that Ofwat either:

- returns to the approach it used in the IAP and projects future connections based on company historic actuals. This allows for a consistent approach across the sector that is more representative than the ONS data, but still mitigates the risks associated with business plan forecasts; or
- amends our forecast outside of its models to increase our allowed revenue to reflect the additional 10,000 new connections, aligning the ONS forecast with this data to our trend line. Other companies may view their ONS forecast to be acceptable if they have not had significant changes in growth since 2011, so an adjustment outside the model may be more suitable.

In line with this view, we have updated our business plan tables (WS1/WS2) and submitted our developer services data request to reflect the 30,000 new connections as forecast in the IAP.

## 3.2 True-up mechanism

Ofwat's proposed true-up mechanism allows us to apply for a simple end-of-period adjustment at PR24 to the volume of connections carried out during AMP7. But we believe it does not go far enough to mitigate the risks of variability in types or volume of development. There is also a risk that customer bills will fluctuate over the period, which would then be reversed at PR24.



### 3.2.1 Need for a true-up mechanism

We are not convinced of the need for a true-up mechanism as there are already a number of regulatory protections in place for developers. For this reason, we would support developer income being excluded from the Network Plus price control.

We understand the need for Ofwat to regulate developer services to ensure compliance and promote efficiency. Through Ofwat's charging rules, competition in the market and the draft determination process, all companies have been challenged to ensure efficient charges for all types of work. In particular:

- companies must set charges that are cost reflective such that they promote effective competition;
- Ofwat has the powers to determine any disputes between companies and developers over charging arrangements; and
- infrastructure charges have to be reconciled to the expenditure on network reinforcement each year and are expected to be consistent over a five-year rolling period.

The true-up should be treated outside the RFI and adjusted at PR24 to avoid undesired bill volatility and the mechanism should incorporate different unit costs for bands of developer. This removes the need for a price control in this area as we only recover the efficient, competitive, cost-reflective rate for the developments carried out during the period. With Ofwat's careful monitoring of costs throughout the AMP, developer services should remain well regulated without the need for a separate price control.

### 3.2.2 Considerations on the proposed true-up mechanism

Although we disagree with developer income being part of the Network Plus price control, if Ofwat considers it is necessary, we support the need for a true-up mechanism to allow for variation. This mechanism needs to be clear and equitable to companies. We believe there are two issues with how the proposed mechanism is to be implemented.

#### 3.2.2.1 Bill volatility

In its supporting document on [regulating developer services](#)<sup>12</sup> published alongside the draft determinations, Ofwat proposed to put developer services back into the revenue forecasting incentive (RFI). This would mean that in the case where companies face a larger number of connections than forecast in their business plans and recover more revenue for developers as a result, this would have to be returned to customers through a bill reduction with a two-year lag.

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<sup>12</sup> 'PR19 draft determinations: Our proposed approach to regulating developer services', Ofwat July 2019.  
[www.ofwat.gov.uk/wp-content/uploads/2019/07/PR19-draft-determinations-Our-proposed-approach-to-regulating-developer-services.pdf](http://www.ofwat.gov.uk/wp-content/uploads/2019/07/PR19-draft-determinations-Our-proposed-approach-to-regulating-developer-services.pdf)

As Ofwat's proposed true-up mechanism allows companies to then recover the revenue in relation to the difference in the volume of connections assumed in the business plan and the actual number carried out at PR24, the revenue given back to customers during AMP7 would have to again be recovered by companies through increased bills. This could potentially have a material impact on customers' bills.

We believe that it is not in customers' interests to have movement in their bill on the accuracy of growth forecasts, which is fast-changing and completely outside of companies' control. So, we disagree with Ofwat's approach to include developer services in the RFI. Instead, we think it is more appropriate for it to be treated outside of the RFI, and true-up only the over-recovery driven by inefficient unit costs at PR24. However, if income from developers remains in the RFI, then we strongly believe that the true-up mechanism needs to operate on an annual in-period basis when we set tariffs (with the allowed level of developer services being adjusted for changes in the number of connections each year) to avoid this bill volatility. Effectively, the 'over-recovery' of income as a result of the number of connections would be retained by the company.

### 3.2.2.2 Including the variance in the type of connections in the mechanism

Under the proposed mechanism, we would not be allowed to recover revenue to account for the type of connection as the proposal is to use a single unit cost rather than allowing variations for different bands of connection works as set out in table App28. Ofwat has recognised that basing the true-up on the aggregated unit rate is not a cost-reflective approach and we disagree that reducing the administrative burden is a benefit that outweighs the potential costs of variation. As outlined in section 2.1 above, the effect of these variations has been significant for us over the current period in particular.

- **Mix of work.** To calculate our average unit rate for our business plan, we made an informed assumption on the mix of brownfield and greenfield development in our regions. As brownfield development is significantly more expensive than greenfield because of its complexity, a change in the mix will materially change our average unit rate.
- **Proportion of self-lay.** We have also made an assumption on the amount of work that will be carried out by self-lay providers. We have made this assumption based on accurate current data and our reasonable predictions of future uptake. This assumption is also linked to the mix of work as self-lay providers tend to favour the greenfield development as it is more straightforward. So, if the mix of work changes, it is likely that the self-lay proportion will also change, leading to a cumulative effect on our costs and revenue.
- **Location of work.** If more work than anticipated occurs in areas of limited capacity, we may be required to carry out more network reinforcement work. Ofwat's charging rules state that this should be reflected in our infrastructure charges.

Therefore, we support a true-up mechanism incorporating different unit costs for bands of developer work as Ofwat originally proposed in its PR19 methodology.

### 3.2.3 Need for consultation

We understand that this is a very complex area for Ofwat to model and regulate. It is evident from the note circulated on 13 August 2019 and the request for additional data that Ofwat has not finalised its approach to forecasting and modelling developer services. We are concerned that Ofwat will change its approach again at the final determination, at which point it will be too late for us to respond with our views. The policy decisions in this area will significantly affect our company over the next period and we are concerned about being penalised by them further down the line.

We strongly recommend that Ofwat consults with companies on the potential challenges in this area ahead of final determinations to avoid difficulties over the long term. There must be an opportunity to work together on this approach for the benefit of customers and the sector as a whole.

## 4. Outcome delivery incentives

### Key points of this chapter

- Ofwat's interventions have resulted in a package that is in significant penalty at both the P50 and P90 scenarios. We consider that the ODI P10 to P90 range is now –2.5% to –0.4%.
- This is not aligned to Ofwat's original methodology intentions, where a RORE range of +1% to +3% for the P90 level of performance was indicated. This clearly demonstrates that we are substantially outside of the expected range and warrants appropriate intervention.
- We consider the level of penalty exposure to be uniquely punitive for CRI, because the combination of our size and our asset configuration leads to a significant distortion of scores, compared with other companies.
- Ofwat's significant interventions in incentive rates for CRI, mains bursts, customer contact about water quality and supply interruptions go against the results of our extensive customer research and triangulation activity, allowing our rates to be influenced by research that is potentially not as robust or does not reflect our customers' preferences.

### Our proposed resolution

- The unique asset configuration that is creating systemic CRI over-exposure needs to be recognised and corrected, by adjusting for the asset concentration issue in the CRI penalty application. It is not appropriate that a single measure, distorted so heavily by our asset configuration, so disproportionately affects the level of incentive in the P10, P50 and P90 scenarios.
- The interventions in our incentive rates for CRI, supply interruptions, customer contact about water quality and mains bursts needs to be reversed. This will ensure that the views of our own customers, elicited through our extensive and robust engagement programme, are fully taken into account.

### 4.1 Our view of Ofwat's draft determination interventions

Our April submission set out the performance commitments we believed we could deliver, after our consideration of Ofwat's challenges in the IAP. We accepted some of Ofwat's challenges and rejected others on the basis of deliverability.

We also revised our incentive rates, accepting Ofwat's challenges on scaling and doing additional work to ensure our rates were reflective of the customer research we had carried out.

In our April submission, we made the assumption that our performance commitment levels we had set ourselves were at the P50 level, and consequentially that the P50 of our total package of ODIs was incentive-neutral overall. This assumption was feasible only on the basis that we were able to deliver the necessary management actions and investment to achieve that target, which is a step change from current performance levels; and also that our representations on measures that were skewing our package were accepted.

In the draft determination Ofwat has made a number of significant interventions in some measures, and has not accepted our representations in others.

#### 4.1.1 Ofwat's interventions in performance commitment levels

Ofwat has made interventions in three performance commitment levels. We have considered these targets against our view of their level of deliverability given the management actions, investment we are proposing and external drivers of volatility. Our conclusions are as follows.

- **Supply interruptions.** In our April submission, we made representations about the data on which this performance commitment was set. We still believe that this target is extremely stretching, does not allow for natural volatility, and that the glidepath allowed is unrealistically steep. But in this submission, we have not made further representations on this, and for the purposes of our revised risk analysis we have set Ofwat's performance commitment at our P50 level, adjusting our P10 and P90 ranges accordingly. We consider that industry challenges on this target may still be likely in draft determination responses and we expect interventions on this performance commitment target to be common to all companies. We reserve the right to make future challenges on this performance commitment if necessary.
- **Residential water consumption Cambridge region.** We do not consider Ofwat's 6.3% reduction to be achievable. In our April submission, we committed to a target of 142.58 litres per person per day (l/p/d) in 2020/21 reducing to 137.74 l/p/d in 2024/25. In our ODI modelling we have maintained the risk distribution that we set in April, as we believe this is extremely stretching and that Ofwat's target is unlikely to be achieved by 2024/25.
- **Education activity.** Ofwat has increased our target from 3,000 to 6,000 young people engaged with each year. We recognise that this target is primarily driven by the resources we devote to the activity. While we consider our original target to be reflective of customers' views and priorities, we believe we can deliver more activity if we increase resource. Ofwat has not made the link between this target and the level of our cost allowance, although we also recognise that the increase in costs of delivery would be immaterial in our cost allowance. On this basis, we can accept the intervention, and in our ODI modelling we have adjusted our distribution to account for this.

#### 4.1.2 Ofwat's rejection of CRI distortion caused by asset concentration

**The uniquely high relative size of our Hampton Loade and Seedy Mill treatment works (as a proportion of our overall supply volume) distorts our CRI score relative to other companies.**

In our September submission, we discussed the circumstances that mean we are more exposed to CRI penalty than other companies. In our revised submission, we provided further information on this. This situation has not been addressed.

We want to make it clear that we are in overall support of CRI as a regulatory measure. It successfully identifies the most significant compliance risks once they have happened, on an asset-by-asset basis.

CRI becomes problematic when it aggregates and normalises the individual failure scores to enable cross-company comparison. The 'failure risk score' provides a useful metric for comparison. A larger score (driven by a large population impacted or a serious water quality parameter failure) indicates a more significant risk, which stands alone as a value for comparison. For example, a coliform failure at a works supplying 50 million litres of water a day (MI/d) will have a score twice as high as the same failure at a works supplying 25MI/d. The dividing of the failure risk score by the total company volume becomes challenging as a company with a smaller number of larger works will incur a higher CRI score for the same failure than a company operating a larger number of smaller works, proportionally speaking. This is demonstrated in the CRI formula below.

$$CRI = \frac{[Parameter\ score] \times [Inspector\ score] \times [Volume\ affected]}{[Total\ company\ volume]}$$

Failure risk score

Normaliser

The table below shows some examples of band 8 treatment works operated by other companies and illustrates how, for the same failure (scoring 5 for parameter and 4 for inspector score) our asset concentration results in materially higher scores.

Table 8 Coliform failure – company-level CRI scores<sup>13</sup>

Works name	Company total DI (MI/d)	Average works flow (MI/d)	Nr treatment streams	Volume per stream (MI/d)	Failure risk score	CRI Score	Company penalty rate per point (£m)	CRI penalty @ Company rate (£m)	Company RORE (£m)	CRI penalty as % of RORE
Hampton Loade, SSC	416	174	2	87	1743100	4.19	0.27	1.17	178.8	0.66%
Seedy Mill, SSC	416	88	1	88	1751200	4.21	0.27	1.17	178.8	0.66%
Broken Scar, NES	1138	180	2	90	1800000	1.58	1.39	2.20	865	0.25%
Coppermills, TMS	2697	600*	2*	300	6000000	2.22	2.14	4.71	2918	0.16%
Felindre, WSH	841	118	1*	118	2360000	2.81	0.49	1.38	864	0.16%
Frankley, SVT	1942	280	4	70	1400000	0.72	1.26	0.91	1828	0.05%
Iver, AFW	953	220	3*	73	1540000	1.62	0.85	1.38	601	0.23%

This occurs because, referring to the CRI formula shown above, the relative size of the works, compared with total company volume, is distorting the score. So, despite the fact that the failure risk scores for Broken Scar, Coppermills and Felindre are higher, the resultant CRI scores are lower. This is because of the way CRI divides risk scores by total volume supplied.

We acknowledge this is a limited set of works for which we could get data from the public domain, and some works sizes are uncertain. But it demonstrates how the proportional size of the works can skew the CRI score when it is normalised. We have reviewed the size band data supplied to all companies in the business plan tables to explore the correlation more broadly. The table below

<sup>13</sup> The \* indicates where we have made size estimates because of limited publicly available data.

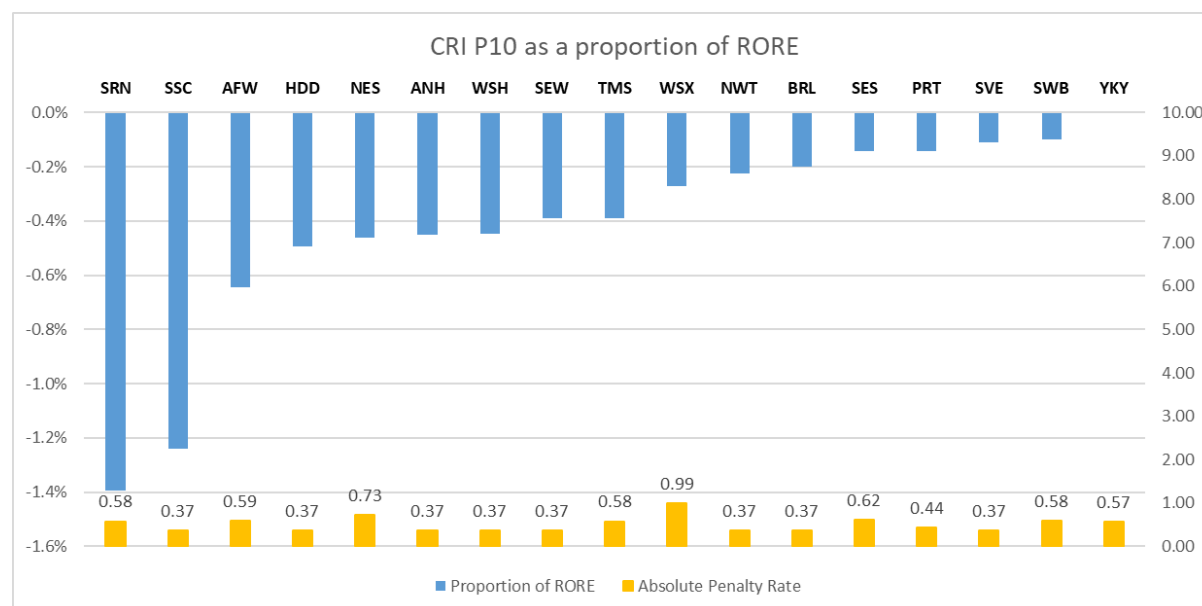
shows all companies with at least one works in size band 8. Applying the same principle as the above, a coliform failure with the same parameters, this also demonstrates that as a higher proportion of volume is supplied per works, the CRI score is distorted upwards.

Table 9 Coliform failure – band 8 size works

	CRI score	DI per band 8 works
SSC	4.19	36%
WSH	2.07	16%
AFW	1.83	20%
NES	1.53	9%
ANH	1.50	16%
YKY	1.36	12%
UUW	0.97	10%
SVT	0.90	11%
TMS	0.65	17%

Figure 3 below takes data Ofwat published in each company's draft determination for ODI penalty, and we have normalised it for each company's regulated equity. It shows that we are the second highest company in terms of CRI RORE exposure.

Figure 3 CRI P10 as a proportion of RORE



Since CRI has been introduced, we have strived to improve performance, addressing risks with our treatment works in this period by investing heavily in ultraviolet (UV) disinfection at several locations. We are also continuing to significantly invest in AMP7 by upgrading the treatment processes at both surface water works in a multi-million pound programme.

Our optioneering for this programme considered the issue of legacy asset configuration by looking at options for a greater number of smaller works, to reduce reliance on these large assets. However, these options were significantly more expensive and more difficult to deliver; so they were not cost beneficial.

The work we are undertaking in AMP7 will deliver a material CRI improvement. That said, these works are expected to be delivered by 2023 (Seedy Mill) and by 2024 (Hampton Loade), and will not change the issue that the size of these works is high compared with our overall scale, relative to other companies.

In addition, there are already other ODIs that fully or partially represent the Hampton Loade and Seedy Mill assets, so they get a great deal of ODI coverage across the whole of our package. These are:

- **supply interruptions**, where significant deterioration could cause unprecedented asset outage of these works and impact on supply in the worst case;
- **unplanned outage**, where the day-to-day level of outage of these works, which would include CRI related failures, is measured;
- **customer contact about water quality**, which is a major factor in our upgrade programme to address the level of sediments being dispersed into the network; and
- **water treatment works delivery programme**, which is a bespoke ODI to specifically incentivise the delivery of the proposed investment and compensate for delays.

We maintain our position that it is not appropriate for CRI to be penalised so heavily and disproportionately given that we are investing to solve the existing problems with these two works, and that our legacy configuration – our reliance on these large assets for a high proportion of our supply – is outside of management control and will not change.

Fundamentally, the issue lies with the way in which CRI scores are normalised by total company volume, which distorts the score. We would like to work with the Ofwat, the Drinking Water Inspectorate (DWI) and the sector in the future to appropriately correct for this distortion. But in the meantime, we recognise that CRI will be used as a common performance commitment in its current form over the next five years. So, we consider that adjustments need to be made to ensure our level of penalty is not unfairly distorted relative to other companies.

We consider the following two options are feasible.

- Descale the penalty rate so that it achieves the same average risk range as other companies, as a percentage of regulated equity. From the values in each company's draft determination (see figure 3 above), the average RORE range for all companies (excluding Southern Water and South Staffs Water) is 0.3%, compared with our 1.2%. So, a descaling factor of 4 would be applied to the penalty rate.
- Exclude Hampton Loade and Seedy Mill from the calculation of the penalty incentive until the notice periods are completed. **For the avoidance of doubt, we do not propose adjusting our actual CRI score as reported each year – just the level of penalty derived from it.**



Based on latest data and experience with CRI we have revised our expected risk range in our latest assessment. Until an adjustment of some kind is adopted, we consider that there is a significant penalty risk in all scenarios.

#### 4.1.3 Ofwat's interventions in incentive rates

Ofwat has made significant interventions in incentive rates for four measures. In our April submission, we thoroughly reviewed our incentive rates following Ofwat's IAP challenges and carried out additional triangulation activity to ensure they were fully reflective of the underlying customer research. We do not believe that Ofwat's rates, which are industry triangulated, are appropriate to use for our incentives.

Our research:

- determined which measures were most important to customers;
- covered targets with reference to sector comparisons; and
- elicited willingness to pay information, which directly fed the ODI rates.

The overall package featured in our acceptability testing, alongside the bill level this and the underlying investment created. Ofwat recognised the high quality of our customer research at the IAP.

Adopting industry rates is not consistent with the approach set out in the PR19 methodology as it does not demonstrate adequately that our customer views and priorities are reflected in the incentive package. In making this intervention, Ofwat is making an assumption that all research is equally valid, something with which we disagree. Each company's research is a collective set of information, presented in the round to customers, and on which those customers take a view and provide a valuation. It is not appropriate to triangulate incentive rates across companies without having confidence that those different research activities are compatible. This would require an extensive review of each company's research, including examining how the questions were asked, the performance range specified, and more. Ofwat has not done this.

Therefore, we disagree with the incentive rate increases for CRI, supply interruptions, customer contact about water quality and mains bursts. These interventions are partly responsible for the skew towards penalty in our risk range.

#### 4.1.4 Ofwat's intervention to adopt in-period ODIs

We researched our flat nominal bill approach extensively and Ofwat itself recognised this an example of best practice innovation. Despite this, it has been ruled out. We find this incongruous, but reluctantly accept Ofwat's decision to override our customer's preferences for a flat and stable bill in favour of in-period incentives.

#### 4.1.5 Ofwat's interventions on caps and collars

Ofwat has made a number of interventions to caps and collars. For the purpose of clarity in this representation, we have focused our arguments on our key priorities. But we reserve the right to bring these forward in any future representations.

#### 4.1.6 Other minor interventions.

We can accept Ofwat's intervention to change our water-efficient homes performance commitment to an annual target rather than an end of period target.

We can also accept Ofwat's intervention to create a new scheme-related performance commitment for WINEP delivery.

And we can accept Ofwat's intervention in our penalty rate for our void properties measure.

### 4.2 Our revised Monte Carlo analysis approach

In our September submission, we used a Monte Carlo simulation approach to provide our estimate of our P10/P90 risk range for ODIs. This approach ensures that the net risk range takes account of the fact that not all P10 or P90 levels are likely to occur at the same time. We did not use this approach in our revised submission, instead summing incentives at the P10 and P90 for each measure, because we identified that there was inconsistency of approach between companies in September. **As Ofwat presents each company's ODI risk range in a single comparative analysis of industry risk and reward, we think it is important that there is a consistency of approach. We remain concerned that this consistency still does not exist.**

We have now revisited our Monte Carlo approach, updating it for Ofwat's interventions and making changes to our risk ranges where we have accepted these interventions. Where we have not accepted the intervention, our models remain as per our April risk ranges, except for CRI where we have additional data and experience in the new measure that we need to update our views of risk.

The Monte Carlo analysis of our ODI package is underpinned by a robust assessment of the risk range for each of our performance commitments. For each measure, we have considered:

- historical data trends and actions, to give a realistic starting point and volatility range;
- future management actions and planned investment, to inform how performance will improve over time and how volatility may be mitigated; and
- external influences, to inform the residual range of volatility that exists.

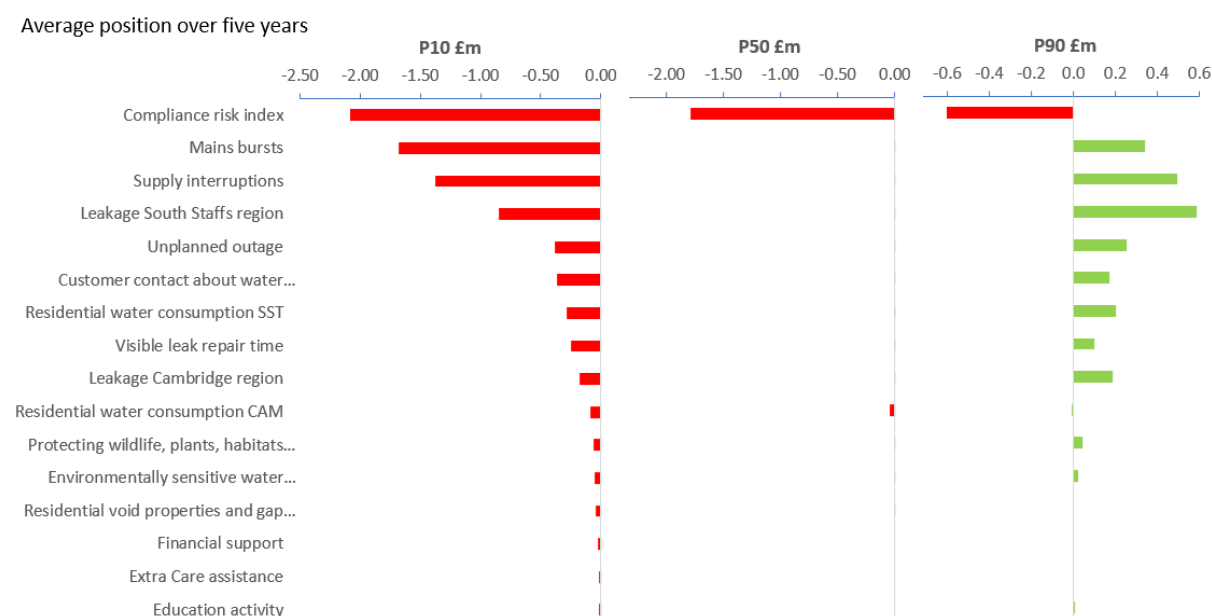
In appendix 5, we provide full details of how we have modelled each performance commitment and the assumptions we have used. This evidence shows that we have followed a robust process and allows full transparency of our assumptions on performance improvement over AMP7.

We instructed Jacobs to assure our assessment approach as the outputs from this analysis feed into the financial model. We have provided this report as appendix 16.

#### 4.2.1 Individual performance commitment results

Figure 4 below shows the outputs of our simulation for each individual measure's P10, P50 and P90, modelled from our input distributions (appendix 5), as an average over five years, in £ millions of expected incentive.

Figure 4 Simulation outputs – P10, P50 and P90



This clearly shows that CRI, mains bursts and supply interruptions have a disproportionate effect on our overall package. This is driven by the following.

- Our **CRI** risk exposure, caused by our unique asset concentration and amplified by Ofwat's incentive rate intervention, which is more than three times higher than our customer research generated. CRI is driving a significantly disproportionate level of penalty at the P50 and P90 scenarios. Our unique sensitivity to CRI means that we expect to perform substantially above the deadband level across the period, after taking account of the significant management actions and investments we are undertaking.
- The interventions in our **mains bursts** and **supply interruptions** incentive rates, which are two to three times higher than our customer research generated.

Our analysis also shows a very slight P50 penalty for our Cambridge region per capita consumption (PCC) driven by Ofwat's intervention in our performance commitment. But this is small when compared with the other issues.

## 4.2.2 Aggregate results

Our Monte Carlo simulation, run over many iterations, aggregates the above outputs for individual measures into a P10, P50 and P90 expectation for the entire package. This creates an output which is not a summation of the individual measures, but which reflects the likelihoods of some measures underperforming and some measures outperforming in any given year, reflective of the underlying risk distributions.

It should be noted that our regulated equity value rises over the period, so this influences the percentages expressed for incentives in each year.

Table 10 P10 aggregate scenario

The results for the P10 aggregate scenario are shown in the table below, showing an average of –2.8% underperformance penalty. As we demonstrated above, this is disproportionately affected by three common performance commitments, although is within (but at the higher end) of Ofwat's indicated range.

P10	2020/21	2021/22	2022/23	2023/24	2024/25	5-year ave
P10 under-performance (£m)	–£4.82	–£4.72	–£4.74	–£4.45	–£4.00	
P10 as % of RORE	–3.0%	–2.7%	–2.5%	–2.3%	–2.0%	–2.5%

Table 11 P50 aggregate scenario

The results for the P50 aggregate scenario are shown below, with an average of –1.4% underperformance penalty. This is because of the disproportionate effect of CRI, which is under a significant penalty in the P50 scenario.

P50	2020/21	2021/22	2022/23	2023/24	2024/25	5-year ave
P50 central estimate (£m)	–£2.48	–£2.49	–£2.61	–£2.40	–£1.98	
P50 as % of RORE	–1.5%	–1.4%	–1.4%	–1.2%	–1.0%	–1.3%

Table 12 P90 aggregate scenario

The results for the P90 aggregate scenario are shown below, with an average of –0.4% underperformance penalty. Again this is because of the disproportionate effect of CRI, which is sufficiently strong even at the P90 to negate any outperformance incentives earned in other measures.

P90	2020/21	2021/22	2022/23	2023/24	2024/25	5-year ave
P90 outperformance (£m)	–£0.78	–£0.84	–£1.03	–£0.78	–£0.41	
P90 as % of RORE	–0.5%	–0.5%	–0.5%	–0.4%	–0.2%	–0.4%

## 4.3 Our conclusions on the ODI package

We consider our outcome delivery incentive P10 to P90 range is –2.5% to –0.4%, on average over the five-year period.

The P50 and P90 remain negative throughout the period, although improves marginally from 2023/24 onwards as we take account of the expected improvements in CRI following our treatment works investment.

## 5. Leakage allowance and policy

### Key points of this chapter

- Ofwat has made a policy transition to a comparative benchmarking approach, resulting in a significant step change in leakage reduction targets, and has made assumptions about leakage reduction funding that the evidence does not support.

### Our proposed resolution

- We cannot deliver our proposed 23% combined regions leakage reduction without the funding we put forward in our business plan. We strongly disagree, as evidenced in this chapter, that there is a cost allowance for any part of our proposed reduction in PR19 modelled base costs.
- We propose that it is appropriate Ofwat to support our leakage enhancement spend for AMP7 of £10.3 million as it is reflective of our customers' priorities and will deliver a substantial step change in improvement.

### 5.1 Historic approaches to leakage target setting

**It is extremely important to recognise that the historic regulatory approaches to leakage target setting are the reason for the current wide range of leakage performance demonstrated across the sector.**

Historic leakage targets were primarily centred on the economic level, which represents the threshold at which the marginal costs incurred in delivering leakage reduction exceed the marginal benefits delivered by that leakage reduction. Prior to PR14, the economic level of leakage (known as ELL) was used, which considered only direct benefits. At PR14, this evolved into the sustainable economic level of leakage (known as SELL), which also considered wider societal and environmental benefits, and customer preferences.

Companies may also have had company-specific supply/demand balance drivers and local environmental drivers to reduce leakage below the economic level. The economic level and additional company-specific drivers, and the resultant leakage targets and investment proposals, were explicitly linked to companies' WRMPs and long-term planning of supply and demand.

Ofwat's PR14 [methodology](#)<sup>14</sup> recognised that there was a growing priority for leakage reduction among customers. But crucially, Ofwat still recognised the significant costs of delivering leakage reduction, the balance of the benefits against the costs and the degree of company-specific factors involved. Its methodology asked companies to have regard to the SELL, along with non-economic factors.

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<sup>14</sup> 'Setting price controls for 2015-20– final methodology and expectations for companies' business plans', Ofwat, July 2013, pages 72-74. [www.ofwat.gov.uk/wp-content/uploads/2015/12/pap\\_pos201307finalapproach.pdf](http://www.ofwat.gov.uk/wp-content/uploads/2015/12/pap_pos201307finalapproach.pdf)

So, leakage performance across the sector today is a result of the historic company and regulatory approaches to setting leakage targets at price reviews, reflective of company-specific assessments of the economic level and any additional drivers. The historical approaches did achieve the goal of minimising costs to customers across successive price reviews, but we agree with Ofwat that, in hindsight, these approaches did not drive a step change improvement in leakage. They were not designed to do this.

We have maintained a regional approach to leakage since the South Staffs Water/Cambridge Water merger, as the two regions have different water resource and environmental drivers. In our South Staffs region, we have historically set our economic level as our target in business plans, because there were no additional supply/demand balance drivers. At PR14, customers supported this approach after extensive engagement. In our Cambridge region, there are greater water resource and environmental drivers, but the region had been operating below its economic level for some time. There were no additional drivers that necessitated a reduction in leakage over time, from the level it was already at.

So, neither region has historically received any additional targets or funding for leakage reduction over and above the economic level. Both regions have continued with a leak detection and repair strategy at a level of resourcing that broadly maintains the economic level (in the South Staffs region) or the pre-existing lower than economic level (in the Cambridge region).

## 5.2 PR19 approach to leakage target setting

**PR19 represents a step change in leakage policy by focusing on comparative performance, which generates a significantly greater regulatory challenge than has historically been the case.**

This policy change reflects recent UK Government and regulatory objectives, and a recognition that customer priorities towards investing in leakage reduction are growing significantly. Data to allow comparative benchmarking is also now more widely available, since the sector's focus on consistent performance reporting and the introduction of the [Discover Water](#) <sup>15</sup> website where annual data is published.

We understand and agree with the overall rationale for this policy step change. The economics-based approach alone would only deliver small incremental improvements over time, which is not sufficient to meet the fast-increasing desire among customers for a step change in leakage reduction, driven by an emerging and strengthening moral case centred on waste and the need to protect the environment. But the scale of the step change that the policy change generates is unprecedented over a regulatory history of more than 20 years.

As well as the step change in targeted reduction, Ofwat has also made some policy decisions around leakage cost allowance. At the IAP, the minimum reduction of 15% was assumed to be implicit within modelled base costs, and at draft determination all leakage reduction outside the comparative upper quartile benchmark is assumed to be implicit within base costs. This has had the effect of removing almost all leakage reduction funding from the sector collectively, and means Ofwat has disallowed all of the leakage funding we need to deliver our target.

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<sup>15</sup> [discoverwater.co.uk/](https://discoverwater.co.uk/)

## 5.3 Our analysis of leakage policies

We have gathered historical data from previously published annual returns, water sector datashares, and final determinations from PR09 and PR14. There are gaps in this data for some companies, while company mergers over time means we have had to blend the data for others. We still consider the historic data to be sufficiently robust to demonstrate general trends for the sector.

### 5.3.1 Historical leakage improvements delivered

Leakage at a total sector level now is just 2.2% lower than in the year 2000. Since 2011 (the period over which Ofwat models costs), total sector leakage has actually increased by 2%. So, the level of reduction required by Ofwat is unprecedented in terms of what the sector as a whole has actually delivered in the past 20 years, including companies already at the upper quartile level.

The data below, for the period 2010 to 2015 (AMP5), shows that the average level of targeted reduction was just -3%, and the sector as a whole delivered -7%. There is a wide range of targeted and actual reductions across companies, with some increasing over the period.

Table13 Leakage targets in AMP5

	2009/10 starting level (MI/d) using 2010 datashare	2014-15 target set at PR09	Targeted reduction % between 2009/10 and 2014/15	2014/15 actual level (MI/d) using 2015 datashare	Actual % change achieved 2009/10 to 2014/15
Affinity*					
Anglian	211	211	0%	192	-10%
Bristol	53	49	-8%	45	-17%
Dee Valley	10	10.2	-2%	10	-7%
Northumbrian	223	216	-3%	198	-13%
Portsmouth	29	30	4%	29	1%
SES	24	25	3%	24	0%
Severn Trent	497	453	-10%	444	-12%
South East	96	93	-3%	93	-4%
South Staffs Cambridge	89	88	-1%	83	-7%
South West Bournemouth	104	105	1%	105	1%
Southern	95	77	-24%	82	-16%
Thames	670	673	0%	654	-2%
United Utilities	462	463	0%	454	-2%
Welsh	193	184	-5%	180	-7%
Wessex	74	71	-4%	69	-8%
Yorkshire	295	297	1%	288	-2%
		Average	-3%		-7%
* data we were able to find had gaps					

The same data for AMP6 shows the average level of targeted reduction at just -1%, and that the sector as a whole, to 2018/19, has delivered 0%. Again some companies have increased.

Table 14 Leakage targets in AMP6

	2014/15 starting level (MI/d) using 2015 datashare	2019-20 target set at PR14	Targeted reduction % between 2014/15 and 2019/20	2018/19 actual level (MI/d) using 2019 datashare	Actual % change achieved 2014/15 to 2018/19
Affinity	184	162	-13%	196	6%
Anglian	192	192	0%	191	0%
Bristol	45	43	-5%	42	-8%
Dee Valley*					
Northumbrian	198	203	2%	200	1%
Portsmouth	29	30	3%	28	-3%
SES	24	24	-1%	24	0%
Severn Trent	444	424	-5%	424	-5%
South East	93	88	-5%	87	-6%
South Staffs Cambridge	83	84	2%	84	1%
South West Bournemouth	105	104	-1%	104	-2%
Southern	82	87	6%	102	20%
Thames	654	649	-1%	690	5%
United Utilities	454	463	2%	456	1%
Welsh	180	169	-6%	170	-6%
Wessex	69	67	-3%	66	-3%
Yorkshire	288	287	0%	290	0%
		Average	-1%		0%
* data we were able to find had gaps					

We recognise that the data has gaps, and there appear to be comparability issues between PR09 and PR14 for some companies. But it remains clear that the current policy, of 15% or greater reductions, is a significant step change from historic policies.

## 5.3.2 Historic cost allowances

Ofwat has made a policy decision that future leakage reduction costs are implicit within the base cost allowance as modelled. But it has not provided any evidence that this is the case. So, we strongly disagree with this assertion for the reasons set out in the following sections.

### 5.3.2.1 Leakage reduction at the scale proposed is clearly enhancement

Leakage reduction is enhancement by Ofwat's own definition. In its information notice [IN 18/11](#) from June 2018<sup>16</sup>, Ofwat defined enhancement as:

"...expenditure for the purpose of enhancing the **capacity or quality of service beyond current levels**. The expenditure may be driven by a number of factors, including population growth, **new statutory obligations** and **strategic prioritisation by company Boards** (which should be **in consultation with their customers**)."<sup>17</sup>

<sup>16</sup> IN 18/11, 'Enhancement expenditure – setting expectations for well-evidenced proposals and clarifying interaction with cost adjustment claims', Ofwat, June 2018. [www.ofwat.gov.uk/publication/18-11-enhancement-expenditure-setting-expectations-well-evidenced-proposals-clarifying-interaction-cost-adjustment-claims/](http://www.ofwat.gov.uk/publication/18-11-enhancement-expenditure-setting-expectations-well-evidenced-proposals-clarifying-interaction-cost-adjustment-claims/)

<sup>17</sup> Our emphasis.



Our view is that service levels are clearly being significantly improved beyond current levels. We also consider that a regulatory policy change on the approach under which leakage targets are set amounts to the equivalent of a new statutory obligation, especially given how performance is financially incentivised. In addition, the definition allows areas of strategic prioritisation by company Boards (supported by customers) to be classified as enhancement, which in the case of such a significant step change in leakage reduction, clearly meets both criteria and is again driven by regulatory policy and the changing views of customers on waste and the environment.

Before it issued this information notice, discussions between Ofwat and the companies had taken place through the Cost Assessment Working Group. In particular, an email sent by David Young at Ofwat in November 2017 set out Ofwat's definition of what constitutes enhancement costs. The notable points from this email (provided in full in appendix 10) are set out below. The emphasis is ours, to highlight the significant points.

- Base expenditure is required to maintain the **current** (most recently established base) level of service to customers.
- Enhancement expenditure is generally where there is **a permanent increase or step change in the current level of service to a new "base" level** and/or the provision to new customers of the current service level.
- Examples of expenditure we would expect companies to categorise as enhancements include: **where expenditure provides an identifiable, measurable and permanent step change in overall level of service to existing customers above the standard previously provided.**

Clearly, by all of these statements, the significant step change in leakage targets is classified as enhancement, especially when considering the fully justifiable reasons why current performance has been driven by the long history of the regulatory approach to target setting.

#### 5.3.2.2 There is no evidence that step change costs are implicit within PR19 models

We have demonstrated that at the 2009 price review (PR09) the average target reduction was -3%, and at PR14 was -1%. We have not analysed each company's plans from those price reviews to determine what funding was requested and allowed specifically for leakage as we cannot resource a task of this scale in such a short timeframe, and it is likely that the granularity of information required to elicit this information would not be present.

But, assuming that PR09 and PR14 funding at a sector level was sufficient to deliver these average targets, then the most that has been historically funded is a 3% reduction at PR09 and a 1% reduction at PR14 – which is a significant difference from Ofwat's current assumption that reductions of more than 15% are implicitly funded over the modelled period.

In addition, the cost models Ofwat used at PR14 were totex models and had a supply/demand balance deficit cost driver that was used to proxy leakage reduction investment. No such cost driver exists in Ofwat's PR19 models, which are also base costs only, not totex models. So, Ofwat's models at PR14, if allowing for leakage reduction funding, were:

- only allowing for the average level of 1% reduction across all companies;
- allowing this funding in totex, not base costs; and
- only proxying leakage reduction, through the use of a supply/demand balance deficit cost driver that also covers other types of cost.

We have examined whether there is any correlation between companies driving the upper quartile cost efficiency at PR19 and their leakage reduction achievements over AMP6. The table below shows that only one company in the top five efficient companies in base costs had a reduction in leakage since 2014/15. Clearly, therefore, there is no demonstrable assertion that efficient companies are providing for an implicit leakage reduction cost allowance.

Table 15 Correlation between leakage reduction performance and cost efficiency

Upper quartile companies (PR19 base cost efficiency at draft determination)	Base cost efficiency score	Actual leakage reduction 2014/15 to 2018/19
Portsmouth Water	0.78	-3%
Yorkshire Water	0.86	0%
Dee Valley Water	0.88	-
Southern Water	0.91	+20%
South Staffs Water/Cambridge Water	0.96	+1%

The report from NERA Economic Consulting<sup>18</sup> published in March 2019, and which we included within our April submission, contains detailed further evidence to support why base costs do not allow for funding the step change in leakage proposed in our business plan. We again attach this report as appendix 11 and fully agree with its analysis and conclusions.

## 5.4 Funding our ambitious leakage reduction target

In our September submission, we proposed a stretching leakage reduction target of 23%<sup>19</sup> by 2024/25, the second highest in the sector. We did this because we recognised that our comparative performance in the South Staffs region was below average and our customers supported this enhanced level of reduction.

To deliver our ambitious target, we will be seeking out new and innovative solutions, using technologies that have been emerging for a few years but that require extensive testing and development to implement over our large distribution network. One example of the innovations we have been evaluating is the HydroSEAL leak repair system, which featured heavily in our PR19 business plan along with a demonstration video of its use that we shared with Ofwat, customers and other stakeholders. Other technologies we need to evaluate and implement relate to:

<sup>18</sup> 'Assessing Ofwat's Funding and Incentive Targets for Leakage Reduction', NERA Economic Consulting, March 2019.

<sup>19</sup> Expressed as three-year average for combined regions (which have separate performance commitments in practice).

- more intelligent pressure and network management;
- live monitoring; and
- other new leak detection methods.

These costs are clearly new and a step change from the past, and we cannot deliver our performance commitment without the funding in our business plan. It is unreasonable for Ofwat to adopt such a significant policy step change and to assume that there is no transition between these two policy regimes.

We cannot absorb this level of leakage reduction expenditure into our allowed costs by delaying other investment schemes. Ofwat's draft determination models show us to be fifth in the historic efficiency ranking, exactly at upper quartile cost efficiency. Ofwat has also imposed a further forward-looking efficiency challenge to our costs. Our base operating costs and capital maintenance schemes are designed to maintain our service levels to our customers and ensure we are maintaining our assets on an optimal and long-term investment cycle that does not defer maintenance to future generations. The other schemes, both enhancement and base, that are part of our plan are all justified and essential to maintain this service and meet any new obligations.

We recognise that society's expectations in this area have changed, and that Ofwat has rightly identified this shift and is seeking to challenge companies to go much further. Our own research confirms that leakage is an extremely important issue for our customers and one that drives or erodes trust. That said, our customers are happy to invest in this area to obtain the right improvements. It is not tenable to simply ignore the consequences of successive price reviews in this area and how they result in each company finding itself in terms of current performance. These are long-term outputs. We have an example of this with our two regions – which are themselves at different ends of this performance benchmark based largely on an economic assessment over a 20-year period. With this in mind, we propose that it is appropriate for Ofwat to support our leakage enhancement spend as it is reflective of our customers' priorities and will deliver a substantial step change in improvement. We recognise that AMP7 may be a transitional period in respect of the movement to a new approach to leakage investment and the future funding of it. But it is not viable to accomplish this in one step. So, we are asking Ofwat to support our proposed leakage investment as enhancement spend of £10.3 million for AMP7.

## 6. Approach to cost modelling

### Key points from this chapter

- We believe Ofwat's draft determination shows our base costs to be efficient.
- We have considered the new development costs and enhancement costs as separate components, and have made specific representations elsewhere in this submission.

### Our proposed resolution

- We urge Ofwat to refrain from any more model changes at this stage.
- We consider our representations on new development costs to be best treated outside of the draft determination model.

### 6.1 Ofwat's models and cost drivers

Ofwat has evolved its modelling approach between the IAP and draft determinations by now modelling base costs together with new development costs. This bundled approach is known as 'botex plus' (where botex is the base total expenditure). Enhancement costs have been separately assessed primarily using deep dives or cost models specific to the enhancement theme.

In the botex plus models, Ofwat has retained its own cost driver forecasts as it used at the IAP. We still believe that some of these cost driver forecasts are understated – particularly the two water treatment works complexity cost drivers. In our April submission, we said that there are known schemes, allowed for in our business plan, that will increase the level of complexity in operation over AMP7. There are also schemes being delivered over the remaining year of AMP6. This is one of the reasons why the treatment works complexity has increased in our 2018/19 annual performance report (APR). While we acknowledge that Ofwat needs to maintain a degree of independence in cost driver forecasts, it is not clear why it has not allowed for our increasing trend when it is clear and supported by evidence.

A specific point of concern is that Ofwat has disallowed the enhancement opex related to our raw water deterioration schemes because it considers this to be covered implicitly by these cost drivers. We do not agree that it can be implicitly covered if Ofwat has not accepted our future rising forecast. We cover this particular issue in more detail in section 7.3.3.

### 6.2 Analysis of our base cost allowance

At a high level, it is important for us to know the main components of our cost allowance – namely:

- base costs;
- new development; and
- other enhancement areas.

Not only does this align with how we manage our costs in the business, but it is necessary to be able to focus our representations back to Ofwat on those areas that we believe need further

examination. At this stage in the process, where time is short, we want to focus on the key issues and be able to have confidence that other areas we are happy with at this stage will not continue to change.

Ofwat's approach to enhancement means that the cost allowance is very transparent and does not interact with base cost models. There are representations on some areas of enhancement costs in this submission. However, base costs are less transparent because of the bundling with new development. Ofwat has not directly published a view of our base cost allowance; but it has published a view of our new development allowance and a model for enhancement opex implicit allowance. So, it is possible to reverse calculate our base cost allowance from this information.

**Table 16 Our view of true base cost allowance**

	Amount
'Botex plus' allowance from model WW4, post-efficiency challenges, gross (includes new development)	£384m
Unmodelled costs	£45m
<b>Total 'botex plus' cost allowance</b>	<b>£429m</b>
New development costs from grants and contributions model, gross	-£26m
Enhancement opex implicit allowance	-£4m
<b>Our view of true base cost allowance, post-efficiency, including unmodelled costs</b>	<b>£399m</b>

The equivalent value to the above true base cost allowance, from our business plan, is our opex costs plus base capital maintenance costs from table WS1, and less our enhancement opex shown in table WS2. This is £396 million, slightly less than Ofwat's allowance.

So, we consider that in true base costs, following the above logic, our cost allowance from Ofwat in the draft determination is aligned with our business plan and that – as a result – it is efficient on base costs.

So, we can accept this cost allowance of £399 million for base costs, subject to our assessment of the above base cost allowance being correct. We now urge Ofwat not to change this base cost allowance at the final determination, so that we can focus on our other issues. In addition, any further changes would be unsighted to us until final determination, giving us no opportunity for further representations to Ofwat. We reserve the right to make future representations on the cost models should Ofwat make any changes in our final determination.

## 6.3 New development cost allowance

Up to this point, we are disappointed with Ofwat's process for new development cost allowance. It appears to us that Ofwat has not yet coherently joined up the cost side, the contribution side, the link to the forecast of new connections, the proportion of self-lay, and the link to the degree of network reinforcement within companies' proposed costs. These all impact the gross costs, recovered costs and unit rate. There have been clear differences in the way companies report costs in this area – for example, with some reporting net rather than gross, and some reporting extensive

new development opex when the majority capitalise. At the time of writing, this area remains very unclear, and this makes it difficult to focus our representations back on the modelling and process issues. So we have focused specifically on our costs.

As we explained in section 6.2 above, we have taken Ofwat's draft determination view of our new development and new connections cost allowance from the grants and contributions model. On sheet 'G&C Water', lines 69 and 74 show our cost allowance is £26.2 million in total, which is what we have used to back calculate our base cost allowance. As this is derived from the models, we can presume this uses Ofwat's projection of new connections of 20,409, which is the forecast derived from ONS data and is far lower than our original business plan forecast of 41,049. We explain why we think that Ofwat's projection is unrealistic in chapter 3.

We consider that the new development costs need to be unbundled from base costs at this stage in the process because of the uncertainties in the modelling and the need to focus in on the cost allowance for new development at this stage in the process. We believe it is now appropriate to calculate the new development cost allowance using the combination of efficient unit rate and the number of new connections. This approach would avoid an issue we have observed in the models, where increasing the number of properties cost driver only provides for approximately one-third of the efficient unit rate, leading to underfunding of cost, which would also cause issues with the contributions we would receive during the period. An appropriate true-up mechanism, which we also discuss in chapter 3, will ensure the efficient unit rate is also applied to any differences to this forecast over the period.

In our updated totex submission as set out in tables WS1, WS2 and the developer services template, we have calculated the developer costs starting with our April submission, adjusting for a forecast of 30,000 connections (see chapter 3 for our justification) and then applying a 6% efficiency as set out in Ofwat's 'Supplementary information in relation to developer services and grants and contributions' sent to companies on 13 August 2019.

A breakdown of the revised cost allowance we have submitted is set out below, accounting for the split between our own connections (72% of the activity) and self-lay connections (28% of the activity). Total gross new development costs are £41.5 million and the average unit cost we incur from the connection activity we undertake is £1,801.

Figure 5 Revised cost allowance

Gross Expenditure (£m)	WS2 table reference	2020-21	2021-22	2022-23	2023-24	2024-25	Total	Number of connections	Unit rate (£k)
Network reinforcement	Line 11	1.467	2.235	2.758	1.684	1.729	9.872	30,000	0.329
Connection charges	Line 12	3.217	3.212	3.198	3.203	3.199	16.028	21,461	0.747
Mains requisitions	Line 11	3.123	3.117	3.104	3.108	3.105	15.557	21,461	0.725
<b>Total Gross Developer costs</b>	<b>Sum of lines 11 and</b>	<b>7.807</b>	<b>8.564</b>	<b>9.059</b>	<b>7.996</b>	<b>8.032</b>	<b>41.457</b>		
<b>Unit rate for company connections</b>									<b>1.801</b>

A breakdown of the revised level of contribution associated with these costs is shown below. Note that the income offset is the sole factor in why the level of contribution is not 100% and Ofwat should be fully aware that this is correct.

Figure 6 Contributions associated with revised cost allowance

Contributions (£m)	App 28 table reference	2020-21	2021-22	2022-23	2023-24	2024-25	Total	Number of connections	Unit rate (£k)
Infrastructure charges before income offset	Line 6	1.467	2.235	2.758	1.684	1.729	9.872	30,000	0.329
Income offset	Line 14	-3.395	-3.395	-3.395	-3.396	-3.395	-16.977	30,000	-0.566
Infrastructure charges after income offset	Line 8	-1.929	-1.160	-0.638	-1.711	-1.667	-7.105	30,000	-0.237
Connection charges	Line 7	3.217	3.212	3.198	3.203	3.199	16.028	21,461	0.747
Mains requisitions	Line 9	3.123	3.117	3.104	3.108	3.105	15.557	21,461	0.725
<b>Total developer contributions</b>	<b>Sum of lines 7 to 9</b>	<b>4.411</b>	<b>5.168</b>	<b>5.664</b>	<b>4.600</b>	<b>4.636</b>	<b>24.480</b>		
Unit revenue									<b>1.235</b>

## 6.4 Other enhancement cost allowance

Ofwat's views on our other enhancement expenditure are transparent because it has used theme-specific forms of assessment, including bespoke models and deep dives. Our representations on leakage are covered in chapter 5, and our additional evidence for other themes of enhancement is covered in chapter 7.

We support Ofwat's separation of other enhancement costs as it allows us to clearly see which elements of funding have been allowed. We expect to see continued separation in the final determination.

## 7. Further evidence on other enhancement costs

### Key points of this chapter

- As at the IAP, Ofwat has used a combination of methods to assess our submitted wholesale enhancement costs in generating the draft determination outcome. The general approach has remained the same in terms of using deep and shallow dive assessments, along with benchmarking business plan and historical data. But we note some significant changes since the IAP to the methodology Ofwat has used to assess specific enhancement costs – most notably in terms of resilience and investment to address raw water deterioration. It should be noted that our representations in relation to leakage and enhancement opex costs are covered in chapters 5 and 6, respectively.

### Our proposed resolution

- We set out extensive supporting evidence both in this chapter and in appendices 3 and 11 to 15 to address Ofwat's challenges, with specific focus on deep dive gateway assessment criteria around the need for the investment being proposed, and evidence of associated optioneering and robust and efficient costs.
- We address specific requirements driven by changes to the assessment methodology for resilience since the IAP, in section 7.1 and appendix A3.1. We also make a representation in relation to the assessment of the scheme-specific enhancement opex of £2.1 million for our investment to address raw water deterioration in section 7.3.3.
- We now include costs for our Amber WINEP schemes (section 7.5 and appendix A3.5) as part of our draft determination response to the programme. These costs were not previously included in our September and April submissions. We set out details of a cost adjustment mechanism that protects our customers should additional research suggest the schemes are not required in-period. Since our April submission, we have scrutinised potential requirements and worked with both the Environment Agency and framework consultants to provide more certainty on both scope and costs of the schemes we put forward.
- We set out expenditure in section 7.6 previously included in both our September and April submissions, that we are now not including in our response to the draft determination. We consider that this spend will still be incurred in AMP7.

Table 17 below shows a breakdown of those enhancement cost categories for which we are providing additional information to address Ofwat's assessment of our submitted costs in the draft determination. It details the variance between our view and Ofwat's allowances since our September submission and, in the far right-hand column, confirms the final costs we are submitting in this draft determination response.



Response to Ofwat's draft determination on our business plan for 2020 to 2025  
South Staffs Water (incorporating Cambridge Water)

Table 17 Summary of submitted costs compared with Ofwat's allowances from September 2018 to draft determination

			£m 2017/18 CPIH					
Enhancement cost category	Section within chapter	Appendix	South Staffs submitted gross costs Sept 2018	Ofwat IAP gross allowance	South Staffs submitted gross costs April 2019	Ofwat DD* gross allowance	Variance between April 2019 resubmission and DD allowance	South Staffs DD response resubmitted costs
Resilience	7.1	A3.1	4.1	3.9	4.1	0.4	-3.7	4.1
Improving taste/odour/colour (cost adjustment claim)	7.2	A3.2	74.4	55.4	74.4	62.9	-11.5	68.4
Investment to address raw water deterioration	7.3	A3.3	13.8	6.5	15.9**	10.7	-5.2	15.9
WINEP Eels Regulations	7.4	A3.4	2.9	2.3	2.9	1.9	-1	2.9
NEP Water Framework Directive	7.5	A3.5	1.6	1.5	1.6	1.5	-0.1	3.1***
Leakage enhancement (within supply/demand enhancement category)	Covered in chapter 5		9.5	3.4	10.3	0	-10.3	10.3
Total			106	73	109	77	-32	105

\* DD = draft determination.

\*\* Model at draft determination includes scheme-specific enhancement opex of £2.1 million.

\*\*\* Includes new Amber WINEP scheme costs, not previously submitted, at £1.5 million.

## 7.1 Resilience

Below we set out below our supporting evidence to address the challenges around our resilience totex submission. We note Ofwat's change to the assessment criteria being used within the deep dive model, and provide summary evidence below and further detail in appendix A3.1, that demonstrates how our proposed investment for resilience meets all the new and existing assessment criteria for the specific gateways within the deep dive model.

Table 18 summarises the specific schemes that have not been allowed in the draft determination – that is, it excludes the allowance of £400,000 made for power resilience, which has already been accepted by Ofwat in the draft determination. We address these schemes in detail in appendix A3.1. **It should be noted that the operational resilience scores in our resilience action plan submitted on 22 August 2019 assume the delivery of these schemes.**

Table 18 Enhancement schemes not allowed at draft determination

Scheme		Cost (£k 2017/18 CPIH)
Network resilience	Norman Road	69
	Town Gate duplication	445
	All Saints Way	1003
	Bourn Tower	410
	Caxton Gibbet to Papworth	468
	Lammas Crossing	0*
Borehole resilience	Fleam Dyke borehole	612

\* Scheme removed following scrutiny against Ofwat's refined assessment methodology with expert stakeholders.

In our September submission, we evidenced our approach to efficient delivery of wholesale capital expenditure in section 6.3. **Within this, in section 6.3.1.3, we outlined the specific efficiency for wholesale capex to which the costs in the above table have been subject.**

### 7.1.1 Need for investment and management control

Following extensive further internal review and analysis of the schemes being proposed, we provide evidence to address the need for the quantification of probability and consequence of failure the proposed investment will mitigate. This evidence, set out in detail in appendix A3.1, has been derived through:

- **hydraulic modelling scenarios**, in addition to those carried out previously, to refine our outputs and give us an understanding of the impacts of the schemes on our performance commitments and ODIs. The hydraulic models were initially built and calibrated using flow and pressure data by Atkins, and are now being maintained through an internal rolling programme to ensure they remain representative of our network. In addition, the outputs of modelling scenarios were used in generating part of

our proposed investment programme in AMP7, with the approach to producing this programme assured by Jacobs prior to our original submission;

- **historic failure data**, including evidence of service level impacts from asset failure since our September submission for our proposed Norman Road scheme;
- **mass balance zonal analysis of our Cambridge region** to enhance our understanding of the consequence of failure;
- additional scrutiny of the schemes based on the above, which has resulted in us accepting **Ofwat's challenge that a specific scheme in our Cambridge region (Lammas Crossing) does not meet the assessment criteria**. So we have removed it from our submission; and
- **detailing those specific factors that demonstrate that the cause and associated consequence of failure are beyond management control**. We proactively maintain our network assets and look to understand condition and performance where we can – for example, through surge analysis. These activities drive our base maintenance programme; but there are factors for which we cannot always account, such as ground movement, third party damage, traffic loading and temperature fluctuations. So the residual risk post-maintenance is considered to be of outside management control.

### 7.1.2 Best option for customers

We have enhanced our supporting evidence to demonstrate that our proposed investment represents the best option for customers. We have done this by:

- providing further evidence around the optioneering process for each scheme, demonstrating the consideration of alternative solutions to address specific needs and the comparative benefits of each; and
- detailing how our cost-benefit analysis (CBA) approach, based on risk to service impact, has been used to assess each scheme and the results used to inform our decision making. We have combined the outputs of our CBA with additional stakeholder review to ensure a thorough understanding of all aspects of each solution are assessed – for example, in terms of potential impact on performance commitments and ODIs, and the operational risk of delivering specific schemes.

### 7.1.3 Robust and efficient costs

Below we present robust and efficient costs for the schemes being proposed. These have been benchmarked against similar schemes delivered and competitively priced by our framework partners during the current period. The framework itself was established following an EU-compliant competitive process completed during 2015.

We continue to monitor performance and value provided by framework contractors and direct labour by allocating a proportion of work (approximately 60%), and by asking all parties to submit prices within mini-tenders for the remainder. We continually monitor the performance of all providers against an extensive suite of key performance indicators on a monthly basis (including cost on comparative jobs). This is primarily to drive continuous improvement, but also provides assurance in demonstrating value for money.

In addition, we are consistently reviewing best practice across the sector and innovative solutions to ensure that we deliver best value for our customers.

In our September submission, we evidenced our approach to efficient delivery of wholesale capital expenditure in section 6.3. **Within this, in section 6.3.1.3, we outlined the specific efficiency for wholesale capex to which our resilience scheme costs have been subjected.**

## 7.2 Improving taste, odour and colour – cost adjustment claim

In this section, we set out our representation on the £4.2 million trunk mains cleaning element of our cost adjustment claim. We also provide more clarity on a £1.15 million cost discrepancy noted in Ofwat's deep dive assessment of our claim.

### 7.2.1 Trunk mains cleaning

Within its assessment of our cost adjustment claim in the draft determination, Ofwat stated that it did not find sufficient evidence about why our proposed trunk mains cleaning costs of £4.2 million, associated with delivering the benefits of the investment in our Hampton Loade and Seedy Mill water treatment works, should not form part of our base expenditure allowance. We have provided more information about why they are outside of our base operating costs and should be considered as part of an overall enhancement investment, necessary in delivering a step change in service to our customers.

We consider our ongoing trunk mains conditioning programme as forming our base maintenance strategy to ensure we are able to be as operationally flexible in terms of managing changing flow regimes within certain key strategic mains. This has been guided by our involvement with the Prediction and Control of Discolouration in Distribution Systems (PODDS) research programme, drawing on the expertise of the University of Sheffield, with input from various water companies across the sector. Mains conditioning is widely recognised in the sector as an effective method of reducing the potential of trunk mains to cause discolouration – the principal cause of which is the layers of fine, cohesive sediments that build up over time are disturbed by a sudden increase in flow, which causes these layers to be eroded under increased shear force. The purpose of mains conditioning is to gradually remove these sediments by slowly increasing flow until a desired flow limit is achieved, while not allowing turbidity to reach a level that is perceptible to customers.

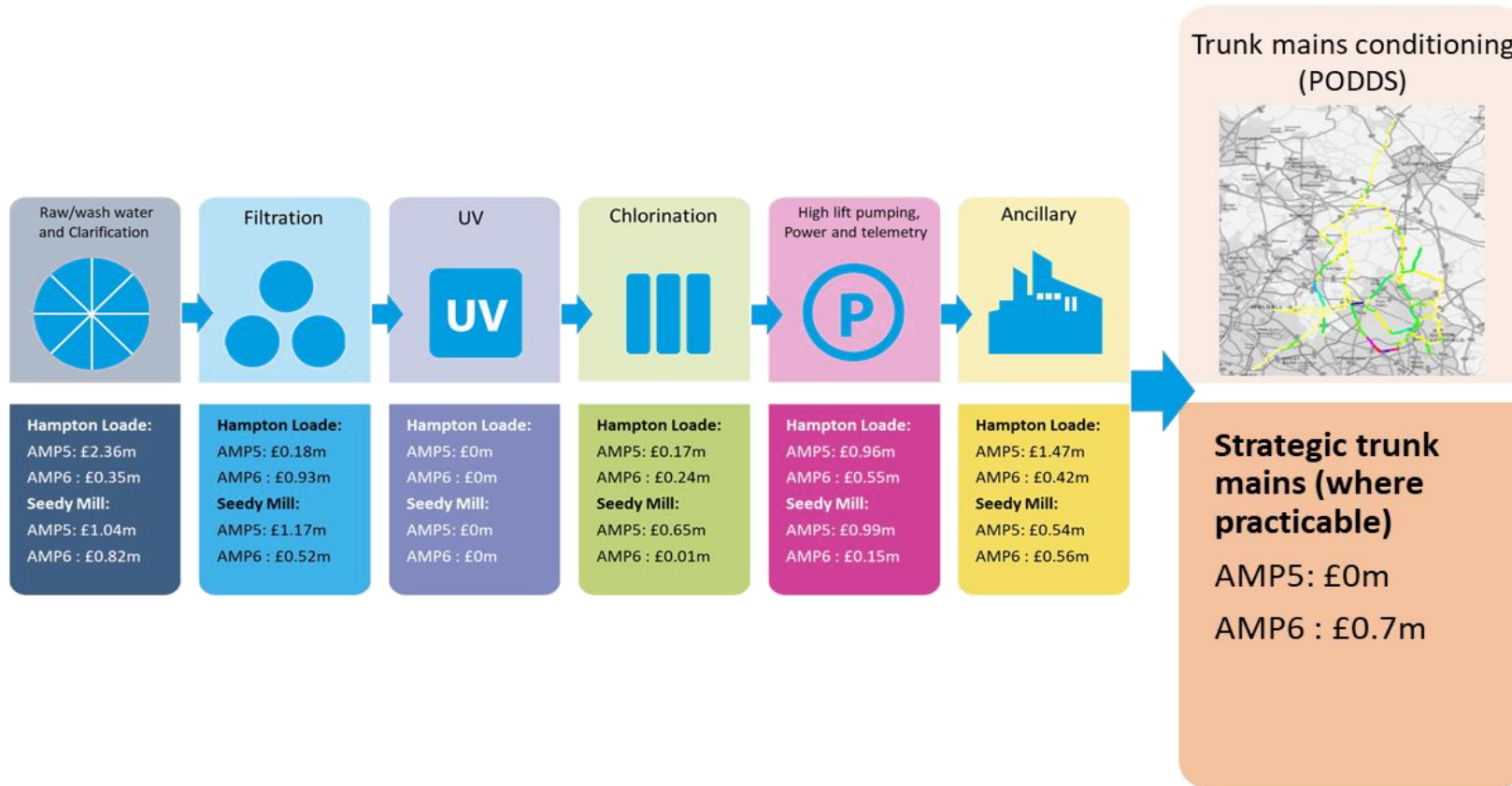
At a cost of around £700,000 and covering 104km of trunk mains in AMP6, this mains conditioning technique has become established practice at South Staffs Water to reduce the risk of customers receiving discoloured water. In appendix A3.2, we use a series of graphs to illustrate the impact of pre- and post-mains conditioning on our network.

In figure 6 below, we illustrate the six treatment stages at our water treatment works, and the associated ongoing base maintenance costs at each in both AMP5 and AMP6. (Full details on this can be found in section 1.1 of [appendix RA03](#)<sup>20</sup> to our April submission). We have expanded the section on the far right-hand side of the infographic to highlight the role of the trunk mains conditioning (PODDS) programme to be an equivalent critical base maintenance activity in ensuring we maintain our current level of service in terms of operational flexibility and from a water quality perspective. The trunk mains cleaning investment we are proposing does not sit within this ongoing base maintenance activity.

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<sup>20</sup> 'Appendix RA03: Addendum to original appendix A33 – cost adjustment claim', South Staffs Water, April 2019.  
[www.south-staffs-water.co.uk/media/2570/ra03-addendum-to-appendix-a33-cost-adjustment-claim.pdf](http://www.south-staffs-water.co.uk/media/2570/ra03-addendum-to-appendix-a33-cost-adjustment-claim.pdf)

Figure 6 PODDS trunk mains conditioning programme aligned with base water treatment works maintenance activity



But PODDS is limited in both its:

- applicability to all key strategic mains (that is, those we cannot adequately control as part of a staged flow increase); and
- effectiveness (that is, it will not deliver the level of sediment removal required to deliver the proposed benefits of our investment at our Hampton Loade and Seedy Mill water treatment works)

Indeed, in certain situations beyond our control – for example, trunk mains failure or fire demand – the flow and velocity variance coupled with the level of built-up sediment are such that discolouration events have occurred (as highlighted in section 1.2 of appendix RA03). In general, it is not within the scope of mains conditioning to protect against such events, merely to provide a degree of mitigation; indeed, there may not be the means to generate such flows without adversely affecting customers. So, some customers may still receive discoloured water during an exceptional event even though we have carried out the mains conditioning.

The trunk mains cleaning activity we are proposing will represent a step change from this base maintenance to the extent we have so far invested in the PODDS conditioning programme. We have identified this physical cleaning of strategic mains as critical to delivery of the benefits of our water treatment works investment. Mains cleaning is invasive; it involves significant expenditure, operational risk and disruption to the network on a scale where it is unlikely to be repeated on a regular basis. Mains conditioning, on the other hand, is intended to be low impact and can be repeated with limited resource. Mains cleaning also differs from mains conditioning in that it seeks to completely remove sediments, offering negligible risk of discolouration under most circumstances, whereas mains conditioning seeks to reduce sediments to a 'background' level, offering minimal risk while flow remains within a set limit. The latter is not seen as an acceptable option in terms of delivering the step change in service to our customers through our investment at our water treatment works.

To ensure our customers receive the full benefit of this investment, we will have to use different techniques in a number of situations to achieve the level of cleansing required. These techniques potentially include:

- physical 'swabs';
- 'ice plugs';
- jetting;
- air scouring; and
- re-lining.

Ice pigging is a process in which an ice slurry is pumped into a water pipe and forced along it to remove sediment, leaving it clean. Air scouring involves using a mixture of compressed air and a controlled volume of water to create a vortex that travels through a section of pipe, removing any sediment or other deposits. Introducing an additional filtration stage at both treatment works will significantly reduce the build-up of sediment within our strategic trunk mains. Specifically, it will reduce the amount of aluminium, manganese and iron leaving both works. So there is a benefit in removing all the historic sediment that have settled in the strategic trunk mains as this can lead to discolouration. We know from our engagement that this is unacceptable to customers.

By way of conclusion, we reference an email sent by David Young at Ofwat in November 2017 (included in full in appendix 10), as part of the Cost Assessment Working Group correspondence, providing clear definition as to what constitutes base and enhancement costs. (Emphasis is ours.)

- Base expenditure is required to maintain the **current** (most recently established base) level of service to customers.
- Enhancement expenditure is generally where there is **a permanent increase or step change in the current level of service to a new “base” level** and/or the provision to new customers of the current service level.
- Examples of expenditure we would expect companies to categorise as enhancements include: **where expenditure provides an identifiable, measurable and permanent step change in overall level of service to existing customers above the standard previously provided.**

We relate the definitions above to the distinction between our base PODDs activity – that is, maintaining a level of risk of discolouration events our customers may experience, and proposed trunk mains cleaning costs that would enable the delivery of the step change in service from our water treatment works investment.

### 7.2.2 Cost discrepancy

In the draft determination, Ofwat challenged the discrepancy on the total gross value for the claim, evident in a table on page 8 of our April submission [appendix RA03](#)<sup>21</sup>. We have set this table out again below, to highlight that it is clearly labelled as being in the 2017/18 RPI price base. We did this to allow ease of comparison between the table on page 50 of [appendix A33](#)<sup>22</sup> of our September submission – that is, to show the trunk main cleaning costs had been transitioned from opex to capex. Both tables are clearly stated in 2017/18 RPI. The total gross cost in both is £73.2 million. We uplift to 2017/18 Consumer Prices Index (CPIH) as required by Ofwat's methodology, resulting in a £1.15 million increase to the £74.35 million stated in our business plan tables and elsewhere within supporting commentary in both our September and April submissions.

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<sup>21</sup> 'RA03 Addendum to Appendix A33 – Cost adjustment claim', South Staffs Water, April 2019. [www.south-staffs-water.co.uk/media/2570/ra03-addendum-to-appendix-a33-cost-adjustment-claim.pdf](http://www.south-staffs-water.co.uk/media/2570/ra03-addendum-to-appendix-a33-cost-adjustment-claim.pdf)

<sup>22</sup> 'Appendix A33 – cost adjustment claim', South Staffs Water, September 2018. [www.south-staffs-water.co.uk/media/2331/appendix-a33-cost-adjustment-claim-final-submission.pdf](http://www.south-staffs-water.co.uk/media/2331/appendix-a33-cost-adjustment-claim-final-submission.pdf)

Figure 7 Table from page 8 of appendix 'RA03 Addendum to Appendix A33 – Cost adjustment'

(£m 17/18 RPI price base)	2020/21	2021/22	2022/23	2023/24	2024/25	Net Total (gross)
<b>Seedy Mill Treatment Works</b>						
SMTW – 2 <sup>nd</sup> Stage Filtration capex	10	10	10			30
SMTW Additional opex due to increase pumping head			0.33	0.33	0.33	1
<b>Hampton Loade Treatment Works</b>						
HLTW – 2 <sup>nd</sup> Stage Filtration capex	8.5 (12)	8.5 (12)	8.5 (12)			25.5 (36)
SMTW Additional opex due to increase pumping head			0.66	0.66	0.66	2
<b>Trunk Mains cleaning</b>						
Trunk Mains cleaning capex (inc. enabling works)	0.4	0.4	1.4	1	1	4.2
<b>Contributions</b>						
Total Contribution	3.5	3.5	3.5			10.5
<b>Net Totals</b>						
Total Capex	18.9	18.9	19.9	1	1	59.7
Total Opex			1	1	1	3

Note: This table does not now reflect our representations in response to Ofwat's draft determination. It is shown only to address the challenge made on the £1.15million discrepancy in the draft determination deep dive assessment.

## 7.3 Investment to address raw water deterioration schemes

Below we set out our supporting evidence on the challenges around our totex submission to address raw water deterioration. We provide evidence here and in appendix A3.3 that demonstrates how our proposed investment for raw water deterioration meets all the assessment criteria for the specific gateways within the deep dive model. We do not include our catchment management scheme at £1.4 million, as this has been allowed in full in the draft determination.

Table 19 New treatment works investment location, costs and deployable output

Enhancement cost category		Schemes	Capital costs Costain pre-efficiency (Cell C99) (£)	Capital costs Costain 10% efficiency (£)	WRMP 2019 DO* (MI/d)
Investment to address raw water deterioration	New treatment at groundwater sources	Ashwood	£5.0m	£4.5m	18
		Cookley–Kinver	£4.5m	£4.1m	18 Cookley 9 Kinver **
		Somerford–Slade Heath	£4.2m	£3.8m	6.5
Total net			£13.7m	£12.4m	



\* WRMP 2019 dry year annual average and critical period deployable output (DO).

\*\* Kinver is part of a group licence arrangement and there is spare capacity so that, at times, this site can pump up to 14ML/d into supply.

### 7.3.1 Need for investment and management control

As well as the evidenced DWI support already submitted as part of the need for this investment, we have also carried out the following detailed analysis.

- We have **further analysed raw water quality data** to generate future forecasts of nitrate levels.
- We have **developed a blend model** at to identify the robustness of our existing blending arrangements, forecasting when water in distribution would breach specific water quality parameters based on the raw water quality predictions. We also used this model to clearly demonstrate the constraints and failings of a blending solution and to provide a measure of what additional investment may look like if blending were to be considered as a long-term mitigation. This blend model has been included in appendix 16.

### 7.3.2 Best option for customers

In appendix A3.3, we provide evidence of the consideration we have given to alternative treatment solutions, including significant detail on why these are not the best options for our customers. Likewise, we have also outlined the options for specific types of treatment processes to address the issues of Chlorthal in some of our groundwater sources. This evidence includes:

- **independent third party consultant assessments and analysis** to demonstrate that catchment management is not a viable alternative solution to address the nitrate issues;
- **costs provided in a CBA exercise** carried out in 2015 by engineering contractor IMTECH for alternative Chlorthal treatment processes, which were reviewed in scheme selection (see appendix 17). Updated opex costs, analysed in 2018/19 based on current ongoing pilot trials demonstrate that, at this time, ion exchange is the more cost-effective option when compared with granular activated carbon (GAC);
- **a report from WRc** ('Assessment of treatment options for removal of Chlorthal from groundwater'), is now also provided in appendix 12. The report outlines alternative treatment processes to address our Chlorthal issue and concludes that our chosen form of treatment process of ion exchange is the most promising process for application at our Slade Heath groundwater source;
- **our endorsement of ion exchange** as also being the optimum solution based on our current experiences of treating Chlorthal through an ion exchange plant at our Pipehill source; and
- **the range of flows to be treated at each of the identified groundwater sites**, as summarised in table 19 above, to provide some context in terms of the scale, scope and relative costs of the respective treatment plants. These flows align with our WRMPs (dry year annual average and critical period) data and also with historic peak flow data.

### 7.3.3 Robust and efficient costs

Our engineers have worked closely with Costain in the development of both the scope and the costs for ion exchange treatment at our Ashwood, Cookley–Kinver and Somerford–Slade Heath sites.

We consider that through competitive tendering, a strong procurement process and serving economies from packaging these schemes, we can deliver them more efficiently. Costain's original costing for the three sites were £13.7 million and we have applied an efficiency reduction of 10%, which once applied results in a cost of £12.4 million for the three sites. The cost for each site is set out in the table below. **As additional evidence for the robustness of these costs, we have previously supplied the three Costain reports as a sub-appendix in RA02.1<sup>23</sup> of our April submission, and specifically cell C99 for each site breakdown.**

#### 7.3.3.1 Enhancement opex for these schemes

Ofwat has disallowed £2.1 million of enhancement opex which is for the step change in power and treatment costs related to these schemes, on the basis that the treatment complexity cost driver in base models implicitly includes this enhancement opex. We disagree with this for two reasons.

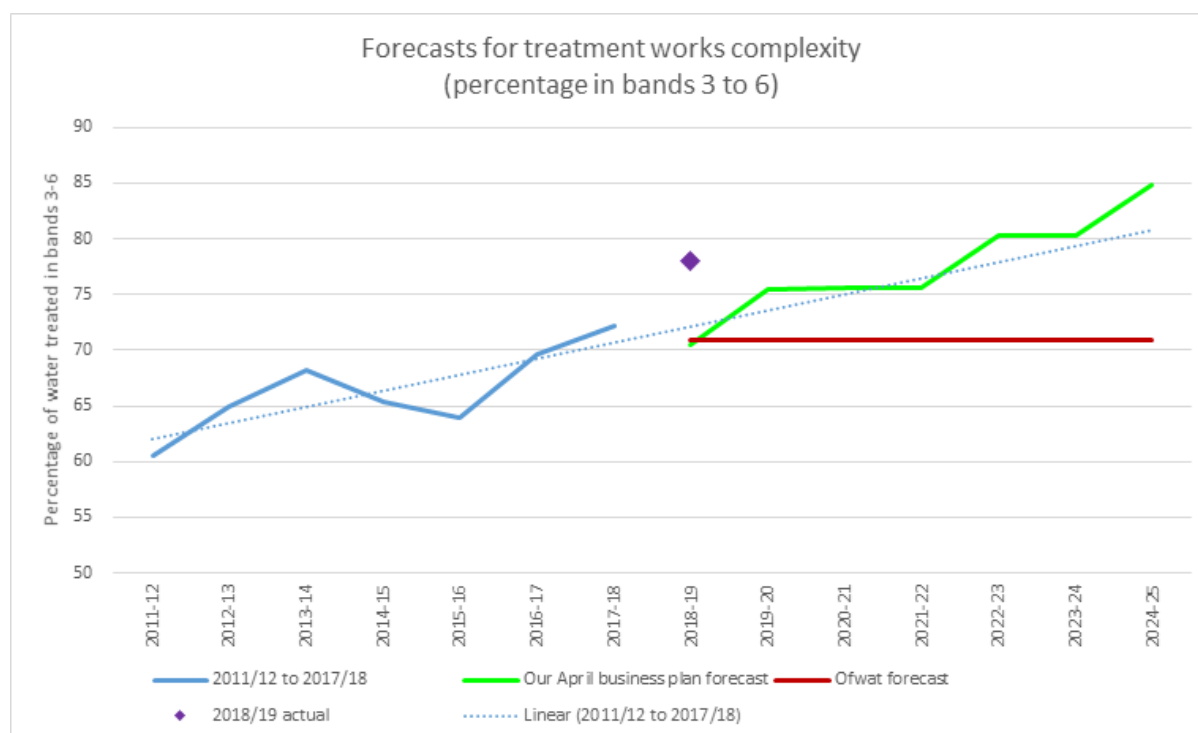
- First, Ofwat has calculated a view of enhancement opex implicit allowance, and deducts it from our allowed costs on the basis that enhancement opex is explicitly allowed against specific schemes as required.
- Second, Ofwat has used its own forecast for the treatment complexity cost drivers in the base models, that, as we commented in our April submission, significantly understate the future level of complexity. By using its own forecast, Ofwat assumes that complexity stays at the same level as now, and thus future opex increases cannot be implicit.

The chart below shows our treatment complexity historically, our forecast, and Ofwat's forecast. Ofwat's forecast used an average of the most recent years (either two or three depending on the cost driver) which does not take account of the clear upwards trend in this cost driver. We also show the 2018/19 data point, an increase which supports the fact that there is an upwards trend in this measure. As per our query response for IAP query SSC-APR-CA-003, we have confirmed that this increase reflects a change in the way we account for Hampton Loade, increased demand in the year and increases in the level of complexity because of recent treatment process upgrades.

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<sup>23</sup> 'RA02 Costain pre-PR19 pricing – new treatment at Kinver, Slade Heath and Ashwood', South Staffs Water, April 2019. [www.south-staffs-water.co.uk/media/2565/ra02-addendum-to-appendix-a29-wholesale-water-enhancement-cost-allowance.pdf](http://www.south-staffs-water.co.uk/media/2565/ra02-addendum-to-appendix-a29-wholesale-water-enhancement-cost-allowance.pdf)

Figure 8 Forecasts for treatment works complexity



We do not understand why Ofwat would so significantly understate the above trend in its forecasts given the degree of evidence that our forecast is reasonable, based not only on the historic trend but also the upgrade schemes we have obtained funding for in the business plan. However, we have outlined in chapter 6 that our base costs are satisfactorily funded. **So, we consider Ofwat should, if it will not increase the forecast of this cost driver, allow the £2.1 million enhancement opex that is specifically required for the raw water deterioration schemes.**

## 7.4 WINEP Eels Regulations

Ofwat has allowed £1.9 million of our submitted costs of £2.9 million that we believe are necessary to comply with Eels Regulations. The challenges around our submitted costs can be defined in terms of:

- the uncertainty around the proposed schemes having WINEP drivers (as they are not all visible in the Environment Agency's WINEP3 table);
- confirmation that our optioneering was robust in proposed solutions addressing the specific WINEP drivers; and
- also clarity around any contribution from Severn Trent Water regarding work carried out at our Hampton Loade water treatment works.

Below we set out our representations that address these challenges and resubmit our costs at the original value of £2.9 million on this basis.

Most (£2.6 million) of the £2.9 million submitted for us to become compliant with Eels Regulations is allocated to four projects originally referenced in the Environment Agency's AMP6 NEP5 table. **It is important to note that while these schemes are referenced in this NEP5 table, and coded as 'E1' – that is, for implementation in AMP6 – the delivery date for all four is March 2021.**

Table 20 below outlines the locations for installing the screens or alternative measures.

Table 20 Location of schemes to install screens/alternative measures in NEP5 with March 2021 completion dates

Scheme	Environment Agency no.
Hampton Loade 1	6SSWEels01
Hampton Loade 2	6SSWEels02
Blithfield	6SSWEels03
Nethertown Blithe intake	6SSWEels04

As outlined in figure 9 below, our proposed AMP6 funding was £138,000 for investigative and feasibility works associated with these schemes, as there remained significant uncertainty over compliancy requirements at the time. **In the interests of our customers, we did not want to put forward potential expenditure of several million pounds without a level of certainty around what was needed.**

Figure 9 Summary of proposed investment in our PR14 business plan

#### 10.7.4 Fisheries NEP

Some requirements around the Fisheries NEP remain uncertain and therefore the Business Plan submission allows for continued study with the objective of clarifying requirements and identifying measures for solutions should they still be required to be implemented early in AMP7 but still within the present River Basin Management Plan cycle.

The potential expenditure in this area at AMP7 could be several £m. The Company is working closely with the Environment Agency to identify innovative and cost beneficial ways to meet the Eel Regulation requirements and to manage the impact on customer bills.

#### 10.7.5 Summary of AMP6 NEP Investment

Scheme	AMP6 Investment
Fisheries NEP	£0.138m
Water Resources NEP	£3.683m
Water Quality NEP	£1.242m
	<b>£5.062m</b>

To be certain, this AMP6 provision has been used to undertake investigation and specification for work to provide an optimised solution, with expenditure associated with this implementation to be included in AMP7, per the March 2021 completion date.

As these four schemes in question are not visible in the WINEP3 table for AMP7, Ofwat has queried the drivers behind the scheme as being outside of NEP requirements and reduced the allowance on this basis. **We have communicated this to the Environment Agency, which has agreed to amend the WINEP3 table to include these schemes as AMP7 implementation (WINEP code EE-IMP), maintaining the original completion date of March 2021. In addition, the Agency has agreed to update the NEP5 table to show them as now having a code of 'E2' – that is, they are investigative works. We include the confirmation email from the Environment Agency, in appendix A3.4.1, as evidence of this change.**

We include a full breakdown table in appendix A3.4 of both the schemes transitioning into the WINEP3 from NEP5 as outlined above, and also those existing in the WINEP3 table already. This evidences the generation of costs and scope of works through engagement with specialist framework contractors and a full competitive tendering process. For clarity, one of these schemes (6SSWEels03 – Blithfield reservoir screens) is subject to investigation and expected not to be required. We have removed it on this basis. **It should also be noted that the Severn Trent Water contribution of £576,000 is referenced against the Hampton Loade scheme 6SSEels01 to be included in line 21 of table WS1 (grants and contributions for water resources investment).**

The scoping study report, 'RA02.3 APEM – SSW Eels Regulation Intake Screening and Passage Specification', produced by APEM in April 2018 through our Hydrological Framework, outlines locations to be considered screening specification requirements and potential solution options to ensure compliance with regulations as required by schemes considered within WINEP3.

## 7.5 NEP Water Framework Directive – Amber WINEP schemes

In this section, we provide our final position on our Amber WINEP water resources schemes.

In our response to Ofwat's query of 7 November 2018 (SSC-IAP-CE-003), we stated that we viewed the Amber schemes as too uncertain to enable us to develop scope and costs. In our April submission, on page 16 of 'RA02 Addendum to Appendix 29 – Wholesale water enhancement cost allowance', we responded to Ofwat's IAP action SSC.CE.A2, by saying that:

“...we have not made an allowance in our business plan for the Amber WFD water resources schemes.”

But on the same page, we also said that we would:

“consider our position over the coming months as we gain more certainty around our requirements.”

Since then, we have considered our position carefully and worked in full collaboration with the Environment Agency. **As a result, we now intend to make provision for both Amber and Green WINEP schemes within our business plan.** To provide an example of the dialogue we have had with the Agency, on 23 May 2019 our Managing Director, Phil Newland, responded to the letter from Mike Grimes (Environment Agency West Midlands Area Director) dated 15 April 2019 and signalled our intention to include a cost adjustment in our post-draft determination submission. In his reply, Phil stated that this will:

“more fairly share the risk of expenditure between ourselves and our customers.”

This is set out in more detail in appendix A.3.5.1. Since 1 April 2019, we have engaged with numerous teams from the Environment Agency, through face-to-face meetings, teleconferences and email exchange to reach our current position. Most recently, following a meeting with the Agency on 29 July 2019 at our Walsall head office, Felicity Miller (the Environment Agency's Principal Account Officer for South Staffs Water) emailed us on 1 August to support our intention to pursue a cost adjustment mechanism to fund the Amber WINEP schemes. This is set out in appendix A3.5.2.

### 7.5.1 Best option for customers and the environment

We note that there still remains some uncertainty associated with these schemes and we will continue to deliver all that we can at these sites before 31 March 2020. During our engagement with the Environment Agency, we have compared current progress against stage plans and NEP5 itself. In addition, our framework consultants have carried out CBA and other technical reports providing more scheme-specific detail, which we have shared with the Environment Agency. As a result, we are firm in our belief that the costs needed in AMP7 for the Amber schemes in our South Staffs region will be significant. Because the potential cost associated with all nine schemes is £1.5 million, this is material and should be included within our plan to ensure all of our environmental obligations are funded. We are not making provision for the single Amber scheme at the Horseheath site in our Cambridge region because we do not expect there to be any material AMP7 expenditure associated with this site.

### 7.5.2 Robust and efficient costs

The cost estimates that we have used for our environmental schemes have been produced on the basis of the best currently available information. For Amber WINEP schemes, costs have been generated based on estimates from framework consultants and NEP work carried out in AMP6 that was procured on a competitive business. We have also considered cross-sector cost information where applicable.

As such, the costs set out in appendix A3.5 are based on in-house expertise supplemented by specialist consultancy services, specifically Stantec/APEM from our hydro-ecological contract.

### 7.5.3 Customer protection

To protect customers, we have assessed the potential work required for each site and produced cost estimates on a scheme-by-scheme basis. **This means that, if we do not require any of these schemes, then the investment associated with that specific scheme or schemes will be returned to customers through an adjustment at the end of the control period.** The table in section 7.6 below sets out the scheme-specific costs that we are now including in our business plan as unit rates.

### 7.5.4 Potential Amber WINEP expenditure not included

As we have outlined above, in our customers' interests, we have included only those efficient costs identified from our investigations over which we now have more certainty. The costs set out in appendix 3.5 do not include any replacement of deployable output (DO) beyond what we have included in our WRMPs. This analysis made provision for some sustainability reductions of 6MI/d. This is the level of DO reductions that we consulted on publicly and that we have made appropriate provision for in our business plan.

On 2 August 2019, the Environment Agency informed us that it would write to Defra, giving its view on whether our WRMPs are now ready to be published as final plans. Although we do not know what the Agency will recommend, we provided the extra information it requested on 5 July 2019 and are not aware of any outstanding queries that still have to be addressed. So, our working assumption is that there will not be any reductions to DO beyond what we are currently planning for. Should the loss of DO be greater than what we have in our WRMPs and should this trigger the need for future additional supply, demand or regional transfer options, we will seek funding for these at PR24.

The costs in appendix 3.5 do not cover any expenditure to fund channel or pool re-lining. There is a possibility that this could be required for Rising Brook. But our ecological consultants, APEM, have told us that this is now not the preferred Environment Agency approach, except in last resort cases/short reaches. APEM have provided us with some cost estimates for channel relining which make reference to Environment Agency (with Defra, Welsh Government and Natural Resources Wales – NRW) 2015 guidance on cost estimation for channel management and NRW 2015 guidance on Natura 2000 in Wales: Costings for Terrestrial Actions. APEM has also sense checked these costs with the River Nith (in Scotland) clay lined river project which cost £3.3 million for 3km.

Because of the potentially large costs involved and the continuing uncertainty on the need for channel or pool lining, we will request funding for this, if required for Rising Brook, in our PR24 submission.

## 7.6 Enhancement costs not included in our representation

Below we set out expenditure previously included in both our September and April submissions, that we are now not including in our response to the draft determination. We consider that this spend will still be incurred in AMP7.

Table 21 Expenditure not included in our draft determination response

Scheme	Cost (£m 17/18 CPIH)	Cost allowance challenges based on:
Improving taste/odour/colour (cost adjustment claim)	6	Client risk Implicit allowance Company-specific efficiency adjustment
Metering	1	Changed modelling approach from IAP to draft determination
Lead	0.5	Changed modelling approach from IAP to draft determination



## 8. AMP7 financeability

### Key points of this chapter

- We believe that Ofwat's draft determination is not financeable under either the notional or actual structure.
- We believe that Ofwat's approach of not taking the £15 million developer services revenue adjustment into account when assessing our financeability artificially improves our financial metrics.

### Our proposed resolution

- Our analysis shows that our plan could be brought back into financeable status if Ofwat accepts the key representations set out in this document.

In the draft determination, Ofwat made a number of interventions which both directly and indirectly affect the financeability of our plan. Contrary to Ofwat's assessment of our business plan reflecting these interventions to be financeable under notional structure, we believe that it is not financeable either under notional or actual structure, as stated in the Board assurance statement.

In this chapter, we set out how we believe Ofwat's interventions in the draft determination should be interpreted in terms of financeability. We also set out how it could be brought back to a financeable plan by reflecting our overall representation on the draft determination.

### 8.1 Consideration of our key financial metrics

We use a number of financial metrics in assessing our financial resilience, including:

- cash generation;
- gearing;
- headroom in banking facilities;
- the forecast borrowing covenants (debt:RCV and Interest Cover Ratio);
- Funds from Operation (FFO)/Net Debt (a key metric for Standard & Poor's); and
- the Adjusted Interest Cover Ratio (AICR).

Maintaining a strong investment grade credit rating will enable the business to operate in a resilient manner and to raise the funds needed to finance our plan for the long term. It will also enable us to have access to the capital market and continue to raise funds at more favourable rates as assumed by Ofwat in our allowed level of return. And it is in our customers' interests.

We have our credit ratings assessed by Moody's and Standard and Poor's (S&P), which have particular metrics that are used as part of their assessment. Moody's considers the AICR and debt/regulatory capital value (RCV) as key metrics used to assess our credit rating. S&P assesses our credit rating with reference to FFO/Net Debt.

### 8.1.1 Moody's Adjusted Interest Cover Ratio (AICR)

Moody's calculation of AICR is similar to the Ofwat's calculated metric. The only difference is that the Moody's AICR excludes inter-company interest receivable. This means that the metric is lower than the Ofwat calculated AICR on the actual structure. But as there is no inter-company interest assumed, the two metrics are consistent in the notional structure.

### 8.1.2 Moody's debt:RCV ratio

Our investors, lenders and rating agencies assess our gearing based on our covenant debt (65.5% at March 2019) rather than book debt as used in financial statements and Ofwat's regulatory accounting guidelines – or RAGs (70.6%). In its latest credit opinion published in December 2018, Moody's referenced our "conservative gearing of 66%" and has confirmed in writing its use of our actual or covenant borrowings rather than the amounts included in the accounts.

Covenant net debt reflects the actual liability of the company to its lenders. For 2018/19, the difference between covenant and book net debt includes £11.6 million, which relates to the unamortised premium and costs on issuance of our debt. The remaining £7.7 million relates mainly to the difference in the long-term inflation assumption to maturity used for the book value of index-linked debt compared with the lower actual inflation rate that reflects the amount due to lenders and used for covenant reporting. We provide a full reconciliation between book net debt and covenant net debt on pages 149 and 150 of our latest [APR](#)<sup>24</sup>. We also included an extra column in table 4H (page 175) showing the financial metrics on a covenant basis and submitted a separate version of the Excel table.

In the draft determination, Ofwat has not accepted our proposed approach of using gearing based on covenant debt in relation to the gearing outperformance benefit sharing mechanism that it plans to introduce in AMP7. As we set out in detail in our April submission, we still believe that using covenant debt is more appropriate since it reflects the company's actual indebtedness (the amount we owe to lenders) more correctly than the book debt and as a result being referred by the lenders and rating agencies. To use the book (or accounting) debt would lead to the reporting of a higher level of gearing, which could impact on our credit rating. This could ultimately lead to new debt being more expensive to raise, which would not be in the interests of our customers. We also believe that using covenant debt rather than accounting debt is very similar to how Ofwat considered pension deficit repair costs at PR14, where the accounting charge for those companies reporting under FRS17 was replaced with the cash payment. The extent of difference between covenant and book debt varies among the companies across the sector, but we recognise ourselves as having one of the largest in terms of percentage and therefore the impact is significant. So, again we strongly request Ofwat to accept our approach to use covenant debt for calculating regulatory gearing and to adopt the same approach for the gearing outperformance benefit sharing mechanism.

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<sup>24</sup> 'Full statutory accounts and annual performance report 2018/19', South Staffs Water, July 2019. [www.south-staffs-water.co.uk/media/2697/annual-report-and-accounts-and-apr-to-31-march-2019-final.pdf](http://www.south-staffs-water.co.uk/media/2697/annual-report-and-accounts-and-apr-to-31-march-2019-final.pdf)

### 8.1.3 S&P's Funds from Operation/Net Debt

S&P's FFO/Net Debt calculation is consistent with Ofwat's alternative definition with indexation on the index-linked debt being deducted from FFO.

### 8.1.4 Target credit rating under the notional and actual structure

Consistent with the Board's objective of maintaining a strong investment grade and taking Ofwat's feedback at the IAP into account, we have targeted credit ratings of Baa1/BBB+ for both the notional and actual capital structure. We believe and agree that this maintains our current level of credit quality and provides some headroom to enable the company to remain financially resilient. It is also the target rating that Ofwat uses in assessing the cost of debt component of the WACC.

### 8.1.5 Threshold for key financial metrics to achieve target credit rating

Moody's current guidance ranges for RCV gearing and AICR are set out in table 22 below.

Table 22 Moody's guidance ranges for RCV gearing and AICR

Moody's credit rating	RCV gearing	AICR
Baa1	65–72%	1.5x – 1.7x
Baa2	72–80%	1.3x – 1.5x

In our assessment, an AICR of >1.5x is considered the standard to achieve the target credit rating, while maintaining covenant net debt to RCV below 72%.

To maintain a credit rating with S&P of BBB+, we require a minimum FFO/Net Debt of 9% for the appointed business. This is consistent with the target ratio of other companies with the same target credit rating.

## 8.2 Ofwat's assessment of financeability in the draft determination

To address the financeability constraint under notional structure, which was one of the actions that Ofwat gave us in the IAP, we proposed an increase to Pay As You Go (PAYG) rates of 3% on average in our April submission. But Ofwat rejected this proposal in the draft determination as it believes our plan, after its interventions, is already financeable under the notional structure.

We have gone through Ofwat's financeability assessment of our business plan in detail. We have some serious concerns about its approach to assessing the financeability of our plan. While we describe these in detail below, we believe that once these points are taken into account in the analysis, the draft determination would not be financeable in either the notional or actual structure.

### 8.2.1 Treatment of the legacy revenue adjustment in relation to developer services income

We believe Ofwat's approach of not taking into account the £15 million revenue adjustment in relation to the developer services income when assessing our financeability in notional structure is wrong, as this artificially improves our financial metrics.

As we discuss in detail in chapter 1, we strongly disagree with such revenue correction in the first place. We also think that the correction should not be excluded from the financeability assessment of notional structure. In its final methodology, Ofwat sets out the rule of the treatment of reconciliation adjustments when assessing the notional financeability as follows.

"To maintain the incentives on management, we will make reconciliation adjustments relating to incentive mechanisms from previous control periods after carrying out our assessment of notional financeability. This ensures that customers do not pay more to address financeability constraints arising either from poor performance, or as a result of an adjustment being made to allowed revenue as a result of the company's performance against its totex allowances in the previous period. Similarly, it ensures that the value of outperformance payments for performance against regulatory incentive mechanisms is not eroded as a result of adjustments made following the financeability assessment."<sup>25</sup>

In addition, in its [technical appendix on aligning risk and return](#), Ofwat states:

"In the 'PR19 Initial assessment of plans – Technical appendix 3: Aligning risk and return', we set out that we also accept the inclusion of the beneficial effect of reconciliation adjustments relating to incentive mechanisms from previous control periods in a company's assessment of notional financeability where it sets out compelling evidence that this is in the best interests of customers. We will not however, assess financeability after the application of incentive mechanisms where the adjustments reflect penalty adjustments to maintain appropriate incentives on companies."<sup>26</sup>

While we agree with Ofwat on the importance of maintaining the effectiveness of regulatory incentive mechanisms on service metrics and cost performance, we believe the £15 million revenue adjustment should neither be treated as a penalty nor within the incentive mechanism, and so should be taken into account in the assessment of notional financeability.

Although we disagree with this revenue adjustment in principle, if this is taken into account in the financeability assessment of notional structure, this will have a negative impact of around 0.4x on the average AICR over the period, which is one of the key financial metrics that we use to assess financeability. We illustrate the impact of this correction in figure 10 below.

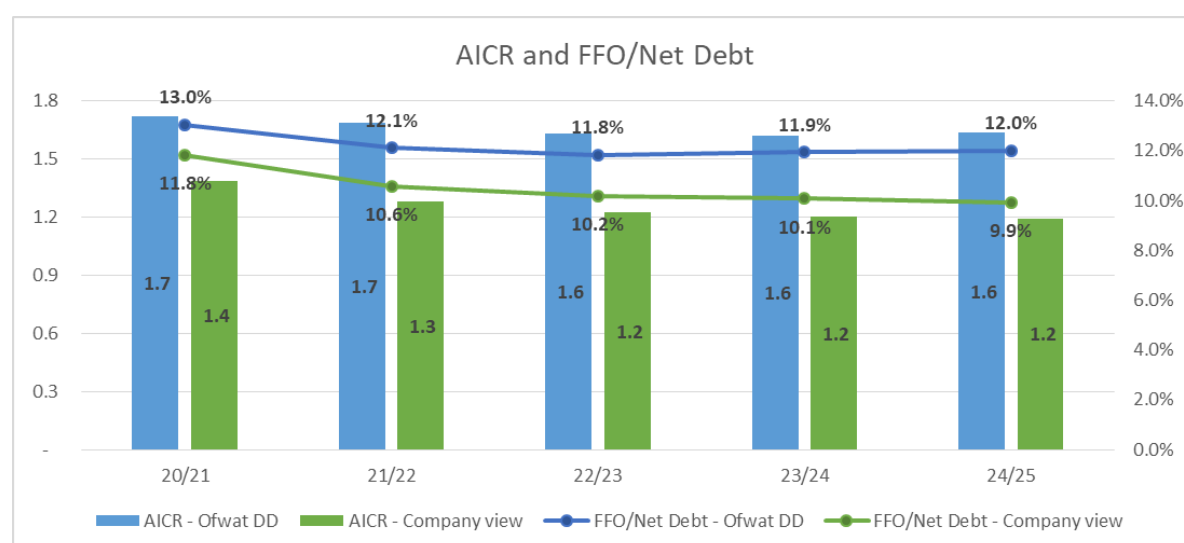
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<sup>25</sup> 'Delivering Water 2020: Our final methodology for the 2019 price review', Ofwat, December 2017, page 191.

<sup>26</sup> 'PR19 draft determinations: Aligning risk and return technical appendix', Ofwat, July 2019, page 55.

[www.ofwat.gov.uk/publication/pr19-draft-determinations-aligning-risk-and-return-technical-appendix/](http://www.ofwat.gov.uk/publication/pr19-draft-determinations-aligning-risk-and-return-technical-appendix/)

Figure 10 Notional financial metrics reflecting revenue correction



As shown in figure 10 above, the AICR will now remain far below the threshold of 1.5x throughout the period, which is why we believe Ofwat's determination of our plan is not financeable.

In addition, the draft determination assumes a recovery of pension deficit through the price control revenues but does not deduct them as a cost when assessing financeability, thereby inflating the above AICR ratios.

### 8.2.2 Reflection on the in-period ODI penalty

We are well aware that Ofwat does not take in-period ODI penalty into account in the financeability assessment of our plan. We assume this is based on the same principle of not taking legacy ODI reward or penalty when assessing financeability since an efficient company would not bear penalty and it would distort the incentive mechanism if such penalty is taken into account upfront in the financeability assessment. Although we support the basis of this principle, this pre-supposes that an efficient company would not incur such penalty.

As we discuss in detail in chapter 4, Ofwat's intervention in our incentive rates for our AMP7 ODIs has created a significant skew towards penalty position. Our Monte Carlo simulation reflecting Ofwat's interventions shows that this results in us being in a penalty position even in the P50 and P90 scenarios. We believe that this is in direct conflict with the assumption that an efficient company would not incur a penalty. In addition, Ofwat's intervention to apply all ODI incentives in-period would suggest that any rewards or penalties we incur would now have a direct impact on our financeability during AMP7.

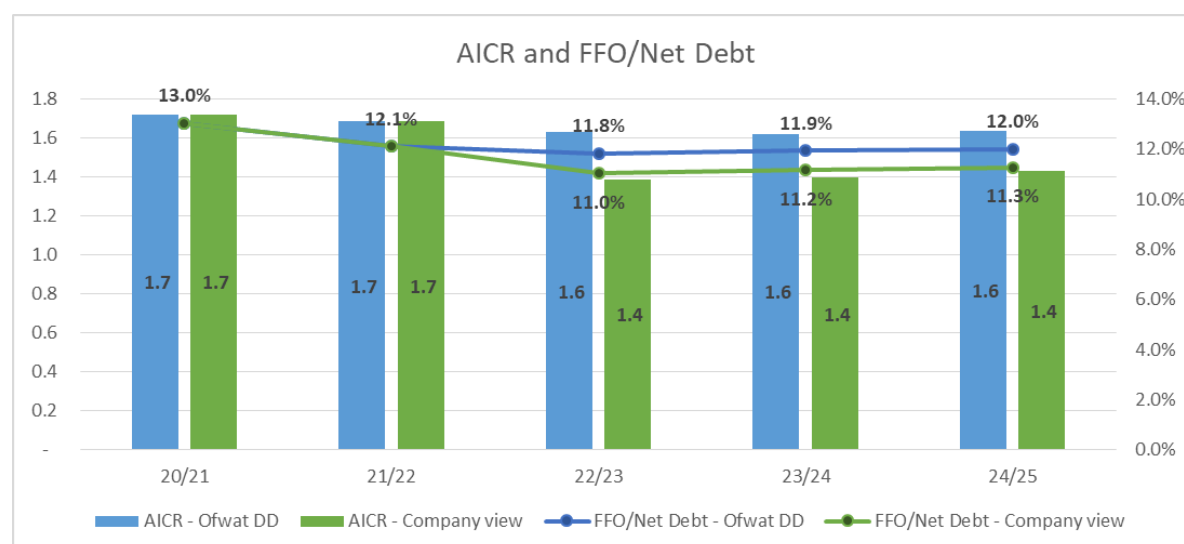
So, we think that as a result of Ofwat's intervention, it is now appropriate that the financeability assessment takes into account the in-period ODI penalty. In doing so, we have applied the P50 penalty position, which has been calculated based on our updated Monte Carlo simulation, as illustrated in table 23 below.

Table 23 P50 penalty position based on Monte Carlo simulation

	2020/21	2021/22	2022/23	2023/24	2024/25
P50 position (£m)	-2.48	-2.49	-2.61	-2.40	-1.98

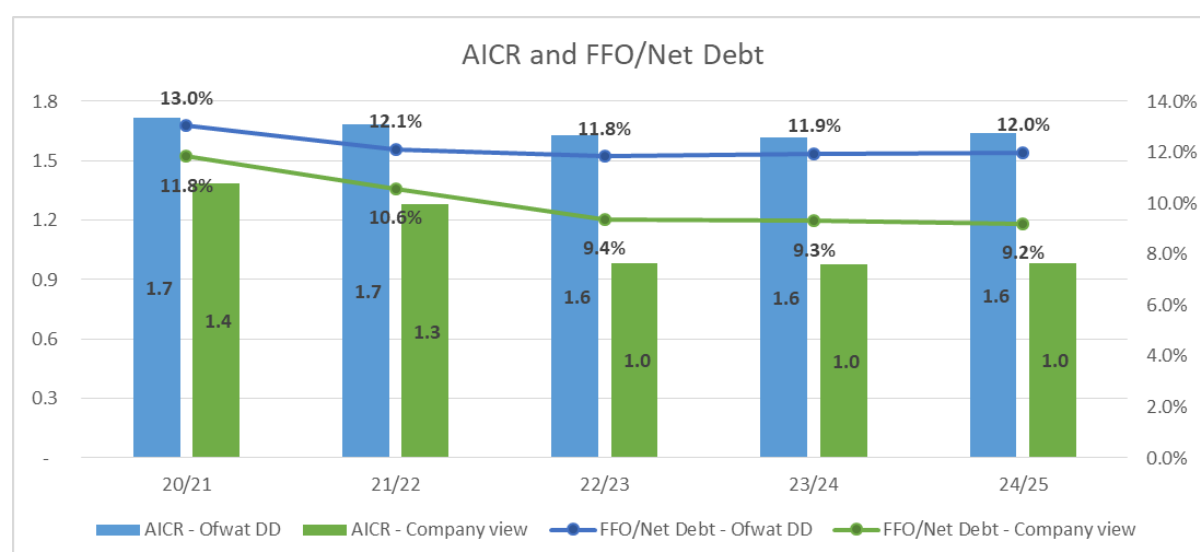
As illustrated in figure 11 below, this would deteriorate the AICR and FFO/Net Debt by roughly 0.2x and 0.7% respectively in the last three years of the period and would bring down the AICR below the threshold we set. The reason why the financial metrics in the first two years do not move is because we apply the penalty with a two-year lag, in accordance with Ofwat's approach to applying in-period ODI rewards and penalties.

Figure 11 Notional financial metrics reflecting in period ODI penalty



When both the PR14 revenue correction and the in-period ODI penalty are taken into account in the assessment, the key metrics in the notional structure would be as shown in figure 12 below. This again confirms our view that Ofwat's draft determination is not financeable and presents the magnitude of financeability constraint we face if we were to apply Ofwat's interventions.

Figure 12 Notional financial metrics reflecting revenue correction and in-period ODI penalty



### 8.2.3 Disproportionate allocation of opex and capex

In the draft determination, Ofwat allowed us a totex, net of grants and contributions, of £493 million and allocated this into opex and capex as shown in table 24 below. This has resulted in an average PAYG ratio over AMP7 of 57.5%, which is lower than the natural PAYG ratio (before using the financial lever) of 58.2% from our April submission. This suggests Ofwat has allocated the cut in totex more towards opex than capex.

Table 24 Ofwat's totex allowance with opex/capex split

	2020/21	2021/22	2022/23	2023/24	2024/25	Ave/total
Net opex (£m)	59.6	58.5	56.9	54.3	54.3	283.6
Net capex (£m)	44.9	47.7	49.3	32.5	35.0	209.3
Net totex (£m)	104.5	106.2	106.2	86.8	89.3	493.0
PAYG ratio	57.0%	55.1%	53.6%	62.3%	60.8%	57.5%

As well as still having concerns with Ofwat's cost allowances as set out in this document, we also disagree with the PAYG ratio in the draft determination.

While it is not fully clear how Ofwat has allocated the totex into opex and capex, our analysis of its cost allowance models suggests that if the new development cost is set aside from the base cost model, our proposed base cost and Ofwat's allowance would be broadly aligned. So, the reduction in totex by Ofwat is principally due to lower assumed new development capex and lower assumed enhancement capex by Ofwat. As a result, the cut in allowed cost should be allocated mainly, if not entirely, to capex.

Since Ofwat's financial models assume that our actual opex would match the PAYG portion of the allowed revenue, the impact of the potential gap between the two is not apparent. But, as we set out above, we believe that if the cut in totex is allocated correctly, there is a high likelihood that our actual opex would exceed the PAYG portion of the allowed revenue.

This would have the same effect of using the financial levers the other way round to that which we proposed in our April submission, and would further deteriorate our financeability.

We are also aware that Ofwat has requested all companies to submit their view of the split between capex and opex if they were to accept Ofwat's allowed totex in the draft determination. As stated above, based on our analysis of Ofwat's cost allowance model and taking into account the nature of business, we believe opex should be kept in line with our view and the reduction to be allocated entirely towards capex. Table 25 below shows our view of this split in detail.

Table 25 Our view of opex/capex split of Ofwat's allowed totex in draft determination

	2020/21	2021/22	2022/23	2023/24	2024/25	Total
Gross opex (£m)	68.7	67.3	65.6	62.6	62.6	326.8
Gross capex (£m)	46.8	49.7	50.8	28.4	30.7	206.4
Gross totex (£m)	115.5	117.0	116.4	91.0	93.3	533.2

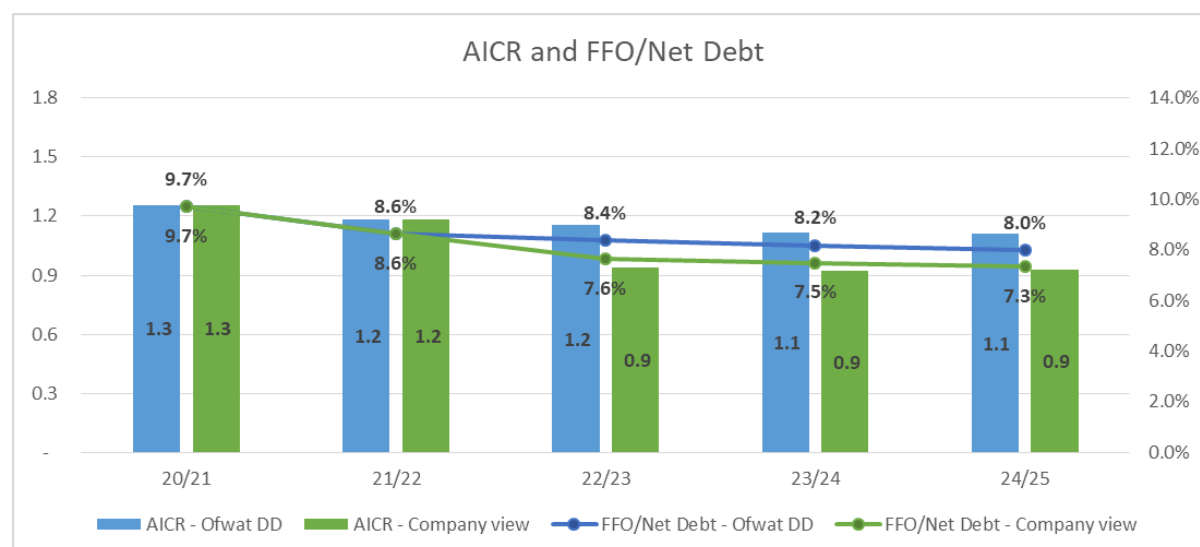
## 8.2.4 Our financeability assessment in actual structure

We have also looked into our financeability in actual structure by de-notionalising Ofwat's financial model. Because of the impact primarily of the revenue adjustment of developer service revenue, as well as Ofwat's updated wholesale WACC, which is significantly lower than its early view, the average AICR over the period and FFO/Net Debt falls below the target threshold. In addition, when the in-period ODIs mentioned above are applied, both AICR and FFO/Net Debt deteriorate further by around 0.2x and 0.7% respectively in the last three years of AMP7.

The overall level of key financial metrics is similar to that observed for the notional structure (that is, AICR remaining below the threshold over the period), and again we believe the determination is not financeable.



Figure 13 Actual financial metrics reflecting correction in-period ODIs



Note: We derived the above figures by de-notionalising Ofwat's financial model. In doing so, we have also changed the wholesale WACC figures in the input sheet to Ofwat's updated figures, as otherwise the WACC automatically changed back to the 'early view' figures. In addition, in calculating the AICR, we have manually adjusted the calculation to eliminate the inter-company loan interest receivable from the interest payment as this is more consistent with Moody's definition of AICR. Such adjustment is not required in the assessment of notional financeability as there is no inter-company interest assumed in the notional structure.

## 8.3 Financeability assessment reflecting our representation

As shown above, according to our analysis we strongly believe Ofwat's draft determination interventions make our plan unfinanceable, both on actual and notional structure. In addition, our analysis shows that our plan could be brought back into financeable status if Ofwat accepts the key representations set out in this document.

In this section, we describe how we have carried out the financeability assessment of our business plan reflecting our representations, and its results.

### 8.3.1 Key representations reflected in the financeability analysis

In this document, we propose number of representations to Ofwat's draft determination – some of which will have a material impact on the assessment of our plan's financeability. The key areas of representation that we recognise as having a material impact on the financeability assessment, and hence taken into account are as follows.

- Allowed totex profile.** We have based our analysis on the totex profile presented in the re-populated WS1 table, which reflects our representations. The overall totex net of grants and contributions is now £531 million, which is £38 million higher than Ofwat's view of efficient net totex in the draft determination.

- **Use of the correct natural PAYG percentage.**
- **PR14 legacy adjustment in relation to developer service revenue.** We have based our analysis on the assumption that Ofwat accepts our representation on the application of £15 million revenue correction in relation to our developer service income during the current period.
- **Company-specific adjustment to the cost of debt.** We have based our analysis on the assumption that Ofwat accepts our proposal of 40bps uplift of the overall cost of debt, which translates into 24bps uplift in WACC terms. We have applied this uplift to Ofwat's updated wholesale WACC from the draft determination.
- **Reduction in ODI risk** as set out in chapter 4.

And while they do not have such material impact as the key areas listed above, in our assessment we have also updated the following areas from our April submission.

- Repayment of an inter-company loan, completed in May this year.
- Updated PR14 reconciliation, reflecting the 2018/19 actual position.
- Updating the index-linked debt balance based on latest inflation forecast.

These updates are also reflected in the financial model we have submitted alongside this document.

### 8.3.2 Results of the financeability assessment

Figures 14 and 15 below set out the key financial metrics from Ofwat's financial model based on our notional and actual capital structure respectively.

Figure 14 Financial metrics reflecting our representations – notional

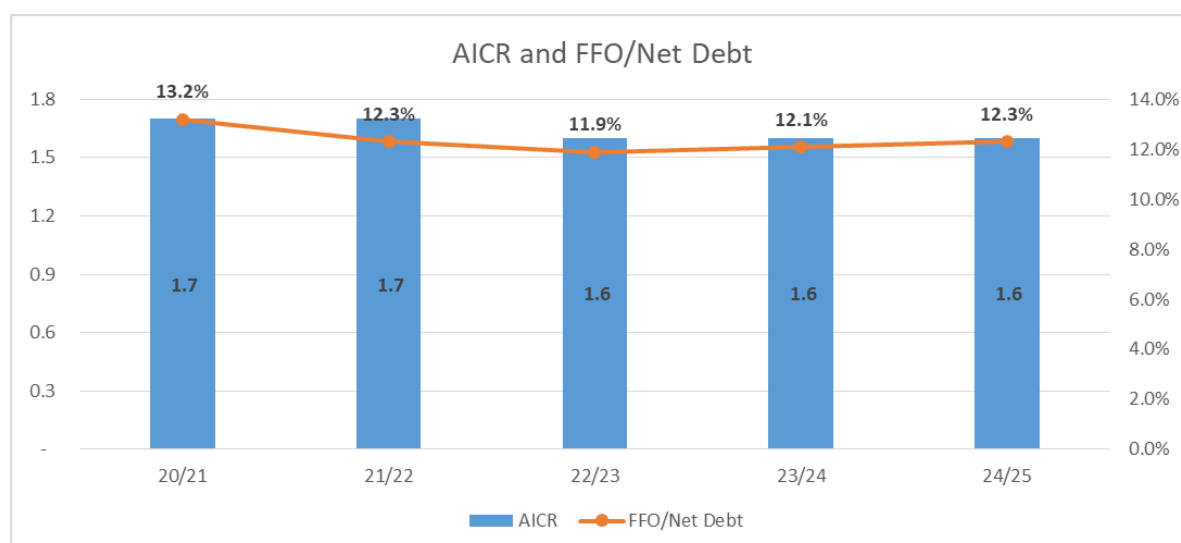
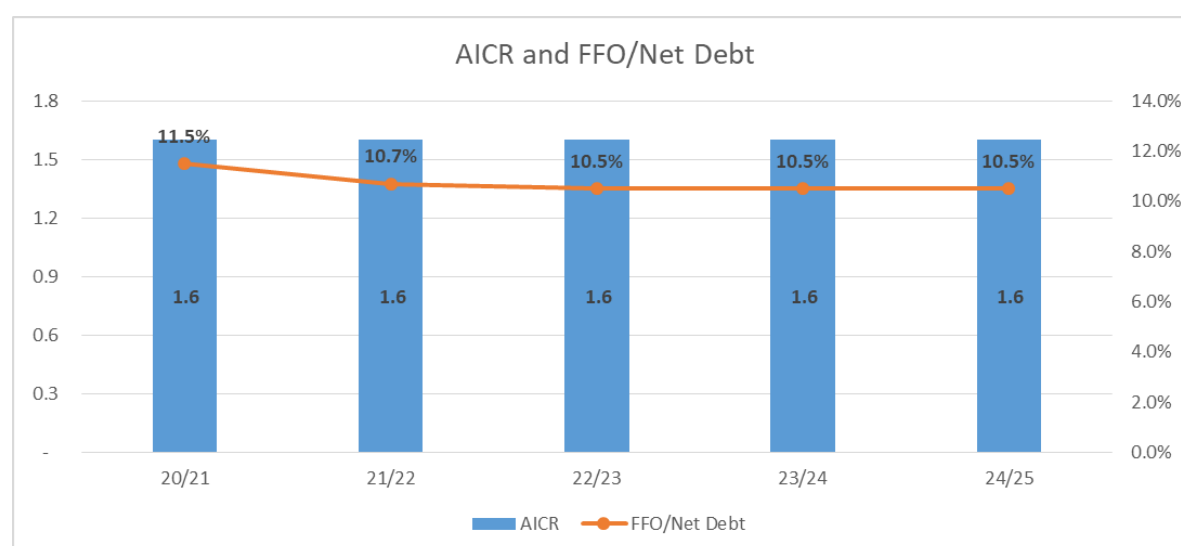


Figure 15 Financial metrics reflecting our representations – actual



As shown in the above figures, if Ofwat were to accept our representations, the two key financial ratios could be brought back above the threshold with some limited headroom both in notional and actual structure to allow for the natural variability in performance against projected performance. As is normal, the Board believes that it is appropriate to be in the middle of the range for the rating rather than on the lower bound with no headroom. However, these ratios do not allow for any further reduction in the WACC and if this were lower at Ofwat's final determinations, then the Board would not consider it financeable without other off-setting additional revenue.

In addition, the above AICR calculations on both the actual and notional structure reflect the approach by Ofwat in the draft determination of allowing the recovery of pension deficit through revenue but not deducting it as a cost, thereby inflating AICR. The impact of this is 0.2 on the AICR ratio; if this benefit is excluded from the plan, the company would not be financeable on either a notional or actual basis.

## 8.4 Stress-testing our plan

### 8.4.1 Stress scenario assumed

We have stress-tested our financial projections against a number of plausible scenarios that could realistically impact on our business. We have taken into account the key risks facing the business and the impact they could have on our customers and other stakeholders.

Our base plan, which we have used to carry out stress tests, is consistent with the one shown in section 8.3, where we reflected our representations on the draft determination. Below, we set out the specific scenarios we have modelled. Again, this is based on the assumption that Ofwat accepts the representations set out in this document.

Table 26 Scenarios modelled as part of stress testing

Scenario	Size of the impact	Explanation
Overspend on our treatment works expenditure	20% overspend (£11 million) over the first three years of AMP7	In our business plan, we have proposed a significant investment in the Hampton Loade and Seedy Mill water treatment works in our South Staffs region at a cost of around £60 million. This investment is required to ensure we can continue to supply high-quality drinking water to customers and also improve our operational resilience. There is a risk that the cost of delivering this investment may be more expensive than planned. This could be because of possible changes in scope or that contractors' tender prices are higher than expected.
Lower cost of capital	40bps reduction	In its draft determinations, Ofwat hinted that the WACC expected to be set as part of its final determinations in December 2019 may be further reduced by around 40bps as a result of taking more up-to-date market data into account. So, we applied a further reduction of 40bps to the updated WACC presented by Ofwat in its draft determinations, but still assuming that our request for a company-specific adjustment to the cost of capital of 0.24% (in WACC terms) would be accepted by Ofwat.
Extreme weather event	£1.3 million higher than assumed opex in year 3	Since March 2018, we have experienced the effects of both a severe winter (the freeze/thaw event) and a hot summer. Both events resulted in additional costs incurred as a result of, for example, additional pumping costs and the cost of repairing burst mains. There is a risk that something similar could happen again in the future. We have based the estimated impact on the cost we actually incurred.
ODI penalty for CRI, leakage and interruptions to supply	<p>CRI</p> <p>P10 penalty (£2.0 million/year)</p> <p>Leakage</p> <p>P10 penalty (£1.0 million/year)</p> <p>Interruptions to supply (£1.6 million/year) in year 2</p>	<p>We have put forward stretching performance commitments with the intention of achieving upper quartile performance over AMP7.</p> <p>There is a risk that we fail to achieve our targets and this results in us incurring a penalty. There are three performance commitments, which carry the largest risks and we have run a scenario assuming we hit the penalty on all three for two successive years in AMP7. Although we disagree with Ofwat's intervention in our ODI as it creates a significant skew towards penalty position, for the sole purpose of stress testing, we have used the P10 penalty amount for each metric calculated by our Monte Carlo analysis that is based on Ofwat's draft determination.</p>

Scenario	Size of the impact	Explanation
Financing	Interest rates on new debt financed at 2% above expectation from year 3	As a result of our significant increase in investment for AMP7, we will need to raise additional funding on the financial markets. There is a risk that the interest paid on this debt is higher than expected. We have assumed that rates are 2% above expectation from year 3 onwards.
Combined scenario (lower WACC, overspend on our treatment works expenditure, extreme weather, and ODI penalty)	<p><b>Lower cost of capital</b> 40bps reduction</p> <p><b>Overspend</b> 20% overspend (£11 million) over the first three years</p> <p><b>Extreme weather</b> £1.3 million higher than assumed opex in year 3</p> <p><b>ODI penalty</b> CRI P10 penalty (£2.0 million/year) Leakage P10 penalty (£1.0 million/year) Interruption to supply (£1.6 million/year) in year 2</p>	<p>We recognise that it is possible that a number of the scenarios outlined above could happen together. In fact, the impact of one scenario may impact on another; for example, an extreme weather event may impact on our ODI performance.</p> <p>We recognise that this combination of scenarios is extreme, but is still plausible; from a risk perspective it is important to understand its impact on our business.</p>

## 8.4.2 Results of our stress testing

We have considered the impact of the stress tests on a range of factors. But we think the most important of these is our ability to maintain an investment grade credit rating.

Below we set out the impact of each of our stress tests on our plan along with the mitigating factors we have considered where there is a risk to financeability. This sets out the key financial metrics after each stress test as an average, as well as the lowest year in the period, but before management action to mitigate them. We have identified where we fall below our targeted metrics as follows.

- **Green** – the metric remains consistent with our target credit rating (Baa1/BBB+) and gearing remains at or below 70%, based on covenant debt.
- **Red** – the metric falls below our target rating and/or gearing is above 70%.

Table 27 Summary of stress testing results

		AICR (Moody's)	FFO/Net Debt (Ofwat alternative)	Gearing
<b>Base Case</b> (Based on our representations)	Lowest year	1.6	10%	66%
	Average	1.6	11%	65%
<b>High Interest</b>	Lowest year	1.5	10%	66%
	Average	1.6	11%	65%
<b>Overspend on Treatment Works Capex</b>	Lowest year	1.5	10%	68%
	Average	1.6	10%	67%
<b>Lower WACC</b>	Lowest year	1.4	10%	67%
	Average	1.4	10%	66%
<b>Extreme Weather Event</b>	Lowest year	1.5	10%	66%
	Average	1.6	11%	65%
<b>ODI Penalty</b>	Lowest year	1.2	9%	67%
	Average	1.5	10%	65%
<b>Combined Scenario</b>	Lowest year	0.9	8%	71%
	Average	1.3	9%	69%

The outputs show that under the lower WACC, ODI penalty and combined scenarios, we would be below the required credit metrics for at least one year of the period. While the ODI penalty scenario is a one-year shock and therefore the impact on financeability could be eased through the mitigations we discuss below, in the lower WACC and combined scenario, which also assumes a lower WACC, even the average AICR would be below the required credit metrics' threshold. This is because WACC is set at final determination and the impact would be persistent for the entire period.

### 8.4.3 Mitigations

Based on the outputs from the stress testing we have considered the actions senior management could take to ensure we maintain an investment grade. We believe that one or a combination of them would restore the financial metrics to an acceptable range.

Table 28 Mitigations in place

Mitigation	Explanation
Risk management	We have a risk management process in place to ensure we understand the key risks facing our business. We assess each identified risk against the impact it has on our business and the likelihood of the risk occurring. We determine the overall rating of each risk by multiplying the impact and likelihood scores. This enables us to focus on the most important risks and ensure that appropriate controls are put in place to minimise them.

Mitigation	Explanation
Reprioritising capital investment	We have a good track record historically of delivering our capex programmes. Even where we have experienced unexpected cost increases, we have been able to take actions to manage this and reprioritise our overall programme to ensure we can offset these costs while still delivering for customers. For example, in the current period, we have accommodated the need to install UV treatment at our Hampton Loade and Seedy Mill water treatment works by reducing our expenditure on our mains replacement programme. All our investment needs are appraised through our Investment Optimisation tool, which captures the costs associated with delivery and also the anticipated benefits that our customers will see. Combined with internal review and challenge, this allows us to re-prioritise our investment needs and fully understand the impact this will have on service. So, we believe we can offset any underperformance in the short term.
Lower dividends/capital injection	Although we are projecting a low dividend yield of 2%, we could restrict dividend payments further to save cash and maintain investment grade credit metrics.
Regulatory mechanism	There are a number of regulatory mechanisms in place for water companies that protect them from significant shocks. These include: <ul style="list-style-type: none"> <li>• totex sharing allowances that share the out- or underperformance of costs between customers and investors;</li> <li>• a revenue true-up mechanism for wholesale over- or under-recovery;</li> <li>• the impact of indexation of the cost of new debt mechanism to be introduced in AMP7;</li> <li>• uncertainty mechanisms; and</li> <li>• the substantial effects determination.</li> </ul>

After considering potential mitigations, the Board considers that, in the event of cost shocks or reduced operational performance, the business should be able to maintain an investment grade credit rating while still delivering our commitments to our customers. However, a lower WACC, given the low level of dividend included in our plan, would not result in a sustainable business.

## 9. Board assurance statement

**The Board has considered Ofwat's 18 July draft determination carefully, and in particular the interventions made to the previous plan submitted in April 2019.**

The Board met on 2 August and also on 23 August specifically to consider the draft determination.

- We have proposed a limited number of changes to outcomes based on the balance of the package overall, and in respect of the CRI measure in particular.
- We have made a number of representations on totex.
- We have proposed an alternate view of future growth to that contained within the draft determination.
- We have put forward a more detailed plan to improve resilience in the round.
- We have carried out new customer research regarding the proposed company-specific cost of capital change.

The Board reaffirms that the plan we are now submitting is of high quality, ambitious and in accordance with Ofwat's PR19 methodology.

We now provide further detail in relation to the financeability of the plan and the stress tests scenarios we have applied to it.

**The Board has considered Ofwat's draft determination, and in its opinion it is not a financeable plan on either an actual or notional basis.** This is because of Ofwat's treatment of several factors, including:

- a significant proportion of the legacy developer services claim not being accepted and its impact being excluded in Ofwat's notional financeability assessment;
- the exclusion of the impact of ODIs, which are skewed such that an efficient company would be in penalty;
- the removal of the company's proposed use of financial levers;
- the reduction of the cost of capital compared with Ofwat's early view;
- an incorrect PAYG rate assumed, which disproportionately reduces opex; and
- the level of ODI risk.

The Board has considered these points and has **proposed a number of representations** that will address this on the basis that Ofwat:

- accepts our developer services legacy claim in full;
- agrees to our company-specific cost of debt of 40bps;
- agrees to our view of the correct natural PAYG rate to allocate costs between opex and capex; and
- accepts our representations on our ODIs.

**If these representations are accepted, then based on the financial projections, the stress tests performed and the mitigations available, the Board declares that, in its opinion, the company will remain financeable on both an actual and notional basis.**



The Board also confirms that the targeted gearing level and credit rating for the company's actual structure would be consistent with maintaining financial resilience over the long term. This is based on the financial metrics set out in the draft determination representations being consistent with the company's target credit rating of Baa1 for Moody's and BBB+ for S&P. In particular, the repayment of the £15 million inter-company loan provides more headroom in our gearing against cost shocks.

If there is any significant further reduction in the cost of capital, then the Board believes this may not allow the company to maintain further financial resilience in either the actual or notional structure, and would therefore require further intervention of either:

- a further increase in the company-specific cost of debt uplift; or
- an adjustment to the PAYG rate to accelerate revenue from further periods.

**Sir James Perowne**

Independent Chair  
South Staffordshire Water PLC



**Stephen Kay**

Independent Non-Executive Director  
South Staffordshire Water PLC



**Catherine May**

Independent Non-Executive Director  
South Staffordshire Water PLC



**Lord Smith of Finsbury**

Independent Non-Executive Director  
South Staffordshire Water PLC



**Keith Harris**

Non-Executive Director  
Arjun Infrastructure Partners



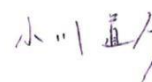
**Peter Antolik**

Non-Executive Director  
Arjun Infrastructure Partners



**Michihiko Ogawa**

Non-Executive Director  
Mitsubishi Corporation



**Adrian Page**

Group Chief Executive  
South Staffordshire PLC



**Phil Newland**

Managing Director  
South Staffordshire Water PLC



## Appendix 1: Responses to Ofwat's actions

Ofwat test area	Action reference	Ofwat's action taken from the draft determination	Our response to Ofwat	Signposting/ further information
Delivering outcomes for customers – actions and interventions	SSC.OC.C3 PR19SSC_D3	<p>The company should provide a full set of intermediate calculations at a zonal level, underlying the risk calculation (for both baseline levels and performance commitment).</p> <p>The company should confirm that its performance commitment levels are reflective of its water resources management plan position. This should include the potential that it will have access to drought orders and permits.</p> <p>The company should confirm which programmes of work will impact its forecasts.</p> <p>The company should confirm which schemes will impact its forecasts.</p>	<ol style="list-style-type: none"> <li>1. We can confirm that our performance commitment levels are reflective of the position set out in our WRMPs and include the potential access we have to drought permits and drought orders.</li> <li>2. We note that we have not (as of 30 August 2019) had permission to publish our final 2019 WRMPs but our calculations for this performance commitment use our latest versions as the data source.</li> <li>3. We have been in regular contact with the Environment Agency about finalising our WRMPs (including supplying the additional information requested earlier this year) so we do not expect these tables to change.</li> <li>4. We have provided our intermediate calculations at a water resource zone (WRZ) level and combined this in a company-wide tab – these calculations follow Ofwat's guidance and have received independent assurance from Jacobs.</li> <li>5. We did not produce or report baseline risks for 2018/19 in our APR because, at APR18 organisations like the Blueprint for Water quoted the baseline risk for South Staffs compared with all the other companies, where they only quoted the final plan risks. This incorrectly made our levels of resilience look worse than other companies. In addition, our understanding of the guidance as well as that of Jacobs was that the risks we should report are the final plan risks.</li> </ol>	We have also attached the additional data on the risk of severe restrictions in a drought with our data tables.

Response to Ofwat's draft determination on our business plan for 2020 to 2025  
South Staffs Water (incorporating Cambridge Water)

Ofwat test area	Action reference	Ofwat's action taken from the draft determination	Our response to Ofwat	Signposting/ further information
			<p>6. The main demand-side programmes of work that will affect our forecasts are the leakage reduction, metering and water efficiency programmes.</p> <p>7. The main programme that will affect our drought resilience forecasts is the sustainability reductions/Water Framework Directive (WFD) programme, although climate change will also influence future levels of resilience.</p> <p>8. The selected options that will affect the forecasts are shown in table 6 of our WRMP tables.</p> <p>9. The selected supply-side scheme for our South Staffs region is Somerford-Slade Heath.</p> <p>10. The selected supply-side schemes in are Cambridge region are the re-commissioning of St Ives, Croydon and Kingston (options CW4, CW5 and CW6).</p>	
Delivering outcomes for customers	Section 3.2.4 of the policy appendix on delivering outcomes for customers – per capita consumption	<p>We consider that given the increasing important of making best use of precious water, there is a case for going further than the proposed interventions above. The leading reductions in the sector, proposed by Affinity Water of 12.5% and Yorkshire Water of 8.9% suggest that more ambitious reductions are deliverable by the sector. International comparison suggests that water consumption in England and Wales is high relative to other European countries, many of which achieve water consumption levels below 120 litres per person per day. We therefore invite stakeholders to</p>	<p>In response to Ofwat's invitation to stakeholders to comment on the case requiring companies to deliver a 10% reduction in PCC or forward-looking upper quartile performance, we are:</p> <ul style="list-style-type: none"> <li>committed to encouraging our customers to use water wisely and specifically to deliver the PCC reductions in AMP7 that are set out in our business plan and that align with our latest WRMPs;</li> <li>going to respond to Defra's consultation on PCC targets by October 2019. We expect that this consultation will lead to an evidence-based UK Government recommended approach that is equitable for all sectors;</li> <li>intending to also contribute to the wider Water UK response to Defra's consultation and we will recommend that any approach to PCC targets applies proportionately to different parts of the country. For example, high rates of PCC reduction will give rise to</li> </ul>	n/a

Response to Ofwat's draft determination on our business plan for 2020 to 2025  
South Staffs Water (incorporating Cambridge Water)

Ofwat test area	Action reference	Ofwat's action taken from the draft determination	Our response to Ofwat	Signposting/ further information
		consider the case for requiring companies to deliver a 10% reduction over the 2020-25 period or forward looking upper quartile performance.	<p>higher environmental and supply/demand balance benefits in one part of the country than in another; and</p> <ul style="list-style-type: none"> <li>of the opinion that any changes to AMP7 PCC targets at this stage in the WRMP and business planning process risk causing inconsistencies that could undermine the ability of the UK Government to set appropriate policy and future targets for all water users.</li> </ul> <p>Within our response to Defra's consultation, we will emphasise the need for collective responsibility to reduce the wasteful use of water. We will continue with our existing water efficiency activity and expand this to ask customers to use water wisely. But to deliver a national PCC that compares favourably with some of the most efficient countries will require action from developers, government, and the producers and retailers of white goods that use water, as well as a marked change in water-using behaviour among a diverse customer base.</p> <p>Delivering a step change in PCC can only be achieved through collective stakeholder action. The water sector alone only has a limited impact on individual water consumption. For example, we know that some European countries, such as Denmark, have made policy decisions to reduce abstraction in the knowledge that this would increase the costs of water and wastewater services. Denmark has achieved a lower PCC than the UK because of a significant government and public sector drive to fit efficient water-using devices and making sustainable drainage the standard in new developments. This has led to Danish customers having one of the highest tariffs in the EU and a price per m<sup>3</sup> that is roughly six times higher than the price paid by our metered customers.</p>	

Response to Ofwat's draft determination on our business plan for 2020 to 2025  
South Staffs Water (incorporating Cambridge Water)

Ofwat test area	Action reference	Ofwat's action taken from the draft determination	Our response to Ofwat	Signposting/ further information
			<p>Other countries in Europe and elsewhere in the world have higher PCC levels that England and Wales or a high proportion of non-revenue water. Non-revenue water is difficult to allocate accurately to either leakage or consumption. This means that comparisons with water use in other countries need to be seen in the context of their different circumstances and may not be directly comparable with the privatised water sector in England and Wales.</p> <p>Water consumption trends cannot be seen in isolation from other cultural trends. For instance, the recent focus on reducing the amount of single-use plastics entering the environment since the BBC broadcast its 'Blue Planet' series gives real environmental benefits, but will actually cause a (modest) increase in tap water consumption.</p>	
Securing long-term resilience	SSC.LR.A2	The company should provide a commitment that it will, by 22 August 2019, prepare and provide to us an action plan to develop and implement a systems based approach to resilience in the round and ensure that the company can demonstrate in the future an integrated resilience framework that underpins the company's operations and plans showing a line of sight between risks to resilience, planned mitigations, package of outcomes and corporate governance framework.	We confirm that we submitted our integrated, systems-based resilience action plan to Ofwat on 22 August 2019.	n/a

Response to Ofwat's draft determination on our business plan for 2020 to 2025  
South Staffs Water (incorporating Cambridge Water)

Ofwat test area	Action reference	Ofwat's action taken from the draft determination	Our response to Ofwat	Signposting/ further information
Securing long-term resilience	SSC.LR.A4	<p>We seek further Board assurance from the company that the targeted gearing level and credit rating for its actual financial structure are consistent with maintaining financial resilience in the long term, with reference also to action SSC.LR.C1.</p> <p>In its future reporting, we expect South Staffs Water to apply suitably robust stress tests in its long-term viability statements in 2020-25.</p>	Please refer to our signed Board assurance statement.	Chapter 9 – Board assurance statement
Securing long-term resilience	SSC.LR.C1	<p>We expect companies to provide further Board assurance, in their responses to the draft determination, that they will remain financeable on a notional and actual basis, and that they can maintain the financial resilience of their actual structure, taking account of the reasonably foreseeable range of plausible outcomes of their final determination, including evidence of further downward pressure on the cost of capital in very recent market data as we discuss in the 'Cost of capital technical appendix'.</p>	Please refer to our signed Board assurance statement.	Chapter 9 – Board assurance statement

Response to Ofwat's draft determination on our business plan for 2020 to 2025  
South Staffs Water (incorporating Cambridge Water)

Ofwat test area	Action reference	Ofwat's action taken from the draft determination	Our response to Ofwat	Signposting/ further information
Targeted controls, markets and innovation	SSC.CMI.C1	<p>We have reviewed the company's Annualised Unit Cost (AUC) that inform the water resources price control. The company's proposed AUC is lower than our own estimate when we populated the Reckon model with the companies' submitted information in table Wr7.</p> <p>We are therefore intervening for the draft determination and have uplifted AUC to match our calculated AUC values.</p> <p>If the company disagrees, it should provide us with its populated Reckon model to demonstrate why the uplift is not necessary as part of its DD representation for us to review for the final determination.</p>	We accept Ofwat's decision to uplift our Annualised Unit Cost.	n/a
Securing cost efficiency	SSC.CE.A1	<p>We provide our view of efficient costs for the company along with our reasoning.</p> <p>We expect the company to continue to address areas of inefficiency and lack of evidence.</p>	<p>We believe Ofwat's draft determination shows our base costs to be efficient.</p> <p>However, we address the areas that Ofwat viewed to be inefficient or lacking evidence in the following chapters.</p> <ul style="list-style-type: none"> <li>Chapter 3: we challenge Ofwat's use of ONS data to forecast new connections over the period as we believe this significantly under-estimates our figures, thereby reducing our cost allowance.</li> <li>Chapter 5: we disagree with Ofwat's treatment of leakage reduction costs as base and request it allows our enhancement spend in this area.</li> </ul>	<p>Chapter 3: Growth and development</p> <p>Chapter 5: Leakage allowance and policy</p> <p>Chapter 7: Further evidence on enhancement costs</p>

Response to Ofwat's draft determination on our business plan for 2020 to 2025  
South Staffs Water (incorporating Cambridge Water)

Ofwat test area	Action reference	Ofwat's action taken from the draft determination	Our response to Ofwat	Signposting/ further information
			<ul style="list-style-type: none"> <li>Chapter 7: we provide further evidence to support our enhancement costs that were disallowed in the draft determination.</li> </ul>	Including all referenced appendices.
Securing cost efficiency	SSC.CE.A2	<p>We note the company's exclusion of 9 Amber WINEP schemes (cf10 – 9 SST +1 CAM – by our count) on account of uncertainty over need, scope and solution and the implication that the company will bear the risk of a need for investment prior to PR24 without recourse to customers.</p> <p>Should the company's continuing engagement with the Environment Agency result in revisions to its plan, we expect the company to advise us of these.</p>	<p>We have considered our position on WINEP schemes carefully and worked in full collaboration with the Environment Agency. As a result, we now make provision for both Amber and Green WINEP schemes within our business plan.</p> <p>We outline the detail of these schemes in section 7.5 and appendix A3.5.</p>	<p>Section 7.5: Amber WINEP schemes</p> <p>Appendix A3.5: Amber WINEP costs</p>
Securing cost efficiency	SSC.CE.A3	Company to provide evidence to confirm DWI agreement with its submitted plans/revised undertakings and that no metaldehyde specific treatment or product substitution costs are included in the requested allowance.	<p>In our April submission, we confirmed that we have not included any additional spend specifically related to metaldehyde within our business plan. This is because we include metaldehyde mitigation activity within our general catchment management approach. We also confirmed that with the targeted ban now coming into force, we have no additional mitigation activity planned over the period 2020 to 2025 over and above what we do as business as usual.</p> <p>We do not have any metaldehyde-specific treatment or product substitution as we have had no metaldehyde failures over the past five years.</p>	n/a



Response to Ofwat's draft determination on our business plan for 2020 to 2025  
South Staffs Water (incorporating Cambridge Water)

Ofwat test area	Action reference	Ofwat’s action taken from the draft determination	Our response to Ofwat	Signposting/ further information												
Aligning risk and return	SSC.RR.A5	South Staffs Water should set out the impact of this on its actual financeability and long term financial resilience. Pursuant to action SSC.LR.C1 (PR19 (‘South Staffs Water Securing Long-term resilience actions and interventions’) the company should provide further Board assurance that the company will remain financeable and can maintain financial resilience for the actual structure.	We detail our stress testing in section 8.4. The stress testing has been applied to our financeability assessment taking account of our draft determination representations, as we believe the draft determination is unfinanceable before stress testing.  The Board assurance statement in chapter 9 reflects this.	Section 8.4: Stress testing  Chapter 9: Board assurance statement												
Aligning risk and return	SSC.RR.C1	We expect the company to reconsider the RoRE risk range for ODIs in its response to the draft determination.	Given Ofwat’s draft determination interventions, we outline our RORE risk range for ODIs using Monte Carlo simulation in chapter 4.	Chapter 4: Outcome delivery incentives												
Aligning risk and return	SSC.RR.C5	We expect companies to update their overall RoRE risk range analysis in updated App26 submissions as part of their response to the draft determination. This should take account of the guidance we have provided in the ‘Aligning risk and return technical appendix’ that accompanies our draft determination and ‘Technical appendix 3: aligning risk and return’ published with the IAP, and the context that achieved cost and outcomes performance has been positively skewed at a sector level in previous price review periods.	<p>We have resubmitted App26 as requested and have flowed these outputs through to the financial model.</p> <p>We have reflected Ofwat’s intervention in respect to financing costs. For more detail and evidence on our ODI RORE risk, please refer to chapter 4.</p> <p>The table below sets out the components of the RORE range.</p> <table><tr><th></th><th>Lower bound</th><th>Upper bound</th></tr><tr><td>Overall</td><td>-4.0%</td><td>0.9%</td></tr><tr><td>ODIs</td><td>-2.6%</td><td>-0.5%</td></tr><tr><td>Totex and retail costs</td><td>-1.0%</td><td>0.7%</td></tr></table>		Lower bound	Upper bound	Overall	-4.0%	0.9%	ODIs	-2.6%	-0.5%	Totex and retail costs	-1.0%	0.7%	Chapter 4: Outcome Delivery Incentives
	Lower bound	Upper bound														
Overall	-4.0%	0.9%														
ODIs	-2.6%	-0.5%														
Totex and retail costs	-1.0%	0.7%														

Response to Ofwat's draft determination on our business plan for 2020 to 2025  
South Staffs Water (incorporating Cambridge Water)

Ofwat test area	Action reference	Ofwat's action taken from the draft determination	Our response to Ofwat			Signposting/ further information
		Companies are strongly incentivised to achieve and outperform regulatory benchmarks. Therefore where companies consider there to be a potential downward skew in forecast risk ranges for returns, we expect companies to provide compelling evidence that this is expected to be in the context of expected performance delivery of the company, taking account of the company's reported level of actual performance delivered in 2015-19 and taking account of the steps it is already taking or plans to take to deliver against regulatory benchmarks and mitigate downside risk.	Revenue (wholesale and retail)	-0.1%	0.1%	
			Financing	-0.1%	0.3%	
			C-Mex	-0.1%	0.2%	
			D-Mex	-0.1%	0.1%	
Securing confidence and assurance	SSC.CA.A1	We expect South Staffs Water to apply our default benefit sharing mechanism. If the company does not apply the default mechanism set out in the 'Putting the sector in balance' position statement, we intend to make an adjustment at PR24 to ensure benefits are adequately shared with customers.	<p>We confirm that we will adopt Ofwat's default approach to the sharing of outperformance from high gearing as set out in its position statement on putting the sector back in balance. But we believe this should be based on covenant debt as explained below.</p> <p>Our investors, lenders and ratings agencies assess our gearing based on our covenant debt (65.5% at March 2019) rather than the book debt as used in Ofwat's regulatory accounting guidelines (70.6%). In its latest credit option for South Staffs Water, published in December 2018, Moody's referenced our "conservative gearing of 66%".</p> <p>Covenant net debt reflects the actual liability of the company to its lenders. For 2017/18, the difference between covenant and book net debt includes £12 million, which relates to the unamortised premium and costs on issuance of the company's debt. The remaining £7.8</p>			Section 8.1.2: Moody's debt:RCV ratio

Response to Ofwat's draft determination on our business plan for 2020 to 2025  
South Staffs Water (incorporating Cambridge Water)

Ofwat test area	Action reference	Ofwat's action taken from the draft determination	Our response to Ofwat	Signposting/ further information
			<p>million relates mainly to the difference in the long-term inflation assumption to maturity use for the book value of index-linked debt compared with the lower actual inflation rate used for covenant reporting. We consider that this is an accounting difference and would recommend that, similar to other accounting adjustments, it is adjusted in the same way as the ratings agencies do this.</p> <p>To use the book (or accounting) debt would lead to the reporting of a higher level of gearing, which could impact on our credit rating. This could ultimately lead to new debt being more expensive to raise, which would not be in the interests of customers. We also believe that using covenant debt rather than accounting debt is very similar to how Ofwat considered pension deficit repair costs at PR14, where the accounting charge for those companies reporting under FRS17 was replaced with the cash payment.</p>	
Securing confidence and assurance	SSC.CA.A2	<p>We expect South Staffs Water to be transparent about how the dividend policy in 2020-25 takes account of obligations and commitments to customers and to demonstrate that in paying or declaring dividends it has taken account of the expectations we set out in our position statement. We expect the company to respond to this issue in its response to our draft determination.</p> <p>We expect the company to demonstrate that its dividend policy for 2020-25 takes account of obligations and commitments to customers and other stakeholders, including</p>	<p>We are pleased to provide further clarifications on our dividend policy for 2020 to 2025. Our proposed business plan is based on a dividend yield of 2% of regulated equity.</p> <p>Whereas we previously made reference in the operation of the dividend policy for 2020 to 2025 in relation to our performance against "regulatory and customer targets (principally delivered through our performance commitments)", we now further clarify that these targets include:</p> <ul style="list-style-type: none"> <li>• C-MeX;</li> <li>• D-MeX;</li> <li>• leakage;</li> <li>• supply interruptions;</li> <li>• CRI;</li> <li>• PCC;</li> </ul>	See page 223 of our <a href="#">April submission</a> and Ofwat's position statement on <a href="#">putting the sector back in balance</a>

Response to Ofwat's draft determination on our business plan for 2020 to 2025  
South Staffs Water (incorporating Cambridge Water)

Ofwat test area	Action reference	Ofwat's action taken from the draft determination	Our response to Ofwat	Signposting/ further information
		<p>performance in delivery against the final determination. In doing so, the company should refer to the examples of best practice we have identified among companies.</p> <p>Provide further evidence of:</p> <ul style="list-style-type: none"> <li>i) the specific obligations and commitments to customers;</li> <li>ii) the level of performance delivery they will be considered against: and</li> <li>iii) how they will impact on dividends.</li> </ul>	<ul style="list-style-type: none"> <li>• mains bursts; and</li> <li>• unplanned outages.</li> </ul> <p>The levels of performance considered relevant under the dividend policy are the final determination performance commitments.</p> <p>In the event that we do not meet the performance commitment(s) outlined above, the Board will consider the extent to which additional investment may be required to rectify the performance shortfall and whether or not a proportion of the dividend should be withheld to address the shortfall(s) in question. This decision rests with the Board, but it will explain transparently through the APR the process it has carried out to reach its decision.</p> <p>As we have already set out, the Board will consider:</p> <ul style="list-style-type: none"> <li>• our continued financeability, and compliance with covenant and licence conditions;</li> <li>• our continued prudent position in relation to our pension obligations;</li> <li>• the emergence of new and compelling investment needs to meet service challenges or resilience issues; and</li> <li>• any relevant external issues that may impact on our overall resilience.</li> </ul>	
Securing confidence and assurance	SSC.CA.A3	<p>There remain some details to be finalised, for example details of the underlying metrics and associated weightings, and confirmation as to whether the company will have a single scheme or an annual and long-term scheme. Once finalised, we expect South Staffs Water to provide an update in its response to the draft</p>	<p>We are pleased to provide further clarification concerning our AMP7 remuneration arrangements for executives. During 2020 to 2025, we will operate both an annual and long-term incentive scheme.</p> <p>In relation to the annual scheme, we confirm that:</p> <ul style="list-style-type: none"> <li>• one-third of the award will be derived from financial objectives (profit, cash generation, totex and cost efficiency);</li> </ul>	<p>See page 220 of our <a href="#">April submission</a></p> <p>See also United Utilities' <a href="#">supplementary documentation</a></p>

Response to Ofwat's draft determination on our business plan for 2020 to 2025  
South Staffs Water (incorporating Cambridge Water)

Ofwat test area	Action reference	Ofwat's action taken from the draft determination	Our response to Ofwat	Signposting/ further information
		<p>determination that it is committed to meet the expectations we have set out in 'Putting the sector back in balance'.</p> <p>We expect the company and its remuneration committee to ensure its performance related executive pay policy demonstrates a substantial link to performance delivery for customers through 2020-25 and is underpinned by targets that are stretching.</p> <p>Trust and confidence can best be maintained where stretching performance is set by reference to the final determination and taking account of stretching regulatory benchmarks (for example delivery of upper quartile performance) and should include a commitment that it will continually assess performance targets to ensure targets will continue to be stretching throughout 2020-25.</p> <p>We expect the company to report transparently, in its annual performance report, about further updates to the development of its policy that will apply in 2020-25.</p>	<ul style="list-style-type: none"> <li>one-third will be derived from customer service objectives (C-MeX, D-MeX and complaints); and</li> <li>one-third will be derived primarily from performance arising from the standard outcomes for the sector (leakage, supply interruptions, CRI, PCC, mains bursts, unplanned outages and employee safety).</li> </ul> <p>So, most of the variable pay (two-thirds) will be based on performance delivery for customers. The Remuneration Committee will retain a level of discretion under the framework outlined above; it may create additional objectives to respond to emerging challenges or a change in priorities. It may also include additional personal objectives within the above categories from time to time. We will publish and report on these in a transparent manner.</p> <p>We will initially calibrate the targets set for the annual scheme against the final determination outcomes. During 2020 to 2025, the Remuneration Committee will monitor the level of stretch contained within the targets with reference to the upper quartile level for the sector. Targets will be modified as necessary during the period to ensure they remain appropriate and challenging.</p> <p>As we have disclosed previously, we intend to operate a parallel long-term incentive scheme. We are still designing this scheme, and will complete the work before the start of AMP7. But we are able to confirm that it will adopt the expectations set out in 'Putting the sector back in balance' and that most potential payments will be based on performance delivery for customers.</p> <p>We also confirm that the scheme will be calibrated initially against the final determination outcomes and reviewed each year during the</p>	<p><a href="#">on executive performance pay</a>, which we are citing as an example of good practice</p>

Response to Ofwat's draft determination on our business plan for 2020 to 2025  
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Ofwat test area	Action reference	Ofwat's action taken from the draft determination	Our response to Ofwat	Signposting/ further information
			<p>period to 2025 with reference to the upper quartile level for the sector.</p> <p>In respect of both awards made against the annual and long-term incentive schemes, we confirm that we will report these transparently in the APR.</p>	
Securing confidence and assurance	SSC.CA.A7	<p>South Staffs Water is required to provide further evidence to explain the scope of the third party review that was undertaken on its tax forecasts and the outcome of the work.</p> <p>Should the company not provide sufficient evidence in advance of the Final Determination, we will consider whether it is appropriate to make an adjustment to the tax allowance in the Final Determination to reflect this.</p>	<p>We took a proportionate approach to the assurance of our tax computations. The overall tax allowance in our April submission was £3.0 million over the period, equating to less than £1 on customer bills.</p> <p>The third party review was in the form of a discussion of the approach as set out in our response to SSC.CA.A7. Although the third party did not raise any concerns, we did not undertake this as a formal engagement, and, as such, we did not receive a report as an output. A more detailed review of our tax methodology and calculations was carried out by our independent internal audit function.</p> <p>The tax inputs in table App29 are relatively straightforward as we do not have any significant allowable or disallowable expenditure, other taxable income or brought forward allowances. So, the assurance work concentrated on the brought forward allowances and the split of forecast capex.</p>	n/a
Regulating developer services	Section 5.5 of the appendix on Ofwat's proposed approach to regulating	To give effect to our proposals related to diversions, we are consulting on whether the list of Excluded Charges for the purposes of Condition B should include amounts payable in relation to diversions other than those required by section 185 of the Water Industry Act 1991. This change would	<p>We agree with the proposed change to licence Condition B to include amounts payable in relation to diversions to the list of Excluded Charges, except those required by section 185 of the Water Industry Act 1991.</p> <p>We have no comments on the proposed definition.</p>	n/a

Response to Ofwat's draft determination on our business plan for 2020 to 2025  
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Ofwat test area	Action reference	Ofwat's action taken from the draft determination	Our response to Ofwat	Signposting/ further information
	developer services	<p>require the agreement of each water company for the purposes of the definition of 'Excluded Charges' in paragraph 2 of Condition B of its appointment (licence).</p> <p>We ask that each water company therefore indicates whether or not it would be prepared to agree to this and whether it has any comments on the following proposed definition:</p> <p>'In relation to the period from 1 April 2020 to 31 March 2025, amounts payable in relation to the alteration or removal of any relevant pipe (as defined in section 158 of the Water Industry Act 1991) or other apparatus that the Appointee is required to carry out under the New Roads and Streets Works Act 1991 or any other statutory provision except section 185 of the Water Industry Act 1991.'</p>		

## A1.1 Our response to action SSC.PD.A5 from the IAP

In its draft determination appendix on [accounting for past delivery actions and interventions](#)<sup>27</sup>, Ofwat stated that we had not responded to the action. We believe that we did respond to this action in our April submission and so we reproduce our responses in full below. (Emphasis added for signposting.)

In the IAP, Ofwat challenged us to provide further evidence to **support our assumption that the proportion of self-lay would increase significantly**, including the steps we have taken to:

- promote the take up and delivery of self-lay for new connections across our South Staffs and Cambridge regions; and
- achieve the projected significant increase in self-lay.

Our assumptions around the increase in self-lay came from the expectation that a large proportion of housing development would be in greenfield sites compared with the historic number. Based on our experience in the Cambridge region, these types of development had been popular with SLPs. One example was the significant Trumpington Meadows development by Barratt Homes, which was entirely a self-lay site (with the infrastructure provided by Energetics).

We also assumed that the change in charging rules, with a greater emphasis on transparency, would also help to stimulate the levels of SLP and new appointments or variations (NAV) activity.

We have always been transparent with developers about the choices they have in delivering connection services. Historically, in responding to developer requests, we have always set out the cost if we carry out the work, as well as the asset value for an SLP to carry out the work.

With the introduction of new charging rules, our developer charges scheme clearly sets out the options available to developers in using SLPs<sup>28</sup>. We have also been promoting NAVs, and for the past two years our charges scheme has set out the bulk charge we would levy in line with Ofwat's decision document published in May 2018. This has already generated interest in a number of different sites, including the 6,000-home development in Sutton Coldfield set out in the local development plan for Birmingham.

The real issue is that the significant number of smaller or infill developments are not appealing to SLPs as the benefit from the economies of scale are not sufficient, even when offering a multi-utility solution.

In the IAP, Ofwat challenged us to provide further evidence on **how much of the additional connections costs are covered by the unit costs for connections** set out in our original submission.

In response, we set out below an analysis of the split of connections over the period. Although non-standard connections are not included in the Ofwat commissioned report, we think that it may be

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<sup>27</sup> 'PR19 draft determinations: South Staffs Water – Accounting for past delivery actions and interventions', Ofwat, July 2019. [www.ofwat.gov.uk/wp-content/uploads/2019/07/PR19-Draft-Determinations-South-Staffs-Water-Accounting-for-past-delivery-actions-and-interventions.pdf](http://www.ofwat.gov.uk/wp-content/uploads/2019/07/PR19-Draft-Determinations-South-Staffs-Water-Accounting-for-past-delivery-actions-and-interventions.pdf)

<sup>28</sup> 'Developer Services charges 2018/19', South Staffordshire Water plc, April 2018. [www.south-staffs-water.co.uk/media/2126/ssc-developer-charges-2018-19.pdf](http://www.south-staffs-water.co.uk/media/2126/ssc-developer-charges-2018-19.pdf)



closely aligned to a 9m footway/carriageway, which is likely to include additional costs such as traffic management.

Company categorisation	Equiv. bench-marking report category	2015/16	2016/17	2017/18	2018/19
Standard unmade ground – short	Verge 2m	33%	35%	49%	39%
Standard unmade ground – long	Verge 4m	6%	4%	8%	5%
Standard footpath/highway – short	Footway 2m	8%	20%	11%	13%
Standard footpath/highway – long	Footway 4m	5%	4%	4%	5%
Non-standard connection	Footway 9m	47%	36%	31%	38%

Note: may not add down because of rounding.

Using the above mix and unit rates from the benchmarking report, we have calculated the expected median costs.

Historic 3-year average mix	%	Median from Ofwat report
Verge 2m	39%	£633
Verge 4m	5%	£713
Footway 2m	13%	£774
Footway 4m	5%	£1,009
Footway 9m	38%	£1,597
<b>Weighted average</b>		<b>£1,040</b>

Our three-year actual average unit cost of connection is as follows.

£s	2015/16	2016/17	2017/18	Average
Average unit connection cost	£897	£1,186	£685	£923

This demonstrates that we are more than 10% below the median costs from the benchmarking report.

In the IAP, Ofwat challenged us to provide further evidence around the [appropriateness of basing our forecasts for connections numbers over a short period relating to the final quarter of 2017/18 and the first two months of 2018/19](#).

We now have ten months' data on the actual number of connections carried out in 2018/19 split between company and SLP. We set this out below, along with the annualised figure for the year.

	10-month figure	Annualised figure	%
Company	3,206	3,847	56%
Self-lay	2,568	3,082	44%
Total	5,774	6,929	

In terms of connection costs, it is the number of company connections that is relevant, and the estimate of 3,574 connections included in our business plan is within 7% of the estimated annual figure outlined above. So, with two months of forecast remaining, we think it makes sense to retain the current projection and then update it with the actual position in our APR, which we published in July 2019.

The projection for 2019/20 in our business plan was the same as 2018/19. We still think that this is a sensible projection. We have cross-validated this projection using the four-year historical average as set out below.

	2015/16	2016/17	2017/18	2018/19	Average
Company	2,904	2,364	4,637	3,487	3,438
Self-lay	1,272	1,894	2,255	3,082	3,126
Total	4,176	4,258	6,892	6,929	5,564

The four-year average for company connections is 3,438 compared with the projected figure of 3,574 – a difference of only 138 properties (or 3.8%).

In the IAP, Ofwat required us to update [Table WS13 and the WFRIM model to remove this adjustment \(on mains requisitions\) or provide compelling evidence to support why the adjustment is appropriate](#). We set out our response below.

The total claim for mains requisitions is £5.156 million (outturn prices). Of this, £3.112 million relates to the projected mains requisition charges that were omitted from Table W9. This additional developer income results from increased cost that has been legitimately incurred.

We still maintain that we completed the line in Table W9 in accordance with Ofwat's guidance. We set out below the relevant section in Table W9.

E	Capital contributions from connection and infrastructure charges
14	Connection and infrastructure charges (including requisitions and self-lay) treated as a capital contribution in statutory accounts

Ofwat's line definition was: "Capital contributions received from connection and infrastructure charges (including requisition and self-lay). This should exclude any contributions which are recorded as revenue in your statutory accounts – which would be reported in line 2."

The section heading does not refer to mains requisition charges at all and although the line definition refers to requisitions, it is included in brackets. This infers that the line only required connection and infrastructure charges for both company requisition schemes and self-lay schemes.

We believe that other water companies have also interpreted this in the same way. For example, on page 40 of Severn Trent Water's 2018 APR, the commentary to Table 2I states: "Net Wholesale Water capital is £7.7m higher than the Wholesale Price Control. This is due to requisition income of £0.6m omitted from the Wholesale Price Control, s146 infrastructure charges £5.8m higher and new connections revenue £1.3m higher."

We have previously already confirmed to Ofwat that the £3.112 million was netted off totex in our PR19 totex submission even though it was not included in this line.

The remaining £2.044 million of the claim for mains requisition relates to the higher number of company schemes carried out compared with our expectations, resulting in additional costs and income being legitimately incurred in delivering the services required.

## Appendix 2: Legacy developer services charges claim

### A2.1 Overview of our claim

In our PR14 reconciliation submitted in July 2019, we summarised our claim as follows.

Table A1 PR14 developer services reconciliation (£m)

Summary of variances – outturn prices	2015/16	2016/17	2017/18	2018/19	2019/20	5-year total
Variance in connection charges due to number of connections carried out	0.609	0.440	1.532	1.281	1.172	5.035
Variance in the unit price per connection	1.368	1.776	1.082	0.670	1.283	6.178
Variance in infrastructure charges	0.230	0.163	0.931	0.000	0.000	1.324
Variance in mains requisitions due to increase in volume and not included in revenue	0.679	1.746	0.668	1.351	1.111	5.556
<b>Total variance</b>	<b>2.886</b>	<b>4.125</b>	<b>4.214</b>	<b>3.302</b>	<b>3.566</b>	<b>18.092</b>

This showed a reduction of £0.8 million on our original claim submitted in July 2018 as a result of lower unit cost of connection compared with our forecast in 2018/19, which also reduces 2019/20.

Ofwat has accepted our claim for the volume-related variance, which is £6.539 million of the total claim. It has not accepted the variance in the unit cost of connections and all of the mains requisitions.

In table A2 below, we show that most of the £18 million (£15.5 million) is volume related. We also explain the reasons for the other variances.

Table A2 Volume-related variances (£m)

Summary of variances – outturn prices	Company view – September 2018	Ofwat's draft determination	Company view – July 2019
Volume related variance – connections	4.967	4.680	10.894
Volume related variance – mains requisitions	0.000	0.000	3.322
Volume related variance – infrastructure charges	1.324	1.324	1.324
Variance in unit cost of connections	7.436	0.000	0.319
Variance due to change in data table definition	5.156	0.000	2.234
<b>Total variance</b>	<b>18.883</b>	<b>6.004</b>	<b>18.092</b>

## A2.2 Volume of connections

As illustrated above, following the PR14 reconciliation submission, our total claim for income from connections is £11.213 million (£5.035 million plus £6.178 million).

As set out in chapter 2, we consider that all of the adjustment for our developer connections claim is volume related.

At PR14, we submitted our view of developer contributions from connections using a weighted average unit cost. This was based on a forecast split of types of connections and associated unit rates based on information from local plans. This pointed to a significant number of new greenfield developments where connections would be standard length in unmade ground.

In addition, we recognised that there would also be some standard connections in made ground for smaller infill sites. The projections did not suggest any material connections on more significant brownfield sites where additional costs such as traffic management may be required. So, it was assumed this would be zero. In hindsight, we acknowledge that this element of the forecast was too optimistic. But this does not deter from the fact that we have completed 6,388 non-standard connections. All the charges for these were consistent with our charges scheme and have never been contested or challenged.

No further analysis of our unit costs for each type of connection was required as part of PR14, unlike at PR19 where different bands were completed in table App28.

In table A3 below, we set out the assumptions that were used at PR14.

Table A3 Connections by type – PR14 business plan assumptions

	2015/16	2016/17	2017/18	2018/19	2019/20	Total
Number of unmade	859	787	723	650	581	3,600
Number of made short connections	616	565	519	466	416	2,582
Number of made long and non-standard connections	0	0	0	0	0	0
<b>Number of company connections</b>	<b>1,475</b>	<b>1,352</b>	<b>1,242</b>	<b>1,116</b>	<b>997</b>	<b>6,182</b>

The actual/forecast split of company connections are set out in table A4 below.

Table A4 Connections by type – actual

	2015/16	2016/17	2017/18	2018/19	2019/20	Total
Number of unmade	971	830	2,257	1,664	1,431	7,153
Number of made short connections	574	675	958	735	736	3,678
Number of made long and non-standard connections	1,359	859	1,422	1,470	1,278	6,388
<b>Number of company connections</b>	<b>2,904</b>	<b>2,364</b>	<b>4,637</b>	<b>3,869</b>	<b>3,444</b>	<b>17,218</b>

The unit rates used at PR14 were taken from the actual connection costs experienced at 2013/14, with an efficiency challenge applied. These are set out in table A5 below.

Table A5 Connections by type – unit costs

Type of connection	Unit cost (2012/13 prices)
Unmade short connection	£294
Made short connections	£553
Made long and non-standard connections	£1,251

So, the volume variance for each type of connection is as follows.

Table A6 Connection type – volume variance (£m)

Volume variance	2015/16	2016/17	2017/18	2018/19	2019/20	Total
Number of unmade	0.033	0.013	0.452	0.298	0.250	1.046
Number of made short connections	-0.023	0.061	0.243	0.149	0.177	0.606
Number of made long and non-standard connections	1.699	1.074	1.778	1.838	1.598	7.988
Total volume variance (2012/13 prices)	1.709	1.148	2.473	2.286	2.024	9.639
<b>Total volume variance (outturn prices)</b>	<b>1.812</b>	<b>1.243</b>	<b>2.778</b>	<b>2.647</b>	<b>2.414</b>	<b>10.894</b>

The above data highlights the material increase in volumes across the board for each broad class of connection, with a material increase in the long and non-standard connections. The variance on the connections that is volume related is £10.894 million compared with the £11.213 million for connections set out in our updated claim as part of the PR14 reconciliations submission in July 2019.

## A2.3 Mains requisitions

In the draft determination, no allowance has been given for the variance in mains requisitions. But there is a direct relationship between the number of connections and the level of mains requisitions.

We have compared the level of actual company connections with our projections at PR14 and made an assumption that there is a linear relationship between connections and mains length, and cost. From this, we have estimated the additional mains requisitions contributions collected as a result of the higher number of connections. This is set out below.

Table A7 Actual company connections and mains requisitions

	2015/16	2016/17	2017/18	2018/19	2019/20	Total
Number of company connections as per final determination	1.475	1.352	1.242	1.116	0.997	6.182
Actual company connections	2.904	2.364	4.637	3.869	3.444	17.218
Additional connections	1.429	1.012	3.395	2.753	2.447	11.035
Additional connections as a % of total connections	96.8%	74.9%	273.3%	246.7%	245.4%	178.5%
Total mains requisition charge – outturn prices (£m)	0.679	1.746	0.668	1.351	1.111	5.556
<b>Mains requisitions related to additional connections (£m)</b>	<b>0.334</b>	<b>0.748</b>	<b>0.489</b>	<b>0.961</b>	<b>0.789</b>	<b>3.322</b>

## A2.4 Timeline of engagement with Ofwat on the legacy developer services claim

As we explained in chapter 2, throughout the period since PR14 we have been open and transparent with Ofwat on the issue of developer services contributions. We have continued to adopt what we consider a reasonable approach following engagement with Ofwat and have not attempted to alter any charges. At no point during the period has Ofwat ever stipulated that we would be likely to face such a material penalty. Below, we set out the details of our engagement with members of Ofwat since 2016.

Table A8 Engagement with Ofwat since July 2016 on our developer services claim

Date	Engagement
15 July 2016	Email to Andrew Chesworth setting out the issue and requesting a discussion.
18 July 2016	Email to Robert Thorp following, requesting a call to discuss.
27 July 2016	Phone call between Philip Saynor, Tim Orange and Robert Thorp to set out our issue and allow Ofwat to consider.
1 March 2017	Follow-up on the contributions claim under WRFIM with Freddie Levett, our company contact. Confirmation through Andrew Chesworth and Robert Thorp that material changes in developer services would be considered.
6 November 2017	Email from Phil Newland to David Black with our developer services claim.
1 December 2017	Meeting at Ofwat between Philip Saynor, Tim Orange, Andrew Chesworth and Gayle Webb.
7 December 2017	Response sent to Gayle Webb, answering questions from the previous meeting.
11 December 2017	Follow-up call with Andrew Chesworth and Gayle Webb to go through our response to Ofwat and answer any further questions.
13 February 2018	Email from Gayle Webb, advising the claim would be considered if submitted as part of the PR19 business plan.
6 March 2018	Letter from Tim Orange to David Black expressing disappointment that the issue would not be considered before PR19.
14 May 2018	Letter from David Black to Tim Orange confirming the issue would be dealt with at PR19 and thanking us for our early engagement on the issue.

## A2.5 Changes in data definitions for developer contributions at PR14

As we explained in chapter 2, during the PR14 process, the data table requirements were changed several times for the wholesale contributions (table W9, line 14). In the following sections, we set out some of the key changes, although it should be noted that there were also numerous other changes.

### A2.5.1 July 2013

In the final methodology published on the 25 July 2013, the line was as follows.

D	Capital contributions from connection and infrastructure charges		
13	Capital contributions from connection and infrastructure charges	W9013	£m

The line definition was:

13	Capital contributions received from connection and infrastructure charges	W9013
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This clearly excludes mains requisitions charges.



## A2.5.2 February 2014

Ofwat issued revised data tables after its risk-based review of companies' business plans for pre-qualified companies (final version updated 28 February 2014).

The line was as follows.

<b>D</b>	<b>Capital contributions from connection and infrastructure charges</b>	
<b>14</b>	Capital contributions from connection and infrastructure charges	W9013

And the line definition was:

13	Capital contributions received from connection and infrastructure charges. This should exclude any contributions which are accounted for as revenue - which would be reported in line 2.	W9013
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There was still no reference to mains requisitions in this line.

## A2.5.3 June 2014

Ofwat issued a final set of updated tables on 2 June 2014, three weeks before companies were due to submit their revised business plans. Here, there was a subtle change to the line as follows.

<b>E</b>	<b>Capital contributions from connection and infrastructure charges</b>		
<b>14</b>	Connection and infrastructure charges (including requisitions and self-lay) treated as a capital contribution in statutory accounts	W9013	£m

With this line definition:

<b>14</b>	Capital contributions received from connection and infrastructure charges (including requisitions and self-lay). This should exclude any contributions which are recorded as revenue in your statutory accounts - which would be reported in line 2.	W9013
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The associated table guidance on page 10 states:

"These tables have been revised slightly to group some lines into 'third party income' and that 'changes to these data lines are expected if the scope or costing in the business plan are modified'. It does not refer to any changes expected to the line 14 as a result of a definition change."

It was only at this point that requisitions were mentioned, but still not the words 'mains requisitions'. Even so, the wording is ambiguous. We interpreted this line as being all connection charges and infrastructure charges for both requisitions by the company and for self-lay as the words are in brackets. As we set out in our April submission, we believe other companies have also interpreted the line definition in the same way.

## Appendix 3: AMP7 enhancement schemes

### A3.1 Resilience

These schemes have been put forward based on a combination of hydraulic modelling and engineering judgement. The hydraulic models were initially built and calibrated using flow and pressure data by an external consultant, Atkins, and are now being maintained through a rolling programme. External assurance of our hydraulic modelling activities was also carried out in September 2017 in connection with our ISO 55001 accreditation. In addition, the modelling scenario outputs were used to generate part of our proposed AMP7 investment programme, with the approach to producing this programme assured by Jacobs before our original business plan submission in 2018.

Before carrying out any modelling we cross-referenced the model results against the current DMA flow and pressure data to ensure that it is still representative of our current network operation. Where applicable, we also cross-referenced the modelling results against historic events to validate the model's accuracy. Using hydraulic models is an essential tool to allow us to highlight risks and proactively plan interventions for failures before they happen to ensure that customer service levels are maintained. We explain the approach we used in more detail in [appendix A29](#)<sup>29</sup> of our original business plan submission.

To give an overall measure of risk, we then had to determine the likelihood of such an impact occurring. We did this by assessing the historic burst rate of mains that are of a similar age, material and diameter. The statistical model we used to generate the likelihood of failure has been externally assured as part of the price control process.

The likelihood is supplemented by condition assessments where these have been carried out and details of historic bursts.

Below we set out more detail on the resilience schemes outlined in chapter 7.

#### A3.1.1 Norman Road resilience scheme

##### A3.1.1.1 Need for investment

The Smethwick booster zone comprises a booster station feeding a discrete area of 6,847 properties.

**We categorise it as a Category 1 booster, which means that it boosts 24 hours a day into a zone that has no storage or alternative source of supply.** The significant impact of failure means using a tanker would not be an effective operational response, and has been excluded from our optioneering on this basis.

In this zone there are three significant single points of failure.

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<sup>29</sup> 'Appendix A29: Capital investment to deliver a class leading service', South Staffs Water, September 2018.  
<https://www.south-staffs-water.co.uk/media/2326/appendix-a29-capital-investment-to-deliver-a-class-leading-service.pdf>

1. Suction main – approximately 100m of single length 12” cast iron main installed in 1900.
2. Smethwick Booster – duty and two standby pump sets and a diesel generator.
3. Delivery main – approximately 1.7km of single length delivery main, comprising of 1,200m of 12” cast iron main rehabilitated in 1984, and 500m of 12” cast iron main installed in 1924.

Failure of these assets would have a significant impact on service within the zone. This proposed investment is to address all of the single points of failure.

For the mains single points of failure, the probabilities were assessed using the historic burst rate of mains that are of a similar age, material and diameter. The statistical model that was used to generate the likelihood of failure has been peer reviewed by both Jacobs and SEAMS.

The probabilities and consequence of the single points of failures are set out below.

1. **Smethwick booster.** Based on historical asset failure data the station has lost output capability seven times over the past five years. This equates to an observed frequency of once in 1.4 years. The average duration of these unplanned outages was around 1.5 hours. In the event of a complete loss of station output to supply, the modelling identified that the consequence is identical to that outlined previously for the suction main point of failure.
2. **Delivery main.** Looking at mains of a similar material, age and diameter our deterioration model (peer reviewed by Jacobs) forecasts these mains to burst once every 33years. The consequence was established based on an actual failure of the 12” main on 8 January 2019. This burst had an estimated flow rate of 94l/s and the pump was unable to sustain the pressures required to supply all 6,847 customers within the zone. During the period of the mains isolation and repair more than 1,800 customers had no water for a period of more than 12 hours with 170 customers out of supply for more than 18 hours. This burst had the highest impact on the interruptions to supply ODI in the South Staffs region for the past five years. This is the only burst recorded on the 12” cast iron delivery main, which equates to an observed frequency of once in 23 years. Analysis of the cut out from the main showed that there is at least 42 years of life left it. The report states:  
  
“The type of fracture is usually attributed to movement of the pipe and fluctuation in pressure causing the two sections of pipe to be compressed together and the spigot end failing first to the reduced thickness compared to the bell housing. In the balance of probability this is the most likely cause of the failure rather than that of the pipes condition.”
3. **Suction main.** The probability of failure is once in 558 years. This is because of the short length of the main. In the event of a suction main failure, hydraulic modelling shows that approximately 600 properties would have no water on an average day with potentially 3,900 customers having poor pressures (below 15m).

We proactively maintain our network assets and look to understand condition and performance where we can – for example, through surge analysis. These activities drive our base maintenance programme. That said, there are factors which we cannot always account for – such as:

- ground movement;
- third party damage;
- traffic loading; and
- temperature fluctuations.

Therefore, the residual risk post-maintenance is considered to be outside of management control.

To further reduce the likelihood of future unplanned outages at Smethwick booster station, we are carrying out a detailed review of the PLC controls of the booster plant.

#### A3.1.1.2 Best option for customers

Because of the very low probability of failure of the suction main to the Smethwick booster, we have focused our investment mitigation options on failure of the delivery. We considered the following three options to mitigate against these single points of failure, which were identified based on hydraulic modelling and a risk-based workshop.

- **Option 1** – no investment and potentially incur the impacts outlined above.
- **Option 2** – duplicating approximately 1.7km of the single sections of delivery main costing around £480,000 to mitigate the risk of the delivery main failing.
- **Option 3** – the Norman Road resilience scheme. Lay 200m of main and automate a valve located on Norman Road to bring water in from an adjacent supply zone, costing £68,778. The automated valve will allow the main to be conditioned so that it can be accustomed to the flows required to feed the demand of the zone, mitigating against the risk of discolourations.

We consider the Norman Road resilience scheme to be the better option for customers as it involves less main laying, causing less disruption during construction. It is also the least cost option and mitigates the effect of a failure of the booster and any planned outage works at Smethwick booster. The mitigation would have the capability to operate automatically when it detects imminent service level failures, thus safeguarding supplies to 6,847 properties.

#### A3.1.1.3 Robustness and efficiency of costs

We deliver our resilience-based schemes through framework contractors or directly employed resources. The framework contractors were appointed in 2015 following an exhaustive procurement process, which provided full visibility of market rates and assurance that we awarded the contract based upon the best value available.

We continue to monitor performance and value provided by framework contractors and direct labour by allocating a proportion of work (approximately 60%) and asking all parties to submit prices within mini-tenders for the remainder. We continually monitor the performance of all providers against an extensive suite of key performance indicators on a monthly basis (including cost on comparative jobs). This is primarily to drive continuous improvement, but also provides assurance in demonstrating value for money.

Historically, we have tried to conduct these mini-tenders with a wider market participation, but had to acknowledge that framework contractors consistently won the work because of their critical mass and inherent establishment. This led to a reduction in the number of external organisations that were interested in participating in such a process because of their poor rate of conversion. This then became an activity that absorbed overhead within our business but offered no real value.

But we are constantly reviewing best practice across the sector and looking at innovative solutions to ensure that we deliver best value for our customers.

In section 6.3 of our original business plan submission, we evidenced our approach to efficient delivery of wholesale capital expenditure. In section 6.3.1.3, we also outlined the specific efficiency for wholesale capital expenditure applied to these costs, and these are applied on a scheme-by-scheme basis for our resilience investment.

#### A3.1.1.4 Customer protection

Customers are protected through our performance commitments on interruptions to supply and the acceptability of water.

#### A3.1.2 Town Gate duplication

##### A3.1.2.1 Need for investment

Town Gate is the primary supply to the Sutton Coldfield zone (average demand in 2018/19 was 14ML/d). During 2018/19, it supplied 93% of the water to the zone. Over the same time period, the other inputs at Chester Road and Camp Road contributed 6% and 1% of the demand, respectively.

There are twin trunk mains (4.5km in length) supplying the Town Gate control valve. But there are some short sections of only a single 18" cast iron trunk main installed in 1962.

Hydraulic modelling indicated that if the single length of 18" main failed during peak hour demands on an average day, the following number of properties would have no water for the respective durations

- Around 17,500 properties for less than 3 hours.
- Around 4,000 properties for durations of between 3 and 12 hours.
- Around 1,000 properties for durations of more than 12 hours.

Given that these single lengths of mains are located within Sutton Park, which is a Site of Special Scientific Interest (SSSI), access outside of opening hours could prove to be problematic and, as a result, may extend the period of customer impact.

Since our burst records began in 1996, the only burst recorded on the 18" cast iron main, was in 2007, which equates to an observed frequency of once in 23 years. We carried out a non-destructive test (NDT) in 2012, which showed that the main had a minimum remaining life of 21.8 years. So, at the time of writing, we expect the main to have 14.8 years of life remaining.

Given the criticality of these mains, we carry out base maintenance activities on apparatus located on these mains and also the control valve located at Town Gate.

We proactively maintain our network assets and look to understand condition and performance where we can – for example, through surge analysis. These activities drive our base maintenance programme. That said, there are factors which we cannot always account for – such as:

- ground movement;
- third party damage;
- traffic loading; and
- temperature fluctuations.

Therefore, the residual risk post-maintenance is considered to be outside of management control.

#### A3.1.2.2 Best option for customers

We considered the following three options, which identified based on hydraulic modelling and a risk based workshop:

- **Option 1** – no investment and potentially incur the customer impacts outlined above.
- **Option 2** – duplicating the remaining single lengths of mains (from Streetly Gate to Town Gate within Sutton Park) at a cost of £444,729.
- **Option 3** – laying a new 600mm main from the 24" Foley Rd/Chester Rd, along Chester Rd/Monmouth Drive to the 15" main costing around £3.6 million. This additional main would compensate for the Town Gate feed into the Sutton zone.

We considered that duplicating the remaining single lengths of main within Sutton Park was considered the best option for customers as it fully mitigates the risk at the least cost.

#### A3.1.2.3 Robustness and efficiency of costs

We deliver our resilience-based schemes through framework contractors or directly employed resources. The framework contractors were appointed in 2015 following an exhaustive procurement process, which provided full visibility of market rates and assurance that we awarded the contract based upon the best value available.

We continue to monitor performance and value provided by framework contractors and direct labour by allocating a proportion of work (approximately 60%) and asking all parties to submit prices within mini-tenders for the remainder. We continually monitor the performance of all providers against an extensive suite of key performance indicators on a monthly basis (including cost on comparative jobs). This is primarily to drive continuous improvement, but also provides assurance in demonstrating value for money.

Historically, we have tried to conduct these mini-tenders with a wider market participation, but had to acknowledge that framework contractors consistently won the work because of their critical mass and inherent establishment. This led to a reduction in the number of external organisations that were interested in participating in such a process because of their poor rate of conversion. This then became an activity that absorbed overhead within our business but offered no real value.

But we are constantly reviewing best practice across the sector and looking at innovative solutions to ensure that we deliver best value for our customers.

In section 6.3 of our original business plan submission, we evidenced our approach to efficient delivery of wholesale capital expenditure. In section 6.3.1.3, we also outlined the specific efficiency for wholesale capital expenditure applied to these costs, and these are applied on a scheme-by-scheme basis for our resilience investment.

#### A3.1.2.4 Customer protection

Customers are protected through our performance commitments on interruptions to supply and the acceptability of water.

#### A3.1.3 All Saints Way

##### A3.1.3.1 Need for investment

The All Saints Way valve complex comprises strategic 18", 24" and 27" trunk mains serving our Walsall and West Bromwich supply zones. At this location, there are permanent valve isolations between these zones. These valves and additional apparatus are located in the centre of a major carriageway of the A4031. This means that some of the mains apparatus are inaccessible without traffic management.

In both the Walsall and West Bromwich zones, there are several additional smaller inputs into these zones. However, these cannot maintain service levels alone during certain peak demand conditions. During 2018/19, 55% of the water serving the Walsall zone came through the All Saints complex; for the West Bromwich zone it equates to 33%.

If there was a burst on the 27" Walsall zone main, or any of the other trunk mains, within the vicinity of the All Saints Way complex, then because of the volume of water from the failure point (around 18MI/d rate) it would not be possible to access the required valves to isolate the failed main. This would result in having to extend the mains isolation such that the primary feed serving our Walsall zone would have to be isolated from supply, and there would be no potential to backfeed the zone through the West Bromwich mains at All Saints Way.

Hydraulic modelling shows that the impact of this isolation on the 2018 peak day (our most recent peak data) would potentially have the following impact on our customers.

- Around 6,354 properties with no water for less than 3 hours.
- Around 727 properties with no water for between 3 and 12 hours.
- Around 17,429 additional properties with low pressure.

Looking at mains of a similar material, age and diameter our deterioration model forecasts these mains to burst once every 31 years.

The valves within this complex are required to be operated to proactively maintain air valves on the 18" main and 24" main. Failure to maintain these valves will result in the probability of a burst increasing.

These valves are extremely difficult to access and there is very little opportunity for proactive maintenance on some of our apparatus. In addition, this is a heavy traffic loaded highway/junction and subsequent ground movement and heave are beyond our control.

While we proactively monitor for surge pressures, and have sophisticated computer controlled valves in operation to manage working pressures, our assets cannot accommodate any sudden changes attributable to large customers or any other third parties – for example, fire-fighting. We proactively maintain our network assets and look to understand condition and performance where we can – for example, through surge analysis. These activities drive our base maintenance programme. That said, there are factors which we cannot always account for – such as:

- ground movement;
- third party damage;
- traffic loading; and
- temperature fluctuations.

Therefore, the residual risk post-maintenance is considered to be outside of management control.

#### A3.1.3.2 Best option for customers

We considered the following two options, which were identified based on hydraulic modelling and a risk-based workshop.

- **Option 1** – no investment and incur the impacts outlined above.
- **Option 2** – an option to relocate the valves and mains out of the carriageway to suitable locations such that any mains failure would not inhibit access, or operation, of the strategic valves. This scheme design would also facilitate easy access to all our apparatus for maintenance purposes.

Given the criticality of the assets within the All Saints Way complex, providing sufficient water from elsewhere is not viable without substantial additional infrastructure, with costs being far in excess of the preferred solution. The relocation option is the only viable option to mitigate the risks and consequential failures we have outlined. It will ensure that any future mains failure, either within the vicinity or at All Saints Way, can be mitigated and supplies to our customers within the Walsall and West Bromwich zones are protected.

#### A3.1.3.3 Robustness and efficiency of costs

We deliver our resilience-based schemes through framework contractors or directly employed resources. The framework contractors were appointed in 2015 following an exhaustive procurement process, which provided full visibility of market rates and assurance that we awarded the contract based upon the best value available.

We continue to monitor performance and value provided by framework contractors and direct labour by allocating a proportion of work (approximately 60%) and asking all parties to submit prices within mini-tenders for the remainder. We continually monitor the performance of all providers against an extensive suite of key performance indicators on a monthly basis (including cost on comparative jobs). This is primarily to drive continuous improvement, but also provides assurance in demonstrating value for money.



Historically, we have tried to conduct these mini-tenders with a wider market participation, but had to acknowledge that framework contractors consistently won the work because of their critical mass and inherent establishment. This led to a reduction in the number of external organisations that were interested in participating in such a process because of their poor rate of conversion. This then became an activity that absorbed overhead within our business but offered no real value.

But we are constantly reviewing best practice across the sector and looking at innovative solutions to ensure that we deliver best value for our customers.

In section 6.3 of our original business plan submission, we evidenced our approach to efficient delivery of wholesale capital expenditure. In section 6.3.1.3, we also outlined the specific efficiency for wholesale capital expenditure applied to these costs, and these are applied on a scheme-by-scheme basis for our resilience investment.

#### A3.1.3.4 Customer protection

Customers are protected through our performance commitments on interruptions to supply and the acceptability of water.

#### A3.1.4 Bourn Tower, Cambourne

##### A3.1.4.1 Need for investment

Bourn Tower serves a discrete area comprising 3,232 properties within our Cambridge region. Water to the tower comes from a single input to the zone, namely Bourn booster. Based on average operational capacity of the tower, and average demand conditions, there is only eight hours' contingent storage provision.

The storage tower is supplied from the booster by a 1.7km of single 250mm ductile iron trunk main laid in around 1989, with no alternative supply. Since the main was laid we have no records of any bursts, but by analysing mains of a similar cohort we expect the main to burst once every 28 years. Our experience shows that a burst on a trunk main in a similar location can take up to 12 hours to repair; in this scenario, the tower would empty before the repaired section of trunk main was reintroduced.

If this 250mm main failed, we are able to re-zone 1,574 properties onto adjacent zones. But there are still 1,658 properties that are reliant on being supplied from the tower. Failure of the main culminates in the inability to pump water into the zone through Bourn booster, leading the tower to empty within eight hours. In reality, a burst on the main will deplete the storage at a faster rate.

We proactively maintain our network assets and look to understand condition and performance where we can – for example, through surge analysis. These activities drive our base maintenance programme. That said, there are factors which we cannot always account for – such as:

- ground movement;
- third party damage;
- traffic loading; and
- temperature fluctuations.

Therefore, the residual risk post-maintenance is considered to be outside of management control.

#### A3.1.4.2 Best option for customers

We considered the following options to improve the risk of losing supplies to customers included.

- **Option 1** – no investment and incur the impacts outlined above.
- **Option 2** – duplicating the main supplying Bourn Tower costing £410,284.
- **Option 3** – a new booster input to the Bourn Tower zone and associated main laying (approximately 5km) at a cost of around £1.6 million.

Options 2 and 3 fully mitigate the risk of failure of the single zonal input/s. But as the second option marginally reduces the opex costs for Bourn booster station by £1,000 a year, it is the best solution for our customers.

#### A3.1.4.3 Robustness and efficiency of costs

We deliver our resilience-based schemes through framework contractors or directly employed resources. The framework contractors were appointed in 2015 following an exhaustive procurement process, which provided full visibility of market rates and assurance that we awarded the contract based upon the best value available.

We continue to monitor performance and value provided by framework contractors and direct labour by allocating a proportion of work (approximately 60%) and asking all parties to submit prices within mini-tenders for the remainder. We continually monitor the performance of all providers against an extensive suite of key performance indicators on a monthly basis (including cost on comparative jobs). This is primarily to drive continuous improvement, but also provides assurance in demonstrating value for money.

Historically, we have tried to conduct these mini-tenders with a wider market participation, but had to acknowledge that framework contractors consistently won the work because of their critical mass and inherent establishment. This led to a reduction in the number of external organisations that were interested in participating in such a process because of their poor rate of conversion. This then became an activity that absorbed overhead within our business but offered no real value.

But we are constantly reviewing best practice across the sector and looking at innovative solutions to ensure that we deliver best value for our customers.

In section 6.3 of our original business plan submission, we evidenced our approach to efficient delivery of wholesale capital expenditure. In section 6.3.1.3, we also outlined the specific efficiency for wholesale capital expenditure applied to these costs, and these are applied on a scheme-by-scheme basis for our resilience investment.

#### A3.1.4.4 Customer protection

Customers are protected through our performance commitments on interruptions to supply and the acceptability of water.

### A3.1.5 Caxton Gibbet to Papworth

#### A3.1.5.1 Need for investment

There is currently only one 1.7km 250mm asbestos cement (AC) main feeding a discrete area from the Caxton Gibbet roundabout to Papworth, Papworth St Agnes and Graveley. There is also no storage within this zone.

Hydraulic modelling shows that with the current network configuration there is no suitable alternative supply for the customers in this area in the event of failure of the AC main. Since our mains burst records began in 1990 there is no record of a failure on this particular section of AC main. But looking at mains of a similar material, age and diameter we expect the main to burst once every 41 years.

Should the main burst during the day then the hydraulic model indicates that more than 1,600 customers would experience supply interruption. Based on our experience it can take about 12 hours to isolate, repair and restore mains of this cohort in similar locations.

We proactively maintain our network assets and look to understand condition and performance where we can – for example, through surge analysis. These activities drive our base maintenance programme. That said, there are factors which we cannot always account for – such as:

- ground movement;
- third party damage;
- traffic loading; and
- temperature fluctuations.

Therefore, the residual risk post-maintenance is considered to be outside of management control.

#### A3.1.5.2 Best option for customers

The options we considered to completely mitigate the risks associated with a mains failure and subsequent impact to our customers included the following.

- **Option 1** – no investment and incur the impacts outlined above.
- **Option 2** – a new booster station at Hilton and upsizing of the new suction main and delivery main at a cost of around £1.5 million.
- **Option 3** – duplicated approximately 1.7km of the single section of main at a cost of £468,332.

We consider duplication to be the best option for customers as it is the least cost option and fully mitigates the risk.

#### A3.1.5.3 Robustness and efficiency of costs

We deliver our resilience-based schemes through framework contractors or directly employed resources. The framework contractors were appointed in 2015 following an exhaustive procurement process, which provided full visibility of market rates and assurance that we awarded the contract based upon the best value available.

We continue to monitor performance and value provided by framework contractors and direct labour by allocating a proportion of work (approximately 60%) and asking all parties to submit prices within mini-tenders for the remainder. We continually monitor the performance of all providers against an extensive suite of key performance indicators on a monthly basis (including cost on comparative jobs). This is primarily to drive continuous improvement, but also provides assurance in demonstrating value for money.

Historically, we have tried to conduct these mini-tenders with a wider market participation, but had to acknowledge that framework contractors consistently won the work because of their critical mass and inherent establishment. This led to a reduction in the number of external organisations that were interested in participating in such a process because of their poor rate of conversion. This then became an activity that absorbed overhead within our business but offered no real value.

But we are constantly reviewing best practice across the sector and looking at innovative solutions to ensure that we deliver best value for our customers.

In section 6.3 of our original business plan submission, we evidenced our approach to efficient delivery of wholesale capital expenditure. In section 6.3.1.3, we also outlined the specific efficiency for wholesale capital expenditure applied to these costs, and these are applied on a scheme-by-scheme basis for our resilience investment.

#### A3.1.5.4 Customer protection

Customers are protected through our performance commitments on interruptions to supply and the acceptability of water.

#### A3.1.6 Cambridge region additional borehole resilience scheme

##### A3.1.6.1 Need for investment

In our Cambridge supply region, three of the largest groundwater sites (Fleam Dyke, Euston and Brettenham) together supply around 30% of the total supply volume. But they are all single borehole sources with no redundancy. So if any of these fail or we need to do planned maintenance, we lose the entire output from the site. During average demand periods the loss of one of these sites could be absorbed within the surplus available. But during annual average and, to a lesser degree, peak demand periods the failure of one of these sites would significantly risk our ability to meet demand. We set out peak outputs and demands below that use actual data from the 2018 peak demand period as well as dry year annual average data taken from our latest Cambridge region WRMP.

- Peak week production capacity – 118MI/d (2018).
- Peak day demand – 104MI/d (2018).
- Surplus – 14MI/d.
- Peak supply from Fleam Dyke – 16.0 MI/d; from Euston – 10 MI/d; and from Brettenham – 15 MI/d.
- Potential demand shortfall during peak – up to 2 MI/d.
- Dry year annual average (DYAA) water available for use (WAFU) – 87MI/d.
- Average day demand – 83MI/d (WRMP).
- Surplus in average demand conditions – 4MI/d.

- Annual average supply from Fleam Dyke – 15.6 MI/d, from Euston – 8 MI/d and from Brettenham – 8 MI/d.
- Potential demand shortfall in an average year – between 4 and 12 MI/d.

The potential deficit resulting from a long-term loss of one of the three largest single borehole assets is greater than the overall surplus in both peak and dry year annual average conditions.

Available peak capacity surplus could mitigate some of the deficit. But this would increase risk to supplies in peak periods as peak availability must also be maintained within the total annual average licensed quantities. As a borehole failure event is likely to be for a prolonged period, this is not a viable mitigation. (see below).

#### A3.1.6.2 Service failure – likelihood and consequence

Water quality driven borehole failure modes are of a type that have a lengthy impact and, as a result, a consequence on the availability of supply. For short-term periods, our peak supply capacity can mitigate the loss of a borehole. But recovery or rehabilitation can take many weeks or months rather than days, which would compromise our ability to maintain supplies to customers within our abstraction licence limits. This risk is greater because the headroom between our available supply and customer demand has been significantly reduced since AMP6 as a result of the WFD 'no deterioration' clause and sustainability changes on our abstraction licences.

For example, at our Horseheath single borehole source (2.8MI/d), we experienced an unforeseen water quality turbidity event which resulted in complete loss of this resource for a three-month period (April to June 2018). The consequence of this unplanned outage event was a loss of 252 million litres of water. If a similar event were to occur with the supplies outlined above, and at a larger volume borehole source, we would be at a risk of exceeding our abstraction licences elsewhere to maintain supplies to customers.

While the frequency of these events is low, the potential consequence is high; this is particularly the case from 2020, when the available resources to replace output is less because of abstraction licence reductions/restrictions and sustainability changes.

Failure mitigation for borehole failure is dependent on mode. Asset failure mitigation – borehole, liner – can be undertaken through monitoring deterioration by inspections, and rehabilitation as required, and this is part of our maintenance regime for most borehole assets. But because of the large size of these three single borehole sources, currently any rehabilitation works would have a similar impact to failure in terms of removing the asset from supply for a period of typically between 3 to 12 weeks. Therefore, a standby borehole asset will also mitigate the impact of maintenance of the assets in future.

Table A9 below illustrates the frequency of failures we have experienced at our single borehole sites within our Cambridge region. These failures occurred because of events that were not foreseeable or within management control – namely, catchment pollution and excessive raw water turbidity. They all culminated in the complete loss of the water production sites for more than seven days because of not having any risk mitigation in the form of borehole duplication.

Table A9 Borehole failures – Cambridge region

No	Borehole station	Date of failure
1	Horseheath	May 2019
2	Abington Park	June 2018
3	Fleam Dyke	Oct 2017
4	Horseheath	Mar 2018
5	Horseheath	Dec 2017
6	Weston Colville	Feb 2018
7	Abington Park	May 2016
8	Weston Colville	Jun 2016
9	Duxford Grange	Dec 2016
10	Abington Park	Dec 2014
11	Horseheath	May 2014
12	Horseheath	Sep 2014
13	Horseheath	Feb 2015

Based on an analysis of the frequency of historical outages of longer than a week, we estimate that we will lose a single borehole because of either turbidity or pollution once every five years and once every 21 years during peak demands. In contrast, for sites with multiple boreholes we estimate that we will lose the site once every 9 years and once every 36 years during peak demands. Some failure modes in boreholes may affect multiple boreholes – for example, rainfall-induced turbidity.

The consequence of a borehole failure may not be immediate, as with an integrated supply system. Resources would be available from other sources, within the limitations of the annual average licence headroom. The immediate impact would be on service reservoir storage, which would reduce to critical levels after 48–96 hours. Some customers would start to receive low pressure or loss of supply at the extremes of the network supplied, and our ability to transfer water to other storage assets would be compromised.

As an indication of consequence, 1MI/d of supply equates to approximately 3,500 properties (140l/p/d at an occupancy rate of 2.03 = 3,519 properties), so between 14,000 and 42,000 properties might be at risk of losing supplies, or experiencing below levels of service based on a shortfall of between 4MI/d and 12MI/d.

As a borehole failure has a long duration, during peak demands the site may not be able to be returned to supply before reservoir storage is depleted, particularly if there are planned outages or failures in other areas of the network. An example of this is if we lost Brettenham and Fleam Dyke simultaneously and had July 2019 level of demands (which were unexceptional) our modelling predicts that Cherry Hinton reservoir would empty within 4 days with approximately on average 13,600 customers in the Cambridge Zone being out of water for 2 days.

#### A3.1.6.3 Best option for customers

We considered the following options to mitigate the loss of strategic boreholes.

- Option 1 – use of alternative abstraction licences.
- Option 2 – bulk supply from neighbouring company.
- Option 3 – duplicate all single borehole sites.
- Option 3 – duplicated borehole at one of large output sources.

While the use of alternative abstraction licences is the cheapest option, it is no longer feasible because of licence reductions that come into effect from AMP7 at critical points of the calendar year. We have ruled this out for not being environmentally sustainable.

A bulk supply from a third party is an option to balance supply and demand in the long term and we are exploring options of this sort through the WRE group. However, options that rely on major strategic infrastructure, such as a new reservoir in Lincolnshire have long lead in times and are not available during AMP7. In addition, the discussions we have had to date with both Anglian Water and Affinity Water have indicated that such a supply would most likely be from a surface water source. This would introduce additional risks around water quality as a result of mixing with our current sources of waters, which are 100% from groundwater. Overcoming this challenge, as well as any associated increased risk of customer contacts, is something we expect to take in excess of five to ten years.

We carried out cost-benefit analysis to determine how many boreholes we should be duplicating during AMP7. This showed that duplicating one of the three largest sources would provide the increased resilience required. Our work showed that this was the best option for customers because it gave the optimal balance between cost and risk. We will explore adding further resilience by additional duplications in subsequent AMPs.

Our analysis has identified that Fleam Dyke is the optimum site for this duplicated borehole.

#### A3.1.6.4 Robustness and efficiency of costs

The costs for the proposed scheme at Fleam Dyke (£612,000) were obtained based on WRMP cost estimates provided by Atkins (see the borehole cost model in figure A1 below). These costs have been benchmarked against historic outturn costs for drilling new boreholes.

We are carrying out a competitive tender to establish suitable supply partners on a framework agreement for the provision of AMP7 drilling and borehole work. We have conducted the tender under EU procurement regulations following the guidelines of a negotiation process. We evaluated the tender on the basis of the 'Most Economically Advantageous Tender'. We are currently assessing tender submissions from shortlisted suppliers, having already removed suppliers deemed less suitable/capable from the process.

The framework will be based on an NEC (New Engineering Contract) basis and will help drive value for money through stringently managing the quality and costs of work carried out. We hope to sign contracts with multiple suppliers, enabling mini pricing competitions for projects and ensuring best value for money throughout the life of the framework.

Figure A1 Atkins borehole cost model

<b>Drill New Borehole</b>	<b>TOTAL</b>	<b>£ 230,000</b>
	Mobilisation / Demobilisation, transportation around site.	£ 30,000
	Drill borehole (610mm casing) assume 200m deep.	£ 90,000
	Casing installation and grouting (610mm), assume 200m deep.	£ 70,000
	Geophysical surveys and investigations.	£ 15,000
	Temporary works and pipelines and test pumping.	£ 25,000
<b>Headworks</b>	<b>TOTAL</b>	<b>£ 75,000</b>
	Headworks, valves, pipework, chamber, kiosk	£ 75,000
<b>Borehole Pumps (all sizes)</b>	<b>TOTAL</b>	<b>£ 205,000</b>
	Installation permanent submersible pump(s)	£ 5,000
	Pumps and associated peripherals	£ 200,000
<b>Abandon Existing Borehole</b>	<b>TOTAL</b>	<b>£ 52,000</b>
	Mobilisation / Demobilisation	£ 10,000
	Remove equipment from borehole	£ 2,000
	Grout up borehole (508mm, 200m deep)	£ 40,000
<b>Borehole Building</b>	<b>TOTAL</b>	<b>£ 50,000</b>
	Notional allowance for building	£ 50,000

#### A3.1.6.5 Customer protection

Customers are protected through the interruptions to supply performance commitment.

### A3.2 Trunk mains cleaning

As referenced in section 7.2, the examples below illustrate the efficacy of PODDS trunk mains conditioning. These graphs should be read chronologically to understand the relationship between staged flow increases and monitored turbidity levels. While this highlights our base maintenance mitigating the risk of discolouration caused by flow variance in certain strategic mains, it is not possible to adequately remove the sediment build up in all the mains outlined in section 7.2 that will enable the benefits of the water treatment works investment to be realised, because of the limited scope to control flow and the internal condition of the main being poor.



Figure A2 Internal mains conditioning – week 1

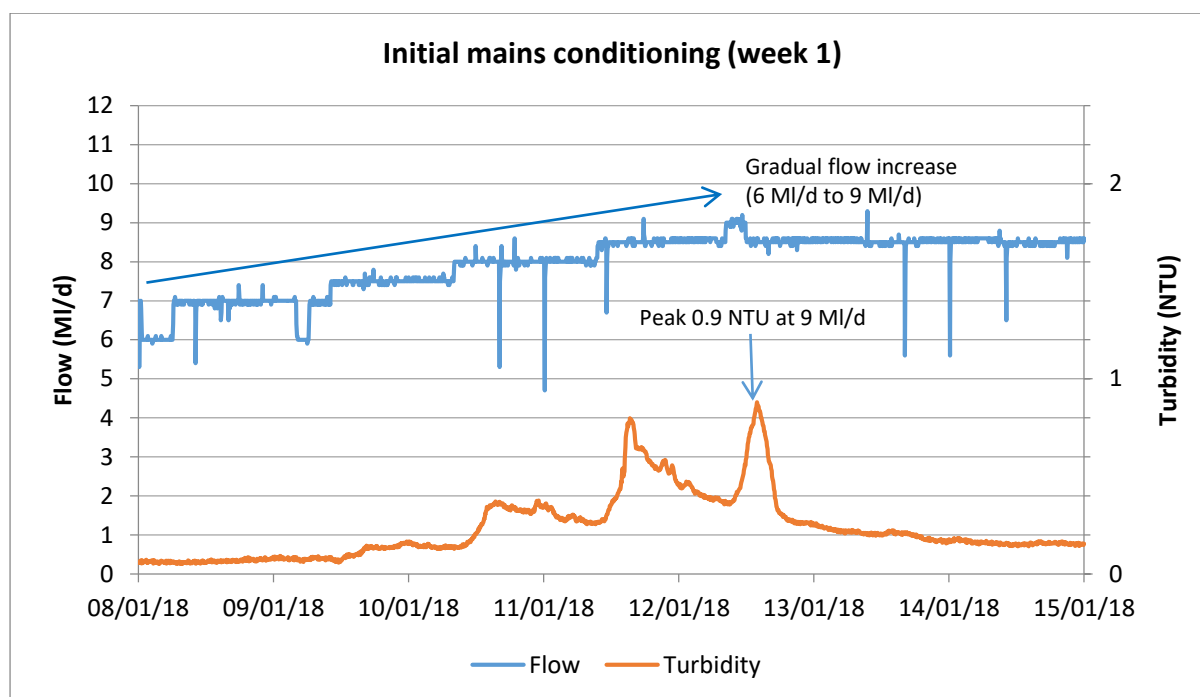


Figure A3 Internal mains conditioning – week 2

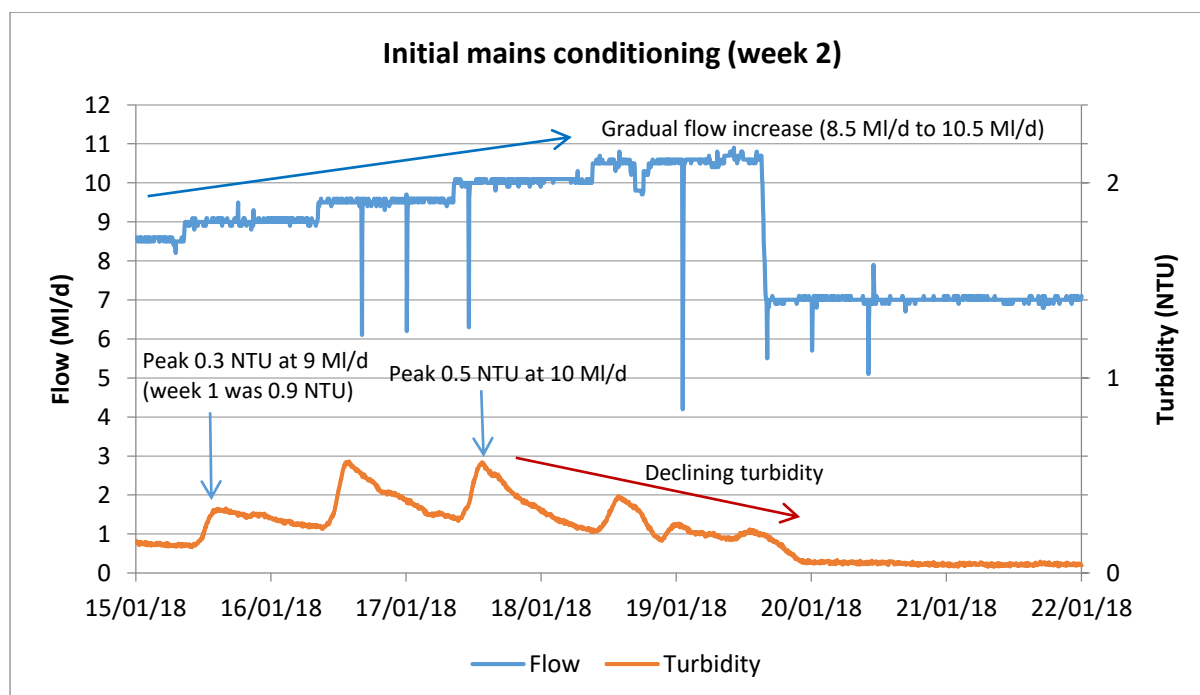
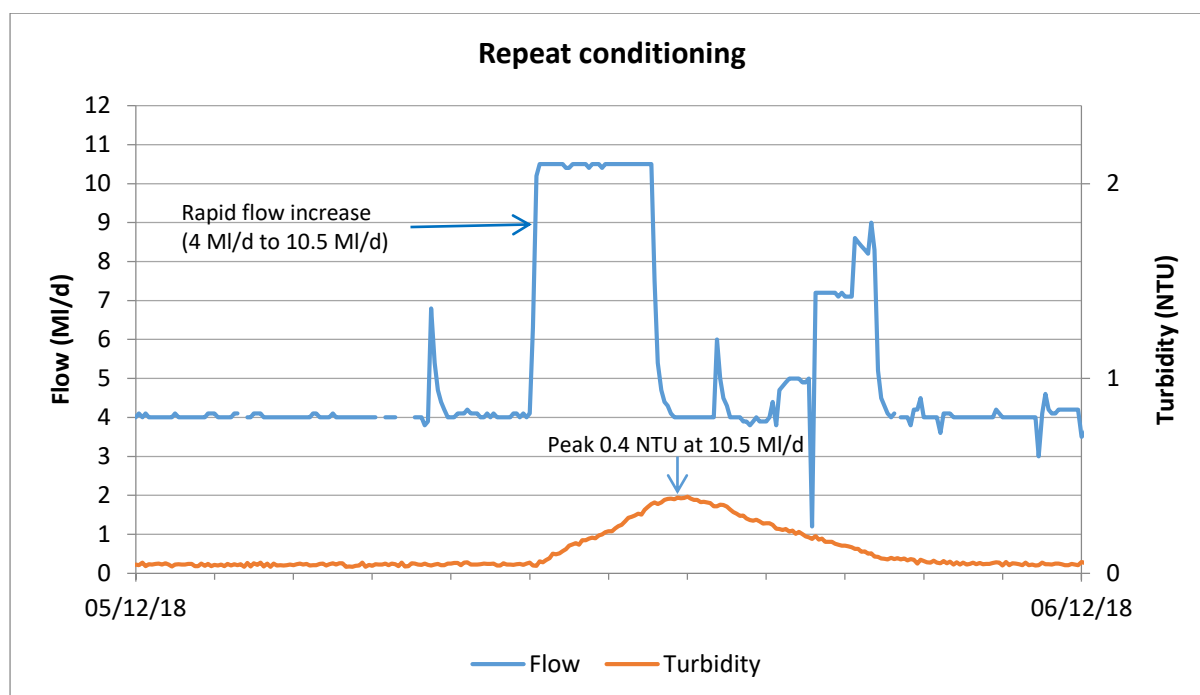


Figure A4 Repeat conditioning



### A3.3 Raw water deterioration

In its draft determination deep dive assessment, Ofwat raised a number of challenges. Below we set out how we have addressed these challenges, and provide evidence and clarity to support the water treatment investments required to mitigate the impacts of deteriorating raw water quality at our Ashwood, Cookley–Kinver and Somerford–Slade Heath groundwater sources

#### A3.3.1 Need for investment

Although the need passed the gateway criteria at the deep dive assessment, we consider it is worthwhile to provide additional detailed supporting evidence to further supplement the need for the investment to address raw water deterioration within our South Staffs region. The additional information will also provide a clearer line of sight in terms of establishing that we have put forward the best solution for our customers.

##### A3.3.1.1 Ashwood

- A letter of DWI support has been submitted for the construction of a treatment plant at Ashwood to increase supply resilience by reducing nitrate and Chlorthal levels in the raw water. (Reference: April 2018 resubmission appendix A3.2.1 – DWI formal notice of support.)
- Ashwood is a strategically important ground water source in our South Staffs region; it is the only groundwater source supplying a discrete water supply zone (Springsmire) serving about 35,000 properties.

- In 2018/19, the average demand for the Springsmire zone was 18.3MI/d and based on our latest WRMP, the deployable output for Ashwood groundwater source in dry year annual average and critical period is 18MI/d. Of all the 26 groundwater sources within our South Staffs region, this site delivers the joint second highest daily output and its criticality is not just confined to meeting zonal demands but that of the entire region.
- Ashwood has four operational boreholes; two of these have nitrates and Chlorthal concentrations above the Prescribed Concentration Value (PCV). Chlorthal is a degradation product of the now-banned pesticide Chlorthal dimethyl and was only identified recently (2014) at this and other groundwater sources within our South Staffs region. A blend is currently operated, both at site by borehole optimisation and within the distribution system. But as we outline in more detail in section A3.3.3.1, we expect that blends will be non-compliant within the AMP7 planning period;
- As the raw water deteriorates further, our operational resilience diminishes as we will have less flexibility in how we can operate the site.

#### A3.3.1.2 Cookley–Kinver

- A letter of DWI support has been submitted for the construction of a treatment plant at Cookley–Kinver to secure compliance with the nitrate standard for drinking water quality. (Reference: appendix A32.2 – DWI formal notice of support.)
- Both Cookley and Kinver are strategically important groundwater sources in our South Staffs region. Their combined peak output capability (32MI/d) represents about 10% of our total deployable output, and at a local supply zone level they provide on average (based on 2018/19 data) approximately 59% of the water required to meet the average demand and transfers for the Shavers End zone, which comprises some 59,000 properties.
- Based on our WRMP, the deployable output for Cookley and Kinver dry year annual average and critical period is 18MI/d and 9MI/d, respectively. Both of these groundwater sources form part of a combined group abstraction licence arrangement, which comprises another five groundwater sources that are not all currently operable. This facilitates the potential to pump up to 14MI/d from our Kinver source at various periods of the year, providing that the existing nitrate levels can be blended to meet our compliance targets. For example, during the period 2014 to 2019, the maximum weekly output from Cookley–Kinver was just over 32MI/d (Cookley – 18.1MI/d and Kinver – 14MI/d).
- Our Kinver source has two boreholes, operated on a duty-standby arrangement, and both have recorded raw water nitrate levels in excess of the PCV. So blending with Cookley is required to achieve compliance in distribution. Cookley has three continuously operated boreholes (no standby), with one recording nitrates in excess of the PCV. Because of the increasing nitrates, the blend with Kinver is forecast to exceed our target nitrate in supply by about 2024 (see also section A3.3.3.2).
- As the raw water deteriorates further, so our operational resilience diminishes as we will have less flexibility in how we can operate these sites. Failure of either of these sources significantly impacts upon our supply resilience.

### A3.3.1.3 Somerford–Slade Heath

- A letter of DWI support has been submitted for the construction of a treatment plant at Slade Heath to secure compliance with the Chlorthal standard for drinking water quality. (Reference: appendix RA02.5 – DWI formal notice of support.) The DWI is familiar with the water quality risks and has agreed to support the case for investment under a quality/resilience driver.
- These sources are the only groundwater sources serving a water supply zone comprising about 11,000 properties (Cannock Low and Rugeley). They are locally critical as they supply customers in a more distant region of our supply network, which helps manage local water quality.
- Based on our WRMP, the deployable output for Somerford–Slade Heath dry year annual average and critical period is 6.5MI/d. These sources would provide at least 50% of the water required to meet the average demand for the Cannock Low and Rugeley zone.
- The outputs from both groundwater sources, Somerford and Slade Heath, have historically been blended together to achieve the PCV for arsenic, sodium and chloride.
- In 2014, following the detection at Slade Heath of Chlorthal in excess of the PCV, both Somerford and Slade Heath sources had to be taken out of supply because of the unsustainability of the blending arrangement (see also section A3.3.3). As a result, this has significantly impacted upon our supply resilience, particularly at a local level.

### A3.3.2 Management control

Deteriorating raw water quality, nitrates and pesticides are largely outside of management control. The groundwater sources mentioned above are either at risk of not being able to be used, or currently unable to be used, as a result of raw water quality deterioration. Over time, we have sought to mitigate these issues operationally where possible. But because of further deterioration in the raw water concentrations of nitrate and Chlorthal, the risk to supply has become too great to deal with operationally, and we now need to invest in additional treatment processes.

As we previously stated in 'RA02 Addendum to Appendix A29 – Wholesale water enhancement cost allowance' the value in WS2 of £13.8 million is the correct value for the entirety of the investment required to address raw water deterioration and includes £1.4 million for a catchment management programme in the Blithfield and Severn catchments. However, catchment management as a potential sole alternative solution to address the current and forecasted deterioration in raw water quality at Ashwood and Kinver–Cookley, has been assessed and this is discussed in greater detail in sections A3.3.3.1 and A3.3.3.2, respectively.

### A3.3.3 Best option for customers

Through blending arrangements, apart from the Somerford–Slade Heath sources, we are currently meeting the required water quality PCV set by the WFD. But while this has been sufficient to provide customers with high quality water to date, the emerging trends in concentrations tell us that this approach will not be sustainable in the future. In the case of Somerford–Slade Heath, there is no potential to achieve compliance by network re-configuration and, as a result, these sources are currently not in supply.

Ion exchange treatment process is a proven effective and efficient solution to remove nitrates from raw water. The treatment process holds DWI approval for nitrate selective resins and has been implemented widely across the UK. It is well documented within the sector that ion exchange is the preferred solution for the removal of nitrates for various reasons, including, for example, its generally lower totex cost than other potential treatment options. In addition, opex is significantly lower than for reverse osmosis, the waste volume can be significantly lower and the footprint of the treatment plant itself is generally smaller than other alternatives (when compared with, say, biological denitrification).

During 2014, when Chlorthal was identified at various groundwater sources, analysis both internally and externally was carried out to identify optimum and effective solutions. At the time, it also became apparent that at one particular high nitrate source (Pipehill), that the use of the ion exchange treatment process was also reducing the Chlorthal concentration that was present in the raw water. We set out the outcomes of this analysis and additional Chlorthal trials in section A3.3.3.3 below.

As evidenced in greater detail in the following sections, we have determined that installing an ion exchange treatment plant is the best solution for our customers. We have carried out a thorough and detailed optimisation process in which we have considered both the benefits to service that the treatment solution will deliver and the cost of the investments. None of the alternative solutions that we investigated could meet all of the required objectives. Indeed, where the water quality issue is either because of elevated nitrates or Chlorthal, or a combination of both, ion exchange treatment was identified as the optimum solution.

All of the groundwater sites experiencing raw water deterioration have received letters of support and a formal notice from the DWI for the investment in treatment plants so that we can ensure that we continue to comply with the nitrate and Chlorthal standards for drinking water quality in the future (refer to appendices A32.1, A32.2 and RA02.5). We ask that this support from the DWI, combined with the additional supporting evidence, should be reflected in any final assessment of our claim to invest in suitable treatment at these works.

We discuss the potential alternative solutions that we considered for each site the following sections.

#### A3.3.3.1 Ashwood

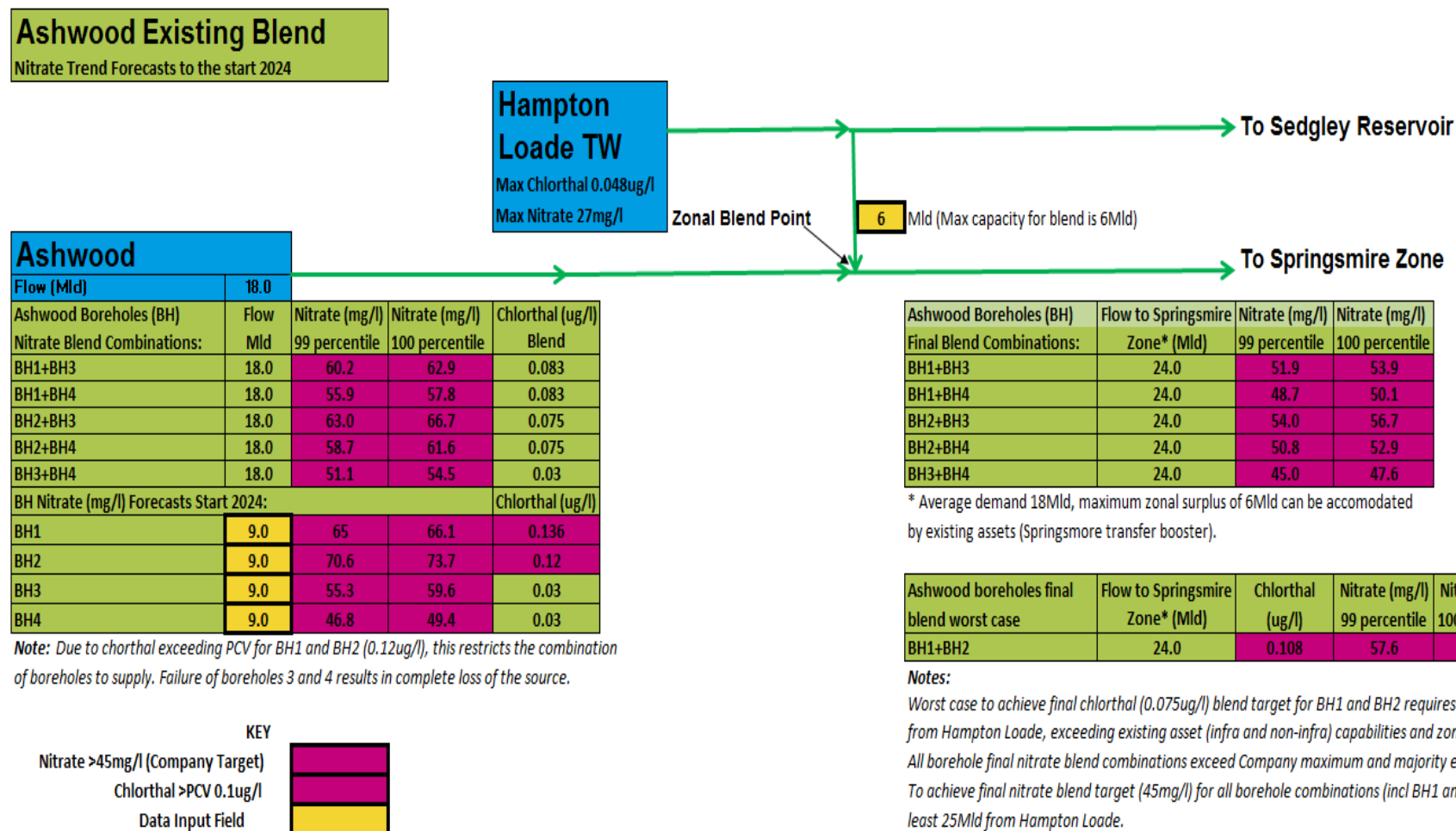
Possible alternatives to treatment for nitrates and Chlorthal at Ashwood included future blending and catchment management. Supporting evidence for ion exchange, rather than any other treatment process, particularly for the removal of Chlorthal, are described in greater detail in the Somerford–Slade Heath section (section A3.3.3.3).

## Blending

Using 2000 to 2016 water quality data for each of the four boreholes at this site, nitrate trend forecasts (99 percentile and 100 percentile) have been generated and these forecasts were then input to a blend model, developed using internal expertise across our production, water quality and asset management teams. This enabled us to determine the longevity and sustainability of the existing blending arrangement. This blend model can be found in appendix 16.

Although certain boreholes at Ashwood are currently being blended, both at the site and within the network, the model results indicated that blend compliance, both in terms of our target value (45mg/l) and the PCV (50mg/l), will be breached by 2024, with Ashwood source pumping at its WRMP dry year annual average and critical period volume of 18MI/d (a snapshot of that forecast is shown below).

Figure A4 Ashwood forecast



All six operational groundwater sources in the southern part of the South Staffs region, including Ashwood, have elevated levels of nitrates, with four of them already being blended as they breach PCV. So, the opportunity to blend between different groundwater sources from different water supply zones is considerably constrained and would not allow us sufficient resilience to meet our supply/demand challenges. We also reviewed our bulk supplies with Severn Trent Water as a potential option, but there are no imports within the vicinity of Ashwood. The only source of water within our South Staffs regions that has an average annual level of nitrates below these other groundwater sources is our Hampton Loade water treatment works.

To achieve blend compliance, even based on the 2024 forecast trends, would require substantial large diameter main laying and network re-configuration, combined with the need for additional non-infrastructure investment in the form of a large volume transfer booster (approximate capital cost: £21 million). By about 2024 the maximum volume of water required to blend Ashwood with Hampton Loade water is 25ML/d and 36ML/d to achieve our blend target levels in distribution for nitrate and Chlorthal respectively. This would result in a significant zonal supply to demand surplus of up to 36ML/d, virtually double the actual average demand for the Springsmire zone (18.3ML/d in 2018/19). Over time, if the upward trend persisted and outpaced catchment management mitigation, ongoing infrastructure and non-infrastructure investment would always be required to attain a long-term blending solution. So, we concluded that blending Ashwood is not a viable option and is not in our customers' best interests.

As with any blend scheme, failure of the dependent source of water will result in complete loss of the source being blended for water quality compliance. So, failure to maintain supply is put at greater risk than with direct treatment and additional risks are also incurred – such as elevated turbidities in the trunk mains network (larger mains flows and increased velocities). There is also the possibility that the ever-changing mix of waters could become distasteful to customers and overall blending reduces supply resilience and hampers operational flexibility.

### Catchment management

We include an ESI summary report in appendix 15, indicating that the identified catchment management measures will likely take up to five years to begin to have an effect on nitrate concentrations at the extraction points. The peak nitrate concentrations are likely to be reduced by approximately 2mg/l in all boreholes after 15 years.

Applying the 15-year projected forecast reduction to regenerate a future nitrate trend based on existing water quality sample data still culminates with a failure to meet compliance and our blend targets for nitrates under the existing supply arrangement.

In addition, given that we expect under the current blending arrangement that the water into distribution will be non-compliant within the AMP7 planning period, then catchment management alone is clearly not a viable solution. It will, however, be adopted as a long-term strategy alongside the treatment plant solution.

### A3.3.3.2 Cookley–Kinver

Possible alternatives to treatment for nitrates at Cookley–Kinver were investigated, including future blending, blending with a bulk supply from Severn Trent Water, and catchment management. We outline these in the following sections.



## Blending

Using 2008 to 2016 water quality data for each of the boreholes at these sites (two at Kinver and three at Cookley), nitrate trend forecasts (99 percentile and 100 percentile) have been generated and these forecasts were then inputted into a blend model to determine the longevity and sustainability of the existing blending arrangement.

The model results indicated that blend compliance, both in terms of our target value and the PCV, will be breached by about 2024 (a snapshot of that forecast is shown below). The forecasts indicate that by the end of 2023 that out of all of the three operational boreholes at our Cookley source, only one is likely to have nitrates below our target level and the PCV. Similarly, the forecasts predict that both boreholes at our Kinver source will be slightly above (borehole number 1) and slightly below (borehole number 2) the PCV.

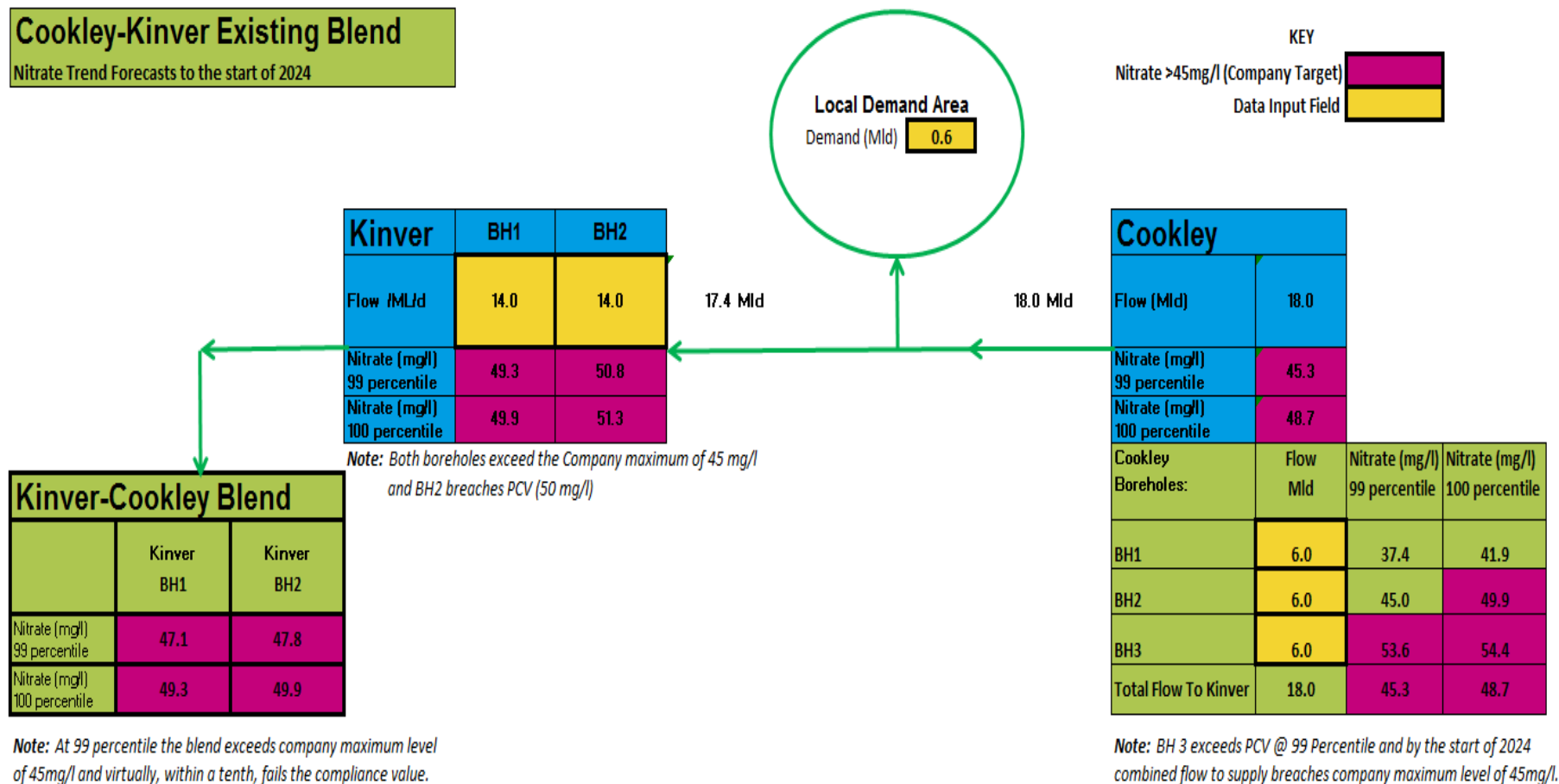
Given that the nitrate trends suggest that neither of these groundwater sources will have nitrates below our target for blending (45mg/l), then achievement of the higher PCV (50mg/l) is not possible. The blend model indicates that it would require the entire deployable output from Cookley to be abstracted from a single borehole with the lowest nitrates (borehole number 1), equating to three times its reliable yield, in order to achieve a satisfactory blend with Kinver pumping at 9MI/d rate.

As previously discussed, while the WRMP dry year annual average and critical period for Kinver is 9MI/d, it has the capacity and potential due to being part of a group abstraction license to pump up to 14MI/d, and this is regularly utilised as and when the existing blend criteria can be achieved. However, based on the forecast nitrate trends (by year end 2023) this would not be possible as it would require 24MI/d from Cookley and from borehole number 1 alone which breaches the permissible abstraction license (the WRMP dry year annual average and critical period is 18MI/d).

Given the location of these two sources is at the southern extremity of our South Staffs region, the option to blend with other sources is heavily constrained because of the excessive infrastructure investment that would be required. But we did review the potential for blending using a bulk import from Severn Trent Water. Currently there is a bulk export, rather than import, agreement with Severn Trent Water within close proximity of our Cookley source station. Based on the maximum nitrate level for the Severn Trent Water in its Cookley supply zone (Ref: ZWC06) of 5mg/l, then at least 5MI/d of imported water would be required to blend Cookley and then subsequently blend our Kinver source to within our target nitrate of 45mg/l. Even excluding any additional capital costs which are likely to be incurred, the cost of the imported water would equate to £2.65 million a year (using our estimated volumetric import charge for 2018/19). So, we did not consider this to be a viable option.

Although the current risk mitigation is achieved by blending, based on the analysis carried out we do not believe this will continue to be a sustainable solution over the short to medium term or give us the necessary supply and network resilience. Indeed, for certain periods more recently we have had to reduce the outputs from both our Cookley and Kinver sources to ensure that our blend policy of 45mg/l is not breached. Thus, blending is not considered to be a viable long-term and robust mitigation to address the raw water deterioration at Cookley and Kinver groundwater sources.

Figure A6 Cookley–Kinver forecast



## Catchment management

An assessment of catchment management mitigations has been carried out (2017) by ESI. For the Kinver source, the summary report, shown in appendix 14, indicates that the measures identified will impact on the level of nitrates within approximately ten years, with reductions in nitrate concentrations of around 2.5mg/l within a 20-year period. For the Cookley site the report indicates that the identified catchment management measures will likely impact within 20 to 40 years with reductions in nitrate concentrations of around 5mg/l.

Even with the 20-year reduction in nitrates at both sources applied to the 2023 year-end forecast nitrates, the existing blend arrangement would not meet all of our requirements in terms of the blend target of 45mg/l and enabling us to also maximise the outputs from both sources (principally Kinver) as and when required to reduce opex costs and maintain supply and network resilience.

Clearly, based on the nitrate trend forecasts, catchment management as a solution in itself is not going to address the nitrate issues at these sources within the required timeframe to achieve water quality compliance. Thus, it is not considered to be an effective and viable short-term solution, but it is likely to have some longer-term benefits and will be adopted alongside our preferred solution of Ion exchange treatment at Cookley–Kinver.

### A3.3.3.3 Somerford–Slade Heath

In 2014, we removed both Somerford and Slade Heath sources from supply following the detection of Chlorthal in excess of the regulatory limit. We commissioned WRc and worked with an engineering contractor, IMTECH, to assess the potential for a defined range of treatment options to remove Chlorthal from groundwater sources. The conclusions of IMTECH's work, together with additional work that we have carried out is summarised in the following sections.

## Ion exchange treatment

During 2014, we also experienced Chlorthal levels in excess of the regulatory limit at our Pipehill groundwater source. This raw water at the site also exceeds the regulatory limit for nitrate, so has operated an ion exchange process since 1993 to reduce nitrate concentrations to an acceptable level. Upon investigation following the detection of Chlorthal at the site, we observed that the final water was often lower than the raw water, which was eventually confirmed to be because of the existing ion exchange process removing some of the Chlorthal from the raw water. Building on this discovery, the existing plant was subsequently used to determine the efficacy of ion exchange in removing Chlorthal. Trials determined that 100% removal was achieved using ion exchange, while the existing treatment process (optimised for nitrate removal) was only designed up to 50% of the works flow. Once the trials demonstrated process capability to completely remove Chlorthal, a new ion exchange plant was duly scoped and subsequently installed at this source in 2018, and continues to be effective in the removal of both Chlorthal and nitrates at the source.

The WRc report in appendix 12 concluded that:

“The ion-exchange process at the Pipehill site, used for nitrate removal, is the most promising process for application at Slade Heath.”

We concur with this view and, based also on our assessment of non-treatment alternatives, strongly believe that ion exchange treatment is the best solution for our customers.

### GAC treatment

GAC was also considered as a potential solution for Chlorthal treatment. But a literature assessment carried out by Atkins suggested that the removal may be limited (as is the case with metaldehyde). From a resilience perspective, we installed a temporary GAC adsorption process at Slade Heath to allow the station to be returned to supply for periods of peak demand. Trials using this vessel have demonstrated that GAC media only provides an effective barrier to Chlorthal for approximately six weeks at full flow. Such short media life expectancies significantly impact the opex-based CBA towards GAC not being the optimum sustainable solution.

Before this trial, we carried out an internal review in 2015 in conjunction with IMTECH. An optioneering exercise was carried out by IMTECH at this time and a presentation of the results of this study can be found in appendix 17. While this study suggested that GAC may be the optimum solution in terms of whole life cost appraisal at this time, this analysis has been superseded with the opex information from the Slade Heath temporary GAC installation detailed above. With more than 12 months' worth of opex cost data, it is clear that the opex costs for GAC are greater because of the relatively short time for which the media provides an effective barrier to Chlorthal. Table A10 below contains a section of the report summarising the totex of permanent solutions to address Chlorthal – **the annual opex cost for GAC has been updated with the data from the temporary GAC adsorption process at Slade Heath collected since 2018.**

Table A10 Slade Heath – IMTECH initial totex estimates (2015)

Description	Option 1 Ion exchange	Option 2 GAC plant	Option 3 PAC dosing	Option 4 MIEX
Output (4MI/d)				
Capex* (£m)	2.97	2.84	4.69	3.71
Opex (£K/yr)	171	340**	354	145

\*All capex costs in this table are not representative of our current submission costs, being in 14/15 price base and for 4MI/d as opposed to the 6MI/d flow rate we would be treating through the works. A competitive tender process has indicated an average cost of the works required as £5.3 million, to which we have applied a 10% efficiency.

\*\*Figure updated with current GAC opex data from Slade Heath temporary installation in 2018, and is for regeneration costs only.

In addition, the WRc laboratory and pilot scale tests indicated that GAC was relatively poor at removing Chlorthal because of its aqueous solubility. Their rapid column test clearly showed that while GAC is capable of removing Chlorthal, it has very limited capacity and effectiveness. WRc concluded that GAC treatment would require frequent regeneration as described above, and for this reason considered GAC not to be a practicable option for the removal of Chlorthal at our Slade Heath source.

While the WRc report also suggested that the addition of powdered activated carbon (PAC) could be considered, they state that this would require an additional downstream treatment process to remove the PAC and the likely operating costs would make the use of PAC inappropriate. Further to this, when IMTECH assessed PAC dosing as an alternative solution, the capital and operating costs were about 1.5 times greater and two times greater respectively than an ion exchange plant.

### Ultraviolet light (UV) irradiation

The tests and analysis carried out by the WRc identified that removal of Chlorthal by UV alone at Slade Heath would be highly energy intensive. Although UV, in combination with hydrogen peroxide, can achieve useful degradation of Chlorthal, it was clear that the cost of energy to achieve 90% removal of Chlorthal at Slade Heath would increase the cost of water production to unacceptable levels. As a consequence, we discounted this as a viable option for the required removal of Chlorthal at our Slade Heath source.

### Ozonation

Based on the WRc tests using aqueous ozone the results indicated that there was no removal of Chlorthal when compared with the starting concentrations; in fact, the tests indicated an increase although this may have been because of analytical issues. Tests were also carried out using perozone, whereby with a greater ratio of hydrogen peroxide to ozone achieved a small reduction (about 5%) in Chlorthal for the Slade Heath water sample but no removal (a slight increase) for the Pipehill sample. They concluded from the tests undertaken that ozone or perozonation achieved any useful degradation of Chlorthal.

### Blending

We have considered blending as a possible alternative to treatment. However, at an early stage in the mitigation process it soon became clear that this was not a viable solution because of the excessive levels of Chlorthal recorded at the Slade Heath source. The range of Chlorthal recorded varied from a minimum of 0.442µg/l to 3.32µg/l (the PCV is 0.1µg/l).

For the zone that Somerford–Slade Heath supply, there would be an average zonal supply to demand deficit of 6.5Ml/d and this would normally be made up from water primarily coming from our Hampton Loade water treatment works. To put the blend solution impracticalities into context in this instance, to achieve compliance blend for Chlorthal in excess of the treatment and pumping capability of the Hampton Loade works would be required, namely in excess of 210Ml/d. So, this option was not considered any further. Similarly, given the very high levels of Chlorthal at our Slade Heath source, any water provided through a bulk import from Severn Trent Water is highly likely to have similar background/low levels of Chlorthal. Thus, this option was also discounted because of the volumes of water that would be required to achieve a compliance blend.

### A3.3.4 Robustness and efficiency of costs – ion exchange treatment plant

Our engineers have worked closely with Costain in the development of both the scope and the costs for ion exchange treatment at the three sites, Ashwood, Cookley–Kinver and Somerford–Slade Heath.

We consider that through competitive tendering, a strong procurement process and deriving economies from packaging these schemes, we can deliver these schemes more efficiently. Costain's original costings for the three sites were £13.7 million and we have applied an efficiency reduction of 10%, which once applied results in a cost of £12.4 million for the three sites. The cost for each site is set out in the table below.

As additional evidence for the robustness of these costs, we have previously supplied the three Costain reports as a sub-appendix in 'RA02.1 Costain PR19 pricing – new treatment at Kinver, Slade Heath and Ashwood'.

Table A11 New treatment works investment location, costs and deployable output

Enhancement cost category		Schemes	Capital costs Costain pre-efficiency (Cell C99) (£)	Capital costs Costain 10% efficiency (£)	WRMP 2019 DO* (MI/d)
Investment to address raw water deterioration	New treatment at groundwater sources	Ashwood	£5.0m	£4.5m	18
		Cookley–Kinver	£4.5m	£4.1m	18 Cookley 9 Kinver **
		Somerford–Slade Heath	£4.2m	£3.8m	6.5
Total net			£13.7m	£12.4m	

\* WRMP 2019 dry year annual average and critical period deployable output (DO).

\*\* Kinver is part of a group licence arrangement and there is spare capacity so that, at times, this site can pump up to 14MI/d into supply.

In section 6.3 of our original business plan submission, we evidenced our approach to efficient delivery of wholesale capital expenditure. In section 6.3.1.3, we also outlined the specific efficiency for wholesale capital expenditure applied to these costs, and these are applied on a scheme-by-scheme basis for our raw water deterioration investment.

### A3.3.5 Customer protection

Our enhancement investment needs – that is, ion exchange treatment, for the groundwater sites discussed relate to regulatory compliance standards (PCVs) for nitrate and Chlorthal, which are fully covered by our performance commitment for CRI. In addition, local changes to network configuration and treatment processes can result in customer contact due to the changing taste of the water our customers receive. Our performance in this area will be covered by our performance commitment for 'customer contact about water quality' for which we have a significant and stretching target in AMP7.

### A3.4 Eels Regulations further supporting evidence

Table A12 below details the scheme specific costs for each scheme comprising our submitted £2.9 million to achieve regulatory compliance, generated through a competitive tender process and

cost estimates from our framework consultants Stantec/APEM using comparable NEP investigations. As detailed in section 7.4, it should be noted that the top four rows, highlighted blue, are those that were referenced as AMP6 implementation schemes (NEP5) but with a completion date of March 2021. As such the Environment Agency have agreed to update the WINEP3 table to include these as AMP7 implementation schemes. For clarity, one of these scheme, 6SSWEels03 – Blithfield reservoir screens, is subject to investigation and expected not to be required. It has been removed on this basis. Also note that the Severn Trent Water contribution of £567,000 is referenced against the Hampton Loade scheme 6SSEels01 to be included in WS1.

Response to Ofwat's draft determination on our business plan for 2020 to 2025  
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Table A12 Breakdown of scheme costs for compliance with Eels Regulations

AMP6 NEP or AMP7 WINEP3	Scheme	Unique ID (& driver code)	Delivery date	Totex estimate	SVT recharge	Comments
NEP but EA confirmed moving into WINEP3 for Implementation	Hampton Loade installation of eel screens	6SSWEels01 (E1 i.e implementation but the the EA has agreed to change to E2 i.e. investigation in AMP6)	30-Mar-21	£1,700,496	£566,832	This cost is the lowest cost from a competitive tender process (awarded to IWS). We are now showing the 1/3 contribution from Severn Trent Water.
NEP but EA confirmed moving into WINEP3 for Implementation	Hampton Loade installation of eel screens	6SSWEels02 (E1 but changing to E2)	31-Mar-21			Two entries for the Hampton Loade screen scheme.
NEP but EA confirmed moving into WINEP3 for Implementation	Nethertown intakes installation of eel screens	6SSWEels04 (E1 but changing to E2)	31-Mar-21	£854,297		Cost based on the lowest cost from a competitive tender (IWS) include the Nethertown Blithe screen, the Trent screen as well as an eel pass i.e. some eel tiles on the exisitng Nethertown fish pass.
NEP but we expect our study will show that a screen is not required. This will allow us to apply to the EA for this screen to become exempt, in which case it will not need to move to WINEP	Screen or alterative measures at Blithfield reservoir	6SSWEels03 (E1 but changing to E2)	31-Mar-21	0		APEM are completing an investigation to demonstrate that this is a low risk site and we expect it to qualify for an EA exemption. This exemption would be justified if our study demonstrates that there are no eels present upstream of Blithfield dam. If this intake is exempt there will be no screen required. We continue to work with the local EA on this.
WINEP3	Nethertown Bilthe Pumpback	7SS200009 (EE_INV but EA thought it should be EE_IMP)	31-Mar-22	£250,000		This WINEP line also involves looking at the barrier downstream of the Nethertown impoundment - WINEP says "ST owned" but should say "SST owned". APEM £250k estimate based on a low flow notch along the entire concrete apron.
WINEP3	Nethertown Trent Abstraction - installation of screens	7SS200010 EE_IMP	31-Mar-25	covered by £854k		Covered by the £854k cost, which is from a competitive tender process. By delivering this screen whilst we are close to the site installing the screen at Nethertown Blithe (rather than as a separate scheme) drives efficiencies in terms of capital delivery because we don't duplicate the mobilisation costs.
WINEP3	NETHERTOWN	7SS100040 WFD_IMP_WRHMBW	31-Mar-21	£50,000		WINEP states that <i>"Changed measure to sustainability change as fish passage is for construction of pass whereas changes may need to be made to operation of intake and licence. Work is ongoing so solution currently unclear, 9 MI/d HoF on Blithe added for now"</i> .  Date of 2021 is from stage plan & is the date that a condition in our abstraction licence runs out. Our cost estimate for this scheme assumes we need to improve our control system at Nethertown to optimise the performance of the existing fish pass.
WINEP3	Chelmarsh Reservoir eels presence investigation	7SS300004	31-Mar-22	£20,000		Described as a light touch investigation in WINEP. During 2019 we have consulted our frameworks consultants, APEM, when preparing these cost estimates. In addition, our final cost estimates draw on prices provided by Stantec/ APEM for comparable NEP investigations.
			Total	£2,874,793		



### A3.4.1 Confirmation of NEP5 to WINEP3 transition schemes

We include below an email from the Environment Agency confirming the updates agreed for the four schemes that are transitioning to implementation in the WINEP3 table instead of the NEP5 table, as discussed in detail in section 7.4 above.

**From:** Miller, Felicity [<mailto:felicity.miller@environment-agency.gov.uk>]

**Sent:** 01 August 2019 15:32

**To:** Ken MacDonald

**Cc:** Lines, Adam; Lucas, Mary; Cope, James; Robertson, Russell; Taylor, Ayesha

**Subject:** RE: Chronology and proposal regarding Eels regs

Ken

Further to your email below and discussions at our meeting earlier in the week, I can now confirm the following way forward:

- 1) We will reclassify the 4 lines on the NEP for AMP6 as an E2 driver, subject to completion of formal alteration forms (template attached);
- 2) We will then add the 3 lines pertaining to Nethertown and Hampton Loade to the WINEP under an EE-IMP driver with all other details remaining unchanged.
- 3) With reference to Blithfield, you mentioned that the investigation has concluded that no implementation work is required. Please submit your assessment of this to me and I will forward onto our fisheries technical specialist for their approval.

I hope you will agree this seems a sensible way forward and look forward to receiving the relevant paperwork in due course.

Kind regards

Felicity

**Felicity Miller**

Principal Account Officer, Operations Catchment Services

[felicity.miller@environment-agency.gov.uk](mailto:felicity.miller@environment-agency.gov.uk)

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## A3.5 Amber WINEP cost detail

We set out in the below table the breakdown of those schemes comprising the £1.5m being submitted as our Amber WINEP costs, as supported by the EA. These have been generated based on estimates from framework consultants and recently undertaken NEP work in AMP6, that was procured on a competitive business. We have also considered cross sector cost information where applicable.

Region	Unique ID	Scheme category/ name	Company proposed unit rate Capex - £m 17/18 CPIH	Measure type	Primary driver	Additional information
South Staffordshire	7SS100051	Rising Brook	0.63	Sustainability Change	WFD_IMP_WRFflow	This is made up of £312k for the UV at Moors Gorse well, £205k for the associated M&E and £113k for re-lining the pipeline.
South Staffordshire	7SS100041	BLITHFIELD RESERVOIR	0.41	Sustainability Change	WFD_IMP_WRHMBW	This is made up of £354k for new pipework from the upper intake on Blithfield reservoir to the downstream fish farm and £56k for automation of compensation release valve.
South Staffordshire	7SS300007	BLITHFIELD RESERVOIR	covered by work for 7SS100041	Sustainability Change	WFD_IMP_WRHMBW	Install new Larinier baffleplates to fish pass: £6k for new baffles and £14k for civils and controls.
South Staffordshire	7SS100040	NETHERTOWN	0.021	Sustainability Change	WFD_IMP_WRHMBW	Reference price based on delivery of Broome Farm lodge borehole.
South Staffordshire	7SS100001	LITTLE HAY - BOREHOLE	0.26	Sustainability Change	WFD_ND_WRFflow	Based on capex estimates of £113k for Sandhills pump/ M&E and installation in addition to £108k for WFD no deterioration ground water modelling of whole aquifer to inform potential sustainability changes.
South Staffordshire	7SS100052	Bourne-Black Brook	0.22	Sustainability Change	WFD_IMP_WRFflow	The three lines in WINEP represent the different WFD water bodies. Combining the solution is logical and more efficient than addressing individually.
South Staffordshire	7SS100053	Bourne-Black Brook (Footherley Brook)	covered by work for 7SS100052	Sustainability Change	WFD_IMP_WRFflow	We will address all three drivers in one programme to ensure efficient delivery.
South Staffordshire	7SS300008	Bourne-Black Brook (Crane Brook)	covered by work for 7SS100052	Sustainability Change	WFD_IMP_WRFflow	WINEP states that the agreed licence changes for AMP7 are to add a flow related condition to Horseheath licence. During 2018-19 we have varied this abstraction licence so that it now includes a Hands Off Flow (HoF) condition which becomes effective from 2025. As a result we don't expect anymore activity or investment to be need for this scheme.
South Staffordshire	7SS300003	NETHERTOWN	covered by work for 7SS100041	Land Management/ Habitat Restoration/ Physical Improvement	WFD_IMP_WRHMBW	
Cambridge Water Co	7CW100023	HORSEHEATH	0	Sustainability Change	WFD_IMP_WRFflow	
		Total	1.541			

### A3.5.1 Correspondence with the Environment Agency confirming our approach to Amber WINEP cost submission

We include below correspondence between ourselves and the Environment Agency as regards the inclusion of our Amber WINEP schemes.



### A3.5.2 Evidence of Environment Agency support for Amber WINEP schemes

**From:** Miller, Felicity [<mailto:felicity.miller@environment-agency.gov.uk>]

**Sent:** 01 August 2019 12:17

**To:** Ken MacDonald

**Cc:** Cope, James

**Subject:** Amber WINEP schemes - cost adjustment

Ken

Further to South Staffs response to our letter on delivery of amber WINEP schemes, I am pleased to see that you intend to pursue a cost adjustment mechanism to fund these. I look forward to seeing this in your post DD submission to Ofwat.

Kind regards  
Felicity

**Felicity Miller**

Principal Account Officer, Operations Catchment Services

[felicity.miller@environment-agency.gov.uk](mailto:felicity.miller@environment-agency.gov.uk)

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## Appendix 4: Glossary

Term	Definition
AMP	Asset management plan – a five-year planning period in water sector in England Wales. Introduced when the water companies were privatised in 1989, AMP periods are linked to Ofwat's regular reviews to set the price, service and investment package that determines the bills customers pay for their water and sewerage services. The current AMP (known as AMP6) covers the five years from 2015 to 2020. The responses to Ofwat in this document are about our plans for AMP7 (2020 to 2025).
Basis points (bps)	A measure used to determine shifts in the weighted average cost of capital (see below). One basis point is the equivalent of 1/100th of 1%, or 0.01%.
Botex	Base total expenditure. See 'Capex' and 'Totex' for more detailed definitions.
Capex	Capital expenditure – that is, expenditure that will be used to improve a company's performance in the future. It is typically used for fixed assets like property, plant and equipment, and building improvements.
IAP	Initial assessment of plans – the process Ofwat carried out after companies submitted their business plans in September 2018 to assess the quality of those plans against nine specific gateways: engaging customers; addressing affordability and vulnerability; delivering outcomes for customers; securing long-term resilience; controls, markets and in innovation; cost efficiency; aligning risk and return; accounting for past delivery; and confidence and assurance. Ofwat announced the results of the IAP on 31 January 2019. After the IAP, South Staffs Water was placed in Ofwat's 'slow track' category.
NEP/WINEP	National Environment Programme/Water Industry National Environment Programme – an Environment Agency programme that sets out what companies are expected to include in their invest plans to meet regulatory environmental obligations.
NPV	Net present value – the value of projected cash flows, discounted to the present. It is a financial modelling method used by analysts and investors to assess the profitability of a company's proposed investments and projects and calculate the expected return on investment.
ODI	Outcome delivery incentive – our outcomes are the promises we have made to our customers on the services they want us to deliver. The outcome delivery incentives are the stretching targets we have set for different areas of our performance (such as customer service, leakage, supply interruptions, water quality and the support we give to customers with the greatest need).
Opex	Operating expenditure – that is, expenditure incurred as a result of a company's day-to-day operations (such as equipment, payroll, insurance and marketing, for example).
P10/P90	P10 is the performance commitment threshold at which there is only a 10% chance of outturn performance being worse; P90 is the threshold at which there is only a 10% chance of outturn performance being better.

Term	Definition
PCC	Per capita consumption – the volume of water each person in a particular area uses on a daily basis. Usually measured in litres per person per day (l/p/d).
RCV	Regulatory capital value – the value of the capital base of a regulated water company. It represents the initial market value of a company, including debt, plus new capital expenditure obligations. It is used by Ofwat primarily to set price controls. It is now also widely used by the investment community as an alternative for the market value of a regulated business.
RORE	Return on regulated equity – a measure used by Ofwat to assess the impact on regulation and price controls on companies' performance and financial returns.
SELL	Sustainable economic level of leakage – the level at which the cost of finding a new source of water is less than the cost of fixing a leak. SELL was Ofwat policy until the 2019 price review (PR19) when it was replaced by percentage reduction charges.
Totex	Total expenditure – that is, taking a combined approach to capital and operating expenditure. Using a totex approach reflects Ofwat's move to regulate based on the full economic consequences of decision making without differentiating whether expenditure was classified as capital or operational. Ofwat's rationale for using totex is that it will ultimately deliver better value and lower costs for customers.
True-up mechanism	A mechanism by which over- or under-recovered revenue can be taken into account in a company's bottom line in the next five-year planning period.
Upper quartile (UQ)	Sector leading; at the forefront of water companies in terms of service and performance. It is the level the 25% of companies have already achieved, or are forecast to achieve.
WACC	Weighted average cost of capital – the average return a company pays its investors to finance its assets (such as its pipes and treatment works). Also known as the 'cost of capital'. In simple terms, it is the equivalent of the interest paid on a loan or mortgage.
WRFIM	Wholesale resources forecasting incentive mechanism – a tool that enables companies' allowed revenues to be adjusted for each year to take account of differences between actual and projected revenues. The WRFIM incentivises companies to avoid revenue forecasting errors by applying a penalty to variations that fall outside a set uncertainty band.
WRMP	<p>Water resources management plan – a legal document that we are required by the Water Industry Act 1991 to develop and adopt every five years. We produce a separate WRMP for both our South Staffs region and Cambridge regions. These documents set out how we will manage our water resources over the long term and maintain the balance between water available for supply and the demand for that water. We have to consult on our WRMPs and submit them to the Secretary of State at the Department for Environment, Food and Rural Affairs (Defra).</p> <p>Our WRMPs are an essential part of our integrated business planning and we review them each year. They have very close links with a number of other plans, including:</p>

Term	Definition
	<ul style="list-style-type: none"> <li>• our strategic environmental assessment, which considers whether the proposals within our plan could cause “significant environmental effects” and to assess the potential impacts of the options we are considering;</li> <li>• our business plan for 2020 to 2025, which sets out our investment and service package for each of the five years, and what that will mean for customers’ bills; and</li> <li>• our drought plan, which we finalised in October 2018.</li> </ul> <p>When developing our WRMPs, we also take into account a range of other information, including:</p> <ul style="list-style-type: none"> <li>• local authority development plans, which considers projections for new housing needs across both regions;</li> <li>• river basin management plans, which include a range of measures that help to meet the overall objective of improving the environment; and</li> <li>• flood management plans, which consider a number of flood management measures that the Environment Agency has identified for both our regions.</li> </ul>