

Wessex Water Services Ltd Response to Ofwat's PR19 Draft Determination – August 2019

Representation reference: Cost Assessment C2

Representation title: STW Capacity

Summary of issue

In the Draft Determination, Ofwat have asked that companies “*respond to our draft determinations and propose alternative drivers for our econometric models or special circumstances that may require a cost adjustment.*” We set out below our objections to the overall approach and respective comments on our cost adjustment claim to STW capacity.

Overall approach

Ofwat made a major change to its approach to growth enhancement costs for DD, intending to capture these through the base cost allowances. The shift in Ofwat's approach to cost assessment for growth from IAP to DD has significant impacts on totex allowances across the board.

- We consider that Ofwat has not followed a reasonable and proportionate process in developing the approach to growth-related expenditure used for its draft determinations, and that the retention of this approach would raise serious questions about whether growth-related expenditure is financeable:
 - Ofwat's IAP and DD have showed a clear preference for benchmarking approach to growth.
 - The approaches to benchmarking treatment of growth at IAP and DD, while quite different to each other, both have substantial limitations as a means to estimate each companies' efficient totex for growth over the 2020-25 period.
 - We do not consider that these approaches provide a reasonable basis on which to remunerate growth-related expenditure through the price control.
 - If the DD approach is to be maintained, then it is essential that Ofwat considers potential adjustments to mitigate limitations of these models.
 - If the DD approach is changed substantially, Wessex Water need opportunity to consider how this affects the need for adjustment.
- For Wessex Water this related to a reduction in the IAP allowance of £41m totex down to an implicit allowance of £32m at the DD (capex only, as stated in FM_CACWSX_ST_DD).
- For wastewater, the DD approach gives significantly lower allowances for growth at the industry aggregate level (£1,566m in DD vs £2,240m in IAP).
- For wastewater, the marginal allowance under the DD approach is between £76 and £150 per new connection per year compared to the IAP marginal allowance of between £1,644 and £2,026 (one-off) per new connection.
- Ofwat's DD approach does not take proper account of the number or rate of new connections (or forecasts of these) as a cost driver for growth-related expenditure. Ofwat states that company scale is a good cost driver for growth costs, however companies with similar scales could have very different connections activity. Based on ONS forecasts used by Ofwat in the DD, growth rates across the industry vary

from 0.33% to 0.85% per year for wastewater for 2020-2025. The forecast growth rate for Wessex Water's region is 0.79% per year for wastewater.

- Ofwat has assumed that the additional categories of expenditure that have now been included within base models are adequately accounted for by company scale variables however no evidence has been provided for this.
- Ofwat's DD approach gives Wessex Water lower growth allowances than at the IAP. Ofwat have stated that in their deep dive to our cost adjustment claim that the implicit allowance in the base plus cost models provides a capex allowance in the region of £32m for STW growth compared to our capex submission of £59.9m (£61.1 totex).

Cost adjustment claim for STW capacity

Ofwat have rejected our cost adjustment claim on the grounds that WSX have:

- not sufficiently justified our need for investment in excess capacity.
 - We provided evidence in our original submission and response to the IAP with respect to the influence of synergies with other drivers and the unique requirements at our Poole STW. We include this information with further clarification in this document.
- not demonstrated WSX are unique.
 - We do not see this as a valid basis for rejecting an adjustment claim but rather the issue relates to whether our efficient totex is significantly different to that funded through the models. Our totex requirements are significantly different to the hypothetical efficient industry average company that is implicitly funded through the models.
 - We have previously provided evidence on how our future and historical investment requirements are not relative to our spread of site sizes and associated economies of scale. We provide further evidence and explanation in this document regarding how these investment requirements, which are outside of our management control, have impacted WSX and further enhance the impact of the allocated allowances being insufficient in the long-term. We have previously provided evidence and reiterate again in this document with regards to the higher unit costs inherent in DWF schemes. The schemes requiring investment in PR19 with enhancement due to DWF are also at small sites, further exacerbating the economies of scale experienced by capacity enhancement at small sites.
- not demonstrated that Ofwat's allowance is insufficient in the long-term.
 - It is difficult to have confidence regarding the funding that will be available through allowances in future control periods given significant changes in Ofwat's approach to cost assessment from PR09 to PR14 and PR14 to PR19. And that this is especially so in relation to expenditure to accommodate growth, for which Ofwat has made fundamental changes from PR19 IAP to DD and currently still does not provide confidence in the approach to price control remuneration of growth. The way that the price control framework deals with uncertainty about future price control remuneration of efficient capital expenditure is via the RCV – i.e. allowing efficient totex in the RCV – which represents a form of regulatory commitment about remuneration in future control periods. WaSCs cannot be expected to have base their

- proposals for the next price control on assumptions regarding what Ofwat's approach to price controls and cost assessment will be over the long-term.
- Ofwat's funding allowance is insufficient to enable WSX to provide the required STW capacity for growth in AMP7. This exacerbates the position in PR14 where Ofwat's funding level for STW growth was insufficient, and WSX has invested significantly more in AMP6 than was allocated in order to meet the population equivalent (p.e.) enhancement required and continue to maintain our permit compliance. We provide further evidence and explanation in this document.

STW capacity	£m
PR19 business plan	61.065
Draft determination	32.0 (+opex)
Representation request	58.757

Change requested

We request that Ofwat reassess our cost adjustment claim for STW capacity programme based on the evidence submitted in our Business Plan, additional evidence in our IAP response and further clarifications relating to the assessment gates provided in this representation to the Draft Determination. We have removed Bristol (Avonmouth) STW from this claim (now subject to a separate claim, refer to representation C1) and as such we request that Ofwat assess our claim for our STW capacity programme on our submission of £58.757m totex.

Rationale (including any new evidence)

Assessment gate: Need for investment = Partial Pass

Bristol (Avonmouth) STW is our largest treatment works and requires an increase in hydraulic capacity under the WINEP FFT driver. The required increase in hydraulic capacity is the primary driver for this investment, which inherently allows for an increase in biological treatment capacity equal to 30,729 p.e.

As this scheme is not adequately allowed for in the implicit allowances for FFT enhancement or base cost allowances, we have submitted this as an additional cost adjustment claim in our representation to the draft determination (refer to representation C1 for further detail).

As such this removes £2.3m for this scheme within this cost adjustment claim for the STW capacity programme with the revised programme as follows (updated from our original submission document, Appendix 8.6.A):

PR19 Growth investment and population

Site ID	Site name	Scheme drivers	Capex growth (£m)	Capacity enhancement (p.e. provided)
13008	AMESBURY STW	Growth	1.9	3,346

Site ID	Site name	Scheme drivers	Capex growth (£m)	Capacity enhancement (p.e. provided)
13027	BOURTON STW	Increase FFT + growth	0.1	204
13041	BURTON STW	DWF growth	4.0	69
13048	CASTLE CARY STW	Increase FFT + quality (BOD)	0.2	1,331
13075	COMPTON BASSETT STW	DWF growth + quality (FFT)	3.4	2,827
13077	CORFE CASTLE STW	Quality (UV) + growth	0.4	235
13353	GREAT WISHFORD STW	DWF growth	4.4	299
13140	HALSTOCK STW	Increase FFT + growth	0.1	39
13158	HURDCOTT STW	DWF growth	8.0	652
13165	KEYNSHAM STW	Quality (AmmN) + growth	0.7	2,544
13175	LANGPORT STW	Quality (phosphorus) + growth	2.6	1,039
13242	POOLE STW	Growth	11.4	35,479
13252	RADSTOCK STW	Quality (phosphorus & AmmN) + growth	1.4	3,025
13256	RODE STW	FFT + SCM + growth	0.4	195
13258	SALISBURY STW	Growth	5.9	9,008
13016	SALTFORD STW	Increase FFT + growth	1.1	19,937
13271	SHILLINGSTONE STW	Increase FFT + growth	0.03	268
13336	WEST HUNTSPILL STW	Quality (UV) + growth	1.4	5,599
13366	YEOVIL PEN MILL STW	Quality (BOD+ AmmN) + growth	1.3	7,346
	Temporary treatment	Growth	1.1	-
	DWF Exceedance	Growth	5.8	6,337*
	Non-Specific Growth	Growth	2.1	8,206**
		Total	57.7	107,985

* These figures have been derived on the assumption the four highest risk DWF sites are those that receive investment during 2020-25

** This figure has been derived from the unit cost equation for the associated capex (Equation 1)

Ofwat acknowledge the explanation for additional p.e. capacity at Poole STW but state that:

“The work proposed at Poole is deemed to be business as usual, because other companies also undertake similar capacity expansions to prepare for rationalisation of sites.”

We recognise that long term planning and rationalisation of sites is business as usual however as explained in our original submission (Appendix 8.6.A, Annex N) the site at Poole presents a unique and costly challenge to the company. The site itself is very constrained for available space and due to continuous development in the surrounding area there is no land available at a reasonable cost for relocation. In addition to this Poole STW effluent discharges into Holes Bay and is a highly sensitive environmental area. Holes Bay flows into Poole Harbour, which is a large natural harbour situated between Bournemouth and Swanage on the south coast of England and is also a key feature in the area’s tourism which contributes significantly to the economy of the region. Poole Harbour is designated as a Site of Special Scientific Interest (SSSI), a Special Protection Area (SPA) under the Habitats Regulations 1994, and as a Ramsar site. It is also designated as a Sensitive Area under the

Urban Waste Water Treatment Directive. All these factors result in restrictions to WSX's ability to manage the investment phasing in a traditional enhancement planning approach. Without the influence of these factors, a traditional enhancement approach would allow for less energy intense/larger footprint treatment processes and greater flexibility in construction phasing. The high sensitivity of the receiving watercourse mean that the permit numeric limits are much tighter leading to a much higher level of treatment required and contingencies for protecting that environment are significantly greater than any other of our STWs.

Ofwat also state that:

"No evidence is provided to justify investment in further excess capacity at any other sites. Therefore it is not clear that there is a need for additional investment (above the modelled allowance) to cover the extensive scope of sewerage treatment works proposed by Wessex Water."

We explained in our business plan submission, Appendix 8.6.A, section 5.2.2, that a large proportion of the additional capacity enhancement is due to synergies with quality schemes required under the U_IMP5 driver for WINEP increasing flow to full treatment. We also explained that the EA had stated that the driver only applies to increases required to FFT over and above those required and funded under growth. The additional investment to meet the provision of capacity to a reasonable design horizon will not be funded under a quality driver. Combining drivers into schemes provides the most value to our customers. The FFT elements of the enhancement schemes provide hydraulic capacity which also provides some biological treatment capacity (i.e. p.e. enhancement) but the incremental investment afforded by the growth driver represents the most efficient investment for our customers.

As outlined in our original submission (Appendix 8.6.A) our planning and optioneering approach is designed to ensure that we deliver the most efficient investment in capacity enhancement. The process was followed to determine sites with low or no headroom compared to their design capacity and to discount any sites where the risk to compliance was not significant at 2025. Sites were also discounted where other measures could be employed whilst ensuring we meet our statutory obligations and customer expectations, such as:

- Operational optimisation (i.e. 'sweating the assets')
- Temporary treatment (where appropriate)
- Flow reduction at source (hydraulic)
- Abandonment of the site with flows pumped away to a nearby site/catchment
- Synergies with other drivers.

Sites deemed to be at risk of failure by 2025 with current/future pressures on process units and compliance risk were then progressed to develop options for capacity enhancement to develop an understanding of costs. These options adopted design horizons appropriate to ensure the most efficient investment, being 10 years for larger sites and 15-20 years for smaller sites. These investment proposals then underwent cost benefit analyses to ensure the timing and impacts of these investments was the most cost-beneficial for our customers in PR19.

Our approach to planning and optioneering follows the principles of UKWIR's 'Long term/least cost planning for wastewater supply-demand'¹. We have proposed additional incremental capacity enhancement at sites where we have an FFT driver under the WINEP in PR19 to ensure the schemes' design horizons permit an efficient long-term investment.

To illustrate the scale of incremental costs associated with longer design horizons for smaller sites, we have provided an example analysis below for two of the schemes at small STWs included in the STW capacity programme. The costs shown below were determined using the cost models from the programme TR61, a large collection of capital and operational cost estimation models for the water industry. These models are for measured work items only and we have included supervision, preliminaries, design, overheads and risk as per our internal cost estimating. The costs shown are for the scheme costs of building for the stated design horizon in AMP7 at 17/18 price base.

Site	Hurdcott STW			Rode STW		
Total p.e. served (2018)	3,487			1,080		
Design Horizon	10 years	20 years*	10 years @ AMP7 & AMP9	10 years	20 years*	10 years @ AMP7 & AMP9
Scheme work items	1 x PST 2 x biological filter 1 x HST 1 x inter-process PS 1 x TSF		x2 as per 10-year sizing	1 x inter-process PS 2 x biological filter		x2 as per 10-year sizing
Scheme cost (£000s)	£7,781	£8,042	£13,277**	£2,663	£2,680	£4,544**
Marginal increase	-	3%	39%	-	1%	41%

*as proposed in our business plan submission

** total cost for comparison calculated using the same scheme cost in AMP7 for the 10-year horizon scheme, increased by 1% p.a. to 2032 with NPV using discount rate of 3.3%.

This table illustrates that for these schemes at small STWs the cost difference in AMP7 is almost immaterial due to the small incremental difference in process unit sizes. Time spent on site and design costs would largely be the same for either sized scheme. However, if we were to take the option of building for a 10-year design horizon, accounting for the need to return and build again early in AMP9, the overall long-term cost would be c.40% greater and thus not good value for our customers.

Assessment gate: Need for (cost) adjustment = Fail

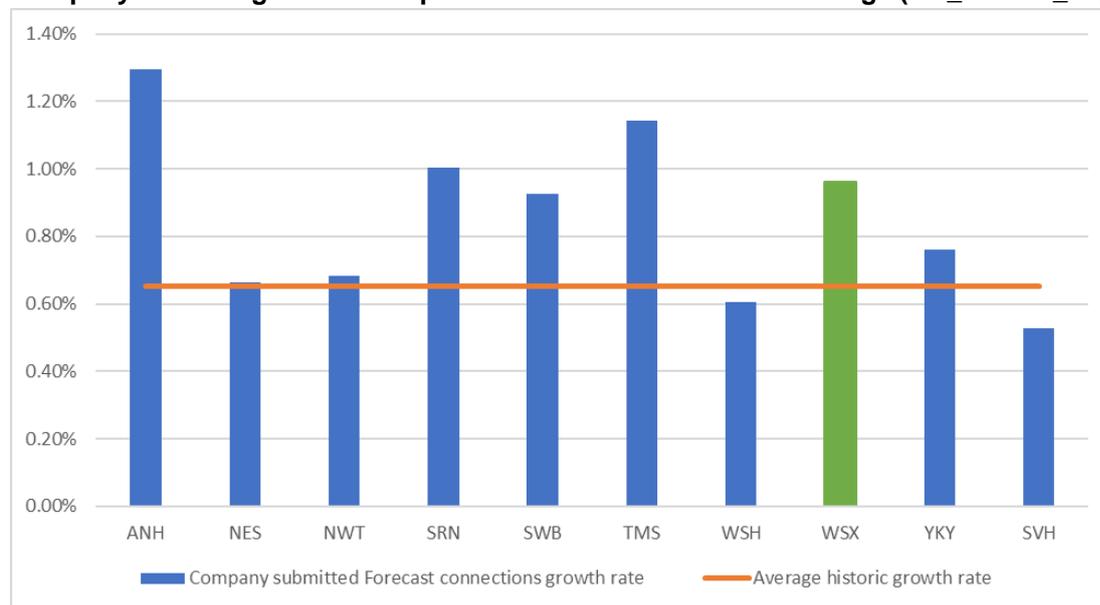
We believe the level of STW growth totex investment we have proposed for PR19 to be efficient. We have provided detail on this in our IAP submission and provide a summary and further detail in a later section of this document in relation to the assessment gate, robustness and efficiency of costs.

¹ Report ref. no. 07/RG/08/2, UKWIR, 2007.

The required totex, as submitted in our IAP response (unchanged from our original submission) is significantly different to the hypothetical efficient industry average company that is implicitly funded through the models. The DD approach gives Wessex Water an allowance for growth but this largely reflects historical industry average growth/connection rates. Wessex Water's historical and forecast connection rates are higher than the historical industry average. We therefore believe that that the DD model results in Wessex Water being under-funded for STW growth and require a specific cost adjustment for this difference.

The company forecast growth rates for the period 2018/19 to 2024/25 compared to the industry historical average (2011/12 to 2017/18) are highlighted in the graph below. This shows that Wessex Water's forecasts are 18% higher than the historical industry average.

Company forecast growth rates per connection vs. historical average (FM_WWW3_ST_DD)



We do not agree with Ofwat's forecast customer growth used within the base models. Whilst our company forecasts use ONS data as a basis for determining growth in connections, we make specific adjustments to ensure this data more accurately reflects our connected customers. This follows the same methodology consistent with that completed for the water resources management plan:

- Population data is obtained from the most recent Office of National Statistics (ONS) publication at Local Authority area level with forecasts using regional growth projection rates from ONS.
- The Local Authority areas are overlaid with our STW catchment areas to determine percentage of ONS population within waste network.
- This data is cross-referenced to RAPID billing system (managed by Pelican) to remove properties that are not connected to the public sewer.
- A small downward adjustment is made for our inset appointments.
- non-resident population is based on data received from local tourist boards.

Ofwat's DD approach presents substantial limitations as a means to estimate each companies' efficient totex for growth over the 2020-25 period. In the DD cost adjustment

claim feeder model, Ofwat state that the base plus models provide an allowance for STW capacity in the region of £32m capex. We compared allowances under the DD base plus models (post triangulation) with allowances calculated for versions of those models with specific elements of expenditure removed. We cannot recreate the DD implicit allowance stated for STW growth. We provide further detail of this analysis in our representation C18 - Move to Base+ Modelling.

The disproportionate spread of investment required at our smaller sites in PR19 is not reflected in the base totex model, which uses scale drivers related to our spread of load received across the various size bands of our STWs, rather than a reflection of the size bands within which the investment is required.

Due to economies of scale, the investment at these smaller sites has a higher unit cost than at larger size 5 and 6 band sites and thus when we have a skew of investment needs at these small sites, our average unit cost is not reflective of the modelled allowance unit cost. In addition to the higher unit cost attributed to economies of scale, the majority of this investment at small sites (c.£20m of the £29m) is at sites with an additional no-deterioration driver (DWF schemes), which significantly compounds the impact on higher unit costs.

The impact of this was presented in section 3.3.3 of our IAP response document Appendix 10. A copy of the table presented in this section is copied below for reference (adjusted to remove the £2.3m capex for Bristol (Avonmouth) STW).

Wessex Water split of load by size band

F	Load received at STWs in 2018-19	kgBOD ₅ /day ¹	% split by load	% split by capex	AMP7 growth capex (£m)
1	Load received by STWs in size band 1	637	0.3%	0.2%	0.1
2	Load received by STWs in size band 2	637	0.3%	8.2%	4.8
3	Load received by STWs in size band 3	6,905	3.8%	6.3%	3.7
4	Load received by STWs in size band 4	19,286	10.5%	34.8%	20.1
5	Load received by STWs in size band 5	27,362	14.9%	13.8%	8.0
6	Load received by STWs above size band 5	129,109	70.2%	36.6%	23.4
7	Total load received	183,936	100.0%	100.0%	57.7

Note 1: BOD figures from Business Plan Table WWn4

At STWs in size bands 1, 2, 3, and 4 (less than 10,000 p.e.) we have investment required in PR19 totalling close to £29m capex, 50 per-cent of our total programme. However, these sites treat less than 15 per-cent of our total load. Of these smaller sites, only the investment required in size band 1 is a comparable proportion of the total investment programme versus load.

The impact of the locations where we must provide investment heavily influences our costs due to the associated size of the connected STWs and economies of scale. In PR19 a significant proportion of our expenditure lies in catchments connected to small STWs which have a higher unit cost, and also a number of these are also DWF (consent tightening) schemes, which again attract a higher unit cost.

Ofwat have stated that:

“Using individual company investment plans removes a standard methodology, risks funding companies for investment that should have been made in previous periods or allowing companies to oversize solutions.”

We note that Ofwat is keen to use a standardised benchmarking approach to set allowances or growth, including STW growth. If Ofwat maintains the approach to growth from its DD, we are seeking a cost adjustment claim to cover the efficient totex for STW growth-related cost that is not allowed for (implicitly) in the modelled allowances. Given the scale of expenditure at stake, we consider it essential for Ofwat to consider this claim, rather than assuming that the implicit allowances is somehow sufficient despite the substantial limitations in Ofwat’s benchmarking approach to growth. Our proposal does not remove the role for a standardised benchmarking approach but supports this with targeted adjustments where there is evidence to support these.

Ofwat expresses some concerns about funding companies to recover historical under-spending. This issue can be assessed from the permit compliance performance for each WaSC. Wessex Water have ensured our historical level of investment was appropriate in order to safeguard our ability to maintain leading performance. The following table was included in our business plan submission, Appendix 8.6.A. It has been updated to include the latest performance results and illustrates permit compliance by WaSC between 2011 and 2018, with data sourced from the annual Environmental Performance Assessments (EPA), Environment Agency² and Natural Resources Wales³ for Welsh Water. It highlights that in seven out of the past eight years, Wessex Water have been ranked 1st or 2nd for discharge permit % compliance.

WaSC discharge permit compliance (%) – updated to include 2018

WaSC	2011	2012	2013	2014	2015	2016	2017	2018
Anglian	97.1	98.1	97.5	98.6	99.0	99.1	98.6	98.2
Northumbrian	99.4	100.0	98.1	99.4	99.4	97.8	96.0	99.4
Severn Trent	97.5	99.1	99.3	99.9	99.0	99.6	99.6	98.4
South West	90.1	97.1	92.5	96.1	95.8	98.1	98.2	98.7
Southern	96.0	96.8	96.0	99.0	99.3	98.7	97.1	99.1
Thames	99.7	99.1	95.7	98.9	99.1	97.9	99.5	99.0
United Utilities	98.6	99.2	98.6	98.3	97.2	97.4	98.8	99.7
Welsh	95.6	98.6	97.9	99.1	98.6	99.0	96.7	98.0
Wessex Water	99.7	99.7	99.0	99.7	99.7	99.4	99.0	100.0
Yorkshire	97.3	93.2	98.0	99.3	99.3	97.2	98.6	97.5
Sector average*	97.2	98.3	97.4	98.9	98.2	98.6	98.7	98.6

*Excludes Welsh Water

² <https://www.gov.uk/government/publications/water-and-sewerage-companies-in-england-environmental-performance-report>

³ <https://naturalresources.wales/evidence-and-data/research-and-reports/water-reports/annual-performance-report-for-dwr-cymru-welsh-water>

Our permit compliance is consistently upper quartile and we were one of only two companies to achieve 100% compliance in this period, which we achieved last year (2018). This confirms that we have not under-invested in the past and our historical level of investment was appropriate in order to safeguard our ability to achieve this performance.

This is a sound basis for funding our costs adjustment claim as our plan for PR19 has been built up by assessing our STWs where the associated catchments have growth in the short-medium term that will cause the STW to have limited or no treatment headroom compared to their design capacity. To ensure we are intervening at sites at the appropriate timing, for the sites with standalone growth needs, we have only proposed investment at sites where we also expect that there is a medium to high risk that the performance will also deteriorate beyond the permit requirements. These sites represent over 50% of our capacity enhancement capital expenditure and are listed in the following table.

Site Name	Growth driver	Growth capex (£m)	Pop increase 2016 to 2025	Numeric parameter Compliance risk	DWF permit compliance risk	Overall risk AMP7 (if deferred)
Amesbury STW	100%	1.9	46%	High	Compliant	High
Burton STW	100%	4.0	20%	High	Not compliant	High
Great Wishford STW	100%	4.4	6%	Low	Not compliant	High
Hurdcott STW	100%	8.0	11%	Low	Not compliant	High
Poole STW	100%	11.4	5%	High	Compliant	High
Salisbury STW	100%	5.9	9%	Medium	Compliant	Medium
	Total	35.6				

We undertook cost-benefit-analysis on these risks using customer-willingness-to-pay valuations to determine which sites to include in our PR19 plan and to ensure that these were the appropriate interventions. We have also included the growth portions of our WINEP driven schemes in this analysis to ensure the solutions are the most cost beneficial. Refer to our business plan submission Appendix 3.3 – Cost Benefit Analysis for further detail. We are protecting our customers by linking this programme to the PC, treatment works compliance, the performance of which is inherently linked with intervening appropriately to manage these risks.

In this representation we have demonstrated that Wessex have not under-invested in the past. We have also sought independent verification of a significant proportion of our plan to evaluate the need, scope and cost of our solutions.

At PR09 and PR14 we submitted our plans for STW growth based on the principles of UKWIR's 'Long term/least cost planning for wastewater supply-demand'⁴ framework, which "requires planners to carry out an initial review of the scale, location and timing of potential demand change and the relevant asset capacities." And "the most appropriate planning horizon for assessment of the SDB".

⁴ Report ref. no. 07/RG/08/2, UKWIR, 2007.

We have incorporated these principles into our planning for PR19. Further detail of how we have formed our PR19 plan to control costs was submitted in section 4.2 of our business plan Appendix 8.6.A.

Subsequent to the challenges from Ofwat to our plans in their IAP in January 2019 and our response at that time in April 2019, we appointed Stantec to undertake a high-level independent review of a number of our proposed STW schemes to confirm and/or challenge our selected business plan option and its technical scope. Stantec are international engineering consultants.

The schemes were chosen for external review based on site-specific complexities and where we had particular concerns that the associated costs had not been adequately represented through Ofwat's IAP modelling approach. They also covered those schemes where, in our response to the IAP, we had invited Ofwat to review or take a deep dive into those programmes or schemes.

The following summarises the schemes reviewed by Stantec and associated capex value:

Main driver	Schemes/Sites	BP capex (£m)
Sanitary	Yeovil & Shepton Mallet	39.6
FFT Increase	Avonmouth & Saltford	68.2
Growth	Burton, Compton Bassett, Great Wishford, Hurdcott & Salisbury	29.1
MCERTS	Poole, Dorchester, Milborne St Andrew, Palmersford & Weymouth	3.6

The STW growth schemes were selected as they represent the five highest totex and unit costs schemes. We selected Bristol (Avonmouth) and Saltford from the set of FFT/growth schemes, as these are the two largest schemes, together representing over 80% of the combined totex value in that area.

We have included Stantec's full report in Appendix C1.1. Stantec were asked to identify any immediate scope challenges as well as any opportunities for consideration in outline and detailed design. Their main conclusions are included below, with key points we believe are particularly pertinent are highlighted in bold.

The finding of the report is that overall for all 14 sites reviewed, the solution described in the Business Plan is appropriate and a good fit to both Wessex Water design standards and wider industry benchmarks. For example, application of the "Pearce" model demonstrated that the process design approach applied for trickling filters is equal to or more aggressive than that of other UK water companies.

The challenge process applied by Stantec has developed many potential challenges some of which are recommended to be applied in delivery, these comprise optimisation opportunities as outputs of the Pearce model and drive reduced process risk, but not capital efficiency.

In no case was there any radical challenge as alternative unit processes or process trains promoted as a preferred solution after the risk analysis step.

*The default approach by Wessex Water was to remain compliant with their in-house asset standards for wastewater process design. No significant positive deviations were identified through the gap analysis process i.e. **examples of significant over provision of asset were not found. Conversely there were multiple examples of negative deviations i.e. examples of risk or potential under provision being proposed. These were driven by factors such as footprint constraint and the modular nature of process assets.***

Wessex Water design standard sets out design horizons for new projects, dependant on the size of the STW as shown below: -

- *Population >10000 10 year horizon*
- *Population < 10000 20 year horizon*

In our view, this is a common and efficient approach with the longer design horizon for smaller STWs based on the very small marginal cost increase involved in constructing slightly larger process units for the longer term at these STWs.

There was evidence that Wessex Water were willing to take risks regarding the reuse of ageing assets either in their current or enhanced functionality or repurposed.

Where existing process assets are not embraced, modified or repurposed, a clear argument is given as to why an alternative is adopted. The theme in this case was the replacement or augmentation of trickling filter sites with the Activated Sludge process.

For many of the sites, the improvements required are manifold, for example at Hurdcott STW, Compton Bassett STW and Great Wishford STW. At these sites, simultaneous application of the load standstill principle regards sanitary determinants, and updating FTT for historic, and future growth to the design horizon is applied. This span of requirements across quality and flow mostly precludes the classical solution of solely adding tertiary or quaternary unit processes. Typically for the nine sites the whole process train from inlet to outfall requires quality and hydraulic upgrades and/or asset replacement.

We note Stantec's endorsement of the option selections, technical scopes and design horizons which we have selected for these schemes.

We consider that by following these methods described above we demonstrably provide confidence that we have not historically made investments that were unnecessary or oversized, nor that we are proposing to do so in PR19. In addition to this, our continued leading performance in STW permit compliance demonstrates that we have not under-invested in previous price control periods.

The challenge therefore relating to the appropriate level of implicit allowance for PR19 is associated with the unit costs for our investments. This is covered under the assessment gate 'Robustness and efficiency of costs', for which Ofwat has given WSX a partial pass and to which we provide further explanation of our evidence below.

Ofwat have also stated that:

“The company also has not demonstrated that our allowance is insufficient over the long term.”

We responded to this in our IAP document, Appendix 10, under section 3.3.1. Ofwat have clearly not allowed long-run expenditure in PR19 as they have capped allowances at the lower of the modelled allowance and business plan submissions. Refer to our IAP submission for more detailed evidence.

With respect to our unique circumstances, we view that we are unique in the requirement that 50% of our STW capacity investment needs for PR19 are driven by growth at small STWs, which inherently have a higher unit cost. In addition to this, a number of these schemes are also DWF enhancements which have a high unit cost due to the step-change in quality performance required. These investment requirements are not proportional to the split of load received at sites within those size bands, as illustrated in further detail in the next assessment gate, management control. The key areas that influence the unit cost of capacity enhancement at STWs are outside of our management control. Further clarification on these drivers of unit cost are provided below, and section 3.3.2 of our IAP response document Appendix 10 provided an assessment of other WaSCs' plans to demonstrate how these influences are not inherent in their investment plans. To provide a detailed analysis against other WaSC's plans Ofwat would need to seek a break-down of investment proposed against STW size bands for all companies.

Assessment gate: Management control = Partial Pass

As per our response to this assessment gate in our IAP document, Appendix 10, in section 3.4 we provided further evidence that we have fully explored opportunities for rationalising our sites to ensure the best long-term investment in our planning process.

In addition to this, with respect to the suggestion by Ofwat that we can influence regional development plans, we stressed that our influence on development plans is limited. Our only real influence is often on the timescales for development rather than complete deferral or selection of location. Government priorities for new housing development and Ofwat's priorities for enabling markets in these areas highlights the importance that WaSCs should not stand in the way of development proposals. Thus we would not consider it appropriate to adopt an approach to STW growth that had the effect of reducing costs in a narrow sense by simply deterring or delaying new connections (e.g. by influencing regional plans) but instead Wessex Water has a positive role to play in supporting new housing and other developments. If headroom is not available and site rationalisation is not cost beneficial, the STW catchment within which developments occur are not within our management control and yet wholly influence our investment requirements.

Assessment gate: Robustness and efficiency of costs = Partial Pass

As per our response to this assessment gate in our IAP document, Appendix 10, in section 3.5, we provided a more detailed breakdown of the information presented in our business plan submission, focussed specifically on our STW growth scheme costs.

We consider that Wessex Water's unit cost for capex per enhancement unit (p.e. provided) as being efficient once correct for WaSCs whose cost reporting skews the data.

As per the evidence provided in our IAP document, Appendix 10, under section 3.3.4, the implicit allowance uses benchmarking of costs which use industry data that has been inconsistently allocated. Yorkshire do not split their capex correctly by drivers in WWn2, but claim all combined SDB/Q pe enhancement in WWn4:

- From YKY commentary for WWn4: *“We have identified the changes in Population Equivalent associated with each of the WINEP drivers and these reflected in this table. The WWS2/2a table guidance requires us to map expenditure to the primary driver. As such, there may be PE changes to drivers which do not align with the expenditure within the corresponding lines in table WWS2”*
- WWS2 general table guidance: *“Where a quality enhancement scheme (or the proportionally allocated component of a quality enhancement scheme) has more than one cost driver, companies should allocate the expenditure attributable to the primary driver to the relevant line. Any net additional cost for meeting the requirements of any further drivers should be included in the (different) relevant line.”*

If we were to allocate our costs in the same manner (i.e. capex for schemes only where growth is primary driver but claim full pe enhancement), our total STW capacity programme would be:

- WSX growth total capex = £34.3m
- WSX pe enhancement = 138,714
- WSX associated unit rate = £247/p.e. provided

In addition, the benchmarking does not take into account the skew for investments by other WaSCs with growth only proposed where other primary drivers have been allocated by the EA, for example for Severn Trent and Hafren Dwrfdwy and presents an additional bias to the unit cost benchmarking.

“When agreeing the WINEP3 enhancement measures with the Environment Agency, we deliberately sought to promote sites where we were aware of significant supply/demand pressures.... For AMP7, we have successfully avoided the need to include any ‘stand-alone’ supply demand projects in our plan.”⁵

For Wessex Water’s growth schemes which also have a quality driver:

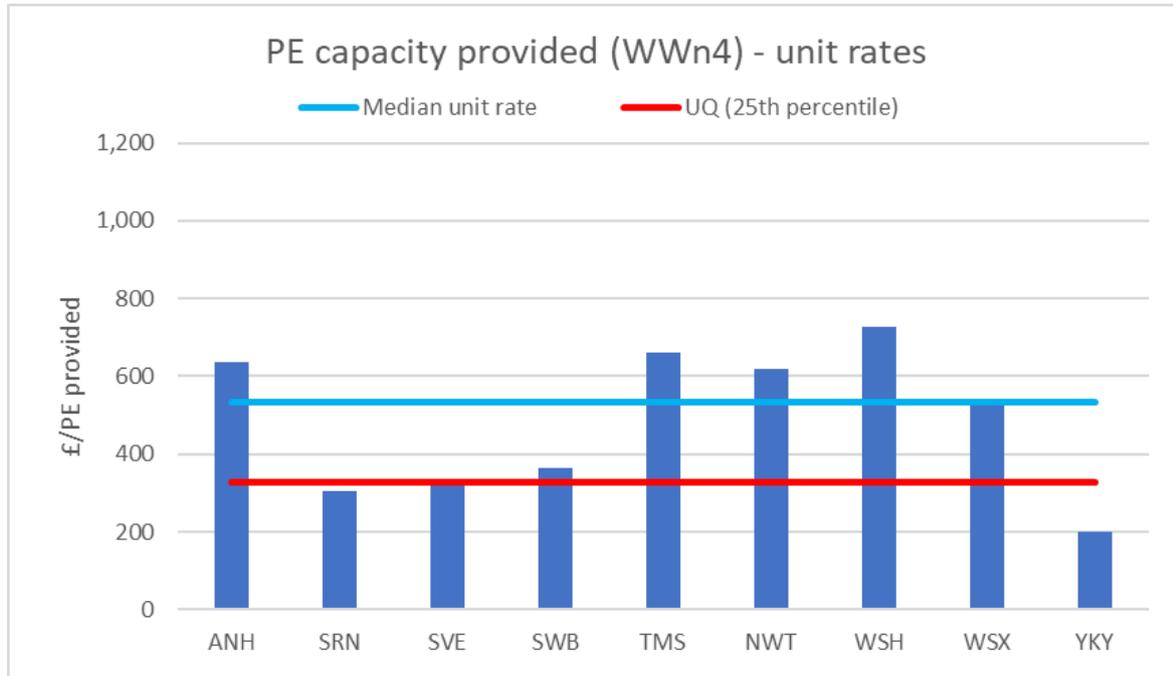
- WSX growth total capex (growth proportion of combined schemes) = £18.4m
- WSX associated pe enhancement = 91,907
- WSX associated unit rate = £200/p.e. provided

As previously stated, our ability to influence the locations of sites requiring quality enhancement under the WINEP is limited. We have a strong relationship with the EA and work with them to ensure the WINEP and our plan protects the environment in our region appropriately and proposed improvements are the most cost-beneficial. A number of our growth schemes are not subject to WINEP funding but also still require quality enhancement in addition to capacity to ensure they continue to meet the permit requirements (i.e. DWF schemes).

⁵ Appendix A8: Securing cost efficiency and enhancement spend, Severn Trent Business Plan submission, https://www.stwater.co.uk/content/dam/stw/about_us/pr19-documents/sve_appendix_a8_securing_cost_efficiency_r.pdf Sept. 2018.

To illustrate the impact of these inconsistencies of data reporting and to demonstrate Wessex Water's unit rates are efficient, we have provided two summary graphs of all WaSC's unit costs (where the driver data is available).

Before removing the sites that skew the upper quartile figure, the graph below shows Wessex Water represents the median unit rate of £534/p.e. but are outside the upper quartile rate of £329/p.e.

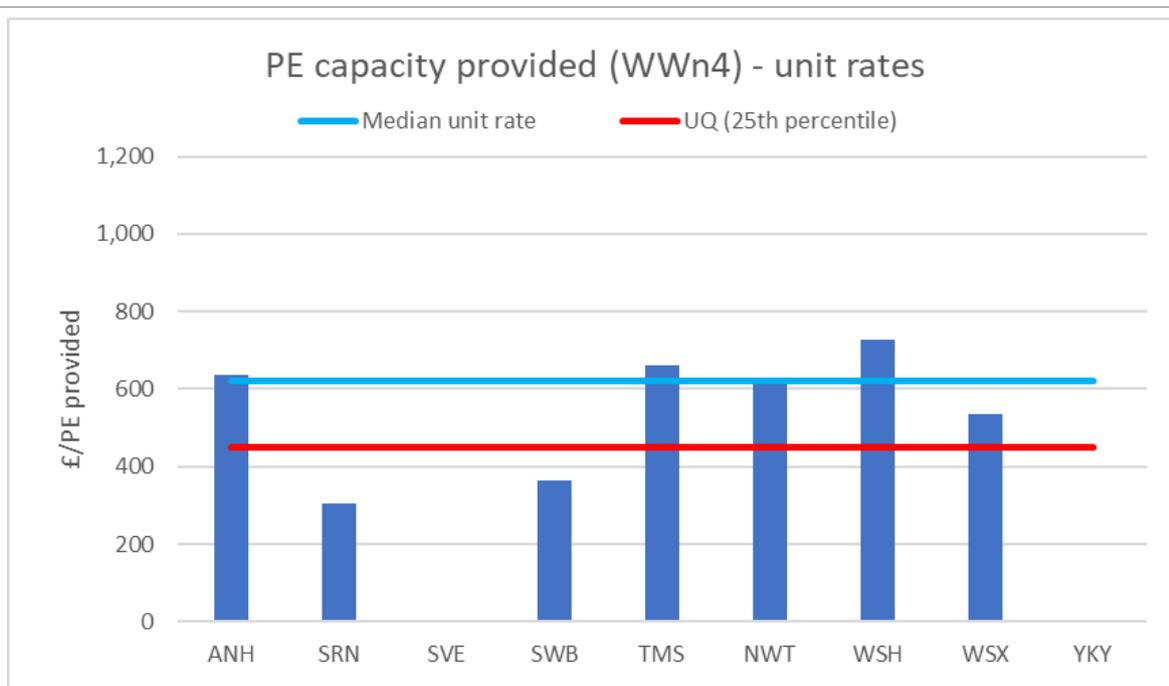


Notes:

£ as per DD submitted capex for STW growth. Northumbrian and Hafren Dyfrdwy cannot be included as included 0 p.e. provided in table WWn4.

The unit rates for WSX for PR19 have been recalculated removing Bristol (Avonmouth) STW as this is now subject to a separate representation.

As demonstrated in the following graph, if you remove the WaSCs that skew the unit costs, WSX move closer to the unit rate of £450/p.e. enhancement. The two companies that remain in the upper quartile are South-West Water and Southern Water, both of whom are poorer performers as show in the table on page 9 (WaSC discharge permit compliance), which could be considered to cast doubts on whether these "upper-quartile" unit rates are appropriate.



Note: the unit rates for WSX for PR19 have been recalculated removing Bristol (Avonmouth) STW as it is now subject to a separate cost adjustment claim

At PR09 Ofwat allowed funding of £51.2m (17/18 prices) against the stated output for provision of STW capacity enhancement of 77,095 p.e. In AMP5 WSX invested £48.9m to provide capacity for p.e. of 78,930.

At PR14 WSX submitted a plan for £44m (17/18 prices) to provide STW capacity enhancement of 72,358 p.e.; Ofwat allowed funding of £25.0m (17/18 prices), disallowing our claim for additional funding above the implicit allowance. By the end of AMP6 we will have invested £42.4m to provide capacity enhancement of 71,685 p.e.

Using the variable 'p.e. capacity provided' to determine the actual unit cost of STW growth, we have undertaken a comparison of the unit rate allowances from Ofwat for PR14 and PR19 against PR09, to determine the proposed efficiency cuts by Ofwat. We consider PR09 as the baseline as the unit rate allowance was appropriate to allow the investment in capacity that was required and the total of our investment in AMP5 for STW growth was completed at a similar unit rate compared to this PR09 allowance. The comparison is shown in the following table, with all costs adjusted to the 17/18 price base.

	Ofwat allowance (£/p.e. enh)	Efficiency cut, cum from PR09 (Ofwat)	WSX actual (£/p.e. enh)	Efficiency achieved, cum from AMP5 (WSX)
PR09/AMP5	664	-	619	-
PR14/AMP6	346	48%	591	5%
PR19	231	65%	534	14%

Note: the unit rates for WSX for PR19 have been recalculated removing Bristol (Avonmouth) STW as it is now subject to a separate cost adjustment claim

Ofwat's PR14 allowance proposed an efficiency cut of 48%. We did not agree with this allowance at PR14 and to ensure we continued to appropriately invest in STW growth to

maintain compliance we have invested greater than our allowance in AMP6, improving our efficiency by 5% efficiency against the unit rate of our AMP5 programme.

The implicit allowance proposed by Ofwat in the DD for PR19 indicates a further 33% efficiency cut from the WSX PR14 unit cost allowance, or a 65% cut compared to the unit rate allowance for PR09. Our unit rate proposed for PR19 shows we are targeting an efficiency of 10% over our unit rate in AMP6 (14% compared to AMP5), which we are largely able to achieve due to the synergies with drivers under the WINEP programme at a proportion of our capacity enhancement sites.

We view that the efficiency cut proposed by Ofwat in the DD for STW growth is not reasonable and under-investment at this level will significantly put at risk our ability to continue our statutory duty to protect the environment, to the level expected by the EA and by our customers. We provide further detail on our customers' expectations.

Why the change is in customers' interests

We do not consider that the STW growth allowance under the DD approach provides a reasonable basis on which to remunerate growth-related expenditure through the price control. Our required growth-related expenditure is not financeable without the adjustments we have sought in this cost adjustment claim.

The full funding of our proposed STW capacity programme will enable us to provide treatment capacity for regional growth at specific sites under stress by development, whilst continuing to target 100% compliance with environmental discharge standards for sewage effluent. This level of performance is valued by customers and our other stakeholders.

Providing STW capacity enhancement is essential to maintaining the high standards of our region's rivers. If the level of investment in capacity proposed by our business plan is not allowed then our industry leading STW numerical permit compliance will reduce; resulting in a deterioration of the region's rivers. Discharge permit compliance measures progress against the Environment Agency's expectation that we achieve 100 per cent compliance for all licences and permits, and thus have a reduced impact on the water environment. Our permit compliance is consistently above the sector average and we were the only Water and Sewerage Company (WaSC) to achieve 100% compliance in 2018.

Designing schemes based on our standard design horizons has only a marginal increase in costs now but significantly reduces the costs to customers in another 10 years' time.

Customer research conducted for our business plan identified that our customers place a high priority and value on environmental improvements to watercourses in our region, and to river quality in particular. As outlined in our business plan document, Appendix 8.6.A, we have used the values our customers place on increments to performance and on willingness to avoid deterioration to assess whether investments are cost-beneficial.

Treatment works permit compliance is a common performance commitment for PR19 and reflects the EA's expectations of the water industry in meeting our statutory obligations.

Links to relevant evidence already provided or elsewhere in the representation document

Response to Draft Determination of Plans August 2019

Representation C1 – cost adjustment claim for Bristol STW

Representation C18 – Move to Base+ Modelling

Appendix C1.1: Third party report - Stantec

Response to Initial Assessment of Plans April 2019

Appendix 10 – Accommodating growth and new development: Response to IAP

PR19 business plan submission in September 2018

Appendix 8.6.A – Claim WSX02 – Sewage treatment works capacity programme

Appendix 5.7 – Accommodating growth and new development

Appendix 3.3 – Cost Benefit Analysis.