

## Draft Determination Representations

WSH.DD.CE.1

Wholesale base expenditure

30 August 2019

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## 1. Introduction

### 1.1. Summary of our position

Whilst cost modelling is necessarily imperfect as a means of establishing an efficient cost baseline for a complex industry with a small number of companies (resulting in a small sample size), we believe that Ofwat have produced cost models that function as intended and produce meaningful results. However, due to the imperfect nature of the modelling, care and consideration need to be taken when applying the modelling framework, especially through the role of adjustments. We make comments on the modelling below but the substantive part of this document is concerned with these adjustments.

#### *Modelling*

The approach to the botex modelling at the IAP was based on consultation with the industry through the cost assessment working group; a process that we consider to be best practice. Ofwat's approach to modelling has substantially changed with the draft determination. The draft determination now models 'botex plus', which includes new development, growth, low pressure and sewer flooding. These models have not been subject to the same level of rigour as those used in the IAP. We have undertaken work (with Reckon) to try and understand the impact of the changes to modelling. However, at this point in time, the work is far from conclusive so we still do not fully understand all of the impacts of the changes to the modelling.

We are also conscious that there are additional datasets available from both the APR19 and the developer services data request which provide important additional data which will have a material impact on the results and we would expect, therefore, to be incorporated in the models. We remain committed to working with Ofwat as these models are developed.

Ofwat have explicitly asked for feedback on their approach to determining the cost allowance for the bioresources control. We do not support separate upper quartile efficiency assessments for wastewater network plus and bioresources due to the trade-offs and cost allocations differences between the two price controls. This is discussed further in section 6.

#### *Adjustments to the outputs of the modelling*

Our principal objection to the base expenditure allowances in the draft determination relates to Ofwat's decision on the productivity frontier shift. We believe the assumption of a 1.5% per annum shift is methodologically unsound and, particularly when combined with other elements of the price review in the round, undeliverable. Ofwat are expecting companies to achieve both the level of frontier shift and significant improvements in performance. The combined reduction in costs and improvement in service results in a 'double counting' of productivity improvement by Ofwat. We set out our arguments in more detail in section 2 below.

There are a number of other adjustments that Ofwat have introduced in the draft determination that we comment on in this document:

- Enhancement opex adjustment of -£13m which we believe have been erroneously derived (section 3)
- Adjustment to base costs for delivery of Merthyr water treatment works of -£17m which is unjustified (section 5); and
- We also continue to believe that Ofwat has not made a reasonable allowance for business rates of +£16m, as set out in Section 4.

## 2. Frontier shift and Real Price Effects

In document “PR19 DD WSH.MTH.1.Ofwat’s approach to determining the cost-service frontier”, we explain how Ofwat’s overall methodological approach and its application in our draft determination produce an outcome that goes beyond what is feasible. The purpose of this section of this document is to present our representations on one of the main building blocks of Ofwat’s approach, namely the assumptions that are made on potential “frontier shift” and the related issue of relative price effects (RPEs). Even leaving aside the questions of double-counting covered in that other analysis, we are strongly of the view that Ofwat’s decisions on the specific component of frontier shift and relative price effects are excessive. Where appropriate we put forward suggestions as to alternative values that we think a regulator could reasonably use instead and which we would find acceptable.

In section 3.2 we re-state our principal concern with Ofwat’s approach to the potential for productivity growth going forwards, and set out what we consider to be a reasonable or neutral alternative set of calculations. Section 3.3 covers the additional element of frontier shift that Ofwat has factored into draft determinations to address what it calls the effects of the totex/outcomes framework on productivity. We find that, if anything, direct evidence suggests that the introduction of the framework has had a negative effect on efficiency. Finally, section 3.4 addresses Ofwat’s revised position on RPEs, and puts forward an alternative set of assumptions that we consider to be more reasonable.

### 2.1. The potential for ongoing economy-wide productivity growth

#### 3.1.1 Overview

At the IAP Ofwat applied a “frontier shift” movement of 1.5% per annum. This represented its view of the scope for productivity growth in the wider economy, together with an additional element to represent the effects of the introduction of the totex/outcomes framework. This second component is the subject of section 3.3 below.

Our over-riding concern with Ofwat’s assumptions on productivity growth at the IAP stage was that it appeared to be completely at odds with what is going on in the UK economy at the moment, and the views of respected and authoritative institutions such as the Bank of England and the Office for Budget Responsibility as to the prospects for any revival of productivity growth over the coming years. In the “Securing Cost Efficiency” Technical Appendix to the draft determinations, Ofwat addressed a number of detailed points that had been made by various consultants on behalf of other companies, but did not address points that we had made, including the central issue of high level “credibility”.

Ofwat’s assumptions on productivity growth in the draft determination are unchanged from the IAP. Our over-riding point therefore remains valid. Ever since the financial crisis, regulators, consultants, and others have proceeded on the working assumption that there would be a “return to normality soon”, and therefore that looking at historical productivity performance to guide forward-looking assumptions was valid. Pre-crisis trends were going to be a better guide to the future than the anomalous movements in the economy in its immediate aftermath.

It is now over ten years since the financial crisis, however, and there is no consensus that a return to productivity growth is in sight. Ofwat has not offered an explanation as to how its

assumptions fit within this wider context. For the final determination it is important that Ofwat addresses this issue and puts forward revised assumptions on productivity growth that fit better with the reality of the macroeconomic environment within which companies will be taking on the very tough challenges of AMP7. The following sub-sections set out in more detail the considerations that should guide Ofwat's thinking and reasoning, and we offer a suggestion as to what an acceptable conclusion Ofwat could reach on the basis of the relevant evidence.

### 3.1.2 Recent UK productivity growth

The following table summarises the conclusions about frontier rates of productivity growth which regulators have reached in reviews carried out since 2012. It shows that there has been a noticeable clustering of views around a figure of approximately 1% per annum productivity growth. Estimates of annual productivity growth impacting a companies' operational activities have invariably sat at or very close to 1%: estimates of productivity growth potential in companies' capital programmes have sometimes, but not always, been slightly below 1%, but the range of estimates is still strikingly narrow.

#### **Assumptions made by regulators about the rates of annual frontier productivity growth for network industries**

	Opex	Capex
Ofgem, RIIO-GD1/T1, 2012	1.0%	0.7%
Competition Commission, Northern Ireland Electricity, 2014	1.0%	1.0%
Ofgem, RIIO-ED1, 2014*	1.0%	0.7% to 1.0%
Utility Regulator, NI Water, 2014	0.9%	0.6%
CMA, Bristol Water, 2015	1.0%	-
Utility Regulator, GD17, 2016	1.0%	1.0%
Ofwat, PR19, 2019 (current consultation range)	0.6% to 1.2%	

\* Ofgem's RIIO-ED1 determinations allowed for the frontier productivity growth that individual companies had factored into their business plans.

However, these estimates have been informed primarily by pre-2008 experience<sup>1</sup> and they feel like an increasingly dated set of figures. The last decade has been a turbulent period for the UK economy, and it would be reasonable to think that there has been a degree of structural change since the onset of the global financial crisis. This is particularly the case when it comes to productivity, in that one of the most talked about economic issues of the day has been the failure of the UK and other western economies to revert to pre-crisis levels of productivity growth since recovering from recession. This comes through quite clearly in the Bank of England's most recent set of figures on total factor productivity, which are reproduced below.

<sup>1</sup>This is partly a function of the timing of updates to the EU KLEMS database. Figures for 2010 onwards only first became available in 2016.

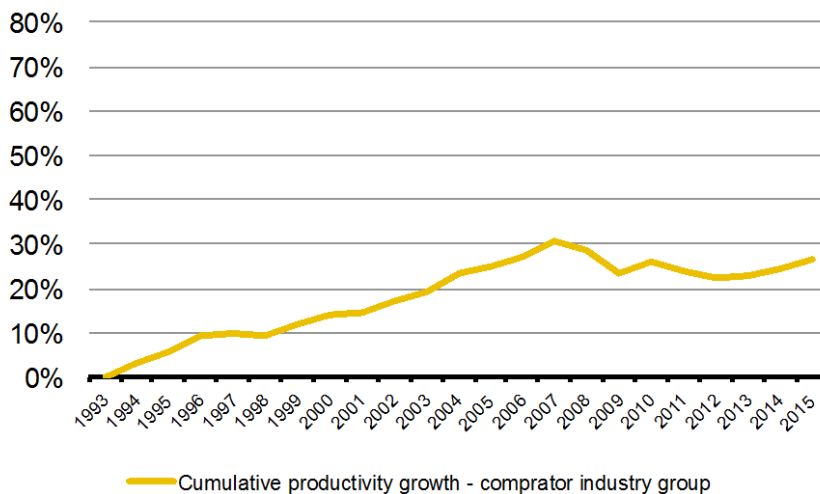
### Average annual total factor productivity growth

	1998-07	2008-10	2011-14	2015-18Q3
TFP growth	1.0%	-0.6%	-0.1%	0.2%

Source: Bank of England February 2019 inflation report.

The following chart illustrates the importance of this point more clearly by reproducing a recent piece of analysis that looked at productivity growth in the comparator sectors that have previously been used as benchmarks by UK regulators.<sup>2</sup> The chart shows a discernible levelling off of productivity growth after 2008 – i.e. since the start of the global financial crisis and after the cut-off date for the vast majority of the analyses on which the “cluster” of regulatory decisions presented above were based.

**Total factor productivity growth in comparator sectors (cumulative)**



The source of this chart is the well-known 2017 study by Frontier Economics<sup>3</sup> that concluded, *inter alia*, that productivity growth in the water sector had slowed since around 2010. A recent study<sup>4</sup> on productivity in the energy sector provides evidence that the economy-wide productivity slowdown has also had a significant impact there. The following table reproduces Ajayi, Anaya and Pollitt’s recently published analysis of electricity distribution TFP growth.

<sup>2</sup> The full set of comparator industries feeding into this calculation is: construction; manufacture of chemicals and chemical products; manufacture of electrical and optical equipment; manufacture of transport equipment; transport and storage; electricity, gas & water supply; Ajayi, Ayani, Pollitt (2018), Productivity in the electricity and gas networks since 1990; business activities; finance, insurance, real estate and business services; financial intermediation; post and telecommunications.

<sup>3</sup> Frontier Economics (2017), “Productivity improvement in the water and sewerage industry in England since privatisation.”

<sup>4</sup> Ajayi, Ayani, Pollitt (2018), “Productivity in the electricity and gas networks since 1990”.

**Electricity DNOs’ average annual total factor productivity growth**

	DPC1/2	DPCR3	DPCR4	DPCR5	RIIO-ED1
TFP growth	3.3%	4.0%	3.2%	-1.2%	0.4%

A variety of theories has been put forward for the “productivity puzzle” that is illustrated by this evidence, but none provide a coherence explanation as to why productivity growth has stalled for the last ten years, but is going to resume suddenly in the very near term. In other words, while there is no clear consensus on the reasons for the “puzzle”, one clear takeaway from the projections that have been published in the last two years is that low productivity growth has turned out to be not just a temporary phenomenon, and looks set to continue for the foreseeable future. Previously (i.e. until around 2016 or 2017) forecasters had tended to assume that low productivity growth was abnormal and that there would be a reversion to the mean within a horizon of 2-3 years. Now, though, the consensus among economists is that some of the factors listed in the box above may dissipate over the next 5-6 years – e.g. if central banks are able to normalise monetary policy and when uncertainties around Brexit are resolved – but others may be more pervasive and entrenched, e.g. – if competitive forces are weaker than in the past or if there really has been a fundamental slowdown in the rate of technical progress.

The Deputy Governor of the Bank of England expressed the following views in a speech<sup>5</sup> last year:

*... after such a long period of weak productivity growth it is reasonable to argue that we are in a new paradigm of lower productivity growth, and that is reinforced by the global nature of the weakness.*

The same view has been coming through clearly in the Bank of England’s and OBR’s recent economic forecasts, with both organisations downgrading medium-term growth projections and their estimates of the UK economy’s natural “speed limit” in response to persistently disappointing productivity data. In November 2017, for example, the OBR broke with previous forecasts and said:

*As the remarkable period of post-crisis weakness extends – and as various explanations pointing to a temporary slowdown become less compelling – it seems sensible to place more weight on recent trends as a guide to the next few years.*

The Bank of England has taken the same position. Its latest forecasts for TFP growth are reproduced in table 6.

**Average annual total factor productivity growth**

	1998-07	2008-10	2011-14	2015-18Q3	2018Q4-22Q1
TFP growth	1.0%	-0.6%	-0.1%	0.2%	0.3%

Source: Bank of England February 2019 inflation report.

5 “The UK’s Productivity Challenge” – Speech by Dave Ramsden 23rd February 2018.



The emerging consensus, as exemplified in the above table, appears to be that it is reasonable for the foreseeable future to expect no more than a third of the pre-crisis annual productivity to materialise. Elsewhere in the economy, this has been a key element in most macroeconomic forecasts. It is also a position that has obvious relevance to Ofwat's PR19 work, and calls into question the continued relevance of estimates based on pre-2008 data.

In summary, we acknowledge the difficult judgements that regulators have to make in arriving at reasonable assumptions on the potential for productivity growth over the course of a price control period. However, without a coherent explanation as to why pre-2008 productivity trends can reliably be expected to resume within the *next few months*, Ofwat should be looking at much lower figures than the 1% that has been typical of regulatory decisions in the past. Given that forecasters' projections of productivity growth have consistently turned out to be over-optimistic in recent years, we would suggest that the Bank of England's figure of 0.3% for the period covering the next three years would represent a fixed upper bound for productivity growth over the AMP7 period, with a range of 0.2-0.25% constituting a more balanced view of what could be justified, given the available evidence.

### 3.1.3 Representations on Ofwat/Europe Economics' updated position

Ofwat's only response in the Draft Determination to the criticism that its 1.5% figure ignores the recent economy-wide slowdown in productivity growth is the following statement:

*Europe Economics' considers that its forecast for frontier shift remains appropriate as it considers both the more recent growth in the post crisis period, and also growth over the longer term ... Europe Economics notes that the lower bound [in its range of 0.6% to 1.2%] for frontier shift is based on productivity growth in the post crisis period and so takes account of more recent lower growth, although it notes that comparator sectors have tended to exhibit stronger growth than the economy as a whole. Overall we consider that Europe Economics forecasts of frontier shift are based on an appropriate time period as they consider growth over more recent years and the longer term.*

Europe Economics' report states that:

*... although total economy productivity growth has been lagging behind pre-crisis averages, productivity growth in certain sectors has recovered.*

...

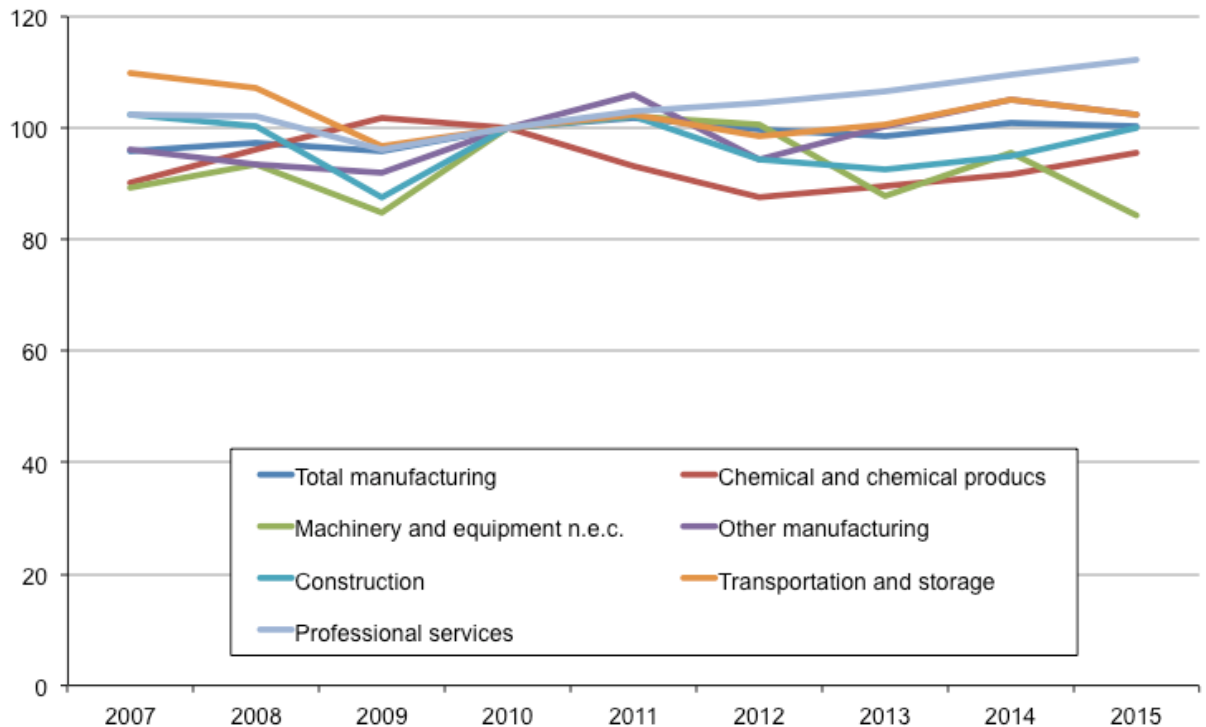
*Our recommended lower bound for wholesale is 0.6 per cent. This is based on the post-crisis period (NACE 2 data for 2010-2014) during which the economy as a whole has been characterised by low productivity growth relative to pre-crisis years*

...

*Our recommendation for the upper bound for wholesale is 1.2 per cent. In determining an upper bound, we take note of Ofwat's approach of setting stretching performance targets for the water companies. As such, we focus on the TFP growth performance of the stronger performing comparator sectors ... We note that even in the post-crisis figures, there are three comparator sectors clustered close to our upper bound ("Machinery and equipment n.e.c.", "Other manufacturing; repair and installation of machinery and equipment" and "Professional, scientific, technical, administrative and support service activities", with TFP growth rates of, respectively, 1.0, 1.3 and 1.5 per cent).*

This insistence that there has been productivity growth in comparator sectors since the global financial crisis is based on a very selective reading of the data. The following chart sets out the source data on which Europe Economics is drawing.

### Value-added total factor productivity (2010 = 100)



Source: EU KLEMS.

It can be seen straight away that:

- productivity in the comparator sectors was broadly unchanged between 2007 and 2015; and
- between 2010 and 2015, there was meaningful productivity growth in only one of the seven selected industries – professional services.

Europe Economics' contradicting statements, as set out above, stem wholly from its choice of 2009 as a base year (NB: although Europe Economics labels its post-crisis period "2010-14", it is actually measuring productivity in 2014 vs 2009). This is the point at which output per unit of labour, capital, etc. employed was at its most depressed due to falling sales during the recession and when firms had not had the opportunity to respond fully to lower demand by adjusting headcounts and asset stocks. A 2009-14 average productivity growth rate therefore mixes the sharp bounce-back that there was from the temporary low in 2009-10 followed by broadly flat productivity growth thereafter.

The importance of this point is further illustrated in the following table by showing the average productivity growth rate that one can calculate with slightly different choices of start and end dates.

### Average annualised gross output total factor productivity growth rates

Sector	2009-14	2010-15	2007-15
Total manufacturing	0.3%	0.3%	0.2%
Chemicals and chemical products	-0.8%	-0.3%	0.3%
<i>Machinery and equipment n.e.c.</i>	<i>1.0%</i>	<i>-1.3%</i>	<i>-0.3%</i>
<i>Other manufacturing</i>	<i>1.3%</i>	<i>0.2%</i>	<i>0.4%</i>
Construction	0.7%	0.0%	-0.1%
Transportation and storage	0.8%	0.2%	-0.4%
<i>Professional services</i>	<i>1.5%</i>	<i>1.4%</i>	<i>0.7%</i>
<b>Average</b>	<b>0.6%</b>	<b>0.0%</b>	<b>0.1%</b>

Source: EU KLEMS.

In our view, the lower bound in Europe Economics'/Ofwat's range should really be the ~0% average shown in shown at the bottom of the middle column of this table, not the 0.6% in the preceding column.

In addition, it is not appropriate for Ofwat to cherry pick the stronger performing comparator sectors (denoted by red/italicised text). The industries listed in the table collectively give what is sometimes called a "nature of work comparator", in that the sectors, in combination, broadly match up to the basket of activities that a water and sewerage companies must engage in order to provide services to customers. It is not appropriate to challenge companies to match the productivity growth achieved by a subset of the comparators, given that this rate of productivity improvement is only realistically achievable in a subset of companies' activities, but by no means all.

Finally, other than reiterating that Ofwat "*consider that Europe Economics forecasts of frontier shift are based on an appropriate time period as they consider growth over more recent years and the longer term,*" Ofwat fails to explain why it continues to regard pre-2008 evidence as relevant. When looking at, for example, evidence on the future cost of debt, Ofwat does not take into account the relatively high prevailing interest rates from 20 years or so ago, so it is not clear why, without explanation, it considers that this is a valid approach for future productivity growth.

## 2.2. One-off Efficiency Gains Associated with the Totex/Outcomes Framework

Although Ofwat has not committed to a specific figure, it confirms in the draft determination that the 1.5% per annum frontier shift assumption contains an element for the "one-off" gains associated with the totex/outcomes framework, as well as the ongoing improvements available as a result of economy-wide productivity growth.

Several companies raised objections to this part of Ofwat's methodology in their IAP responses, and Ofwat seeks to address these in section 2 of Annex 3 of "Securing Cost Efficiency". However, the basis for this element is still based on limited, circumstantial

evidence, and we are not satisfied that Ofwat has put forward adequate evidence to justify applying it to botex allowances going forwards. In particular, we note the following:

- whilst the totex outcomes framework has undoubtedly modified the regulatory framework within which companies operate, it is by no means clear that the net effect has “liberated” companies to make more efficient service delivery decisions. There are regulatory developments that have been implemented since PR14 that have distorted efficiency incentives in a way that would move behaviours away from, not closer to, the optimum. For example, ten years ago companies could welcome new business, especially from non-household customers in areas where there was spare capacity, because the incremental costs of serving new demand were generally more than outweighed by the incremental revenue. The ability to spread fixed costs more widely was efficiency-enhancing in a way that benefited all customers from the subsequent price review. However, unlike the overwhelming majority of firms, water and wastewater undertakers are no longer incentivised to attract new business, because 100% of the incremental revenue (and 50% of the incremental costs) are passed through to customers. (The notable exception to this is bioresources, where Ofwat has recognised that the price control has to be structured differently to generate sensible efficiency-enhancing incentives); and
- in addition, post 2015 there are now more external constraints on company decision-making that restrict companies’ discretion as to how they run their businesses. For example, Ofwat’s imposition of a performance commitment on “unplanned outages” (which do not affect customers) together with financial penalties means that companies may be incentivised to operate their assets in a particularly risk averse manner which may differ from what would be optimal in terms of cost efficiency.

We also note that the available evidence from AMP6 does not appear to support Ofwat’s claims as to the effects of the introduction of the totex/outcomes framework. The following tables present results from the multi-period “botex plus” modelling that Ofwat carried out for the purposes of the draft determination.

	<b>Aggregate Industry Costs (CPIH deflated) – Water Supply</b>		
	<b>Actual £bn</b>	<b>Predicted £bn</b>	<b>Actual vs predicted</b>
2011/12	3.21	3.14	2.3%
2012/13	3.18	3.16	0.4%
2013/14	3.11	3.19	-2.5%
2014/15	3.16	3.23	-2.0%
2015/16	3.13	3.27	-4.2%
2016/17	3.52	3.33	5.8%
2017/18	3.80	3.37	12.7%

The final column is a measure of “aggregate industry efficiency” assessed against Ofwat’s eight-year cost functions. Thus, for water, the industry was 2.3% “inefficient” compared with the period average in 2011/12, improving to 2.5% “efficient” by the end of 2013/14, but then deteriorating to 12.7% “inefficient” by 2017/18. Therefore, if anything, the introduction

of the totex/outcomes framework in 2015/16 was associated with a sharp deterioration in efficiency, not an improvement.

	<b>Aggregate Industry Costs (CPIH deflated) – Wastewater</b>		
	<b>Actual £bn</b>	<b>Predicted £bn</b>	<b>Actual vs predicted</b>
2011/12	3.10	3.28	-5.5%
2012/13	3.38	3.31	1.9%
2013/14	3.40	3.37	1.1%
2014/15	3.34	3.44	-2.9%
2015/16	3.46	3.46	-0.1%
2016/17	3.71	3.51	5.7%
2017/18	3.62	3.50	3.3%

For wastewater the picture is a little less clear cut, and the figures are more volatile. However, on average the industry was 1.3% “efficient” in AMP5, but 3.0% “inefficient” in AMP6. Again, therefore, the evidence does not support the hypothesis that the totex/outcomes framework has facilitate the achievement of additional “one-off efficiencies”.

Although Ofwat’s modelling does not take into account the most recent year, 2018/19, given the general movement in costs between 2017/18 and 2018/19 across the industry it is highly likely that the latest year will have seen further deterioration in aggregate industry efficiency, as compared to Ofwat’s cost models.

Of course, in the same way that the circumstantial evidence presented by Ofwat (and KPMG/Aqua) does *not* conclusively prove that the totex/outcomes framework will generate additional efficiency, the above analysis does not conclusively prove that it has *not*. However, the alternative explanations for the above findings in themselves raise questions about other aspects of Ofwat’s approach to setting allowed costs. For example, one possibility is that the higher costs in AMP6 reflect higher real input prices, but Ofwat does not accept that “real price effects” have a significant effect on water company costs. Another possibility is that the higher costs, especially for water supply, reflect improvements in service performance not captured by Ofwat’s modelling. However, if this is the case it reinforces our position that significant service performance improvement inevitably costs money, and that the absence in the draft determination of any cost allowance for improvements in service performance adds significantly to the frontier shift challenge that Ofwat has built into the determinations.

In sum, whilst we acknowledge that Ofwat has modified its view of the potential for efficiency savings due to the introduction of the totex/outcomes framework since the original claim that “*water companies could cut costs by between 5% and 17% by the end of the next control period*”,<sup>6</sup> we remain sceptical. In the absence of firm direct evidence that this regulatory change has had a material effect on aggregate industry efficiency so far, we do not think there is a case for assuming that it will start to deliver extra efficiencies in the AMP7 period.

<sup>6</sup> See PN/13, PR19 – “*Efficiency and productivity are key to delivering high quality services for customers*” 21 March 2018.

### 2.3. Real Price Effects - RPEs

At the IAP stage Ofwat was criticised for breaking with regulatory convention by making no allowance for RPEs in its forecasts of allowed expenditure going forwards. Further, since the basis for indexation from 2020 onwards is being changed, its “CPIH plus zero” assumption on the overall effect of RPEs was actually equivalent to around RPI minus 1%, comfortably outside the range of assumptions that regulators have used in the past, and comparatively aggressive.

In the draft determination Ofwat has made a small change. An RPE for labour costs based on the forecasts of the Office for Budget Responsibility is to be allowed, on the assumption that labour accounts for 35% of water industry costs. However, “given the uncertainty in the forecast of labour productivity and real wage growth” there is to be a “true-up” at the end of AMP7 “based on out-turn manufacturing wage growth”.

Notwithstanding this change, we continue to have fundamental difficulties with Ofwat’s approach to RPEs and would expect Ofwat to make full, appropriate allowance for RPEs in the Final Determination.

Ofwat’s starting position is that:

*“At the initial assessment we stated that companies needed to make a compelling case for an allowance for real price effects to be made. This is partly because water companies already benefit from a range of protections not provided to companies that operate in other parts of the economy. These include CPIH indexation of revenues, cost sharing with customers, five yearly price control reviews, interim determinations and substantial effects provisions. In part this addresses information asymmetry where companies will have better information on their future costs than the regulator and are only likely to put forward the case for positive real price effects.”*

In this paragraph Ofwat conflates three completely different things. First, there is the question of what is the “best estimate” of the path of future input prices, which may imply RPEs, positive or negative. This is a matter of objective analysis, not “advocacy”, and requires careful consideration of future economic growth and other macroeconomic factors: in other words, it is analogous to the cost of capital, for which the onus is on the regulator to arrive at a considered view, as distinct, say, from an enhancement programme or a “special cost factor”, for which it is the company’s responsibility to “make the case”. In effect, therefore, Ofwat is saying that “our best estimate of RPEs is zero”, but this is effectively asserted without any evidence being supplied. In our view, therefore, it is for the regulator to arrive at a considered view on RPEs and not, in the first instance, for companies to “make the case”.

Second, Ofwat alludes to the various mechanisms and features that are in place that govern how risks are shared between customers and companies. This is a different matter from the question of arriving at the “best estimate” of the future path of RPEs (and, in any event, the relevance of the “protections” cited to the specific issue of movements in RPEs is very limited). Inevitably there will be variances, either way, between the assumptions made on input prices at price reviews and out-turn values. It may in some circumstances be appropriate for a regulator to take the view that a company should bear all of the risks of those variances in a single price control period, but it is equally legitimate for the regulator

to judge that there should be some sharing mechanism. But this is entirely separate from the question of what is the best estimate of future input prices in the first place.

The third issue cited by Ofwat is the “information asymmetry” between companies and the regulator. Again, this is a completely separate matter. It may be that companies know more about their own future costs than the regulator, but the exercise in which RPEs are used is independent of companies’ own costs, since RPEs are applied to figures produced by the regulator’s models. Further, since the job of arriving at a reasonable view on RPEs generally entails examination of historical macroeconomic data that is external to the industry itself, there can be no question of companies having an “information advantage”. In effect, therefore, the idea that a regulator should not consider RPEs because companies have an advantage due to information asymmetry is somewhat perverse.

It follows that Ofwat should, for the final determination, prepare best estimates of RPEs for all categories of water company costs. There is no justification for singling out labour. This would be a coherent and orthodox position, and we would support it.

As a separate matter Ofwat might also want to apply some kind of RPE true-up at the end of the AMP7 period. Our view is that this is not desirable, because there already exists a basic over-riding cost-sharing mechanism, and we do not think the incremental complexity of an RPE-specific true-up is justified (and indeed, Ofwat would need to think carefully about the interaction between it and other aspects of the regulatory methodology). However, as noted above, this is primarily a matter for the regulator, not companies.

In addition to our over-riding difficulties with Ofwat’s approach, we have the following additional and specific points.

First, Ofwat’s proposals on labour RPEs are based on the suggestion that wages account for only 35p in every pound of totex. This 35% figure is noticeably lower than the percentage values that have been used in previous water industry price reviews. More specifically, it is inconsistent with the figures we presented in table APP24 of our business plan, which were generally in the region of about 50%. We believe that this is similar to the proportions identified by other companies. Ofwat should revised the 35% figure upwards, either on a company-specific basis or in line with the average figures submitted by the companies with their business plans.

Second, Ofwat proposes to allow for an ex ante labour RPE to match the OBR’s latest forecasts of average earnings growth, less the OBR’s latest forecasts of CPI inflation. It also proposes that there should be an ex post true-up at PR24 to reflect out-turn growth in manufacturing wages.

There are a number of missing details, i.e.:

- it is not clear what measure of “manufacturing wages” Ofwat has in mind;
- Ofwat has not specified if it will true-up for errors in its forecast of nominal wage growth or the errors in its forecast of real wage growth; and
- there is not clarity as regards how the true-up will translate into adjustments in AMP8 revenues.

On the first of these points, the report by Europe Economics references data from the ONS' Annual Survey of Hours and Earnings. This release contains multiple time series for "manufacturing wages" which are broken down, among other things, to:

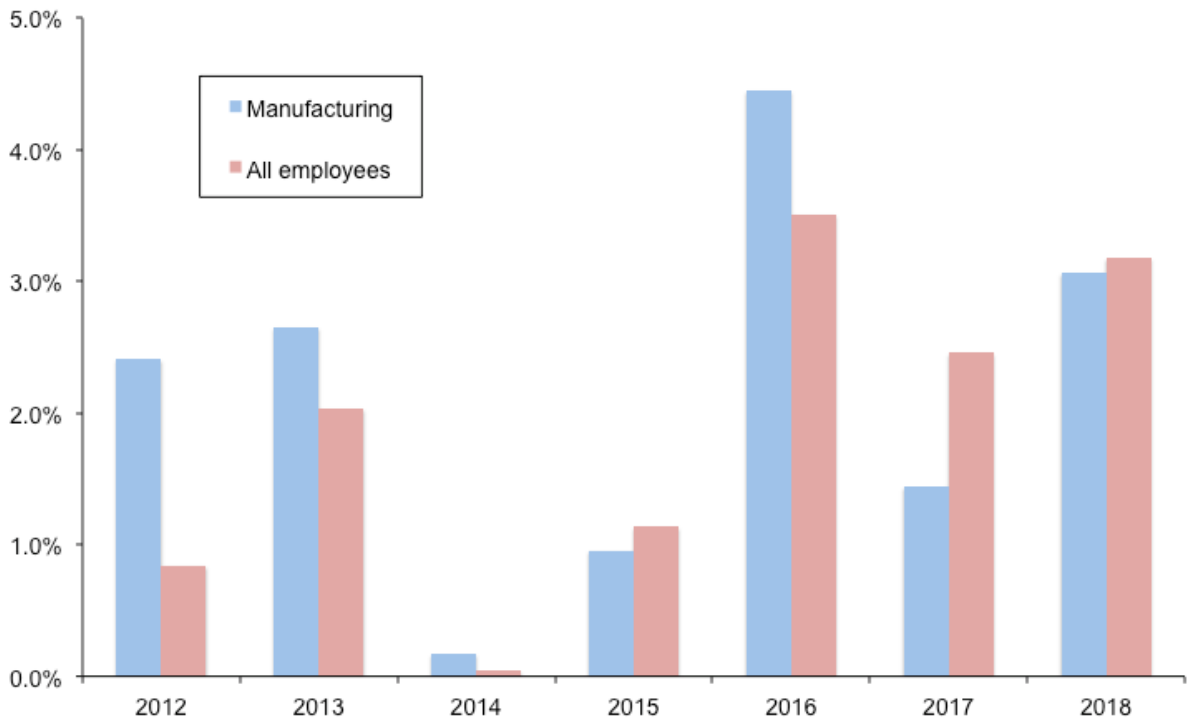
- mean and median earnings;
- pay including bonuses, pay excluding bonuses;
- hourly, weekly and annual pay; and
- all employees, full-time workers and part-time workers.

From these series, we would suggest that mean weekly pay for full-time workers is likely to give the most robust measure of wage growth for Ofwat's purposes. We would especially emphasise the unsuitability of industry-level measures of wage growth for all employees given the sensitivity of such metrics to changes in the mix of full- and part-time jobs.

There is a question, however, about whether Ofwat ought to be using manufacturing wages or an economy-wide measure of average wage growth. The chart below plots wage growth for manufacturing workers and all employees between 2011 and 2018. It shows that manufacturing workers saw faster wage growth between 2012 and 2016, however in 2017 and 2018 manufacturing wage growth was slightly behind economy-wide wage increases. Over a seven-year period, growth in manufacturing wages exceeded growth in economy-wide wages by around three percentage points (16.5% vs 13.7%).



### Annual growth in mean weekly pay for full-time workers



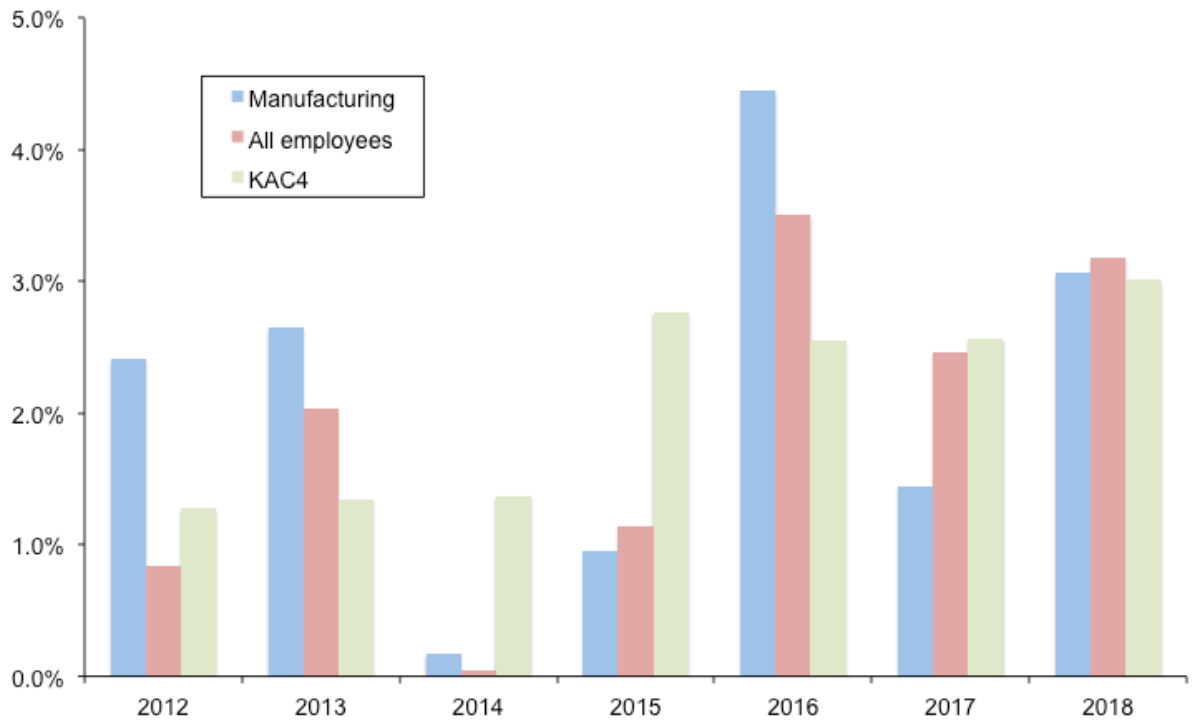
Source: ONS.

It is difficult to say that past experience gives any grounds for thinking that there will naturally be a positive or negative differential between manufacturing wages and economy-wide wages during AMP7. However, we are uncomfortable with the suggestion that manufacturing wage growth is the best proxy for water and sewerage industry wage growth. We note that water and sewerage companies are not classified by the ONS under SIC codes as a component part of the country’s manufacturing industry, but are treated as a separate industry in its own right. Similarly, the construction sector, where most supply chain partners sit, is also classified as a separate industry. At a time when Brexit-related uncertainties are to the fore (especially for the manufacturing sector), our worry is that manufacturing wages will be extremely sensitive to trade volumes and that there could easily be a disconnect over the next few years to wage growth in more domestic-focused industries. For this reason, we would propose that an economy-wide measure of wage growth should be used, as this is likely to be less volatile and a better overall match to water industry wage increases.

We note, though, that Ofwat does raise a valid objection when it highlights that economy-wide measures cover both private- and public-sector wage growth. However, this problem can be easily side-stepped if Ofwat focuses on one of the ONS’ measures of private-sector wage growth.

Our preferred proxy index is the ONS’ average weekly earnings total pay index for the private sector (ONS code: KAC4), which is published on a monthly basis as part of the ONS’ Labour Market Statistical Bulletin. The chart below plots recent annual wage growth on this measure.

### Annual wage growth



Source: ONS.

Finally, as noted above, Ofwat should be putting forward its best estimate of RPEs for other cost categories, as well as labour, rather than simply asserting that a uniform “RPI minus 1%” is the right answer. Whether or not there is a true-up for those items is a separate issue, although we have explained why we think this would be a retrograde step.

The case for an RPE for power is particularly strong: indeed, we note that even Europe Economics advocates the inclusion of a power RPE. As the following table shows, the latest BEIS forecast is for industrial electricity prices to increase by around 8% in real terms by 2024/25, the equivalent of about CPIH plus 1.6% per annum, so Ofwat’s default assumption of RPI-1% is sharply at odds with the available evidence.

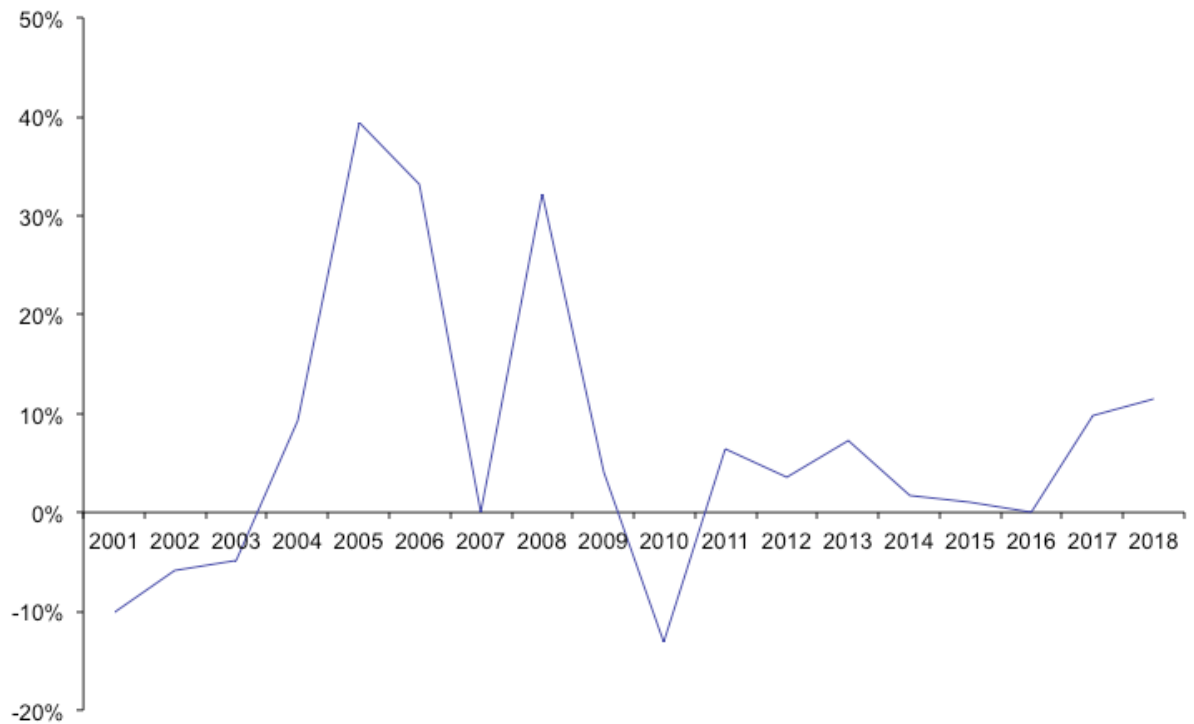
#### Electricity input price inflation and CPI inflation forecasts

	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25
Power	5.2%	2.2%	2.2%	1.7%	3.0%	5.4%
CPI	2.0%	1.9%	2.0%	2.0%	2.0%	2.0%

Source: BEIS and OBR.

Moreover, where one might think that the margin of uncertainty around wages is perhaps  $\pm 2$  percentage points, the margin of uncertainty around power costs is potentially of the order of at least  $\pm 10$  percentage points. As evidence for this, the following chart gives historical data for power purchase costs.

**Figure 4: Annual change in electricity purchase costs (p/kWh) for a user with annual demand of between 8.8m kWh and 150m kWh**

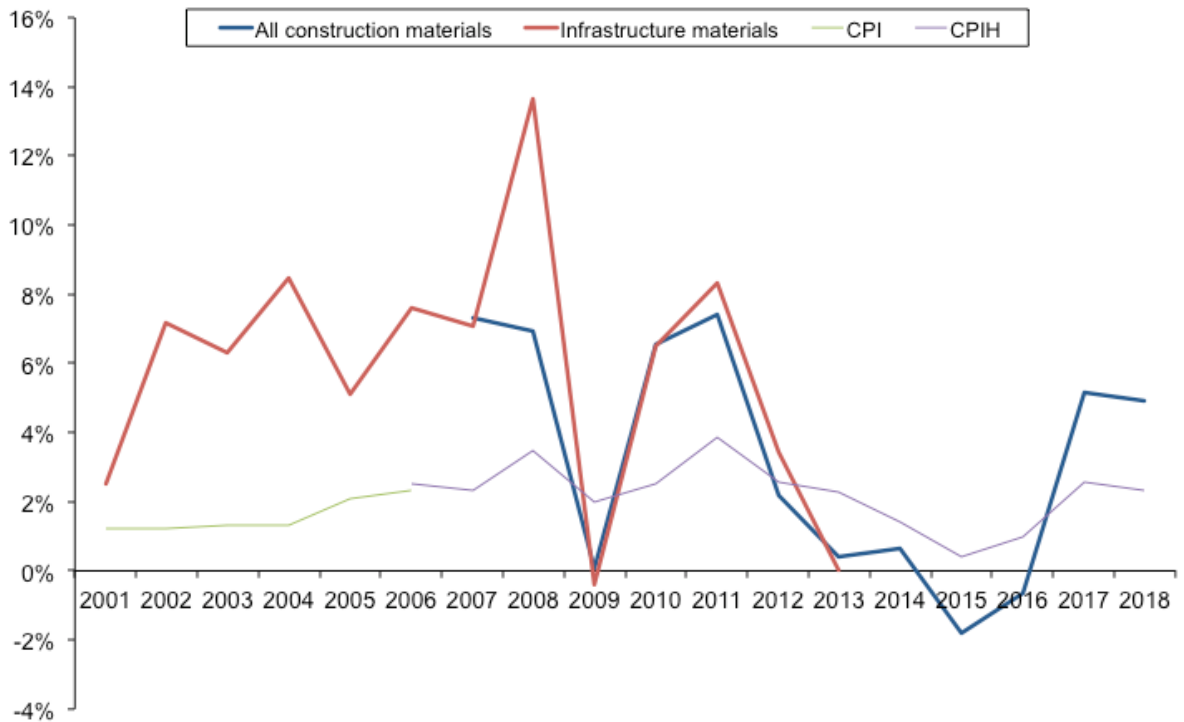


Source: BEIS.

Consequently if, contrary to our view, there is any case for any RPE true-up at the end of the AMP7 period, there might be a stronger argument for power than labour.

There is also a case for an RPE for materials. We note that Europe Economics' analysis of materials is somewhat muddled by a conflation of different categories of "materials", but there is certainly evidence to support an RPE for construction materials if not a wider category. The following chart plots the relevant historical data over the past two decades or so.

### Construction materials cost inflation



Source: BEIS and ONS.

Construction materials inflation in 2017 and 2018 on the BEIS measure was 5.1% and 4.9%, compared to CPIH inflation of 2.6% and 2.3%. Looking further back, there have also been several other periods in which construction materials prices have increased well ahead of consumer price inflation. This would appear to support an RPE compared to CPIH of at least plus 2%.

#### 2.4. Summary

The net effect of Ofwat’s assumptions on frontier shift and RPEs in the draft determination is to apply a factor to projected costs of approximately CPIH-1.1%, equivalent to RPI-2.1%. This implies a much larger proportionate reduction in expenditure that other regulators have applied in the past.

However, for frontier shift we do not think that the evidence supports an assumption of more than 0.25% per annum for general productivity growth, and there is no directly relevant evidence that supports an uplift for the effect of the “totex/outcomes framework”. For RPEs, the available evidence supports a central weighted average assumption of at least 1.0% relative to CPIH, or zero relative to RPI.

Overall, therefore, it would be reasonable to assume that costs will move either in line with, or slightly below RPI, equivalent to around CPIH plus about 0.75%-1.0%.

### 3. Enhancement opex adjustment

Ofwat's calculation of allowed wholesale costs includes a downward adjustment for "enhancement opex implicit allowance." Specifically, as set out in section 4.3.2 of "Securing Cost Efficiency Technical Appendix", Ofwat removes £10.2m from our water botex and £3.2m from our wastewater botex.

In our view these reductions in allowed cost appear to be based on a misinterpretation of what "enhancement opex" represents, they remove expenditure that was never in our base costs in the first place, and as such have been erroneously derived and are unacceptable. Our reasoning is set out as follows.

The first issue is the question of what "enhancement opex" means. From the query "WSH-DD-CE-002" it appears that the original Business Plan table definitions were not clear, and as Ofwat stated in that query, it seems that companies interpreted it differently. (At least) two quite distinct definitions are possible:

- A. "enhancement opex" could refer to the ongoing opex arising as a result of a capital scheme intended to enhance service or environmental performance. This is often referred to as "opex from capex". Classic examples include the additional power and chemicals that have appeared in wastewater treatment budgets since the large investments in secondary treatment that took place in the 1990s under the Urban Wastewater Treatment Directive (UWWTD). Once the capital enhancement has taken place, the "opex from capex" is to all intents and purposes permanent, and is indistinguishable from other "base opex" after the period in which it appears for the first time, and part of general "botex" for efficiency purposes; or
- B. "enhancement opex" could refer to circumstances in which a company finds that an opex solution offers lower whole life costs to deliver a service or environmental improvement than a capex solutions. An example would be entering into a bulk supply agreement with another undertaker to augment water resource security of supply, in preference to building a new abstraction facility, say. Under Ofwat's "totex" approach, introduced at PR14, companies are encouraged to take an "optimal whole life cost" approach to meet service and environmental challenges, including the implementation of opex solutions where this is better for customers in the long run. It should be noted that enhancement opex of this nature does not come to an end when a price control period is over: unless the enhancement that it delivers is intended to be temporary, it continues into the future. Or to put the point another way, if the expenditure necessary to deliver a permanent enhancement *did* come to an end after one or two years, then *by definition* it would be classified as capital expenditure not operating expenditure.

In addition, it is evident that for "enhancement opex" to have quantitative meaning it has to be qualified with a "reference point". In other words, it is necessary to state from what date or baseline an activity constitutes "enhancement" rather than "base".

The way in which Ofwat has chosen to model historical botex (or "botex plus") at PR19 implies the following treatment of "enhancement opex":

- where companies incur enhancement opex of Type A during AMP6 that is associated with improvements that are comparable across the industry (or that can be captured in Ofwat’s modelling) there is no need to make prior adjustments to the dependent variable before the modelling exercise, or to make any adjustments to the results for the purposes of arriving at AMP7 allowed costs. To take the above example, all wastewater undertakers incur “opex from capex” associated with investments originally prompted by the UWWTD. This “enhancement opex” is in “base” and should stay there, subject to appropriate efficiency adjustments. Exceptionally, where a company incurs expenditure associated with a company-specific unique enhancement, due allowance may need to be made. For example, we understand that Sutton and East Surrey has, for a long time, been subject to unique water-softening obligations, which manifest themselves in additional “enhancement opex”. The appropriate way to deal with this is to remove the relevant costs from Sutton’s historical botex for the purposes of modelling, and then to add them back afterwards. *At no point is there a suggestion that historical costs incurred should be removed from botex allowances going forwards.*
- where companies have incurred enhancement opex of type B during the AMP 6 period, a similar approach, in principle, is required to ensure that the modelling and the derivation of allowed AMP7 botex is properly compares like-with-like and produces fair outcomes. A company that had implemented an opex solution to meet an industry enhancement challenge when all other companies had chosen capex solutions would wish to have that opex removed from historical botex figures for the purposes of Ofwat’s cost assessment modelling,<sup>7</sup> and then have it added back into allowed costs for AMP7. Of course, this can get complicated, especially if some companies choose pure capex solutions, some choose pure opex solutions, and others choose “hybrids” in between. But this is merely an inevitable consequence of the fact that the cost assessment modelling focuses on botex. Again, however, the correct approach is to remove identifiable company-specific enhancement opex for the purposes of the modelling, and to add it back later. *At no point is there a suggestion that historical costs incurred should be removed from botex allowances going forwards.*

Given the above, Ofwat’s approach as set out in section 4.3.2 of “Securing Cost Efficiency Technical Appendix” is illogical, it entails unsafe extrapolations, and it is unfair because it takes away enhancement opex from some companies that recorded some in AMP6 and potentially takes away enhancement opex from others that never incurred it in the first place.

As we understand it, Ofwat’s concern is that some companies’ historical botex figures include some enhancement opex. Instead of removing this for the purposes of its modelling, to ensure comparability, it appears to assume that its cost functions will be “shifted” by an amount equal to the percentage represented by the average ratio of enhancement opex to total botex for one year (2017/18) for six companies for water, and five companies for wastewater. It treats this assumed shift as an “error” that gives all companies “too much”, and seeks to compensate by adjusting projected allowed costs downwards by that percentage.

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<sup>7</sup> Or, to be precise, the excess of its opex over the average “opex from capex” incurred by the other companies.

There are many things wrong with this calculation. For one, it makes a number of questionable assumptions, such as:

- it assumes that the data submitted by the six companies for water and five companies for wastewater for 2017/18 can be taken to be representative of the whole industry for all years;
- it assumes that the effect of the “erroneous” inclusion of enhancement opex in the modelled dependent variable is to bring about a *pro rata* shift in the cost function, when in fact it could just as easily rotate it as well. This would mean that different companies would have been affected to differing degrees, and there is no way of telling without actually removing the enhancement opex from the dependent variable and re-running the models, which as noted above is exactly what Ofwat should be doing in the first place;
- it assumes that the data from the six companies for water and five companies for wastewater is reliable, even though the average “implicit allowance” for which Ofwat makes its adjustments for water supply primarily comprises the figure from one outlier water-only company, Affinity, which has effectively suggested that £1 out of every £28 of its botex in 2017/18 was “enhancement opex”.

Ofwat’s approach also appears to rely on the presumption that all companies could be expected to have incurred enhancement opex to the same degree. But the whole point of the totex framework is that companies are free to make optimal choices between enhancement capex and enhancement opex, so legitimate differences are expected and indeed encouraged.

The biggest problem, however, is that Ofwat’s calculations treat enhancement opex as though it ceases at the end of the AMP6 period, and never adds it back for any of the companies. This is plainly wrong. For the final determination Ofwat should either carry out the calculations set out earlier, adjusting its dependent variable for company-specific enhancement opex and then adding it back on a company-by-company basis, or abandon the idea of the opex enhancement implicit allowance altogether.

Finally, it is worth noting that the issues raised above are not new. Although the totex framework could in principle have encouraged more type B enhancement opex during AMP6 than had been the case historically, both types have always existed, and the problem Ofwat seeks to solve here has always been present at price reviews. In the past, however, it has evidently judged that there is not sufficient of an issue to attempt a correction.

Ofwat note that they make the adjustment as enhancement expenditure is examined on a totex basis and the botex modelling includes enhancement opex. Enhancement opex is included within the botex modelling as the reporting does not distinguish between base and enhancement opex. To ensure that ‘customers do not pay twice’ for this expenditure Ofwat have made an opex enhancement implicit allowance. The adjustment is a top down adjustment to reflect the percentage of botex that is enhancement opex. Ofwat’s does not provide sufficient evidence that the enhancement opex adjustment is appropriate and reflective of the uplift companies’ receive from the inclusion of the expenditure in the botex modelling. This document considers Ofwat’s approach and firstly outlines the approach that should be taken for enhancement and secondly outlines our concerns with Ofwat’s current approach.

Ofwat’s approach to modelling allowances in PR19 has been to model the efficient level of base costs and enhancement costs separately. Enhancement costs are difficult to model in a top down model as the enhancement expenditure is company specific and lumpy. This principal holds for both enhancement capex and opex. To properly account for enhancement opex the historical expenditure should be excluded from the botex modelling and examining separately. Ofwat should follow the approach that is used for water softening for Sutton and East Surrey.

At this time Ofwat does not have the data available to remove the costs from the modelling therefore Ofwat apply a top down implicit allowance adjustment. Ofwat determines the implicit allowance by examining the proportion of botex expenditure that is enhancement opex. The data used within the calculation is extremely limited, the data only considers 2017-18 for six out of the seventeen companies for water and five out of the eleven companies for wastewater.

Ofwat states that they consider that it is reasonable to use 2017-18 as an ‘average’ year because it is halfway through the 2015-20 period. Ofwat’s botex modelling examines costs over the period 2011-12 to 2017-18. We do not consider 2017-18 to be a representative year because whilst 2017-18 is in the middle of the current AMP, this year is the final year of the modelling period. We believe that 2017-18 will overstate the amount of enhancement opex included within the modelling as enhancement expenditure is typically lower at the beginning of the AMP. We would also expect the level of enhancement opex will be substantially different in AMP5 due to changes in Ofwat’s incentive framework. Ofwat’s PR14 price review moved to a totex framework to remove the differing incentives between opex and capex and to encourage opex based enhancement solutions. We would therefore expect the amount of enhancement opex to be lower for 2011-12 to 2014-15. Overall we consider that enhancement opex is likely to be considerably lower for 2011-12 to 2014-15 than the proportion in 2017-18.

Ofwat only considers data from a small number of companies. The data in figure (??) shows that there is substantial variation in the proportion of enhancement opex between companies. Affinity Water’s proportion of enhancement opex is substantially higher the remaining companies in the industry, this substantially increase the average. Enhancement opex solutions are very company specific and therefore care should be taken when averaging companies’ proportion of enhancement opex. The exclusion of Affinity Water from the sample reduces the average by 50%. Given the large amount of missing data we do not consider that the data is representative of the industry.

	Water Enhancement Opex (%)
ANH	0.16%
SRN	0.13%
SVE	1.38%
WSH	0.03%
WSX	0.80%
AFW	3.63%
Average	1.03%

	Wastewater Enhancement Opex (%)
ANH	0.16%
SRN	0.06%
SVE	0.65%
WSH	0.40%
WSX	0.09%
Average	0.30%



Ofwat's approach makes the assumption that the each company's base expenditure is uplifted by the 'average' proportion of enhancement opex. A given percentage increase of expenditure in the dependent variable does not necessarily equate to that percentage uplift in allowances. The water data shows that the average is driven by two companies; Severn Trent and Affinity. As the data is driven by two companies the inclusion of their enhancement opex will not necessarily shift the regression upwards to give companies higher allowances. The impact of including this company specific expenditure may:

- Have no impact on the relationship and the additional enhancement expenditure is classified as an inefficiency; or
- Change the relationship between the costs and cost drivers. It is unclear whether this will systematically increase all companies' expenditure. This could benefit some companies and be detrimental to others.

Overall we do not consider that Ofwat's approach for the enhancement opex implicit allowance is appropriate for the following reasons

- Ofwat's approach assumes that the inclusion of company specific expenditure in the modelling will increase all companies' allowances by the same proportion.
- We do not consider 2017-18 is a representative year for the modelling period due to differing regulation in AMP5 and the typical lower level of expenditure in the AMP.
- The implicit allowance is based on a very small number of companies. The industry average is significantly skewed by one or two companies.

To ensure that enhancement opex is appropriately accounted for Ofwat should collect the data to enable it to be removed from the botex modelling and examined separately.

## 4. Business rates

### 4.1. Required changes for the Final Determination

We believe that full provision should be made for £15.96 million of additional wastewater ratings costs, which were not allowed for in the Draft Determination.

In summary:

- business rates are an unavoidable consequence of the carrying out of our wastewater statutory obligations and thus need to be funded in the regulatory determination in full
- the different circumstances in Wales mean that there is a greater level of certainty as to future wastewater business rates than in England
- as a consequence, the business rates for wastewater treatment works in AMP7 can be accurately calculated now, including the increases resulting from changes to our statutory obligations.

### 4.2. Business rating of wastewater treatment works

The methodology used by Ofwat to calculate the business rates charges for the wastewater business is overly simplistic. It ignores the impact of the 2021 and 2024 revaluations and also assumes that no additional rates cost will arise from the construction of new assets at wastewater treatment works, despite these having been included in our capital programme. It therefore assumes that rateable values (RVs) will remain unchanged at the revaluations and future business rates costs will simply increase in line with the relevant inflation index (RPI or CPIH).

We know this assumption is inconsistent with what occurred at the last revaluation in 2017 - which saw significant changes in RVs compared to the 2010 list. Ofwat has noted that transitional relief can help to reduce and defer the impact of changes which arise from a revaluation, however this is only the case in England. Unfortunately there is no transitional relief in Wales. As such any changes would take immediate effect for Welsh Water, from April 2021, with the full impact of any change arising from that date.

The calculation of rateable values for wastewater assets are relatively mechanical (they apply unit costs to a schedule of rateable assets which have been physically measured). We believe that accurate estimates can be made of the key variables e.g. expected movements in the Valuation Office Agency's (VOA) Cost Guide (the unit costs which are applied) and the decapitalisation rate. We used external business rates consultants (Lambert Smith Hampton) to advise on these variables in our original submission and our response to Ofwat's Initial Assessment of Plans. For example, the VOA used the RICS Tender Price Index to inflate their Cost Guide at the 2017 revaluation. As the Antecedent Valuation Date for the 2021 revaluation (1 April 2019) has now passed and that index has already been published, this movement can now be reliably calculated.

We also used external capital allowances consultants (Chandler KBS) to develop the analysis of our capital programme which had been prepared for our tax calculations, to estimate the increase in rateable values which will arise from additions to wastewater treatment works. We strongly disagree with Ofwat's decision not make an allowance for the associated

incremental business rates costs. These are a natural consequence of constructing additional assets, as the calculation of business rates costs for wastewater treatment works is based on the cost of constructing the underlying assets.

As the impact of the 2021 revaluation and additions to assets at wastewater treatment works can be calculated we were able to make a reasonable estimate of our future wastewater rates costs in our business plan. Therefore we did not seek an uncertainty mechanism in our response to Ofwat's Initial Assessment of Plan. Our calculations identify that there will be a significant increase in business rates costs for our wastewater business at the 2021 revaluation, resulting in additional rates totalling £12.7m for AMP 7 compared to the amount which Ofwat has included in our Draft Determination. We have also calculated the increase in business rates costs resulting from additions to wastewater treatment works to be £4.4m for the whole of AMP 7, again something which Ofwat's methodology ignored. As both costs can be reliably estimated, they have remained in our revised Business Plan.

## 5. Adjustment to base costs for delivery of Merthyr water treatment works

In the DD, Ofwat made a negative adjustment to our base cost allowances of £17 million to account for the anticipated reduction in the maintenance allowance for existing works.

The deduction to the modelled base allowance for AMP7 is not justified. Maintenance of potable drinking water to the required legal standards is a clear statutory obligation on the company and it will not be possible to deliver that without maintaining the existing WTWs throughout the AMP7 period, given that the new WTW is not scheduled to come into production until well into the AMP8 period.

Cost assessment modelling already takes account of the ongoing asset management decisions companies make in the knowledge of planned major schemes in the data for the period used to create the cost assessment models and so the allowance derived from the modelling will have already taken this into account. We cannot see the justification for a further £17 million company specific adjustment.

Further, the base expenditure reduction was introduced in the IAP as a perceived consequence of the allowance for design and construction of the first phase of the Cwm Taf strategy. The proposal to pursue the scheme via DPC has fundamentally changed the scope of what is being allowed for and we believe that the £17 million reduction does not take account of this material change and is unwarranted. Any actual base maintenance savings should be taken account of when agreeing the DPC revenue allowance.

## 6. Bioresources cost efficiency frontier

The 'Securing cost efficiency appendix' welcomes stakeholders view on Ofwat's approach to considering setting a separate efficiency challenge for bioresources. Ofwat's approach to determining the efficient level of expenditure for wholesale wastewater and bioresources is:

- i) Calculate the forecast average expenditure for wholesale wastewater from the econometric models and the forecast cost drivers
- ii) Apply an upper quartile adjustment calculated from the efficiency scores for 2014-2018.
- iii) Allocate the expenditure between bioresources and wastewater network plus.

The allocation of expenditure between bioresources and wastewater network plus is calculated from the implied allowed expenditure for Ofwat's sewage collection, sewage treatment, network+, bioresources and bioresources plus models. Ofwat is concerned that, at an aggregate industry level, this produces higher aggregate industry allowed expenditure than companies proposed in their business plans.

The following table shows the share of bioresources costs in total wastewater costs on three bases: the projected costs produced by Ofwat's models; the historical split of costs, and the forward-looking splits in companies' business plans.

Company	Ofwat's Modelling Proportion	Historical Proportion	Business Plan Proportion
ANH	15.4%	17.7%	14.2%
HDD	19.6%	13.2%	14.1%
NES	14.1%	7.6%	6.1%
NWT	16.9%	14.7%	12.1%
SRN	13.1%	11.6%	8.8%
SVE	16.7%	11.3%	10.5%
SWB	12.6%	11.7%	10.3%
TMS	17.7%	14.0%	13.7%
WSH	14.1%	10.1%	8.0%
WSX	13.7%	11.1%	7.9%
YKY	17.5%	15.8%	12.7%
Industry	15.9%	13.4%	11.4%

Although the aggregate bio-resources expenditure allowances in the draft determination are higher than companies' business plan proposals, overall wholesale base cost allowances are roughly £1.5bn lower than the business plans. Therefore, on the whole Ofwat have set a sufficient stretching efficiency challenge. The issue therefore is not with the efficiency challenge but more with regard to the allocation of costs between network+ and bio-resources.

In our view, the apparent anomaly arises because of the inevitable imperfections that arise when modelling at a sub-service level, especially given the trade-offs between different functions at the margin. The pragmatic way of dealing with this is to take total allowed expenditure for each company and to allocate it *pro rata* between network plus and

bioresources. In this way, each company will have the same percentage efficiency challenge in each of the two price controls.

An alternative approach would be to use the historical split of expenditure. This is how Ofwat has dealt with the corresponding issue for water resources versus water network plus. However, we would see this very much as a second best option since it would not take into account the possibility that the trends in bioresources and wastewater network plus costs may be expected to diverge in the future for perfectly legitimate reasons.

For the avoidance of doubt, we would not support a proposal to leave the network plus efficiency challenges as they are, and to superimpose an additional efficiency challenge on the bioresources price controls. As noted above, the anomaly identified by Ofwat arises because of the inevitable issues that arise when modelling at a sub-service level. It would be wrong to manufacture an additional efficiency challenge over and above that which has resulted from the modelling exercise, because this would not be supported by any analysis and could result in companies effectively being required to operate beyond the efficiency frontier. We would also not support separate upper quartile efficiency assessments for wastewater network+ and bioresources due to the trade-offs and cost allocations differences between the two price controls this could result in setting the efficiency challenge based on infeasible frontiers.