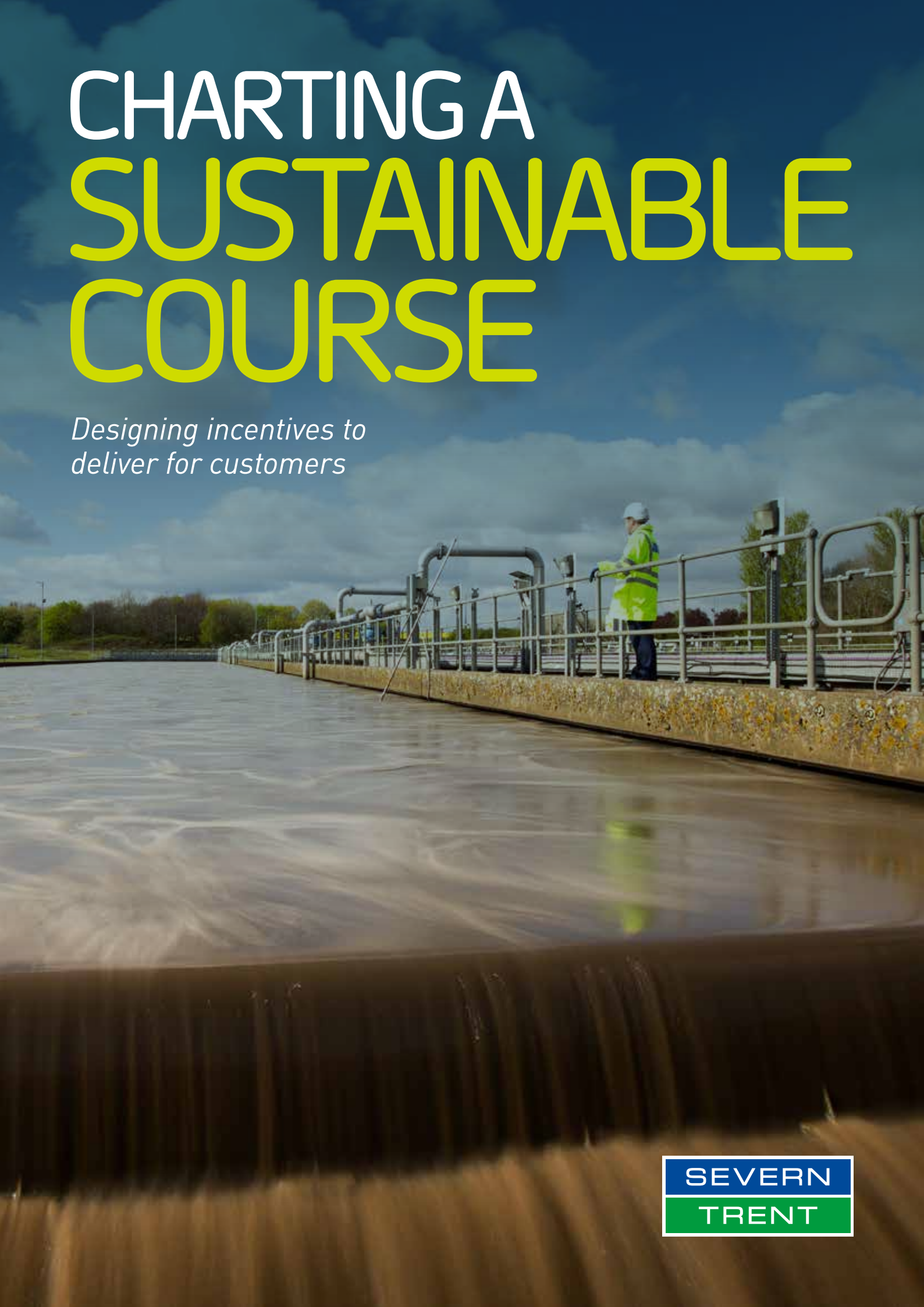
CHARTING A SUSTAINABLE COURSE

Designing incentives to deliver for customers



SEVERN TRENT

Acknowledgements

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Severn Trent Water Limited

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Foreword
Professor George Yarrow, April 2017

This second in Severn Trent's *Charting a Sustainable Course* series of publications, *Designing incentives to deliver for customers*, makes a valuable contribution to the debate on how the regulatory framework for the water sector could continue to evolve. As the latter part of the title indicates, the report addresses an area of issues that is broadly referred to as 'incentive regulation'. This is a label that is applied to a very mixed bag of regulatory initiatives, many of which have proven difficult to sustain over the longish periods of time that are usually necessary for incentive structures to realise their full effects. Particularly when arrangements seek to be prescriptive at a fine level of detail, there can be a tendency toward repeated tinkering with parameters, which can become a source of regulatory uncertainty that undermines the intended effects.

All the regulated sectors of the economy have experienced major, exogenous change in their economic environments in recent years associated with factors such as technological progress (particularly in digital technologies) and climate change. Such change calls for adaptation and innovation not only by companies, but also by customers and regulators. Experimentation with new incentive arrangements is part of a wider adaptive process, but the changing environment pushes questions about incentives to higher and broader levels. For example: *What are the criteria to be used in selecting among alternative lines of experimentation and development?*

Designing incentives to deliver for customers provides some preliminary answers in a number of specific areas, building on Ofwat's own, major contribution in PR14 when it opted to take a path out of the bogs of detailed, highly prescriptive rule-making. The report merits careful consideration in general, but two areas in particular might, even at a preliminary stage, be judged to be particularly worthy of further study and reflection:

- the relationship between the cost of capital and the risks inherent in a business plan; and
- the size and nature of caps on outcome delivery incentive (ODI) rewards/penalties.

The two areas are related because the first is concerned with *ex ante* (i.e. before outcome) revenue effects whereas the second is concerned with *ex post* revenue effects, and it is important that the two legs of the incentive structure are coherent and complementary in the ways in which they function.

The capital asset pricing model (CAPM), used to estimate costs of capital, is a curious thing - a financial model that is known to be deeply flawed as a representation of market realities, yet is universally used in regulation. It would be difficult for Ofwat unilaterally to abandon it as a methodology, but it is feasible to build in greater degrees of flexibility in its use, as is routinely done in competitive market contexts, e.g. when businesses have recourse to hurdle rates in investment appraisal. The CAPM itself implies that the cost of capital is itself project/activity specific. The phenomenon of loss aversion (i.e. the tendency for people/companies to strongly prefer avoiding losses, even relatively small losses) - noted in *Designing incentives to deliver for customers*, but a factor ignored by the CAPM approach - adds weight to this point: two plans may have similar, CAPM-relevant parameters, but rather different loss/gain profiles. It should, therefore, be taken as a given that different business plans imply different costs of capital and that the substantive issue is simply one of magnitude: *how big is the effect and is it significant enough to warrant adjustments?*

Better regulators recognise the point, but tend to make adjustments implicitly and without full transparency by taking advantage of the uncertainties surrounding estimates of the WACC to make subjective adjustments in their WACC determinations. Lack of transparency, however, tends to weaken incentive effectives: businesses can be left in the dark as to what is going on. It is therefore perhaps unfortunate that an old distinction in regulatory practice between the cost of capital and the allowed (or 'fair and reasonable') rate of return for a regulated business appears to have been lost. Its restoration would, *inter alia*, provide for a more transparent, credible and sustainable means of promoting, or at least not discouraging, more innovative and ambitious business plans. This, in effect, is what the Essential Services Commission in Victoria, Australia is seeking to do (see Chapter 5 of the report).

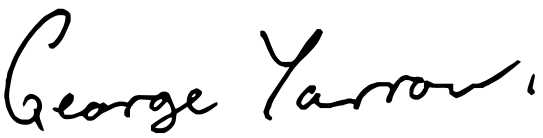
In relation to ODI caps, *Designing incentives to deliver for customers* draws attention to what is now termed 'behavioural economics' and to the distinction between incremental and radical innovation. These are highly relevant considerations and clearly there is more to be said about them. Some learning from one of the earliest experiments in ODI-type incentives might be useful here, Ofgem's approach to system operator incentives. The regulator's proposals were intentionally generous and the generosity was greater for the menu option with the more highly geared incentives (an option that simultaneously gave substantial protection against major losses). The company was reluctant to travel this road, however, raising the obvious, diagnostic question: *why the reluctance?*

I think the answer is that *loss aversion* was a powerful tendency and that incentive structures that were even more asymmetric than those offered by Ofgem would have been required to overcome it. The difficulty for the regulator is that incentives structures are difficult to calibrate and there is obvious risk of errors. Companies could be allowed to earn levels of reward that turn out to look over-generous, which would then attract criticism of the regulator. At that point the regulator's own loss aversion comes into play and the upside may therefore be over-constrained. The take-away learning is that all parties - companies, regulator and customers - are loss averse and that small carrots are not attractive, if they come with additional downside risk.

The good news is that Ofwat has a major advantage that was unavailable to Ofgem when it was necessarily dealing with a single system operator, National Grid: Ofwat regulates several companies. There is, therefore, prospect of structuring rewards/penalties in a way that breaks the link between reward/penalty structures at the industry-wide and at the individual company levels. This is how competition - the best-known mechanism for encouraging innovation and adaption - works: it focuses on *relative* performance. It is to be stressed, however, that this is not an argument for greater levels of detailed, disaggregated benchmarking, which brings multiple problems. It is more basic than that: ODI arrangements, however simple or complex, can potentially be made more powerful by some form of relativity in their structure.

My final thought, stimulated by reading *Designing incentives to deliver for customers*, is that there is a sense in which more radical innovation requires that all parties - customers, companies and regulator - 'jump together'. One of the big benefits of the type of discourse that Ofwat has sought to promote lies, I believe, in the possibility of establishing a common recognition of the ubiquity of loss aversion, of the barriers that this creates to progress, and of the possibilities for overcoming those barriers by simultaneous, adaptive adjustments by all parties. This will likely require sustained and persistent effort, and a degree of patience. There will no doubt be stumbles and mishaps along the way and loss aversion can then easily give rise to voices that want to call the whole thing off or, alternatively, to start tinkering again to address some immediate issue of the day. That, of course, would undermine the sustainability of incentive structures which is required for longer-term success.

Designing incentives to deliver for customers makes a valuable contribution to the debate on the regulatory framework and makes a strong case for increasing the power of incentives. I hope the report will be widely read and its suggestions thoroughly explored.



Professor George Yarrow
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Executive Summary

The water sector finds itself at a very exciting point in time. There are significant challenges ahead, given pressures of population changes and climate change, and the ongoing need to ensure that affordability and customer legitimacy is maintained. The regulatory framework is evolving in ways that are designed to drive, encourage and support positive responses from the water sector to those challenges. Those regulatory changes aim to deliver tangible benefits to customers, and to enhance trust and confidence in the sector.

In our previous *Charting a Sustainable Course* publication, we set out a series of key policy questions concerned with driving towards a sector that truly puts customers at the heart of all we do, and with promoting an engaging and constructive debate about the water sector's future.

In this report, the second in the *Charting a Sustainable Course* series of publications, we address specifically the question of incentives. We consider how the price control arrangements can be developed to generate incentives that drive companies to deliver an outstanding customer experience, best value services and a sustainable environment, while building on existing trust and confidence in the sector.

Designing an appropriate package of incentives that not only allows companies to finance their functions, but also drives leading companies to innovate and drive future efficiency and improved services to customers is not, however, a straightforward matter. There are inevitably trade-offs to be made, e.g. between shorter- and longer-term considerations, between comprehensiveness/complexity and simplicity, and so on. We have suggested ways in which some key trade-offs could be addressed at the 2019 price review (PR19), in the light of the challenges currently facing the water sector, and building on the positive progress made at the last price review in 2014 (PR14). The diagram on page 8 sets out a possible overall package that arises from the suggestions we have made throughout this report.

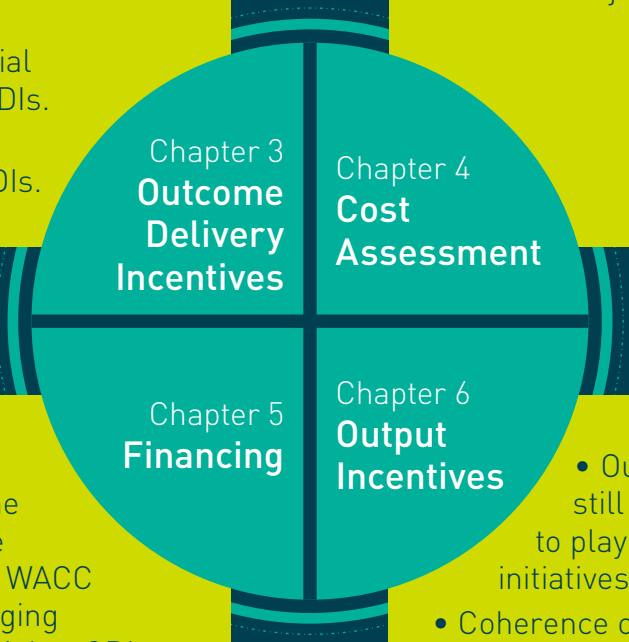
In Chapter 1 we consider the journey so far	PR14 marked a very welcome change to the course of price regulation in the water sector. Much greater focus is now put on the need for companies to identify the outcomes that really matter to customers, and on providing companies with opportunities and incentives to identify and deliver new and innovative ways of improving customer outcomes. We summarise these changes, and highlight some of the very real benefits for customers that are starting to be delivered.
In Chapter 2 we consider 'where next?'	PR14 represented the first phase of a change in regulatory approach, and continuing on this new course offers the prospect for substantial customer benefits. A major challenge for PR19 will be to maintain, and enhance, the renewed focus that PR14 put on incentives to seek out and deliver improvements in service quality and cost efficiency. Central to this, we believe, is providing clear and significant upside opportunities as part of an overall workable package. That overall package needs to be sufficiently challenging to provide a fair outcome for customers in the short term. But it also needs to be realistic, so that there are significant opportunities for company rewards for improvements, given the importance of this for delivering better outcomes for customers in the medium and longer term. The incentive characteristics of the package need to be sufficiently clear and credible for the arguments to generate the kind of desirable responses that will drive the sector to deliver for customers.

In Chapter 3, we set out our thinking on Outcome Delivery Incentives (ODIs)	• The benchmarking of Performance Commitments (PCs) should be applied in ways that allow realistic reward opportunities when considered in the round. - There should be greater use of common PCs where they can be appropriately measured and consistently applied. - Companies should be able to earn rewards where they perform at upper quartile or better. - There should be flexibility to develop bespoke PCs where they can better reflect customer preferences. • There should be greater use of in-period Outcome Delivery Incentives (ODIs) to provide a clearer and stronger link between performance, remuneration and bill impacts. • The financial significance of ODIs should be increased in PR19 so that companies can make more revenue dependent on what matters to customers (subject to willingness a to pay and for measurement checks). • Dynamic adjustments to ODIs within the price control shouldn't be applied as they would undermine their strong incentive properties. Dynamic adjustments should be limited to capturing exogenous changes (using CPI, debt cost indexation, etc.) to avoid undermining improvement incentives.
In Chapter 4, we set out our thinking on the PR19 cost assessment process	• There should be no caps applied to forecast totex underspend to avoid undermining incentives on companies to develop more challenging plans. • The cost benchmark should not be set at a level no higher than the upper quartile level as the use of a tighter benchmark would increase the risk of results being driven by modelling errors and could undermine improvement incentives by overly depressing reward opportunities. • Only differences in outcomes between companies that have material cost implications should be adjusted for when, otherwise, they would be likely to undermine cost efficiency assessments.
In Chapter 5, we set out our thinking on financing issues	• Companies could be given the opportunity to be allowed a higher WACC, *ex ante* if they have plans with higher exposure to ODIs and lower costs. This would reflect the more challenging risk profile being signed up to and/or form part of an explicit reward that incentivises the development of more challenging plans. • More than one category could be used to reward higher quality or more challenging business plans depending on the level of ambition shown. • Opportunities for rewards should be informed by past performance with outcome delivery, with this affecting the assessment of the credibility and robustness of, and thus the risks to customers associated with, business plans.
In Chapter 6 we set out our view that output incentives still have a role to play	When the longer-term nature of decisions associated with areas such as resilience raise difficulties for the development of effective ODIs, output type incentives could be applied. We note the importance of output incentives fitting within the broader regulatory landscape (e.g. the infrastructure planning framework and alongside the evolution of ODIs).
In Chapter 7 we briefly look beyond PR19	We point to the improved position the water sector could be in if an effective and workable overall package is developed and applied at PR19. In addition to the direct improvements delivered for customers, the information generated in the price control period could provide a significantly better informed basis for the development and setting of price controls beyond PR19.

A workable overall package for PR19 to drive further efficiency overall and improved services for customers

- Realistic rewards through the sensible application of benchmarks:
  - use of common Performance Commitments.
  - companies at upper quartile or better earn rewards.
  - plus bespoke ODIs.
- Greater use of in-period ODI payments.
- Increased financial significance of ODIs.
- No dynamic adjustment to ODIs.

- No caps applied to forecast totex underspend.
- Cost benchmarks should be set at the upper quartile level (and no tighter).
- Only differences in outcomes between companies that have material cost implications should be adjusted for.



- Companies could be given the opportunity to be allowed a higher WACC for more challenging plans (e.g. with higher ODIs and lower costs).
- More than one category could be used to reward higher quality/more challenging business plans.
- Opportunities for rewards should be informed by past performance and outcome delivery.

- Output incentives still have a role to play for long term initiatives.
- Coherence of fit within the broader regulatory landscape will be important.

A workable package needs to be:

- Challenging
- Realistic
- Clear and credible

CHAPTER 1

The journey so far - changing course

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The journey so far - changing course

PR14 marked a significant change of course

Over the 25 years that followed privatisation in 1989, the regulatory framework in the water sector underpinned many well-documented achievements, including significant improvements in customer service, drinking water quality, and environmental standards. But the challenges facing the sector evolved over that period, and the ongoing adequacy and effectiveness of the regulatory arrangements was being called into question increasingly - including by Ofwat, the industry economic regulator. As we emphasised in the first of our *Changing Course* publications in 2010, the regulatory framework needed to provide stronger incentives for more effective decision-making and for more innovation as part of a move to a more sustainable sector.

Ofwat led the response to these challenges in its 2014 price review (PR14), setting a welcome change to the course of price regulation in the water sector. Much greater focus was put on the need for companies to identify the outcomes that really matter to customers, and to put the delivery of those outcomes at the heart of their decision-making.

As part of its wide-ranging changes, Ofwat introduced the opportunity for companies to earn rewards for submitting 'high quality' business plans (to encourage the provision of better information). There was also a shift to assessing and applying incentives to levels of total expenditure (totex), and to the address the potential for perverse incentives to arise when separate mechanisms are applied to operational expenditure (opex) and capital expenditure (capex).

A key feature of the incentive arrangements in PR14, though, was that Ofwat sought to be much less prescriptive in terms of operational matters, and to instead provide companies with greater flexibility in terms of how outcomes might be delivered. This was supported by a requirement on companies to identify and develop performance commitments and outcome delivery incentives (ODIs) - through engagement with their customers - within their business plans. ODIs provide reputational and financial incentives to deliver on and, where justified, exceed identified performance commitments.

In short, at PR14 Ofwat introduced a much-needed shift in the way it sought to apply incentive regulation. Companies were offered greater scope to increase their returns where they could show that they were delivering valued improvements and/or savings to their customers. Conversely, companies could also suffer significant penalties in cases where they failed to deliver.

The Changing Course/Charting a Sustainable Course series of publications

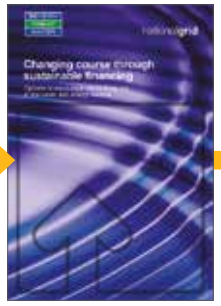
April 2010

What needs to be done for a sustainable future for the water industry

June 2011

How customers and the environment could benefit from water trading

Sept 2012



Ensuring sustainable financing for regulated utilities

Sept 2013

Implementing environmental legislation in an affordable way

Sept 2015

How to ensure we maintain a sustainable course - delivering a better future for customers

Ofwat's change of course is consistent with best practice

Ofwat's change of course built on experience concerning the application of incentive regulation across many sectors and jurisdictions. The closest parallel is Ofgem's development of the so-called RIIO framework (Revenue = Incentives + Innovation + Outputs).[1]

While the nature of the challenges facing the energy sector differ in significant ways to those facing the water sector, the diagnosis of the limitations of the starting point ahead of the change in regulatory approach is very similar.

Ofwat and Ofgem - like other economic regulators - have grappled for many years with the risk that cost reductions incentivised by price cap regulation might be achieved through under-delivering service quality, in a context where service quality can be difficult for the regulator to observe. A standard response to this problem had been for the regulator to require increasing amounts of detail concerning what company expenditure plans would deliver. But such an approach had the effect - in both the water and energy sectors - of considerably increasing the burden of regulation and of lessening the flexibility of companies to respond to new opportunities as circumstances changed.

The limitations of the old framework were highlighted in the Gray Review of Ofwat in 2011, which pointed to considerable evidence suggesting that Ofwat at that time went too far into the detail of company business plans, and that, as a result, companies were very Ofwat-focused and overly cautious in their approach.[2]

The context for the development of the RIIO Framework in the energy sector

"The risk averse nature of most monopoly networks and the static focus of the regulatory framework resulted in low rates of innovation and companies that are not seen to be open to new ideas. This became increasingly apparent and concerning as the network companies and the regulatory framework struggled to respond to a sector-wide need for a step-change in technology driven by the push for a low carbon energy sector."

Jenkins, C. (June 2011) RIIO Economics: Examining the economics underlying Ofgem's new regulatory framework. Florence School of Regulation Working Paper, p3.

The challenges were such, though, that the need for step-change had been identified in both the water and energy sectors, and this has significant implications for the development of incentive regulation. Ofgem's RIIO approach, and Ofwat's change of course at PR14, have responded to this by putting much more focus on seeking to develop incentives that promote dynamic efficiency gains.

[1] 'The RIIO framework was developed through Ofgem's RPI-X@20 project',
[2] DEFRA (2011) Review of Ofwat and consumer representation in the water sector, p6

"We saw considerable evidence to suggest that Ofwat goes too far into the detail of company business plans and that, as a result, the companies are very Ofwat-focused and very cautious and conservative in their approach. Rectifying this will require a substantial change of approach by Ofwat and the companies it regulates.

A reduction in the burden of regulation should free up management time for other purposes; more importantly, it should return ownership of the business plans to the companies and provide more flexibility in their implementation. ...and appropriate use of positive incentives should encourage the companies to be more proactive and innovative in their approach."

DEFRA (2011) Review of Ofwat and consumer representation in the water sector, p6-7.

The change in course is starting to deliver for customers

The change in course introduced at PR14 is starting to deliver real benefits for customers as companies strive to improve their services and reduce costs. As Ofwat has noted, it is *"already seeing evidence from the first year of reporting that the outcomes approach is causing some companies to focus more on delivering what matters to their customers, future customers and the environment as well as driving significant improvements in service."*[3]

It is notable that, in the energy sector, Ofgem's application of the Interruption Incentive Scheme has been associated with year-on-year reductions in levels of customer interruptions, and in customer minutes lost, and with large reductions in those measures for some distribution network operators in some years.[4]

Severn Trent's experience so far is consistent with Ofwat's assessment. The ODI framework has changed behaviours and given companies greater freedom to concentrate on delivering what is really important to customers. It can encourage many different types of change, including through renewed efforts to understand and influence the drivers of known problems, and to identify and develop technology and process changes that can deliver performance improvements. Importantly, the ODI framework can provide a basis for justifying the totex implications of engaging in these types of activities and has been instrumental in delivering additional investment to benefit customers.

As well as providing an immediate source of potential benefits to customers, these outcome improvements can have highly desirable knock-on effects. They generate new information and greater transparency about service provision, and the outcomes framework provides a structure within which that new information can be assessed and responded to over time. Customers, CCGs, Ofwat and companies are all likely to be better informed when outcomes, performance commitments and ODIs are being developed for PR19, including through comparisons between companies.

The additional information that the ODI framework is unveiling will provide a basis for more rapid and more customer-focused progress to be made over time. It can also provide for improvements in the nature and substance of the conversations that underpin business plan development and the setting of price controls, something which can itself improve decision making and subsequent performance.

This highlights the significance that culture within the sector can have. PR14 marked a movement towards a more customer-focused, innovative and productive culture in the water sector.

[3] Ofwat (November 2016) A consultation on the Outcomes Framework for PR19, p5

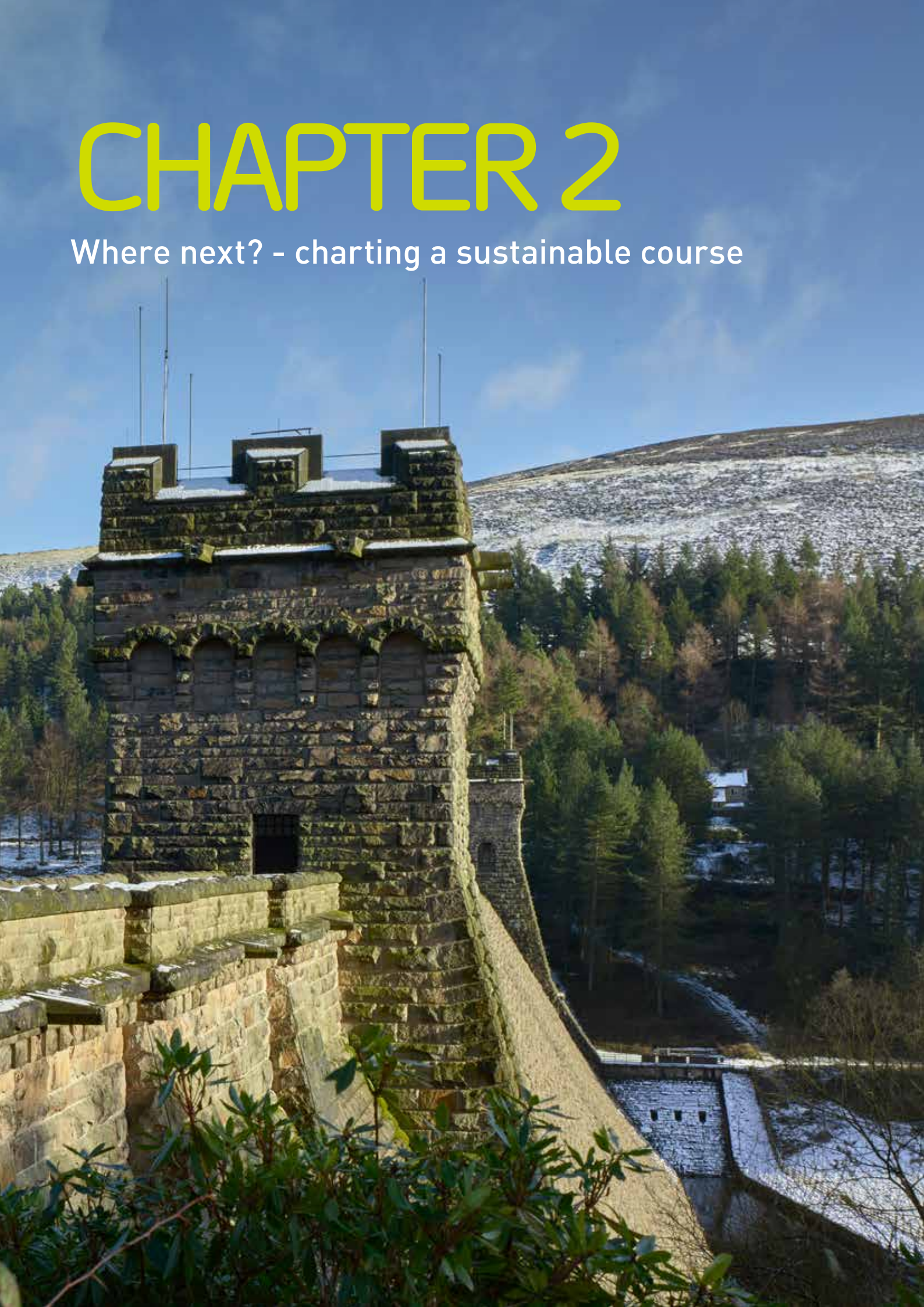
[4] See, for example: CMA (2015) British Gas Trading Limited v The Gas and Electricity Markets Authority: Final determination, paragraphs 5.41-5.42

Key regulatory changes introduced at PR14 included:

- Incentives for companies to develop high quality business plans, where achieving 'enhanced' status from Ofwat provided for financial, reputational and procedural benefits.
- Requiring the development of Customer Challenge Groups (CCGs) to give customers and stakeholders a stronger voice in shaping company plans, and putting much more emphasis on company engagement with customers when assessing business plans.
- Introducing Outcome Delivery Incentives (ODIs) that put more focus on delivering what mattered most to customers.
- Applying a totex approach to assessing and incentivising the costs of service provision.
- Introducing separate wholesale water and wholesale wastewater price controls, alongside separate, and different, forms of controls for household and non-household retail services.

CHAPTER 2

Where next? - charting a sustainable course



Chapter 2
Where next? - charting a sustainable course

We are now on the right course, but significant challenges remain

As Ofwat rightly recognises[5], the PR14 developments represented only the initial phase in its shift in approach, which is something that Severn Trent supports. Continuing on this new course offers the prospect of substantial customer benefits, with companies seeking out new and improved ways of delivering for their customers. But it also throws up significant challenges. There are important 'how' questions to be addressed.

The key challenges concern how incentives can be sharpened and/or strengthened in effective and robust ways. That is, in ways that generate the kind of incentives for innovation and improvement that are wanted, and that don't give rise to unwanted side-effects. Our experience of the regulated industry points to the particular importance of two overarching factors as the PR19 arrangements are developed:

i) **Opportunities for company rewards when companies deliver high levels of service for customers.** The availability of genuine upside opportunities is key to incentivising more innovative cultures of the kind that can be expected to identify and deliver step change improvements in the sector.

ii) **The need for a workable overall price control package.** Given the difficult and complex nature of incentive design in contexts such as those in the water sector, the aim should be to provide a workable overall package. This should strike a broadly reasonable balance between objectives (when trade-offs arise), and be expected to generate the types of incentive effects that are intended.

Later sections of this report identify some specific ways in which these considerations should guide the regulatory approach to be taken to ODIs, cost assessment and financing.

[5] Ofwat (May 2016) Water 2020: Our regulatory approach for water and wastewater services in England and Wales, p11-12

Opportunities for company rewards

Ofwat has stated clearly that it continues to believe very strongly in incentives that deliver outperformance to achieve new efficiency frontiers. This is very welcome, as we think opportunities for earning significant gains from outperformance in PR19 will be critical to building on the desirable behaviour changes that have been encouraged - and that are being observed - in PR14. This is particularly so given the long-term nature of many decisions in the water sector, and the nature of the challenges that Ofwat rightly identifies the sector as facing. PR19 provides an opportunity to bed down a regulatory approach that clearly signals to companies that real ambition, when combined with cost reductions and outcome improvements, will be rewarded when it delivers for customers.

> *"...I should also make clear that we continue to believe very strongly in the incentive that gains from outperformance provide to achieve new efficiency frontiers. So yes, companies will face a tough challenge at PR19. But there will be opportunities to outperform - in particular by doing things that deliver benefits for customers."*
>
> **Ofwat (October 12, 2016) Towards PR19: legitimacy through efficiency. Speech by Chief Executive Cathryn Ross at Moody's UK water sector conference. Page 9.**

A continuing incentive to outperform would be consistent with a forward-looking focus on dynamic efficiency gains, something that was such a core feature in the early development of UK-style economic regulation in the 1980s.[6] An emphasis on the potential for dynamic efficiency gains recognises the importance of learning and improvement over time. Critical to this is improvement in information conditions, which may come through a whole variety of means, such as changes to engagement, prioritisation and focus, analytical perspectives and techniques, experimentation and discovery processes. It is through such learning processes that efficiency frontier shifts can arise.

[6] This forward-looking focus was evident from the initial design of RPI-X regulation in the UK, although in the early years of price cap regulation dynamic incentives were focused primarily on reducing operating costs

Regulatory experience in the water sector clearly points to the availability of genuine upside opportunities for companies as being important for dynamic efficiency improvements. The 2009 Cave review highlighted the potential benefits of innovation for customers and the environment but also identified the water sector as exhibiting weak incentives for innovation.[7] The Gray review identified ways in which the regulatory framework could engender a lack of ambition, and highlighted a concern that the balance of risk and reward had been tilted too far towards uncertain and potentially large penalties for failure, with relatively limited rewards for outperformance or innovation.[8]

Research on the implications that rewards and penalties within organisations can have on innovation also provides some support for this assessment.[9] A distinction has been drawn between 'radical' and 'incremental' innovation (where radical innovation refers to substantial shifts from existing services or procedures, and incremental innovation refers to more minor shifts). That distinction suggests, while the use of penalties has been identified as conducive to incremental innovation, the availability of rewards has been identified as more important for radical innovations.

It is straightforward to identify how this distinction could have relevance to water sector innovation-related decisions. Efforts to innovate will involve some level of cost being incurred but may not achieve the desired outcome improvements and/or cost reductions within the price control period. As the risk of that happening is likely greater for attempts at more radical innovations, such efforts may be difficult to justify unless there is a sufficient prospect of reward if success is achieved within a control period.

Insights from behavioural economics may also have relevance here. Penalty-focused systems may reinforce tendencies towards loss aversion and satisficing behaviour, and may make companies more likely to become regulator-focused in ways that are unconducive to innovative responses emerging. This perspective suggests that the extent of available rewards should take account of the importance of overcoming such tendencies. That is, incentives need to be sufficiently strong (where that is justified by the potential for customer benefit) in order to prompt more ambitious responses.

[7] Professor Martin Cave (April 2009) Independent Review of Competition and Innovation in Water Markets: Final Report
[8] DEFRA (2011) Review of Ofwat and consumer representation in the water sector, p30
[9] See, for example, Chen, C.X., Lill, J.B. & Lucienetti, L. (2015) Carrots or Sticks? The effect of incentive framing on radical or incremental innovation

Taxi drivers as satisficers?

A 1997 study of New York cab drivers is a much cited source of evidence of satisficing behaviour.* The rate per mile charged by the cab drivers was fixed by law, but their earning potential on a given day would depend on prevailing demand: at busier, higher demand times, cab drivers would need to spend less time searching for customers and thus could earn a higher wage. The study found that drivers tended to quit early on 'high wage' days, and drive for longer on 'low wage' days. This finding was supportive of the view that drivers had a target amount of money that they sought to earn in a day, and quit when they had reached that level, i.e. that they behaved as satisficers.

More recently, though, the emergence of Uber, and its use of 'surge pricing', highlights that cab driver behaviour - notwithstanding behavioural tendencies there may be towards satisficing - will depend on incentives. With surge pricing, the rate per mile charged does not remain fixed: at busier times it goes up and provides drivers the opportunity to earn higher rates when customers are willing to pay more. This can provide a strong incentive for increases in supply at times that matter most to customers, overriding satisficing tendencies.**

*** Camerer, C., Babcock, L., Loewenstein, G. & Thaler, R. (1997) Labor supply of New York City cab drivers: one day at a time. Published in by Kahneman, D. & Tversky, A. (eds) (2000) Choices, Values and Frames.**

**** Considered in: Chen, M. K. and M. Sheldon (2015), Dynamic Pricing in a Labor Market: Surge Pricing and Flexible Work on the Uber Platform. Working Paper.**

Importantly, the benefits of making such rewards available would be expected to go beyond outcome improvements and/or cost reductions in the price control period. Innovative effort that does not deliver in-period improvements may nevertheless feed into other future improvements that will benefit customers in some direct or indirect way. 'Indirect' here can be thought of broadly as experimental activity that is ultimately not fruitful but which can nevertheless support desirable learning and cultural change. This suggests the availability of opportunities for rewards is likely to be key to promoting desirable shifts in behaviour that will benefit customers both in PR19 and in the longer term.

The fact that these broader benefits can be highly significant, though, points to ways in which company incentives for improvement can be dampened, and to some associated challenges for incentive regulation. The potential for significant positive spill-over effects, such that innovation and improvement by one company, including through benchmarking at future price reviews, can have highly beneficial effects for customers of other companies, can mean that incentives to innovate tend to be low. This can justify the provision of substantial 'additional' rewards - such as those given to 'enhanced' companies at PR14 - in order to counter this.

The prospect of future benchmarking also brings with it the potential for a dampening of incentives to improve performance because of what is referred to as the 'ratchet effect'. In particular, improvements now may cause a regulator to set tougher targets at the next review and this can make efforts to make improvements less desirable from a company perspective.[10] This highlights why efforts to tighten the ratcheting process (for example, by moving to a more challenging efficiency benchmark) can be counter-productive: securing more of the benefits of *past* company improvements for customers *now* can dampen incentives for the delivery of future improvements.

A regulator can seek to use its own reputation to try to provide greater confidence over how evidence of improvement will be treated in future controls. By increasing their public commitment to following (or not following) particular types of approaches in the future, regulators can try to lessen the adverse consequences that the ratchet effect can have for dynamic incentives. Regulatory statements, as well as decisions, concerning opportunities for, and the earning of, rewards can therefore play a key role in creating an environment conducive to innovation and improvement.[11]

[10] See, for example: Meyer, M.A. & Vickers, J. (1997) Performance comparisons and dynamic incentives. Journal of Political Economy, Vol 105(3), p547-581

[11] Ofgem's development of the RIIO Handbook can be understood, in part, in this context. By setting out in the Handbook the regulatory approaches it intends to use in future controls, it becomes less likely that Ofgem would subsequently apply a different approach, as to do so could result in reputational damage

The need for a workable overall package

When the potential for dynamic efficiency gains is considered significant - as it might be in the water sector - a key part of the regulatory challenge is to provide a package of incentives (and, more generally, a regulatory environment) that is conducive to learning and improvement. The opportunities for success are underpinned by the potential for mutually beneficial outcomes to be generated: with customers better served, and companies - when they deliver - better rewarded.

Developing such a package necessarily involves trade-offs, and recognising the nature of such trade-offs is important for effective incentive design. A key part of this is the balancing of objectives that can pull in different directions. For example, as was highlighted above, regulatory efforts to improve customer outcomes in the short-term through the setting of more stringent benchmarks can have adverse effects on customer outcomes over time (if they have the effect of undermining incentives for innovation and improvement).

Consideration of whether the overall package can be expected to deliver what is intended is also important. Whether a price control provides opportunities for significant company rewards when material improvements are delivered for customers, will depend on the overall effect of different parts of the price control.

Opportunities for outperformance in one area (e.g. ODIs) may effectively be diminished by the regulatory approach taken in another area (e.g. the cost of capital) such that the overall risk/reward balance is one that is more likely to engender incrementalism and conservative responses. In addition, efforts to develop more sophisticated and complex mechanisms can, where they reduce the clarity of the overall arrangements, have the effect of dampening incentives. While there is a clear opportunity to build on the beneficial changes of approach that Ofwat introduced at PR14, there is also a risk that progress could be undermined.

Developing and applying principles for assessing the appropriateness of price control packages can lessen the risks of adverse outcomes arising. The overall package needs to be sufficiently **challenging** to provide a fair outcome for customers in the short-term. It also needs to be **realistic**, such that there are **significant opportunities for company rewards for strong performance**, given the importance of this for delivering better outcomes for customers in the medium- and longer-term. And the incentive characteristics of the package will need to be sufficiently **clear and credible** for the arrangements to generate the kinds of desirable responses that are needed, i.e. the incentives need to be understood *and* acted upon.

The assessment of, and approach to, Return on Regulatory Equity (RORE) implications provides an important mechanism through which the overall effect of the arrangements can be considered, and compared with what is intended. It is notable, for example, that Ofgem has routinely pointed to the intention that its RIIO price controls are calibrated such that the best performing companies should have the opportunity to earn double-digit returns on regulatory equity. On the other hand, poor performance may result in returns close to the cost of debt. Ofgem's assessments have sought to ensure that plausible RORE outcomes are wide enough to ensure full engagement of equity investors but not so wide as to threaten financial stability.[12]

Careful assessment of the overall balance of risk and reward that price controls provide for at PR19 will be important, to ensure that there are clear incentives to encourage companies to develop and deliver on ambitious plans. As with Ofgem's approach, providing a sufficient range of plausible outcomes is central to this.

[12] For example, Ofgem (July 2014) RIIO-ED1: Draft Determinations for the slow-track electricity distribution companies: Overview, Paragraph 5.31

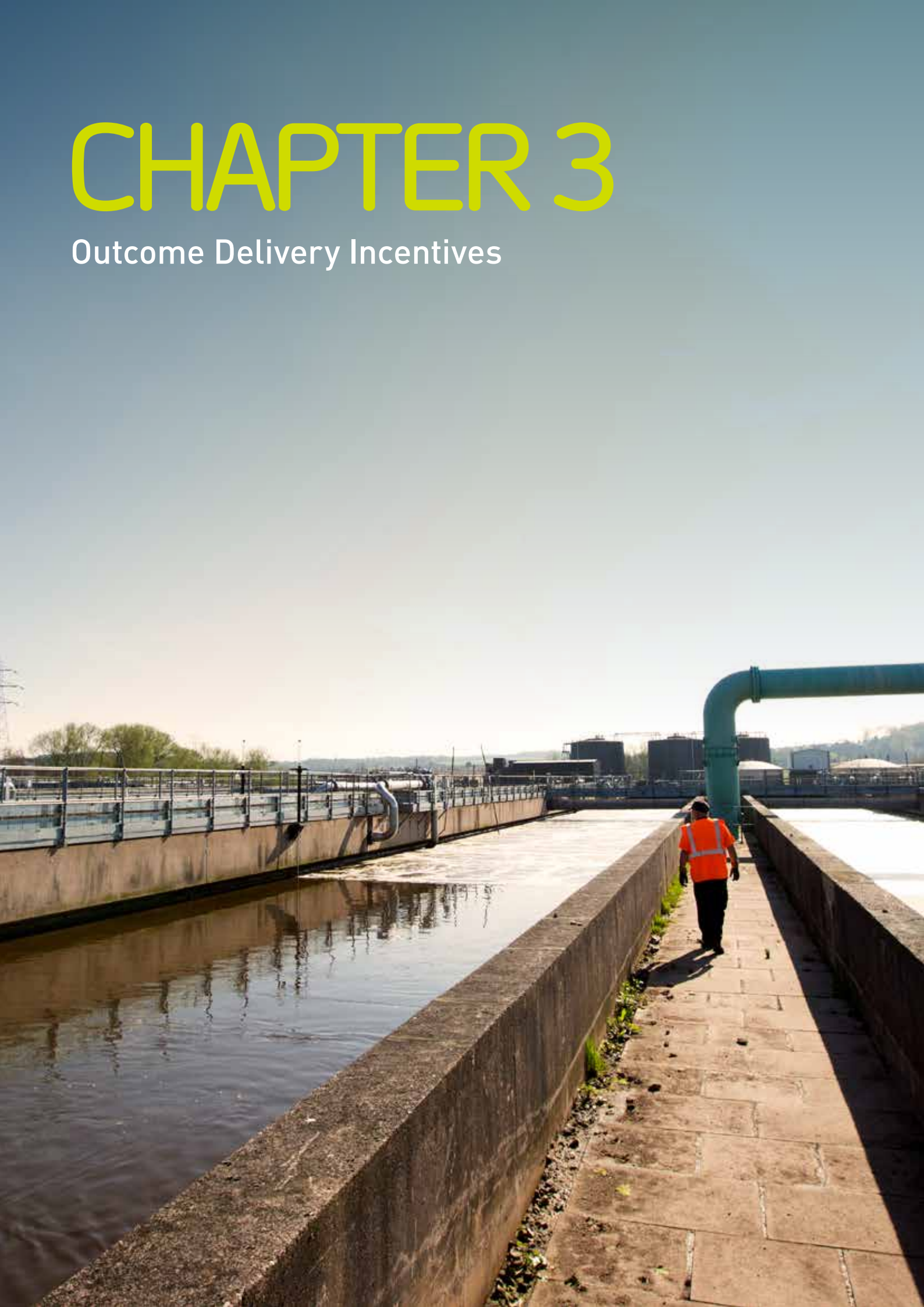
The design of incentive arrangements in contexts such as that in the water sector is, however, not a straightforward process. The aim should be to provide a 'workable' package that strikes a broadly reasonable balance between objectives (when trade-offs arise) and that can be expected to generate the types of incentive effects that are intended. In the chapters that follow, we have set out some key components of what we believe could form part of a workable package.

We start in the next chapter by considering outcome delivery incentives: that is, incentives which are focused directly on company performance in delivering those outcomes that have been identified as mattering most to customers. We then (in Chapter 4) consider how allowances for the costs of delivering those outcomes are assessed, and some key ways in which that assessment process can affect incentives. The allowance in the price control for financing costs is then considered in Chapter 5. In particular, we highlight some ways in which the WACC determination process interacts with ODI and totex decisions, and how it could be used to encourage companies to develop and deliver on more ambitious business plans. Finally, the ongoing and complementary role that output incentives can play within the ODI framework is considered in Chapter 6.

At the end of each of these chapters we highlight the key components that we think could form part of a workable overall price control package.

CHAPTER 3

Outcome Delivery Incentives



Chapter 3:
Outcome Delivery Incentives

The development of the framework

The introduction of ODIs at PR14 was seen as a major change to the incentive framework. Despite not having been a universally popular change, it has proven to be a real success in terms of increasing company focus on what matters to customers.[13]

After extensive engagement with customers and local stakeholders, water companies proposed a set of outcomes, performance commitments (PCs) and ODIs. Overall, companies proposed 171 outcomes, 515 PCs, and 312 financial ODIs.[14] All companies proposed outcomes covering the core service elements, such as excellent water quality, a reliable water supply and protection of the natural environment on the water side, For wastewater, proposals included a reliable wastewater service, reduced sewer flooding, and the protection of the natural environment on the wastewater side. At the same time, there were significant differences between companies in terms of the resulting scope of their ODIs These included the specific performance levels that were being committed to, the overall levels of financial exposure they provided for, and when and how the financial implications of rewards and penalties were to be adjusted for.

[13] The UKWIR report on outcomes found stakeholders to be generally positive about the introduction of the Ofwat outcomes framework, and supportive of retaining it. See UKWIR Report Re. No. 16/RG/07/39 (2016) Setting performance commitments and incentives to deliver best value for money

[14] Ofwat (December 2014) Setting price controls for 2015-20, Final price control determination notice: policy chapter A2 - outcomes, p2

Realistic opportunities for rewards through the sensible application of PC benchmarks

Under the PR14 outcomes approach, Ofwat put responsibility for the development of outcomes, PCs and ODIs with companies, apart from in two areas: the Service Incentive Mechanism (SIM) and leakage. In its consultation on the outcomes framework for PR19, Ofwat has set out a list of ten performance commitments that it is proposing all companies would use, based on standard definitions.

[15] Ofwat (November 2016) A consultation on the outcomes framework for PR19, Figure 6 (p14).

Ofwat's proposed common performance commitments for PR19

1. New customer experience measure.
2. Water quality compliance.
3. Customer water supply interruptions.
4. Water distribution input (or leakage and per capita consumption).
5. Abstraction incentive mechanism.
6. Customer property sewer flooding (internal).
7. Wastewater pollution incidents.
8. Asset health water - pipe bursts.
9. Asset health wastewater - sewer collapses.
10. Possible new measure or measures of resilience.

Ofwat's ODI framework at PR14

Outcomes are the high level objectives that companies propose to deliver for their customers, and for the environment, within their business plans.

PCs are defined levels of performance that companies commit to providing within their business plans as part of their delivery of a defined outcome.

Bespoke PCs are performance commitments that are specific to a given company, and that are developed through a company's engagement with its customers.

Common PCs are performance commitments that Ofwat decides should apply to all companies.

Outcome Delivery Incentives (ODIs) are financial and/or reputational incentives that companies face depending on how their performance compares with what was committed to (in their PCs). Financial ODIs can be penalty-only, or may allow for rewards and penalties.

Comparing and benchmarking PCs and ODIs across companies can provide useful information. The provision of clear and comprehensible comparative information will be an important part of the engagement processes that underpin the development of business plans, and can play an important role in terms of the development of credible PCs and ODIs that have legitimacy with customers.

Common performance commitments work best, we believe, where they reflect an area of service that is important to customers and where they can be appropriately measured and consistently applied across companies. At the same time, we think it is important that companies have the freedom to develop bespoke PCs where engagement identifies customer preferences that are not commonly held across companies. That could also be the case where there are preferences which are difficult to incentivise in an effective manner through the use of common measures (for example, because of data consistency issues).

When PC and ODI levels are determined, or adjusted, on the basis of benchmarking, however, it will be important, however to ensure that such decisions are consistent with companies having realistic opportunities for rewards. This does not imply that companies should necessarily expect such reward opportunities to be available for each PC as the use of common benchmarking approaches may mean companies facing a reasonable likelihood of a penalty on some measures. The key issue is that the price control arrangements should offer significant opportunities for rewards when material outcome improvements are delivered. **We believe that companies should be able to earn rewards for benchmarked ODIs where they perform at the upper quartile or better.** This can provide the basis for more pragmatic and practical approaches to specific measures, with companies 'taking the rough with the smooth'. In addition it might be expected that there is movement in the target through the price review period to reflect a reasonable level of shift in the upper quartile level of performance through continious improvement.

Difficulties can arise, if different parts of the price control are benchmarked in isolation, as this could potentially create a risk that the overall benchmark/ package is more stringent than may at first seem to be the case. That is, disaggregated approaches to benchmarking can result in a form of 'cherry picking'. For example, using upper quartile (UQ) for the cost assessment exercise (and capping forecast totex underspend), and then applying an UQ (or tighter) standard in relation to ODIs (with limits on the size of benefits), could result in a situation where a company that is in the UQ on the basis of cost assessment could face expected losses (or minimum gains) on those ODIs.

The significance of these issues will depend on how companies are distributed around the different benchmarks. Care should be taken though to avoid undue - and unintended - tightening of the overall benchmark being applied through disaggregated decisions being taken in isolation. This highlights the importance of considering the overall RORE position so as to guard against such effects arising. The price control framework should ensure that there are strong incentives for the development and delivery of ambitious plans and a suitable overall package.

In-period ODI payments provide a clearer and stronger link between performance and remuneration

The timing of financial adjustments for ODI performance can have a significant bearing on customer engagement. **We believe in-period ODI payments can provide a more transparent and timely linkage between performance and bill impacts, and provide a far stronger impetus to drive improvements in performance.** This can have important implications for customer engagement. The legitimacy of earning rewards for out-performance will depend on customer buy-in to the underlying performance commitments and ODIs. Where performance falls short, in-period adjustments can provide for a more direct and immediate bill effect.

The use of slower, less direct approaches to adjusting for the financial consequences of ODI performance - such as through an adjustment to the regulatory capital value (RCV) - may be justified in some circumstances. For example, it may provide for a better alignment between payments and performance when longer term impacts are being assessed. In general, though, there are good reasons to prefer the use of in-period payments, given how they can help reinforce a more customer-focused culture.

The financial significance of ODIs should be increased in PR19

At PR14, Ofwat set an aggregate cap of +/-2% RORE for ODI rewards/penalties. In practice, resulting company ODI exposures for PR14 were more modest than this as Ofwat identified the average ODI risk range for PR14 as -1.7% to +0.6%.[16]

The relatively modest nature of these levels of exposure is apparent from noting that the Interruptions Incentive Scheme that Ofgem applies to electricity Distribution Network Operators (DNOs) itself allows for +/-2.5% of RORE in RIIO-ED1 (the current distribution charge control), and sits alongside additional significant financial incentives related to customer satisfaction.[17]

A relatively cautious approach was merited in PR14 given that ODIs were being applied for the first time. Ofwat noted when setting the aggregate cap of +/-2% RORE: *"...ODIs are a new and innovative feature of this price control, the cap provides an element of protection to both customers and companies while retaining the strong incentives that the outcomes approach brings."*[18]

We believe that Ofwat could explore the scope for increasing the scale of ODIs at PR19. The experience and greater understanding from the use of ODI measures in PR14 should provide a basis for more revenue to be made dependent upon delivering outcomes, without undermining the protections that the PR14 cap was intended to provide.

For PR19, companies should be allowed to increase their exposure to ODIs (including increasing opportunities for financial benefits), subject to appropriate checks. 'Willingness to pay' checks will be important, to avoid perverse incentives. Also important, will be checks on measurement and attribution issues that can arise. PR14 experience is important here as it provides a basis for showing how such issues have been addressed in practice.

[16] Ofwat (December 2014) Final price control determination notice: policy chapter A7 - risk and reward. p15
[17] Ofgem (March 2013) Strategy decision for the RIIO-ED1 electricity distribution price control: Outputs, Incentives and innovation, paragraph 4.11
[18] Ofwat (December 2014) Final price control determination notice: policy chapter A2 - outcomes, p6

Dynamic adjustments to ODIs would undermine their strong incentive properties

The appropriate length of price control periods has been the subject of much attention over time, given its central importance to the provision of desirable incentives for dynamic efficiency improvements. A long-running concern in relation to the water sector and energy networks has been that a five-year price control could be too short.

To address this challenge, Ofgem's RIIO approach has involved the introduction of an eight-year price control which allows companies to retain the benefits of improvements they make for a longer period and which can provide stronger incentives for companies to make improvements.

As PR19 is developed, it will be important to avoid introducing changes that can undermine desirable incentives for improvement. For example, the introduction of dynamic adjustments to efficiency targets during a control period could effectively shorten that period. That is, if targets are adjusted on the basis of observed practices across companies during the period, then the expected gains associated with improvements may be diminished. Instead of achieving a reward, an improvement may - depending on the response of other companies - result in no upside, and could even be associated with a penalty (if others had improved to a greater extent).

On the face of it, such dynamic adjustments may be thought of as generating strong incentives for continuous improvement because failing to improve sufficiently runs the risk of penalties being incurred.

But such approaches may also engender more risk averse behaviour by intensifying the significance of the ratchet effect described above, with companies expecting rewards for improvement to be limited and/or short-lived. Rather than encouraging innovation by providing clear opportunities for reward, such approaches may simply reinforce existing tendencies to adopt more incremental approaches.

In addition, the use of dynamic adjustments would seem to go against the grain of the significant efforts that have been made to generate clearer and simpler incentives. By increasing uncertainty over the payoffs that can be expected, incentives for improvement can be dampened and 'wait and see' approaches preferred.[19]

We believe that dynamic adjustments should not be applied to ODIs, as they would undermine their strong incentive properties. This does not mean, however, that predicted improvements in performance determined ***ex ante*** would be unreasonable, as discussed earlier. The use of dynamic adjustments, we believe, should be limited to capturing exogenous changes, such as movements in the general level of prices (through RPI/CPI indexation) and movements in the cost of new debt. This would focus attention on updating targets to take account of changes that are outside the control of companies, and so doesn't raise the same concerns over problematic incentive effects arising.

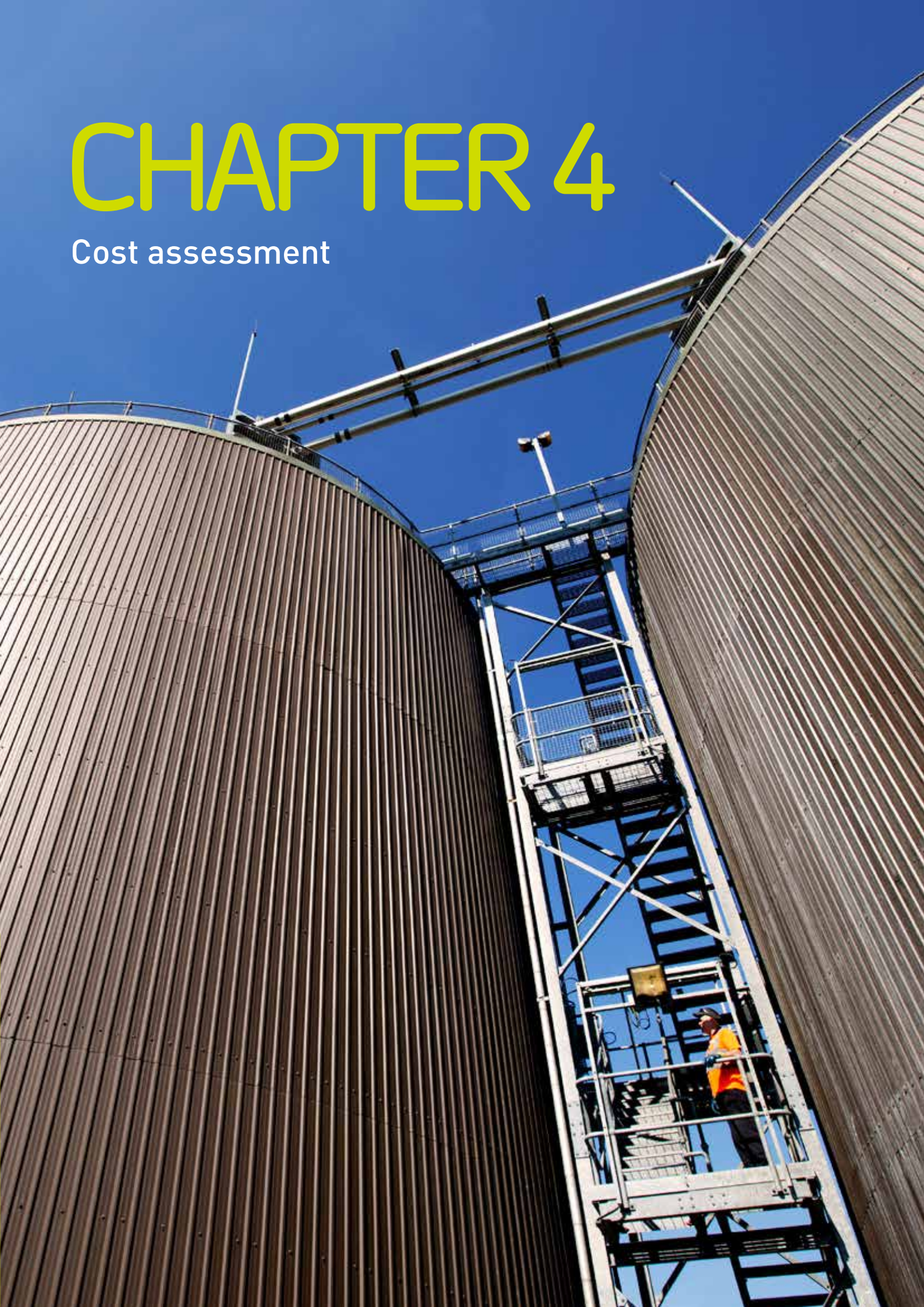
[19] This reflects the real option value of 'delay' that can arise when investment decisions are subject to increased levels of uncertainty

ODIs: Components of a workable package

- **Realistic reward opportunities when considered in the round.**
  - Greater use of common PCs where they can be appropriately measured and consistently applied.
  - Companies at upper quartile or better earn rewards.
  - Flexibility to develop bespoke PCs where they can better reflect customer preferences.
- **Greater use of in-period ODIs** to provide a clearer and stronger link between performance, remuneration and bill impacts.
- **Increased financial significance of ODIs** so that companies can make more revenue dependent on what matters to customers.
- **No dynamic adjustment to ODIs,** which would undermine their strong incentive properties.

CHAPTER 4

Cost assessment



Chapter 4:
Cost assessment

Cost assessment at PR14: Ofwat's totex approach

At PR14, in place of the previous distinction between capital and operating expenditure, Ofwat introduced a total expenditure approach to the way in which it assessed, incentivised and remunerated company expenditure.

This involved Ofwat forming its view of what the wholesale totex requirements were for each company. This was assessed using a number of econometric benchmarking models. Ofwat then made a series of adjustments to the cost benchmarks it had identified from the modelling. These adjustments sought to reflect specific aspects of company characteristics and circumstances that had a material bearing on cost levels but which had not been taken into account adequately by the benchmarking process.

Incentives for the provision of challenging total expenditure forecasts need to be credible

As part of the move to a totex approach at PR14, Ofwat applied a new approach to cost assessment that was rooted in the econometric modelling.[20] For each company, Ofwat estimated a cost benchmark for wholesale water and (when relevant) wholesale wastewater on the basis of this modelling, with some adjustments made after the consideration of special cost factor claims from companies.

In a small number of cases, the Ofwat cost benchmark that resulted from this estimation process was significantly higher than the company's own view of its totex requirements. Ofwat took the view that in these cases - for non-enhanced companies - it was appropriate to cap the difference between its baseline measure of cost and the level of cost submitted by the company in its business plan at 5%. That is, instead of using its own modelled baseline measure of totex in these circumstances, Ofwat simply set the cost benchmark 5% higher than the company's submitted level of totex.[21]

Ofwat's decision to apply a cap at PR14 may have been a result of concerns that its modelling may have over-estimated the totex requirements in these cases, and that customers would have ended up paying too much if it hadn't made a downward adjustment to its cost benchmark. There was a concern that, while companies may face strong incentives to try to address modelling issues that result in costs being under-estimated, they would be likely to devote fewer resources to correcting issues that result in over-estimates.

[20] This approach is summarised in: Ofwat (December 2014) Setting price controls for 2015-20, Final price control determination notice: policy chapter A3 – wholesale water and wastewater costs and revenues.'
[21] Ofwat (December 2014) Setting price controls for 2015-20, Final price control determination notice: policy chapter A3 – wholesale water and wastewater costs and revenues, p37

While concerns over potential modelling anomalies may have justified such an approach as a one-off at PR14, it is important for business plan development incentives going forward that Ofwat credibly commits to not applying such an approach at PR19. For PR19, an expectation that such a cap may be applied again could have highly undesirable incentive effects on business plan development. It could undermine incentives for companies to submit more challenging totex forecasts, or indeed, drive real efficencies within the current price control period, as there could be a real perception that this may be used as a justification for applying a lower cost benchmark.

It is important that the cost assessment process is clearly seen to be supportive of, and compatible with, companies developing and delivering on ambitious plans. **As such we believe that there should be no caps applied to forecast totex underspend to avoid undermining incentives on companies to develop more challenging plans.**

The cost benchmark should not be set at a level tighter than upper quartile

Ofwat applied an upper quartile benchmark for cost efficiency in PR14[22], and an equivalent approach is likely to be appropriate for PR19, providing that, when considered alongside the other parts of the control, the benchmark allows efficient companies a reasonable opportunity to earn their cost of capital.

The use of a benchmark that is more stringent than upper-quartile risks results being driven by modelling errors and/or data specification problems and inconsistencies, rather than by than genuine observations of more efficient performance. The relevance and significance of modelling accuracy issues to the choice of benchmark was highlighted by the Competition Commission in its Northern Ireland Electricity Inquiry[23], and by the Competition and Markets Authority in its Bristol Water Report, when noting that: *"The effect of modelling error and limitations will tend to mean that an upper quartile benchmark will require levels of efficiency that are, in practice, greater than the upper quartile."*[24]

As such we believe that the cost benchmarks should not be set at a level tighter than the upper quartile.

[22] Ofwat (December 2014) Setting price controls for 2015-20, Final price control determination notice: policy chapter A3 – wholesale water and wastewater costs and revenues, p4
[23] CC (March 2014) Northern Ireland Electricity Limited Price Determination, Paragraphs 8.135-6
[24] CMA (October 2015) Bristol Water plc, Paragraphs 4.219-4.224

The cost implications of differences in outcomes need to be considered

PR14 effectively proceeded as though the cost assessment and ODI setting exercises could be considered discretely. Given the novelty of the arrangements, and the relatively limited overall exposures arising from ODIs, this approach was understandable, and helped make the assessment processes more straightforward to administer. However, the adequacy of such an approach for PR19 is much more questionable.

The cost implications of differences in outcomes - including customer generated differences in outcomes - needs greater consideration in PR19. The totex forecasts that companies' business plans reflect their view of the costs of delivering a set of outcomes. If those outcomes differ materially, then differences in costs, leaving aside modelling errors and data limitations, need not relate to different levels of efficiency, they could simply reflect the different levels of service that different sets of customers wish to see. For example, prevailing totex levels associated with sewer flooding will have been affected by past assessments of both willingness to pay for improvements and the likely cost of delivering those improvements. Given that both of those measures could differ across companies for reasons that do not imply inefficiency, the resulting outcomes and totex levels could also differ legitimately.

There are a number of ways in which the challenge of assessing different levels of outcomes could be addressed, including through adjustments to the cost assessment modelling and/or through adjustments to ODI levels and associated performance commitments.[25] For PR19, it will be important to test and - where relevant - to adjust for the cost implications of material differences in outcomes.

[25] Some practical options are considered in: Economic Insight (October 2016) Outcomes framework at PR19

Cost Assessment: Components of a workable package

- **There should be no caps applied to forecast totex underspend** to avoid undermining incentives on companies to develop more challenging plans.
- **The cost benchmark should be set at the upper quartile level:** the use of a tighter benchmark would increase the risk of results being driven by modelling errors, and could undermine improvement incentives by overly depressing reward opportunities.
- **Outcome differences between companies that have material cost implications should be adjusted for** when otherwise they would be likely to undermine cost efficiency assessments.

CHAPTER 5

Financing

Chapter 5: **Financing**

Setting the WACC

The approach to setting the WACC has been largely unchanged across previous water sector price controls. Central to this has been the aim of setting the allowed WACC equal to an estimate of the cost of capital for an efficient water business (given an assumed financial structure). However, the process for setting the WACC provides an opportunity to strengthen the incentive framework at PR19, by linking the allowed level of the WACC to the ODI and cost assessment framework.

Setting the allowed weighted average cost of capital (WACC)

The Competition & Markets Authority (CMA) described a central part of the standard approach to setting the allowed WACC in the water sector in its determination of Bristol Water's price control for 2015-20:

"The return required by the marginal investor will depend on other aspects of the price control determination, for example projections of totex. If, for example, the totex projections are relatively generous and consequently the market expects the company to outperform, this will affect the marginal investor's view of associated risk and therefore the implied return on capital. As part of our determination, we made central projections of totex and other elements in the price control (which we interpret as expected values). Consequently, we assumed that we can estimate the cost of capital without considering effects from totex or other elements." (Paragraph 10.11).

That is, the standard assumption for WACC assessments has been that other parts of the control are, at least when taken in the round, calibrated such that expected returns from those other sources (totex incentives, ODIs, etc.) should be assumed to be zero.

ODIs and the WACC

Ofwat has raised the question of whether the availability of ODI rewards may justify a downward adjustment to the WACC rather than the opportunity to secure a higher WACC.[26] The case for downward adjustment of the WACC should, in our view, be treated with caution.

In its Outcomes framework document, Ofwat explained the reasoning that could underpin such a downward adjustment by comparing a 'penalty-only' with a 'reward and penalty' system. In the stylised example considered, investors are said to be willing to accept a lower WACC under a reward and penalty system than under a penalty-only system, because of the scope to earn higher returns through the rewards mechanism.

The Ofwat stylised example appears to assume a starting position in which investors required an allowed WACC that exceeded their cost of capital in order to offset an expected loss on ODIs because of the penalty-only system. From this starting point, introducing ODI rewards could result in a position where the overall expected return on ODIs was zero, rather than negative, and so the WACC would no longer need to exceed the cost of capital to offset an expected ODI loss. In practice, the starting (PR19) position is not one in which it is reasonable to assume expected ODI losses. As highlighted in the box above, the standard assumption when setting the WACC has been that overall expected returns from ODIs, totex and other parts of the control should be treated as zero.

[26] Ofwat (November 2016) A consultation on our outcomes framework for PR19, p6-7

The view that increases in opportunities to earn ODI rewards should lead to a lower WACC being set, relies on the assumption that such opportunities will mean that investors should be able to expect positive net returns overall from ODIs, including after any totex implications are taken into account. This would require a significant departure from the standard approach that has been taken to WACC determination previously in the water sector, including by the CMA in its Bristol Water determination.

It is clearly possible for ODIs and totex benchmarks to be calibrated in such a way as generate *ex ante* expectations of positive net returns. But the view that opportunities for ODI rewards should be increased in no way implies that need be, or would be likely to be, the case. So there should be no expectation that there would be any downward WACC implications and, without a robust framework for making such trade-offs, material underfunding risks could emerge.

Rewarding challenging plans

Consideration should be given to providing the opportunity for companies to be allowed a higher WACC, *ex ante* if they have more challenging plans with higher exposure to ODIs and lower costs. The higher WACC would reflect the more challenging risk profile the company would be signing up to, and would be part of an explicit reward that incentivises the development of more ambitious and challenging plans.

This could happen if the plan increased company exposure to totex levels and/or ODIs in ways that made returns more exposed to systematic risk. Increased exposure to totex levels and ODIs may also increase the level of total risk faced by a company such that a lower gearing assumption, and/or an increase in the assumed cost of debt, may be appropriate. This type of cost of capital interaction has been examined in the context of price control separation[27], and merits consideration in this context.

The nature of a challenging business plan can reflect a shift in the overall risk profile that a company is adopting, and the opportunity to secure a higher WACC may be an important component of the incentives for such a shift. Where a plan is genuinely challenging, it may involve the relevant company adopting a different risk appetite to many others in the sector, with the company backing itself to be able to achieve rewards notwithstanding the ambitious targets that it has presented.

By setting challenging performance targets, a company is effectively committing that its customers will share in some of the benefits that it considers it will be able to deliver. On the basis of what 'good' performance currently looks like, the expected financial outcome of signing up to such a plan may be negative but in developing a challenging plan the company is backing itself to be able to innovate and improve performance. In order for companies to have an incentive to do this, it is important that the arrangements provide for incentive compatibility. So a company needs to believe that it will be better off seeking to deliver a more challenging plan than, for example, adopting a more incrementalist or conservative approach. The potential for a WACC uplift could provide part of a package aimed at providing for such incentive compatibility.

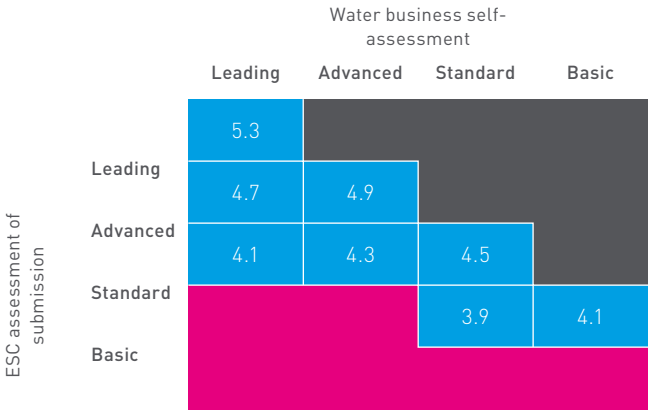
In PR14, Ofwat used the opportunity to secure 'enhanced' status as a way of incentivising the submission of high quality business plans. In practice, securing that status resulted in a cost of capital benefit, as the cost of debt assumption for enhanced companies was not subject to updating later in a review period that, for the other companies, resulted in a cost of capital reduction. But getting a higher WACC was not a form of financial benefit that Ofwat had committed in advance to providing to enhanced companies.[28] It is also notable than in RIIO-ED1, Ofgem allowed Western Power Distribution - the only 'fast-tracked' DNO group[29] - a significantly higher WACC[30] than it allowed for other companies.

[27] PwC (December 2015) Balance of risk: risk and reward across the water and sewerage value chain
[28] Committed financial benefits from enhanced status were an up-front reward (that ensured an enhanced company would be better off than had it gone through Ofwat's menu process as a non-enhanced company), and a higher cost efficiency sharing factor
[29] Ofwat's 'enhanced' status at PR14 operated in a manner similar to Ofgem's fast-tracking process
[30] WPD's price control included an allowance for a cost of equity of 6.4%, compared to an allowance for the other ('slow-track') DNOs of 6% (Ofgem (January 2017) Guide to the RIIO-ED1 electricity distribution price control)

A potential model for determining differences in the WACC

Ofwat has drawn attention to an approach developed by the Essential Services Commission (ESC) in Victoria, Australia that involves an explicit commitment to apply a different level of cost of capital to companies depending on its assessment of their business plan (in light of factors that include taking account of past performance).[31] In particular, a different cost of capital is applied depending on which of four categories a plan falls into and how this compares with the company's self-assessment of its category. Indicative cost of equity figures are shown in the table below, and the basis upon which the ESC considers that ambition should be assessed is summarised.

The Essential Services Commission: indicative real return on equity allowances depending on business plan assessments



Essential Services Commission (October 2016) Water pricing framework and approach: Implementing PREMO from 2018

The ESC approach points to how more than one category could be used to classify higher quality or more challenging business plans, and how pre-defined cost of capital uplifts could be used to incentivise the development of more ambitious plans. **The use of more than one category for more challenging plans could provide less of a cliff-edge character to the 'enhanced' assessment, and that may itself assist with encouraging the development of more ambitious plans.**

[31] Ofwat (September 2016) Water 2020: consultation on the approach to the cost of debt for PR19

The Essential Services Commission: criteria for assessing business plan ambition

The ambition of business plans is to be assessed against five criteria (referred to as PREMO):

Performance: Have the performance outcomes which the business committed to in its previous price submission been met or exceeded?

Risk: Has the business sought to allocate risk to the party best placed to manage that risk?

Engagement: How effective was the business' customer engagement?

Management: Is there a strong focus on efficiency?

Outcomes: Do proposed service standards represent an improvement?

Essential Services Commission (October 2016) Water pricing framework and approach: Implementing PREMO from 2018

The ESC approach raises questions over how much weight should be given to Ofwat's assessment of the quality and ambition of the business plan, as against what is actually delivers subsequently or what is presently being delivered. The ESC approach looks to put a great deal of weight on the regulator's assessment of plans but intermediate approaches could be envisaged that draw on some aspects of the ESC approach. For example, the assessment of 'ambition' under the ESC approach includes consideration of observed performance in relation to previous outcome commitments. Using evidence of past performance in this way can act to counter the 'ratchet effect' (described in Chapter 2), by rewarding delivery in one period and with greater scope for rewards in the next period. **We believe that opportunities to earn rewards should be linked to the business plan assessment process and to past performance** as part of a risk-based approach: the more credible the plan (where credibility is affected by evidence of past performance), the higher the potential rewards, subject to checks on customer willingness to pay.

The WACC as part of a package that incentivises innovation

As highlighted earlier, the incentive effects of the price control will depend on how decisions on the different components fit together as an overall package. The key, and more general, point is that the overall package should be calibrated in a way that offers the opportunity for significant rewards for companies that deliver ambitious plans. As was highlighted in Chapter 2, experience suggests that the upside possibilities are likely to be key to incentivising and promoting the development of more innovative cultures in the sector. They can provide a basis for the identification and delivery of step change improvements in customer outcomes, by providing a regulatory framework that is supportive of companies committing significant resources to seeking out dynamic efficiency gains.

Financing: Components of a workable package

- **Companies could be given the opportunity to secure a higher WACC for higher levels of ODI and cost performance** to reflect the more challenging risk profile being signed up to, and/or which forms part of an explicit reward that incentivises the development of more ambitious plans.
- **More than one category could be used to reward higher quality/more challenging business** depending on the level of ambition shown
- **Opportunities for rewards should be informed by past performance and outcome delivery** with this affecting the assessment of the credibility and robustness of, and thus the risks to customers associated with, business plans.

CHAPTER 6

Output incentives

Chapter 6:
Output incentives

Outcomes and incentives

The focus on outcomes at PR14 provided a welcome correction to a situation in which companies, given the incentives that had previously been applied, had become overly Ofwat-focused. Delivery was too often assessed in relation to detailed project plans, rather than in terms of how well customers were being served. As has been set out in earlier sections, PR19 provides an opportunity to build on, and develop, the outcomes framework, (through such measures as sharpening and strengthening ODIs) in important and desirable ways.

The longer-term nature of decisions associated with areas such as resilience, however, can raise difficulties in terms of the development of effective ODIs. Customer outcomes may only be affected many years in the future by decisions taken in the current price control period, and this makes it difficult to rely on the prospects of future rewards or penalties to provide effective longer-term incentives.

This kind of longer term issue illustrates how the regulatory contract for any given price control period is an incomplete contract. Longer term outcomes will be affected by decisions that are not explicitly captured by the control. This provides further support for a general regulatory approach that sets efficiency benchmarks that are challenging, but realistic, and which encourage dynamic efficiency improvements through opportunities for rewards. In particular, that kind of regulatory framework can be more conducive to enhancing cultures of trust[32] and longer-term thinking than more penalty-based regulatory approaches that adopt a shorter-term and more static focus.

Output incentives

Supporting a culture of longer-term thinking can help promote good practice in relation to issues such as resilience but, when substantial investments are required, it is important that there is a regulatory mechanism that can provide an effective basis for funding so that important improvements can be progressed in a timely manner. ODIs that perhaps resemble something more like *output*, than *outcome*, delivery incentives have a role to play. **While significant efforts should made to try to develop *outcome* incentives where possible, *output* incentives should continue to be treated a useful regulatory mechanism where necessary.** A good example of this is the ODIs that Severn Trent has for the Birmingham Resilience Scheme in this regulatory period.

The future regulatory challenge will be to develop assessment mechanisms that allow resilience needs to be delivered through the use of *output* incentives (where necessary), and that fit in a coherent way both within the broader infrastructure planning framework and alongside the evolution of ODIs.

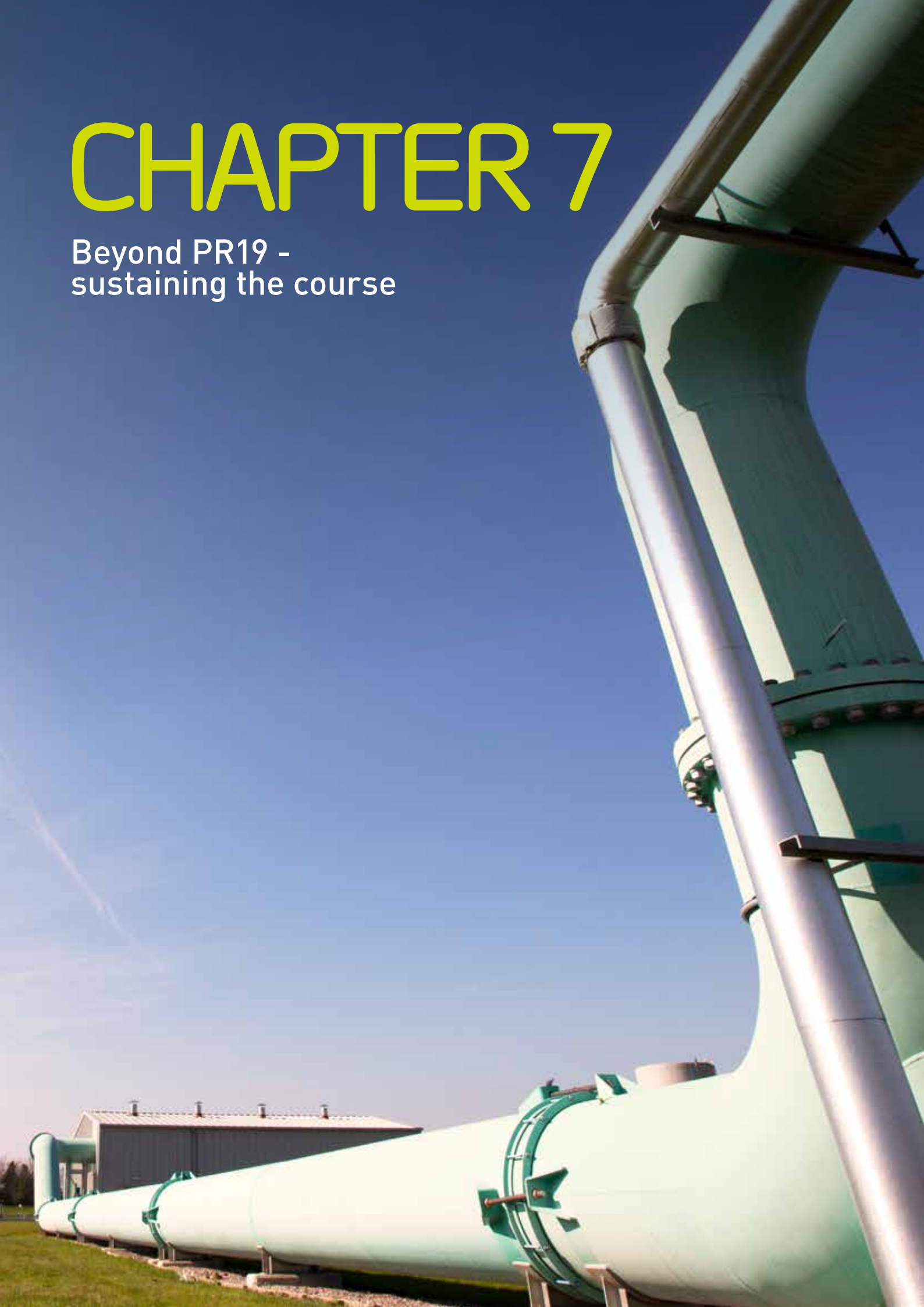
[32] See, for example: Christ, M.H., Sedatole, K.L. & Towry, K.L. (2012) Sticks and Carrots: The effect of contract frame on effort in incomplete contracts. The Accounting Review, Vol. 87, No. 6, p1913-1938

Output incentives: components of a workable package

- **Output incentives still have a role to play** when the longer-term nature of decisions associated with areas such as resilience raises difficulties for the development of effective ODIs.
- **Coherence of fit within the broader regulatory landscape will be important** within the broader infrastructure planning framework and alongside the evolution of ODIs.

CHAPTER 7

Beyond PR19 - sustaining the course



Chapter 7:
Beyond PR19: sustaining the course

Future opportunities

PR19 provides a fantastic opportunity to build on the changes made at PR14 that put the water sector on the right course in terms of incentive regulation. Continuing on this new course offers the prospect of substantial customer benefits. At PR19 and beyond, we think that Ofwat should seek to continue to strengthen incentives to deliver for customers where that can be done in effective and robust ways. This should mean that the price control provides companies with clear and significant upside opportunities as part of an overall workable package.

This approach might be expected to generate significant amounts of new and valuable information, aiding the setting of price controls beyond PR19. The new information would allow the benefits from identified improvements to be experienced across a broader set of customers, through the comparison and benchmarking processes.

There are a number of future regulatory developments that would be explored beyond PR19. For example:

- the length of the price review period could be adjusted;
- system operation activities could be subjected to new and separate forms of control; and
- the WACC assessment process could be developed such that it takes account of differences in balance sheet structures.

The provision of clear and significant upside opportunities as part of an overall workable package at PR19 would be expected to improve the scope for these and other potential developments to be explored and pursued in an effective manner beyond PR19.

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