Setting price controls for 2015-20 – final methodology and expectations for companies' business plans

Appendix 1: Integrating the calibration of outcome delivery and cost performance incentives

OFWAT

A1.1. Introduction

It is the responsibility of each company to propose its outcomes and associated outcome delivery incentives (ODIs).

Nonetheless, a number of companies have raised questions on how ODIs should be calibrated with other incentives in the wholesale price control, notably the cost performance incentives. In response to these questions we are setting out some guiding principles and examples that are designed to be illustrative to assist companies in their considerations.

As the outcomes and associated delivery incentives will be developed locally by companies we recognise (and encourage) that there will be differing approaches. It is important to emphasise that we are not seeking for companies to alter the outcomes or delivery incentives in any way at this stage of the price review. We are, however, emphasising the importance of companies considering the incentives as an overall package for their customers and that they should provide a clear explanation of the interaction between incentives as part of the information they submit to us in business plans.

This is because without a properly integrated approach to incentives there may be perverse consequences, such as customers paying more than their willingness to pay (WTP) for improvements or companies profiting from not delivering these commitments.

Adopting an integrated approach to developing incentives will involve assessing and if necessary balancing a range of considerations. As a minimum we would expect the approach to calibrating ODIs to reflect the following.

- Provides robust protection for the interests of consumers.

- ODIs should be based on WTP with appropriate adjustments – which should include adjustments necessary to take account of the impact of cost performance incentives, so that when considered together the incentives provide appropriate protection for the interests of consumers and appropriate incentives for companies.

- Business plans should identify a package of outcomes and performance commitments that are affordable as a package and where each element of the package is supported by a robust cost benefit analysis. For these performance commitments ODI penalties will generally be appropriate to incentivise delivery and protect consumers from the adverse consequences of under-delivery.

- ODI rewards will be most appropriate to deal with uncertainty and provide funding for performance levels not funded through baseline totex. Any rewards and likely level of cost recovery through totex efficiency sharing should be affordable and proportionate, and, companies will need to clearly demonstrate this.

Due to the significance of the calibration with cost performance incentives in setting appropriate wholesale ODIs we have set out below illustrative examples of how these can be integrated together. These illustrative examples involve a degree of complexity – as it is not necessarily straight forward to integrate ODIs and totex incentives.

It is for each company to decide on its approach to incentives and each company will need to decide on the range of factors it is appropriate to take into account in finalising its plan. Companies may decide to adopt a different or modified approach to the examples described below, so that their package of incentives and outcomes:

- reflects an appropriate degree of simplicity, clarity and transparency;
- takes account of the penalties and incentives created by other regulatory regimes;
- appropriately balances risks and rewards between companies and customers; and
- encourages and provides proportionate rewards for innovation.

We will examine any such proposals as part of our risk-based review, looking favourably upon packages of incentives and business plans that:

- offer appropriate protection for outcome delivery and customers' bills; and
- clearly explain, properly justify and quantify the approach that the company has adopted.

A1.2. Basic form of the ODIs

As noted above, these examples illustrate an approach to integrating ODIs with cost performance incentives. It is for companies to make the final decision on their preferred approach to incentives and to explain and clearly justify their approach.

For the purposes of the calculations in this appendix a cost performance (sharing) incentive rate of 50% is used. This is only for purposes of illustration (and other cost performance rates could also have been employed). In designing ODIs each company should use the same performance incentives as those underlying its business plan.

In this illustrative example the adjustments necessary to take account of the interactions between cost performance incentives and ODIs depend on the basic form of the outcome commitment.

A1.2.1. Basic form ODI penalties

- These will be most appropriate where the outcome commitment has been assumed to be funded from the totex baseline then customers require protection if the company fails to deliver as planned. In most cases this will take the form of a financial ODI penalty that has been calculated in such a way so to take account of both the costs that have been assumed in the baseline, and, the impact of the cost performance incentives, as shown below. Where a different incentive form, such as a non-financial incentive, is proposed the company will need to explain how customers are sufficiently protected against under-delivery.

- Will be most appropriate where there is a clear economic case to support delivery of the outcome commitment within the price control period (that is, incremental WTP exceeds incremental costs associated with increased outcome delivery).

- Should be calibrated in a way that compensates customers for the economic loss (incremental WTP minus the incremental costs allowed, adjusted for the impact of the cost performance incentives) associated with the company's failure to deliver the relevant outcome commitment.

A1.2.2. Basic form ODI rewards

- Where the incentive relates to the potential for actual delivery performance in excess of the outcome commitments that have been assumed in the totex baseline, then an ODI reward may be appropriate for successful over-delivery. In these circumstances the ODI financial reward could provide appropriate funding, taking account of the evidence used to justify the proposed outcome commitment levels during customer engagement.

- Will be most appropriate where there is not at present a clear economic case to support delivery beyond the proposed outcome commitment within the price control period (that is, incremental cost of going beyond the committed performance level is expected to exceed incremental WTP for doing so), but there is nevertheless a reasonable prospect that costs may fall during the period (for example, following further innovation or adjustment to company delivery plans), making further delivery efficient in the process.

- Should be calibrated to provide a reward no greater than the incremental WTP (taking account of the funding for incremental costs that will be already available from the cost performance incentives).

The following examples illustrate only the calibration of the basic form ODI penalties and rewards with cost performance incentives. They do not address the further adjustments and incentives that are discussed in the introduction to this appendix. Any further adjustments or differences in approach are for companies to consider and should be clearly explained, properly justify and quantified transparently in business plans.

A1.2.3. Calibration of basic form ODI penalties

As noted above the basic form ODI penalties should be calibrated in a way that compensates customers for the economic loss (incremental WTP minus incremental costs allowed adjusted for the impact of the cost performance incentives) associated with the company's failure to deliver the relevant performance commitment.

The following general formula can be used to take account of the impact of the cost performance incentives.

$ODI_{penalty}$ = Incremental WTP – (incremental cost x p),

where

Incremental WTP is the value foregone by customers in the event of the given level of under-delivery.

Incremental cost is an estimate of expenditure which can be avoided by the company for the given level of under-delivery.

p = the customer share of expenditure performance (derived from the cost performance incentive).

This same basic formula can be used for incentives expressed per unit of performance (so that WTP and incremental costs are on a per unit basis) or for larger increments (for example, for an incentive based on the total additional value and incremental costs associated with a specific milestone being delivered, with a step change in delivery arising during or by the end of the control period as a result).

Example 1

The example below assumes a scenario where customers are willing to pay up to a certain level of delivery, after which point WTP for additional commitments drops close to zero. The company is able to deliver the improvements with expected incremental costs that are below the incremental WTP – so there is a clear economic case for delivery in period, costs are pre-funded via the totex baseline, and the basic form of the incentive is then an ODI penalty.

Outcome: clean river environment.

Performance measure: improve percentage of rivers meeting good ecological status.

Performance commitment: improve from 40% to 60% (in two steps reflecting WTP data).

Figure 1 Outcome delivery incentive calibration

	Penalty incentive rate 1	Penalty incentive rate 2	Explanation
Performance measure ranges (%)	40–50	50–60	Level of service
Incremental WTP (£ million/%/year)	2	1	Customer WTP for a 1% improvement
Average incremental cost (£ million/%/year)	0.4	0.6	Cost estimate for a 1% improvement
Customer share of totex efficiency (p)	0.5	0.5	Customer share of any cost under- or over-spend
Outcome delivery incentive (£ million/%/year)	-1.8	-0.7	Penalty returned to customers for any under-delivery ODI = marginal WTP – (average incremental cost*p)

We expect business plans to include provision to ensure compliance with existing statutory requirements. In this illustration it might be that performance below a low level of 40% (for example, a decline in current achievement) represented a serious failure to deliver existing statutory requirements, for which a graduated performance regime would be inappropriate as the regulatory bodies concerned would instead have recourse to alternative and more severe remedies.

The use of two penalty rates would reflect evidence that incremental WTP and/or incremental costs vary across the plausible range of performance commitments. In this example there is greater incremental WTP for the first tranche of improvement than the second tranche of improvement.

If a company under-delivers to a modest extent (that is, its performance is within the range 50–60%) it will return £0.7 million to customers for each percentage point that its actual performance is below the performance commitment in that year. For each year the company under-delivers more significantly (that is, its performance is within the range 40–50%) it will return £1.8 million to customers for each percentage point that it is below the performance commitment in that year.

So, if the company has committed to deliver 60% in a given year but only delivers 45% in that year, the total penalty would be:

$ODI_{penalty}$ = (10*£0.7 million) + (5*£1.8 million) = £16 million.

As part of its proposals for ODIs the company should explain how it would propose to return any penalties to customers (or provide other customer benefits) in whatever way it has evidence to support – for instance, by lower customer bills within the control period, or offset from allowed revenue in the next control period.

A1.2.4. Calibration of basic form ODI rewards

To calibrate basic form rewards (where the incremental costs of outperformance are not in the totex baseline) then companies should only account for the extra net cost (that is, that in addition to the recovered costs provided by the cost performance incentives) necessary to provide a level of reward equivalent to incremental WTP for the performance commitment.

In these circumstances the general formula can therefore be simplified to:

ODI_{reward} = Incremental WTP*(1–p).

So if, for example, a company had a cost performance rate of 50% the outcome delivery incentive would simply be set at 50% of estimated WTP for the additional level of outcome delivery.

Example 2

This example assumes the same WTP as the first example, but with different incremental costs for improving performance from 50% to 60%. Because these incremental costs are higher than the incremental WTP, only the lower level of performance commitment is expected within the period and funded from the totex baseline. If the company is able to find an innovative way of delivering performance at above 50% during the control period, then a basic form ODI reward would be appropriate, calibrated to provide funding up to the level of incremental WTP (after taking account of the funding enabled by the cost performance incentives).

Outcome: clean river environment.

Performance measure: improve percentage of rivers meeting good ecological status.

Performance commitment: improve from 40% to 50%.

Figure 2 Outcome delivery incentive calibration

	Penalty incentive rate	Reward incentive rate	Explanation
Performance measure ranges (%)	40–50	50–60	Level of service
Incremental WTP (£ million/%/year)	2	1	Customer WTP for a 1% improvement
Average incremental cost (£ million/%/year)	0.4	1.6	Cost estimate for a 1% improvement
Customer share of totex efficiency (p)	0.5	0.5	Customer share of any cost under- or over-spend
Outcome delivery incentive (£ million/%/year)	-1.8	0.5	ODI penalty = marginal WTP – (average incremental cost*p) ODI reward = marginal WTP*(1–p)

Consistent with example 1 if the company under-delivers within the range 40–50% in a given year, it will return £1.8 million to customers for each percentage point below the performance commitment in that year.

There is a significantly different treatment of incentives for performance within the performance range 50–60%, as expected incremental costs are relatively high and so have not been included in the totex baseline. To allow for an appropriate level of cost recovery there will be a reward of £0.5 million for each percentage point delivered above the performance commitment in that year.

So, with a performance commitment of 50% and actual performance in a given year of 55% then the basic form ODI reward would be:

ODI_{reward} = (5*£0.5 million) = £2.5 million.

A1.2.5. Committed performance levels below the most economic level

The examples above consider scenarios where the committed performance level is set at the economic level of service (that is, where the expected costs of further delivery exceed WTP). In practice this may not always be the case. For some performance measures companies may propose committed performance levels that are below the most economic level.

In these situations the company may need to consider the reasons for this and potentially make further adjustments to the incentive in order to account for these, such that the reward aligns with the objective of an ODI reward to incentivise companies to find cheaper, more innovative, ways to deliver improvements beyond the committed performance level. For instance, if committed performance levels:

- are being set below economic levels then companies should consider capping any ODI reward at an estimate of incremental costs, rather than using potentially higher estimates of WTP; and
- were kept low in order to keep an overall plan affordable then the company may need to be cautious in setting its reward, ensuring that in overall terms delivery would remain affordable.

A1.2.6. Varying annual performance commitments

The two simplified examples above estimate outturn incentives in a year where the committed performance level is the same in each year throughout the price control period. Nonetheless, in practice it is likely that outcomes may involve a company proposing to get to a higher level of committed outcome delivery gradually over the price control period. In such cases, it would be appropriate to consider whether different incentive rates should be used in each year.

The company should have an understanding of how incremental costs and incremental WTP values are likely to change with different levels of outcome delivery over the control period in proposing its outcome commitments, to provide assurance they are reasonable and efficient. The company should set out if and how it has simplified such estimates in deriving practical incentive rate proposals.

For certain outcomes companies may decide annual commitments are not appropriate, instead favouring approaches that assess average performance over a number of years or a target assessed at the end of the price control period. Companies would need to justify such proposals in business plans.

A1.2.7. Calculating costs and benefits

For a company to identify its committed performance level it needs to understand information on whole life incremental costs and incremental benefits (including WTP) of an appropriate range of performance commitments. In order to estimate the incremental costs and benefits relevant to ODIs for the next control period, these cost and benefit estimates need to be converted into equivalent annualised values. These annualised values smooth lumpy investment in capital projects that will tend to have relatively long lives and provide an appropriate basis for calibrating annual incentives for use within the price control framework.

Because of the lumpiness of capex it is likely that the whole life annualised incremental totex used in calibrating ODIs in the examples set out in this appendix will vary from the annual average incremental totex for 2015 to 2020 used in totex baselines. We would need to decide at the next price control review whether to roll forward the ODIs to provide appropriate incentives over time or whether to make other adjustments to allow for the funding of outcome driven investment that has been efficiently incurred.

Guidance on how to calculate appropriate annualised incremental costs and benefits can be found in the report for UKWIR, 'Review of cost-benefit analysis and benefit valuation'.

A1.3. Completing business plan tables

This section illustrates how the first simplified example in the main section of this appendix might feed through into the outcomes business plan tables (tables S1, S2 and S2a in this case). Further guidance on completing the business plan tables is provided in appendix 5.

For the purposes of illustration we describe the basic information needed to complete the relevant business plan tables. However, in formulating business plans it is for companies to decide the information that is appropriate given the specification of their outcomes and ODIs, and to make sure that this is fully explained in business plans.

A1.3.1. Background information

We assume that following customer engagement the company proposes:

a. an outcome to deliver a clean river environment; and
b. that for this outcome only one performance measure is justified – the percentage of river length meeting good ecological status (GES).

The company has decided that the performance measure is consistent with the requirements of the Water Framework Directive (WFD), and it appropriately reflects evidence on the preferences of customers that has emerged during the customer engagement process.

The company estimates the level of service expected at the end of the current price control period is 40%. Under the WFD 'no deterioration' rule the company would face sanctions if its performance were to slip beneath this level and the company decides that these sanctions provide sufficient incentives such that no further ODIs are needed for performance below this level.

As part of its assessment of the options for business improvement the company identifies three realistic levels of improved performance: 50%, 60% and 65%. Intermediate steps would lose the synergy benefits of the catchment-wide improvements (for instance, because of the lumpy nature of improvements arising out of new operating procedures or capital solutions) and so would not be efficient.

Customer engagement has produced robust data on WTP for incremental improvements, aggregated across the relevant customer base (in this case 'wholesale – sewerage'), as set out in the figure below.

Figure 3 Aggregate incremental WTP for improvements at different ranges of service levels

Levels of service (% GES)		Incremental WTP per percentage point improvement
Lower bound	Upper bound	£ million/%/year
40	50	2
50	60	1
60	70	0.1

The company has decided that an assumption of a cost performance sharing rate of 50% will provide appropriate incentives to support its business plan and will properly balance the interests of customers and shareholders.

A1.3.2. Table S1 – outcomes, performance measures and expenditure

This table allows the company to summarise the performance measures for each outcome and the incremental total expenditure required to deliver the changes in performance level. It also requires companies to identify the ongoing maintenance costs required for the service. This table does not ask companies to justify the committed performance levels they have identified – this follows in table 2a.

Block A is used to identify the years in which companies commit to delivering a specific level of performance and what that committed performance level is (line 1 of figure 4). The company will be held to account for delivery of these by the automatic application of incentives. Line 2 shows the incremental total expenditure required to meet the committed performance levels. This includes both one-off and ongoing annual expenditure. The example shows a total of £120 million one-off expenditure split across years 1–4 of the new price control period; it also demonstrates £2 million of annual expenditure is required in years 3 and 4 and £5 million in year 5 to meet

the committed performance level. In total the company estimates it requires £129 million across the new price control period to meet and maintain the committed performance levels associated with outcome A. In this simple example, line 3 is equal to line 2 as there is only one performance measure (if there were more this would not be the case).

Block Y is used to identify ongoing maintenance costs and summarises incremental expenditure. Line 4 shows the ongoing annual costs (£3 million) of delivering the 2014-15 levels of performance for all performance measures. Line 5 sums the total incremental costs of all outcomes (in this example it is equal to line 3). Line 6 shows the ongoing maintenance costs of maintaining future performance at the 2019-20 level for all outcomes. In this example it is equivalent to the annual £3 million expenditure from line 4 plus the £5 million annual costs identified in line 2. Block Y is designed to be a summary across all outcomes. However, in this simplified example it only includes data relating to the one outcome identified.

Figure 4 Table S1 – outcomes, performance measures and expenditure

	Line description	Item references	Units	DPs	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	Long-term ambition
A	Outcome A: Clean River Environment																	
1	Performance measure A1: Improve the percentage of rivers meeting good ecological status		%	0			40	40	50	50	60	60		70		80		90
2	Incremental Totex required to deliver the performance commitments for measure A1-wastewater		£m	3				25.000	25.000	37.000	37.000	5.000	50.000	50.000	55.000	55.000	10.000	
3	Total incremental expenditure required to meet all performance commitments for outcome A		£m	3				25.000	25.000	37.000	37.000	5.000	50.000	50.000	55.000	55.000	10.000	
Y	Outcomes total																	
4	Total expenditure required to maintain all outcomes at 2014-15 level of performance						3.000	3.000	3.000	3.000	3.000	3.000						
5	Total incremental expenditure required to meet all performance commitments							25.000	25.000	37.000	37.000	5.000	50.000	50.000	55.000	55.000	10.000	
6	Total expenditure required to maintain all outcomes at 2019-20 level of performance												8.000	8.000	8.000	8.000	8.000	
7	Total expenditure required to deliver all wholesale wastewater outcomes		£m	3				28.000	28.000	40.000	40.000	8.000	58.000	58.000	63.000	63.000	18.000	

A1.3.3. Table S2a – cost benefit analysis

As noted above, the company identified three potential levels of improvement. In order to decide on the optimal level of investment it estimated the costs and benefits associated with each of these three levels (line 2). In undertaking its cost benefit analysis it estimated total costs associated with this as well as WTP for these improvements and the other benefits associated with the proposed improvements.

Because the analysis is associated with only one performance measure the outcome total values are based solely on the one performance measure values. If there were more than one performance measure the outcome totals would sum the values for the separate performance measure. Alternatively, the company may undertake the analysis at the outcome level (or across a number of outcomes) and allocate the figures across the different performance measures.

The company separates the assessments of customer WTP for the improvements (line 3) from any wider benefits, such as environmental or social dis-benefits, that did not come directly from research involving the company's own customers (line 4). The customer WTP figure maps through to the incremental WTP rate in table S2.

The company also estimates the total costs to the company associated with the different performance levels (line 5). This figure maps through to the average incremental cost in table S2.

These cost and benefit estimates (lines 3–5) are annualised based on a 40-year economic life for the associated assets and discounted back to the 2014-15 price base.

The total costs and benefits are aggregated for the outcome (lines 6 and 7). The resulting net benefit (benefits minus costs) shows that 'performance level 2' is the most economic level (line 8). The committed performance level (line 9) in this example is shown to be consistent with the most economic performance level.

Figure 5 Table S2a – cost benefit analysis

	Line description	Units	Starting level	Assessed levels			Calculation/ Copy rule
A	**Clean river environment**	**Unit**	**2014-15**	**Performance level 1**	**Performance level 2**	**Performance level 3**	
1	**% of rivers meeting good ecological status**						
2	Performance level - (units)	**%**	40	50	60	65	
3	Annualised willingness to pay (change from 2014-15 level)	**£m/year**		20	30	30.5	
4	Annualised other benefits (change from 2014-15 level)	**£m/year**		1	1	-0.5	
5	Annualised costs (change from 2014-15 level)	**£m/year**		4	10	15	
	Total for outcome						
[6]	Annualised total benefits (change from 2014-15 level)	**£m/year**		21	31	30	
[7]	Annualised total costs (change from 2014-15 level)	**£m/year**		4	10	15	
[8]	Annualised net benefit (change from 2014-15 level)	**£m/year**		17	21	15	line 7 – line 8
[9]	Performance commitment level?	**Yes/No**		No	Yes	No	

A1.3.4. Table S2 – outcome delivery incentives

The company will take two years to efficiently deliver the first tranche of improvement and a further two years to efficiently deliver the second tranche of investment. In the light of this schedule and the evidence of WTP it proposes performance commitments of 50% by the end of year 2 of the new price control period and 60% by the end of year 4 of the new price control period (line 3 of figure 6).

As explained above, the penalty collar (line 4 of figure 6) is set at 40 in each year due to the 'no deterioration' rule.

The company believes delivery of the improvements to be very certain (that is, there is a very strong link between company expenditure and improvements in the performance measure). It therefore proposes no penalty deadband (line 5) to allow for uncertainty of delivery.

The reward deadband and reward cap (lines 6 and 7) are left blank as no reward is proposed in this example.

As stated above, the estimates of incremental costs and WTP are estimated solely using the values associated with the good ecological status performance measure, as estimated from the company's WTP survey.

Due to the variations in incremental costs and WTP it proposes two separate incentive rates, one ranging 40–50% (lines 8 and 9), the other 50–60% (lines 10 and 11). Beyond 60% incremental WTP for further improvement is so close to zero there is no reasonable chance that the company would be able to deliver the improvements at a cost less than this, thus it leaves the reward incentive rate lines blank (lines 12 and 13).

As explained for table S2a, WTP and costs are annualised. In this case the company estimates incremental changes associated with a unit (in this case one percentage point) changes in performance. For WTP this was simply estimated from the company's WTP survey for a one percentage point change (varying across the two incentive rate ranges). In the particular circumstances of this example it is impractical to estimate the variation in cost per percentage point improvement in performance. The company instead uses the discrete total cost estimates associated with each of the two ranges of service and assumes it to be distributed evenly within the range. It uses the two incremental values to estimate the calibrated annualised outcome delivery incentive, as described in the main text.

Figure 6 Table S2 – outcome delivery incentives

	Line description	Units	Starting level	Annual Milestones					Application of incentive				
									Performance levels		Annualised incentive rates		
A	Clean river environment	Unit	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	Lower	Upper	Incremental willingness to pay	Average incremental cost	Outcome delivery incentive
1	% of rivers meeting good ecological status												
2	Penalty only												
3	Performance commitments - (units)	%	40	40	50	50	60	60					
4	Performance level associated with penalty collar (i.e. maximum penalty)	%		40	40	40	40	40					
5	Performance level associated with penalty deadband (to account for uncertainty)	%											
6	Performance level associated with reward deadband (to account for uncertainty)	%											
7	Performance level associated with reward cap (i.e. maximum reward)	%											
8	Penalty incentive rate 1 - performance levels range	%							40	50			
9	Penalty incentive rate 1 - incentive rates	£m/%/year									2	0.4	-1.8
10	Penalty incentive rate 2 - performance levels range	%							50	60			
11	Penalty incentive rate 2 - incentive rates	£m/%/year									1	0.6	-0.7
12	Reward incentive rate n - performance levels range	%											
13	Reward incentive rate n - incentive rates	£m/%/year											

A1.4. Conclusion

The above examples have been provided for the purposes of illustration. As we have highlighted it is for each company to decide on its approach to outcomes and incentives. Nonetheless it will be important that each company clearly explains in its business plan how it has integrated its ODIs with other incentives, how these incentive packages and the individual incentives have been calibrated and how they will protect the interests of current and future customers and the environment.

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Photograph © Stockvault
Printed on 75% minimum de-inked post-consumer waste paper
July 2013

Any enquiries regarding this publication should be sent to us at mailbox@ofwat.gsi.gov.uk.

This document is also available from our website at www.ofwat.gov.uk.

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