Risk return balance under RIIO-GD2

Prepared for Cadent Gas

Private and confidential

14th March 2019

Contents

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2 Executive summary

On December 18th 2018, Ofgem published its consultation on the Methodology for the gas distribution and electricity and gas transmission sectors. The overall approach is clear from the documentation Ofgem has published: to systematically and comprehensively ensure that all potential sources of "excess" value for networks are reduced and shared with customers.

Cadent has asked KPMG to analyse Ofgem's consultation and consider its potential implications for the risk-return balance for the gas distribution networks and then to assess the extent to which key regulatory mechanisms outlined in the consultation are consistent with an appropriate risk-return balance. This note presents the results of this analysis. The appendix describes Ofgem's methodology and proposed mechanisms.

Table 1 summarises the mechanisms being proposed under RIIO2 in terms of categories that describe their estimated effect on the risk-return balance based on our analysis.

Table 1: Summary of RIIO2 mechanisms

Category	Mechanisms included in category		Impact on returns	Impact on risk
1. Mechanisms that affect allowed revenues and returns regardless of any other variables	Reduction in equity beta		Negative	No effect
	Reduction in TMR		Negative	No effect
	Reduction in the risk free rate		Negative	No effect
	Reduction in the cost of equity (exp)		Negative	No effect
	Adjustment for expected o/p		Negative	No effect
	Reduction in notional gearing		Positive	No effect
	Deflation of nominal CoD	Option 1	Symmetric	No effect
		Option 2	Positive	No effect
	Business plan incentive		Negative	Increase
	Updated totex allowances		Negative	Increase
	Updated output targets		Negative	Increase
2. Mechanisms whose impact on allowed revenues depends on variables that are external to the company (and are fully outside of the company's control)	Introduction of cost of equity indexation		Symmetric	Increase
	Change to CPIH index and transition		Unclear	Increase
	Changes to RPE indexation	Option 1	Negative	Decrease
		Option 2	Symmetric	Decrease
		Option 3	Negative	Decrease
	GD2 specific uncertainty mechanisms		Symmetric	Decrease
3. Mechanisms whose impact on allowed revenues depends on the outturn level of the company's operating and capital costs, or some component of these	Remuneration of corporation tax		Negative	Decrease
	TIM: blended factors		Symmetric	Decrease
	Enhancing competition		Negative	Increase
	Investment assessment		Negative	Decrease
	Pension funding		Symmetric	Decrease
4. Mechanisms whose impact on allowed revenues depends on the outturn level of the company's performance against output targets determined by Ofgem	Price control deliverables		Negative	Increase
	Output delivery incentives		Negative	Decrease
	Licence obligations		Negative	Increase
	Innovation		Negative	No effect
	Whole system solutions		Symmetric	Increase
5. Mechanisms that adjusted allowed returns based on the level of allowed return	Cashflow floor		Negative	Increase
	Return Adjustment Mechanisms		Positive	Decrease

Overall, the price control package set out in the Consultation is likely to result in a significant reduction in expected returns (beyond what is driven by the change in the allowed return) with limited corresponding risk reduction from networks' perspective. This is likely to have a dampening effect on companies' incentives, and potentially on networks' ambition and determination to go beyond minimum requirements in terms of efficiency and service delivery. It might also encourage a risk-averse approach to delivery during RIIO2, with management action targeted at avoiding penalties rather than improving performance.

While reductions in expected returns will reduce customers' bills, all other things being constant, they might also have significant adverse consequences, especially given the uncertainty that is currently faced by networks regarding their long-term role (for example, regarding the pace and scale of the electrification of heating, and possible transitions to alternatives to gas such as hydrogen). In this context, customers are likely to be best served by networks being highly proactive, innovative, adaptive and responsive to change. In contrast, the behaviours encouraged by the proposed package might are unlikely to be consistent with this objective.

The estimated indicative effect of the proposed regulatory mechanisms based on the analysis outlined in this Report is depicted graphically in 1 in the mean-variance framework in terms of their expected impact on risk (horizontal axis) and returns (vertical axis). A mechanism depicted in the figure at the intersection of the dotted lines is expected to have no effect on the expected risk or returns relative to the RIIO-GD1 settlement.

The figure also considers the position of each mechanism relative to the market equilibrium line: risk-reward combinations that approximate an efficient market outcome. This market equilibrium line lies below and to the right of RIIO-GD1 because required returns for the same level of risk are likely to have fallen since RIIO-GD1 due to changes in market conditions (although the exact quantum of this reduction is complex to estimate). Secondly, some aspects of the RIIO-GD1 determination could be seen as having enabled companies to earn rewards without being subject to risk or incur costs (although the extent of the latter effect is debatable since some of the sources of outperformance were the result of the positive *ex-post* evolution of factors external to companies' control).[1]

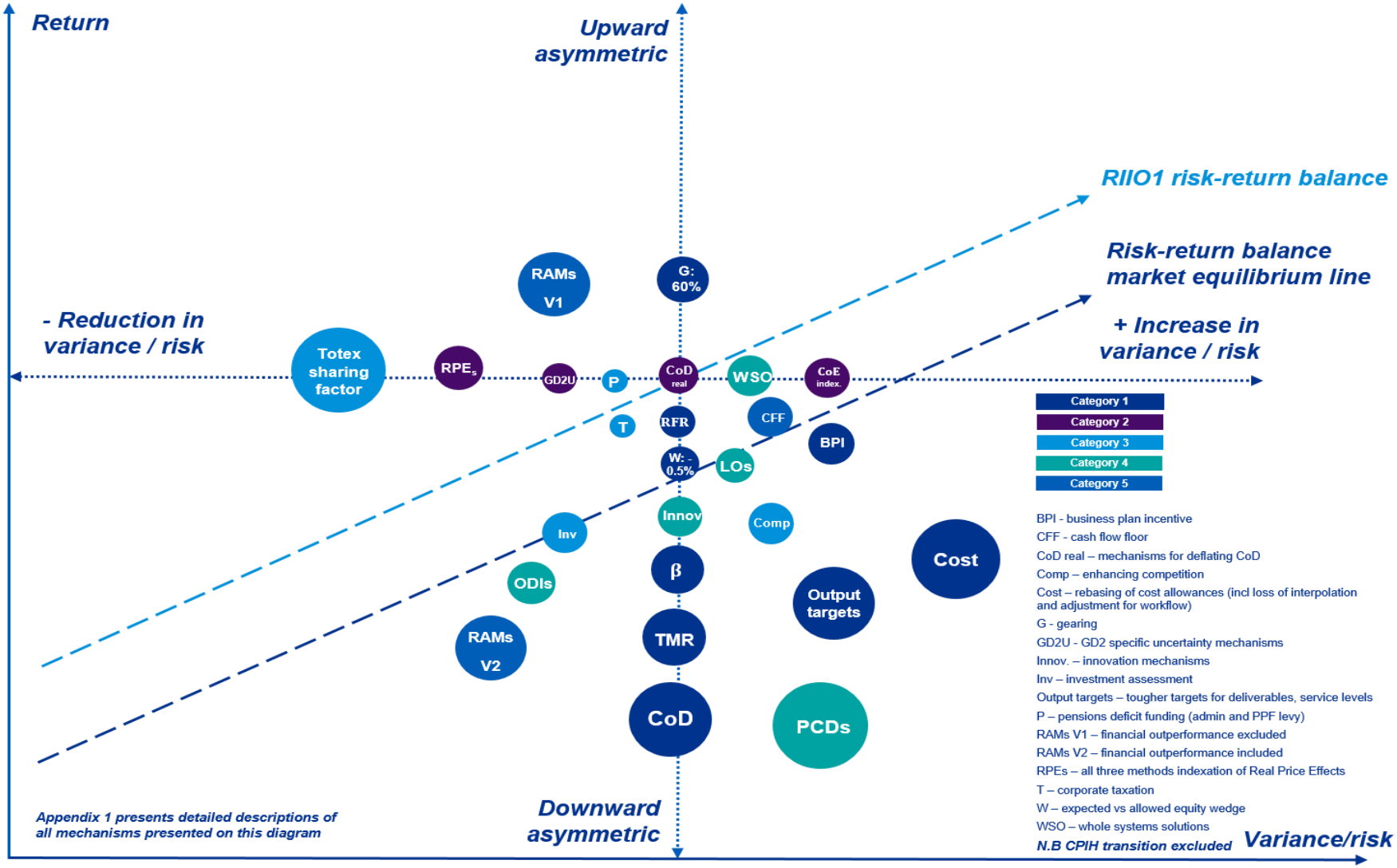
In order for a particular source of outperformance to constitute a risk-reward "imbalance", it is necessary for the prospects for out- and underperformance to be systematically skewed. The stylised analysis suggests that the RIIO-GD2 package can be seen as a significant over-correction of any risk-return imbalance under RIIO-GD1, for a number of reasons:

- **Scale of 'unconditional' return reduction** – the consultation has set out a number of mechanisms that would unconditionally reduce returns but are not clearly supported by market evidence or corresponding reductions in risk. This would lead to a risk-return imbalance unless it can be demonstrated that either: (i) companies were earning revenues in relation to a particular activity that were not justified by either the cost of that activity or the level of risk undertaken; or ii) where the reduction in returns can be supported with market evidence;
- **Stacking of mechanisms** – Ofgem has introduced 29 mechanisms to remedy what can be identified as around 8 distinct market failures. This necessarily results in "stacking" of mechanisms whereby several mechanisms are targeted at addressing the same perceived market failure or a potential departure from an efficient market outcome. In a number of cases, the effects of these mechanisms amplify each other, meaning that the price control package over-corrects for the underlying market failure and results in a risk-return imbalance; and
- **Targeting a market failure** – Ofgem has introduced mechanisms that are downwards biased in their impact on returns but are not clearly targeting any particular market failure. This is likely to introduce an imbalance between risk and return.

As a consequence, from a risk-return balance perspective, the proposed mechanisms collectively result in a shift that might be seen as going beyond what can be justified based on outcomes that would prevail in a competitive market equilibrium.

[1] For example, the lower level of repex relative to forecast was at least in part the result of lower workload than was forecast at the start of the price control period. It is also conceivable that such variables could have evolved in the opposite direction with the consequence that companies would have underperformed their allowances. For the purposes of the current assessment, it has been assumed that the RIIO-GD1 determination resulted in a certain amount of systematic outperformance, but for the reasons set out above, this might explain only a small proportion of total outperformance during this price control period.

Figure 1: Graphical depiction of the impact of mechanisms introduced under RIIO2



3 Context and objectives

On December 18th 2018, Ofgem published its Methodology for the gas distribution and electricity and gas transmission sectors.

Cadent has asked KPMG to analyse Ofgem's consultation and:

— Consider its implications for the risk-return balance for the gas networks under RIIO2 controls (Section 4); and

— Assess the extent to which key regulatory mechanisms outlined in the consultation are consistent with an appropriate risk-return balance (Section 5).

This note presents the results of our analysis of Ofgem's consultation and methodology. The appendix to this note describes Ofgem's methodology and proposed mechanisms.

Wherever possible, we have substantiated our findings with evidence and quantitative analysis. At the same time, given that the price control framework is still under development and that companies have yet to produce business plans that forecast how their businesses are likely to evolve over the RIIO-GD2 period, some of the findings are necessarily subjective and require judgement.

4 Analysis of the risk-reward balance under RIIO-GD2

This section summarises the impact of the regulatory mechanisms introduced under RIIO-GD2 on the level of return and risk exposure of the gas distribution networks relative to the *status quo* (i.e., the start of RIIO-GD1 price control framework). It firstly sets out the framework used to assess and present the impact of the price control package, and secondly sets out some key observations regarding the impact of the package.

The Foreword of the main document indicated that an explicit objective of the consultation is "to achieve a better balance of risk and return in RIIO-2". To this end, based on this analysis, the Methodology document outlined approximately 29 different regulatory mechanisms that can be considered relevant for the analysis of the risk-return balance under RIIO2, of which:

— 17 can be considered to have a significant mean expected impact on returns;

— 17 can be considered to have a downwards-biased impact on returns;

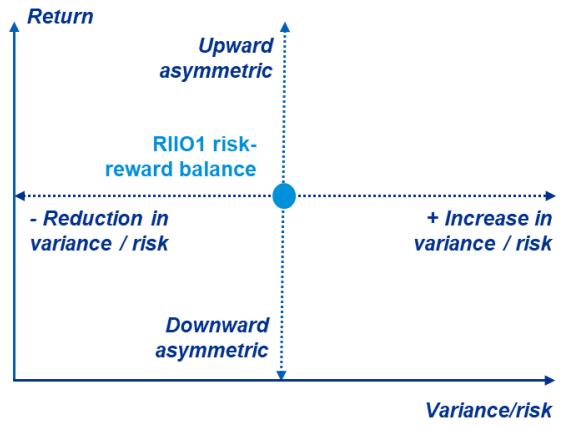
— 2 can be considered to have an upwards-biased impact on returns;

— 10 can be considered to increase the variance of returns; and

— 11 can be considered to decrease the variance of returns, depending on assumptions.

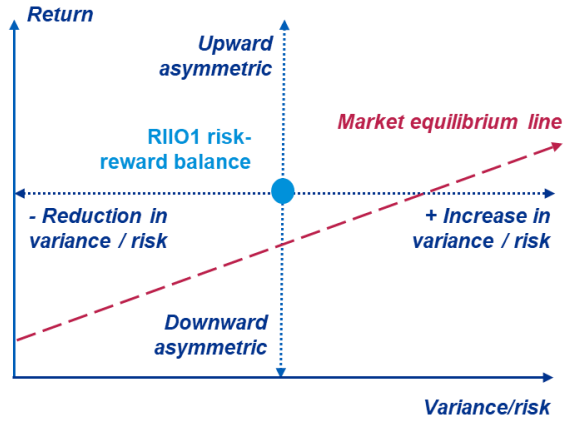
A regulatory mechanism can be defined as a component of the overall price control framework that has an effect on the revenues (and hence returns) that network companies are allowed to earn.

Risk exposure in this context constitutes the variance or range of returns that could be earned, since investors desire certainty over their return prospects and require higher returns to compensate for larger variances in returns. Asset pricing models assume that all one side exposures (eg downside risks) are fully reflected in probability-adjusted cashflows, i.e. expected returns; risk corresponds to variations in returns around the mean expected return and has to be compensated via a risk premium.



The impact of the regulatory mechanisms under RIIO2 can be illustrated in terms of how they affect the expected return (vertical axis) and variance of returns or risk (horizontal axis).

In the chart opposite, the return and risk of the RIIO1 package is denoted by the intersection of the dotted lines. Mechanisms that lie above this point will tend to increase returns, and mechanisms that lie to the left of this point will tend to reduce risk.

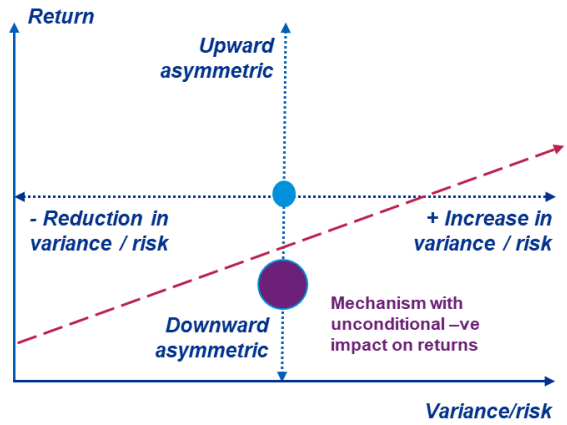


The market equilibrium line represents the combinations of risk exposure and corresponding mean expected returns that would approximate an efficient market outcome. This line has been depicted as lying somewhat below/to the right of RIIO-GD1, for two main reasons:

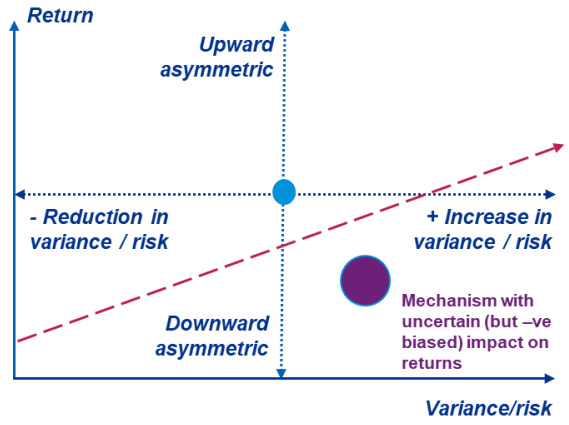
- Firstly, required returns for the same level of risk are likely to have fallen since RIIO-GD1 due to changes in market conditions (although the exact quantum of this reduction is complex to estimate with any precision); and
- Secondly, some aspects of the RIIO-GD1 determination could be seen as having enabled companies to earn rewards without being subject to risk or incur costs.

The extent to which this was the case is debatable: many of the sources of outperformance by companies in RIIO-GD1 were the result of the *ex-post* evolution of factors external to companies' control that happened to evolve in companies' favour. For example, the lower level of repex relative to forecast was at least in part the result of lower workload than was forecast at the start of the price control period. It is conceivable that such variables could have evolved in the opposite direction with the consequence that companies would have underperformed their allowances. In order for a particular source of outperformance to constitute a risk-reward "imbalance", it would have been necessary for the prospects for out- and underperformance to be systematically skewed in favour of the former, the evidence for which is limited. For the purposes of the current assessment, it has been assumed that the RIIO-GD1 determination resulted in a certain amount of systematic outperformance. However, for the reasons set out above, this is likely to explain only a small proportion of total outperformance during this price control period.

The effect that a mechanism has on allowed revenues and returns may be known upfront or may only be revealed as the price control progresses and further information becomes available. For the purposes of the current assessment, it is useful to group mechanisms together based on the effect that they have on returns. In the following discussion, mechanism are illustrated using circles that denote the magnitude of their overall impact.



One category of mechanisms are those that have an unconditional effect on the allowed return. These mechanisms result in an upfront change to the level of returns companies can earn, regardless of how other variables (whether or not they are controllable) evolve over the course of the price control. The most pronounced of these mechanisms is the allowed return, which under RIIO2 is set nearly 300bps lower for the gas distribution networks than it did under RIIO-GD1. The effect of such mechanisms is illustrated opposite.



There are then several mechanisms whose effect on returns is conditional on other factors and will only be revealed as the price control progresses.

An illustrative example is provided opposite of a mechanism with a conditional impact on returns. In this example, the effect on returns is biased downwards, but because this impact is uncertain it increases the range of return outcomes.

The second category above can be further decomposed into four subcategories:

— Mechanisms whose effect on realised returns conditional on companies' actual costs – these mechanisms are generally targeted at ensuring that companies have an incentive to ensure that costs are incurred efficiently and include e.g. the Totex Incentive Mechanism;

— Mechanisms whose effect on realised returns conditional on companies' performance relative to output targets – these mechanisms are generally targeted at ensuring that companies deliver certain types of desirable outcomes, and include e.g. Price Control Deliverables that adjust totex allowances depending on whether or not a particular target (e.g., in respect of customer vulnerability) has been met;

— Mechanisms whose effect on realised returns conditional on the evolution of variables external to the company – these mechanisms determine the allocation of risk between customers and companies in respect of variables such as interest rates and different measures of inflation that neither party can control;

— Mechanisms with effect on realised returns if different from forecast/allowed – Ofgem has introduced mechanisms whose purpose is to adjust returns when they deviate from a target level or range. Of particular relevance are the Return Adjustment Mechanisms (RAMs) proposed by Ofgem that seek to guide returns towards the set allowed return in the event that actual returns exceed or fall below certain thresholds.

Based on the framework above, the following observations can be made with respect to the impact of the RIIO2 framework on the risk-return balance for the gas distribution networks:

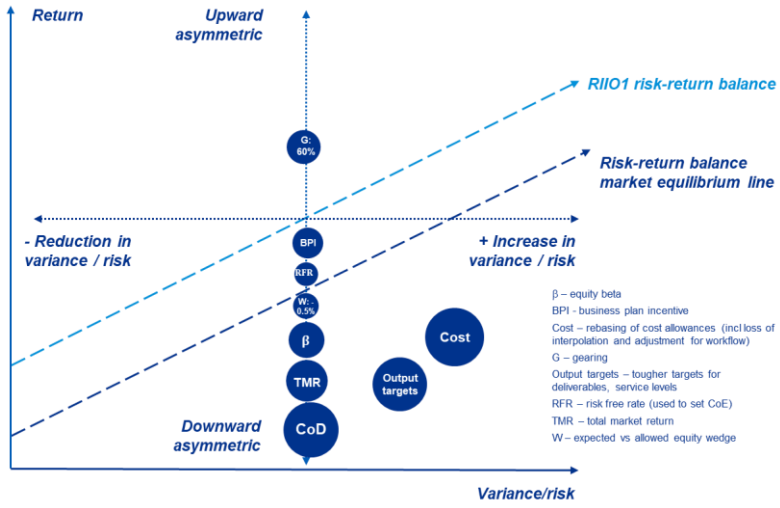
Only one of the RIIO2 mechanisms that have an unconditional impact on returns act to increase returns. Eight mechanisms unconditionally negatively affect returns

A proportion of the unconditional reduction in returns is a result of changes in market conditions. This proportion of the reduction would have taken place even if the same approach to setting the allowed return had been adopted in RIIO2 as under RIIO1.

For some mechanisms, Ofgem has amended its methodology in a manner that reduces returns beyond a level that can be attributed solely to changes in market conditions. For example, Ofgem's approach to determining TMR places weight on forward-looking approaches that tend to produce lower estimates of the TMR than the long-term historic averages of outturn stock-returns that formed the basis of the RIIO1 determination. Ofgem has also introduced new mechanisms that are specifically intended to reduce the allowed

return. In particular, the adjustment for expected outperformance results in a downward adjustment to returns that fully abstracts from changes in market conditions. These effects are illustrated graphically in the figure below.

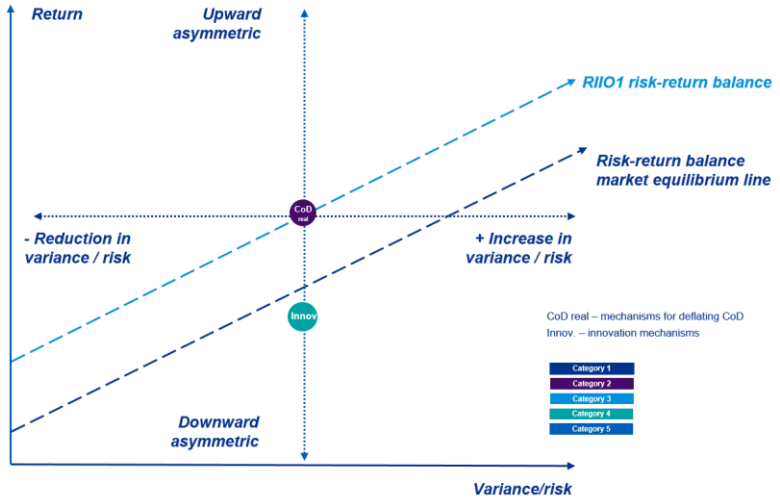
Figure 2 Mechanisms with unconditional effect on returns



There are two mechanisms that will conditionally affect expected returns without significantly affecting networks' risk profile

The impact of the way in which the nominal cost of debt mechanism is deflated will depend on how outturn CPI evolves compared with its RPI analogue. The amendments Ofgem has introduced to the innovation-related allowance will tend to reduce the expected return. However, the actual impact will depend on which innovation projects are brought forward, the extent of competition from other parties for innovation funding and the outturn cost of translating innovation to BAU activities.

Figure 3 Mechanisms that conditionally affect expected returns

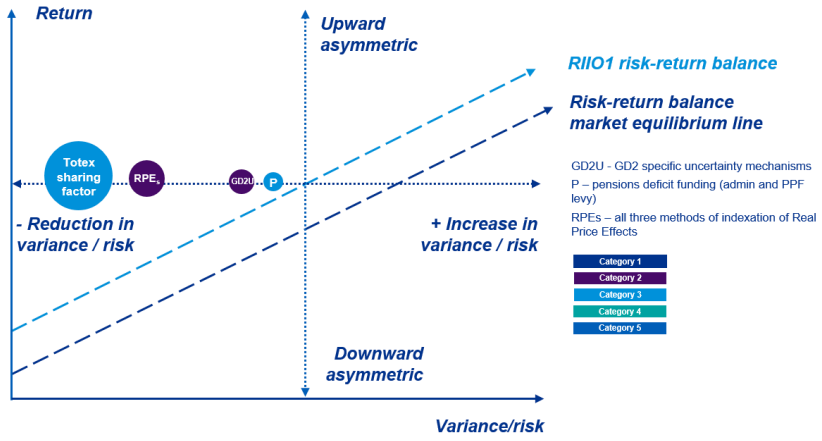


The GD2 package includes a number of mechanisms that will result in a reduced range of returns, some of which are downwards-biased in their impact on returns

Several RIIO2 mechanisms have the effect of lowering the variance of returns, and many of these do so in part by reducing downside risk.

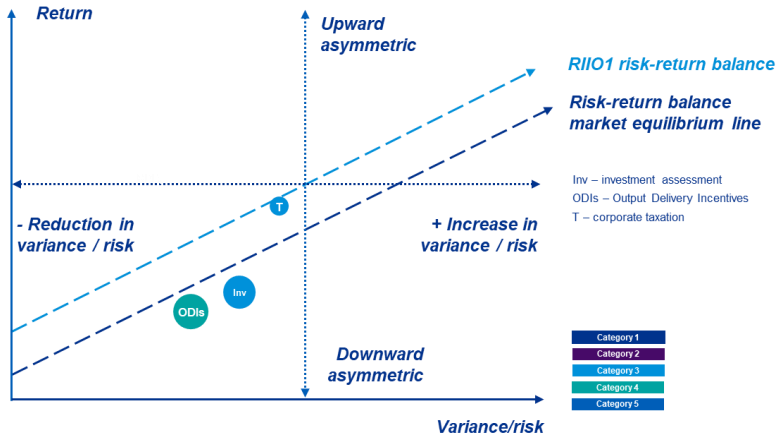
Of these, four mechanisms act purely to reduce the variance of returns: i.e., they affect upside and downside outcomes largely symmetrically. The “de-risking” associated with these mechanisms could be seen as a partial justification for lower returns under RIIO2 overall.

Figure 4 Mechanisms that symmetrically reduce risk



Three mechanisms will reduce the variance of returns whilst also having a downwards bias – i.e., these mechanisms will tend to curtail upside potential to a greater extent than they protect against downside outcomes (though they will generally all act to reduce downside risk exposure to some extent). For example, Ofgem has introduced three (and is considering adding a fourth) penalty-only incentives that were previously either reward/penalty or reputational incentives.

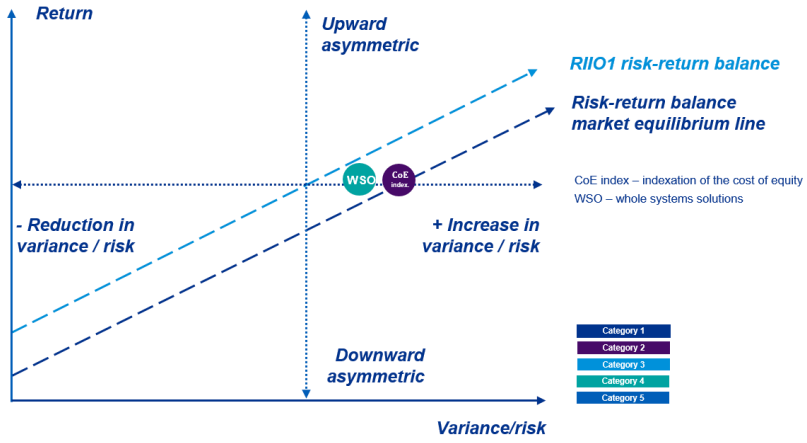
Figure 5 Mechanisms that reduce both risk and return



Some mechanisms increase risk, including some that are downwards-biased in their impacts in their returns

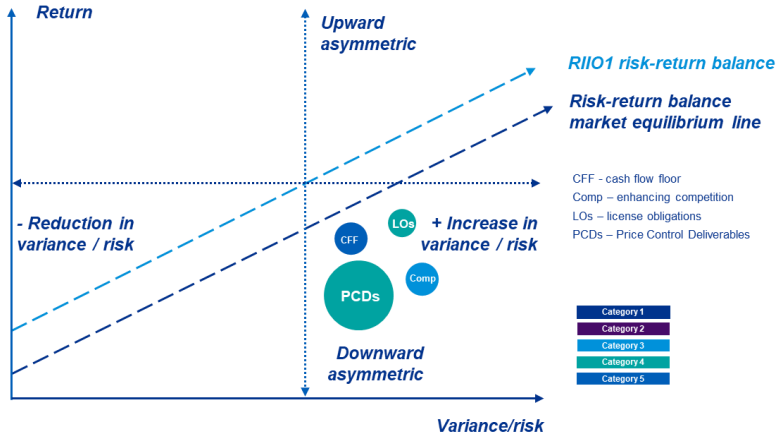
Two mechanisms – the indexation of the CoE and WSOPs will have the effect of increasing the variance of returns, and do so by affecting upside and downside outcomes largely symmetrically. Although a full quantification of the effect that these mechanisms will have on return variance is not possible at this stage, it is unlikely that these mechanisms on their own will be sufficient to offset the reduction in return volatility driven by the other mechanisms discussed above. At the same time, these mechanisms can potentially result in higher-than-forecast returns for the GDNs, which could be important in an environment where outperformance is significantly constrained.

Figure 6 Mechanisms that increase risk with limited impact on expected returns



Four mechanisms will increase the variance of returns whilst also having a downward-biased impact on expected returns. Three of these mechanisms – enhancing competition, PCDs and LOs result in companies being held accountable for the delivery of certain pre-specified outputs and as such expose companies to downside risk in respect of non-delivery. The cash flow floor reduces expected returns and increases risk for a number of reasons – e.g., because of the increased discretion that Ofgem considers the mechanism allows it with respect to setting the allowed return.

Figure 7 Mechanisms that increase risk and reduce return



On balance, it is not clear whether RIIO2 materially increases or decreases risk. There are 10 mechanisms reducing the variance and 10 increasing it (see appendix 2), as such the

outturn depends on the significance of the mechanisms individually and in relation to one another.

RAMs could reduce the variance of returns at an industry level but make individual company returns less predictable by linking them to other companies' performance

Both variants of RAMs being proposed by Ofgem are intended to constrain the range of return outcomes for network companies. They are likely to reduce risk in the sense that they provide protection against potential downside outcomes. At the same time, they could be seen as reducing the predictability of returns, since they introduce a linkage between individual company returns and variables outside of their control (i.e., the performance of other network companies).

The extent to which their effect is symmetric depends on the distribution of return outcomes given the other elements of the price control package. Under a price control package where all other mechanisms resulted in a broadly symmetric distribution of equity returns around the expected equity return, the effect of RAMs on expected returns would be essentially neutral since they would affect upside and downside returns roughly equally.

The *ex-ante* distribution of equity returns under the RIIO-GD1 price control package was broadly symmetric – i.e., underperformance of the allowed equity returns was seen to be as plausible as outperformance.

The GD2 package as a whole is downwards-biased by comparison with GD1: the potential for upside returns has been curtailed to a considerably greater extent than have downside returns. This implies that RAMs are more likely to be triggered on the downside than on the upside, which suggests that they would have a positive expected impact overall.

5 Evaluation of mechanisms against Ofgem criteria and potential challenges

This section evaluates the mechanisms considered relevant for the analysis of the risk-return balance under RIIO2 against a set of criteria corresponding to Ofgem's objectives and principles of regulatory best practice. Based on this evaluation, a subset of mechanisms are identified that could be seen as not meeting these criteria.

The subset of mechanisms developed in this section have been selected purely based on the criteria below, and without reference to whether they increase or decrease the range of returns. They therefore include a mix of mechanisms with different impacts on the range of potential returns.

The criteria used to conduct the assessment are set out below:

Criteria for evaluation of mechanisms against Ofgem objectives	
Criteria	**Description**
Unconditional return reduction	Mechanisms that unconditionally reduce returns should be supported with reference to market evidence or regulatory design with corresponding reductions in risk. There are two exceptions to this: i) where it can be demonstrated that regulated companies were previously earning returns without being exposed to risk; and/or ii) where the reduction in returns can be supported with market evidence. This could include evidence that the "price" of risk has fallen - i.e., that investors are willing to bear the same level of risk for a lower return (e.g. which could be argued to justify a lower TMR determination); or evidence that risk free rates have fallen (e.g. which would warrant lower returns regardless of risk exposure).
Stacking	Where several mechanisms are employed to remedy a single market failure, there is a risk that these mechanisms may amplify each other and create a reduction in returns that is out of proportion to the scale of the underlying market failure. Employing several mechanisms to remedy a single market failure is not necessarily problematic where the application of one mechanism renders the other mechanisms redundant. It becomes problematic when the impacts of multiple mechanisms come into effect simultaneously.
Market failure	Where a mechanism is downwards biased in its impact on returns but is not clearly targeting any particular market failure, this is likely to introduce an imbalance between risk and return.
Financeability	A mechanism that can, on its own, lead to companies bearing a significant downside exposure could be challenged on the grounds that they will undermine companies' ability to finance their functions. At this stage, the impact on financeability could be assessed by comparing a high-level estimate of the potential downside impact compared with the scale of the financial buffer available to companies under RIIO2.

The key mechanisms that have been highlighted as potentially not meeting these criteria on the basis of their impact on the risk-return balance are summarised below, along with the rationale for this finding.

Equity and debt beta determination

The proposed reduction in the equity beta could be argued to fail the **unconditional return reduction** criterion since the reduction in allowed returns that it implies is not supported with evidence to suggest that the underlying asset risk has actually fallen (and certainly not sufficiently to warrant a reduction of the scale being proposed). In fact, there are a number of mechanisms highlighted in this report that are likely to increase risk exposure for networks.

Ofgem reconciles a lower equity beta in an environment of similar levels of asset risk to RIIO-GD1 via the introduction of a debt beta of between 0.10 and 0.15, compared with an implied debt beta determination of zero in RIIO-GD1. However, Ofgem has not presented any evidence to suggest that the systematic risk exposure of debt has significantly increased to the point that the introduction of a debt beta adjustment to the equity beta is warranted.

A complicating factor in this assessment is that the debt premium implied by the wedge between the iboxx index used to set allowances for the cost of debt and the risk free rate (measured based on traded Government bond yields) has increased slightly since RIIO-GD1. A proportion of this increase could be attributable to the systematic component of the premium. On the other hand, this increase could be seen as insufficient to warrant such a dramatic shift in the determination of the debt beta, given that the systematic component of debt premiums is generally small. It will be important in due course to assess the evidence with respect to the determination of debt betas (including that presented by Ofgem) and understand the implications for the equity beta determination.

Expected outperformance

The mechanism results in an **unconditional reduction in returns** without a corresponding reduction in risk. It also amplifies the effect of several other mechanisms that are also targeted at addressing the same underlying market/regulatory failures, which creates a reduction in returns that could be seen as being out of proportion to the scale of the problem.

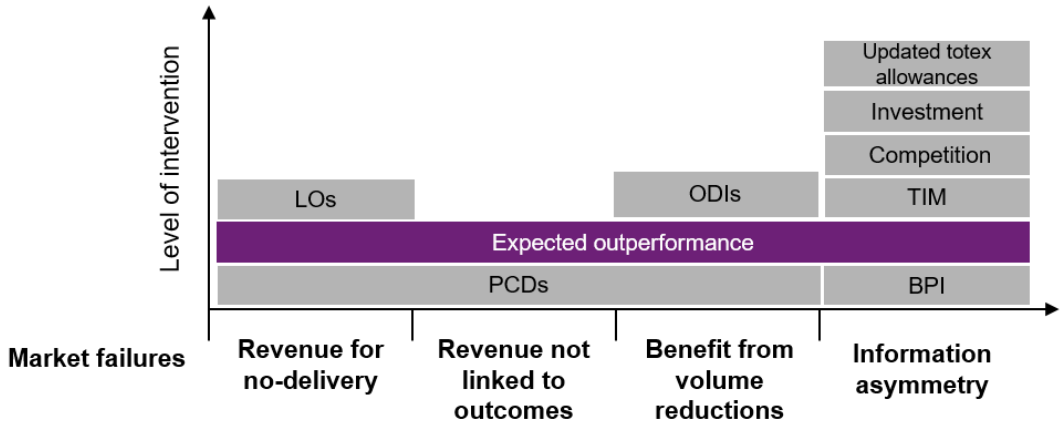
Ofgem is concerned that the information asymmetry inherent in the price control process means that companies will always outperform the settlement regardless of the targets and parameters that it sets. Ofgem has introduced the business plan incentive and blended sharing factor mechanisms with the explicit objective of addressing this market failure. The business plan incentive mechanism already has a downward-biased impact on returns.

In addition, there are several mechanisms being proposed in RIIO2 whose intended purpose and likely effect is to significantly curtail upside returns across a range of areas. Of these mechanisms, 16 are downwards-biased in terms of their impacts on returns, meaning that they tend to curtail upside to a greater extent than they mitigate downside risk. These mechanisms already significantly reduce any expected upside-bias within the RIIO2 price control, and could result in a substantial downwards-bias with respect to returns.

The expected/allowed wedge therefore amplifies the effect of these mechanisms and could be seen as representing an unnecessary intervention with respect to the information asymmetry and resulting potential for upside-bias within the RIIO2 price control package.

A graphical illustration of this “stacking” of mechanisms targeted at the same market failures is presented below.

Figure 8 Illustration of mechanisms overlapping with the expected outperformance adjustment



There are several other challenges associated with the implementation of an expected vs allowed wedge:

— Estimation of the appropriate adjustment would need to take into account all potential sources of both underperformance and outperformance;

— Estimating potential outperformance and underperformance robustly would be very difficult and, in practice, impossible. At best, Ofgem could estimate potential performance due to a selected number of specific mechanisms which would be neither robust nor comprehensive;

— A downwards adjustment is conceptually appropriate only if the regulatory framework as a whole is asymmetric and biased upwards. By contrast, there is substantial historical precedent of regulators attempting to avoid imposing mechanisms that are solely one-sided penalties;

— Ofgem has presented no analysis, evidence or estimates of any specific factors that are expected to drive outperformance in RIIO2 from a business perspective. They only refer to the UKRN report which notes the previously observed premium to RAB implied by market data and infer from that expected outperformance exists;

— The adjustment should in principle apply on a company-specific basis, since expected out- or underperformance will differ considerably depending on the company and its business plan, risks and situation. Applying an adjustment on a sector-wide basis could introduce large biases for each company; on the other hand, applying an adjustment on a company-specific basis would be very difficult to implement and would imply a significant move away from Ofgem's current sector-wide approach to regulation;

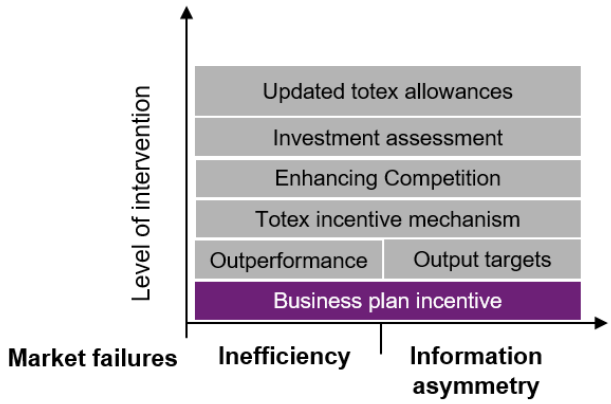
— Asymmetry in costs to customers between setting an allowed return that is too low compared with setting an allowed return that is too high ("aiming up") is also a relevant consideration, as acknowledged by UKRN, but has been given little or no consideration by Ofgem. This asymmetry would suggest an adjustment in the opposite direction to the proposed adjustment.

Business plan mechanisms

The new business plan incentive **unconditionally reduces returns** with no corresponding reduction in risk exposure. It provides a reward or penalty of up to 2% of totex equivalent depending on the quality and cost ambition of business plans submitted by companies. However, the reward received is dependent on submissions by other networks and the potential reward received by each company is diluted if all companies provide high quality plans. By contrast, the penalty would not be diluted if several companies were to submit low quality or high cost business plans. This asymmetry can reasonably be expected to result in a downwards-biased impact on returns compared with the relative symmetry of the IQI in RIIO1.

As illustrated in the figure below, this mechanism interacts with several others. The effect of the business plan incentive is exacerbated by the fact the forecast costs submitted by networks will not directly contribute to the determination of cost allowances as they did in RIIO1. The likelihood is that the cost allowances will be set at a lower level than they otherwise would as a consequence. This is further exacerbated by the apparent removal of the adjustment for workload that was used by Ofgem in RIIO1 to calculate cost allowances.

Figure 9 Illustration of mechanisms overlapping with the business plan incentive



The business plan incentive does not reduce risk, and may increase it. This is because although the IQI involved higher maximum rewards and penalties[2], in practice companies did not receive rewards or penalties in the extremes of this range. In part, this is because companies exert significant control over the quality of their own business plans and hence were able to apply an appropriate and targeted degree of effort based on the rewards and penalties available, which were solely based on the quality and costs of companies' own submissions. The linkage of rewards and penalties to the cost and quality of other companies' submissions introduces additional risk that was not present previously.

Cash flow floor

The cashflow floor **reduces expected returns** without reducing risk exposure, and there is no underlying **market failure** that the mechanism addresses.

[2] Under RIIO1, companies could earn a reward of up to 2.5% of totex through the IQI mechanism. Network companies received an up-front financial reward or penalty depending on their forecast relative to Ofgem's assessment of efficient expenditure. In addition, companies who submitted better forecasts received a higher efficiency incentive rate. Ofgem's allowed expenditure under IQI was based on both Ofgem's view of costs (weighted 75%) and company forecasts (weighted 25%).

The mechanism represents a regulatory intervention in the actual financial structures adopted by companies and presupposes that there is an inefficiently high risk of financial distress inherent in the financial structures adopted by companies. However, Ofgem has not presented any evidence in support of such inefficiency. If this assumption is incorrect, any regulatory intervention in companies' financial structures will be value-reducing by definition, since it will introduce an inefficient distortion in companies' financing choices.

In the current context, the cashflow floor reduces expected returns and increases risk for a number of reasons:

— Companies are exposed to the penalty that Ofgem intends to apply for companies that trigger the floor at gearing levels in excess of a particular threshold;
— The requirement to repay top-up cashflows at the WACC can lead to negative consequences of the floor for companies' financial performance in the medium term;
— The floor risks undermining the role of financeability as a cross check and a binding constraint on regulatory outcomes and hence might undermine financeability itself
— Protecting debt capital at the cost of equity is likely to create distortions and disenfranchise equity capital;
— The floor is likely to have negative implications for incentives, reducing monitoring and contingent control rights of debt capital providers while undermining equity

In practice, the floor might provide liquidity for a time-limited period by shifting cash flows over time, similar to existing regulatory levers such as the split between fast and slow money or depreciation rates rather than ensuring financial sustainability. But improving liquidity in the short term is not the same as improving creditworthiness or financial viability. **The floor cannot reduce company or asset risk**, or improve the financial position of a firm, on a sustainable basis. Rather, it simply shifts risk from debt to equity providers.

Price Control Deliverables ("PCDs") and Licence Obligations ("LOs")

Both of these mechanisms have a **negative expected impact on returns** combined with an **increased risk exposure**.

The reduction in returns results from the inherent asymmetry in these mechanisms. For example, Ofgem has indicated that companies will be provided with upfront funding for some PCDs, but with mechanisms designed to return revenue to customers where these are not adequately delivered. In these cases, companies are likely to be exposed to the risk of under-recovering costs in the case of under- or non-delivery, but may not be rewarded with additional revenues for delivery beyond the requisite standards and specifications. Alternatively, where zero base allowances are set, companies are exposed to the risk that they are unable to recover the costs incurred in completing a particular PCD where Ofgem deems that the work was not needed or not carried out efficiently.

These mechanisms can be seen as increasing risk to the extent that they increase the scope for regulatory discretion around cost recovery (and hence increase the risk of downside exposure).

Updated totex allowances

Ofgem's proposed changes to the way it intends to set totex allowances will result in a negative expected impact on returns combined with an increased risk exposure.

Some aspects of Ofgem's approach result in a reduction in expected returns and an increase in risk without evidence of an underlying market failure. In particular, Ofgem's increased focus on bottom-up cost models could result in lower cost allowances. It will also increase uncertainty in the near-term because for some bottom-up cost areas there are several alternative approaches for modelling and estimating costs, and it is not clear how Ofgem will proceed. There is a risk in these areas a regulatory settlement might 'cherry-pick' the approach that yields the lowest cost allowances. Ofgem has yet to demonstrate that there is an underlying issue associated with the weighting it previously assigned to top-down modelling that would warrant a shift in approach.

Appendix 1 Summary of impacts by mechanism

This appendix presents a summary of the regulatory mechanisms introduced under Ofgem's proposed framework for setting allowed revenues under RIIO-GD2 as set out in its December 2018 consultation, and considers how these differ from the arrangements under the current price control framework. It also provides an initial, high-level description of the impact of each mechanism (relative to the arrangements under the current price control). The following are considered for each mechanism:

— **Significance**: the overall magnitude of the impact

— **Asymmetry**: the extent to which the impact on allowed revenues and returns is skewed downwards the upside or downside

— **Variance**: the range of potential impacts on allowed revenues and returns

The regulatory mechanisms referred to in this document represent aspects of the overall price control framework that govern how a particular component of allowed revenues will be determined ex ante and also how it could change over the course of the price control period conditional on the evolution of other variables.

The mechanisms set out in the consultation have been categorised based on how they affect allowed revenues and hence returns (defined as allowed revenues less actual operating costs and regulatory depreciation as a percentage of the RAV).

— The first category comprises mechanisms that affect allowed revenues and returns regardless of any other variables.

— The second category comprises mechanisms whose impact on allowed revenues depends on variables that are external to the company (and are fully outside of the company's control).

— The third category comprises mechanisms whose impact on allowed revenues depends on the outturn level of the company's operating and capital costs, or some component of these.

— The fourth category comprises mechanisms whose impact on allowed revenues depends on the outturn level of the company's performance against output targets determined by Ofgem.

— The fifth category comprises mechanisms that adjusted allowed returns based on the level of allowed return (i.e., attempts to "guide" allowed returns towards a particular target).

Wherever possible, indicative values have been provided based on stylistic analysis. However, this should be treated as preliminary and the actual impacts will depend on a variety of factors that cannot be quantified at this stage, including areas where Ofgem has not fully specified how it intends to apply particular mechanisms.

Category 1: Mechanisms proposed by Ofgem unconditionally affecting returns

No.	Mechanism	Description	Significance	Asymmetry/bias	Variance	Comments
1	**Reduction in equity beta**	A reduction in equity beta from 0.9 (GD1) to a midpoint 0.704 (GD2). Beta estimated over a ten year period with a small upward adjustment to reflect the more conservative 5-year data. See page 41 of the Finance Annex	High	Downward	No effect	All else being equal, the reduction in beta translates to a negative impact of £32m[3] per annum. This change is asymmetrical as it unconditionally reduces the return.
2	**Reduction in TMR**	A reduction in TMR from 7.25% in GD1 to 6.50% midpoint in GD2 (5.44% in RPI terms). See page 41 of the Finance Annex	High	Downward	No effect	All else being equal, the reduction in TMR translates to a negative impact of £51m per annum. This change is asymmetrical as it unconditionally reduces the return.
3	**Reduction in the risk free rate**	A reduction in RFR from 2.00% in GD1 to -0.60% in GD2 (-1.68% in RPI terms). See page 41 of the Finance Annex	Medium	Downward	No effect	All else being equal, the reduction in RFR translates to a negative impact of £11m per annum. This change is asymmetrical as it unconditionally reduces the return.
	Reduction in the cost of equity (expected)	A reduction in CoE from 6.73% in GD1 to 4.50% in GD2 (3.46% in RPI terms). See page 41 of the Finance Annex	High	Downward	No effect	All else being equal the combined negative impact of beta, TMR and RFR reductions is £101m per annum.
4	**Introduction of an adjustment for expected outperformance (expected vs**	A downward adjustment of 50 basis points in being implemented in GD2 to take into account the distinction between expected and allowable returns and the benefits from other financial incentives.	Medium	Downward	No effect	All else being equal the 0.5% wedge translates to a negative impact of £15m per annum.

[3] In our high level impact assessment of WACC components we have used the Cadent RAV value as at 31 March 2017 and the RPI equivalent GD2 WACC. The impact is relative to the GD1 values. The reason for using Cadent-specific values is to facilitate a comparison of the scale of impacts between different mechanisms.

	allowable return wedge)	See page 52 of the Finance Annex				This change is asymmetrical as it unconditionally reduces the return.
	CoE (allowed)	A reduction from 6.73% in GD1 to 4.00% in GD2 (2.96% in RPI terms)	High	Downward	No effect	All else being equal the combined negative impact of beta, TMR and RFR reductions and the wedge is £117m per annum.
5	**Reduction in notional gearing**	A reduction in gearing from 65% in GD1 to 60% in GD2 See page 71 of the Finance Annex	Medium	Upward	No effect	All else being equal the reduction in gearing translates to a positive impact of £17m per annum. This change is asymmetrical as it unconditionally increases the return since it gives a higher weighting to a higher CoE (vs CoD).
6	**Deflation of nominal cost of debt to CPIH real terms [4]**	1. RIIO-1 breakeven approach with an expected RPI-CPIH wedge when deflating the nominal iBoxx yields	Small	Symmetric	No effect	The deflation of the nominal cost of debt is an unconditional adjustment to the CoD index. Breakeven inflation is likely to include a component pertaining to the inflation risk premium. By subtracting this, Option 1 is likely to yield a lower estimate than Option 2.
		2. Deflating the nominal iBoxx using Office for Budget responsibility's longest forecast of CPI	Small	Upward	No effect	
7	**Change in the method for setting the cost of debt allowance**	A reduction in CoD from 2.92% in GD1 to 1.74% in GD2 (0.72%[5] in RPI terms) See page 12 of the Finance Annex	High	Downward	No effect	All else being equal, the reduction in CoD translates to a negative impact of £126m per annum. This change is asymmetrical as it unconditionally reduces the return and the variance is low.

[4] We have only included the mechanisms for COD deflation and not indexation since there has not been a change here, the full indexation approach of GD1 is retained.

[5] Calculated as (1+1.74%)/(1+1.009%)-1, 1.009% being the RPI-CPIH wedge.

	Overall change in the allowed rate of return (WACC)	A reduction in WACC from 4.20% in GD1 to 2.64% in GD2 (1.62% in RPI terms)	High	Downward	No effect	All else being equal the combined negative impact of the changes to all the individual elements of WACC is £233m per annum.
8	**Business plan incentive**	A totex linked incentive with an upfront reward/penalty of 2% based on the assessment of plans for cost efficiency and qualitative elements. The greater the number of companies that qualify for reward, the more the reward for individual companies is diluted. See appendix 3 of RIIO-2 Sector Specific Methodology	Medium	Downward	Increase	The worst case outcome is an upfront penalty of -2%, where the company is at the lower end of the cost efficiency scale with the quality of the plan assessed as poor. The negative impact of such penalty is £19m per annum.[6] This mechanism is asymmetric because the potential upside is less than the downside since the reward is diluted but the penalty is not. It can also affects the range of potential outcomes.
9	**Updated totex allowances**	In GD2 we expect the cost allowances to be much more stringent. In part, this will be driven by the removal of the interpolation that previously took place under the IQI mechanism. In addition, Ofgem appear to have removed the adjustment for workload that was made under GD1, which could lead to even lower cost allowances. Finally, we expect an increased focus on bottom-up approach to setting the allowances.	High	Downward	Increase	These changes will result in an unconditional reduction in return as well as increased variance. The possibility of several alternative bottom-up approaches to cost modelling in particular increases uncertainty and gives rise to a risk of 'cherry-picking' by Ofgem. While it is difficult to quantify the impact, we expect it to be high.
10	**Updated output targets**	Output targets are likely to be updated to reflect current best practice and potentially reflecting expected improvements over GD2.	High	Downward	Increase	These changes will result in an unconditional reduction in return as well as increased variance. While it is difficult to quantify the impact, we expect it to be high.

[6] On the basis of Cadent totex per GD1 annual report for the year ended 31 March 2017.

Category 2: Mechanisms proposed by Ofgem with impact on returns conditional on external variables

No.	Mechanism	Description	Significance	Asymmetry/bias	Variance	Comments
11	**Introduction of the cost of equity indexation**	Annual indexation to the risk free rate. Allowed cost of equity for each financial year to be published four months in advance of the relevant financial year beginning. See page 22 of the Finance Annex	Small to Medium	Symmetric	Increase	A change of 1% in the RFR translates to an impact of £10m per annum.[7] The impact is symmetrical and it increases the variance of returns.
12	**Change of revenues indexation for inflation to CPIH index and transition**	Transition from RPI to CPIH from RIIO-2 onwards for the purposes of calculating RAV indexation and allowed returns with no phasing.	Medium	?	Increase	Impact will be an upfront increase in returns that will reverse in future years as revenues grow more slowly than under RPI. The size and direction of the NPV impact is difficult to assess at this stage. There is likely to be an increase in return variance due to the mismatch between CPI-linked revenues and RPI-linked debt. This could be offset by the fact that CPIH has historically been less variable than RPI, which would tend to reduce return volatility. It is not known which effect predominates at this stage.
13	**Changes to RPE indexation**	Ofgem is proposing to move away from setting fixed, upfront adjustments to cost allowances in respect of Real Price Effects ("RPEs") towards indexing allowances based on the underlying indices on which the previous upfront adjustment was made in RIIO-GD1.	Medium	Symmetric (but upfront reduction in returns)	Decrease	All options being considered for the mechanism would reduce the forecasting error associated with RPEs. This will tend to reduce the variance of returns, and should act symmetrically on the assumption that the alternative would be a fixed allowance based on unbiased RPE forecasts.

[7] Calculated using the formula from the Finance Annex - $Change\ in\ cost\ of\ equity = (1-\beta) \cdot Change\ in\ risk\ free\ rate$

		The suboptions being considered by Ofgem all relate to how the upfront allowances (i.e., pre-indexation) should be set: Option 1: To forecast RPEs as zero				Option 1 would result in an upfront reduction in returns of £45m[8] per annum compared with the RIIO-GD1 approach. This impact will reverse at the end of the price control period if outturn RPEs are the same as forecast.
14		Option 2: To fix a forecast of RPEs for the duration of the price control (similar to GD1)	Small	Symmetric	Decrease	Option 2 would result in the same upfront returns compared with RIIO-GD1.
15		Option 3: To annually update RPE forecasts with latest available input price data	Medium	Symmetric (but upfront reduction in returns	Decrease	Option 3 would result in an upfront reduction in returns for the same reason as under Option 1 and by a similar magnitude. If RPEs evolve as forecast, then this difference would reverse incrementally over the course of the price control period
16	**GD2 specific uncertainty mechanisms**	Re-openers proposed for uncertainty mechanisms to support substantial changes in external policy such as policy (decarbonisation) or Health and Safety Executive policy. Uncertainty mechanisms to align allowances with delivery and uncertainty mechanisms for areas fully outside of network companies' control have not changed substantially. See page 100 of the RIIO-2 Sector Specific Methodology Annex: Gas Distribution	Small	Symmetric	Decrease	Uncertainty mechanisms associated with policy changes are likely to reduce return volatility and would act symmetrically.

[8] Ofgem has indicated that the GD1 RPE upfront allowances over-remunerated network companies by circa £89m per annum, which suggests that the upfront reduction in returns for Cadent under this option could be around £45m per annum.

Category 3: Mechanisms proposed by Ofgem with impact on returns conditional on outturn level of costs

No.	Mechanism	Description	Significance	Asymmetry/bias	Variance	Comments
17	**Change to the method for remunerating corporation tax**	Two additional options being proposed along with added protections to RIIO-1 notional allowance mechanism: 1. Pass-through for payments to HMRC 2. The "double-lock": the lower of notional and actual See page 63 of the Finance Annex	Small	Downward	Decrease	The impact of option 1 is likely to be nil as it allows variability in line with the actual cost, thereby limiting both the upside and the downside. With regards to option 2, where the notional amount is less than the actual cost, there is a downside equal to the difference between these amounts, however, when notional is above actual there is no upside. We have used tax retained under tax trigger deadband as a proxy for the tax underspend for 2016/17 which resulted in an increase of 0.12% in RoRE i.e. £4m in monetary terms.
18	**Totex incentive mechanism: blended factors**	Totex sharing factor determines companies' earnings (or loss) potential in case they do not spend in line with their allowance. A weighted-average factor, calculated by categorizing cost elements by the level of confidence Ofgem has in setting the allowance for them, to be applied to totex. See page 96 of RIIO-2 Sector Specific Methodology	High	Symmetric	Decrease	Ofgem is proposing a range of 15%-50% vs 2016/17 sharing factor of 63%. All else being equal the impact of this change is +/-£38m[9]. The change is symmetric as it has equal upside and downside potential and it increases the range of potential outcomes.
19	**Enhancing competition**	Ofgem has identified two approached to enhancing native competition in order to reveal and reduce costs:	?	Downward	Increase	Where assets are delivered by third parties rather than being added to the RAV, this is likely

[9] Based on the £122m underspend for Cadent based on 2016/17 data.

		inclusion in the business plan incentive and competition as price finder. In the former the quality and ambition would be taken into account when determining the incentive. In the latter, a cost reference benchmark would be set by Ofgem for an identified system need and a competition run by a licensee to find a solution. See page 82 of RIIO-2 Sector Specific Methodology				to reduce RAV growth which is value negative all else equal. It could increase variance due to companies remaining accountable for delivery of the projects at the level of costs revealed by the tender regardless of any underlying difficulties encountered by third party suppliers. The scale of the impact will depend on which projects are eligible for competition, which is not known at this stage.
20	**Investment assessment**	For standard assets Ofgem is proposing higher hurdles and establishing a working group for highly anticipatory investment. See page 62 of RIIO-2 Sector Specific Methodology	?	Downward	Decrease	Under these mechanisms it would be harder to justify new investments which would lead to less totex and less potential to over/underspend i.e. less variance. We consider this mechanism downward biased due to the decreased ability to grow RAV (a value driver for investors). The scale of the impact will depend on which projects fail to qualify for inclusion in business plans, which is not known at this stage.
21	**Pension funding**	For GD1 pension deficit funding related scheme administration and Pension Protection Fund levy were included within the deficit pension allowance. The new approach would make these a part of the totex.	Small	Symmetrical	Decrease	The proposed change reduces the variance as it enables the companies to share under/over performance via the TIM.

Category 4: Mechanisms proposed by Ofgem with impact conditional on outturn level of output

No.	Mechanism	Description	Significant	Asymmetry/bias	Variance	Comments
22	**Price control deliverables**	Price control deliverables for those outputs that are directly funded through the price control settlement. New PCDs include GDN record keeping and use-it-or-lose-it allowances for cyber resilience, consumer vulnerability and carbon monoxide safety awareness. In RIIO-GD1, repex has been the largest area of underspend for the GDNs leading to revisions to this output which include categorising repex into mandatory repex activities and asset management repex activities with several options for PCDs being considered. For asset categories currently in scope for Network Output Measures, Network Asset Risk Measure will be used defining outputs using a long-term measure of the monetised risk benefit delivered through companies' investments. See sections 3-5 of the RIIO-2 Sector Specific Methodology Annex: Gas Distribution	High	Downward	Increase	Overall, we consider that the introduction of PCDs will result in an increase in variance as it places the onus on the companies to deliver certain outcomes with the implication that downside risk increases (due to the risk of non-delivery). We have reviewed the proposed outputs to identify those where we think the impact will be the most significant. This does not include any bespoke outputs that GDNs might propose (something they are encouraged to do). <u>Repex:</u> According to Ofgem repex cost allowances account for 40% of the GDN total spend. This is due to a combination of factors that Ofgem is now addressing in GD2. All things being equal the negative impact of the GD2 repex policy is £40m per annum[10]. We consider the mechanism to be asymmetric because companies will be able to benefit from unit cost efficiencies.

[10] According to Ofgem Tier 1 mains replacement is accounts for the majority of repex. Our assessment uses the 40% (as share of 2016/17 overspend of attributable to £122m) and assuming that the Tier 1 mains replacement comprised 80% of this.

						Cyber resilience: Under RIIO-GD1, companies were provided with ex ante allowances for general resilience work (including cyber). Any over/underspend against allowances pass through the Totex Incentive Mechanism meaning that companies could potentially retain part of the unused allowance. In GD2 cyber resilience is a separate output and any allowance not used will be clawed back. As such we expect a slightly negative impact. GDN record keeping: A new output for GD2, with a specific focus on multiple occupancy buildings. Companies are expected to include GDN record keeping in their business plans. Ofgem will then embed these specific deliverables into a PCD with funding being returned to customers in case on under-delivery.
23	**Output delivery incentives**	Output delivery incentives (reputational/financial) for service quality improvements beyond the minimum standard may be in the interests of consumers. Reputational incentives do not have direct financial consequences and will be administered by publishing results in a particular area such as customer vulnerability, a new output for RIIO-GD2.	?	Downward	Decrease	As with PCDs the targets for ODIs will be more stringent in order to limit the potential outperformance. As such we the mechanisms are likely to be asymmetric. It is not possible to quantify the scale of the impact of these mechanisms in the absence of incentive rates, which may be

		For financial ODIs there is a general move towards a more dynamic (adjusting year on year based on performance) and relative (to own or other GDN performance) approach such as for customer satisfaction and complaints incentives. There is also a move to tighten those ODIs where the GDNs have earned substantial rewards such as NTS exist capacity and shrinkage. See sections 3-5 of the RIIO-2 Sector Specific Methodology Annex: Gas Distribution				proposed in companies' business plans.
24	**Licence obligations**	Licence obligations to address minimum standards of performance. Failure to meet these minimum standards could lead to enforcement action and/or penalties. For RIIO-2 existing Los are being refined with a new LO being considered which would require companies support consumers in vulnerable situations as part of business as usual. See sections 3-5 of the RIIO-2 Sector Specific Methodology Annex: Gas Distribution	?	Downward	Increase	The introduction of new LOs and the translation of GD1 outputs into LOs will remove any potential for reward for delivery in excess of required standards, whilst retaining the possibility of penalties being imposed for under-delivery. The minimum standards of performance increase variance since there are downside implications to companies not delivering the output. The significance of this mechanism depends on companies' forecast ability to deliver in line with required standards, which is not known at this stage.
25	**Innovation**	No specific outputs for innovation are proposed in either of the three categories, however companies are expected to strive for innovation in all areas of their business. Furthermore,	Small	Downward	No effect	The reduction in innovation funding will not have a material impact on the range of possible return outcomes.

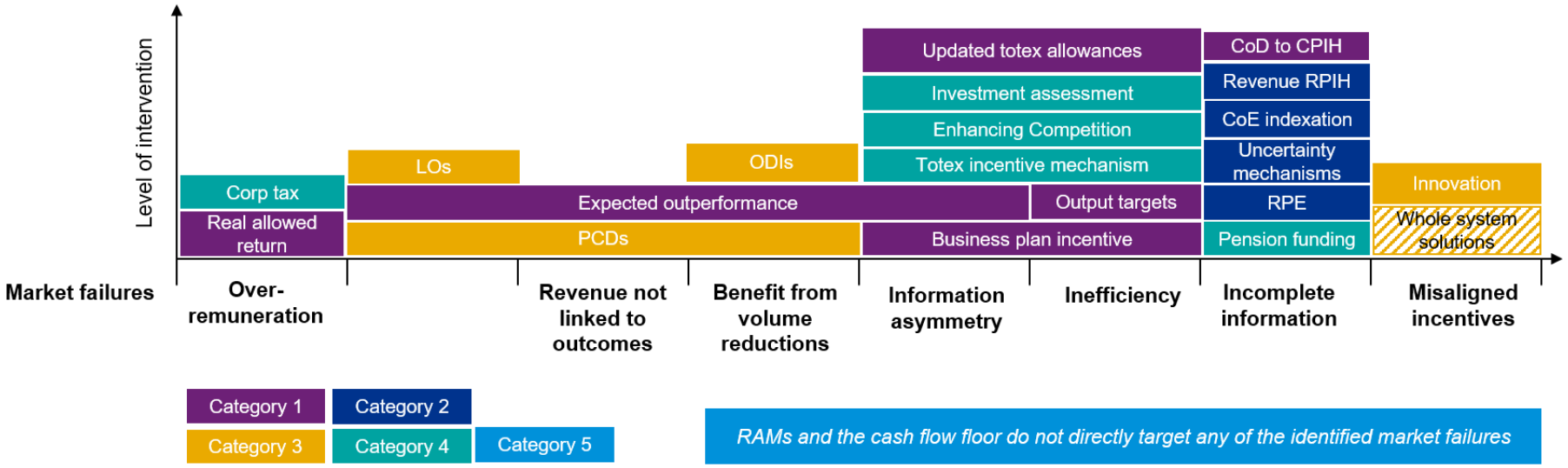
		Ofgem is pushing for companies to undertake more innovation as BAU. As a result the Innovation Rollout Mechanism is to be removed, the Network Innovation Competition is to be replaced with a new funding pot focused on pre-defined strategic challenges and Ofgem is consulting on whether to maintain the annual Network Innovation Allowance. Increased third party engagement along with increased competition to encourage new or innovative ways of solving network problems See section 8 of RIIO-2 Sector Specific Methodology				The effect is assumed to be small on the basis of the funding amounts obtained for GD1.
26	**Whole systems solutions**	Similar to innovation there is an overall increased focus on whole systems solutions. Ofgem has identified six potential ways, two of which will be addressed through the Business Plan and innovation mechanisms. New mechanisms include a symmetrical incentive for undertaking additional co-ordination related analysis, mechanisms and incentives for balancing financial incentives between traditional and whole systems behaviour, a co-ordinated re-opener for projects which operate across multiple networks and a discretionary funding mechanism. See section 5 of RIIO-2 Sector Specific Methodology	?	Symmetric	Increase	New incentives around WSOP increase the variance of returns by allowing for the possibility of rewards and penalties against whole system performance targets. The scale of the impact cannot be determined in the absence of incentive rates, which may be proposed as part of companies' business plans.

Category 5: Mechanisms proposed by Ofgem that adjust return based on the level of allowed return

No.	Mechanism	Description	Significant	Asymmetry/bias	Variance	Comments
27	**Financeability: cash flow floor (option C)**	Where a liquidity based cash flow floor (Expected Cash Available before debt service to Debt Service Requirements) reveals a shortfall, a company is placed in a Cash flow Supported Status resulting in an increase in tariffs across the sector as a Cash Top Up, ring-fence provisions such as dividend lockup and increased regulatory oversight. The company will pay 75% of operating surpluses to system operator. Company can only exit this status upon full repayment. Additional provisions apply if the company fails to repay within 10 years. See page 57 of the Finance Annex	Medium	Downward	Increase	Cash flow floor is likely to increase the variance of returns due to such factors as reduced flexibility to seek efficient solutions, uncertain reaction from the credit agencies and general reputational, strategic and operational repercussions of triggering such mechanism. The reduced flexibility is likely to have a negative impact on returns. While it is difficult to quantify the impact at this stage, we consider the significance of the impact to be medium due to the fact that Ofgem is using the introduction of the floor as a justification, from a financeability perspective, of the new low CoE environment and the tighter price control in almost all other aspects.
28	**Return Adjustment Mechanisms**	RAMs are proposed to apply to RoRE with an adjustment collar of 300 bps in order to mitigate the risk systematic outperformance by the companies. The adjustments may take place either at the end of the price control period or as part of annual iteration process. Option 1: sector average sculpting Adjusting out/underperforming companies based on the sector average using a predetermined	Medium - High	Upward	Decrease	RAMs are likely to have a moderately upwards-biased impact on returns. This is because the GD2 package as a whole is downwards biased by comparison with GD1, where return outcomes were relatively symmetric. This implies that the downside return outcomes are more significant than the upside return outcomes before the impact of RAMs. RAMs are therefore more likely to be triggered on the downside than on the upside.

		sculpting levels linked to different sector average returns. Option 2: anchoring (preferred) When the sector RoRe is within the collar, individual company returns reflect performance against own targets and allowances. When the sector RoRe is outside collar, upward/downward adjustments in proportion to the individual company's RAV which will bring sector average back to threshold. No adjustments would send a company's return below its allowed return on equity. See appendix 4 of RIIO-2 Sector Specific Methodology				The impact is estimated to be moderate-high based on the GD1 RoRE ranges. The GD2 RoRE ranges are likely to be narrower, and so the impact of RAMs could be lower than this in practice. Because RAMs moderate both upside and downside return outcomes, they reduce return variability.

Appendix 2 Graphical illustration of stacking between all RIIO GD-2 proposed mechanisms



Glossary

BAU	Business As Usual
BPI	Business Plan Incentive
CFF	Cash Flow Floor
CoE	Cost of Equity
CPI	Consumer Price Index
CPIH	New measure of consumer price index including owner occupiers housing costs
CPM	Competition Proxy Model
DPC	Direct Procurement for Customers
GD2	Refers to RIIO2 framework for gas distribution
Iboxx index	Index against iBoxx bond market
IQI	Information Quality Incentive
LO's	Licence obligations
NIA	Network Innovation Allowance
NIC	Network Innovation Competition
NPV	Net Present Value
ODIs	Outcome Delivery Incentives

PCD	Price Control Deliverables
RAM	Return Adjustment Mechanisms
RAV	Regulated Asset Value
Repex	Replacement Expenditure
RFR	Risk Free Rate
RIIO2	Ofgem's proposed regulatory framework
RoRE	Return on Regulated Equity
RPEs	Real Price Effects
RPI	Retail Price Index
TIM	Totex Incentive Mechanism
TMR	Total Market Return
Totex	Total Expenditure
WACC	Weighted Average Cost of Capital
WSOPs	Whole System Solutions

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