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Decision

RIIO-2 Final Determinations – Finance Annex (REVISED)

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Our aim for the RIIO-2 price controls is to ensure energy consumers across GB get better value, better quality of service and environmentally sustainable outcomes from their networks. In May 2019, we set out the framework for the price controls in our Sector Specific Methodology Decisions. In December 2019, Transmission and Gas Distribution network companies and the Electricity System Operator (ESO) submitted their Business Plans to Ofgem setting out proposed expenditure for RIIO-2. In July we published our Draft Determinations and asked stakeholders a number of consultation questions.

This document, and others published alongside it, set out our Final Determinations for company allowances under the RIIO-2 price controls. Shortly after this publication a statutory consultation will be published setting out the proposed licence modifications reflecting these final determinations.

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Contents

1. Introduction **4**
2. Allowed return on debt **9**
3. Allowed return on equity **24**
Step 1 - The Capital Asset Pricing Model evidence 25
Step 2 – Cross-checks 49
Step 3 – Expected versus allowed returns 55
Return on Regulated Equity (RoRE) 69
4. WACC allowance **71**
5. Financeability **73**
6. Financial resilience **87**
7. Corporation tax **91**
8. Return Adjustment Mechanisms (RAMs) **102**
9. Indexation of RAV and calculation of allowed returns **110**
10. Regulatory depreciation and economic asset lives **112**
11. Other finance issues **114**
Capitalisation rates 114
RAV opening balances 118
RIIO-1 close-out 119
Directly Remunerated Services 121
Disposal of assets 122
Annual Iteration Process 124
Time value of money 126
Revenue forecasting 129
Base revenue and ODI cap/collar 132
Pension scheme established deficit funding 135
Bad debts 135
Equity Related Notional Company Assumptions 137
Transparency through RIIO-2 reporting 139
Appendix 1 - Final Determinations on the allowed return on capital **141**
Appendix 2 – Equity: A summary of consultants' reports and our comments **143**
Appendix 3 – Debt and financeability: A summary of consultants' reports and our comments **173**
Appendix 4 – Company points raised on debt **180**
Appendix 5 – Company points raised on financeability **184**
Appendix 6 – Stress Test Results **194**
Appendix 7 – Financial values for Gas Distribution Networks **198**
Appendix 8 – Financial values for Transmission Networks and SOs **202**
Appendix 9 – Totex reconciliation **206**

1. Introduction

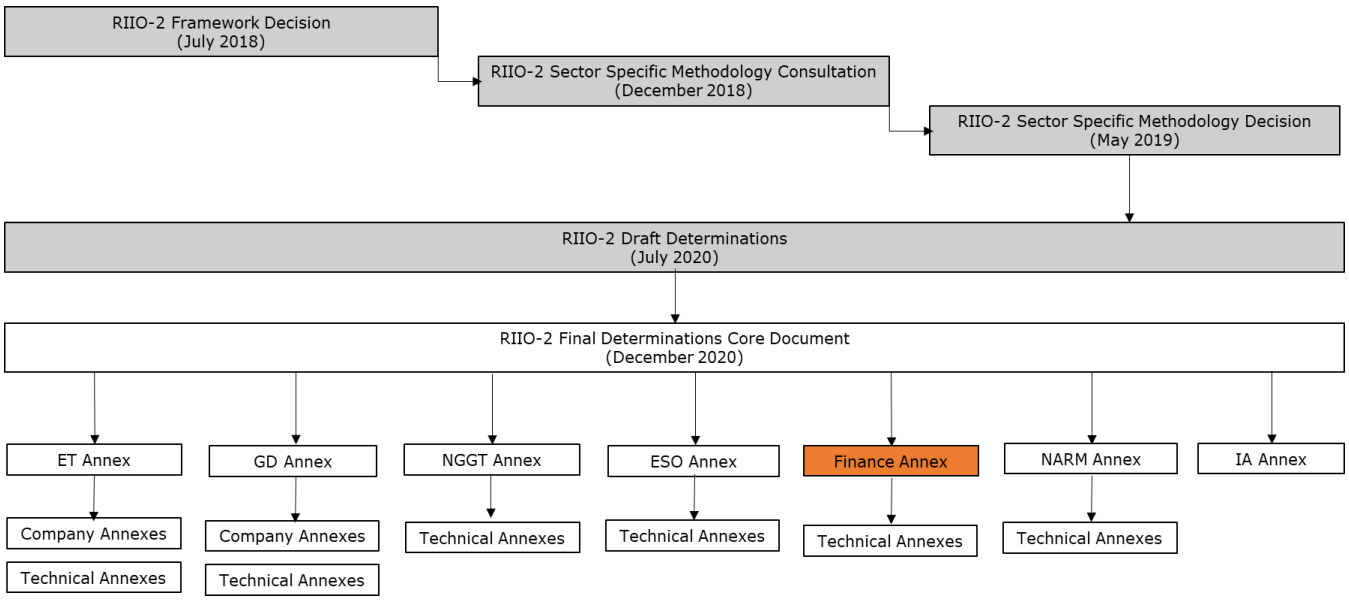
1.1 In this chapter, we set out:

- a graphical depiction of how this document fits into the overall structure of the full suite of RIIO-2 Final Determination decision documents and how these have followed consultation stages
- a summary of the background to our finance work since July 2020 (Draft Determinations)[1]
- inflation forecasts for RIIO-2
- technical annexes in support of our RIIO-2 finance decisions.

Structure of RIIO-2 Final Determination decision documents

1.2 We highlight below how this document fits into the suite of RIIO-2 documents, with a focus on those published alongside these Final Determinations for RIIO-ET2, RIIO-GD2, RIIO-GT2 and the ESO. We also address finance issues unique to the ESO within a finance chapter in the ESO Sector Document.

Figure 1: RIIO-2 Final Determinations documents map



[1] https://www.ofgem.gov.uk/system/files/docs/2020/07/draft_determinations_-_finance.pdf

Background to our finance work since July 2020

1.3 Stakeholders submitted consultation responses in early September 2020, which we have reviewed. We held bilateral meetings with network companies and other stakeholders and finance workshops with the Energy Networks Association. We also held Open Meetings, in which various finance related topics were discussed.

1.4 Networks refer to various consultancy reports prepared on their behalf, in support of their consultation responses. A list of the primary reports with a finance focus is presented below in Table 1 and Table 2.[2]

Table 1: Equity-focussed consultancy reports we received

Report	Author	Prepared for/ Funded by	Report reference	Date
1	Oxera	ENA	Asset risk premium relative to debt risk premium.[3]	Sep 2020
2	Oxera	ENA	The Cost of Equity for RIIO-2' Q3 2020 Update.[4]	Sep 2020
3	Oxera	Heathrow Airport Ltd	Is aiming up on the WACC beneficial to customers?.[5]	Apr 2020
4	Oxera	ENA	What explains the equity market valuations of listed water companies? - A review of Ofwat's use of financial market evidence to support its allowed cost of capital.[6]	May 2020
5	Oxera	ENA	Estimating debt beta for regulated entities.[7]	Jun 2020
6	Oxera	ENA	Are sovereign yields the risk-free rate for the CAPM?.[8]	May 2020
7	Oxera	Heathrow Airport Ltd	Estimating RPI-adjusted equity market returns.[9]	Aug 2019
8	Oxera	Heathrow Airport Ltd	Response to the CMA on estimating RPI-adjusted equity market returns.[10]	Apr 2020

[2] To avoid repetition, we generally exclude from these tables any substantially identical reports that we considered between business plan submission and Draft Determination, as addressed in DD. https://www.ofgem.gov.uk/system/files/docs/2020/07/draft_determinations_-_finance.pdf#page=6
[3] https://www.northerngasnetworks.co.uk/wp-content/uploads/2020/09/ARP-DRP-Oxera.pdf
[4] https://www.northerngasnetworks.co.uk/wp-content/uploads/2020/09/CoE-Oxera.pdf
[5] https://www.northerngasnetworks.co.uk/wp-content/uploads/2020/09/Oxera-2020-Is-aiming-up-on-the-WACC-beneficial-to-customers-prepared-for-Heathrow-Airport-7-April.pdf
[6] https://www.northerngasnetworks.co.uk/wp-content/uploads/2020/09/Oxera-2020-%E2%80%98What-explains-the-equity-market-valuations-of-listed-water-companies%E2%80%99-20-May-1.pdf
[7] https://www.northerngasnetworks.co.uk/wp-content/uploads/2020/09/Oxera-2020-%E2%80%98Estimating-debt-beta-for-regulated-utilities%E2%80%99-4-June..pdf
[8] https://www.northerngasnetworks.co.uk/wp-content/uploads/2020/09/Oxera-2020-%E2%80%98Are-sovereign-yields-the-risk-free-rate-for-the-CAPM%E2%80%99-prepared-for-the-Energy-Networks-Association-20-May..pdf
[9] https://www.northerngasnetworks.co.uk/wp-content/uploads/2020/09/Oxera-2019-%E2%80%98Estimating-RPI-adjusted-equity-market-returns%E2%80%99-2-August..pdf
[10] https://www.northerngasnetworks.co.uk/wp-content/uploads/2020/09/Oxera-2020-Response-to-the-CMA-on-estimating-RPI-adjusted-equity-market-returns-prepared-for-Heathrow-Airport-15-April.pdf

Report	Author	Prepared for/ Funded by	Report reference	Date
9	Frontier	ENA	Further analysis of Ofgem's proposal to adjust baseline allowed returns.[11]	Sep 2020
10	Frontier	National Grid	Potential performance in RIIO-T2.[12]	Sep 2020
11	Frontier	National Grid	Estimating beta for RIIO-2.[13]	Sep 2020
12	Frontier	NGN	Potential performance in RIIO-GD2 - report for NGN.[14]	Sep 2020
13	First Economics	ENA	RIIO-2: Prior Year Adjustments.[15]	Aug 2020
14	John Earwaker, Nick Fincham	National Grid	Information asymmetry and the calibration of price controls.[16]	Aug 2020
15	NERA	Scottish Power Transmission	Cost of Capital for SPT in RIIO-T2.[17]	Sep 2020
16	KPMG	NG ESO	NG ESO: risk and remuneration under Ofgem's RIIO2 Draft Determination.[18]	Aug 2020
17	Economic Insight	Cadent	RIIO-GD2 Method Impact on Expected Equity Returns at the Draft Determination	Sep 2020

Table 2: Debt and financeability consultancy reports we received

Report	Author	Prepared for	Report reference
18	NERA	ENA	NERA 'Review of Ofgem's DD Additional costs of borrowing, and deflating nominal iboxx' Prepared for ENA September 2020.[19]
19	Oxera	SHET	Financeability of the RIIO-2 Draft Determinations.[20]
20	Consultancy	GD&T networks (Confidential)	Confidential

[11] https://www.northerngasnetworks.co.uk/wp-content/uploads/2020/09/ER-vs-AR-Frontier-Economics.pdf
[12] https://www.ofgem.gov.uk/system/files/docs/2020/09/dd_response_nget.zip "NGETFinance Annex FQ10Technical reportOutperformance wedge.pdf"
[13] https://www.ofgem.gov.uk/system/files/docs/2020/09/dd_response_nget.zip "NGETFinance Annex FQ5FQ6Technical Report Beta for RIIO T2GD2.pdf"
[14] https://www.northerngasnetworks.co.uk/wp-content/uploads/2020/09/NGN-Outperformance-Wedge-Frontier-Economics.pdf
[15] https://www.ofgem.gov.uk/system/files/docs/2020/09/dd_response_sgn.zip "First Economics RIIO2 prior year adjustments.pdf"
[16] http://www.first-economics.com/earwakerfincham.pdf
[17] https://www.ofgem.gov.uk/system/files/docs/2020/09/dd_response_spt.zip "Annex 4", "200903SPTWACCNERAreportFINAL.pdf"
[18] https://www.nationalgrideso.com/document/176026/download
[19] https://www.northerngasnetworks.co.uk/wp-content/uploads/2020/09/Additional_Costs_Borrowing_and_Inflation-NERA.pdf
[20] https://www.ofgem.gov.uk/system/files/docs/2020/09/dd_response_shet_part_three.zip "T2BPDDCON003 Financeability of the RIIO2 Draft Determinations Oxera.pdf"

Report	Author	Prepared for	Report reference
21	PWC	SGN	The balance of risk in SGN's GD2 Draft Determination, 4th September.[21]

1.5 In Appendix 2 and Appendix 3 below, we provide a point-by-point analysis of the main issues raised in these reports. To further understand the issues raised we held bilateral meetings with RIIO-2 companies and other stakeholders.

Inflation expectations: OBR's March 2020 forecast

1.6 Before presenting our finance determinations for RIIO-2, we refer to inflation forecasts by the Office for Budget Responsibility (OBR) as at March 2020.[22] These forecasts are an important factor when estimating real price allowances and financeability, and therefore underpin many aspects of our RIIO-2 estimates, as outlined in the remaining chapters of this document.

Table 3: Inflation expectations, OBR's March 2020 forecast.[23]

YE 31st December	2020	2021	2022	2023	2024
CPI	1.41%	1.80%	2.06%	2.05%	2.02%
RPI	2.16%	2.74%	3.05%	2.95%	2.85%

1.7 In line with Draft Determinations, we focus on the longest horizon available for our RIIO-2 Final Determinations. We also continue to assume that the best proxy for CPIH is CPI. On this basis, we derive a difference between RPI and CPIH (the RPI-CPIH wedge) of 0.813% based on the OBR forecasts for the year 2024.[24]

1.8 We note the OBR's most recent publication on 25th November 2020[25] does provide different forecasts for CPI and RPI for the longest horizon available (2025). However, as set out in the Sector-Specific Methodology Consultation (SSMC),[26] we will use the March 2020 publication for setting allowances for 2021/2022 and will use the March 2021 publication forecasts for setting

[21] https://www.ofgem.gov.uk/system/files/docs/2020/09/dd_response_sgn.zip "PwC The balance of risk in SGNs GD2 DD 4 Sept 2020Redacted.pdf"
[22] In accordance with what we said in SSMC, para 3.47, we are using forecasts from OBR's annual March publication..
[23] See CPI and RPI worksheets here: https://obr.uk/download/historical-official-forecasts-database/
[24] Derived using the Fisher equation: (1+2.85%) / (1+2.02%) - 1. We display three decimal places solely to allow stakeholders to derive the subsequent tables.
[25] "Economic and fiscal outlook, November 2020" published by OBR on 25th November 2020
[26] SSMC, para 3.47

2022/2023 allowances and so on. This is because the model must be finalised and published in November each year and as a result the forecasts published later in the year (usually November) do not afford the modelling process sufficient time to properly incorporate these forecasts. We typically therefore have a cut-off for macro-economic data inputs to the model of the end of October, ahead of the 30 November publication date.

2. Allowed return on debt

Section summary

The cost of debt allowance is a significant component of allowed returns and the cost to consumers of network services.

In this section, for the ET, GT and GD sectors, we summarise stakeholder responses on the debt allowance proposed in our Draft Determinations and set out our decision on what would provide networks with a reasonable allowance for their debt costs.

Introduction

2.1 In the SSMD, we decided to apply full indexation to the cost of debt allowance, which involves setting the cost of debt allowance each year according to updated data for a benchmark index.

2.2 We also stated that we intended to broadly match debt allowances with expected efficient debt costs for RIIO-2 through the calibration of the index.

Purpose and benefits

Purpose: To provide a reasonable allowance for debt costs that updates with changes in market conditions.

Benefits: Providing an allowance that references an appropriate index retains incentive properties for networks to minimise their debt costs, which over time feeds through into lower costs for consumers. Adjusting for market rate movements protects both consumers and networks from ex ante forecast error.

Final Determination

Cost of Debt Parameter	Final Determination	Draft Determination
Index selection	To index the cost of debt allowance with reference to the yield of the iBoxx Utilities 10yr+ index (ISIN reference DE0005996532).	Same as FD
Additional Costs of Borrowing	To add 0.25% to the index above for additional borrowing costs. This	DD proposed 0.17%.

	represents an increase from DD of 8bps.	
Calibrating the index- Trailing Average Period	To calculate the allowance using an extending 10 to 14-year trailing average.	Same as FD
Calibrating the index- Exceptional Cases	To use a RAV-weighted cost of debt allowance calculation for SHET. To provide an additional 6bps allowance for smaller companies that would be expected to issue less frequently, namely SGN Scotland, NGN and WWU.	Same as FD for SHET. Allowance for smaller companies represents a change from DD where we proposed no other adjustments for exceptional circumstances.
Deflation to CPIH	To deflate nominal 'all in' yields for each date of the trailing average to CPIH real yields using the 5-year OBR forecast for CPI available for each date, using the Fisher equation. The trailing average of the resulting real yields provides the CPIH real allowed return on debt.	Same as FD

Final Determination rationale and Draft Determination responses

2.3 We have summarised and responded to the main points made by network companies on cost of debt in Appendix 4 and have summarised and responded to relevant consultant reports in Appendix 3.

A summary of responses to FQ1 (approach to estimating debt costs and setting debt allowances)

2.4 Centrica and Citizens Advice were broadly supportive of our approach to estimating efficient debt costs and setting allowances using an iBoxx index calibrated to cover average debt costs. Centrica noted that a similar approach in GD&T1 allowed all but one GD&T network to at least cover their respective costs of debt, and that they considered an extending 10 to 14yr trailing average (but not longer) appropriate for RIIO-2. Citizens Advice thought debt performance should be included in the Return Adjustment Mechanisms (RAMs) (we discuss the RAM in Chapter 8 below).

2.5 The RIIO-2 Challenge Group was supportive of the approach but thought the inclusion of an allowance of 17bps for additional costs was overly generous.

2.6 The majority of network companies were supportive of a notional approach to setting debt allowances but a number of networks argued that the trailing average

should be longer, either based on the weighted average life of sector debt (e.g. 20yrs) or another longer trailing average (with suggestions ranging from 12-16yr, 15yr, 14-18yr). They also argued for higher allowances for additional costs of borrowing that are not captured in bond yields. The longer trailing averages and/or a higher allowance for additional costs suggested by the networks would provide a materially higher allowance overall than that proposed by us at Draft Determinations.

2.7 Some networks stated that a shorter trailing average than the average tenor of sector debt may encourage shorter dated issuance from networks which may not be in the interests of consumers.

2.8 WWU and ENWL disagree strongly with a benchmark or sector average approach to debt allowances and advocate company-specific allowances based on individual company actual costs.

A summary of responses to FQ2 (proposal to use iBoxx GBP Utilities 10yr+ index)

2.9 Centrica and Citizens Advice were supportive of our proposal to use the iBoxx GBP Utilities 10yr+ index rather than the broader corporate A and BBB indices, with Centrica noting various reasons why they consider it more representative for network company debt costs than the A and BBB indices.

2.10 The RIIO-2 Challenge Group had some concerns that the Utilities index did not have a specific rating requirement which, it said, makes it difficult to assess whether the target financial ratios in the financeability assessments are compatible with it. The Group also expressed concern over the requirement for an uplift for transaction and liquidity costs if this index is used.

2.11 The networks mainly expressed concerns that the average rating of the Utilities index may change over time, exposing them to risk that it no longer reflects the notional company rating. SGN and Northern Powergrid, while noting this potential risk, did not consider it material. SGN suggested monitoring for this risk.

A summary of responses to FQ3 (proposal to RAV weight the debt allowance for SHET)

2.12 Centrica, Citizens Advice and the RIIO-2 Challenge Group were supportive of our proposal to continue to RAV weight SHET's debt allowance due to their unusual RAV growth profile.

2.13 Many networks chose not to comment on this question but some recognised that if company-specific circumstances make it materially different to others (such as an unusual RAV profile), then it may warrant a company-specific approach.

2.14 SHET disagreed strongly with our proposal and argued that a company-specific approach such as this should only be applied if it was considered likely that the network wouldn't recover their expected costs under a standard mechanism. They argued that this was the test applied for RIIO-1.

2.15 In relation to other company-specific adjustments, WWU continued to advocate for a company-specific allowance based on individual licensee actual debt costs, checked for efficiency. SGN Scotland and NGN proposed a smaller company (or less frequent issuer) additional allowance of 6bps.

Index Selection rationale

2.16 Although a number of stakeholders expressed concern that the iBoxx GBP 10yr+ Utilities index average rating may diverge from the notional company assumed rating, we consider this risk to be lower (to both networks and consumers) than the risk of the A/BBB combined index diverging from the average borrowing costs of networks.

2.17 We consider broadly matching the average borrowing costs of networks by using an investment grade index that is expected to be more representative of network borrowing costs is more important than precisely matching a theoretical notional company rating (which itself involves some judgement).

2.18 We note evidence submitted that indicates the average rating of the constituents of the Utilities index has fallen over time and the suggestion that it would be prudent to monitor the average rating of the index over time. We will therefore monitor this information and reassess whether the iBoxx GBP Utilities 10yr+ index remains appropriate for RIIO-3.

Additional Costs of Borrowing rationale

2.19 NERA, on behalf of networks, submitted another report (in addition to a similar report submitted at the business plan stage) estimating additional costs of borrowing for GD&T networks at 53bps (down from 68bps estimated at the business plan stage). We have considered each point raised in that report in turn and provide detailed comments in Appendix 3.

2.20 Networks also provided additional evidence on a number of the same points, some of which agreed with NERA's analysis, and some of which estimated some of the costs as lower than NERA had estimated.

2.21 It should be noted that we only consider adding additional costs of borrowing to the index yields to be appropriate if the calibration of the index (including the trailing average period) accurately reflects the average expected yield costs of networks. In other words, the allowances we made for additional costs of borrowing are linked to the results of the calibration exercise. If the index calibration exercise had resulted in an allowance that was expected to overcompensate networks' debt yield costs, then we would have proposed adjusting the additional borrowing cost allowance downwards, potentially to zero.

2.22 Overall, we find the evidence submitted on new issue premium to be unreliable for the reasons set out in Appendix 3. Our own analysis continues to find a small positive halo (i.e. an outperformance of the index rather than an issuance premium) but we have decided not to deduct from the Utilities iBoxx yields for this as the amount was small and we consider it reasonable to be conservative and not to assume future outperformance of the Utilities 10yr+ index.

2.23 We do not consider that NERA's estimate of cost of carry is based on robust evidence, as there has been no actual data or examples submitted to support the broad assumptions made in their report. However, some additional evidence was submitted by NGET[27] and we consider it appropriate on the basis of that evidence to increase the allowance for cost of carry from 6bps to 10bps.

2.24 We do not agree with all of the points made about additional costs of CPI-linked debt, for the reasons set out in Appendix 3. However, we consider that networks may want to raise CPI or CPIH debt for the first time in RIIO-2 due to the change in RAV inflation to CPIH. This market is relatively nascent, so we consider it reasonable to provide an additional allowance for new CPI/CPIH debt. This would be applied to new debt only and has been calculated based on an assumption of 30bps additional cost of this form of debt (which has been informed by the lower end of ranges suggested in stakeholder evidence) multiplied by 30% index-linked

[27] NGET Finance annex response, page 29

debt (ILD) debt assumption multiplied by the average proportion of new debt over RIIO-2.[28]

2.25 We have also decided to provide an allowance for managing basis risk between RPI and CPI debt of 10-15bps.29 multiplied by 30% ILD debt assumption multiplied by the average proportion of embedded debt over RIIO-2.30.

2.26 We tested reasonable assumptions feeding into the assessed proportions of new and embedded debt and conclude that 5bps in total for CPIH new debt issuance premium and/or embedded debt basis mitigation is appropriate.

2.27 The CPIH/CPI debt allowance, in particular, will be reviewed at RIIO-3 to assess whether or not these additional costs were indeed incurred and whether it is appropriate to continue with this allowance. In particular, it may not be necessary if either the CPI/CPIH market develops further or the market adapts to the UK Statistics Authority proposal to reform the measure of RPI to make it equal to CPIH from 2030.[31]

Table 4: Additional Cost of Borrowing Determination

Additional Cost Element	DD Ofgem Estimate	FD Ofgem point estimate	Decision Basis
Transaction Costs	6bps	6bps	Based on NERA data but excludes one outlier.
Liquidity/RCF cost	3 - 5.5bps	4bps	Based on Regulatory Financial Performance Reporting (RFPR) and group account data about actual Revolving Credit Facility (RCF) holdings. Also supported by an assumption of 10% RCF.
Cost of carry	1.5 – 11bps	10bps	Based on RFPR and group accounts data on cash on balance sheet.[32]

[28] The assessed proportion of new debt can vary depending on totex scenario, whether SHET is included or excluded and the assessment methodology used (actual pooled information or conceptual). Our calculations range from 15% to 22% depending on the assumptions and methodology used.
[29] This estimate is based on swap charges for RPI-CPI swaps. It is not assumed notional or actual companies would enter into these swaps but is a reasonable way to estimate the cost of mitigating this risk.
[30] Assessed as 1 minus the percentage proportion of new debt
[31] We note the HMT/UK Statistics Authority publication on 25th November 2020, which suggested that "reform will not be implemented before 2030" but that the "Authority would be able to legally and practically implement its proposal to the RPI in February 2030".
[32] There is a wide range in our estimate for cost of carry because the underlying data represented a broad range of cash held on balance sheet across networks and network group companies. The low represents the median of just regulated network data (a median is less distorted by exceptional years), and high represents the mean of a mixture of regulated network data and group data, with a higher 75% weighting given to regulated network data as group data is often for group businesses managing not only regulated monopoly businesses but also more cyclical business with higher cashflow volatility. The range of cash on balance sheet divided by debt was then multiplied by the 5yr average difference between the iBoxx index and the 3m deposit rate.

Additional Cost Element	DD Ofgem Estimate	FD Ofgem point estimate	Decision Basis
			Adjusted to top end of range based on evidence submitted by network companies.
CPIH issuance/ basis mitigation allowance		5bps	Provision of an allowance to cover potential additional costs of CPI/CPIH new debt issuance and RPI/CPIH embedded debt basis mitigation.
Total	17bps	25bps	Point estimate revised in light of additional evidence.

Calibrating the index- trailing average period rationale

2.28 There are two main options for assessing the cost of debt and setting a notional company allowance for it – a bottom-up approach as we presented in DDs, and a conceptual approach which the CMA has recently adopted in its PR19 provisional findings.

2.29 While a conceptual approach, if appropriately adjusted and tailored to the industry, may have merit in some circumstances, we have decided to apply a bottom-up approach first and then to use a properly adjusted conceptual approach as a cross-check because we consider it the most appropriate to the industry and aligned with the evidence before us.

2.30 We have carefully considered the evidence submitted and are of the view that there are a number of reasons and factors which mean that it is not appropriate in this context to set a cost of debt allowance by applying a trailing average matching the weighted average maturity of the index or sector debt (so, in this case the 20yr trailing average proposed by some networks and recently suggested by the CMA for PR19 appellants). These include:

- Regulated companies' RAVs and therefore debt books have been growing over time, so a trailing average that is not calibrated or weighted appropriately would not be accurate
- Regulated companies have benefitted from a large amount of UK taxpayer subsidised European Investment Bank (EIB) loans (which have been provided below commercial market rates because it is a non profit maximising supranational that is funded by contributions from member countries, which until Brexit, included 16% subscribed capital from the UK)

- Companies can issue a mix of short term and ultra long term debt (a so-called 'barbell issuance strategy'), which with the generally prevailing yield curve shape in the UK could be expected to provide a lower combined yield than issuing only 15-20yr debt
- Companies can adjust the timing of issuance in response to market events
- Companies can and have issued some floating rate debt so applying a historical fixed rate to the entire debt book does not capture the fact that a proportion of debt is currently attracting much lower rates of interest
- GD&T networks received an allowance based on a 10yr trailing average in RIIO-1 so a 10-14 year trailing average both adequately provides for expected costs and logically progresses from the RIIO-1 allowance basis.

2.31 One of the benefits of setting the cost of debt on a notional basis (rather than on a pass-through basis) is the incentive properties for companies to raise the most cost effective finance, such that consumers could benefit from any achieved lower cost embedded finance in subsequent price controls. It would therefore be perverse not to consider actual embedded debt costs across the sectors when calibrating the index or setting an allowance for embedded debt. Therefore, we believe it is appropriate to consider actual average efficient debt costs when calibrating allowances.

2.32 We have updated our model for additional costs submitted that could be substantiated by evidence or Ofgem research (such as monoline fees submitted by two licensees).

2.33 We have also reviewed information submitted by a consultant on behalf of all GD&T networks, which suggests that their modelling of actual GD&T company debt costs closely matched our own modelling at DD stage, with the main area of difference being what is assumed for additional costs of borrowing, which is discussed above.

2.34 Our updated modelling based on iBoxx data to end of October and market implied rate forecasts from this point onwards indicates that a 10-14 year trailing average is expected to be sufficient for expected GD&T sector debt costs. We have also tested different rate and inflation environments and consider a 10-14 year trailing average remains an appropriate calibration.

2.35 As a proportion of GD&T company embedded debt is currently RPI linked, forecast nominal network debt costs are therefore sensitive to the forecast or assumed RPI

rate used and to outturn inflation. We have updated our embedded debt model for outturn RPI to October 2020 and note that embedded debt forecasts could be impacted by the latest OBR forecasts of RPI for future years.[33]

2.36 The OBR note that before the COVID-19 pandemic, underlying inflationary pressures appeared broadly consistent with meeting inflation targets in the medium term. However, during the pandemic, inflation has fallen sharply on the back of changes in consumer behaviour, lower oil prices and policies to reduce prices for catering and accommodation services. This has led the OBR to revise downwards their forecasts for RPI in the coming years, rising back to a long-term average of 3% in 2025.

2.37 If RPI does outturn lower than long-term averages (for example, in line with either the November 2020 OBR forecast or the RPI -1% scenario tested at DD[34]), our estimates suggest our 10-14yr trailing average would provide material headroom to actual average debt costs. This could lead us to question whether a shorter trailing average or a deduction from the resulting index yields might be appropriate.

2.38 However, as discussed in the DDs,[35] another approach to assessing nominal debt costs is to assume a long term RPI assumption in all years (rather than a forecast for each particular year). On this basis, our calibration would be expected to provide a lower level of headroom over expected average debt costs.

2.39 The results of our calibration testing are provided in Table 5, which shows the average performance of the 10-14yr +25bps calibration compared to forecast network debt costs. Positive numbers indicate that the allowance would be more than sufficient to cover expected costs, and negative numbers indicate a potential shortfall.

Table 5: FD debt allowance calibration compared to expected GD&T debt costs under different scenarios

Scenario/ Assumption	Net Zero 2 Totex	Ofgem FD Totex
March '20 OBR RPI Forecast	0.29%	0.26%
RPI +1%	0.03%	-0.02%
RPI -1%	0.53%	0.51%
Long Term RPI = 3%	0.26%	0.22%

[33] "Economic and fiscal outlook, November 2020" published by OBR on 25th November 2020
[34] DD Finance Annex, Figure 5 and Table 8
[35] DD Finance Annex, para 2.61

Scenario/ Assumption	Net Zero 2 Totex	Ofgem FD Totex
RPI 3%, Iboxx & LIBOR +1%	0.11%	0.10%
RPI 3% Iboxx & LIBOR -1%	0.40%	0.34%

2.40 We remain of the view that it is appropriate to exclude intercompany loans and derivatives from our calibration exercise for the reasons set out in the DD Finance Annex[36]. However, our modelling suggests that if both of these products were included in modelled expected costs for the GD&T companies, the 10-14yr trailing average plus 25bps would be expected to be sufficient to cover the combined expected GD&T company debt and derivatives costs. The results of this testing are shown in Table 6.

Table 6: FD debt allowance calibration compared to expected GD&T debt costs under different scenarios, including intercompany loans and derivatives

Scenario/ Assumption	Net Zero 2 Totex	Ofgem FD Totex
March '20 OBR RPI Forecast	0.24%	0.21%
RPI +1%	-0.10%	-0.15%
RPI -1%	0.55%	0.53%
Long Term RPI = 3%	0.19%	0.16%
RPI 3%, Iboxx & LIBOR +1%	0.07%	0.06%
RPI 3% Iboxx & LIBOR -1%	0.32%	0.25%

2.41 We consider our chosen calibration is robust to various macro-economic assumptions and different potential ways of assessing the sufficiency of the allowance.

2.42 We are not concerned that a shorter trailing average than the average tenor of debt encourages shorter dated issuance. The index we use has a longer average tenor (approximately 20yrs) that broadly matches the average tenor of GD&T company debt so it could be expected to reflect the costs of networks continuing to issue approximately 20yr debt. However, this assumption is based on an observation of current issuance behaviour rather than a judgement about what type or tenor of debt networks should issue.

[36] DD Finance Annex, paras 2.49- 2.56

2.43 We do not consider it our role to seek to influence treasury strategy or to judge whether 10, 15 or 20yr debt is more efficient. Our allowance reflects what networks have done on average and an assumption about future issuance based on current evidence. There is a licence obligation in place relating to rating and it is this that could be expected to protect consumers against imprudent or risky choices from networks. In any case, we do not necessarily consider 10-15yr debt to be particularly more risky than 15-30yr debt for regulated networks and it is up to networks to determine their own capital structure and treasury strategy.

2.44 We continue to believe our approach of seeking to broadly match the debt allowance to expected GD&T sector average efficient debt costs is appropriate and justified. We believe that adopting a conceptual benchmark approach without adjustment would fail to recognise lower costs of debt that has been available to network companies, from for example the European Investment Bank, and risks over-compensating them. However, we note the CMA's approach in their provisional findings for PR19 and their stated preference to focus on a conceptual benchmark approach, partly due to time constraints related to their re-determination[37]. The CMA's conceptual approach for PR19 is based on broadly matching a trailing average period for embedded debt to the weighted average life of debt in the water sector. We note that a number of network companies have advocated a conceptual approach on this basis.

2.45 Therefore, we have also looked at a more conceptual approach as a cross check to our bottom-up approach. However, in performing this cross check it is necessary for such a conceptual approach to be adjusted for three particularly material factors:

- RAV growth (and therefore debt RAV growth)
- Embedded EIB debt and its expected run off as it matures
- A proportion of debt being floating rate debt.

2.46 These factors are industry specific and help to explain why groups of companies in the energy sector exhibit quite different costs of embedded debt to water companies for example, despite all having relatively similar regulatory regimes.

2.47 We consider it reasonable (and necessary) to adjust a conceptual approach to assessing cost of debt for these factors because:

[37] As mentioned in CMA PR19 Provisional Findings, 9.432 (b)

- RAV growth is something that is not solely determined by management decisions - it is heavily influenced by regulatory decisions and regulatory requirements for investment. Therefore, we consider it reasonable to assume that the timing of notional efficient operator debt raising broadly follows RAV growth
- EIB debt is transacted at below commercial rates and has already been subsidised by UK taxpayers (who are also likely to be energy consumers). The majority of GD&T companies have accessed this form of funding[38]. Therefore, we consider it reasonable to assume the notional efficient operator would access this cheap funding source when available
- the vast majority of corporates (including actual licensees and/or their parent companies) include some floating rate in their funding mix and it's generally considered prudent to do so to enable some flexibility for capital structure changes to respond to changes in business operations or macro-economic environment. Therefore, given this market evidence, we consider it reasonable to assume a notional efficient operator holds some floating rate debt.

2.48 The assumptions we have used for the above three adjustments have been informed by market data.

2.49 We use data we have collected from network companies to model expected embedded EIB debt and its gradual maturity over time. EIB debt represents approximately 16%-18%[39] of the debt RAV across these sectors at the start of RIIO-2 but this falls to 9%-10%[40] by the end of RIIO-2 as this debt gradually matures.

2.50 Data submitted by networks suggests that 10-15% of debt in the GD&T companies is floating rate (depending on whether pre or post derivatives proportions are considered). It is important to recognise this in any conceptual approach cross check because the interest payable on floating rate debt can be materially different to that paid on fixed rate debt assumed to be contracted some years ago. Currently floating rate debt is attracting interest at much lower rates than a trailing average of iBoxx index fixed rate bond yields would assume, but if rates had risen over time the opposite would be true.

[38] RFPR data submitted by networks provides us with this information. Some details of financed projects are also available on EIB website: https://www.eib.org/en/projects
[39] Depending on whether SHET is included in the analysis pool or not
[40] Depending on Totex scenario used

2.51 For simplicity, we assume that floating rate debt would attract interest equivalent to the 'spot' iBoxx index level for each year. An alternative would be to employ a floating rate index similar to that developed for the ESO for 10-15% of the GD&T networks' debt RAV but as this has been used as a cross-check rather than for setting the allowance, it is appropriate to use as a simplified assumption. We note that it would be a fairly standard treasury strategy to maintain a proportion of floating rate debt and that National Grid group, for example, maintain 10% floating rate debt and comment that they are "maintaining a balanced and diversified portfolio of interest rate exposures"[41].

2.52 This conceptual approach cross-check adjusts for RAV growth by assuming that 1/20th of debt RAV from 20 years ago is refinanced each year (in line with the companies' submissions that point to approximately 20yr weighted average life of debt) and that annual RAV growth is funded 60% by debt each year. This naturally weights more recent years more heavily than historical years because more debt has been raised in more recent years as RAV has grown.

2.53 The results of this conceptual approach are that if RAV growth is based on the Ofgem FD totex the debt allowance forecast would be 1.84%-1.91% on average over RIIO-2 for 15%-10% floating rate debt assumptions. If RAV growth is based on the Net Zero 2 totex scenario the allowance would be 1.77%-1.84% for 15%-10% floating rate debt assumptions. These results are therefore very close to our preferred approach of a 10-14yr trailing average +25bps (which results in a forecast RIIO-2 average allowance of 1.82%), so this cross check provides comfort that an appropriately structured conceptual approach would not result in materially different allowances to our more detailed bottom-up approach.

2.54 By contrast, an unadjusted 20 year trailing average would be expected to yield 2.40% on average, before any additional cost of borrowing allowance. This would be expected to systematically and materially over-compensate GD&T companies for their average debt costs. In our view, this would not be in line with our principle that consumers should not pay more than an efficient cost of debt.

2.55 We consider it appropriate to continue with our suggested bottom-up approach to calibrating the index on an ex ante basis because:

- we have carefully considered actual debt costs in detail

[41] https://investors.nationalgrid.com/~/media/Files/N/National-Grid-IR-V2/factsheets/2020/national-grid-debt.pdf

- we consider it is more accurate than alternative approaches
- it provides a logical transition from RIIO-1 allowances
- a detailed bottom-up approach carries significantly lower risk of under or overcompensating networks for debt costs.

2.56 A simple trailing average based on a detailed calibration exercise also has the benefit of greater simplicity in the annual iteration process than a split index mechanism based on a conceptual approach would.]

2.57 Our further work and cross checks provide us with confidence that a 10-14yr trailing average of the iBoxx £ Utilities 10yr+ index plus the additional cost of borrowing discussed above will provide an adequate allowance for expected GD&T networks' debt costs as a group.

Calibrating the index- exceptional company circumstances rationale

2.58 In the SSMD, we stated that "in line with RIIO-1, we may consider adjusted indexation mechanisms (such as that used for SHET in RIIO-1) for unusual company-specific circumstances, if appropriate and justified".[42]

2.59 We do not agree with SHET that a company-specific approach such as this should only be applied if it was considered likely that the network wouldn't recover their expected costs under a standard mechanism. This would make any company-specific approach a one-way option for networks at the expense of consumers rather than applying the most appropriate mechanism for the circumstances. We were clear at the SSMD stage (as mentioned above) that adjusted indexation mechanisms may be considered, if appropriate and justified, so we consider that we set out the relevant test (that it could be applied if appropriate and justified) at the SSMD stage.

2.60 We continue to assess SHET's RAV growth profile over the RIIO-1 and RIIO-2 period as materially different to other networks, justifying a RAV-weighted approach to their debt allowance.

2.61 SGN Scotland and NGN submitted additional evidence regarding the potential risk that smaller networks face as their borrowing amounts are significantly less then benchmark size issuance each year. This included suggesting that some of the

[42] SSMD, paragraph 2.24

mitigation techniques that may have been available in the past (e.g. smaller size borrowing from EIB and private placements) may not be as available in RIIO-2.

2.62 SGN Scotland and NGN provided estimates of these costs on two different bases but suggested the same additional allowance of 6bps. We consider this estimate is reasonable and have decided to err on the conservative side in allowing this additional provision for notional licensees expected to issue smaller size or less frequently than other networks due to their lower RAV size and RAV growth for RIIO-2. We define less frequently issuing notional networks as those that are expected to issue less than £150m per annum on average, namely SGN Scotland, NGN and WWU. This 'cut off' amount is lower than the typical £250m benchmark size because it is possible to issue £250m face value (qualifying for the index) but retain some bonds for sale at a later date (this technique is relatively common in the social housing sector where there are a number of smaller issuers). However, this listing technique is generally considered to be limited to retaining £100m for sale at a later date.

2.63 We will review at RIIO-3 whether a smaller size/less frequent issuer additional allowance remains appropriate in light of market developments, RAV growth and/or additional evidence at the time.

2.64 Consistent with the discussion in paragraph 2.47, we consider these adjustments for RAV profile differences are appropriate for notional company allowances because RAV is not solely determined by management decisions and is heavily influenced by regulatory decisions and regulatory requirements for investment. This distinguishes these notional company adjustments from other requests for actual company-specific adjustments (for example, from WWU for actual company debt costs), which are to a much greater extent driven by management or shareholder decisions on capital structure, M&A activity, dividend policies, and type and timing of debt.

2.65 As previously stated, we consider it important that the incentive properties of a notional allowance are retained. Making adjustments for actual company decisions would not retain the incentive properties of a notional allowance. By contrast, making adjustments based on RAV does not dilute incentives to issue efficiently and prudently.

3. Allowed return on equity

The determination of the allowed return on equity is a significant component of allowed returns and the cost to consumers of network services.

In this section, we focus on the ET, GT and GD sectors[43], summarising stakeholder responses to our Draft Determinations regarding the proposed allowed return on equity. We set out our decision on what would provide networks with a reasonable baseline allowed return on equity.

Purpose and benefits

Purpose: Returns to equity investors remunerate their investment in network services and comprise a baseline allowance plus performance incentives.

Benefits: Accurate remuneration for equity investors will secure network investment during RIIO-2 and help keep consumer charges in line with efficient costs.

Final Determination (60% notional gearing, CPIH-real)[44]

Equity steps and parameters		Final Determination	Draft Determination
Step 1 – The Capital Asset Pricing Model evidence	Risk-free rate forecast	-1.58%	-1.48%
	Total Market Returns	6.5%	6.5%
	Debt beta[45]	0.075	0.125
	Asset beta	0.349	0.365
	Unlevered beta	0.311	0.3025
	Notional equity beta	0.759	0.725
	CAPM implied cost of equity	4.55%	4.3%
Step 2 – cross-checks and assessed cost of equity		Suggests a mid-point of 4.4%. However, we have assessed the cost of equity at 4.55%.[46]	DD cross-checks reduced cost of equity by 10bps from CAPM implied mid-point to 4.20%.
Step 3 – baseline allowed return on equity		Baseline allowed return of 4.30%, reflecting 0.25% expected outperformance. Ex post adjustment mechanism on licensee rather than average basis.	Baseline allowed return of 3.95%. Ex post mechanism to protect investors, on average, if expected outperformance of 0.25% does not materialise.

[43] See the ESO document for ESO-specific equity issues.
[44] For simplicity, we summarise our decisions here using mid-point values for reference. The remainder of the chapter sets out further detail on each parameter, in both policy and decision terms, and includes the ranges that we considered for each parameter.
[45] See paragraph 3.63 for further detail.
[46] See paragraph 3.99 for further detail.

Step 1 - The Capital Asset Pricing Model evidence

Risk-free rate and equity indexation

3.1 At DDs, we sought views from stakeholders on the model for implementing equity indexation. The following sections provide:

- a summary of consultation responses on the published model.[47]
- our final determinations on the Risk-Free Rate (RFR) including updated estimates for the RIIO-2 period
- supporting rationale for these final determinations on the RFR.

A summary of responses to FQ4 (the model to implement equity indexation)

3.2 In general, licensees did not consider there were spreadsheet errors in the WACC allowance model. However, licensees proposed that the calculation method should change, for example to use a longer averaging period and/or an alternative definition of risk-free. Licensees suggested that the alternative definition would result in a higher value and referred to work undertaken by Oxera which suggested the RFR should be approximately 75bps higher than Index Linked Gilts (ILGs). We address Oxera's work at Appendix 2 below see Consultancy Report 6.

3.3 NGET and NGGT did not comment directly on the WACC allowance spreadsheet model, noting instead that "we can see merit in the indexation of the risk-free rate but the methodology needs to be consistent with a wider robust process for setting cost of equity". SPEN disagreed with a one-month averaging period, suggesting a longer averaging period "in order to smooth out spot market volatility over RIIO-2." SPEN suggested that 20-year nominal UK gilts should be deflated by expected CPIH inflation, rather than Ofgem's proposal to add a wedge to ILGs.

3.4 Cadent supports equity indexation and agrees that the benefits should outweigh the drawbacks, noting its review of the model did not result in any immediate concerns other than the definition of risk-free. SGN suggests a 12-month averaging period would provide a more stable estimate and that European

[47] We refer to the file "Draft Determinations - WACC Allowance Model.xlsx" as published at DDs. See here: https://www.ofgem.gov.uk/system/files/docs/2020/07/draft_determinations_-_technical_annexes_part_one.zip

regulatory precedents support the use of an averaging period of at least six months. NGN state:

> "[w]e do not have a strong view on the use of October average rates (rather than annual average rates) to derive the forecast real Cost of Equity. There are certain benefits in using longer averages… however, it is also true that a one-month average would better capture the latest market conditions."

3.5 Citizens Advice fully support the proposed approach. The RIIO-2 Challenge Group did not disagree in principle but noted that equity indexation reduces risk for the relevant companies. Centrica did not raise concerns in principle but did suggest that a one-month average would impact forecasting abilities.

Final Determination: RFR

3.6 Table 7 below provides an update on latest ILGs which we use for the purposes of this Final Determination, as estimated in an updated version of the WACC allowance model.

Table 7: RFR calculation based on ILGs and the forward curve, 20yr tenor, as of October 2020

Component	2022	2023	2024	2025	2026	Average	Ref	Source
ILG (RPI, spot)	-2.53%	-2.53%	-2.53%	-2.53%	-2.53%	-2.53%	A	Bank of England
Uplift (RPI)	0.02%	0.08%	0.15%	0.23%	0.31%	0.16%	B	Bank of England
ILG (RPI, forward)	-2.51%	-2.45%	-2.38%	-2.30%	-2.22%	-2.37%	C	C = A+B
ILG (CPIH, spot)	-1.74%	-1.74%	-1.74%	-1.74%	-1.74%	-1.74%	D[48]	D = (1+A) * (1+0.8127%)-1
Uplift (CPIH)	0.02%	0.08%	0.15%	0.23%	0.31%	0.16%	E	E = F - D
ILG (CPIH, forward)	-1.71%	-1.66%	-1.58%	-1.51%	-1.43%	-1.58%	F	F = (1+C) * (1+0.8127%)-1

Source: Ofgem analysis of Bank of England data

[48] The value 0.8127% is derived above in paragraph 1.7 above.

Rationale for our decision on the RFR

Rationale for modelling approach and averaging period

3.7 Stakeholders did not raise spreadsheet issues with the published model but did suggest a new estimation approach for the RFR. We set out below why we continue to favour our proposed definition of RFR – based on observable Index-Linked Gilts ("ILGs").

3.8 Licensees did not appear to unanimously favour one averaging period over another. We agree with NGN, in terms of the trade-off between averaging periods. A short averaging period will use the most up to date information on the risk-free rate and will allow changes to feed through more quickly. A longer averaging period, in contrast, would be more stable. On balance we prefer a short (1-month) averaging period to ensure the mechanism is more responsive to current market conditions.

CMA precedent on RFR: PR19 Provisional Findings

3.9 In September 2020, the CMA published its PR19 provisional findings ("CMA's PR19 PFs"), stating that:

> "[i]t is our assessment that ILGs closely but imperfectly match the key requirements of the RFR [risk-free rate] within the CAPM model."[49]

3.10 The quoted text suggests that the use of ILGs is an acceptable basis upon which to estimate the RFR. In other words, using ILGs is not necessarily wrong, in the CMA's view.

3.11 The CMA noted arguments by Oxera as to why the ILG might have a so-called 'convenience yield', which will be unobservable, and so argues that the government can borrow at rates substantially lower than "even higher-rated non-government market participants".[50] Following Oxera, the CMA suggest that an index of AAA-rated corporate bonds is an alternative measure of the RFR. The CMA also relate this to the Modigliani and Miller model.[51] We received similar

[49] CMA's PR19 PFs. Para 9.135 https://www.gov.uk/cma-cases/ofwat-price-determinations#provisional-findings and https://assets.publishing.service.gov.uk/media/5f7c467ee90e070dde709cee/Water_provisional_determinations_report_all_-_September_2020_---_web_-online-2.pdf#page=535
[50] CMA PR19 PFs. Para 9.135
[51] CM PR19 PFs. Para 9.135

submissions in a paper by Oxera[52] and by the ENA during the RIIO-2 consultations, which were also submitted by the ENA to the CMA.[53] We addressed some of these issues in DDs[54] and provide further consideration within Appendix 2 below (see Consultancy Reports 2 & 6).

Rationale for our final view: to use Index Linked Gilts (ILGs) to estimate RFR

3.12 We recognise that government bonds are very low risk. We therefore re-considered which government bonds would best allow us to estimate the RFR, given the choice between using nominal gilts or ILGs. We recognise that, in either case, adjustments are needed to derive CPIH-real values. On balance, we favour adjusting ILGs, as proposed in DDs, rather than adjusting nominal gilts. In our view, the latter approach would require greater discretion, for example on the value of the inflation risk premium, which, under the former approach, is largely unnecessary. We consider that an approach which is less discretionary and more reproduceable is in the interests of all stakeholders.

3.13 We also recognise that AAA-rated corporate bonds are low risk, in line with CMA's PR19 PFs.[55] However, the overwhelming weight of academic theory and of suggested practice, regarding RFR estimation, supports the use of ILGs.[56]

3.14 In response to the CMA, Ofwat submitted a report by Stephen Wright and Robin Mason, two of the original authors of the UKRN Cost of Capital study.[57] Wright and Mason argue that the important investor is the marginal investor and that investors in the appellant water companies are predominantly net lenders.[58] Therefore, the return of the zero-beta asset lies very close to the ILG yield.

3.15 We agree with Wright and Mason that it is not appropriate to distinguish between lending and borrowing rates for CAPM without also considering whether marginal investors in regulated utility companies are net lenders or net borrowers. We define institutional investors as pension funds, sovereign wealth funds, life insurance funds and endowments. They may invest directly or via funds, such as

[52] See Appendix 2 below (Consultancy Reports 2 and 6) for further information on Oxera's work.
[53] ENA letter to CMA. Oxera Are Sovereign Rates the Risk-free Yield for the CAPM? 20 May 2020.
[54] See Consultancy report 6 RIIO-2 Draft Determinations for G/T2 Finance Annex p 197.
[55] See paragraph 9.137 here: https://assets.publishing.service.gov.uk/media/5f72f3d2e90e0740cf4eb0a9/Water_provisional_determinations_report_all_-_September_2020_---_web_-.pdf#page=535
[56] See for example: Armitage, S. **The Cost of Capital Intermediate Theory**. Cambridge UP. 2005. Ch 13.1 p. 278. Koller, T. Goedhart, M. Wessels, D. **Valuation Measuring and Managing the Value of Companies**. John Wiley & Sons. 2010. pp. 236-238. Brealey, R. Myers, S. **Principles of Corporate Finance**. 7th Ed. 2003. McGraw-Hill. pp. 192-194. Damodaran, A. Valuation. 2nd Edition. Ch7 pp. 1-2.
[57] Wright, S. Mason, R. Comments prepared for Ofwat on the CMA's Provisional Findings. 26 October 2020.
[58] Ibid, para 3.9 p7.

infrastructure funds, which are managed by third party asset managers. We believe that, by their nature, institutional investors are overall net long investors – providers of capital. They can take short positions against particular quoted companies, but it would be difficult to do so for equity stakes in private companies. Our analysis of the investors in energy network companies shows several large institutional investors in the quoted parent companies. We are also able to identify several leading infrastructure investment funds as final owners of the privately held licensees. These funds invest money on behalf of large pension funds and other institutional investors. For example, OMERS Infrastructure holds a 25% share of SGN.[59] OMERS Infrastructure is the infrastructure investment subsidiary of OMERS, the defined benefit pension fund for Ontario municipal government employees.[60] Such investors are inherently lenders of either debt or equity capital to companies. We therefore consider that the marginal investor is effectively a lender for whom the ILG rate is the most appropriate risk-free rate.

3.16 We also consider that using nominal corporate bonds, as per the CMA's PR19 PFs, risks introducing errors.[61] For example, nominal bonds will have an inflation risk premium embedded in their yield, leading to a higher yield than an equivalent ILG would have.

3.17 However, given suggestions from the CMA and other stakeholders that it may be appropriate to look for other measures of RFR, we have looked for other measures as a cross check to the use of ILGs. SONIA is the Bank of England's preferred measure of RFR.[62] A 20-year SONIA swap rate would provide a maturity equivalent rate to those being considered by the CMA in the PR19 appeals.

3.18 Table 8 compares three estimates of RFR in CPIH-real terms, based on: the 20-year ILG; the SONIA 20-year swap rate; and the 20-year Nominal Gilt. For comparability, we inflate the 20-year ILG by 0.813% (the 5-year OBR forecast

[59] https://www.sgn.co.uk/sites/default/files/media-entities/documents/2020-07/SGNAnnualReport_2020.pdf p. 35 . Ontario Teachers Pension Plan is also a 25% holder.
[60] https://www.omersinfrastructure.com/Approach
[61] We refer here to CMA's approach to deflate nominal corporate bonds (see paragraph 9.140). We also note CMA's PR19 PFs do not adjust nominal government bonds, given CMA's concerns that " we [CMA] cannot exactly know the inflation assumptions used or liquidity premium required by market participants when pricing the two instruments." (see paragraph 9.109)
[62] Sterling Overnight Index Average. See https://www.bankofengland.co.uk/markets/sonia-benchmark for further info. https://www.bankofengland.co.uk/markets/transition-to-sterling-risk-free-rates-from-libor. https://www.fsb.org/wp-content/uploads/r_140722.pdf p. 9 specifically mentions use of SONIA & LIBOR in CAPM.

wedge between CPI/H and RPI) and deflate nominal rates to CPIH real by the 2.023% OBR forecast.

3.19 We see that the 20-year ILG and the SONIA rate are comparable. The higher value of -1.2% as derived from nominal gilts can be partly explained by the embedded inflation risk premium, and therefore a reasonable downward adjustment for this would bring it more in line with the other two values of -1.71% and -1.65%.

Table 8: RFR estimates (October 2020)

Source	Nominal Yield	RPI Real	CPIH real
20-Year ILG		-2.51%	-1.71%
20-Year SONIA swap	0.34%		-1.65%
20-Year nominal gilt	0.80%		-1.20%

Source: Bloomberg and Ofgem estimates.

3.20 After considering licensee responses to our DDs and the CMA's PR19 PFs, both of which suggest that the use of ILGs could lead to an underestimation of the RFR, we have decided to proceed with our DD approach for three primary reasons. First, our cross-checks for RFR estimation, using nominal gilts or SONIA swaps, suggest multiple methods can arrive at a similar value. Second, academic evidence, including from Wright and Mason, supports our proposed approach to use ILGs as the closest proxy to RFR. Third, our approach to update allowed returns for changes in ILGs will capture future changes in rates, and therefore should reduce the risk that the allowances would necessarily underestimate RFR – to the extent that ILG are, currently, underestimates of the RFR, it is more difficult to suggest this would remain the case for all future periods.

3.21 One significant difference between RIIO-2 DDs and Ofwat's PR19 FD is that Ofwat decided to fix the RFR estimate for a five-year period. In contrast, we proposed that allowances during RIIO-2 would be updated to reflect outturn ILGs, capturing changes that had not been anticipated, therefore reducing uncertainty and the need to 'aim up'.

3.22 Separately, with regards to our proposal to retain some scope/discretion during RIIO-2 to refine the calculation of CPIH-real, we have decided not to do so. We sought views from stakeholders on whether we should retain flexibility during RIIO-2 regarding the estimation of CPIH RFR, to reflect, for example, HM Treasury

consultations on the definition of ILGs.[63] In response, stakeholders did not indicate a strong preference for this flexibility. Some stakeholders, for example suppliers, indicated concerns with predictability of charges generally, which a discretionary approach to equity indexation would exacerbate. Therefore, we have decided to implement our proposed approach using ILGs without modification during RIIO-2.

3.23 We agree with the CMA that "ILGs closely but imperfectly match the key requirements of the RFR within the CAPM model" – we therefore believe it is a reasonable basis for RIIO-2.[64] Having considered the alternatives, we could not confirm a necessarily better estimation method. Relying on ILGs alone is simpler, more principled, and supported by greater precedent, than other methods or combinations of methods.

Beta

3.24 At DDs, we sought views from stakeholders on systematic risk and set out our views on debt beta, asset beta and equity beta. The following sections provide:

- a summary of consultation responses on systematic risk
- our final determinations on betas
- supporting rationale for these final determinations.

3.25 Licensees refer to advice from Oxera on the cost of equity for RIIO-2, which we address in Appendix 2 (Consultancy Report 2). Oxera's report suggests the largest difference between its view and DDs relates to beta issues, accounting for 1.54% of the total 2.36% difference between low-end CAPM values.[65]

A summary of responses to FQ5 (similar systematic risk for energy and water networks in GB)

3.26 Licensees generally disagree that energy networks will hold similar systematic risk during RIIO-2 as water networks would hold during PR19. We note that some licensees appear to disagree more strongly than others. For example, NGET, NGGT and SGN strongly argue that risk is higher for energy networks. By contrast,

[63] See DDs Finance Annex paragraph 3.8.
[64] CMA's PR19 PFs. paragraph 9.135.
[65] https://www.northerngasnetworks.co.uk/wp-content/uploads/2020/09/CoE-Oxera.pdf#page=63

Cadent and SPEN identify areas of similarity between the sectors, whilst suggesting the overall level of risk is higher in energy.

3.27 Citizens Advice, Centrica and the RIIO-2 Challenge Group suggest that there are many areas of similarity, with overall levels of systematic risk similar or lower in energy than water.

3.28 SPEN suggest that the comparison between energy networks and water companies is generally acceptable in many areas within economic regulation (e.g. debt assessment, incentive package and cost benchmarking approach). Although water networks are utilities and subject to a similar regulatory regime, SPEN suggest that water networks ultimately face a different set of business risks than energy networks. SPEN disagree that water networks can be used as primary evidence when measuring beta risk for GB energy networks. SPEN refer to NERA's comparative risk analysis which claims that the fundamental risk of energy networks is greater than that faced by water networks, due to:

- the government's decarbonisation agenda
- system operability risk
- investment programme complexity, given project sizes, number of projects and interlinkages
- competition models such CPM, SPV and CATO which SPEN refer to as 'fake competition'.

3.29 SHET argue that beta estimates for National Grid have been above pure-play water companies and that this illustrates that electricity networks are observably higher risk than water companies. After a qualitative comparison between energy networks and water networks, including a comparison of RoRE ranges and indexation mechanisms, SHET saw no reason why energy networks are lower or similar risk to water.[66] NPg suggest that Ofgem improperly excludes SSE from its consideration of beta despite Ofgem's own evidence that SSE makes a greater percentage of its profits from UK energy networks businesses than NG.

3.30 Cadent's response states:

> "We recognise the similarities in risks that investors in UK regulated utility networks bear within the confines of a regulatory period. Gas distribution, transmission, electricity distribution and water and

[66] See for example SHET's main response document Table 5.9

sewerage companies are all nowadays regulated under a broadly similar regulatory framework in which:

- companies have fixed revenue caps
- investors take a share of costs risks for a period of five years at a time
- RAVs roll forward seamlessly from one control period to the next.

There are some differences in the design of the specific regulatory mechanisms that apply in individual industries, but we do not consider these differences to be material enough to make five-year returns in any one of the sectors any more or any less risky than returns in any other sector."[67]

3.31 Cadent also argue that "the most material factor that currently distinguishes the regulated networks is the risk that investors currently perceive to long-term revenue recovery in the gas industry." Cadent then argue that gas distribution differs from other sectors, because "[i]n the electricity and water sectors, there is no real question that networks have a long-term, captive market of household and non-household consumers."[68]

3.32 SGN compare the sources of systematic risk between gas and water as follows:

- Longer-term network use (gas higher risk than water)
- Regulatory regime (gas higher risk than water)
- Operational gearing (gas lower risk than water)
- Scale of capital investment (gas similar risk with water)
- Complexity of capital investment (gas higher risk than water)

3.33 SGN, NGN and WWU argue that the uncertain future for gas may contribute to higher risk, compared to water and/or electricity networks.

3.34 The GDNs presented investor survey research on the question of stranded asset risk. The surveyed investors considered energy networks to have higher risk than water, although we note that these remarks were primarily from equity investors (11 investors) and that 10 out of 13 investors were already investors in UK energy networks.[69] Investors felt unable to quantify the perceived risk in terms of

[67] Cadent response, "… Regulatory Finance Questions.pdf", page 11
[68] Ibid
[69] Investor Views of Risk for Gas Distribution Networks. Energy Networks Association. September 2020. p.5. Document will be published on Ofgem website in the technical annex to the FDs.

required return.[70] Debt investors (2) appeared more neutral, believing the two sectors to be of similar levels of risk.[71]

3.35 Citizens Advice consider that energy networks and water networks hold similar levels of systematic risk. Centrica suggest that the water sector may be slightly riskier than the energy sector from the investor perspective, while noting its belief that the water sector is an appropriate benchmark for the energy sector.

3.36 The RIIO-2 Challenge Group consider that systematic risk faced by the energy and water companies is similar, but, on balance, probably lower for the energy companies due to lower regulatory risk. In support of this, the RIIO-2 Challenge Group considers that the principal risk faced by both water and energy companies is the risk of low regulatory returns, and that the arrangements proposed in the DDs are such that for RIIO-2, they are lower for the energy companies.

A summary of responses to FQ6a (systematic risk difference between RIIO-1 and RIIO-2)

3.37 Network companies argue that risks have increased between RIIO-1 and RIIO-2, although the source of the change is explained in different ways.

3.38 NGET and NGGT suggest the increase can be linked to two factors: increased uncertainty in the quantum of totex and delivery model; and reduced confidence in the predictability and stability of energy regulation. NGET and NGGT argue that risk reduction mechanisms, (eg the introduction of RAMs, ODI caps, and indexation of equity and RPEs), will only have a narrow and limited effect on risk.

3.39 SHET note that its risk profile has reduced since RIIO-1 due to the size of its RAV which will exhibit lower growth. However, overall, SHET argue that RIIO-2 is higher risk than RIIO-1 due to: cash flow volatility; ex post adjustments; heightened regulatory risk and framework design; asymmetric incentive framework; extreme efficiency challenges; and, "changes to the revenue management over RIIO-2". SHET consider that reopeners, given the extent and the number of these, introduce a series of regulatory risks that heightens uncertainty.

[70] Ibid, p. 11.
[71] Ibid, p. 10.

3.40 SPEN suggest a risk increase is evidenced in Rating Agency comments, referring to Moody's comments on expected outperformance, National Grid's negative outlook, and the reduced scope for financial outperformance. SPEN also suggest there is asymmetry in ODIs and increased risk from ex-post Price Control Deliverables (PCDs).

3.41 Cadent argue that a narrowing of the RoRE range itself is not particularly informative of whether systematic risk has changed, or in what direction. Cadent also argue that skewness of returns would need to be considered. SGN argue that GD2 introduces asymmetric downside risk, which exposes companies to greater levels of systematic risk, and that asset betas have increased by 0.07 percentage points. WWU argue that weaker incentive sharing does not have a significant impact on asset risk. The ESO refers to advice from KPMG, which suggests that a lower cost exposure for investors could increase systematic risk exposure, rather than reduce it.

3.42 NGN suggest that RIIO-1 might be characterised as having more macro risk but, owing to the fixed nature of the regime, lower levels of regulatory risk. NGN argue that RIIO-2 is based on a plethora of true-up mechanisms and ex-post reappraisals, which will see a substantial increase in regulatory/political risk. In NGN's view, any reduction in systematic risk arising from the extensive use of PCD/UMs will not offset this increase in regulatory risk.

3.43 Citizens Advice consider that systematic risk is significantly lower during RIIO-2, due to narrower RoRE ranges. Citizens Advice suggest that systematic risk lies mostly with consumers (not investors) and that revenues/costs do not vary materially with wider economic cycles.

3.44 The RIIO-2 Challenge Group considers that systematic risk will be lower during RIIO-2, referring to uncertainty mechanisms for a high proportion of totex and indexing of equity returns.

A summary of responses to FQ6b (systematic risk difference between distribution and transmission networks)

3.45 Network companies had different views, on both the levels of, and drivers of, risk difference between the sectors.

3.46 NGET and NGGT consider that "there has long been an acceptance and recognition that transmission is higher risk than distribution" which, they argue, is one of the reasons why Ofgem set lower notional gearing and higher notional equity beta for transmission networks in RIIO-1. NGET and NGGT refer to the following arguments in support of this:

- The lack of clear and direct benchmarks for transmission results in much greater regulatory risk
- Complexity and uncertainty around:
  - capex spend, which is more one-off and bespoke than opex or most of the expenditure by distribution companies
  - projects within the capex programme, including the concentration of large and discrete projects.
- Stranding risks for gas transmission and in electricity transmission, and the range of future uncertainty under different net zero scenarios.

3.47 SPEN argue that compared to other networks:

- transmission networks face greater competition risks
- transmission networks face higher relative investment complexity
- SPT has higher capex/RAV ratios than the GDNs
- TOs are exposed to material uncertainty regarding their future role given the decarbonisation agenda of the UK and Scottish governments.

3.48 SHET considers that on a qualitative basis electricity transmission has significantly higher risk in relation to capital investment and network reliability compared to gas distribution.

3.49 Cadent consider "the regulatory approach is very similar and… [we] see relative risk differences being principally around government policy resulting in technology changes which may impact distribution and transmission networks in a similar way."

3.50 SGN argue that distribution is higher risk than transmission because:

- Distribution has higher operational gearing than transmission
- Transmission companies benefit from greater uncertainty mechanisms, which reduce their exposure to systematic risk

- Based on DD proposals, gas distribution has a higher TIM incentive rate of 50% compared to 36% for gas and electricity transmission.

3.51 WWU argued that for RIIO-1 Ofgem considered the scale of investment as the most significant differentiator of risk affecting both asset beta and the appropriate level of notional gearing. NGN consider that the risk around future demand is particularly acute for gas networks.

3.52 The RIIO-2 Challenge Group believes that systematic risk is probably not materially different.

A summary of responses to FQ6c (systematic risk difference between gas transmission and electricity transmission)

3.53 NGET and NGGT believe the complexity of capex is greater in electricity transmission than gas transmission. SGN consider that, across its risk measures, gas transmission has higher long-term asset use risk but benefits from more Uncertainty Mechanisms.

3.54 The RIIO-2 Challenge Group believes that systematic risk is probably not materially different.

A summary of responses to FQ6d (systematic risk difference between gas and electricity)

3.55 NGET and NGGT argue that on balance electricity is higher risk than gas.

3.56 SGN consider that the energy transported is a more important driver of risk than the stage of the value chain. SGN argue that gas has higher long-term asset use risk, higher operational gearing, lower potential use of Uncertainty Mechanisms and higher TIM incentive rates.

3.57 The GDNs presented information that investors perceived higher risk for gas networks than electricity networks due to the possibilities of gas asset stranding arising from net zero. Of the surveyed investors, equity investors were most concerned about this risk of stranding, however debt investors and credit rating agencies were less concerned.

3.58 Citizens Advice, Centrica and the RIIO-2 Challenge Group did not provide detailed evidence in response to this question.

Our consideration of consultation responses

3.59 We note divergent opinions/interpretations amongst respondents regarding the systematic risk difference between the water and energy sectors. For example:

- Cadent,[72] SHET[73] and SPEN[74] identify similarities/comparability between the energy and water networks, whereas other network companies did not appear to identify many similarities
- SHET and the RIIO-2 Challenge Group appear to have different views on whether smaller RoRE ranges necessarily indicated lower risk for the energy sector compared to the water sector
- The RIIO-2 Challenge Group suggest the principal risk faced by both the water and energy sectors relates to regulatory judgements on allowed returns, and that DD proposals indicate that these are lower for the energy companies (ie RoRE ranges). In contrast, network companies emphasise asset risks, such as the future of gas, and political risk as reflected in government policy.

3.60 We note divergent opinions/interpretations regarding the systematic risk difference between RIIO-1 and RIIO-2. For example:

- SHET and NGET appear to have different views on whether policy changes for RIIO-2 necessarily indicate lower or higher risk. NGET suggest that RPE and indexation mechanisms would have a limited effect in reducing risk, whereas SHET argued that those mechanisms introduce more cash flow risk compared to the water sector
- Citizen's Advice consider that a lower RoRE range indicates lower risk, whereas Cadent consider the range itself is not particularly informative
- NGN and SHET appear to disagree with the RIIO-2 Challenge Group in terms of whether greater use of Uncertainty Mechanisms indicates lower risk
- SPEN and SHET argue that RIIO-2 is asymmetric. This view may reflect, at least partially, an interpretation of the Energy Not Supplied (ENS) ODI. However, the impact presented in DD RoRE charts reflected the range of possible outcomes, without reference to the distribution of outcomes within the range. It is not necessarily the case that the expected outcome is the simple average of highest and lowest values.

[72] See for example paragraph 3.30
[73] See for example SHET's main response document Table 5.9
[74] See for example paragraph 3.28

3.61 We note divergent opinions/interpretations amongst responses regarding systematic risk difference between distribution and transmission. For example:

- NGET and NGGT believe transmission is higher risk than gas distribution, whereas SGN believe gas distribution is higher risk than transmission. SHET, SPEN, WWU and NGN appear less definitive/clear on the overall net balance of systematic risk, with each party highlighting areas where it believes its sector may have higher risk
- SGN argue that higher TIM incentive rates indicate higher risk, in contrast with Cadent's view that larger RoRE ranges do not necessarily indicate higher risk
- SGN argue that operational gearing indicates higher risk, which is consistent with its response to FQ6a that water networks in GB are generally exposed to greater risk than energy networks in this regard.

3.62 We note the following from stakeholder responses relating to relative risk between sectors:

- SGN appear to suggest that the use of Uncertainty Mechanisms (UMs) lowers risk, which is consistent with views expressed by the RIIO-2 Challenge Group. In contrast, NGET and NGGT argue that greater reliance on UMs exposes networks to projects being progressed without funding.[75]
- NGET and NGGT believe that electricity is higher risk than gas. By contrast, SGN believe that gas is higher risk than electricity, given that, across its risk measures, "Gas has higher long-term asset use risk and higher operational gearing, as well as lower potential use of Uncertainty Mechanisms and higher TIM incentives rates."[76]
- GDNs believe that gas networks are riskier than electricity networks due to asset stranding risk.

Final Determination: beta

3.63 Table 9 reflects our decision on notional equity beta, in light of the quantitative and qualitative evidence available to us on systematic risk. We explain our rationale for this decision in the subsequent subsections.

[75] See NGET's finance response page 49 for example, as summarised at paragraph 3.38 above.
[76] See page 18 of SGN's full response to FQ6.

Table 9: Unlevered beta, asset beta and notional equity beta range, DDs (July 2020) compared with FDs (Dec 2020)

Component	Mid July 2020	Low Dec 2020	Mid Dec 2020	High Dec 2020	Ref	Source
Observed gearing.[77]	50%	50%	50%	50%	A	Ofgem judgement
Notional gearing	60%	60%	60%	60%	B	Ofgem judgement
Unlevered beta.[78]	0.3025	0.285	0.311	0.335	C	Ofgem judgement
Debt beta	0.125	0.075	0.075	0.075	D	Ofgem judgement
Asset beta	0.365	0.323	0.349	0.373	E	=C + A*D
Notional equity beta	0.725	0.694	0.759	0.819	F	= (E – (B*D)) / (1-B)

Source: Ofgem analysis

Rationale for decision on debt beta

3.64 Our DD view reflected the balance of evidence on debt beta and the difficulties of determining an exact level. We considered the UKRN Study,[79] in addition to Business Plan submissions and regulatory precedent, before proposing a range of 0.1 to 0.15,[80] from which we used a midpoint of 0.125 when estimating an equity beta range.[81] We noted in the DDs that common approaches to re-gearing asset beta have the effect of increasing the overall WACC estimate. This effect is exacerbated by using lower levels of debt beta.[82] The CMA noted in its then-provisional findings in the NATS (En Route) plc CAA Regulatory Appeal provisional findings ("NATS Appeal") that this was inconsistent with the Modigliani and Miller theorems that the overall cost of capital of a company should not vary with gearing.[83] Accordingly, we were sceptical of very low estimates of debt beta and we noted that Oxera presented a very wide range of possible estimates (from 0 to 0.2) before recommending a value of 0.05.

[77] See for example DD Table 13. On a 10-year estimation window, and excluding SSE, average gearing for the other four companies is 49% or 51%. Similarly, on a 5-year estimation window, we observe values of 49% and 52%.
[78] At the DD stage we estimated a range for asset beta of 0.34 to 0.39 and hence a midpoint of 0.365 (DDs Finance Annex Table 16 p 48). Given observed gearing of approximately 50% and debt beta assumption of 0.125, this implied a midpoint of 0.3025 (0.365-50%*0.125)
[79] Considerations for UK regulators setting the value of debt beta. UKRN. Dec 2019.
[80] https://www.ofgem.gov.uk/system/files/docs/2020/07/draft_determinations_-_finance.pdf#page=42, paragraph 3.39
[81] https://www.ofgem.gov.uk/system/files/docs/2020/07/draft_determinations_-_finance.pdf#page=48, Table 16
[82] DDs Finance Annex para 3.70.
[83] https://assets.publishing.service.gov.uk/media/5f350e17e90e0732e0f31c2a/NATS_-_CAA_final_report_for_publication_August_2020_-----.pdf#page=199 para 13.112

3.65 Licensees continued to suggest the DD value for debt beta was high. They pointed to Oxera's report for the ENA (see Appendix 2, Consultancy Report 5) which says that some approaches support a debt beta as low as zero or even negative.[84] SPT also provided us with a report from NERA that made similar arguments and used a debt beta of 0.05 for its calculations.[85]

3.66 We note the CMA's PR19 PFs suggest an appropriate range for debt beta of 0.0 to 0.15.[86] The CMA considered a very wide range of views and acknowledged that the debt beta is difficult to measure and in their view has a relatively small effect on the overall WACC.[87] The CMA then chose a point estimate of 0.04 reflecting its approach to "aim up".[88] We discuss the general principle of aiming up separately (see paragraphs 3.176 to 3.186).

3.67 In our view, estimating debt beta involves considerable regulatory judgement. Given the arguments presented in the consultation period and the CMA's provisional range of 0.0 to 0.15 from its PR19 PFs, we believe it is reasonable to assume a debt beta value of 0.075. The range of possible values from different approaches is quite wide and so choosing the midpoint of the range seems to us to be appropriate.

Rationale for our final view on unlevered beta and asset beta

3.68 In its September 2020 report for the ENA, Oxera suggest that current evidence supports an asset beta of 0.38 to 0.41.[89] In its October 2020 report for French regulator (CRE), Oxera suggest an asset beta of 0.32 to 0.38 for the electricity transmission network, RTE, after considering National Grid as a relevant comparator within its beta estimation sample.[90] We note our final view is consistent with the wider range of 0.32 to 0.41 implied by Oxera.

3.69 To reflect network company submissions and market evidence, we see merit in placing greater weight on National Grid's (NG) observed beta.[91] Whilst the NG beta may be an imperfect proxy for a pure-play GB energy network, given for

[84] https://www.northerngasnetworks.co.uk/wp-content/uploads/2020/09/Oxera-2020-%E2%80%98Estimating-debt-beta-for-regulated-utilities%E2%80%99-4-June..pdf
[85] https://www.ofgem.gov.uk/system/files/docs/2020/09/dd_response_spt.zip
[86] Ofwat CMA PFs, Table 9-16 p 585.
[87] Ofwat CMA PFs, para 9.307 p 582.
[88] Ofwat CMA PFs, Table 9-26 p 674.
[89] https://www.northerngasnetworks.co.uk/wp-content/uploads/2020/09/CoE-Oxera.pdf#page=11
[90] https://www.cre.fr/Documents/Consultations-publiques/prochain-tarif-d-utilisation-des-reseaux-publics-de-transport-d-electricite-turpe-6-htb
[91] See for example Oxera. https://www.northerngasnetworks.co.uk/wp-content/uploads/2020/09/CoE-Oxera.pdf#page=48 (Figure 3.6)

example its US operations, it has the benefit of capturing systematic risk levels across all sectors, GD, GT and ET, particularly when we consider larger samples of data. We weighted this against the fundamental similarities with GB water companies, which we maintain are good proxies. By contrast, the only other UK-listed energy network company, SSE, is more difficult to interpret in pure-play energy network terms.[92]

3.70 Table 10 presents analysis of unlevered betas updated for latest information as at October 2020. Values are ranked from highest (red) to lowest (green) within each separate section as indicated by the horizontal line.

Table 10: Unlevered betas to Oct 2020 using OLS estimation, (debt beta of 0)

Estimation window	Averaging period	Market value of debt	SSE	NG	PNN	SVT	UU	Average	Average (exc SSE)	Average of PNN, SVT & UU
2-year	Spot	No	0.63	0.34	0.30	0.26	0.26	0.36	0.29	0.27
2-year	2-year	No	0.47	0.33	0.31	0.26	0.26	0.33	0.29	0.28
2-year	5-year	No	0.55	0.36	0.36	0.31	0.30	0.38	0.33	0.32
2-year	10-year	No	0.47	0.31	0.33	0.28	0.26	0.33	0.30	0.29
2-year	Spot	Yes	0.61	0.32	0.29	0.24	0.24	0.34	0.27	0.26
2-year	2-year	Yes	0.45	0.31	0.30	0.24	0.24	0.31	0.27	0.26
2-year	5-year	Yes	0.53	0.34	0.36	0.28	0.28	0.36	0.32	0.31
2-year	10-year	Yes	0.46	0.30	0.33	0.26	0.26	0.32	0.29	0.28
5-year	Spot	No	0.63	0.35	0.32	0.28	0.27	0.37	0.31	0.29
5-year	2-year	No	0.58	0.36	0.36	0.31	0.30	0.38	0.33	0.32
5-year	5-year	No	0.56	0.35	0.36	0.32	0.30	0.38	0.33	0.33
5-year	10-year	No	0.49	0.32	0.32	0.29	0.28	0.34	0.30	0.30
5-year	Spot	Yes	0.60	0.33	0.32	0.25	0.25	0.35	0.29	0.27
5-year	2-year	Yes	0.56	0.34	0.36	0.28	0.28	0.36	0.32	0.31
5-year	5-year	Yes	0.54	0.33	0.37	0.29	0.29	0.36	0.32	0.32
5-year	10-year	Yes	0.47	0.30	0.33	0.27	0.28	0.33	0.30	0.29
10-year	Spot	No	0.56	0.33	0.32	0.29	0.27	0.35	0.30	0.29
10-year	2-year	No	0.47	0.30	0.32	0.27	0.25	0.32	0.29	0.28
10-year	5-year	No	0.47	0.32	0.31	0.28	0.27	0.33	0.30	0.29
10-year	Spot	Yes	0.54	0.31	0.33	0.26	0.26	0.34	0.29	0.28
10-year	2-year	Yes	0.45	0.29	0.33	0.25	0.25	0.31	0.28	0.28
10-year	5-year	Yes	0.45	0.30	0.32	0.27	0.27	0.32	0.29	0.29

Source: Ofgem analysis of Bloomberg share price movements and companies' financial accounts

[92] We believe that historically SSE has had a higher beta because of its retail supply operations and its generation activities – both of which have higher systematic risk. In 2019 the company disposed of its retail supply business and repositioned itself as a developer of offshore renewable generation which brings with it contracting risk. We consider these activities to have higher systematic risk than energy networks. We note that Oxera also excludes SSE from its sample of UK network companies for determining beta. See "The cost of equity for RIIO-2 Q3 2020 update": https://www.northerngasnetworks.co.uk/wp-content/uploads/2020/09/CoE-Oxera.pdf#page=33

3.71 Table 10 indicates that the simple average beta for the 4 best proxies (NG, PNN, SVT and UU) is 0.299.[93]

3.72 NG's observed asset beta captures transmission risks, and for some periods of history, gas distribution risks. Therefore, analysis of NG's beta captures observable systematic risks for GD, ET & GT. It therefore seems reasonable, on a backward-looking basis, to put greater weight on NG.

3.73 NG has approximately 45% of its total RAV in UK network assets, and adjusting for accounting differences, a similar percentage in US network assets.[94] It is not easy to determine the contribution to systematic risk made by different parts of the business. Analysis by Frontier[95] and CEPA suggests that relative risk has varied over time – sometimes the risks of the US business appearing higher, and sometimes the risks of the UK business appearing higher.

3.74 In line with our methodology, we put more weight on larger samples of data, such as the 10-year estimation window or the 10-year average of the smaller windows. On this basis, while putting greater weight on NG than the other entities, an unlevered beta of 0.31 appears reasonable. To infer higher values than 0.31 would, in our view, require us to put undue weight on certain estimation windows without a sound economic rationale. Further, we are mindful of other considerations that imply downward pressure on Table 10 values, including: GARCH results; risk reduction policies for RIIO-2 and specific recent events, such as nationalisation and political risks. On the same basis, an unlevered beta range of 0.285 to 0.335 appears reasonable. This is an increase from our DD view, which implied an unlevered beta mid-point of 0.30, as shown in Table 9. Combining our updated view on unlevered beta with a debt beta of 0.075 (see paragraph 3.67) implies a mid-point for notional equity beta of 0.759 (an increase from the DD mid-point of 0.725).

3.75 It is not clear to us whether individual energy sectors will hold materially different levels of systematic risk. In our view, there is a lack of quantitative evidence to draw upon and qualitative arguments do not appear conclusive. We did see merit in claims that some sectors may be exposed to greater risk in certain aspects although there often appear to be offsetting issues. For example, gas distribution

[93] This inference can be obtained by taking the average of the 88 values under NG, PNN, SVT, and UU.
[94] "National Grid: It might be getting better". Barclays Equity Research. 1st October 2020, p. 6. (Barclays estimate adjusting for US GAAP v IFRS).
[95] See Figure 18 in the Frontier report for National Grid on beta. https://www.ofgem.gov.uk/system/files/docs/2020/09/dd_response_nget.zip "NGETFinance Annex FQ5FQ6Technical Report Beta for RIIO T2GD2.pdf"

licensees have greater exposure, given the larger cost incentive rates[96], to any over/underspending than most transmission licensees. Offsetting this, gas distribution licensees benefit from allowances which are set with greater certainty, given the better benchmarking opportunities. Our RIIO-2 approach to set confidence-dependent incentive rates, means that the impact of cost risk is better aligned across the sectors and licensees.

3.76 We considered whether the gas sector may have greater stranding risk than electricity transmission. It did not seem to us that stranding risk is perfectly systematic, although we did see some basis for it being asymmetric. We also considered the protection afforded to network companies on stranding risks. For example, as recognised by Cadent, network companies can seek and obtain changes to depreciation policies at each price control review.

3.77 Given the increased weighting on NG's observed beta, and our approach to put more weight on larger samples of data, thus capturing GD, GT and ET risks, we are also mindful not to double count, for example by implying that one sector is above 0.31 without implying that another sector is below 0.31.

3.78 We considered whether there were structural breaks in the NG beta at the time of divestitures of its gas distribution businesses, but did not identify strong evidence on this basis that gas distribution had materially different risk than transmission.[97] After considering this and other potential differences between the sectors, we could not see robust grounds to infer risk differences or to allow materially different returns on equity.

3.79 At the suggestion of the GDNs, we reviewed international examples where regulators had considered stranded asset risk for gas. In one example, from Australia, the AER had considered reducing the economic life of gas assets to account for this, but eventually reconsidered this approach.[98] Cadent referred us to another example, from Austria, which it claimed had relevance. We agree with Cadent that there is an apparent premium of +3.5% on allowed returns for a gas

[96] Cost incentive rates are referred to using various terminology, including: "sharing factors", "Totex Incentive Mechanism rates", "TIM incentive rates", "pain-gain share", "incentive strength", and "company share".
[97] The UKRN Indepen Beta Study (2018) found statistically significant breaks for NG in 2000, 2001, 2008, 2009. Merger with Lattice Grp (BG gas distribution and transmission) took place in 2002, stakes in the gas distribution businesses were divested in 2005 & 2017.
[98] Australian Energy Regulator. Final Decision Jemena Gas Networks (NSW) Ltd. Access Arrangement 2020 to 2025. Overview. June 2020. P. 38.

transmission business. However, this premium appears to compensate volume risk, rather than asset stranding.[99]

3.80 The ENA directed us to a letter from the UKRN to the Utility Regulator which discusses both the option of shorter asset lives and of an adjustment to allowed returns on capital.[100] However, this reference does not appear to unanimously suggest that higher returns on capital are necessary to reflect asset stranding. The letter contains analysis which suggests that GB GDNs have lower RAV:Revenue ratios than two Northern Ireland gas networks, and by extension, lower value at risk for any recoverability issue. We consider it appropriate to keep the various policy options under review for RIIO-3 when gas pathways are expected to be clearer.

TMR

3.81 At DDs, we did not seek explicit views on TMR, although we outlined our reasoning and proposals for a 6.25% to 6.75% CPIH range. The following sections provide:

- a summary of consultation responses on TMR
- our final determinations for TMR
- supporting rationale for these final determinations, including:
  - our review of the CMA's recent estimates during the NATS Appeal and PR19 appeals
  - our updated analysis on TMR.

A summary of consultation responses on TMR

3.82 Network companies continued to highlight inflation issues for TMR estimation.

3.83 The ENA submitted two TMR focused papers by Oxera, both of which were prepared for Heathrow Airport: one dated August 2019, and one dated April 2020.[101] Oxera question the reliability of the approach taken in a UKRN Study[102], and by the CMA in then-provisional findings of the NATS Appeal. Oxera's work suggests that back-cast measures of CPI could lead to inaccurate estimates of

[99] CEER. Report on Regulatory Frameworks for European Energy Networks 2019. Ref C19-IRB-48-03. 18 January 2020. p 9.
[100] https://www.ukrn.org.uk/wp-content/uploads/2018/06/2016Jul-PeerReviewURCostOfCapital.pdf
[101] See Appendix 2 below (Consultancy Reports 7 and 8) for further information on these Oxera reports.
[102] https://www.ukrn.org.uk/wp-content/uploads/2018/11/2018-CoE-Study.pdf

(expected) real returns. On this basis, Oxera argue that CMA's then-provisional approach in the NATS Appeal, to avoid the use of RPI, is not robust.

3.84 SPT submitted a report prepared by NERA, which argues that there are two issues in the DD that need correcting, both relating to Ofgem's reliance on the UKRN Study. The first is the use of the Bank of England hybrid index to derive historical CPI-deflated returns. This, NERA argue, understates historic real returns. The second is the adjustment to the historical returns for the "alleged predictability of returns at long horizons".

3.85 In a separate report, Oxera question Ofgem's use of geometric returns, arguing instead that arithmetic returns should be used and that "the arithmetic average has to be adjusted up to achieve an unbiased estimate of the discounted value of future cash flows".[103]

Final Determination: TMR

3.86 We have decided on a TMR range of 6.25% to 6.75% (CPIH real), with a mid-point of 6.5%, in line with our position at DD.

Rationale for our decision on TMR

3.87 It appears to us that Oxera's critique is similar to those we addressed at the SSMD and DD stages.[104] We believe that it is correct to interpret the historical returns data using the best available measures of inflation, including CPI. In this way, we avoid an over-reliance on any one measure, such as RPI, in line with CMA's approach and then-provisional rationale in the NATS Appeal.[105]

3.88 We also believe that our approach of starting from geometric average returns and adding an upward adjustment is reasonable. We addressed this at the time of the SSMD noting PWC's research and estimates, which the CAA referred to when it used an uplift of 0.4% to 1.3% for a 10-year holding period, towards the lower end of the 1% to 2% range in the UKRN study.[106]

[103] See Appendix 2 below (Consultancy Reports 2) for further information on this Oxera report. https://www.northerngasnetworks.co.uk/wp-content/uploads/2020/09/CoE-Oxera.pdf#page=7
[104] SSMD para 3.72 to 3.84. DDs para 3.12
[105] See para 12.192 here: https://assets.publishing.service.gov.uk/media/5e7a2644d3bf7f52f7c871f3/Provisional_Findings_Report_-_NATS_-_CAA.pdf#page=188
[106] SSMD para 3.89. PWC's report for the CAA refers to a lower range, of 0.3% to 1.2%, although the holding period is larger (10-15 years) than CAA referred to when it stated a 0.4% to 1.3% range (10-year holding period).

3.89 We reject NERA's view that we have used inappropriately long time horizons. We have taken a long-term view of other parameters in the price control.

3.90 We also suggested in the SSMC that the consistency of UK returns measured in US dollars provides us with comfort. To quote from the UKRN Cost of Capital Report (2018):

> "Intriguingly the real USD return on UK equities was also 5.1%. (Sterling depreciated in real terms versus the USD.) To the extent that equity market returns are determined globally (which is what we would anticipate with free movement of capital) and the average real appreciation/depreciation of Sterling might have been anticipated, then this would suggest that UK returns were in line with the global historical average."[107]

3.91 We make the argument that the marginal investor can move capital internationally. US dollars are an appropriate way to measure real returns in such a situation provided: 1) US CPI over the period was a more accurate estimate of inflation over the entire period than the UK inflation indices; and 2) Purchasing Power Parity theorem holds, in the very long run, in which case the exchange rate reflects the difference in inflation between two currencies. Both propositions seem reasonable to us. We find a striking similarity between UK returns, measured in GBP terms, with UK returns measured in US Dollar terms.[108] This gives us greater confidence that our assumptions about inflation-adjusted returns are reliable.

CMA provisional findings on TMR: NATS Appeal

3.92 In March 2020, the CMA published its provisional findings on the NATS Appeal, stating that:

> "… our provisional view is that the TMR estimates produced under both the historic ex-post and historic ex-ante approaches are

[107] Wright, S. Burns, P. Mason, R. Pickford, D. Estimating the cost of capital for the implementation of price controls by UK regulators D-121

[108] We presented analysis for within our Sector Specific Methodology Consultation (Figure 9) which used two measures of inflation, one from DMS and one from the Bank of England. We also note that CMA's preferred estimate of historical inflation provides further evidence of consistency with returns measured in US Dollar terms.

> consistent with a figure of between 5 and 6% on an RPI-real basis."[109]

3.93 In July 2020, RIIO-2 DDs referred to these provisional findings, noting similarities between the CMA's rationale and our own.[110] We also highlighted that we would consider the CMA's final view prior to making final determinations for RIIO-2.

3.94 In July 2020, the CMA published its final report. Therein, it used the same range for TMR, of between 5% and 6% on an RPI-real basis, although the CMA stressed that it had limited its work on the cost of capital since its provisional findings to issues that did not include TMR.[111]

CMA provisional findings on TMR: PR19

3.95 In September 2020, the CMA published its PR19 provisional findings, stating that:

> "Taking all this evidence in the round, we consider that a reasonable TMR range is 5.25% to 6.25% (RPI-real)… We note that **this range is comfortably at the top end** of investors' current expectations regarding market returns over the next few years. This range is **slightly** above the 5-6% range used by the CMA in its recent CAA/NATS decision"[112] [emphasis added]

3.96 The highlighted text suggests that both ranges are acceptable estimates of TMR, and that a 5-6% range is not necessarily wrong in the CMA's view. We agree with the CMA that a TMR range of 5.25 to 6.25% (RPI-real) is comfortably at the top end of investors' current expectations.

3.97 We responded to the CMA's PR19 PFs with our initial views.[113] In our response, we asked the CMA to reconsider how it has interpreted and weighted its analysis. We continue to believe that CMA's range from the provisional findings for the NATS Appeal, of 5-6% (RPI-real) better reflects the available evidence on TMR and is in line with the conclusions of the UKRN Cost of Capital Report (2018). Our

[109] https://assets.publishing.service.gov.uk/media/5e7a2644d3bf7f52f7c871f3/Provisional_Findings_Report_-_NATS_-_CAA.pdf#page=197 Para 12.234
[110] https://www.ofgem.gov.uk/system/files/docs/2020/07/draft_determinations_-_finance.pdf#page=36
[111] https://assets.publishing.service.gov.uk/media/5f350e17e90e0732e0f31c2a/NATS_-_CAA_final_report_for_publication_August_2020_-----.pdf#page=256 Para 13.303
[112] https://assets.publishing.service.gov.uk/media/5f72f3d2e90e0740cf4eb0a9/Water_provisional_determinations_report_all_-_September_2020_---_web_-.pdf#page=559
[113] https://assets.publishing.service.gov.uk/media/5fa298d88fa8f57896ad0276/Ofgem_response_to_PR19_Provisional_Findings_291020_Redacted.pdf#page=8

final view reflects the broad range of TMR evidence and places less weight on estimations that rely on outturn or expected RPI. Our final view is that we should interpret and weight the analysis in line with our DD proposals.

3.98 We believe there are cross-checks which avoid RPI measurement issues from materially impacting on TMR estimates.[114] Our decision reflects our view that most estimation methods continue to support the DD proposed TMR range.

Step 1 CAPM-implied cost of equity at 60% notional gearing

Final Determination: Step 1 CAPM-implied cost of equity

3.99 Table 11 below summarises the preceding sections of this chapter and compares our FD decision (Dec 2020) with our DD proposals (July 2020).

Table 11: Step-1, CAPM-implied cost of equity at 60% notional gearing

Component	Mid July	Low Dec	Mid Dec	High Dec	Ref	Source
Notional equity beta	0.725	0.694	0.759	0.819	A	July 2020 & Table 9
Total Market Return	6.5%	6.25%	6.5%	6.75%	B	July 2020 & 3.86
Spot risk-free rate	-1.58%	-1.74%	-1.74%	-1.74%	C	July 2020 & Table 7
Forward curve uplift	+0.10%	+0.16%	+0.16%	+0.16%	D	July 2020 & Table 7
Risk Free Rate	-1.48%	-1.58%	-1.58%	-1.58%	E	= C + D
Cost of equity (step 1)	4.3%	3.85%	4.55%	5.24%	F	= E + A * (B - E)

Source: Ofgem analysis

3.100 The completion of Step 1 allows us to progress now to Step 2 below.

Step 2 – Cross-checks

Introduction

3.101 At DDs, we sought views from stakeholders on our interpretation of cross-checks. The following sections provide:

- a summary of consultation responses on the two relevant questions

[114] We also considered the issues regarding inflation measurement in the DDs (para 3.14) and SSMDs (para 3.81).

- our final determinations on the impact of crosschecks
- supporting rationale for these final determinations on cross-checks.

A summary of responses to each consultation question

A summary of responses to FQ7 (gearing impact on beta and cost of capital)

3.102 Energy networks generally argue that this cross-check has limited value, while referring to submissions made by the ENA to the CMA.[115]

3.103 NGET and NGGT argue that Ofgem's inference, that the cost of equity is lower under a Modigliani Miller approach than it is under de-levering/re-levering approach, is largely attributable to:

- Incorrect value for the cost of debt that is a weighted average of embedded and new debt
- Ofgem's choice of CAPM parameters, in particular, the risk-free rate
- Ofgem's choice of sample lengths and periods for beta values.

3.104 NGET and NGGT suggest that aligning notional gearing with actual gearing could be pursued, "but there would seem little benefit for consumers". SPEN refer to advice from Oxera which "shows that when the weight of new debt is set at 100%, the variation of WACC with gearing becomes less noticeable…". Cadent, NGN, SGN and WWU also refer to Oxera's logic. We address Oxera's report on risk-free rates in Appendix 2 (Consultancy Report 6).

3.105 The RIIO-2 Challenge Group considers that it is appropriate to regard WACC as invariant to gearing.

A summary of responses to FQ8 (our interpretation of cross-checks)

3.106 Network companies generally argue that the cross-checks presented are misleading, erroneous or irrelevant, and/or that no weight should be placed upon them. Most network companies repeat previous submissions, in terms of perceived limitations or interpretation issues with the proposed cross-checks, while proposing the following two cross-checks as alternatives, as per Oxera's advice: Asset risk premium to Debt risk premium differential (ARP-DRP); and, Dividend

[115] See for example: https://assets.publishing.service.gov.uk/media/5ed0f2b3d3bf7f45fb321450/Energy_Networks_Association_submission.pdf

Discount Model (DDM). We address Oxera's report on ARP-DRP in Appendix 2 (Consultancy Report 1).

3.107 NGET and NGGT do not agree with Ofgem's interpretation of cross-checks "as all of the cross-checks either contain errors in their application or are of limited or no relevance". A more meaningful cross-check, NGET and NGGT argue, is the "Asset risk premium to Debt risk premium differential".

3.108 SPEN suggest that the proposed cross-checks are ultimately based on evidence derived from comparators that are "not analogous to TOs (e.g. OFTOs[116] and infrastructure funds)". SHET consider that ARP-DRP is a superior cross check "as it is based on market data".

3.109 Cadent noted that "Oxera find that the MARs of listed water companies can be explained without any recourse to the presumption that the market cost of equity is lower than the allowed equity return." We address Oxera's report on MAR analysis in Appendix 2 (Consultancy Report 4).

3.110 NGN argue that Ofgem's MAR analysis "presumes that markets are perfectly knowledgeable and that instantaneous valuations in the market are informed by a perfect understanding of the fundamentals. This is a highly dubious assumption."

3.111 The RIIO-2 Challenge group broadly agreed with the interpretation of cross-checks, while noting that several cross-checks indicate that the cost of equity has fallen further than is reflected in the proposed baseline allowed return on equity.

[116] Offshore Transmission Owners

Final Determination: Step-2 cross checks

3.112 Table 12 demonstrates the outcome of Step 1 and Step 2, alongside a comparison against our view at DDs in July 2020.

Table 12: Cost of equity, Step 1 & Step 2. July 2020 (DD) compared to December 2020 (FD), CPIH real, 60% notional gearing

Component	Low July	High July	Low Dec	Mid Dec	High Dec	Ref	Source
Notional equity beta	0.66	0.79	0.694	0.759	0.819	A	July 2020 & Table 9
Total Market Return	6.25%	6.75%	6.25%	6.5%	6.75%	B	July 2020 & para 3.86
Spot risk-free rate	-1.58%	-1.58%	-1.74%	-1.74%	-1.74%	C	July 2020 & Table 7
Forward curve uplift	+0.1%	+0.1%	+0.16%	+0.16%	+0.16%	D	July 2020 & Table 7
Risk Free Rate	-1.48%	-1.48%	-1.58%	-1.58%	-1.58%	E	= C + D
Cost of equity (step 1)	3.64%	5.0%	3.85%	4.55%	5.24%	F	= E + A * (B - E)
Cost of equity (step 2)	3.6%	4.8%	3.8%	4.4%	5.0%	G	Judgement based on Step 2 crosschecks
Cost of equity (assessed point estimate)	4.2%	4.2%	4.55%	4.55%	4.55%	H	Judgement based on Step 1 and Step 2

Source: Ofgem analysis

Rationale for our decision on step 2

3.113 We note that equity returns above 5% are not supported by any of the six cross-checks we presented at DDs.[117] This could imply that some element(s) of step 1, for example, re-gearing, ex-post TMR or some estimates of unlevered beta (ie those based on a small sample of data), may not perfectly reflect expected returns.

3.114 At the time of DDs, investment manager forecasts indicated real return expectations of 5%. We recognise that these estimates suffer from two primary drawbacks: estimates can quickly change; and, estimates embed an equity beta of 1.0.[118] Nonetheless, stakeholders generally agree that the equity beta for network

[117] https://www.ofgem.gov.uk/system/files/docs/2020/07/draft_determinations_-_finance.pdf#page=64
[118] DDs Finance Annex Paras 3.92 and 3.105.

businesses is less than 1.0, so it appears reasonable to infer a high end of 5% based on this cross-check.

3.115 As we discussed in the SSMD, we remain convinced that OFTO-implied equity internal rates of return (IRRs), of 4.9% in DDs, provide useful information on expected returns for deploying capital in UK energy assets. We noted that this cross-check embeds a much higher level of leverage (generally 80-90%) and some risk differences.[119] Stakeholders generally agree that higher levels of leverage should increase expected equity returns. In our view, the gearing effect could overshadow the underlying risk difference, so it appears reasonable to infer a high end of 5% based on this cross-check.

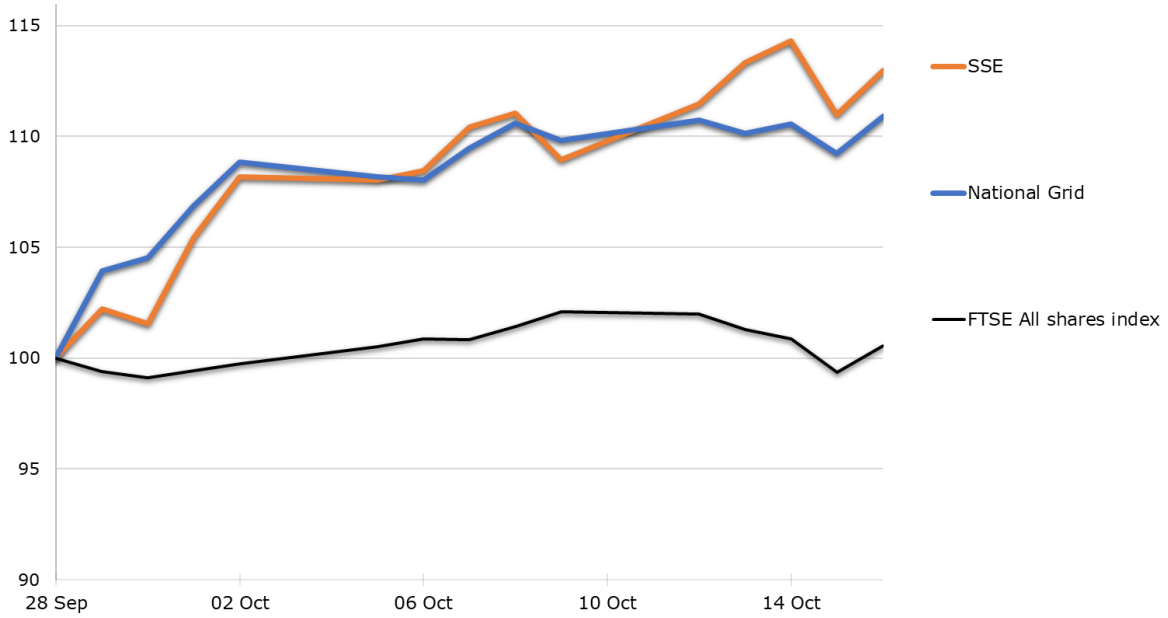
3.116 In contrast, the bottom end of the CAPM range is better supported: three other cross-checks presented at DDs imply CPIH-real returns at or below 4.2%: Modigliani Miller (MM); Market-to-Asset Ratios (MARs); and, infrastructure funds.

3.117 In our view, MARs for the UK utility stocks is a strong piece of evidence.[120] Latest estimates show similar levels of premia for the two purest-play water companies and the two energy companies as prevailed at the time of the DDs. In making this analysis, we have had to make several assumptions regarding the parts of the businesses which are not UK regulated network assets, particularly for the energy companies.[121]

3.118 Upon the announcement of the CMA PR19 PFs at 7 AM on 29th September 2020, the value of the listed energy companies moved upwards, as shown in Figure 2 below. Arguably, this indicates that investors in SSE and NG interpreted CMA's PFs as a positive, and unexpected, signal for higher returns.

[119] https://www.ofgem.gov.uk/system/files/docs/2019/05/riio-2_sector_specific_methodology_decision_-_finance.pdf#page=62 Para 3.212
[120] DDs. Finance Annex. Paras 3.76 onwards.
[121] CEPA's analysis for the DDs outlined the assumptions they have used. RIIO-2 Use of Market Evidence Annex. 09 July 2020. https://www.ofgem.gov.uk/system/files/docs/2020/07/draft_determinations_-_technical_annexes_part_two_2.zip

Figure 2: Observed equity reaction to CMA's PR19 PFs



Source: Bloomberg data rebased

3.119 We estimate that on an EV/ RAB basis, as of October 30th 2020, Severn Trent (SVT) was trading at a 32% premium and United Utilities (UU) was trading at a 15% premium, while National Grid (NG) was at 18% and SSE was at 26%.[122] On an equity basis, SVT was at a 57% premium, UU was at a 29% premium, NG was at a 28% premium, SSE was at a 59% premium. As outlined in the DDs, we believe these measures indicate that the market believes:

- that the cost of equity for these companies is below recent cost estimates, by Ofwat, Ofgem and/or CMA, or
- that companies will outperform, or
- that some combination of these two factors is true.

3.120 Some stakeholders consider that explicit adjustments in Step 2 may involve the exercise of too much discretion by Ofgem. We agree that cross-checks should be interpreted carefully and weighted appropriately, but we disagree that no weight can be placed on them at all, or that they are wholly irrelevant, particularly given the large underlying quantum of investor monies (eg £6.5bn in OFTOs, £20bn in infrastructure funds and approximately £58bn in listed equity[123]).

[122] The PNN value (of over 100%) appears to be distorted by the proceeds from the sale of its Viridior waste management business.
[123] Estimate of combined market capitalisations of PNN, SVT, UU, SSE and NG at 30/11/2020.

3.121 Even though these cross-checks in combination generally support a lower cost of equity than is implied by the Step 1 mid-point, after consideration of stakeholder responses, we have decided not to adjust the Step 1 mid-point in Step 2. At the DD stage we considered that we had sufficient evidence to choose a value for cost of equity which was below the mid-point of the range. Stakeholders made representations to us that our market cross-checks were not as strong as we believed and that using a lower value was not a justified use of regulatory discretion. For FDs, we have decided to narrow the range, (from 3.85%-5.24% to 3.8%-5.0%), using more discretion to adjust the high end than the low end, as per our rationale in paragraphs 3.113 to 3.118 above. The range 3.8%-5.0% has a mid-point of 4.4%. However, we have decided to assess the cost of equity at 4.55% which is 0.15% higher than the mid-point we could draw from Step 2.

Step 3 – Expected versus allowed returns

Introduction

3.122 At DDs, we sought views from stakeholders on our overall assessment of allowed returns and on expected outperformance. The following sections provide:

- a summary of consultation responses on the three relevant questions
- our final determinations for Step 3
- supporting rationale for these final determinations.

A summary of responses to each consultation question

A summary of responses to FQ9 (your view on the overall in-the-round assessment of allowed returns to equity of 3.95% at 60% notional gearing)

3.123 Network companies generally argue that a baseline allowed return on equity of 3.95% is too low. By contrast, Citizens Advice and the RIIO-2 Challenge Group argue it is too high.

3.124 NGET and NGGT argue that the main issues with DD proposals, which result in baseline allowed returns being too low, are:

- TMR estimate
- Risk-free rate (the use of Index Linked Gilts (ILGs) for the risk-free rate)
- Beta estimates

- The use of cross-checks and expected outperformance.

3.125 SPEN strongly support the principle of "aiming up" to attract adequate investment in GB, while suggesting that the principle is not to deliberately over-remunerate but to maximise societal welfare.

3.126 Cadent argue that consistently aiming down, across the financial package and the whole draft determination, results in a package that is not financeable or deliverable within the allowances determined by Ofgem. SGN argue that comparisons drawn with SVT and UU are not relevant due to a risk differential between GDNs and water networks.

3.127 NGN argue that "apart from the principle of the Cost of Equity indexation… all other elements of CAPM, Ofgem's conclusions on cross-checks and the introduction of the Outperformance wedge have been strongly and universally rebutted based on both theoretical and empirical evidence". Regarding the risk-free rate, NGN add that "it is obvious that even the AAA-rated firms cannot borrow at the same cost as governments do and consequently no utility can raise debt at Ofgem's estimate of the Risk-free rate proxied by spot index-linked government gilt yields."

3.128 WWU reiterated its request for a baseline equity return of 6.1% as proposed in its business plan, which it considers to be a prudent rate, subject to all other allowances being set at appropriate levels, while noting its view that debt and totex allowances in Draft Determinations are too low.

3.129 Citizens Advice argue that 3.95% materially overstates the cost of equity (sic, allowed return) and associated systematic risk for the regulated energy network companies for the RIIO-2 price control review period. Citizens Advice argue that this is for two main reasons: systematic risk is lower for long-term investors; and historic share price data does not adequately reflect forward-looking systematic risk.

3.130 The RIIO-2 Challenge Group considers that the analysis is sound but there are several aspects in which Ofgem has opted for a mid to upper figure within a range resulting in a combined effect that is generous.

A summary of responses to FQ10 (your view on expected outperformance of 0.25% at 60% notional gearing and the analysis techniques published alongside DDs)

3.131 Network companies generally disagree with the concept, the principle, and the estimate of expected outperformance, suggesting it could have unintended consequences, while referring to Frontier's work as evidence that 0.25% is an overestimate.[124] In contrast, Citizens Advice argue that 0.25% is an underestimate.

3.132 NGET and NGGT refer to Frontier's work as evidence that there are estimation issues, and argue that interpretation of MAR evidence is subject to judgement.

3.133 SPEN argue that there are very few examples of regulators choosing not to adopt the approach of aiming up. SPEN suggest that performance has varied widely by regulated sector. In SPEN's view, recent levels of outperformance are not representative of potential outperformance in RIIO-2. SPEN argue that it is unjustified and conceptually incorrect "to correct for the perception that expected outperformance is guaranteed…".

3.134 SHET argue that Ofgem should not rely on data from other regulated sectors such as water or aviation, suggesting these sectors are not relevant to RIIO-2 and therefore should be excluded. SHET argue that "[o]ur analysis also shows that companies are more likely to underperform or at least not repeat the same level of performance in RIIO-2". SHET argue that the "AR-ER database.xlsx" is irrelevant and that the estimation approaches contain errors. SHET also refer to a report by John Earwaker and Nick Fincham – we address this report at Appendix 2 (Consultancy Report 14).

3.135 Cadent refer to advice from Economic Insight, which suggests that the inclusion of expected outperformance represents a material "overcorrection". We address this report at Appendix 2 (Consultancy Report 17).

3.136 SGN argue that the database properly considered does not support an argument "that regulation is a one-way bet". SGN argue that recent history is not a reliable guide and past data is irrelevant.

[124] We received three Frontier reports on outperformance. We address each of these at Appendix 1 (see Consultancy Reports 9, 10 and 12).

3.137 NGN argue that the restatement exercise that Ofgem has undertaken ("Residual outperformance.xlsx") is incomplete and contains errors for NGGT and by omitting close-out adjustments. This, NGN suggest, means that Ofgem has significantly over-stated the outperformance these companies achieved in RIIO-1, "again giving the misleading impression that companies always outperform when, in fact, they don't." WWU had no substantive comments on the analytical files published.

3.138 The RIIO-2 Challenge Group argue that the analysis points to the maintenance of a 50bps 'wedge' and highlighted its disappointment to see the reduction to 25bps.

3.139 Citizens Advice argue that a more realistic level of expected outperformance, based on Ofgem's analysis, would be 1.6%, which, Citizens Advice argue, would retain scope for incentive effects. In support of this, Citizens Advice undertook its own analysis of totex, RIIO-1 and MAR, before concluding that its proposal of 1.6% is objective, transparent and replicable in future charge controls and sectors.

A summary of responses to FQ11 (your view on an ex-post adjustment for baseline equity returns)

3.140 NGET and NGGT do not support an ex-post adjustment for baseline equity returns. In their view, it represents an additional complexity that creates perverse incentives and reduces the legitimacy and clarity of the framework.

3.141 SPEN suggest there is no precedent for an ex-post adjustment but understand Ofgem's intentions. SPEN argue that "[i]f a company was expected to experience weak performance at say 2/3 years into the control, they would have no incentive to seek cost savings, and on the contrary may have an incentive to spend up as this would be compensated through the ex-post agreement."

3.142 SHET argue that an ex-post adjustment reduces incentives to outperform and referred to analysis by Frontier that the ex-post mechanism has the potential to reduce the strength of incentives by up to 33% for electricity transmission companies. We address this Frontier report at Appendix 2 (Consultancy Report 9). SHET argue that applying the adjustment based on average performance reduces the incentive for companies to outperform.

3.143 Cadent recommend the adjustment should be made at the company level for consistency with RAMs. Cadent state that the concept of anchoring returns (via

RAMs) was ruled out as "ownership structures in gas distribution sector are not sufficiently diverse to sustain a class 2 measure such as anchoring."

3.144 SGN suggest there are two issues with an ex-post mechanism: weakened incentives to outperform; and difficulties in creating a level playing field. SGN also argue that the assumption of outperformance should not be included in the financeability assessment for RIIO-2.

3.145 NGN suggest that an ex-post mechanism presents additional problems that require further analysis. NGN suggest there are risks, such as: unfair/unjustified outcomes; deterrents to collaboration; and weakened incentives.

3.146 Citizens Advice disagree strongly with the need for the proposed ex-post adjustment, arguing that it is unnecessary and unfair in terms of consumer risk. The RIIO-2 Challenge Group considers that the ex-post adjustment represents an unnecessary transfer of risk to consumers.

Final Determination: Step 3 expected versus allowed returns at 60% notional gearing

3.147 Taking the above three steps in the round, our decision is:

- that the cost of equity falls within the 3.80% to 5.00% range
- that investors should expect outperformance of at least 0.25%. Deducting 0.25% from the assessed point estiamte of 4.55% results in a baseline allowed return of 4.30%, which remains within the cost of equity range
- to implement, on a licensee basis, an ex-post adjustment mechanism to protect investors, so that each licensee will, if its outperformance is less than 0.25%, receive a top-up allowance, up to 0.25%.

3.148 Table 11 below captures our final views and provides a comparison between DDs (July 2020) and these FDs (December 2020).

Table 11: Baseline allowed return on equity at 60% notional gearing. July 2020 (DDs) compared with December 2020 (FDs), CPIH real

Component	Low July 2020	Mid July 2020	High July 2020	Low Dec 2020	Mid Dec 2020	High Dec 2020	Ref	Source
Cost of equity (step 1)	3.64%	4.3%	5.0%	3.85%	4.55%	5.24%	A	July 2020 and Table 12

Component	Low July 2020	Mid July 2020	High July 2020	Low Dec 2020	Mid Dec 2020	High Dec 2020	Ref	Source
Cost of equity (step 2)	3.6%	4.2%	4.8%	3.8%	4.4%	5.0%	B	July 2020 and Table 12
Cost of equity (assessed point)	4.20%	4.20%	4.20%	4.55%	4.55%	4.55%	C	Ofgem judgement
Expected Outperformance	0.25%	0.25%	0.25%	0.25%	0.25%	0.25%	D	Ofgem judgement
Baseline allowed return on equity	3.95%	3.95%	3.95%	4.30%	4.30%	4.30%	E	E = C – D

Source: Ofgem analysis

Rationale for our decision on step 3

Our rationale for baseline allowed returns of 4.3% (60% notional gearing)

3.149 The increase from 3.95% to 4.30% primarily reflects a higher notional equity beta: the largest component difference between DD proposals and network company views. In Step 2, we do not implement a reduction of 0.1% when arriving at the assessed cost of equity, in contrast with DDs, given stakeholder concerns about our exercise of undue discretion. For Step 3, we retain the same value for expected outperformance of 0.25%, reflecting the largely unchanged evidence base, unchanged principle, and the diversity of stakeholder views.

3.150 Arguments by licensees for higher levels of return remain difficult to reconcile with the evidence, and licensee responses to DDs did not materially affect the underlying evidence. Baseline allowed returns above 5% would require us to take the high end of each component piece of evidence. We suggested in DDs that energy networks and water networks in GB had comparable risk frameworks. Several licensees appear to agree that there is comparability between the sectors (see DD responses from Cadent[125] and SPEN[126] for example). We therefore found it difficult to justify a cost of equity materially higher (greater than 5% CPIH) for energy networks.

3.151 Our final view on the cost of equity (4.55%) is consistent with a premium to water networks, given the estimates by Ofwat (4.09%) and the CMA (4.37%).[127] Our

[125] See paragraph 3.30
[126] See paragraph 3.28
[127] CMA's PR19 PFs suggest a cost of equity range of 3.56% to 5.60%, and therefore a mid-point of 4.57% (see Table 9-24). These values include a retail margin, which CMA estimate at 8bps of RAV (see paragraph 9.564). Using Ofwat's approach to adjust the cost of equity range accordingly results in a 20bps (8bps / (1-60%)) downwards adjustment to the cost of equity range, giving a new mid-point of 4.37% (4.57% - 0.2%).

final determination is therefore consistent with arguments made by most licensees that an energy premium exists.

3.152 Further, consultancy reports submitted by licensees can support the assumptions underpinning allowed returns of 4.3%.[128] One example of this is Oxera's report on equity market valuations of listed water companies.[129] Oxera's analysis suggests that traded market premia can be reconciled with Ofwat's allowed return, supporting a view that the allowed return by Ofwat is not materially out of line with the cost of finance for Severn Trent and United Utilities. By using outperformance to explain traded market premia, Oxera's analysis suggests that the cost of capital may have been slightly over-estimated (see Oxera analysis Figure 4.2a)), or slightly under-estimated (see Oxera analysis Figure 4.1 and Figures 4.2b & 4.2c) by Ofwat.

3.153 Recent CMA findings in NATS Appeal and PR19 (provisional at the point of writing) are also supportive of our final views, on risk-free rate and TMR in particular. We believe we have been suitably cautious across all elements of the evidence and that a baseline allowed return of 4.30% is arguably consistent with a degree of aiming up, given evidence from cross-checks. We outline our further rationale and concerns at paragraphs 3.176 to 3.186 below, regarding more material amounts of aiming up.

3.154 Citizens Advice and the RIIO-2 Challenge Group felt that allowed returns above 3.95% would be too high. While we could agree that there are good arguments for returns at or below 3.95%, the evidence is also consistent with a cost of equity near 4.55%. We believe consumer and investor interests are appropriately reconciled by setting baseline allowed returns at 4.3%.

Our rationale for expected outperformance of 0.25% (60% notional gearing)

3.155 We believe that our decision is a conservative estimate of expected outperformance – the evidence generally suggests values of at least 0.25%. Citizens Advice also believe that 0.25% is a low estimate of expected outperformance, based on their different approach to historical evidence.

[128] As noted for example at paragraphs 3.109 and 3.159. We also note Oxera's advice to CRE on beta at paragraph 3.68.
[129] "What explains the equity market valuations of listed water companies?", Oxera, May 2020. As published by NGN here. See Appendix 2 (Consultancy Report 4) for our further comments.

3.156 We agree with licensees' views that there is uncertainty, as highlighted for example in the uncertainty around the MAR for NG's UK regulated assets. We also agree that the evidence can be interpreted in different ways and inferences can vary widely. However, in our view, it is unlikely that investors would expect performance to be precisely in line with RIIO-2 baseline allowances and assumptions.

3.157 SPEN appear to misinterpret the policy assumption by arguing that it is unjustified and conceptually incorrect "… to correct for the perception that expected outperformance is guaranteed".[130] In contrast, our DD proposal was that outperformance is expected, not guaranteed. Similarly, SGN may misinterpret the rationale, given its argument that "[the database does not support an argument]… that regulation is a one way bet".[131] We agree with SGN that the database does not support a "one way bet" assumption. In contrast, the database supports a view that outperformance dominates underperformance, without suggesting that underperformance is impossible.

3.158 We see merit in SHET's suggestion to focus on energy rather than water and aviation. Doing so, however, can imply higher expectations of outperformance, given a tendency for the energy sector to exhibit greater degrees of underspending. In theory, information asymmetry is not unique to the energy sectors among regulated industries. Also, including more sectors within the database helps reduce idiosyncratic or one-off values. We disagree with SHET's suggestion that outturn information on past price controls is irrelevant. Our analysis in the DDs showed that the conclusions were robust to changes in the sample of sector, time period, price control, licensee or company.[132] The evidence collected therein was spread across a number of price controls. In our view, outturn information should be considered carefully in the context of how it can inform expectations.

3.159 SHET refer to a report by John Earwaker and Nick Fincham – in our view, this report is supportive of the DD proposals in many respects.[133] For example, it notes that most respondents believe there is an asymmetry of information between regulators and regulated companies. The Earwaker & Fincham report confirms that most survey participants believe a regulator should strive to set up a 'fair bet' in which the likelihood of a regulated firm earning returns above or below

[130] See SPEN's response to DD's, paragraph 3.177.
[131] See SGN's response to DD's, page 232.
[132] DDs Finance Annex paragraph 3.124
[133] http://www.first-economics.com/earwakerfincham.pdf See also our more detailed response in Appendix 2.

the cost of capital are evenly balanced. In these respects, our final determinations for RIIO-2 are consistent with the Earwaker & Fincham report.

3.160 In a report for the ENA, Frontier argue that there is a calculation error within the "residual outperformance" spreadsheet which overstates performance for GT.[134] We agree with Frontier. However, correcting this error would change only GT and does not undermine the inference drawn at DDs: that the analysis supports expected outperformance levels of above 0.25% for RIIO-2 (see Frontier's Figure 4). In this report and in two other reports, Frontier argue that there are other issues regarding the approach to expected outperformance. We address these at Appendix 2 (see Consultancy Reports 9, 10 and 12).

3.161 In one of these reports[135] (for National Grid), Frontier's analysis suggests that NGGT could expect annual RoRE underperformance of 0.16% (Figure 3 in Frontier's report). However, if BPI underperformance of 0.23% is excluded, Frontier's modelling suggests that NGGT could expect annual outperformance of 0.07% (-0.16% + 0.23%) from other incentive opportunities. Similarly, Frontier's report suggests that the majority of NGET's 0.26% underperformance expectation relates to BPI underperformance of 0.22%. In our DD considerations for expected outperformance, we intentionally excluded BPI – we maintain our view that the notional efficient operator could reasonably be expected to have received neither a penalty nor a reward on this incentive (see paragraph 5.28 below for our related thoughts from a financeability perspective – the same reasoning and rationale applies in both areas).[136]

3.162 MAR premia continue to provide strong evidence that investors expect outperformance by regulated utilities. We discussed the conclusions that we derive from these premia in detail in the DDs.[137]

3.163 We considered in detail in the DDs the issue of information asymmetry and remedial mechanisms within the price control.[138] We continue to believe that there is an information asymmetry between the regulator and the regulated

[134] See footnote 68 here: https://www.northerngasnetworks.co.uk/wp-content/uploads/2020/09/ER-vs-AR-Frontier-Economics.pdf#page=51
[135] https://www.ofgem.gov.uk/system/files/docs/2020/09/dd_response_nget.zip "NGET Finance Annex FQ10Technical reportOutperformance wedge.pdf"
[136] For further detail on Frontier's work see Appendix 2 Consultancy Report 10.
[137] DD Finance Annex, para 3.76 to para 3.85
[138] DD Finance Annex, para 3.153

companies and that other mechanisms in the price control do not fully compensate for this.

3.164 Some stakeholders believe that 0.25% is too low an estimate of expected outperformance. We see rationale in the arguments and evidence submitted by Citizens Advice (CA) and the RIIO-2 Challenge Group (CG) on this. We agree that some level of outperformance can be expected, and believe that it should be recognised in order to strike a fair risk and return balance, as described in the RIIO-2 SSMC.[139] In principle, CA and CG have strong arguments that higher levels of outperformance can be expected, and therefore captured in baseline allowed returns. However, whilst we recognise that higher levels might be justifiable, we believe that using a value of 0.25% in Step 3 achieves an appropriate overall balance, all things considered.

3.165 Given our view that expected outperformance should be more than 0.25%, our decision to adjust by 0.25% reflects a cautious approach to deploying an important principle, based on the best available evidence alongside a reasonable degree of discretion.

3.166 In light of arguments by licensees, we considered carefully whether an adjustment of 0.25% would represent an excessive adjustment based on discretionary judgement. For reference, the CMA's PR19 PFs demonstrate that it has added 0.5% to allowed returns based on an aiming up rationale. The CMA's adjustment, which is twice as large, suggests our view in Step 3 is reasonable, particularly given the comparative depths of evidence and the additional protection afforded by an ex-post adjustment mechanism. We also address the merits of the CMA's rationale for aiming up at paragraphs 3.176 to 3.184 below.

Our rationale for an ex-post adjustment mechanism and consultation responses

3.167 In the DDs, we proposed an ex post adjustment top-up mechanism and explained its implementation.[140] We said that we remain committed to remunerating the cost of equity and the cost of capital for notional efficient licensees. The proposed mechanism meant that if average performance did not materialise as expected

[139] See for example Chapter 11 (achieving a reasonable balance in RIIO-2 https://www.ofgem.gov.uk/system/files/docs/2019/01/riio-2_sector_methodology_0.pdf#page=125
[140] DD Finance Annex, para 3.153, https://www.ofgem.gov.uk/system/files/docs/2020/07/draft_determinations_-_finance.pdf#page=83

then there would be a top-up.[141] We said this was in line with our decision in July 2018 to distinguish between allowed and expected returns.

3.168 Following consideration of consultation responses, we have decided to make one change to our proposal. Rather than implement the mechanism with reference to average performance (e.g. gas licensee average performance), we have instead decided to implement with reference to licensee-specific performance.

3.169 This change means that each licensee will, if its outperformance is less than 0.25%, receive a top-up allowance, up to 0.25%. One advantage of the change is that it avoids the complexity of creating separate pools of licensees and the complexity of calculating average performance. Relative to our DD proposal, a licensee-specific approach reduces risk to investors because it avoids the chance that one licensee/company drives average outperformance resulting in no top-up being paid.

3.170 The CG stated that the mechanism was a transfer of risk to consumers. By contrast, we would describe the mechanism as a sharing of estimation risk rather than a simple transfer.

3.171 CA and CG question whether the mechanism is necessary. We agree that it is unlikely to be activated given the historic outperformance by energy network companies. Therefore, the mechanism has no benefit for licensees if RIIO-2 unfolds as expected and some benefit if performance does not meet expectations.

3.172 While licensees focus on unintended consequences, we note that most do not wholly reject the merits or benefits of introducing an ex-post mechanism.

3.173 Cadent suggest the mechanism should be operated on a company-specific basis. Concerns over the incentive properties were raised by NGET, NGGT, SPEN, SHET, SGN and NGN.

3.174 We noted SPEN's suggestion that there may be "no incentive" in some circumstances. We interpret that to mean no incentive to outperform. We also note NGET, NGGT, SHET, SGN and NGN raise incentive concerns. We considered incentive properties at DDs and noted that using average performance would maintain marginal incentives at all stages of performance. However, we do not

[141] See DD Finance Annex, para 3.155. Further, for the proposed calculation, see Table 28 from the DD Finance Annex. We showed how the top-up depended on the performance of the relevant pool (eg gas licensees) and was capped at 0.25%.

think that the ex-post mechanism, either in its DD or FD form, has a large impact on incentives. In principle, expected outperformance of 0.25% reflects information asymmetry, not effort. If we assume that 0.25% is primarily earned through information advantages, it would not be consistent to also assume that material effort is also needed. For companies to earn returns that exceed the cost of equity, we agree that effort will be needed: we therefore also believe that a strong incentive exists to earn more than 0.25%.

3.175 Overall, we believe that an ex-post mechanism is net beneficial. It offers investors protection against an overestimation or over adjustment on our part. It also allows us to implement a more balanced risk and reward framework for consumers.

CMA provisional findings on aiming up: NATS Appeal

3.176 In March 2020, the CMA published its provisional findings in the NATS Appeal, stating that:

> "[i]n coming to a point estimate, we have considered the risks of setting the WACC [allowance] in the top or the bottom estimate of the [WACC] range. We considered possible reasons for departing from the mid-point of the range (ie whether to aim up or aim down). We provisionally concluded on balance that there was no compelling reason **in this case** to deviate from the mid-point of our range."[142] [emphasis added]

3.177 The highlighted text suggests that setting allowed returns at the mid-point reflected case specific circumstances. Therefore, to set allowed returns at some other level for RIIO-2 is not necessarily wrong.

CMA provisional findings on aiming up: PR19

3.178 The CMA's PR19 PFs refer to the concept of "aiming up" by regulators. In each of the parameter estimates for the cost of equity, the CMA chooses a value which is at the "75th percentile" of its range of possible values. The CMA suggests that by doing so it adds 0.50% to allowed returns, which, for reference, is double the

[142] https://assets.publishing.service.gov.uk/media/5e7a2644d3bf7f52f7c871f3/Provisional_Findings_Report_-_NATS_-_CAA.pdf#page=18 (paragraph 52)

0.25% expected outperformance that we have used for these final determinations. We have therefore given this proportionate attention in the following sections.

Aiming up to address asymmetry

3.179 The CMA's PR19 PFs appear to place significant weight on an assumption that there is asymmetric downside risk within the PR19 framework. We considered whether the RIIO-2 framework contains net asymmetric risk, or whether there were parallels between RIIO-2 and the CMA's interpretation of PR19. However, our view, which we believe is shared by most RIIO-2 stakeholders and responses to DDs, is that a material adjustment to allowed returns on this basis would be unwarranted.[143] We also note that the CMA's PR19 PFs do not appear to draw a mechanistic link between asymmetric risk and higher allowed returns.

3.180 We do not, however, expect RIIO-2 companies to face perfectly symmetric risks across every aspect of their regulated activities. We recognise that RIIO-2 companies operate under regulatory arrangements that expose them to risks and provide opportunities for rewards to varying degrees. While, in aggregate, price control packages are typically calibrated to provide companies with a fair opportunity to earn an efficient cost of capital, it is possible that individual elements of the price control package are not perfectly symmetrical and may be biased upwards or downwards.

Aiming up to maximise consumer welfare or secure additional investment

3.181 The CMA's PR19 PFs state that "[t]here are well-established arguments that underinvestment caused by a cost of capital being set too low damages the overall welfare of consumers (and potentially the wider economy) materially more than the welfare lost through bills that may be slightly too high."[144] The CMA may be referring to research which in our view is not fully applicable to the regulation of energy networks. One report, which we have seen cited in support of aiming up, is by Professor Ian M Dobbs.[145] However, Dobbs' work does not account for all relevant considerations. For example, sharing factors, Output Delivery Incentives ("ODIs"), and licence obligations, are omitted from Dobbs' analysis. Overall, in the context of maximising consumer welfare, we do not believe that there are 'well-

[143] For example, Frontier's report for National Grid on expected performance assumes that most incentive mechanisms are in general normally distributed with identical upside and downside potential. Similarly, Frontier's report for NGN on expected performance also suggests there is symmetry on most incentives. Frontier's estimates of expected underperformance are generally much smaller (0.16% to 0.26%) than the CMA's PR19 PF 'aiming up' value of ~0.50%. We do, however, note claims that asymmetry may exist, particularly in some elements, as argued by SGN, SPEN and SHET for example.
[144] CMA Ofwat PFs. Para 9.667
[145] https://www.staff.ncl.ac.uk/i.m.dobbs/Files/Welfare%20loss%20JRegE.pdf

established' arguments or evidence for aiming up in the context of the energy networks sector.

3.182 The CMA's PR19 PFs also state that "we note that the most common decision has been that some 'aiming up' has been merited in order to promote investment in the sector, and that there may be benefits to consistency – including ensuring investor confidence in the sector."[146] We believe there are examples where an 'aim straight' approach has been taken and we explain further below why we view these as relevant to the case of RIIO-2. For example, the approach taken by the CMA and its predecessor, the Competition Commission ("CC") in other appeals/re-determinations (e.g. NATS Appeal provisionally in 2020, Bristol Water in 2015) was to 'aim straight').

3.183 The design of the RIIO-2 price control includes several features, such as UMs, to protect network companies and consumers from uncertainty regarding investment during the RIIO-2 period to deliver, for example, net zero. This flexibility weakens the argument that allowed returns should materially exceed the cost of capital. For example, rather than allow a material premium above the cost of capital, UM totex allowances can, at the time of established need, reflect consumer benefits of actual investment in a targeted and evidenced way, with a concrete link between allowances and outputs/outcomes. By contrast, an allowed return on capital that materially exceeds the cost of capital does not appear to be an effective or targeted method of securing higher investment, particularly in the absence of agreed investment(s).

3.184 In the National Audit Office report into RIIO-1 published this year, the NAO concluded that Ofgem had aimed up in ex ante cost of equity allowances.[147] The experience of RIIO-1 outturn is that – rather than this leading to higher investment levels – the licensees have consistently underspent their allowances.

Aiming up to address financeability

3.185 Based on the results of our 3-step process for determining an allowed return on equity, which explicitly considers market evidence at each step, we believe that the notional efficient company is equity financeable under RIIO-2 and there is therefore no need to aim up on equity financeability grounds. Our view is

[146] CMA Ofwat PFs. Para 9.668
[147] https://www.nao.org.uk/wp-content/uploads/2020/01/Electricity-networks.pdf#page=37 (e.g. Para 2.12)

therefore in line with CC precedent from the 2007 airport price control review.[148] We set out further rationale within Chapter 5 (Financeability). For example, at paragraphs 5.18 to 5.21, we consider in more detail whether there is other regulatory precedent that might support aiming up on financeability grounds, and whether any aiming up is necessary given financial ratio estimates for RIIO-2.

Aiming up

3.186 Our final view in these FDs is arguably consistent with a degree of aiming up. The Step 2 cross-checks suggest that the expected return is lower than the CAPM-implied value from Step 1. Based on Step 2 evidence, we tighten the range to 3.8% to 5.0% implying a mid-point of 4.4% however we select a value of 4.55%. In Step 3, we believe that the evidence supports expected outperformance of more than 0.25%.[149] However, our final view uses the minimum value of 0.25%. We supplement this with an ex post adjustment mechanism in favour of investors.

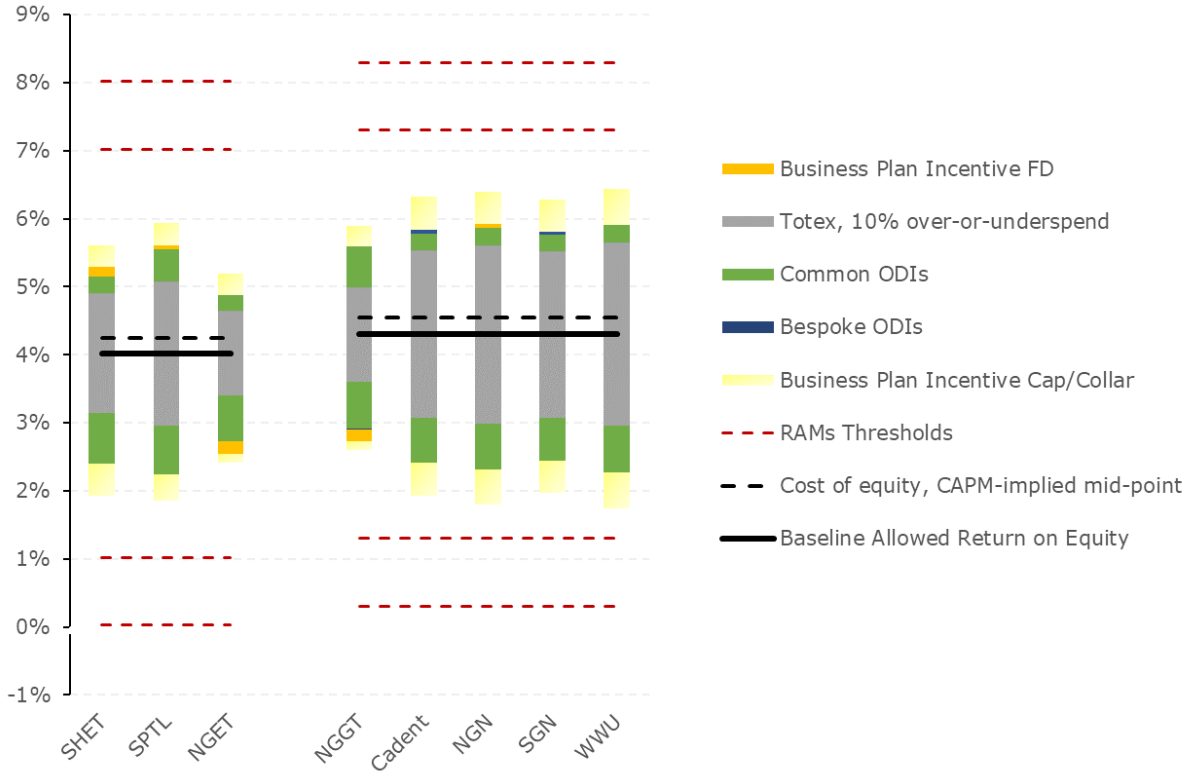
Return on Regulated Equity (RoRE)

3.187 In this section, we present our final view on the package of incentives for RIIO-2. In line with our approach to RIIO-1 Annual Reports, we present companies with different notional gearing levels side by side. Figure 3 below reflects:

- Outcome Delivery Incentives (ODIs), showing the maximum upside and downside returns
- Totex upside and downside, assuming 10% under-or-overspends
- RAMs thresholds, as described in Chapter 8
- The Business Plan Incentive (BPI) range and our BPI Final Determination
- Baseline RoRE values for RIIO-2.

[148] Competition Commission, 2007, Heathrow Airport Ltd and Gatwick Airport Ltd price control review. Final report, paragraph 5.32, page 77 (see https://webarchive.nationalarchives.gov.uk/20140402235728/http://www.competition-commission.org.uk/assets/competitioncommission/docs/pdf/non-inquiry/rep_pub/reports/2007/fulltext/532.pdf#page=80)
[149] https://www.ofgem.gov.uk/system/files/docs/2019/05/riio-2_sector_specific_methodology_decision_-_finance.pdf#page=77

Figure 3: RIIO-2 RoRE ranges



Source: Ofgem analysis

3.188 We consider that our RIIO-2 price control package offers a reasonable balance between scope for outperformance for high performing companies and underperformance for those companies that fall short. For ET, Figure 3 reflects our decisions for ODIs, including cap and collar levels and a wider range of downside outcomes than upside ones. However, in line with our presentation at DDs, Figure 3 reflects the range of possible outcomes, without reference to the distribution of outcomes within the range. Therefore, the expected outcome is not necessarily the simple average of the highest and lowest points. Our expectation based on actual performance to-date is that SHET, SPT and NGET should perform well on these ODIs and the more extreme downside outcomes are highly unlikely to materialise.

4. WACC allowance

Section summary

In this section we bring together our decisions for debt, equity and notional gearing to generate an overall allowance for the cost of capital for ET, GT and GD. We summarise how allowances for the cost of capital will change during RIIO-2 to reflect debt and equity indexation.

4.1 Our current forecast for the baseline allowed return on capital during RIIO-2 is summarised in Table 13, reflecting the combined decisions made in other chapters on debt, equity and financeability.

Table 13: Final determination on the baseline allowed return on capital (CPIH): average[150] for five years ending 31st March 2026

Component	SHET	NGET & SPT	GT, SGN south & Cadent	SGN scot, NGN & WWU	Ref	Source
Notional gearing	55.00%	55.00%	60.00%	60.00%	A	Chapter 5
Cost of equity	4.25%	4.25%	4.55%	4.55%	B	Table 12 shows Ofgem estimate of 4.55%. 4.25% assumes the cost of capital is identical at 60% and 55% gearing.
Expected Outperformance	0.22%	0.22%	0.25%	0.25%	C	See paragraph 3.147 for Ofgem decision of 0.25%. 0.22% assumes return on capital is identical at 60% and 55% gearing.
Allowed return on equity	4.02%	4.02%	4.30%	4.30%	D	= B – C
Allowed return on debt	1.59%[151]	1.82%	1.82%	1.88%	E	Chapter 2
Allowed return on capital	2.69%	2.81%	2.81%	2.85%	F	= A * E + D * (1 – A)

Source: Ofgem analysis

[150] We present here a forecast of allowed returns. Final allowances for debt and equity from 2022/2023 onwards will reflect changes in market observations for debt costs and Index Linked Gilts, as per the WACC allowance model. Equity values on a post-tax real basis, debt values on a pre-tax real basis. Values may not sum due to rounding.
[151] SHET will have a RAV weighted cost of debt indexation mechanism, forecast shown is based on Ofgem FD totex scenario. Cost of debt forecast would fall to 1.49% in a Net Zero 2 totex scenario.

4.2 The allowed return on capital will change during RIIO-2 to reflect the combined effect of the debt indexation and equity indexation mechanisms, as shown in the "WACC allowance model" published alongside these Final Determinations. We will update the allowed return on equity using updated risk-free rates and an equity beta of 0.759 for 60% notional gearing as discussed in Chapter 3, and in line with our Step 2 view (see Table 12). We will then confirm the impact of debt indexation to calculate WACC at 60% notional gearing and lastly calculate equity returns for those companies with notional gearing of 55% assuming that equity indexation affects the allowed return on capital equally, in line with Modigliani Miller.

5. Financeability

Section summary

Financeability relates to licence holders' ability to finance the activities, which are the subject of obligations imposed by or under the relevant licence or legislation. We focus in this chapter on the financeability considerations for ET, GT and GD. The ESO annex sets out our ESO considerations.

We have considered the financeability implications of Ofgem's totex allowances, WACC allowances, incentives and notional structure as well as macro-economic changes since Draft Determinations.

This section should be read in conjunction with Chapter 11 of the Core Document.

Purpose and benefits

Purpose: To check that all components of our Final Determination, when taken together, allow a notional efficient operator to generate cash flows sufficient to meet its financing needs.

Benefits: Allowing continuing investment in networks, which benefits consumers by allowing the continuation of stable and well-functioning networks that support energy supply at an efficient cost to consumers.

Final Determination

Allowance parameter	Final Determination	Draft Determination
Notional Gearing	Notional gearing of 55% for ET networks and 60% for NGGT and GD networks.	Same as FD
Financeability Check	We consider all licensees are financeable on a notional capital structure basis, taking account of cost and incentive allowances, cost recovery and allowed returns in these Final Determinations.	Also considered financeable at the date of DD

Final Determination rationale and Draft Determination responses

5.1 We have summarised and responded to the main points made by network companies on financeability in Appendix 5 and have summarised and responded to relevant consultant reports in Appendix 3.

A summary of responses to FQ12 (approach to assessing financeability)

5.2 Citizens Advice broadly supported our approach to assessing financeability but noted that networks could have provided more justification for their proposed target rating levels for the notional company.

5.3 The RIIO-2 Challenge Group thought that the companies had not taken a sufficiently nuanced approach to financeability "with an excessive emphasis on AICR and PMICR and insufficient justification for targeting ratings which were in most cases two notches above those required to satisfy the relevant licence condition"[152]. They also took the view that COVID-19 and Brexit could benefit utilities relative to other investments such that the cushion suggested in certain network proposed ratios and ratings may not be justified.

5.4 Network companies generally disagreed with assumptions we had made for the financeability assessment and/or the resulting conclusion. These are covered in more detail in Appendix 5. Most networks did agree with a notional (rather than actual) approach to assessing financeability, but they argued that various erroneous assumptions overstated various key ratios and therefore gave an overly optimistic picture of financeability.

5.5 Several network companies suggested that the financeability assessment should act as a cross check on the allowed return. For example, NGET argued that "… a financeability issue should give regulators pause for thought in the judgements they have made in the return calculation"[153].

A summary of responses to FQ13 (approach to notional gearing)

5.6 Citizens Advice supported our approach to determining notional gearing and considered that moving to lower notional gearing would alleviate pressure on

[152] RIIO-2 Challenge Group response, pages 23-24
[153] NGET, Finance annex response, page 86

financial metrics and be more in line with measures of gearing for listed companies.

5.7 Conversely, the RIIO-2 Challenge Group were not convinced of the need to reduce gearing levels from RIIO-1 levels and expressed concern that this led to an equity issuance allowance being provided to networks. They considered that it might be more appropriate to reduce the notional dividend assumption before considering reducing notional gearing and providing an equity issuance allowance.

5.8 Most network companies disagreed that notional gearing should be driven by financeability considerations. Some acknowledge that reducing notional gearing does aid notional company financeability. However, some argue that material reductions from RIIO-1 levels (for example, as they argue applies in the GD sector) may create challenges for actual companies because it may take some time to implement a mirroring reduction for actual companies. SPT did agree that lower notional gearing levels were helpful for financial resilience[154], but they argued that the WACC allowance should be increased for ET due to the increased risk of ET relative to other sectors.

A summary of responses to FQ14 (financial adjustments due to COVID-19)

5.9 Citizens Advice and the RIIO-2 Challenge Group do not believe any changes to financial parameters need to be made due to COVID-19. Both point to the additional protections that network companies enjoy relative to other investments and the likelihood that they will be attractive investments and have good access to capital in times of uncertainty.

5.10 Some licensees argue that recent analyst forecasts show that TMR estimates may have increased significantly and that utilities do not seem to be seen by the current market in their usual safe haven way. In support of this, licensees refer to a Frontier report indicating increasing risk.[155]

5.11 Some licensees suggested that uncertainties surrounding COVID-19 highlight the requirement to have a notional company with comfortable headroom to absorb increased volatility in the macroeconomic environment. One network (NGET)

[154] "the move to 55% gearing is welcome due to impact this will have on financial resilience", SPT Draft Determination response, 3.204

[155] See for example page 86 of the following Frontier report: https://www.ofgem.gov.uk/system/files/docs/2020/09/dd_response_nget.zip "NGETFinance Annex FQ5FQ6Technical Report Beta for RIIO T2GD2.pdf"

submitted concerns that high inflation could be problematic for networks, while another (NGN) raised concerns over low inflation.

Final Determination rationale

Approach

5.12 We do not agree with the view that the financeability assessment is a reliable cross check on the allowed return. It is an assessment of the price control package and cashflows as a whole including whether these are sufficient to allow the notional efficient operator to access finance on reasonable terms. We do not consider it a reliable check on whether the allowed return (or components of it) is reasonable. The cross checks employed for the cost of capital parameters themselves serve to provide comfort that the allowed return is set at the level indicated by market evidence of the requirements of investors.

5.13 We have previously indicated that it will be for network companies to evaluate whether any issues revealed by weak metrics may lead to lower levels of gearing or tolerance of lower credit ratings, and for rating agencies to evaluate whether there should be a further evolution in rating methodologies[156].

5.14 We consider it wholly appropriate if there are constraints on certain credit metrics for the notional company that we consider appropriate action(s) in response. As set out in the DD Finance Annex[157], we consider a reduction in notional gearing, particularly when accompanied by equity issuance allowances, is proportionate and appropriate. In addition, we consider that other measures could be appropriate in some circumstances, such as adjustments to capitalisation rates and/or depreciation rates, which are net present value neutral for investors and consumers.

5.15 We are of the view that at the current time, any constraint in credit metrics would likely have resulted from the combination of a) expected investor returns (for both equity and debt) being at close to historically low levels, and b) Ofgem allowing remuneration for average embedded debt costs that have been contracted at higher than current rates because rates have been falling over a long period of time.

[156] RIIO-ED1 Draft determinations financial issues paragraphs 3.21-3.22. Although this draft determination applied to Electricity Distribution networks, which this price control does not, the principle holds for all sectors.
[157] DD Finance Annex, 5.37- 5.57

5.16 To illustrate this point, if we took the spot cost of debt on 30th October 2020 of 0.29% CPIH real (including additional costs of borrowing) and the cost of equity of 4.55%, at 60% gearing this would result in an AICR of 1.96x, which is above Moody's published ratio guidance for an A2 rating[158]. If rates had been rising for the last 10-15 years, we would expect the embedded cost of debt to be even lower and the resulting AICR to be even higher. In this hypothetical circumstance, we would not argue that allowed returns should be lower than market evidence levels. Similarly, we do not accept that allowed returns should be increased after a period of falling rates.

5.17 We note Wright and Mason's position in the UKRN report[159] that embedded debt should not be remunerated at all because (among other reasons) unregulated companies do not receive this kind of insurance from their customers[160]. While we note this logic, we have intentionally and consistently provided an allowance for embedded debt in price control settlements. Nonetheless, this issue is relevant to the question of whether the allowance for equity should be influenced by the cost of embedded debt, which it would be if we accepted that pressure on certain credit metrics might indicate the equity allowance needed to be set higher. It cannot be correct that in offering networks the protection of remunerating average efficient embedded debt costs that this could lead to overcompensating equity or 'aiming up' for apparent financeability reasons.

5.18 We note the CMA's position in PR19 PFs does indicate that "[w]e also consider that there are broader reasons for considering a WACC above the mid-point in this determination, relating to financeability..."[161] However, in previous CC/CMA appeals/re-determinations, the CC[162]/CMA's approach was consistent with our approach, to not increase WACC or equity allowances as an appropriate remedy for financeability constraints. Perhaps the best example of this comes from the CC 2007 airport price control review:

> "It would be possible to increase the returns in Q5 and hence improve financeability in various ways. We set out some options and our views on them.

[158] As stated in Moody's "UK Energy Networks" webinar presentation on 9th September 2020
[159] "Estimating the cost of capital for implementation of price controls by UK Regulators", published on UKRN website in 2018: https://www.ukrn.org.uk/wp-content/uploads/2018/06/2018-CoE-Study.pdf
[160] Ibid, para 8.5.2
[161] CMA PFs. Para 9.670
[162] Competition Commission

> (a) By raising the allowed cost of capital. It would be possible to increase our proposed WACC [allowance] in the form of a higher equity return or a higher debt return. We do not favour this as we consider that our chosen cost of capital reflects the true cost of raising funds allowing for all the systematic risk faced by the airports and to increase the cost of capital and hence the allowed return further would result in an excessive return being earned on new investment."[163]

5.19 Other examples span at least 25 years of CC/CMA decision making, including:

- South West Water (1995), "in our view, as long as the overall rate of return is satisfactory, it is for the company to adapt its financial structure and policies to achieve key financial ratios"[164]
- Mid Kent Water (2000), which adopted a lower level of gearing than shown in the initial balance sheet[165]
- Bristol Water (2010), which took an approach consistent with the CMA's determination on South West Water[166]
- NIE (2014), which considered that "if shareholders were able to withdraw large sums in periods with strong cash flow, it was reasonable they should also be willing to supply finance in periods of weaker cash flow. We considered that shareholders had an incentive to supply finance as long as the overall rate of return is in line with the WACC, and that the regulatory regime has appropriate provision for situations where shareholders are unable to, or refuse to, supply finance".[167]

[163] Competition Commission, 2007, Heathrow Airport Ltd and Gatwick Airport Ltd price control review. Final report, paragraph 5.32, page 77 (see https://webarchive.nationalarchives.gov.uk/20140402235728/http://www.competition-commission.org.uk/assets/competitioncommission/docs/pdf/non-inquiry/rep_pub/reports/2007/fulltext/532.pdf#page=80)
[164] South West Water Services Ltd: A report on determination of adjustment factors and infrastructure charges for South West Water Services Ltd, MMC, 1995, paragraph 2.117.
[165] Mid Kent Water plc, a report on the references under sections 12 and 14 of the Water Industry Act 1991, CC August 2000, paragraphs 8.54–8.59. As noted in paragraph 8.55, Mid Kent Water accepted during the course of the inquiry that the CC should reduce gearing by reversing the special dividend paid to its parent company
[166] https://assets.publishing.service.gov.uk/media/55194c70e5274a142b0003bc/558_final_report.pdf, para 10.12
[167] https://assets.publishing.service.gov.uk/media/535a5768ed915d0fdb000003/NIE_Final_determination.pdf, para 17.100

5.20 We also note Ofwat's observation from previous water price control experience that "Increasing returns at PR04 for financeability led to windfall gains for investors…. without obvious benefits to customers".[168]

5.21 In line with these precedents, we do not agree with a principle that allowed returns should be increased to deal with apparent financeability constraints. Further, even if this principle were accepted, we do not believe that it would be necessary for RIIO-2, given the analysis that follows.

Financeability analysis results

5.22 We have performed an updated financeability analysis based on these Final Determinations. Consistent with our Draft Determination approach, this involved an in-the-round assessment that targets each notional licensee broadly achieving comfortable investment grade credit quality. This included consideration of:

- financial projections from our financial model(s) as used to calculate revenues in line with these final determinations
- the implied Moody's methodology rating (as this is the most transparent and therefore replicable methodology of the three rating agencies)
- key ratios compared to stated rating agency guidance thresholds for ratings two notches above investment grade but without a hard requirement to always meet those guidance levels for every ratio, recognising the discretion that rating agencies have in applying those levels to their eventual ratings assessments
- the strength of other metrics and qualitative factors
- stress test results.

5.23 For financeability testing purposes we have tested different possible outturn totex scenarios. The first is what we refer to as "Ofgem FD", which represents the current charge setting totex scenario. We have also tested a higher volume illustrative totex scenario ("Net Zero 1") across all sectors and an additional even higher totex scenario in the ET sector ("Net Zero 2") as this was considered necessary by ET networks given the uncertainty around the eventual spend, in that sector in particular, to meet net zero ambitions. These illustrative scenarios (Net Zero 1 and Net Zero 2) do not represent forecasts or indications of re-opener allowances but are cases that could be considered, albeit dependent on several

[168] https://assets.publishing.service.gov.uk/media/5f97f639e90e077b075040ab/Risk_and_Return_-_response_to_CMA_provisional_findings.pdf, page 44

factors The 'Net Zero 2' scenario therefore tests financeability at what we consider to be fairly extreme levels of additional totex (total of £8bn across the ET sector, in addition to £9.9bn of ex ante allowances).

Table 14: Summary financial ratios for Final Determinations for notional company structures (FYE 2022-2026), Final Determination allowances

Licensee	RIIO-2 Starting Notional Gearing	Adjusted Interest Cover Ratio [169]	Funds from operations/ net debt [170]
SHET	55%	1.64	10.5%
SPTL	55%	1.63	12.7%
NGET	55%	1.60	11.9%
NGGT	60%	1.57	11.6%
Cadent	60%	1.49	10.1%
Northern	60%	1.46	9.7%
Scotland	60%	1.46	9.8%
Southern	60%	1.49	10.1%
Wales & West	60%	1.47	10.1%

Table 15: Summary financial ratios for Final Determinations for notional company structures (FYE 2022-2026), Net Zero 1 scenario

Licensee	RIIO-2 Starting Notional Gearing	Adjusted Interest Cover Ratio [171]	Funds from operations/ net debt [172]
SHET	55%	1.64	9.9%
SPTL	55%	1.59	12.3%
NGET	55%	1.57	11.5%
NGGT	60%	1.52	11.5%
Cadent	60%	1.47	10.0%
Northern	60%	1.43	9.6%
Scotland	60%	1.44	9.8%
Southern	60%	1.47	10.0%
Wales & West	60%	1.44	10.1%

[169] Broadly consistent with Moody's form of calculation which excludes the impact of differences between fast/slow money and expected opex/capex
[170] Broadly consistent with S&P form of calculation which includes the impact of differences between fast/slow money and expected opex/capex
[171] As for Table 14
[172] As for Table 14

Table 16: Summary financial ratios for Final Determinations for notional company structures (FYE 2022-2026), Net Zero 2 scenario

Licensee	RIIO-2 Starting Notional Gearing	Adjusted Interest Cover Ratio [173]	Funds from operations/ net debt [174]
SHET	55%	1.62	9.6%
SPTL	55%	1.58	12.1%
NGET	55%	1.56	11.4%

5.24 The above results indicate that all notional licensees can be considered comfortable investment grade in the round because a) RIIO-2 average key credit metrics indicate comfortable investment grade, and b) the application of the full Moody's methodology results in a methodology implied rating of Baa1 (2 notches above the minimum investment grade) or above for all notional networks across Ofgem FD, Net Zero 1 and Net Zero 2 scenarios.

5.25 The above results make assumptions consistent with those set out in Draft Determinations, including that equity outperformance of 0.25% is earned in line with expectations. We note that some network companies pointed out that the cashflow timing impact of this would depend on how it was earned (i.e. whether it was earned through incentives or fast money or slow money underspend).[175] To reflect this, we considered ratio results excluding this outperformance assumption: the results indicate that AICR falls by 0.06x on average and FFO/Net debt falls by 0.2% on average.

5.26 We continue to consider it appropriate to include 0.25% expected outperformance in our financeability assessment. Although the timing of the cashflow impact may vary, the AICR is intended not purely as a cashflow interest cover metric (the interest cover ratios that include regulatory depreciation allowances could more accurately be viewed as this), but as a longer-term debt service sustainability measure. Our decision to set the ex post adjustment mechanism on a company-specific basis should provide networks and ratings agencies with comfort that it will be earned and that any absence of this source of revenue in any particular year should not be considered a longer term problem in terms of debt service sustainability.

[173] As for Table 14
[174] As for Table 14
[175] Finance Annex, 5.22

5.27 On the other hand, we note that AICR would improve by approximately 0.15 if the notional company were assumed to retain RPI debt rather than immediately switch all existing RPI debt to CPIH-linked debt. Although in the base case we have assumed a switch to higher real yielding CPIH-linked debt in line with the switch in RAV inflation (mainly because this is the more conservative assumption from a financeability and credit metric perspective), we do not consider that to be the only possible reasonable assumption for the notional company. If the notional company were assumed to either retain RPI-linked debt or transition to CPIH debt over time, the AICR metric would exhibit more headroom. This is a relevant factor to take into consideration in an in-the-round credit quality assessment.

5.28 We continue to consider it appropriate to exclude BPI penalties or rewards from notional company financeability assessments. We do not accept some network company assertions that the BPI is designed in such a way that a notional transmission company should be expected to attract a penalty. We note that there are some transmission companies that will receive a reward and some that will receive a penalty and consider that the notional efficient operator could reasonably be expected to have received neither a penalty nor a reward under this incentive.

5.29 We continue to consider it reasonable to assume some notional de-gearing in some sectors, and our notional gearing assumptions reflect the analysis undertaken at Draft Determinations.[176] This does therefore assume £1.8bn[177] of notional equity issuance across sectors, with associated equity issuance cost allowances, at the start of the price control.

5.30 In addition, some networks require notional equity issuance during the price control in certain scenarios. Our modelling suggests that SHET and SPT would require some notional equity injection during the price control for the Ofgem FD totex scenario. In a Net Zero 2 scenario, all ET networks would require some notional equity injection (totalling £2.5bn[178]) during the price control. We consider this reasonable given under these scenarios ET RAV would increase by almost £9bn.[179] It would not be reasonable to assume that this level of RAV growth was funded all by debt.

[176] See Table 13 from DDs here: https://www.ofgem.gov.uk/system/files/docs/2020/07/draft_determinations_-_finance.pdf#page=42, which we continue to believe is accurate.
[177] 2018/2019 price base
[178] 2018/2019 price base
[179] 2018/2019 price base

5.31 As discussed in the capitalisation section (see paragraphs 11.2 to 11.11 below), there are some judgements required in setting capitalisation rates in a price control where the level of totex (and therefore the split of capex to opex) cannot be predicted with certainty at the outset. The split capitalisation rate with one rate applying to baseline and one rate applying to uncertainty mechanisms goes some way to alleviating concerns that setting the capitalisation rate on the basis of one potential totex scenario could lead to significant and persistent under or over capitalisation during RIIO-2.

5.32 The precise capex/opex mix for uncertainty mechanism totex is uncertain ex ante and overcapitalisation could put pressure on some credit metrics. We therefore consider it appropriate to set the capitalisation rate for uncertainty mechanisms at the lower end of the range of possible capex/opex assessments under different scenarios. This has the benefit that it could be expected to provide some financial support (and support some credit metrics) through increased revenues if higher totex scenarios (involving higher capex proportions) outturn.

5.33 We consider our judgement in setting capitalisation rates for uncertainty mechanisms in this way is consistent with Ofgem's Decarbonisation Action Plan and facilitates "net zero-related actions to be put into place in the price controls at any time"[180]. This is because this judgement seeks to support the financial strength of the networks in the event higher totex scenarios associated with high Net Zero investment materialise.

5.34 Applying the financial parameters discussed in this finance annex to the totex scenarios for Net Zero, we do not observe systemic credit metric weaknesses. However, we also do not consider one credit metric falling below guidance levels as indicative of the credit quality in the round necessarily being judged to be a notch lower.

5.35 Even if one ratio indicated a concern, we note that different agencies take different views on the importance or otherwise of particular ratios. This is illustrated by the significant number of companies that have 'split ratings' (i.e. not rated at the equivalent category by all agencies that rate them). It would not be inconsistent for us to consider the notional company credit quality as two notches

[180] https://www.ofgem.gov.uk/system/files/docs/2020/02/ofg1190_decarbonisation_action_plan_revised.pdf, page 16

above minimum investment grade in the round, even if we did consider there was a possibility that one or more rating agencies may rate it slightly lower or higher.

5.36 At Draft Determinations, we indicated that we were comfortable with network companies' suggestions of target credit quality of two notches above investment grade (which provides headroom over their investment grade licence obligation). This remains our position and we consider the financeability assessment is consistent with this target credit quality.

Dealing with uncertainty

5.37 As discussed in Chapter 8 'Net Zero and innovation' of the Core Document, a key objective of RIIO-2 is to prepare network companies to deliver Net Zero at lowest cost to the consumer, while maintaining world-class levels of system reliability.

5.38 To achieve this, the RIIO-2 price control is designed to be flexible enough to inject the necessary funding, at the right time, to support the achievement of Net Zero. We have allowed for significant additional funding to be sought within the price control period, rather than having everything settled at the beginning of the control.

5.39 This flexibility does present a challenge in terms of assessing financeability because it is not clear in advance what level of totex investment will be required and therefore how this might impact revenue, cashflow and credit quality.

5.40 Although we have tested what we consider to be stretching totex scenarios from a financeability perspective, we recognise that it is not possible to test all conceivable totex scenarios and/or have perfect foresight on the eventual capital intensity of those scenarios. We therefore do not consider it necessary (or desirable) to attempt to manipulate price control parameters to meet certain credit metric guidance levels for all conceivable totex scenarios, given the uncertainty surrounding whether these totex scenarios will materialise.

5.41 We note that in higher Net Zero totex scenarios the notional company would be expected to be raising a higher proportion of new debt than in the Ofgem FD totex scenario, which could be expected to result in more headroom in the cost of debt allowance (as discussed in Chapter 2). This headroom (or additional allowance compared to average costs) could also be expected to provide some support to credit quality in these scenarios.

5.42 If very high re-opener volumes do materialise and if the ex ante fixed uncertainty mechanism capitalisation rate does not offer adequate revenue relief then there could be some circumstances where it would be appropriate to consider any resulting notional company financeability constraints at the time. We consider it appropriate and proportionate that potential remedies be considered in those circumstances at the time rather than incorporating ex ante 'fixes' to a problem that we do not expect to materialise.

5.43 One policy development that further supports financeability is our decision to allow re-opener forecasting (see Chapter 11 paragraphs 11.54 to 11.71 for further detail). This forecasting will not only facilitate timely cost recovery for networks (which was something that was raised as a financeability concern by some networks if reopeners were not permitted to be forecast for charging purposes), it will also assist Ofgem and network companies foreseeing any potential notional company financeability constraints as the price control progresses and it becomes clearer what outturn totex may be. It could also provide time for adequate consideration of potential remedies.

5.44 We have also considered a number of stress tests, including inflation stress tests, overspend stress tests and overall RoRE downside stress tests. We note that the CMA ran an overarching stress test for their PR19 redetermination of -1% on RORE and considered that this stress test captured an overall severe scenario that was unlikely to materialise. At business plan stage, we had suggested a -2% RORE scenario and we do present results of this stress test, but having considered the relatively narrow RORE ranges and protections for networks (such as lower sharing factors for example), we consider -1% RORE is a more reasonable overall stress test to run. The results of this and other relevant stress tests are included in Appendix 6.

Conclusion

5.45 The results of our financeability assessment, along with our consideration of market gearing levels, indicate to us that the notional gearing assumptions proposed at DD are appropriate. This is because a) the ratio results provide adequate but not excessive headroom at these notional gearing levels, and b) the gearing levels are reasonable given market data, medium term interest rate trends and embedded debt costs.

5.46 All notional licensees can be considered financeable under reasonable totex and stress test scenarios and we have processes in place to consider additional remedies if unexpected scenarios occur.

6. Financial resilience

Section summary

In this chapter, we summarise stakeholder responses to our Draft Determinations proposals and to the informal licence drafting consultation and set out our decision on additional financial resilience requirements for ET, GT, GD and ESO for RIIO-2.

Purpose and benefits

Purpose: Financial resilience measures aim to protect consumers from adverse consequences of financial distress.

Benefits: Having measures in place that provide early warning of financial distress, which enable consideration of potential mitigations and/or the restriction of certain activities in the event of financial deterioration, which in turn makes the failure of network companies less likely and/or increases the chance and quantum of recovery for the benefit of consumers.

Final Determination

Licence Modification	Final Determination	Draft Determination
Financial resilience report	Licensees to provide Ofgem with a financial resilience report if their issuer credit rating falls to BBB/Baa2 (or equivalent) and is placed on negative watch (or is downgraded directly to a lower rating without first being placed on negative watch).	Same as FD
Rating reports	Licensees to provide Ofgem with published rating reports, where permitted by the relevant rating agency.	Same as FD with clarification to drafting

Final Determination rationale and Draft Determination responses

Summary of Draft Determination and Informal Licence Modification Consultation responses

6.1 Some networks commented that the need for additional financial resilience measures were indicative of the financeability of the price control and that the

focus should be on ensuring a robust price control package for RIIO-2. Some network company responses to the informal licence drafting consultation on this topic also requested justification and explanation of how this requirement interacts with and offers more than the existing requirements for financial information.

6.2 Some networks questioned whether the rating trigger level for the financial resilience report was set at the correct level and whether it should be triggered if any of their ratings fell to this level or when the highest of their ratings fell to this level.

6.3 A greater number of networks commented on the proposal that networks share rating reports, stating that access to rating reports is subject to subscription rights and restrictions apply. However, some networks noted that it may be possible to share the reports if it was a formal regulatory requirement to do so.

6.4 In response to the informal licence consultation, a number of networks sought clarification that the licence requirement to send reports to Ofgem would not require them to breach their commercial agreements with rating agencies.

6.5 There were also a number of responses to the informal licence consultation that suggested a period of 5 working days was too short for this requirement and that 10 working days would be more reasonable.

Rationale for Final Determination

6.6 We considered stakeholder responses and the practical concerns raised. We have decided to amend the drafting of the condition to address stakeholder concerns and to clarify that the requirement to provide published rating reports is limited to where there had been a negative rating action or rating withdrawn, and when sharing of the report with Ofgem is permitted by the relevant rating agency. We have also clarified that the requirement could be fulfilled by sharing only the parts of a group company rating report that relate to the licensee.

6.7 As set out in DD Finance Annex, we believe the provision of such reports will assist Ofgem in monitoring the financial resilience of companies and will provide us with valuable information on networks' considerations of and plans for mitigating financial resilience challenges.

6.8 In response to the request that we set out how this requirement interacts with and provides more than the existing financial reporting requirements, we note the following:

- The sufficiency of resources certificate requires a 12 month look forward whereas the Financial Resilience Report would look further ahead
- An inability to provide a sufficiency of resources certificate would indicate a serious problem; the requirement for a Financial Resilience Report would be expected to be triggered before the circumstance of a licensee being unable to provide a sufficiency of financial resources certificate arises and therefore provides Ofgem with an earlier indication of potential problems
- Statutory accounts are backwards looking and do not make detailed projections about the future (other than a high-level going concern statement); the Financial Resilience Report would provide detailed financial projections
- The RFPR provides only numerical forecasts and does not currently include calculation or commentary on financial ratios used by ratings agencies
- The Financial Resilience Report includes consideration of downside scenarios and details of potential mitigating actions the licensee could take to improve its financial resilience and an indication of whether such actions are planned; no other existing reporting requirements include these considerations.

6.9 We consider this requirement is proportionate because we are only requiring this additional reporting from licensees that have credit quality materially below the notional company and that may approach licence equity distribution lockup and/or licence breach rating levels if credit deterioration continues. The required contents of the Financial Resilience Report in our view does not go beyond what a prudent licensee should be considering and discussing internally if they were in this position.

6.10 We do not agree with some network companies' suggestion that inclusion of this additional reporting requirement reflects the deteriorating credit position of the notional company. As we have illustrated in Chapter 5, the notional company is considered two notches above investment grade, so the trigger point for this additional reporting requirement is proportionate as it is one notch and a negative outlook below the notional company credit quality and one notch above the trigger for equity distribution lockup under the licence.

6.11 We have carefully considered whether the trigger level should be applied to any ratings held or whether it should only apply if the highest rating held falls to this level. We note that the obligation relating to maintaining an investment grade rating is for "an investment grade rating", not multiple ratings. On the other hand, the current distribution restrictions as set out in the Indebtedness condition are triggered by any of the issuer ratings held being below certain levels.

6.12 We are conscious that we regulate licensees with varying types of corporate and financing structures and that what might be problematic for one licensee with a particular type of financing structure may not be as problematic for a licensee with a different type of financing structure.

6.13 The Financial Resilience Report is intended to provide us with evidence that the licensee is carefully considering the various mitigants available to them in the event their credit quality is materially below that of the notional company and that they understand the risks they face. It is also expected to be a useful source of information for framing discussions with licensees that may have deteriorating financial resilience.

6.14 We do therefore want the Financial Resilience Report to be provided at the appropriate time. Therefore, we consider that the trigger point for the requirement to provide the Financial Resilience Report should reference licensees' existing debt covenants relating to ratings (if applicable).

6.15 We have therefore decided that the requirement for a Financial Resilience Report will be triggered if the licensee's highest rating held is at BBB/Baa2 (or equivalent) and is on negative watch, unless the licensee has any debt covenants linked to particular ratings from specified ratings agencies, in which case the requirement will also be triggered if any rating that is the subject of a debt covenant is one notch above the minimum covenant requirement and is on negative watch or the rating is lower than one notch above the minimum rating requirement. So, for example, if the covenant is for maintenance of an investment grade rating by S&P, the requirement for a Financial Resilience Report will be triggered if S&P's rating is at BBB and is on negative watch, or if the rating is lower than BBB.

6.16 We consider that this decision is proportionate and balances the timing of a requirement for a Financial Resilience Report according to the potential consequences of the rating falling further.

7. Corporation tax

Section summary

In this chapter, we summarise stakeholder responses to our Draft Determinations proposals and set out our decision on additional Corporation tax requirements for ET, GT, GD and ESO for RIIO-2.

Purpose and benefits

Purpose: To provide network companies a tax allowance to compensate them for their efficient corporation tax payments.

Benefits: Providing a notional allowance enables companies to recover amounts required to cover their tax costs while incentivising them to manage their tax affairs efficiently thereby keeping costs lower for consumers.

Final Determination

Output parameter	Final Determination	Draft Determination
Basis of calculation	To pursue Option A – continue with the notional allowance with a number of additional mechanisms to improve reporting and to enable us to review the allowance, if required, during RIIO-2.	Same as FD
Additional protections – Tax Trigger	To retain this mechanism from RIIO-1 and to simplify the modelling and determination process for Type A events.	Same as FD
Additional protections – Tax Clawback	To retain this mechanism from RIIO-1 and where we are reducing notional gearing levels for companies in RIIO-2, to allow some headroom by gradually reducing notional gearing levels for the purposes of the tax clawback calculation.	Same as FD
Additional protections – Tax Reconciliation	To introduce an annual requirement for companies to submit an annual tax reconciliation between the notional allowance and actual tax liability per their latest Corporation Tax returns.	Same as FD

Output parameter	Final Determination	Draft Determination
Additional protections – Board assurance statement	To introduce an annual requirement for companies to submit a board assurance statement alongside the tax reconciliation, providing assurance over the appropriateness of the values in the reconciliation.	Same as FD
Additional protections – Tax review	To introduce a tax review mechanism that would enable us to formally review and, if necessary, to adjust the companies' tax allowances during the course of RIIO-2.	Same as FD
Capital allowances - rates	To make both the allocation rates and tax rates used to calculate capital allowances variable values to enable updates during the price control.	Same as FD
Capital allowances – opening balances	To roll forward the RIIO-1 closing balances on a notional basis as opposed to resetting the opening pool balance based on the companies' actual tax computations.	Same as FD – we have also introduced an additional Intangibles pool for the ESO
Fair Tax Mark	To not pursue the Fair Tax Mark certification as a requirement for RIIO-2.	Same as FD

Final Determination rationale and Draft Determination responses

A summary of responses to FQ15 (pursuit of Option A)

7.1 All but one of the respondents to this question agreed with our proposal to pursue Option A, a notional calculation with added protections.

7.2 NGET and NGGT noted that a notional tax allowance has worked well in RIIO-1 and that it provides an incentive for licensees to manage their tax affairs efficiently, whilst other respondents mentioned that it is likely to provide the best outcome for consumers.

7.3 A few networks raised concerns around the proposed additional protections: SGN suggested a balance needs to be struck between the effectiveness of the protections and the additional cost of implementing them, while NPG considered the additional protections an unnecessary source of administrative cost and does not support the proposal to introduce them.

7.4 SSE does not support the notional calculation or the added protections but instead endorses a pass-through policy for tax costs along with the Fair Tax Mark accreditation as an alternative to our proposed additional protections.

A summary of responses to FQ16 (Capital allowance balances and variable values)

7.5 Networks were mostly in favour of the proposed rolling forward of capital allowance balances; in many cases, they agreed with the proposal, noting that it would ensure consistency with the treatment of capital allowances in previous price controls.

7.6 SSE supported resetting capital allowance pool balances to align with the actual positions to ensure they are remunerated for the actual tax they are paying.

7.7 Similarly, NGET, NGGT and the ESO recommend pool balances should be reset to actual for RIIO-2 as this would be consistent with the approach adopted at the beginning of RIIO-T1 and suggest retaining non-variable allocation rates but with a specific Tax Reconciliation narrative requirement.

7.8 The ESO also raised the issue of intangible assets, noting that they do not fit in any of the existing capital allowance pools as they are amortised over shorter periods than other pool balances and would require a new tax pool to be reflected within the PCFM.

7.9 Almost all networks were supportive of our proposal to make capital allowance and allocation rates PCFM variable values, citing simplification of the PCFM as the main benefit.

7.10 Cadent disagreed with the proposal to set variable, licensee-specific allocation rates and suggested that it would introduce complexity and potential inconsistency between licensees.

A summary of responses to FQ17a (Materiality threshold and deadband)

7.11 Feedback received on the use of the RIIO-1 "deadband" as a materiality threshold for the tax reconciliation, was broadly supportive.

7.12 All network companies agreed that a materiality threshold was required under which unreconciled differences would not require investigation, and a number of

the networks agreed that the RIIO-1 deadband was an appropriate materiality level to use.

7.13 NGET, NGGT and the ESO support the use of the deadband on the basis that it reflects the relative size of each business. WWU, NGN, and the RIIO-2 Challenge Group agreed that the deadband remains an appropriate threshold for the tax reconciliation.

7.14 SGN and SSE argue for a 1% materiality threshold on the basis that it is broadly in line with what would be expected for external audit purposes and that this is also in line with other reopeners.

7.15 NPG favoured a close-out assessment tax review using a materiality threshold based on five years' worth of the current deadband, rather than an annual reconciliation, arguing that this would ensure proportionality in the assessment and consistency with the previous approach.

7.16 A number of networks expressed a desire for further guidance to be provided by Ofgem as to how the reconciliation should be prepared.

A summary of responses to FQ17b (Tax Clawback and Tax Trigger)

7.17 All respondents agreed with Ofgem's proposal to retain the existing Tax Trigger mechanism and process for Type B events and to replace the Type A event process and calculation with PCFM variable values for each tax rate, which can simply be updated every year as part of the Annual Iteration Process.

7.18 There was broad support from the networks regarding the proposed retention of the Tax clawback mechanism and particularly for the proposed "glide path" to allow networks a few years to adjust to lower notional gearing levels.

7.19 Citizens Advice agreed that it is reasonable to allow networks some time to adjust to lower gearing levels but they suggest setting a more challenging timeline for Gas Transmission noting that the gradual reduction to 60% by year 5 of GT2 seems too generous.

7.20 NGN suggested that the proposed glide path should be extended with the 60% notional gearing level applying from the beginning of RIIO-3 instead of the last year of RIIO-2.

7.21 ENWL noted a number of cases whereby the clawback mechanism could give rise to unintended consequences, and both WWU and National Grid recommend that the policy objectives of the Tax Clawback mechanism be re-evaluated and justified by Ofgem as part of the wider RIIO-2 package.

A summary of responses to FQ17c (Tax Review)

7.22 There were mixed views on Ofgem's proposed process for the Tax Review. Cadent, NGN, NPG, ENWL and SSE were not supportive of our proposed introduction of a Tax Review process.

7.23 A number of networks were concerned that an additional review process could result in disproportionate cost and administrative burden if undertaken too frequently.

7.24 There were also some concerns around timing; Cadent and WWU suggest that a review should only cover the RIIO-2 period and beyond, rather than applying retrospectively. Cadent and National Grid argue that there should be a time limit on Ofgem's powers to trigger a review. Cadent suggest two years after the accounting period and while NGET and NGGT note Ofgem's ability to trigger a review should lapse on or after the closing out of the Tax Reconciliation process.

7.25 SGN and NPG suggest that a sharing factor should be applied to any legitimate under- or over-performance so that licensees are incentivised to be as tax efficient as possible.

7.26 Citizens Advice welcome the proposal for a review mechanism to check company tax allowances and note that seeking a resolution through engagement with networks before initiating a formal review is an appropriate and efficient process.

A summary of responses to FQ17d (Board assurance statement)

7.27 On the whole networks did not support the proposed introduction of a board assurance statement.

7.28 Cadent suggested a separate agreed-upon procedure carried out by third-party auditors would provide a more independent view on the reconciliation than a board assurance statement.

7.29 SGN and SSE see the board assurance requirement as a duplication of submissions that are already provided to HMRC and note that assurance is already implicit in the networks' compliance with existing tax legislation.

7.30 A number of networks argue that sufficient assurance will be provided over the Tax Reconciliation through the existing DAG process that covers the RIGs submissions.

7.31 WPD suggested submitting a copy of the Senior Accounting Officer (SAO) certifications and a copy of the licensee's published tax strategy as an alternative to the board assurance statement. Conversely, National Grid were comfortable with a board assurance statement in principle but suggested removing the requirement to submit a copy of the SAO certification on the basis that this duplicates the DAG process.

7.32 Citizens Advice support the board assurance requirement noting that it will be an important additional protection over the appropriateness of the values in the tax reconciliation.

Rationale for Final Determination position

7.33 We acknowledge that one respondent was not supportive of continuing the notional allowance and some network companies did not support our proposals to introduce added protections, while others were supportive in the main.

7.34 Having considered responses to the Draft Determinations, we have decided to implement the notional calculation and the additional protections for the reasons set out below.

Notional allowance

7.35 The notional allowance remains the most appropriate basis of calculation for the tax allowance. We have not identified any clear evidence that a change to either a pass-through or "double lock"[181] would provide better value for the consumer and furthermore, we consider that it would introduce inconsistency in the calculation of the allowance, which may be to the advantage of some networks and the disadvantage of others.

[181] As described in our RIIO-2 Sector Specific Methodology Decision and Draft Determinations Finance Annex, the double lock represents the lower of the notional allowance and actual payments made to HMRC.

7.36 The notional allowance preserves the incentive for networks to manage tax payments efficiently and is supported by all but one of the network companies.

7.37 While we consider the notional calculation to be the most appropriate approach based on the above, our work to date in this area has highlighted the need for more robust reporting and monitoring to improve transparency and to support tax legitimacy. As such, we will introduce a number of additional protections to supplement the notional tax allowance calculation.

Capital allowance pools

7.38 We acknowledge that NGET, NGGT and SSE argue for re-setting pool balances to actual as was done at the beginning of RIIO-1, however we do not agree that this is the best approach.

7.39 Continuing with the notional pool balances ensures that consumers continue to benefit from tax relief in respect of the asset expenditure they have funded. Changing the opening pool balances would represent a shift away from the notional calculation and may result in a gain for some networks whilst others would lose out with no clear consumer benefit.

7.40 NGET, NGGT and the ESO raised the issue of intangible assets, noting that they do not fit in any of the modelled capital allowance pools. We understand that a significant proportion of the ESO's expenditure is intangible capex given the unique nature of its business and its asset base among network operators. As such we will include an intangibles capital allowance pool within the ESO PCFM.

7.41 For NGET and NGGT we do not consider a new capital allowance pool for intangible assets to be necessary as intangible expenditure has not historically represented a significant proportion of expenditure for these operators and they are not forecasting an increase in intangible spend over the T2 period. For NGET, NGGT and other network companies, the intangible spend that is not allocated to a specific capital allowance pool will simply be shown as a reconciling item in the Tax Reconciliation.

7.42 The capital allowance pools for RIIO-2 are as follows:

Capital Allowance pool	Annual Allowance rate	Basis of amortisation
General pool	18%	Reducing balance

Capital Allowance pool	Annual Allowance rate	Basis of amortisation
Special rate pool	6%	Reducing balance
Structures and buildings	3%	Straight line
Deferred revenue expenditure	3% for SHET and NGET 2.22% for all others	Straight line
Intangible assets (ESO only)	14%	Straight line

Tax PCFM variable values

7.43 In RIIO-1, the PCFM used a macro to calculate the impact of changes in tax rates on base revenue and then generate a "Tax Trigger Event" adjustment if the impact is greater than the materiality threshold.

7.44 In DD, we proposed to replace the macro with variable values for the corporation tax rate, capital allowance rates and for allocation rates, which can be updated in every Annual Iteration Process.

7.45 We have decided that this modelling simplification will better enable the notional allowance to reflect the networks' actual tax payments because it will enable any changes to tax rates to be fully reflected in allowances without the use of a complex macro.

Materiality threshold

7.46 In the Draft Determinations Finance Annex, we proposed to apply the materiality threshold used for tax in RIIO-1 known as the "deadband"[182] to any unexplained differences between notional and actual tax paid in the tax reconciliation, which will be used to decide whether or not a tax review should be undertaken.

7.47 A number of networks have suggested that the materiality threshold should be in line with the RIIO-2 common approach to reopeners, which we proposed in our Draft Determinations to set at 1%. Some networks noted that a lower threshold may result in more reviews placing a greater administrative burden on networks and Ofgem.

[182] The "deadband" is the higher of the effect of a one per cent change in the rate of corporation tax on base revenue (all other things being held equal) and 0.33 per cent of the base revenue allowance.

7.48 We acknowledge that a low threshold could result in more frequent reviews of the tax allowance, however we reiterate that the existence of a material unexplained difference will not automatically trigger the formal review. An unexplained material difference in the tax reconciliation will simply prompt Ofgem to undertake a preliminary assessment, which, if not resolved, may result in a formal tax review.

7.49 Having considered the feedback received, we believe that our original proposal to use the deadband remains the most appropriate materiality threshold to apply in the context of the tax reconciliation as it reflects the relative size of the network companies and was the rate that was used for tax allowance adjustments made during RIIO-1.

Tax clawback and Tax Trigger

7.50 As set out in the Draft Determinations Finance Annex, we believe this mechanism should be retained as it captures the tax benefit received by networks with higher than notional gearing, promoting tax legitimacy within the sector.

7.51 We consider it reasonable to retain the mechanism whilst allowing networks some time to transition to the lower gearing levels of RIIO-2.

7.52 We note also that due to COVID-19 the ESO in particular may be exposed to significant under-recovery risk of magnitude comparable to its RAV. As such, we will not apply the tax clawback calculation to the ESO for the first two years of RIIO-2 and will keep this under review for the remaining years of RIIO-2 depending on the ESO's cash flow position.

7.53 A number of respondents also requested a review of the tax clawback policy for RIIO-2. We intend to formally review and clarify our position on this mechanism to provide clear and transparent guidance to all licensees, in due course.

7.54 On the Tax trigger, as noted in paragraph 6.45, we will replace the PCFM macro used to calculate the impact of changes in tax rates, with PCFM variable values that can be updated at each Annual Iteration Process.

7.55 For "Type B" events[183], we will apply the RIIO-1 materiality thresholds, or the existing notification and determination process.

Tax review

7.56 We have considered stakeholder responses and the concerns raised over the Tax Review and as a result have made some amendments to the licence condition and Price Control Financial Handbook (PCFH) drafting in this area.

7.57 Our intention is to monitor the tax allowance more closely in RIIO-2 and to improve transparency in this area through more robust reporting. We agree that efforts taken to achieve this should be proportionate and should not place any unnecessary regulatory burden on networks at the expense of the consumer.

7.58 A Tax Review would follow a submitted tax reconciliation, which contained material, unexplained differences, which cannot be understood or resolved through initial engagement between Ofgem and the licensee in question.

7.59 This preliminary assessment stage has been drafted into the process set out in the PCFH as a way to minimise the frequency of formal reviews being undertaken, where the licensee is able to provide a satisfactory explanation for a difference.

7.60 To address the concerns on timing, a Tax Review will be triggered by a material, unexplained difference in the reconciliation submitted during the RIIO-2 period. However, it may be necessary for the appointed examiner to review historical CT600 returns, statutory accounts and/or regulatory submissions to gain a full understanding of the licensee's tax payments.

7.61 The detail of the scope of work will be developed on a case-by-case basis, depending on the nature of the concern raised.

7.62 We do not agree that there should be a backstop or any caveat on the time periods that may be subject to a Tax Review. Tax is a complex and technical area and whilst we acknowledge the point that CT600 returns are often agreed and

[183] Changes in tax rates are Type A events. A full list of Type A and Type B events is included in the Tax liability allowances - financial adjustment methodologies chapter of the Price Control Financial Handbook for each sector: https://www.ofgem.gov.uk/publications-and-updates/latest-price-control-financial-handbooks-riionetwork-operator-licensees

closed down within 24 months, there are some instances where enquiries span many years.

7.63 We do agree with networks that more detailed guidance will be required than that which was in place for RIIO-1 and we intend to continue working with network companies to develop both the reconciliation template and guidance in time for its first submission.

Board assurance statement

7.64 We have considered stakeholder responses and the concerns raised over the board assurance statement and as a result, we have amended some of our licence drafting in this area.

7.65 Networks were largely opposed to the idea of submitting an annual board assurance statement alongside the tax reconciliations and while a number suggested alternative measures, there was little agreement among them as to what would be a suitable substitute.

7.66 Network companies continued to question the purpose of this additional statement given the existing DAG process that covers all RIGs submissions. As stated in the Draft Determinations Finance Annex, the board assurance statement will cover the reconciliation and the figures within it whereas the DAG requirements cover the licensee's internal assurance processes.

7.67 In our view, a board assurance statement will provide specific assurance over the accuracy and reasonableness of the values in the tax reconciliation and should require very little additional resource from the companies who will already be populating the reconciliation.

8. Return Adjustment Mechanisms (RAMs)

Purpose and benefits

Purpose: to provide protection to consumers and investors in the event that network licensees' returns are significantly higher or lower than anticipated at the time of setting the price control.[184]

Benefits: Consumers and investors will benefit from the introduction of RAMs as they will be protected against the possibility of licensees earning unreasonably high or low or returns in the RIIO-2 price controls. RAMs help to ensure the fairness of RIIO-2 by protecting consumers and investors against ex post overall returns from network price controls deviating greatly from ex ante expectations.

Final Determination

Parameter	Final Determination	Draft Determination
Primary threshold level	300 RoRE basis points (bps) plus or minus the baseline allowed return on equity	Same as FD
Primary adjustment rate[185]	Adjustment of 50% applied to returns above or below the primary threshold level	Same as FD
Secondary threshold level	400bps plus or minus the baseline allowed return on equity	n/a - new proposal
Secondary adjustment rate	Adjustment of 90% applied to returns above or below the secondary threshold level	n/a - new proposal
Symmetry	RAMs will be symmetrical, allowing for adjustments for both under- and outperformance	Same as FD
Combined or separate totex and ODI performance	Combined totex and ODI performance	Same as FD.[186]
Adjustment timing	Any adjustments under RAMs are made following the closeout of the relevant RIIO-2 price controls and reflected in company revenues in RIIO-3	Same as FD.[187]

[184] RAMs are not applied to the ESO (see SSMD paragraph 12.110).
[185] The adjustment rate is the rate at which company returns are adjusted upwards or downwards in the event that the thresholds are breached.
[186] DDs Finance Annex para 8.14 p 138.
[187] DDs Finance Annex para 8.22 p 140.

Final Determination rationale and Draft Determination responses

8.1 We received 13 responses to our consultation on RAMs.

8.2 Of the thirteen responses, five were generally supportive of our proposals. Six responses were generally not supportive of the RAMs proposals and they either did not consider RAMs to be necessary or understood the rationale for RAMs but disagreed with the proposals.

8.3 Those that agreed with overall design also agreed with the proposal for RAMs to be symmetrical.[188] Even thobse that disagreed with the rationale for the introduction of the RAMs mechanism agreed that if implemented it should be symmetrical (if they responded to this aspect of the consultation). One TO suggested that the DD proposals were skewed downwards and therefore the RAMs mechanism as designed is asymmetrical.

8.4 Thirteen responses commented on the proposed threshold levels, which at DDs we proposed to set at 300 bps on either side of the cost of equity. Views were mixed.

8.5 Of those that disagreed with the proposal, two network companies argued that RAMs should be context specific. Two GDNs suggested that the threshold for underperformance should not be any lower than the cost of debt. A TO said that it did not see a role for RAMs considering that the 300bps threshold would not be breached and given the proposed makeup of the RIIO-2 package.

8.6 Another TO said that the proposed threshold level "represents a reasonable threshold in balancing the risks of consumers paying too much or too little for networks". Citizens Advice was supportive of our proposal. A DNO said that, given the introduction of RAMs, the proposal for a 300bps threshold seemed reasonable.

8.7 A supplier said that "the level of outperformance required to demonstrate a systemic problem is lower than under current arrangements", given the improvements in the RIIO-2 proposals relative to RIIO-1 arrangements and therefore the threshold on outperformance should be lower than 300 bps.

8.8 One company said that if a RAM mechanism were to be imposed there should be a smoothing of negative revenue impacts in the RIIO-3 price control – that they should be spread out over the life of that control not taken in the first year. It

[188] See paragraphs 8.8-1.10 of the Draft Determinations Finance Annex

argued this would reduce volatility in customer bills and might help stability of credit metrics. However, it also stated that positive revenue impacts (for the company) should be taken entirely in the first year.

8.9 Not all responses addressed the proposed adjustment rate. Those that did generally agreed with proposal that of returns above or below the threshold level be adjusted by 50%.

Overarching rationale

8.10 We acknowledge that some respondents were not supportive of our RAMs proposals set out in DDs, while others were largely supportive of our proposed position. Of the energy network companies, views were mixed, though the majority were not in favour of the introduction of a RAMs mechanism.

8.11 Our position on the overarching rationale for the introduction of RAMs is as follows:

a) The aim of the inclusion of a RAMs mechanism in RIIO-2 is to provide protection to consumers and investors in the event that network company returns are significantly higher or lower than anticipated at the time of setting the price control.
b) Through the RIIO-2 policy development process we have considered and consulted upon a range of options for achieving this aim. This has included: a hard cap and floor, zero sum incentives, fixed incentive pots, discretionary adjustments and anchoring. We have sought, considered and where appropriate reflected stakeholder views in the development of these options and believe that the mechanism that we have decided to implement is the most appropriate of the options that we have considered.
c) The introduction of a RAMs mechanism is necessary, as no other mechanism in the price control either separately or in combination with other mechanisms will achieve the aim set out at point a) above.
d) As a mechanism for ensuring that energy consumers do not pay in full for levels of return that are only achievable by companies due to errors or information asymmetry, the RAMs mechanism that we have decided to implement at FDs will further our principal objective under the Gas Act 1986 and under the Electricity Act 1989 to protect the interests of existing and future consumers in relation to gas conveyed through pipes and electricity conveyed by distribution or transmission systems. In developing our RAMs

proposals we have had regard to the need to secure that licence holders are able to finance their licensable activities.

Mechanism parameters

8.12 In the DDs, we proposed a RAMs threshold of 300bps either side of our baseline allowed return on equity for each licensee. Retaining this 300bps level and applying it to the baseline allowed return on equity set out in these Final Determinations implies that adjustments under RAMs would be made if a licensee's unadjusted returns have an outturn of[189]:

- lower than 1.30% RoRE. This level would be lower than our allowed return on debt for the first year of the price control
- higher than 7.30%. This would be a level approximately 0.55% higher than our upper estimate of the total market return which is 6.75%.

8.13 Our DDs set out our view that returns that are a) lower than the allowed cost of debt or b) materially higher than our upper estimate of the total market return sit significantly outside our current expectations in setting the price controls. Such levels of return are, we said, unlikely to be achieved as this would require a very significant level of overspend or underspend against allowances, either alone or in conjunction with performance against ODIs.

8.14 Some respondents argued that the lower threshold level should be set no lower than the cost of debt. Given current levels of real borrowing rates, we consider that the spot cost of debt is in fact currently lower than the bottom threshold of the RAM. Nonetheless, it is important to maintain the principle of a symmetric RAM and therefore our decision at FDs is to retain the primary RAM thresholds at +/- 300bps.

Secondary RAMs threshold

8.15 As a change to our DD position, we have also decided that a secondary threshold should be introduced at a level of 400bps either side of our baseline allowed return on equity and that returns beyond this level should be subject to an adjustment rate of 90% to cover the potential of extreme levels of out- or underperformance.

[189] Assuming a 60% notional gearing level.

8.16 The price control process has utilised a strong business plan incentive and a confidence-dependent incentive rate to calibrate the totex allowances and the totex incentive rate at FDs. However, we have not proposed to apply the BPI to in-period submissions, nor will the incentive rate vary based on our confidence in the costs associated with re-opener submissions.

8.17 The BPI provided licensees with an incentive to submit ambitious and well justified expenditure forecasts as part of business plans while the CDIR approach ensured that there is an appropriate link between the totex incentive rate and our ability to set cost allowances independent of companies' own views. As neither will be applied to in-period re-opener submissions and given the potential volume of new spending that may flow through in-period mechanisms, there is the potential for increasing miscalibration over time through information asymmetry.

8.18 Although the risk is a remote one, we consider a proportionate way of dealing with it is to strengthen RAMs by introducing an additional threshold. We consider it relatively unlikely that companies will cross either the first or the second threshold. However, if the latter, this would be an indication that the control has become miscalibrated over time. The 90% adjustment rate would protect companies as well as consumers while still maintaining a positive marginal incentive, until such time as the control can be reset.

8.19 In summary, we consider that thresholds set at 300bps and 400bps either side of the baseline allowed return on equity are consistent with RAMs being a failsafe mechanism. Companies would need to achieve both a significant RoRE return via performance under ODIs and simultaneously a significant under or overspend against totex allowances in order to hit the RAMs threshold of 300bps and a significantly larger under or overspend on the same basis to hit the RAMs upside threshold of 400bps. We believe that the proposed thresholds represent appropriate failsafe levels in the context of historical levels of performance, especially when taking into account other relevant changes in the RIIO-2 package such as the setting of TIM incentive rates via the CDIR method and the greater use of indexation.

Timing

8.20 We were not convinced by one company's arguments regarding the timing of revenue impacts.[190]

8.21 We have decided at FDs that we should apply the impact of the RAM mechanistically at the start of the RIIO-3 price control, however an affected company may request a variation on this and we will consider their justification when they make this request.

Use of RoRE measure in mechanism

8.22 As we stated in our SSMC[191] and restated in the Finance Annex of the Draft Determinations[192], for asset-rich organisations such as regulated energy networks, the return that investors earn on their regulatory equity would be an appropriate metric for use in setting the RAMs threshold as it is directly linked to the RAV. Additionally, Ofgem has consistently used RoRE as a preferred measure of performance in the setting and monitoring of price controls and we believe it is appropriate to use it in this context. Further, given that we are proposing that RAMs should encapsulate both the TIM and ODI performance, a threshold expressed in RoRE terms is appropriate as it can accommodate this (including any trade-offs between TIM and ODI performance).

8.23 The use of a RAMs threshold expressed in RoRE terms means that the level of combined TIM and ODI performance required to meet that threshold may vary between licensees. For example, because two companies underspending by the same percentage amount may have different TIM incentive rates and different totex:RAV ratios and/or different notional gearing. As we have set out above, our decision is that it is appropriate to set the upper and lower levels for the primary RAMs threshold with reference to the baseline allowed return on equity, the cost of debt and the total market return, respectively, with a significant additional gap between the primary and secondary threshold levels. The relevant financial metrics do not in general vary between companies. Therefore, we have decided that the RAMs threshold should also not vary between companies and that setting the thresholds in RoRE terms is appropriate.

[190] Paragraph 8.8 above.
[191] DD Finance Annex Paragraph 10.88.
[192] DD Finance Annex Paragraph 8.15.

Interactions with other areas of RIIO2: expected versus allowed returns

8.24 In response to our SSMC, some respondents commented that there was overlap or duplication between RAMs and our proposals to distinguish between expected and allowed returns. As previously stated in our SSMD[193] and restated in the Draft Determinations Finance Annex,[194] we do not accept that these measures are duplicative. The principle behind 'allowed returns' addresses ex ante expectations to set the most appropriate baseline for returns, having regard to the systemic nature of information asymmetry and other potential sources of return. RAMs are intended to operate only as a failsafe mechanism when ex post outturns deviate substantially from those ex ante expectations. The rationale for our proposals on RAMs and on distinguishing between expected and allowed returns are separate and each proposal is intended to achieve separate policy goals that cannot both be met by either one of the proposals.

Interactions with other RIIO-2 areas: the totex incentive mechanism

8.25 The TIM and RAMs serve distinct purposes. There is a relationship between the two policy areas in the sense that returns derived via the TIM (in conjunction with any returns derived through ODI) may trigger the use of RAMs. The TIM is intended to drive companies to operate more efficiently by finding ways of delivering for lower cost than the allowances that have been set, while delivering agreed outputs. Cost savings or overruns against allowances are shared between consumers and network companies, the proportions being determined by the TIM incentive rates.

8.26 Where returns derived via the TIM are extremely high or extremely low, this is more likely to be representative not of the underlying efficiency in delivery against allowances but instead representative of the assumptions held at the time of the price control having been invalidated (for example, because cost allowances were set at a level significantly higher or lower than the efficient cost of delivery, or because the costs were not specifically linked to outputs, meaning that companies may underspend with no corresponding effect via another price control mechanism, such as an ODI).

[193] Paragraph 12.121.
[194] Paragraphs 8.23 – 8.25.

8.27 TIM incentive rates are lower in RIIO-2 than in RIIO-1[195] and this may be expected to contribute to a decrease in the probability that companies earn returns significantly higher or lower than anticipated at time of setting the price control. However, this does not remove the possibility altogether. RAMs act as a failsafe mechanism for the RIIO-2 price controls. The TIM and RAMs achieve two distinct objectives which we believe will not be achieved by either mechanism on its own.

[195] See Section 10 of the Final Determinations Core document.

9. Indexation of RAV and calculation of allowed returns

Purpose and benefits

Purpose: RIIO-2 price controls offer inflation protection to investors through inflation adjustments to the Regulatory Asset Value (RAV). Returns on capital are also provided in real terms. Together, these approaches make inflation a key parameter for the RIIO-2 price control.

Benefits: A good measure of inflation improves legitimacy and accuracy for both investors and consumers.

Final Determination

Parameter	Final Determination	Draft Determination
Indexation of RAV and calculation of allowed return	For ET, GT, GD and ESO price controls, to implement an immediate switch from RPI to CPIH from 1st April 2021 for the purposes of calculating RAV indexation and allowed returns	Same as FD

Final Determination rationale and Draft Determination responses

A summary of responses to FQ21 (proposal to implement CPIH inflation)

9.1 NGET argues that Ofgem's DD proposals rely on an implicit assumption that CPI and CPIH will on average be equal, and that this can create risk and uncertainty as CPI and CPIH are not generally equal. NGET and NGGT note that the more favoured index in financial markets is CPI and that "it would be better, simpler and more transparent to use CPI throughout, although this may change for future rounds of price controls after RIIO-2". ESO argues that the value neutrality check has either not been performed or has been disregarded. SHET argues that the immediate switch from RPI is to solve a financeability problem.

9.2 Cadent and SGN suggest a glide path rather than an immediate switch, while highlighting concerns that the immediate switch is motivated by a desire to lower returns. WWU notes it is not convinced by Ofgem's NPV neutrality proposition and suggest that Ofgem should assess the long-term financeability consequences of this change. SPEN agrees in principle with CPIH inflation, while noting that Ofgem

should recognise the limitations of CPIH. NGN supports the introduction of CPIH from the start of RIIO-2.

9.3 Citizens Advice and the RIIO-2 Challenge Group agreed with the proposal. Centrica did not raise any concerns.

Rationale for Final Determination

9.4 Stakeholders generally support a switch to CPIH.

9.5 We agree with NGET and NGGT that financial markets or some sections thereof may currently favour CPI over CPIH. We also agree with NGET and NGGT that this could change over the long term. On balance, however, we see benefits in adopting CPIH, given its merits as a long-term solution and a wider government objective that it will become the headline measure over time.

9.6 Some network companies continued to question the motivation and neutrality of the change. In our view, this decision, to move away from RPI to CPIH, is fair, for both investors and consumers. We have sought to obtain value neutrality, in line with the SSMD,[196] although we have needed to do this in the absence of CPIH forecasts. As stated at DD, the primary motivation for the change is that RPI is no longer seen as a credible measure of inflation.[197]

[196] RIIO-2 SSMD – Finance Annex, paragraphs 6.19-6.25: https://www.ofgem.gov.uk/system/files/docs/2019/05/riio-2_sector_specific_methodology_decision_-_finance.pdf#page=108
[197] RIIO-2 Draft Determination – Finance Paragraph 9.4 https://www.ofgem.gov.uk/system/files/docs/2020/07/draft_determinations_-_finance.pdf#page=143

10. Regulatory depreciation and economic asset lives

Purpose and benefits

Purpose: Regulatory depreciation assumptions determine the speed that RAV additions are re-paid by consumers.

Benefits: Accurate rates help ensure, over time, that charges are fair and that company revenues reflect annual and economic investment. Rates can reflect the economic and technical lives of the underlying assets.

Final Determination

Parameter	Final Determination	Draft Determination
Regulatory depreciation	To align GT and GD depreciation policies, so that for RAV additions from 2002 onwards, the depreciation policy for both sectors is on a 45-year, front-loaded basis. To roll over the approaches from RIIO-1 for the ET and GD sectors. To assume a 7-year straight line profile for ESO.	Same as FD

Final Determination rationale and Draft Determination responses

A summary of responses to FQ22 (proposal for GT and GD policy alignment and recovery of backlog depreciation)

10.1 NGGT agrees with most aspects of our proposal including sum-of-digits, backlog recovery, and backlog recovery period. NGGT does not agree with the assumed life of 45 years for RIIO-2 RAV additions, suggesting an asset life of 30 years for RIIO-2 additions would be more appropriate.

10.2 Other network companies did not object to the proposals for depreciation. SHET noted it was comfortable with continued transition to 45-year asset life. SPEN saw no reason why alignment (between GT and GD) is unreasonable. NGN agreed with the logic to align GT to GD. In terms of stranding risk, Cadent stated "we believe the steps taken previously address the asset stranding risk sufficiently i.e.

accelerating depreciation of asset through the sum of digits methodology." For GD2, SGN agrees a 45-year asset life should be retained.

10.3 ESO did not raise concerns with the depreciation proposals.

10.4 Citizens Advice agrees with the approach but noted "there is a strong case in response to the pandemic to reduce the frontloading of costs". The RIIO-2 Challenge Group considers that the 45-year depreciation period is appropriate for both (GT and GD) in RIIO-2 and support the recovery for GT RAV additions over the 20 years from the start of RIIO-2. Centrica did not raise any concerns.

Rationale for Final Determination

10.5 We continue to see benefits of alignment between GT and GD policies as set out in DDs. NGGT's suggestion to assume a 30-year life is not necessarily unreasonable. However, on balance, we favour alignment between GT and GD rather than further distinctions as this will create a better footing for future reviews. We note that the monetary impact of our DD proposals is not very different from NGGT's. Further, we see benefit in considering NGGT's suggestion as part of developing RIIO-3, when we expect there to be more detail on government policy in relation to heat policy. We can consider NGGT's proposal and any further proposals from other stakeholders in that context. Therefore, we do not consider it necessary to go further at this time.

11. Other finance issues[198]

Capitalisation rates

Purpose and benefits

Purpose: Capitalisation rates determine the proportion of costs added to the RAV with the remainder recovered within the year incurred. The decisions below apply to GT, ET, GD and ESO.

Benefits: Accurate rates help ensure, over time, that charges are fair and reflect annual and economic investment.

Final Determination

Parameter	Final Determination	Draft Determination
Capitalisation rates	For all licensees, to fix capitalisation rates ex ante, based on forecast capex proportions, for each relevant category of expenditure. For TOs (GT and ET), to set the capitalisation rate(s) as the average of the 5-year forecast capex proportion, for each of the following two categories of expenditure: • ex ante allowances (including PCDs) • re-openers and volume drivers. For GDNs, to set the capitalisation rate(s) as the average of the 5-year forecast capex proportion, for each of the following three categories of expenditure: • ex ante allowances (including PCDs) • re-openers and volume drivers • repex. For ESO, to set a distinct capitalisation rate for each of the first two years of RIIO-2, and to confirm rates for subsequent years alongside decisions on the ESO's second Business Plan.	We sought stakeholder views on whether rates should be updated ex post. We modelled rates on an annual basis using opex and capex proportions for each licensee in each year.

[198] Unless otherwise stated, the "Other Finance Issues" policy decisions apply to all sectors - GD, GT, ET and ESO.

Final Determination rationale and Draft Determination responses

A summary of responses to FQ23 and FQ24 (capitalisation rates)

11.2 Network companies generally favour ex ante rates that are fixed in advance, although SPEN and Cadent indicate that flexibility may have merit for UMs or material projects. ESO suggested that capitalisation rates could be updated during the control period.

11.3 NGET does not agree with the use of two annual capitalisation rates (one for baseline and one for uncertainty mechanisms) or with annual rates. NGET notes there could be benefits in applying a split capitalisation rate but argue that it presupposes that the opex/capex proportion of uncertainty mechanism expenditure can be forecast at the start of the period. NGET proposes a fixed average over the price control period "based on the opex/capex split in our baseline allowances". SHET "do not agree with the idea of changing capitalisation rates on an annual basis either for outturn values or for allowances". SPEN did not support ex post changes to baseline capitalisation rates but argued that UM should be allowed to flex.

11.4 Cadent suggests using the average rate for RIIO-2 rather than a varying amount each year and did not support any ex post true up unless required for material projects.

11.5 ESO proposes its capitalisation rate should be calculated using an ex ante natural split on an annual basis rather than setting a single rate for five years, highlighting the fact that ESO would submit business plans on a 2-year cycle. ESO suggests its capitalisation rate could be iterated during the year using the proposed dynamic revenue process for ESO, such that the capitalisation rate is set as a variable value in the PCFM. ESO argues that the Cyber opex UM expenditure has been incorrectly categorised as capex expenditure in Ofgem's Licence Model.

11.6 Citizens Advice saw merit in an ex post approach. The RIIO-2 Challenge Group accepted the proposal to set rates which reflect the accounting distinction between capex and opex. Further, the RIIO-2 Challenge Group noted that the degree of uncertainty surrounding levels of totex (particularly capex) is such that this is an important issue, and that, against that background a good case can be made for updating capitalisation rates ex post. Centrica argues that the case for updating rates ex post had not been made.

Rationale for Final Determination

11.7 Stakeholders generally prefer rates that are fixed ex ante, even though these need to be based on expenditure forecasts which can be uncertain. In particular, the monetary quantum of UMs are difficult to forecast, and we note stakeholder awareness of the potential impact on ex ante rates. Our decision to set different rates for different expenditure categories is, in our view, a good compromise, because it is simple (embeds an ex ante view) and effective (the overall rate will be a weighted average of the two rates/categories). This approach requires only that we forecast the rate of capitalisation rather than the monetary quantum of all UMs. The overall capitalisation rate will therefore reflect the weighted average of the underlying expenditure categories in Table 17, with the weight on each category dependent on future decisions for re-openers and volume drivers.

11.8 To set capitalisation rates for each category of expenditure in Table 17, we needed to exercise some judgement, particularly where the volume of expenditure is uncertain. The reason that judgement is required for re-openers and volume drivers is that we cannot say with certainty the proportion of outturn expenditure that will be capex or opex. We explain in the financeability chapter above[199] that our judgement attempts to avoid over-capitalisation, as this could result in less fast money than might be reasonable, which could hamper company investment and consumer interests. As a result, we have decided to use sector-specific rather than company-specific rates for the UM category (re-openers and volume drivers), as shown in Table 17.

11.9 For TOs (GT & ET) and GD licensees, we have decided not to set annual rates. Doing so could imply a degree of accuracy that may not materialise. Further, annual rates are not sufficiently different from the average to warrant further complexity.

11.10 For ESO, we see benefit in setting annual rates for the first two years of RIIO-2 and confirming rates for subsequent years alongside decisions on ESO's second Business Plan. ESO's capitalisation rate will be 37% in 2021/22 and 34% in 2022/23 (rates for 2023 onwards to be confirmed in due course). We also updated the classification of Cyber costs in line with ESO's DD feedback.

11.11 The applicable RIIO-2 rates and categories are shown in Table 17 below.

[199] See paragraphs 5.31-5.33

Table 17: Capitalisation rates for RIIO-2 compared with RIIO-1

Sector	Licensee/ network	Totex Categorisation	RIIO-1	RIIO-2
GT	NGGT (TO)	Ex ante allowances (including PCDs)	64%	65.00%
		Re-openers and volume drivers	90%	75.00%
	NGGT (SO)	Ex ante allowances (including PCDs)	37%	34.00%
ET	SHET	Ex ante allowances (including PCDs)	90%	78.00%
		Re-openers and volume drivers	NA	85.00%
	SPT	Ex ante allowances (including PCDs)	90%	84.00%
		Re-openers and volume drivers	NA	85.00%
	NGET	Ex ante allowances (including PCDs)	85%	80.00%
		Re-openers and volume drivers	NA	85.00%
GD	EoE	Ex ante allowances (including PCDs)	27%	29.00%
		Re-openers and volume drivers	NA	70.00%
	Lon	Ex ante allowances (including PCDs)	24%	20.00%
		Re-openers and volume drivers	NA	70.00%
	NW	Ex ante allowances (including PCDs)	26%	28.00%
		Re-openers and volume drivers	NA	70.00%
	WM	Ex ante allowances (including PCDs)	25%	26.00%
		Re-openers and volume drivers	NA	70.00%
	NGN	Ex ante allowances (including PCDs)	35%	35.00%
		Re-openers and volume drivers	NA	70.00%
	Sc	Ex ante allowances (including PCDs)	35%	44.00%
		Re-openers and volume drivers	NA	70.00%
	So	Ex ante allowances (including PCDs)	32%	35.00%
		Re-openers and volume drivers	NA	70.00%

Sector	Licensee/ network	Totex Categorisation	RIIO-1	RIIO-2
	WWU	Ex ante allowances (including PCDs)	36%	32.00%
		Re-openers and volume drivers	NA	70.00%
	All GDNs	Repex	Increasing from 50% to 100%	100.00%

Source: Ofgem analysis

RAV opening balances

Purpose and benefits

Purpose: To ensure the accuracy of opening balances at the start of RIIO-2.

Benefits: The opening RAV balance drives a number of the building blocks of allowed revenue (depreciation, return on RAV) and so will need to be correctly calibrated to ensure the accuracy of allowed revenue.

Final Determination

Parameter	Final Determination	Draft Determination
Opening balances	To roll forward closing RIIO-1 RAV balances from the PCFM to inform the opening RAV balances for RIIO-2.	Same as FD
True-up of opening balances	To use provisional opening balances until we are able to settle the final RIIO-1 closing RAV balances as part of our work on closing out the RIIO-1 price controls.	Same as FD

Final Determination rationale and Draft Determination responses

A summary of responses to FQ25 and FQ26

11.12 All respondents supported our proposal to use the closing RAV balance for RIIO-1 as the opening balance for RIIO-2.

11.13 NGGT and NGET noted that continuation of the RAV balance from RIIO-1 to RIIO-2 is a significant factor in driving investor certainty and confidence within the regulatory regime.

Rationale for Final Determination

11.14 We will use the closing RIIO-1 RAV balances as opening RAV balances for RIIO-2.

11.15 This is because final closing balances for RIIO-1 will not be known until we have completed the close-out of the RIIO-1 price controls, which we expect will take place by 2022.

11.16 In the meantime, we have reflected forecast expenditure data in the RIIO-1 PCFM in order to be able to calculate a provisional closing balance in the absence of actual outturn data.

11.17 These closing balances represent our best estimate of opening RAV for RIIO-2 and remain under review until we can close out the RIIO-1 price controls.

RIIO-1 close-out

Purpose and benefits

Purpose: To ensure that any issues not settled in RIIO-1 are captured in RIIO-2.

Benefits: The opening RAV balance, along with fast money, drives a number of the building blocks of allowed revenue (depreciation, return on RAV) and so will need to be correctly calibrated to ensure the accuracy of allowed revenue.

Final Determination

Parameter	Final Determination	Draft Determination
Close-out adjustments	To use estimated values for close-out adjustments until we are able to close out the RIIO-1 price controls.	Same as FD

Final Determination rationale and Draft Determination responses

A summary of responses to FQ27 and FQ28

11.18 All networks broadly agreed with the proposed categories of adjustments required for the close-out of RIIO-1 as well as the proposed approach to use forecasts values as at the time of Final Determinations, which will be subject to a subsequent true up.

11.19 NPG suggests that where values are predictable, they can be incorporated directly into the RIIO-2 licence and financial model so that they flow automatically into revenues, such as the revenue incentives that operate with a two-year lag. This point was also raised by several other network companies.

Rationale for Final Determination

11.20 We will reflect the following legacy adjustments in the PCFM at the beginning of RIIO-2 for the reasons set out below.

Legacy MODt (LMODt)

11.21 We will modify the existing RIIO-1 PCFM to calculate a LMOD2021/22 value based on 2019/20 actual expenditure performance as reported in July 2020.

11.22 We will also calculate a provisional LMOD2022/23 value using forecast expenditure for 2020/21 as reported in the network companies' RFPR in 2020. This provisional LMOD2022/23 will be trued up in the November 2021 AIP following the receipt of actual expenditure in July 2021.

11.23 These "legacy MODt" values will be reflected in the opening revenue allowances for RIIO-2. This will ensure that revenues earned in the RIIO-1 period are correctly reflected in allowances received in the RIIO-2 period.

Legacy RAV balance

11.24 As above, we will take the closing RAV balance, capital allowance pool balances and regulatory tax loss balance from the RIIO-1 PCFM that was used to calculate the provisional LMOD2022/23 value.

11.25 These closing balances will reflect actual data for 2019/20 and forecast data for 2020/21 and will be used as the opening balances for RIIO-2. As we will not have actual data for 2020/21, these balances represent our best estimate of opening RAV for RIIO-2 and remain under review until we can close out the RIIO-1 price controls.

Legacy adjustments to revenue (LARt)

11.26 We will use a modified RIIO-1 Revenue RRP to calculate the revenue adjustments which currently fall outside of the RIIO-1 PCFM and operate on a two-year lagged basis. These are revenues and costs such as pass-through items, the revenue correction factor and non-totex incentives and will be calculated for the 2021/22 regulatory year, for which we have actual data.

11.27 The revenue adjustments for the 2022/23 year will contain forecast data and will remain under review until we can close out the RIIO-1 price controls.

Directly Remunerated Services

Purpose and benefits

Purpose: Directly Remunerated Services (DRS)[200] are specific activities outside of the normal regulatory price control. Companies are allowed to charge their customers directly for certain services performed. We provided further information in relation to DRS in the SSMD.

Benefits: As in RIIO-1, we want to ensure that consumers do not pay twice for a service for which companies have already been remunerated.

Final Determination

Parameter	Final Determination	Draft Determination
Classification of DRS activities	Harmonisation across sectors	Same as FD

[200] These are referred to as "Excluded Services" in RIIO-1 Special Condition 8B (Services treated as Excluded Services) of the electricity transmission licence, RIIO-1 Special Condition 11C (Services treated as Excluded Services) of the gas transmission licence and in RIIO-1 Special Condition 4C (Services treated as Excluded Services) of the gas distribution licence.

Final Determination rationale and Draft Determination responses

11.28 We have decided to harmonise the classification and numbering of categories across sectors, for the reason set out in DD. Some networks raised the issue of unclear payment routes to other networks under DRS for services that subsequently involve ongoing responsibilities, eg future asset maintenance. We have introduced a new re-opener (the Coordinated Adjustment Mechanism (the CAM)), which allows for complete transfer of responsibility for the relevant output to the network undertaking the work. No other whole system issues relating to DRS were put forward in stakeholders' responses to DD.

11.29 For the ET sector, as part of the RIGs consultation in early 2021, we will set out our proposals relating to improvements in the reporting of connection income.

Disposal of assets

Purpose and benefits

Purpose: Consumers should benefit where assets are no longer required and are disposed of by companies.

Benefits: Treating disposal proceeds as a deduction from Totex incentivises networks to achieve the best sale price on any assets no longer required.

Final Determination

Parameter	Final Determination	Draft Determination
Totex	Net disposal proceeds to be netted off Totex	Same as FD
Transfer to a company within the same group	We may review the final sale. Where there is a difference, we will consider whether a further adjustment to Totex is required	Same as FD

Final Determination rationale and Draft Determination responses

A summary of responses to FQ29

11.30 All eight respondents to this question supported the approach of deducting the net disposals proceeds from Totex. One respondent recommended that all of the Totex

adjustment should flow into Allowed Revenue as fast money, with no capitalisation or RAV adjustment.

A summary of responses to FQ30

11.31 Of the 10 respondents to this question, nine supported the approach to review the final sale when there is a transfer to a company within the same group. One respondent did not agree with Ofgem's proposal to carry out a review where an asset is transferred to a company within the same group and then subsequently sold to a third party. They considered such a review to be beyond the scope of the financial ring fence provisions that are applicable to the licence holder.

Rationale for Final Determination

11.32 We have decided that where a company has disposed of an asset[201], we will net the cash proceeds off against Totex from the year in which the proceeds occur, which go through the Totex incentive mechanism.[202]

- Cash proceeds of sale at an arm's length to a third party external to the licensee group
- Transfer at an arm's length fair market value of assets to a company within the licensee group
- Cash proceeds of sale of assets as scrap
- Amounts recovered from third parties, including insurance companies, in respect of damage to the network.

11.33 Where an asset is transferred to a company within the licensee group and then subsequently sold to a third party, we may review the final sale to ensure it was undertaken at a fair market price and in the best interests of consumers. Where there is a difference, we will consider whether a further adjustment to Totex is required. The licensee will be required to inform Ofgem promptly of any completed sale to a third party, setting out:

- the amount of the proceeds from the third party

[201] The sale of a gas holder site that is no longer operationally required is one example of an asset disposal.
[202] This is for disposal of assets during RIIO-2. For assets disposed in RIIO-1, adjustments will be made as part of the close-out of RIIO-1, based on the respective sector policy that was in place for RIIO-1. In RIIO-T1 and GD1, RAV is adjusted with net proceeds (for GD there is a five-year lag).

- the factors which the licensee considers account for any difference between the transferred amount and the proceeds from the third party referring in particular to:

a) the general movement in market prices of similar assets
b) costs incurred by the company in improving or maintaining the asset between the date of transfer and the date of sale to the third party.

11.34 The RIGs will provide guidance on how companies should report on disposal of assets.

11.35 We consider that the deduction of net proceeds from Totex provides an appropriate level of incentivisation for the network to achieve the best sale price and allows consumers to benefit from the sale of assets no longer required. For RIIO-2, the Totex adjustment will be capitalised in the normal way, with a proportion flowing through as (negative) fast money, and the rest being deducted from RAV. However, we consider there is a case to treat all of the incentivised net proceeds as fast money, especially for those assets already fully depreciated. Treating the net proceeds as fast money would better allow those consumers who have already paid for the assets, rather than future consumers, to gain from the sale proceeds. We will consider this further during RIIO-2 and consult on it as appropriate.

11.36 We consider it appropriate for Ofgem to review sale of assets to a company within the sale group. It reflects existing practice in RIIO-1 and in the water sector, and offers an important protection for consumers.

Annual Iteration Process

Purpose and benefits

Purpose: The AIP for the Price Control Financial Model (PCFM) is the formal process of recalculating revenue allowances annually by updating the 'PCFM Variable Values'.

Benefits: This enables changes to inputs such as totex to be reflected in the next regulatory year's revenue allowances.

Final Determination

Parameter	Final Determination	Draft Determination
Allowed Revenue	Consolidated within an all-revenue PCFM.	Same as FD

Final Determination rationale and Draft Determination responses

Consolidated reporting

11.37 In RIIO-1, the PCFM contains the Base Revenue and annual incremental change to Base Revenues, known as the 'MOD' term. Base Revenue represents a large component, but not the entirety of total allowed revenue. The remaining components of Allowed Revenue (incentive revenues, pass-through items etc.) are calculated and recorded in the Revenue Regulatory Reporting Pack (RRP).

11.38 The Revenue RRP and the Regulatory Financial Performance Reporting (RFPR) model are two templates that are currently submitted to us as part of the regulatory submissions made each 31 July.

11.39 To consolidate reporting and increase transparency, we have decided to modify the AIP and PCFM so that the total Allowed Revenue, instead of recalculated Base Revenue, is calculated in the PCFM and so that the performance data previously submitted in the RFPR is now included in the PCFM.

11.40 As the PCFM will include the calculations currently held in the Revenue RRP and the RFPR, there will no longer be a need for them to exist in their current form as stand-alone models. Instead, the PCFM is to be updated in accordance with the PCFM Guidance (an Associated Document) and sent to us by 31 July of each regulatory year, which will capture all the required information and provide a complete picture of the financial position of the network companies.

11.41 The PCFM Variable Values and the methodologies under which they will be revised for each AIP will be specified in the special conditions of the licence, the Price Control Financial Handbook ('the handbook') and the PCFM Guidance.

11.42 The PCFM Variable Values and the methodologies under which they will be revised for each AIP will be specified in the special conditions of the licence, the Price Control Financial Handbook ('the handbook') and the PCFM Guidance.

Time value of money

Purpose and benefits

Purpose: Ofgem applies a range of interest rates to the different kinds of revenue true ups relating to prior years.

Benefits: A properly calibrated rate of interest that reflects the actual opportunity cost of capital faced by the network, will ensure that networks can recover their financing costs and that consumers are protected against excessive costs.

Final Determination

11.43 The table below compares our FD with DDs.

Parameter	Final Determination	Draft Determination
Time Value Of Money (TVOM) for ADJ term	WACC	SONIA plus a fixed premium
TVOM for K correction term	SONIA plus a fixed premium of 115bp applied to all sectors	SONIA plus 110bp

11.44 12 networks, including ESO, responded to FQ31-33. There were 3 non-network responses: Citizens Advice, the RIIO-2 Challenge Group, and one supplier. Not all respondents answered each of the three questions.

A summary of responses to FQ31

11.45 Networks generally disagreed with Ofgem's proposal to apply a Cost of Debt (CoD) TVOM approach to Totex related revisions in PCFM, especially where the revisions were due to delays in Ofgem setting allowances. One network supported an approach which reflected a higher rate for instances where the allowed revenue had been underestimated compared to situations when the allowed revenue had been overestimated. Networks generally argued against the shift from what they considered to be the accepted practice of applying a different rate of interest to K correction adjustments to that applied for Totex-related revisions.

11.46 Most networks supported a CoD TVOM approach to revisions to output incentives and pass-through allowances, though a limited number of networks supported a WACC TVOM approach for these elements. One non-network respondent supported an approach which did not over-reward networks who over-forecast

revenue, whilst another non-network respondent agreed with Ofgem's proposed approach to apply a CoD TVOM approach, provided only short-term funding is needed for such revisions.

A summary of responses to FQ32

11.47 Notwithstanding the general lack of support for applying a CoD TVOM approach to Totex revisions, there was general support for the proposed approach to calculating CoD as a fixed premium to SONIA. However, a few networks supported a premium based upon a 5-year historical average, rather than the proposed 3-year average. Two networks disagreed with the proposed approach to calibrate CoD to SONIA, implicitly preferring the status quo whereby the RIIO-T1 CoD TVOM approach is set at a fixed premium to the Bank of England base rate.

A summary of responses to FQ32

11.48 Notwithstanding respondents' concerns about applying a CoD-related rate of interest, respondents generally were comfortable with both the margin-based approach and the methodology used to calculate the relevant margin. One respondent recommended using a 5-year average of historical margins rather than the proposed 3-year average.

A summary of responses to FQ33

11.49 Networks generally supported different TVOM approaches such that WACC is applied to revisions to PCFM inputs whilst CoD is applied to K correction (under/over-recovery) errors. One non-network respondent supported one (CoD) TVOM approach on simplicity grounds but acknowledged that a case could be made to apply a WACC TVOM approach for certain elements. A second non-network respondent supported an approach which did not over-reward networks who over-forecast revenue.

Rationale for Final Determination

11.50 Whilst we see advantages to applying one consistent TVOM approach to all corrections and revisions, we recognise that the proposal to apply CoD to Totex-driven revisions moves away from Ofgem regulatory practice.

11.51 Our RIIO-2 approach to setting Allowed Revenue as part of the AIP will allow the networks to better reflect their latest forecasts of expenditure and allowances and

so should reduce the magnitude of any revisions. This provides some support for a CoD-based approach. However, we recognise it will take time for Ofgem and industry to gain experience of the new regime and that industry generally believes that we should continue with the current WACC approach.

11.52 For these reasons, we have decided to continue with the WACC TVOM approach to Totex revisions, as per RIIO-1. We will also apply this approach to all revisions related to output incentives and pass-through allowances. We will apply a CoD TVOM approach to K correction adjustments, but we will index CoD to a floating SONIA rate plus a fixed premium of 115bp, based upon historical spread data between 1/11/2017 and 30/10/2020, the publication date used elsewhere in the 2020 AIP process.[203] For large under/over-recoveries, the penal rate of interest premium will be capped at 115bp, and in RIIO-2 we will have the right to waive the penal rate of interest for under/over recoveries beyond the reasonable control of companies.

11.53 We will continue to review the case for the application of one TVOM applicable to all revisions and corrections, engaging further with other GB regulators and with industry on this issue, drawing upon the experience of the new RIIO-2 AIP arrangements. Where appropriate, we will consult on any proposed changes to our TVOM approaches.

Table 18: Margins over SONIA

	1 Yr Avg	3 Yr Avg	5 Yr Avg	10 Yr Avg
6M Libor	0.50%	0.72%	0.66%	0.66%
SONIA	0.30%	0.51%	0.43%	0.44%
SONIA/6M Libor Spread	0.20%	0.22%	0.23%	0.21%
Asset Swap Margin	0.90%	0.83%	0.835%	0.915%
Transaction costs	0.10%	0.10%	0.10%	0.10%
Total Margin over SONIA	1.20%	1.15%	1.16%	1.23%

[203] The three-year rolling-average of spreads of spreads is 115bp, not significantly different to the 5 year rolling average spread of 116bp.

Revenue forecasting

Purpose and benefits

Purpose: To include forecast information within the PCFM.

Benefits: This will enable revenues to be more cost-reflective and should reduce the magnitude of subsequent true ups.

11.54 In our Draft Determinations, we proposed to incorporate forecasts in most of the PCFM Variable Values, with the exception of re-openers, to reflect updates more quickly and to reduce the magnitude of true ups.

11.55 These would replace enduring value adjustments currently submitted via the RFPR and would serve as the basis for measuring return on regulatory equity.

11.56 We also proposed to add a licence condition to require a licensee to use best endeavours in providing forecast values.

A summary of responses to FQ34

11.57 Of the fourteen responses received, five were supportive, four were supportive in principle while raising practical implementation concerns and two did not support our proposal.

11.58 Cadent noted that the proposals should bring value to both networks and consumers and also support the removal of enduring value adjustments from reporting, which has caused inconsistency among network reporting. They were also supportive of the introduction of a best endeavours forecasting licence condition.

11.59 SPT agreed that our proposal should reduce potential cashflow issues if actual expenditure were to substantially exceed allowed revenues or vice versa.

11.60 NPG, Citizens Advice, WWU, NGET and NGGT also supported our proposals on revenue forecasting. NGET and NGGT noted that allowing revenues to be calculated on an expected outputs position is likely to significantly reduce volatility of revenue and charges for customers but they note that this will only work if re-openers are included within the scope of revenue forecasting.

11.61 SGN, WPD, ENWL agreed in principle but note that further review is needed to determine whether the implementation will provide enough benefit to outweigh the administrative burden of such a change. WPD noted that this proposal may increase complexity and have suggested the licence condition should require reasonable rather than best endeavours for forecasting.

11.62 SHE-T disagreed with the proposal, noting it would be likely to lead to more volatility in tariffs and would be difficult to understand. NGN were also unsupportive, suggesting that there was no guarantee forecasting would reduce the magnitude of any true ups.

A summary of responses to FQ35

11.63 Respondents were largely unsupportive of our proposal to exclude re-openers from the scope of revenue inputs that can be forecast in the RIIO-2 PCFM.

11.64 ESO commented that re-openers were the most significant source of revenue volatility in RIIO-1 and that this could have been mitigated by including allowances in earlier periods and spreading the revenue over the price control to avoid peaks.

11.65 SPT noted that excluding re-openers from forecasts may result in a risk of delayed investment, a sentiment echoed by NGET and NGGT who noted the proposals must cover re-opener allowances to reduce revenue volatility whilst simultaneously mitigating the spend at risk.

11.66 Infingergy was also unsupportive noting that this proposal may delay much needed infrastructure investment while Citizens Advice suggested that the potentially open-ended costs of RIIO-2 due to reopeners could be better managed by enabling forecasting.

Final Determination

PCFM Input	Final Determination	Draft Determination
Actual expenditure	Forecast annually updated by licensees. Forecasts are already submitted via the RFPR, and would instead be input in the PCFM at each AIP	Same as FD
Volume driver allowances	Forecast annually updated by licensees. Forecasts are already submitted via the RFPR and	Same as FD

PCFM Input	Final Determination	Draft Determination
	would instead be input in the PCFM at each AIP.	
Incentive performance	Forecast annually updated by licensees. Forecasts are already submitted via the RFPR and would instead be input in the PCFM at each AIP.	Same as FD
Re-openers	Forecast annually updated by licensees. Forecasts are already submitted via the RFPR and would instead be input in the PCFM at each AIP.	Values not updated until re-opener determination. Initial values will be set at final determinations. Any exceptions detailed in regulatory instructions and guidance.
Legacy adjustments	For RIIO-1 PCFM close-out and RIIO-2 opening values: the expected two final years of MOD continue to be forecast consistent with the LIMO Business Plan submissions and the RFPR, eventually reflecting the final RIIO-1 PCFM as published.	Same as FD
Other revenue components, such as DARTs, pass-through, use-it-or-lose-it allowances, Collected Revenue	Forecast annually updated by licensees. Forecasts are already submitted via the RFPR and would instead be input in the PCFM at each AIP.	Same as FD

Final Determination rationale and Draft Determination responses

11.67 Having considered stakeholder responses in this area we have decided to implement revenue forecasting within the PCFM as an alternative to the enduring value adjustments that were reported in RIIO-1. We have also decided to include re-openers within the scope of PCFM inputs that can be forecast.

11.68 It is our view that reflecting forecasts within the PCFM is more likely to reduce the difference between expenditure and revenue allowances, enabling networks to better manage their cashflows and reducing revenue volatility for network operators and their customers.

11.69 Having considered stakeholder responses on re-openers, we acknowledge that the magnitude of re-openers and therefore the level of uncertainty in RIIO-2 is greater than in RIIO-1, which may benefit from a more flexible and agile form of revenue allowance. We note forecasting re-opener allowances will allow revenues

to be more closely linked to output delivery, will further aid cost-reflectivity of allowances and will enable us to adapt allowances to any changes in network companies' circumstances without delay.

11.70 While we note that any forecast will require an element of true up, this is likely to be smaller in magnitude than it otherwise would be if forecasts were not reflected in the PCFM. We recognise that some networks have concerns over the practical implementation of this policy and we will work with them to clarify the process and ensuring that any new requirement is proportionate and does not result in unnecessary administrative burden for Ofgem or for licensees.

11.71 We have also decided to introduce a provision requiring licensees to use their best endeavours to provide accurate forecasts within the Annual Iteration Process chapter of the Price Control Financial Handbook (PCFH) rather than a specific licence condition. We consider that this better fits in this section of the PCFH than in a specific licence condition.

Base revenue and ODI cap/collar

Purpose and benefits

Purpose: Base Revenue is a defined term within RIIO and is used as a calibrating parameter for:

- caps, collars, or value for output delivery incentives
- the tax trigger event deadband
- the materiality threshold for re-openers.

Benefits: These caps and collars protect consumers and companies, from excessive gain or loss from a financial incentive.

Final Determination

Parameter	Final Determination	Draft Determination
Definition of Base Revenue	The sum of PCFM outputs: • fast money • pass-through expenditure • depreciation • return • equity issuance costs	Modified from RIIO-1 PCFM to include other pass-through and exclude tax allowance

Parameter	Final Determination	Draft Determination
	• additional funding (ESO).	
Basis on which to set ODI caps and collars	Same as DD	Caps and collars are set as a percentage of ex ante base revenue. Base revenue is the annual average value fixed at final determinations

11.72 At DDs, we sought views from stakeholders on the components of base revenue and whether it should be a fixed value or updated annually (either ex ante or ex post).

Summary of responses to FQ37 (definition of base revenue)

11.73 Three network respondents and Citizens Advice agreed with the definition proposed at DDs, while others argued that it should include other elements such as tax or other revenue allowances (eg innovation).

Summary of responses to FQ38 (fixing the value at final determinations)

11.74 Citizens Advice, WWU, NGN, Cadent, WPD, and NPg agreed with fixing a value at FDs to provide the most certainty. Cadent argued that Ofgem should ensure potential incentives values are not reduced from RIIO-1.

11.75 Other networks disagreed, noting that uncertainty mechanisms may increase revenue through the price control. National Grid noted that RIIO-1 base revenue was updated annually to maintain strong output incentives.

11.76 SHET supported an ex-post 'recalculated' value of base revenue being used.

Final Determination rationale and Draft Determination responses

11.77 Some change from RIIO-1 is required to accommodate changes to the PCFM and licence terms that are not used in RIIO-2. Incentives now have a tax allowance provided by the PCFM, requiring its (at least partial) exclusion to avoid circularity.

11.78 Choosing a fixed base revenue value for all years in RIIO-2 provides the most certainty and consistency in incentives and is the simplest. Incentive calculations would not need to reference recalculated or saved results in the PCFM. However, if revenue does change materially due to re-openers, incentives may end up

stronger or weaker than initially intended. RIIO-2 is a shorter price control than RIIO-1, but there is greater use of uncertainty mechanisms.

11.79 In RIIO-ET2 we are including pre-vesting or pre-BETTA connection income in the PCFM. This means the directly remunerated services adjustment is now slightly larger than in RIIO-1. After consideration, we have removed the DRS adjustment from the definition of base revenue.

11.80 The DD position also included a pension allowance as part of Core DARTs, which was a relatively small value and omitted for simplicity. It has been included in 'other revenue allowances', along with innovation.

11.81 This leaves base revenue based on our FD forecast of:

- Fast money
- Pass-through expenditure/non-controllable opex
- Depreciation
- Return
- Equity issuance cost
- Additional funding (ESO only).

11.82 Overall, we think RIIO-2 should have broadly similar values to RIIO-1. On balance, we think the new values, published in the table below, accomplish this.

11.83 The DRS definitional change to base revenue are not reflected in the models published at FDs but will be adjusted at the statutory consultation.

Table 19: Ex ante base revenue values

Network	RIIO-1* (PU+MOD+TRU)	RIIO-1** (alt definition)	RIIO-2 (FD)
NGET	1748	1720	1629
SHET	227	250	482
SPTL	313	291	331
NGN	433	390	380
East	650	604	538
London	451	420	390
North West	469	438	368
West Midlands	349	324	287
Scotland	325	308	288
Southern	774	705	599

Network	RIIO-1* (PU+MOD+TRU)	RIIO-1** (alt definition)	RIIO-2 (FD)
WWU	437	413	380
NGGT TO	740	702	731
NGGT SO	157	96	102
NG ESO	149	185	254

*average of FY 13/14 to FY 19/20 'BR' term per Revenue RRP, converted to 18/19 real prices.

**Ofgem analysis retroactively applying the proposed RIIO-2 definition, converted to 18/19 prices

Pension scheme established deficit funding

Final determination (update)

11.84 We completed the 2020 pension reasonableness review in November 2020,[204] which set out the revised allowances from April 2021. These revised allowances have been included as part of our Final Determination. There will be a further reasonableness review in 2023.

11.85 As part of the 2023 reasonableness review, we will conduct an initial review of any established surplus that may have arisen to identify whether a more detailed review is required. This more detailed review would occur as part of the close-out of RIIO-2, using the latest information available at that time.

Bad debts

Purpose and benefits

Purpose: To enable RIIO-2 companies to recover amounts associated with supplier-related bad debts.

Benefits: To introduce a consistent and transparent mechanism for all sectors to recover amounts associated with bad debts.

[204] https://www.ofgem.gov.uk/publications-and-updates/revised-pension-allowance-values-and-completion-2020-reasonableness-review-0

Final Determination

Parameter	Final Determination	Draft Determination
Bad debts incurred in RIIO-1	Where potential bad debts (including Network Charge Deferral bad debt) relating to the RIIO-1 period crystallise during the RIIO-2 price control, we will reflect an estimate of these amounts in our Final Determinations with the intention to true-up these estimates.	Same as FD

Final Determination rationale and Draft Determination responses

11.86 We explained in DDs that during the course of any price control, there may be times when companies are unable to recover debts owed to them by industry parties, including suppliers, shippers and generators.

11.87 We did not ask a specific question on bad debts in our Draft Determinations. We noted that we would be consulting separately to introduce a consistent bad debt licence term across all sectors for RIIO-2, but that where potential bad debts relating to RIIO-1 crystallise during the RIIO-2 price control, we proposed reflecting an estimate of these in FDs for ET, GT and GD with the intent to true-up these estimates once the actual amounts are known. Since DDs, we have had continued formal and informal engagement on the topic with licensees and other stakeholders, primarily through our open letter on the network charge payment deferral scheme and through our informal licence drafting consultation[205] as well as ongoing and iterative discussions with the Energy Networks Association (ENA) on the relevant draft licence condition.

11.88 It is our view that following the implementation of the Network Charge Deferral scheme,[206] which allows electricity suppliers and gas shippers to defer charge payments that they would ordinarily make to companies until end of March 2021, there may be an increased risk of bad debts being incurred by network companies if they are unable to recover those deferred payments.

[205] https://www.ofgem.gov.uk/system/files/docs/2020/09/riio-2_informal_licence_drafting_consultation.pdf
[206] https://www.ofgem.gov.uk/publications-and-updates/managing-impact-covid-19-energy-market-relaxing-network-charge-payment-terms The Network Charge Deferral scheme was set up by Ofgem to provide relief to cash flow-constrained suppliers and shippers in light of the impact of COVID-19.

11.89 In our open letter (at footnote 192) on relaxing network charge payment terms, we said that network companies would be able to recover outstanding bad debt within the Regulatory Year 2021-22 and set out three options for this.

11.90 Stakeholders were supportive in the main and agreed with us that "option 3" set out in our open letter, namely the introduction of a new bad debt licence term was an appropriate solution. We set out the comments received from stakeholders as well as our responses to them in Appendix 1 to our ED1 statutory consultation on proposed changes to the ED1 special licence conditions.[207]

11.91 Having considered stakeholder responses, we have decided to implement this policy by introducing a consistent bad debt licence term across all sectors for RIIO-2.

11.92 The reason for introducing a new licence term is that in RIIO-1 there was no consistent approach to allow licensees to recover bad debt costs. The different mechanisms used in RIIO-1 for each sector were set out in our Draft Determinations.

Equity Related Notional Company Assumptions

Purpose and benefits

Purpose: To provide reasonable assumptions for modelling an efficient notional company. The efficient company may incur costs raising new equity – either publicly or privately - and will, from time to time, pay dividends to investors, both of which we wish to reflect in our assessment of allowed revenues and financeability.

Benefits: Fair assumptions will allow us to appropriately model, and, given our view on issuance costs, fairly remunerate the notional company.

Final Determination

Parameter	Final Determination	Draft Determination
Dividend yield assumption	To assume a dividend yield of 3.0% in the Licence Models.	Same as FD
Notional equity issuance costs	To allow 5% for equity issuance costs associated with notional	Same as FD

[207] https://www.ofgem.gov.uk/system/files/docs/2020/10/statutory_consultation_ed_slc_-_ncd_bad_debt_accessible_0.pdf

Parameter	Final Determination	Draft Determination
	equity issuance assumed in the License Models.	

11.93 We have decided to retain the assumption, stated at the DD stage, of a 3.0% dividend yield for the notional company. We have also decided to retain an allowance of 5% for issuance costs associated with notional equity issuance.

Final Determination rationale and Draft Determination responses

11.94 We did not ask a specific question regarding dividends or equity issuance costs at DDs. NGET said that the DDs used an inappropriately low estimate of FTSE 100 dividend yield of 3% when the correct value was c. 4%. SGN presented analysis that the proposed yield represented Dividend Payout Ratios ("DPR") for SSE and NG of approximately 50% of their earnings, when the current DPRs for those companies were 0.96 (for SSE) and 0.83 (for NG). SGN calculates the 10-year DPRs as 0.76 for both companies. SGN argues that the proposed dividend yields would render the companies not equity financeable.

11.95 We could not see a clear link between actual companies and the notional company within the arguments raised. For example, the actual company dividends could reflect historic performance and RAV growth/decline, neither of which are necessarily accurate assumptions for the notional company during RIIO-2. Under the Modigliani and Miller theorems, investors are motivated by total returns and indifferent to the level of dividends, so we continue to believe that RAV growth and dividend assumptions should be considered together. We believe our final decision allows companies to pay reasonable dividends to investors.

11.96 SGN presented evidence on the cost of rights issues. They cited data for UK fund raisings of between £250m and £750m by publicly listed companies since 2016. This showed an average cost of 4.6% of funds raised. In addition, they noted two costs not included in these totals. The first was the cost of carry arising from the time lag between raising funds and their use. The second was significant internal costs to the companies to support the capital raising. They asserted therefore that 4.6% represents a minimum value for cost of capital raised.

11.97 We agree with SGN that 4.6% is a reasonable estimate of the costs of raising equity for publicly listed UK companies of medium size. However, we believe these costs would include substantial underwriting costs of up to 3.5% of funds raised

paid to the investment banking consortium acting for the company to raise money (and including sub underwriting costs to institutions of c. 1.5% from that). In principle, a private company raises money directly from its existing shareholders or new private capital investors and the costs should be much lower because the professional fees may be lower and there is no underwriting per se. However, we do not have sufficient evidence on the fundraising costs of private licensees and so we have chosen to rely on the data for public companies which we do have.

11.98 As many of our licensees are either owned by private infrastructure funds or are part of larger companies, underwriting should not be necessary. Therefore, we believe that our estimate of 5% for costs of equity fundraising is a reasonable or even a generous allowance for the actual costs faced by licensees that require an equity injection. We do not believe the cost of carry would be large in the context of a generous allowance for cost of raising equity for our licensees.

Transparency through RIIO-2 reporting

Purpose and benefits

Purpose: To provide an understanding of executive pay/remuneration and how this reflects the performance of the regulated business, and of the regulated business' approach to dividends.

Benefits: Transparency builds customers' and other stakeholders' trust and confidence that the regulatory regime is protecting consumers' interests.

Final Determination

Parameter	Final Determination	Draft Determination
Reporting executive pay/remuneration	Require licensees to report annually on executive roles in relation to the regulated business, and how executive pay reflects the company performance and adds value for consumers.	Same as FD
Reporting approaches to dividends over the RIIO-2 price control period along with any factors that will influence these policies	Licensees must explain their approaches to dividends over the RIIO-2 price control period along with any factors that will influence these policies. We will require licensees to report this	Same as FD

Parameter	Final Determination	Draft Determination
	as part of PCFM annual reporting.	

Final Determination rationale and Draft Determination responses

A summary of responses to FQ36

11.99 Most networks do not agree with the notion that additional reporting on executive pay/remuneration and dividend policies will help improve the legitimacy and transparency of a company's performance under the price control. Some networks do not understand the reason for the additional disclosure requirement, with others arguing that additional executive reporting was counterintuitive to good corporate governance.

11.100 In contrast, Citizens Advice strongly supported our proposed measures, linking it to their Principle 4,[208] that companies should publish complete information on their performance, financial structures, gearing and ownership.

Rationale for Final Determination

11.101 We have considered network company views that additional reporting is not required, but they have not provided anything substantively new to justify why we should not introduce this. For the reasons set out in our DDs, we will require disclosure and amount of executive remuneration, and how this reflects the performance of the regulated business, to a similar level to that required for UK-listed public limited companies, and will also require companies to publish their sustainable dividend policies.

11.102 This will support the legitimacy of the price control and build stakeholder trust and confidence. In particular, we will ask licensees to explain executive roles in relation to the regulated business, and how executive pay reflects the company performance and adds value for consumers and around a licensee's dividend policy for any price control. This would provide evidence that these are in consumers' interests and support the legitimacy of their regulatory performance and efficiency over the price control period. Guidance will be set out as part of PCFM annual performance reporting.

[208] As set out in Citizens Advice' response to our DDs.

Appendix 1 - Final Determinations on the allowed return on capital[209]

Table 20: Cadent, SGN South and GT, financial years ending March 31

Component	2022	2023	2024	2025	2026	Average
Equity						
Annual cost of equity	4.52%	4.53%	4.55%	4.57%	4.59%	4.55%
Expected outperformance	0.25%	0.25%	0.25%	0.25%	0.25%	0.25%
Allowed return on equity	4.27%	4.28%	4.30%	4.32%	4.34%	4.30%
Debt						
Cost of debt (10-14 yr trailing avg)	2.05%	1.90%	1.80%	1.71%	1.65%	1.82%
Notional gearing	60.00%	60.00%	60.00%	60.00%	60.00%	60.00%
Allowed return on capital	2.93%	2.85%	2.80%	2.76%	2.73%	2.81%

Table 21: SGN Scot, NGN and WWU, financial years ending March 31

Component	2022	2023	2024	2025	2026	Average
Equity						
Annual cost of equity	4.52%	4.53%	4.55%	4.57%	4.59%	4.55%
Expected outperformance	0.25%	0.25%	0.25%	0.25%	0.25%	
Allowed return on equity	4.27%	4.28%	4.30%	4.32%	4.34%	4.30%
Debt						
Cost of debt (10-14 yr trailing avg)	2.11%	1.96%	1.86%	1.77%	1.71%	1.88%
Notional gearing	60.00%	60.00%	60.00%	60.00%	60.00%	60.00%
Allowed return on capital	2.97%	2.89%	2.83%	2.79%	2.76%	2.85%

Table 22: NGET and SPT, financial years ending March 31

Component	2022	2023	2024	2025	2026	Average
Equity						
Annual cost of equity	4.24%	4.24%	4.24%	4.25%	4.26%	4.25%
Expected outperformance	0.22%	0.22%	0.22%	0.22%	0.22%	
Allowed return on equity	4.02%	4.02%	4.02%	4.03%	4.04%	4.02%
Debt						
Cost of debt (10-14 yr trailing avg)	2.05%	1.90%	1.80%	1.71%	1.65%	1.82%
Notional gearing	55.00%	55.00%	55.00%	55.00%	55.00%	
Allowed return on capital	2.93%	2.85%	2.80%	2.76%	2.73%	2.81%

[209] We present here a forecast of allowed returns. Final allowances for debt and equity from 2022/2023 onwards will reflect changes in market observations for debt costs and Index Linked Gilts, as per the WACC allowance model.

Table 23: SHET, Ofgem FD Scenario,[210] financial years ending March 31

Component	2022	2023	2024	2025	2026	Average
Equity						
Annual cost of equity	4.24%	4.24%	4.24%	4.25%	4.26%	4.25%
Expected outperformance	0.22%	0.22%	0.22%	0.22%	0.22%	0.22%
Allowed return on equity	4.02%	4.02%	4.02%	4.03%	4.04%	4.02%
Debt						
Cost of debt (10-14 yr trailing avg)	1.80%	1.66%	1.55%	1.49%	1.45%	1.59%
Notional gearing	55.00%	55.00%	55.00%	55.00%	55.00%	55.00%
Allowed return on capital	2.80%	2.72%	2.66%	2.63%	2.61%	2.69%

Table 24: ESO, financial years ending March 31

Component	2022	2023	2024	2025	2026	Average
Equity						
Annual cost of equity	7.57%	7.57%	7.56%	7.55%	7.54%	7.55%
Expected outperformance	0.00%	0.00%	0.00%	0.00%	0.00%	
Allowed return on equity	7.57%	7.57%	7.56%	7.55%	7.54%	7.55%
Debt						
Cost of debt (10-14 yr trailing avg)	-0.17%	-0.13%	-0.08%	0.02%	0.04%	-0.07%
Notional gearing	55.00%	55.00%	55.00%	55.00%	55.00%	
Allowed return on capital	3.31%	3.33%	3.36%	3.39%	3.41%	3.36%

[210] RAV weighted cost of debt allowance forecast based on Ofgem FD totex case. The five-year average debt allowance forecast using Net Zero 2 assumptions would be 1.49% CPIH real.

Appendix 2 – Equity: A summary of consultants' reports and our comments

Consultancy report 1:

Author	Prepared for	Report	Date
Oxera	ENA	Asset risk premium relative to debt risk premium.[211]	Sep 2020

Point raised	Ofgem consideration and response
Oxera's work provides an update on its March 2019 evidence. In this updated report, Oxera: • Argue that the benchmarks for ARP-DRP can be employed "not only as a cross-check to cost of equity, but also to obtain conservative estimates of the allowed WACC (sic)" • Address Ofgem's concerns with its March 2019 work • Provide updated analysis, including for energy bonds over the six-month period preceding RIIO-2 Draft Determination • Argue that past regulatory allowances were broadly in line with contemporaneous market evidence	We welcome Oxera's attempt to address our initial concerns as highlighted within the SSMD decision.[212] It appears however, that Oxera's analysis continues to rely on regulatory precedent (as per Table 2.1 of Oxera's report) even though Oxera appear to agree that there is benefit in using contemporaneous market evidence (as per page 14 of Oxera's report). Oxera's analysis may simply reflect its assumption for the equity risk premium, which can increase as observed risk-free rates decrease, given Oxera's apparent TMR assumptions.
Oxera argue that "the ARP−DRP differential is an (sic) useful addition to the PMICR, in the assessment of the underlying financeability of RIIO−2 proposals." For this argument Oxera compare ARP-DRP to the PMICR, as a measure of financeability.	To our knowledge, no rating agency currently uses the ARP-DRP metric to assess financeability. We agree with Oxera that PMICR may need to be supplemented, given it relies heavily on inflation assumptions and the exclusion of depreciation allowances, which can result in a misleading indication of financeability in isolation. Arguably, a better alternative to PMICR may be PMICRg, as proposed during RIIO-1, because PMICRg reflects the maintenance of a capital structure rather than maintenance of a RAV.[213]

[211] https://www.northerngasnetworks.co.uk/wp-content/uploads/2020/09/ARP-DRP-Oxera.pdf
[212] https://www.ofgem.gov.uk/system/files/docs/2019/05/riio-2_sector_specific_methodology_decision_-_finance.pdf#page=125
[213] For further detail see ED1 Draft Determinations: https://www.ofgem.gov.uk/sites/default/files/docs/2014/07/riio-ed1_draft_determination_financial_issues.pdf#page=20

Point raised	Ofgem consideration and response
	However, we have focused our analysis on the more widely used metrics.
Oxera argue that the debt beta assumption does not have a material impact on its conclusions.	We note Oxera's arguments that debt beta is not a material factor in its conclusions.
Oxera present analysis on how the ARP-DRP differentials have increased over time.	The analysis presented (for example Oxera's Figure 3.3) may reflect reducing risk-free rates over the same period of 2011 to 2018. Oxera's analysis suggests ARP-DRP differentials of approximately 2% for RIIO-1 (Figure 3.3) which is similar to Oxera's presentation for RIIO-2 (Figure 3.2). It is not clear to us how a materially larger ARP-DRP can be safely reconciled with CAPM and market evidence. For example, a very large increase in the assumed asset beta would be needed to align with Oxera's median ARP-DRP mid-point cost of equity estimate of 6.35% (CPIH real).

Consultancy report 2:

Author	Prepared for	Report	Date
Oxera	ENA	The Cost of Equity for RIIO-2' Q3 2020 Update[214]	Sep 2020

Arguments raised	Ofgem comment
Oxera's report argues that current market evidence supports a cost of equity range of 6.00% to 7.08% (CPIH-real) at 60% gearing, which is similar to its 2019 report which suggested a 5.98% to 7.09% range. Oxera retains its original 2019 ranges for TMR (7% to 7.5% CPIH-real) and equity beta (0.88 to 0.95) at 60% gearing.	On TMR, Oxera's work is largely identical to its previous submissions, which we address in the SSMC and SSMD, while noting within DDs the issues where we remain unconvinced. We note that Oxera's view on TMR is higher than CMA's (Competition and Markets Authority) provisional findings in the NATS Appeal (of 5% to 6% on an RPI basis). Oxera's range is also out of line with CMA's provisional findings in the PR19 appeals (5.25% to 6.25% on an RPI basis).
On beta, Oxera note that "since the beginning of 2020, SSE's beta diverged from the other networks, suggesting that part of the risk profile is not yet aligned with that of the other networks. Therefore, we decided to exclude SSE from the sample of UK energy companies."	Oxera's analysis accords with the analysis we presented within Draft Determinations. We therefore agree with Oxera's approach to exclude SSE from its sample.

[214] https://www.northerngasnetworks.co.uk/wp-content/uploads/2020/09/CoE-Oxera.pdf

Arguments raised	Ofgem comment
Oxera argue that its European sample reflects its methodology to screen out illiquid firms "because the market data for these firms do not match in terms of generating a market beta."	It is not clear that Oxera's methodology to 'screen out' is in principle any better than CEPA's approach, which Oxera refer to as 'screening in'.
Oxera argue that CAPM "does not necessarily capture all of the systematic risk faced by regulated networks". Oxera present analysis on political/regulatory risk and associated skewness. Oxera argue that "The premium that investors require for exposure to political and regulatory risk factors would in principle be best estimated using multifactor models."	We continue to believe that CAPM is the best available model. Our view reflects recommendation 1 from the UKRN Study published in March 2018 "The Capital Asset Pricing Model remains (despite numerous caveats) the best available model."[215] We note that Oxera do not present multifactor model analysis to supplement their arguments.
Oxera argue that National Grid's beta is higher than water company observed betas (Figure 3.6 from the Oxera report). Oxera argue that "the average asset beta for the energy networks (i.e. National Grid) has been consistently higher than the average asset beta of the two pure-play water comparators—United Utilities and Severn Trent." (Figure 3.7 from the Oxera report). Oxera's report notes "Ofgem mentions that energy networks may be riskier than water companies, and its own beta analysis consistently suggests that National Grid is riskier than the two pure-play water companies."	We note that Oxera's report (Figure 3.5) shows periods where National Grid's beta is lower than PNN, UU and SVT. Oxera's argument therefore hinges on the period chosen. Draft Determinations (Table 10) suggests that Severn Trent may not be a long-term pure-play water network. National Grid's group beta can at times indicate a higher value than pure-play water comparators, we agree. However, this does not necessarily indicate that GB energy networks carry higher risk than GB water networks. For example, National Grid's group beta reflects significant other investments (see Table 10 from Draft Determinations). Further, CEPA's analysis (see Figure 4.10 from "Beta Estimation Issues Annex" as published alongside Draft Determinations), suggests that US comparators can for periods indicate higher asset betas than the inferred National Grid GB network beta. This observation is also evident in Frontier's analysis. Oxera's analysis does not address in detail PPL's asset beta (a US-listed company with regulated US and GB energy assets (see section 4.3.3 from CEPA's report on "Beta Estimation Issues Annex" as published alongside Draft Determinations)). CEPA's report notes "illustrative analysis of PPL's corporate group beta, which indicates a much lower GB energy networks asset beta of 0.28-0.31."
Debt beta	See section below on consultancy report 5

[215] https://www.ukrn.org.uk/wp-content/uploads/2018/06/2018-CoE-Study.pdf#page=7

Consultancy report 3:

Author	Prepared for	Report	Date
Oxera	Heathrow Airport Ltd	Is aiming up on the WACC beneficial to customers? [216]	Apr 2020

Arguments raised	Ofgem comment
Oxera discuss whether it is optimal and desirable for a regulator to set the allowed return above the midpoint estimate of the WACC (i.e. to 'aim up'). Oxera estimate, in the case of airport charges, the optimal extent of aiming up, based on assumptions for the aviation sector, including: the expected WACC; the standard deviation of WACC; aviation demand; and customer welfare functions.	Oxera focus on the aviation sector. Given that this report is dated April 2020, it precedes • RIIO-2 Draft Determinations (July 2020) • the CMA final report on the NATS Appeal (August 2020) • the CMA provisional findings on the PR19 appeals (September 2020). Reflecting this, Oxera's work does not appear to address the issues described in Draft Determinations (see paragraphs 3.145 and 3.146) [217] or the CMA's provisional findings in the NATS Appeal. However, since DDs we note the CMA's approach, in the Provisional Findings (PFs) for the PR19 appeals, "to aim up to the 75th percentile on cost of equity metrics" [218] and the CMA's broader reasons for doing so include "financeability and asymmetric risk" [219]. Therefore, we see similarities between Oxera's work and the CMA's logic in PR19 PFs, although the CMA's rationale for PR19 PFs is, at least in part, case specific. In response to the CMA's PR19 PFs, academics (Wright and Mason) list five concerns with the CMA's approach. [220] Having considered arguments from Oxera, CMA/NATS Appeal, CMA/PR19 PFs and Wright &

[216] https://www.northerngasnetworks.co.uk/wp-content/uploads/2020/09/Oxera-2020-Is-aiming-up-on-the-WACC-beneficial-to-customers-prepared-for-Heathrow-Airport-7-April.pdf
[217] https://www.ofgem.gov.uk/system/files/docs/2020/07/draft_determinations_-_finance.pdf#page=80
[218] https://assets.publishing.service.gov.uk/media/5f72f3d2e90e0740cf4eb0a9/Water_provisional_determinations_report_all_-_September_2020_---_web_-.pdf#page=679 (paragraph 9.685)
[219] https://assets.publishing.service.gov.uk/media/5f72f3d2e90e0740cf4eb0a9/Water_provisional_determinations_report_all_-_September_2020_---_web_-.pdf#page=674 (paragraph 9.670)
[220] https://www.ofwat.gov.uk/wp-content/uploads/2020/10/Wright-and-Mason-Comments-prepared-for-Ofwat-on-the-CMAs-provisional-findings-cost-of-capital-considerations.pdf#page=22 (paragraph 7.4)

Arguments raised	Ofgem comment
	Mason, we maintain our view, as expressed in SSMD and DD, that it is not necessarily in consumers' interests to set the allowed return significantly above a cost estimate. Our further thoughts on the CMA's PR19 PF have been published on the CMA's website.[221] Our rationale and concerns apply to both PR19 and RIIO-2.

Consultancy report 4:

Author	Prepared for	Report	Date
Oxera	ENA	What explains the equity market valuations of listed water companies? - A review of Ofwat's use of financial market evidence to support its allowed cost of capital.[222]	May 2020

Arguments raised	Ofgem comment
Oxera refer to analysis by Europe Economics "that indicates the implied market cost of equity is 2.8% to 3.8%, materially less than the PR19 allowed equity return of 4.18%" (all values CPIH-real).	We agree that Oxera's work on this highlights a very important issue for RIIO-2. To ensure that our RIIO-2 decisions are, where possible, grounded in reality, it is important that we consider market-implied costs of equity for actual companies. We note that Ofwat present a cost of equity of 4.19% (appointee) and 4.09% (wholesale) in its PR19 Final Determinations, not 4.18% as implied by Oxera.[223] In the finance annex to RIIO-2 Draft Determinations, at footnote 101, we note that "RIIO-2 companies are not exposed to retail risks" and therefore, the most relevant benchmark for RIIO-2 networks is arguably 4.09%, not 4.18%.[224] On this basis, the difference between allowed returns and the market implied cost of equity is smaller than stated in Oxera's report.

221 https://assets.publishing.service.gov.uk/media/5fa298d88fa8f57896ad0276/Ofgem_response_to_PR19_Provisional_Findings_291020_Redacted.pdf#page=13

222 https://www.northerngasnetworks.co.uk/wp-content/uploads/2020/09/Oxera-2020-%E2%80%98What-explains-the-equity-market-valuations-of-listed-water-companies%E2%80%99-20-May-1.pdf

223 https://www.ofwat.gov.uk/wp-content/uploads/2019/12/PR19-final-determinations-Allowed-return-on-capital-technical-appendix.pdf#page=19

224 https://www.ofgem.gov.uk/system/files/docs/2020/07/draft_determinations_-_finance.pdf#page=55

Arguments raised	Ofgem comment
	Nonetheless, depending on how outperformance is accounted for, we agree that there can be a material difference between the market implied cost of equity and the PR19 allowed return on equity from Ofwat's FD.
Oxera note that "the premium to regulated equity might imply that investors are either expecting higher outperformance than the regulatory assumptions, and/or that they are applying a lower discount rate, and/or that they consider that the non-regulated parts of the business are creating additional value. The different components need to be considered together – to the extent they can be reliably determined."	Although Oxera's report (May 2020) precedes RIIO-2 Draft Determinations (July 2020), we note that Oxera's view is very similar to Ofgem's. For example, see analysis presented in Draft Determinations (see "joint hypothesis problem" and Table 22 on pages 57-58).[225] We therefore agree with Oxera's logic in this respect and we agree that it is useful to carefully consider the magnitude and probable causes of valuation premia.
Oxera summarise Competition Commission (CC) and Competition and Market Authority (CMA) views on the use of Market to Asset Ratios (MARs). The references appear to agree with the principle use of this evidence, while highlighting practical interpretation and estimation issues.	Oxera's work appears consistent with the analysis and considerations presented in RIIO-2 Draft Determinations. We also note from the Bristol Water appeal in 2015 the CMA view that "in principle, the market prices of asset transactions relative to the regulatory asset value (either M&A activity or traded share prices) can also provide an indication of the value of the cost of capital as a whole, and in particular whether the cost of equity appears to be consistent with observed market evidence. We can therefore use it to cross-check this level of cost of capital."[226]
Oxera report (Table 4.1) seventeen analyst estimates of expected outperformance for UU and SVT, ranging between 0.2% to 3.7% (of RoRE). Oxera argue that "While most analysts agree that there will be outperformance for each company, our review shows that there is little to no consensus on the level of expected outperformance."	We note that Oxera's report focuses on the water sector companies, although we would anticipate that there are similar and important considerations for RIIO-2. We note that sixteen of the seventeen values quoted by Oxera are greater than the value for Expected Outperformance proposal in RIIO-2 Draft Determinations (0.25% at 60% notional gearing).
Oxera's report provides analysis on the components of premia for Severn Trent (see Figure 4.1) and United Utilities (see Figure 4.2).	Oxera's analysis is similar to that presented in the RIIO-2 Draft Determinations (see "joint

[225] https://www.ofgem.gov.uk/system/files/docs/2020/07/draft_determinations_-_finance.pdf#page=58

[226] https://assets.publishing.service.gov.uk/media/56279924ed915d194b000001/Bristol_Water_plc_final_determination.pdf#page=344

Arguments raised	Ofgem comment
Oxera conclude that "under a range of plausible scenarios, the current traded premia can be more than explained without any recourse to an assumption that the actual cost of equity is lower than the regulated allowed base equity return. To the extent that conclusions can be drawn, the analysis is consistent with the conclusion that Ofwat has underestimated the cost of equity" Oxera argue that "in light of the uncertainty in this modelling, there is no reason to depart from the position as stated in previous CMA assessments and the UKRN cost of capital study—evidence from traded market premia does not provide a reliable guide in practice to the cost of equity used by investors in regulated utilities."	hypothesis problem" and Table 22 on pages 57-58).[227] Oxera's analysis suggests that the cost of capital may have been slightly over-estimated by Ofwat (see Oxera analysis Figure 4.2 a)), or slightly under-estimated (see Oxera analysis Figure 4.1 and Figures 4.2b & 4.2c). Oxera's analysis suggests that Ofwat's allowed return on capital is very close to the cost of capital for UU and Severn Trent, particularly if the "takeover premium" is excluded. Oxera's analysis suggests that traded market premia can be reconciled with Ofwat's allowed return, supporting a view that the allowed return by Ofwat is not out of line with the cost of finance for Severn Trent and United Utilities. For these reasons, Oxera's work leads us to a slightly different conclusion, that, to the extent that conclusions can be drawn, the analysis is consistent with an accurate estimate of the cost of equity by Ofwat.

Consultancy report 5:

Author	Prepared for	Report	Date
Oxera	ENA	Estimating debt beta for regulated entities.[228]	Jun 2020

Arguments raised	Ofgem comment
Oxera respond to the following remarks made by Ofgem with respect to the effect of debt beta on the cost of capital: "We refer the CMA to the UKRN study on debt beta as published in December 2019, noting also that the CMA may wish to consider the MM [Modigliani and Miller] cross-check as per the NATS reference. If notional gearing and	We note that Oxera do not disagree that alignment of notional and actual gearing renders the debt beta moot. We agree with Oxera that the MM cross-check cannot be considered a replacement for robust estimates of the cost of capital parameters. A cross-check, by definition, is a method of

[227] https://www.ofgem.gov.uk/system/files/docs/2020/07/draft_determinations_-_finance.pdf#page=58
[228] https://www.northerngasnetworks.co.uk/wp-content/uploads/2020/09/Oxera-2020-%E2%80%98Estimating-debt-beta-for-regulated-utilities%E2%80%99-4-June..pdf

Arguments raised	Ofgem comment
actual gearing are aligned then this could render debt beta moot."[229] Oxera state: "the MM cross-check cannot be considered a replacement for robust estimates of the cost of capital parameters, including the debt beta and the risk-free rate" Oxera respond to this as follows: "It is important to note that the MM cross-check does not necessarily lead to the correct estimation of the cost of capital parameters. In particular, previous submissions to the CMA have demonstrated the challenges of applying the MM cross-check in the context of regulated utilities (e.g. the treatment of the cost of embedded debt) and the risks that such an approach will lead to misleading conclusions about the cost of equity and the WACC."	providing assurance and a directional indication to compare with the primary estimation approach. The CMA's provisional findings in the NATS Appeal highlight concerns with the consequences of the standard regulatory approach to 're-gearing', where the debt beta plays a role. It is therefore important to consider whether the debt beta assumption exacerbates the CMA's re-gearing concerns. We note the CMA's PR19 PFs state a debt beta range from 0 to 0.15, and therefore a mid-point of 0.075.[230] Whilst the CMA's view is not perfectly clear on the exact value of debt beta it may prefer,[231] we can agree there is estimation uncertainty, and therefore we have in these final determinations also assumed a debt beta of 0.075, which is more in line with Oxera's recommendation (0.05) than the 0.125 assumed in DDs. The MM cross-check is an important tool to assess the combined effect of any given set of WACC parameters, which is a different issue to the correct estimation of any individual WACC parameter, which may be the concern to which Oxera refer. Further, no cross-check could, to the extent it would be possible in any case, necessarily lead to the correct estimation of the cost of capital parameters.

Consultancy report 6:

Author	Prepared for	Report	Date
Oxera	ENA	Are sovereign yields the risk-free rate for the CAPM?[232]	May 2020

[229] https://assets.publishing.service.gov.uk/media/5ebebdc1e90e071e2a937fce/Ofgem_Redacted.pdf#page=2

[230] https://assets.publishing.service.gov.uk/media/5f72f3d2e90e0740cf4eb0a9/Water_provisional_determinations_report_all_-_September_2020_---_web_-.pdf#page=587 (Table 9-16)

[231] For example, as highlighted by Wright & Mason, the CMA states (paragraph 9.314) that Ofwat "provide[s] a compelling case that the regulatory model should include a positive debt beta". But in paragraph 9.315, the CMA appears to set its lower bound for the debt beta in light of "significant calculation uncertainties associated with debt beta".

[232] https://www.northerngasnetworks.co.uk/wp-content/uploads/2020/09/Oxera-2020-%E2%80%98Are-sovereign-yields-the-risk-free-rate-for-the-CAPM%E2%80%99-prepared-for-the-Energy-Networks-Association-20-May..pdf

Arguments raised	Ofgem comment
Oxera address the CMA's concern in the NATS Appeal regarding the observed positive relationship between gearing and the cost of capital (the violation of the Modigliani-Miller proposition). Oxera argue that the observed concern is reduced or eliminated "if the risk-free rate is set at more plausible levels than the current underestimates assumed in recent regulatory decisions." Oxera argue that "On balance, based on the assessment of the academic literature and market evidence it is recommended that the risk-free rate is adjusted upwards by 50–100bp."	Oxera's work precedes RIIO-2 Draft Determinations (July 2020) and therefore is not able to consider the specific approach and concerns highlighted therein, which also build upon the CMA's provisional findings in the NATS Appeal regarding the observed positive relationship between gearing and the cost of capital.[233] We note that Oxera focus on CAPM parameters, and debt costs, for the aviation sector, rather than the RIIO-2 price controls. Notwithstanding this, we see merit in Oxera's arguments that the MM proposition can apply to the incremental cost of capital, thus excluding the impact of embedded debt. Oxera present analysis which indicates that the cost of capital continues to display a positive relationship with gearing, when using incremental debt (at Figure 2.1) or when using a value of -1.25% for risk free (Figure 2.2). Oxera suggest "the deviation from the MM proposition would be reduced or eliminated if the risk-free rate were adjusted upwards by an appropriate amount." However, rather than conclude that the risk-free rate should be higher as suggested by Oxera, it could also be concluded that the cost of new debt is (or should be) closer to the risk-free rate. This, too, could reduce or eliminate the observed concern. We refer to the UKRN Study in 2018 for further information: "To the extent that the risk premium on debt (RPD) is greater (or less) than the value implied by the CAPM (i.e., if the square bracketed term is positive (or negative), an increase in leverage, g will increase (or decrease) the estimated CAPM(E)-WACC, whereas the pure CAPM-WACC will be entirely unaffected, consistent with standard finance theory."[234]

[233] https://assets.publishing.service.gov.uk/media/5e7a2644d3bf7f52f7c871f3/Provisional_Findings_Report_-_NATS_-_CAA.pdf#page=168 (paragraph 12.120)
[234] https://www.ukrn.org.uk/wp-content/uploads/2018/06/2018-CoE-Study.pdf#page=24

Consultancy report 7:

Author	Prepared for	Report	Date
Oxera	Heathrow Airport Ltd	Estimating RPI-adjusted equity market returns.[235]	Aug 2019

Arguments raised	Ofgem comment
Oxera's August 2019 advice to Heathrow Airport Ltd argues that there is a significant difference "between real equity returns calculated by directly adjusting the historical RPI compared with backcasting CPI and then deducting the forecast differential between RPI and CPI inflation". Oxera argue that "The revisions to the calculation of the RPI inflation statistic made by the ONS in 2010 created a structural increase in the RPI measure of inflation. All else equal, this would make the historical equity market returns deflated by historical RPI an upwardly biased estimate of the future TMR calculated relative to future RPI. However, there are likely to have been other revisions to the calculation of RPI during the history of the UK equity returns data set, some of which might have introduced a downward bias to average historical real equity market returns."	The focus of Oxera's work is on inflation measurement issues. However, as outlined in SSMD, there are other cross-checks that can help inform a real TMR estimate, each of which can address the concerns that Oxera identify. These cross-checks appear more credible than making subjective adjustments to RPI such as those undertaken by Oxera, and less error prone than assuming RPI represents the best expectation of future inflation, as implied by Oxera's report. Oxera's advice to Heathrow (August 2019) is based on similar logic to its advice to the ENA (November 2019) which we address in the SSMD.[236] and re-reference in Draft Determinations (July 2020 – noting therein the issues that remain unaddressed)..[237] Therefore, this report from Oxera does not change our view as set out in Draft Determinations which we have maintained at Final Determinations.

Consultancy report 8:

Author	Prepared for	Report	Date
Oxera	Heathrow Airport Ltd	Response to the CMA on estimating RPI-adjusted equity market returns.[238]	Apr 2020

[235] https://www.northerngasnetworks.co.uk/wp-content/uploads/2020/09/Oxera-2019-%E2%80%98Estimating-RPI-adjusted-equity-market-returns%E2%80%99-2-August..pdf
[236] https://www.ofgem.gov.uk/system/files/docs/2018/12/riio-2_finance_annex.pdf#page=25
[237] https://www.ofgem.gov.uk/system/files/docs/2020/07/draft_determinations_-_finance.pdf#page=34
[238] https://www.northerngasnetworks.co.uk/wp-content/uploads/2020/09/Oxera-2020-Response-to-the-CMA-on-estimating-RPI-adjusted-equity-market-returns-prepared-for-Heathrow-Airport-15-April.pdf

Arguments raised	Ofgem comment
Oxera analyse the RPI inflation series and argue that three structural breaks (in years 2010, 2004 and 1992) are consistent with the following changes to RPI: • clothing price methodology (2010) • used car prices (2004) • foreign holidays housing depreciation and council tax (1993-1995). Oxera argue that "If the methodological changes identified are removed from the RPI series, the adjustment that would be applied to average RPI inflation would be less than 1 basis point, as the 2010 and 1992 breaks almost cancel each other out. Therefore, on the evidence available, the net effect of the identified changes in methodology is approximately zero, implying that no adjustment should be made to the long-run average of RPI inflation."	Oxera's arguments focus on the CMA's approach to estimating TMR in its provisional findings from the NATS Appeal. While the CMA arrive at a similar conclusion as RIIO-2, the approaches are not identical. Oxera's approach suggests that RPI could remain the best measure of inflation. However, we continue to disagree that RPI is the best measure of inflation expectations, as noted in SSMD.[239] and DD..[240]

Consultancy report 9:

Author	Prepared for	Report	Date
Frontier	ENA	Further analysis of Ofgem's proposal to adjust baseline allowed returns.[241]	Sep 2020

Arguments raised	Ofgem comment
Frontier remain of the view that • "the public policy case for aiming up is clear and unambiguous." Frontier argue that: • "In response Ofgem has offered little defence of its position, but has chosen instead to bring forward specious examples that purport to demonstrate how aiming up will not work, or will not be effective".[242] "…Ofgem's conclusion is that it would take many years for the benefit from aiming up to pay off, and therefore doubts the effectiveness of the aiming up policy in bringing forward any extra investment. This absurdity of the example can be	The logic Frontier propose seems clear, but in our view remains flawed. Frontier's assertions do not appear to be based on the full set of options and trade-offs available to investors/companies, including the example trade-off we provided in Draft Determinations.

[239] https://www.ofgem.gov.uk/system/files/docs/2019/05/riio-2_sector_specific_methodology_decision_-_finance.pdf#page=36
[240] https://www.ofgem.gov.uk/system/files/docs/2020/07/draft_determinations_-_finance.pdf#page=34
[241] https://www.northerngasnetworks.co.uk/wp-content/uploads/2020/09/ER-vs-AR-Frontier-Economics.pdf
[242] A reference to paragraph 3.146 from the Draft Determinations Finance Annex, https://www.ofgem.gov.uk/system/files/docs/2020/07/draft_determinations_-_finance.pdf#page=80

Arguments raised	Ofgem comment
seen if we actually take Ofgem's illustration to its logical conclusion. Under Ofgem's logic companies have no incentive to invest at all." • "Ofgem's argument is concerning as it serves to illustrate that it continues to misunderstand the principle of aiming up. The intention is not to offer a wedge over and above the true underlying cost of equity to shift incentives to invest more. It is to avoid inadvertently setting the cost of capital too low, given the asymmetric risks associated with failure to invest."	It is not true that companies have no incentive to invest at all or that this is a logical conclusion from the trade-off we identified. On the contrary, licence obligations, outcome incentives and minimum standards provide incentives, as well as the totex incentive mechanism. Frontier's assumed link between the baseline allowed return on capital and a failure to invest does not seem complete or reliable.
Frontier argue that: "… if the annual net productivity gains are eroded by anything more than around 3%, due to changes in the strength of the incentives regime brought about by the 25 bps outperformance-based reduction on equity returns, the present value of the productivity losses to the sector would outweigh the present value of the gains for the customers."	We do not think there will necessarily be a mechanical impact on productivity in line with Frontier's hypothesis. The incentive could in fact operate in the opposite fashion, improving productivity, on the basis that companies/investors must earn returns from productivity, rather than relying on a baseline allowance that exceeds the cost of capital.
Frontier argue that: "Our main objections to Ofgem's approach are in relation to the unintended negative effects of applying an outperformance wedge. Therefore, whether the wedge is 50 bps, or 25 or 101 is, to a large extent, irrelevant as those criticisms would remain regardless." Frontier argue that: "All of the historical analysis Ofgem presents is subject to a critical weakness: RIIO-2 is set to be a significantly different price control to RIIO-1 (and even more so to predecessor price controls) in a large number of ways."	It does not seem safe to assume that the size of the wedge is largely irrelevant. By gathering, analysing and publishing historical data, we address concerns that the proposed 0.25% expected outperformance is arbitrary, as alleged in Frontier[243] and First Economics[244] reports. This large sample of price controls addresses concerns raised by NGN, SGN and NPG that presented data is selective, misleading or excludes relevant controls.[245]

[243] https://www.northerngasnetworks.co.uk/wp-content/uploads/2019/12/A31-NGN-RIIO-2-Outperformance-Wedge.pdf#PAGE=8
[244] https://www.northerngasnetworks.co.uk/wp-content/uploads/2020/09/Information-Asymmetry-and-the-Calibration-of-Price-Controls-First-Economics-1.pdf#PAGE=19
[245] https://www.ofgem.gov.uk/system/files/docs/2019/05/riio-2_sector_specific_methodology_decision_-_finance.pdf#page=70

Arguments raised	Ofgem comment
	Information on observed outperformance and underspending, as presented at DDs, is very relevant for setting price controls. It is difficult to see a clear distinction between outperformance information and other outturn information used to set price controls (such as costs, service levels and Total Market Returns). Frontier's suggestion that RIIO-2 is significantly different from other price controls appears subjective.
Frontier analyse and critique the three models published alongside Draft Determinations: • AR-ER database.xlsx • Residual outperformance.xlsx • Simple MAR application model.xlsx Frontier argue that: "Ofgem's database includes early network price controls (e.g. DPCR1, 2 and 3, PCR2002) which have methodologies that are far removed from that which has been set for RIIO-2. This ancient history therefore tells us nothing meaningful about likely levels of performance during RIIO-2. If we exclude these price controls from Ofgem's analysis, the average outperformance falls to 3.7%."	Frontier's analysis and critique of the three published models does not significantly change the inference drawn within DDs. For example, Frontier's exclusion of early price controls appears arbitrary, and Frontier's estimation that "outperformance falls to 3.7%" does not appear to jeopardise expected outperformance of 0.25%. As stated in DDs, "we estimate a totex underspend of approximately 2-4% would deliver expected outperformance of 0.25% on equity."[246]
Frontier argue that: • "The ex post mechanism may prima facie appear to helpfully mitigate some of the potentially harmful effects of the existence of the wedge in the first place. However our analysis highlights that it has the potential to weaken incentives for outperformance even more despite its yardstick based design, adding to the problems created by the use of the outperformance wedge in the first place." • "we consider the same three scenarios from the previous section: ○ outperformance by more than 25 bps ○ underperformance ○ outperformance below 25 bps." • "As before, for the first two of these three scenarios, the mechanism will not affect companies' incentives to outperform"	The potential for an ex-post adjustment to negatively impact incentives appears small. The yardstick approach is common practice in price controls, for example to set allowances for totex and debt costs. Frontier's observation that two of the three scenarios will not affect companies' incentives appears broadly correct.

[246] https://www.ofgem.gov.uk/system/files/docs/2020/07/draft_determinations_-_finance.pdf#page=73

Arguments raised	Ofgem comment
Frontier argue that: • "The scale of the [incentive] impact depends on performance levels during RIIO-2, but the ex-post mechanism has the potential to reduce the strength of incentives by up to 33% in the electricity group and up to 20% in the gas group." • "Moreover the desire to use a yardstick is (sic) brings with it further practical design problems": ○ Need for a level playing field ○ Potential for tacit collusion ○ Weakened incentive to collaborate ○ Impact on long-term productivity ○ Impact on financeability	We have considered the practical design issues raised by Frontier. Overall, these do not seem to outweigh the benefits of an ex-post mechanism. For example, given our view that information asymmetry can lead to expected outperformance, it is also feasible that information asymmetry arises between companies, as well as between companies and their regulator.
Frontier argue that: "In its Draft Determination, Ofgem briefly considers the following four policy alternatives to the outperformance wedge: • a) Set neutral cost and performance targets • b) Lower incentive strengths • c) Asymmetric incentives or incentive strengths • d) Competed, fixed or zero pot for incentives. Ofgem considers that, due to information asymmetry and based on its assessment of historical performance, option A would be improbable. We strongly disagree with Ofgem on this point. It is perfectly possible to set ex ante symmetrical targets: this has been achieved by Ofgem and other regulators in the past."	As noted in the SSMD (May 2019): "We agree with Frontier that price controls can be calibrated symmetrically. However, Frontier's argument focuses on what is possible rather than what is probable. Investors are likely to base their expectations for RIIO-2 on probabilities, and it is reasonable to assume that these probabilities are, at least in part, informed by previous scenarios."[247] We note Frontier may agree with our view that option a) is improbable. Frontier do not address the distinction between probability and possibility. Probabilities have a stronger bearing on expected outperformance than possibilities.

Consultancy report 10:

Author	Prepared for	Report	Date
Frontier	National Grid	Potential performance in RIIO-T2[248]	Sep 2020

[247] https://www.ofgem.gov.uk/system/files/docs/2019/05/riio-2_sector_specific_methodology_decision_-_finance.pdf#page=139
[248] https://www.ofgem.gov.uk/system/files/docs/2020/09/dd_response_nget.zip "NGETFinance Annex FQ10Technical reportOutperformance wedge.pdf"

Arguments raised	Ofgem comment
Frontier argue that: "Our baseline approach results in an estimated expectation of: • a -16bps underperformance in RoRE terms, for NGGT, which is equivalent to an absolute underperformance of -£4m per year; and • a -26bps underperformance in RoRE terms, for NGET, which is equivalent to an absolute underperformance of -£16m per year."	We note that this report for National Grid differs from the report prepared for the ENA, which states: "Our core model suggests that companies should expect to underperform at RIIO2. In RoRE terms, we expect this underperformance to be: • -0.20% for NGET; • -0.26% for NGGT; and • -0.20% for a notional GDN" In both reports, we assume Frontier mean underperformance (of between 16 and 26bps), rather than 'negative underperformance' which could be interpreted as outperformance.
Frontier argue that: • "We also calculate that around 11% totex outperformance would be necessary for NGGT to achieve an expected outperformance of 25bps under our base case assumptions. For NGET the totex outperformance required is 26%."	It is not clear how Frontier derive values of 11% or 26% for "totex outperformance". These appear in the Executive Summary section of the report (page 7) without supporting evidence or repetition on the main body. It is possible that these are much higher than the 2-4% we stated in Draft Determinations.[249] given totex constraints that Frontier assume (for PCDs and NARMs) among other things.
Frontier's analysis, throughout its report, includes BPI penalties for: • NGGT – a mean RoRE of -0.23%, and a mean financial impact of -£5.28m per year (Figure 3) • NGET – a mean RoRE of -0.22%, and a mean financial impact of -£13.20m per year (Figure 4).	We note that Frontier appear to have inconsistently combined the notional and actual companies, by including one particular impact (BPI penalties), relevant for actual companies, while excluding others. Frontier's approach is therefore inconsistent, as it does not consider positive impacts that can arise for actual companies like National Grid, such as debt outperformance. We note that excluding BPI would result in a positive expectation for NGGT (mean RoRE +7bps) and near-neutral expectation for NGET (mean RoRE -4bps). Therefore, when BPI is excluded, Frontier's analysis in this report suggests the NGET and NGGT price control proposals yield performance expectations near zero.

Consultancy report 11:

[249] https://www.ofgem.gov.uk/system/files/docs/2020/07/draft_determinations_-_finance.pdf#page=73

Author	Prepared for	Report	Date
Frontier	National Grid	Estimating beta for RIIO-2[250]	Sep 2020

Arguments raised	Ofgem comment

Frontier argue that:
• Time period matters and that longer estimation windows (10-years or more) can include the Global Financial Crisis (GFC) and that "We note that Ofwat relied primarily on 5-year betas in setting allowed returns for the water and therefore did not rely on evidence from the GFC/SDC period, which we consider appropriate at this time."
• Underlying risk is likely to have increased over time, noting regulatory risk and risk from Net Zero
• "Ofgem has failed to take a rounded view on appropriate beta values for RIIO-2" which has "led Ofgem to make an assessment of beta that is biased downwards"
• "Energy companies including the networks are facing considerable uncertainty arising from the challenges of delivering Net Zero. There is no comparable risk faced by the water companies."
• That CEPA's decomposition analysis suggests:
  ○ NG's group beta should be a lower bound for GB energy network beta
  ○ GB energy network beta is in the range 0.4 to 0.5, based on analysis of SSE
• CEPA's recomposition analysis suggests:"When CEPA uses GB water betas as a proxy for NG's underlying GB network beta to reconstruct NG's group beta, the result is systematically below NG group's actual beta over time.It finds the same when CEPA's EU peer group average beta is used instead of GB water companies."
• "The fact that the analysis of PPL does not line up perfectly with other
	We agree with Frontier that the chosen time-period matters, and that the inferences drawn reflect this.
	
	Frontier may not have considered the rationale we explained in the SSMC (December 2018) and SSMD (May 2019) with regards to arguments made by Oxera and NERA, that:
	• "we disagree with the argument that we should not use beta estimates for the period 2011 to 2014. This period may be no less valuable - in fact, it may be more valuable because we can better understand how investors perceive risk in network utilities during periods of economic uncertainty or financial turbulence"[251]
	• "The Oxera argument [that post-crisis data is more appropriate] fails to draw a strong link between the financial crisis and why network risk data should be ignored during this period. In any case, we do not see, based on Oxera's two-year graphs, a clear structural break. Oxera's argument would exclude periods where equity beta values are lower than other periods. Therefore, Oxera's suggestion could unduly bias the results rather than improve accuracy."[252]
	
	There seems no sound rationale to exclude some periods, such as the GFC or COVID-19, as suggested by Frontier, particularly if exclusions reflect data alone, as appears to be the case, including for Frontier's suggested to pay "attention more to the pre-COVID19 [and post GFC] period". Doing so without firm rationale could introduce cherry-picking risks.

[250] https://www.ofgem.gov.uk/system/files/docs/2020/09/dd_response_nget.zip "NGETFinance Annex FQ5FQ6Technical Report Beta for RIIO T2GD2.pdf"
[251] https://www.ofgem.gov.uk/system/files/docs/2018/12/riio-2_finance_annex.pdf#page=37
[252] https://www.ofgem.gov.uk/system/files/docs/2019/05/riio-2_sector_specific_methodology_decision_-_finance.pdf#page=127

Arguments raised	Ofgem comment
decomposition exercises does not provide a valid reason to reject the entire approach." • "Ofgem relies on a CEPA study that includes a handpicked set of low risk peers." • "In our view, a pragmatic way forward would be set a range based on the simple average of the UK 5. This would strike an appropriate balance between the risks of going too high and too low, with SSE included to broadly offset the effect of including three water companies." Frontier: • "observe dramatic increases in beta estimates for US energy firms. This has an important bearing on our decomposition results (see Section 5), as we rely on a robust estimate for the US activities to decompose our NG beta. We therefore caution the direct use of the latest result in this particular area and defer our attention more to the pre-COVID-19 period." • Display analysis regarding the percentage of time that asset betas are within Ofgem's range, which shows a marked difference between 2-year and 10-year windows • "examined a much wider range of possible GARCH estimation models, and find GARCH results both above and below standard OLS estimates, not evidence to suggest that OLS estimates are systematically too high" • "consider it is in principle appropriate to use the market value of debt to calculate gearing levels for the purpose of de-gearing beta comparators, we note that there are practical challenges involved with the underlying data on market value of debt." • Note that "our review has found that a subset of the available evidence supports the lower end of Ofgem's range, much of that evidence comes from peers that it is reasonable to assume have a lower risk profile than GB energy networks."	We could not see a strong link between regulatory/Net Zero risk and the evidence Frontier submitted. For example, Frontier's Figure 1 suggests lower risk from Jan 2020 onwards for NG, SVT, PNN and UU, contrary to its higher risk thesis. Frontier have improved the comparability of our results by assuming a debt beta of 0.125, which we have found helpful. Frontier's analysis in places appears in line with Draft Determinations. For example, Frontier's Figure 1 demonstrates that the proposed range of 0.34 to 0.39 fits the data well. We also find Frontier's Figure 8 helpful. It, too, suggests that an asset beta assumption of 0.34 to 0.39 aligns well with the various companies, groups and windows, with SSE the notable exception. On decomposition analysis, Frontier's analysis is helpfully similar to CEPA's, and also includes recent periods. For example, Frontier's Figure 18 suggests that NG's pure play GB energy network asset beta is lower during 2020 on both 2-year and 10-year horizons. This could reflect lower GB political risk during 2020 and NG's general protection from COVID-19-related risks, such as volume risk. Frontier's Figure 22 also presents a similar picture and is therefore supportive of RIIO-2 Draft Determinations. One apparent flaw in Frontier's decomposition analysis, which is potentially significant, is that inferred GB energy network betas appear to spike around the COVID-19 outbreak (see Frontier's Figure 22, Figure 25 and Figure 30). This contradicts Frontier's Figure 8, which shows only SSE spike during COVID-19. There is no apparent economic explanation for this difference and Frontier do not appear to contrast or explain these elements of its analysis in detail. We could agree with Frontier that CEPA's reconstruction/recomposition of the NG group beta may indicate lower results than the actual National Grid Group beta. However, as shown in CEPA's report (Table 4.4), the difference is small (0.37 v 0.36 asset beta), when using GB water networks over a long time period, and therefore in line with DD proposals. The difference between GB energy networks and GB

Arguments raised	Ofgem comment
	water networks could simply reflect specific risk issues during the RIIO-1 period (higher incentive rates, high political risk, and high regulatory risk due to RIIO-1 outperformance levels). Frontier argue that European energy companies are exposed to lower risks than GB energy companies (see Frontier's report on pages 66 and 67), and CEPA's work indicates that GB water comparators may be better comparators for RIIO-2 energy networks than European energy companies. These findings are consistent with, and captured within, the Draft Determination asset beta range of 0.34 to 0.39. Frontier's suggestion to include SSE contrasts with Oxera's. In its September 2020 report, Oxera state that "… since the beginning of 2020, SSE's beta diverged from the other networks, suggesting that part of the risk profile is not yet aligned with that of the other networks. Therefore, we decided to exclude SSE from the sample of UK energy companies." We note Frontier's report suggests 10% of National Grid Group operating income relates to unregulated activities. It is not clear how sensitive Frontier's results are to its approach to unregulated activities. We could agree with Frontier that some GARCH models could give higher results than OLS. It is not clear, however, if Robertson's report from 2018 was considered within the scope of Frontier's review. The Robertson approach appears robust because it deploys a BEKK GARCH model based on economic research and principle.[253] There should be a principle behind analysis techniques, to avoid data mining and cherry-picking risks.

[253] https://www.ofgem.gov.uk/system/files/docs/2018/12/ofgem_dr_dec_2018.pdf#page=14

Consultancy report 12:

Author	Prepared for	Report	Date
Frontier	NGN	Potential performance in RIIO-GD2 - report for NGN.[254]	Sep 2020

Arguments raised	Ofgem comment
Frontier estimate outperformance for the notional GDN in RIIO-2. Frontier argue that its results show an "estimated expectation of a -20.2bps underperformance in RoRE terms". Frontier present a breakdown of this -20.2bps (see Figure 2 of Frontier's report), showing, inter alia: • -8.8bps relates to the complaints metric • -5.6bps relates to GSOP • -2.8bps relates to Emergency response time • 0bps relates to totex (excl. NARM and PCDs). Frontier argue: • "that there is only a 25.3% chance that the notional GDN achieves outperformance at or above 25bps. In other words, the notional GDN would see worse than 25bps of outperformance almost three-quarters of the time". • "The distributional assumptions around totex outperformance are a key driver of the range of plausible outcomes" • That a zero mean expectation on totex remains justified, in contrast with Ofgem's analysis that suggests otherwise. "The result from the historical analysis [as per Ofgem's published analysis] is largely driven by price controls more than a decade old, which no longer hold any relevance to the situation faced by energy networks today." Frontier suggest:	Frontier's work is a helpful addition to the outperformance thesis. However, Frontier's work hinges on its assumptions, as reflected in its response to Ofgem's critique (see section 2.3 of Frontier's report). Crucially, Frontier attempt to rationalise its zero mean totex assumption, relying primarily on a hypothesis that RIIO-2 is not sufficiently similar to draw any inference from history. It therefore remains, as noted in Draft Determinations, that we are unable to reconcile Frontier's assumptions with actual data and for this reason do not find Frontier's logic persuasive.[255] Further, we note that Frontier present a sensitivity result which includes totex underspending of 3.7%, perhaps indicating that Frontier recognise at least some significance of the historical data. The result, Frontier demonstrate, is outperformance of 7.5bps, which Frontier characterise as 'slight'. It seems clear from this report that Frontier's estimate of required totex outperformance, of up to 7%, reflects its assumed underperformance in other areas, such as GSOP and emergency response times. This therefore helps to explain the difference between Frontier's characterisation and the estimate provided at Draft Determinations.

[254] https://www.northerngasnetworks.co.uk/wp-content/uploads/2020/09/NGN-Outperformance-Wedge-Frontier-Economics.pdf
[255] https://www.ofgem.gov.uk/system/files/docs/2020/07/draft_determinations_-_finance.pdf#page=70

Arguments raised	Ofgem comment
• 3.7% mean totex outperformance "results in the expected overall impact increasing from -20.2bps in our baseline model to 7.5bps, i.e. going from underperformance to slight outperformance" • In its "sensitivity for GSOP" scenario, that "The totex outperformance necessary to reach 25bps outperformance would be around 7%." • In its "sensitivity for complaints metric" scenario, that "The totex outperformance necessary to reach 25bps outperformance would be over 5%."	

Consultancy report 13:

Author	Prepared for	Report	Date
First Economics	ENA	RIIO-2: Prior Year Adjustments[256]	Aug 2020

Arguments raised	Ofgem comment
Under- and over-recoveries against the revenue cap should roll forward at a benchmark interest rate. This has been the case for 30 years since privatisation and should be well understood by investors.	As per our proposals at DD stage, we will use a benchmark interest rate to determine remuneration for these factors.[257] We set out our decision at paragraph 11.43 above.[258]
Prior year adjustments should generally roll forward at the allowed cost of capital. Companies' capital requirements should be treated as a homogeneous pool.	We recognise it will take time for Ofgem and industry to gain experience of the new RIIO-2 regime and that industry generally believes that we should continue with the current WACC approach. We will continue to review the case for the application of one TVOM applicable to all revisions and corrections, engaging further with other GB regulators and with industry on this issue, drawing upon the experience of the new RIIO-2 AIP arrangements.
There is no obvious rule for discretionary incentive payments such as ODIs [being	Partially agree. We have decided to apply the WACC TVOM approach to all revisions related to

[256] https://www.ofgem.gov.uk/system/files/docs/2020/09/dd_response_sgn.zip "First Economics RIIO2 prior year adjustments.pdf"
[257] DDs. Finance Annex. Paragraphs 11.59 and 11.60
[258] DDs. Finance Annex. Para 11.62

Arguments raised	Ofgem comment
subject to different time value of money adjustments.]	output incentives and pass-through allowances, as per the Totex approach. We will continue to review the case for the application of one TVOM applicable to all revisions and corrections, engaging further with other GB regulators and with industry on this issue, drawing upon the experience of the new RIIO-2 AIP arrangements.

Consultancy report 14:

Author	Prepared for	Report	Date
John Earwaker, Nick Fincham	National Grid	Information asymmetry and the calibration of price controls.[259]	Aug 2020

Arguments raised	Ofgem comment
This report reflects survey evidence from "32 ex-regulators from across the UK's regulated sectors". Q1. Should the principal purpose of setting price controls be to incentivise companies to reveal efficient levels of expenditure or to anticipate efficient levels of expenditure? Respondents were about evenly divided on this issue.	On balance, Ofgem has set the incentive mechanisms in the RIIO-2 price control to incentivise companies to reveal efficient levels of expenditure and to forecast these as correctly as possible.
Q2. There is usually an asymmetry of information between regulators and regulated companies. 28/32 responses agree or strongly agreed	Ofgem notes agreement from the former regulators.
Q3. A regulator conducting a price review should strive to set up a 'fair bet', in which the likelihood of a regulated firm earning returns above or below the cost of capital are evenly balanced. ¾ of respondents agreed or strongly agreed	Ofgem agrees with this principle and for this reason has generally sought in these FDs to "aim straight" rather than to materially aim up or aim down.
Q4. A regulator conducting a price review using available approaches to cost assessment and output setting will usually be unable to set expenditure allowances and output targets	Ofgem agrees with the proposition that it is possible for a regulator to set a 'fair bet' but acknowledges the practical difficulties of doing so, given information asymmetry.

[259] http://www.first-economics.com/earwakerfincham.pdf

Arguments raised	Ofgem comment
that are sufficiently stringent to set up a 'fair bet' A majority (18/32) considered that the toolkit that regulators can deploy during price reviews is sufficiently robust to enable the regulator to set up a 'fair bet'. One respondent believed that the appeals process (to the CMA) had an asymmetric impact. Companies would not appeal aspects of the price control that are in their favour but would appeal ones which are not. One respondent believed that it was in practice too difficult for a regulator to set a price control stringent enough to be a 'fair bet'.	
Q5. After setting a firm's expenditure allowances and output Targets, a regulator should make a final lump-sum deduction from allowed revenues to capture otherwise overlooked scope for the regulated firm to make cost savings and/or output improvements The report notes "a consensus on question 5 with 25 out of 32 former regulators stating that they were not keen on the idea that a regulator should make a final lump-sum deduction from allowed revenues as a way of securing a 'fair bet'." Q6. "The deduction referred to in Q5 above, should be the equivalent of 5% of the regulator's estimated annual expenditure allowances" The report states "At the end of our interviews, none of the 32 people that we spoke to agreed with the proposition that the deduction considered in the previous question should be set at a fixed 5% of allowed expenditure." Q7. The deduction referred to in Q6 above should be applied by: setting the allowed return below the cost of capital; adjustments to calculated totex allowances and/or output	The question(s) in the survey may not accurately reflect the approach to setting allowed returns in RIIO-2. For example, responses may reflect an inaccurate deduction number of 5%. By contrast DDs estimated a totex underspend of between 2% and 4% would deliver expected outperformance of 0.25% on equity.[260] It is possible that former regulators would react differently after digesting the full set of DD information and analysis on expected outperformance, which may have been outside the scope of the survey.[261] We note that responses felt that the cited 5% was a large number – even though DD analysis suggested outturn data supported 7%, before considering the positive relationship with other incentives.[262]

[260] See paragraph 3.126: https://www.ofgem.gov.uk/system/files/docs/2020/07/draft_determinations_-_finance.pdf#page=73
[261] For example, see DDs, Figure 16: https://www.ofgem.gov.uk/system/files/docs/2020/07/draft_determinations_-_finance.pdf#page=72
[262] See paragraph 3.123 for example: https://www.ofgem.gov.uk/system/files/docs/2020/07/draft_determinations_-_finance.pdf#page=72

Arguments raised	Ofgem comment
targets; either of the above; or neither of the above. The report suggests that 24 of 32 responses indicate "neither of the above".	
Q8. "If a regulated company goes on to out—perform its price control and make returns above the cost of capital, this indicates that the regulator failed to set the price control at an appropriate level" Large majority either disagreed or strongly disagreed. Noting that the risks in the real world give a dispersion of outcomes which does not imply regulatory failure.	Ofgem believes that returns above the cost of capital could indicate some failure or it could indicate good performance. From the evidence collected and presented at DDs, Ofgem believes there is a substantial body of evidence that shows that UK regulators set price controls which, are, on average, outperformed. The scale and frequency of outperformance suggests that a remedy is needed. If there were not, the incidence of outperformance and underperformance would be more symmetric.
There was general support for the principle that "earned rewards" are part and parcel of a healthy regulatory regime as must not be rebadged as a symptom of regulatory failure.	Ofgem agrees in principle.

Consultancy report 15:

Author	Prepared for	Report	Date
NERA	Scottish Power Transmission	Cost of Capital for SPT in RIIO-T2.[263]	Sep 2020

Arguments raised	Ofgem comment
NERA Estimate a TMR of 6.9% to 7.8% (CPIH-real) • RPI index based on DMS (up to 1949) and ONS (1950 onwards) • RPI Index based on Bank of England Millennium RPI data NERA refer to Blume & JKM to provide an unbiased measure of expected returns. They take 5-year holding period in line with evidence on typical investor holding periods. NERA convert historical RPI-deflated returns to CPI equivalent using updated estimates for the	We explained our methodology in detail, including our position on inflation indices, at DDs. We maintain these positions for FDs. We believe we have appropriately reflected the long investment horizons of investors in utilities.

[263] https://www.ofgem.gov.uk/system/files/docs/2020/09/dd_response_spt.zip "Annex 4", "200903SPTWACCNERAreportFINAL.pdf"

Arguments raised	Ofgem comment
historical RPI-CPI wedge of 46 to 72 bps, measured over the period where historical CPI data (actual or back-casted) are available.	
CEPA use UK GDP growth estimates for DGM whereas Bank of England DGM uses global GDP growth forecasts which support TMR estimates higher than historical realised returns estimate (of around 8 to 9 per cent).	In line with the CMA's recent provisional findings for NATS Appeal and PR19, we place less emphasis on the ex ante measures of expected return and note DGM estimates are particularly prone to assumption issues.
Ofgem's beta analysis emphasises GB water networks rather than focusing on energy networks	We disagree with the use of SSE's beta because it appears to us that the non-regulated businesses dominate the market's perception of SSE's systematic risk. This leaves NG as the remaining energy network quoted in the UK stock market. For FDs, we have increased our estimate of unlevered beta to 0.31 to reflect a larger weight on NG's beta. We still believe that, as regulated utilities, the beta of the water companies gives us valuable information as to investors' expectations of risk and return.
NERA focus on 2 and 5 year estimation periods for the regression, and 2 and 5 year averaging periods, and daily estimates. Consistent with the CMA. Argue this ensures that we do not place undue weight on most recent period where betas have been downwardly biased Argue Ofgem's use of 10-year estimation periods is unreliable given changes in business & regulatory risks.	We do not agree that we should disregard large periods of history (eg more recent betas) simply because the values are lower. All periods provide information on systematic risk – in principle the information is revealed under various market conditions. Our use of large samples of data provides us with the largest possible number of data points, including those that reflect the Global Financial Crisis of 2008-09.
NERA criticise CEPA's analysis re inference WPD beta from PPL, saying WPD inferred beta is highly volatile. Argue CEPA is wrong to reject decomposition analysis which supports a far higher beta for NG's GB energy networks relative to NG's group beta.	We do not agree that PPL's beta should be disregarded in attempting to assess the beta of UK energy network companies given that most of its business is composed of regulated UK assets. We also do not agree that a decomposition analysis of NG supports a much higher beta for the UK part of its business. We believe that the risk profile of NG's US and UK businesses is not stable over time and that makes it difficult to ascertain what is driving its estimates at any given moment.
NERA reject CEPA's European stocks beta sample. Conclude European comparators support beta range of 0.38 to 0.40 (0.05 debt beta)	We believe the CEPA sample is representative of the European utilities – there are issues with including or excluding any of the stocks. We believe CEPA has correctly excluded Naturgy and Acea due to the size of their unregulated non-network businesses.
TMR should use arithmetic averages to estimate historic returns, as proposed by Cooper.	We do not think arithmetic averages are an appropriate way to measure returns for long-horizon investors, for reasons we discussed at the SSMD stage and in line with advice to regulators contained in the UKRN Cost of Capital

Arguments raised	Ofgem comment
	Report (2018). In line with those recommendations, we start with the long run geometric return, and adjust upwards.
Cost of Debt: argue Ofgem's proposed use of the iBoxx Utilities index imposes rating risk on companies	We believe the iBoxx Utilities index gives the more accurate view of the true cost of debt for UK network utility companies. We discuss the NERA report on this issue under Consultancy report 18, below.
Argue that Ofgem's halo analysis is imprecise, and as a consequence fails to correctly allow for NIP	See below, Consultancy report 18
Argue that Ofgem's use of company data to calculate cost-of-carry is unreliable	See below, Consultancy report 18
Argue that Ofgem incorrectly disallows CPI indexation costs	See below, Consultancy report 18
Estimate additional cost of borrowing of 53bps, range of 47-59bps	See below, Consultancy report 18

Consultancy report 16:

Author	Prepared for	Report	Date
KPMG	NG ESO	NG ESO: risk and remuneration under Ofgem's RIIO2 Draft Determination.[264]	Aug 2020

Arguments raised	Ofgem comment
KPMG provide analysis on ESO's risk exposure and ESO's required remuneration, including for: • Asymmetry and contingent capital • systematic risk • revenue collection function • financeability, including: ○ its view on CEPA's analysis ○ its criteria for financeability ○ the central importance of equity financeability ○ its view on equity financeability metrics	We note that KPMG's claims for required returns differ from previous submissions, such as in ESO's July 2019 submission.[267] or in ESO's December 2019 business plan..[268] By contrast, KPMG's work now presents asymmetry as the largest additional factor. The shifting emphasis, from revenue collection claims towards asset beta claims, may reflect the reducing revenue collection responsibilities for the ESO.[269], and DD proposals for asset beta (0.45) relative to business plan assumptions (0.6)..[270]

[264] https://www.nationalgrideso.com/document/176026/download
[267] https://www.ofgem.gov.uk/system/files/docs/2019/08/riio-2_methodology_for_the_electricity_system_operator_-_decision_and_further_consultation.pdf#page=26
[268] As summarised in Draft Determinations: https://www.ofgem.gov.uk/system/files/docs/2020/07/draft_determinations_-_eso.pdf#page=81. See also KPMG's report here: https://www.nationalgrideso.com/document/158076/download#page=85
[269] https://www.ofgem.gov.uk/ofgem-publications/164726
[270] https://www.ofgem.gov.uk/system/files/docs/2019/08/riio-2_methodology_for_the_electricity_system_operator_-_decision_and_further_consultation.pdf#page=57

Arguments raised	Ofgem comment
KPMG argue that the required return should total £35.5m per annum, which KPMG contrast with a CEPA value of £15.9m.[265] The difference of £19.6m reflects the following areas[266]: • Remuneration for asymmetry (+£6.9m) • Correction for NG ESO RAV-related asset beta (+£3.5m) • Non-RAV systematic risk (+£3.7m) • Revenue collection (£6.7m - £2.6m = +£4.1m) • Contingent capital (+£1.3m)	We understand the £19.6m difference reflects the following assumptions: • Remuneration for asymmetry: ○ £230m * 3% = +£6.9m • RAV-related asset beta: ○ 0.60 asset beta rather than 0.45 = +£3.5m • Non-RAV systematic risk: ○ £11.1m * 33% = +£3.7m • Revenue collection: ○ 0.35% * £1.9bn = £6.7m, ○ £6.7m – £2.6m = +£4.1m • Contingent capital: ○ £75m * 1.75% = +£1.3m We address each of these below.
KPMG argue: • "the scale of NG ESO's potential cost disallowance under the DD amounts to £30m per annum, which markedly exceeds the capped reward for outperformance of £15m per annum. This gives rise to a prima facie presumption of asymmetric risk exposure." • "CEPA explicitly compares the cost treatment for regulated networks to the cost regime for NG ESO, and suggests that they exhibit asymmetry to a similar degree. This statement does not demonstrate that NG ESO's cost regime is not asymmetric, since: i) regulated networks' cost regime exhibits considerable asymmetry; and ii) regardless of the cost treatment for regulated networks, the asymmetry faced by NG ESO under its cost regime is material relative to its financial headroom." • The UR's guidance emphasises that "The use of the word 'Demonstrably' serves to reverse the normal burden of proof", so that "expenditure which is potentially	Regarding asymmetry, KPMG's logic suggests that the ESO's price control is more symmetrical than other licensees, including energy networks subject to RIIO-2 price control. The FD cap on disallowances (2.5% of RAV) is smaller than proposed at DDs (10% of RAV), hence further reducing ESO's risk. We note that network companies are unlikely to have the same degree of upside as the ESO. KPMG's work suggests the relevant question is not asymmetry benchmarking, but absolute asymmetry, including in the context of ESO's financial headroom. Using the ESO's licence model, we could not clearly see a concern from asymmetry regarding ESO's headroom. Regarding financial headroom, we agreed with the ESO's business plan submission that financeability tests indicate strong credit worthiness. Our tests indicated Moody's scorecard-implied ratings of A1, similar to ESO's A1 or A2.[271] We note KPMG's approach to financial headroom suggests a focus on annual equity returns of £10m per annum.

[265] KPMG's value for CEPA does not immediately reconcile with CEPA's report, as KPMG take a different approach to presenting returns on the RAV. Further, KPMG's work (Table 1) may not accurately reflect DDs or CEPA's report. For example, KPMG's Table 1 implies zero funding for asymmetry and £2.6m for the revenue collection function.
[266] KPMG's breakdown of the difference does not sum to its display of the components, perhaps due to rounding.
[271] https://www.ofgem.gov.uk/system/files/docs/2020/07/draft_determinations_-_eso.pdf#page=86

Arguments raised	Ofgem comment
subject to DIWE is presumed efficient; unless and until the UR establishes that it is not". Ofgem's phrasing is different, and provides no indication of a reversal of the normal burden of proof: "All expenditure is presumed efficient until Ofgem comes to the decision that it is inefficient"	In the absence of identical guidance from both regulators (UR and Ofgem), we could agree with KPMG that each regulator may approach disallowance in different ways. In our view, however, the approaches will be broadly similar in practice, particularly given these FDs update the disallowance guidance in line with ESO's suggestions.
KPMG argue: "The sum of baseline annual fast pot and slow pot totex for NG ESO is forecast in the DD financial model at about £230m over the five-year period. A 2% allowance for asymmetric risk on this basis would be £4.6m per annum while a 4% allowance would be £9.2m. It is also necessary to recognise that these forecasts excluded costs that Ofgem considered were too uncertain to perform a reliable costs assessment. The issues highlighted in section 3.1.4 above indicate that Ofgem's proposed disallowance regime is not fully disciplined. In these circumstances, an allowance of £6.9m per annum would appear reasonable."	We note KPMG's application of CMA precedent implies a 3% allowance for asymmetry based on annual totex forecasts (3%*£230m = £6.9m). We agree that totex cost levels are not entirely certain for RIIO-2. These FDs also cap disallowance risk at 2.5% of RAV, which therefore materially reduces ESO's risk from the DD proposals of 10% of RAV. These FDs also provide an update to the disallowance guidance in line with ESO's suggestions. Therefore, using KPMG's methodology, the risk of disallowance is small and an allowance of £6.9m would over-remunerate the ESO. We also note that KPMG's £6.9m does not account for the benefit of upside asymmetry from other aspects of the framework.
KPMG reference SONI's asset beta of 0.6 as a basis for ESO.	We remain unconvinced that there is a perfect read-across between SONI and ESO, given the differences in risks for example. We also note more recent estimates of SONI's asset beta, by SONI (0.57), KPMG (0.54-0.61) and the Utility Regulator (0.5).[272] We have accounted for these estimates within our Final Determinations for the ESO.
KPMG argue that non-RAV risks warrant an increase in allowed returns.	It is unclear how the non-RAV risks could impact the ESO in a material way, given the RIIO-2 framework. It appears KPMG's November 2019 report relies on totex as a metric for these risks, and a subjective judgment on relative risks. We are mindful of double counting these risks in addition to those captured through beta. We have however accounted for non-RAV risks in our Final Determinations for the ESO.

272 https://www.uregni.gov.uk/sites/uregni/files/consultations/Annex%207%20Risk%20and%20return.pdf#page=31

Arguments raised	Ofgem comment
KPMG argue that the ESO should earn a return on its remaining revenue collection activities.	It is not clear that returns should scale with non-TNUoS revenues as proposed. We are also mindful of providing returns that could double-count those funded through other allowances, such as opex or WCF. We have however accounted for revenue collection activities in our Final Determinations for the ESO.
KPMG argue that £75m of contingent capital is required in addition and should therefore each a separate return.	It is not clear that contingent capital of £75m is necessarily required as proposed. Based on the ESO's framework, and benchmark companies, we struggled to see clearly a materially distinct and additional capital amount. We have however accounted for this claim within our Final Determinations for the ESO.
KPMG argue: • "The Finance Duty does not end once the regulator has set allowances. It must also construct tests that will provide a meaningful and internally consistent check on whether all capital providers under the notional financial structure would be willing to commit capital given the allowances that have been set." • "CEPA does not present any scenarios other than its base case forecasts. This means that CEPA lacks any means of examining potential equity requirements under a downside scenario, let alone considering how these might be met and whether this is consistent with the proposed price control arrangements." • "It is striking that Ofgem sees a weakness of an EBIT margin metric as depreciation being included "in the denominator but not in the numerator". Were depreciation included in the numerator, it would no longer be a measure of profitability. Were depreciation to be excluded from the denominator, it would no longer be a measure of business activity analogous to turnover in the comparator businesses used to calibrate an EBIT margin benchmark. Seeing this as a weakness reveals a lack of	We can address KPMG's critique as follows: • We can agree that financeability testing involves more than setting allowances. Constructing tests may be useful, although it is not clear which tests would be sufficient in KPMG's view, aside from a heavy reliance on EBIT margins, which we address within Draft Determinations and again in these Final Determinations (see below for example). • Downside scenarios are considered for the ESO in Draft Determinations. For example, in line with KPMG's suggested focus on equity downsides, DDs present RoRE downsides within the DD Finance Annex Table 45. Arguably, any downside due to cost disallowance would reflect actual ESO inefficiencies, rather than the notional ESO, and therefore be addressed by equity shareholders. • Using the ESO's licence model, we could not clearly see a financeability concern under downside scenarios, particularly given our concerns regarding an undue reliance on EBIT margin inferences, as discussed in our FD financeability rationale. We highlighted in DD's a sensitivity of the proposed metrics with regards to depreciation. The impact of depreciation helps explain why observed EBITDA metrics can lie towards the high end of rating

Arguments raised	Ofgem comment
understanding around the relevance of profitability metrics in an equity-weighted financeability assessment."	agency metric ranges, whereas EBIT metrics can lie towards the lower end. We note KPMG's agreement that EBITDA margins "can, of course, be useful credit metrics" (footnote 52 of KPMG's report). It is not overly clear whether KPMG's translation of rating agency EBITDA metrics into EBIT margins (see Appendix 8 of KPMG's November 2019 report), results in quality insight for equity investors, as appears to be the intention. KPMG's adjustment appears to re-purpose, perhaps unreliably, a rating agency benchmark that may be designed for very different purposes, such as a focus on debt rather than equity.

Consultancy report 17:

Author	Prepared for	Report	Date
Economic Insight	Cadent	RIIO-GD2 Method Impact on Expected Equity Returns at the Draft Determination	Sep 2020

Arguments raised	Ofgem comment
Estimates overall that Ofgem has tightened the price control by -1.38% RoRE. In addition, there are also further changes at RIIIO-2 explicitly introduced to remove areas that Ofgem perceive to have driven outperformance in RIIO-1. The total impact of Ofgem's changes at RIIO-2 increases to -2.5% RoRE, compared to RIIO-1. Ofgem's proposed adjustment of -0.25% for expected outperformance therefore represents a material 'overcorrection'.	Economic Insight appear to compare: changes between RIIO-1 and RIIO-2; with an adjustment of 0.25% for RIIO-2. However, it is not correct to assume that changes between price controls will mean that outperformance cannot be expected in a future control.
Ofgem also considered alternatives to the outperformance adjustment, including setting neutral cost and performance targets, lower incentive strengths, and applying asymmetric incentives. However, a closer examination of the DDs reveals that Ofgem has applied all three of these options, and tightened cost allowances, in addition to applying the outperformance wedge. Thus, in	Estimates of expected outperformance at DDs capture RIIO-2 cost and performance targets including the impact of lower incentive strengths. Therefore, it is not correct to assume that the totality of the adjustment(s) represents an 'overcorrection'.

Arguments raised	Ofgem comment
practice, the totality of Ofgem's adjustment is considerably greater than -0.25%.	
An adjustment for expected outperformance may be rationalised if companies benefit from an intrinsic information advantage. However, we think the appropriate test for this is whether there is evidence of substantial, systematic and persistent outperformance historically, when measured in terms of economic profit.	These Economic Insight views appear consistent with DDs. We believe that the evidence presented in the DDs, across many UK regulators and many price controls, provides evidence of information asymmetry between companies & the regulator which cannot be fully closed. It is therefore still appropriate to apply a minimum 25bps adjustment between expected and allowed returns. The ex post adjustment mechanism is intended to protect shareholders if outperformance does not materialise. We have presented evidence of sustained outperformance by GD companies in RIIO-1 and GDPCR1.[273]
Ofgem's approach to RPEs transfers risk from company to consumers but also limits scope for outperformance (reducing the overall RoRE range).	We would agree that there is a risk transfer regarding unforeseen RPEs. This Economic Insight view could indicate a lowering of systematic risk for investors.
Ofgem views the RPE effects in GD1 to be inherently miscalibrated. Economic Insight disagrees – underperformance was inherently as likely as outperformance.	We believe that outperformance has historically been systemic. We have not see evidence to the contrary in response to Draft Determinations.
5 instances in which Ofgem has either explicitly reduced upside potential or increased downside risk; 7 where Ofgem has narrowed overall outperformance range	We would agree that we have reduced the scope for outperformance in many mechanisms compared to RIIO-1. However, the probability distributions for outcomes do not appear perfectly normal around a mean of zero.
Estimate a reduction of c. -250bps for the efficient firm relative to RIIO-1. RPE (-60-70bps), repex PCD (-35bps) and NARMS (-7bps).	In our DDs, paras 3.129-3.132, we re-present the RIIO-1 outperformance in a RIIO-2 context. We show in Figure 18 that GD1 exhibited outperformance of 1.9% (1.8% weighted average basis) compose of 0.9% from Totex outperformance and 1.0% from incentives. We believe there is still considerable scope for Totex outperformance and given the incentive rates, company shareholders will benefit from this.

[273] RIIO-2 Sector Specific Methodology Decision Finance Annex. Figure 22 p. 95. Figure 26 p. 99. https://www.ofgem.gov.uk/system/files/docs/2018/12/riio-2_finance_annex.pdf#page=95

Appendix 3 – Debt and financeability: A summary of consultants' reports and our comments

Consultancy report 18:

Author	Prepared for	Report
NERA	ENA	Review of Ofgem's DD additional costs of borrowing, and deflating nominal iboxx

Point raised	Ofgem consideration and response
Using duration adjusted measure of spread leads to 9bps negative halo, therefore 9bps new issue premium allowance should be provided.	We have examined NERA's halo analysis and find the following problems: - It compares yields on the issuance (settlement) date rather than the pricing date. For bond issues, the pricing date is typically 4-5 business days earlier than the settlement date, although it can be longer. It is the pricing date that matters (and is available from Bloomberg), so comparing yields for dates other than the pricing date is unreliable. -It includes SSE plc bond issues - SSE plc is not a network company. -It excludes a number of more recent issues, possibly because they are marked by data systems as "callable" because they technically have a call date. However, when looking at the final terms' details, these call dates are only 3 months ahead of maturity on very long dated bonds. This is a recent market development driven by bank regulatory requirements with the structure also adopted by corporates (as it may partly mitigate cost of carry for refinancing ahead of legal maturity), however these are not considered or traded as callable bonds in the traditional sense and should be included. -It excludes tap (follow on) issuances. We therefore find NERA's evidence unreliable. We continue to believe that looking at the spread over the specific government bond over which the corporate bond is issued is appropriate because investors typically switch out of gilts into the new issue and this is the typically quoted spread used for new issues and assessments of new issue premium. NERA's argument that efficient markets would adjust spreads on new issues to reflect a smoothed risk-free curve is not borne out in practice. In any event, we examined duration adjusted spreads against the duration matched zero coupon BoE curve and on this basis found 4bps halo effect on a weighted average basis or 8bps on a simple average basis for our sample, which

Point raised	Ofgem consideration and response
	did not include SSE plc issuance, did include tap issuances and did include more recent issuances with 3 months prior to maturity par calls. Overall, we find NERA's analysis unreliable and do not agree with a requirement to add a new issue premium to the additional costs of borrowing.
Ofgem's cost of carry estimates are unreliable because Ofgem's analysis does not reflect divergent approaches taken by companies to location of Treasury functions.	Ofgem did recognise that corporate treasury functions can be located at different group levels, hence the analysis of group accounts where licensee level accounts showed no cash. NERA criticise but do not provide alternative evidence and instead use broad assumptions for their estimate.
Companies have a higher cash requirement in RIIO-2 than RIIO-1 due to a) higher proportion of maturities and b) greater use of UMs	We are not convinced by this reasoning and are proposing forecasting mechanisms that will reduce the cash requirement of UMs.
Updated estimates of CPI linked debt premium based on comparison of CPI and nominal issuances suggests 50bps premium, so applied to 30% ILD propose an additional allowance of 15bps.	We do not consider the secondary market spreads for the CPI bonds examined are likely to be reliable due to relative illiquidity in the secondary market for these bonds, therefore, we do not consider the top end of NERA's range of 90-100bps is reliable. If anything, we think it is more appropriate to consider the new issue differential, which NERA indicate at 26-30bps differential. We consider this is relevant for new inflation linked debt only and have decided to provide an allowance for this, as set out in Chapter 2: Allowed return on debt.
Also suggest swapping nominal to CPI would cost 40-60bps, which NERA suggest supports the 50bps assumption.	We do not consider this is relevant- what should be considered is cost of swapping RPI to CPI if the network wanted to mirror the change in debt RAV inflation indexation. We would estimate the cost of swapping RPI to CPI would be much lower than swapping nominal for RPI because there is less of a differential in payments between RPI real and CPI real compared to nominal/RPI, and therefore lower credit intensity for the swap counterparty. It is not obvious to us that this will be necessary given the HMT/ONS consultation on RPI changing to CPIH anyway but consider any allowance would be better assessed on the basis of swapping RPI real to CPI real. Our decision in relation to allowances for CPI linked debt and/or basis mitigation is discussed in Chapter 2: Allowed return on debt.
NERA agree that deflating iBoxx by an inflation expectation other than breakeven inflation is likely to be more reliable and OBR 5yr forecast for CPI is a reasonable measure. Outturn inflation could be used as an alternative but this would increase allowance volatility. A multi year measure could be used as a true up.	We consider it appropriate to use a measure of expected inflation because this is what is included in nominal bond yields. We recognise that this could differ from outturn inflation over time but we do not consider it necessary to true up because the arrangement is not expected to lead to any asymmetrical risk for networks or consumers.

Consultancy report 19:

Author	Prepared for	Report
Oxera	SHET	Financeability of the RIIO-2 Draft Determinations

Points Raised	Ofgem Consideration and response
Ofgem have altered the definition of the notional company (between SSMD and DD) to give appearance of higher credit metrics. Parameters such as notional gearing shouldn't be adjusted to 'solve' financeability constraint.	We were clear that any assumptions made about the notional company at SSMD stage were working assumptions only and were subject to review following busines plan submissions.[274]. The construction of the notional company is informed by market evidence. We consider it valid to consider notional gearing in light of the risks network companies face, rating agency views on gearing levels for investment grade regulated networks, balancing an appropriate cost of capital and the impact medium term market conditions have on debt servicing. We consider that current medium-term market conditions indicate that certain credit metrics may come under pressure at higher levels of gearing and that the notional gearing levels set out in this document are appropriate in light of market data.
Dividend yield too low and even with this assumption gearing rises- this demonstrates fundamental deficit with allowed return	We believe that, in line with Modigliani and Miller theorems, equity investors are indifferent between dividend and capital return. Accordingly, we have set what we consider to be a fair return on equity and made a reasonable assumption on notional company dividend yield. Given the RAV growth expected for SHET it is not unreasonable to assume notional equity investment to partially fund this growth. Our notional company model assumes debt funding first and then triggers equity issuance so temporary rises in notional gearing are simply a function of this modelling technique and do not demonstrate a fundamental deficit in allowed return. We are comfortable with the implied level of notional equity issuance.
Ofgem should assess impact of CPI switch on short term and long term financeability	As stated at DD, we do not consider it necessary or practical to assess financeability so far into the future. We also note the HM

[274] SSMD, Finance annex, 4.56, 4.109, 7.30

Points Raised	Ofgem Consideration and response
	Treasury and UK Statistics Authority (UKSA) recent response to their consultation on RPI reform, which stated that the UKSA intend to reform RPI so that from February 2030 RPI will equal CPIH.[275]. This means that our switch to CPIH is entirely aligned with the approach of HMT and UKSA and that it only really represents a 'switch' for a maximum of 9 years, after this point RPI is expected to convert to equal CPIH in any case.
Appropriate financeability assessment would consider whether it is possible to attract equity investment at allowed return and whether cost allowances are reasonable expectation of what companies are expected to incur	The 3-step process to determine the allowed return on equity is designed to ensure a fair return to equity. In Step 1, the cost of equity is estimated using the CAPM. The CAPM parameters are set based on available market data, eg the current level of risk-free rates. In Step 2, real world cross-checks are used to give information on the returns demanded by equity investors and we believe that they demonstrate that the range determined in step 1 is reasonable and that this is sufficient to attract equity investment. Step 3 includes an ex post adjustment mechanism in favour of the companies to ensure that companies can earn at least the cost of equity. We have considered sufficiency of cost allowances as part of our in the round assessment, described in more detail in Chapter 11 of the Core Document.
Analysis should include BPI and exclude outperformance assumption	We have carefully considered the design of the Business Plan Incentive and consider that it is reasonable to assume the notional efficient operator neither receives a reward or a penalty and that any reward or penalty decided is due to actual company actions and performance. Please see Chapter 10 'Totex and Business Plan Incentive Mechanisms' in the Core Document for further detail. We discuss in DDs why there should be expectations of outperformance of at least 0.25%. After considering consultation responses, we remain of this view in these Final Determinations. Expected outperformance is largely due to information asymmetry between the regulator and the notional efficient operator. We therefore consider it appropriate to consider it in our analysis of the financeability of the notional efficient operator. In addition, our decision to set the ex post adjustment

[275] https://consultations.ons.gov.uk/rpi/2020/user_uploads/rpi-consultation-response.pdf

Points Raised	Ofgem Consideration and response
	mechanism on a company-specific basis provides comfort that companies will earn this return.
Analysis should consider negative skew on incentives	It is not necessarily the case that the expected outcome is the simple average of highest and lowest values. We explain in various places (see: Core Document - Chapter 11 'RIIO-2 in the round, interlinkages and appeals'; individual sector documents and Chapter 3 above) our analysis of whether incentives are skewed and the overall expectations that could be assumed for RIIO-2.

Consultancy report 20:

Author	Prepared for	Report
Consultancy	GD&T networks (Confidential)	Confidential

Points raised	Ofgem comment
Ofgem adopted the consultant's debt costs models for DD	This is not correct; we reviewed the consultant's models but built our own model based on RFPR data.
The consultants broadly replicate Ofgem's results showing modelled slight outperformance of GD&T sector against the Ofgem DD calibration (using Ofgem's assumption and DD proposed allowance for additional costs of borrowing). However, this outperformance switches to underperformance if a higher assumption of additional costs of borrowing is used.	We welcome the cross check of the cost of debt modelling using independently developed models. We note the consultant's analysis that GDNs and TOs combined are expected to slightly outperform in each of their low, mid and high interest rate scenarios. It therefore appears that differences mainly relate to difference of opinion on additional costs of borrowing. We don't replicate the individual subsector results, but it is not clear how refinancing costs have been allocated when looking at individual subsectors.
For the combined sectors using a simple average would lead to greater outperformance	We note the consultant's previous preference for using a simple average and therefore note that on this basis, the proposed calibration at DDs could be considered to have more headroom in it than Ofgem presented based on debt weighted averages.
If the iBoxx Utilities index constituents improve credit rating this could lead to a deterioration in the GD&T combined network	Given a) networks expressed concern at business plan stage that the A/BBB index may represent a 'too high' rating assumption as network companies were concerned that their

Points raised	Ofgem comment
company debt performance vs the Utilities index.	own ratings may fall during RIIO-2, b) the Utilities index is comprised of ~50% network company bonds, and c) monoline wrapping is no longer a product used for utility new issues, it seems unlikely that the Utilities index would improve in terms of overall average rating. A more balanced analysis would have looked at the impact of a deterioration of the Utilities iBoxx index average rating and the additional protection this would offer network companies in terms of headroom. We consider that the risk is not material and that it is lower than the risk of the broader A and BBB indices trading out of line with average regulated network debt costs for other reasons.

Consultancy report 21:

Author	Prepared for	Report
PWC	SGN	The balance of risk in SGN's GD2 Draft Determination, 4th September

Finance Points Raised	Ofgem Consideration and response
Risks are skewed to the downside, which means a company faces the possibility of negative returns which can have significant impacts on its financeability, the ability to attract equity investment, credit downgrades and more expensive debt finance costs.	We do not consider the risks to be skewed to the downside for more detail on why this is our view please see the relevant sections discussing totex, ODI and uncertainty mechanisms in the Core Document.
Adjusted for risks the P50/baseline RoRE is markedly below Ofgem's allowed return	We do not agree with the analysis of risks and consider that the results are therefore unreliable. For example, PWC's analysis assumes 0.50% and 0.98% RORE underperformance for cost of debt for Southern and Scotland respectively in the P50 scenario. This is based on NERA's analysis on additional costs of borrowing (which we discuss above- consultancy report 18), and assumptions around derivatives that we do not consider reliable. We do not consider it plausible to consider this level of underperformance on debt for the notional company. In addition, we have revised totex allowances for FD and consider these adequate.
CPI/CPIH mismatches- P10 downside case based on 5yr historical outturn differential between CPI and CPIH	This appears a relatively immaterial and symmetrical risk according to PWC's analysis.

Finance Points Raised	Ofgem Consideration and response
Debt premia risk based on SGN and NERA submissions so P10, P50 and P90 assumptions are based on significantly underperforming the benchmark index.	We disagree with various elements of the NERA analysis on additional costs of borrowing, as covered in our consideration of their report. We also note that network companies latest RFPR submissions show on average slight outperformance against the benchmark index used in RIIO-1 despite this index being based on a 10 yr trailing average and without any additional allowance added to the benchmark index. We note that NERA's analysis of SGN's derivatives costs do not align with PWC's assumption in its risk analysis. We do not find these assumptions reliable and we therefore find it implausible to assume that SGN would underperform the debt index so significantly in P10, P50 and P90 cases. Even if that were the expectation, PWC's analysis appears to focus on the actual company rather than the notional company.

Appendix 4 – Company points raised on debt

Debt Point Raised	Made by	Ofgem consideration and response
Debt costs should be calibrated against a broader industry wide average (including ED) – otherwise there are a small number of companies in the calibration pool, many of which have atypical features.	NGET, NGGT	We continue to consider the combination of GD&T networks pool of debt represents a broad enough pool to provide a reasonable allowance for those networks. We are not of the view that the pool is too small or atypical.
3 sectors used for Ofgem calibration are dominated by Cadent and NGET due to their large RAV/debt book.	NGET, NGGT, WWU	We note that a consultant for the GD&T networks analysis indicates that a simple average across networks in those three sectors would lead to a slightly lower assessed expected average cost of debt than when looked at on a weighted average basis. We therefore do not share concerns that the calibration is dominated by large networks as the simple average check would indicate otherwise. Our own analysis on simple average supports this position.
Debt buy back costs should be included in calibration £81m	NGET, NGGT	NGET have not provided supporting evidence on this in their DD response.
At least 40bps additional borrowing costs should be added to index. Difference to Ofgem 17bps largely due to costs of inflation linked exposure	NGET, NGGT	We consider the points raised on additional costs of borrowing in our response to NERA's report: consultancy report 18.
No good reason why cost of debt in RIIO T2 and RIIO-GD2 should be so different to ED1 and PR19 so it should be amended to bring it more in line-12-16yr trombone would do this.	NGET, NGGT	There could be a number of reasons why GD&T companies exhibit different debt costs to the ED sector but the cross check we have applied for this final determination relates to the networks we are providing a determination for. We continue to consider this the most appropriate cross check given the data available.
Agree that deflating iBoxx using OBR avoids issues with breakeven inflation but also suggest trailing average of outturn inflation could be equally good or better	SGN, SHET, SPT, others	See response to NERA consultancy report 18
Concern around possibility of lower than forecast inflation and mismatch between CoD deflation and RAV inflation	NGET, NGGT, Cadent, SHET, SPT	We have considered both financeability and cost of debt allowances compared to expected debt costs under lower inflation scenarios and do not have concerns in the round.
Ofgem's additional costs of borrowing allowance does not capture additional cost of CPI/H issuance	NGET, NGGT, Cadent, NGN	We have decided to provide an allowance for CPI/H issuance within the additional costs of borrowing allowance.

Debt Point Raised	Made by	Ofgem consideration and response
Additional costs do not capture new issue premium	NGET, NGGT, Cadent, NGN, SHET, SPT	Our response to this point is addressed in response to consultancy report 18, above: NERA's "Review of Ofgem's DD additional costs of borrowing, and deflating nominal iboxx"
Cost of carry not high enough	NGET, NGGT, Cadent, NGN, SGN, SHET, SPT	Most networks refer to NERA's analysis on this point, which we address in our review and response to their report, with some referring to the year end balance that we have observed as not representative of average cash holdings over the year. However, most networks did not provide evidence on average cash holdings to substantiate their point. As discussed in Chapter 2, in light of evidence submitted and assessed, we have revised our estimate and allowance for cost of carry..
Don't agree with use of utilities index because it doesn't target a specific rating- consumers could be funding cost of debt of a rating different to the notional company or networks could face basis risk if rating of utils index increases	NGET, NGGT, Cadent, NGN, SGN, SHET, SPT	Our objective for the cost of debt benchmark is to reflect a reasonable debt allowance for the notional efficient operator such that the notional efficient operator is not systematically under- or over-compensated for these reasonable costs. Although credit quality is an important feature of our notional company financeability assessment, we do not consider a precise rating 'target' is necessary for the cost of debt allowance benchmark. We consider that the sectors' features also influence the cost of debt, not just the rating. This is evidenced by our analysis which suggests a material halo effect to the broader corporate indices. We note that SGN say the use of utilities index is not a material issue but should be kept under review. We agree that it would be sensible to review the composition and network debt performance against this index at RIIO-3.
Using utilities index dilutes additional challenge provided by external benchmarks and/or reduces incentive challenge	NGET, NGGT, SHET	As the index is not entirely made up of regulated network bonds and covers a broad range of network, water and other utility companies, we are comfortable that it provides sufficient external and incentive challenge.
If SHET have had different RAV growth this would impact when borrowing was raised so a different index mechanism might be appropriate	NGET, NGGT	Our analysis suggests that SHET's RAV growth has been materially different to other networks over RIIO-1 and will be materially different to other networks over the trailing average period.

Debt Point Raised	Made by	Ofgem consideration and response
Ofgem has not provided robust evidence that its methodology is superior to all others. The resultant discriminating outcomes across the networks have not been objectively justified by Ofgem.	WWU	Our notional approach to setting the cost of debt has been transparent and well-signalled over multiple price controls. We have never set an allowance for debt based on passing through actual debt costs, or allowed costs for particular debt instruments based on verifying their status as 'efficiently incurred'. At various stages of the GD consultation process, we have set out our reasoning as to why we consider setting a notional cost of debt allowance is superior to others. We remain of the view that setting the cost of embedded debt allowance based on individual company actual debt costs would dilute incentives to issue debt efficiently and prudently. This is because there would effectively be no long-term financial reward to networks for doing so, and no penalty for failing to do so.
Company specific allowances would better meet principles	WWU	We disagree and have considered the merits previously.
Infrequent issuer or small company premium should be 6bps	NGN, SGN	We have considered both SGN's and NGN's submitted evidence and note that the estimates are identical based on two different methodological approaches.
Monoline fee should be included in embedded debt costs	SGN, NPG	We have added monoline fees into our embedded debt model where evidence has been provided.
Using forward curve to estimate future cost of floating rate debt passes risks associated with risk management on to consumers. Propose using yield at issuance instead.	SGN	This would either implicitly or explicitly incorporate derivatives into the analysis. Although there are examples given of where networks have swapped floating rate issuance into fixed (which they state increases forecast interest costs), there are also examples of networks transacting the opposite. Overall, the proportion of floating rate debt across GD&T sector is 16% pre derivatives or 10% post derivatives in 2019/2020.
Bespoke mechanism should only be used where it is likely that a company would not recover efficient costs of borrowing if general benchmark used	SHET	We do not consider that company-specific adjustments should only be made when it is in the company's favour to make the adjustment. If the principle and rationale for an adjustment holds, the adjustment should be made whether this is

Debt Point Raised	Made by	Ofgem consideration and response
		expected to lead to a higher or lower allowance.
It's not valid/appropriate to combine RIIO-1 and RIIO-2 for looking at growth and whether a bespoke mechanism is justified, decision for RIIO-2 should relate to that period only	SHET	We do not agree that just because the RIIO-1 period has materially passed that this is not relevant for how a notional company's debt would have evolved. The RIIO-1 period is relevant because it is this period over which a trailing average applies.
SHET RAV growth not materially different to other TOs in T2 period so shouldn't have bespoke	SHET	We consider the combined RIIO-1 and RIIO-2 period is more relevant than considering only the RIIO-2 period given this longer period is covered by the trailing average.
Ofgem not proposing bespoke mechanisms in GD despite differing debt structures and GDNs sizes, therefore not consistent	SHET	The proposal was not based on actual debt structures, but on the RAV growth profile being materially different across the RIIO-1 and RIIO-2 period indicating that a notional company with that RAV growth could be expected to raise debt at materially different times to other notional companies over that period. As discussed in Chapter 2 we have decided to provide different allowances for companies with smaller RAV sizes, therefore the SHET adjustment is consistent with the rationale for these other adjustments.
Trailing average should be set to match tenor of debt- at least 15yrs	SHET, SPT	We do not consider the tenor of debt is the only relevant factor to selecting the trailing average period. This is discussed in Chapter 2.
Calibration should be based on simple average because weighted average is akin to pass through for largest network	SPT	We note that both our analysis and a consultant for GD&T networks' finds that the simple average of GD&T sector debt costs is lower than the weighted average, therefore, if the calibration were based on a simple average, this could justify a lower allowance.

Appendix 5 – Company points raised on financeability

Financeability Point Raised	Made by	Ofgem consideration and response
Financial resilience of notional company has been weakened to cusp of Baa1/BBB+	NGET, NGGT	We have updated our modelling of the notional companies and are comfortable with the expected credit quality and financial resilience of the notional company.
Financeability modelling doesn't reflect credible totex case	NGET	We have reconsidered the illustrative totex case we ran for DDs and updated it for additional evidence received. For the ET sector, where the potential difference in scale of re-openers is broader, we have run a Net Zero 1 and a Net Zero 2 scenario. These are discussed in Chapter 5.
Financeability assessment should factor in delays between spend and revenue under UMs	NGET, NGGT, Cadent	We have considered the evidence submitted relating to delay in revenue flows from uncertainty mechanisms. We are keen to make the uncertainty mechanism process agile and support networks in driving forward net zero. In final determinations we have decided to allow networks to forecast re-openers and for this to provisionally form part of allowed revenue. This should allow timely recovery but is subject to Ofgem decisions on reopeners and subsequent adjustment of allowances in accordance with those decisions. By allowing this forecasting mechanism we do not consider there will be material delay between spend and revenue under UMs.
Ex ante allowances for UM's should be provided and apply forecasting of outputs for allowances subject to reopeners- these solutions would close a substantial proportion of the cashflow gap.	NGET, NGGT, Cadent, SPT	As set out above we have decided to allow networks to forecast reopeners in the interests of agility and timely recovery. However, it should be noted that Ofgem will only decide on reopeners once we have full information at reopener application stage. Any adjustments to previous forecasts will be made for Ofgem determinations on re-openers in accordance with the annual iteration process.

Financeability Point Raised	Made by	Ofgem consideration and response
There is a higher risk of disallowance for UM spend than has been the case in the past which could erode credit metrics	Cadent	We do not consider there to be higher risk of disallowance for UM spend than has been the case in the past. Regardless, we have considered overspend and RoRE downside stress tests, which we consider capture this risk. We are comfortable that the results of stress tests indicate maintenance of investment grade credit quality.
Assess totex from potentially contestable projects in financeability and base return assessments	NGET	As stated in DD,[276] we would expect to consider the impact of our applying any of the late models of competition on network company financeability as part of our decision on whether a specific project will be funded through one of the late competition models.
Dividend yield assumption in financeability assessment is unreasonable	NGET, NGGT, SHET	We believe that, in line with Modigliani and Miller theorems, equity investors are indifferent between dividend and capital return. Accordingly, we have set what we consider to be a fair return on equity and made a reasonable assumption on notional company dividend yield. Within the limits of the licence conditions, it is up to actual companies to determine their own actual capital structures and dividend policies for their particular circumstances.
Investment required for net zero is complex, requires innovation and reflects an increase in risk	NGET	We have not received any evidence to conclude whether investment required for net zero will be more complex or reflect an increase in risk. We would expect to review the complexity and profile of re-openers when they are submitted.
Ofgem's DD Financeability ratios are misleading and can't be relied upon	NGET, NGGT, SGN, SHET	This point was made mainly by questioning the assumptions we had used in the modelling, rather than the calculations of the ratios themselves. We have addressed the questions around these assumptions in consultancy report 19 and Chapter 5.

[276] DD Core Document, para 9.19

Financeability Point Raised	Made by	Ofgem consideration and response
Outperformance wedge should not be included in financeability assessment (ratings agencies wouldn't include it and there could be a lag)	NGET, NGGT, Cadent, NGN, SGN, SHET	See response to consultancy report 19 on this point and Chapter 5.
BPI penalty should be included in financeability assessment	NGET, NGGT confi, SHET	See response to consultancy report 19 on this point and Chapter 5.
Insufficient weight is given to equity financeability- resulting in risk/return imbalance- shareholders will choose to reallocate capital elsewhere resulting in an increase in cost of raising equity and consumers will suffer.	NGET, NGGT, SPT	When assessing equity financeability, we primarily sought to ensure the robustness of our estimate of the cost of equity and our final decision on allowed returns. This process embeds a risk/return balance. We reviewed allowed returns internationally and found no clear basis for capital reallocation from UK. Responses did not offer a conclusive benchmarking exercise to substantiate these views on equity financeability.
Change in notional structure (reducing gearing) not justified, unsustainable and assumes equity investors want to invest at low returns. Evidence of liquidity should be tested.	NGET, Cadent	We consider the reduction in notional gearing is justified and is discussed in more detail in Chapter 5. We are aware that ESG[277] factors have positively contributed to availability of debt funding for energy companies via the use of Green Bonds and other instruments. We believe that similar opportunities are emerging in the equity market although we are not aware of definitive quantitative evidence as yet. These factors could positively contribute to the availability of equity and debt finance for network companies.
Ofgem has not given due consideration to needs of equity investors [See Oxera's report "Asset risk premium relative to debt risk premium"	NGET, NGGT	See our response to consultancy report 1.

[277] Environmental, Social, and Corporate Governance (ESG) refers to the three central factors in measuring the sustainability and societal impact of an investment in a company or business.

Financeability Point Raised	Made by	Ofgem consideration and response
Propose buffer in metrics of 1.45x AICR, 9.5% FFO/net debt	NGET, NGGT	We do not consider it necessary to target such specific credit ratios. We consider credit quality in the round with credit metrics feeding into that consideration but not being sole determinants of it. We note that certain metrics of the notional company are stronger than others and, in particular, Moody's recently presented a table with published ratio guidance which showed both AICR and net debt/RAV. This indicated that although they might consider 1.4x-1.6x is consistent with Baa1, they also consider gearing of 60-68% would be consistent with A3 and by implication that 55% would be consistent with A2. Therefore, we do not consider it appropriate to focus on just AICR and FFO/net debt without also considering net debt/RAV.
£556m clawback assumptions incorrect regarding spend being in line with allowances	NGET	Our FD position is different to the DD position on this issue, please see NGET annex for details.
Ofgem shouldn't reduce notional gearing before robustly testing judgement in financial package such as allowed equity return	NGET, SHET	We have robustly tested judgements in the financial package through extensive work on CAPM parameters and cross checks. We continue to consider a reduction in notional gearing from RIIO-1 levels for most networks is appropriate given balance of risks and the lag involved in historically contracted debt costs (when rates were higher) leading to high debt costs relative to equity allowances, which are forward looking only.
Notional gearing benchmarks should be clearer- actual utility companies have regulatory gearing in 60-80% range so it is unclear why Ofgem consider 55% sits within benchmarks	NGET, WWU	We note two distinct measures of gearing: RAV gearing and EV gearing. These can differ, for example the RAV value may not equal the EV value. When estimating and remunerating the cost of capital we have sought to account for the full range of information, including market observations. Similarly, when assessing financeability, we have considered different gearing

Financeability Point Raised	Made by	Ofgem consideration and response
		estimates, rather than being constrained to any one measure. As we stated in DD, to set notional gearing solely on the past behaviour of companies would be passive and circular. In common with RIIO-1 we have decided to include an equity issuance allowance for notional equity issuance. This helps support the reduction in notional gearing. We therefore consider that our assumptions are reasonable.
Regulatory depreciation and capitalisation should be considered instead of a notional gearing change- changes to these could make a difference to credit metrics	NGET	This is contrary to submissions by other networks, who claimed that changes to capitalisation or depreciation would be excluded from key credit metrics and therefore could not be used to improve credit quality. However, we do agree these could be used to improve credit quality in some circumstances. In the current circumstances, we consider a modest reduction in notional gearing is appropriate.
Inadequate allowances are the main cause of financeability pressure	WWU, Cadent	We consider our FD allowances are sufficient and do not place undue pressure on financeability.
Financeability assessment should place some weight on actual company assessment (not just notional)	WWU	Our financeability assessment is based on the notional company, as has been consistently applied by UK regulators. We have had regard to actual company financial resilience but consider that the responsibility for dealing with any actual company financial resilience challenges lies with shareholders.
Consumers are willing to pay for additional cost of capital allowances to support WWU actual company financeability.[278]	WWU	We have reviewed WWU's customer and investor engagement on this topic. We appreciate the effort WWU have given to engaging customers on a relatively technical topic. However, we note that WWU's presentation to customers omitted information that we consider relevant. We are also of the view

[278] This point was made by WWU in a submission on 8th June which included customer engagement surveys but was not commented on in Draft Determinations as it was not included in WWU's business plan submission.

Financeability Point Raised	Made by	Ofgem consideration and response
		that Ofgem is in receipt of additional information that enables us to make a more informed decision aimed at protecting the interests of consumers in this regard. We have a regulatory model designed to encourage efficiency and part of that model involves consistently remunerating debt costs based on efficient averages rather than company specifics (except where there are RAV related notional company specifics that warrant adjustments). Therefore, whilst we have considered the information, we do not consider that material weight can be placed on it for the reasons set out above.
Long term financeability assessment should be at least as long as RAV and based on cashflow, not economic form of one ratio	WWU	It is not practical or particularly useful to carry out a financeability assessment that far into the future when there are a lot of unknowns and variables that can be adjusted at future price controls if there are notional financeability concerns.
Costs of managing impact of COVID-19 should be treated as non controllable pass through	WWU	See Chapter 12 paragraph 12.7 of Core Document.
Ongoing efficiency assumptions should be reduced due to COVID-19	Cadent	See Chapter 12 paragraph 12.7 of Core Document.
Continue to review beta and TMR in light of COVID-19	NGET, NGGT, NPg, Cadent	We considered the impact of COVID-19 on the cost of capital for network businesses. We note claims that TMR may have increased (NPg), although we also note claims that beta may have decreased (RIIO-2 Challenge Group refer to "flight to quality"). Based on our methodology, we did not see an obvious net effect. We provide updated beta analysis in Chapter 3 (see Table 10) – indicating similar results to those presented within DDs.
Errors in totex regression modelling and efficiency challenge make DD undeliverable and unfinanceble	Cadent	We have considered and addressed several modelling issues that have been raised in response to Draft Determinations. This has made our methodological

Financeability Point Raised	Made by	Ofgem consideration and response
		approach more robust than the one proposed at Draft Determinations. We consider our Final Determinations are deliverable and financeable.
Totex allowances exclude 2 years of RPE inflation from 18/19 to 20/21. If uncorrected this would negatively impact financeability.	Cadent	This has been corrected.
Large Totex disallowances and moving expenditure from core allowances into uncertainty mechanisms present an unrealistic picture	NGN	We have revised totex allowances materially from DDs and have also run a 'Net Zero' illustrative totex scenario for financeability testing. We consider this provides a range of realistic pictures and are comfortable with the implied credit quality.
PWC risk analysis indicates skewed to downside, therefore strong BBB+ should be target of base case	SGN	We address points raised by PWC in consultancy report 21. We do not consider the risks are skewed to the downside. We are comfortable with the implied credit quality of notional efficient operators.
Financeability assessment should take greater account of sensitivities related to COVID-19 - e.g. low inflation in short term	NGN	We have considered low inflation stress tests and are not concerned regarding notional company financeability.
Uncertainty around COVID-19 is another reason strong BBB+ should be targeted for notional company financeability	SGN	We consider the credit quality of all GD&T notional companies is two notches above minimum investment grade (BBB+/Baa1 equivalent) in the round and that this headroom over the licence requirement means the notional company is adequately resilient to macro-economic and other downside scenarios.
Over optimistic assumptions on qualitative factors on Moody's implied rating- e.g financial policy for GDNs actually rated Ba but assumed at Baa	NGN	Financial policy is entirely within each network's control and we do not consider it appropriate to assume that the notional company has an 'aggressive' financial policy. Networks that are part of public listed companies typically have a Baa subfactor score for financial policy and we consider this to be an appropriate assumption for the notional efficient operator, which would also be assumed to have prudent financial policies.

Financeability Point Raised	Made by	Ofgem consideration and response
Assuming 30% ILD is inappropriate- Oxera note weighted average 25% and that is skewed by NG entities	SHET (Oxera), SPT	We consider 30% is a reasonable assumption based on the average of GD&T networks ILD and on a comparison with notional water company assumptions.
Ofgem has not undertaken analysis to justify its immediate switch to CPIH and this has material impact on financeability	SHET	As stated in DDs, the justification for a switch to CPIH is that RPI is no longer seen as a credible measure of inflation. We also note that Citizens Advice "support the use of CPIH."[279]
Equity issuance assumed if required to maintain gearing with no check of whether this is realistic or not	SHET	We consider it appropriate that when RAV is growing, equity funds part of that growth, either through retained earnings, equity injection, or both. The Ofgem model assumes equity issuance when required to maintain gearing within a tolerance of the notional gearing level. If notional equity issuance is triggered, an equity issuance allowance is also triggered, providing fair compensation for this assumption. We consider that our equity allowance is fair and in line with market levels, therefore we consider it realistic that capital will be available.
In order to pay 3% dividend yield the notional company gearing increases to 58%	SHET	Following stakeholder feedback, we have decided to revert to RIIO-1 equity issuance threshold levels. Other parameters have also changed for Final Determinations. The result of these changes is that modelled notional gearing for SHET no longer increases to 58%. Our updated modelling does though assume approximately £300m of notional equity issuance under the FD ex ante allowance scenario and higher amounts in Net Zero scenarios. Even under the lowest totex scenario (FD ex ante allowances), SHET exhibits significant RAV growth (approximately £1.2bn in nominal terms) and we consider it reasonable that in periods of significant RAV growth some

[279] Citizens Advice DD response to Q21

Financeability Point Raised	Made by	Ofgem consideration and response
		equity issuance and/or dividend restraint is assumed.
Insufficient financial buffer to retain investment grade credit rating in the presence of plausible downside risks	SHET	Our analysis of plausible downside scenarios indicates sufficient financial buffer to retain an investment grade rating.
A fuller set of stress tests should be published by Ofgem	SPT, SGN	Please see Appendix 6
Stress testing should include cash collection risk which is being proposed to sit with TOs in RIIO-2	SPT	By accepting company proposed credit quality target (two notches above investment grade for the notional company) we build in a buffer to capture various risks, including cash collection risks. We consider that the overspend and RORE downside scenarios we have tested indicate sufficient financial buffer to retain an investment grade rating, and that these tests are a suitable proxy for cash collection risks that could materialise.
Equity financeability hasn't been properly tested- illustrated by allowed returns not at the levels on offer elsewhere with returns in the USA circa 300bps higher than those proposed.	SPT	When assessing equity financeability, we primarily sought to ensure the robustness of our estimate of the cost of equity and our final decision on allowed returns. This process embeds a risk/return balance. We reviewed allowed returns internationally and found no clear basis for capital reallocation from UK. Responses did not offer a conclusive benchmarking exercise to substantiate these views on equity financeability. Looking at allowed returns internationally, it appears that baseline allowed returns in the USA could be an outlier compared to other countries. However, this may be explained, at least in part, by risk differences between international frameworks.

Financeability Point Raised	Made by	Ofgem consideration and response
Level of risk that the electricity transmission companies will be exposed to during RIIO-2 and the level of proposed return are not consistent when compared to the water and gas sectors and therefore the package as a whole cannot be deemed to be financeable on an equity basis.	SPT	We have carefully considered the arguments regarding the relative risk profiles of water, gas and electricity in Chapter 3 and conclude that there is a lack of quantitative evidence to draw upon and qualitative arguments do not appear conclusive.

Appendix 6 – Stress Test Results

Table 25: ET Notional Company RoRE and Overspend Stress Tests

Totex Scenario	Stress Test	Licensee	AICR [280]	FFO/ ND [281]
Ofgem FD	RoRE underperf. -100 bps	SHET	1.31	9.5%
Ofgem FD	RoRE underperf. -100 bps	SPTL	1.32	11.6%
Ofgem FD	RoRE underperf. -100 bps	NGET	1.27	10.5%
Ofgem FD	RoRE underperf. -200 bps	SHET	1.04	8.7%
Ofgem FD	RoRE underperf. -200 bps	SPTL	1.07	10.7%
Ofgem FD	RoRE underperf. -200 bps	NGET	1.04	9.8%
Ofgem FD	10% Totex Overspend	SHET	1.53	10.0%
Ofgem FD	10% Totex Overspend	SPTL	1.52	12.1%
Ofgem FD	10% Totex Overspend	NGET	1.50	11.3%
Ofgem FD	20% Totex Overspend	SHET	1.47	9.6%
Ofgem FD	20% Totex Overspend	SPTL	1.47	11.7%
Ofgem FD	20% Totex Overspend	NGET	1.46	11.0%
Net Zero 2	RoRE underperf. -100 bps	SHET	1.29	8.7%
Net Zero 2	RoRE underperf. -100 bps	SPTL	1.28	11.1%
Net Zero 2	RoRE underperf. -100 bps	NGET	1.27	10.5%
Net Zero 2	RoRE underperf. -200 bps	SHET	1.02	7.9%
Net Zero 2	RoRE underperf. -200 bps	SPTL	1.04	10.3%
Net Zero 2	RoRE underperf. -200 bps	NGET	1.02	9.6%
Net Zero 2	10% Totex Overspend	SHET	1.49	9.1%
Net Zero 2	10% Totex Overspend	SPTL	1.44	11.5%
Net Zero 2	10% Totex Overspend	NGET	1.47	11.0%
Net Zero 2	20% Totex Overspend	SHET	1.41	8.7%
Net Zero 2	20% Totex Overspend	SPTL	1.36	11.1%
Net Zero 2	20% Totex Overspend	NGET	1.41	10.6%

Table 26: ET Notional Company Inflation Stress Tests

Totex Scenario	Stress Test	Licensee	AICR [282]	FFO/ ND [283]
Ofgem FD	CPIH = 0%	SHET	1.61	10.9%
Ofgem FD	CPIH = 0%	SPTL	1.60	13.0%
Ofgem FD	CPIH = 0%	NGET	1.57	12.2%
Net Zero 1	CPIH = 0%	SHET	1.61	10.3%
Net Zero 1	CPIH = 0%	SPTL	1.57	12.6%

[280] Broadly consistent with Moody's form of calculation which excludes the impact of differences between fast/slow money and expected opex/capex
[281] Broadly consistent with S&P form of calculation which includes the impact of differences between fast/slow money and expected opex/capex
[282] As for Table 25
[283] As for Table 25

Totex Scenario	Stress Test	Licensee	AICR [282]	FFO/ ND [283]
Net Zero 1	CPIH = 0%	NGET	1.56	12.0%
Net Zero 2	CPIH = 0%	SHET	1.59	10.0%
Net Zero 2	CPIH = 0%	SPTL	1.56	12.4%
Net Zero 2	CPIH = 0%	NGET	1.55	11.9%

Table 27: GT Notional Company RoRE and Overspend Stress Tests

Totex Scenario	Stress Test	Licensee	AICR [284]	FFO/ ND [285]
Ofgem FD	RoRE underperf. -100 bps	NGGT	1.27	10.3%
Ofgem FD	RoRE underperf. -200 bps	NGGT	1.04	9.3%
Ofgem FD	10% Totex Overspend	NGGT	1.42	10.8%
Ofgem FD	20% Totex Overspend	NGGT	1.34	10.2%
Net Zero 1	RoRE underperf. -100 bps	NGGT	1.24	10.3%
Net Zero 1	RoRE underperf. -200 bps	NGGT	1.02	9.4%
Net Zero 1	10% Totex Overspend	NGGT	1.36	10.7%
Net Zero 1	20% Totex Overspend	NGGT	1.26	10.1%

Table 28: GT Notional Company Inflation Stress Tests

Totex Scenario	Stress Test	Licensee	AICR [286]	FFO/ ND [287]
Ofgem FD	CPIH = 0%	NGGT	1.50	11.5%
Net Zero 1	CPIH = 0%	NGGT	1.46	11.4%

[284] As for Table 25
[285] As for Table 25
[286] As for Table 25
[287] As for Table 25

Table 29: GD Notional Company RoRE and Overspend Stress Tests

Totex Scenario	Stress Test	Licensee	AICR[288]	FFO/ ND[289]
Ofgem FD	RoRE underperf. -100 bps	Cadent	1.21	9.0%
Ofgem FD	RoRE underperf. -100 bps	Northern	1.18	8.6%
Ofgem FD	RoRE underperf. -100 bps	Scotland	1.19	8.7%
Ofgem FD	RoRE underperf. -100 bps	Southern	1.21	8.9%
Ofgem FD	RoRE underperf. -100 bps	Wales & West	1.20	9.0%
Ofgem FD	RoRE underperf. -200 bps	Cadent	0.99	8.1%
Ofgem FD	RoRE underperf. -200 bps	Northern	0.97	7.7%
Ofgem FD	RoRE underperf. -200 bps	Scotland	0.98	7.8%
Ofgem FD	RoRE underperf. -200 bps	Southern	0.99	8.1%
Ofgem FD	RoRE underperf. -200 bps	Wales & West	0.98	8.1%
Ofgem FD	10% Totex Overspend	Cadent	1.30	9.1%
Ofgem FD	10% Totex Overspend	Northern	1.27	8.7%
Ofgem FD	10% Totex Overspend	Scotland	1.28	8.8%
Ofgem FD	10% Totex Overspend	Southern	1.32	9.2%
Ofgem FD	10% Totex Overspend	Wales & West	1.27	9.1%
Ofgem FD	20% Totex Overspend	Cadent	1.18	8.5%
Ofgem FD	20% Totex Overspend	Northern	1.17	8.3%
Ofgem FD	20% Totex Overspend	Scotland	1.18	8.4%
Ofgem FD	20% Totex Overspend	Southern	1.22	8.6%
Ofgem FD	20% Totex Overspend	Wales & West	1.14	8.3%
Net Zero 1	RoRE underperf. -100 bps	Cadent	1.19	8.9%
Net Zero 1	RoRE underperf. -100 bps	Northern	1.16	8.5%
Net Zero 1	RoRE underperf. -100 bps	Scotland	1.17	8.7%
Net Zero 1	RoRE underperf. -100 bps	Southern	1.19	8.9%
Net Zero 1	RoRE underperf. -100 bps	Wales & West	1.17	9.0%
Net Zero 1	RoRE underperf. -200 bps	Cadent	0.98	8.0%
Net Zero 1	RoRE underperf. -200 bps	Northern	0.99	8.1%
Net Zero 1	RoRE underperf. -200 bps	Scotland	0.98	8.1%
Net Zero 1	RoRE underperf. -200 bps	Southern	0.98	8.0%
Net Zero 1	RoRE underperf. -200 bps	Wales & West	0.96	8.2%
Net Zero 1	10% Totex Overspend	Cadent	1.28	9.0%
Net Zero 1	10% Totex Overspend	Northern	1.28	9.1%
Net Zero 1	10% Totex Overspend	Scotland	1.27	9.0%
Net Zero 1	10% Totex Overspend	Southern	1.29	9.1%
Net Zero 1	10% Totex Overspend	Wales & West	1.23	9.1%
Net Zero 1	20% Totex Overspend	Cadent	1.19	8.7%
Net Zero 1	20% Totex Overspend	Northern	1.17	8.5%
Net Zero 1	20% Totex Overspend	Scotland	1.17	8.6%
Net Zero 1	20% Totex Overspend	Southern	1.21	8.7%
Net Zero 1	20% Totex Overspend	Wales & West	1.14	8.8%

[288] As for Table 25
[289] As for Table 25

Table 30: GD Notional Company Inflation Stress Tests

Totex Scenario	Stress Test	Licensee	AICR [290]	FFO/ ND [291]
Ofgem FD	CPIH = 0%	Cadent	1.43	10.1%
Ofgem FD	CPIH = 0%	Northern	1.40	9.7%
Ofgem FD	CPIH = 0%	Scotland	1.40	9.8%
Ofgem FD	CPIH = 0%	Southern	1.43	10.1%
Ofgem FD	CPIH = 0%	Wales & West	1.41	10.1%
Net Zero 1	CPIH = 0%	Cadent	1.41	10.0%
Net Zero 1	CPIH = 0%	Northern	1.40	9.9%
Net Zero 1	CPIH = 0%	Scotland	1.40	10.0%
Net Zero 1	CPIH = 0%	Southern	1.41	10.0%
Net Zero 1	CPIH = 0%	Wales & West	1.38	10.1%

[290] As for Table 25
[291] As for Table 25

Appendix 7 – Financial values for Gas Distribution Networks

London	31 Mar 2022	31 Mar 2023	31 Mar 2024	31 Mar 2025	31 Mar 2026	RIIO-2 Total	RIIO-2 average
	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices
Regulatory Asset Value (RAV)							
Opening asset value (before transfers)	2,456.0	2,455.7	2,484.6	2,511.9	2,530.0		2,487.6
Transfers	-	-	-	-	-	-	-
Opening asset value (after transfers)	2,456.0	2,455.7	2,484.6	2,511.9	2,530.0		2,487.6
RAV additions (after disposals)	126.6	158.0	159.8	153.8	149.7	747.9	149.6
Depreciation	(127.0)	(129.1)	(132.5)	(135.7)	(138.6)	(662.9)	(132.6)
Closing asset value	2,455.7	2,484.6	2,511.9	2,530.0	2,541.1		2,504.6
Recalculated allowances							
Fast money	105.9	105.7	105.1	97.4	90.3	504.4	100.9
Pass-through expenditure	89.9	88.5	84.6	84.2	82.5	429.6	85.9
Depreciation	127.0	129.1	132.5	135.7	138.6	662.9	132.6
Return	71.0	69.5	68.9	68.5	68.2	346.2	69.2
Equity issuance costs	6.0	-	-	-	-	6.0	1.2
Directly remunerated services adjustment	-	-	-	-	-	-	-
Return adjustment	-	-	-	-	-	-	-
Business plan incentive	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Output delivery incentives	-	-	-	-	-	-	-
Other revenue allowance	2.6	2.6	2.6	2.6	2.6	12.8	2.6
Tax allowance	22.6	21.7	22.0	21.6	21.0	108.9	21.8
Tax allowance adjustment	-	-	-	-	-	-	-
Price Control Revenue							
Calculated revenue	425.0	417.1	415.8	410.0	403.2	2,071.1	414.2

East	31 Mar 2022	31 Mar 2023	31 Mar 2024	31 Mar 2025	31 Mar 2026	RIIO-2 Total	RIIO-2 average
	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices
Regulatory Asset Value (RAV)							
Opening asset value (before transfers)	3,259.2	3,285.4	3,305.0	3,319.2	3,324.3		3,298.6
Transfers	-	-	-	-	-	-	-
Opening asset value (after transfers)	3,259.2	3,285.4	3,305.0	3,319.2	3,324.3		3,298.6
RAV additions (after disposals)	196.6	194.0	192.2	186.5	182.6	951.9	190.4
Depreciation	(170.4)	(174.4)	(178.0)	(181.4)	(184.3)	(888.5)	(177.7)
Closing asset value	3,285.4	3,305.0	3,319.2	3,324.3	3,322.6		3,311.3
Recalculated allowances							
Fast money	136.2	133.4	133.2	123.4	117.0	643.3	128.7
Pass-through expenditure	144.3	142.1	136.3	135.5	132.4	690.5	138.1
Depreciation	170.4	174.4	178.0	181.4	184.3	888.5	177.7
Return	94.6	92.7	91.4	90.3	89.4	458.5	91.7
Equity issuance costs	8.0	-	-	-	-	8.0	1.6
Directly remunerated services adjustment	-	-	-	-	-	-	-
Return adjustment	-	-	-	-	-	-	-
Business plan incentive	0.0	0.0	0.0	0.0	0.0	0.2	0.0
Output delivery incentives	-	-	-	-	-	-	-
Other revenue allowance	4.6	4.6	4.6	4.6	4.6	22.9	4.6
Tax allowance	31.4	29.9	29.5	29.8	28.8	149.4	29.9
Tax allowance adjustment	-	-	-	-	-	-	-
Price Control Revenue							
Calculated revenue	589.6	577.1	573.0	565.0	556.6	2,861.4	572.3

North West	31 Mar 2022	31 Mar 2023	31 Mar 2024	31 Mar 2025	31 Mar 2026	RIIO-2 Total	RIIO-2 average
	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices
Regulatory Asset Value (RAV)							
Opening asset value (before transfers)	2,301.3	2,340.0	2,350.2	2,355.0	2,353.1		2,339.9
Transfers	-	-	-	-	-	-	-
Opening asset value (after transfers)	2,301.3	2,340.0	2,350.2	2,355.0	2,353.1		2,339.9
RAV additions (after disposals)	159.3	134.3	131.4	126.8	123.1	674.9	135.0
Depreciation	(120.5)	(124.2)	(126.6)	(128.8)	(130.6)	(630.6)	(126.1)
Closing asset value	2,340.0	2,350.2	2,355.0	2,353.1	2,345.6		2,348.8
Recalculated allowances							
Fast money	89.0	89.5	87.2	78.1	72.5	416.2	83.2
Pass-through expenditure	96.3	93.8	91.4	91.0	89.0	461.4	92.3
Depreciation	120.5	124.2	126.6	128.8	130.6	630.6	126.1
Return	67.1	66.0	64.9	64.0	63.2	325.2	65.0
Equity issuance costs	5.6	-	-	-	-	5.6	1.1
Directly remunerated services adjustment	-	-	-	-	-	-	-
Return adjustment	-	-	-	-	-	-	-
Business plan incentive	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Output delivery incentives	-	-	-	-	-	-	-
Other revenue allowance	3.1	3.1	3.1	3.1	3.1	15.3	3.1
Tax allowance	21.9	21.8	22.0	21.8	21.0	108.5	21.7
Tax allowance adjustment	-	-	-	-	-	-	-
Price Control Revenue							
Calculated revenue	403.5	398.3	395.2	386.6	379.3	1,963.0	392.6

West Midlands	31 Mar 2022	31 Mar 2023	31 Mar 2024	31 Mar 2025	31 Mar 2026	RIIO-2 Total	RIIO-2 average
	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices
Regulatory Asset Value (RAV)							
Opening asset value (before transfers)	1,749.2	1,775.2	1,790.9	1,805.7	1,815.2		1,787.2
Transfers	-	-	-	-	-	-	-
Opening asset value (after transfers)	1,749.2	1,775.2	1,790.9	1,805.7	1,815.2		1,787.2
RAV additions (after disposals)	117.5	109.7	111.1	108.0	107.0	553.2	110.6
Depreciation	(91.5)	(94.1)	(96.3)	(98.4)	(100.3)	(480.5)	(96.1)
Closing asset value	1,775.2	1,790.9	1,805.7	1,815.2	1,821.9		1,801.8
Recalculated allowances							
Fast money	73.9	72.1	72.9	67.0	63.5	349.4	69.9
Pass-through expenditure	74.3	73.3	68.6	68.2	66.7	351.2	70.2
Depreciation	91.5	94.1	96.3	98.4	100.3	480.5	96.1
Return	51.0	50.2	49.6	49.2	48.9	248.9	49.8
Equity issuance costs	4.3	-	-	-	-	4.3	0.9
Directly remunerated services adjustment	-	-	-	-	-	-	-
Return adjustment	-	-	-	-	-	-	-
Business plan incentive	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Output delivery incentives	-	-	-	-	-	-	-
Other revenue allowance	2.2	2.2	2.2	2.2	2.2	11.2	2.2
Tax allowance	17.5	16.3	17.1	16.7	16.6	84.2	16.8
Tax allowance adjustment	-	-	-	-	-	-	-
Price Control Revenue							
Calculated revenue	314.7	308.3	306.8	301.9	298.3	1,529.8	306.0

Northern	31 Mar 2022	31 Mar 2023	31 Mar 2024	31 Mar 2025	31 Mar 2026	RIIO-2 Total	RIIO-2 average
	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices
Regulatory Asset Value (RAV)							
Opening asset value (before transfers)	2,233.4	2,274.9	2,316.1	2,350.6	2,377.4		2,310.5
Transfers	-	-	-	-	-	-	-
Opening asset value (after transfers)	2,233.4	2,274.9	2,316.1	2,350.6	2,377.4		2,310.5
RAV additions (after disposals)	157.4	161.0	157.8	153.7	150.1	780.0	156.0
Depreciation	(116.0)	(119.7)	(123.4)	(126.8)	(129.9)	(615.8)	(123.2)
Closing asset value	2,274.9	2,316.1	2,350.6	2,377.4	2,397.6		2,343.3
Recalculated allowances							
Fast money	96.1	92.8	88.9	87.3	84.6	449.7	89.9
Pass-through expenditure	94.6	95.1	104.6	104.3	102.0	500.7	100.1
Depreciation	116.0	119.7	123.4	126.8	129.9	615.8	123.2
Return	66.0	65.4	65.2	65.1	65.1	326.7	65.3
Equity issuance costs	5.5	-	-	-	-	5.5	1.1
Directly remunerated services adjustment	-	-	-	-	-	-	-
Return adjustment	-	-	-	-	-	-	-
Business plan incentive	0.5	0.5	0.5	0.5	0.5	2.6	0.5
Output delivery incentives	-	-	-	-	-	-	-
Other revenue allowance	3.7	3.7	3.7	3.7	3.7	18.4	3.7
Tax allowance	20.2	19.0	18.7	19.0	19.0	95.9	19.2
Tax allowance adjustment	-	-	-	-	-	-	-
Price Control Revenue							
Calculated revenue	402.6	396.2	405.0	406.8	404.8	2,015.4	403.1

Scotland	31 Mar 2022	31 Mar 2023	31 Mar 2024	31 Mar 2025	31 Mar 2026	RIIO-2 Total	RIIO-2 average
	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices
Regulatory Asset Value (RAV)							
Opening asset value (before transfers)	1,756.3	1,781.6	1,811.9	1,841.6	1,858.7		1,810.0
Transfers	-	-	-	-	-	-	-
Opening asset value (after transfers)	1,756.3	1,781.6	1,811.9	1,841.6	1,858.7		1,810.0
RAV additions (after disposals)	117.8	125.4	127.7	117.8	115.2	603.9	120.8
Depreciation	(92.5)	(95.1)	(97.9)	(100.7)	(103.0)	(489.2)	(97.8)
Closing asset value	1,781.6	1,811.9	1,841.6	1,858.7	1,870.9		1,833.0
Recalculated allowances							
Fast money	67.9	74.6	72.4	66.4	62.7	344.0	68.8
Pass-through expenditure	68.7	69.0	69.7	69.4	68.6	345.4	69.1
Depreciation	92.5	95.1	97.9	100.7	103.0	489.2	97.8
Return	51.8	51.2	51.0	50.9	50.8	255.8	51.2
Equity issuance costs	4.3	-	-	-	-	4.3	0.9
Directly remunerated services adjustment	-	-	-	-	-	-	-
Return adjustment	-	-	-	-	-	-	-
Business plan incentive	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.3)	(0.1)
Output delivery incentives	-	-	-	-	-	-	-
Other revenue allowance	3.2	3.2	3.2	3.2	3.2	16.0	3.2
Tax allowance	15.3	15.6	15.2	14.7	13.7	74.5	14.9
Tax allowance adjustment	-	-	-	-	-	-	-
Price Control Revenue							
Calculated revenue	303.6	308.7	309.4	305.3	301.9	1,528.9	305.8

Southern	31 Mar 2022	31 Mar 2023	31 Mar 2024	31 Mar 2025	31 Mar 2026	RIIO-2 Total	RIIO-2 average
	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices
Regulatory Asset Value (RAV)							
Opening asset value (before transfers)	3,949.1	3,980.7	4,012.5	4,028.8	4,054.7		4,005.2
Transfers	-	-	-	-	-	-	-
Opening asset value (after transfers)	3,949.1	3,980.7	4,012.5	4,028.8	4,054.7		4,005.2
RAV additions (after disposals)	237.5	242.5	231.8	245.3	241.2	1,198.3	239.7
Depreciation	(205.9)	(210.7)	(215.4)	(219.5)	(223.9)	(1,075.5)	(215.1)
Closing asset value	3,980.7	4,012.5	4,028.8	4,054.7	4,071.9		4,029.7
Recalculated allowances							
Fast money	121.5	121.8	122.2	115.8	114.1	595.5	119.1
Pass-through expenditure	151.1	151.7	153.1	152.5	150.7	759.1	151.8
Depreciation	205.9	210.7	215.4	219.5	223.9	1,075.5	215.1
Return	114.7	112.5	110.9	109.9	109.3	557.3	111.5
Equity issuance costs	9.7	-	-	-	-	9.7	1.9
Directly remunerated services adjustment	-	-	-	-	-	-	-
Return adjustment	-	-	-	-	-	-	-
Business plan incentive	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.5)	(0.1)
Output delivery incentives	-	-	-	-	-	-	-
Other revenue allowance	7.2	7.2	7.2	7.2	7.2	35.8	7.2
Tax allowance	38.7	36.3	36.9	36.3	36.3	184.5	36.9
Tax allowance adjustment	-	-	-	-	-	-	-
Price Control Revenue							
Calculated revenue	648.6	640.1	645.7	641.1	641.4	3,216.9	643.4

Wales & West	31 Mar 2022	31 Mar 2023	31 Mar 2024	31 Mar 2025	31 Mar 2026	RIIO-2 Total	RIIO-2 average
	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices
Regulatory Asset Value (RAV)							
Opening asset value (before transfers)	2,230.2	2,256.8	2,279.3	2,296.6	2,311.9		2,274.9
Transfers	-	-	-	-	-	-	-
Opening asset value (after transfers)	2,230.2	2,256.8	2,279.3	2,296.6	2,311.9		2,274.9
RAV additions (after disposals)	143.7	142.6	140.4	141.0	141.8	709.4	141.9
Depreciation	(117.1)	(120.1)	(123.0)	(125.7)	(128.2)	(614.2)	(122.8)
Closing asset value	2,256.8	2,279.3	2,296.6	2,311.9	2,325.4		2,294.0
Recalculated allowances							
Fast money	107.2	103.5	95.5	95.3	95.1	496.6	99.3
Pass-through expenditure	89.3	93.6	93.0	94.4	93.6	463.9	92.8
Depreciation	117.1	120.1	123.0	125.7	128.2	614.2	122.8
Return	65.7	64.6	63.9	63.4	63.2	320.9	64.2
Equity issuance costs	5.5	-	-	-	-	5.5	1.1
Directly remunerated services adjustment	-	-	-	-	-	-	-
Return adjustment	-	-	-	-	-	-	-
Business plan incentive	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)
Output delivery incentives	-	-	-	-	-	-	-
Other revenue allowance	4.1	4.1	4.1	4.1	4.1	20.4	4.1
Tax allowance	21.2	19.6	18.4	19.1	19.4	97.8	19.6
Tax allowance adjustment	-	-	-	-	-	-	-
Price Control Revenue							
Calculated revenue	410.0	405.6	398.0	402.0	403.6	2,019.2	403.8

Table 31: GD, baseline allowed return on equity[292], and RoRE upside/downside

Scenario	Ref	Parameter	Cadent	NGN	SGN	WWU
Baseline	A	Baseline allowed return on equity	4.30%	4.30%	4.30%	4.30%
Upside	B	Business Plan incentive cap/collar	0.48%	0.52%	0.47%	0.53%
	C	Totex	1.23%	1.32%	1.22%	1.35%
	D	Common ODIs	0.25%	0.26%	0.24%	0.26%
	E	Bespoke ODIs	0.06%	0.00%	0.05%	0.00%
	A+B+C+D+E	RoRE upside	6.33%	6.39%	6.28%	6.44%
Downside	G	Business Plan incentive cap/collar	0.48%	0.52%	0.47%	0.53%
	H	Totex	1.23%	1.32%	1.22%	1.35%
	I	Common ODIs	0.65%	0.67%	0.63%	0.69%
	J	Bespoke ODIs	0.00%	0.00%	0.00%	0.00%
	A-G-H-I-J	RoRE downside	1.93%	1.79%	1.98%	1.74%

Source: Ofgem analysis

[292] We present here a forecast of baseline allowed return on equity. Values from 2022/2023 onwards will reflect changes in market observations for Index Linked Gilts, as per the WACC allowance model. Equity values on a post-tax real basis. Values may not sum due to rounding.

Appendix 8 – Financial values for Transmission Networks and SOs

NGET	31 Mar 2022	31 Mar 2023	31 Mar 2024	31 Mar 2025	31 Mar 2026	RIIO-2 Total	RIIO-2 average
	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices
Regulatory Asset Value (RAV)							
Opening asset value (before transfers)	14,229.3	14,529.5	14,819.8	14,948.1	14,941.6		14,693.6
Transfers	-	-	-	-	-	-	-
Opening asset value (after transfers)	14,229.3	14,529.5	14,819.8	14,948.1	14,941.6		14,693.6
RAV additions (after disposals)	1,176.2	1,165.6	1,004.8	867.0	745.6	4,959.2	991.8
Depreciation	(876.0)	(875.4)	(876.4)	(873.6)	(861.3)	(4,362.6)	(872.5)
Closing asset value	14,529.5	14,819.8	14,948.1	14,941.6	14,825.9		14,813.0
Recalculated allowances							
Fast money	288.2	290.2	249.6	214.9	184.5	1,227.4	245.5
Pass-through expenditure	116.5	115.9	91.8	75.4	75.4	475.0	95.0
Depreciation	876.0	875.4	876.4	873.6	861.3	4,362.6	872.5
Return	415.9	413.0	410.7	406.3	400.4	2,046.2	409.2
Equity issuance costs	34.9	-	-	-	-	34.9	7.0
Directly remunerated services adjustment	(158.8)	(154.4)	(149.8)	(146.2)	(144.7)	(754.0)	(150.8)
Return adjustment	-	-	-	-	-	-	-
Business plan incentive	(13.0)	(13.0)	(13.0)	(13.0)	(13.0)	(65.0)	(13.0)
Output delivery incentives	-	-	-	-	-	-	-
Other revenue allowance	13.6	11.4	11.9	11.9	11.9	60.5	12.1
Tax allowance	118.2	103.8	94.2	89.7	81.3	487.2	97.4
Tax allowance adjustment	-	-	-	-	-	-	-
Price Control Revenue							
Calculated revenue	1,691.4	1,642.2	1,571.7	1,512.6	1,457.1	7,875.0	1,575.0

SHET	31 Mar 2022	31 Mar 2023	31 Mar 2024	31 Mar 2025	31 Mar 2026	RIIO-2 Total	RIIO-2 average
	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices
Regulatory Asset Value (RAV)							
Opening asset value (before transfers)	3,063.0	3,775.7	4,013.1	4,181.3	4,321.3		3,870.9
Transfers	492.4	-	-	-	-	492.4	98.5
Opening asset value (after transfers)	3,555.5	3,775.7	4,013.1	4,181.3	4,321.3		3,969.4
RAV additions (after disposals)	414.2	442.7	384.7	365.4	255.0	1,862.0	372.4
Depreciation	(194.0)	(205.3)	(216.5)	(225.4)	(229.0)	(1,070.2)	(214.0)
Closing asset value	3,775.7	4,013.1	4,181.3	4,321.3	4,347.2		4,127.7
Recalculated allowances							
Fast money	110.5	123.7	107.3	101.6	70.7	513.8	102.8
Pass-through expenditure	46.9	50.5	57.5	60.5	62.8	278.2	55.6
Depreciation	194.0	205.3	216.5	225.4	229.0	1,070.2	214.0
Return	101.1	104.5	107.6	110.4	111.7	535.3	107.1
Equity issuance costs	-	4.2	4.5	2.8	2.2	13.7	2.7
Directly remunerated services adjustment	3.2	(16.6)	(16.6)	(16.6)	(16.6)	(63.2)	(12.6)
Return adjustment	-	-	-	-	-	-	-
Business plan incentive	2.9	2.9	2.9	2.9	2.9	14.4	2.9
Output delivery incentives	-	-	-	-	-	-	-
Other revenue allowance	80.2	2.1	2.6	3.1	3.6	91.6	18.3
Tax allowance	14.1	16.5	14.3	13.1	10.8	68.8	13.8
Tax allowance adjustment	-	-	-	-	-	-	-
Price Control Revenue							
Calculated revenue	552.9	493.0	496.5	503.3	477.1	2,522.7	504.5

NGESO	31 Mar 2022	31 Mar 2023	31 Mar 2024	31 Mar 2025	31 Mar 2026	RIIO-2 Total	RIIO-2 average
	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices
Regulatory Asset Value (RAV)							
Opening asset value (before transfers)	213.3	275.6	302.2	329.3	348.9		293.9
Transfers	19.0	-	-	-	-	19.0	3.8
Opening asset value (after transfers)	232.3	275.6	302.2	329.3	348.9		297.7
RAV additions (after disposals)	94.9	85.6	92.4	91.2	81.5	445.6	89.1
Depreciation	(51.5)	(59.1)	(65.2)	(71.6)	(77.3)	(324.8)	(65.0)
Closing asset value	275.6	302.2	329.3	348.9	353.1		321.8
Recalculated allowances							
Fast money	160.9	162.6	167.8	174.7	174.7	840.7	168.1
Pass-through expenditure	11.1	11.0	5.3	1.6	1.6	30.5	6.1
Depreciation	51.5	59.1	65.2	71.6	77.3	324.8	65.0
Return	8.3	9.5	10.4	11.3	11.8	51.2	10.2
Equity issuance costs	0.6	-	-	-	-	0.6	0.1
Directly remunerated services adjustment	-	-	-	-	-	-	-
Return adjustment	4.8	4.8	4.8	4.8	4.8	24.0	4.8
Business plan incentive	-	-	-	-	-	-	-
Output delivery incentives	4.4	4.5	4.5	4.5	4.5	22.4	4.5
Other revenue allowance	-	-	-	-	-	-	-
Tax allowance	1.7	2.8	3.6	4.6	5.8	18.5	3.7
Tax allowance adjustment	-	-	-	-	-	-	-
Price Control Revenue							
Calculated revenue	243.4	254.3	261.7	273.0	280.4	1,312.8	262.6

SPT	31 Mar 2022	31 Mar 2023	31 Mar 2024	31 Mar 2025	31 Mar 2026	RIIO-2 Total	RIIO-2 average
	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices
Regulatory Asset Value (RAV)							
Opening asset value (before transfers)	2,474.3	2,635.1	2,822.6	2,865.0	2,865.7		2,732.5
Transfers	35.0	105.2	-	-	-	140.1	28.0
Opening asset value (after transfers)	2,509.3	2,740.3	2,822.6	2,865.0	2,865.7		2,760.6
RAV additions (after disposals)	293.1	262.0	225.1	180.0	152.6	1,112.9	222.6
Depreciation	(167.3)	(179.6)	(182.7)	(179.4)	(157.6)	(866.6)	(173.3)
Closing asset value	2,635.1	2,822.6	2,865.0	2,865.7	2,860.7		2,809.8
Recalculated allowances							
Fast money	55.1	49.8	42.8	34.2	29.0	211.0	42.2
Pass-through expenditure	37.2	37.9	37.7	37.6	37.1	187.6	37.5
Depreciation	167.3	179.6	182.7	179.4	157.6	866.6	173.3
Return	74.4	78.3	78.5	77.9	77.0	386.0	77.2
Equity issuance costs	-	1.9	1.3	0.3	-	3.5	0.7
Directly remunerated services adjustment	(24.3)	(24.5)	(24.9)	(25.0)	(24.8)	(123.5)	(24.7)
Return adjustment	-	-	-	-	-	-	-
Business plan incentive	0.7	0.7	0.7	0.7	0.7	3.7	0.7
Output delivery incentives	-	-	-	-	-	-	-
Other revenue allowance	34.6	4.1	4.2	4.7	4.7	52.3	10.5
Tax allowance	18.8	19.3	18.0	15.4	9.7	81.1	16.2
Tax allowance adjustment	-	-	-	-	-	-	-
Price Control Revenue							
Calculated revenue	363.8	347.2	341.0	325.2	291.1	1,668.3	333.7

NGGT TO	31 Mar 2022	31 Mar 2023	31 Mar 2024	31 Mar 2025	31 Mar 2026	RIIO-2 Total	RIIO-2 average
	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices
Regulatory Asset Value (RAV)							
Opening asset value (before transfers)	5959.6	5861.2	5838.4	5817.6	5665.6		5,828.5
Transfers	0.0	0.0	0.0	0.0	0.0	-	-
Opening asset value (after transfers)	5959.6	5861.2	5838.4	5817.6	5665.6		5,828.5
RAV additions (after disposals)	200.1	277.7	284.9	158.9	149.7	1,071.2	214.2
Depreciation	-298.5	-300.5	-305.7	-311.0	-310.5	(1,526.1)	(305.2)
Closing asset value	5861.2	5838.4	5817.6	5665.6	5504.8		5,737.5
Recalculated allowances							
Fast money	106.8	147.5	150.6	83.7	78.4	567.1	113.4
Pass-through expenditure	146.8	146.8	147.1	154.5	154.9	750.1	150.0
Depreciation	298.5	300.5	305.7	311.0	310.5	1,526.1	305.2
Return	171.0	164.7	160.8	156.1	150.3	802.8	160.6
Equity issuance costs	7.5	0.0	0.0	0.0	0.0	7.5	1.5
Directly remunerated services adjustment	-13.9	-13.9	-13.9	-13.9	-13.9	(69.3)	(13.9)
Return adjustment	0.0	0.0	0.0	0.0	0.0	-	-
Business plan incentive	-4.3	-4.3	-4.3	-4.3	-4.3	(21.7)	(4.3)
Output delivery incentives	0.0	0.0	0.0	0.0	0.0	-	-
Other revenue allowance	45.5	25.0	25.0	25.0	25.0	145.5	29.1
Tax allowance	46.0	44.6	44.7	38.4	40.6	214.2	42.8
Tax allowance adjustment	0.0	0.0	0.0	0.0	0.0	-	-
Price Control Revenue							
Calculated revenue	803.8	810.8	815.8	750.4	741.5	3,922.3	784.5

NGGT SO	31 Mar 2022	31 Mar 2023	31 Mar 2024	31 Mar 2025	31 Mar 2026	RIIO-2 Total	RIIO-2 average
	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices	£m 18/19 prices
Regulatory Asset Value (RAV)							
Opening asset value (before transfers)	149.4	143.7	137.7	136.1	132.2		139.8
Transfers	0.0	0.0	0.0	0.0	0.0	-	-
Opening asset value (after transfers)	149.4	143.7	137.7	136.1	132.2		139.8
RAV additions (after disposals)	31.8	30.7	33.9	30.9	26.9	154.3	30.9
Depreciation	-37.5	-36.7	-35.4	-34.9	-34.3	(178.9)	(35.8)
Closing asset value	143.7	137.7	136.1	132.2	124.8		134.9
Recalculated allowances							
Fast money	61.7	59.7	65.8	60.1	52.2	299.4	59.9
Pass-through expenditure	3.1	3.1	3.0	2.4	2.2	13.9	2.8
Depreciation	37.5	36.7	35.4	34.9	34.3	178.9	35.8
Return	4.2	4.0	3.8	3.6	3.5	19.1	3.8
Equity issuance costs	0.0	0.0	0.0	0.0	0.0	-	-
Directly remunerated services adjustment	0.0	0.0	0.0	0.0	0.0	-	-
Return adjustment	0.0	0.0	0.0	0.0	0.0	-	-
Business plan incentive	0.0	0.0	0.0	0.0	0.0	-	-
Output delivery incentives	0.0	0.0	0.0	0.0	0.0	-	-
Other revenue allowance	-0.2	0.0	0.0	0.0	0.0	(0.2)	(0.0)
Tax allowance	1.9	1.7	2.5	1.2	0.0	7.3	1.5
Tax allowance adjustment	0.0	0.0	0.0	0.0	0.0	-	-
Price Control Revenue							
Calculated revenue	108.2	105.1	110.5	102.2	92.2	518.4	103.7

Table 32: ET, GT and ESO, baseline allowed return on equity[293], and RoRE upside/downside

Scenario	Ref	Parameter	SHET	SPTL	NGET	NGGT	ESO
Baseline	A	Baseline allowed return on equity	4.02%	4.02%	4.02%	4.30%	7.55%
Upside	B	Business Plan incentive cap/collar	0.47%	0.38%	0.32%	0.30%	0.00%
	C	Totex	0.88%	1.06%	0.62%	0.70%	0.00%
	D	Common ODIs	0.24%	0.47%	0.22%	0.59%	0.00%
	E	Bespoke ODIs	0.00%	0.00%	0.00%	0.01%	11.10%
	A+B+C+D+E	RoRE upside	5.61%	5.94%	5.19%	5.90%	18.65%
Downside	G	Business Plan incentive cap/collar	0.47%	0.38%	0.32%	0.30%	0.00%
	H	Totex	0.88%	1.06%	0.62%	0.70%	0.00%
	I	Common ODIs	0.74%	0.72%	0.67%	0.69%	0.00%
	J	Bespoke ODIs	0.00%	0.00%	0.00%	0.01%	4.44%
	A-G-H-I-J	RoRE downside	1.93%	1.86%	2.41%	2.61%	3.11%

Source: Ofgem analysis

[293] We present here a forecast of baseline allowed return on equity. Final allowances for debt and equity from 2022/2023 onwards will reflect changes in market observations for debt costs and Index Linked Gilts, as per the WACC allowance model. Equity values on a post-tax real basis, debt values on a pre-tax real basis. Values may not sum due to rounding.

Appendix 9 – Totex reconciliation

Baseline totex values presented in sector annexes cover a subset of the total forecast expenditure allowances. Baseline values include expenditure on committed outputs but may exclude uncertainty mechanism forecasts (eg volume drivers, real price effects), pass-through expenditure, and other revenue allowance (eg innovation, TIRG in ET).

A reconciliation between sector annex totex and the values published in the financial models is shown in the table below.

Table 33: Forecast expenditure allowances (£m 18/19 prices)

	Expenditure	ET	GT	GD	ESO*	Total
1	Sector baseline totex from annexes	8708	2010	9590	504	20,812
2	Diff (rounding)	1	0	0	0	1
3	**Sector baseline totex in model**	**8,707**	**2,010**	**9,590**	**504**	**20,811**
4	+ Decisions already taken (Visual Amenity+ HSB ET)	638	-	-	-	638
5	+ Volume Drivers/MSIP/Clawback/opex escalator (ET), GD-Non-TIM resilience (GD), Disposals (GD)	203	-	17	-	220
6	+ RPEs	284	82	406	-	772
7	+3 years company proposals	-	-	-	782	782
8	+ UIOLI	55	-	40	-	95
9	**Modelled totex (Ofgem FD)**	**9,886**	**2,092**	**10,053**	**1,286**	**23,318**
10	Pass through expenditure	941	764	4,002	31	5,737
11	Other allowances	204	145	153	46	549
12	**Total expenditure allowances**	**11,031**	**3,001**	**14,208**	**1,363**	**29,604**

*ESO baselines do not cover a five-year period. 504m covers "BP1", the first two years of RIIO-2.