



SHE Transmission RIIO-T2 Business Plan Finance Annex

December 2019

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1 Introduction

The Finance Annex sets out our Proposed Financial Parameters ('financial parameters' or 'proposed parameters') for RIIO-T2 comparing to Ofgem's Working Assumptions while considering the impact on customers in the short and long-term. We have evaluated our Proposed Financial Parameters against Ofgem's Financeability Guidance¹ for consistency while also considering the sensitivities set out in our Business Plan in relation to indexed linked debt, additional borrowing costs and additional capital expenditure². The financial parameters and policies set out in our Business Plan are also summarised in this Finance Annex and noted where they differ from those in our Business Plan.

The Finance Annex should be read in conjunction with our overall Business Plan where our Finance Section is based on Ofgem's Working Assumptions ('WA')³ and Business Plan Guidance ('Guidance')⁴. The structure of the Finance Annex is as set out as follows:

1. Allowed Revenue and Customer Bills
2. Compliance with Ofgem Guidance
3. Setting the Right Cost of Equity
4. The Cost of Debt
5. Other Financial Parameters
6. Financeability Assessment

Our Proposed Financial Parameters which is summarised in Table 1 below compared to RIIO-T1 and Ofgem's Working Assumptions.

¹ Ofgem (April 2019) Financeability Guidance for RIIO-2

² This is specifically in relation to the additional capital expenditure incurred under the Likely Outturn set out in our Pathway to NetZero supporting document.

³ Ofgem (May 2019), SSMD – Finance Annex

⁴ Ofgem (Oct 2019), Business Plan Guidance for RIIO-2

Table 1 - Financial Parameters Summary

Financial Parameter	RIIO		Ofgem
	T1	T2	Working Assumptions
Cost of Equity	8.0%**	6.5%	4.3% - 4.8% ⁵
Cost of Debt	RAV Weighted mechanism	11-15 year Trombone ⁶	11-15 year Trombone
Gearing or Debt	55%	60%	60%
Inflation	RPI	CPIH	CPIH
Capitalisation Rate	90%	90%	90%
		<i>(based on business plan)</i>	<i>(based on business plan)</i>
Asset Lives	Transition to 45 years over two 8-year price controls	Transition 45 years over one 5-year price control <i>(based on business plan)</i>	Transition 45 years over one 5-year price control <i>(based on business plan)</i>
Tax	Notional Allowance	Pass-through and Fair Tax Mark	Notional allowance vs pass-through vs “double-lock”

****RIIO-T1 Cost of Equity was set in RPI terms at 7.0% which translates to 8.0% on a CPIH⁷ basis.**

Our Proposed Financial Parameters differ mainly on the Cost of Equity (CoE) whereby we have proposed a higher CoE based on our evaluation of market evidence and regulatory precedent. For the Cost of Debt (CoD) we have set out our evaluation of the CoD mechanism with supporting evidence and analysis from Oxera⁸. This includes an evaluation of different mechanism calibrations under different interest rate sensitivities. We have also considered additional costs of borrowing through our own evaluation of financial information and with independent analysis undertaken by NERA⁹. We have considered updated evidence in relation to the *Halo Effect* on regulated networks issuing debt below the market rate.

For asset lives and capitalisation rates as well as other financial parameters, we have not deviated from our Business Plan. This includes any financial risk management actions or mitigations such as reducing the capitalisation rate, changing the asset lives or the notional gearing. We have set out our financeability assessment on our financial proposals are sensitivities.

⁵ Ofgem WA include an *outperformance wedge* of 0.5% whereby they have proposed a Cost of Equity (CoE) assuming that network companies will outperform the price control.

⁶ We have elected to keep the Cost of Debt (CoD) mechanism under review based on market conditions in line with previous price controls as stated in our Business Plan. We have set out in the Finance Annex why we believe Ofgem’s proposals is the minimum requirement and should consider a longer term index such as 15 year simple average or greater.

⁷ Note that we use CPI and CPIH interchangeably throughout our Business Plan

⁸ Oxera (Dec 2019), Cost of Debt and Financeability for SHE-T for RIIO-T2

⁹ NERA (Sept 2019), Halo Effect and Additional Costs of Borrowing at RIIO-2

2 Allowed Revenue and Customer Bills

As part of our Finance Annex, we have set out our allowed revenue during RIIO-T2 and the impact on customer bills using our proposed parameters. As an appropriate comparison, we have also shown the allowed revenue and customer bill impact based on implementing the mitigating actions including in our Business Plan. These actions are used to address financeability concerns in RIIO-T2 *only* as stipulated by Ofgem's Guidance.

Figure 1 sets out the allowed revenue with Figure 2 showing the impact on customer bills. This demonstrates that customer bills are very similar during RIIO-T2 under Ofgem's WAs adjusted to address financeability concerns and our proposed parameters. We have set out why in the long term customers would be worse off under Ofgem's WAs compared to under our proposed parameters considering financeability, the risk of underinvestment and intergenerational value transfers between generations of customers.

Figure 1 – Allowed Revenue (£m with inflation)

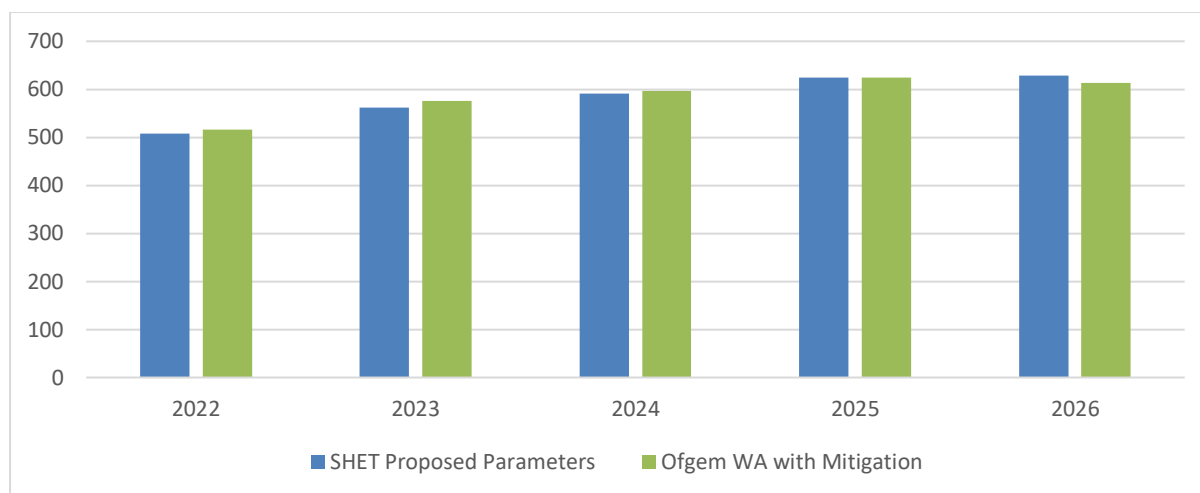
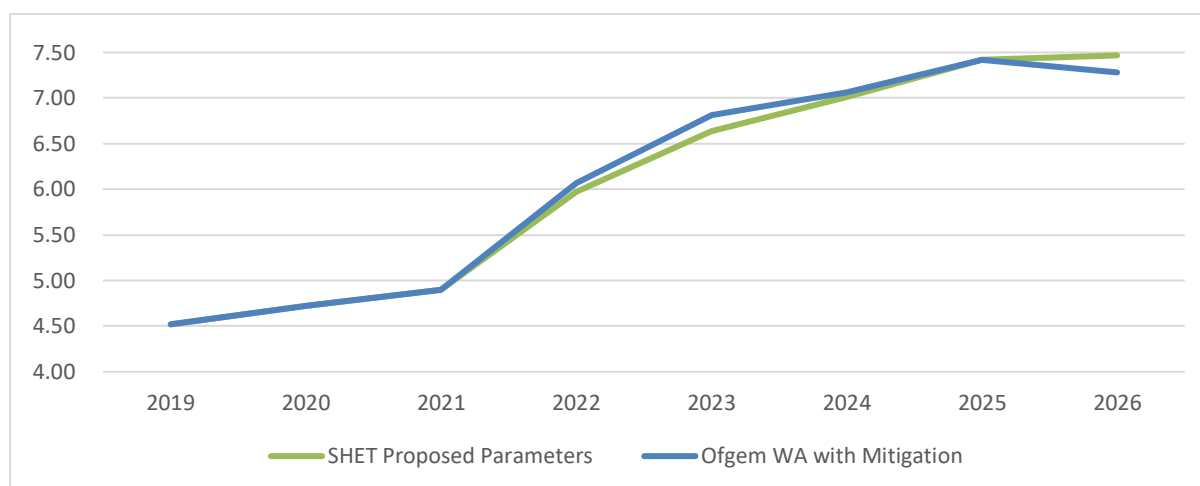


Figure 2 – Customer Bill Impact (£ with inflation)



3 Compliance with Ofgem Guidance

Ofgem set out in their Guidance and SSMD what companies should include in their Business Plan covering the financial parameters, sensitivities and financeability assessment. For ease we have set out the main components of the Ofgem Guidance in Table 2.

Table 2 – Compliance with Ofgem Guidance

Financial Parameter	Ofgem Guidance	Compliance
Cost of Equity	Use Ofgem WA for evaluating the Business Plan on 4.3% and 4.8% CPIH-real	In our Business Plan we have only used Ofgem's WA for the CoE.
Cost of Debt	Use Ofgem working assumptions for evaluating the Business Plan using the 11-15 year Trombone index	We have only used Ofgem's CoD mechanism.
Gearing	Use 60% Gearing	We have only used 60% notional gearing except where noted as a sensitivity ¹⁰ .
Asset Lives	Use RIIO-1 commitments for asset lives and note where this would deviate and why	We have not deviated from RIIO-1 asset lives commitments but have tested alternative options as part of our assessment ¹¹ .
Capitalisation Rate	Set out the capitalisation rate based on the split of operating to capital costs and the spread of costs over generations of consumers	We have considered both our Certain View and Likely Outturn in calibrating our capitalisation rate ¹² .
Tax treatment	Set out our proposals on the treatment of tax	Included in our Business Plan.
Pass-through costs	Set out our proposals on the treatment of pass-through costs	Included in our Business Plan.
Dividend and Equity Issuance Policy	Set out our Dividend and Equity Issuance Policy. Assume for financeability assessment a dividend yield of 3% and a cost for equity issuance cost of 5%	Included in our Business Plan and the dividend yield has been evaluated in our financeability assessment.
Financeability Assessment	Undertake a financeability assessment using Ofgem's Financeability Guidance ¹³ and proposed scenarios as set out in Table 19 in the SSMD ¹⁴ based on both 4.3% and 4.8% CoE. Ofgem also propose that companies include other appropriate sensitivity analysis in their Business Plan.	This is included in full in our Business Plan. We have also included an assessment of the Business Plan Financial Model ¹⁵ (BPFM) and reconciled revenue and financial metrics with our Internal Financial Model ¹⁶ .
Notional vs Actual Company financeability assessment	Provide both a notional and actual company assessment of financeability including any differences in capital structure and actual costs of debt	Included in our Business Plan for Ofgem's WAs as well as in our Finance Annex for our financial proposals.

¹⁰ We tested a lower gearing at 55% as part of the financial risk management and mitigation measures reflective of Ofgem's Financeability Guidance (April 2019) of measures companies can take to address financeability concerns in the RIIO-2 period only.

¹¹ Asset lives does not impact on financeability based on Ofgem financial ratios in particular the Adjusted Interest Cover Ratio (AICR) as noted in our Business Plan.

¹² We have only varied the capitalisation rate when considering measures to aid financeability in our Business Plan using Ofgem's WAs.

¹³ Ofgem (April 2019), Financeability Guidance for RIIO-2

¹⁴ Ofgem (May 2019), SSMD – Finance Annex, Table 19

¹⁵ Referred to in RIIO-1 and in our Business Plan as the Price Control Financial Model (PCFM)

¹⁶ We have also submitted our Internal Financial Model as part of our Business Plan.

Mitigating Actions for Financeability	Provide information covering the mitigating actions that would be available to address financeability concerns during the current price control only. This includes changes to notional gearing, capitalisation rates, asset lives and dividend restrictions (as well as equity injections) during the period ¹⁷	Included in our Business Plan for the RIIO-T2 period only. Our Finance Annex considers longer term financeability also.
Board Assurance and Compliance with Licence Obligations	Provide indication that the Board has assured our Business Plan is financeable and the licensee will comply with its licence obligations for investment grade credit rating and availability of resources. This should cover both the notional and actual company financeability assessment.	Included in our Business Plan alongside accompanying independent analysis undertaken by Oxera ¹⁸ .

¹⁷ Ofgem (April 2019), Financeability Guidance for RIIO-2 and Ofgem (May 2019), SSMD – Finance Annex

¹⁸ Oxera (Dec 2019), Cost of Debt and Financeability for SHE-T for RIIO-T2

4 Setting the right cost of equity

Our approach to setting the Cost of Equity (CoE) is through a balanced consideration of the evidence-base covering the CoE as well as the Cost of Debt (CoD) components. These comprise the Cost of Capital which is then calibrated based on our financeability analysis to ensure the gearing ratio is set accordingly to maintain financeability during RIIO-T2.

This approach is to ensure that our plan provides an allowance sufficient enough to cover CoD and related transaction costs and also provide an adequate return to our investors. We have therefore set out our proposals for the CoE and CoD with reference to previous analysis and evidence we have considered and presented to Ofgem where relevant.

4.1 Cost of equity

We agree that evidence illustrates that returns have fallen since setting the CoE for RIIO-T1 and that this should be reflected in RIIO-T2. Our analysis of evidence since February 2018¹⁹ and as set out in our response to Ofgem consultations for the RIIO-2 Framework Decision and Sector Specific Consultation (SSC) shows that an appropriate range for the CoE is significantly higher than Ofgem's proposals during this period. With an updated Oxera²⁰ report prepared for the ENA, we have identified a CoE of between 5.98% and 7.09% CPIH-real as shown in Table 3.

Table 3 – Summary of RIIO-2 Cost of Equity Estimates

Cost of Equity	Oxera 2018		Current Evidence		Change	
	Low	High	Low	High	Low	High
Real TMR (%)	7.00	7.50	7.00	7.50	-	-
Real RFR (%)	0.50	1.00	-1.20	-0.79	-1.70	-1.79
ERP (%)	6.50	6.50	8.20	8.29	1.70	1.79
Asset Beta	0.40	0.42	0.38	0.41	-0.02	-0.01
Gearing (%)	60	60	60	60	-	-
Debt Beta	0.05	0.05	0.05	0.05	-	-
Equity Beta	0.93	0.98	0.88	0.95	-0.05	-0.03
Real Cost of Equity (%)	6.51	7.34	5.98	7.09	-0.53	-0.25

Source: Oxera Analysis

When assessing the CoE we have adopted an approach consistent with regulatory precedent and what is deemed best practice for a regulator. This approach considers a broad range of evidence including observable information grounded in central finance theory as used by practitioners, as well as forward looking approaches. We have also factored in a number of *cross checks* in selecting the point estimate

¹⁹ Oxera report, The cost of equity for RIIO-2 – A review of the evidence, Prepared for the ENA, (Feb 2018) available at:

https://www.oxera.com/wp-content/uploads/2018/07/ENA-cost-of-equity_2018-02-28.pdf.pdf

²⁰ Oxera report, The Cost of Equity for RIIO-2, Prepared for the ENA, (Nov 2019)

within a range which was proposed by Oxera²¹²² on behalf of the Energy Networks Association (ENA). Ofgem subsequently endorsed the use of cross checks in their Sector Specific Consultation (SSC) and SSMD.

Based on our evaluation of the balance of evidence, we do not believe that Ofgem has correctly set the range for the CoE and that the Working Assumptions are too low as we have illustrated in our Business Plan. In proposing our CoE point estimate we have considered a balanced range of evidence including observable market evidence, survey evidence and *cross checks*. We have placed more weight on observable market evidence to set the range for the CoE and utilised cross checks as a means to select the point estimate in our Business Plan.

4.2 Selection of the mid-point

The mid-point in CPIH terms of 6.5% is what we based our Business Plan financeability assessment on including testing Ofgem sensitivities and additional factors we have evaluated in our Business Plan.

Regulatory precedent supports aiming towards the upper end of the cost of equity range to mitigate the risk of underinvestment and adverse impact on consumers. As Frontier²³ set out in their report, using this approach to aim down on the cost of equity is damaging to consumers due to the risk of underinvestment. The risk to consumers' social welfare by setting the cost of equity too low has long been seen as a risk to be avoided. The CMA decided to aim towards the upper end of the range as set out in their report on London airport companies:

"However, we [the CMA] consider it a necessary cost to airport users of ensuring that there are sufficient incentives to invest, because if the WACC is set too low, there may be underinvestment from BAA or potentially costly financial distress....Given the significance to customers of timely investment at Heathrow and Gatwick, we have given particular weight to the cost of setting the allowed WACC too low. Most importantly, we note that it is difficult for a regulator to reduce the risks of underinvestment within a given regulatory period."

Oxera²⁴ were commissioned in a study in 2014 by the New Zealand Commerce Commission to give evidence in setting the WACC for Electricity Transmission and Distribution. Oxera evaluate setting the cost of capital in the 75th percentile compared to the 50th percentile including analysing the various loss to consumers and see that aiming up in the range is justified. This paper also references Dobbs (2011)²⁵ who identified a similar adverse impact on consumers from setting the cost of capital too low. In our view, the mid-point of the range of 6.5% is the most reasonable estimate, which is consistent with regulatory precedent and is a slightly more prudent approach than that supported by Dobbs²⁶ when setting the CoE.

²¹ Oxera report, The Cost of Equity for RIIO-2, Prepared for the ENA, (Nov 2019)

²² Oxera report, The cost of equity for RIIO-2 – A review of the evidence, Prepared for the ENA, (Feb 2018) available at:

https://www.oxera.com/wp-content/uploads/2018/07/ENA-cost-of-equity_2018-02-28.pdf.pdf

²³ Frontier Economics, Adjusting baseline returns for anticipated outperformance – An assessment of Ofgem's proposals, Prepared for the ENA (March 2019)

²⁴ Oxera report, Input methodologies – Review of the '75th percentile' approach, Prepared for New Zealand Commerce Commission (23 June 2014)

²⁵ Dobbs, (2011), Modelling Welfare loss Asymmetries Arising from Uncertainty in the Regulatory Cost of Finance

²⁶ Modelling Welfare loss Asymmetries Arising from Uncertainty in the Regulatory Cost of Finance (Dobbs 2011) available at: <https://link.springer.com/article/10.1007/s11149-010-9131-2>

There is substantial economic and academic evidence underpinning the justification for selecting at least the middle and preferably towards the top end of a range on the cost of equity. This is due to the potential harm caused by underinvestment on customers and wider society. We believe this is particularly relevant given the significant investment required to deliver NetZero and government targets which our Business Plan is based upon.

4.3 Components of the Cost of Equity

For each component of the CoE, a significant body of evidence has been provided to Ofgem considering a range of factors including comprehensive academic evidence. This is in relation to the appropriate Total Market Return (TMR), Asset Beta, Debt Beta and the treatment of levering and re-levering the Equity Beta depending on the gearing. We have not included all evidence in our Finance Annex or submitted Business Plan but rely on our responses to Ofgem's consultations and reports submitted to Ofgem prepared for the ENA as well as other evidence submitted to Ofgem²⁷. We have included an extract of our SSC response in Appendix B as a reference to some of this evidence.

Updated Cost of Equity evidence

Oxera have undertaken an update to their 2018 review of the cost of equity evidence and prepared this report on behalf of the ENA as noted above, and they consider a range of evidence presented to date including a response to elements in Ofgem's SSMD Finance Annex. We have not repeated their report here but have relied upon it as a consolidation of evidence to date with noted exceptions.

Oxera note that the TMR is a relatively stable parameter and highlight where Ofgem has incorrectly relied upon evidence. This includes relying on the UKRN study to deflate the nominal equity market returns by an estimate of historical CPI inflation rather than published data on RPI inflation. This conclusion is supported by evidence presented by NERA^{28,29} regarding the deflation of TMR. Oxera also reference work undertaken on behalf of Heathrow Airport whereby they investigated the historical RPI series and concluded that their analysis concludes the TMR should be around 7.4%-7.8% consistent with their range.

Oxera also summarise that the use of geometric and arithmetic average of historical equity returns by UKRN produces a lower estimate than undertaken by Cooper (1996)³⁰. When accounting for the downward bias of using the indirect approach Oxera conclude that the TMR is 7.46 – 8.11% in line with their range.

Other evidence Oxera notes includes updating the Dividend Discount Model (DDM) using updated data and they conclude that using the Bank of England's specification the TMR is 9.5%. Oxera also review survey evidence in addition to the evidence they reviewed for investment managers³¹ and conclude similarly that this evidence is unreliable but if interpreted needs adjusted for the basis it has

²⁷ SHE-T Response to SSC (March 2019), available here:

<https://www.ofgem.gov.uk/publications-and-updates/rrio-2-sector-specific-methodology-consultation>

SHE-T Response to RIIO Framework Consultation (April 2018), available here:

<https://www.ofgem.gov.uk/publications-and-updates/rrio-2-framework-consultation>

²⁸ NERA report, Review of UKRN Report Recommendations on TMR, Prepared for the ENA (Nov 2018)

²⁹ NERA report, Further evidence on the TMR, Prepared for the ENA (Nov 2018)

³⁰ Cooper, I. (1996) 'Arithmetic versus geometric mean estimates: Setting discount rates for capital budgeting', *European Financial Management*, 2:2 1996 pp 156-67

³¹ Oxera report, Review of RIIO-2 finance issues – Rates of return used by investment managers (March 2019)

been prepared³². Oxera also updated for the change in the risk free range and forward curve on UK government bonds which have declined since their February 2018 report. This explains the downward adjustment they have reflected since that report.

Risk and Beta

One of the most significant components of the CoE is the estimate of Asset Beta, Debt Beta and the methodology for de-leveraging and re-leveraging the equity beta. Oxera's evidence includes an update to their evidence collated over the past two years during the RIIO-2 consultation period. In doing so, they consider Ofgem's approach compared to their own methodology which remains substantially unchanged. Oxera set out the basis of their methodology including why they have excluded UK water companies and include a wider range of energy networks with similar characteristics to the UK energy networks. They also undertook a range of cross checks including assessing the difference between historical asset risk premium and debt risk premium in regulatory decisions as well as evaluating Ofgem's point estimates. They conclude that their range is more appropriate when compared to Ofgem's methodology.

New Beta Evidence

In addition to this previously submitted evidence, most recently we have undertaken a review of the disaggregation of beta across National Grid plc and SSE plc as part of the sample for estimating the appropriate beta for RIIO-2. This has been done in conjunction with a third-party consultant but is not yet complete where we intend to submit it to Ofgem as part of the ongoing review of evidence³³. We have also considered evidence presented in relation to de-gearing and re-gearing to estimate the equity beta. We believe this evidence supports the beta range proposed by Oxera's methodology. We are finalising our review of this evidence and will present this to Ofgem following submission of our Business Plan in line with their process set out in the SSMD.

4.4 CoE Indexation and the RfR

Cost of equity indexation needs to be considered and developed further before being implemented. Cost of equity indexation using the RfR is a new regulatory innovation and should follow the same high bar set for cost of debt indexation. The ENA commissioned NERA³⁴ to evaluate the various methodologies for indexing the cost of equity using the RfR. In doing so NERA assessed Ofgem's proposed options as well as considering the appropriate tenor of gilts, the averaging period and the adjustment for inflation from nominal to real using RPI and CPIH. NERA recommend that a *nominal 20 year gilt deflated using CPI forecast, based on a 12 month average prior to the charging year, provides a more stable and objective measure of the RfR*. They identify a number of practical requirements for a methodology and we believe this needs developed further with Ofgem including any true-up required for outturn inflation.

Ofgem has outlined the option of a 1 month averaging period which we perceive as too volatile and potentially not reflective of either interest rates over time or the investment period. There are also potential implications for financeability metrics as well as longer-term implications for consumers

³² Oxera analysed this information and provided a report outlining why Ofgem's analysis is incorrect. Ofgem has misinterpreted the basis for which these estimates are provided publicly. The estimates are heavily regulated by the Financial Conduct Authority (FCA) and therefore cannot be relied upon as a guide to future returns as set out in the FCA Code of Business.

³³ Ofgem set out in the SSMD (May 2019) that they will keep the CoE under review based on emerging evidence up until Final Determinations in late 2020.

³⁴ NERA report, Cost of equity indexation using RfR, Prepared for the ENA, (March 2019)

which, to date, have not been considered by Ofgem. Any switch to indexation on the cost of equity carries with it a potential longer-term commitment as Ofgem has implemented with cost of debt indexation. Therefore, across multiple price controls there is a risk of material changes in the cost of equity which will impact customers by way of changes in the WACC influencing both the risk of underinvestment and intergenerational transfers.

We note that the relationship between the ERP and the RfR is not exactly 1:1 and therefore further analysis is required to refine any methodology for implementing cost of equity indexation. There is insufficient evidence to specifically identify the exact empirical relationship between the ERP and RfR other than that current evidence points to a strong negative correlation. We believe this needs explored further alongside the elements identified above prior to being a final decision for RIIO-T2.

4.5 Allowed vs Expected returns and the “outperformance wedge”

Ofgem’s Working Assumption for RIIO-2 CoE is 4.3% (CPIH-real) with an underlying CoE of 4.8% (CPIH-real) where Ofgem has made a deduction to the CoE of 0.5%. This deduction relates to what is termed as the Allowed vs Expected return adjustment (‘AvE’ or ‘outperformance wedge’). The AvE adjustment is based on Ofgem’s assertion that investors expect some outperformance in a price control which supplements the base return, and therefore there should be a deduction equal to that expectation from the base return.

As set out in our consultation response to the SSC with supporting evidence from Frontier Economics, the wedge is considered arbitrary and is based upon an expectation of outperformance which is not funded as part of the price control. In our view, to make an adjustment to the cost of equity which is subjective and inconsistent with both economic principles and regulatory precedent is not sound regulatory practice.

The overall financial package and range of returns is set on the current price control therefore the cost of equity cannot be adjusted based on an expectation of future performance as a result of past analysis. Frontier Economics³⁵ to appraised Ofgem’s proposals and they concluded that *“As far as the theoretical foundations Ofgem relies upon are concerned, these are deeply flawed.”* and *“MPW fail to consider the wider implications of forcing convergence [between allowed return and expected return]”*. Frontier also outline that price controls have historically been calibrated more symmetrically and are not therefore a *one-way bet*.

In order to deliver 0.5% of additional return on equity, totex efficiency would need to be around 15%, which is more than 4 times higher than expected in RIIO-1 subject to the close out of RIIO-1. This does not seem plausible and therefore we do not believe this is an appropriate evaluation of Ofgem’s cost of equity estimate of 4.8% and 4.3%. Ofgem has not set out the range of potential performance outcomes for RIIO-2 and therefore has not justified its rationale for this adjustment. At this stage any expectation of future out or under performance is unclear, with proposed elements of the price control as set out in the sector specific consultation limiting any degree of outperformance.

When considering Ofgem’s own study with CEPA³⁶ the sources of outperformance in RIIO-1 include a range of factors that are price control specific and are unlikely to be repeated. We therefore do not

³⁵ Frontier Economics, Adjusting baseline returns for anticipated outperformance – An assessment of Ofgem’s proposals, Prepared for the ENA (March 2019)

³⁶ CEPA (March 2018), Review of RIIO Framework and RIIO-1 Performance

believe relying on the past is an appropriate guide for RIIO-2 thereby supporting Frontier Economic's assessment of the AvE adjustment.

Ofgem has failed to take account of customer detriments in adopting this approach. Frontier outline several factors which harm customers. They point to erosion of investor confidence and increased investor risk (which leads to an increased cost of capital); weakened incentives for efficiency and innovation (which will dampen incentives to the longer-term detriment of customers); the distortionary impact on incentives to invest; and loss of clarity over price control calibration.

There are existing mechanisms and regulatory tools in place to address any uncertainty in the price control. These established mechanisms, such as reopener mechanisms, the cost assessment and incentive target setting, are in place to continue to drive performance, recognise good performance and deliver for consumers. As with Return Adjustment Mechanisms (RAMs) there is no clear justification or evidence that this new regulatory innovation is of benefit to consumers more so than refinement of existing mechanisms. Ofgem has sought to include several new mechanisms in RIIO-2 which inadvertently overlap and are being used to address the same *perceived* problems from RIIO-1. How these mechanisms interact is complex and therefore dampens incentives to the longer-term detriment of customers.

Aiming off or down on the cost of equity range by differentiating between allowed returns and expected returns is unjustified and a break from regulatory precedent. Ofgem set out in its Framework Decision that it would distinguish between allowed returns and expected returns³⁷ following on from the UKRN Study on the cost of equity. However, any application of an adjustment to the setting of the cost of equity base is arguably a deviation from their decision in July 2018 which intended to distinguish between allowed and expected returns but not explicitly adjust allowed returns. No other regulator to date has aimed down or off on the cost of equity on the basis of potential future outperformance or expectation of outperformance.

Rating agencies see the downward adjustment on the allowed return as set out by Ofgem as credit negative. As set out by Moody's³⁸ and S&P³⁹ in their review of the RIIO-2 consultation document, they see proposed lower returns, including aiming down on the cost of equity, as credit negative. They outline their view on RIIO-2 proposals and highlight that lower cost of equity is significantly credit negative alongside the other mechanisms Ofgem has proposed.

³⁷ Ofgem Framework Decision (July 2018)

³⁸ Moody's, Credit quality likely to weaken in RIIO-GD2 regulatory period (14 Feb 2019)

³⁹ S&P Global, Ofgem's Proposed RIIO-2 Regulatory Framework Will Test U.K. Energy Networks (20 Feb 2019)

5 Cost of debt

In RIIO-1, there was a company-specific arrangement for SHET whereby the CoD was annually indexed using a 10-year trailing average A/BBB non-financial iBoxx corporate bond indices with a bespoke weighting tracking the investment profile. This was due to the high capital growth which was forecast for SHET in the RIIO-1 period⁴⁰. Below we consider a number of CoD mechanisms with reference to Ofgem's principles⁴¹:

1. Cost of Debt in RIIO-T1 and RIIO-T2
2. Our Embedded Debt Costs
3. Approach to Evaluating CoD Mechanisms
4. Additional Costs of Borrowing

In undertaking our analysis, we have commissioned an independent study by Oxera⁴². This is in addition to a study undertaken by NERA⁴³ on behalf of the ENA for evaluating the CoD mechanisms used in RIIO-1 and extending those into RIIO-2. This also includes our own assessment of the additional costs of borrowing with an evaluation provided by NERA on behalf of the ENA⁴⁴.

5.1 Cost of Debt in RIIO-T1 and RIIO-T2

Our Business Plan is underpinned by our Certain View and an expectation that pursuing NetZero will require some investment over and above this expenditure. The scale and extent of investment in RIIO-T2 compared to the size of our current asset base is not as pronounced when comparing to RIIO-T1. During RIIO-T1 the RAV has grown fivefold whereas in RIIO-2 we anticipate that RAV will grow by 30%-50% depending on the outcome of a range of uncertainty mechanisms to the pursuit of NetZero. We are therefore not currently considering a bespoke weighted mechanism for RIIO-2 albeit we intend to keep this under review until our Final Determinations should market circumstances and government policy change.

Based on the evidence and analysis presented by the ENA through NERA, several notional and actual Energy Networks would underperform in RIIO-2 under the 10-year RIIO-1 mechanism. In order to remedy this, a longer-term average is appropriate as Networks should be able to recover their CoD on a notional basis. In the SSMD, Ofgem's Working Assumption using an 11-15-year trombone on A/BBB iBoxx index (compared to its previously proposed 10-year trailing A/BBB iBoxx index). We have evaluated Ofgem's revised proposal against other configurations of longer-term CoD index mechanisms to ensure that the CoD mechanism for RIIO-T2 delivers Ofgem's principles while supporting the delivery of our stakeholder-led outcomes.

5.2 Our Embedded Debt Costs

During RIIO-T1, SHET raised a significant amount of debt to finance its capital growth programme. SHET has raised approximately £1.7bn between 1 April 2013 and 31 March 2020 in order to fund this

⁴⁰RIIO-T1 SHE-Transmission Final Proposals (Ofgem, 2012) available at:

www.ofgem.gov.uk/publications-and-updates/riio-t1-final-proposals-sp-transmission-ltd-and-scottish-hydro-electric-transmission-ltd

⁴¹ RIIO-2 framework consultation (Ofgem, 2012) available at: www.ofgem.gov.uk/publications-and-updates/riio-2-framework-consultation

⁴² Oxera (Dec 2019), RIIO-T2 cost of debt and financeability assessment

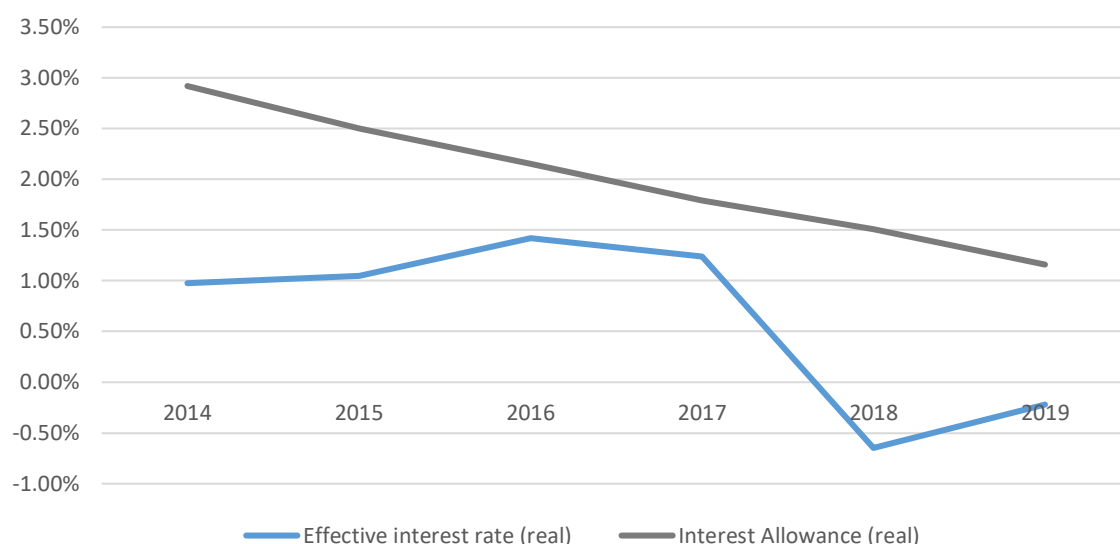
⁴³ NERA (March 2019), Cost of debt at RIIO-2, Prepared for the ENA

⁴⁴ NERA, (Sept 2019), Halo Effect and the Additional Costs of Borrowing in RIIO-2

large capital investment⁴⁵. Figure 3 shows an analysis of the RIIO-T1 CoD mechanism compared to our actual CoD during the price control. During RIIO-T1, our average real cost of debt was below the allowance when calculating this on a simple basis.⁴⁶

Figure 3 – SHET plc cost of debt allowance vs actual cost of debt (RPI-real)

Since RIIO-T1 period to date (%)



Source: SHET analysis

In considering additional borrowing costs and the term of our embedded debt during RIIO-T1, we believe the CoD mechanism in RIIO-T1 was only partly effective in delivering its outcomes. For example, having a market index to set the annual cost of debt is an effective way to ensure only efficient finance costs are funded by consumers while also retaining incentive properties.

However, we believe the mechanism did not provide for 'all-in' cost of debt which resulted in SHET having to raise shorter term debt. The average age (or tenor) of debt issue during this period is 10 years⁴⁷, which is significantly shorter than the average A/BBB iBoxx index. A longer-term averaging period was acknowledged as a reasonable match to interest costs across operators at ED1 Final Determinations⁴⁸. As of 31 March 2019 we had a weighted debt maturity of less than 6 years.

When we analyse Figure 4, considering the additional costs of borrowing and also consider the premium on issuing longer term debt i.e. 20-year bonds vs 10-year bonds, it is clear we would have been underfunded during RIIO-T1. In order to manage the costs during this capital intensive phase, we adopted a shorter term treasury policy by issuing 10-year debt to mitigate the impact of being underfunded. Figure 4 below sets out the spread between general 10 and 20-year gilts from April 2013.

⁴⁵ Based on the annual statutory financial statements between 31 March 2013 and 31 March 2019.

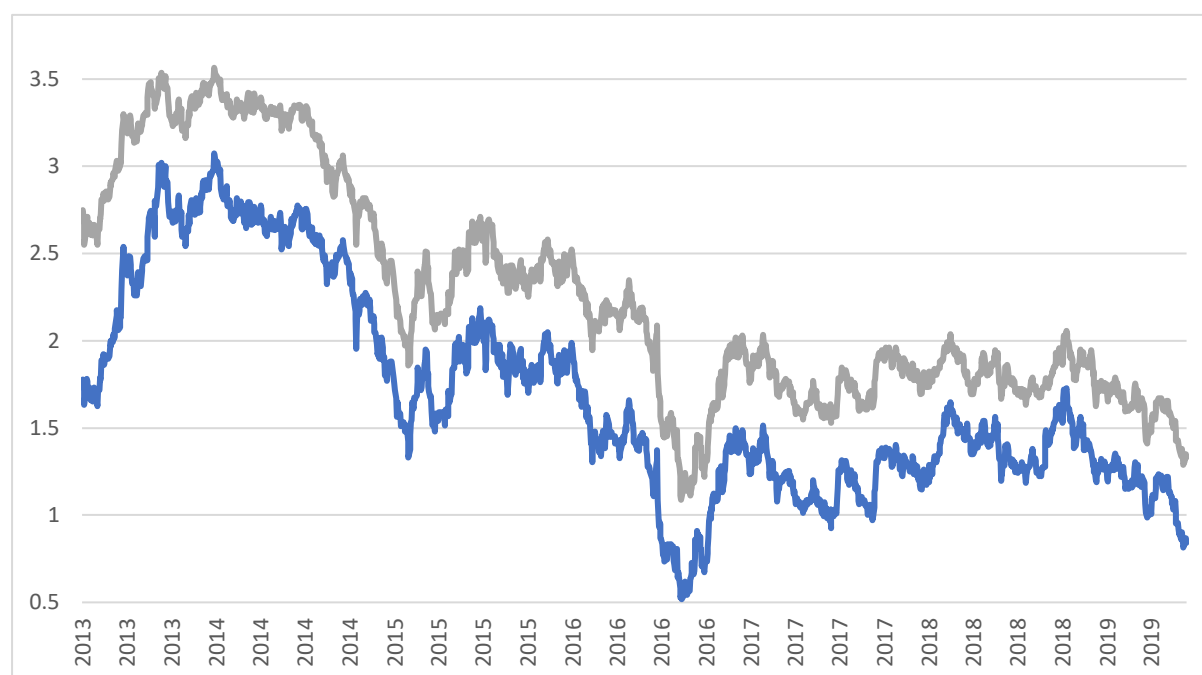
⁴⁶ We refer to this as a simple basis as it deducts the real effective interest rate from the real interest rate allowance as opposed to making any other adjustments for additional costs of borrowing or other elements related to tenor or credit rating.

⁴⁷ Weighted average term of debt raised during the period.

⁴⁸ RIIO ED1 Final determination (Ofgem, 2014) available at: www.ofgem.gov.uk/publications-and-updates/riio-ed1-final-determinations-slow-track-electricity-distribution-companies

Figure 4 – Comparison of 10-year and 20-year gilts from 1 April 2013

Since 2013 (%)



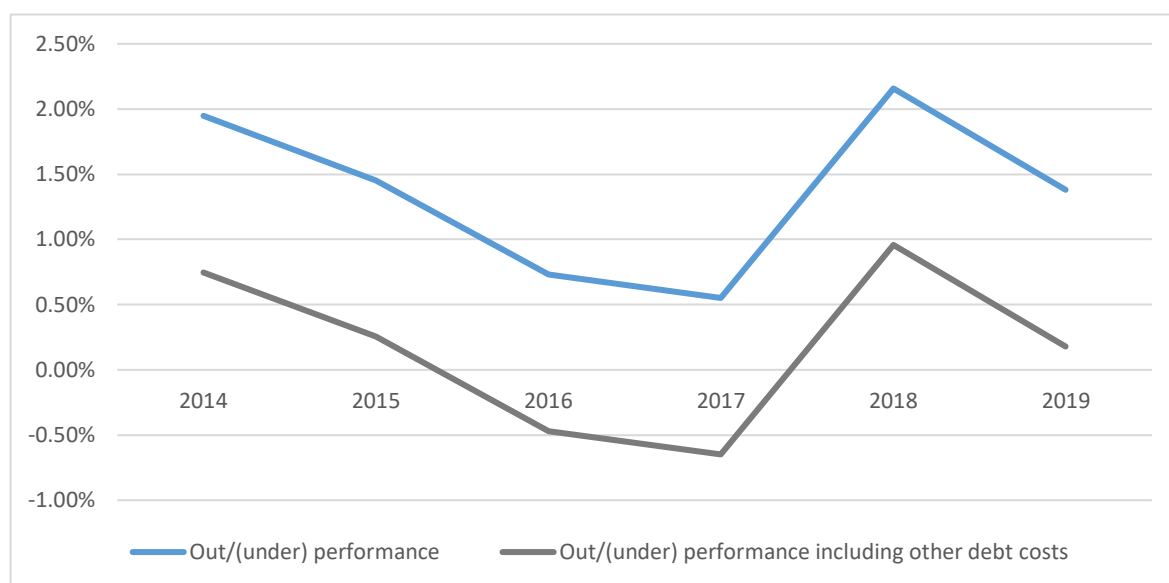
Source: Bank of England

The premium on issuing 20-year debt compared to 10-year debt is approximately 60bps. Therefore, when considering the additional costs of borrowing and also the premium of 60bps on issuing 20 year debt, the comparison of the RIIO-T1 CoD mechanism and actual CoD in Figure 4, changes to Figure 5. This shows a shift downward in our funding levels for the CoD during RIIO-T1.

This analysis evidences that the embedded debt during RIIO-T1 is a function of the CoD mechanism which has required us to raise shorter term bonds (10 years) compared to longer dated bonds (20 years).

Figure 5 – Out/(under) performance on the cost of debt in RIIO-T1 (comparing ‘all-in’ and additional premium costs on issuing 20 year debt)

Since RIIO-T1 period to date (%)



Source: SHET analysis

As of 31 March 2019, the weighted average term remaining on our debt is less than six years and we believe that issuing longer dated bonds would be an efficient and appropriate treasury policy to adopt in RIIO-T2. This is consistent with RIIO-ED1 which uses a 10-20 year trombone mechanism to reflect longer dated debt and is also in line with Ofgem’s RIIO-2 SSMD Working Assumption on adopting an 11-15 year trombone CoD mechanism.⁴⁹

Oxera have undertaken their analysis considering the impact of additional costs of debt and the premium associated with 20-year bonds compared to 10-year bonds. They conclude that when considering these elements, the CoD mechanism for RIIO-T2 would be more appropriately set using a 15-year trailing average compared to the 11-15 year trombone.

⁴⁹ Ofgem RIIO-2 Sector Specific Methodology Decision – Finance Annex, para 2.62 (May 2019)

5.3 Additional Costs of Borrowing

Ofgem's 11-15 year trombone is a more appropriate CoD mechanism for RIIO-T2 than a 10 year trailing average. However, through analysis of the CoD mechanism, we do not believe that this will adequately fund the costs of borrowing during RIIO-2 when including additional transactional related costs of borrowing. When these costs, such as the cost of carry and transaction costs are taken into account. It is less likely that we would be fully funded during RIIO-2 on a notional basis if these additional costs are discounted.

Table 4 sets out our evidence based view of the additional costs of borrowing from discussions with our relationship banks and our own experience of borrowing in capital markets. We have identified that associated debt transaction costs are between 60-65 basis points (bps) (or 0.60% and 0.65%). NERA's assessment included analysis of companies additional costs of borrowing to estimate the costs of borrowing based on market evidence and company data. They also analysed evidence on the cost of mitigating a risk from the switch to CPIH indexation from RPI. The calibration of the CoD mechanism must ensure that these other debt costs are efficiently funded.

Table 4 – Transaction and related costs of debt

	NERA Assessment	SHE-T Assessment
Transaction and related costs of debt	Bps	Bps
New Issue Premium and Transaction costs	20	20
Costs of carry or Liquidity costs	21 - 50	15 - 20
Premium for issuing nominal debt	N/A	15
Total	41 - 70	50 - 55
Spread on issuing BBB+ debt compared to A/BBB ibovx index	N/A	10
CPI indexation associated costs	12	N/A
Total	53 - 82	60 - 65

We have summarised these in turn with reference to our own analysis and the analysis undertaken by NERA.

New Issue Premium and Transaction costs (20bps)

Costs associated with issuing new debt have previously been calculated and assumed to be 20bps by Ofgem and other regulators⁵⁰. When considering market evidence and regulatory precedent, we believe these costs are still approximately 20bps albeit varying over time depending on market conditions. This includes bank underwriting fees, rating agency fees and new issue premiums. NERA undertook this assessment also and identified the components of transaction costs affecting Network companies for their existing debt portfolios. They concluded similarly that 20bps was appropriate considering all elements experienced by energy networks.

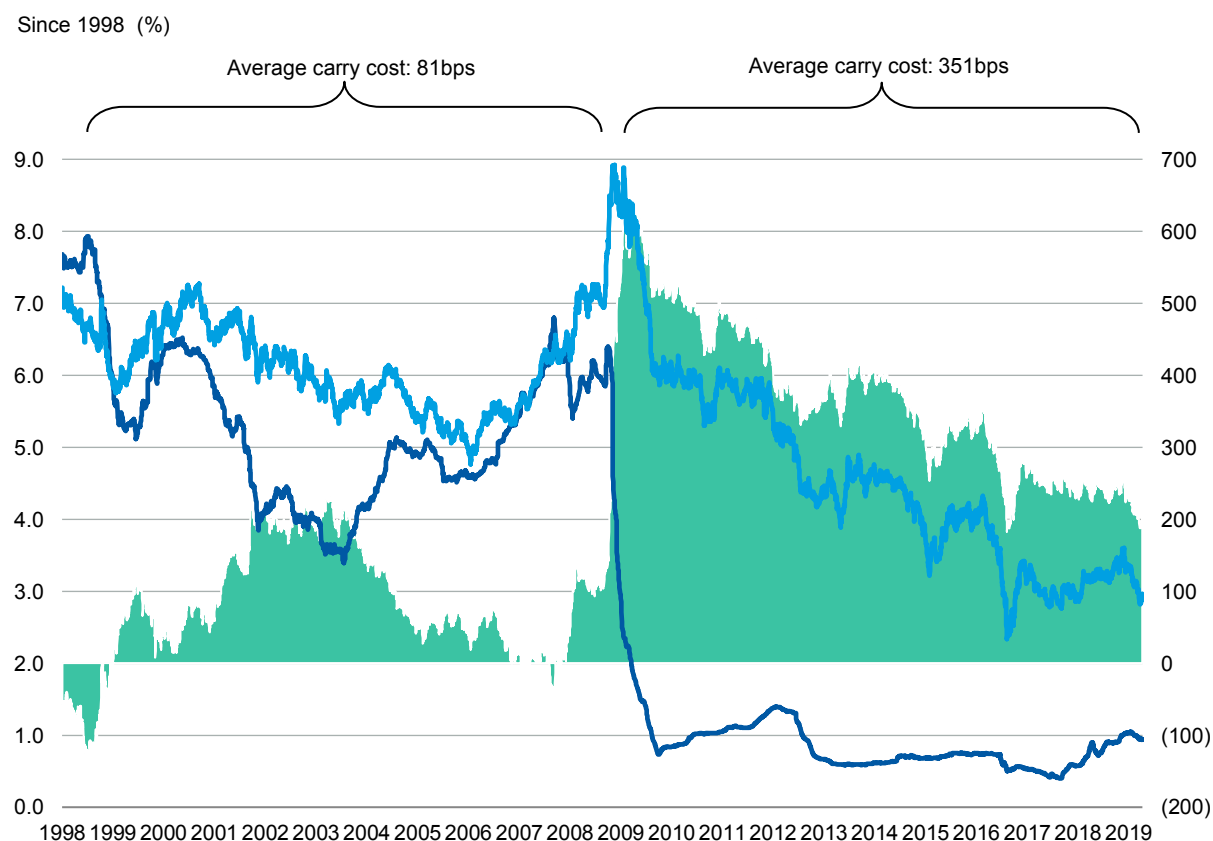
⁵⁰ See, for example, RIIO-ED1: Final determinations for the slow-track electricity distribution companies where Ofgem conclude that issuance and other costs for raising debt are around 0.2% or 20bps

Cost of carry (15-20bps or 21-50bps)

As part of raising funds from debt markets, there is a requirement to pre-finance or raise funds in advance of needing the funds, in sufficient time to avoid liquidity issues. The standard timeframe is around 6 months in advance of requiring the funds but could extend to as far as 12 months in advance depending on the circumstances. Raising funds in advance therefore carries a significant amount of costs which are unfunded due to both the cost of holding cash balances and the differential between interest returns on cash balances and the interest costs on borrowed funds. In our analysis, we note that this could cost as much as 15-20bps over a full year.

The costs in Figure 6 illustrate an average cost of 35-40bps per six months on 10-year bonds, which equates to 17-20bps per annum (50% of this applies to the full year once spread over 12 months). This analysis is over a 10-year period where, with the expected rise in interest rates and rising credit spreads, the cost of pre-funding would continue at similar averages to the past 10 years in the next price control.

Figure 6 – Analysis of the cost of carry for GBP A-Rated Corporates (10 year bonds) (source: Morgan Stanley)



Source: Bloomberg, iBoxx

NERA similarly identified a range for the cost of carry based on companies having sufficient liquidity to meet obligations over a 12 to 24 month period. We believe this is particularly relevant for a capital intensive phase which has underpinned RIIO-T1 and is expected to underpin RIIO-T2 for the North of Scotland. We have considered the lower end of this estimate at 15-20bps compared to NERA's larger range.

Premium on issuing nominal debt (15bps)

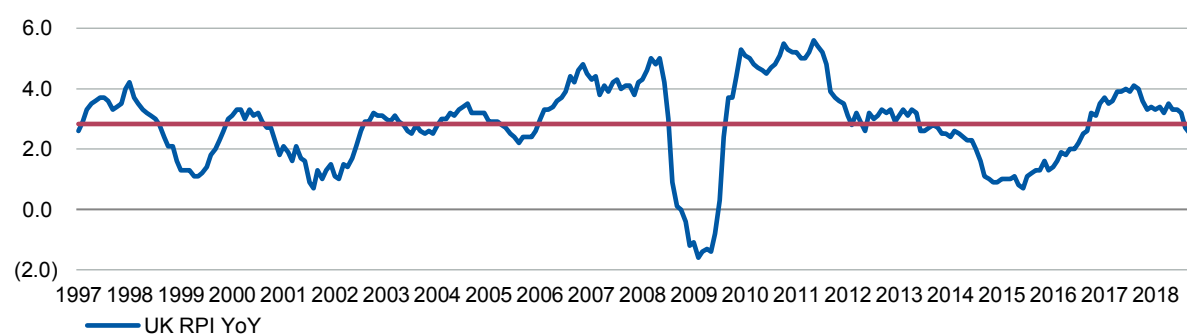
Analysis of the differential between issuing index linked debt and nominal debt shows a premium is applied to issuing nominal debt. We have only issued nominal debt during RIIO-T1 despite Ofgem's assumption that networks will issue 25% of their debt as index linked debt (real debt increasing with an inflation measure, typically RPI). For RIIO-T2, we expect to see around 15bps of additional costs on the nominal debt during the period. In assessing our financeability we have elected to consider the event in which we would not issue any indexed linked debt given it would account for 70% of our new debt in RIIO-T2 to achieve the 25% threshold by the end of the T2 period.

Figure 7 compares the coupon on issuing nominal debt vs indexed linked debt to account for inflation risk.

Figure 7 – Inflation implied in nominal Corporate Debt is higher than realised inflation (source: Morgan Stanley)

UK RPI YoY

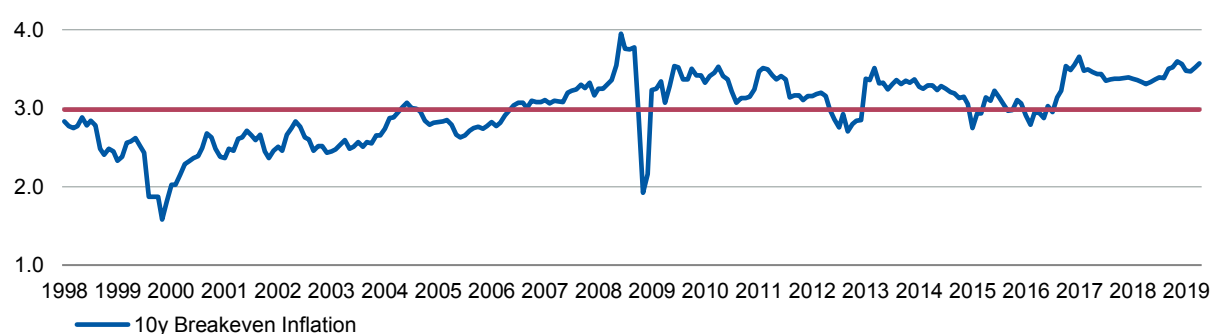
Since May 1997 (%)



Source: Bloomberg

10 year Breakeven Inflation

Since 1998 (%)



Source: Bank of England

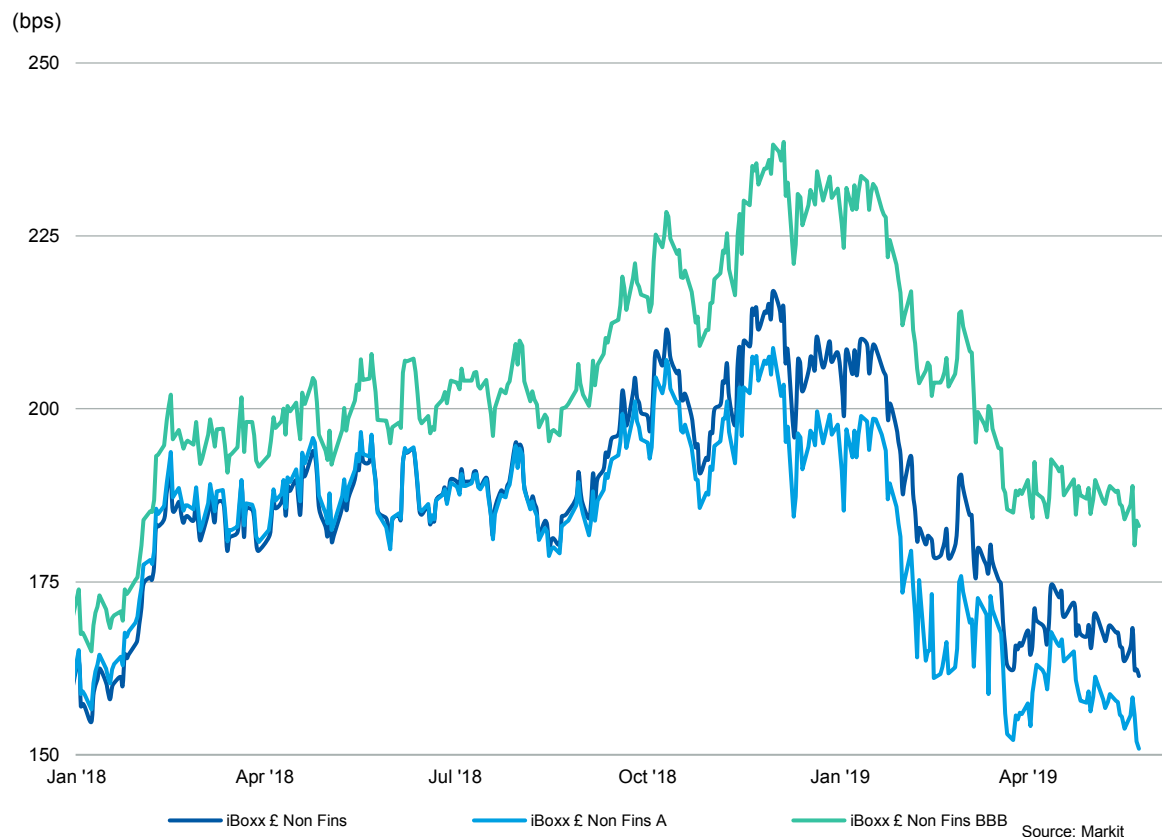
Since 1997, RPI has averaged 2.83% whereas over the same period 10-year breakeven inflation (which is the rate the market will pay to receive inflation over 10 years) has averaged 2.98%. This is 15bps above realised inflation. This represents the risk premium that the market charges to hedge the inflation risk. Ofgem has assumed that at least 75% of the debt issued by regulated networks will be nominal debt and therefore this cost differential needs to be funded. In our case, 100% of our debt has been issued as nominal debt as a lack of index linked bond investors. Issuing CPIH linked debt is a new market and has relatively few bonds in issue. The UK government has also not issued any CPIH denominated debt meaning the Ofgem assumption is not plausible.

Spread on issuing BBB+ debt (10bps)

There is an evident cost differential between issuing BBB+ debt (our current credit rating) compared to averaging A/BBB iBoxx debt indices (the method used to set CoD). The differential amounts to 36bps annually and at least part of this differential would form an additional cost. When spread evenly between A and BBB, this converts to approximately 10bps of additional annual costs when raising BBB+ bonds compared to the average of A/BBB. Spread differentials remain historically tight, with increasing market pressure on credit fundamentals pointing to a higher difference going forward. This is illustrated in Figure 8 comparing the spreads between A and BBB bonds.

Figure 8 – Credit Spread of A and BBB bonds (source: Morgan Stanley)

Non-Financial Corporates Trading Performance



5.4 Assessment of the ‘Halo Effect’

NERA⁵¹ have provided an updated report for the ENA evaluating the presence of a *halo effect*. In doing so, NERA note that previous analysis by Ofgem in GD1 and T1 failed to compare bonds on a like-for-like basis including controlling for tenor and credit rating of debt. During ED1 Ofgem agreed with analysis presented by NERA that tenor and credit rating should be corrected for and reached the same financial analysis. However, Ofgem still concluded in ED1 that there was presence of a *halo effect* post 2012 of c20bps.

The CMA concluded during the BGT Appeal to the CMA for the Slow Track DNOs⁵² that there was no presence of a *halo effect*, despite BGT arguing for 50bps. In updating that analysis, NERA reviewed the CEPA report prepared by Ofgem in February 2018⁵³, which argued that there was a *halo effect* amounting to 10-25bps. When NERA correct the coupon rate used by CEPA (as debt was issued below par in many cases), control for credit rating at issue and correct for the treatment of Index Linked Debt (ILDs) in the CEPA analysis, they conclude that there is no *halo effect*.

There is evidence that there is no presence of a *halo effect* for regulated networks raising debt against a market index. This is supported again by an update of NERA’s⁵⁴ analysis for the ENA based on assessing Ofgem’s analysis in the SSMD where they asserted there was evidence of a halo effect of around 7bps. NERA replicated this analysis as part of their study and found Ofgem’s analysis did not precisely control for tenor. When NERA use a more robust measure of credit spreads using the Bank of England forward curves, they find that a negative halo effect of -13bps. They state this is due to new issue premiums faced by energy networks and is supported by separate academic evidence. When testing this analysis with other sources of credit spread data (that is also not precisely controlling for tenor) NERA find that Ofgem’s analysis is not statistically different from zero.

⁵¹ NERA (March 2019), Cost of debt at RIIO-2, Prepared for the ENA

⁵² This was part of the British Gas Appeal in 2015. See ground 4 as per CMA Final Determination https://assets.publishing.service.gov.uk/media/5609588440f0b6036a00001f/BGT_final_determination.pdf

⁵³ NERA (March 2019), Cost of debt at RIIO-2, Prepared for the ENA

⁵⁴ NERA (Sept 2019) Halo Effect and additional costs of borrowing at RIIO-2

5.5 Approach to Evaluating CoD Mechanisms

Our approach to evaluating potential CoD mechanism options for RIIO-T2 has been set out comprehensively by Oxera. We have relied on this independent analysis to inform our proposals alongside analysis undertaken in July by Oxera and separately by NERA.

Table 5 sets out the mechanisms which have been considered with Oxera, thereby adopting their methodology and sensitivity analysis for future interest rates, variability around these interest rates and consideration of issuing debt on a longer-term basis consistent with the wider industry, regulatory precedent, and Ofgem's SSMD.

Table 5 - Potential cost of debt indexation mechanisms in RIIO-T2

Cost of debt mechanism	Description
15-year trailing	15-year trailing average starting from November 2006
20-year trailing	20-year trailing average starting from November 2001
ED1 trombone	10–20-year trombone starting from November 2002 (assumes continuation of ED1 trombone into RIIO-T2)
RIIO-T2 trombone	11–15-year trombone starting from November 2011
16–20-year trombone	16–20-year trombone starting from November 2006

Source: Oxera analysis.

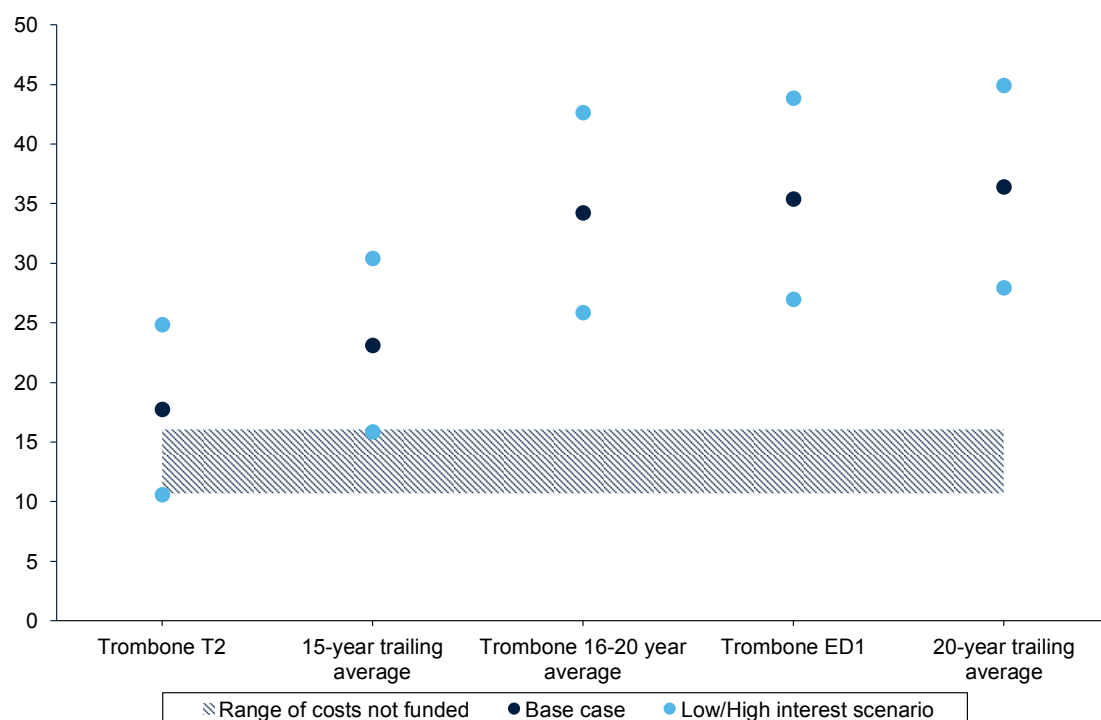
All scenarios are modelled based on a simple average of yields on the nominal iBoxx A/BBB non-financial corporate bond indices. This is not exactly aligned with our credit rating of BBB+, which is a factor likely to contribute to underfunding of the cost of debt.

We have not repeated Oxera's methodology below in relation to the detailed calculations. However, we note that they have evaluated the CoD mechanisms compared to Ofgem's principles set out in the SSMD as well as considering the following elements:

1. Maintaining our investment grade credit rating at Baa1
2. The notional company cost of borrowing over the long term
3. The impact of the additional costs of borrowing

In doing so, Oxera conclude that the 11-15-year trombone proposed by Ofgem is unlikely to fund the 'all-in' cost of debt for SHET during RIIO-T2 when considering the additional costs of borrowing. During a period of high interest rates, it is more appropriate to use a simple 15-year trailing average of A/BBB iBoxx non-financial corporate bond indices. This is illustrated in Figure 9.

Figure 9 – Average annual funding impact in RIIO-2 under different cost of debt mechanisms (£m nominal) with term premium ⁵⁵



Source: Oxera analysis

Oxera's analysis supports that a 15-year trailing average is the minimum required CoD mechanism to ensure the costs of borrowing are fully funded during RIIO-2 for a notional company. We also believe there is enough evidence to move towards a 20-year trailing average or to a point between a 15-year trailing average and a longer-term average.

We intend to keep the CoD mechanism under review in advance of Final Determinations in late 2020⁵⁶ and consider additional evidence, analysis and changing market conditions to ensure our proposed CoD mechanism fairly compensates SHET for borrowing costs while also maintaining the incentive to fund finance efficiently during RIIO-T2, in line with Ofgem's principles.

⁵⁵ Oxera's analysis does not include the full impact of issuing longer term bonds as we have proposed. When included the unfunded costs area increases significantly meaning at least 15 year trailing average looks more appropriate as a minimum i.e. they have used 30bps but in their appendix they present a sensitivity with 60bps.

⁵⁶ In RIIO-ED1, the CoD mechanism design was changed at Draft Determinations (July 2014) before being finalised in Final Determinations (December 2014) as Ofgem kept options open for changing market conditions and additional analysis as the price control progressed.

6 Other Financial Parameters

Other Financial Parameters include:

1. RAMs
2. Asset Lives and Capitalisation Rates
3. Treatment of Tax
4. Dividend and Equity Issuance Policy
5. Inflation

We do not diverge in our thinking on these items from what we have stated in the Finance section of the Business Plan. We have set out our more detailed view on RAMs below.

6.1 Return Adjustment Mechanisms (RAMs)

RAMs are a new regulatory mechanism which, our analysis indicates, are more likely to cause harm than good to consumers in RIIO-T2⁵⁷. In summary, our analysis shows that these mechanisms are akin to a tax on effort. They have a distortionary impact on incentives and their introduction has not been justified by means of a full and clear regulatory impact assessment.

These mechanisms are to the detriment to consumers over the long term by creating inadvertent consequences that are likely to increase costs to consumers and create uncertainty within a price control. EY undertook a review of the proposed RAMs for the ENA and found they provided little value compared to existing regulatory mechanisms⁵⁸. There is not, therefore, any proven advantage to consumers or companies in introducing these complex mechanisms.

We have not proposed any RAM mechanisms in our Business Plan although we note that Ofgem have provisionally proposed a $\pm 3.0\%$ cap and collar on Return on Regulatory Equity (RoRE) excluding the Business Plan Incentive and Cost of Debt outperformance [insert references to SSMD]. The sensitivity analysis requested by Ofgem in the SSMD on Financeability [insert reference] does not provide for a return that is outwith the proposed cap and collar and therefore does not appear a necessary mechanism based on Ofgem's assessment of plausible ranges of performance.

6.2 Asset Lives and Capitalisation Rates

We do not propose any deviation from our Business Plan proposals on asset lives or capitalisation rates for our Proposed Financial Parameters.

⁵⁷See, for example, our response to Ofgem's Sector Specific Methodology Consultation (SSEN Transmission, 2019) available at: <https://www.ssen-transmission.co.uk/news-views/articles/2019/5/ssen-statement-on-ofgem-s-riio2-sector-specific-methodology-decision/>

⁵⁸Oxera report, RIIO-T2 cost of debt and financeability assessment, Prepared for Scottish Hydro Electric Transmission plc (June 2019)

6.3 Treatment of Tax

We have proposed the pass-through treatment of taxation including an accreditation for Fair Tax or something equivalent. This is consistent with our Business Plan.

6.4 Dividend and Equity Issuance Policy

We have set the dividend and equity issuance policy in our main plan and have not deviated from this policy in our Proposed Financial Parameters for RIIO-T2.

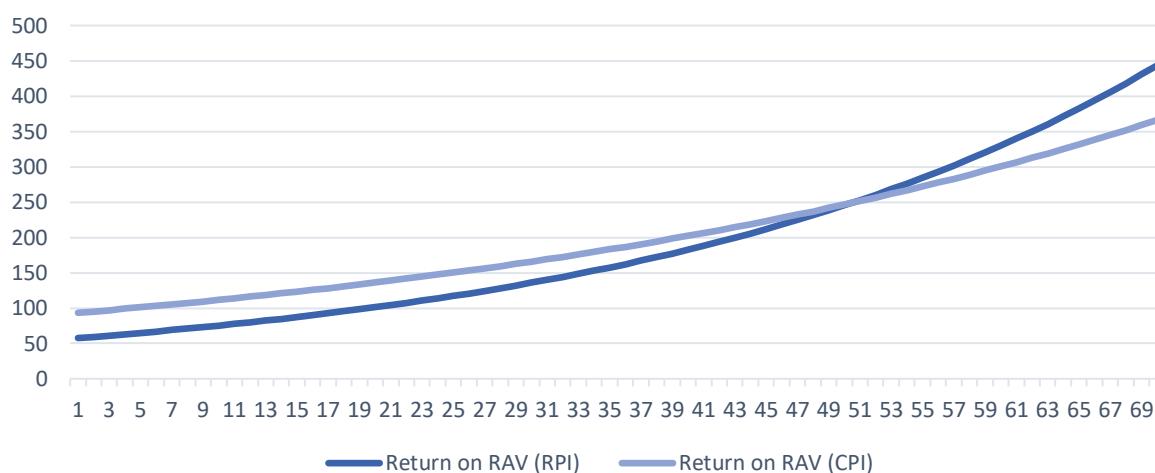
6.5 Choice of Inflation

We acknowledge Ofgem's decision to apply an immediate switch from RPI to CPIH. In reviewing this decision, we have considered the impact on consumer bills as well as how this would impact on short and long term financeability. Our analysis clearly shows that allowed revenue, and therefore consumer bills, will be higher due to the switch to CPI from RPI (Figure 10).

The switch to CPI results in a higher return on RAV as compared to RPI at the beginning of the switch. In future years however, consumers will pay less due to a CPI-inflated RAV base as opposed to an RPI-inflated RAV. In summary, consumers will pay more today but less in the future.

Recognising this, the water regulator Ofwat adopted a transitional arrangement when moving to CPIH for PR19 to mitigate the impact on consumer bills⁵⁹. Ofgem have decided not to consider a transitional arrangement.

Figure 10 – RPI versus CPI switch stylised effect



Source: SHET analysis

We consider the impact of an immediate switch to CPI, and what this means for consumers, in our financeability assessment in the short and long term. We conclude that the change to CPI should be NPV-neutral across RIIO-T2. In particular it is not appropriate to use a change in inflation measure to support short term credit ratios at the expense of longer term financeability.

⁵⁹ Ofwat price control framework and methodology (Ofwat, 2019) available at: www.ofwat.gov.uk/regulated-companies/price-review/2019-price-review/pr19-final-methodology/

7 Financeability Assessment

In this section we have undertaken our financeability assessment within our Business Plan based on Ofgem's WA, their sensitivities and our own sensitivities for indexed linked debt and additional costs of borrowing for the notional and actual company. Oxera have also independently assessed these sensitivities compared to Ofgem's WAs. We have outlined our analysis of credit ratios based on these range of sensitivities including comparing this to our mitigating actions for addressing financeability concerns⁶⁰. This section considers the following:

1. The basis of our Evaluation
2. Financeability Analysis
3. Long term Financeability
4. Assessment and Comparison to the Ofgem Financial Model (PCFM or BPFM)

These sections are set out below.

7.1 Basis of our Evaluation

The sensitivities we have tested are as follows:

- Using a cost of equity of 6.5% compared to Ofgem sensitivities for the notional and actual company
- Evaluating the impact of zero indexed linked debt for the notional company
- Evaluating the impact of the additional costs of borrowing on the actual company
- Assessing the impact of higher totex expenditure in line with the Likely Outturn on notional and actual company financeability for Ofgem and our own sensitivities

The tables summarising this analysis are included in full in Appendix A as well as being included in Oxera's independent report. The notional and actual company differ as noted in Oxera's analysis and as summarised in our Business Plan. The notional company is as defined by Ofgem with the actual company reflective of our actual capital structure and embedded costs of borrowing.

7.2 Financeability Analysis

We have summarised our findings below based on the notional and actual company based on comparing Ofgem's WAs to our proposed 6.5% cost of equity.

Notional company financeability

for the notional company during RIIO-2, the AICR (or PMICR) falls towards the bottom end of Moody's guidance of 1.2–1.4x and 1.4–2.0x for a Baa rating. The AICR is slightly below the guidance for a Baa2 rating indicated in recent commentary from Moody's (i.e. 1.2x).⁶¹ The AICR is below Fitch's guidance of 1.5x for a BBB rating. FFO interest cover including inflation accretion is below the lower end of Fitch's guidance of 3.5x for a BBB rating. FFO/net debt (including and excluding accretion) is below the lower end of Moody's guidance for a Baa rating of 11%.

⁶⁰ This is set out in our Business Plan where we identify a change in capitalisation rate to 86% and a reduction in the notional gearing as measures which would ensure we retain the target credit rating of Baa1 and satisfy the Ofgem dividend yield assumption of 3%.

⁶¹ Moody's (2018), 'Regulated electric and gas networks – UK. Risks are rising, but regulatory fundamentals still intact', 29 May, p. 4.

We note that average credit ratios in RIIO-2 using Ofgem's economic form⁶² for the AICR, FFO/net debt and RCF/net debt are higher than the values using the accounting forms of the ratios as shown in Oxera's analysis. Our Financeability Analysis focuses on the accounting form of the metrics in line with CRAs. The difference to the economic form ratios reported by Ofgem is also driven by Ofgem assuming that the notional company outperforms the price control assumptions and earns an additional 50bps return on regulated equity as well as the difference in the cost of debt assumption.

Overall, assessment of the notional company shows that **financeability metrics are under pressure and leave limited headroom for downside scenarios**. In RIIO-1, Ofgem indicated that it targeted a 'comfortable investment grade' credit rating in the range of BBB–A.⁶⁴ Removing the assumption that 25% of debt is inflation-linked results in a decrease of the AICR to 0.99x (from 1.15x in the base case), well below Moody's guidance threshold for a Baa2 rating (of 1.2x). We explore this further below.

Treatment of CPIH Indexed Linked Debt

In its modelling of the notional company, Ofgem assumes that 25% of debt is index-linked to inflation. To justify the 25% index-linked debt assumption, Ofgem notes:

As a working assumption, we have included 25% inflation-linked debt in the draft business plan financial model (consistent with RIIO-1). This is also consistent with RFPR data on the level of inflation-linked debt across the industry. However, we have included a suggested scenario where this assumption is flexed by $\pm 5\%$ (to 20% or 30%). We also expect to review this assumption following receipt of business plans and to decide on the appropriate proportion of inflation linked debt for the notional company at Final Determination.⁶⁵

The RFPR data (which is on a pre-derivative basis) shows that while the average index linked debt in the industry is around 25%, there is a wide range of index-linked debt between companies, (see Figure 3.1 below). Moreover, the data shows that at present the energy sector does not have any CPI linked debt in RIIO-1.

Ofgem has not presented any evidence on the availability of CPI-linked debt to support the financeability assessment of the notional company. It has also not presented any evidence on the equivalence of swapping RPI index-linked debt using CPIH swaps. Given the uncertainty about the availability of new CPI-linked debt and the wide variance in RPI-linked debt across the sector, a $\pm 5\%$ sensitivity to the 25% CPI-linked debt assumption does not seem appropriate.

Actual company financeability

The AICR for the actual company is 1.27x, still below Moody's minimum threshold for Baa1 credit rating assuming zero issuance costs for new debt. With a 40-60 bps uplift to the cost of new debt, the AICR ranges between 1.16x to 1.19x, which is below the Moody's threshold for a Baa2 rating.

Reducing gearing to 55% or reducing the capitalisation rate to 86% will improve the AICR though it will still be below Moody's A3 rating threshold of 1.6x when issuance costs of new debt are assumed to be zero. With debt issuance costs of 40 to 60bps, the AICR will range between 1.31x and 1.37x, i.e.

⁶² Ofgem (2019), 'RIIO-2 Sector Specific Methodology Decision – Finance Annex', 24 May, para. 4.39.

⁶³ Oxera's analysis is based on a more recent estimate of the cost of debt (cut-off date of 31st October 2019)

⁶⁴ Ofgem (2012), 'RIIO-T1: Final Proposals for National Grid Electricity Transmission and National Grid Gas' 17 December, para. 4.6.

⁶⁵ Ofgem (2019), 'RIIO-2 Sector Specific Methodology Decision – Finance Annex'

below Moody's Baa2 threshold.⁶⁶ While reducing both the gearing to 55% and the capitalisation rate to 86% will allow the company to achieve a solid investment grade credit rating (AICR ranges from 1.51x to 1.64x).

Implications for Dividend Yield

The above financeability assessment of the notional company suggests that Ofgem's assumption of a 3% dividend yield is **not realistic**. We have therefore examined the requirement for net new equity issuance over RIIO-2 to maintain a dividend assumption of 3% and a gearing of 60%⁶⁷ with Oxera.

In the Certain View totex, the size of capital investment over RIIO-2 implies that maintaining notional gearing at 60% would require net new equity issuance over the period of £155m if the transition from the 55% gearing in the last year of RIIO-1 is included in the analysis as a one-off re-gearing dividend. The net equity issuance would be £340m if the transition from the 55% gearing in the last year of RIIO-1 is excluded from the analysis. Oxera consider the latter approach more consistent with how Ofgem is assessing financeability for RIIO-2.

A £340m equity injection would therefore be required to maintain the notional company financial parameters. This is in excess of 20% of the current equity value and would further add pressure to the credit metrics.

Financeability for our proposed Cost of Equity

Our analysis of the AICR and FFO/Net debt ratios under our proposed CoE of 6.5% compared to the range of sensitivities shows we can retain the target credit rating (Baa1) and sustain the Ofgem's assumed 3% dividend yield during the period. We also do not have a deteriorating credit metrics over the long term and can sustain close to the target credit rating in the event of significantly higher capital expenditure. When accounting for the issues with the AICR ratio under the Likely Outturn scenario, it the ratio deteriorates which is supported by other key ratios. We are therefore able to sustain this scale of investment, any shocks or other variations including rising interest costs and no CPIH indexed Linked Debt market.

As we have set out, the impact on customers in the short and long term is the same under our proposals than under Ofgem's WA as under Ofgem's WA adjustments would be required in RIIO-T2 to the capitalisation rate and notional gearing thereby increasing short term cash flows. In the longer term, i.e. future price control periods, Ofgem would need to address financeability concerns thereby changing parameters to continue to sustain the appropriate credit rating.

⁶⁶ While the gearing is reduced to 55%, the cost of equity is held constant at 4.3% CPIH-real, consistent with how Ofgem addressed financeability constraints in RIIO-1. If the cost of equity had been re-calibrated at a 55% gearing (leading to a lower cost of equity), the credit metrics would be even weaker.

⁶⁷ The profile of cash flow modelled during RIIO-T2 implies that there will be equity issuance in some years and buybacks in other years, assuming a constant dividend yield. The reported net equity issuance is net of buybacks.

7.3 Long term Financeability

A full analysis of all credit ratios is included in the Oxera report. Figures 11 and 12 below show the outcome for Ofgem's WAs on a long term basis for key ratios AICR and FFO/Net Debt. Oxera considered the credit metrics analysis undertaken by Ofgem in relation to the notional electricity transmission company in RIIO-T2, as reported in the SSMD. They observed that, for this financeability assessment, Ofgem uses the economic form of the ratios, rather than the accounting form, where the accounting form is consistent with the credit rating agencies' methodologies, as well as Ofgem's financeability guidance.⁶⁸ Oxera have been able to broadly replicate the economic form of the ratios derived by Ofgem,⁶⁹ and this shows that the economic form of the average ratios for RIIO-2 is higher than the accounting form.⁷⁰ Therefore both the Oxera and our own analysis focuses on the accounting form of the metrics.

Oxera also considered the ratios across the RIIO-T2 period and beyond given the long term impact of the change to CPIH on credit metrics. In doing so they identify that ratios deteriorate significantly after RIIO-T2 which demonstrates Ofgem's WAs are incorrect. Ofgem's statutory obligations are to consider current and future consumers and therefore they must consider current and future financeability as opposed to over just one price control period. A deterioration in financeability which could lead to financial distress and material underinvestment has an adverse effect on consumers and therefore is a factor in their statutory obligations.

As shown in Figure 11, for the notional company during RIIO-T2, the AICR falls below the bottom end of Moody's guidance of 1.2 for Baa1 rating. Furthermore, Figure 12 shows that the FFO/net debt (including and excluding accretion) is below Moody's guidance for a Baa rating of 11%.⁷¹

This analysis illustrates that the CoE has been proposed at too low a level in Ofgem's WAs. This evidences that Ofgem's WAs present financeability pressures when using CPIH as the inflation measure and is being used as a means to improve short term ratios and the transition skews the analysis as noted by Moody's⁷².

⁶⁸ Ofgem (2019), 'Financeability Assessment for RIIO-2: Further Information', 26 March.

⁶⁹ For the avoidance of doubt, we do not agree with the inclusion of Ofgem's expected 50bp outperformance wedge within the cost of equity allowance in modelling the base case credit metrics.

⁷⁰ This likely difference had been acknowledged by Ofgem, which states in the SSMD that: 'In practice the key credit ratios are calculated from accounting information, may be subject to individual rating agencies' adjustments and will be influenced by the impact of incentives, timing, movements in working capital, actual company capital structures and actual debt costs.' See Ofgem (2019), 'RIIO-2 Sector Specific Methodology Decision – Finance', 24 May, para. 4.39.

⁷¹ Oxera focus on the accounting form which is the same basis in which the CRAs used compared to Ofgem's methodology for using the economic form of CRAs. Oxera explore this further in their report.

⁷² The *novel* approach adopted reduces the TMR by 1%, which has been noted by Moody's in their analysis of RIIO-2. Moody's, Credit quality likely to weaken in RIIO-GD2 regulatory period (Moody's, Feb 2019) available at: https://www.ofgem.gov.uk/sites/default/files/docs/2012/10/7_network_access_policy_shetlandsptl_0.pdf

Figure 11 – AICR analysis over RIIO-T2 for Ofgem Working Assumptions (CPIH)

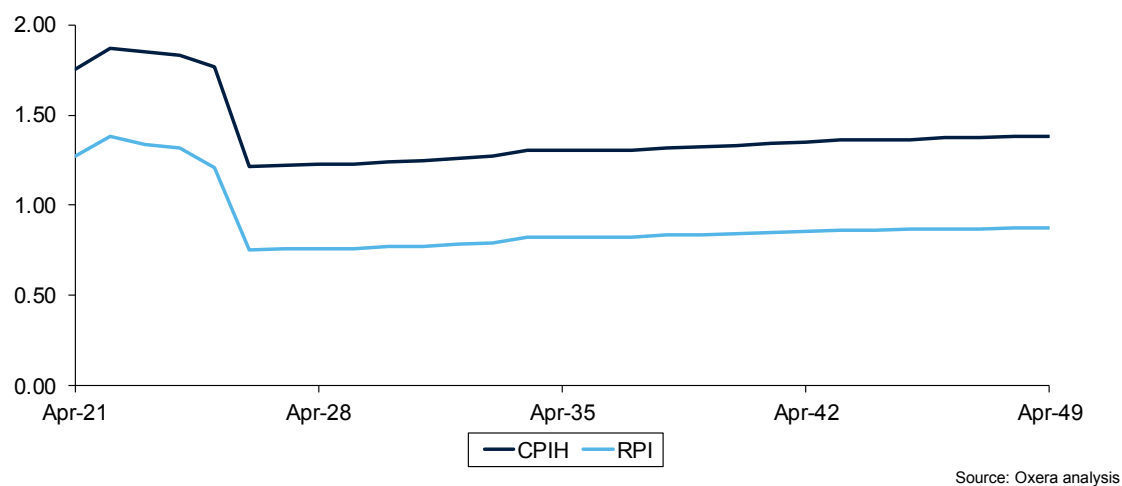
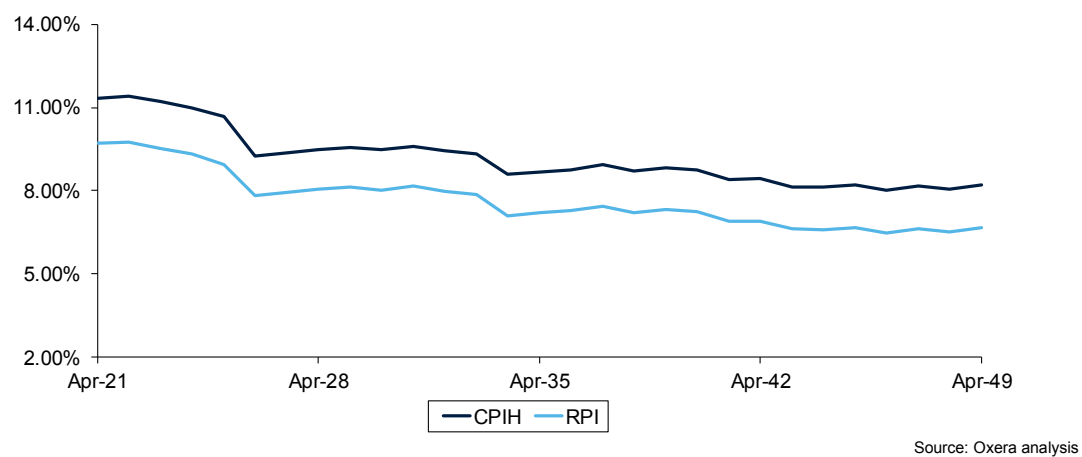


Figure 12 – FFO/Net Debt analysis over RIIO-T2 for Ofgem Working Assumptions (CPIH)



7.4 Assessment and Comparison to Ofgem's Financial Model

As set out in our Business Plan, we have relied upon our own Internal Financial Model instead of Ofgem's Price Control or Business Plan Financial Model (PCFM or BPFM). This is due to the timing and reliability of the Ofgem model whereby it was only available on the 31st of October 2019 before then being changed on the 8th of October. This left little to no time to test the model, undertake all the financeability analysis, have the analysis assured in line with the Ofgem Guidance and taken through internal governance and approval requirements. As our Business Plan required Board Assurance that we are financeable based on Ofgem's Guidance we had to rely on our own internal financial model.

However in order to comply with Ofgem's Guidance, we have provided a reconciliation of revenue and noted key ratio differences compared to our internal financial model and the PCFM. We have also submitted our own internal financial model as requested by the Guidance.

The main differences we noted comparing our financial model and the PCFM in Table 6 (we have only focused on the notional and actual company assessments on the base case and a CoE of 4.3%).

Table 6 – Issues identified with the PCFM

Issue	Description
Cost of debt	We have elected to use a more up to date cost of debt index cut-off date which is lower than Ofgem's PCFM. This has the effect of improving credit metrics compared to Ofgem's PCFM.
Treatment of TIRG or Shadow RAV	We have adjusted for transfer of TIRG related assets in our assessment in line with Ofgem's guidance to remove one-off and legacy revenue items etc. The PCFM does not account for this correctly.
Debt analysis and new equity	Ofgem's PCFM assumes dividends will be paid at 3% in line with their assumption. As a result, the conclusion is that debt will increase but then be offset by new equity. This did not allow for a full assessment of financeability as it forced ratios back into line with higher metrics.
Debt calculations	Ofgem's analysis for calculating debt and gearing does not account for TIRG correctly and therefore skews the debt analysis. This is also an issue identified in the RFPR that is addressed as part of that regulatory submission.
Accounting vs economic form ratios	We have focused on using accounting form of credit ratios in line with CRAs whereas the PCFM relies on using economic form ratios. Oxa have provided an analysis of the difference whereby noting economic form ratios provide a higher average than accounting ratios.
Return on equity (RoRE)	Ofgem's method in the PCFM does not adjust profits for statutory and RAV depreciation and it uses the real cost of debt to calculate the interest component instead of the nominal cost of debt. The result is that the RoRE being significantly higher than in reality therefore skewing the analysis higher.

This does not mean there are no other differences or issues but sets out clearly why we have opted to rely more explicitly on our Internal Financial Model than the PCFM. We also note that the approach we have adopted for undertaking the notional and actual company financeability indicates improved credit ratios due to the updated lower cost of debt and also the way interest costs are modelled.

We remain committed to developing and finalising the model with Ofgem including throughout its independent audit.

7.5 Conclusion on Financeability Assessment

Our analysis of financeability under Ofgem's WAs shows that there would be significant downward pressure on our credit metrics and would be below the threshold for Baa2. This is 2 notches below the target credit rating of Baa1 based on the notional company. When including a lower assumption on indexed linked debt our credit ratios worsen significantly for the notional company. This is also the case for the actual company when including the additional costs of borrowing.

Oxera's analysis is consistent with our own financeability assessment whereby in order to secure the target credit rating of Baa1 and sustain a dividend yield of 3% in line with Ofgem's assumptions the Cost of Equity needs to be increased significantly above Ofgem's WAs. For the RIIO-T2 period only, cash flows can improve if there is a reduction in the capitalisation rate to 86% and a reduction in notional gearing of 55%. The outcome of which may support short term credit metrics but may not prevent a credit rating below the target credit rating.

When considering a higher totex or capital expenditure scenario as set out by our Likley Outturn of between £1.1bn and £1.3bn, the credit ratios improve falsely. This is due to the treatment of the AICR ratio whereby the RAV depreciation is used as a proxy for maintenance capital expenditure. As Oxera note in their analysis, in a high capital expenditure scenario, the compulsory capital expenditure is significantly above the RAV depreciation meaning the fast money proportion improves credit ratios. When substituting the RAV depreciation for compulsory capital expenditure, the AICR significantly deteriorates to below Baa2 thresholds.

Considering long term financeability either under CPIH or RPI, ratios worsen overtime even in a steady state capital expenditure environment. Therefore market evidence supports our proposed cost of equity for RIIO-T2 while also ensuring we retain the target credit rating of Baa1 and can sustain a dividend yield in line with Ofgem's assumptions. Changes to financial parameters such as capitalisation rates and notional gearing have the effect of increasing costs to consumers in the short term in line with our proposals for RIIO-T2 while exhibiting longer term adverse impacts on customers including significant intergenerational transfers.

Appendix A Financeability Tables

Table 1 Financeability metrics for the notional company (6.5% CoE): Certain View

	CoE 6.5%	No inflation- linked debt	Interest Rate ±1%	CPIH ±1%	RPI-CPI wedge ±0.5% ***	Totex Perf ± 10%	RoRE ±2%	Inflation linked debt ±5%
Net debt/RAV (%)	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
FFO interest cover, incl. accretions (x)*	4.4	3.8	4.1 - 4.7	4.8 - 4.1	4.4 - 4.4	4.5 - 4.3	5.0 - 3.8	4.5 - 4.3
FFO interest cover, excl. accretions (x)*	3.8	3.8	3.6 - 4.0	3.8 - 3.8	3.8 - 3.8	3.9 - 3.7	4.3 - 3.3	3.8 - 3.8
AICR (or PMICR) (x)*	1.57	1.36	1.52 - 1.64	1.64 - 1.70	1.70 - 1.46	1.46 - 1.57	1.57 - 1.57	1.57 - 1.64
Notional PMICR (x)	2.14	2.14	2.05 - 2.24	2.24 - 2.52	2.52 - 1.75	1.75 - 2.14	2.14 - 2.14	2.14 - 2.20
FFO (cash interest) /net debt (%)*	10.6%	10.6%	10.5% -10.6%	10.6% -10.6%	10.6% -10.6%	10.9% -10.2%	12.5% - 8.6%	10.6% -10.6%
FFO (interest expense)/net debt (%)*	11.1%	10.6%	11% - 11.1%	11.3% -10.8%	11.1% -11.1%	11.4% -10.7%	13.0% - 9.1%	11.2% -11.0%
RCF/net debt (%)	9.2%	8.7%	9.2% - 9.2%	9.4% - 8.9%	9.2% - 9.2%	9.5% - 8.9%	11.1% - 7.2%	9.3% - 9.1%
EBITDA/RAV	10.5%	10.5%	10.6% -10.3%	10.5% -10.4%	10.5% -10.5%	10.7% -10.2%	12.1% - 8.8%	10.5% -10.5%
RoRE	13.5%	13.5%	13.5% -13.5%	13.6% -13.3%	13.5% -13.5%	14.1% -12.9%	16.6% -10.3%	13.5% -13.5%
Dividend Cover	3.4	3.4	3.4 - 3.4	3.5 - 3.4	3.4 - 3.4	3.6 - 3.2	4.5 - 2.4	3.4 - 3.4
Dividend/RegEquity	3.0%	3.0%	3.0% - 3.0%	3.0% - 3.0%	3.0% - 3.0%	3.0% - 3.0%	3.0% - 3.0%	3.0% - 3.0%
Implied Dividend yield	1.4 %	1.3 %	1.4% - 1.4%	2.9% - (0.1%)	1.4% - 1.4%	3.5% - (0.7%)	4.5% - (1.7%)	1.4% - 1.4%
Required equity buyback/(issuance) (£m)	(143)	(148.8)	(145) to (140)	(11) to (269)	(143) to (143)	46 to (332)	136 to (422)	(142) to (144)

Table 2 Financeability metrics for the actual company (6.5% CoE): Certain View

	CoE 6.5%	No inflation- linked debt	Interest Rate ±1%	CPIH ±1%	RPI-CPI wedge ±0.5% ***	Totex Perf ± 10%	RoRE ±2%	Inflation linked debt ±5%
Net debt/RAV (%)	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
FFO interest cover, incl. accretions (x)*	4.9	4.9	4 - 5.4	4.9 - 4.9	4.9 - 4.9	5 - 4.8	5.5 - 4.2	4.8 - 4.9
FFO interest cover, excl. accretions (x)*	4.9	4.9	4 - 5.4	4.9 - 4.9	4.9 - 4.9	5 - 4.8	5.5 - 4.2	4.6 - 4.9
AICR (or PMICR) (x)*	1.75	1.75	1.5 - 1.87	1.87 - 1.74	1.74 - 1.75	1.75 - 1.75	1.75 - 1.75	1.75 - 1.82
Notional PMICR (x)	2.74	2.74	2.31 - 3	3 - 3.22	3.22 - 2.25	2.25 - 2.74	2.74 - 2.74	2.74 - 2.82
FFO (cash interest) /net debt (%)*	11.4%	11.4%	11% - 11.5%	11.4% -11.4%	11.4% -11.4%	11.7% -11.1%	13.4% - 9.4%	11.2% -11.4%
FFO (interest expense)/net debt (%)*	11.4%	11.4%	11.0% -11.5%	11.4% -11.4%	11.4% -11.4%	11.7% -11.1%	13.4% - 9.4%	11.3% -11.4%
RCF/net debt (%)	11.4%	11.4%	11.0% -11.5%	11.4% -11.4%	11.4% -11.4%	11.7% -11.1%	13.4% - 9.4%	11.3% -11.4%
EBITDA/RAV	10.6%	10.6%	10.7% -10.5%	10.7% -10.6%	10.6% -10.6%	10.9% -10.4%	12.3% - 9.0%	10.6% -10.6%
RoRE	14.8%	14.8%	14.2% -14.9%	14.9% -14.6%	14.8% -14.8%	15.3% -14.2%	17.9% -11.6%	14.5% -14.8%
Dividend Cover	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Dividend/RegEquity	0.0%	0.0%	0.0% - 0.0%	0.0% - 0.0%	0.0% - 0.0%	0.0% - 0.0%	0.0% - 0.0%	0.0% - 0.0%
Implied Dividend yield	2.6 %	2.6 %	2.0% - 2.7%	4.1% - 1.1%	2.6% - 2.6%	4.8% - 0.6%	5.8% - (0.5%)	2.6% - 2.6%
Required equity buyback/(issuance) (£m)	233	233.3	174 to 244	373 to 99	233 to 233	416 to 51	512 to (46)	227 to 233

Table 3 Financeability metrics for the notional company (6.5% CoE): Likely Outturn Assessment

	CoE 6.5%	No inflation- linked debt	Interest Rate ±1%	CPIH ±1%	RPI-CPI wedge ±0.5% ***	Totex Perf ± 10%	RoRE ±2%	Inflation linked debt ±5%
Net debt/RAV (%)	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
FFO interest cover, incl. accretions (x)*	4.4	3.8	4.1 - 4.8	4.8 - 4.1	4.4 - 4.4	4.5 - 4.3	5.0 - 3.8	4.6 - 4.3
FFO interest cover, excl. accretions (x)*	3.8	3.8	3.6 - 4.1	3.8 - 3.8	3.8 - 3.8	3.9 - 3.7	4.3 - 3.3	3.8 - 3.8
AICR (or PMICR) (x)*	1.81	1.57	1.74 - 1.90	1.90 - 1.96	1.96 - 1.68	1.68 - 1.81	1.81 - 1.81	1.81 - 1.87
Notional PMICR (x)	2.31	2.31	2.21 - 2.42	2.42 - 2.67	2.67 - 1.94	1.94 - 2.31	2.31 - 2.31	2.31 - 2.36
FFO (cash interest) /net debt (%)*	10.6%	10.6%	10.6% -10.6%	10.6% -10.6%	10.6% -10.6%	10.9% -10.3%	12.6% - 8.6%	10.6% -10.6%
FFO (interest expense)/net debt (%)*	11.1%	10.6%	11.1% -11.1%	11.4% -10.9%	11.1% -11.1%	11.4% -10.8%	13.1% - 9.1%	11.2% -11.0%
RCF/net debt (%)	9.3%	8.8%	9.2% - 9.3%	9.5% - 9.0%	9.3% - 9.3%	9.6% - 9.0%	11.2% - 7.3%	9.4% - 9.2%
EBITDA/RAV	10.7%	10.7%	10.9% -10.5%	10.7% -10.7%	10.7% -10.7%	11.0% -10.5%	12.4% - 9.0%	10.7% -10.7%
RoRE	13.7%	13.7%	13.7% -13.7%	13.9% -13.6%	13.7% -13.7%	14.3% -13.2%	16.9% -10.5%	13.7% -13.7%
Dividend Cover	3.5	3.5	3.5 - 3.5	3.5 - 3.4	3.5 - 3.5	3.7 - 3.3	4.5 - 2.4	3.5 - 3.5
Dividend/RegEquity	3.0%	3.0%	3.0% - 3.0%	3.0% - 3.0%	3.0% - 3.0%	3.0% - 3.0%	3.0% - 3.0%	3.0% - 3.0%
Implied Dividend yield	(2.5%)	(2.6%)	(2.5%)-(2.4%)	(1.0%)-(4.0%)	(2.5%)-(2.5%)	0.1% - (4.9%)	0.7% - (5.7%)	(2.5%)-(2.5%)
Required equity buyback/(issuance) (£m)	(547)	(557)	(551) to (544)	(412) to (677)	(547) to (547)	(284) to (810)	(228) to (867)	(545) to (549)

Table 4 Financeability metrics for the actual company (6.5% CoE): Likely Outturn Assessment

	CoE 6.5%	No inflation- linked debt	Interest Rate ±1%	CPIH ±1%	RPI-CPI wedge ±0.5% ***	Totex Perf ± 10%	RoRE ±2%	Inflation linked debt ±5%
Net debt/RAV (%)	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
FFO interest cover, incl. accretions (x)*	4.9	4.9	4.0 - 5.5	4.9 - 4.9	4.9 - 4.9	5.0 - 4.8	5.5 - 4.2	4.8 - 4.9
FFO interest cover, excl. accretions (x)*	4.9	4.9	4.0 - 5.5	4.9 - 4.9	4.9 - 4.9	5.0 - 4.8	5.5 - 4.2	4.6 - 4.9
AICR (or PMICR) (x)*	2.01	2.01	1.68 - 2.20	2.20 - 2.01	2.01 - 2.01	2.01 - 2.01	2.01 - 2.01	2.01 - 2.07
Notional PMICR (x)	2.95	2.95	2.43 - 3.28	3.28 - 3.40	3.40 - 2.48	2.48 - 2.95	2.95 - 2.95	2.95 - 3.02
FFO (cash interest) /net debt (%)*	11.4%	11.4%	10.9% -11.5%	11.4% -11.4%	11.4% -11.4%	11.7% -11.1%	13.4% - 9.5%	11.3% -11.4%
FFO (interest expense)/net debt (%)*	11.4%	11.4%	10.9% -11.5%	11.4% -11.4%	11.4% -11.4%	11.7% -11.1%	13.4% - 9.5%	11.4% -11.4%
RCF/net debt (%)	11.4%	11.4%	10.9% -11.5%	11.4% -11.4%	11.4% -11.4%	11.7% -11.1%	13.4% - 9.5%	11.4% -11.4%
EBITDA/RAV	10.9%	10.9%	11.0% -10.7%	10.9% -10.9%	10.9% -10.9%	11.1% -10.6%	12.6% - 9.2%	10.9% -10.9%
RoRE	15.0%	15.0%	14.3% -15.2%	15.2% -14.9%	15.0% -15.0%	15.6% -14.5%	18.2% -11.8%	14.8% -15.0%
Dividend Cover	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Dividend/RegEquity	0.0%	0.0%	0.0% - 0.0%	0.0% - 0.0%	0.0% - 0.0%	0.0% - 0.0%	0.0% - 0.0%	0.0% - 0.0%
Implied Dividend yield	(1.3%)	(1.3%)	(2.1%)-(1.1%)	0.2% -(2.7%)	(1.3%)-(1.3%)	1.3% -(3.7%)	1.9% -(4.5%)	(1.3%)-(1.3%)
Required equity buyback/(issuance) (£m)	(127)	(127)	(207) to (107)	16 to (264)	(127) to (127)	126 to (380)	192 to (446)	(134) to (127)

Appendix B Cost of Equity Summary from SHE-T's RIIO-2 SSC Response

The Total Market Return (TMR) proposed by Ofgem is not reflective of observable evidence, relies too much on survey evidence and incorporates a *novel* approach to adjusting for inflation. The evidence presented by Ofgem to justify its range for the CPIH TMR does not reflect the evidence presented by NERA⁷³ on behalf of the ENA Finance Working Group. This is set out by NERA in their review of the UKRN study, in particular, the analysis by Mason, Pickford, Wright (MPW)⁷⁴ and the TMR recommendations they made. MPW recommend that CPI should be used as the reference measure of inflation when analysing historical real market returns going back to 1990. MPW recommend using CPI inflation published by the Bank of England (BoE) Millennium dataset. MPW estimate a TMR of 6-7% (CPI-real) based on long-run realised returns. The lower bound reflects a 1% downward adjustment to the simple arithmetic mean of realised returns (due to the return predictability at long horizons). NERA however show that this is not a reliable CPI dataset which is also acknowledged by the ONS and academic research. Historical TMR should be calculating using the *official* RPI inflation measure. NERA also note that the MPW conclusion around predictability of returns is *not well founded* and that the CMA's position on the NIE (2014) case is more robust. The *novel* approach adopted reduces the TMR by 1%, which has been noted by Moody's⁷⁵ in their analysis of RIIO-2.

Ofgem's reference to measuring TMR in USD terms should not be relied upon as evidence in support of UKRN's approach to deflating historical TMR in CPI terms. Ofgem argues that using CPI as the preferred deflation technique enhances the comparability of UK real market returns in GBP with the UK returns converted to USD-based returns. This method is supposed to account for changes in the nominal exchange rate and differences in UK and US inflation. Ofgem uses the theory of Purchasing Power Parity (PPP) to predict that changes in the nominal rate will exactly offset differentials in inflation rates between the two countries. We believe that the comparability of real returns is actually driven more by the choice of the averaging period than the inflation index. When considering this, the implied TMR is not consistent with the range per the UKRN study of 6-7% TMR CPI-real⁷⁶. Additionally, PPP depends on other factors which are not explored in Ofgem's consultation document and are not supportive of their contention.

Ofgem should adjust their TMR estimate by 100 to 200 bps through moving to arithmetic from geometric returns in line with evidence and regulatory precedent. The UKRN study argues that the adjustment to move from geometric to arithmetic returns does not need to be as large (as the upper end of the 100 to 200bps range) when regulators set returns over a long (10 year) horizon. Ofgem has continued to argue throughout its consultation document that it is setting returns for a relatively short period over 5 years and therefore using short term data is more appropriate. We do not believe this is appropriate based on the evidence of selecting between arithmetic and geometric returns and the related adjustment for setting the allowed equity return for a price control. Oxera⁷⁷ reviewed this position and contend that UKRN's reasoning is not transparent and is contradicted by academic

⁷³ NERA report, Review of UKRN Report Recommendations on TMR, Prepared for the ENA (Nov 2018)

⁷⁴ We have excluded Burns from the reference to this particular point as he disagreed with the other authors on a number of areas as set out in the UKRN study.

⁷⁵ Moody's, Credit quality likely to weaken in RIIO-GD2 regulatory period (14 Feb 2019)

⁷⁶ Ofgem's reasoning is that if real returns measured in different currencies are similar and PPP holds in the long run, then the 'back-cast' index of historical CPI is an unbiased estimate of the unknown true historical CPI. This reasoning implies that the old DMS index (which is not based on CPI) is a more appropriate measure of inflation. Therefore using CPI as the preferred historical deflation technique is not supported by the cross-check against returns in USD terms.

⁷⁷ Oxera report, Review of Ofgem's initial cost of equity proposals for RIIO-2, Prepared for the ENA, (May 2018)

literature, which is supportive of placing more weight on arithmetic averages for setting equity market returns. This is consistent with an earlier report prepared for the ENA by Oxera which also supported placing more weight on the upper end of the adjustment when moving to arithmetic means⁷⁸. NERA⁷⁹ also analysed the issue of arithmetic vs geometric means for the ENA and contend that more weight should be applied to arithmetic vs geometric averages when estimating the TMR referencing the CMA position on this area (as well as reference to the CMA review of NIE in 2014).

When estimating the equity beta for a regulated network, care must be taken to use observable, reliable and consistent data that is in line with regulatory precedent. The reports published by Ofgem from Indepen⁸⁰ and Dr Robertson⁸¹ outline a number of points but appear to contradict one another in places. For example, Dr Robertson refers to using longer term data series unless there are structural breaks while Indepen note there is a “*structural break*” but this should be ignored as betas are mean reverting. There appears to be no clear conclusion from either of these studies in relation to use of OLS or GARCH, time period or frequency, or indeed sample size (UK or international comparators).

Ofgem’s approach appears to be more a matter of convenience than statistical significance, where they seem to overrule some of the recommendations from their own studies in an attempt to disagree with the ENA Finance Working Group studies. Ofgem elect to rely on long term beta estimates despite both of their studies and the study undertaken by Oxera⁸² advocating for shorter periods if there is evidence of a structural break which Indepen agree there has been. Ofgem seem to prefer selecting between high and low frequency data, sighting a trade-off between noise and signal as the reason, but there appears to be no justification for this conclusion. Ofgem argue that longer term periods are more appropriate, but simultaneously rule out using international comparators without quantifying why these are inappropriate benchmarks to be considered. Oxera⁸³ have provided a comprehensive study on beta whereby they address the points raised by Ofgem through their own studies.

Ofgem has incorrectly reflected the de and re levering of the equity beta for differences in actual observed betas, gearing and notional gearing. The ENA commissioned Oxera⁸⁴ to review levering of the equity beta and they found that Ofgem’s adjusted gearing ratio is not reliable. Oxera identified a number of other errors that Ofgem has made in calculating the equity beta including its approach to calculating a debt beta in the range; the use of GARCH modelling; the selection of appropriate data sample; and the length and frequency of beta estimates. This report provides evidence that Ofgem has miscalculated the beta and failed to rely on appropriate and valuable evidence.

Ofgem has incorrectly interpreted nominal estimated returns from asset managers and financial organisations. Oxera⁸⁵ have analysed this information and provided a report outlining why Ofgem’s analysis is incorrect. Ofgem has misinterpreted the basis for which these estimates are provided publicly. The estimates are heavily regulated by the Financial Conduct Authority (FCA) and therefore cannot be relied upon as a guide to future returns as set out in the FCA Code of Business.

⁷⁸ Oxera report, The cost of equity for RIIO-2 – A review of the evidence, Prepared for the ENA, (Feb 2018)

⁷⁹ NERA report, Review of UKRN Report Recommendations on TMR, Prepared for the ENA (Nov 2018)

⁸⁰ Indepen report, Ofgem Beta Study – RIIO-2 Main Report (Dec 2018)

⁸¹ Dr Robertson paper, Estimating Beta (April 2018)

⁸² Oxera report, The cost of equity for RIIO-2 – A review of the evidence, Prepared for the ENA, (Feb 2018)

⁸³ Oxera report, Review of RIIO-2 finance issues – The estimation of beta and gearing, Prepared for the ENA (March 2019)

⁸⁴ Ibid

⁸⁵ Oxera report, Review of RIIO-2 finance issues – Rates of return used by investment managers (March 2019)

Additionally, this evidence can be classed as survey evidence in that it is not as observable as actual outturn performance or indeed expectations of investors. Oxera highlighted that academic research refers to this evidence as less reliable, for example, Brealey, Myers, and Allen (2016) state *“Do not trust anyone who claims to know what returns investors expect.”*. The CMA has also commented on the empirical reliability of survey evidence where they *“have preferred to consider underlying data on which survey respondents presumably base their views”*. Survey evidence therefore suffers from significant empirical drawbacks and less weight should be given to it. Oxera note that even if this evidence could be relied upon, Ofgem need to adjust nominal returns from the geometric to the arithmetic average leading to a significant uplift in the nominal TMR which is more in line with Oxera’s previous evidence⁸⁶.

Ofgem has relied upon weak evidence using the Dividend Growth Model (DGM). In conjunction with CEPA and with reference to Ofwat and the CAA, Ofgem identify a nominal TMR using CEPA’s DGM approach between 7.4% to 8%. Oxera set out in February 2018⁸⁷, that when using the BoE’s DGM they calculate an RPI-real TMR of 7.5%. As set out in that report, Oxera do not place the full weight of evidence on the BoE DGM and recommend that the TMR be set 100 bps below between 6% and 6.5% as set out in Table 1. Oxera note that there is a strong negative correlation between the Risk Free Rate (RfR) and the Equity Risk Premium (ERP) meaning lower end DGMs are theoretically flawed. Furthermore, NERA⁸⁸ set out in their analysis of CEPA’s methodology specifically where the DGM calculation is incorrect in a report prepared for the ENA (Nov 2018). In their report they correct for CEPA’s errors in their DGM which supports a forward-looking TMR of 6.5 to 7.1% (RPI-real). Corrections NERA make include reference to use of UK GDP as a proxy for long run dividend growth compared to analyst forecasts or global GDP (noting 70% of UK companies derive earnings overseas). NERA also note that there is no evidence that the TMR is reducing over time and mainstream evidence supports a broadly constant TMR.

When considering other robust and reliable cross checks in calculating the cost of equity, Oxera have provided compelling academic evidence relating to the Asset Risk Premium (ARP) and the Debt Risk Premium (DRP) of regulated networks. Oxera⁸⁹ analyse the relationship between the ARP and DRP as an appropriate cross check for estimating the cost of equity for RIIO-2. Due to the security ranking of debt over equity, the rule must hold that the premium to equity holders is higher than for debt holders. In providing their analysis, Oxera empirically reviews evidence using UK regulatory precedents, bonds issued by UK utilities and regulated entities and bonds issued by US utilities. Oxera note in their analysis that Ofgem has understated the asset risk premium differential to the debt risk premium by a significant amount from Ofgem’s point estimate of 4.5% CPI-real (before applying the 50 bps downward adjustment for allowed vs expected returns). **Considering all evidence presented and where weight of evidence should be reflected, it is clear that Ofgem has materially understated the cost of equity for RIIO-2.**

⁸⁶ Oxera report, The cost of equity for RIIO-2 – A review of the evidence, Prepared for the ENA, (Feb 2018)

⁸⁷ Ibid.

⁸⁸ NERA report, Further evidence on the TMR, Prepared for the ENA (Nov 2018)

⁸⁹ Oxera report, Review of RIIO-2 finance issues – Asset and debt risk premiums, Prepared for the ENA (March 2019)

