
RIO-T2 cost of debt and financeability assessment

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Scottish Hydro Electric Transmission
plc

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Strictly confidential

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Executive summary

Scottish Hydro Electric Transmission plc (SHE-T) has asked Oxera Consulting LLP (Oxera) to provide scenario analysis of different options for the cost of debt index against the forecast cost of debt for SHE-T in RIIO-2. We have also undertaken an assessment of the financeability of the SHE-T business plan.

The main findings of the analysis are as follows.

- Implementing a simple 15-year trailing average would provide a small increase in funding relative to the 11–15 year trombone average and is less likely to under-fund the ‘all-in’ cost of debt for SHE-T over RIIO-T2.
- Under a scenario where the SHE-T embedded cost of debt is increased to reflect the embedded debt costs that would have been incurred by a notional company that had issued longer term debt (20 year tenor) in RIIO-T1, the 11–15 year trombone average underfunds the ‘all-in’ cost of debt in both the base case and the high interest rate scenario.
- The credit metrics for the notional company using Ofgem’s working assumptions are lower than the thresholds indicated by credit rating agencies for a Baa1/BBB+ rating, which is the rating targeted by SHE-T. Specifically, our modelling of the average AICR over RIIO-2 on a notional company basis, at around 1.18x, is below Moody’s reported guidance threshold for a Baa1 rating of 1.4x.
- Given the size of the SHE-T capital programme in RIIO-2 and the corresponding forecast growth in the RAV, net equity issuance of £328m would be required to maintain gearing at the notional level of 60% throughout RIIO-2.
- We have assessed the sensitivity of the results to the dividend yield assumption. Assuming zero dividend yields in RIIO-2 has no effect on interest cover ratios. Although under this scenario no new equity is required on average over RIIO-2, the weighting of the CAPEX programme to the early years of RIIO-2 will still require equity to be issued early on in the control period, offset by share repurchases later in the control to maintain gearing at 60%.¹
- The switch from RPI to CPIH indexation is creating a short-term improvement in credit metrics, but masks a significant weakness underlying these metrics compared to the scenario in which RPI indexation is retained. If the basis of indexation had remained RPI, the AICR of the notional company using SHE-T’s financial model for the average of the RIIO-2 period would be 0.84x, which is considerably below the guidance thresholds for an investment-grade credit rating.
- The pressures on financeability can be reduced by increasing the allowance for the cost of equity to SHE-T’s business plan assumption of 6.9% (CPIH-real). This results in a significant improvement in the AICR to 1.61x, which is consistent with a Moody’s Baa1 rating.

¹ In both dividend yield scenarios, this assumes that an increase in notional gearing from 55% to 60% is effected in the last year of RIIO-1. If, instead, the increase in notional gearing was experienced in the first year of RIIO-2, then the substitution of equity financing by debt in that year as a ‘step change’, would imply an equity buyback in that year of £181m.

1 Introduction

Scottish Hydro Electric Transmission plc (SHE-T) has asked Oxera Consulting LLP (Oxera) to provide scenario analysis of different options for the cost of debt index against the forecast cost of debt for SHE-T in RIIO-2. We have also undertaken an assessment of the financeability of the SHE-T business plan.

The report is structured as follows.

- Section 2 provides scenario analysis of different options for the cost of debt index against the forecast cost of debt for SHE-T in RIIO-2.
 - Section 3 provides our review of the financeability of the SHE-T business plan, on a notional company basis.
 - Appendix A1 presents supplementary data relating to the cost of debt analysis.
 - Appendix A2 provides supplementary data relating to the financeability analysis.
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2 Cost of debt assessment

This section provides scenario analysis of different options for the cost of debt index against the forecast cost of debt for SHE-T in RIIO-2.

The 11–15-year trombone average proposed in the Sector Specific Methodology Decision (SSMD) document² is modelled under the base case, high, and low interest rate scenarios for RIIO-T2. Alternative specifications of the cost of debt index are also modelled. These allowances are compared against the forecasts of the ‘all-in’ cost of debt for SHE-T.

The ‘all-in’ cost of debt is comprised of debt raised prior to RIIO-2, new debt issued during RIIO-2, and the associated costs (i.e. issuance costs, cost of carry, the premium for issuing nominal vs real debt and the premium for issuing bonds rated BBB+ instead of issuing A/BBB simple average bonds).

The main findings from our analysis of the cost of debt are the following.

- Implementing a simple 15-year trailing average would provide a small increase in funding relative to the 11–15 year trombone average and is less likely to under-fund the ‘all-in’ cost of debt for SHE-T over RIIO-T2.
- Under a scenario where the SHE-T embedded cost of debt is increased by a term premium to reflect the embedded debt costs that would have been incurred by a notional company that had issued longer term debt in RIIO-T1, the 11–15 year trombone average underfunds the ‘all-in’ cost of debt in both the base case and the high interest rate scenario.

This section is structured as follows:

- Section 2.1 describes the allowed cost of debt mechanisms used in RIIO-T1 and those proposed for RIIO-T2 by Ofgem. We also outline Ofgem’s principles for setting the cost of debt indexation mechanism.
- Section 2.2 describes the potential cost of debt mechanisms assessed in this report.
- Section 2.3 details the methodology used to model and evaluate the debt mechanisms outlined in section 2.2.
- Sections 2.4, 2.5 and 2.6 summarise the findings of our quantitative and qualitative debt assessment against Ofgem’s cost of debt principles.
- Section 2.7 provides a conclusion.

2.1 Cost of debt allowance under RIIO-T1 and proposals for RIIO-T2

2.1.1 Cost of debt allowance

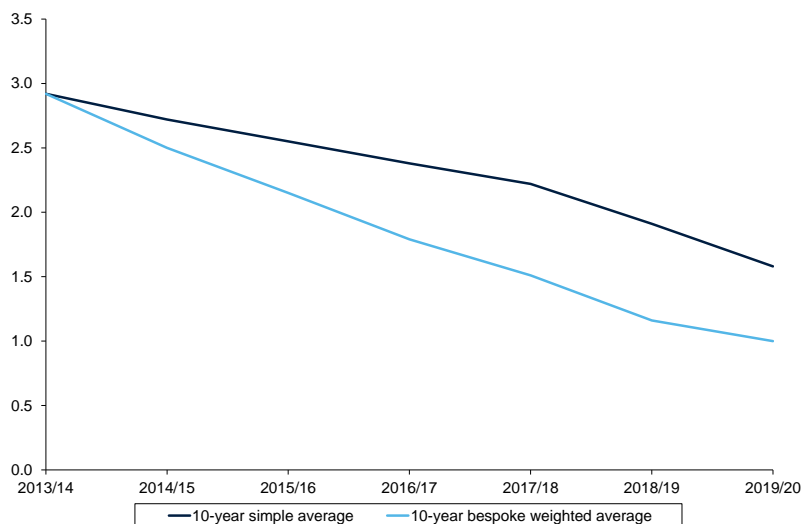
During RIIO-T1, Ofgem used two cost of debt indexation mechanisms: a 10-year simple trailing average; and a 10-year ‘bespoke weighted’ trailing average. The former was used for Scottish Power Transmission Limited (SPTL) and National Grid Electricity Transmission (NGET), while the latter was used for SHE-T (see Figure 2.1).

The reasoning behind SHE-T having a ‘bespoke weighted’ trailing average was to reflect the substantial growth in SHE-T’s RAV over RIIO-T1. It was considered that this bespoke weighting would more accurately reflect the SHE-

² Ofgem (2019), ‘RIIO-2 Sector Specific Methodology Decision – Finance’, 24 May.

T cost of debt due to the company's greater reliance on new debt and significant RAV growth.³

Figure 2.1 Ofgem 10-year simple average cost of debt and 10-year bespoke weighted average cost of debt during RIIO-T1, RPI deflated (%)



Source: Ofgem cost of debt indexation model.

For RIIO-T2, Ofgem has proposed using an 11–15-year trombone simple average for the cost of debt indexation mechanism.⁴ This assumption is for illustrative purposes only, to facilitate business plan submissions. Post-business plan submission, when more information is available, Ofgem aims to calibrate the index so that it represents efficient debt costs across the sector.

On potential calibration of the cost of debt allowance, Ofgem notes the following:⁵

Our intention is to broadly match debt allowances with sector expected efficient debt costs for RIIO-2 through the calibration of the index. There are a number of ways the index could be calibrated to meet this aim, including adjusting the trailing average period, changing the specific iBoxx indices referenced or the weightings of the indices used, and/or providing a 'wedge' for expected sector embedded debt cost differential to the index. The calibration will consider Business Plan information regarding expected volume of new debt to be raised in RIIO-2 and will also consider the efficiency of sector embedded debt. Calibration may exclude inefficiently raised debt and/or complex, unusual or opaque products that would not be contemplated for the notional company.

2.1.2 Principles for assessing the cost of debt indexation mechanism

In the RIIO-2 framework consultation, Ofgem highlighted the following principles for setting the cost of debt indexation mechanism in RIIO-2.⁶

1. The mechanism should allow for recovery of efficiently incurred cost of debt (i.e. consumers should pay only an efficient cost of debt).

³ RIIO-T1 (2012), 'Initial Proposals for SP Transmission Ltd and SHE-T', 20 March, p. 49, para. 5.44.

⁴ Ofgem (2018), 'RIIO-2 Framework Consultation', March, p. 119, para. 12.16.

⁵ Ofgem (2019), 'RIIO-2 Sector Specific Methodology – Core document', 24 May, para. 12.15.

⁶ Ofgem (2018), 'RIIO-2 Framework Consultation', March, p. 78, para. 7.11.

2. The indexation mechanism should incentivise companies to obtain the lowest cost financing without incurring undue risk.
3. The mechanism should be simple and transparent while providing adequate protection for consumers.

This report assesses the potential cost of debt mechanisms against these Ofgem principles.

2.2 Potential cost of debt mechanisms

The cost of debt mechanisms modelled are described in the table below. 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 the target and current SHE-T credit rating of BBB+/Baa1, a factor that is likely to contribute to underfunding of the cost of debt.

Table 2.1 Potential cost of debt indexation mechanisms in RIIO-T2

Cost of debt mechanism	Description
RIIO-T2 trombone	11–15-year trombone starting from November 2011
15-year trailing	15-year trailing average starting from November 2006
Trombone 16–20-year average	16–20-year trombone starting from November 2005
ED1 trombone	10–20-year trombone starting from November 2002 (assumes continuation of ED1 trombone into RIIO-T2)
20-year trailing	20-year trailing average starting from November 2001

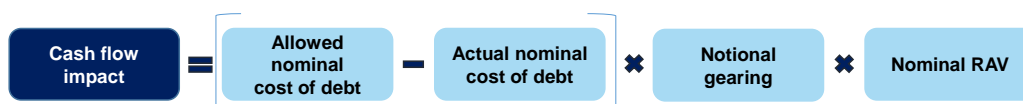
Source: Oxera analysis.

2.3 Methodology used to assess the cost of debt mechanisms

In the draft business plan for RIIO-T2, SHE-T is proposing a 15-year trailing average of yields on A/BBB iBoxx non-financial corporate bond indices.⁷

We have assessed the impact of the proposed SHE-T cost of debt mechanism against a range of alternative mechanisms under several scenarios of future interest rate. The impact is presented as the forecast £m difference in value (i.e. cost of debt * notional gearing * RAV) between the expected allowed and actual costs of debt (as projected in the SHE-T business plan), representing an assessment against the first Ofgem principle; namely, the recovery of efficiently incurred cost of debt (see Figure 2.2).

Figure 2.2 Measuring the recovery of debt costs (£m, nominal terms)



Note: The expected allowed cost of debt is based on interest rate projections and alternative cost of debt indexation mechanisms. The actual cost of debt represents the bundled effective interest rate of the embedded and new debt. Both cost of debt rates are expressed in nominal terms. The notional gearing working assumption is in line with the Ofgem methodology (i.e. 60% for RIIO-T2). Nominal RAV is estimated as the simple average of the opening RAV and NPV-neutral closing RAV. The latter is estimated using the relevant one-year WACC discounting factor.

⁷ For the cost of debt assessment, SHE-T provided Oxera with the business plan, which included the embedded cost of debt along with the planned profile of refinancing and issuance of new debt to finance CAPEX in RIIO-T2.

Source: Oxera.

The expected allowed cost of debt is based on interest rate projections that are taken as inputs into the various cost of debt indexation mechanisms. The actual cost of debt is based on the cost of embedded debt and the projected cost of new debt raised in RIIO-T2.⁸ It is estimated as follows:

$$\text{Actual CoD} = (\text{embedded interest} + \text{interest on new debt}) / \text{total net debt}$$

The interest rate on cash and cash equivalents is assumed to be zero.⁹

In forecasting the cost of debt indexation mechanisms, the following steps are undertaken.

1. The forward curve for 10-year UK gilts is calculated, with a cut-off date of 30 April 2019.
2. The spreads of the iBoxx 10-year+ A and 10-year+ BBB non-financial corporate indices over 10-year UK gilts are calculated for the past year. The average tenor of the bonds in these indices is between 17-19 years. The simple average of these spreads is then taken to estimate the spread applicable for the SHE-T credit rating of BBB+.¹⁰
3. The simple average spread from Step 2 is combined with the forward curve from Step 1 to estimate the future spot cost of debt.
4. This forecast of the spot or prevailing cost of debt—and, where possible, the actual outturn data of the iBoxx 10-year+ A and 10-year+ BBB non-financial corporate indices—is used to forecast the cost of debt indexation mechanisms.

It is our understanding that Ofgem used the same approach to forecast the cost of debt indexation mechanism in the RIIO-2 SSMD.¹¹

We have also tested the sensitivity of our results to alternative scenarios (high and low interest rate scenarios) for future interest rates. We did this by applying deviations to our forward curve. The high and low scenarios assume a ± 25 bp increase in interest rates in each year relative to the forward curve starting from April 2020 up to the end of RIIO-T2.

This allows us to see the impact of scenarios when debt yields do not follow the same path as predicted by the forward curve. The results of our forecast for the spot cost of debt and the proposals for RIIO-T2 are shown below. These results are for the base scenario based on the predicted nominal forward curve.

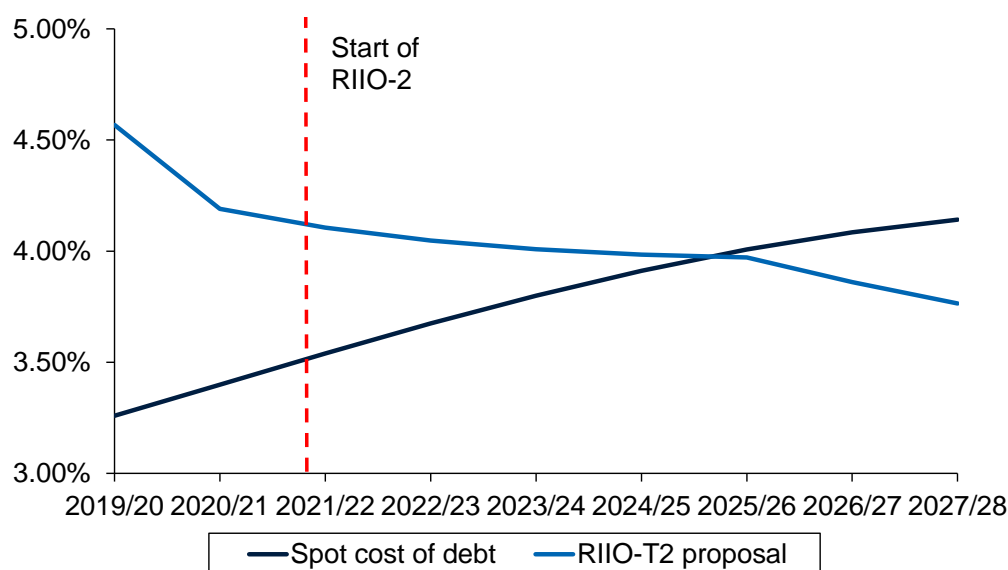
⁸ The issuance profile of new debt is based on data provided to us from SSE. We assume that the new debt will be issued at the prevailing market rate based on our forward curve analysis described above.

⁹ This is in line with the SHE-T business plan assumption for RIIO-T2.

¹⁰ As noted later in this report, this is not exactly aligned with the [target and/or actual] SHE-T credit rating of BBB+ [or Baa1], which is a factor likely to contribute to underfunding of the cost of debt.

¹¹ For Ofgem's forecast, see Ofgem (2019), 'RIIO-2 Sector Specific Methodology Decision – Finance,' 24 May, Table 5.

Figure 2.3 Results of forecast for the spot cost of debt and the proposals for RIIO-T2 in the base case scenario



Source: Oxera analysis.

We see from Figure 2.3 that the prevailing or spot cost of debt is forecast to be above the proposed 11–15-year trombone index by the end of RIIO-T2.

In addition to our quantitative analysis, we have undertaken a qualitative assessment of the various debt indexation mechanisms against Ofgem's stated principles.

2.4 Assessment against principle 1: funding of efficient cost of debt

The impacts on cash flows (£m) in RIIO-T2 under the cost of debt mechanisms in each future interest rate scenario are presented in Figure 2.4 and Table 2.3 below. Positive values indicate that the allowance is forecast to be above the actual cost of debt; negative values indicate that SHE-T is forecast to be underfunded relative to efficiently incurred debt costs.¹²

We note that the analysis below takes into account the following costs associated with issuing debt.

1. **New issue premium**—the iBoxx indices are based on yields derived from bonds trading in the secondary market, whereas new issues may offer investors a premium over the prevailing secondary market rates.
2. **Cost of carry**—debt is typically raised in tranches, with cash held on deposit until needed for CAPEX. This creates a cost of carrying the debt on the balance sheet until the cost of debt allowance is increased in line with RAV growth.
3. **Premium on nominal debt**—we understand from SHE-T that the cost of debt allowance does not fully compensate for the yield spread between issuing nominal and real debt.

¹² For an annual comparison between the actual and allowed cost of debt under the base interest rate scenario, see Appendix A1.

4. **BBB+ versus A/BBB simple average**—the SHE-T credit rating of BBB+ is lower than the simple average of A/BBB, which would be expected to lead to higher yields than the simple average.

SHE-T provided us with the following ranges for these costs (Table 2.2).

Table 2.2 Costs associated with issuing debt

Costs of issuing debt	Basis points (bp)
New issue premium	20
Cost of carry	15–20
Premium on nominal debt	15
Differential on BBB+ debt versus A/BBB index	10
Total	60–65

Source: Cost assumptions provided by SHE-T.

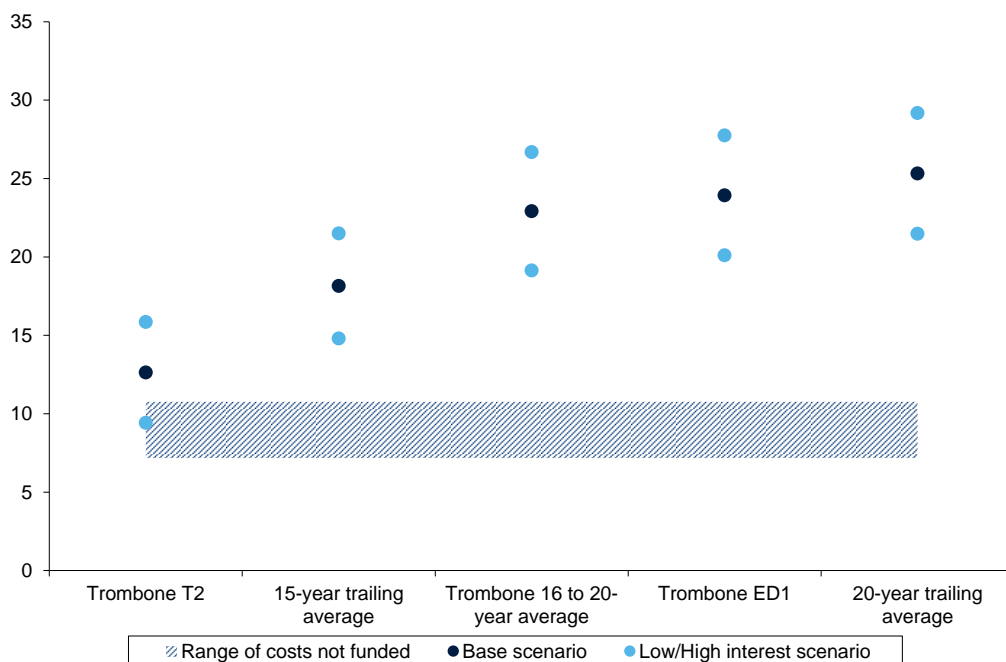
Based on the information provided by SHE-T, we have assumed a range of 40–60bp for costs not covered by the cost of debt mechanism. We note that this does not include any allowance for bank or rating agency fees.

Figure 2.4 below shows the net impacts on annual cash flows of various cost of debt mechanisms relative to the forecast actual cost of debt. It compares these to the range of 40–60bp for costs not covered by the cost of debt mechanism. A scenario outcome in or below the ‘costs not funded range’ indicates that allowed debt costs would be insufficient to recover the actual cost of debt.

Figure 2.4 shows that Ofgem’s proposal to apply an 11–15-year trombone average to calculate the cost of debt allowance only just covers the forecast all-in cost of debt for SHE-T in RIIO-2 once the costs of issuing new long-term debt at the SHE-T Baa1/BBB+ credit rating are accounted for.

Under a scenario where interest rates increase faster than the current market-derived forecast, an 11–15-year trombone average will underfund SHE-T’s all-in cost of debt. Implementing a simple 15-year-trailing average would provide a small increase in funding relative to the 11–15-year trombone average, and is less likely to underfund the all-in cost of debt for SHE-T over RIIO-T2.

Figure 2.4 Average annual cash flow impact in RIIO-2 under different cost of debt mechanisms (£m nominal)



Note: The lower bound of the range corresponds to the cash flow impact (£m) under the high interest rate scenario, while the upper bound reflects the cash flow impact in a low interest rate scenario. The midpoint of the range is the base-case scenario (i.e. no deviation from the nominal forward rates). The costs not funded are assumed to equal 40–60bp, and represent the new issue premium; the cost of carry; a premium for issuing nominal debt relative to index-linked debt; issuing at BBB+ yields that are higher than the average of A and BBB yields.

Source: Oxera analysis.

Table 2.3 presents the cash flow impact for the potential cost of debt mechanisms net of these other costs. The RIIO-2 Trombone under-funds the SHE-T ‘all-in’ cost of debt in the high interest rate scenario by approximately £1m when costs not covered by the cost of debt mechanism are included in the analysis.

Table 2.3 Average annual cash flow impact in RIIO-2 under different cost of debt mechanisms net of costs not covered by the cost of debt mechanism (40-60bp) (£m nominal)

Cost of debt mechanism	Base case	Low interest rate scenario	High interest rate scenario
Trombone T2	5–9	2–5	(1)–2
15-year trailing average	11–14	7–11	4–8
Trombone 16-20 year average	16-20	12-16	8-12
Trombone ED1	17–21	13–17	9–13
20-year trailing average	18–22	15–18	11–14

Note: The impact on cash flow is reported on a per annum nominal (£m) basis. The low and high interest rate scenarios reflect the annual cash flow impact in RIIO-2, subject to a ±25bp deviation from the nominal forward curve.

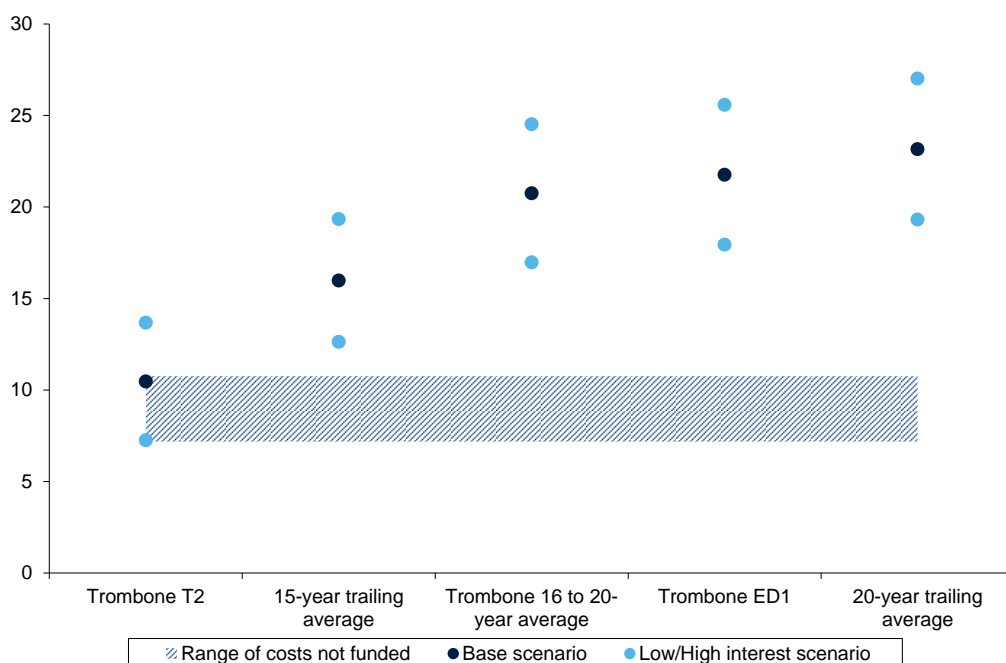
The cost of debt analysis presented above is based on the actual cost of the debt already raised by SHE-T. The average tenor of debt issued by SHE-T in RIIO-T1 is around 10 years, aligned with the averaging period of the RIIO-T1 index. We have also modelled a scenario where the SHE-T embedded cost of

debt is replaced by the embedded debt costs that would have been incurred by a notional company that had issued longer term debt (20 year tenor) in RIIO-T1. This is modelled by increasing the SHE-T embedded cost of debt by the difference between the real gilt yields of 10 year maturity and 20 year maturity.

The spread between 20yr and 10yr yields estimated over RIIO-T1 is approximately 30bp.¹³ Figure 2.5 shows the cash flow impact of the various cost of debt mechanisms with the embedded cost of debt in RIIO-T2 adjusted upwards by 30bp.

Under this scenario, Ofgem’s proposal to apply an 11–15-year trombone average to calculate the cost of debt allowance does not cover the forecast all-in cost of debt in RIIO-T2 in either the base case or the high interest rate scenarios. As before, implementing a simple 15–year-trailing average would provide a small increase in funding relative to the 11–15-year trombone average, and is less likely to underfund the all-in cost of debt over RIIO-T2.

Figure 2.5 Average annual cash flow impact in RIIO-2 under different cost of debt mechanisms (£m nominal) with term premium



SHE-T considers the term premium impact of the embedded debt to be 60bp (instead of 30bp). For illustration, we have modelled this scenario where the SHE-T embedded cost of debt is increased by 60bp in Appendix 3.4A1.3.

2.5 Assessment against principle 2: incentivise companies to obtain the lowest cost financing without incurring undue risk

Ofgem’s principles mean that in addition to considering the recovery of the efficiently incurred cost of debt, it is important to consider how the cost of debt mechanism affects networks’ incentives to issue debt.

The way the cost of debt allowance is set may influence the way the company issues debt. The company is incentivised to adopt a financing strategy that

¹³ The spread is estimated as the difference between the average real UK gilt yields of 10 and 20 year maturity where the averaging period is of eight years in line with the duration of the RIIO-1 price control (from May 2011 to April 2019).

achieves a lower cost of debt than the allowance. When issuing new debt, a company will consider the number of years over which the cost of debt allowance is averaged. Under the current 10-year average applied in RIIO-T1, the company knows that the yields at the time when new debt is raised will remain in the index for only ten years. Issuing debt with a term longer than ten years therefore exposes the company to the risk that, after ten years, the index will not reflect the cost of this debt. This may encourage the issuance of comparatively short-term bonds more aligned with the averaging period of the cost of debt allowance.

The working assumption proposed by Ofgem in the RIIO-T2 sector methodology decision is to use an 11–15-year trombone average. The yields on the market benchmark for bonds issued in RIIO-2 will remain in the cost of debt allowance for 15 years, which may encourage the issuance of longer-term bonds.

2.6 Assessment against principle 3: the mechanism should be simple and transparent, and provide adequate protection for consumers

All the mechanisms considered in this report are either simple or trombone trailing averages. They are therefore similar in terms of simplicity and transparency, although, arguably, the approach of a simple trailing average is slightly more simple and transparent.

All the mechanisms expose consumers to changes in interest rates during RIIO-T2. The indices that are least volatile and therefore least sensitive to changes in interest rates during T2 are those that have longer averaging periods.

2.7 Conclusions

The main findings from our analysis of the cost of debt are the following.

- Implementing a simple 15-year trailing average would provide a small increase in funding relative to the 11–15 year trombone average and is less likely to under-fund the ‘all-in’ cost of debt for SHE-T over RIIO-T2.
- Under a scenario where the SHE-T embedded cost of debt is increased to reflect the embedded debt costs that would have been incurred by a notional company that had issued longer term debt (20 year tenor) in RIIO-T1, the 11-15 year trombone average underfunds the ‘all-in’ cost of debt in both the base case and the high interest rate scenario.

Moreover, moving to a longer averaging period may encourage the issuance of longer-term bonds.

3 Financeability assessment

This section provides our review of the financeability of the SHE-T business plan and Ofgem's approach to financeability assessment, as described in the SSMD document of 24 May¹⁴ and the financeability guidance document of 26 March.¹⁵

We assess the financeability of the notional company by assuming that the allowed cost of debt equals the actual cost of debt, which is modelled using Ofgem's proposed 11–15-year trombone. (However, as discussed in the previous section, the proposed 11–15-year trombone average may not be sufficient to cover the actual cost of debt plus issuance costs across all interest rate scenarios.¹⁶) We assume that net debt to RAV remains constant at 60% throughout RIIO-2.

We use the SHE-T financial model under a base case scenario, informed by Ofgem's working assumptions, and we consider the impact on the financeability metrics when these assumptions are varied. We discuss the cash-flow impact of the transition to CPIH. We comment on Ofgem's proposed tools for addressing financeability. Finally, we assess Ofgem's proposed financeability metrics, relative to those of the credit rating agencies.

The main findings from our analysis of financeability are the following.

- Key financeability metrics for the notional company leave little headroom above the minimum investment-grade threshold guidance of the credit rating agencies. In particular, we note that the modelling of the AICR (or PMICR) on a notional company basis, at around 1.18x, is below Fitch's guidance threshold of 1.5x to 1.75x for BBB and A, respectively. It is also lower than the guidance AICR threshold range for an A rating by Moody's (i.e. 2.0–3.5x), and at or below the lower end of the guidance threshold ranges for a Baa rating that have been variously reported by Moody's (i.e. 1.2–1.4x and 1.4–2.0x).
- Given the size of the SHE-T capital programme in RIIO-2 and the corresponding forecast growth in the RAV, net equity issuance of £328m would be required to maintain gearing at the notional level of 60% throughout RIIO-2.
- We have assessed the sensitivity of the dividend yield assumption. Assuming zero dividend yields in RIIO-2 has no effect on interest cover ratios. Although under this scenario no new equity is required on average over RIIO-2, the weighting of the CAPEX programme to the early years of RIIO-2 will still require equity to be issued early on in the control period, offset by share repurchases later in the control to maintain gearing at 60%.¹⁷
- Changes to the asset life assumption are ineffective in materially alleviating pressure on gearing or interest coverage ratios.¹⁸ Revising the capitalisation

¹⁴ Ofgem (2019), 'RIIO-2 Sector Specific Methodology Decision – Finance', 24 May.

¹⁵ Ofgem (2019), 'Financeability Assessment for RIIO-2: Further Information', 26 March.

¹⁶ The impact of including transactions costs would be to reduce the credit ratios by increasing the interest expense.

¹⁷ In both dividend yield scenarios, this assumes that an increase in notional gearing from 55% to 60% is effected in the last year of RIIO-1. If, instead, the increase in notional gearing was experienced in the first year of RIIO-2, then the substitution of equity financing by debt in that year as a 'step change', would imply an equity buyback in that year of £181m.

¹⁸ Regarding gearing, this is because debt costs are driven by the maintenance of a constant notional gearing ratio in line with the RAV growth projected by SHE-T. Regarding Interest coverage, this is because changes to the asset life assumption for depreciation would be reflected in the calculation of the FFO but then offset by a revised estimate of RAV depreciation within the numerator for the AICR (or PMICR) ratio.

rate to generate an AICR of 1.4x, in line with the Baa1 guidance threshold, would require the capitalisation rate to be reduced from 90% to 85%. Revising this rate would thereby improve the AICR. However, the credit rating agencies may 'look through' adjustments that are NPV-neutral, such as modifying the capitalisation rate and the depreciation profile. Therefore, the efficacy of reducing the capitalisation rate in order to improve rating agency assessments of credit worthiness is questionable.

- A scenario which shows a significant improvement in the financeability testing is to increase the cost of equity to the 6.9% (CPIH-real) allowance assumed in SHE-T's business plan, which results in an AICR of 1.55x, slightly below a Moody's A3 rating. Reducing the notional gearing ratio would also improve credit metrics; e.g. the average AICR over the RIIO-2 period would be 1.31x assuming a gearing ratio of 55% instead of 60%.
- The CPIH transition has a significant positive cash-flow impact in RIIO-2 due to higher cash flows from a higher return allowance (due to a higher cost of capital expressed in CPIH terms), relative to RPI indexation. Absent the CPIH transition, the notional company's financeability metrics would be under significantly more pressure. If, instead, the cost of capital were stated in RPI-deflated terms and RPI indexation were retained in relation to the indexation of the RAV, we estimate that a 109bp uplift to the cost of equity (real, RPI) would be required to raise the AICR to 1.18x, consistent with the notional company under CPIH indexation. This would imply a cost of equity of 4.2% (real, RPI).

Finally, we have considered the credit metrics analysis undertaken by Ofgem in relation to the notional electricity transmission company in RIIO-T2, as reported in the SSMD. For this preliminary, high-level, financeability assessment, Ofgem uses the economic form of the ratios¹⁹, rather than the accounting form, where the accounting form is consistent with credit rating agencies' methodologies, as well as Ofgem's financeability guidance²⁰ (see Appendix A2 for details). We have been able to broadly replicate the economic form of the ratios that Ofgem has derived.²¹ This shows that the average ratios for RIIO-2 using the economic form are higher than those using the accounting form.²² Our analysis focuses on the accounting form of the metrics based on actual business plan information provided by SHE-T.

This section is structured as follows.

- Section 3.1 discusses our analysis of the financeability of the notional company using the SHE-T financial model. We also analyse the impact on the financeability metrics of modifying these assumptions.

¹⁹ Ofgem stated in the SSMD: 'We come to this view having conducted an extracted [sic] high-level analysis of some of the key credit ratios based on a sector average notional company using the working assumptions set out in this decision document and the economic form of the key ratios as shown in Table 13.' See Ofgem (2019), 'RIIO-2 Sector Specific Methodology Decision – Finance', 24 May, para. 4.39.

²⁰ Ofgem (2019), 'Financeability Assessment for RIIO-2: Further Information', 26 March.

²¹ For example, the economic form of the average RIIO-2 AICR for the notional company using SHE-T's financial model is 1.48x (which is the same as Ofgem's estimate of 1.48x). This includes Ofgem's 50bp outperformance wedge to facilitate comparison between the metrics. For avoidance of doubt, we do not agree with the inclusion of Ofgem's expected 50bp outperformance wedge within the cost of equity allowance, when modelling the base case credit metrics.

²² This likely difference had been acknowledged by Ofgem, which stated 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.

- Section 3.2 analyses the impact of the CPIH transition on credit metrics and cash flows.
- Section 3.3 provides our review of Ofgem's financeability guidelines and its proposed financeability metrics, comparing them with those of the credit rating agencies.
- Section 3.4 discusses our main conclusions from the financeability assessment.

Appendix A2 provides further details of our financeability metrics analysis.

3.1 Financeability analysis of the notional company in RIIO-2

In the SSMD, Ofgem reiterated that it will rely primarily on the notional company to assess the financeability of the RIIO-2 control. We have used the SHE-T financial model as the basis for assessing the financeability of the notional company.²³ Our assumptions have been informed by the latest working assumptions used in Ofgem's own modelling of the notional company, as discussed in the Finance annex of the SSMD (see also Appendix A2).²⁴ The main assumptions underlying the notional company base case are summarised in Table 3.1.

Table 3.1 Main assumptions for notional company

Parameter	Assumption
Allowed cost of equity	Baseline estimate of 4.3% (real, CPIH) ¹
Allowed cost of debt	RIIO-2 11–15-year trombone
Index-linked debt	Comprises 25% of total debt, index to CPIH
Interest expense	Equal to the cost of debt (11–15-year trombone) ²
Gearing	60%. Gearing maintained in line with notional assumption through equity injection(s) ³
Inflation	CPIH of 2.0% ⁴
Dividend yield	4.3%. Equal to Ofgem's baseline cost of equity estimate (4.3%) in the SHE-T base case. The impact of modelling a zero dividend yield for RIIO-2 is also assessed in this report.
Capitalisation rate	90.0%. Corresponds to the SHE-T rate in RIIO-1, consistent with Ofgem SSMD guidance.
Depreciation	Asset life phased to 45 years through RIIO-2 for post-vesting assets. ⁵ We take the CAPEX profile as given in SHE-T's model.
Incentives (TOTEX, business plan, outcomes)	No under- or over-performance. This is consistent with the approach in RIIO-1. Only base revenues were considered in Ofgem's financeability assessment then.

Notes: ¹ Ofgem has also included a 50bp uplift to the allowed cost of equity due to assumed outperformance of the price control. The base equity return is 4.8% in Ofgem's financeability modelling. ² Our interest costs (expressed as a percentage of net debt), as well as those used by Ofgem in its notional financeability assessment as described in the Finance annex of the SSMD, are shown in section A2.2 of Appendix A2. We note that our estimates of the interest cost are similar to those of Ofgem. ³ Net debt is assumed to be at the notional level at the start of RIIO-2. ⁴ We note that the CAPEX profile is specified in constant 2009/10 prices in SHE-T's financial model. The movement from RPI to CPI alters the CAPEX profile in nominal terms. ⁵ We have retained SHE-T's modelling of a phased transition to a 45 year asset life in RIIO-2 for post-vesting assets. The asset life increases from 37.5 years to 45 years by 2023/24. Changing the asset life to 45 years in RIIO-2 would cause the FFO/Net debt and FFO interest cover ratios to decline slightly. We have used the SHE-T bottom-up modelling estimates of depreciation, allowing for differing depreciation policy assumptions over time. We note that Ofgem's guidance

²³ We used SSE financial model 'SHET RIIO-2 Financial Modelling Oxera v1' dated 15 May 2019. We have not undertaken a full audit of the model.

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

for modelling the notional company is to use depreciation rates as a percentage of RAV based on expenditures at the RIIO-1 average level.

Source: Ofgem (2019), 'RIIO-2 Sector Specific Methodology Decision - Finance', 24 May. Ofgem (2012), 'RIIO-T1: Final Proposals for SP Transmission Ltd and Scottish Hydro Electric Transmission Ltd', 23 April. Ofgem (2012), 'RIIO-T1: Final Proposals for National Grid Electricity Transmission and National Grid Gas' 17 December.

Our modelling assumes that net debt grows in line with RAV growth, maintaining notional gearing at a constant of 60%. The dividend yield is assumed to be in line with the headline cost of equity in the base case without prejudice to the dividend yield assumed by SHE-T in its business plan. SHE-T is experiencing annual RAV growth at a rate that exceeds the headline cost of equity. Accordingly, we have also tested the impact of assuming a zero dividend yield in each year of RIIO-2, as discussed later in this section.

The average of the credit metrics for the notional company during RIIO-2 are provided in Table 3.2 below, alongside the credit rating agencies' guidance ranges for an investment-grade credit rating.

Table 3.2 Average credit metrics during RIIO-2 for the notional company versus indicative ranges for investment-grade rating from the credit rating agencies

Ratio	Fitch ¹		Moody's		Standard & Poor's ²		Notional company base case
	A	BBB	A	Baa	A	BBB	
Debt metrics	A	BBB	A	Baa	A	BBB	
Net debt/RAV (%)	60	70	45–60	60–75	<70	>70	60.0%
FFO interest cover, excl. accretion (x)*	4.5	3.5	4–5.5	2.8–4			3.8
FFO interest cover, incl. accretion ³ (x)*					>3.5	2.5–3.5	3.3
AICR (or PMICR) (x)*	1.75	1.5	2.0–3.5 ⁴ or 1.6–1.8 ⁵	1.4–2.0 ⁴ or 1.2–1.4 ⁵			1.18
FFO (cash interest)/net debt (%)*			18–26	11–18	>12	8–12	9.8%
RCF/net debt (%)			14–21	7–14			7.1%

Note: * Ofgem's key credit metrics as per the Finance annex of the SSMD. The ratios are calculated using credit rating agency formulae. ¹ Fitch also considers other financial ratios, including lease-adjusted FFO/debt and lease-adjusted FFO/net debt. These measures have not been explicitly highlighted by Ofgem as measures of interest when assessing financeability. ² Unlike Moody's and Fitch, S&P does not provide indicative ranges. The ranges interact with additional considerations such as the business risk profile and industry risk. See Standard & Poor's (2013), 'Criteria | Corporates | General: Corporate Methodology', tables 3, 17–19. We have reported the indicative ranges provided by Ofgem during the RIIO-1 period. See Ofgem (2011), 'Decision on strategy for the next transmission and gas distribution price controls – RIIO-T1 and GD1 Financial issues', 31 March, p. 40. ³ Moody's subtracts inflation accretion from FFO and the interest expense to the extent that it is included. Ofgem's approach, which is the same used by S&P, includes inflation accretion in the denominator of the FFO interest cover ratio. ⁴ Moody's guidance ranges for Baa and A ratings from Moody's sector rating methodology for regulated electric and gas networks. ⁵ Moody's guidance minimum rating for a Baa2 rating (1.2), Baa1 rating (1.4), A3 rating (1.6), and A2 rating (1.8) from 29 May 2019 commentary. Moody's does not provide a guidance figure for a Baa3 rating.

Source: Fitch (2018), 'Corporate rating criteria Sector Navigators', p. 165; Moody's (2017), 'Rating Methodology Regulated Electric and Gas Networks, 16 March 2017, p. 19; Moody's (2018), 'Regulated electric and gas networks – UK. Risks are rising, but regulatory fundamentals still intact', 29 May, p. 4; Ofgem (2011), 'Decision on strategy for the next transmission and gas distribution price controls – RIIO-T1 and GD1 Financial issues', 31 March, p. 40.

As shown in the table, 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).²⁵ 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%.

We note that average credit ratios in RIIO-2 using Ofgem's economic form²⁶ for the AICR, FFO/net debt and RCF/net debt are higher than the values using the accounting forms of the ratios shown in Table 3.2. Our analysis focuses on the accounting form of the metrics based on actual business plan information provided by SHE-T. The difference to the economic form ratios reported by

²⁵ Moody's (2018), 'Regulated electric and gas networks – UK. Risks are rising, but regulatory fundamentals still intact', 29 May, p. 4.

²⁶ Ofgem (2019), 'RIIO-2 Sector Specific Methodology Decision - Finance', 24 May, para. 4.39.

Ofgem is also driven by Ofgem assuming that the notional company outperforms the price control assumptions and earns an additional 50bp return on regulated equity. Table A2.1 in Appendix A2 provides the values of the financial ratios using the economic form presented by Ofgem. For comparison with Ofgem's figures, Table A2.1 in Appendix A2 provides the value of the ratios using the economic form, including the 50bp return for outperformance.

We have also examined the requirement for net new equity issuance over RIIO-2.²⁷ In the base case, the size of SHE-T's RAV growth over RIIO-2 implies that maintaining notional gearing at 60% would require net new equity issuance over the period of £328m, as shown in Table 3.3.

Table 3.3 Equity issuance/(buybacks) during RIIO-2 for the notional company (£m)

Dividend scenario	Apr 2021	Apr 2022	Apr 2023	Apr 2024	Apr 2025	Total RIIO-2
Dividend yield = 4.3% (base case)	28	168	81	27	24	328

Note: We have modelled a notional gearing ratio of 60% for SHE-T in the last year of RIIO-1. This is to allow the proportion of debt financing to increase by 5% of RAV in the last year of RIIO-1, to align with the revision in the notional gearing assumption (i.e. 55% to 60%) in the start of RIIO-2.

Source: Oxera analysis using SHE-T's financial model.

Box 3.1 Impact of revised notional gearing assumption

We note that Ofgem is intending to align the gearing for the networks at 60% for RIIO-2. This compares to a notional gearing assumption of 55% in RIIO-1 for SHE-T. To avoid a step-change in the amount of debt financing required in the first year of RIIO-2 in our modelling, the proportion of debt financing increases by 5% of RAV in the last year of RIIO-1. If instead, the 'step change' in debt financing were to be effected in the first year of RIIO-2, then this would imply substitution of equity financing by debt to increase leverage. In this case, the 'step change' would mean that debt financing would substitute equity financing by the amount of 5% of the RAV, which would leave the potential for an equity buyback of £181m in the first year of RIIO-2, due to the change in the assumed notional gearing ratio.

Source: Oxera analysis.

Overall, our modelling of the notional company using the SHE-T business plan suggests 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.²⁸

The Competition Commission has previously interpreted the definition of a comfortable investment-grade rating in the context of ensuring financeability in the regulated airports sector, as below:

Our interpretation of a solid investment-grade rating is BBB+ (using S&P's and Fitch's terminology) and Baa1 (using Moody's terminology) which is a couple of 'notches' above the bottom of investment grade of BBB– or Baa3. Our aim is thus for the two airports, at our assumed gearing level of 60 per cent, to be in a position to absorb unanticipated downside risk and still retain an investment grade credit rating range.²⁹

²⁷ 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.

²⁸ Ofgem (2012), 'RIIO-T1: Final Proposals for National Grid Electricity Transmission and National Grid Gas' 17 December, para. 4.6.

²⁹ Competition Commission (2007), 'BAA Ltd', 28 September, para. 5.14.

Following this guidance from Ofgem and the Competition Commission, modelling of the notional company using the SHE-T business plan suggests that the AICR would be below Fitch's guidance level for a BBB rating (i.e. 1.5x) and Moody's guidance level for a Baa1 rating (i.e. 1.4x).

Our analysis shows that the credit metrics are under pressure for SHE-T for the RIIO-2 period, on a notional company basis. It is relevant to note that whether a credit rating agency would downgrade an actual company should its financial metrics fall below the guidance thresholds for that company would depend on the precise calibration of the RIIO-2 package, and on the holistic assessment of the quantitative and qualitative factors that underpin the assigned credit rating. The credit rating agencies consider financial ratios as part of a holistic assessment of credit quality, and the quantitative analysis is supplemented by a qualitative assessment. The agencies consider broader factors, including the companies' operational performance and consistency of the regulatory framework. The agencies may show some degree of flexibility towards the financial ratio ranges—we understand that in general these ranges are not construed as 'red lines', especially if the ratios are close to the range.

Financeability scenario analysis

To test the financeability of the notional company, we have also considered several sensitivities, as follows:

- the continued use of the RPI index;
- using a cost of equity of 6.9% (CPIH, real or 5.8% RPI, real), consistent with the SHE-T business plan assumption;
- assuming that no dividends are paid by SHE-T in RIIO-2 (i.e. a dividend yield of zero);
- using the SHE-T proposal for a 15-year trailing average of yields on A/BBB iBoxx non-financial corporate bond indices to set the allowed cost of debt, as well as the interest expense (see 'Cost of debt mechanisms' in section 2 of this report);³⁰
- assuming that no inflation-linked debt (ILD) is used, which more closely reflects SHE-T's existing debt portfolio;³¹
- measuring the change in the capitalisation rate required to achieve credit metrics that would be consistent with the upper end of the guidance range from Moody's for a Baa1 rating³², in line with the Competition Commission's (2007) guidance on interpreting a 'solid' investment-grade rating; and
- assuming a reduction in the notional gearing assumption from 60% to 55%.

The results from these tests are summarised in Table 3.4 below. All scenarios assume an equity return in line with the base case assumption for the notional company (i.e. 4.3%, CPIH real), unless otherwise noted.

³⁰ The 15-year trailing average cost of debt index excludes the impact of transaction costs and the cost of carry. We note that SHE-T is currently engaging with Ofgem on the appropriate length of the trailing average period; therefore, the sensitivity modelled here is not intended to preclude the possibility of a different trailing average period as an outcome from SHE-T's business planning process and engagement.

³¹ It is also relevant to note that the current market for CPI(H)-linked debt is not developed in the UK.

³² Moody's (2018), 'Regulated electric and gas networks – UK. Risks are rising, but regulatory fundamentals still intact', 29 May, p. 4.

Table 3.4 Sensitivity analysis of financeability metrics for the notional company

	Base case	RPI inflation	Cost of equity 6.9%	Dividend yield 0.0%	15-year trailing average	No inflation -linked debt	Capitalisation rate 84.8%	Gearing 55%
Debt metrics								
Net debt/RAV (%)	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%	55.0%
FFO interest cover, incl. accretions (x)*	3.3	3.0	3.6	3.3	3.1	3.3	3.5	3.6
FFO interest cover, excl. accretions (x)*	3.8	3.7	4.2	3.8	3.6	3.3	4.0	4.2
AICR (or PMICR) (x)*	1.18	0.84	1.55	1.18	1.15	1.03	1.40	1.31
Nominal PMICR (x)	1.8	1.8	2.1	1.8	1.7	1.8	2.0	2.0
FFO (cash interest)/net debt (%)*	9.8%	8.7%	11.1%	9.8%	9.8%	9.3%	10.7%	11.1%
FFO (interest expense)/net debt (%)*	9.4%	8.1%	10.7%	9.4%	9.4%	9.3%	10.3%	10.7%
RCF/net debt (%)	7.1%	5.9%	8.4%	9.8%	7.1%	6.6%	8.0%	7.8%
Equity metrics								
EBITDA/RAV (x)	8.7%	7.7%	9.7%	8.7%	8.9%	8.7%	9.4%	8.8%
RoRE	0.2%	-2.0%	2.2%	0.2%	0.1%	0.2%	1.4%	0.7%
Dividend cover (x)	1.9	1.4	2.4	NA	1.9	1.9	2.2	1.8
Dividend/ReqEquity (x)	4.3%	4.3%	4.3%	0.0%	4.3%	4.3%	4.3%	4.3%

Note: * Ofgem key credit metric as per the Finance annex of the SSMD.

Our conclusions from the scenario analysis of the credit metrics are as follows.

- If Ofgem had retained RPI-based allowances instead of CPIH-based allowances, the AICR would have been even lower, at around 0.84x. This is well below Moody's guidance threshold for a Baa2 rating (of 1.2x).
- The analysis earlier in this report indicates that a simple 15-year trailing average would be less likely to underfund the actual all-in cost of debt for SHE-T over RIIO-T2 when compared to an 11–15-year trombone average. Moving to a 15-year trailing average cost of debt index would cause a slight deterioration in the AICR for the notional company.
- Reducing the notional gearing to 55% in line with RIIO-1 would improve credit metrics—for example, AICR would increase to 1.31x.
- Removing Ofgem's assumption that 25% of debt is linked to CPIH would cause the AICR to fall to 1.03x, below Moody's guidance threshold for a Baa2 rating (of 1.2x).
- Changes to the dividend yield or asset life assumption are ineffective in materially alleviating pressure on interest coverage ratios.³³
- Revising the capitalisation rate to generate an AICR estimate of 1.4x, in line with a Baa1 guidance threshold, would require a reduction from a rate of

³³ Regarding the former, this is because debt costs are driven by the maintenance of a constant notional gearing ratio in line with the SHE-T projected RAV growth rather than by dividend policy. Regarding the latter, this is because changes to the asset life assumption for depreciation would be reflected in the calculation of the FFO, but then offset by a revised estimate of RAV depreciation within the numerator for the AICR (or PMICR) ratio.

90% to 85%. However, the credit rating agencies may 'look through' adjustments that are NPV-neutral, such as modifying the capitalisation rate and the depreciation profile. For example, Fitch has indicated that it does not view alternative capitalisation or depreciation rates as helping PMICRs.³⁴

- A scenario that shows a significant improvement in the AICR to 1.59x, which is slightly below a Moody's Baa1 rating, would result from increasing the cost of equity to the 6.9% (CPIH-real) allowance assumed in SHE-T's business plan. Alternatively, if the cost of equity is stated in equivalent RPI terms (i.e. 5.8%, RPI-real³⁵), the AICR would improve to 1.24x, between Moody's guidance threshold for a Baa2 and a Baa1 rating (of 1.2x and 1.4x, respectively).

Below, we provide, in turn, more detail on the cost of debt, cost of equity, dividend yield, capitalisation rate and revised notional gearing scenarios. We also comment on why the AICR is not responsive to revisions in the asset life assumption. The transition from RPI to CPIH is then discussed in the next subsection.

Cost of debt using 15-year trailing average³⁶

This scenario assumes that the 15-year trailing average is used as the basis of setting the allowed cost of debt and the interest expense, instead of the 11–15 year trombone. The choice of method for the cost of debt indexation has a relatively small impact on the credit and equity metrics during RIIO-2. Using the SHE-T proposal for a 15-year trailing average for the cost of debt results in a slight deterioration in all the key credit metrics relative to the base case. In particular, the AICR decreases slightly to 1.15x (from 1.18x in the base case).

No inflation-linked debt

In its modelling of the notional company, Ofgem assume that 25% of debt is index-linked to inflation. We understand from SHE-T that its actual debt portfolio includes minimal amount of ILD. Removing the assumption that 25% of debt is inflation-linked results in a decrease of the AICR to 1.03x (from 1.18x in the base case), well below Moody's guidance threshold for a Baa2 rating (of 1.2x). The AICR metric declines when reducing the proportion of ILD due to FFO increasing (cash interest expense, which is added back to FFO, is higher).

Cost of equity = 6.9% (CPIH real)

This scenario uses a cost of equity estimate of 6.9% (CPIH real) from the SHE-T business plan. There is a clear improvement in the financeability metrics resulting from a higher cost of equity relative to the base case. The AICR improves to 1.55x (from 1.18x in the base case), higher than Moody's guidance of at least 1.4x for a Baa1 investment-grade credit rating, and broadly consistent with its A3 guidance of 1.6x. FFO (cash interest)/net debt also increases to 11.1% (from 9.8%), marginally above Moody's minimum guidance

³⁴ FitchRatings (2019), 'Fitch Rtg's: Ofgem's Credit-Enhancing Mechanisms Unlikely to Benefit Ratings', 28 February.

³⁵ CPIH-real cost of equity dividend by RPI-CPIH wedge of 1.05%.

³⁶ The 15-year trailing average cost of debt index excludes the impact of transaction costs and the cost of carry. We note that SHE-T is currently engaging with Ofgem on the appropriate length of the trailing average period; therefore, the sensitivity modelled here is not intended to preclude the possibility of a different trailing average period as an outcome from the SHE-T business planning process and engagement.

of 11.0% for a Baa investment-grade credit rating. The dividend cover metric is 2.4x (in this case using a dividend yield of 4.3%, equal to the cost of equity).

Dividend yield = 0%

Ofgem has suggested that dividends could be reduced in order to improve the financeability metrics. Assuming that the notional company pays no dividends, RCF/net debt increases to 9.8% (from 7.1% in the base case).³⁷ Credit ratios other than RCF/net debt are unaffected by dividends. The main impact of revising the dividend yield would be a net equity buyback of £46m over RIIO-2, according to the SHE-T financial model. This is relative to a £328m equity issuance requirement in the base case, as shown in Table 3.5 below.

Table 3.5 Equity issuance/(buybacks) during RIIO-2 for the notional company (£m)

Dividend scenario	Apr 2021	Apr 2022	Apr 2023	Apr 2024	Apr 2025	Total RIIO-2
Dividend yield = 4.3% (base case)	28	168	81	27	24	328
Dividend yield = 0.0%	-32	98	4	-55	-61	-46

Source: Oxera analysis using SHE-T financial model.

As in the base case, to avoid a step-change in the amount of debt financing required in the first year of RIIO-2 in our modelling, the proportion of debt financing increases by 5% of RAV in the last year of RIIO-1. If instead, the 'step change' in debt financing were to be effected in the first year of RIIO-2, then this would leave the potential for a further equity buyback of £181m in the first year of RIIO-2, due to the change in the assumed notional gearing ratio.

Asset life assumption

Ofgem has suggested that depreciation could be accelerated by reducing the asset life assumption in order to improve financeability metrics. Our analysis suggests that the calculation of interest coverage ratios would not be sensitive to adjustments in the asset life assumption. This is because changes to the asset life assumption for depreciation would be reflected in the calculation of the FFO but then offset by a revised estimate of RAV depreciation within the numerator for the AICR ratio in the mechanical estimation of the ratios. We also note that changes to the depreciation profile may raise concerns about departing from cost-reflective pricing within the price control period, or of driving intergenerational transfers between consumers.

Adjustment to the capitalisation rate

Ofgem has suggested that increasing the proportion of fast money received in RIIO-2 by lowering the capitalisation rate could be used to improve financeability metrics. We have considered adjusting the capitalisation rate so that the AICR improves to a level consistent with Moody's threshold guidance for an indicative rating of Baa1,³⁸ which corresponds to an AICR of 1.4x. In order to increase the RIIO-2 average AICR ratio to 1.4x (from 1.18x in the base case), the capitalisation rate would have to decline to 84.8% (from 90% in the base case). By lowering the capitalisation rate, the AICR benefits from higher amounts of fast money. This scenario illustrates that the AICR is relatively sensitive to changes in the capitalisation rate. However, again, it is relevant to

³⁷ Fitch (2018), 'Corporates—Sector Navigator: Addendum to the Corporate Rating Criteria', March, p. 117.

³⁸ Moody's (2018), 'Regulated electric and gas networks – UK. Risks are rising, but regulatory fundamentals still intact', 29 May, p. 4.

note that the credit rating agencies may 'look through' adjustments that are NPV-neutral, such as modifying the capitalisation rate and the depreciation profile. For example, Fitch has indicated that it does not view alternative capitalisation or depreciation rates as helping PMICRs.³⁹

Gearing = 55%

Ofgem has suggested that gearing could be reduced in order to improve the financeability metrics. Reducing gearing from 60% to 55% would improve the AICR to 1.31x (from 1.18x in the base case), above Moody's guidance threshold for a Baa2 rating (of 1.2x) and close to its guidance for a Baa1 rating (of 1.4x). FFO interest cover, FFO/net debt and RCF/net debt would similarly improve, above Moody's minimum guidance thresholds for an investment grade credit rating. We note that in order to raise the AICR to 1.4x in SHE-T's model, consistent with Moody's guidance for a Baa1 rating, the gearing level would need to be 52%.

3.2 Impact of the CPIH transition

In the SSMD, Ofgem proposes switching from RPI to CPIH as a measure of inflation. It has indicated that the switch should, on an ex ante basis, secure NPV-neutrality for the regulated companies. Specifically, a lower depreciation allowance (due to lower RAV indexation under the CPIH) is expected to be offset with a higher return allowance (due to a higher cost of capital expressed in CPIH terms).

The CPIH transition has a significant positive cash-flow impact in RIIO-2 due to higher cash flows from a higher return allowance (due to a higher cost of capital expressed in CPIH terms). Absent the CPIH transition, the notional company's financeability metrics would be under significantly more pressure in RIIO-2. This can be seen in the 'RPI inflation' scenario in Table 3.4 above. This scenario assumes that RPI inflation continues to be used in the control. The AICR declines to 0.84x (from 1.18x in the base case), below Moody's guidance of 1.2x for a Baa2 investment-grade credit rating and well below its guidance of 1.4–2.0x for a Baa rating. These values are below the 'solid' investment-grade ratings of Baa1 or BBB+, as implied by the guidance from the Competition Commission (2007). FFO (cash interest)/net debt declines to 8.7%, below Moody's guidance range for an investment-grade credit rating of Baa; while RCF/net debt falls to 5.9%, also below Moody's guidance for an investment-grade credit rating of Baa.

This demonstrates that, but for the transition to CPIH inflation, the credit metrics would not have been consistent with the threshold guidance for investment-grade ratings. If the status quo of the RPI basis had been retained, the price control parameters would have appeared mis-calibrated in ensuring the financeability of the notional company. If, instead, the cost of capital were stated in RPI-deflated terms and RPI indexation were retained in relation to the indexation of the RAV, we estimate that a 109bp uplift to the cost of equity (real, RPI) would be required in order to raise the AICR to 1.18x, consistent with the notional company's AICR under CPIH indexation. In other words, a real cost of equity of around 4.2% RPI-deflated would be consistent with an AICR of 1.18x.

³⁹ FitchRatings (2019), 'Fitch Rtg: Ofgem's Credit-Enhancing Mechanisms Unlikely to Benefit Ratings', 28 February.

While the transition to CPIH improves revenues in the short term (relative to RPI indexation), and hence financeability metrics, it would be expected to reduce them in the long term, all else being equal (see Appendix A2).⁴⁰

3.3 Assessment of Ofgem's guidelines and metrics to assess financeability

3.3.1 Actions in response to financeability concerns

As explained in the SSMD, Ofgem is putting the onus on companies to take action to address financeability concerns. Ofgem suggests several courses of action: changes to dividend policy, equity injections, debt refinancing, alternative capitalisation rates and/or depreciation rates (if appropriate), and adjusting notional gearing.⁴¹

In relation to reduction in dividends and/or injections of equity, we observe that in the SSMD, Ofgem suggested that a reduction or cessation of dividends could be used for companies facing financeability constraints, stating the following.

As discussed in the notional company credit metrics section above we believe the credit metrics for the notional company are mainly improved compared to RIIO-1 so we do not believe long term dividend restraint for the notional company would be required. Therefore, any requirement for dividend restraint would likely be due to company specific actual financeability constraints, which it is appropriate for network companies to consider addressing through dividend restraint or equity injection. Ofgem considers that restricting dividends can be an effective measure for addressing company-specific financeability constraints as this would increase funds available for making debt service payments or, if used to pay down debt (either at maturity or before to pay for refinancing high coupon debt or other financial commitments), it can reduce gearing and/or debt interest costs and improve key credit metrics.⁴²

In the quotation above, Ofgem assumes that forgone dividends would be used to reduce gearing and/or debt interest costs. However, this may not be practical due, for example, to transaction costs and refinancing costs. Refinancing debt is likely to entail a buyback premium, and it would not be effective if the embedded debt had been financed on terms equal to or better than the current rates available to the company. If a reduction in dividends is not accompanied by refinancing of debt then, as modelled in our scenario analysis (undertaken earlier in this section), dividend policy does not affect the credit metrics of the notional company because debt costs and gearing are aligned with notional assumptions (including growth of net debt in line with RAV growth).

We have shown that, in line with SHE-T's projected RAV growth for the RIIO-2 period, the equity issuance requirement over the period is around £328m in the base case, to ensure that gearing is aligned with the notional assumption of 60%.

We have also noted why changes, such as capitalisation rates or asset lives, may not be practical or effective if the credit rating agencies make offsetting adjustments for NPV-neutral reprofiling of cash flows when estimating credit

⁴⁰ Assuming an expected level of inflation, our calculations using a simplified version of SHE-T's financial model indicate that the NPV of the nominal revenues under the CPIH or RPI (discounted at the nominal WACC) would be equal in both cases (i.e. the transition is NPV-neutral).

⁴¹ Ofgem (2019), 'RIIO-2 Sector Specific Methodology Decision - Finance', 24 May, para. 4.5.

⁴² Ofgem (2019), 'RIIO-2 Sector Specific Methodology Decision - Finance', 24 May, para. 4.66.

metrics. For example, Fitch has indicated that it does not view alternative capitalisation or depreciation rates as helping PMICRs.⁴³

3.3.2 Ofgem's financeability metrics

Table 3.6 compares Ofgem's metrics with those of the credit rating agencies.

Table 3.6 Comparative review of Ofgem's financeability metrics

Metric and formulae used by Ofgem and the credit rating agencies	Differences
Debt ratios	
Gearing	None
$\frac{\text{Net debt}}{\text{RAV}}$	
FFO interest cover (interest expense)	Ofgem's metric explicitly includes principal inflation accretion in the denominator, which is the increase in the value of index-linked debt due to increases in the inflation rate.
Ofgem:	
$\frac{\text{FFO (pre cash net interest)}}{\text{Cash net interest + principal inflation accretion}}$	
Moody's (2017):	It is unclear formulaically how the credit rating agencies treat inflation-linked debt, however both Moody's (2017) and S&P (2013) mention that they make appropriate adjustments.
$\frac{\text{FFO (pre cash net interest)}}{\text{Cash net interest}}$	
FFO interest cover (cash interest)	None
$\frac{\text{FFO (pre cash net interest)}}{\text{Cash net interest}}$	
AICR	Capital charges, such as regulatory depreciation, the excess of 'fast money' over OPEX, and the excess of 'profiled revenue' over 'un-profiled revenue' are subtracted from FFO by Moody's.
Ofgem (2019):	
$\frac{\text{FFO (pre cash net interest)} - \text{RAV depreciation}}{\text{Cash net interest}}$	
Moody's (2017):	Non-cash accretion is deducted in the numerator, only to the extent that it has been included in FFO, and is deducted from the denominator only to the extent that it has been included in interest expense.
$\frac{\text{FFO (pre cash net interest)} - \text{non cash accretion} - \text{capital charges}}{\text{Cash net interest} - \text{non cash accretion}}$	
Nominal PMICR	Similar to the AICR, Ofgem subtracts RAV depreciation from FFO, but it is unclear whether it makes adjustments for other capital charges.
Ofgem (2019):	
$\frac{\text{FFO (pre cash net interest)} - \text{RAV depreciation} + \text{YoY RAV inflation}}{\text{Cash net interest} + \text{principal inflation accretion}}$	
Fitch (2018):	Fitch takes a different approach by subtracting maintenance CAPEX and net working capital from FFO. Ofgem adds RAV inflation to FFO, and adds principal inflation accretion to the interest expense in the denominator.
$\frac{\text{FFO (pre cash net interest)} \pm \text{net working capital} - \text{maintenance capex}}{\text{Cash net interest}}$	

⁴³ FitchRatings (2019), 'Fitch Rtgs: Ofgem's Credit-Enhancing Mechanisms Unlikely to Benefit Ratings', 28 February.

Metric and formulae used by Ofgem and the credit rating agencies	Differences
<p>FFO/net debt (interest expense)</p> <p>Ofgem (2019):</p> $\frac{FFO \text{ (post cash interest)} - \text{principal inflation accretion}}{Net \text{ debt}}$ <p>Standard & Poor's (2013) and Moody's (2017):</p> $\frac{FFO \text{ (post cash interest)}}{Net \text{ debt}}$	Ofgem's calculation of the metric includes an adjustment for principal inflation accretion in the numerator.
<p>FFO/net debt (cash interest)</p> <p>Ofgem (2019):</p> $\frac{FFO \text{ (post cash interest)}}{Net \text{ debt}}$ <p>Standard & Poor's (2013) and Moody's (2017):</p> $\frac{FFO \text{ (post cash interest)}}{Net \text{ debt}}$	Ofgem's calculation of the metric is the same as the credit rating agencies.
<p>RCF/Net Debt</p> <p>Ofgem (2019):</p> $\frac{FFO \text{ (post cash interest)} - \text{dividends} - \text{principal inflation accretion}}{Net \text{ debt}}$ <p>Moody's (2017):</p> $\frac{FFO \text{ (post cash interest)} - \text{dividends}}{Net \text{ debt}}$	Ofgem's calculation of the metric includes an adjustment for principal inflation accretion in the numerator.
<p>Equity ratios</p> <p>EBITDA/RAV</p> <p>Ofgem (2019):</p> $\frac{EBITDA}{RAV}$	n/a
<p>RoRE</p> <p>Ofgem (2019):</p> $\frac{EBIT - \text{tax} - (\text{cost of debt} * \text{debt RAV})}{Equity RAV}$	n/a
<p>Dividend cover</p> <p>Ofgem (2019):</p> $\frac{\text{Profit after tax}}{\text{Dividends declared}}$ <p>Fitch (2018):</p> $\frac{FFO \text{ (post cash interest)}}{\text{Dividends declared}}$	Ofgem considers this metric from an accounting profit perspective, while the credit rating agencies work on a cash basis.
<p>Dividend/req equity</p> <p>Ofgem (2019):</p> $\frac{\text{Dividends declared}}{Equity RAV}$	n/a

Notes: ¹ The PMICR is described as the ratio between cash flows from operations (CFO) less maintenance CAPEX and net interest expense. Cash flows from operations are FFO plus net working capital. For a more detailed description of Fitch's definitions of cash-flow measures, see Fitch (2019), 'Corporates – Corporate Rating Criteria: Master Criteria', 19 February, p. 46.

Source: Oxera analysis; Moody's (2017), 'Regulated Electric and Gas Networks', 16 March, p. 19; Fitch (2018), 'Corporates—Sector Navigator: Addendum to the Corporate Rating Criteria', March, p. 189; Standard & Poor's (2013), 'Corporate Methodology: Ratios and Adjustments', 19 November, p. 36; Fitch (2018), 'Corporates—Sector Navigator: Addendum to the Corporate Rating Criteria', March, p. 117.

From the comparison of the formulae, it is not clear where there will be systematic differences between Ofgem's findings and those of the credit rating agencies. This is not least because the latter do not always set out explicitly what adjustments they will make formulaically. For example, Moody's (2017) and S&P (2013) both mention that they make appropriate adjustments for inflation-linked debt, notwithstanding that these adjustments are not stated in the formulae (e.g. for FFO interest cover).

To account for regulatory decisions that alter the timing of cash flows, the credit rating agencies make adjustments to ratios—for example, through changes to asset lives, depreciation policy, capitalisation ratio, and revenue profiling.⁴⁴ Moody's (2017) states: '[t]he adjusted ICR attempts to normalize for these 'regulatory levers' by adjusting FFO by an amount of money ("Capital Charges") that can be influenced by regulatory decision making in the allowed revenue calculation'. This is partly why, as noted earlier in the report, changes to such assumptions as a tool to address financeability concerns may not be effective or practical. To the extent that Ofgem, in calculating credit metrics, does not make such adjustments itself, it may formulaically find an improvement in credit metrics from revising the asset life assumption for RIIO-2, for example, which is a change that the credit rating agencies may then 'look through' in their calculations.

Finally, we have considered the credit metrics analysis undertaken by Ofgem in relation to the notional electricity transmission company in RIIO-T2, as reported in the SSMD. We observe that, for this preliminary 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.⁴⁵ We have been able to broadly replicate the economic form of the ratios derived by Ofgem,⁴⁶ using the SHE-T financial model. This shows that the economic form of the average ratios for RIIO-2 is higher than the accounting form.⁴⁷ Our analysis focuses on the accounting form of the metrics based on business plan information provided by SHE-T.

3.4 Conclusion

The main conclusions from the modelling of the notional company using the SHE-T financial model are the following:

- The notional company's financial metrics are under pressure in RIIO-2. There is downward pressure on credit metrics, implying metrics that are below or towards the minimum threshold for BBB/Baa and A credit ratings.
- The modelling of the AICR on a notional company basis, at around 1.18x, is below Fitch's guidance threshold of 1.5x to 1.75x for BBB and A, respectively. It is also lower than the guidance AICR threshold range for an A rating by Moody's (i.e. 2.0–3.5x) and at or below the lower end of the various 1.2–1.4x and 1.4–2.0x guidance threshold ranges for a Baa rating by Moody's.
- In assessing financeability, regulators may target a 'comfortable' rating of around BBB+/Baa1, which would imply some headroom in the financial metrics relative to the lowest bound consistent with a minimum investment-grade rating. Targeting a comfortable rating such that the financial metrics are higher than the minimum investment-grade credit rating would also allow for some headroom to deal with negative shocks within the price

⁴⁴ Moody's (2017), 'Ratings Methodology for Regulated Electric and Gas Networks', 16 March, Appendix B.

⁴⁵ Ofgem (2019), 'Financeability Assessment for RIIO-2: Further Information', 26 March.

⁴⁶ 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.

⁴⁷ 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.

control period. In RIIO-1 Ofgem targeted a rating of BBB–A in its financeability assessment.

- Given the size of the SHE-T capital programme in RIIO-2 and the corresponding forecast growth in the RAV, net equity issuance of £328m would be required to maintain gearing at the notional level of 60% throughout RIIO-2.
- We have assessed the sensitivity of the dividend yield assumption. Assuming zero dividend yields in RIIO-2 has no effect on interest cover ratios. Although under this scenario no new equity is required on average over RIIO-2, the weighting of the CAPEX programme to the early years of RIIO-2 will still require equity to be issued early on in the control period, offset by share repurchases later in the control to maintain gearing at 60%.⁴⁸
- The transition to CPIH inflation from RPI inflation significantly improves credit metrics relative to the counterfactual in which RPI inflation is used in the RIIO-2. If, instead, the cost of capital were stated in RPI-deflated terms and RPI indexation were retained in relation to the indexation of the RAV, we estimate that a 109bp uplift to the cost of equity (real, RPI) would be required in order to raise the AICR to 1.22x, consistent with the notional company under CPIH indexation. This would imply a cost of equity of 4.2% (real, RPI).
- Ofgem has indicated that if financeability issues arise, the onus will be on the companies to solve them. Ofgem has proposed that companies can address these issues in a number of ways, including by reducing dividend payments, increasing equity injections, refinancing or repaying existing debt, and, if appropriate, proposing alternative capitalisation and/or depreciation rates.⁴⁹ However, these tools may entail costs or be ineffective. Some tools to address financeability concerns, such as changes to the depreciation profile or capitalisation rates, may not be effective in the credit rating agencies' analysis (if they are perceived as being neutral in NPV terms such that there is no impact on credit ratings).⁵⁰ They will also have practical consequences, for example departing from cost-reflective pricing and driving intergenerational transfers between consumers.

⁴⁸ In both dividend yield scenarios, this assumes that an increase in notional gearing from 55% to 60% is effected in the last year of RIIO-1. If, instead, the increase in notional gearing was experienced in the first year of RIIO-2, then the substitution of equity financing by debt in that year as a 'step change', would imply an equity buyback in that year of £181m.

⁴⁹ Ofgem (2018) 'RIIO-2 Sector Specific Methodology Annex: Finance', 18 December, para. 4.16.

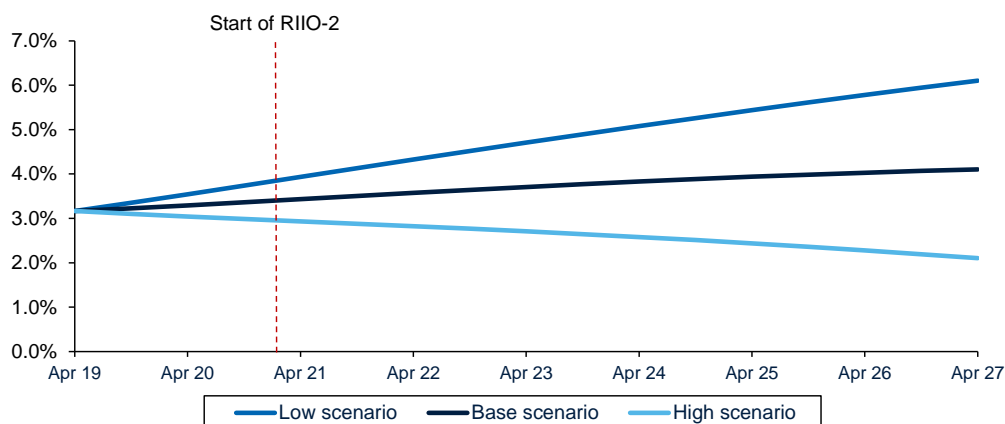
⁵⁰ For example, Fitch has indicated that it does not view alternative capitalisation or depreciation rates as helping PMICRs. See FitchRatings (2019), '[Fitch Rtgs: Ofgem's Credit-Enhancing Mechanisms Unlikely to Benefit Ratings](#)', 28 February.

A1 Cost of debt assessment

A1.1 Interest rate scenarios

Figure A1.1 presents the evolution of the spot cost of debt (average of A and BBB iBoxx nonfinancial corporate indices) under the base, high and low future interest rate scenarios.

Figure A1.1 Spot cost of debt: evolution under the base, high and low future interest rate scenarios



Source: Oxera analysis based on data from Thomson Reuters.

A1.2 Alternative cost of debt mechanisms

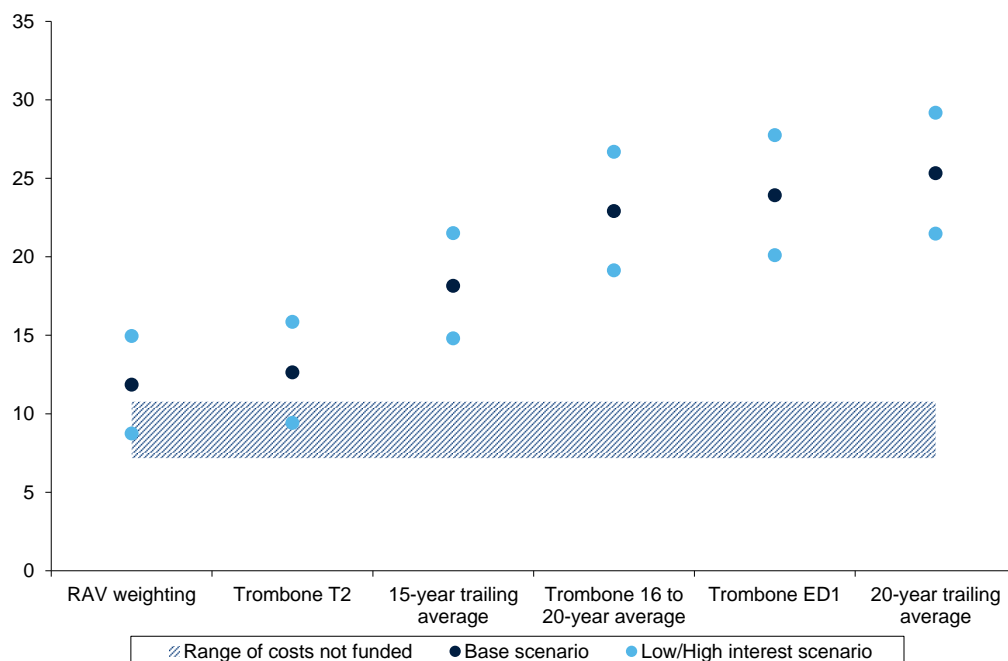
The impacts on cash flow (£m) in RIIO-T2 under the various cost of debt mechanisms net of other costs (i.e. transaction costs, cost of carry, etc.) are presented below. The additional cost of debt mechanism modelled is the SHE-T RAV weighted index.

Table A1.1 Potential cost of debt mechanisms

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	10–25-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
Trombone 16–20-year average	16–20-year trombone starting from November 2005
SHE-T RAV-weighted index	Current SHE-T mechanism in RIIO-T1 based on RAV growth in each year (assumes continuation of RIIO-T1 mechanism into RIIO-T2)

Figure A1.2 shows that the cost of debt mechanisms based on the RAV-weighted index would not allow SHE-T to recover its actual cost of debt in the base case and the high interest rate scenarios when additional costs not priced into the iBoxx indices allowance are taken into account.

Figure A1.2 Average annual cash flow impact in RIIO-2 under different cost of debt mechanisms (£m nominal)



Note: The lower bound of the range corresponds to the cash flow impact (£m) under the high interest rate scenario, while the upper bound reflects the cash flow impact in the low interest rate scenario. The midpoint of the range is the base-case scenario (i.e. no deviation from the nominal forward rates). The costs not funded are assumed to equal 40–60bp, and represent the new issue premium; the cost of carry; a premium for issuing nominal debt relative to index-linked debt; issuing at BBB+ yields that are higher than the average of A and BBB yields.

Source: Oxera analysis.

Table A 1.2 presents the difference between the actual and allowed cost of debt net of other costs (i.e. transaction costs, cost of carry, etc.) per annum in percentage terms. Negative values indicate that SHE-T will not be able to fund the ‘all-in’ cost of debt under the scenario.

Table A 1.2 Difference between the allowed and the actual cost of debt net of costs not covered by the allowed cost of debt mechanism (0.4-0.6%) (%)

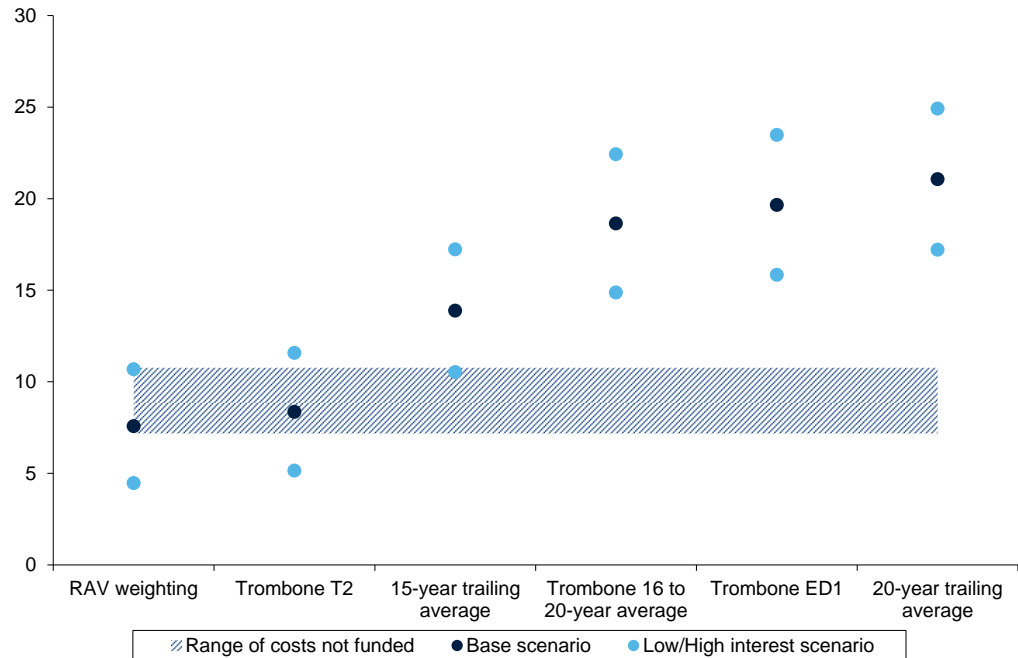
Cost of debt mechanism	Base case	Low interest rate scenario	High interest rate scenario
Trombone T2	0.1 - 0.3	0.3 - 0.5	(0.1) - 0.1
15-year trailing average	0.4 - 0.6	0.6 - 0.8	0.3 - 0.5
Trombone 16-20 year average	0.7 - 0.9	0.9 - 1.1	0.5 - 0.7
Trombone ED1	0.8 - 1	1 - 1.2	0.5 - 0.7
20-year trailing average	0.8 - 1	1 - 1.2	0.6 - 0.8
SHE-T RAV weighted index	0.1 - 0.3	0.2 - 0.4	(0.1) - 0.1

Note: The difference between the allowed and actual cost of debt is estimated on a per annum basis. The low and high interest rate scenarios reflect the annual cash flow impact in RIIO-2, subject to a ±25bp deviation from the nominal forward curve. The () indicate negative values—SHE-T will not be able to fund the ‘all-in’ cost of debt under the scenario.

A1.3 SHE-T’s view on the term premium

Figure A 1.3 shows the scenario where the embedded cost of debt is uplifted by 60bps as per SHE-T’s view on the term premium between 10yr and 20yr bonds.

Figure A 1.3 Average annual cash flow impact in RIIO-2 under different cost of debt mechanisms (£m nominal) with SHE-T term premium assumption (60bp)



Note: The lower bound of the range corresponds to the cash flow impact (£m) under the high interest rate scenario, while the upper bound reflects the cash flow impact in the low interest rate scenario. The midpoint of the range is the base-case scenario (i.e. no deviation from the nominal forward rates). The costs not funded are assumed to equal 40–60bp, and represent the new issue premium; the cost of carry; a premium for issuing nominal debt relative to index-linked debt; issuing at BBB+ yields that are higher than the average of A and BBB yields.

Source: Oxera analysis.

A2 Financeability assessment

A2.1 Overview of modelling key parameters

Our modelling assumes that net debt grows in line with RAV growth, maintaining notional gearing at a constant of 60%. We use the annual closing RAV as estimated by SHE-T in its financial model. The notional net debt is therefore exogenous to the model and does not fluctuate year-by-year with changes in other input parameters.

Interest expense is estimated using the notional net debt and allowed cost of debt (i.e. our estimates of Ofgem's 11–15-year trombone under the base case). We perform a sensitivity test using SHE-T's proposal for a 15-year trailing average of yields on A/BBB iBoxx non-financial corporate bond indices for the cost of debt (see 'Cost of debt mechanisms' in section 2 of this report).⁵¹

Cash interest differs from interest expense in our financeability assessment due to the 25% inflation-linked debt in line with Ofgem's guidance for the notional company.⁵² The introduction of index-linked debt for the notional company means that part of the interest expense that is incurred is not paid immediately and increases the value of the outstanding principal ('principal inflation accretion'). The FFO (cash interest)/net debt ratio is higher with the introduction of index-linked debt to the notional company as the numerator is on a cash interest basis and does not require an adjustment for principal inflation accretion. The FFO interest cover (excl. accretions) ratio is higher as the denominator is on a cash interest basis and does not require an adjustment for principal inflation accretion.

The dividend yield is assumed to be in line with the headline cost of equity in the base case. However, in recognition of the fact that SHE-T is experiencing annual growth in the RAV at a rate exceeding the headline cost of equity, we have also tested the impact of assuming a zero dividend yield in each year of RIIO-2.

Dividends are calculated using the NPV-neutral RAV, as estimated by SHE-T in the financial model. The equity injection required during RIIO-2 is estimated by modelling the movement in the notional net debt required to bring gearing back to 60% in each year, after accounting for regulatory revenues, pass-through cash flows, and dividends.

A2.2 Accounting versus economic form of key credit metrics for Oxera base case

Table A2.1 compares the results in our base case scenario using the accounting ratios used by the credit rating agencies with the economic forms specified by Ofgem in the SSMD.⁵³

The economic forms of the key ratios are:

$$\text{AICR/PMICR} = \frac{WACC}{\text{gearing} \times \text{cash interest}}$$

⁵¹ The 15-year trailing average cost of debt index excludes the impact of transaction costs and the cost of carry. We note that SHE-T is currently engaging with Ofgem on the appropriate length of the trailing average period; therefore, the sensitivity modelled here is not intended to preclude the possibility of a different trailing average period as an outcome from the SHE-T business planning process and engagement.

⁵² Ofgem (2019), 'RIIO-2 Sector Specific Methodology Decision - Finance', 24 May, para. 4.43.

⁵³ Ofgem (2019), 'RIIO-2 Sector Specific Methodology Decision - Finance', 24 May, para. 4.39.

FFO cash interest cover	$\frac{WACC + \frac{\text{Regulatory depreciation}}{RAV}}{\text{gearing} \times \text{cash interest}}$
FFO interest exp cover	$\frac{WACC + \frac{\text{Regulatory depreciation}}{RAV}}{\text{gearing} \times \text{interest expense}}$
FFO (cash interest)/net debt	$\frac{WACC + \frac{\text{Regulatory depreciation}}{RAV} - \text{gearing} \times \text{cash interest}}{\text{gearing}}$
FFO (interest expense)/net debt	$\frac{WACC + \frac{\text{Regulatory depreciation}}{RAV} - \text{gearing} \times \text{interest expense}}{\text{gearing}}$

Note: Cash interest and interest expense differ due to principal inflation accretion of index-linked debt in the notional company.

The economic ratios are higher on average than the accounting ratios. As Ofgem has noted, the difference between the ratios will be driven by a number of factors:

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.⁵⁴

⁵⁴ Ofgem (2019), 'RIIO-2 Sector Specific Methodology Decision - Finance', 24 May, para. 4.39.

Table A2.1 Accounting versus economic form of key credit metrics for Oxera base case

	Apr 2021	Apr 2022	Apr 2023	Apr 2024	Apr 2025	RIIO-2 average
AICR						
Accounting	0.97	1.58	1.22	1.06	1.05	1.18
Economic	1.37	1.38	1.38	1.38	1.39	1.38
<i>Difference</i>	<i>-0.40</i>	<i>0.20</i>	<i>-0.16</i>	<i>-0.33</i>	<i>-0.33</i>	<i>-0.20</i>
FFO (cash interest)/net debt						
Accounting	9.3%	11.0%	9.9%	9.5%	9.4%	9.8%
Economic	10.8%	10.3%	10.4%	10.6%	10.6%	10.5%
<i>Difference</i>	<i>-1.4%</i>	<i>0.7%</i>	<i>-0.6%</i>	<i>-1.1%</i>	<i>-1.2%</i>	<i>-0.7%</i>
FFO (interest expense)/net debt						
Accounting	8.9%	10.6%	9.5%	9.1%	9.0%	9.4%
Economic	10.2%	9.8%	9.9%	10.1%	10.1%	10.0%
<i>Difference</i>	<i>-1.3%</i>	<i>0.8%</i>	<i>-0.4%</i>	<i>-1.0%</i>	<i>-1.1%</i>	<i>-0.6%</i>
FFO/cash interest						
Accounting	3.59	4.10	3.82	3.72	3.73	3.79
Economic	3.99	3.90	3.98	4.05	4.06	4.00
<i>Difference</i>	<i>-0.40</i>	<i>0.20</i>	<i>-0.16</i>	<i>-0.33</i>	<i>-0.33</i>	<i>-0.20</i>
FFO/interest expense						
Accounting	3.14	3.59	3.33	3.25	3.25	3.31
Economic	3.50	3.41	3.47	3.54	3.54	3.49
<i>Difference</i>	<i>-0.35</i>	<i>0.18</i>	<i>-0.14</i>	<i>-0.29</i>	<i>-0.29</i>	<i>-0.18</i>

Note: Net debt is equal to gearing ratio (60%) × RAV.

Source: Oxera analysis and Ofgem (2019), 'RIIO-2 Sector Specific Methodology Decision - Finance', 24 May, Table 17.

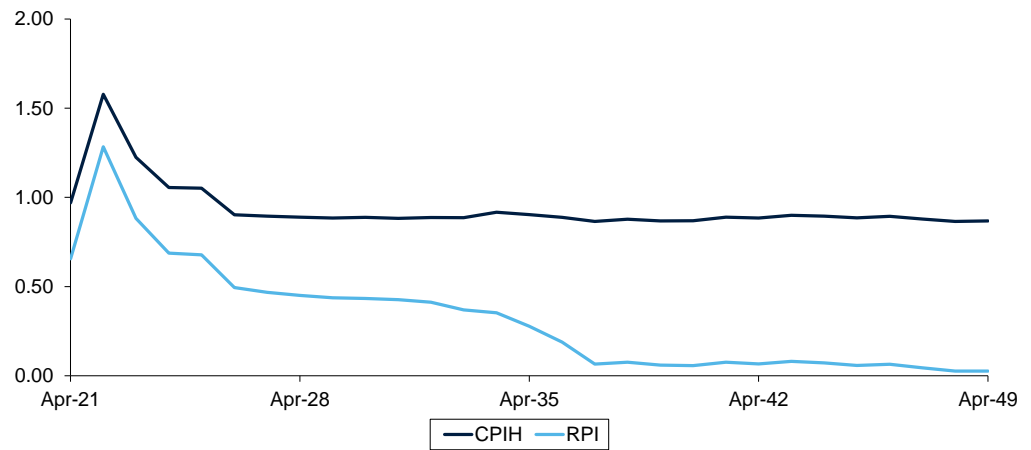
A2.3 Key credit metrics, 2021–49

The figures below show the AICR, FFO/net debt and FFO interest cover ratios (both accounting and economic) over the long term using the base case assumptions. On the basis of these assumptions, all ratios would eventually fall below the lower end of Moody's guidance threshold for a Baa rating (or a Baa2 rating in the case of the AICR).

However, we note that the long-term ratios are highly sensitive to assumptions regarding the CAPEX profile, interest costs, and the WACC, among other factors. These assumptions would be assessed and revised periodically, in line with the five-year price control cycle. Therefore, we do not consider that the estimation of these ratios for the long term can be reliably predicted on the basis of RIIO-2 input assumptions using a financial model that is primarily focused on the business planning process for RIIO-2.

We also note that the ratios under RPI inflation are similar to those under CPIH inflation shown below, but are shifted downwards.

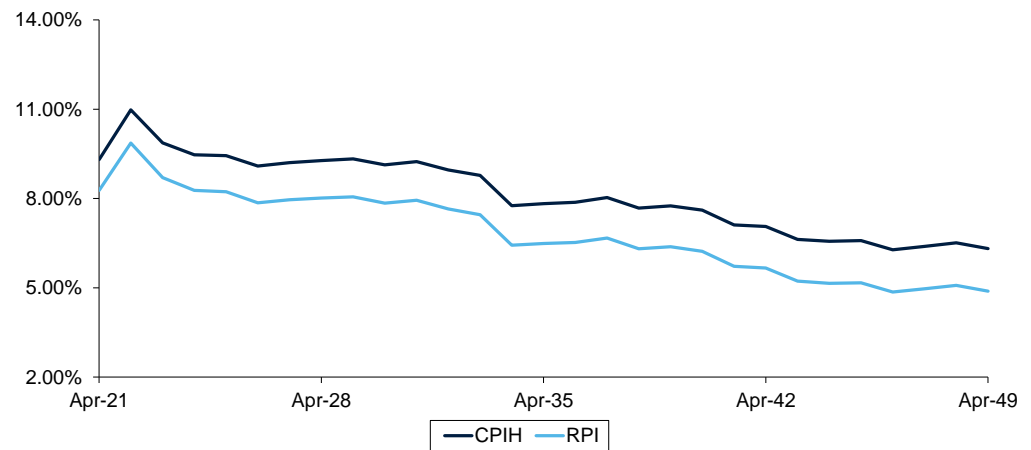
Figure A2.1 AICR, CPIH versus RPI, 2021–49



Note: The significant decline in in RPI-based AICR is driven by the higher rate of RAV depreciation and the higher interest costs implied by faster growth of net debt to finance RAV growth.

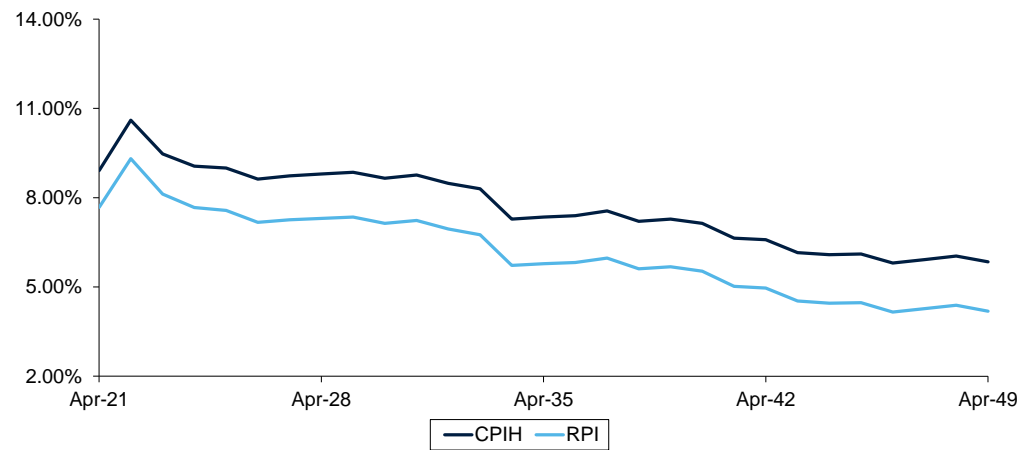
Source: Oxera analysis and SHE-T financial model.

Figure A2.2 FFO (cash interest)/net debt, CPIH versus RPI, 2021–49



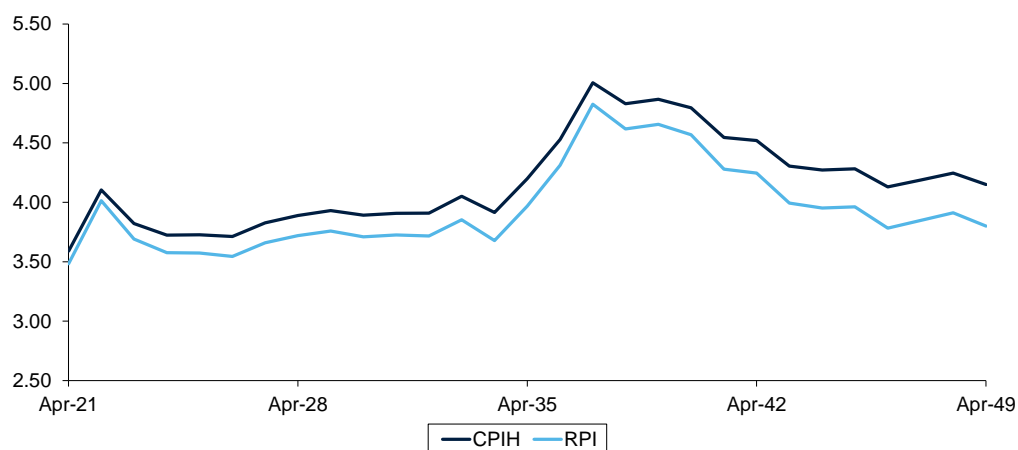
Source: Oxera analysis and SHE-T financial model.

Figure A2.3 FFO (interest expense)/net debt, CPIH versus RPI, 2021–49



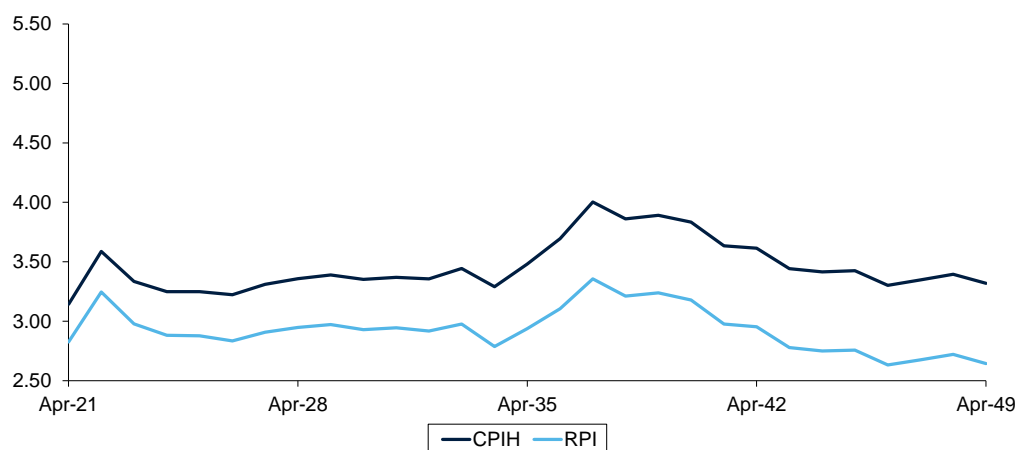
Source: Oxera analysis and SHE-T financial model.

Figure A2.4 FFO cash interest cover, CPIH versus RPI, 2021–49



Source: Oxera analysis and SHE-T financial model.

Figure A2.5 FFO interest expense cover, CPIH versus RPI, 2021–49



Source: Oxera analysis and SHE-T financial model.

A2.4 Reconciliation of key credit ratios with Ofgem figures

Table A2.2 compares our estimate of the economic form of the key credit ratios with those published by Ofgem in the SSMD Finance annex. Assuming a 50bp uplift to the cost of equity for expected outperformance is inconsistent with assuming that the notional company does not out- or underperform against regulatory allowances; therefore, these figures are presented for reconciliation purposes only.

Table A2.2 Oxera and Ofgem credit ratios using economic form, with uplift of 50bp to cost of equity for expected outperformance

	Apr 2021	Apr 2022	Apr 2023	Apr 2024	Apr 2025	RIO-2 average
Inputs						
Equity allowance						
Oxera	4.30%	4.30%	4.30%	4.30%	4.30%	4.30%
Ofgem	4.27%	4.29%	4.30%	4.31%	4.31%	4.30%
<i>Difference</i>	<i>0.03%</i>	<i>0.01%</i>	<i>0.00%</i>	<i>-0.01%</i>	<i>-0.01%</i>	<i>0.00%</i>
Incentive bias						

	Apr 2021	Apr 2022	Apr 2023	Apr 2024	Apr 2025	RIIO-2 average
Oxera	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%
Ofgem	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%
<i>Difference</i>	<i>0.00%</i>	<i>0.00%</i>	<i>0.00%</i>	<i>0.00%</i>	<i>0.00%</i>	<i>0.00%</i>
Expected equity return						
Oxera	4.80%	4.80%	4.80%	4.80%	4.80%	4.80%
Ofgem	4.77%	4.79%	4.80%	4.81%	4.81%	4.80%
<i>Difference</i>	<i>0.03%</i>	<i>0.01%</i>	<i>0.00%</i>	<i>-0.01%</i>	<i>-0.01%</i>	<i>0.00%</i>
Allowance for debt						
Oxera	2.06%	2.01%	1.97%	1.95%	1.93%	1.98%
Ofgem	2.03%	1.96%	1.91%	1.88%	1.86%	1.93%
<i>Difference</i>	<i>0.03%</i>	<i>0.05%</i>	<i>0.06%</i>	<i>0.07%</i>	<i>0.07%</i>	<i>0.06%</i>
Notional gearing						
Oxera	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
Ofgem	60.0%	60.0%	60.0%	60.0%	60.0%	60.0%
<i>Difference</i>	<i>0.00%</i>	<i>0.00%</i>	<i>0.00%</i>	<i>0.00%</i>	<i>0.00%</i>	<i>0.00%</i>
WACC allowance						
Oxera	3.16%	3.12%	3.10%	3.09%	3.08%	3.11%
Ofgem	3.13%	3.09%	3.07%	3.05%	3.04%	3.08%
<i>Difference</i>	<i>0.03%</i>	<i>0.03%</i>	<i>0.04%</i>	<i>0.04%</i>	<i>0.04%</i>	<i>0.03%</i>
Cash interest						
Oxera	3.60%	3.54%	3.50%	3.47%	3.46%	3.51%
Ofgem	3.56%	3.49%	3.44%	3.40%	3.38%	3.45%
<i>Difference</i>	<i>0.04%</i>	<i>0.05%</i>	<i>0.06%</i>	<i>0.07%</i>	<i>0.08%</i>	<i>0.06%</i>
Interest expense						
Oxera	4.11%	4.05%	4.01%	3.98%	3.97%	4.02%
Ofgem	4.07%	4.00%	3.95%	3.91%	3.89%	3.96%
<i>Difference</i>	<i>0.04%</i>	<i>0.05%</i>	<i>0.06%</i>	<i>0.07%</i>	<i>0.08%</i>	<i>0.06%</i>
Depreciation/RAV						
Oxera	5.65%	5.36%	5.45%	5.56%	5.56%	5.52%
Ofgem	6.07%	5.97%	5.87%	5.80%	5.59%	5.86%
<i>Difference</i>	<i>-0.42%</i>	<i>-0.61%</i>	<i>-0.42%</i>	<i>-0.24%</i>	<i>-0.03%</i>	<i>-0.34%</i>
Key economic form ratios						
AICR/PMICR						
Oxera	1.46	1.47	1.48	1.48	1.48	1.48
Ofgem	1.46	1.48	1.49	1.49	1.50	1.48
<i>Difference</i>	<i>0.00</i>	<i>-0.01</i>	<i>-0.01</i>	<i>-0.01</i>	<i>-0.02</i>	<i>-0.01</i>
FFO (cash interest)/ net debt						
Oxera	11.1%	10.6%	10.8%	10.9%	10.9%	10.9%
Ofgem	10.4%	10.6%	10.7%	10.9%	11.0%	10.7%
<i>Difference</i>	<i>0.7%</i>	<i>0.0%</i>	<i>0.1%</i>	<i>0.0%</i>	<i>-0.1%</i>	<i>0.1%</i>
FFO (interest expense)/ net debt						
Oxera	10.6%	10.1%	10.2%	10.4%	10.4%	10.4%
Ofgem	9.9%	10.1%	10.2%	10.4%	10.5%	10.2%
<i>Difference</i>	<i>0.7%</i>	<i>0.0%</i>	<i>0.0%</i>	<i>0.0%</i>	<i>-0.1%</i>	<i>0.1%</i>
FFO/cash interest						
Oxera	4.08	4.00	4.07	4.15	4.16	4.09

	Apr 2021	Apr 2022	Apr 2023	Apr 2024	Apr 2025	RIIO-2 average
Ofgem	3.93	4.04	4.12	4.20	4.25	4.11
<i>Difference</i>	<i>0.15</i>	<i>-0.04</i>	<i>-0.05</i>	<i>-0.05</i>	<i>-0.09</i>	<i>-0.01</i>
FFO/interest expense						
Oxera	3.58	3.49	3.56	3.62	3.62	3.57
Ofgem	3.44	3.52	3.59	3.65	3.70	3.58
<i>Difference</i>	<i>0.14</i>	<i>-0.03</i>	<i>-0.03</i>	<i>-0.03</i>	<i>-0.08</i>	<i>-0.01</i>

Note: Net debt is equal to gearing ratio (60%) × RAV.

Source: Oxera analysis and Ofgem (2019), 'RIIO-2 Sector Specific Methodology Decision - Finance', 24 May, Table 17.

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