



# Cadent Gas Limited

## The impact of refinancing on cost of debt and implications for reporting

KPMG LLP

**STRICTLY PRIVATE AND CONFIDENTIAL**

21 November 2018

## Contents

1	Important notice	1
2	Executive summary	2
3	Key findings	6
4	Context and scope	15
4.1	Context	15
4.2	Scope	16
4.3	Structure of report	17
5	Discussion and analysis of the refinancing	18
5.1	Summary of debt refinancing undertaken as part of segmentation	19
5.2	Financial structure of the gas distribution business prior to the refinancing	19
5.3	Novation of existing debt	21
5.4	Redemption of existing debt	22
5.5	Raising of new debt	24
5.6	Costs of refinancing recorded in statutory accounts	25
6	Development of financial projections	27
6.1	Overview of financial projections	27
6.2	Observed costs of the gas distribution business	28
6.3	Pre-refinancing estimate of all-in cost of debt	31
6.4	Estimates of cash flows of redeemed debt	35
6.5	Cost of debt if all debt had been novated	36
6.6	Reported statutory charges	37



6.7	Independent valuation of cost of debt redemption	42
6.8	Observations on financial projections developed	45
7	Implications of the refinancing for the cost of debt	47
7.1	Scenario 1: cost projections in the absence of the refinancing	48
7.2	Scenario 2: cost projections of debt if it was novated as originally intended	50
7.3	Scenario 3: cost projections based on all costs actually incurred and associated with the refinancing	51
8	Reporting considerations and potential information for inclusion in the RFPR	53
8.1	Overview of reporting requirements	53
8.2	Overview of options for inclusion of additional information in the RFPR	55
8.3	Option 1: estimate based on statutory costs	56
8.4	Option 2: estimate based on independent valuation of redemption costs (value approach)	58
8.5	Option 3: estimate based on pre-refinancing cost of debt	59
8.6	Option 4: estimate based on independent valuation of redemption costs (cashflow approach)	61
8.7	Summary: all-in cost of debt by option	63
8.8	Relative assessment of options	66
9	Appendix 1: cost of debt assumptions	70
10	Glossary	75

## 1 Important notice

This Report has been prepared under our Engagement Letter of 19<sup>th</sup> September 2018 with Cadent Gas Limited ('Cadent') and is provided solely for the benefit and information of the addressees of our Engagement Letter and should not be copied, referred to or disclosed in whole or in part without our prior written consent. We accept no responsibility to anyone other than the parties identified in our engagement letter for the information contained in this Report.

This Report has been prepared for the use of Cadent in order to inform how its cost of debt performance can be reflected in its regulatory reporting, and does not carry any right of publication or disclosure to any other party. Neither this Report nor its content may be used for any other purpose without prior written consent of KPMG LLP.

In this instance, we consent to Cadent disclosing the Report to the Office of Gas and Electricity Markets ('Ofgem') for the purposes of informing discussions around the submission of Cadent's regulatory reporting.

The information contained in this Report, including market data, has not been independently verified. No representation, warranty or undertaking, express or implied, is made as to, and no reliance should be placed on, the fairness, accuracy, completeness or correctness of the information, the opinions, or the estimates contained herein.

Although we endeavour to provide accurate and timely information, there can be no guarantee that such information is accurate as of the date it is received or that it will continue to be accurate in the future. No one should act on such information without appropriate professional advice after a thorough examination of the particular situation.

Whilst the information presented and views expressed in this Report have been prepared in good faith, KPMG LLP accepts no responsibility or liability to any party in connection with such information or views.

This Report is not suitable to be relied on by any party wishing to acquire rights against KPMG LLP (other than the Client) for any purpose or in any context. Any party other than the Client that obtains access to this Report or a copy and chooses to rely on this Report does so at its own risk. To the fullest extent permitted by law, KPMG LLP does not assume any responsibility and will not accept any liability, including any liability arising from fault or negligence, for any loss arising from the use of this Report or its contents or otherwise in connection with it to any party other than the Client.

This Report is made by KPMG LLP, a UK limited liability partnership, a subsidiary of KPMG Europe LLP and a member firm of the KPMG network of independent member firms affiliated with KPMG International Cooperative ('KPMG International'), a Swiss entity, and is in all respects subject to the negotiation, agreement, and signing of a specific engagement letter or contract. KPMG Europe LLP and KPMG International provide no client services. No member firm that is part of KPMG Europe LLP or any other KPMG member firm has any authority to obligate or bind KPMG Europe LLP, KPMG International or any other member firm vis-à-vis third parties, nor does KPMG International have any such authority to obligate or bind any member firm. All rights reserved.

The address of KPMG LLP is 15 Canada Square, Canary Wharf, London, E14 5GL.

## 2 Executive summary

The gas distribution business now operated by Cadent was subject to a refinancing in 2016. This refinancing was related to the segmentation and separation of the gas distribution networks from National Grid (the 'segmentation').

The refinancing included a part-novation and part-repayment of relatively expensive existing debt as well as raising of new debt at lower rates. There were significant costs associated with this process to enable a new financing structure to be put in place.

As a result of the refinancing, the gas distribution business now pays significantly lower coupons on its existing debt, which do not reflect the all-in economic costs that its owners have incurred to enable this.

A large proportion of the costs associated with refinancing were incurred upfront and were reported in statutory and regulatory accounts within the period over which the segmentation took place (FY2017). Specifically, cash payments of £1,050m were made to banks and bondholders in relation to the segmentation, according to statutory accounts.

A simple analysis of the cost of debt based on the coupon rates now being paid on the new debt post refinancing, as set out in the RIGs governing the RFPR, omits significant costs directly associated with the refinancing, which enabled it in the first place and, therefore, does not represent the actual all-in economic cost of debt including associated costs incurred upfront as part of the refinancing and separation. Ignoring these costs would give a misleading view that significant value was simply given up by debt investors for free.

Cadent has commissioned KPMG to conduct a careful, in-depth analysis of the all-in economic cost of debt of the business, taking into account the costs associated with the refinancing that enabled current rates on its debt, and to comment on how the estimated all-in cost of debt could be reflected in regulatory reporting, specifically, in the context of Ofgem's Regulatory Financial Performance Reporting ('RFPR').

A number of factors have to be considered carefully when estimating the all-in economic cost of debt for the gas distribution business:

- The way in which the costs recorded in the statutory and regulatory accounts at the time of the refinancing have been calculated is not publically available, and it is therefore not possible to ascertain precisely what is included within the scope of the reported figures;
- The costs incurred as part of the refinancing were borne by a number of different entities, and some of these costs were also subsequently transferred in value terms to other parties. It is not transparent which costs were ultimately borne by which parties based on publically available data;
- The costs recorded in the statutory and regulatory accounts at the time of the refinancing may include costs that would not be appropriate to include in the

estimate of the all-in cost of debt so care has to be taken not to overestimate the all-in costs<sup>1</sup>; and

- Once the appropriate quantum of costs incurred as part of the refinancing has been determined, it is appropriate to profile these costs over time to determine the all-in cost of debt on an ongoing basis while avoiding double counting.

In order to estimate the all-in cost of debt, three scenarios are developed in this report to enable the analysis of the overall cost:

- **Scenario 1: cost projections in the absence of the refinancing**—assuming that the refinancing did not materially affect the all-in cost of debt (ie that the total value was preserved in an efficient market), the observed cost of debt that would have prevailed in the absence of the refinancing could be used as an approximation of the economic all-in cost of debt;
- **Scenario 2: cost projections of debt if it was novated as originally intended**—if all the legacy debt associated with the gas distribution business in existence at the time of the refinancing had been successfully novated as originally intended, the resulting observed cost of debt could approximate the all-in cost of debt, which represents another potential basis for estimation;
- **Scenario 3: cost projections based on all costs associated with the refinancing that took place**—the all-in cost of debt can be also estimated by considering all the relevant costs associated with the refinancing actually incurred; these costs have to be identified, estimated and profiled appropriately to be added to the observed costs based on coupon rates on the new debt.

Based on these scenarios, a series of options for estimating the all-in cost of debt are set out.

- **Option 1: estimate based on statutory costs** – this approach uses the reported statutory costs of the refinancing as the basis for estimating the all-in cost of debt.
- **Option 2: estimate based on independent valuation of redemption costs (value approach)** – this approach involves independently estimating the upfront costs associated with the refinancing based on IFRS9 methodologies and profiling this over time.
- **Option 3: estimate based on pre-refinancing cost of debt** –, the all-in cost of debt is estimated based on the pre-refinancing cost of debt, assuming that the refinancing did not happen.
- **Option 4: estimate based on independent valuation of redemption costs (cashflow approach)** – this approach involves independently estimating the upfront costs associated with the refinancing based on a comparison of the cash flows of the

---

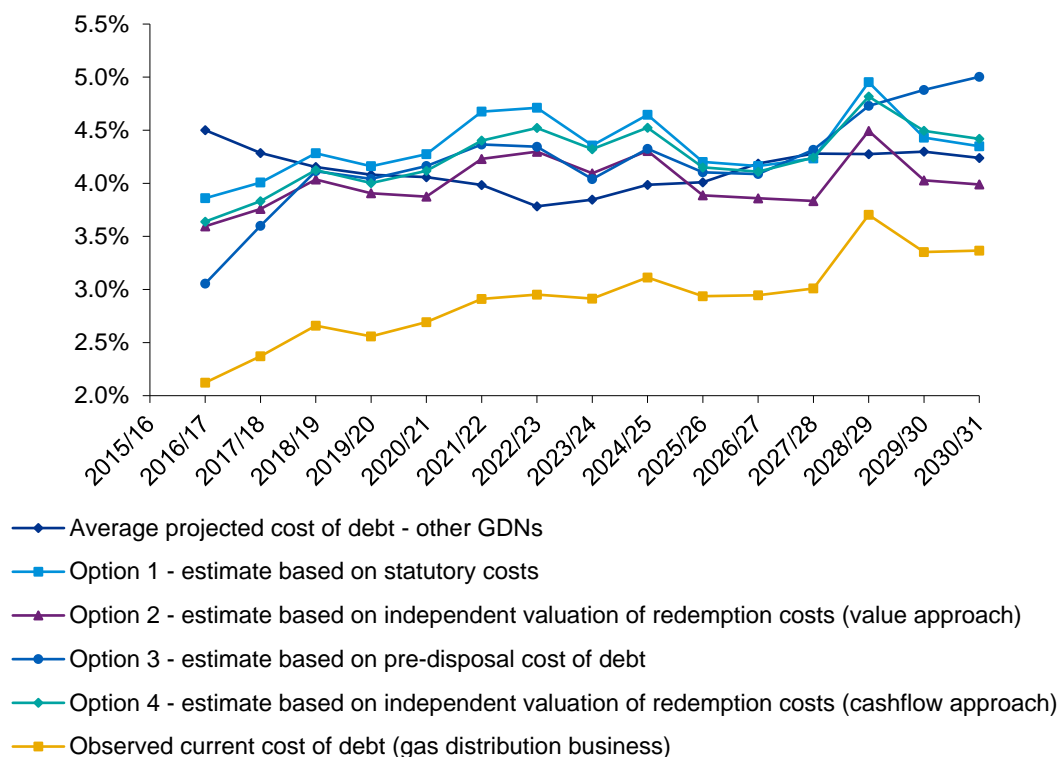
<sup>1</sup> For example, the impact of the fair valuation of novated debt reported in the statutory accounts may include the impact of the increase in the coupon rate agreed as part of the novation process. Since the increase in the coupon rate is reflected in the interest costs reported in the accounts on an ongoing basis, including an additional cost corresponding to this impact would be double counting.

redeemed debt securities and the cash flows of the new debt securities raised post refinancing, and profiling this over time.

There is insufficient data on the observed cost of debt that would have prevailed if all of the legacy debt had novated at the time of the refinancing, and so it has not been possible to develop any Options corresponding to Scenario 2 with sufficient precision.

The all-in cost of debt is set out below for each of the four options, relative to the current observed cost of debt:

**Figure 1: Summary of reporting options – nominal cost of debt**



Overall, the results indicate that there is a clear difference between the currently observed cost of debt based on current coupon rates on the one hand, and the all-in economic cost of debt, including the cost of the refinancing, based on each of the four options, on the other hand. This result holds whichever scenario and option is used.

On average, the cost of debt under the four options is 120bps higher than the cost observed from current coupon rates.

There are in fact relatively small differences in the estimated all-in economic cost of debt across the four options, which indicates that estimation differences across different options have limited impact on the overall result. The average basis points differential between the options is +/-15-20bps<sup>2</sup>, which suggests that the all-in cost of debt and the

<sup>2</sup> This is expressed as the average variance of each option to the average of the four options from 2016/17 to the end of RIIO3.



quantum of the adjustment to the observed cost of debt can be specified with a reasonable degree of precision.

The four options also have similar profiles, as under each option the adjustment is spread over the maturities of the instruments attributed to the gas distribution business prior to the refinancing.

Different methods of estimating the all-in cost of debt over time also suggest that the all-in cost of debt would be broadly similar to the level that would have prevailed in the absence of the refinancing as would be expected in an efficient market.

The options for estimating the all-in cost of debt considered in this report suggest that, when the relevant costs associated with the refinancing are taken into account, the resulting effective all-in economic cost of debt for the gas distribution business is relatively close to the reported cost of debt for other GDNs based on publically available data.



## 3 Key findings

### Background

The gas distribution business now operated by Cadent was subject to a refinancing in 2016. This refinancing was related to the segmentation and separation of the gas distribution networks from National Grid.

The refinancing included a part-novation and part-repayment of relatively expensive existing debt as well as raising of new debt at lower rates. There were significant costs associated with this process to enable a new financing structure to be put in place.

As a result of the refinancing, the gas distribution business now pays significantly lower coupons on its existing debt, which do not reflect the all-in economic costs that its owners have incurred to enable this.

A large proportion of the costs associated with refinancing were incurred upfront and were reported in statutory and regulatory accounts within the period over which the refinancing took place (FY2017). Specifically, £1,050m in cash was paid to banks and bondholders in relation to the segmentation, according to statutory accounts.

A simple analysis of the cost of debt based on the coupon rates now being paid on the new debt post refinancing, as reported under the RFPR, omits significant costs directly associated with the refinancing, which enabled it in the first place and, therefore, does not represent the actual 'all-in' economic cost of debt including associated costs incurred upfront as part of the refinancing and separation. Ignoring these costs would give a misleading view that significant value was simply given up by debt investors for free.

If the refinancing had not happened, the current cost of debt for the gas distribution business would be on average circa 120bps higher per annum up to the end of RIIO-GD3. Our understanding based on publically available data of the key relevant elements of the segmentation and separation of Cadent and refinancing is set out below.

### Key elements of the segmentation and refinancing

In 2016 National Grid, which owned the gas distribution business as part of a single legal entity comprising the gas distribution, gas transmission and metering businesses determined a strategy to dispose of the gas distribution business. In order to facilitate this it created a new legal entity. The gas distribution assets were transferred into this new entity. An intercompany loan of £3.6bn between the parent company and new entity was put in place at the time that the gas distribution assets were transferred.

At the point of the refinancing, £5.2bn of debt was attributed to the gas distribution business. National Grid sought to move this debt liability to the new entity alongside the distribution assets.<sup>3</sup>

£1.2bn of debt attributed to the gas distribution business prior to the refinancing was moved into the new entity from the parent company, which was priced at market terms

---

<sup>3</sup> This allocation is consistent with the debt attributed to the gas distribution business within the National Grid Gas plc regulatory accounts.

and increased the reported value of the debt transferred, resulting in non-cash costs being reflected in the statutory accounts.

The remainder (£4.0bn) held by the gas business and attributed to the gas distribution business could not be transferred as the cost of doing this was deemed too expensive.

The parent company bought back some of the debt on its balance sheet (£1.8bn), incurring significant costs. At the same time the new entity raised £3.6bn of debt at low prevailing market rates, which was used to repay the £3.6bn intercompany loan between the parent company and the new entity. The repayment of the intercompany loan was used to finance the buyback of existing debt held by the parent company (£1.8bn).<sup>4</sup>

The equity sale completed six months after the refinancing and following the repayment of parent company debt.

Figure 2 below provides a visual representation of the impact of the refinancing on the gas distribution business.

**Figure 2: Summary of impacts of the refinancing on the gas distribution business**

Mar-16		Key events affecting gas distribution business				Mar-18	
<ul style="list-style-type: none"><li>▪ Ratio of net debt/RAV: 59%</li><li>▪ Interest cost<sup>1</sup> (all debt, including derivatives): 3.2%</li><li>▪ Interest cost (all debt, excluding derivatives): 4.1%</li><li>▪ Interest cost (fixed-rate debt): 6.3%</li><li>▪ Interest cost (IL debt): RPI+2.3%</li><li>▪ Weighted average time to maturity: 15 years</li></ul>	<div>Sum of gas distribution RAVs: £8.7bn<sup>2</sup></div> <div>Face value of debt attributable to gas distribution business: £5.2bn<sup>3</sup></div>	<div>£1.2bn of index-linked debt novated;</div> <div>Hedging instruments de-designated</div>	<div>£3.6bn of new fixed-rate debt raised;</div> <div>£1.5bn of new floating-rate debt raised</div>	<div>£1.8bn of fixed-rate debt redeemed</div> <div>Hedging instruments de-designated</div>	<div>New legal entity created; 61% of equity of new legal entity sold for £3.7bn cash, £2.3bn debt</div>	<div>Sum of gas distribution RAVs: £9.4bn<sup>4</sup></div> <div>Net debt outstanding for gas distribution business: £5.8bn<sup>5</sup></div>	<ul style="list-style-type: none"><li>▪ Ratio of net debt/RAV: 62%</li><li>▪ Interest cost (all debt): 2.4%</li><li>▪ Interest cost (fixed-rate debt): 2.2%</li><li>▪ Interest cost (IL debt): RPI+1.6%</li><li>▪ Weighted average time to maturity: 13 years</li></ul>
<div>Costs pertaining to these events are recorded in statutory accounts</div>							

<sup>1</sup>This refers to interest divided by the book value of outstanding debt

<sup>2</sup>Based on NGG Mar-16 regulatory accounts

<sup>3</sup>Based on NGG 2016 statutory accounts, and excluding all intercompany borrowing

<sup>4</sup>Based on Cadent Mar-18 regulatory accounts

<sup>5</sup>Based on Cadent Mar-18 regulatory accounts

## Overview of refinancing costs incurred

The costs incurred at various points during the refinancing are recorded in the statutory accounts of various parties, including the 2017 statutory accounts of National Grid Electricity Transmission plc ('NGET' or 'the electricity business'), National Grid Gas plc ('NGG' or 'the gas business'), and National Grid plc.

Bondholders and banks were paid £1,050m per the statutory accounts of various legal entities, which reflected costs including the net present value of the difference between

<sup>4</sup> The statutory accounts show £871m of costs relating to the redemption of debt across different National Grid legal entities, part of £1,052m of cash costs for liability management programme in relation to the separation and segmentation of the UK Gas Distribution business.

old expensive debt cash flows and lower observed cost of debt as well as market costs incurred as part of the refinancing.

The analysis in this report is based on the premise that the upfront costs incurred in relation to the refinancing have ultimately been borne by the owners of the gas distribution business. This approach is adopted on the basis that the upfront costs were incurred in relation to the gas distribution business which represents an ongoing business activity, they are a critical component of the all-in cost of debt for this business, and were partly paid for by new equity.

The costs incurred over the course of the refinancing are summarised in Figure 3 below:

**Figure 3: Summary of costs directly attributable to the refinancing<sup>5</sup>**

Costs incurred in respect of refinancing		One off / recurring	Cash / non cash	Total value / cost
1	Costs incurred in respect of redeemed debt	One off	Cash	£871m
The gas distribution business incurred a cost reflecting the market premium (over and above face value) for instruments that were redeemed				
2	Costs incurred in respect of novated debt	One off	Non-cash	£264m
The gas distribution business incurred a cost pertaining to the change in the carrying value of the novated debt to fair value				
3	Impact of de-designation of derivatives	One off	Cash	£179m
The gas distribution business incurred costs driven by the de-designation of derivatives corresponding to novated and/or redeemed debt				

Cadent has commissioned KPMG to conduct a careful, in-depth analysis of the all-in economic cost of debt of the business, taking into account the costs associated with the refinancing that enabled current rates on its debt, and to comment on how the estimated all-in cost of debt could be reflected in regulatory reporting, specifically, in the context of Ofgem's Regulatory Financial Performance Reporting ('RFPR').

### Estimating the all-in economic cost for the gas distribution business

A number of factors have to be considered carefully when estimating the all-in economic cost of debt for the gas distribution business:

- The way in which the costs recorded in the statutory and regulatory accounts at the time of the refinancing have been calculated is not publically available, and it is therefore not possible to ascertain precisely what is included within the scope of the reported figures;
- The costs incurred as part of the refinancing were borne by a number of different entities, and some of these costs were also subsequently transferred in value terms to other parties. It is not transparent which costs were ultimately borne by which parties based on publically available data;
- The costs recorded in the statutory and regulatory accounts at the time of the refinancing may include costs that would not be appropriate to include in the

<sup>5</sup> Total cash costs incurred as part of the refinancing are £871m for redemption of debt and £179m for de-designation of cash flow hedges (£1,050m in total) per the statutory accounts of NGET and NGG in 2016/17. This is consistent with cash costs reported at the Group level in the NG plc statutory accounts of £1,052m.

estimate of the all-in cost of debt so care has to be taken not to overestimate the all-in costs<sup>6</sup>; and

- Once the appropriate quantum of costs incurred as part of the refinancing has been determined, it is appropriate to profile these costs over time to determine the all-in cost of debt on an ongoing basis while avoiding double counting.

As a variety of costs have been incurred in different forms associated with the refinancing, each needs to be analysed in order to understand the all-in cost of debt. In conducting this assessment, we have relied on a combination of information in the public domain, in particular statutory accounts, and documents provided to us by Cadent, as indicated.

In some cases, it has not been possible to precisely replicate certain calculations based on the available information. Where we have relied on assumptions and judgements in these cases, we have stated these explicitly. However the analysis represents a good approximation based on reliable data and has fully utilised the information available to us.

In order to estimate the all-in cost of debt, three scenarios are developed in this report to enable the analysis of the overall cost:

- **Scenario 1: cost projections in the absence of the refinancing**—assuming that the refinancing did not materially affect the all-in cost of debt (ie that the total value was preserved in an efficient market), the observed cost of debt that would have prevailed in the absence of the refinancing could be used as an approximation of the economic all-in cost of debt;
- **Scenario 2: cost projections of debt if it was novated as originally intended**—if all the legacy debt associated with the gas distribution business in existence at the time of the refinancing had been successfully novated as originally intended, the resulting observed cost of debt could approximate the all-in cost of debt, which represents another potential basis for estimation;
- **Scenario 3: cost projections based on all costs associated with the refinancing that took place**—the all-in cost of debt can be also estimated by considering all the relevant costs associated with the refinancing actually incurred in the course of the refinancing; these costs have to be identified, estimated and profiled appropriately to be added to the observed costs based on coupon rates on the new debt.

Based on these scenarios, a series of options for estimating the all-in cost of debt are set out.

- **Option 1: estimate based on statutory costs** – this approach uses the reported statutory costs associated with redemption of debt and de-designation of cashflow hedges as the basis for estimating the all-in cost of debt.
- **Option 2: estimate based on independent valuation of redemption costs (value approach)** – this approach involves independently estimating the upfront costs associated with the refinancing, on the basis that the calculation of the statutory charges is not publically available and hence a cross-check on these

---

<sup>6</sup> For example, the impact of the fair valuation of novated debt reported in the statutory accounts may include the impact of the increase in the coupon rate agreed as part of the novation process. Since the increase in the coupon rate is reflected in the interest costs reported in the accounts on an ongoing basis, including an additional cost corresponding to this impact would be double counting.

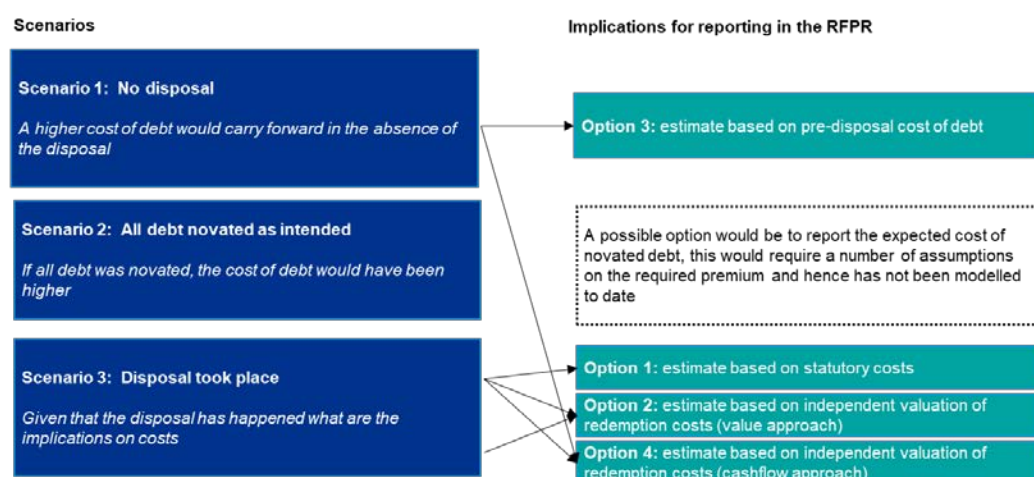
figures is needed. It compares the carrying value of legacy debt with the present value of lower cost new debt. The all-in cost of debt is then calculated as the sum of this value – profiled over time based on the IFRS9 methodology – and the post-refinancing observed cost of debt.

- **Option 3: estimate based on pre-refinancing cost of debt** – this approach is based on the hypothesis that the refinancing did not result in a material change to the all-in cost of debt: i.e., the upfront costs precisely offset the reduction in the observed cost of debt. Under this hypothesis, the all-in cost of debt can be estimated based on the pre-refinancing cost of debt, which is higher than the current observed cost of debt.
- **Option 4: estimate based on independent valuation of redemption costs (cashflow approach)** – this approach is similar in nature and motivation to Option 2 – i.e., the upfront costs are independently estimated on the basis that a cross-check is needed on the statutory charges – but the calculation and profiling of the upfront costs are based on an alternative approach. The principal difference pertains to the amount that is added to the observed cost of debt to calculate the all-in cost of debt. This is based on a comparison of the cash flows of the redeemed debt securities and the cash flows of the new debt securities raised during the refinancing, rather than their carrying and present values respectively. The approach results in a different estimate to Option 2 due to the way in which the cash flows are translated into carrying/present values, and the methodology used to profile those values under Option 2.

There is insufficient data on the observed cost of debt that would have prevailed if all of the legacy debt had novated at the time of the refinancing, and so it has not been possible to develop any Options corresponding to Scenario 2.

Figure 4 below highlights how the three scenarios above have informed the development of these options.

**Figure 4: Mapping of scenarios to reporting options**

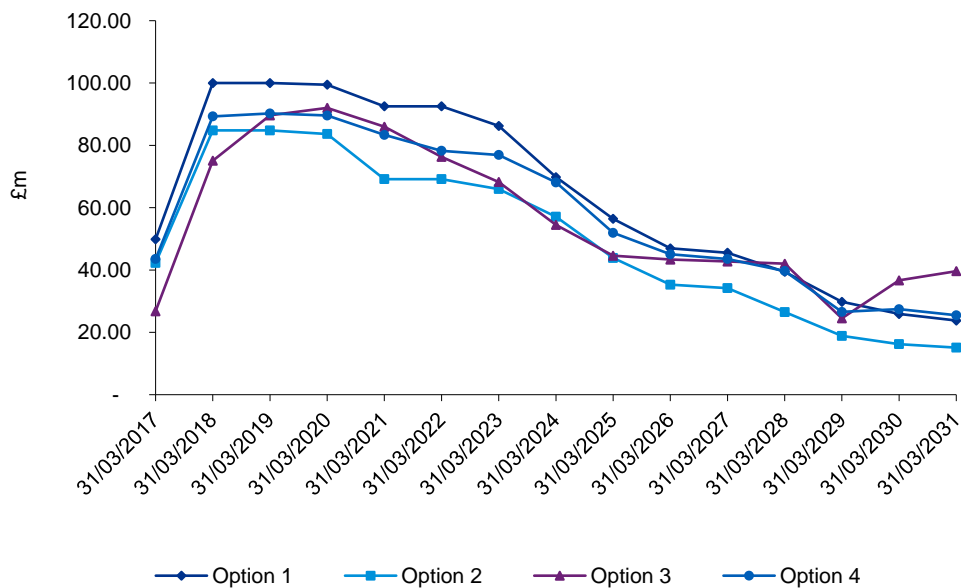


### Summary of all-in cost of debt by reporting option

Each option reflects an estimate of the all-in cost of debt and can be expressed as an increase in the cost of debt relative to the observed cost of debt. The increase in

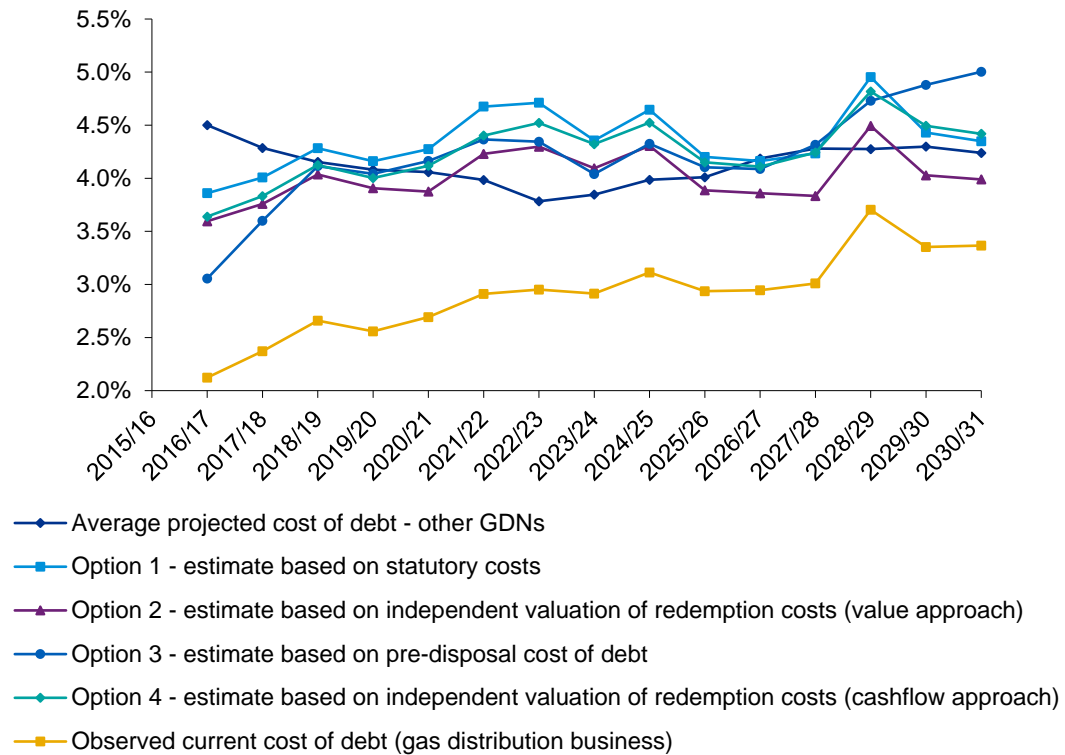
absolute terms is set out in the Figure 5 below. The increase has been projected from the date of the refinancing (September 2016) as it is from this point that the observed cost of debt diverges from the all in cost of debt.

**Figure 5: Summary of potential adjustments to the observed cost of debt in absolute terms**



The potential adjustments have similar profiles, as under each option the adjustment is spread over the maturities of the instruments attributed to the gas distribution business prior to the refinancing. If the observed cost of debt were to be adjusted to reflect the all-in cost of debt, then the observed cost of debt would increase by at least an average of £50m per annum. The impact on the nominal cost of debt is set out below by option.

**Figure 6: Summary of reporting options – nominal cost of debt**



Overall, the results indicate that there is a clear difference between the observed new cost of debt based on current coupon rates and the all-in economic cost of debt of the refinancing implied by each of the four options. This result holds whichever scenario and option is used. On average, the cost of debt under the four options is 120bps higher than the cost observed from current coupon rates.

There are relatively small differences in the estimated all-in economic cost of debt across the four options. The average basis points differential between the options is +/-15-20bps<sup>7</sup>, which suggests that the all-in cost of debt and the quantum of the adjustment to the observed cost of debt can be specified with a reasonable degree of precision.

<sup>7</sup> This is expressed as the average variance of each option to the average of the four options from 2016/17 to the end of RIIO3.



The four options also have similar profiles, as under each option the adjustment is spread over the maturities of the instruments attributed to the gas distribution business prior to the refinancing.

Different methods of estimating the all-in cost of debt over time also suggest that the all-in cost of debt would be broadly similar to the level that would have prevailed in the absence of the refinancing as would be expected in an efficient market.

Options 1 and 2 have profiles primarily driven by amortisation of additional costs calibrated based on the maturity of redeemed instruments. The additional costs attributed to the gas distribution business under Options 3 and 4 are driven by the variance in financing cash flows before and after the refinancing.

Option 1 – which prices in all market costs directly attributable to the refinancing – gives the highest cost of debt. Meanwhile Option 2 implies a lower cost of debt than Option 1; this reflects the fact that the approach (in particular the discount rate) may under-estimate the present value of additional costs associated with the redemption of debt.

Equally, an approach based solely on the variance in cash flows (in particular Option 3) may under-estimate certain market costs incurred as a result of the refinancing, which are indivisible from the variance in projected cash flows as in their absence it would not have been possible to re-finance debt allocated to the distribution business prior to the hive out.

All options for estimating the all-in cost of debt considered in this report suggest that, when the relevant costs associated with the refinancing are taken into account, the resulting effective all-in economic cost of debt for the gas distribution business is relatively similar to the reported cost of debt for other GDNs, based on publically available information.

### Relative assessment of the options

A high level assessment has been carried out to identify potential advantages and disadvantages of each of the four options for including additional cost of debt information in the RFPR. In total, three criteria are applied as part of this assessment and a RAG assessment of each option against the criteria above is set out in the table below.

**Table 1: Assessment of reporting options**

Criterion	Option 1	Option 2	Option 3	Option 4
<u>1. The option is simple and transparent</u>				
<u>2. The underlying data is publically available and value of option is based on cost estimates that have been independently audited</u>				
<u>3. Value of option is robust to alternative assumptions</u>				

Option 3 has some advantages based on the three criteria specified as it is conceptually clear (comparing costs before and after the refinancing). In particular the fact that Option 3 looks at all financing cash flows before and after the refinancing (an all-entity approach)



adds to the simplicity of this approach; the impact of refinancing does not need to be determined separately for different tranches of debt.

Whilst different assumptions could be made around which debt raised post refinancing could be assumed to have been used to finance debt redemption, this option is exposed to relatively few alternative assumptions. A significant proportion of the underlying data is in the public domain and audited, however some data (for bonds, bank loans and derivatives held by the gas business prior to the refinancing) is not audited and similarly some data is not publically available.

Option 1 is relatively simple and transparent as the methodology is based on the audited statutory charges in line with internationally recognised accounting standards. The lack of detail available around the calculation methodology applied to determine the statutory charges reduces transparency. If full details of the statutory charges were made available, this figure could represent the most robust basis for estimating the all-in cost of debt. This approach is predicated on the assumption that all statutory charges incurred by the gas and electricity businesses (£1,050m) in different legal entities are attributable to the current entity.

The analysis of redeemed debt under Option 2 is relatively complex and a number of alternative assumptions could be adopted under this approach. This approach is also sensitive to the discount rate used to determine the net present value of the gain on debt modification.

The analysis of redeemed debt under Option 4 is straightforward, however this approach is predicated on the assumption that bonds redeemed by the gas and electricity businesses (£1,050m) in different legal entities are attributable to the current entity.

## 4 Context and scope

### 4.1 Context

The gas distribution business now operated by Cadent was subject to a refinancing in 2016. This refinancing was related to the segmentation and separation of the gas distribution networks from National Grid.

The principal changes to which the business has been subject include:

- The creation of a new legal entity into which the assets of the gas distribution business were transferred;
- The novation of a proportion of outstanding debt obligations to the new entity - £1.2bn of existing index-linked debt instruments were transferred to the new entity following negotiations with bondholders that resulted in an increase in the coupon payable on these securities, as well as a fair valuation loss of £264m;
- The raising of new debt financing by the new entity – the new entity raised £3.6bn of new fixed-rate debt instruments, along with £1.5bn of floating-rate debt and bank loans;
- The redemption of existing debt obligations funded in part by the issuance of the new debt – £1.8bn of existing debt obligations were redeemed following an auction process that resulted in the payment of an £871m premium to bondholders (as recorded in statutory accounts);
- A de-designation of hedging contracts corresponding to redeemed/novated debt securities, resulting in a fair valuation loss of £179m; and
- The sale of 61% of the equity in the new legal entity to a consortium of new investors, for a total purchase price of £3.7bn for the 61% stake. As part of this sale the consortium agreed terms to acquire an additional 14%.
- In May 2018 National Grid announced it had agreed terms to sell the remaining 25% of its investment in Cadent to the consortium subject to six months' notice and this was subsequently exercised on 8 November 2018 meaning that National Grid will cease to be a shareholder in Cadent in May 2019. These subsequent changes to the shareholding structure are included for completeness but do not impact the analysis in this report.

Figure 7 below provides a visual representation of the changes to which the gas distribution business has been subject and the consequence changes in the financing structure of the business:

**Figure 7: Summary of key changes to gas distribution business**

Mar-16	Key events affecting gas distribution business				Mar-18
<ul style="list-style-type: none"> <li>Ratio of net debt/RAV: 59%</li> <li>Interest cost<sup>1</sup> (all debt, including derivatives): 3.2%</li> <li>Interest cost (all debt, excluding derivatives): 4.1%</li> <li>Interest cost (fixed-rate debt): 6.3%</li> <li>Interest cost (IL debt): RPI+2.3%</li> <li>Weighted average time to maturity: 15 years</li> </ul>	<p><b>Sum of gas distribution RAVs: £8.7bn<sup>2</sup></b></p> <p><b>Face value of debt attributable to gas distribution business: £5.2bn<sup>3</sup></b></p>	<p>£1.2bn of index-linked debt novated;</p> <p>Hedging instruments de-designated</p>	<p>£3.6bn of new fixed-rate debt raised;</p> <p>£1.5bn of new floating-rate debt raised</p>	<p>£1.8bn of fixed-rate debt redeemed</p> <p>Hedging instruments de-designated</p> <p>New legal entity created; 61% of equity of new legal entity sold for £3.7bn cash, £2.3bn debt</p>	<p><b>Sum of gas distribution RAVs: £9.4bn<sup>4</sup></b></p> <p><b>Net debt outstanding for gas distribution business: £5.8bn<sup>5</sup></b></p> <ul style="list-style-type: none"> <li>Ratio of net debt/RAV: 62%</li> <li>Interest cost (all debt): 2.4%</li> <li>Interest cost (fixed-rate debt): 2.2%</li> <li>Interest cost (IL debt): RPI+1.6%</li> <li>Weighted average time to maturity: 13 years</li> </ul>
<p>Costs pertaining to these events are recorded in statutory accounts</p>					

<sup>1</sup>This refers to interest divided by the book value of outstanding debt  
<sup>2</sup>Based on NGG Mar-16 regulatory accounts  
<sup>3</sup>Based on NGG 2016 statutory accounts, and excluding all intercompany borrowing  
<sup>4</sup>Based on Cadent Mar-18 regulatory accounts  
<sup>5</sup>Based on Cadent Mar-18 regulatory accounts

## 4.2 Scope

Cadent has asked us to consider and comment on the impact of changes to the observed cost of debt for the gas distribution business, and how any impact could be reflected in regulatory reporting – specifically, in the context of Ofgem’s Regulatory Financial Performance Reporting (‘RFPR’).

An overview of the scope is set out below:

- Analyse the observed cost of debt and its evolution from the time of the refinancing, as well as to analyse the cost of debt that is attributed to the gas distribution business prior to the refinancing, and to project the latter forward in a counterfactual case where the refinancing does not take place.
- Illustrate how the refinancing undertaken, as well as debt raised and refinanced subsequently, has impacted on the cost of debt by comparing the observed cost of debt to the projected cost of debt in a counterfactual case in the absence of the refinancing.
- Consider to what extent and how the impact of the refinancing of debt could be reflected in the RFPR, whether and how this could be justified from an economic perspective, together with a discussion of the rationale for as well as potential pros and cons for different options.
- Set out the mechanics of the estimates of any proposed options for reflecting the impact of the refinancing in the RFPR and associated justification.

This analysis will be based on information provided by Cadent as well as information from public sources.

In conducting this assessment, we have relied on a combination of information in the public domain and documents provided to us by Cadent. In some cases, it has not been possible to precisely replicate certain calculations based on the available information. Where we have relied on assumptions and judgements in these cases, we have stated these explicitly.

If additional information that is not currently in the public domain were made available, the calculations could be conducted with greater precision and accuracy.

### 4.3 Structure of report

The report is structured as follows:

- A discussion is provided highlighting the aspects of the refinancing and segmentation that are of principal relevance to the current assignment (Section 5);
- The cost of debt is projected for the gas distribution business under based on the observed financial structure, and additional financial projections are developed to determine additional costs that may need to be taken into account to estimate the all-in cost of debt for the gas distribution business to the end of RII03 (Section 6)
- Observations regarding the refinancing and potential implications for reporting in the RFPR are set out (Section 7); and
- The reporting requirements and guidelines issued by Ofgem for the RFPR are set out, and the way in which additional information could be included within the RFPR is considered. Options for additional information that could be included in the RFPR are then proposed (Section 8).

## 5 Discussion and analysis of the refinancing

This section discusses the sequence of events over the course of the segmentation that led to the current financing structure being put in place for the gas distribution business. The sequence of events informs the analysis that is carried out in subsequent sections.

The key relevant elements of the segmentation that led to the current financing structure and associated cost of debt are as follows:

In 2016 National Grid, which owned the gas distribution business as part of a single legal entity comprising the gas distribution, gas transmission and metering businesses determined a strategy to separate the gas distribution business. In order to facilitate this it created a new legal entity. The gas distribution assets were transferred into this new entity. An intercompany loan of £3.6bn between the parent company and new entity was put in place at the time that the gas distribution assets were transferred.

At the refinancing date £5.2bn of debt was attributed to the gas distribution business. National Grid sought to move this debt liability to the new entity alongside the distribution assets.<sup>8</sup>

£1.2bn of debt attributed to the gas distribution business prior to the segmentation was moved into the new entity from the parent company, which was priced at market terms and increased the reported value of the debt transferred, resulting in non-cash costs being reflected in the statutory accounts.

The remainder (£4.0bn) held by the gas business and attributed to the gas distribution business could not be transferred as the cost of doing this was deemed too expensive.

The parent company bought back some of the debt on its balance sheet (£1.8bn), incurring significant costs. At the same time the new entity raised £3.6bn of debt at low prevailing market rates, which was used to repay the £3.6bn intercompany loan between the parent company and the new entity. The repayment of the intercompany loan was used to finance the buyback of existing debt held by the parent company (£1.8bn).<sup>9</sup>

The equity sale completed six months after the refinancing and the following the repayment of parent company debt.

---

<sup>8</sup> This allocation is consistent with the debt attributed to the gas distribution business within the National Grid Gas plc regulatory accounts.

<sup>9</sup> The statutory accounts show £871m of costs relating to the redemption of debt across different National Grid legal entities, part of £1,052m of cash costs for liability management programme in relation to the separation of the UK Gas Distribution business.

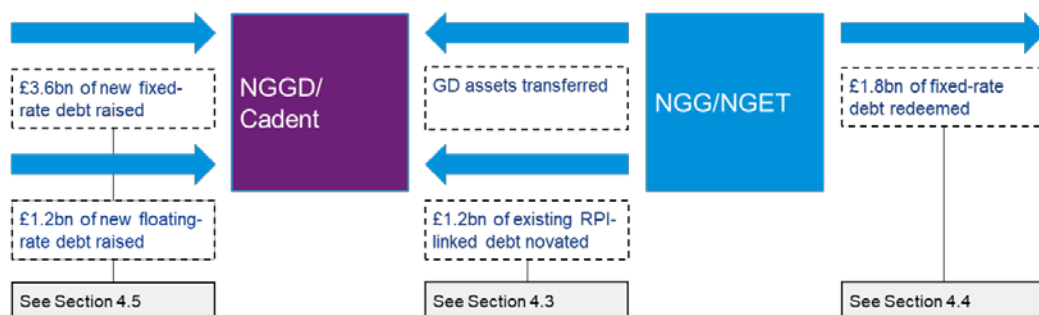
## 5.1 Summary of debt refinancing undertaken as part of segmentation

The Figure below illustrates the principal aspects of the refinancing undertaken in the context of the segmentation. The key points are set out below:

- The segmentation involved the creation of a new legal entity: National Grid Gas Distribution Limited ('NGGD', subsequently renamed to 'Cadent') into which it transferred its gas distribution assets following Ofgem's confirmation of consent<sup>10</sup>.
- The new entity then raised £3.6bn of new debt finance<sup>11</sup>, the proceeds of which were used to redeem an intercompany loan issued by the gas distribution business. In order to secure sufficient take up from bondholders National Grid tendered to repay bonds in both the gas and electricity businesses.
- These proceeds were in part used to redeem outstanding debt securities with book value of £1.8bn<sup>12</sup>.
- A further £1.2bn of floating-rate debt was then issued by the new entity immediately following the completion of the equity stake sale<sup>13</sup>.

Each of the principal elements of the segmentation are outlined below.

**Figure 8: Summary of debt refinancing undertaken as part of the segmentation**



## 5.2 Financial structure of the gas distribution business prior to the refinancing

Prior to the refinancing, the gas business possessed licences and assets pertaining to both gas distribution and gas transmission. The combined Regulated Asset Value ('RAV') of each of the licensed businesses amounted to £13.5bn in March 2016 (15/16 prices)<sup>14</sup>.

<sup>10</sup> National Grid Gas 2017 statutory accounts

<sup>11</sup> Cadent 2018 statutory accounts

<sup>12</sup> Information provided by Cadent Gas Limited to KPMG on 20<sup>th</sup> September 2018 (document titled, 'Pages from 2016\_09\_26 - National Grid Deal Review\_LiabilityManagement (002).pdf')

<sup>13</sup> Cadent 2018 statutory accounts

<sup>14</sup> Based on Ofgem's published price control financial models, uplifted for RPI between March 2010 and March 2016.

The four licensed gas distribution networks had a combined RAV of £8.6bn (15/16 prices).

The gas business had debt with a face value of £7.5bn outstanding as at 31st March 2016<sup>15</sup>. This comprised of £4.1bn of index-linked debt, £2.0bn of fixed rate debt and £1.5bn of floating-rate debt. In addition:

- The fixed-rate debt was issued in GBP, EUR, JPY, USD, HKD and RON.
- The weighted average cost of index-linked debt was RPI plus 2.3%.
- The weighted average nominal cost of fixed rate debt was 6.3%.

Across the transmission and distribution businesses RAV gearing was 59% as at 31<sup>st</sup> March 2016<sup>16</sup>, and average cost of debt was 3.20%.

This compares to a real cost of debt allowance of around 2.55% for that year. RPI growth in the same year was 1.08%, implying a nominal cost of debt of 3.65%. This suggests that both businesses were outperforming the cost of debt allowance prior to the refinancing.

It is not clear from a review of the gas business' statutory annual report and regulatory accounts whether or how individual debt securities were apportioned to the gas distribution business. An apportionment of debt based on the RAV would suggest that £5.2bn of debt could be attributed to the gas distribution business.

There was also a portfolio of derivatives across the transmission and distribution businesses, which was principally used to hedge debt securities against movements in currency values, interest rates and inflation. In its 2016 accounts, the gas business recorded a derivative asset of £1,070m and a corresponding derivative liability of £566m, relating predominantly to cross-currency swaps.

Given that some debt within the electricity business was redeemed as part of the refinancing, it is also relevant to consider the financial structure of the electricity business prior to the refinancing.

The electricity business' RAV was £11.4bn in March 2016 (15/16 prices). It reported total borrowings of £7.2bn in its 2016 statutory accounts and an interest charge of £262m, implying a weighted average cost of debt of 1.95% – considerably below that of the gas business.

The electricity business reported a RAV gearing ratio of 59% in its regulatory accounts in 2016. The electricity business also reported a derivative financial asset of £484m and a derivative financial liability of £737m.

---

<sup>15</sup> Based on the face value of debt securities listed in NGG's 2015 statutory accounts

<sup>16</sup> National Grid Gas 2015 regulatory accounts

### 5.3 Novation of existing debt

The process for the novation of debt took place sequentially prior to the raising of new debt by the gas distribution business and the redemption of existing debt. The chronology of this process was as follows<sup>17</sup>:

- **May/June 2016** – the process for novating existing debt to a new entity ('NGGD') was initiated: the early stages consisted of conducting an assessment of the financial/rating implications of separation and novation of debt to the new entity.
- It was originally intended to novate an amount of debt equivalent to the gas distribution's proportion of the total RAV allocated to the distribution business, equivalent to 62.5% of the total debt of the gas business outstanding at that time (i.e., around £4.7bn) together with an intercompany loan from National Grid plc of £750m, which related to debt issued by other parts of the National Grid group.
- **End of June 2016** – negotiations commenced with a bondholder committee, representing the interests of all bonds being considered for novation. The Committee was assembled by the Association of British Insurers ('ABI'), and representatives included, e.g., Standard Life.
- Where an issuer is considering a change of terms or novation of debt, it is common practice for the ABI to manage the process, since the holders of the bonds are not generally known to the issuer. The ABI will generally act to contact and coordinate the relevant bondholders on behalf of the issuer.
- It is a requirement of the ABI that all bondholders are treated consistently and are offered the same terms. As a consequence, the ABI's proposed terms will be dictated by the individual bondholder that demands the highest coupon rate.
- **July 2016** – it was determined that there would be insufficient expected take-up of the novation offer at that time. Bondholders did not agree to the terms being offered of a 20-30bps increase in the coupon rate, and were seeking a 100bps increase in order to novate the entire quantum of desired debt, which was considered to be excessive.
- **October 2016** – £1.2bn of index-linked debt (EIB and private placements) were novated to NGGD from the gas business (the parent company). The debt instruments were recorded on NGGD's balance sheet at fair value, and a one-off cost was recognised in the gas business' P&L associated with the realised loss due to the fair value adjustment, and due to the de-designation of hedging instruments associated with the novated debt.

The novated instruments are summarised below (values correct as at 31/3/2018)<sup>18</sup>. These instruments transitioned to the new entity with a coupon that was 32bps higher on average than their previous level. The figures in the Table reflect the coupon rates that prevailed once they had been novated (i.e., they are inclusive of the coupon uplift).

---

<sup>17</sup> This information has been provided to KPMG by Cadent Gas Limited

<sup>18</sup> Based on Cadent 2018 statutory accounts



The fact that only a proportion of debt was successfully novated meant that it was necessary for it to undertake a redemption of existing debt, funded by the issuance of new debt.

**Table 2: Summary of debt instruments novated under the refinancing**

Maturity	Notional amount	Book value	Fair value	Coupon*
2/10/2023	78	92	88	1.500%
18/6/2024	75	86	83	0.925%
25/6/2024	76	87	83	1.015%
29/4/2024	76	89	86	1.212%
30/4/2024	76	88	85	1.020%
7/5/2024	76	88	85	1.073%
2/5/2039	138	215	212	2.313%
10/8/2048	141	238	240	2.180%
14/8/2048	141	235	236	2.102%
Total	876	1,218	1,198	

Source: Cadent Gas Limited, company accounts

\*the coupons are RPI-linked; the values in this table represent the margins over RPI included in the coupon.

The fact that the novated debt was cheaper on average than the existing index-linked debt as a whole suggests that the choice of debt that was novated partially contributed to the reduction in the business's observed cost of debt. However, this contribution is small (20bps) by comparison with the impact of the lower cost of new debt raised.

## 5.4 Redemption of existing debt

We understand that after it became apparent that the take-up of the novation offer was likely to be insufficient to facilitate the desired apportionment of debt, a process was initiated in August 2016 for the redemption of existing debt, to be funded via the raising of new debt at the new legal entity. This consisted of an auction (open tender) process.

Bondholders were approached to determine if they were willing to retire bonds early at a premium. Table 3 below summarises the terms of the instruments that were redeemed. All of the relevant instruments were fixed rate debt<sup>19</sup>.

The amount outstanding for each instrument is below the amount issued, as a consequence of a previous liability management exercise conducted (i.e., a proportion of these debt securities had been redeemed previously).

The take-up for the redemption of debt was less than 100%, meaning that the full amount outstanding of each security auctioned could not be successfully redeemed.

The purchase price is expressed as a ratio to the face value of the outstanding debt. The purchase price was above the face value of the debt for every security that was redeemed. This is consistent with the fact that market interest rates at that time were below the coupon rate being paid on the relevant instruments. The amount

<sup>19</sup> The information in this table is based on a document shared by Cadent Gas Limited with us titled, 'Pages from 2016\_09\_26 - National Grid Deal Review\_LiabilityManagement (002)'

tendered/accepted represents the face value of each security that was redeemed, and is exclusive of the premium to face value paid.

**Table 3: Summary of debt instruments redeemed under the refinancing (gas business)**

Issuer	Amount issued	Amount out-standing	Coupon	Maturity	Amount tendered	Take up	Purchase Price
NGG	484	278	6.375%	Mar-20	139	50.13%	121.25%
NGG	503	404	4.1875%*	Dec-22	139	34.33%	211.46%
NGG	503	217	7.000%	Dec-24	135	62.22%	147.46%
NGG	275	111	8.750%	Jun-25	89	79.93%	164.19%
NGG	457	457	6.000%	May-38	396	86.56%	172.48%
Total	2,222	1,467			898	61.18%	

Source: Cadent Gas Limited, company accounts

\*This is the only index-linked instrument that was redeemed.

**Table 4: Summary of debt instruments redeemed under the refinancing (electricity business)**

Issuer	Amount issued	Amount out-standing	Coupon	Maturity	Amount tendered	Take up	Purchase Price
NGET	460	324	5.875%	Feb-24	174	53.75%	135.51%
NGET	525	525	4.000%	Jun-27	274	52.14%	126.84%
NGET	263	263	6.500%	Jul-28	201	76.18%	155.98%
NGET	311	311	7.375%	Jan-31	219	70.36%	174.49%
Total	1,724	1,523			868	60.06%	

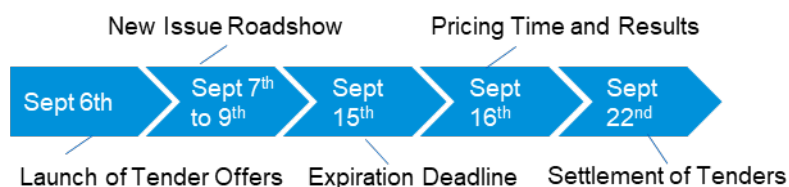
Source: Cadent Gas Limited, company accounts

The redeemed debt had a slightly lower average cost (5.8%) compared with the average cost of the business's fixed rate debt (6.4%).

The instruments exhibited a range of purchase prices and spreads, reflecting the diversity of maturities, coupon rates, and presumably investor bases associated with each instrument.

The key milestones for the auction process are summarised below.

**Figure 9: Summary of key milestones for debt redemption auction process**



The fact that a well-structured and carefully managed auction process appears to have been conducted over several weeks could suggest that the price paid (and in particular the premium to the market price that had previously prevailed) was no more than the price that was necessary to pay in order to successfully execute the redemption of debt.

## 5.5 Raising of new debt

The process followed for raising new debt proceeded largely in parallel with the process for redeeming existing debt instruments.

The chronology of this process is as follows:

- **Late August / early September 2016** – an offer was made to prospective bidders by National Grid on behalf of the gas distribution business to procure new bank, bond, EIB and private placement debt financing in advance of share sale.

Among the bidders at that time, the Quadgas Consortium\* accepted the offer.

\*the Quadgas Consortium is comprised of Macquarie Infrastructure and Real Assets, Allianz Capital Partners, Hermes Investment Management, CIC Capital Corporation, Qatar Investment Authority, Dalmore Capital and the International Public Partnerships fund run by Amber Infrastructure Limited.

- **12th September 2016** – the new debt financing was drawn down: £3bn of sterling-denominated debt was raised, along with EUR600m of Euro-denominated bonds (currency swaps were issued to hedge these).

The relevant instruments are summarised below.

**Table 5: Summary of new fixed rate debt instruments issued**

Maturity	Notional amount	Book value	Fair value	Coupon
22/9/2021	650	650	643	1.125%
22/9/2024	658	655	655	1.912%
22/9/2028	850	855	855	2.125%
22/9/2038	700	704	704	2.625%
22/9/2046	800	799	799	2.750%
Total	3,658	3,658	3,552	

Source: Cadent Gas Limited, company accounts

The average cost of the newly issued debt was 2.1%: considerably below the cost of the existing fixed-rate debt of the gas distribution business (6.4%). This reflected the low market rates prevailing at the time, and is the major driver of why the observed cost of debt of the gas distribution business is lower than prior to the refinancing and lower than other GDN's observed cost of debt currently.

The issuance proceeds were used to redeem an intercompany loan of £3.6bn between the gas business and NGGD that was put in place at the time that the gas distribution assets were transferred to NGGD. The proceeds were partly used to fund the cost of redeeming the debt summarised previously, and temporarily invested the balance into marketable securities<sup>20</sup>.

- **March 2017** – immediately following the completion of the equity sale, a further £1.2bn of debt was issued. All of this additional debt was comprised of floating-rate instruments. The relevant instruments are summarised below.

<sup>20</sup> NGG 2017 statutory accounts

**Table 6: Summary of new floating-rate debt instruments raised**

Maturity	Notional amount	Book value	Fair value	Coupon
14/10/2021	393	391	397	6m LIBOR + 68bps
14/10/2019	400	399	402	6m LIBOR + 80bps
27/3/2017*	400	400	389	6m LIBOR + 80bps
	1,193	1,190	1,188	

Source: Cadent Gas Limited, company accounts

\*It is noted that an inflation swap has been entered into in relation to this new floating rate debt, which is reflected in the financial projections for the observed cost of debt for this financial instrument.

6m sterling LIBOR has been below 1% for several years, meaning that the cost of debt of these instruments was and is similar to the fixed rate debt that was put in place during the refinancing.

- **March 2018** – a further £300m fixed rate bond was issued at a coupon rate of 3.125%. This rate is somewhat above the rate at which the business was able to issue debt during the refinancing, mainly reflecting increased gilts yields, which may reflect the increase in gearing since that date. It is still considerably below the average cost of debt prior to the refinancing.

## 5.6 Costs of refinancing recorded in statutory accounts

The costs incurred in the course of the refinancing have been recorded in notes to the 2017 statutory accounts.

The gas business has recorded a financing cost of £833m in its 2017 statutory accounts pertaining to 'the refinancing undertaken to ensure an appropriate amount of debt was placed in Gas Distribution'.

This is comprised of:

- cash costs associated with buybacks of debt from the continuing Group (£444 million);
- accounting losses (non-cash) on loans novated at fair value from the continuing Group to Gas Distribution (£264 million); and
- cash costs arising from de-designation of cash flow hedges (£125 million) as part of liability management restructuring

The cost referred to under the first bullet above does not appear to include the entire cash amount paid to redeem the relevant securities, since the face value of the securities redeemed was £898m, or over twice the amount in the note.

We infer from this that the amount in the notes to the statutory accounts refers to the premium paid over face value, rather than the entire purchase price. The sum of the purchase prices provided to us by Cadent for each security (£593m) is greater than the amount in the first bullet above in the statutory accounts. It has not been possible to precisely reconcile these two values based on the information that is available in the

public domain, since the underlying calculations behind the note to the accounts have not been provided to us.

Prior to the refinancing, the gas distribution business held a number of derivative contracts that were designated as hedging contracts for reporting purposes. This meant that there was no requirement to mark-to-market the value of these instruments. IFRS9 requires that instruments that are not designated as hedging instruments must be carried at fair value. As such, when the debt instruments to which these contracts corresponded were novated or redeemed as part of the refinancing, they were de-designated as hedging instruments, and their value had to be marked-to-market. This resulted in a cost that had to be recorded within finance costs.

In the 2017 statutory accounts of the electricity business it was stated that the company redeemed £880m of fixed rate debt at a fair market value of £1,307m. In consequence a loss of £427m was recognised, with an additional £54m net loss recognised in respect of the de-designation of cash flow hedges.

The carrying value of £880m referred to in the note to the accounts is close to (but slightly above) the value of the amount tendered/accepted in the information provided to us by Cadent (£868m).

The sum of the purchase prices provided to us by Cadent (£411m) is slightly less than the cash loss amount referred to in the note to the statutory accounts, and suggests that these figures broadly reconcile.

The net impact of the de-designation of cashflow hedges broadly follows the same logic as for the gas business above.

Total cash costs incurred as part of the refinancing are £871m for redemption of debt (£444m for the gas business and £427m for the electricity business) and £179m for de-designation of cash flow hedges (£125m for the gas business and £54m for the electricity business). This equates to £1,050m in total per the statutory accounts of NGET and NGG in 2016/17. This is consistent with cash costs reported at the Group level in the NG plc statutory accounts of £1,052m.

The analysis in this report is based on the premise that the upfront costs incurred in relation to the refinancing have ultimately been borne by the owners of the gas distribution business. This approach is adopted on the basis that the upfront costs were incurred in relation to the gas distribution business which represents an ongoing business activity, they are a critical component of the all-in cost of debt for this business, and were partly paid for by new equity.

## 6 Development of financial projections

The gas distribution business's observed cost of debt reflects the terms of financing raised at the time of the refinancing. Given the market rates prevalent at the time, the observed cost of debt – meaning the current reported interest cost divided by the book value of debt – is lower than was the case before the refinancing.

As set out in the previous section, however, an important factor for consideration is that the gas distribution business incurred a number of costs as part of the refinancing that contributed to the change in the observed cost of debt.

These costs were incurred at various points during the refinancing. The costs incurred by the gas distribution business over the course of the refinancing are summarised in Figure 10 below:

**Figure 10: Summary of costs directly attributable to the refinancing incurred by the gas distribution business**

Costs incurred in respect of refinancing	One off / recurring	Cash / non cash	Total value / cost
1 Costs incurred in respect of redeemed debt	One off	Cash	£871m
The gas distribution business incurred a cost reflecting the market premium (over and above face value) for instruments that were redeemed			
2 Costs incurred in respect of novated debt	One off	Non-cash	£264m
The gas distribution business incurred a cost pertaining to the change in the carrying value of the novated debt to fair value			
3 Impact of de-designation of derivatives	One off	Cash	£179m
The gas distribution business incurred costs driven by the de-designation of derivatives corresponding to novated and/or redeemed debt			

The sequence of the refinancing, segmentation and the additional costs incurred as part of the novation and redemption of debt allocated to the gas distribution business – which crystallised at the time of the refinancing, as set out in the previous section – suggest that the observed cost of debt may not reflect the all-in cost of debt.

As a result a series of financial projections are developed in this section corresponding to different ways in which the all-in cost of debt could be projected for the gas distribution business. Each set of financial projections can be considered as a building block that could be used to estimate the projected all-in cost of debt for the gas distribution business.

Different combinations of these building blocks are then aggregated in the remainder of the report to develop potential estimates of all-in cost of debt for the gas distribution business, and determine whether any adjustment to the observed cost of debt is required to capture the all-in cost of debt.

### 6.1 Overview of financial projections

This section sets out projections corresponding to different ways in which the cost of debt could be defined for the gas distribution business.

The development of financial projections in this section is conducted in the following stages:

- 1 A pre-refinancing estimate of the all-in cost of debt of the gas distribution business.** This is based on a profile of cash flows representing the overall impact of the refinancing (i.e., the interest costs that would have been payable in the absence of the refinancing). An analysis of the cost of debt that could be attributable to the gas distribution business in the absence of the refinancing is projected forward to the end of RIIO3, based on the scheduled debt maturities of relevant financial instruments held prior to the refinancing;
- 2 The observed costs of the gas distribution business.** This comprises an analysis of the gas distribution businesses' observed cost of debt over the period since the refinancing. The cost of debt is projected forward to the end of RIIO3 based on interest rate forecasts and expected debt maturities;
- 3 Estimates of cash flows of redeemed debt.** This is based on an analysis of the cash flows of each of the nine financial instruments that were redeemed as part of the refinancing. This comprises an analysis of the cost of redeemed debt prior to the refinancing.
- 4 The cost of debt if all debt had been novated.** The projections in a counterfactual scenario where all debt had been successfully novated is not explicitly modelled but the development of projections is considered in qualitative terms;
- 5 Reported statutory charges.** This comprises an analysis of the costs recognised following the refinancing in the statutory accounts of both the gas and electricity business and how these could be profiled over time; and
- 6 Independent valuation of cost of debt redemption.** The cost of debt redeemed as part of the refinancing is projected forward to the end of RIIO3 in a counterfactual scenario where the refinancing did not take place. A cost of redeemed debt post-refinancing is developed by applying the weighted average interest rate of the new fixed rate debt raised by the gas distribution business to the same quantum of pre-refinancing redeemed debt.

Each of the projections has then been mapped to potential options for estimating the all-in cost of debt, as set out in Section 8.

## 6.2 Observed costs of the gas distribution business

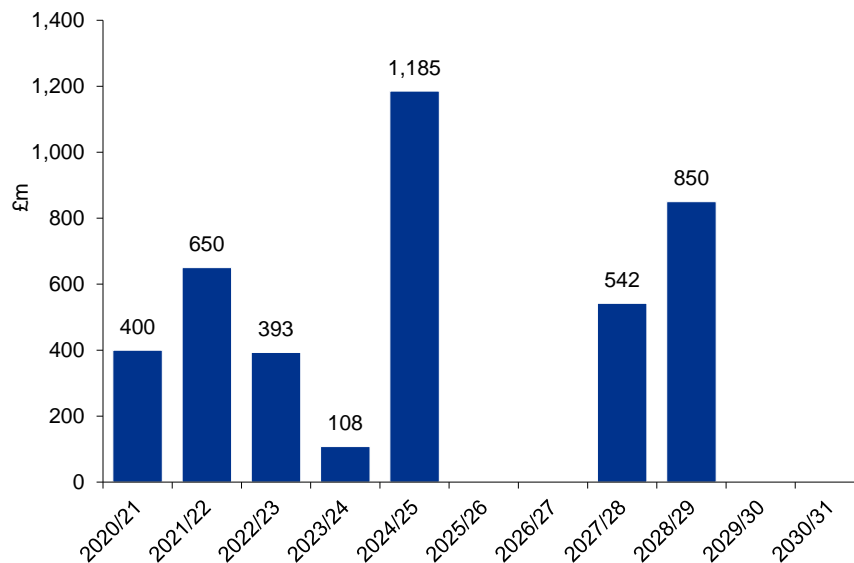
The current cost of debt of the gas distribution business is observable in the year to March 2018 based on the information provided to us. The nominal cost of debt for the gas distribution business was 2.19% in FY2017.

The current cost of debt of the gas distribution business and associated financial projections based on observed costs is referred to as the 'observed costs' of the gas distribution business.

In order to forecast the observed cost of debt of the gas distribution business until the end of RIIO3, assumptions have been made in respect of a number of variables. These are summarised below.

It is assumed that all existing debt is held to maturity. An overview of the maturity profile of debt held by the transmission and distribution businesses is set out below, with c.£2.5bn of existing debt maturing between 2020 and 2025.

**Figure 11: Maturity of existing debt (based on observed debt for the gas transmission and distribution businesses)**



Source: Maturity of existing debt for the gas distribution business is based on financial disclosures in Cadent's statutory accounts (2016/17)

The cost of existing debt in the year of the maturity for each security is calculated on a *pro rata* basis.

### **Cost of fixed rate debt**

The cost of existing fixed rate debt is forecast based on the product of the observed coupon rate for the relevant instrument and the face value of the instrument until maturity. A breakdown of the gas distribution businesses' observed fixed rate debt is set out in the appendix.

### **Cost of floating rate debt**

The cost of existing floating rate debt is forecast based on the product of the observed cost of debt (LIBOR plus a margin) for the relevant instrument and the face value of the instrument until maturity. This is intended to convey the cash cost that will be payable in each year by the gas distribution business.

The gas distribution business currently has three floating-rate debt instruments outstanding, one of which will remain in issue until 2027. A breakdown of the gas distribution businesses' observed fixed rate debt is set out in the appendix.

It is necessary to forecast 6m LIBOR (the reference index for each of the floating-rate debt instruments) until this date in order to forecast coupon payments on these instruments.



LIBOR is projected based on forward curves sourced from Thomson Reuters Eikon over the model period.

The resulting cost of floating-rate debt is calculated based on the LIBOR forecast and a margin for each existing instrument.

### **Cost of index linked debt**

The gas distribution business currently has nine index-linked debt instruments outstanding, several of which will remain in issue throughout the forecast period. A breakdown of existing index linked debt within the gas distribution business is provided below.

Accretion of each existing index linked instrument is forecast as the product of the book value at the beginning of the year and the forecast RPI in each relevant year.

For the purposes of the current assessment, RPI is assumed to remain constant at 3% in each year over the model period.

The book value is calculated as the sum of the book value in the previous year and accretion in the current year.

The resulting annual cost of index-linked debt is then calculated until maturity based on (1) the product of the coupon rate (the real cost of the index linked debt) and the prevailing book value for each existing instrument; and (2) accretion.

It is assumed for modelling purposes that the former is cash, i.e. is paid in the year to which it relates, and the latter is non-cash.

### **Summary of financial projections – observed cost of debt**

Figure 12 below sets out the projection of the cost of existing debt for the gas distribution business based on observed costs, excluding the impact of any new debt on the overall cost of debt.

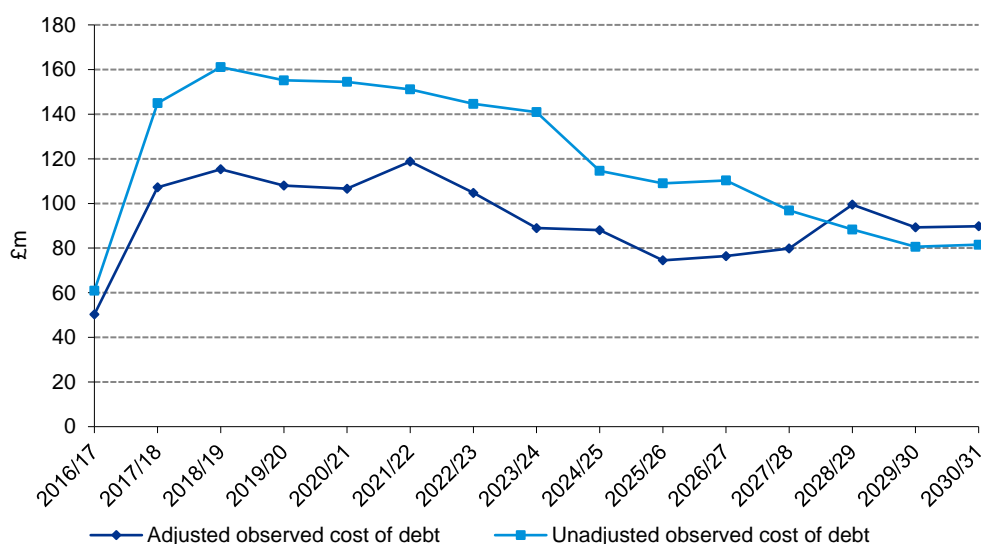
The figure presents two projections: the 'unadjusted' profile represents the post-refinancing cost of debt applied to the post-refinancing debt balances; the 'adjusted' profile represents the post-refinancing cost of debt, but applied to the pre-refinancing debt balances<sup>21</sup>. The adjustment is relevant under certain approaches to estimating the all-in cost of debt because of the change in debt balances (in particular an increase in gearing) that occurred as a consequence of the refinancing.

The consequence of the adjustment is that the adjusted observed cost of debt increases in 2027/28, which reflects (1) an increase in the weighted average cost debt (as cheaper, short term debt matures); and (2) a relatively flat quantum of debt assumed in a counterfactual scenario where the refinancing did not take place.

---

<sup>21</sup> The pre-refinancing debt balance is assumed to be £4.707bn, excluding (1) the fair value of derivatives on the balance sheet; and (2) intercompany debt. A breakdown of the pre-refinancing debt balance is provided in the following section.

**Figure 12: Financial projections – observed cost of debt (gas distribution business)**



The observed cost of debt (adjusted and unadjusted) declines over time as existing debt matures and in absolute terms associated interest costs reduce in line with the reduction in levels of debt. This is driven by the assumption that no new debt is raised in these projections to maintain a target level of gearing or to raise debt in line with RAV growth.

### 6.3 Pre-refinancing estimate of all-in cost of debt

This section presents financial projections for the pre-refinancing all-in cost of debt for the gas distribution business. It is assumed for the purpose of estimating the projected all-in costs of the gas distribution business that the refinancing does not take place.

In order to develop financial projections that relate solely to the gas distribution business prior to the refinancing it would be necessary to obtain a breakdown by financial instrument of each GDN's debt portfolio by instrument and determine costs for each instrument based on coupon and maturity. However this is not available from either the published statutory or regulatory accounts.

Gas transmission and distribution assets and associated liabilities, including debt, were held prior to the refinancing within the NG Gas plc legal entity (the 'gas business').

The gas business prior to the refinancing was required to submit regulatory accounts to Ofgem under its transmission and distribution licenses. The regulatory accounts prior to the refinancing (FY2016) contain segmental reporting including both profit and loss and balance sheet statements for each of the four distribution licensees and the transmission licensee.

This allows analysis of the cost of debt of both the transmission and distribution businesses prior to the refinancing. A summary of interest costs and debt by licensee is set out below.

**Table 7: Summary of debt in the transmission and distribution businesses prior to refinancing (2015/16)**

	Total interest costs	Current borrowings	Current derivatives	Non current borrowings	Non current derivatives	Less intercompany	Total debt - including derivatives	Total debt - excluding derivatives	Cost of debt including derivatives	Cost of debt excluding derivatives
North West	38	276	5	1,087	79	-	233	1,214	1,130	3.13%
East of England	50	365	8	1,441	105	-	308	1,611	1,498	3.10%
West Midlands	26	190	4	748	54	-	160	836	778	3.11%
North London	33	245	5	965	70	-	206	1,079	1,004	3.06%
Metering	11	72	2	285	21	-	60	320	297	3.44%
<b>Total NGGD</b>	<b>158</b>	<b>1,148</b>	<b>24</b>	<b>4,526</b>	<b>329</b>	<b>-</b>	<b>967</b>	<b>5,060</b>	<b>4,707</b>	<b>3.12%</b>
<b>NGGT</b>	<b>87</b>	<b>694</b>	<b>15</b>	<b>2,735</b>	<b>198</b>	<b>-</b>	<b>586</b>	<b>3,056</b>	<b>2,843</b>	<b>2.85%</b>
<b>NGG plc</b>	<b>245</b>	<b>1,842</b>	<b>39</b>	<b>7,261</b>	<b>527</b>	<b>-</b>	<b>1,553</b>	<b>8,116</b>	<b>7,550</b>	<b>3.02%</b>

Source: National Grid Gas plc, DN Regulatory Accounting Statements 2015/16, p.85

This table sets out (based on the gas business' 2015/16 regulatory accounts) the total interest costs and borrowings attributed to the gas distribution and transmission businesses prior to the refinancing. Borrowings and the implied cost of debt for each business is determined including and excluding: (1) the impact of intercompany debt on the balance sheet of the gas business; and (2) the impact of the fair value of derivatives on the balance sheet of the gas business.

The average cost of debt for the distribution business prior to the refinancing and based on the 2015/16 regulatory accounts is 3.12% (including the impact of derivatives). This is higher than the cost of debt for the transmission business of 2.85%.

The estimate of the projected all-in costs of the gas distribution business has been developed by assuming that all debt within the gas business – including external debt allocated to transmission and distribution licensees – is held until maturity. The cost of debt has been calculated in aggregate for both the transmission and distribution businesses and then apportioned to the distribution business based on the proportion of debt allocated to the distribution business in the 2015/16 regulatory accounts.

In practice this means that the cost of debt derived will in part reflect the lower cost of debt of the transmission business and therefore is understated. All else being equal this reduces the variance between the observed cost of debt for the gas distribution business and the estimate of the projected all-in costs and hence understates the impact of the refinancing on the cost of debt in the distribution business.

Any adjustment to the observed cost of debt of the gas distribution business to reflect the impact of the refinancing on cost of debt performance in RIIO1 and subsequent price control periods would therefore also be understated.

### Cost of fixed rate debt

The cost of existing fixed rate debt is forecast based on the product of the coupon rate for the relevant instrument and the face value of the instrument until maturity.

A breakdown of all existing fixed rate debt prior to the refinancing within the transmission and distribution businesses is set out in the appendix.

### Cost of floating rate debt

The cost of existing floating rate debt is forecast based on the product of the cost of date (LIBOR plus a margin) for the relevant instrument and the face value of the instrument

until maturity. This is intended to convey the cash cost that will be payable in each year by Cadent.

A breakdown of all existing floating rate debt prior to the refinancing within the transmission and distribution businesses is set out in the appendix.

Three floating-rate debt instruments were outstanding prior to the refinancing. As such, it is necessary to forecast 6m LIBOR (the reference index for each of Cadent's floating-rate debt instruments) until this date in order to forecast coupon payments on these instruments.

LIBOR is projected based on forward curves sourced from Thomson Reuters Eikon over the model period.

The resulting cost of floating-rate debt is calculated based on the LIBOR forecast and a margin for each existing instrument.

### **Cost of index linked debt**

31 index-linked debt instruments were outstanding prior to the refinancing, a number of which will remain in issue throughout the forecast period.

Accretion of each existing index linked instrument is forecast as the product of the book value at the beginning of the year and the forecast RPI in each relevant year.

For the purposes of the current assessment, RPI is assumed to be 3.1% in 2018/19, 3.0% in 2019/2020, 3.2% in 2020/21 and 3.2% in 2021/22 based on HM Treasury forecasts. Thereafter RPI is assumed to be constant at 3% in each year over the model period.

The book value is calculated as the sum of the book value in the previous year and accretion in the current year.

The resulting annual cost of index-linked debt is then calculated until maturity based on (1) the product of the coupon rate (the real cost of the index linked debt) and the prevailing book value for each existing instrument; and (2) accretion.

It is assumed for modelling purposes that the former is cash, i.e. is paid in the year to which it relates, and the latter is non-cash.

A breakdown of all existing index linked rate debt prior to the refinancing within the transmission and distribution businesses is set out in the appendix.

### **Treatment of derivatives**

There was a significant derivatives portfolio across the transmission and distribution businesses, consisting predominantly of interest rate and cross currency interest rate swaps. Derivatives are financial instruments that derive their value from the price of an underlying item such as interest rates, foreign exchange rates, credit spreads, equity or other indices. Where the fair value of a derivative is positive it is carried as a derivative asset, and where negative as a derivative liability. The portfolio in FY2016 had a positive net fair value of £514m, with associated interest costs on derivatives of -£69m.

For the purposes of developing the pre-refinancing estimate of the all-in cost of debt, interest costs on derivatives have been included, as cash flows associated with swaps impacts on the overall cost of debt in cash terms. As the net interest costs are *negative*

the inclusion of interest costs on derivatives reduces the estimated pre-refinancing all-in cost of debt.

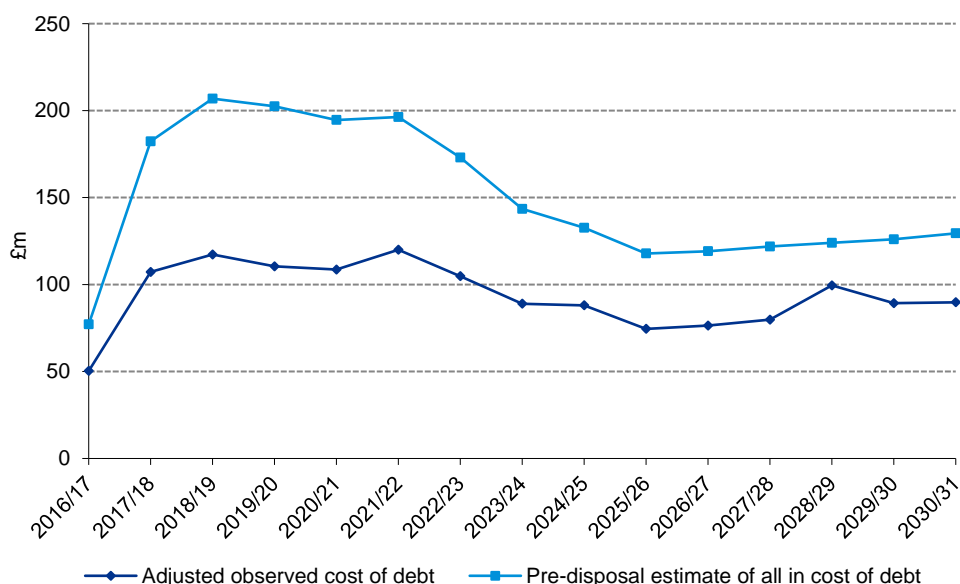
Interest costs on derivatives have been forecast based on the FY2016 interest costs on derivatives of -£69m. As derivatives (which are in a new asset position in FY2016) predominantly relate to cross-currency swaps, it is assumed that interest costs on derivatives will reduce from -£69m in FY2016 in proportion to the maturity of non-GBP denominated debt.

Derivatives on the balance sheet represent the fair value of debt but not the book value of borrowings (which may or may not crystallise in the future). The fair value of derivatives has been excluded from the estimate of the all-in cost of debt, as all cash flows associated with the derivatives are included in the cash flow projections, and inclusion of the fair value in addition would double count the impact of derivatives on the estimate of the all-in cost of debt.

### Summary of financial projections – pre-refinancing estimate of all-in cost of debt

Overall – consistent with the observed cost of debt – the declining cost of debt in absolute terms over time reflects the maturity profile of existing debt and the assumption that no new debt is raised to target a specified level of gearing relative to RAV.

**Figure 13: Pre-refinancing estimate of all-in cost of debt**



The pre-refinancing estimate of all-in cost of debt is *higher* than the adjusted observed cost of debt, as the nominal cost of debt by instrument prior to the refinancing is on average higher than that of debt re-financed subsequent to the refinancing. The adjusted

observed cost of debt has been used to ensure that both sets of cash flows reflect the same quantum of debt.

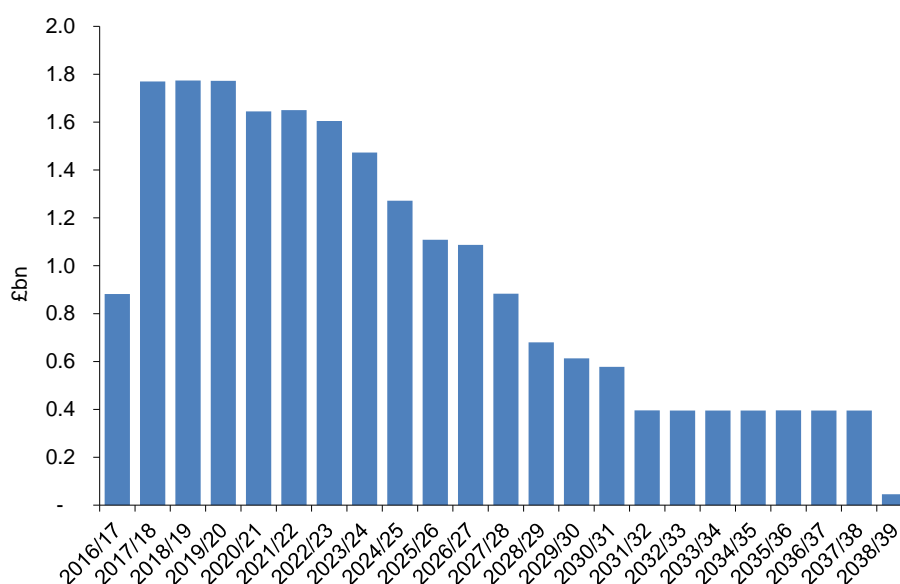
This suggests that observed cost of debt may not reflect the all-in cost, as the lower cost of observed debt (consistent with market rates prevailing in 2016 at the time of the financing exercise) was achieved in large part through the redemption of more expensive debt in place prior to the refinancing at significant upfront cost.

## 6.4 Estimates of cash flows of redeemed debt

This comprises an analysis of the cost of redeemed debt prior to the refinancing. The cost of redeemed debt is projected forward to the end of RII03 based on (1) the projected debt balances (taking into account the maturity of each debt instrument redeemed as part of the refinancing); and (2) the cost of each instrument redeemed in a counterfactual scenario where the refinancing did not take place.

The Figure below sets out the expected evolution of redeemed debt, based on the characteristics of the debt including maturity prior to the refinancing.

**Figure 14: evolution of redeemed debt (pre-refinancing)**



Almost £1.2bn of the £1.8bn debt on the balance sheet in 2017/18 matures by 2030/31, reflecting the profile of the debt in the event that the refinancing had not taken place.

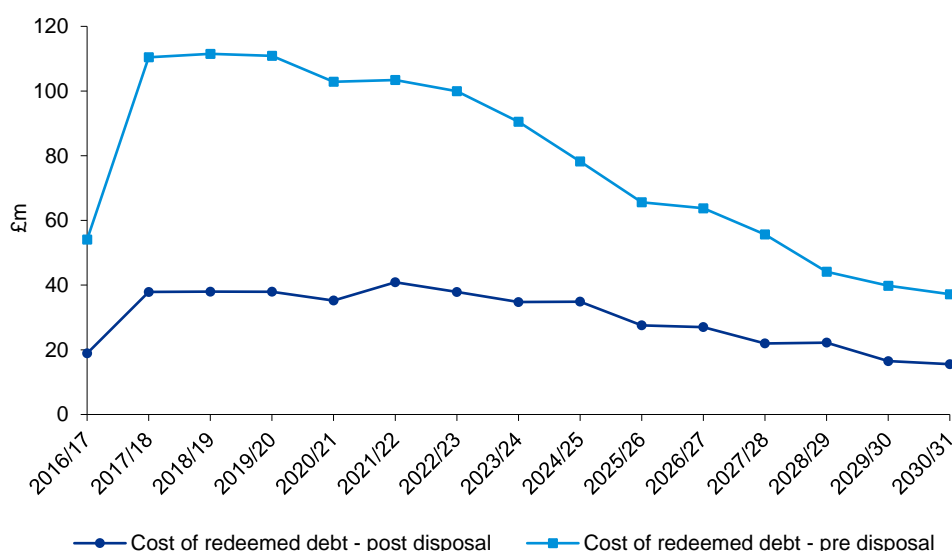
At the same time the overall cost of redeemed debt is relatively flat, which results in a secular projected cost of redeemed debt (pre-refinancing).

An alternative cost of redeemed debt is developed by applying an alternative interest rate (based on the weighted average cost of debt of the new fixed rate debt raised by the gas

distribution business post refinancing) to the same profile of debt as used in the projected cost of redeemed debt (pre-refinancing) above.

The estimate of the cost of redeemed debt (post-refinancing) is designed to estimate in absolute terms the cost of the financial instruments that are equivalent to the redeemed instruments post-refinancing. It is assumed that the instruments used to finance the buyback of redeemed debt at the time of the refinancing are the relevant comparators for this analysis. Both the pre and post refinancing estimates of the cost of redeemed debt are set out in the Figure below.

**Figure 15: Estimates of cost of redeemed debt**



The variance between these two sets of cash flows, which reflects the annualised cost of redeeming relatively expensive debt, is considered as a potential adjustment to the observed cost of debt in subsequent sections.

## 6.5 Cost of debt if all debt had been novated

In Section 5 it was noted that the original intention of the refinancing was to novate existing debt across to the gas distribution business, rather than raise any new debt or redeem any existing debt.

If this exercise had been successful, the observed cost of debt for the gas distribution business would have been equal to the cost of the novated debt instruments, plus an uplift to this rate to reflect the demand by existing bondholders for compensation for this novation.

Projections would be dependent on the premium (i.e. the uplift required by bond holders to facilitate the novation of debt) but it was not practicable at the time to implement novation at reasonable cost and hence development of financial projections would (1) be contingent on the assumptions made around the level of premium, which would not be

as evidence-based as other approaches; and (2) in practice would give a broad range which would be less useful for comparative purposes.

The scale of the uplift that would have been required is not known with certainty, since the proposed novation did not in fact take place. On this basis detailed financial projections have not been modelled.

At the same time, there are indications that an uplift of around 100bps could have been demanded by bondholders. It is expected that the overall cost of debt would have increased relative to the pre-refinancing estimate of the all-in cost of debt. The novation actually carried out (£1.2bn) suggests that this would not have been a material change.

## 6.6 Reported statutory charges

As set out in Section 5 a premium was paid upfront in respect of the refinancing undertaken. A number of factors have to be considered carefully when estimating the all-in economic cost of debt for the gas distribution business:

- The way in which the costs recorded in the statutory and regulatory accounts at the time of the refinancing have been calculated is not publically available, and it is therefore not possible to ascertain precisely what is included within the scope of the reported figures;
- The costs incurred as part of the refinancing were borne by a number of different entities, and some of these costs were also subsequently transferred in value terms to other parties. It is not transparent which costs were ultimately borne by which parties based on publically available data;
- The costs recorded in the statutory and regulatory accounts at the time of the refinancing may include costs that would not be appropriate to include in the estimate of the all-in cost of debt so care has to be taken not to overestimate the all-in costs; and
- Once the appropriate quantum of costs incurred as part of the refinancing has been determined, these costs can be profiled appropriately over time to determine the all-in cost of debt on an ongoing basis while avoiding double counting.

As a variety of costs have been incurred in different forms associated with the refinancing, each needs to be analysed in order to understand the all-in cost of debt. In conducting this assessment, we have relied on a combination of information in the public domain, in particular statutory accounts, and documents provided to us by Cadent, as indicated.

In some cases, it has not been possible to precisely replicate certain calculations based on the available information. Where we have relied on assumptions and judgements in these cases, we have stated these explicitly. However the analysis represents a good approximation based on reliable data and has fully utilised the information available to us.

### Development of financial projections – reported statutory charges

The gas business recorded a cost of £833m in respect of the refinancing in its March 2017 statutory accounts. Similarly, the electricity business recorded a cost of £481m in respect of the refinancing in its March 2017 statutory accounts.



A detailed exposition of the aggregate £1,314m loss (at a National Grid plc level) is set out in Section 5.6. The majority (£871m) of the total £1,314m loss relates to the redemption of debt held prior to the refinancing.

These costs represent market costs that are directly attributable to the refinancing, i.e. are incremental costs that are directly attributable to the acquisition, issue or disposal of a financial asset or financial liability.

Under IAS 39 (prior to the introduction of IFRS 9) the carrying value of debt would be adjusted to reflect these costs, which would be amortised over the life of the financial liabilities to which they relate.

At a high level there are three different subcomponents of the overall statutory charge, in respect of: (1) redemption of debt (2) novation of debt; and (3) de-designation of cash flow hedges.

The detailed calculations to support the statutory charges are not in the public domain. As a result, the development of projected amortisation is assumed to vary depending on the subcomponent of the statutory charge and the maturity of the instruments to which the charge relates, as follows:

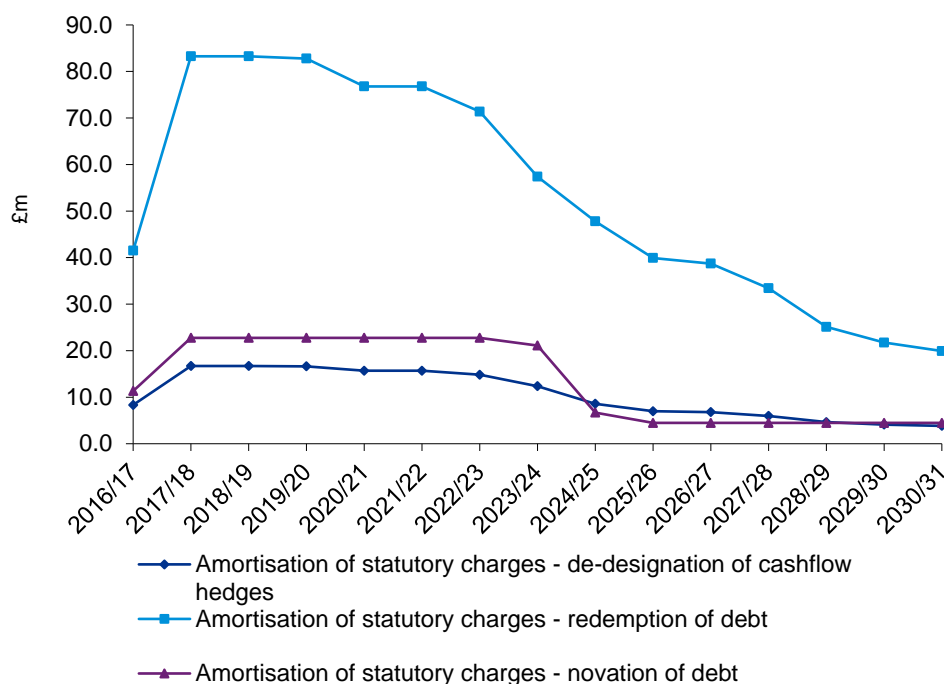
- The charge has been apportioned to each of the nine instruments based on the premium paid over par. The statutory charge for redemption is amortised over the life of the nine instruments to which the charge relates;
- The charge has been apportioned to each novated instrument redeemed based on notional value. The statutory charge for novation over life of the instruments to which the charge relates; and
- The statutory charge for the de-designation of hedges is amortised based on the amortisation profiles of the redeemed and novated debt (above), as the maturity of the index-linked and cross-currency swaps held by the gas distribution business prior to the refinancing is not known.

### **Summary of financial projections – reported statutory charges**

Figure 16 below sets out the projected amortisation of each statutory charge.

The scale of the amortised statutory charges is material relative to observed cost of debt, however declines sharply from 2022/23 as redeemed financial instruments to which a significant proportion of the statutory charges relate mature.

**Figure 16: Reported statutory charges**



### Development of financial projections – additional considerations for the treatment of statutory charges

For the development of reporting options the statutory charges are derived directly from the audited accounts and hence are a robust reflection of the market costs recognised at the time of the refinancing.

From a reporting perspective the subcomponents of the statutory charge could be reflected (depending on the approach adopted) either individually or in aggregate.

Whilst the statutory charges reflect market costs there are several areas of potential challenge, including what proportion of the overall market costs relate to transaction costs rather than the difference between fair and book value.

It is difficult to determine with certainty what proportion of the overall market costs relate to transaction costs rather than the difference between fair and book value, however one measure might be the variance between the all-in cost of debt based on pre-refinancing cash flows and the all-in cost of debt implied by the amortisation of statutory charges. This suggests that transaction costs constitute a relatively small proportion of total market costs recognised upfront.

#### Statutory charges - redemption of debt

It is important to consider the relevance of instruments re-financed within the electricity business for the purpose of determining costs directly attributable to the hive out of the gas distribution business.

From a Group perspective – given that novation of all debt relating to the gas distribution business has not been practicable – as much debt as possible within the Group needed to be redeemed (up to a cap equal to the quantum of debt allocated to the gas distribution business) to ensure that there was not a significant increase in gearing at the Group level as a result of the refinancing.

Bondholders were approached to determine if they were willing to retire bonds early at a premium. The take-up for the redemption of debt was less than 100%, meaning that the full amount outstanding of each security auctioned could not be successfully redeemed. In consequence bondholders for debt within the electricity business were approached as well; the cost of redeeming these instruments could be regarded as a proxy for the costs that would have been incurred had all bondholders for debt within the gas business been willing to retire bonds early at a premium, and hence are relevant costs incurred upfront to re-finance debt allocated to the distribution business.

The NG plc (or 'Group') accounts state that:

*An exceptional charge of £1,313 million (2016: £nil; 2015: £131 million) is included in net interest charge on the components of net debt and an exceptional cash outflow of £1,052 million... is included in net interest paid on the components of net debt.*

The Group accounts clarify that the £1,052m exception cash outflow relates to discontinued operations, specifically the liability management programme associated with the segmentation and separation of the gas distribution business. Although costs were incurred in different legal entities within the Group, all of these costs relate to the segmentation and separation of the gas distribution business.

*Costs for discontinued operations in 2016/17 were £1,167 million, £1,044 million higher than 2015/16 primarily due to £1,052 million of debt buyback costs incurred as part of the Group's liability management programme in relation to the disposal of the UK Gas Distribution business.*

The statutory accounts for the gas business show £833m of statutory charges and the statutory accounts for the electricity business show £481m, £1,314m in total. This reconciles (with a difference of £1m) to the exceptional charge disclosed of £1,313m in the Group accounts above.

This suggests that the £1,313m statutory charge includes NGET charges disclosed as part of the restructure Group financing portfolio relate to the separation and segmentation of the gas distribution business.

If the purchase price can be assumed to be the transmission mechanism for the transfer of these costs of refinancing to the current capital providers for the gas distribution business and if all the costs of redemption incurred at Group level and treated as discontinued operations are attributable to the current entity then these costs can be considered in several ways as an adjustment to the observed cost of debt in the RFPR.

Taking into account the all-in economic costs to different legal entities increases the cost of debt relative to the observed cost of debt.

#### Statutory charges - novation

There are, in principle, two components of the cost associated with the FV of novated debt recorded in the 2017 statutory accounts (£264m)<sup>22</sup>. The first component pertains to the increase in the coupon rate negotiated with bondholders. The second component pertains to the increase in the value of the relevant instruments as a consequence of revaluing the instruments using prevailing market rates, which were lower than the rates prevailing at the time that the bonds were issued.

The first of these components will be reflected in the observed cost of debt and should not be included in the projected amortisation profile.

The second component represents an economic cost of the refinancing incurred by the gas distribution business and is currently recognised as a liability on the balance sheet of the gas distribution business. If the gas distribution business had wished to redeem the relevant debt securities immediately following the refinancing, it would have had to pay an amount equivalent to the FV of the debt.

For the purposes of the development of financial projections and consideration of the implications of the refinancing, amortisation of statutory charges relating to the novation of debt have been excluded. This is on the basis that the fair value adjustment in relation to the novation of debt is included separately on the balance sheet of the gas distribution business (i.e. it was transferred as part of the refinancing) but was not included within the net debt balance reported to Ofgem.

#### Statutory charges - de-designation of cash flow hedges

There is a question around how to treat the de-designation of cash flow hedges. Prior to the refinancing, the gas distribution business held a number of derivative contracts that were designated as hedging contracts for reporting purposes. This meant that there was no requirement to mark-to-market the value of these instruments. IFRS9 requires that instruments that are not designated as hedging instruments must be carried at fair value. As such, when the debt instruments to which these contracts corresponded were novated or redeemed as part of the refinancing, they were de-designated as hedging instruments, and their value had to be marked-to-market.

The refinancing therefore crystallised a loss where the costs of the swaps designated as cash flow hedges prior to the refinancing were higher than prevailing market rates. In effect the expected cash flows of the de-designated swaps were NPV negative (£179m) at the point of refinancing, and also represented a cash cost per the statutory accounts at the time – there is therefore a real cost here that should be taken into account. The de-designated swaps were not held by the gas distribution business post-refinancing. As the gas distribution business no longer has exposure to these NPV negative cash flows the £179m constitutes a cost incurred as part of the refinancing from the perspective of the gas distribution business and a real economic cost incurred upfront in cash terms.

---

<sup>22</sup> \*Since the underlying calculation behind this figure is not publically available, this cannot be verified.

Costs associated with the de-designation of cashflow hedges are therefore included in financial projections used to estimate the all in cost of debt of the gas distribution business.

## 6.7 Independent valuation of cost of debt redemption

Where a company re-finances in the ordinary course of business and reports on the basis of IFRS there are potential impacts for accounting treatment, as the refinancing could constitute a modification of a financial liability.

A change to either or both of the amounts and timings of repayments would represent a modification of a financial liability under both IAS 39 and IFRS 9.

If it is assumed that the refinancing meets the IFRS 9 criteria for a modification of a financial liability, there are two potential treatments of the refinancing, contingent on whether the modification is deemed to have been substantial or non-substantial.

Under the quantitative test to determine whether the modification of debt is substantial, the cash-flows before and after the modification are scheduled and discounted back at the original effective interest rate of the existing liability. If the present value of the two calculations differs by more than 10%, then the modification is considered substantial

Under IFRS 9 if the modification is assessed as being substantial, then the original liability would be derecognised and a new liability would be set up at fair value based on the current market interest rate. Any difference between the existing carrying value and fair value would be recorded in the P&L in financing charges.

This effectively could be seen to reflect the treatment of the refinancing, where debt is in effect redeemed at fair value. The overall levels of debt are higher as a result of the refinancing, in part to finance the premium paid upfront. As the premium paid reflects the market cost of the refinancing, the observed opening debt position for the gas distribution business reflects the fair value of the debt, which is higher than the carrying value prior to the refinancing.

Equally the financing charges are lower in the scenario that reflects the difference between the carrying value prior to the refinancing and the fair value.

If the modification is not substantial, then the existing liability is not derecognised, but the carrying value is adjusted. This has an alternative accounting treatment under IFRS 9. Specifically, it is adjusted to an amount that represents the revised payment schedule discounted back using the original effective interest rate of the existing liability. Any difference from the old carrying value is recorded in the P&L in financing charges.

This alternative accounting treatment reflects the difference between the fair value and carrying value as a gain or loss over and above the adjustment of directly attributable costs prescribed by IAS 39.

- The maturity of the financial instruments partially redeemed
- The weighting of each instrument as a proportion of total debt redeemed (£1,766m)

Any gain on modification of debt would in effect be amortised based on the maturity of the instruments to which they relate.

Dr finance costs

#### Cr financial liability

It is assumed for the calculation of the gain that the carrying value reflects the quantum of debt which was successfully redeemed (£1,766m).

The amount that represents the revised payment schedule discounted back using the original cost of debt of the existing liability has been calculated as follows:

- Project cash flows (interest costs and repayment of debt) associated with each of the nine instruments redeemed, based on original maturity and coupon, assuming each instrument is held to maturity. Determine the original weighted average cost of debt for the nine financial instruments in aggregate, prior to the refinancing. This gives a cost of debt of 5.87%.
- Project cash flows (interest costs and repayment of debt) associated with debt raised in the gas distribution business post-refinancing. In practice the overall level of gearing for the gas distribution business increased post-refinancing, and therefore new debt raised to finance the redemption of existing debt does not correspond directly to each financial instrument redeemed (£3,643m of fixed rate debt in total). New debt raised has therefore been scaled to reflect the quantum of debt which was redeemed (£1,766m) at the weighted average cost of debt for the full £3,643m of new debt.

**Table 8: Scaling of new debt**

		Maturity Date	Coupon	Notional	Adjusted Notional
FR1		22/09/2021	1.13%	650	315
FR2		22/09/2024	1.91%	643	312
FR3		22/09/2028	2.13%	850	412
FR4		22/09/2038	2.63%	700	339
FR5		22/09/2046	2.75%	800	388
Total				3,643	1,766

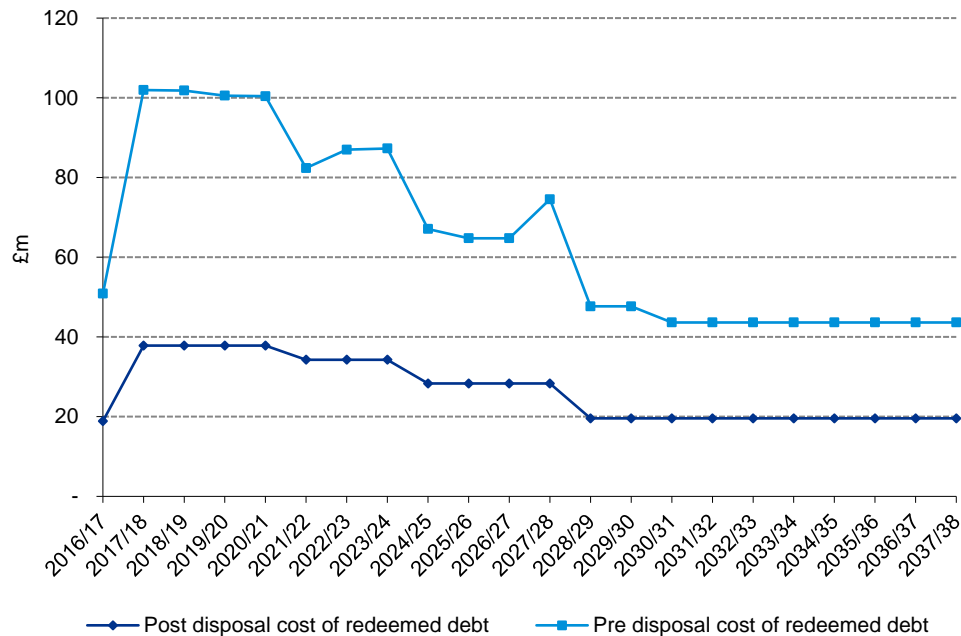
Source: Cadent Gas Limited, company accounts, KPMG analysis

#### Summary of financial projections – cost of redeemed instruments

Based on a levelised quantum of debt – the pre-refinancing all-in estimate of the cost of debt relating to instruments redeemed is significantly higher than the equivalent post-refinancing cost of debt over the model period, as set out in Figure 17 below. This reflects the fact that pre-refinancing debt redeemed was significantly more expensive than the debt raised post-refinancing at lower prevailing market rates.

The material variance suggests that the post-refinancing cost of debt for the nine instruments does not reflect the all-in cost of debt.

**Figure 17: pre and post refinancing cost of redeemed debt**



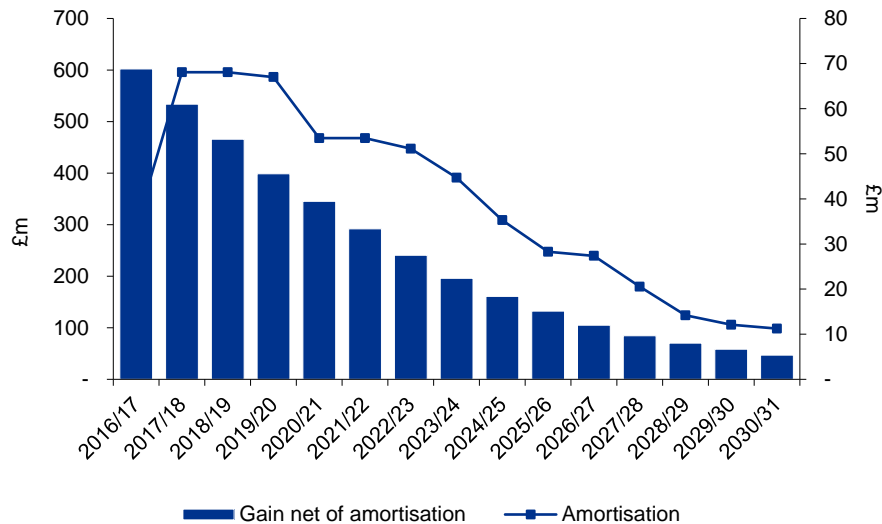
### Development of projections for amortisation of the cost of debt redemption

Cash flows projected for the nine instruments (post-refinancing) are discounted at the original weighted average cost of debt (5.87% based on the pre-refinancing cost of redeemed debt). The present value of the revised payment schedule is £1,130m, compared to a carrying value of £1,766m. This implies a gain on modification of debt equivalent to £636m.

A lower discount rate than that adopted (5.87%) would result in a higher (more negative) present value relative to the carrying value and reduce the scale of the overall gain.

At the point of modification the carrying amount of the financial liability is adjusted to reflect the new cash flows discounted by the original EIR (£618m) are amortised straight line on a pro rata basis and taking into account:

**Figure 18: unwind of gain corresponding to redeemed instruments**



In absolute terms the scale of the amortisation is lower than equivalent reported statutory charge, as here the gain reflects an estimate of fair value based on projected cash flows but not necessarily all market costs associated with the refinancing.

However, based on the IFRS 9 methodology the projected amortisation of the gain could understate the fair value as the discount rate (based on the weighted average interest rate) doesn't reflect in full the time value of money. Regardless, there will not be a direct match with the market value as the discount rate does not correspond to market yield.

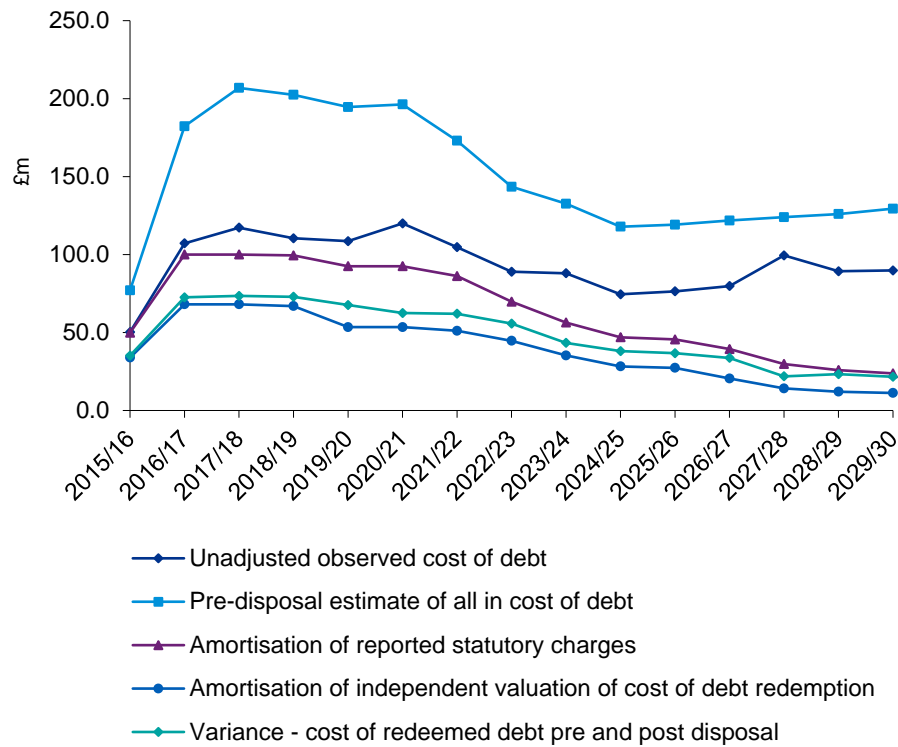
In general where discount rates are lower than the prevailing market yield at the time of the refinancing, the present values above will under-estimate the value of additional market costs incurred as a result of refinancing.

## 6.8 Observations on financial projections developed

It is clear that each set of financial projections are material in scale relative to the adjusted observed cost of debt, as set out in the Figure below.



**Figure 19: summary of financial projections developed**



Each of these financial projections or variants thereof can be considered as building blocks and can be carefully aggregated to develop different options for estimating the all-in cost of debt

The observed cost of debt is in effect a 'base case' building block for the development of the projected all-in cost of debt. Each option effectively represents a set of adjustments (either to reflect additional costs or variances between the observed cost of debt and pre-refinancing estimates) to the observed cost of debt.

Each of these projections is used in Section 8 to develop four options for estimating the all-in cost of debt.

## 7 Implications of the refinancing for the cost of debt

A number of factors have to be considered carefully when estimating the all-in economic cost of debt for the gas distribution business:

- The way in which the costs recorded in the statutory and regulatory accounts at the time of the refinancing have been calculated is not publically available, and it is therefore not possible to ascertain precisely what is included within the scope of the reported figures;
- The costs incurred as part of the refinancing were borne by a number of different entities, and some of these costs were also subsequently transferred in value terms to other parties. It is not transparent which costs were ultimately borne by which parties based on publically available data;
- The costs recorded in the statutory and regulatory accounts at the time of the refinancing may include costs that would not be appropriate to include in the estimate of the all-in cost of debt so care has to be taken not to overestimate the all-in costs<sup>23</sup>; and
- Once the appropriate quantum of costs incurred as part of the refinancing has been determined, these costs can be profiled appropriately over time to determine the all-in cost of debt on an ongoing basis while avoiding double counting.

In order to estimate the all-in cost of debt, three scenarios are developed in this report to enable the analysis of the overall cost:

- **Scenario 1: cost projections in the absence of the refinancing**—assuming that the refinancing did not materially affect the all-in cost of debt (ie that the total value was preserved in an efficient market), the observed cost of debt that would have prevailed in the absence of the refinancing could be used as an approximation of the economic all-in cost of debt;
- **Scenario 2: cost projections of debt if it was novated as originally intended**—if all the legacy debt associated with the gas distribution business in existence at the time of the refinancing had been successfully novated as originally intended, the resulting observed cost of debt could approximate the all-in cost of debt, which represents another potential basis for estimation;
- **Scenario 3: cost projections based on all costs associated with the refinancing that took place**—the all-in cost of debt can be also estimated by considering all the relevant costs associated with the refinancing actually incurred; these costs have to be identified, estimated and profiled appropriately to be added to the observed costs based on coupon rates on the new debt.

---

<sup>23</sup> For example, the impact of the fair valuation of novated debt reported in the statutory accounts may include the impact of the increase in the coupon rate agreed as part of the novation process. Since the increase in the coupon rate is reflected in the interest costs reported in the accounts on an ongoing basis, including an additional cost corresponding to this impact would be double counting.

Based on these scenarios, a series of options for estimating the all-in cost of debt are set out in the following section.

## 7.1 Scenario 1: cost projections in the absence of the refinancing

The observed cost of debt for the gas distribution business was 3.2% prior to the refinancing. If the reduction in interest cost resulting from derivative contracts is excluded from consideration, the cost of debt increases to 4.1%. This is considerably higher than the observed cost of debt for the business in 2018 (2.4%).

One possible hypothesis is that the refinancing did not materially affect the all-in cost of debt. This hypothesis suggests that issuing new 'low' coupon debt to fund the redemption of existing 'high' coupon debt cannot in general result in a lower cost of debt on a discounted basis where:

- the redemption is conducted at market prices; and
- the cost of redeeming debt is appropriately taken into account.

This is because any apparent reduction in the cost of debt from issuing lower coupon debt will be fully offset by the purchase price of the existing debt that is redeemed.

This can be illustrated using a stylised example. A company issues a 15-year fixed-rate bond at par with face value of £100m. At this point in time, the yield on new debt (and hence the coupon rate on the debt instrument) is 5%. Over the following 10 year period, market yields on new debt fall gradually to 0%.

In year T+10, the company considers redeeming the bond early and issuing a new 5-year bond at par. It is assumed that the redemption of the existing debt is undertaken at market value. For simplicity, it is assumed that the company faces a yield curve that is flat at 0% (but the result is not contingent on this assumption).

The Table below illustrates the relevant cash flows under a scenario where the company undertakes the refinancing, and where it does not.

The NPV of the cash flows – and by implication, the cost of debt – is identical across both scenarios, since any gain by the company from issuing debt with a lower coupon rate than its embedded debt is precisely offset by the cost to the company of redeeming the existing debt at market values.

Importantly, if the cost of redeeming the existing debt was ignored, an incorrect inference could be made that the refinancing had resulted in a lower cost of debt by enabling the company to benefit from a lower cost of debt. This is illustrated in scenario 3 in the Table below, where the cost of the redeemed debt is (incorrectly) assumed to be at par value. Under this scenario, the 'apparent' cost of debt is considerably lower, as illustrated by the lower NPV of cash outflows.

**Table 9: illustrative impact of refinancing on value**

	Year	T+11	T+12	T+13	T+14	T+15
	Discount rate	0%	0%	0%	0%	0%
Scenario 1: no refinancing	<b>Existing bond</b>					
	Coupon	5	5	5	5	5
	Repayment of principal					100
	Undiscounted cashflows	5	5	5	5	105
	Discounted cashflows	5	5	5	5	105
	NPV	125				
Scenario 2: refinancing	<b>New bond</b>					
	Proceeds of issuance	-100				
	Coupon	0	0	0	0	0
	Repayment of principal					100
	<b>Existing bond</b>					
	Cost of redemption (at market value)	125				
	Discounted cashflows	25	0	0	0	100
	NPV	125				
Scenario 3: refinancing, ignoring market premium	<b>New bond</b>					
	Proceeds of issuance	-100				
	Coupon	0	0	0	0	0
	Repayment of principal					100
	<b>Existing bond</b>					
	Cost of redemption (at par value)	100				
	Discounted cashflows	0	0	0	0	100
	NPV	100				

Note: cash outflows / (inflows) are shown as positive/(negative) figures above  
Source: KPMG analysis

Under this hypothesis, the cost of debt that would have prevailed in the absence of the refinancing would be the appropriate basis for estimating the all-in cost of debt.

The financing structure of the gas distribution business prior to the refinancing could have persisted in a similar form for a considerable period of time. The maturity structure of the debt instruments corresponding to the gas distribution business is summarised in the Figure below.

Relatively little of the debt outstanding prior to the refinancing was due to mature in the short-term, and the maturity concentrations for the business were modest.

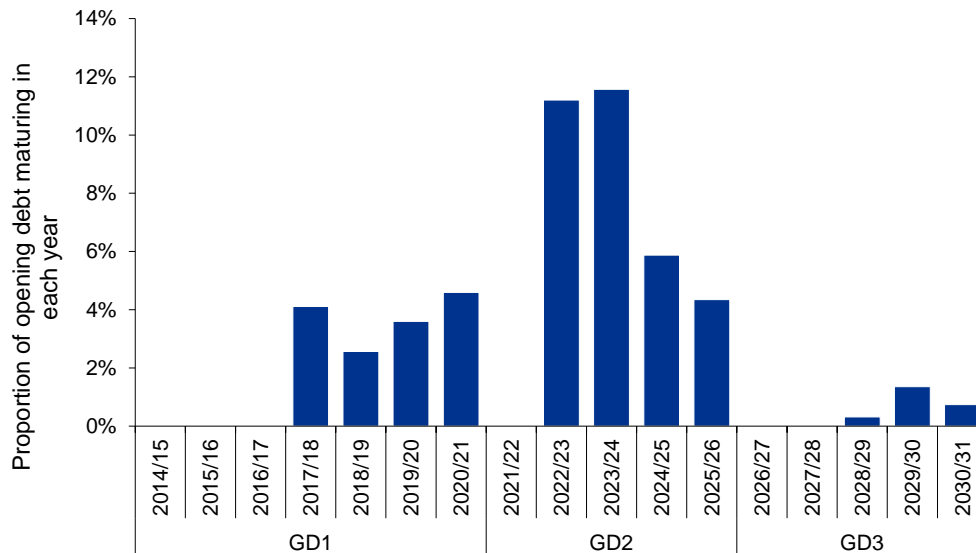
This suggests that the refinancing represented a disruption to an otherwise stable financing structure.

In Section 6, the cost of debt that the gas distribution business would have faced in the absence of the refinancing was explicitly forecast and compared with the business's actual forecast cost of debt.

This analysis suggests that the cost of debt for the gas distribution business would have remained relatively flat over time **at a level that is higher than the observed cost of debt in the absence of the refinancing.**

The impact of the refinancing on the business's interest cost is an important consideration for users of the RFPR, and an estimate of this impact over time will support users' understanding of the drivers of the cost of debt.

**Figure 20: Maturity structure of gas distribution business prior to refinancing**



## 7.2 Scenario 2: cost projections of debt if it was novated as originally intended

In Section 5 it was noted that the original intention of the refinancing was to novate existing debt across to the gas distribution business, rather than raise any new debt or redeem any existing debt.

If this exercise had been successful, the observed cost of debt for the gas distribution business would have been equal to the cost of the novated debt instruments, plus an uplift to this rate to reflect the demand by existing bondholders for compensation for this novation.

The scale of the uplift that would have been required is not known with certainty, since the proposed novation did not in fact take place. At the same time, there are indications that an uplift of around 100bps could have been demanded by bondholders.

The reason that the novation did not take place at the scale originally envisaged was in part because the 100bps uplift being demanded by bondholders was not considered to be value for money (either for investors or consumers).

The scale of the uplift demanded resulted from the process by which it was necessary to engage with bondholders – namely:

- Negotiation through the ABI is generally the only available route for such engagement;
- the ABI is obliged to offer the same terms to all bondholders; and
- different bondholders exhibited different appetites to engage with the novation, such that the overall price demanded was driven by the 'holdout' bondholders who demanded the highest uplift.

The subsequent decision to raise new debt and to redeem existing debt – and hence the resulting cost of debt currently faced by the business – was therefore a direct consequence of factors that were outside of the direct control of the main parties to the refinancing.

There would also have been a greater cost in the statutory accounts associated with the fair valuation of the novated debt instruments. The cost that was actually recorded was £264m. If this is scaled *pro rata* by the ratio of i) book value of debt that was originally intended for novation to; ii) the book value of debt that was actually novated, the cost would increase to approximately £1.0bn.

If additional information on the drivers behind the way in which the refinancing was conducted, and the impact on the cost of debt if the original intent had been realised, were to be included in the RFPR, the reporting around the cost of debt of the gas distribution business would capture that the reduction in the observed cost of debt is a direct consequence of factors that were outside of the direct control of the main parties to the refinancing.

**If the refinancing had been implemented as planned and all debt allocated to the gas distribution business had been novated the observed cost of debt for the gas distribution business would have increased relative to the observed cost of debt prior to the refinancing.**

The cost of debt if all debt had been novated as intended represents another possible basis for estimating the all-in cost of debt.

### 7.3 Scenario 3: cost projections based on all costs actually incurred and associated with the refinancing

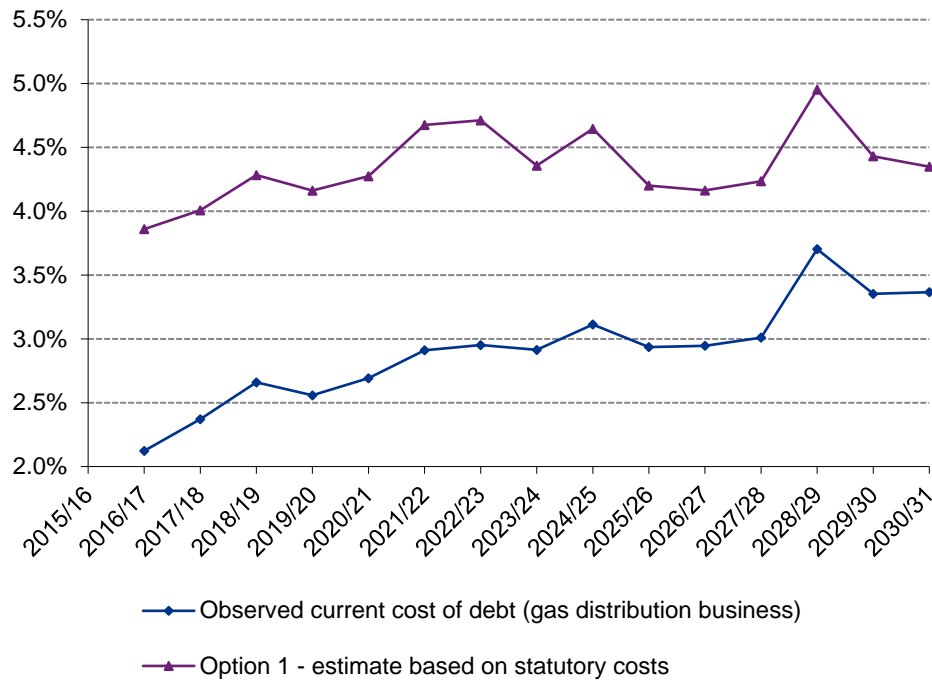
The costs that were actually incurred as part of the refinancing represent another possible basis for estimating the cost of all-in debt. This is justified on the basis that the process that was followed under the refinancing was intended to minimise costs, and that the costs incurred were the quantum that was necessary to ensure that the refinancing (and hence the segmentation and separation of the gas distribution business more generally) could take place.

Section 8 explicitly profiles the costs of the refinancing (based on the amounts recorded in the statutory accounts) over time. This profile is summarised and compared to the actual observed cost of debt for the gas distribution business in the Figure below.

This analysis demonstrates that the costs associated with the refinancing exceeded the reduction in the observed cost of debt that resulted from it. This implies that **the net impact of the refinancing was to increase the cost of debt once all relevant economic costs have been taken into account.**

In the absence of transaction costs or other market frictions, the estimates of the all-in cost debt under this scenario and estimates under Scenario 1 should be similar. The observed difference between the all-in cost of debt in the presence of the refinancing and in its absence could reflect the presence of transaction costs, or could simply reflect uncertainties regarding the estimation of the precise quantum of costs incurred upfront and how much of this can and should be attributed to the refinancing itself.

**Figure 21: summary of profiled costs compared with actual observed cost of debt for the gas distribution business**



### 7.3.1 Summary of implications of the refinancing for the cost of debt

The analysis above suggests the following key implications of the refinancing for the cost of debt:

- In the absence of the refinancing, the observed cost of debt (defined as interest divided by the book value of debt) for the gas distribution business would have been higher than is currently the case.
- If outstanding debt had been novated as intended, the observed cost of debt would have been higher than is currently the case, *and* higher than the cost of debt that would have been observed in the absence of the refinancing.
- If all relevant economic costs are taken into account, the cost of debt in the presence of the refinancing is broadly similar to the cost of debt that would have prevailed in the absence of the refinancing.

These implications suggest that if additional information with respect to the costs and impact of the refinancing were to be included within the RFPR, the reporting of the cost of debt of the gas distribution business would be more reflective of the all-in cost of debt in RIIO-1 and subsequent price control periods in absolute terms and cost of debt performance relative to the allowed cost of debt.

## 8 Reporting considerations and potential information for inclusion in the RFPR

As part of the regulatory reporting process at RIIO1 Ofgem has introduced Regulatory Financial Performance Reporting ('RFPR').

Section 8.1 provides an overview of the RFPR process and reporting requirements.

Section 8.2 sets out an overview of potential options for additional information that could be included in the RFPR and how these could be positioned. These options are considered in Sections 8.3 to section 8.5:

Section 8.7 provides a summary of the cost of debt implied by each of the four options and commentary on the cost of debt of each option relative to the observed cost of debt for the gas distribution business.

### 8.1 Overview of reporting requirements

Companies are required to submit completed RFPRs by the first week of November 2018.

The requirement for companies to complete the RFPR is in lieu of full, audited RIIO accounts (which we understand will be introduced in RIIO 2).

The purpose of the RFPR for Ofgem *is to provide a framework to allow Ofgem to collect accurate and consistent information from licenced network operators (Licensees)*. The RFPR forms part of the overall RIGs reporting and is designed to provide a comprehensive snapshot of Licensee performance under RIIO 1, cost of debt performance.

Companies are required to complete RFRP templates and provide an accompanying commentary.

Financial instruments and associated interest costs are reported in five tables in the RFPR, set out below.

**Table 10: Summary of RFPR data tables**

RFPR data table	Purpose and contents
<b>R1</b>	<i>The Licensee is required to report RoRE based on both the notional and actual gearing. RoRE is also to be presented annually (actuals and forecast), cumulative actuals to date and for the full price control period (actuals and forecast). RoRe is calculated including/excluding the impact of debt performance, which is derived from R7</i>



<b>R7</b>	<i>The purpose of this table is for the Licensee to report its annual actual and forecast net interest as per the Regulatory (RIIO-1) definition. This is then compared against the cost of debt allowances published in the latest PCFM. Key inputs are derived from R7a (below)</i>
<b>R7a</b>	<i>The purpose of this table is to report debt costs for each debt type, segregating each type between the income statement and the cash flow statement.</i>
<b>R8</b>	<i>The Licensee is required to report its annual actual and forecast net debt as per the Regulatory (RIIO-1) definition.</i>
<b>R8a</b>	<i>The Licensee is required to report information for each type of embedded debt only (ie do not forecast refinancing or new debt issuance).</i>

Debt performance in the RoRE analysis (R1) is derived from R7, which calculates debt performance based on actual and notional gearing. As set out in the table below, net interest from the statutory accounts is reconciled to the regulatory or RIGs definition and compared to the cost of debt allowance.

**Table 11: Reconciliation of net interest to regulatory definition and comparison to cost of debt allowance**

	Actuals 2014	Actuals 2015	Actuals 2016	Actuals 2017	Actuals 2018	Forecast 2019	Forecast 2020	Forecast 2021
<b>Net Interest Per Statutory Accounts</b>								
Interest not qualifying for corporation tax relief								
Fair value adjustments (e.g. losses on derivatives)								
Dividends on preference shares								
Costs of early redemption on long term debt								
Swap Termination Costs paid								
Movements relating to pension fund liabilities reported within net interest								
Debt issuance expenses (inc. amortisation to discounts that had previously benefitted from a tax deduction)								
Commitment fees for undrawn liquidity backup lines								
<b>Net Interest Per Regulatory (RIIO-1) Definition</b>								
Forecast new financing/refinancing costs								
<b>Net Interest including forecast new financing/refinancing costs</b>								
Less inflation in interest charge								
Assumed Regulatory finance cost at notional gearing								
Year end RPI								
<b>Assumed regulatory finance cost at actual gearing</b>								
<b>Cost of Debt Allowance as per latest published PCFM (prior year AIP)</b>								
<b>Cost of Debt out(under)performance at actual gearing</b>								

We understand that Cadent would like to include additional information in its RFPR to highlight the implications of the refinancing undertaken for the cost of debt.

This would identify through separate disclosure the variance between:

- The observed cost of debt post refinancing; and
- The all-in cost of debt, reflecting relevant economic costs incurred during the refinancing.

We understand that in addition to the above Cadent is considering tax implications of any

adjustment made or additional information included in the RFPR.

Options for the separate disclosure of the impact of the refinancing to reflect the all in cost of debt within the RFPR are set out below.

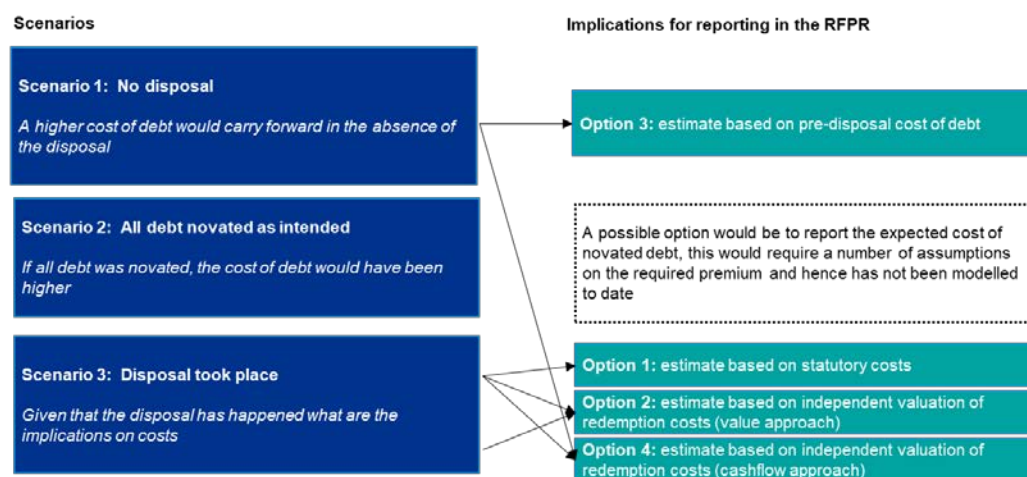
## 8.2 Overview of options for inclusion of additional information in the RFPR

This section sets out options for additional information that could be included in the RFPR. Four options are considered:

- **Option 1: estimate based on statutory costs** – this approach uses the reported statutory costs associated with redemption of debt and de-designation of cashflow hedges as the basis for estimating the all-in cost of debt.
- **Option 2: estimate based on independent valuation of redemption costs (value approach)** – this approach involves independently estimating the upfront costs associated with the refinancing, on the basis that the calculation of the statutory charges is not publically available and hence a cross-check on these figures is needed. It compares the carrying value of legacy debt with the present value of lower cost new debt. The all-in cost of debt is then calculated as the sum of this value – profiled over time based on the IFRS9 methodology – and the post-refinancing observed cost of debt.
- **Option 3: estimate based on pre-refinancing cost of debt** – this approach is based on the hypothesis that the refinancing did not result in a material change to the all-in cost of debt: i.e., the upfront costs precisely offset the reduction in the observed cost of debt. Under this hypothesis, the all-in cost of debt can be estimated based on the pre-refinancing cost of debt, which is higher than the current observed cost of debt.
- **Option 4: estimate based on independent valuation of redemption costs (cashflow approach)** – this approach is similar in nature and motivation to Option 2 – i.e., the upfront costs are independently estimated on the basis that a cross-check is needed on the statutory charges – but the calculation and profiling of the upfront costs are based on an alternative approach. The principal difference pertains to the amount that is added to the observed cost of debt to calculate the all-in cost of debt. This is based on a comparison of the cash flows of the redeemed debt securities and the cash flows of the new debt securities raised during the refinancing, rather than their carrying and present values respectively. The approach results in a different estimate to Option 2 due to the way in which the cash flows are translated into carrying/present values, and the methodology used to profile those values under Option 2.

Each option is based on an aggregation of the financial projections set out in Section 6. A mapping of financial projections developed in Section 6 to the options for reporting additional costs in the RFPR is set out below.

**Figure 22: Mapping of financial projections to reporting options**



The profiles of projections under Options 1 and 2 are based on existing methodologies within IFRS accounting standards for reporting and capturing the underlying impact of refinancing on financing costs over time. Whilst in practice the refinancing does not meet the relevant criteria and tests specified in the relevant accounting standards, the methodologies therein constitute a useful starting point for potential options for the presentation and reporting of the impact of the refinancing.

Option 3 and 4 consider the difference in projected cash flows between the observed costs of the gas distribution business and the all-in cost if the refinancing had not taken place, and hence no or limited profiling is required.

There is no reason in principle why all four options could not be reported in the RFPR, and each piece of information is potentially useful to users.

### 8.3 Option 1: estimate based on statutory costs

Under IAS 39 the carrying amount of financial liabilities post the refinancing is adjusted under IAS 39 to reflect costs directly attributable to the refinancing.

As set out in Section 5 a premium of £1,050m was paid upfront in respect of the refinancing undertaken.

A detailed exposition of the aggregate costs (at a National Grid plc level) is set out in Section 5.6. The majority (£871m) relates to the redemption of debt held by prior to the refinancing.

These costs represent market costs that are directly attributable to the refinancing, i.e. are incremental costs that are directly attributable to the acquisition, issue or disposal of a financial asset or financial liability.

Under IAS 39 (prior to the introduction of IFRS 9) assuming that these costs were treated as directly attributable to the refinancing, the carrying value of debt would be adjusted to reflect these costs, which would be amortised over the life of the financial liabilities to which they relate.

In accounting terms the carrying value of debt would be adjusted to reflect all directly

attributable costs upfront as follows:

Dr financial liability

Cr cash

Directly attributable costs would in effect be amortised (through a revised cost of debt based on the maturity of the instruments to which the costs relate):

Dr finance costs

Cr financial liability

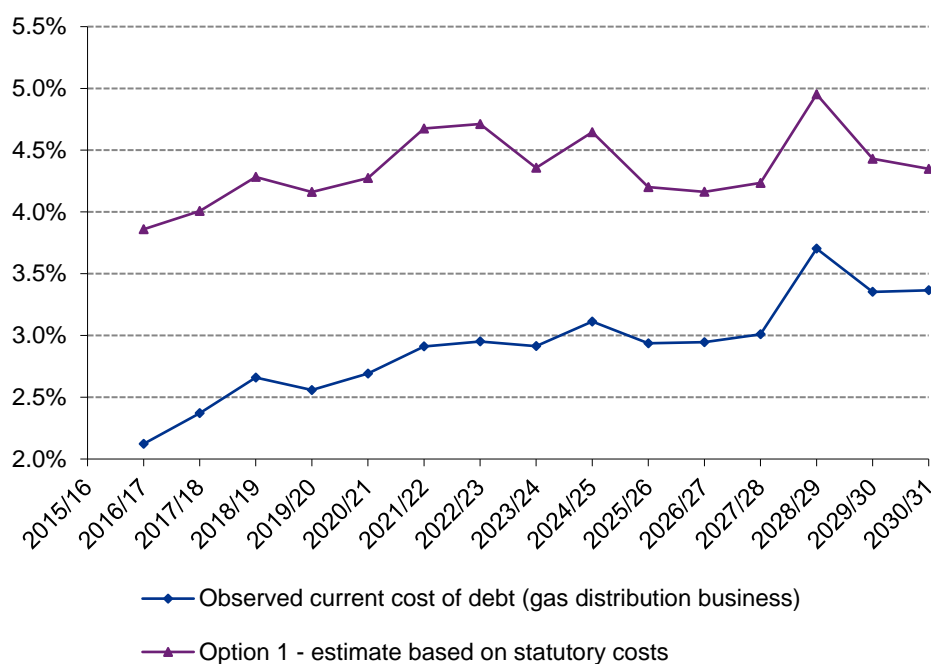
Costs associated with the refinancing have been incurred across multiple entities. It is assumed under this approach that the opening carrying value of debt (FY2017) reflects directly attributable costs as – for the observed debt of the gas distribution business – all cash flows are captured in the opening net debt position. If the opening carrying value of debt were to be adjusted to reflect £1,050m of directly attributable costs this would *increase* the cost of debt implied by this option.

However, as it is assumed that the opening carrying value of debt reflects directly attributable costs, the directly attributable costs (as reported in statutory accounts) would in effect be amortised based on the maturity of the instruments to which the costs relate.

The impact of this treatment of directly attributable costs under IAS 39 would be an increase in finance costs and a corresponding increase in the cost of debt.

Figure 23 below sets out the cost of debt including and excluding amortisation of directly attributable costs in line with the accounting principles set out in IAS 39.

**Figure 23: All in estimate of cost of debt (Option 1) vs observed cost of debt**



The cost of debt under Option 1 significantly increases relative to the observed cost of debt and associated projections of the gas distribution business, as a result of the inclusion of additional financing costs.

## **8.4 Option 2: estimate based on independent valuation of redemption costs (value approach)**

The pre-refinancing cost of debt for the nine instruments that were redeemed is estimated and the projected cash flows associated with these instruments are used as the basis for reporting.

This approach would provide users of the RFPR with information regarding the cost of debt that would have been incurred had these securities not been redeemed.

This approach determines the cash flows relating to the nine instruments redeemed pre and post refinancing. The present value of these cash flows is then determined with a discount rate based on the original pre-refinancing weighted average cost of debt of the nine instruments modified, in line with the methodology set out in IFRS 9 for determining the gain on debt modification.

In accounting terms the carrying value of debt would be adjusted to reflect the gain on modification of debt as follows:

Dr financial liability

Cr cash

It is assumed under this approach that the opening carrying value of debt (FY2017) reflects directly attributable costs and any gains as all cash flows are captured in the observed opening net debt position for the gas distribution business post-refinancing. If the opening carrying value of debt were to be adjusted to reflect directly attributable costs and gains this would *increase* the cost of debt implied by this reporting option.

However, as it is assumed that the opening carrying value of debt reflects any gains and directly attributable costs, these would in effect be amortised based on the maturity of the instruments to which they relate.

Dr finance costs

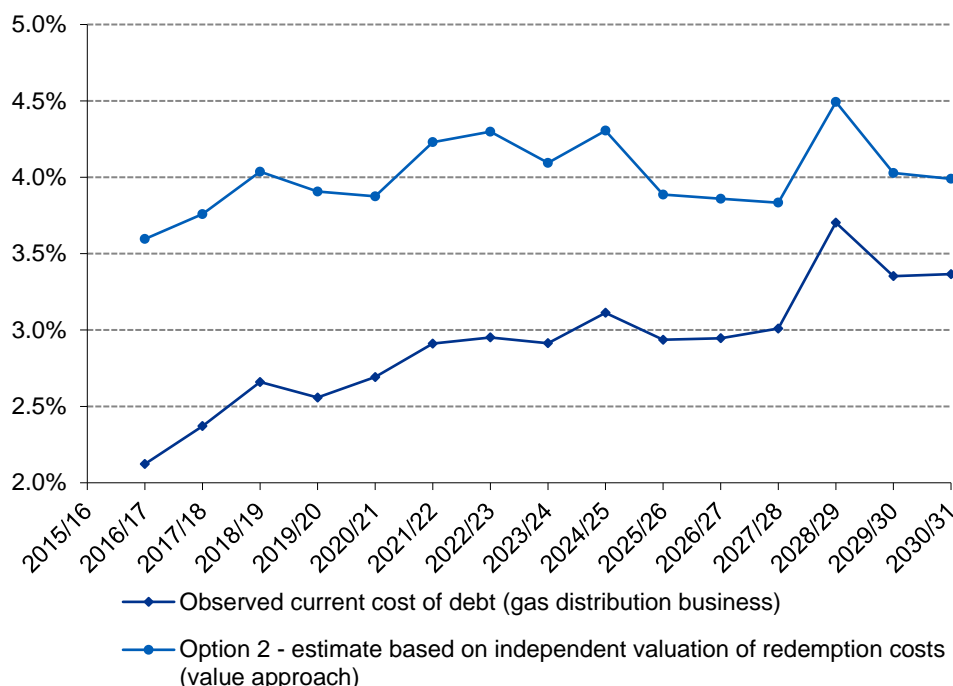
Cr financial liability

Option 2 additionally apportions the reported costs of the the de-designation of cash flow hedges in the statutory accounts to the financial instruments (consistent with Option 1).

It is assumed that in addition the directly attributable costs associated with (1) de-designation of cash flow hedges associated with the modification and redemption of debt; and (2) costs associated with the de-designation of cash flow hedges would in effect be amortised based on the maturity of the instruments to which the costs relate.

The impact of amortisation on the observed cost of debt of the gas distribution business is set out below.

**Figure 24: All in estimate of cost of debt (Option 2) vs observed cost of debt**



The all-in cost of debt under Option 2 significantly increases relative to the observed cost of debt for the gas distribution business, as a result of the inclusion of additional financing costs.

## 8.5 Option 3: estimate based on pre-refinancing cost of debt

This approach looks holistically at the impact of the refinancing by determining existing finance costs based on the observed cost of debt for the gas distribution business and comparing these costs to the cost of debt in the absence of the refinancing.

Two sets of financial projections are developed to determine the impact of the refinancing and associated impacts on the financial structure on the all-in cost of debt the gas distribution business: (1) the observed cost of debt for the gas distribution business; and (2) the cost of debt that would have prevailed in the absence of the refinancing for the gas distribution business as a whole are projected forward (the 'pre-refinancing estimate of the all-in cost of debt'). Both sets of financial projections are set out in Section 6.

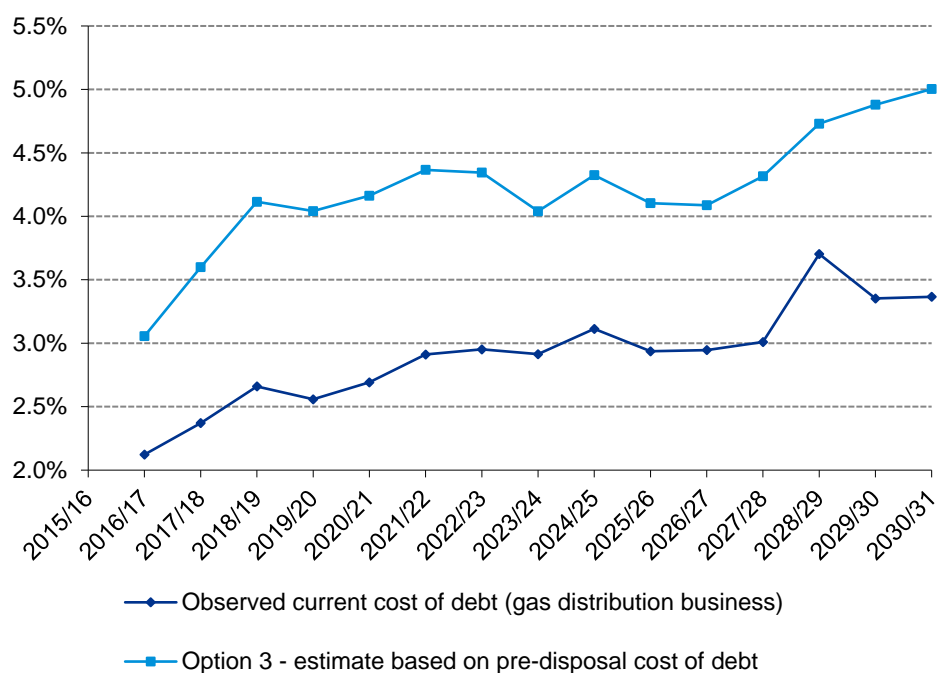
The adjustment is estimated based on the difference between these cash flows. This information would enable users to understand the impact of the refinancing on the cost of debt compared with a scenario where the refinancing had not taken place.

In order to calculate the difference between the two sets of cash flows in absolute terms on a like for like basis, the 'adjusted' profile for the observed cost of debt has been used. This represents the post-refinancing cost of debt, but applied to the pre-refinancing debt

balances<sup>24</sup>. The adjustment is relevant to estimating the all-in cost of debt because of the change in debt balances (in particular an increase in gearing) that occurred as a consequence of the refinancing.

The variance between the two sets of cash flows is applied to the observed cost of debt to estimate the all-in cost of debt under this option. The variance between the cost of debt implied by this option and the observed cost of debt is set out below.

**Figure 25: All-in estimate of cost of debt (Option 3) vs observed cost of debt**



The estimated all-in cost of debt under this option significantly increases relative to the observed cost of debt for the gas distribution business, as a result of the inclusion of additional financing costs.

The cost of debt for this option trends upwards into RIIO GD3 reflecting the maturity of existing instruments. This increasing average cost of debt under this option is driven by the fact that – although the quantum of debt and hence the adjustment declines over time as debt matures – long-term, relatively expensive debt was in place prior to the refinancing.

<sup>24</sup> The pre-refinancing debt balance is assumed to be £4.707bn, excluding (1) the fair value of derivatives on the balance sheet; and (2) intercompany debt. A breakdown of the pre-refinancing debt balance is provided in the following section.

## **8.6 Option 4: estimate based on independent valuation of redemption costs (cashflow approach)**

This Option is an amalgam of Options 2 and 3 and reflects a simplified approach to determining the all-in cost of debt, starting with the current observed cost of debt.

The pre-refinancing cost of debt in absolute terms for the nine instruments that were redeemed is estimated and the projected cash flows associated with these instruments are used as the basis for reporting.

The cost of redeemed debt is projected forward to the end of RII03 based on (1) the projected debt balances (taking into account the maturity of each debt instrument redeemed as part of the refinancing); and (2) the cost of each instrument redeemed in a counterfactual scenario where the refinancing did not take place.

The post-refinancing cost of debt in absolute terms is estimated by applying an alternative interest rate (based on the weighted average cost of debt of the new fixed rate debt raised by the gas distribution business post-refinancing) to the same profile of debt as used in the projected cost of redeemed debt (pre-refinancing) above.

The estimate of the cost of redeemed debt (post-refinancing) is designed to estimate in absolute terms the cost of the financial instruments that are equivalent to the redeemed instruments post-refinancing. It is assumed that the instruments used to finance the buyback of redeemed debt at the time of the refinancing are the relevant comparators for this analysis. Both the pre and post refinancing estimates of the cost of redeemed debt are set out in the Figure below.

The adjustment to reflect the costs of debt redemption is then calculated as the variance between the pre and post refinancing cost of redeemed debt, where the variance reflects the annualised impact of an effective repayment of relatively expensive legacy debt and raising of cheaper debt at low market rates prevailing at the time.

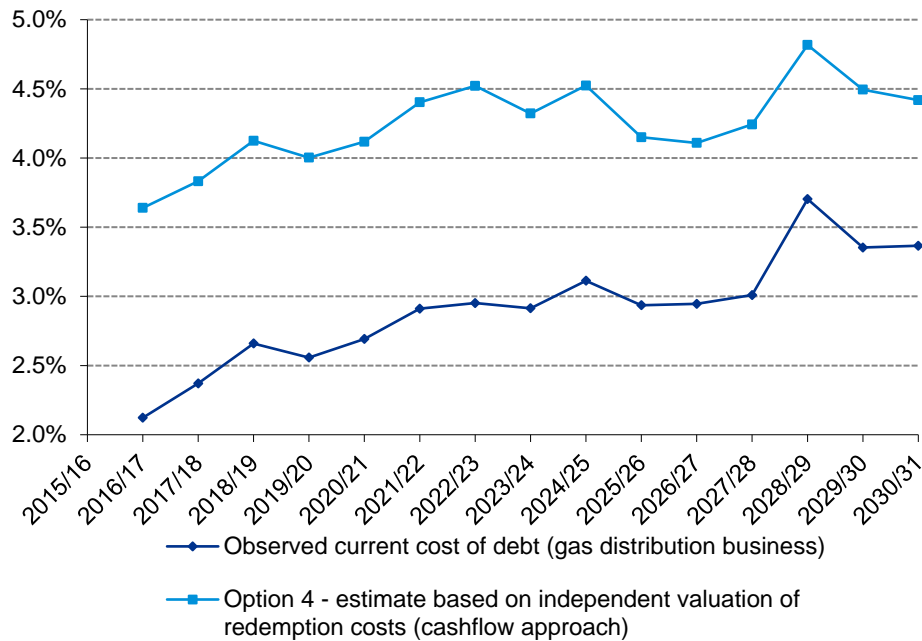
Option 4 additionally apportions the reported costs of the de-designation of cash flow hedges in the statutory accounts to the financial instruments (consistent with Options 1 and 2).

It is assumed that in addition the directly attributable costs associated with the de-designation of cash flow hedges associated with the modification and redemption of debt would in effect be amortised based on the maturity of the instruments to which the costs relate.

The impact of the adjustments proposed under Option 4 on the observed cost of debt of the gas distribution business is set out below.

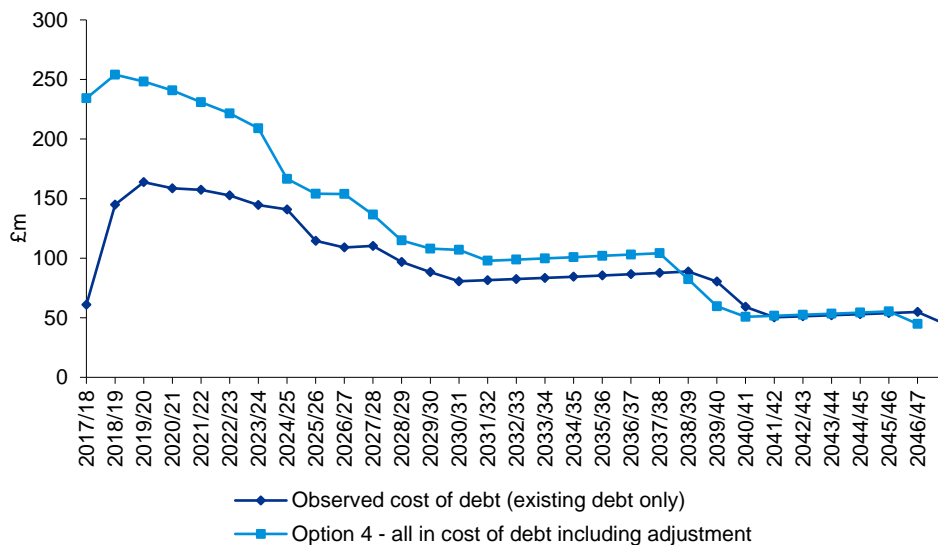


**Figure 26: All in estimate of cost of debt (Option 4) vs observed cost of debt**



The all-in cost of debt under Option 4 significantly increases relative to the observed cost of debt for the gas distribution business, as a result of the inclusion of additional financing costs. The variance between the observed cost of debt and the estimated cost of debt under Option 4 remains relatively constant over the model period in percentage terms. However the maturity of debt within the modelled period means that in absolute terms the variance decreases significantly.

**Figure 27: All in estimate of cost of debt (Option 4) vs observed cost of debt in absolute terms**



## 8.7 Summary: all-in cost of debt by option

Whilst a share of costs associated with the refinancing were borne and recognised upfront in the statutory accounts, directly attributable costs or gains were not recognised in Cadent's statutory accounts and cannot be reflected directly in the RFPR.

If additional costs incurred as part of the refinancing were to be accounted for and amortized over the period to which they relate then the cost of debt would increase materially relative to the observed cost of debt for the gas distribution business and associated projections.

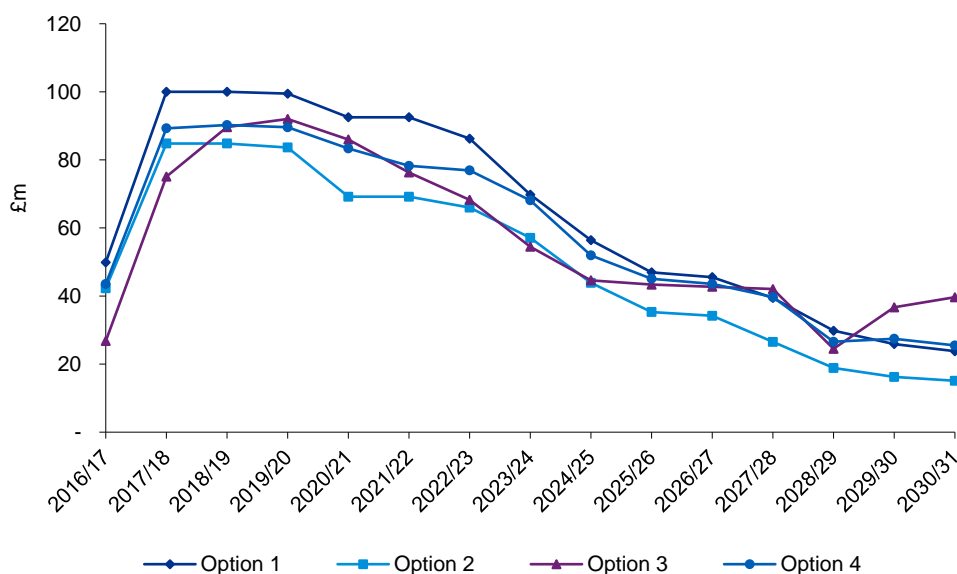
The observed cost of debt for the gas distribution business is significantly lower than the estimated all-in cost under each of the four options.

The four options each seek to determine the scale and profile of additional costs incurred as part of the refinancing and thereby determine the underlying all-in cost of debt on an ongoing basis, such that the ongoing cost of debt is fully reflective of financing costs.

The adjustments to the observed cost of debt are set out in the Figure below. Each option broadly follows a similar glide path reflecting the fact that each Option reflects the maturity profile of debt in place prior to the refinancing.

The potential adjustments have similar profiles, as under each option the adjustment is spread over the maturities of the instruments attributed to the gas distribution business prior to the refinancing. If the observed cost of debt were to be adjusted to reflect the all-in cost of debt, then the observed cost of debt would increase by at least an average of £50m per annum. The impact on the nominal cost of debt is set out below by option.

**Figure 28: Summary of potential adjustments to the observed cost of debt in absolute terms**



Overall, the results indicate that there is a clear difference between the currently observed cost of debt based on current coupon rates on the one hand, and the all-in economic cost of debt, including the cost of the refinancing, based on each of the four options, on the other hand. This result holds whichever scenario and option is used.

On average, the cost of debt under the four options is 120bps higher than the cost observed from current coupon rates.

There are in fact relatively small differences in the estimated all-in economic cost of debt across the four options, which indicates that estimation differences across different options have limited impact on the overall result. The average basis points differential between the options is +/-15-20bps<sup>25</sup>, which suggests that the all-in cost of debt and the quantum of the adjustment to the observed cost of debt can be specified with a reasonable degree of precision.

The four options also have similar profiles, as under each option the adjustment is spread over the maturities of the instruments attributed to the gas distribution business prior to the refinancing.

Table 12 summarises potential adjustments to the observed cost of debt in absolute terms on a non-discounted basis by option. The adjustment for each option would be applied to the observed cost of debt to determine the all-in cost of debt.

**Table 12: Summary of potential adjustments to the observed cost of debt in absolute terms**

Variance to observed cost of debt	Absolute (£m)	Average basis point increase (%)
Option 1	958	1.45%
Option 2	747	1.11%
Option 3	842	1.30%
Option 4	879	1.34%

The additional costs of the refinancing, if they are recognised and reported as part of the cost of debt for the gas distribution business, would equate to an average basis point increase of over 110bps relative to the observed cost of debt.

Different methods of estimating the all-in cost of debt over time also suggest that the all-in cost of debt would be broadly similar to the level that would have prevailed in the absence of the refinancing as would be expected in an efficient market.

Options 1 and 2 have profiles primarily driven by amortisation of additional costs calibrated based on the maturity of redeemed instruments. The additional costs attributed to the gas distribution business under Options 3 and 4 are driven by the variance in financing cash flows before and after the refinancing.

Option 2 implies a lower cost of debt than Option 1; this reflects the fact that the approach (in particular the discount rate) may under-estimate the present value of additional costs associated with the redemption of debt. At as statutory charges

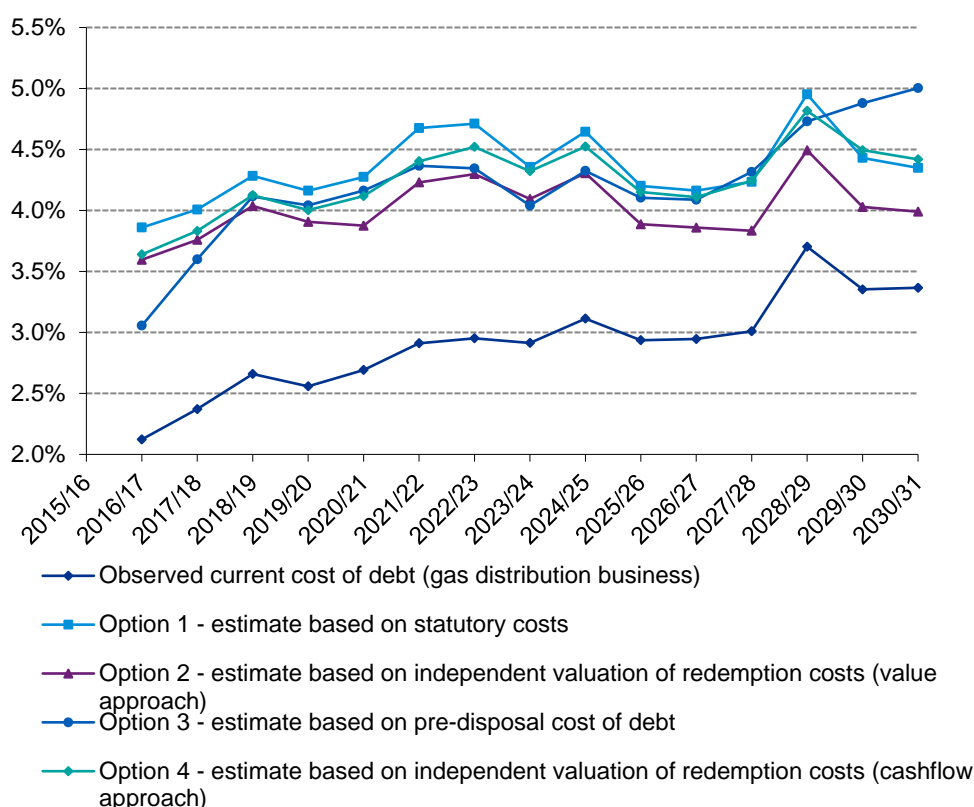
<sup>25</sup> This is expressed as the average variance of each option to the average of the four options from 2016/17 to the end of RII03.

reflected in Option 1 are likely to be present value adjusted in the statutory accounts, a straight line amortisation of the reported statutory charges may under-state the all in cost of debt on an undiscounted basis.

An approach based solely on the variance in cash flows (in particular Option 3) may under-estimate certain market costs incurred as a result of the refinancing, which are indivisible from the variance in projected cash flows as in their absence it would not have been possible to re-finance debt allocated to the distribution business prior to the hive out.

Figure 29 below sets out the adjusted cost of debt – taking into account additional costs – based on the four options.

**Figure 29: Summary of reporting options – nominal cost of debt**

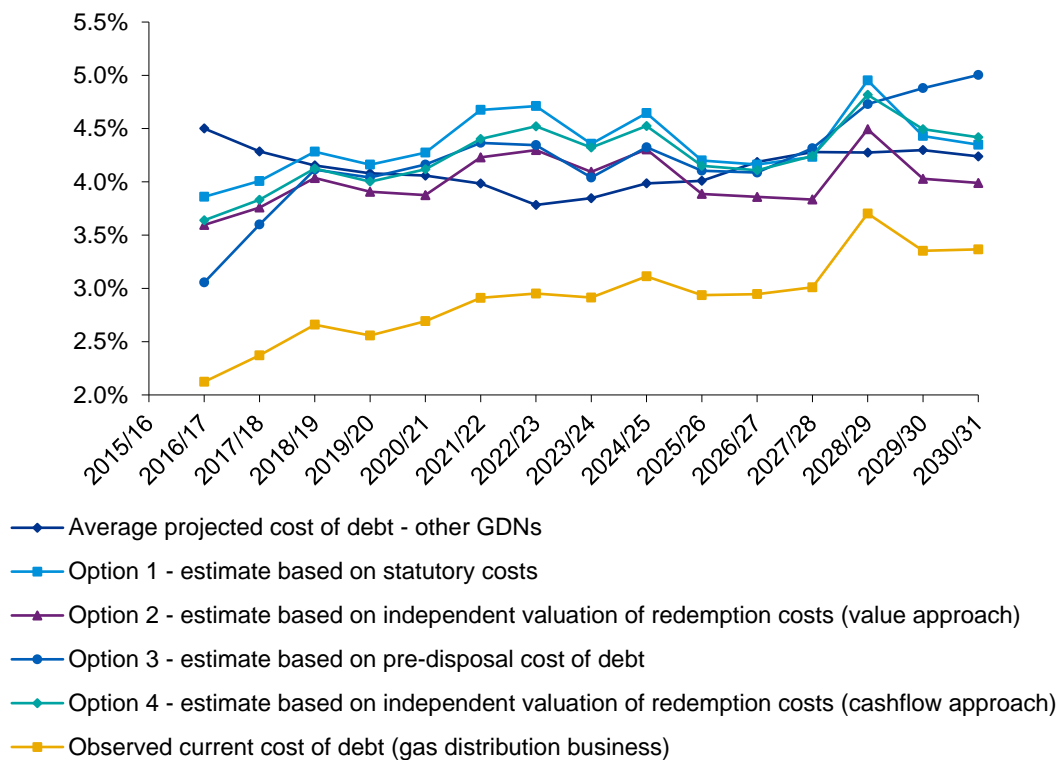


The all-in cost of debt implied by Option 1 is higher initially than the Option 3; this reflects the fact that directly attributable costs recognised in the statutory accounts may reflect market costs over and above the difference between fair and carrying value at the time of the refinancing. These market costs – which are not specified in full in the statutory accounts – include costs that are inextricably linked to the refinancing and reduction in the observed cost of debt for the gas distribution business, including for example costs associated with the de-designation of cash flow hedges.

It is noted that the four options for the all in cost of debt, whilst materially higher than the observed cost of debt, move the cost of debt for the gas distribution business towards the reported cost of debt of the other GDNs.

Figure 30 below sets out the observed cost of debt and the cost of debt of the gas distribution business under Options 1 and 2 based on the evolution of existing debt and projected raising of new debt, relative to the average observed cost of debt of the other GDNs. Assumptions for the raising of new debt are set out in the Appendix.

**Figure 30: Summary of reporting options compared to average observed cost of debt of the other GDNs**



The options for estimating the all-in cost of debt considered in this report suggest that, when the relevant costs associated with the refinancing are taken into account, the resulting effective all-in economic cost of debt for the gas distribution business is relatively close to the reported cost of debt for other GDNs based on publicly available data.

## 8.8 Relative assessment of options

This section contains a high level assessment of potential advantages and disadvantages of each of the four options for including additional cost of debt information in the RFPR.

In total, three criteria are applied as part of this assessment and are summarised below:

Criterion	Way in which criterion is operationalised
<u>1. The option is simple and transparent</u>	The simplicity and transparency of each option is commented on qualitatively, including clarity of approach and whether it is easy to understand what is going on.
<u>2. The underlying data is publically available and the value of option is based on cost estimates that have been independently audited</u>	The extent to which each approach is replicable based on publically available information is assessed, as the accessibility of information contributes to the transparency of each option.  The robustness of each option is enhanced where the value of the option is contingent on cost estimates that have been independently audited.
<u>3. Value of option is robust to alternative assumptions</u>	This criterion considers the extent to which each option would be sensitive to a plausible set of different assumptions, which could impact on the value of the option. High sensitivity to different assumptions could reduce the reliability of a given option.

A RAG assessment of each option against the criteria above is set out in the table below.

Criterion	Option 1	Option 2	Option 3	Option 4
<u>1. The option is simple and transparent</u>				
<u>2. The underlying data is publically available and the value of option is based on cost estimates that have been independently audited</u>				
<u>3. Value of option is robust to alternative assumptions</u>				

Commentary on the potential advantages and disadvantages of each of the four options for including additional cost of debt information in the RFPR is set out below against the four criteria.

### Option is simple and transparent

Option 1 – partially meets this criterion, as the methodology is based on the statutory charges in line with internationally recognised accounting standards. The lack of detail around the calculation methodology applied to determine the statutory charges reduces transparency. The statutory charges were also – per the statutory accounts – paid at the time of the refinancing, which adds to the transparency of this approach as the costs recognised were real costs and not just accounting adjustments.

Option 2 – partially meets this criterion, as the analysis of redeemed debt is complex and there are two components to the analysis under Option 2 (a) analysis of the gain on modification for the redeemed debt; and (b) amortisation of statutory charges relating to the de-designation of cash flow hedges.

Option 3 – meets this criterion as the option is conceptually clear (comparing costs before and after the refinancing). In particular the fact that Option 3 looks at all financing cash flows before and after the refinancing (an all-entity approach) adds to the simplicity

of this approach; the impact of refinancing does not need to be determined separately for different tranches of debt.

Option 4 – meets this criterion as the treatment of redeemed debt is straightforward. Some additional complexity is added as amortisation of statutory charges relating to the de-designation of cash flow hedges is also included under this approach.

**Underlying data is publically available and the value of option is based on cost estimates that have been independently audited**

Option 1 – meets this criterion, in that the aggregate costs are publically available and stated in statutory accounts. However, the calculation methodology used to derive the statutory charges are not available.

Option 2 – partially meets this criterion, on the grounds that most of the costs and carrying values for the publically traded bonds used to develop the estimate are recorded in statutory accounts or are publically disclosed (e.g. on Eikon). The statutory charges relating to the de-designation of hedges are publically available. However, the calculation methodology used to derive these charges are not available. The underlying data where not disclosed in the accounts has not been audited.

Option 3 – partially meets this criterion, on the grounds that most of the costs and carrying values for the publically traded bonds used to develop the estimate are recorded in statutory accounts or are publically disclosed (e.g. on Eikon). However, the underlying data where not disclosed in the accounts has not been audited.

Option 4 – partially meets this criterion, on the grounds that most of the costs and carrying values for the publically traded bonds used to develop the estimate are recorded in statutory accounts or are publically disclosed (e.g. on Eikon). The statutory charges relating to the de-designation of hedges are publically available. However, the underlying data where not disclosed in the accounts has not been audited.

**Value of option is robust to alternative assumptions**

Option 1 – partially meets this criterion. There are several key alternative assumptions that could be adopted under this approach around the profile of amortisation for the relevant costs. Furthermore this approach is predicated on the assumption that all statutory charges incurred by the gas and electricity businesses (£1,050m) in different legal entities are attributable to the current entity. It could alternatively be assumed that (for example) a proportion of the charges (e.g. incurred in the electricity business) could be attributed to the electricity business. Finally it is assumed that the statutory charges are present value adjusted. Amortising statutory charges on a straight line basis may not capture the present value of the adjustment over time, and alternative assumptions could be made to reflect the adjustment under Option 1 on an undiscounted basis.

Option 2 – partially meets this criterion; alternative assumptions could be adopted under this approach for the profile of amortisation for the relevant costs and the discount rate used to determine the net present value of the gain on debt modification. For alternative assumptions that could be made in relation to statutory charges included under this approach, see commentary on Option 1 above.

Option 3 – meets this criterion, on the grounds that whilst different assumptions could be made around which debt raised post-refinancing could be assumed to have been used

to finance debt redemption, this option is exposed to relatively few alternative assumptions.

Option 4 – partially meets this criterion; alternative assumptions could be adopted under this approach for the profile of amortisation for the relevant costs. For alternative assumptions that could be made in relation to statutory charges included under this approach, see commentary on Option 1 above.

### **Summary of relative assessment of options**

Option 3 has some advantages based on the three criteria specified as it is conceptually clear (comparing costs before and after the refinancing). In particular the fact that Option 3 looks at all financing cash flows before and after the refinancing (an all-entity approach) adds to the simplicity of this approach; the impact of refinancing does not need to be determined separately for different tranches of debt.

Whilst different assumptions could be made around which debt raised post-refinancing could be assumed to have been used to finance debt redemption, this option is exposed to relatively few alternative assumptions. A significant proportion of the underlying data is in the public domain and audited, however some data (for bonds, bank loans and derivatives held by the gas business prior to the refinancing) is not audited and similarly some data is not publically available.

Option 1 is relatively simple and transparent as the methodology is based on the audited statutory charges in line with internationally recognised accounting standards. The lack of detail available around the calculation methodology applied to determine the statutory charges reduces transparency. If full details of the statutory charges were made available, this figure could represent the most robust basis for estimating the all-in cost of debt. This approach is predicated on the assumption that all statutory charges incurred by the gas and electricity businesses (£1,050m) in different legal entities are attributable to the current entity.

The analysis of redeemed debt under Option 2 is relatively complex and a number of alternative assumptions could be adopted under this approach. This approach is also sensitive to the discount rate used to determine the net present value of the gain on debt modification.

The analysis of redeemed debt under Option 4 is straightforward, however this approach is predicated on the assumption that bonds redeemed by the gas and electricity businesses (£1,050m) in different legal entities are attributable to the current entity.



## 9 Appendix 1: cost of debt assumptions

### 9.1.1 Gas transmission and distribution existing debt before the refinancing

A breakdown of interest costs and debt for the gas transmission and distribution businesses by instrument post-refinancing is set out below.

**Table 13: Summary of observed fixed rate debt instruments (gas distribution business)**

Identifier	Type	Coupon	Coupon +	Listed/Unlisted	Maturity Date	Notional value (Mar 17)	Book value (Mar 17)
<b>Fixed rate</b>							
FR1	Fixed	1.125%		Listed	22/09/2021	650	649
FR2	Fixed	1.912%		Listed	22/09/2024	643	625
FR3	Fixed	2.125%		Listed	22/09/2028	850	855
FR4	Fixed	2.625%		Listed	22/09/2038	700	703
FR5	Fixed	2.750%		Listed	22/09/2046	800	798
FR6	Fixed	3.125%		Listed	21/03/2040		
<b>Total</b>						<b>3,643</b>	<b>3,630</b>

Source: Cadent Gas Limited, company accounts

**Table 14: Summary of observed floating rate debt instruments (gas distribution business)**

Identifier	Type	Coupon	Coupon +	Listed/Unlisted	Maturity Date	Notional value (Mar 17)	Book value (Mar 17)
FL1	Floating	0.800%	6 Month LIBO	Unlisted	14/10/2021	393	391
FL2	Floating	0.650%	6 Month LIBO	Unlisted	14/10/2019	400	399
FL3	Floating	0.679%	6 Month LIBO	Unlisted	27/03/2027	400	400
<b>Total</b>						<b>1,193</b>	<b>1,190</b>

Source: Cadent Gas Limited, company accounts

**Table 15: Summary of observed index linked debt instruments (gas distribution business)**

Identifier	Type	Coupon	Coupon +	Listed/Unlisted	Maturity Date	Notional value (Mar 17)	Book value (Mar 17)
IL1	Index linked	1.500%	RPI	Unlisted	02/10/2023	75	90
IL2	Index linked	0.925%	RPI	Unlisted	18/06/2024	72	84
IL3	Index linked	1.015%	RPI	Unlisted	25/06/2024	73	85
IL4	Index linked	1.212%	RPI	Unlisted	29/04/2024	73	87
IL5	Index linked	1.020%	RPI	Unlisted	30/04/2024	73	86
IL6	Index linked	1.073%	RPI	Unlisted	07/05/2024	73	86
IL7	Index linked	2.313%	RPI	Listed	02/05/2039	133	210
IL8	Index linked	2.180%	RPI	Listed	10/08/2048	136	233
IL9	Index linked	2.102%	RPI	Listed	14/08/2048	136	229
<b>Total</b>						<b>845</b>	<b>1,190</b>

Source: Cadent Gas Limited, company accounts

### 9.1.2 Pre-refinancing estimate of all-in cost of debt

A breakdown of interest costs and debt for the gas transmission and distribution businesses by instrument prior to the refinancing is set out below.

**Table 16: Summary of fixed rate debt instruments (pre-refinancing estimate of all-in cost)**

	Type	Coupon (Nominal)	Coupon +	Maturity date	Nominal value
FR1	Fixed	8.75%		27/06/2025	111
FR2	Fixed	7.00%		16/12/2024	217
FR3	Fixed	6.38%		03/03/2020	278
FR4	Fixed	6.00%		13/05/2038	458
FR5	Fixed	6.00%		07/06/2017	263
FR6	Fixed	4.02%		04/11/2019	30
FR7	Fixed	4.23%		03/02/2020	30
FR8	Fixed	8.60%		06/05/2020	9
FR9	Fixed	2.54%		10/01/2023	13
FR10	Fixed	3.05%		21/12/2027	24
FR11	Fixed	6.20%		02/10/2028	50
FR12	Fixed	7.13%		08/02/2044	10
FR13	Fixed	3.58%		01/06/2018	194
FR14	Fixed	8.40%		04/11/2021	277
FR15	Floating	4.63%		12/11/2029	56

Source: Cadent Gas Limited, company accounts

**Table 17: Summary of floating rate debt instruments (pre-refinancing estimate of all-in cost)**

	Type	Coupon (Nominal)	Coupon +	Maturity date	Nominal value
FL1	Floating	0.32%	6M GBP L	09/03/2017	10
FL2	Floating	0.30%	6M GBP L	23/03/2029	52
FL3	Floating	0.64%	6M GBP L	10/03/2017	38

Source: Cadent Gas Limited, company accounts

**Table 18: Summary of index linked debt instruments (pre-refinancing estimate of all-in cost)**

	Type	Coupon (Nominal)	Coupon +	Maturity date	Nominal value
IL1	Index Linked	1.67%	RPI	07/04/2036	138
IL2	Index Linked	1.92%	RPI	20/02/2037	133
IL3	Index Linked	1.78%	RPI	28/08/2037	133
IL4	Index Linked	1.77%	RPI	04/04/2039	133
IL5	Index Linked	1.86%	RPI	02/05/2039	133
IL6	Index Linked	1.63%	RPI	10/08/2048	136
IL7	Index Linked	1.73%	RPI	28/06/2046	158
IL8	Index Linked	1.79%	RPI	12/01/2037	187
IL9	Index Linked	4.36%	RPI	05/11/2018	153
IL10	Index Linked	1.75%	RPI	17/10/2036	399
IL11	Index Linked	4.19%	RPI	14/12/2022	647
IL12	Index Linked	1.68%	RPI	30/01/2037	67
IL13	Index Linked	1.76%	RPI	12/01/2037	67
IL14	Index Linked	3.91%	RPI	19/02/2019	103
IL15	Index Linked	1.77%	RPI	30/03/2037	33
IL16	Index Linked	2.47%	RPI	16/04/2037	67
IL17	Index Linked	2.69%	RPI	01/05/2037	87
IL18	Index Linked	2.65%	RPI	01/05/2037	67
IL19	Index Linked	1.94%	RPI	21/08/2037	33
IL20	Index Linked	1.81%	RPI	26/10/2037	32
IL21	Index Linked	2.48%	RPI	29/07/2041	53
IL22	Index Linked	1.55%	RPI	14/08/2048	136
IL23	Index Linked	1.58%	RPI	22/08/2052	98
IL24	Index Linked	1.88%	RPI	22/03/2022	239
IL25	Index Linked	2.14%	RPI	03/05/2022	252
IL26	Index Linked	1.43%	RPI	02/10/2023	74
IL27	Index Linked	0.85%	RPI	18/06/2024	72
IL28	Index Linked	0.94%	RPI	25/06/2024	72
IL29	Index Linked	1.14%	RPI	29/04/2024	72
IL30	Index Linked	0.95%	RPI	30/04/2024	72
IL31	Index Linked	1.00%	RPI	07/05/2024	72

Source: Cadent Gas Limited, company accounts

### 9.1.3 Forecasts of new debt costs (fixed rate only)

New debt requirements are assumed to be driven by the maturing of existing debt and RAV growth.

It is assumed that the gas distribution business will need to issue new debt equal to the sum of (1) the book value of maturing existing debt; and (2) the difference between

actual debt post refinancing and target gearing. It is further assumed that all new debt issued will be fixed-rate, nominal debt.

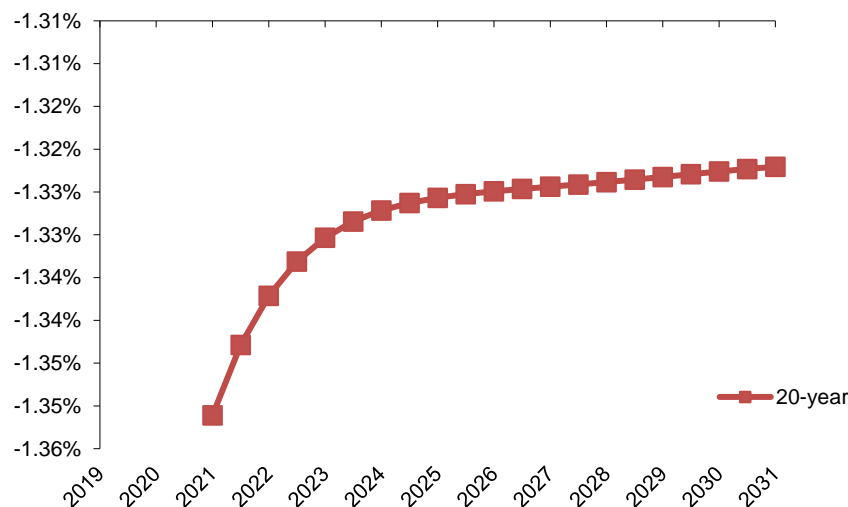
RAV growth has been based on historical RAV values published by Ofgem up to FY2018, and is forecast based on the RAV forecasts set out in the final proposals published by Ofgem at RIIO1.<sup>26</sup> The assumed RAV trajectory is illustrated below in nominal terms:

It is assumed that all new debt will have a maturity of 20 years and hence no new debt matures within the model period.

In order to forecast the interest rate that will be payable on new debt raised by the gas distribution business in the future, it has been assumed that the gas distribution business will pay a spread equivalent to the current (as at 31<sup>st</sup> August 2018) average spread of the A/BBB iBoxx 20-year bond index over nominal 20-year UK Govt securities.

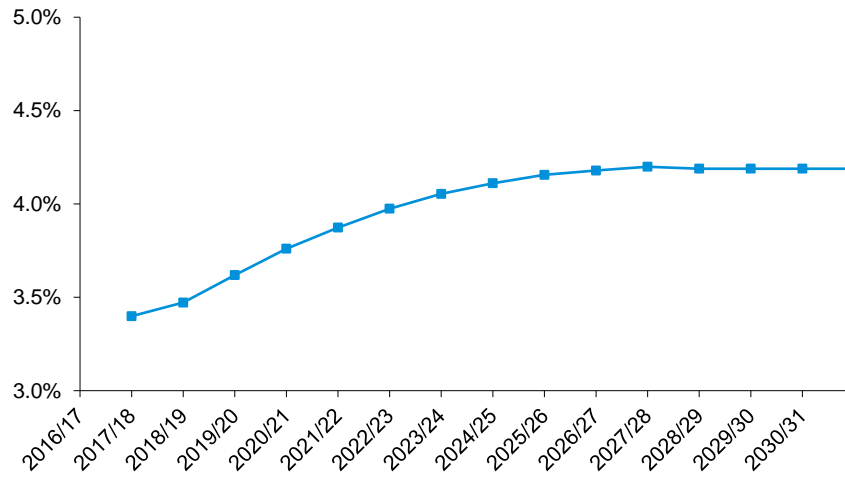
The interest rate on benchmark UK Govt securities is then forecast over the relevant period based on forward curves for 20-year maturities. The forward curve is illustrated below:

**Figure 31: Forward rates (real)**



The total interest rate that is assumed to be payable on new fixed-rate debt over the forecast period is illustrated below:

**Figure 32: Nominal interest rate – new fixed rate debt**



## 10 Glossary

<b>Gas distribution business</b>	Refers to the entity that is currently owned by Cadent, which was as a result of the de-merger from its former owners National Grid.
<b>The 'segmentation'</b>	Refers to the segmentation and separation of the gas distribution networks from National Grid.
<b>Economic costs</b>	The costs incurred by the Gas distribution business as part of the refinancing.
<b>'All-in' cost of debt</b>	Refers to cost of debt once all relevant economic costs have been included.
<b>Observed cost of debt</b>	A simple view of the cost of debt based on the coupon rates now being paid on the new debt post refinancing, as set out in the RIGs governing the RFP. This does not take into account the costs associated with the refinancing and incurred upfront.
<b>Reported statutory charges</b>	Refers to market costs (£1.3bn) incurred upfront and as reported in the statutory accounts of the gas and electricity businesses (NGG and NGET respectively) that are directly attributable to the refinancing undertaken. The market costs include; costs associated with the redemption and novation of debt, and the de-designation of cash flow hedges.
<b>IAS 39 methodology</b>	Under IAS39 (which was the accounting methodology prior to the introduction of IFRS 9), the carrying amount of financial liabilities post the refinancing is adjusted to reflect the market costs directly attributable to the refinancing. Essentially, the market costs are amortised as an additional cost of debt based on the maturity of the instruments to which the costs relate.

**IFRS 9 methodology**

If the modification to debt is deemed not substantial, then the carrying value of existing liability is adjusted to an amount that represents the revised payment schedule of the modified debt discounted back using the original effective interest rate of the existing liability. The difference between this and the old carrying value is the estimated gain from the modification of debt.

**Pre-refinancing estimate of all-in cost of debt**

The cost of debt once all relevant economic costs have been included, assuming the refinancing had not taken place.

**Cost of debt of the redeemed instruments**

The pre-refinancing cost of debt for the nine instruments that were redeemed.

**Option 1: estimate based on statutory costs**

Reflects the observed cost of debt for the gas distribution business plus amortisation of the reported statutory charges (described above), with the exception of statutory charges relating to novated debt. (The **IAS 39** approach).

**Option 2: estimate based on independent valuation of redemption costs (value approach)**

Reflects the observed cost of debt for the gas distribution business plus amortisation of:

- (a) the gain implied by the refinancing on the modification of debt based on the methodology set out in **IFRS9**, i.e. the gain is calculated as the difference between the present value of the cash flows of the modified debt (discounted back using the **cost of debt of the redeemed instruments**) and the original carrying value of the redeemed instruments. And;
- (b) amortisation of **statutory charges** relating to the de-designation of cash flow hedges as reported in the statutory accounts of the gas and electricity businesses.

**Option 3: estimate based on pre-refinancing cost of debt**

Estimates the all-in cost of debt based on the cost of debt observed prior to the refinancing

**Option 4: estimate based on independent valuation of redemption costs (cashflow approach)**

This Option is an amalgam of Options 2 and 3 and reflects a simplified approach to determining the all-in cost of debt, starting with the current observed cost of debt. It reflects the observed cost of debt for the gas distribution business plus the difference between:

The projected pre-refinancing cash flows associated with the nine instruments that were redeemed; and

The projected cashflows associated with the new fixed rate debt raised by the gas distribution business post-refinancing.

**RIIO-GD3**

Refers to the period 1 April 2026 to 31 March 2031 (but noting that it is not known whether the next price control period for the gas distribution networks will coincide with these dates).