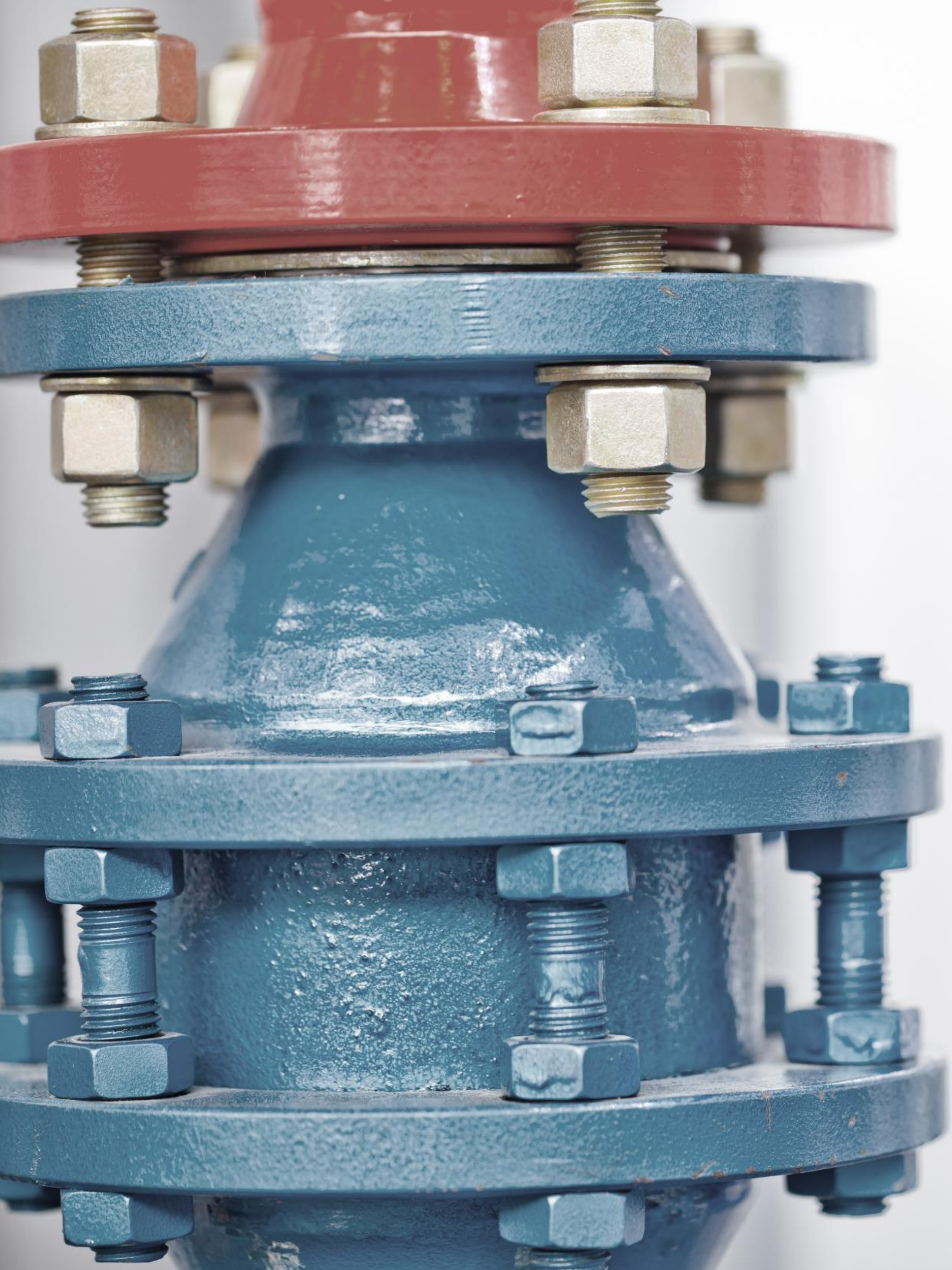
A27 - NGN RIIO-2

Review of NGN's RIIO-2 Business Plan Financeability



Review of NGN's RIIO-2 Business Plan Financeability

Prepared for NGN

4 November 2019

KPMG

Important notice (1/2)

This analysis of Financeability of Northern Gas Networks Business Plan over RIIO-GD-2 (the 'Report') has been prepared by KPMG LLP in the UK ('KPMG UK') for Northern Gas Networks Ltd ('NGN') on the basis set out in a private contract dated 20 August 2019 agreed between KPMG UK and for NGN Ltd (the 'Contract').

This Report was not prepared in connection with an assurance engagement conducted in accordance with any generally accepted assurance standards and consequently no assurance opinion is expressed. Nothing in this Report constitutes a valuation or legal advice.

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This Report makes use of both company information (which remains the responsibility of management) and publicly available information. While we have satisfied ourselves, so far as possible that the information presented in this Report is consistent with our information sources we have not sought to establish the reliability of information sources by reference to other evidence. We have relied upon and assumed, without independent verification, the accuracy and completeness of information available from public sources. 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

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Important notice (2/2)

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This Report and key findings outlined below are based on NGN's RIIO-2 Business Plan and NGN's financial projections supporting this plan sent to us on 18/10/2019 version "NGNFM Ver 8.0 (sent 181019).xlsm", the "Business Plan". As part of this work, KPMG has reviewed NGNFM Ver 8.0 which was found to be broadly consistent in methodology with Ofgem's LiMo model for the notional company, and produces broadly consistent outputs. For the avoidance of doubt, KPMG's review of the model does not constitute any form of assurance of the model. The inputs and outputs of the model remain the responsibility of NGN. The model itself, or its amended versions, do not constitute an output of this work package.

The realisation of any financial projections is dependent on the continuing validity of the assumptions on which they are based. In the case of financial projections, financial viability, financeability and resilience this is particularly so as concerns the amount and the timing of the cash flows and the consequential effect on cash requirements. The assumptions will need to be reviewed and revised to reflect any changes in trading patterns, cost structures or the direction of the business as they emerge.

We accept no responsibility for the realisation of the financial projections, financial plan nor for the financial viability, financeability or financial resilience of NGN. Since the financial projections relate to the future, actual results are likely to be different from the projected results because events and circumstances frequently do not occur as expected, and the differences may be material.

This Report relies on published methodologies, reports and commentaries published by rating agencies. KPMG does not accept responsibility for such information which remains the responsibility of the authors of those methodologies, reports and commentaries.

Details of the Report's principal sources are set out throughout this Report. Attempts have been made to check that the information made available in accordance with the Engagement Letter is consistent with other information where possible. This Report has not sought to establish the reliability of those sources by reference to other evidence.

Structure of this Report

Section 1	**Executive summary**
Section 2	**Context of the assignment**
Section 3	**Approach to testing financeability** Summarises how financeability is tested in this Report and sets out which scenarios are considered in addition to the base case
Section 4	**Financial assumptions and performance in the Base Case** Introduces financeability results under Ofgem's 'Base Case' and NGN's Business Plan
Section 5	**NGN's financeability under Ofgem's prescribed scenarios** Examines NGN's financeability over RIIO-2 under Ofgem's prescribed scenarios
Section 6	**Macroeconomic & Business Risk Assumptions** Introduces the modelling of macroeconomic variables
Section 7	**NGN's financeability under KPMG scenarios** Examines NGN's financeability over RIIO-2 under KPMG scenarios
Appendix 8	**Key messages** Concludes on NGN's financeability over RIIO-2

Section 1: Executive Summary

Executive Summary (1/2)

Scope of the Assessment

- Ofgem requires each energy network company to have a robust financial plan for the RIIO-2 period that is stress-tested and financeable under a range of future outcomes.
- NGN has engaged KPMG to undertake a specific set of financeability assessments of its RIIO-2 Business Plan and financial projections on both the actual and notional financing structures, under the following financing assumptions:
  - **(1) Ofgem's base case financing assumptions**, including a real CPIH-based CoE of 4.3% (post adjustment for outperformance), with expected outperformance of 50bps included in cashflows, and a CoD allowance based on 11-15 trombone average of the A/BBB iBoxx index; and
  - **(2) NGN's Business Plan financing assumptions**, including a real CPIH-based CoE of 5%, and a CoD allowance based on 14-18 trombone average of the A/BBB iBoxx index.
- NGN's Business Plan was stress-tested under a set of Ofgem-mandated macroeconomic and business risk scenarios, as well as a set of KPMG scenarios of potential macroeconomic risks and potential, plausible business downside risks considered by NGN.
- The financeability assessments were carried out based on NGN's own financial model (NGNFM) provided to KPMG.

Assessment based on Ofgem's 'Base Case' assumptions

Notional company

- **Under Ofgem's base case financing assumptions, including expected outperformance of 50bps, and the notional financing structure, NGN is projected to maintain ratios consistent with the Baa1/BBB+ rating.**
- Under the notional financial structure, the business is projected to face some pressure when stress-tested under both Ofgem-mandated as well as KPMG-modelled plausible downside scenarios, with implied results consistent with the thresholds for Baa2. In some of the high impact scenarios, projected ratios are borderline for the Baa2 rating, which could imply a negative credit outlook. Furthermore, without remedying actions, in certain downside scenarios, projected AICR falls to below 1.3x, which as NGN has informed us, if breached, would constitute default.
- **In general, financial projections for the notional company are broadly consistent with ratios required for a comfortable investment grade rating, which suggests that the notional company is unlikely to face a financeability challenge under the assumptions made.**
- In the base case, the results are driven by factors such as the assumption of 25% Index Linked Debt (which improves cash-based ratios in the short term but pushes financeability constraints into the future) and by the inclusion of expected outperformance equivalent to 50bps on Regulated Equity in projected cashflows. The inclusion of expected outperformance is not consistent with typical rating agencies' approach of excluding potential outperformance from the rating assessments.

Executive Summary (2/2)

Assessment based on Ofgem's 'Base Case' assumptions

Actual company

- Under NGN's actual financing structure and Ofgem's base case financial assumptions, projected ratios fall to levels consistent with Baa2 rating based on a mechanistic application of Moody's rating thresholds. The AICR ratio falls below the 1.3x covenant threshold in certain years in the base case (before any impact of downside scenarios) implying that the company might face default. **This implies significant financeability challenge as ratios are projected to fall below the Baa1 target rating and the company is projected to breach its bank covenants.**
- The actual financing structure also performs consistently worse than the notional across a range of downside scenarios implying either a single or double notch downgrade to Baa2/Baa3. Due to Moody's emphasis on the AICR ratio, which falls to below 1x in some high impact scenarios, the results imply a fall to Baa3 levels or even below investment grade. The AICR ratio is projected to fall below 1.3x across most Ofgem-mandated and KPMG modelled scenarios, breaching NGN's bank covenants in the absence of any remedying actions. **This further supports the conclusion that the actual financing structure faces significant financeability challenge under Ofgem's financing assumptions.**
- The actual financing structure scores worse than the notional due to a number of factors, including: (1) higher gearing (NGN's starting position is in line with Ofgem's 65% RIIO1 target but increases to c70% by the end of the period); (2) no ILD debt, which would otherwise improve cash-based ratios under Ofgem's notional structure in the short term; (3) dividend payout being higher than under the notional assumptions yet still significantly lower than the actual dividend payout over the previous period; and (4) a variable debt portfolio which contributes to exposure to macro risks.
- **The results of the financeability tests under the projected actual financing structure are important for the regulatory financeability assessment. The actual market conditions, both at present and which existed in the past when the capital currently employed in the business was raised, and a sustainable level of dividend payouts necessary to ensure equity financeability, should be taken into account.**

Financeability of NGN's Business Plan

- The financeability assessment of the Business Plan under NGN's financing assumptions implies that both the notional and actual financing achieve ratios consistent with comfortable investment grade of Baa1/BBB+ in the base case.
- Under both the notional and actual financial structures with NGN's financing assumptions, the company would face pressure under certain high impact Ofgem-mandated and KPMG modelled scenarios, which might result in a fall in ratios to Baa2/ Baa3 levels. However, these scenarios are based on very high impact events, or a compound set of business and macro shocks (e.g. 2% annual RoRE underperformance, or 10% totex shock) which NGN do not consider to be likely.

Section 2: Context

Context and scope of this assignment

Context

Ofgem requires each energy network company to have a robust financial plan over the RIIO-2 period that is stress tested and proven to be financeable under a range of future outcomes. The Board of each energy network company is required to provide assurance and confirmation that it considers that the company is financially viable over the long term.

Scope of this assessment

NGN has engaged KPMG to undertake a specific set of financeability assessments under (1) Ofgem's base case financial projections, and (2) NGN's Business Plan financial projections, on both the actual and notional financing structures, over the RIIO-2 period.

KPMG were provided with the NGN Financial Model (NGNFM), which was used to perform the financeability assessment described below. The financeability analysis presented in this Report has been carried out with the objective to support NGN in meeting Ofgem's requirements with respect to demonstrating financeability for the notional and actual company as specified in Ofgem's guidance documents.* As per the guidance, NGNFM was used to test financeability under:

1. Ofgem's proposed set of macroeconomic and business risk scenarios (set out in Table 19 of the SSMD Finance Annex); and
2. A set of plausible macroeconomic and business risk scenarios modelled by KPMG and / or provided by the business, as discussed further below.

This Report summarizes findings of the financeability assessment undertaken by KPMG.

Limitations of scope

1. The Board of NGN is solely responsibility for NGN's future financeability, their financial resilience plan and any supporting financial projections and documentation; and
2. This Report does not provide any form of assurance over the financial resilience plan, financial projections, financial resilience or financial viability of NGN.

KPMG accepts no responsibility for the realisation of the financial projections, financial resilience plan nor for the financial viability or financial resilience of NGN. Since the financial projections, financial resilience plan relate to the future, actual results are likely to be different from the projected results because events and circumstances frequently do not occur as expected, and the differences may be material.

** RIIO-2 Business Plan Guidance (9/9/2019); RIIO-2 Sector Specific Methodology Decision – Finance (24/5/2019); Financeability Assessment for RIIO-2: Further Information (26/3/2019)*

Section 3: Approach to testing financeability

Financeability analysis based on a set of financeability tests

Review of financial projections and consistency check of ratios

Business assumptions and drivers

The analysis below relies on the modelling and financial projections in NGN's BP as modelled in the NGN Financial Model provided to KPMG. Leverage and coverage ratio calculations were checked for consistency against rating agency and Ofgem guidance, where relevant.

Test overall financeability based on the following process:

1. Test credit rating / covenants in the base case scenarios
The first step was to test whether credit metrics are in line with comfortable investment grade rating and whether financial covenants are met, under Ofgem base case / NGN Business Plan.

2. Define plausible risk scenarios
In a second step, uncertainty of macroeconomic variables was modelled based on public data, and plausible business risk scenarios were constructed based on guidance by NGN .

3. Ability to withstand shocks
In a third step, financeability was tested based on whether test 1 was passed in the presence of key deviations from the central forecast (downside scenarios).

For the purposes of this analysis, NGN's financeability is assessed against a target credit rating of Baa1/BBB+, i.e. comfortable investment grade rating, consistent with the credit index used by Ofgem to set the cost of debt allowance.

- Baa1/BBB+: Typically the finance duty of Ofgem has been interpreted as ensuring a company can achieve a 'comfortable' credit rating. Failure to achieve this rating means that the company will not be able to achieve Ofgem's cost of debt allowance.
- Baa2/BBB: Failure to achieve this level could be interpreted as a financeability challenge for the business, because it would potentially (and likely) be accompanied by a breach of NGN's AICR covenant of minimum 1.3x cover. Such covenant breach would allow creditors to renegotiate NGN's loan terms. Therefor this scenario would likely require mitigating action.
- Baa3/BBB-: This level would still meet licence requirements so the business may still be able to raise finance on investment grade credit rating, but it would imply a significant financeability challenge and higher cost to consumers. Historically, a Baa3 credit rating has never been targeted by a regulator as it does not constitute 'comfortable' investment grade rating.

Sub-investment grade: a clear remedial plan would be required before such a scenario materialises.

Recent updates to rating agency views

Moody's

Latest outlook has resulted in an indicative rating of Baa1 stable for NGN who benefit from:

- Monopoly owner of gas distribution in the north of England.
- Low business risk
- Well established and transparent regulatory regime.

S&P

S&P's affirmed a credit rating of BBB+ for NGN's given:

- Strong regulatory and operational performance
- Financial ratios above those of a BBB+ rating.
- Expected stable credit metrics, with funds from operations to debt remaining above 9%.

Rating agencies' views of NGN have not changed recently, but rating assessment remains contingent on the outcome of performance in the new regulatory period. NGN's strong results in the first five years of the regulatory period has so far been underpinned by strong credit metrics and a well-established regulatory framework, which ensures a stable and predictable cash flow.

Moody's sector outlook (Page 4, Credit opinion 29 March 2019)

Lower allowed returns

Potential impact of 'increasing interest in re-opening price control'

Implications for NGN

Moody's has specifically commented on the threat to NGN's metrics as a result of lower returns.

Moody's warns '..if political pressure leads to further [such] interventions, it could, over time, weaken our assessment of the transparency, stability and predictability of the energy networks regime'

The above suggests that there is pending risk that Moody's might downgrade the qualitative score awarded to the regulatory framework for the UK Energy sector (as has recently been done for the UK Water sector). If this risk materializes, NGN and other energy companies will be required to meet ***higher*** financial ratios thresholds than currently targeted, to meet the same target 'comfortable' investment grade rating.

Ratio targets based on Moody's / S&P rating criteria

NGN is assessed against a 'comfortable' investment grade target rating, i.e. a Baa1 / BBB+, which is needed to ensure that the price control results in an outcome consistent with the CoD index allowance

Moody's thresholds

- Moody's rating is **based 60% on qualitative factors and only 40% on ratios** – therefore, .
- **Amber shaded areas indicate thresholds where the rating could be at risk;** however, individual ratios falling into those areas over short periods need not imply a rating downgrade.
- Moody's guidance for NGN in particular is that **Baa1 will be maintained if NGN does not fall persistently below 1.4x on AICR, and does not exceed 75% Net Debt / RAV.**

60%	Business risk / financial policy ('qualitative')				
40%	Leverage and coverage ratios		☑	☑?	☑
	10%	AICR – core ratio	> 1.4x	1.4x – 1.3x	< 1.3x
	12.5%	Net Debt / RAV – core ratio	< 75%	75% - 80%	> 80%
	12.5%	FFO / Net Debt – non-core	> 11%	11 - 9%	< 9%
	5%	RCF / Net debt – non-core	> 7%	7 - 5%	< 5%

*Moody's FFO / Net Debt ratio differs from S&P's ratio in its treatment of inflation accretion on ILD.

S&P's / Covenants

S&P provides a rating of BBB+ for NGN. S&P focuses on the FFO / Net debt metric.

S&P requires NGN to maintain FFO/Net debt greater than 9% , in order to maintain BBB+.

NGN's covenants are also considered in the analysis (PMICR & Net Debt / RAV). A PMICR of 1.3x is critical for financeability as a fall below this threshold in any given year triggers default.

Comparison to water PR19

Moody's guidance for Baa1 rating requires higher AICR targets for the water sector (>1.5x AICR) following downgrade of the water sector after Ofwat's introduction of 'sharing of gearing outperformance'.
Moody's has stated it might reconsider the targets for the energy sector as the price review progresses.

Section 4: Financial assumptions and performance in the Base Case

Base case assumptions for RIIO - GD-2

Financial assumptions considered in this assessment

- NGN asked KPMG to consider three sets of financial assumptions for the purpose of testing financeability, set out below:
  1. **Ofgem's base case with zero outperformance -** i.e. Ofgem's working assumptions for RIIO GD-2 (4.3% CoE; 1.93% CoD)
  2. **Ofgem's base case with expected outperformance -** i.e. Ofgem's working assumptions for RIIO GD-2 (4.3% CoE; 1.93% CoD) with expected outperformance of 50bps as additional income
  3. **NGN's proposed financial assumptions in its RIIO-2 Business Plan.**

Parameter	Ofgem 'base case' with zero outperformance	Ofgem 'base case' with outperformance of 50 bps	NGN RIIO-2 Business Plan
Inflation	RPI - CPIH wedge 1.049%	RPI - CPIH wedge 1.049%	RPI - CPIH wedge 1.049%
CoE (real, CPIH)	4.3%	4.3% + 50bps outperformance	5%
CoD method.	11 - 15 trombone	11 - 15 trombone	14-18 trombone
CoD (real, CPIH)	1.93% avg.	1.93% avg.	2.40% avg.
Gearing	60%	60%	60%
WACC (real, CPIH)	2.9%	2.9%	3.4%
Dividend policy	3% dividend target	3% dividend target	3.5% notional/ 5% actual

Base case assumptions for RIIO - GD-2

Base case projections

Under the notional structure, NGN would achieve thresholds consistent with a 'comfortable' investment grade credit rating in Ofgem's 'Base case' with expected outperformance, as well as under NGN's Business Plan proposal. The notional financing structure is significantly constrained under Ofgem's base case excluding expected underperformance, achieving a rating of Baa2. **This means Ofgem's base case excluding outperformance is in fact not financeable as it fails to meet comfortable investment grade rating, consistent with the Cost of Debt allowance (A/BBB average).** This base case is more relevant than the alternative with outperformance, as is it consistent with rating agency methodology, where rating agencies *exclude* uncertain cashflows from their financeability assessments.

NGN's actual capital structure faces significant pressure in ratios under both of Ofgem's 'base case' assumptions, with a likely downgrade to Baa2 under mechanistic application of Moody's methodology.

As shown below, NGN is financeable at Baa1 on both notional and actual basis only under the financial assumptions proposed in NGN's RIIO-2 Business Plan.

			Ofgem 'base case' with zero outperformance	Ofgem 'base case' with outperformance of 50 bps	NGN RIIO-2 Business Plan
NOTIONAL	Moody's	AICR	1.39	1.50	1.46
		Net Debt / RAV	61%	60%	61%
		Implied rating	Baa2	Baa1	Baa1
	S&P	FFO / Net Debt	9.4%	9.9%	10%
	Covenants	PMICR	1.47	1.58	1.54
ACTUAL	Moody's	AICR	1.24	1.30	1.49
		Net Debt / RAV	69%	68%	67%
		Implied rating	Baa2	Baa2	Baa1
	S&P	FFO / Net Debt	8.4%	8.6%	9.4%
	Covenants	PMICR	1.32	1.38	1.57

Section 5: NGN's financeability under Ofgem's prescribed scenarios

Ofgem-prescribed scenarios

Ofgem-prescribed scenarios

Ofgem has explicitly set out a series of scenarios that it requires companies to consider as part of demonstrating financeability. Ofgem, creditors and shareholders will be concerned with the financial profile of the company in certain favourable/adverse situations. Ofgem-prescribed scenarios are set out below.

- A +/- 2% RORE shock is assumed to be plausible (interpreted as 2% of Regulated Equity in each year). For NGN, in practice this results in an annual shock of c£20mn.

1. RoRE (+/-2%)

2. Totex (+/-10%)

- A 10% increase/reduction in Totex relative to regulatory allowances is assumed in each year of RIIO-2 (before sharing)

- Plausible scenarios are assumed where the proportion of inflation linked debt is higher or lower than in the base case by 5%.

3. Proportion of inflation linked debt (+/-5%)

4. Interest rates (+/- 1%)

- Increase and decrease in interest rates by 1% is assumed in all years of GD-2 period.

- CPIH inflation is assumed to be higher and lower than forecast in the base case by 1% in all years. It is assumed that interest rates do not change.

5. Inflation (+/-1%)

6. RPI/CPIH wedge (+/-0.5%)

- The wedge between RPI and CPIH is assumed to change by 0.5% than forecast under the base case.

Ofgem scenarios - notional: Ofgem base case

For the notional structure, none of the individual Ofgem-prescribed scenarios result in an implied downgrade below investment grade, although certain scenarios might imply a one or two notch downgrade to Baa2 or Baa3.

The credit rating might be affected if the company is not able to achieve the 50bps outperformance (no incentive income scenario) and by a 2% RORE shock. These scenarios pressure key ratios to below the guidance levels and might result in a credit rating downgrade to Baa2 and Baa3 respectively based on mechanistic application of Moody's rating methodology.

Notional financial structure	Average values for RIIO-2			Overall rating
Ofgem scenarios	**AICR**	**Net debt/RAB**	**FFO/Net debt (S&P)**	**Moody's implied rating**
Ofgem base case	1.50x	60.20%	9.87%	Baa1
High interest rate (+1%)	1.51x	59.95%	10.06%	Baa1
Low interest rate (-1%)	1.48x	60.49%	9.65%	Baa1
High inflation (+1%)	1.53x	58.89%	9.95%	Baa1
Low inflation (-1%)	1.45x	61.61%	9.76%	Baa1
High RPI-CPIH divergence (1.5%)	1.48x	60.89%	9.83%	Baa1
Low RPI-CPIH divergence (0.5%)	1.51x	59.54%	9.91%	Baa1
High IDL proportion (30%)	1.54x	60.20%	9.87%	Baa1
Low IDL proportion (20%)	1.45x	60.20%	9.87%	Baa1
Totex underperformance (+10%)	1.41x	61.79%	9.30%	Baa1
Totex outperformance (-10%)	1.59x	58.56%	10.50%	Baa1
No incentive income	1.39x	60.80%	9.42%	Baa2
RoRE outperformance (2%)	1.95x	57.81%	11.77%	A3
RoRE underperformance (2%)	1.07x	62.60%	8.12%	Baa3

* cells in amber denote a risk to the credit rating, cells in red are indicator of higher risk to credit ratings.

Ofgem scenarios – actual: Ofgem base case

For the actual structure, most of the individual Ofgem-prescribed scenarios result in a one or two notch downgrade to Baa2 or Baa3 rating. Therefore the actual financing structure faces a financeability challenge under Ofgem's base case with expected outperformance

Most scenarios result in sustained FFO/ Net debt of below 9%, S&P's guidance for BBB+ rating. In majority of the cases a mechanistic application of Moody's methodology results in a single notch downgrade to Baa2, except in RoRE underperformance, which results in outturn ratios consistent with a two notch downgrade to Baa3.

Actual financial structure	Average values for RIIO-2			Overall rating
Ofgem scenarios	AICR	Net debt/RAB	FFO/Net debt (S&P)	Moody's implied rating
Ofgem base case	1.30x	68.46%	8.61%	Baa2
High interest rate (+1%)	1.24x	68.56%	8.51%	Baa2
Low interest rate (-1%)	1.37x	68.41%	8.67%	Baa2
High inflation (+1%)	1.35x	65.41%	9.12%	Baa2
Low inflation (-1%)	1.24x	71.76%	8.08%	Baa2
High RPI-CPIH divergence (1.5%)	1.29x	69.43%	8.46%	Baa2
Low RPI-CPIH divergence (0.5%)	1.31x	67.53%	8.76%	Baa2
High IDL proportion (30%)	1.30x	68.47%	8.61%	Baa2
Low IDL proportion (20%)	1.30x	68.47%	8.61%	Baa2
Totex underperformance (+10%)	1.16x	70.40%	7.91%	Baa2
Totex outperformance (-10%)	1.45x	66.47%	9.37%	Baa1
No incentive income	1.24x	68.76%	8.37%	Baa2
RoRE outperformance (2%)	1.56x	67.27%	9.59%	Baa1
RoRE underperformance (2%)	1.05x	69.68%	7.67%	Baa3

* Cells in amber denote a risk to the credit rating, cells in red are indicator of higher risk to credit ratings.
** Modelling of the actual embedded financing structure, including fixed, variable and swap portfolio, as provided by NGN.

Ofgem-prescribed scenarios – notional: NGN Business Plan

For the notional structure, none of the individual Ofgem prescribed scenarios result in an implied downgrade below investment grade, although certain (low probability) scenarios might imply a one or two notch downgrade to Baa2 or Baa3

The credit rating will be affected by 10% underperformance on Totex and 2% RoRE shock, which pressure key ratios to below the guidance levels and might result in a rating downgrade based on mechanistic application of Moody's methodology. However, NGN's assessment is that both of those scenarios have a low probability of occurring.

Notional financial structure	Average values for RIIO-2			Overall rating
Ofgem scenarios	AICR	Net debt/RAB	FFO/Net debt (S&P)	Moody's implied rating
Base case (NGN BP v1 Business Plan)	1.46x	60.59%	9.91%	Baa1
High interest rate (+1%)	1.49x	60.24%	10.17%	Baa1
Low interest rate (-1%)	1.43x	60.94%	9.65%	Baa1
High inflation (+1%)	1.50x	59.26%	9.99%	Baa1
Low inflation (-1%)	1.43x	61.97%	9.83%	Baa1
High RPI-CPIH divergence (1.5%)	1.44x	61.27%	9.87%	Baa1
Low RPI-CPIH divergence (0.5%)	1.48x	59.92%	9.95%	Baa1
High IDL proportion (30%)	1.50x	60.59%	9.91%	Baa1
Low IDL proportion (20%)	1.43x	60.59%	9.91%	Baa1
Totex underperformance (+10%)	1.38x	62.19%	9.33%	Baa2
Totex outperformance (-10%)	1.55x	58.94%	10.54%	A3
No incentive income	1.46x	60.59%	9.91%	Baa1
RoRE outperformance (2%)	1.86x	58.18%	11.81%	A3
RoRE underperformance (2%)	1.09x	63.00%	8.16%	Baa3

* cells in amber denote a risk to the credit rating, cells in red are indicator of higher risk to credit ratings.

Ofgem-prescribed scenarios – actual: NGN Business Plan

For the actual structure, none of the individual Ofgem prescribed scenarios result in an implied downgrade below investment grade, although the rating might fall by one notch in certain high impact scenarios

The actual structure has comparably better position relative to the notional. The credit rating is maintained for all scenarios apart from totex downside of 10% and a RoRE underperformance of 2%, where the rating might fall by one notch based on mechanistic application of Moody's methodology. NGN does not consider these scenarios to be realistic.

Actual financial structure	Average values for RIIO-2			Overall rating
Ofgem scenarios	**AICR**	**Net debt/RAB**	**FFO/Net debt (S&P)**	**Moody's implied rating**
Base case (NGN BP v1 Business Plan)	1.49x	67.24%	9.36%	Baa1
High interest rate (+1%)	1.42x	67.27%	9.30%	Baa1
Low interest rate (-1%)	1.59x	67.21%	9.42%	Baa1
High inflation (+1%)	1.55x	64.20%	9.92%	Baa1
Low inflation (-1%)	1.44x	70.47%	8.83%	Baa1
High RPI-CPIH divergence (1.5%)	1.48x	68.19%	9.20%	Baa1
Low RPI-CPIH divergence (0.5%)	1.51x	66.31%	9.52%	Baa1
High IDL proportion (30%)	1.49x	67.24%	9.36%	Baa1
Low IDL proportion (20%)	1.49x	67.24%	9.36%	Baa1
Totex underperformance (+10%)	1.34x	69.19%	8.62%	Baa2
Totex outperformance (-10%)	1.65x	65.23%	10.17%	Baa1
No incentive income	1.49x	67.24%	9.36%	Baa1
RoRE outperformance (2%)	1.77x	66.01%	10.40%	Baa1
RoRE underperformance (2%)	1.23x	68.46%	8.37%	Baa2

* Cells in amber denote a risk to the credit rating, cells in red are indicator of higher risk to credit ratings.
** Modelling of the actual embedded financing structure, including fixed, variable and swap portfolio, as provided by NGN.

Section 6: Macroeconomic & Business Risk Assumptions

Sources of macroeconomic risk

The analysis presented in this Report uses two separate sets of inputs for Ofgem's and KPMG's scenarios:

1. For Ofgem-prescribed scenarios, SSMD working assumptions are used for all macroeconomic inputs;
2. For KPMG scenarios, the modelling approach described below is applied.

The nominal and real Cost of Debt is modelled based on the following three components and their inter-relationships:

10Y nominal interest rate	• Energy networks typically issue long-term debt, which exposes networks to fluctuations in long-term interest rates • The 10Y nominal RfR – comprised of the base rate and 10Y term premium - is modelled for this exercise	**Nominal cost of debt** – modelled as sum of long-term risk-free rate and A/BBB credit spread
Credit spread (A / BBB)	• Energy networks have a licence obligation to maintain investment grade credit rating; the CoD allowance by UK Regulators reflects average A/BBB rating • The A and BBB spreads are modelled separately, taking account of their high positive correlation	
10Y implied inflation	• The long-term nominal RfR reflects long-term inflation expectations • The data shows evidence of negative correlation in 10Y long-term interest rates and 10Y implied inflation reflecting macro policy : when central banks lower interest rates, long-term inflation is expected to increase and vice versa	**Real cost of debt** – reflects negative RfR – expected inflation correlation

Short-term inflation is modelled separately based on past behaviour of RPI and CPIH indices:

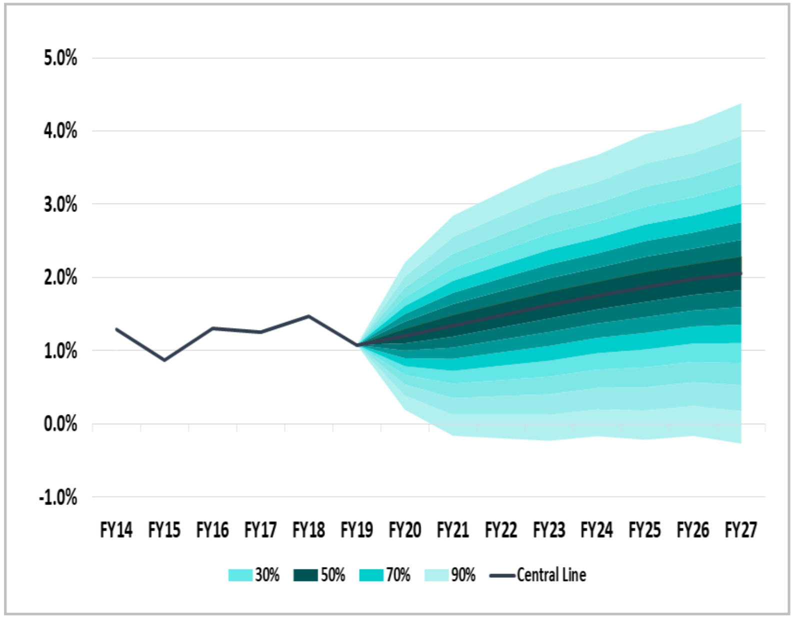
CPIH	• The CPIH short-term inflation can significantly differ from long-term implied inflation • CPIH short-term inflation was modelled separately, accounting of correlations between CPI and other inflation measures (1-period RPI and 10Y implied RPI)	In practice, only CPIH inflation is used in the modelling as this is Ofgem's preferred short-term measure of inflation
RPI	• The RPI short-term inflation can significantly differ from long-term implied inflation • RPI short-term inflation was modelled separately, accounting of correlations between RPI and other measures of inflation (1-period CPI and 10Y implied)	

* For the purpose of modelling CoD and CoE, the analysis in this Report uses a long-term assumption on the RPI-CPI wedge of 1.05% consistent with Ofgem.

Long-term interest rate: 10-year nominal RfR

Modelling approach:

- The assumed central forecast projection for the 10Y nominal interest rate is based on the current 10Y nominal forward rates over RIIO-2, based on BoE data.
- Specifically, for the central case projection, the average of the daily observations of the yield curve based on BoE data between the period 1 January 2019 to 5 August 2019 was used.
- To estimate uncertainty around the central forecast for every year of the modelling horizon, the volatility of historical estimation errors was calculated based on BoE data. Specifically, the difference in the forward estimates in year t of the rate in year t+n, and the realized values in years t+n were calculated based on yield curve data from 1 January 1979 to 5 August 2019.



Forecast values:

Nominal 10Y RFR					
	2021/22	2022/23	2023/24	2024/25	2025/26
P10	-0.16%	-0.20%	-0.23%	-0.17%	-0.22%
P50	1.34%	1.48%	1.62%	1.75%	1.87%
P90	2.84%	3.16%	3.47%	3.67%	3.96%
Ofgem base case	1.46%	1.61%	1.74%	1.86%	1.97%

The table to the left shows the probability distribution of the 10-year implied nominal RfR*.

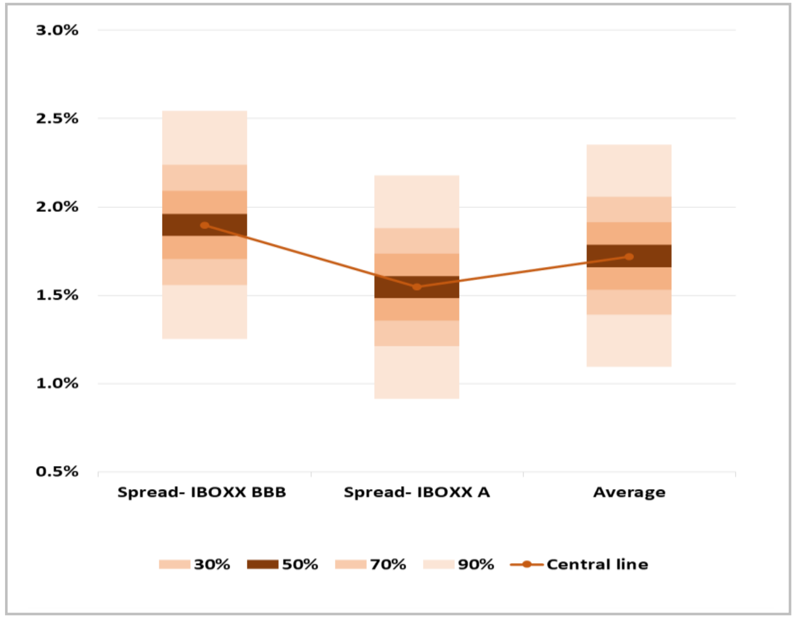
KPMG P50 forecast slightly differs from Ofgem due to using a different cut-off date and averaging period.

* RfR figures are fed into the Cost of Debt calculation with a 2-year lag.

Credit spread : A/BBB iBoxx

Modelling approach:

- iBoxx A and BBB data was assessed over the period August/1999 to August/2019.
- The analysis excluded the period ranging from October/2008 to June/2009 where unusually high spreads were observed on the market over the global financial crisis, as unlikely to be repeated over RIIO-2.
- The modelling approach adopted for iBoxx BBB and iBoxx A spreads uses long-term data given spreads outside of the financial crisis period have been relatively stable over time and are assumed to be approximately normally distributed.
- Ofgem's credit spread is slightly higher than KPMG in base case, but the interest rate is slightly lower (see previous page). Therefore, when KPMG's interest rate and credit spread assumptions are taken together, the resulting CoD assumption is very close to Ofgem's CoD assumption



Forecast values:

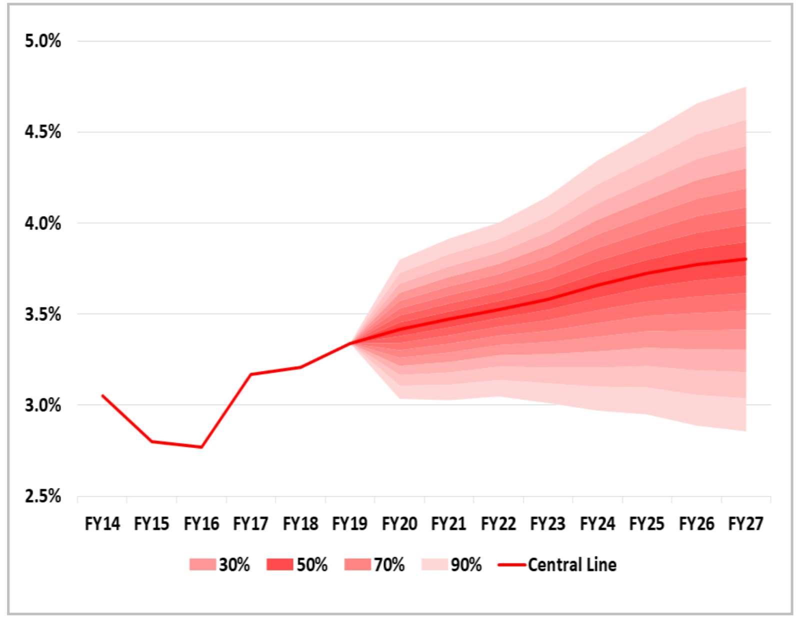
Credit spead (Average of A & BBB)					
	2021/22	2022/23	2023/24	2024/25	2025/26
P10	1.08%	1.08%	1.08%	1.08%	1.08%
P50	1.72%	1.72%	1.72%	1.72%	1.72%
P90	2.36%	2.36%	2.36%	2.36%	2.36%
Ofgem base case	1.87%	1.87%	1.87%	1.87%	1.87%

The adopted approach assumes that the spreads are independent and identically distributed over time.

Long-term inflation: 10-year implied Inflation (RPI)

Modelling approach:

- KPMG uses BoE data to estimate RPI implied inflation, and applies a wedge to arrive at CPIH implied inflation forecast. BoE implied inflation is used as this is the only market-based measure for which historic data is available for use in calibration of risk (P10-P90) scenarios.
- The assumed central forecast projection for the 10Y forward implied inflation is based on the current 10Y forward implied inflation over RIIO-2.
- For the central case projection, the average of the daily observations of the inflation curve based on BoE data between the period 1 January 2019 to 31 July 2019 was used.
- To estimate the uncertainty around the central forecast for every year of the modelling horizon, the volatility of historical estimation errors was calculated (see discussion of long-term interest rates), based on data since 1 January 1998.



Forecast values:

Implied inflation (10Y)					
	2021/22	2022/23	2023/24	2024/25	2025/26
P10	3.03%	3.05%	3.01%	2.97%	2.95%
P50	3.47%	3.53%	3.58%	3.66%	3.72%
P90	3.91%	4.00%	4.15%	4.34%	4.50%
Ofgem base case	3.07%	3.07%	3.07%	3.07%	3.07%

Uncertainty increases over time, reflecting lower precision and higher confidence intervals of estimates further into the future.

Breakeven inflation is used in KPMG scenarios to deflate nominal CoD. Ofgem uses OBR forecast of long-term (CPIH) inflation, which has been used to test financeability under Ofgem scenarios.

*Note: Implied inflation figures are fed into the Cost of Debt calculation with a 2-year lag.

Short-term inflation: CPIH

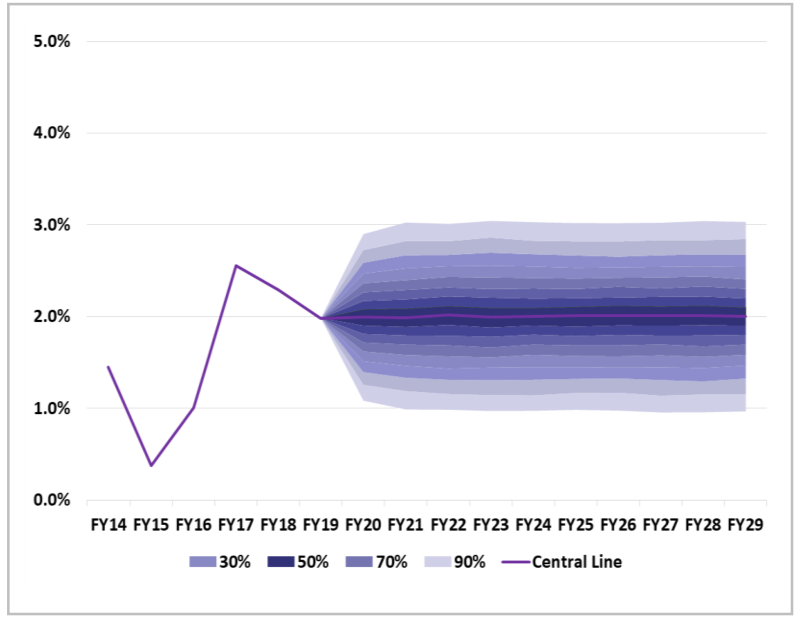
Modelling approach:

- For CPIH projections, historic CPIH data starting in 1998 was assessed , following the start of Bank of England inflation targeting policy.
- Based on the academic literature which supports that inflation metrics exhibit persistence through time, an assessment was carried out to verify whether the CPIH % change could be modelled as an auto regressive process ("AR 1")
- The following AR(1) model was fitted and used in our simulations:

$$\Delta CPIH_t\% = \mathbf{1.03}\% + 48.\mathbf{25}\% * \Delta CPIH_{t-1}\% + \omega_t$$

where $\Delta CPIH_t = \frac{CPIH_t}{CPIH_{t-1}} - 1$, and

$$\omega_t \overset{iid}{\sim} N(\mathbf{0}, \mathbf{0.005}\%)$$



Forecast values:

CPIH					
	2021/22	2022/23	2023/24	2024/25	2025/26
P10	0.99%	0.98%	0.97%	0.97%	0.98%
P50	1.99%	2.02%	1.99%	2.00%	2.01%
P90	3.03%	3.01%	3.04%	3.03%	3.02%
Ofgem base case	2.00%	2.00%	2.00%	2.00%	2.00%

This table refers to the unconditional probability distribution of CPIH. Ofgem uses OBR forecasts, as presented on the left.

*Note: The Year-on-year July/19 CPIH % change was adopted as 2019 average inflation.

KPMG assumptions for RIIO - GD-2

Based on the above, the table below compares our modelled results at P10, P50 and P90 with Ofgem's macroeconomic assumptions for RIIO-2.

	RIIO-GD-2 Averages of forecast values over the 5 year period			
Variable (average over RIIO-2)	**KPMG P10**	**KPMG P50**	**KPMG P90**	**Ofgem "base case"**
Short-term CPIH	1%	2%	3%	2%
Interest rate (nominal)	0.14%	1.34%	2.55%	1.46%*
Credit spread **	1.7%	1.7%	1.7%	1.9%
Nominal iBoxx within period (avg over RIIO2)	1.9%	3.1%	4.3%	3.3%
Implied inflation (RPI)	3.1%	3.5%	3.8%	3.07%***
RPI/CPI wedge **	1.05%	1.05%	1.05%	1.05%
Long-term CPIH for real CoD calculation	1.9%	2.4%	3.1%	2%
Real iBoxx within period (avg over RIIO2)	-0.53%	0.65%	1.83%	1.31%
Real CoD allowance	1.62%	1.81%	2.01%	1.93%

Notes:
- Average 10Y nominal interest rate used to forecast the iBoxx index taken over the RIIO-2 period.

** At present, all 'KPMG scenarios' use the central forecasts of the average A /BBB credit spread and RPI / CPI wedge. For details on KPMG credit spreads see slide 26. KPMG use Ofgem's assumption on the RPI / CPI wedge.

*** The Implied inflation for Ofgem is based on OBR forecasts of CPI and an RPI/CPI wedge, stated here for comparability.

Section 7: NGN's financeability under KPMG scenarios

KPMG scenarios

KPMG's analysis test NGN's financeability based on a set of combined scenarios of macroeconomic risks modelled by KPMG and plausible business risk downsides provided by NGN.

10Y implied inflation

10Y nominal interest rate

Annual RPI and CPIH inflation

Average A/BBB Credit spread

Macroeconomic scenarios (see section 6 for details)

- For each macroeconomic variable, KPMG analysed a distribution of macroeconomic outcomes (P10, P50, P90*) for a range of macroeconomic variables (see section 6).
- The analysis is then based on combinations of macroeconomic risk outcomes (P10/ P90) where it is assumed that certain shocks can co-occur together (e.g. P90 high interest rate might co-occur with a P10 low inflation).
- Scenarios for the notional and actual company were specifically designed to test performance under factors that exert pressure for that structure where these might differ across the two: e.g. high interest rates strain ratios for the actual structure which is more highly leveraged, has interest swap exposure and fixed rate new debt. Therefore, a combined high interest rate - low inflation scenario will exacerbate pressure on the actual structure. The notional structure is less exposed to spot interest rates and in fact does better when interest rates increase. A stretch scenario for the notional company would occur in a low interest rate – low inflation environment.

Totex over/under-performance
(5% totex)

ODI penalty
(£2.3m / annum)

Business risk scenarios

- These scenarios were informed based on high level views by the business on likely downsides over RIIO-2, as provided by NGN:
  1. 5% of totex out/under performance is a plausible range based on historic performance adjusted for the considerable recalibration of the way the allowances and the incentive package would be set in GD-2.
  2. The ODI penalty of £2.3m is based on a bottom-up analysis of the performance of the whole incentive package, which is a reflection of the downside bias that Ofgem appears to introduce in the calibration of the majority of the incentives in GD-2.
- All scenarios are based on assumptions and are indicative only. They do not represent a view of what could happen in the future.

* P denotes the percentile of the distribution of the modelled variable. For example, for a given P10 value, there is 10 per cent probability that the future realized value of the random variable will fall below this value. For a given P90 value, there is 90 per cent probability that the future realized value of the random variable will fall below this value, etc.

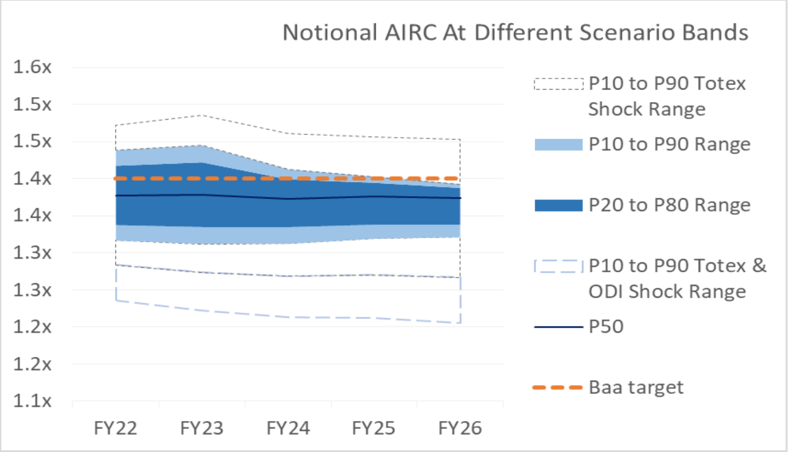
KPMG scenarios - notional structure - Ofgem base case

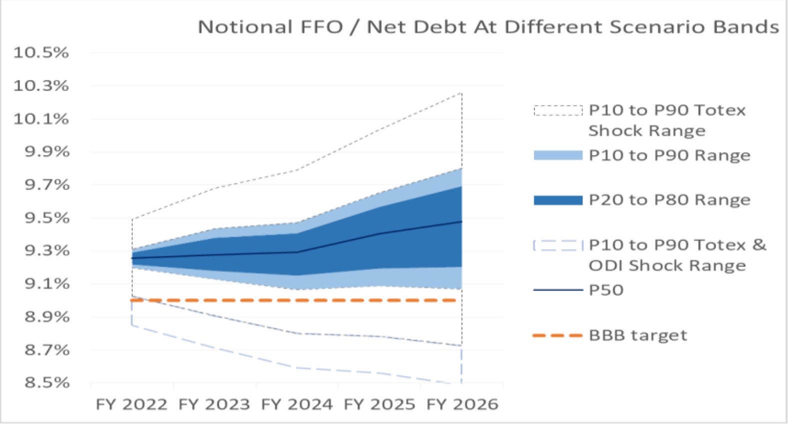
KPMG scenarios are set out as follows:

1. First, **low inflation (P10) is combined with low interest rate (P10) outcome,** assuming they can co-occur independently (and vice versa for the symmetric outperformance)
2. Second, **Totex under/out-performance of 5% is added to the macro shocks above.**
3. Third, **0.3% of regulated equity ODI penalty** is added in a every year in RIIO-2 as an asymmetric downside. No other out-/under-performance is assumed.

- **The combined macro shock results in a one notch downgrade to Baa2, because AICR falls below 1.4x for more than 2 years.**
- **The grid-implied results do not fall below Baa2 thresholds when Totex underperformance and ODIs are added (separately or together).**

Notional outcomes under the KPMG scenarios are shown below:





All of the scenarios use the modelled central forecast of the average A/BBB credit spread and a constant RPI / CPI wedge (see section 6).

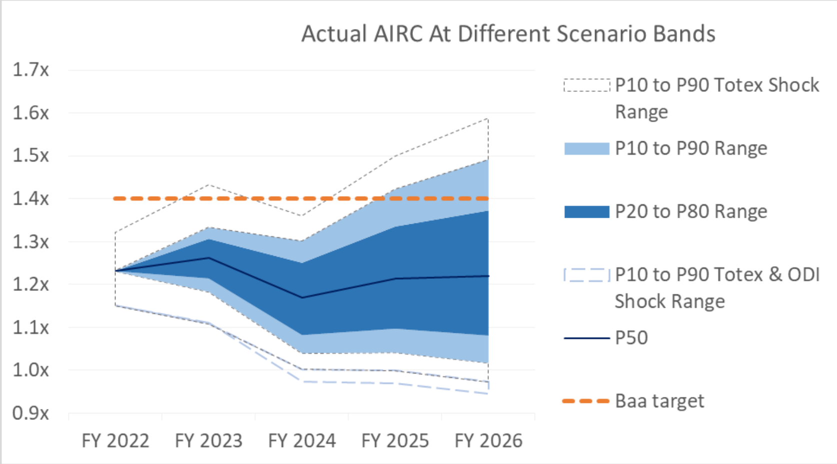
KPMG scenarios - actual structure - Ofgem base case

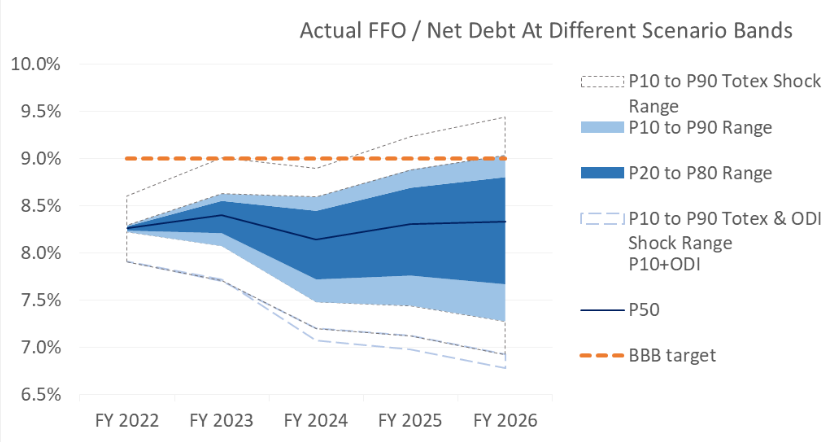
KPMG scenarios are set out as follows:

1. First, **low inflation (P10) is combined with high interest rate (P90) outcome.**
2. Second, **totex under/out-performance of 5% is added to the macro shocks above.**
3. Third, **0.3% of regulated equity ODI penalty** is added in a every year in RIIO-2.

- **Similar to the notional case, the combined macro shock results in a one notch downgrade to Baa2, because AICR falls below 1.4x for more than 2 years. However, NGN would face default due to breach of its 1.3x AICR covenant in most scenarios.**
- **Although the grid-implied Baa2 rating is maintained under the downside scenarios starting P20/P80, AICR falls below 1.2x for more than 2 years. This alone may trigger a Baa3 downgrade due to Moody's placing greater weight on AICR as a core ratio, and guidance of >1.2x for Baa2 rating.***
- **Grid-implied rating falls further to Baa3 when a combined Totex & ODI shock is assumed along with macro risks. In these scenarios AICR falls below 1x for more than 2 years, which may result in a downgrade below investment grade.**

Actual outcomes under the KPMG scenarios are shown below:





* Moody's Investor Service "Risks are rising, but regulatory fundamentals still intact " (29 May 2018)

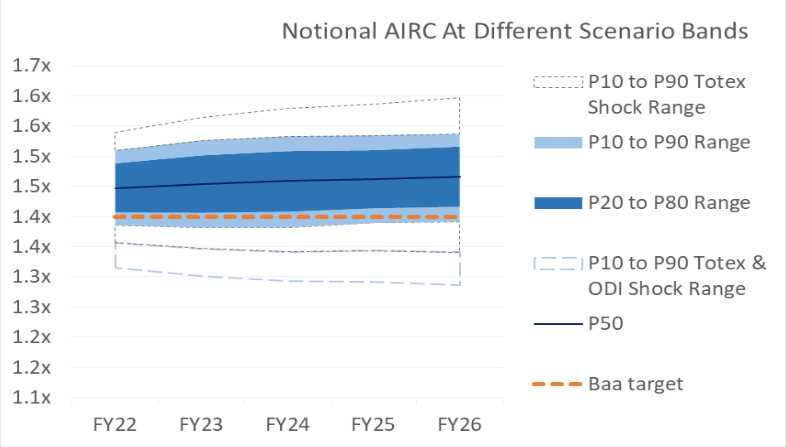
KPMG scenarios - notional structure - NGN Business Plan

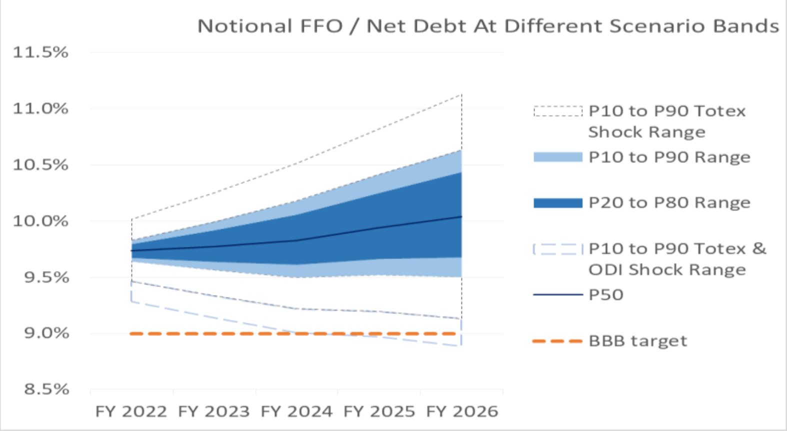
KPMG scenarios are set out as follows :

1. First, **low inflation (P10) is combined with low interest rate (P10) outcome,** assuming they can co-occur independently (and vice versa for the symmetric outperformance)
2. Second, **Totex under/out-performance of 5% is added to the macro shocks;**
3. Third, **0.3% of regulated equity ODI penalty** is assumed in a every year in RIIO-2 as an asymmetric downside. No other out-/under-performance is assumed.

- **The notional structure has sufficient headroom to withstand a combined plausible inflation / interest rate shock whilst maintaining Baa1 rating.**
- **However the grid-implied rating falls to Baa2 when the less likely P10/P10 combined shock is added. The rating does not deteriorate further when Totex downside & ODI penalties are added to the macro downsides.**

Notional outcomes under the KPMG scenarios are shown below:





All of the scenarios use the modelled central forecast of the average A/BBB credit spread and a constant RPI / CPI wedge (see section 6).

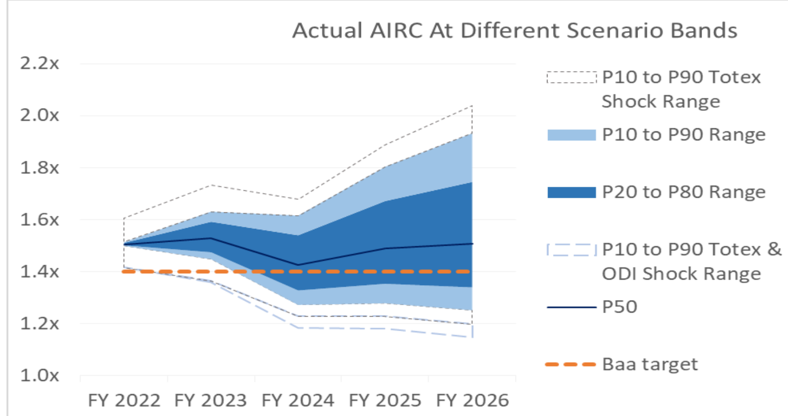
KPMG scenarios - actual structure - NGN Business Plan

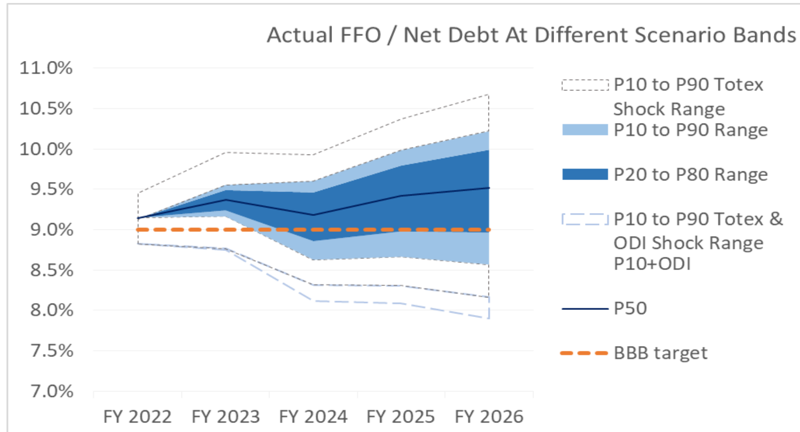
KPMG scenarios are set out as follows :

1. First, **low inflation (P10) is combined with high interest rate (P90) outcome,** assuming they can co-occur independently (and vice versa for the symmetric outperformance).
2. Second, **totex under/out-performance of 5% is added to the macro shocks;**
3. Third, **0.3% of regulated equity ODI penalty** is added in a every year in RIIO-2 as an asymmetric downside. No other out-/under-performance is assumed.

- **The actual structure also has sufficient headroom to withstand a combined inflation / interest rate shock whilst maintaining Baa1 rating, although it does result in a single notch downgrade to Baa2 in the combined macro downside scenarios.**
- **The rating does not deteriorate further even when Totex & ODI combined shocks are added to the macro shock.**

Actual outcomes under the KPMG scenarios are shown below:





All of the scenarios use the modelled central forecast of the average A/BBB credit spread and a constant RPI / CPI wedge (see section 6).

Section 8: Key messages

Key findings - Financeability under Ofgem's base case (1/2)

Under Ofgem's base case with outperformance, NGN's financial projections imply levels of financial metrics consistent with Baa1 rating under the notional structure and Baa2 rating under the actual structure. The metrics under the actual structure face significant pressure and indicate likely downgrade to Baa3 rating in some more high impact downside scenarios. Therefore, the actual company faces a clear financebility challenge under Ofgem's assumptions.

Ofgem 'Base case' with outper-formance

Base case: Under the notional financing structure, NGN's financial projections indicate that there is sufficient headroom to maintain ratios consistent with a Baa1 rating under Ofgem's base case with expected outperformance. However, under the actual financing structure, the metrics fall to levels consistent with Baa2 rating based on a mechanistic application of Moody's rating thresholds. This alone indicates that the actual financing structure faces financeability challenges under Ofgem's proposed financing assumptions.

Stress-tested downside scenarios: NGN's financial metrics face pressure under Ofgem's mandated scenarios as well as KPMG modelled scenarios, on both notional and actual basis, with implied results consistent with a Baa2 in a number of downside scenarios. Furthermore, certain downsides result in a fall of AICR to below 1.3x, a covenant threshold for NGN. NGN has informed us that the breach of this ratio would constitute default.

The business scores consistently worse under the actual structure compared with the notional structure across a range of scenarios. Key levers that contribute to this include:

(1) the actual financing structure is more leveraged than the notional. However, it is noted that NGN's starting position with gearing of c66% is essentially equivalent to Ofgem's RIIO1 target of 65% (although increases to c70% over the period) .

(2) debt raised in the actual structure is nominal, which puts pressure on cash based ratios, where by comparison the notional structure assumes a portion of debt is ILD which improves cash-based ratios;

(3) the actual structure has higher dividend target which results in higher debt funding requirement; however, the dividend target of 5% remains lower than dividend payout over RIIO1; and

(4) the actual structure has a variable debt portfolio which further exacerbates NGN exposure to macroeconomic risk.

The issue is exacerbated in that Ofgem's Base case assumes that outperformance of 50bps will be achieved over the period with certainty, even though in NGN's view this outperformance is very uncertain. in practice.

In summary, the analysis indicates downward pressure on financial metrics under Ofgem's base case, and clear financeability challenge for NGN given its existing financing structure which reflects Ofgem's gearing target over the RIIO1 period. In the event that Moody's downgrade the stability and predictability of the energy network regime, NGN's rating might deteriorate further to below investment grade, therefore risking licence breach which is not in consumer interest.

Key findings - Financeability under NGN's Business Plan (2/2)

Under the financial projections assumed in the NGN Business Plan, NGN's financial ratios achieve levels consistent with a comfortable Baa1 rating in the Base case, under both notional and actual financial structures, and also achieve this result in most plausible scenarios considered. In some, more high impact downside scenarios, the ratios fall to the level consistent with a downgrade by one notch.

'Base case' under NGN's Business Plan

- Based on published thresholds stipulated for NGN by the key rating agencies (Moody's, S&P) and for the energy sector as a whole, this analysis assessed whether the financial projections associated with NGN's business plan for RIIO2 are consistent with thresholds for a (comfortable) investment grade credit rating consistent with NGN's target.
- NGN's financial projections in its Business Plan indicate that operating cashflows are sufficient to cover Capex and dividend projections, whilst maintaining ratios consistent with a Baa1 credit rating, and being consistent with the CoD allowance, under both the actual and notional financial structures.

Performance in downside scenario under the NGN Business Plan

- NGN's Business Plan was stress-tested under the mandated set of Ofgem scenarios as well as 'KPMG scenarios' of potential macroeconomic and business risks. The latter should not be taken as a view of what could actually happen in the future.
- Under both the notional and actual financial structures, NGN could face pressure, which might result in a fall in financial ratios to Baa2/ Baa3 levels only under some high impact Ofgem's mandated scenarios, namely Totex underperformance of 10% and RORE shock of 2% (c£20mn) applied on an annual basis. We note that these downside scenarios represent a significant departure from NGN's current and projected performance over the period, as assessed by the business, and therefore NGN considers them unlikely to materialise.
- The KPMG scenarios assessed in this Report relay a similar message. Under the combined macroeconomic scenarios considered by KPMG, NGN's projected financial ratios are consistent with comfortable investment grade rating which is maintained under both the notional and actual financial structures in most cases. Certain combinations of macroeconomic risk and potential business risks (Totex and ODI underperformance) might result in a fall in financial metrics to levels implying a downgrade to Baa2 on both notional and actual basis. These scenarios combine multiple shocks and, even in these high impact scenarios the outturn financial metrics are consistent with levels for a Baa2 investment grade rating as a minimum.