

H7 HEATHROW AIRPORT LICENCE MODIFICATION APPEALS

**Final Determinations
Appendix A**

17 October 2023

Appendix A: Cost of debt - regulatory precedents

A.1 The appendix provides related paragraphs from various regulatory decisions that HAL and the CAA quoted on the use of inflation forecast when deflating the various nominal components of the cost of capital, in particular, where relevant, the nominal cost of embedded fixed-rate debt.

Precedent cited by HAL

A.2 HAL provided the following examples of regulatory precedent.¹

RIIO-ED2 Framework Consultation

A.3 For electricity distribution price control (known as RIIO-ED2) framework Consultation, HAL's advisor (Oxera) told us that Ofgem noted the ten recommendations from the UKRN [UK Regulators Network] cost of capital study and in that 'proposed to use long horizons when looking at historical data to forecast the future, and for assumptions on investment-holding periods':²

RIIO-ED2 Sector Specific Methodology Decision

A.4 For RIIO-ED2, Ofgem consulted on two methods for deflating the nominal iBoxx index to provide a CPIH real debt allowance. The two methods were (i) RPI breakeven inflation rates and then adjusted for an assumed RPI/CPIH wedge and (ii) one step by using an expected value for CPIH. In response to the Consultation, a few network companies suggested using outturn inflation. However, Ofgem, in its decision, used a proxy for long-term inflation for deflating the nominal iBoxx yields.

Related paragraphs

'Four network companies suggested that outturn inflation should be used to deflate the index (instead of a forecast). However, we do not believe outturn inflation data is a good indicator of the long-term future inflation expectations that are embedded in the long-term debt constituents of the iBoxx indices used. We continue to believe that a long-term estimate of inflation expectations is more appropriate for deflating an index based on long-term debt rates. Breakeven inflation is one long-term measure of inflation expectations but official forecasts are another.'³

¹ HAL, First Witness Statement of Peter Hope (**Hope 1**), section 6C.5.

² Hope 1, paragraph 6.64.

³ Ofgem (2019), [RIIO-2 Sector Specific Methodology Decision – Finance](#), paragraph 2.85.

'We disagree with [Electricity North West] ENWL's suggestion that the inflation adjustment should be aligned to inflation expectations over the regulatory period. To do so would considerably shorten the investment horizon, and contradict our decision in July 2018 to consider a long-horizon approach for all cost of capital components. We continue to believe that the cost of capital should be estimated over a long horizon, and propose to do this consistently for all aspects of the cost of capital, including debt and equity, and therefore, a long horizon is necessary for estimating real costs of debt and real costs of equity.'⁴

RIIO-ED2 Final Determinations

A.5 For RIIO-ED2 Final Determination, Ofgem decided to 'deflate nominal 'all in' yields for each date of the trailing average to CPIH real yields using the OBR forecast for CPI in 5yrs' time, available for each date, using the Fisher equation'.⁵ These forecasts were intended to reflect a long-term measure of inflation.

Related paragraphs

'We decided in the RIIO-ED2 SSMD to implement an immediate switch from RPI indexation to CPIH indexation. This requires us to estimate a real CPIH cost of capital, hence the real CPIH cost of debt. The benchmark iBoxx GBP Utilities 10yr+ index includes nominal yields and so this needs to be deflated into a real equivalent.

In our DD [Draft Determination], we proposed to use long-term OBR forecasts of CPI inflation to directly deflate nominal yields into CPIH real allowances. We proposed to use inflation expectations at each date to create a series of implied real values, rather than deflate a trailing average of nominal yields by a current estimate of inflation.'⁶

In light of this and considering the benefits of retaining a stable and predictable approach for RIIO-ED2, we have decided to deflate nominal yields by the OBR Year 5 forecasts, as proposed in DDs.'⁷

⁴ Ofgem (2019), [RIIO-2 Sector Specific Methodology Decision – Finance](#), paragraph 3.40.

⁵ Ofgem (2022), [RIIO-ED2 Final Determinations, Finance Annex](#), November, page 10.

⁶ Ofgem (2022), [RIIO-ED2 Final Determinations, Finance Annex](#), November, paragraphs 2.101-2.102.

⁷ Ofgem (2022), [RIIO-ED2 Final Determinations, Finance Annex](#), November, paragraph 2.105.

A.6 We also note that Ofgem stated in this document its intention to consult in early 2023 on the approach to inflation within the cost of capital.⁸ The Consultation was published on 1 August 2023.⁹

Ofwat Bristol Water's PR14 price appeal to the CMA

A.7 For price review 2014, Bristol Water disputed the price determination that required Ofwat to make a reference to the CMA. In the decision, the CMA noted that using a longer term RPI may result in divergence between allowed and actual financing costs over multiple periods and using short term RPI projections would risk giving insufficient weight to trends in real cost of debt over time. Therefore, the CMA used a medium-term measure of RPI.

Related paragraphs

'We considered that both these arguments had merit, but also a risk of regulatory inconsistency with the overall approach to the cost of capital. Use of a longer-term RPI, as suggested by Ofwat, would give little weight to projections of real financing costs on nominal fixed-rate debt over the relevant period, and might result in a divergence between allowed and actual financing costs over multiple periods. On the other hand, the use only of short-term RPI projections, as suggested by Bristol Water, risks giving insufficient weight to underlying trends in the real cost of debt over time. As discussed in paragraph 10.6, a stable approach to the cost of capital over regulatory periods is consistent with investors making long-term financing decisions. The notional real cost of debt should be generally expected to be more stable and more reflective of a premium over the underlying real riskfree rate. This is in the context that a material proportion of debt (33% within Ofwat's assumptions, and higher for Bristol Water) is index-linked. In estimating the notional real cost of debt, we therefore considered it was appropriate to have regard to a medium-term measure of RPI.

On balance, we considered it appropriate to estimate a real cost of debt for a notional company based on RPI assumptions using a narrow range from five- to ten-year projections.¹⁰

⁸ Ofgem (2022), [RIIO-ED2 Final Determinations, Finance Annex](#), November, paragraph 2.106.

⁹ Ofgem (2023) Call For Input - Impact of high inflation on the network price control operation [August](#).

¹⁰ CMA (2015), [Bristol Water plc – A reference under section 12\(3\)\(a\) of the Water Industry Act 1991 – Report](#), paragraphs 10.61-10.62.

Ofwat's PR19 final determination

- A.8 For price review 2019, Ofwat used long-term inflation estimates for deflating the nominal components of the WACC.

Related paragraph

'We used long-term inflation assumptions to deflate our nominal allowed return on capital components to CPIH-deflated and RPI-deflated equivalents. For draft determinations, we used the following assumptions:

- CPIH – 2.0%, based on the assumption that the Bank of England will over the long-term hit its 2.0% CPI inflation target, and that CPIH will not systematically be higher or lower than this.
- RPI – 3.0%, based on CPI of 2.0% and the Office for Budgetary Responsibility (OBR)'s estimate of the long-term RPI-CPI wedge of 1.0%

In addition, we also used short-term assumptions about CPIH and RPI inflation, produced by the Office for Budgetary Responsibility.¹¹

Ofwat's PR19 water appeals to the CMA

- A.9 Following Ofwat's 2019 price review, it made four references from water companies (Anglian Water Services Limited, Bristol Water plc, Northumbrian Water Limited and Yorkshire Water Services Limited) to the CMA for a redetermination.
- A.10 Yorkshire Water argued that as inflation is below the target, a lower inflation estimate for price control is needed to recover the nominal cost of capital. The CMA decided that it would not be appropriate to base real cost of capital estimates for the price control on what could prove to be temporarily distorted figures, and updated Ofwat's RPI-CPI wedge to reflect the OBR's latest long-term estimate.

Related paragraphs

'The price control for water is set by reference to inflation – with elements of the determination assumed to vary in line with inflation. Therefore, in theory the choice of inflation has no effect on the

¹¹ Ofwat (2019), [PR19 final determination, Allowed return on capital—technical appendix](#), December, paragraph 2.1.

price control – it is expected that low inflation will be mirrored by low costs and vice versa.

In practice, it is likely to be the case that low inflation may depress water company returns. Whilst 100% of revenue falls with inflation, in reality some costs are more ‘sticky’ to changes to inflation, and therefore in times of low inflation, water companies will often earn lower profits. One example is fixed rate debt, which is assumed to be 66% of the notional company debt, and which has constant interest in nominal terms. The effect of changes in inflation can also result in volatility of returns, as inflation is introduced into revenues with a lag. For example, 2021–22 charges will be based on inflation in the year ending November 2020, ie around a 16-month lag.

Whilst inflation volatility is a challenge for water company management and investors, it is typically assumed in the price control to be a symmetric risk and that the effect of inflation volatility should balance out over time. By setting the price control based around the Bank of England target, there is a built-in mean reversion, as the Bank has a duty to return CPIH inflation to 2% over time, and sets monetary policy to ensure this happens whenever inflation rises above this equilibrium level or falls below it. While rarely at exactly the 2% inflation target, historical evidence does suggest that UK inflation mean reverts to an average of 2% over time. As a result, while inflation volatility is one of the systematic risks faced by investors, the reversion of inflation to mean by policy design means that inflation does not normally form part of the price control settlement.

In the recent NATS (En Route) Plc (NERL)/CAA Regulatory Appeal (from here referred to as NATS/CAA), the CMA used HM Treasury’s summary of independent forecasts for this exercise, while the CAA and NATS used their own estimates of inflation. This was broadly uncontroversial at the time, as forecasts closely matched long-term inflation assumptions.

The current redetermination faces an unusual situation where inflation is known to be below target in the first year, and therefore in theory we have better information that inflation is likely to be below target over the five years. Although inflation could increase above target as the economy recovers, the latest HM Treasury’s summary of forecast suggests it will not recover enough that the average reaches the CPI target of 2%.

Yorkshire told us that the consequence of this should be a higher cost of capital. Yorkshire said that, in real terms, its cost of capital would be higher due to lower inflation, and this should be allowed to ensure it could cover its costs.’¹²

‘In our assessment, it would not be appropriate to base our real cost of capital estimates for the entire price control on what could prove to be temporarily distorted figures. We have decided to match Ofwat’s approach to estimating CPIH at 2.0%, basing our assumption on the Bank of England’s long-term CPI target of 2.0% (and assuming that CPIH inflation will not be systematically different). We update Ofwat’s 1.0% RPI-CPI wedge assumption for the OBR’s new estimate, and instead use a 0.9% wedge in our calculations involving RPI-real data. We have also retained the inflation used in Ofwat’s FD in our modelling.

We consider that using a longer-term estimate is the fairest way to calculate the real cost of capital at this time. We have paid particular attention to both the Bank of England’s stated objective of achieving 2% CPIH inflation over time and the evidence that periods of higher and lower inflation have been met with corrective actions that pushed average inflation back towards the long-term target within a short time-frame. We would suggest that if actual inflation deviates from the long-term inflation target to the extent that it has a material impact on the operations or financeability of water companies, that this is considered and dealt with by Ofwat at the industry level.’¹³

‘We set our cost of embedded debt allowance at 4.52% in nominal terms. Deflating for 2% CPIH gives a real cost of embedded debt allowance of 2.47%.’¹⁴

Precedent cited by the CAA

A.11 In response to HAL appeal, the CAA provided the following examples of regulatory precedent.¹⁵

¹² CMA (2021), [Anlian Water Services Limited, Bristol Water plc, Northumbrian Water Limited and Yorkshire Water Services Limited price determinations](#), paragraphs 9.27-9.32.

¹³ CMA (2021), [Anlian Water Services Limited, Bristol Water plc, Northumbrian Water Limited and Yorkshire Water Services Limited price determinations](#), paragraphs 9.35-9.36.

¹⁴ CMA (2021), [Anlian Water Services Limited, Bristol Water plc, Northumbrian Water Limited and Yorkshire Water Services Limited price determinations](#), paragraphs 9.795.

¹⁵ CAA, Second Witness Statement of Jayant Hoon (**Hoon 2**), paragraph 24.7.

CMA's NATS/CAA regulatory appeal

A.12 NATS En-route Limited (NERL) rejected the CAA's price control decision for the 5-year period 2020-2024, and so the CAA referred the matter to the CMA for investigation. The CMA used inflation assumption over a price control period to deflate the nominal components of the WACC.

Related paragraph

'We updated the RPI deflator figure used within our calculations to reflect contemporary expectations for RPI inflation over RP3. We used HM Treasury's average of independent forecasts in choosing an RPI deflator of 2.78%.'¹⁶

CAA's UK Reference Period 3 decision

A.13 In the CAA's UK Reference Period 3 (RP3) decision, the CAA used inflation assumption for RP3 for deflating the nominal components of the WACC. It also proposed a mechanism within its RP3 RAB rules that will true-up allowed returns and depreciation for differences between the expected and outturn RPI-CPI wedge during RP3. This mechanism reduced the inflation risk that NERL faces.

Related paragraphs

'NERA, in its September 2018 report for NERL, assumed an RPI forecast of 3.2% p.a. to estimate the RPI-deflated WACC. Separately, NERL's RP3 business plan included an RPI forecast that increased from 2.88% in 2020 to 3.54% p.a. by 2024, or about 3.3% p.a. on average. Over the same period, CPI increased from 1.57% to 1.96%, or about 1.8% p.a. on average.

For our draft proposals, we reviewed recent inflation forecasts published by the HM Treasury, the Office for Budget Responsibility (OBR), Bank of England and International Monetary Fund (IMF). We concluded that the inflation forecasts from these sources were broadly aligned and supported an inflation assumption for RP3 of 2.0% p.a. for CPI and 3.0% p.a. for RPI (an RPI-CPI wedge of 1.0%), which we used to estimate the WACC in RPI-deflated terms in our draft proposals. RPI forecasts are typically higher than CPI (particularly due to the 'formula effect') and these inflation forecasts were consistent with a wedge between RPI and CPI of 1.0% p.a.,

¹⁶ CMA (2020), [NATS \(En Route\) plc / CAA regulatory appeal: Final report](#), paragraph 13.160.

which matches the estimate of the long-run difference between RPI and CPI estimated by the OBR in March 2015.

In its response, NERL states that it considers our RPI-CPI wedge of 1.0% to be underestimated based on Oxford Economics forecasts, and recommends a higher RPI-CPI wedge of 1.3% in the last two years of RP3. We note that NERL does not appear to have applied this higher RPI-CPI wedge to its analysis of the RPI-deflated WACC and underlying parameters, in a consistent manner.

We have reviewed recent inflation forecasts from Oxford Economics,²⁶ the HM Treasury (which includes Oxford Economics within its consensus forecasts),²⁷ the Office for Budget Responsibility (OBR),²⁸ Bank of England²⁹ and International Monetary Fund (IMF).³⁰ These are summarised in Figure E1.

Most of the inflation forecasts from these sources are broadly aligned and continue to support an average inflation assumption for RP3 of 2.0% p.a. for CPI and 3.0% p.a. for RPI, which we use to estimate the WACC in RPI-deflated terms in our final decision.

For our final decision we are proposing a mechanism within the RP3 RAB rules that will true-up allowed returns and depreciation for differences between the expected and outturn RPI-CPI wedge during RP3. Further details are provided in chapter 7. This mechanism will reduce the inflation risk that NERL faces.¹⁷

Utility Regulator Gas Distribution Price Control 2023-2028

A.14 The Gas Distribution Price Control 2023-2028 (GD23) price control decision sets out the financing and outputs for the three gas distribution network operators in Northern Ireland for the six years from 2023 to 2028. In this decision, the Utility Regulator used an inflation forecast that matched the control period to deflate the nominal costs of debt.

Related paragraphs

'We convert the nominal costs of debt into their real equivalents by adjusting for GD23 CPIH inflation assumptions as set out in Table 10.3. As stated earlier inflation forecasts are subject to the rate of return adjustment mechanism.'¹⁸

¹⁷ CAA (2019), [UK RP3 CAA decision, Appendix E](#), paragraphs E15-E20.

¹⁸ NI Utility Regulator (2022), [GD23 gas distribution price control 2023-28: final determination](#), paragraph 10.38-10.42.

'The GD17 final determination included a Rate of Return Adjustment Mechanism Capital correction mechanism which adjusted the determined cost of capital for changes in the iBoxx benchmark used to determine rates for debt and to adjust for corporation tax rates.

For GD23, we have updated the mechanism (Annex T) to work on an annual basis. In addition due to uncertainties over the trajectory of interest rates and inflation in the economy, we propose to put in place an additional adjustment mechanisms that will adjust the allowed return on equity for risk-free rate and the real cost of debt for inflation if they turn out to be higher or lower than our base case forecast.

Inflation replaces actual annual average inflation in place of the forecasts used throughout GD23.¹⁹

Utility Regulator's Water Price Control 2021-2027

- A.15 For Northern Ireland's Water Price Control 2021-2027 price control, the Utility Regulator used an inflation forecast that matched the control period to deflate the nominal costs of debt.

Related paragraph

'NI Water's interest costs are expressed in nominal terms. The cost of debt that goes into our cost of capital calculation is a real, inflation stripped cost of debt. The Utility Regulator has asked us to convert from nominal to real using the Office for Budget Responsibility's March 2021 inflation forecasts to be consistent with the inflation assumptions that it is using throughout its draft determination.'²⁰

Competition Commission Northern Ireland Electricity Limited price control determination

- A.16 The Utility Regulator issued a final determination for Northern Ireland Electricity Limited (NIE) in respect of NIE's licences for transmission and distribution. NIE rejected the licence modifications, and the Utility Regulator made a reference to the Competition Commission. The Competition Commission used RPI over the relevant period to deflate the nominal components of the WACC.

¹⁹ NI Utility Regulator (2022), [GD23 gas distribution price control 2023-28: final determination](#), paragraphs 10.44-10.46.

²⁰ Utility Regulator (2021), [Water and sewerage services price control 2021-27: PC21 final determination](#), Annex O, page 9.

Related paragraphs

'Since NIE's price control is RPI-X based, we estimate a measure of RPI over the relevant period to ensure consistency across all aspects of the modelling. Using inconsistent inflation estimates could result in prices that are below those required to allow an efficient licence holder to earn its cost of capital.

Our estimate of expected inflation over the RP5 period is 3.25 per cent, based on actual and forecast inflation over the period (Section 11 paragraphs 11.33 to 11.39). Our estimate is based on OBR forecasts.

NIE said that a lower inflation forecast should be used to calculate the real cost of capital, and submitted that the relevant market implied break-even inflation rate was 2.75 per cent, based on Bank of England calculations. We considered that there was merit in the adoption of a consistent inflation forecast throughout our determination and viewed the OBR as a reliable source on this matter. We acknowledge however that there are differences in view on forecast inflation and that the OBR estimate may be towards the upper end of the range. While we have retained the OBR forecast in our calculation of the WACC range, we have considered the scope for forecasting error in the choice of point estimate.²¹

Ofcom's Wholesale Fixed Telecoms Market Review 2021-2026

- A.17 Ofcom in its wholesale fixed telecoms market review (2021-26), converted the real cost of equity to a nominal cost of equity using RPI and CPI forecasts.

Related paragraphs

'Based on the March 2019 OBR forecasts we proposed to assume CPI inflation of 2.0% and RPI inflation of 3.0% (based on the OBR's 1% RPI-CPI wedge).

TalkTalk agreed with our proposal to use the most recent OBR forecasts. However, it disagreed with the 1% wedge between RPI and CPI citing Ofgem's RIIO-2 proposals that set a wedge of 0.813%.

²¹ Competition Commission (2014), [Northern Ireland Electricity price determination](#), paragraphs 13.22-13.24.

We have decided to use the November 2020 RPI and CPI forecasts from the OBR. The OBR's forecast for RPI in 2025/26 is 3% and for CPI it is 2%.

We have used these RPI and CPI forecasts in our WACC calculations. Ofgem's 0.813% wedge was based on the March 2020 OBR forecasts for the year 2024 and therefore does not represent a like for like comparison.²²

Ofcom's review of the physical infrastructure and business connectivity markets

A.18 Ofcom in its review of the physical infrastructure and business connectivity markets, used 2020/21 RPI and CPI forecasts when converting the real cost of equity to a nominal cost of equity.

Related paragraph

'TalkTalk agreed with our proposal to use the most recent OBR forecasts and, as no other stakeholders commented, we have decided to use the latest RPI and CPI forecasts from the OBR. The OBR's March 2019 forecast of RPI in 2020/21 is 2.8% and for CPI it is 1.9%. We have used these RPI and CPI forecasts in our WACC calculations.'²³

Australian Energy Regulator's position on the regulatory treatment of inflation

A.19 Australia's National Electricity and National Gas rules require the Australian Energy Regulator (AER) to determine a method for estimating the expected inflation. For deflating the nominal components of the WACC, the AER used inflation forecasts that matched the regulatory period.

Related paragraphs

'Our current approach to estimate expected inflation uses a 10 year average of the Reserve Bank of Australia's (RBA) headline rate forecasts for 1 and 2 years ahead, and the mid-point of the RBA's target band—2.5 per cent—for years 3 to 10. The period of 10 years matches the term of the rate of return. This approach has worked well in the past, but the current period has highlighted that

²² Ofcom (2021), [Promoting investment and competition in fibre networks: wholesale fixed telecoms market review 2021-26, Annex 20](#), paragraphs A20.22-A20.24.

²³ Ofcom (2019), [Promoting competition and investment in fibre networks: review of the physical infrastructure and business connectivity markets, Annex 21](#), paragraphs A21.133.

adjustments are required to improve its performance in periods of economic instability or sustained periods of low or high inflation.

Consistent with our draft position, we consider that our current approach is improved by:

- Shortening the target inflation horizon from ten years to a term that matches the regulatory period (typically five years).
- Applying a linear glide-path from the RBA's forecasts of inflation for years 1 and 2 to the mid-point of the inflation target band (2.5 per cent) in year 5.

We consider that our final position addresses some immediate problems highlighted in stakeholder submissions, but that it will be enduring because it is capable of responding to changing economic circumstances. Currently there is a mismatch between our estimate of expected inflation over a 10 year term, and our roll forward of the regulated asset base (RAB), which is done over a 5 year term. We consider that shortening the inflation term to match the regulatory period, although creating a mismatch with the term of the rate of return, is the more critical mismatch to resolve.²⁴

²⁴ AER (2020), [Final position: regulatory treatment of inflation](#), page 6.