NATS En-route Limited (NERL) Price Determination – referral to the Competition and Markets Authority (CMA)

On 16 December 2019 we published our final determinations which set allowed revenues and service and incentive packages for English and Welsh water companies over the period 2020-25. Our determinations allow funding for each company to properly carry out its regulated activities, including by meeting statutory and regulatory obligations, and delivering the outcomes specified in its final determination. Any company that disagrees with our determination has 2 months (no later than 15 February) to request a full redetermination by the CMA.

In the course of reaching our final determination, we have given considerable thought to some issues which have direct relevance to the NERL price control for 2020-24. These issues primarily concern the Total Market Return, risk-free rate, equity beta and debt beta. The CMA may find it helpful, in the context of its price determination for NERL, to review a short summary of our views on these issues based on the extensive work we have carried out. Moreover, any statements the CMA might make in the context of the NERL price control could potentially impact on expectations for the appropriate return on capital for water companies, with consequent implications for water company appeals. For these reasons, we invite the CMA to take into account the evidence we provide here when considering its determination for NERL.

We summarise our views on these issues below and reference where further information is available in our determination. We have also published a policy summary[1] which provides an overview of our overall approach to PR19 final determinations, including the allowed return on capital.

[1] Section 6.2 sets out a high level summary of our allowed return on capital and approach to financeability.

Total Market Return

NERL proposes a total market return (TMR) of 6.2%-6.8% on an RPI basis in its response to the CAA's TMR of 5.4% for RP3 (on an RPI basis).

The CAA's final determination TMR of 5.4% on an RPI basis equates to 6.4% on a CPIH basis,[2] which is comparable to the TMR set in our determination (6.5% on a CPIH basis)[3] and sits within the 6.25% to 6.75% CPIH-based range stated by Ofgem in their latest (May 2019) allowed return on capital estimate.[4]

NERL raises three key issues concerning TMR which we comment on below.

a) Consistency with TMR from RP2: NERL considers that the TMR is stable over time; and that there is little evidence to support the reduction in the TMR since the RP2 review.

We consider the TMR should be set reflecting the most up-to-date evidence on the appropriate way to estimate TMR, and with reference to market data that is relevant to the period of the price control concerned. The CAA's RP2 final determination predates the substantial body of work on TMR estimation conducted by regulators in the 2018-19 period (notably the cross regulator UK Regulators Network[5]-sponsored academic Cost of Equity study).[6] This work has led to regulators revising their approach to 'ex-post' TMR estimation using historical equity returns - primarily in response to better-quality historical inflation data, and taking account of serial correlation and holding periods. This has in turn led to a material reduction in estimates of the TMR.[7] There is also significant 'forward-looking' evidence supporting a TMR that is materially lower than estimated by regulators in previous regulatory determinations.[8]

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[2] Assuming a 100bp RPI-CPIH 'wedge'. See: https://obr.uk/box/revised-assumption-for-the-long-run-wedge-between-rpi-and-cpi-inflation/.
[3] Ofwat, *'PR19 Final Determinations: Allowed return on capital technical appendix',* December 2019
[4] Ofgem, *'RIIO-2 Sector Specific Methodology Decision – Finance'* May 2019
[5] The UKRN encompasses, the Civil Aviation Authority, Ofcom, Ofgem, Ofwat, ORR, FCA, FSA, FRC, Legal Services Board, Payment System Regulator, Single Source Regulators Office, Northern Ireland Utility Regulator, Information Commissioner's Office and Pensions Regulator.
[6] P. Burns et al '*Estimating the cost of capital for implementation of price controls by UK regulators',* February 2018
[7] See UKRN, '*Cost of capital – Annual Update Report',* p20
[8] See for instance, Ofwat '*PR19 Draft determinations: Cost of capital technical appendix',* July 2019 pp37-43

NERL raise concerns about the 'scale and speed' of the reduction of the TMR in aviation relative to its assumed level in RP2. We do not agree that any benefit from maintaining the stability of assumptions over time justifies the setting of an assumption in excess of market-implied estimates and ignoring recent advances in TMR estimation. In our view, to do so would call into question the robustness and legitimacy of a figure derived in this way.

b) Concerns about the relationship between TMR and productivity: NERL argue that the TMR and productivity are linked and that the reduction in the TMR from RP2 is inconsistent with Office for Budget Responsibility's short-term productivity forecasts for the UK.

Similarly to NERL, companies in the water sector which were also advised by Economic Insight raised concerns about the relationship between the TMR and our productivity assumptions for 2020-25.

While a relationship between productivity and equity returns has been observed in historical data, productivity is not the only determinant of TMR, with other factors such as savings demand also being relevant. Caution must therefore be exercised before assuming that the movement in one variable must be matched by a predictable movement in the other. Moreover, TMR estimates in the 6-7% CPI range (i.e. encompassing the CAA's point estimate) are supported by 'ex-post' analysis of long-run historical equity returns, covering periods of both high and low productivity growth. This is the conclusion in the UKRN cost of equity study, and is consistent with our own finding of an overall 'ex-post' range for the TMR of between 5.5% and 6.7% in CPIH terms.[9] We note that NERL's statement seems to support the principle of using long-term average returns as it cites NERA's analysis to support its 6.2%-6.8% RPI-based TMR range.[10] NERA's range is derived from historical data, and does not attempt to reconcile TMR to productivity in 2020-24. [11]

In addition, we do not consider that 'forward-looking' estimates are at odds with productivity forecasts. Our 'forward-looking' TMR range (6.1% to 6.9% in CPIH terms)[12] is based on dividend discount models, and encompasses the CAA's point estimate of 5.4% in RPI terms (6.4% on a CPIH basis).[13] The models informing our

[9] Ofwat '*PR19 draft determinations, Cost of capital technical appendix'* p34
[10] NATS, '*CMA Statement of Case – 28 November 2019'*, p140
[11] NERA, *'Cost of equity for RP3'* April 2019, pp59-60
[12] Ofwat '*PR19 final determinations, Allowed return on capital technical appendix'* p51
[13] Assuming a 100bp RPI-CPIH 'wedge'. See: https://obr.uk/box/revised-assumption-for-the-long-run-wedge-between-rpi-and-cpi-inflation/

range use Office for Budgetary Responsibility and International Monetary Fund forecasts for GDP growth. These GDP forecasts reflect productivity growth assumptions, and so our forward-looking TMR range will be consistent with productivity forecasts over 2020-25.

c) Concerns about the inflation series for estimating TMR, the adjustment for holding periods and predictability of returns.

NERL cites analysis by NERA concluding that the UKRN cost of equity study understates true TMR in its plausible TMR range of 6-7% in CPI terms.[14] NERA argues this is because the UKRN cost of equity study uses a hybrid RPI/CPI historical inflation series, and applies an excessive adjustment for long holding periods and serial correlation in returns.

Taking account of the range of evidence, we agree with the CAA's use of the Bank of England's historical CPI series over other available inflation series[15] when assessing evidence on historic long term real equity returns. This is as the Bank's CPI series is calculated on a more consistent basis - the numerous revisions to historical calculations of RPI have caused current RPI to be structurally higher than its historical equivalents. This makes using unadjusted historical RPI-deflated returns an unreliable guide to prospective RPI-deflated returns required by investors. We consider it particularly important (irrespective of whether a CPI or RPI series is used to deflate nominal returns) that the 1914-1947 period does not use the Cost of Living Index to proxy for inflation under either measure. This index is recognised as seriously flawed by the Office for National Statistics, which prefers the implied consumption deflator used in the Bank's historical CPI and RPI inflation series.[16]

There exists a large body of evidence which finds that arithmetic averages are upwardly-biased over holding periods longer than one year,[17] an effect exacerbated by the presence of serial correlation in returns (which applies to the historical UK

[14] P. Burns et al '*Estimating the cost of capital for implementation of price controls by UK regulators',* February 2018, p8
[15] The Bank of England supply a historical RPI series, and the 2019 Credit Suisse Global Investment Returns Yearbook also supplies a historical inflation series which is largely CPI-based except for the period 1914-1947, where it uses the Cost of Living Index.
[16] See: Office for National Statistics, *'Consumer Price Indices Technical Manual, 2007 edition'*, p73
[17] e.g. Indro & Lee, *'Biases in Arithmetic and Geometric Averages as Estimates of Long-Run Expected Returns and Risk Premia*', 1997

data).[18] Given the long economic life of infrastructure assets and an allowed return assumption which fixes TMR over multiple years, it is appropriate to consider longer holding periods than one year and place some weight on geometric average returns. Evidence from institutional investor surveys provides support for holding periods in excess of 5 years.[19] Finally, the UKRN cost of equity study endorses the assumption of a long (i.e. 10yrs+) investment horizon and also that such a horizon weakens the case for a TMR lower than the upper end of the proposed 6-7% CPIH-based plausible range.[20]

A more detailed discussion of issues relating to Total Market Return is contained in pages 41-53 of our 'PR19 Final determinations allowed return on capital technical appendix' and pages 25-45 of our 'PR19 draft determinations cost of capital technical appendix'.

Risk-free rate

Consistent with the views expressed by NERL, companies in the water sector have also argued for placing more weight on nominal gilts instead of RPI-linked gilts due to their view that the latter may be distorted.

We firstly note the clear recommendation of the UKRN cost of equity study that regulators *'should use the (zero coupon) yield on inflation-indexed gilts at their chosen horizon to derive an estimate of the risk-free rate at that horizon.'*[21]

We consider that the market price for a given financial asset will be a function of the respective motives of buyers and sellers who engage in trading over a given period. In the specific case of RPI-linked gilts, we consider it unjustified to discount some motives (i.e. regulatory requirements, scarcity value) in this price discovery process as 'distortions' without providing a clear rationale justifying why this is appropriate.

[18] The 2019 Credit Suisse Global Investment Returns Yearbook indicates a serial correlation coefficient of -0.07 for UK historical equity returns.
[19] Schroders find 27% of institutional investors target holding periods >5yrs. Source: Schroders, *'Institutional Investor Study 2019'*, June 2019, p9
[20] P. Burns et al '*Estimating the cost of capital for implementation of price controls by UK regulators',* February 2018, p E-125
[21] Ibid. p8

We have identified two distortions in UK gilt yields which should be excluded from any risk-free rate calculation if feasible: a liquidity risk premium in RPI-linked gilts; and an inflation risk premium in nominal gilts. Our analysis of data for our draft and final determinations suggests that almost all of the current difference is explained by the inflation risk premium in nominal gilts, with liquidity risk being negligible.[22] By definition, a truly risk-free rate should not contain any risk premia, indicating that RPI-linked gilts are liable to yield a more accurate estimate of the true risk-free rate.

A more detailed discussion of issues relating to the risk-free rate is contained in pages 29-40 of our 'PR19 Final determinations allowed return on capital technical appendix' and pages 18-25 of our 'PR19 draft determinations cost of capital technical appendix'.

Equity beta

NERL states that the CAA's estimate of a notional equity beta of 1.0 for RP3 understates the true equity beta. The company contends that its operating leverage (expressed as opex : RAB and opex : revenue) has increased and is higher than listed comparators used to derive an asset beta estimate. It refers to previous appeals to the CMA and Competition Commission which have applied an uplift to asset beta because of this. Some water-only companies made similar arguments in their PR19 submissions that it would be appropriate to apply an uplift to their asset beta or require higher headroom in financeability assessments to reflect higher operational gearing.

We are concerned that techniques which adjust for differences in operational gearing by applying an uplift to asset beta derived as the ratio of operational gearing between companies may be simplistic and overstate required returns. This issue was illustrated in Figure A2.2 and accompanying text of our response to the CMA's provisional findings in the 2015 Bristol Water.[23] The concern was also recognised in the 2010 Bristol Water appeal, in which the Competition Commission stated: *'This [uplift for operational gearing], however, assumes that cyclical profit fluctuations are*

[22] Ofwat '*PR19 final determinations, Allowed return on capital technical appendix'* p31
[23] *'Ofwat response to CMA provisional findings',* 2015, figure 9, p64

the only source of systematic risk and would overstate the effect if there are other sources of systematic risk, such as regulatory risk.'[24]

We consider therefore that it is important to assess carefully in theoretical and practical terms why particular ratios of revenues and costs should translate into greater exposure to systematic risks, and which risks are affected. For instance, most textbook examples of operational gearing explain this greater risk exposure in terms of a high share of fixed costs which cannot be scaled down in response to lowered demand, amplifying the negative impact on operating profit. We consider it likely that, in regulated sectors with predictability of revenues and low demand risk, a high share of fixed costs (i.e. high operational gearing) may act to reduce risk exposure to cost risk through limiting the proportion of costs which may vary against the fixed regulatory allowance due to cyclical factors. We also observe in water-only companies which claim to have higher operational gearing, that there is weak evidence of features which we would expect to be associated with a materially higher asset beta (i.e. higher gearing, [25] higher market-to-asset ratios,[26] and higher econometric estimates of raw beta) [27].

Debt beta

NERL suggest that the CAA has overstated debt beta, based on evidence provided by Professor Zalewska (for NERA, supporting NERL) involving regressions of bond returns on a benchmark index, tending to produce results which are either negative or statistically insignificantly different from zero.

We firstly note that the CAA's debt beta at 0.10 is lower than the debt beta applied in our final determinations 0.125. We have considered the findings of the Zalewska paper for this exercise, as well as a wide range of other evidence. The findings of the paper echo those from many previous attempts to estimate debt beta

[24] Competition Commission, '*Bristol Water plc. – A reference under section 12(3)(a) of the Water Industry Act 1991',* 2010, Appendix N, pN36
[25] The arithmetic average of March 2019 company-reported gearing levels is 67.9% for Water and Sewerage Companies and 70.1% for WoCs.
[26] Recent examples of premia to RCV include 53% for Affinity Water in 2017 and 50% for Dee Valley Water in 2016 (both WoCs). The average premium for Severn Trent and United Utilities over 2016-17 was 22% (both WaSCs).
[27] We identified no significant difference in the raw beta of Dee Valley Water (a WoC) against WaSC comparators, '*Ofwat's response to Bristol Water's Price Determination Statement of Case dated 11 March 2015'*, p88-89

econometrically, where poor data quality and poor statistical properties of the regression models has led regulators to use 'indirect' or decompositional approaches of the type relied on by the CAA to inform its point estimate.[28] We consider that the results of the Zalewska paper may be explained by thin trading of bonds. Where trading frequency is low, this has been shown to result in regression estimates of debt beta which are downwards biased for high sampling frequencies ('The Epps Effect'). We note that the Zalewska paper only uses data at daily and weekly frequencies. Our own analysis of debt betas at monthly frequency tends to produce results more consistently above zero.[29]

Secondly, the Zalewska paper's conclusion of a zero or negative debt beta for iBoxx index constituents is incongruous with wider evidence, as it implies that all of the debt premium can be accounted for in the company-specific risk of default. As argued by our consultants Europe Economics, even for half of typical debt premiums to be attributable to this effect would imply that in each year over 80 per cent of investment-grade corporate debt is expected to default – this is plainly implausible.[30]

A more detailed discussion of issues relating to equity beta and debt beta are contained in pages 29-40 of our 'PR19 Final determinations allowed return on capital technical appendix' and pages 54-70 of our 'PR19 draft determinations cost of capital technical appendix'.

Relationship between the cost of capital and financeability

Consistent with our approach in PR14, we assess the cost of capital and financeability separately. Our cost of capital is based on a cost of equity derived using the Capital Asset Pricing Model and a cost of embedded and new debt informed by yields from our benchmark index (the average of A and BBB rated iBoxx GBP 10yrs+ non-financials indices), and company balance sheet debt. We have considered our cost of capital against cross-checks drawn from analyst estimates, Market-to-Asset Ratios and returns from the FTSE 100. We do not apply uplifts to the cost of capital to solve financeability constraints at the level of the notional company, but instead apply measures such as assuming lower dividends

[28] For instance Competition Commission, '*A report on the economic regulation of the London airports companies (Heathrow Airport Ltd and Gatwick Airport ltd.),* 2007
[29] Ofwat, *'PR19 Final determinations: Allowed return on capital technical appendix',* December 2019 p62
[30] Europe Economics, '*The allowed return on capital for PR19 – final advice',* December 2019

(particularly where RCV growth is high), or allowing revenue to be brought forward from future periods.

We note the evidence provided with NERL's submission includes a report by Economic Insight which is yet to be published on your website. If this would be useful to the CMA, we would welcome the opportunity to comment on the Economic Insight report and to discuss the issues in this submission with you in due course.

Ofwat

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