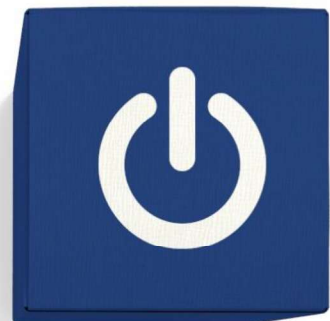


H8 Initial Proposals – Response on financial issues

IATA

29 May 2026



FINAL REPORT

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OVERVIEW

CEPA has been appointed by the International Air Transport Association (IATA) to provide independent advice in relation to the Civil Aviation Authority's (CAA's) H8 Initial Proposals (IPs) for Heathrow Airport. This will represent a two-runway price control covering five years from 2027. The CAA has determined that it will assess any impact from Heathrow expansion separately.

This report has been provided for the purposes of IATA responding to the IPs and demonstrates the areas in which a materially different approach could be adopted to provide a lower cost to users of airport services, whilst still allowing Heathrow Airport Limited ('HAL') to finance its activities.

The combination of the allowed return and the balance of risk for HAL is a core component of the CAA suitably discharging their duties under the Civil Aviation Act 2012 at H8. The financial implications of risk allocation and the level of return set out in the H8 IPs will be exacerbated if capacity expansion occurs in future price controls or in any interim settlement in respect of such costs and should have been considered in the round.

We have reviewed the CAA's H8 IPs and the supporting analysis from FTI Consulting ('FTI') and propose specific recommendations on financial issues that we consider will appropriately balance risk and return for investors in HAL in the H8 price control.

We recommend the following material improvements to the financial package:

1. Apply a downwards adjustment to reflect HAL's lower risk relative to listed comparators.
2. Change approach to empirical beta estimation.
3. Remove market-cap weighting for aggregating comparator beta results.
4. Re-calculate the TRS adjustment with internally consistent low and high differentials.
5. Apply a notional approach to setting the cost of embedded debt.
6. Remove Heathrow-specific premium applied to cost of new debt.
7. Remove inflation indexation of nominal fixed rate debt in the RAB.
8. Reduce notional gearing.

There are six additional recommendations contained in Appendix A of smaller scale.

Our report has focused on recommendations for change, additional scrutiny of evidence and correction of errors to ensure a materially better alternative is adopted. We note that there are many areas of agreement in approach. We do not discuss these individual points separately.

The CAA's H8 IPs set an allowed return of £6.55bn. The allowed return falls by £1.15bn to £5.40bn under the airline Alternative Business Plan (ABP) H8 proposals. The impact of establishing precedent at H8 is likely to lead to inappropriately and persistently higher returns in future price controls.

This report provides an indicative pre-tax real (CPIH) WACC of 4.68%, which suggests that a lower WACC than the CAA estimate is most appropriate for H8. Adopting the indicative WACC would reduce charges by £3.02 per passenger¹.

¹ The airlines ABP pre-tax real (CPI) WACC estimate from November 2025 of 4.83% is also materially lower than the H8 IPs pre-tax real WACC of 5.87%. Long-term CPIH expected to exceed long-term CPI is a reason why a real CPIH WACC may be lower than a real CPI WACC. The CAA's decision equates to an extra +£2.64 per passenger versus the airline ABP.

1. PRINCIPLES FOR SETTING THE COST OF CAPITAL

Before turning to our specific recommendations, we address the principles relied on by the CAA in its H8 Initial Proposals².

1. Regulatory stability and predictability with previous CAA decisions

'We retain our approach from the H7 price control, unless there is a clear reason why this would not be appropriate.'

2. Consistency with other UK regulators where possible

'We align our approach with the UKRN cost of capital guidance, unless there is a clear reason why this would not be appropriate.'

3. Thresholds for subjective judgement

'Where it is practicable and reasonable, we have sought to simplify our approach and avoid relying on approaches that rely excessively on subjective assumptions.'

We agree with the intent of those principles set out by the CAA. The concern we have is how these principles have been applied in the H8 IPs. Each principle requires an element of regulatory judgement as to what amounts to a clear reason for change and what amounts to excessive subjectivity. In our view, the regulator has applied those judgements in the IPs inconsistently and, in doing so, fails to adopt approaches likely to produce materially better estimates, as the regulator is required to do in accordance with its duties under the Civil Aviation Act 2012.

1.1. RELEVANCE OF PREVIOUS CAA DECISIONS

Principle

Regulatory stability and predictability matter and are a duty on the regulator under the Civil Aviation Act 2012. They should be pursued primarily through consistent principles, not through preserving particular methods or parameter estimates where the evidence shows there is a materially better alternative.

The CAA, as regulator, should keep under review whether its existing methods still best give effect to those principles. The fact that the CMA did not find the CAA 'wrong' at H7 does not establish that the H7 approach was the best available approach, or that it remains the best approach for H8. The CMA repeatedly emphasised that H7 was decided in highly unusual circumstances following COVID-19.

We are now not in those same circumstances. The data and market conditions now facing the CAA are materially different from those relevant to H7 and the CAA should adjust its approach in line with the new data and market conditions.

Consistency across decisions, sectors and time is desirable, but consistency is not achieved by merely repeating an earlier method without testing whether it remains fit for purpose in different circumstances.

Application

Two examples illustrate this point.

- First, the CAA retains notional gearing at 60% on the basis that there is no clear reason to change it, notwithstanding that other regulators have not only considered but have changed their approach in other sectors.
- Secondly, the CAA proposes to move from a notional to an actual approach to debt allowances.

² All quotes are from CAA (2026) H8 Initial Proposals: Section 3, p.14.

In our view, the CAA has not identified stronger reasons for moving to an actual debt approach than for revisiting notional gearing. That is difficult to reconcile with consistent application of the principle of stability and predictability.

The same concern arises in relation to relative risk and the threshold for judgement. We address that further below. It is another respect in which the H8 IPs depart from a stable and predictable application of regulatory principle.

1.2. CONSISTENCY WITH UKRN GUIDANCE

Principle

The UKRN 2023 guidance seeks greater consistency between regulators while recognising that cost of capital assessments must reflect sector-specific factors. The guidance states³:

‘Estimating the WACC involves judgement where there are different possible approaches to estimate many of the cost of capital parameters. In some cases, differences between methodological approaches applied will be due to sector specific issues... It is not expected that the outcomes of this taskforce will result in complete alignment on all aspects of the cost of capital by all regulators, as there are key sectoral differences that will require bespoke approaches from regulators.’

That point is especially important for beta, particularly in aviation as the UKRN notes⁴:

‘Betas can change over time reflecting macroeconomic factors whose impacts may vary between sectors because of the form of the control, changes in the composition of the market portfolio and changes in regulation. For instance, share prices of airports have been affected quite differently to the share prices of water companies by the COVID-19 pandemic.’

Heathrow is not a water or energy network. The regulatory task is therefore not to mirror methods used in those sectors, but to adopt methods that properly reflect Heathrow’s circumstances.

Application

The CAA has made two methodological changes from H7 that, in our view, do not adequately reflect the different context of H8 and the differences between Heathrow and the water and energy sectors. It has also retained an assumption that we consider applies a different standard.

- The first change is from a notional to an actual cost of debt. Ofwat and Ofgem use industry balance sheet approaches that assess actual debt costs across a sector in order to set a sector-wide allowance. The regulators use an industry approach to estimate an efficient cost of debt. This is markedly different from regulation of a single regulated asset with one comparator. The CAA now proposes an actual cost of debt approach for HAL, although it is a single company. The IPs approach would effectively be a pass-through of actual costs and significantly weaken incentives on the company to raise debt efficiently, to the significant disadvantage of airport users. Furthermore, stakeholders also do not have access to the underlying debt cost information needed to test the resulting allowance.
- The second change is to rely on unadjusted 2-year and 10-year OLS betas. The CMA concluded in PR24 that unadjusted OLS betas were appropriate in the water sector after considering the effect of the COVID-19 period. The CMA concluded at H7 that it was appropriate for the CAA to not use unadjusted OLS betas in light of the COVID pandemic. As set out above, the UKRN has expressly recognised that aviation was affected differently. In those circumstances, an approach that deals properly with those sector-specific

³ UKRN (2023) UKRN guidance for regulators on the methodology for setting the cost of capital.

⁴ UKRN (2023) UKRN guidance for regulators on the methodology for setting the cost of capital.

features would be more consistent with the UKRN guidance, even if it differs from the approach adopted in water.

- The CAA has decided not to change the notional gearing assumption and has instead retained a 60% notional gearing assumption. This sits uneasily with UKRN guidance and with recent regulatory practice, where Ofwat and Ofgem have reduced notional gearing to provide an appropriate equity buffer, with Ofwat reducing notional gearing from 60% in PR19 to 55% in PR24 (endorsed by the CMA) and Ofgem reducing notional gearing from 60% to 55% in RIIO-T3. Similarly the Utility Regulator in Northern Ireland has also reduced notional gearing from 60% to 55% in its RP7 determination in 2024.

1.3. THRESHOLDS FOR SUBJECTIVE JUDGEMENT

Principle

The cost of capital is not directly observable. There is no purely objective method that allows the data to 'speak for itself' without the application of some adjustment to take into consideration evidence and facts before the regulator.

That is particularly so for Heathrow, which is not publicly listed. Method selection, evidence, the range and the point estimate to select within that range are all matters which will be driven by the evidence and approach which the regulator takes in the exercise of its duties. It is therefore wrong to subject a relative risk adjustment to a materially higher evidential threshold than other decisions embedded elsewhere in the cost of capital assessment.

We make three specific propositions consistent with this:

- Selecting the lower bound of a 0.50–0.60 range is economically equivalent to selecting the midpoint of the range and then applying a 0.05 downward adjustment. The evidential threshold should therefore be the same.
- A decision applied to a single parameter should be subject to the same evidential threshold as a decision applied to the overall cost of capital.
- An upward adjustment or 'aiming up' should be subject to the same evidential threshold as a downward adjustment or 'aiming down'.

The CAA's treatment of the TRS mechanism is itself a useful example of effective application of this evidential burden. At both H7 and H8 IPs, the CAA applied an adjustment to beta for the TRS where that produced a materially better estimate than a zero adjustment.

Application

In the H8 IPs, the CAA does not apply a downward relative risk adjustment to comparator betas. It says that such an adjustment would require a high evidential threshold. FTI similarly refers to not making a relative risk adjustment where risks cannot be meaningfully isolated and quantified.

In our view, that threshold for adjustment is materially more demanding and onerous than the threshold the CAA and other regulators apply elsewhere. That is apparent from four sources:

- other CAA decisions in H8;
- previous CAA decisions;
- decisions by UK regulators, including the CMA; and
- decisions by international aviation regulators.

In each of those areas, regulators have exercised their judgement in making adjustments on evidence that is no stronger, and often no more quantifiable, than the evidence that would support an appropriate relative risk adjustment here.

Table 1.1: Examples relevant to the evidential threshold

Relevant	Examples of applying judgement
CAA H8	<ul style="list-style-type: none"> • Asymmetric risk allowance: The CAA set an allowance based on the probability of a COVID-like impact in future, with one such outbreak is all of history and no evidence on repeatability / investor behaviours on repeatability. • TRS impact on beta: The CAA make assumptions for the share of differences in empirical airport and utility network betas that are due to traffic and how those are impacted by the TRS mechanism.
CAA previous decisions	<ul style="list-style-type: none"> • NERL NR23 IPs: The CAA disregarded the top-half of the comparator beta range based on an assessment of NERL's risk against airport comparator groups. • H7: The CAA considered that Heathrow's pre-pandemic beta was 0.50, the lower part of their empirical range, with a statement that the pandemic had increased the top end of the risk range by up to 0.10. • Q6: The CAA adjusted comparator group betas for AdP and Fraport groups downward to reflect risk characteristics relative to Heathrow. The CAA set different betas for Heathrow and Gatwick Airports to reflect risk differences. • Q5: Assessing risk differentials in setting the cost of capital across regulated airports.
UK regulators	<ul style="list-style-type: none"> • CMA PR24: The CMA aims up by 30bps on the cost of capital based on broad assessment of consumer welfare effects and cross-checks. • Ofwat PR24: Ofwat applied a 28bps uplift on the cost of capital on a similar basis. • Ofgem RIIO-3: Adopting the upper TMR estimate via 'rounding up' to 1d.p, inclusion of European energy betas to reflect RIIO3 risk assessment, and truncation of beta range. • CMA SONI: Determination of asset betas in the absence of listed comparators.
International aviation regulators	<ul style="list-style-type: none"> • IAA - Dublin: Used weighted betas and aiming up above the mid-point. • ART – Paris airports: Aimed down in the range to reflect risk characteristics. • Dutch Min. of Infra – Schiphol: Used lower beta from two methods to reflect risk.

These examples show the relevant point. Regulators, including the CAA and CMA, routinely make adjustments to arrive at what they consider to be the best available estimate. There is therefore no principled basis for treating a relative risk adjustment as uniquely restricted by the evidential threshold invoked in the H8 IPs.

2. RECOMMENDATIONS

2.1. APPLY A DOWNWARDS RELATIVE RISK ADJUSTMENT (#1)

The CAA has applied no relative risk adjustment from empirical beta comparators for HAL's H8 asset beta.

A downwards relative risk adjustment would in our view would represent a materially better approach than no adjustment⁵.

- An adjustment is justified by the significant risk differences between comparators which the CAA has chosen and HAL.
- The application of a risk adjustment is consistent with CAA precedent, the CAA's evidentiary bar in other H8 proposals and the approach adopted by other regulators e.g. CMA (see Section 1).

The CAA uses empirical betas from four comparators: AENA, AdP, Fraport and Zurich. These are airport comparator groups rather than singular airport hubs and are therefore not direct comparators with HAL and would require adjustment in order to be appropriate for use in setting the beta.

- For example, AENA has 46 Spanish airports with the average annual number of passengers per airport of 7m (equivalent to Glasgow or Belfast Airports)⁶. AENA does not equal Madrid or Barcelona. AENA's Spanish airports had 321m passengers 2025, compared to 302m in the UK.
- If the CAA was regulating all UK airports, we would not expect that the asset beta for each airport would be the same as Heathrow Airport. The primary reason for this is linked to traffic. Heathrow has materially lower traffic volatility, more competitive power and an effective capacity constraint. Because of these differences, we would expect the CAA to set a lower asset beta for Heathrow.

The French Aviation Regulator, the ART, recently said this in relation to comparators⁷:

"The choices made by ADP in estimating the beta also result in a high end of the range. The sample of comparables selected, comprising AENA, ADP, Fraport (Frankfurt) and Flughafen Zürich, appears to be both particularly limited and focused on companies engaged in diversified activities, including in particular commercial activities or holdings in international airports.

The Authority points out that a broader and more balanced sample, including operators with a narrower scope of activities, provides a more accurate estimate of the risk within the regulated sector by limiting the upward bias associated with diversified groups."

All comparators used by the CAA are dual till not single till comparators. Comparator empirical betas reflect non-aeronautical activities. Those non-aeronautical activities are riskier under a dual till framework. The CAA should make a downwards relative risk adjustment this for the single till at HAL.

Other regulators have excluded data to control for differences in risk. As examples, Ofwat excluded historical time periods for Pennon when the beta was influenced by non-regulated activities and Ofgem only used pure play regulated European networks. The CAA is not able to adopt this approach due to limited comparators, but needs to properly control for risk differentials through options that it does have available.

⁵ This relative risk adjustment can be estimated in the round, rather than including specific adjustments for individual factors.

⁶ Bologna Airport, with 11m+ passengers in 2025, had >50% extra passengers than the average Spanish Airport in 2025.

⁷ ART (2026) Opinion no 2026-30 of April 9, 2026. Available [here](#). Quote is machine translated from French original.

At H7, the CAA both assessed theoretical grounds for a relative risk assessment and quantified the impacts of relative risk with respect to beta, stating⁸.

“We consider that the pandemic has narrowed the risk differential that previously existed between HAL and comparator airports. This is because HAL previously benefitted to a greater extent than other airports from excess demand (supported by capacity constraints) that insulated it from volatility in unconstrained demand. In the context of the pandemic, we do not expect that HAL will benefit from substantially greater excess demand than other airports in H7. We estimate that this effect increases HAL’s asset beta by 0.10 at the upper end of the range.”

The CAA’s H7 decision stated that *“the pandemic has effectively eliminated the risk differential that previously existed between HAL and comparator airports,”*⁹ in determining to not apply an adjustment.

Given that the capacity constraint is effective for Heathrow at H8, all else unchanged, a roll-forward of the H7 approach in our view would involve a downwards relative risk adjustment from the 0.60 empirical asset beta. We have not seen any convincing rationale for why the CAA has not made an adjustment.

FTI state the following for H8¹⁰:

“HAL is expected to remain capacity constrained under a two-runway solution in line with its pre-pandemic operations. This implies that the company’s risk profile (based on passenger volumes), has lowered since H7 and is largely unchanged from the previous price control (Q6).”

The CAA set out in the H7 decision that the Heathrow pre-pandemic was 0.50. The FTI statement implies that Heathrow’s risk profile should be largely unchanged at H8 relative to pre-pandemic, i.e. close to 0.50. Yet no adjustment has been applied by the CAA.

It is unclear why – whether a) it is due to the CAA adopting a different perspective / threshold for applying a relative risk adjustment, or b) whether the CAA assess that the relative risk differential is now zero.

We consider that both potential justifications would be in error.

- The former is damaging with respect to regulatory predictability and stability, with inconsistency not just over time but across the H8 judgement.
- The latter is problematic as the advice is clear that Heathrow’s risk at H8 is lower than H7. This implies that the only reason for no adjustment is a reduction in comparator airport risk to equivalence.
 - If this is the case, the CAA should be placing weight on short-term betas, not long-term 10yr betas.
 - The logic for no adjustment is clearly inconsistent with the CAA’s empirical beta estimation.

Relative risk is discussed in more detail in Appendix B. For our indicative WACC estimate (Appendix E) we include a relative risk adjustment of -0.075 to the asset beta.

⁸ CAA (2022) H7 Final Proposals, Section 3.

⁹ CAA (2022) H7 Final Proposals, Section 3.

¹⁰ FTI (2026) Initial Proposals for the H8 Cost of Capital, p.62.

2.2. CHANGE APPROACH TO EMPIRICAL BETA ESTIMATION (#2)

The CAA should place less weight on unadjusted spot OLS regressions – in particular the 10yr OLS regression output – and should instead use empirical beta methods that better reflect two features of the airport comparator evidence: airport betas vary over time, and OLS estimates are materially affected by unusual observations.

The CAA's H8 Initial Proposals use spot 2-year and 10-year OLS regressions to derive an empirical asset beta range of 0.47 to 0.70, with a midpoint of 0.59.

The appropriate empirical method depends on two questions.

- First, should the true beta be treated as constant over time, or have airport betas changed materially?
- Secondly, are the regression results materially distorted by high-leverage observations or outliers?

We discuss the evidence from these in detail in Appendix C.

The evidence indicates that comparator airport betas are not constant. The CAA's own empirical asset beta estimates differ materially across different time periods, while analysis conducted by Professor Mason and structural break analysis support a conclusion of airport betas that change over time. This is consistent with the CAA's qualitative discussion of risk at comparators.

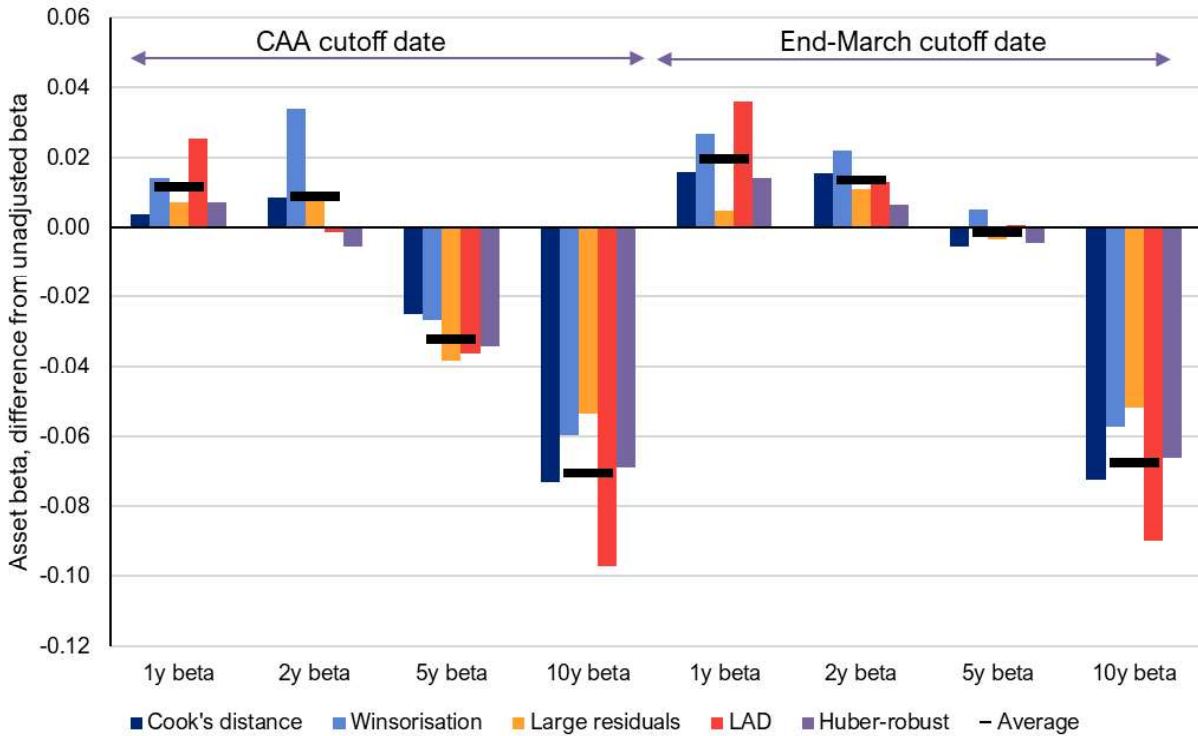
A view that airport betas are not constant supports giving more weight to prevailing evidence or using techniques to manage changes over time.

The evidence also indicates that unadjusted OLS is affected by unusual observations. Rolling betas, non-overlapping beta estimates, scatter plots and Cook's distance analysis all support the same conclusion: a small number of observations have a disproportionate effect on airport beta estimates. Appendix C identifies March 2020 and November 2020 as particularly influential, reflecting the onset of the COVID-19 pandemic and the vaccine announcement. The impacts from 'Liberation Day' and US trade policy in April 2025 is also visible, but is of a magnitude less than the COVID related shocks.

The finding of a disproportionate impact from a small number of data points is consistent with the CAA's own reasoning at H7. At that review, the CAA did not rely on unadjusted OLS because COVID-period observations could dominate the beta estimate and overstate forward-looking systematic risk. That concern has not disappeared, and those influential observations remain within the 10-year estimation window used for H8. Returning to unadjusted 10-year OLS therefore requires a stronger justification or explanation than the CAA has provided.

The impact of the distortion is material. Appendix C shows that outlier-mitigation techniques reduce the 10-year asset beta by c.0.07. By contrast, the downward bias in short-term (e.g. 2-year betas) is much smaller and does not offset the upward bias in the 10-year estimate. This indicates that the CAA's upper bound is too high and that the two ends of the range balance each other.

Figure 2.1: Results from robust regressions to control for outliers



Source: CEPA analysis of Bloomberg data

In Appendix C, we propose three techniques to address both issues. The materially better approach should place greater weight on prevailing beta estimates where the quantitative and qualitative evidence supports non-constant airport betas. It should also use objective and symmetric methods to reduce the effect of influential observations, rather than relying on unadjusted OLS or subjective exclusion of individual data points.

- The CAA could place greater weight on short-term spot OLS estimates, particularly 2-year and 5-year estimates¹¹. Using an end-March 2026 cut-off, those estimates support an asset beta range of **0.45 to 0.56**.
- The CAA could use robust regression techniques. Appendix C considers influence-based deletion using Cook's distance, residual-based deletion, winsorisation, least absolute deviation and Huber-robust regression. These methods apply transparent rules to reduce the influence of high-leverage observations. They support a range of 0.46 to 0.56 for 2-year and 5-year estimates, or **0.46 to 0.61** if 10-year estimates are included.
- The CAA could use time-varying beta models, such as GARCH. A GARCH model directly reflects changes in volatility in company and market returns, and is therefore well suited to periods where risk conditions have changed. The GARCH results in Appendix C support an empirical asset beta range of **0.48 to 0.55**.

These three methods point in a consistent direction. The results suggest that the CAA's 0.47 to 0.70 empirical asset beta range is too high, especially the upper bound. A range of **0.45 to 0.61** covers the full breadth of data. More recent estimates may better support the lower parts of the range, while longer evidence (including non-overlapping betas, robust regressions and structural break analysis) may better support the upper part of the range.

¹¹ The 5yr recommendation is contingent on the November 2020 vaccine announcement having left the estimation window sample.

2.3. REMOVE MARKET-CAP WEIGHTING ON BETA AGGREGATION (#3)

Where multiple comparators are used, the regulator must decide how to weight them. The CAA presents both simple averages and market-cap weighted betas across the four comparator airports.

In our view, the CAA errs in relying upon market-cap weighted betas. Market capitalisation is affected by each comparator's capital structure. That makes it an inexact basis on which to weight asset betas because it gives undue weight to comparators that have selected lower geared capital structures.

The point can be illustrated simply. Assume two companies are equally valid comparators and have the same enterprise value. If Company A is geared at 25% and Company B at 75%, Company A will receive three times the weight of Company B under a market-cap weighted approach because it has three times as much equity value. There is no principled reason why a lower-geared firm should receive greater weight for that reason alone.

The problem is more acute in H8 for four reasons.

- First, the CAA's notional gearing assumption is 60%. A market-cap weighted approach places greater weight on lower-geared comparators. That means the resulting asset beta depends more heavily on the theoretical re-levering step from comparator gearing of around 20% to 60%.
- Second, AENA's asset beta may be overstated if investors expect future gearing to be higher than historical gearing. A market-cap weighted approach places more weight on AENA.
- Third, AENA receives around 50% of the total weight under the market-cap weighted approach used by the CAA. AENA has the highest asset beta of the four comparators under both the 2-year and 10-year OLS specifications – suggesting it is not a balanced interpretation of empirical beta evidence. The CAA reports AENA gearing of 17% for the 2-year beta and 24% for the 10-year beta – materially different from the average comparator gearing and the CAA's H8 IPs notional gearing assumption.
- Fourth, the reasons for higher weight at AENA – i.e. a larger market cap because it is a group with 50+ airports – actually makes it less suitable as a comparator, given the additional need to control for relative risk.

On the CAA's own specifications, market-cap weighting increases the comparator asset beta by around 0.03 under both the spot 2-year and spot 10-year OLS estimates. In practice, that inflates the upper bound of the empirical range, producing an upper bound of 0.70 rather than 0.67.

2.4. RE-CALCULATE TRS ADJUSTMENT (#4)

We support the use of the TRS adjustment applied by the CAA. The CAA has not set out why it considers a 90% differential to be appropriate for the ‘low’ and 70% differential for the ‘high’ case. This generates a smaller adjustment than using applying either a mid-point value or using 70% in the ‘low’ case and 90% in the ‘high’ case, both refinements that we consider to be materially better alternatives.

The CAA’s approach leads the post-TRS mid-point asset beta (using CAA inputs) of 0.50 rather than 0.49 if the ‘low’ and ‘high’ values are switched.

We do not challenge the individual inputs in this example (i.e. we use entirely all CAA inputs), only the application of the 70% to 90%.

Table 2.1: Comparison of CAA and revised IPs approaches – only using CAA’s inputs

Factor	CAA low	CAA high	Revised low	Revised high
Pre-TRS asset beta for notional airport	0.47	0.70	0.47	0.70
Asset beta for network utilities	0.36	0.36	0.36	0.36
Proportion of difference explained by traffic risk	90%	70%	70%	90%
Asset beta for hypothetical airport with no traffic risk	0.37	0.46	0.39	0.39
Proportion of risk mitigated by TRS mechanism	50%	50%	50%	50%
Impact of TRS	0.05	0.12	0.04	0.15
Post-TRS asset beta for notional airport	0.42	0.58	0.43	0.55

Source: CEPA analysis of CAA.

The Revised IPs approach is a materially better alternative because:

- The hypothetical airport with no traffic risk is consistently 0.39 in both low and high cases, rather than a very broad range of 0.37 to 0.46.
- The 0.46 for an airport with no traffic risk under CAA assumptions is very close to the 0.47 pre-TRS asset beta for an airport facing full traffic risk. We do not consider this credible (i.e. a zero traffic risk airport should not be >0.10 higher than a network utility beta).
- The alternative approach involves a consistent non-traffic risk differential of 0.03 (i.e. 0.39 minus 0.36) between both the low and high cases, rather than 0.01-0.10 in the CAA’s calculations (i.e. 0.37-0.46 minus 0.36).

2.5. ADOPT A NOTIONAL APPROACH FOR DEBT ALLOWANCES (#5)

An actual debt approach is materially weaker than a notional approach for Heathrow and is hard to justify given the CAA's duties to users of airport services.

- First, it has poor incentive properties. Where there is just one regulated company, an allowance based on actual debt costs operates as a pass-through once embedded. That weakens incentives to minimise financing costs and increases the likelihood of higher charges due to those incentive properties.
 - The CAA itself states that¹²: *“There is a limited incentive on HAL to issue senior debt efficiently, since the cost of new senior debt would effectively be passed through to consumers once it became embedded debt in future price control periods.”*
- Second, it lacks transparency. In sectors where regulators have adopted an industry balance sheet approach, they have set out the underlying debt instruments and shown how the allowance has been derived. That has not been done here. Heathrow no longer publishes quarterly estimates of its cost of debt, as it did in earlier price controls. Stakeholders therefore cannot test the proposed allowance adequately.
- Third, Heathrow-specific features make an actual debt approach particularly unreliable.
 - Heathrow's actual gearing materially exceeds the notional gearing assumed by the CAA. Debt costs will therefore reflect Heathrow's financing choices, not merely the costs of an efficient notional company with a gearing equivalent to the notional gearing which would result in a lower cost of debt because of a larger equity buffer.
 - Heathrow has a substantial share of non-GBP debt, which makes cost estimation more complex – especially in the absence of cross-currency swaps linked to specific debt instruments¹³.
 - The inclusion of junior debt appears to reduce Heathrow's actual cost of debt in the H8 Initial Proposals. While we agree with such an approach, the results are counterintuitive and itself suggests caution in estimating efficient debt costs based on timing of senior debt.
 - Heathrow has bonds novated from BAA Airports following restructure, which adds complexity.

The choice matters in the longer term, particularly in light of what are expected to be significant costs associated with expansion. An actual debt approach at H8 would create an expectation that future debt costs will also be passed through and embedded in future price controls. If expansion proceeds, Heathrow may need to issue substantial further debt. In those circumstances, a weak approach creates a real risk of higher gearing and windfall gains to equity from substituting debt for equity while continuing to be compensated for the higher gearing, which could be seen as a double recovery. It also reduces financing risk which should be reflected in the level of return in relation to a single regulated company setting.

FTI suggests that the cost of debt could revert to a notional approach in less volatile conditions. Yet FTI also say that the beta methodology changes at H8 because conditions are now less volatile. Those positions are difficult to reconcile.

The fact that a notional debt approach requires judgement is not an appropriate reason not to apply such an approach. It is not clear that using an actual debt approach materially reduces judgement, especially given the issues above and the treatment of non-GBP debt through GBP-equivalent values, which itself differs from the CAA's H7 approach.

¹² CAA (2026) H8 Initial Proposals: Section 3, para 9.247.

¹³ We understand that Heathrow adopts a 'portfolio-level' approach to cross-currency swaps.

We have been limited in our ability to interrogate the cost of debt approach due to citations of confidentiality on the underlying data used to estimate the cost of debt. The airlines have requested access to the underlying data from the CAA if the preferred methodology is to use allowance based on actual debt costs.

We note problems in how Heathrow's actual cost of debt has been estimated, including:

- For Heathrow's floating rate debt, FTI has converted the floating rate exposure into a fixed rate. The fixed rate that is used is the iBoxx 10yr+ index, implying that the debt has tenor of c.18yrs. We have not been provided information on Heathrow's floating rate debt, but expect that the tenor will be less than 18yrs and a shorter tenor benchmark would be a materially better alternative.
- Floating rate debt also is estimated using a Heathrow-specific premium with the primary issuance premium fixed at 12bps and a moving secondary issuance premium. We discuss in the next recommendation why we have concerns over the Heathrow-specific risk premium generally, and in this case the moving premium over time is weaker as it relies on an even smaller subset of Heathrow bonds.
- FTI refers to a 20-year investment horizon and appears implicitly to assume a 20-year trailing average for 20-year debt. This assumption raises two issues.
 - First, it sits uneasily with the CAA's own relative risk assessment. Previous evidence submitted by CEPA to the CAA at H7 showed comparator airport debt issuances were most often around an average tenor of c.8-10 years. If Heathrow can be assumed confidently to raise 20-year debt, that implies lower risk in spite of the CAA's position on no relative risk adjustment.
 - Secondly, it is inconsistent with regulatory precedent. At H7, the CAA used a 13.5-year trailing average to reflect embedded debt costs.
- The assumptions on tenor and Heathrow-specific premium inform an assumption of debt to be issued between end-2024 and the start of 2027.

If the CAA reverts to a notional debt allowance, the detailed assumptions will still require careful consideration and some of the above issues remain items that will need to be addressed.

2.6. REMOVE HEATHROW-SPECIFIC PREMIUM ON COST OF NEW DEBT (#6)

We consider that the analysis conducted to estimate a +12bps Heathrow-specific premium on primary issuances is not robust and no adjustment represents a materially better approach.

We highlight seven inaccuracies / factual issues or errors in methodology with the CAA's IPs:

- **Mix between notional and actual approaches:** The CAA and FTI, in our view, do not apply the notional company principle consistently. FTI says that differences between actual financing costs and benchmark indices should only be reflected where they are relevant to the notional company, and notes that actual costs may be affected by leverage or financing choices that are not relevant to the notional company. Yet it still derives the premium from Heathrow's own debt, despite Heathrow's actual (senior debt) leverage being 72% versus 60% notional and despite recognising that Heathrow's securitisation structure may affect its financing costs.
 - FTI also notes that Heathrow's whole business securitisation structure may reduce financing costs, and that these effects are difficult to disentangle. If Heathrow's actual debt costs are shaped by a financing structure that differs materially from the notional company, they are equally a weak basis for a premium to apply for Heathrow.
- **Limited sample size:** The evidence on primary issuance to justify premium is weak and heavily dependent on eight Heathrow issuances with over 40 debt instruments setting Heathrow's actual cost of debt. FTI acknowledges that primary issuance analysis is only a snapshot, may not reflect current market conditions, and is based on limited data. Heathrow issued only four relevant bonds between 2020 and 2024, during a volatile post-pandemic period. Despite this, FTI still relies on an issuance premium of around 12 bps, which is the main driver of the overall 10 bps Heathrow-specific premium.
- **Tenor:** The CAA and FTI erroneously ascribe a premium to Heathrow debt that is driven by failure to properly control for tenor in the limited sample of eight bonds used. The benchmark index used has average (blended) of 18yrs according to FTI. The average tenor of the Heathrow bonds used are 29-31yrs. We consider that the longer tenor could drive a yield that is higher than the FTI benchmark by the size of the primary issuance premium.

Table 2.2: Evidence on bonds used in FTI debt premium analysis

Bond issuance	Tenor at issue (yrs)	Value
May 2011	30	£750m
Oct 2013	33	£750m
Jun 2014	20	£50m
Aug 2016	33	£400m
Sep 2018	27	£55m
Aug 2022	25	£60m
Nov 2023	32	£70m
Nov 2023	33	£70m
Simple average	29	
Weighted average	31	

Source: CEPA analysis of FTI.

- **Sub-benchmark size:** Several of the bonds relied upon are sized at £60-70m. These sub-benchmark issues may attract an illiquidity premium which FTI and the CAA are falsely attributing to a Heathrow premium that applies to all debt¹⁴.
- **Gearing:** Heathrow's gearing has been materially higher than the CAA's notional gearing assumption. Use of a Heathrow-specific premium from actual debt transfers risk from capital structure choices from Heathrow to consumers. This is inappropriate.
- **Consistency with secondary market analysis:** FTI's secondary market analysis does not indicate a material Heathrow premium. The positive uplift applied by the CAA is driven mainly by snapshots of historical issuance evidence, not by current secondary market trading. FTI's analysis shows a secondary market discount (i.e. negative premium) of around 1 bp relative to the benchmark, meaning the case for a positive premium rests mainly on Heathrow's historic issuance data rather than on current evidence.
- **Threshold for rejecting approaches:** The "balance-sheet-led" approach in H8 for cost of embedded debt marked a departure from the "notional" approach used in H7. The CAA suggests that the H7 notional approach was difficult to calibrate under H8 conditions, given higher interest rates and the planned RPI-CPIH alignment. We consider that this is less challenging than estimating a Heathrow-specific premium from a sample of just eight bonds and is therefore inconsistent in the thresholds being applied across the estimation of the cost of capital.

A more coherent and materially better approach is to rely on benchmark indices without a Heathrow-specific adjustment¹⁵.

¹⁴ For example, NERA – on behalf of the ENA – indicated that sub-benchmark size debt could carry a premium of c.50bps over benchmark size debt. Source: https://www.northernngasnetworks.co.uk/wp-content/uploads/2024/12/NERA_ENA_Additional-Cost-of-Borrowing_220224.pdf

¹⁵ The evidence also appears more supportive of a negative adjustment than a positive adjustment.

2.7. REMOVE OUTTURN INFLATION INDEXATION FOR NOMINAL FIXED RATE DEBT (#7)

We recommend that outturn inflation indexation is removed for fixed rate debt for HAL.

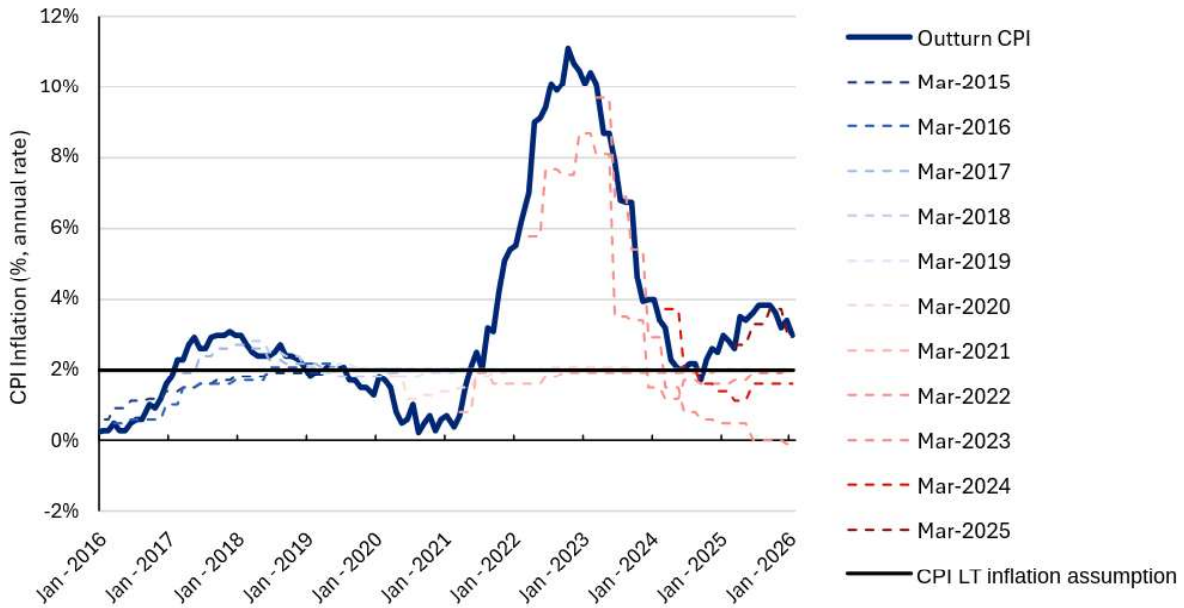
The airlines' ABP proposal includes a materially better method for compensating debt costs for inflation. Under that approach, the nominal debt cost is still deflated by expected inflation, but the same expected inflation is used for RAB inflation indexation (rather than using outturn inflation). This applies to fixed rate nominal debt.

Experience since the start of H7 shows why that issue matters. Outturn inflation has been materially less anchored to long-run averages and to the Bank of England's 2.0% CPI target than it was over much of the period since 1997. Differences between expected inflation embedded in allowances and subsequent outturn inflation created what Ofgem has described as an 'inflation leverage effect'. Ofgem responded by moving to a semi-nominal cost of debt approach for RIIO-3.

There are two basic problems with applying the current approach.

- Expected inflation is difficult to estimate reliably.
 - There is no direct market evidence for CPIH, which is the CAA's preferred inflation measure. There is uncertainty over the wedge between CPI, CPIH and RPI across different periods.
 - There is no CPIH target equivalent to the Bank of England's CPI target.
 - The price control period of five years does not match the assumed investor horizon used for the risk-free rate and cost of debt (at least ten years).
 - Some estimators may include an inflation risk premium while others may not. That requires further assessment and analysis.
 - The 2030 RPI transition creates differences in the data that, in principle, should not arise.
- Outturn inflation can depart materially from expectations.
 - Recent experience shows greater volatility and sensitivity to shocks than was seen in the decade before the post-2022 inflation shock.
 - FTI says that it has 'not observed any bias in either the medium- or long-term inflation forecasts'. The basis for that view is not clear and would benefit from further analysis or assessment. Since 2022, forecasts have often assumed a faster return to target than outturn has delivered.

Figure 2.2: Outturn and forecast CPI inflation in recent years



Source: CEPA analysis of OBR forecast data. Note: Legend items refer to different forecast vintages.

A fixed-indexation approach would also give Heathrow greater certainty because its financing covenants are linked to the RAB.

Importantly, that approach would not be create intergenerational inequity in expectation or to change charges on an expected basis.

We agree with FTI and the CAA that we should not assume any additional compensation is provided by Heathrow to index-linked bondholders due to the transition in the RPI methodology used from 2030. Making an adjustment would be very subjective, not supported by decisions from other regulators and not linked to evidence.

2.8. REDUCE NOTIONAL GEARING (#8)

In our view, the CAA's use of a 60% notional gearing assumption is sub-optimal. A lower level of notional gearing would better reflect evidence and better support financial resilience.

UKRN Cost of Capital Guidance recommendation 9 states¹⁶:

"The notional gearing assumption should reflect the regulator's assessment of the balance of risks facing the regulated company, a wide range of benchmarks on gearing levels, and overall regulatory policy objectives - not just the gearing level of the actual company (or companies) in question."

The CAA and FTI propose a 60% notional gearing assumption for H8. That is:

- higher than the gearing of the airport comparator set, which the CAA estimate at 31-34%;
- higher than the gearing adopted by the CAA for NR23, where a similar comparator set was used; and
- higher than the notional gearing adopted by other UK regulators for companies they regard as facing lower risk and therefore requiring a smaller equity buffer.

Airport comparator gearing and NERL

On the CAA's own H8 2yr and 10yr comparator windows, average comparator gearing is 31–34%.

In its NR23 decision for NERL, the CAA used comparator airport gearing and stated¹⁷:

"Our approach for this Provisional Decision is to use a notional gearing of 34% for NR23 in setting the WACC, based on the observed gearing for the listed companies that are most comparable with NERL (i.e. AENA, Fraport and ADP)."

It is unclear why the CAA consider that the approach is appropriate for their most recent regulatory decision for NERL but for this to be given zero weight for the H8 IPs.

Comparison to UK regulatory decisions

Ofwat for PR24 reduced notional gearing from 60% to 55%. Ofgem also reduced notional gearing for the RIIO3 price controls for electricity transmission networks (from 60% to 55%). The water regulator indicated that a reduction to 55% gearing provides "sufficient headroom to reflect the risks faced by the company, and to provide a capital structure that allows efficient access to the debt market through an investment grade credit rating." The experience of Thames Water and with the potential for other regulated water companies to become sub-investment grade highlight the importance of financial resilience.

Ofwat, in response to the Independent Water Commission report (April 2025), highlighted that it considered that relying upon financiers to support financial resilience was sub-optimal¹⁸:

"Ofwat also lacked the power to impose changes to water company licences until 2021, which limited our ability to modify the regulatory framework over time. The licence conditions for financial resilience, in particular, were outdated. This, along with a broader prevailing view that company financial structures should be set by investors subject to the constraint of maintaining investment grade credit ratings, meant that there have been insufficient controls over water company financial arrangements."

FTI and the CAA have been influenced by the water sector in many areas. This is one area where the read-across is beneficial and has direct read-across. The COVID pandemic and the £300m RAB adjustment showed the

¹⁶ UKRN (2023) UKRN guidance for regulators on the methodology for setting the cost of capital.

¹⁷ CAA (2023) Economic regulation of NATS (En Route) plc: Provisional Decision for the next price control review ("NR23"), para 5.92.

¹⁸ Ofwat (2025) Independent commission on the water sector regulatory system call for evidence - Ofwat response.

importance of financial resilience, with HAL facing some degree of volume risk absent from regulated water companies. Energy and water networks are also protected by Special Administration Regimes, with no such regime existing for HAL. Highly leveraged structures therefore carry additional risk relative to other regulated sectors and should have a higher equity buffer.

The CAA has not changed notional gearing for HAL since before the 2008 Global Financial Crisis. Other regulators have evolved their approach and created processes to monitor financial resilience, following a perception that relying on the market to impose discipline is insufficient for publicly important regulated assets. The CAA should not rely on Heathrow's existing covenants to discharge its duties on financial resilience and consumer protection, with a reduction in notional gearing one positive step in the right direction.

Criticism of H8 approach

FTI's stated reasoning is as follows¹⁹:

"Given that HAL's risk profile is no higher than it was at the time of determining the H7 price control and likely lower, we propose to adopt a notional gearing assumption of 60%."

That reasoning is problematic in two respects.

- First, it assumes, rather than demonstrates, that the 60% assumption adopted at H7 was initially appropriate, notwithstanding the CAA's more recent approach in NR23 (in using much lower comparator gearing).
- Secondly, if risk is the relevant determinant of notional gearing, the CAA's use of a higher beta relative to regulated utilities suggests that notional gearing should be lower not higher for Heathrow. If the CAA retains 60% using the current logic, it should explain why the approach adopted by other regulators is overly conservative, or why Heathrow is materially different.

¹⁹ FTI (2026) Initial Proposals for the H8 Cost of Capital, para 5.21.

Appendix A **ADDITIONAL CONSIDERATIONS**

We note further considerations in this appendix, where CAA's H8 Initial Proposals depart from previous decisions.

#9. Beta comparator selection

Flughafen Zurich ('Zurich') is a materially weaker comparator than the other comparators used. We note issues around robustness of the data point and Zurich as a comparator group.

Similar to the other comparators used by the CAA, it is a group that owns and runs airports in Brazil, Chile, Colombia, Curaçao and India, in addition to Zurich Airport itself.

On robustness, we note currency issues between Zurich's national currency using the Swiss Franc and comparison to a European index, with use of a national relative index reducing beta significantly. We note that FTI has converted the indices into a common Euro-denominated basis, but this means that the beta is contaminated by CHF-EUR currency movements.

The form of regulation is endogenous and depends on the degree of market power. Higher market power is risk-reducing. The use of a price monitoring framework for Zurich therefore reflects lower market power (i.e. higher risk). This is highlighted by the CAA itself, when discussing Swiss International Air Lines operating a two-hub model out of both Zurich and Geneva, and competition with Munich airport as a hub.

If the CAA wishes to include Zurich as a comparator, certain adjustments would need to be made. We would recommend both a lower weight, use of a local index and potentially a larger relative risk adjustment.

We consider that Bologna is worthy of additional comparison as a potential beta comparator. Bologna has been included as a comparator by the ART in France for its determination on Paris airports, passing liquidity tests and being viewed as relevant. Inclusion of Bologna would reduce the CAA's H8 Initial Proposals by 0.02 to 0.05 on a simple average basis. We request that the CAA consider its inclusion as a relevant and appropriate data point.

#10. Use of upward-biased assumptions

Empirical betas rely on judgement and there is often no singular correct answer. However, we have concerns that the CAA's preferred methods lead to higher asset betas than under materially better alternatives – including use of net rather than gross debt, European rather than local or world indices, daily rather than weekly betas²⁰. We consider that a fuller evidence base should be reflected in the final point estimate selected; either through having relevant approaches form part of the evidence base, or through cross-checks that influence the point estimate selected.

For TMR, the CAA should include a CPI-deflated cross-check. A CPIH-based price control leads mechanically to a higher real TMR allowance than a CPI-based approach, because historical CPIH is lower than historical CPI while expected future CPIH is higher than future CPI. That produces both a higher real cash allowance and higher expected indexation.

A CPI-based TMR cross-check would help test that result and, given the uncertainty in the data, support a lower TMR estimate. As set out in the airlines' ABP response, CPI evidence is arguably more robust than CPIH evidence for this purpose.

- Between 1950 and 1988, owner-occupied housing costs, which are included in CPIH but not CPI, were estimated using a range of methods because of known methodological flaws. That creates material differences between CPIH and CPI over that period.
- From 1988 to 2005, CPI was produced as an official series, whereas CPIH for that period is based on a back-cast methodology. By its nature, that back-cast involves more judgement.

²⁰ As an example, we estimate that use of gross debt would reduce asset betas by 0.03-0.04.

#11. Interrogation of MAR evidence

The CAA's analysis suggests that investors in the 2024/25 transaction valued Heathrow at a MAR of 1.24 to 1.50. At the upper bound, this suggests that the investors value the cashflows from Heathrow at over £10bn above the RAB. The CAA has referred to this as a cross-check, but have not appeared to have drawn any inferences from this.

With Heathrow not listed, we consider that this evidence is informative at the scale stated by the CAA. If the CAA do not act at a level of potentially a 1.50x MAR, we do not consider that the MAR is actually being used as a symmetric cross-check.

#12. Pre-tax approach

The airline ABP discussed benefits of closer attention of tax allowances, rather than assume tax will be equal to the headline corporation tax rate. We consider that further attention is justified.

#13. Price control inflation base

The airline ABP discussed benefits from adopting a CPI real basis, rather than CPIH. We do not repeat those arguments, but note that this choice should ideally not create gains or losses. The CAA should consider, analyse and provide reasons why this has not been adopted ahead of Final Proposals.

#14. Review of specific statements or positions

There are a few areas in the H8 IPs where there is a statement made without necessarily clarity on why that decision had been adopted:

- COVID pandemic end-date: There is discussion of December 2021 as a cut-off date for the pandemic; it is unclear why this assumption has been adopted, as it does not fit with our review of empirical evidence.
- Debt tenor: A 20yr tenor has been assumed for Heathrow's debt, but there is no clear basis presented for this assumption.
- 'Capital market volatility': Greater clarity on what is meant here would be useful. We note that volatility is often driven by one-off spikes that are not predictable, so decisions driven by assuming current volatility prevails in the five year price control is problematic. Decisions should be robust to volatility.
- Rolling betas: OLS regressions do not afford equal weight to individual data points. Rejection of rolling betas due to weightings fundamentally gets wrong the basis for OLS regressions and we consider that rolling betas can have merit in assessing beta – especially when median values are used.

Areas of agreement

Our report has focused on recommendations for change, additional scrutiny of evidence and correction of errors to ensure a materially better alternative is adopted. We note that there are many areas of agreement in approach. We do not discuss these individual points separately.

Appendix B **RELATIVE RISK**

The CAA should make a downward adjustment to empirical betas to reflect Heathrow's lower relative risk. That adjustment can be implemented in different ways and those approaches can produce equivalent results. The CAA could:

- Truncate the upper part of the empirical beta range before selecting a mid-point (e.g. consistent with the CAA's NR23 Initial Proposals response).
- Make an explicit downward beta adjustment (e.g. consistent with prior CAA approaches for airports).
- Select a lower point within the beta or overall cost of capital range (e.g. consistent with the French ART's proposals for Paris Airports).

The CAA does not need to apply a single uniform adjustment across all comparators. If some comparators are materially riskier than Heathrow, the CAA can make larger adjustments to those comparators if that better reflects relative risk and better discharges its statutory duties.

General principle and other CAA decisions

As set out in Section 1, the CAA should not apply a higher evidentiary threshold to a downward relative risk adjustment than it applies to other judgement-based elements of the cost of capital. The CAA already uses qualitative judgement to allocate risk differentials between UK water and energy networks and European airport groups. The same type of judgement can and should be used to reflect differences between Heathrow and the comparator airport groups.

Empirical betas are not an objective answer that can simply be read from the data. They depend on adjustments to comparator groups, time periods and estimation methods. Those adjustments would affect the result.

That point is illustrated by the addition of AENA to the comparator set for H7 and H8. AENA has a higher asset beta than AdP and Fraport. If the CAA applies the same relative risk adjustment after adding AENA, the implied position is that HAL has become riskier relative to AdP and Fraport, despite no identified change in HAL's own risk.

The same logic applies if a listed airport group is removed from the sample. On the CAA's approach, HAL's relative risk and asset beta could change only because the sample changed. That is not objectivity; it is an artefact of specification. A relative risk adjustment is therefore needed to anchor the analysis to Heathrow's actual risk rather than to movements in the composition of the comparator set.

Incorrect focus on core airports only

The CAA should assess the risk of the comparator airport groups as groups, not only the risk of their core airports. The listed comparators derive their beta from all of their activities. AdP is not only Charles de Gaulle. AENA is not only Madrid and Barcelona. Fraport is not only Frankfurt.

The CAA therefore errs in focusing on core airports without proper adjustments for the difference in risk. That approach strips out a substantial part of the risk reflected in the observed betas of the listed groups. For example, if you were estimating the risk of investing in a restaurant in a town, you wouldn't focus just on McDonalds when there are another 50 restaurants in the same town. In effect, this is what the CAA is doing by focusing on just the core airport.

The CAA's attempt to show that non-core airports are not riskier is not persuasive. It relies on spot two-year beta estimates for Copenhagen, Vienna, Tuscany and Bologna and states that this "does not obviously indicate that these smaller airports exhibit a higher asset beta than the listed airport comparators that form the basis of our estimate for HAL."²¹

²¹ CAA (2026) H8 Initial Proposals: Section 3, p.27.

The analysis does not justify excluding most of the activities of the comparator businesses from the relative risk assessment.

The analysis is also internally inconsistent. The CAA has previously suggested that beta estimates for these airports are not robust and should not be used for beta estimation – for example, saying the following in relation to Copenhagen Airport: “*we remain of the view that its beta cannot be estimated reliably, and we do not include it in either comparator set.*”²²

The CAA cannot credibly rely on the same evidence to support the proposition that non-core airports are not materially riskier and reject a relative risk adjustment.

If the data points are robust, then the CAA has not indicated why they are not included in the core comparator set – the effect of which would be to reduce empirical betas. For example:

- Bologna’s empirical betas using 2yr / 5yr / 10yr horizons are closer to Fraport than Fraport is to AENA.
- Bologna is used by the French regulator, ART, as a comparator.
- The CAA logic in this discussion of core versus non-core implies a view that the smaller airports are not distinct in risk profile from larger airports, therefore there is no clear reason for rejection if the data point is considered robust.
- Where it finds a result it considers implausible, the CAA has not explored whether it is its choice of empirical method (e.g. 2yr spot OLS) or the underlying comparator that is driving the result.

Extending the restaurant risk example: this would be like disregarding the risk of other restaurants in the town because two non-McDonalds restaurants in a different town that have been open for two weeks have steadier sales. The underlying data is not robust and would not lead you to focus solely on McDonalds.

Capacity constraints

Capacity constraints reduce systematic risk. HAL is expected to be capacity constrained over H8. We understand the CAA and FTI to accept those propositions in principle.

As noted above, FTI state the following²³:

“HAL is expected to remain capacity constrained under a two-runway solution in line with its pre-pandemic operations. This implies that the company’s risk profile (based on passenger volumes), has lowered since H7 and is largely unchanged from the previous price control (Q6).”

The CAA H7 decision is that HAL’s pre-pandemic asset beta (i.e. Q6) is 0.50. The above statement suggests that at H8 the asset beta should similarly be 0.50 prior to the application of the TRS mechanism. The H8 IPs set a 0.60 pre-pandemic asset beta, 0.10 higher than this statement would suggest.

This is driven, in our view, by five errors, where the CAA:

- applies a higher evidentiary threshold here than it applies elsewhere in H8, in previous CAA decisions and in decisions of other regulators, including the CMA.
- focuses on current capacity constraints rather than expected capacity constraints over the estimation window, including the ten-year OLS window.
- focuses on single core airports rather than the airport group.
- has not presented a consistent assessment of capacity constraints across all four comparators.

²² See CAA (2022) H7 Final Proposals.

²³ FTI (2026) Initial Proposals for the H8 Cost of Capital, p.62.

- conflates high utilisation with capacity constraint.

The treatment of AENA illustrates the problem. At H7, the CAA did not appear to treat AENA as capacity constrained in a way that removed HAL's relative advantage. The H7 Final Proposals stated that (emphasis added by CEPA)²⁴:

"We estimate that HAL's pre-pandemic asset beta was in line with the level that we estimated at Q6 of 0.50. This is at the bottom of the range for the baseline asset beta estimated by Flint of 0.50-0.60 because HAL would have benefitted from excess demand in the absence of the pandemic. This would have insulated it from volatility in unconstrained demand to a greater extent than comparators, and led to a lower beta, all else being equal."

At Q6, the CAA applied a downwards relative risk adjustment to reflect the capacity constraint and the CAA's above quote suggested they saw no pre-pandemic differential at H7 (the Final Proposals were in June 2022).

At H8, the CAA references the CMA's RP3 Provisional Determination – a decision set out prior to the above CAA H7 Final Proposal – to support a case that capacity constraints at comparators were becoming binding before the pandemic²⁵. This was referenced in H7, but ultimately the decision reached was the statement set out above.

If we now consider that this is now the CAA's position, it must address the implications. If capacity constraints reduce systematic risk at comparators, the CAA should either make a relative risk adjustment to more historical data where no constraints were expected to be binding or place more weight on recent data. It has done neither. Additionally, the CAA note investment taking place that will alleviate capacity constraints at certain airports within the next five years – only part of the assumed 20yr investment horizon of investments in airports.

The CAA is also wrong to confine the analysis to core airports. The betas of the airport groups reflect all airports in the group. In our view, the core airports are generally less risky than the rest of the portfolio. An assessment limited to core airports therefore understates the risk reflected in the observed group beta.

The CAA's analysis is also incomplete. It does not provide a coherent view of capacity constraints across all four airport groups. For example, it says little about AdP and acknowledges that Zurich has some spare capacity.

Nor is high utilisation the same as capacity constraint. FTI refers to 87% utilisation at Charles de Gaulle as evidence that capacity constraints are more binding for comparators. That does not follow. A capacity constraint reduces both upside volatility and part of downside volatility where unconstrained demand exceeds available capacity. At 87% utilisation, neither effect necessarily arises.

Appendix D contains additional information on capacity constraints that clearly demonstrates that Heathrow faces binding capacity constraints that are more challenging to resolve than other hub airports from listed comparators (putting aside the issue of the overall group being the appropriate reference point).

The CAA also risks an uncontrolled-comparison error when it observes that Zurich has some spare capacity but lower betas than AENA and then infers that capacity constraints have not had a material effect. Differences in beta cannot be attributed to capacity constraints without controlling for other drivers of systematic risk.

²⁴ CAA (2022) H7 Final Proposals, Section 3.

²⁵ The CMA RP3 statements are typically in relation to constraints for particular type of aircraft, rather than a statement that the airports within the comparator groups were capacity constrained.

Traffic volatility and 'Core' vs Group dynamics

The evidence on traffic volatility supports a downward relative risk adjustment. In the airline ABP, we presented traffic volatility for Heathrow and the comparator airport groups over 2013–24. The purpose of that analysis was consistent with the approach undertaken by PwC for the CAA at the start of H7²⁶.

Table B.1: Heathrow and airport group traffic volatility measured as the std. dev. of changes in passenger traffic volumes (2013-2024)²⁷

Core / Non-core	Heathrow	AdP	Fraport	AENA ²⁸
Non-core airports	2.3%	14.4%	10.9%	24.1%
Core airports ²⁹		2.8%	2.2%	6.1%
Simple average ³⁰	2.3%	8.7%	10.8%	16.8%
Weighted average ³¹	2.3%	13.2%	14.6%	6.6%

Source: CEPA analysis of airport published traffic statistics.

The analysis shows three things:

- Heathrow has materially lower traffic volatility than the comparator airport groups.
- the core airports have materially lower volatility than the non-core airports within those groups
- a focus on core airports will therefore understate the risk of the comparator groups as a whole.

The key point is not simply airport size. It is that the non-core assets within the comparator groups tend to have weaker competitive positions and higher traffic volatility. This is relevant to the risk reflected in the listed group betas.

We also shared with the CAA Fitch evidence from 2024 indicating that AENA had higher traffic volatility than London Gatwick and Manchester Airports, which the CAA had previously treated as riskier than HAL.

We previously provided the CAA with extensive evidence from equity analysts and rating agencies, including statements that AdP's acquisitions 'increased exposure to lower quality assets that entail higher country and currency risks.' We do not repeat that material here but it remains valid.

We also previously presented academic evidence indicating that an assumption that higher-risk non-European assets reduce beta would be inconsistent with CAPM and inconsistent with investor and ratings-agency evidence. We do not repeat that material here either.

We had also presented the following CAA graphic from the Q6 price control which reflected how they thought about this issue.

²⁶ We disagree with the inclusion of Zurich as a core comparator, hence the analysis was not undertaken for Zurich.

²⁷ The traffic statistics in this table span the period from 2013 to 2024, although data is not available for every year. We exclude 2020–2022 as pandemic years, and 2023 as its sharp rebound in traffic could distort the results. Furthermore,

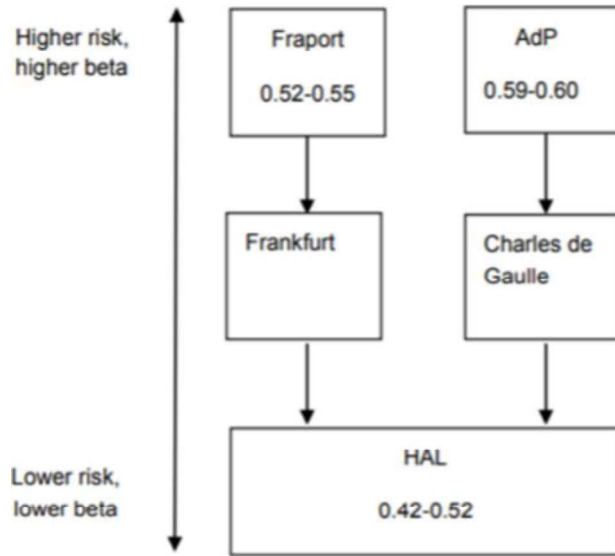
²⁸ The AENA non-core group includes Luton, ANB airports (Brazil), and Spanish airports excluding Madrid and Barcelona.

²⁹ For AdP we use Paris airports, for Fraport we use Frankfurt, and for AENA we use Madrid and Barcelona airports.

³⁰ This represents the weighted averages of the simple averages.

³¹ This represents the weighted averages of the weighted averages.

Figure B.1: CAA approach to assessing risk between comparator groups and Heathrow Airport (HAL)



Source: CAA (Q6)

Against that background, the CAA errs in three ways, by:

- not engaging with the traffic-volatility evidence or with arguments it has previously accepted.
- relying on beta estimates that it considers not robust in order to suggest that non-core airports are not materially riskier.
- using evidence with limited informational value, namely international airport betas estimated against a Eurostoxx index, even though that is not the relevant index for UK market parameters or sterling-based evidence.

Till structure

The single till reduces systematic risk. S&P Global Ratings stated in 2024 that³²:

“[the single till] provides more certainty to returns and earnings, and is generally considered as more credit protective by reducing volatility, lowering downside but also limiting upside.”

The Irish Aviation Regulator, the IAA, adopted materially the same proposition in its Issues Paper for the 2026 determination on charges at Dublin Airport³³:

“A single till approach is more credit protective by reducing volatility, lowering downside but also limiting upside.”

Those references were provided to the CAA in the airline ABP. We also presented a worked example showing that, in a dual till regime, a £1 per passenger change in non-aeronautical spend has a materially larger effect (6x) on firm value than under a single till regime.

The CAA itself recognises that commercial revenues are exposed to greater risk than regulated charges because they depend not only on passenger numbers but also on spend per passenger. That proposition supports, rather than undermines, the conclusion that the single till reduces volatility and beta by pooling those revenues within the regulatory regime³⁴:

“Commercial revenues could be seen as exposed to a greater degree of risk than regulated charges, as, from the consumers’ perspective, they may be seen as more discretionary, even once the effect of traffic risk is controlled for. This factor was highlighted in the context of the H7 price control appeals...”

The CAA errs by conflating two distinct issues in two places:

- Frequency of resets versus the absence of any updates.
- Price and risk factors.

The CAA states that “forecast error represents a relevant risk for regulated entities³⁵”, but that CEPA’s November 2025 analysis misses out that investors may perceive benefits associated with the absence of regulatory discretion.

The CAA fails to recognise that commercial revenues under dual till are not regulated (only costs). In single till, there is a reset. This implies that regulation is risk increasing. We consider this incorrect and inconsistent with the CAA’s positions elsewhere. Any quantitative example will demonstrate that the approach limits volatility, consistent with the S&P and IAA positions.

The CAA’s reliance on anecdotal evidence about the prospect of a longer-term settlement at Charles de Gaulle is also weak. A preference for a longer settlement can reflect expected profitability, not lower risk. It does not outweigh the direct evidence from ratings agencies and the logic of the till structure itself.

Finally, the CAA criticises CEPA’s worked example but does not appear to have developed any alternative method to quantify the relevant risk differential. The rejection of one method should not necessarily lead to no adjustment. The regulator would ideally investigate different methods to determining the best option, rather than suggesting that this means that no adjustment is the optimal answer.

³² See CEPA (2025) Estimating the H8 cost of capital.

³³ IAA (2025) 2026 Determination on Airport Charges at Dublin Airport: Issues Paper Consultation

³⁴ CAA (2026) H8 Initial Proposals: Section 3, p.37-38.

³⁵ CAA (2026) H8 Initial Proposals: Section 3, p.33.

Other factors

Government ownership / support

We have previously stated that government ownership / support should not create a material bias in beta. The expectation is that the risk is most notable during a pandemic or shock event. In the case of the UK and HAL, there was more traffic at the core hub than at other airports. Therefore, the need for support is potentially lower than for an AENA with 46 airports across Spain, and international airports. We also observed the £300m RAB adjusted at Heathrow.

Continuing with the AENA example (though it is valid more broadly), there is a 51% ownership by the state (through ENAIRE). This gives it control over company direction and the government also is responsible for setting DORA, hence affordability considerations are more relevant. We have also seen public utility arguments for bringing Barcelona airport back into public ownership from partially-privatised.

We have seen also presented to the CAA nationalisation arguments in the partially state owned AdP.

Overall, we agree with the CAA that no adjustment should be made, as the directional impact of this risk is unclear.

Share of commercial vs non-commercial activities

HAL derives a materially higher share of revenue from aeronautical activities than the comparators. If, as the CAA says, commercial revenues are riskier than regulated charges, that supports a downward relative risk adjustment for Heathrow relative to the comparator airport groups. The CAA IPs quote is as follows³⁶:

“Commercial revenues could be seen as exposed to a greater degree of risk than regulated charges, as, from the consumers’ perspective, they may be seen as more discretionary, even once the effect of traffic risk is controlled for. This factor was highlighted in the context of the H7 price control appeals as being one possible difference between HAL and network utilities.”

Capex and opex risk

The CAA considers capex risk to not be systematic (as described by Heathrow). The CAA states that HAL has the lowest operational gearing and considers higher operational gearing increases beta, so this suggests grounds to consider HAL as lower risk than comparators. We also note that HAL’s capex envelope has been significantly reduced in IPs, further reducing their capex intensity relative to comparators under that same analysis and pointing to a downwards rather than upwards adjustment for risk.

Regulatory framework risks

HAL’s regulatory framework contains extensive protections for investors, even before the effect of the TRS mechanism is taken into account. Those protections include inflation protection, pension deficit recovery, cost-sharing rates, asymmetric risk allowances, traffic shock factors, flexibility in capex governance, reopeners, indexation for the cost of new debt, an independent appeals framework and an independent regulator.

The IPs go further by proposing a pass-through of HAL’s actual senior debt costs for embedded debt. During the COVID period, the CAA also made a £300 million upward RAB adjustment to provide additional support.

Those features allocate substantial risk to consumers and reduce risk to investors. The cost of capital set for HAL should reflect that regulatory protection. At a minimum, the CAA cannot reasonably increase the relevant threshold for setting a lower cost of capital at the same time that it is adding additional downside protections to reduce risk.

Overall

We do not rely on these factors as the primary basis for a lower beta. The point is narrower. Taken together, they provide no plausible basis for concluding that Heathrow is materially riskier than the comparator airport groups and

³⁶ CAA (2026) H8 Initial Proposals: Section 3, p37.

these other factors support a downwards adjustment for risk. We have not found any credible arguments in our review to suggest that HAL is riskier than airport comparators.

Appendix C **EMPIRICAL BETA ESTIMATION TECHNIQUES**

C.1. SUMMARY

CAA approach

The CAA’s empirical asset beta range is 0.47 to 0.70, with a midpoint of 0.59³⁷. The lower bound is taken from spot 2-year OLS estimates and the upper bound from spot 10-year OLS estimates for the listed comparator airports.

The use of 2-year and 10-year unadjusted OLS estimates raises two questions about beta estimation:

- Is the ‘true’ beta constant over time?
- Are there high leverage data points or outliers distorting the sample?

We set out the conditions under which the CAA’s techniques are appropriate.

Table C.1: Appropriateness of empirical beta techniques

	Constant beta?	Impacted by outliers?
Short-term 2yr OLS regression	No	No
Long-term 10yr OLS regression	Yes	No

Source: CEPA.

Use of a short-term beta implies that you consider more recent evidence to be informative on the ‘true’ beta, with more ‘signal’ than ‘noise.’ Use of a long-term beta implies that short-term movements could be statistical ‘noise’. Commentary from the CAA / FTI suggests that the equity risk at HAL’s comparators has fallen over time, which would support placing greater weight on the short-term estimate.

Use of unadjusted OLS regressions implicitly adopt the view that the true beta has been constant over the backward-looking regression window, with no distortions due to one-off outliers or changes in the true beta. This applies to both the CAA lower and upper bound. The CAA and FTI appear to take the view that the COVID pandemic is a low-probability event which has exerted significant upward pressure on long-term betas, but this upward bias may be offset by recent distortions that exert downwards pressure on short-term and long-term betas.

CEPA view

Our evidence shows that:

- The true value of the comparators’ betas is not likely to have been constant over the last 10 years.
- Empirical betas are materially impacted by outliers – the 10yr betas are increased by 0.07 from outliers, while 2yr betas are decreased by 0.01 by outliers.

This suggests that the CAA’s 2-year and 10-year unadjusted OLS estimates are not equally good estimates of the forward-looking beta, and that the 2-year estimates may be superior.

We look to propose a solution in this report that is objective (i.e. does not rely on excluding individual datapoints, defining any exceptional period or frequency of pandemic recurrence), symmetric and uses accepted econometric techniques. This reflects an updated approach compared to the CEPA ABP report that relied on a median estimate of pre-pandemic and post-pandemic medians, reflecting on criticisms of our report by the CAA in their H8 IPs³⁸.

We recommend that the CAA should rely on:

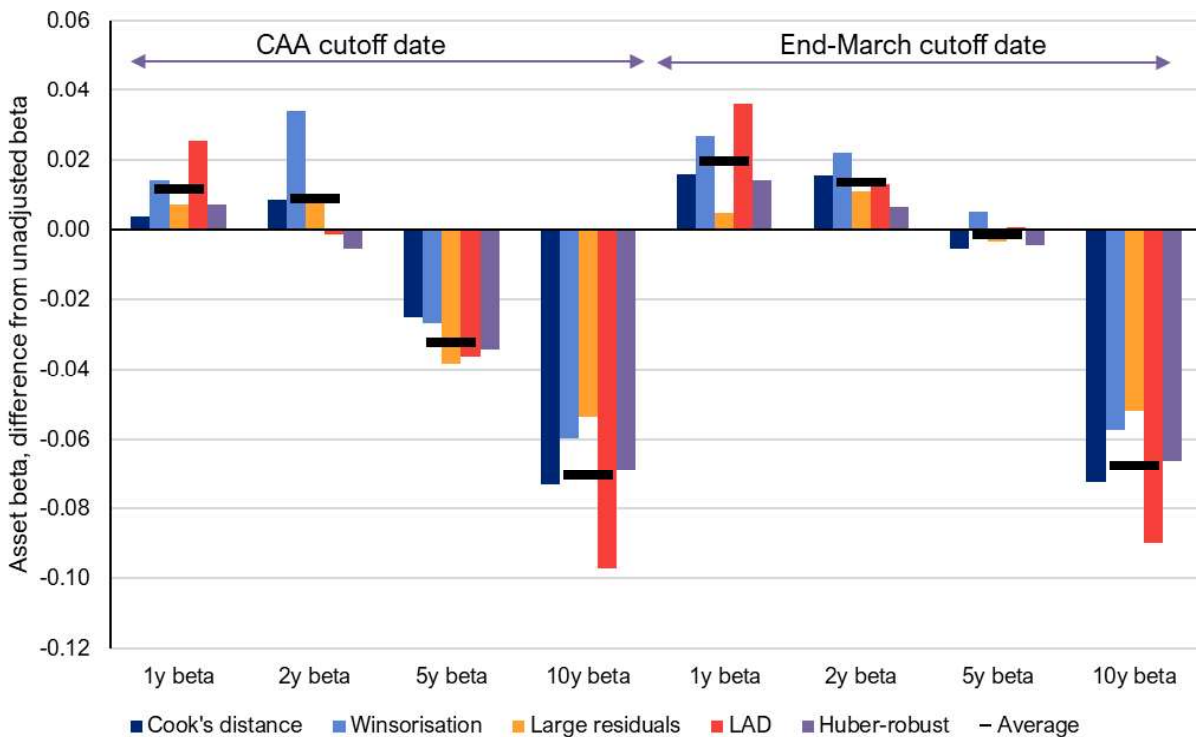
³⁷ Prior to any adjustment for relative risk.

³⁸ The results of that approach across the CAA’s four comparator airports would give an asset beta of 0.56 using an end-March 2026 cut-off date.

- More prevailing estimates of beta to recognise that airport betas are not constant over long periods of time.
- ‘Robust regression’ or time-varying beta estimation techniques, where outliers exist in the sample.

Figure presents the results of robust regression techniques to address the distortions from the COVID pandemic and Liberation Day in standard OLS regressions³⁹. We present results to show the impact on asset beta from these techniques as of the CAA cut-off (end October 2025) and using an updated end-March 2026 cut-off.

Figure C.1: Outlier-corrected comparator-average asset betas at different horizons, difference to unadjusted beta.



Source: CEPA analysis of Bloomberg data

The CAA’s 0.47 to 0.70 asset beta materially overestimates beta at the comparator airport groups because of the upward bias reflected in the 10-year estimates, regardless of whether these outliers are viewed as one-off unrepresentative observations or a temporary structural change in beta.

We discuss in the main body why the CAA’s market cap-weighted average beta is inappropriate. This would bring the CAA’s range at their cut-off down to 0.47 to 0.67. For all figures, we use the CAA’s four comparator sample, but discuss separately comparator selection as an additional source of upwards bias.

Based on our analysis:

- Use of short-term spot OLS regressions support a 0.45 to 0.56 asset beta.
- Use of robust regression techniques support a 0.45 to 0.55 asset beta for 2yr and 5yr estimates, or 0.45 to 61 if 10yr estimates are included.
- Use of GARCH results in an asset beta range of 0.48 to 0.55.

The CAA H8 IPs lead to a significantly higher asset beta than is supported by the evidence.

³⁹ Impacts are as high as +0.04 for the 5-year asset beta and +0.10 for the 10-year beta.

C.2. IS BETA CONSTANT?

We look at the following evidence that airport betas should not be modelled as constant over time:

- Comparison of short-term and long-term empirical betas.
- Empirical tests conducted by Professor Robin Mason.
- Structural break analysis.
- Qualitative assessment of risk.

Given the relevance of the CMA's PR24 redetermination in water, we discuss how results for the comparator airport groups differ to England and Wales water companies. This cross-check shows that COVID-19 was a much clearer structural break for listed airports than for UK water companies.

C.2.1. Comparison of short-term and long-term empirical betas

We present below the results of the CAA's H8 IPs asset betas at their cut-off and with our update to end-March 2026.

In Table C.2, we can see that 2yr, 5yr and 10yr betas are materially different to one another, showing variation over different time horizons.

Table C.2: CAA asset beta estimates for different estimation windows (as of 31 October 2025)

	AENA	AdP	Fraport	Zurich	Simple Average	Weighted average
2y asset beta	0.51	0.53	0.34	0.50	0.47	0.50
5y asset beta	0.70	0.58	0.52	0.61	0.60	0.64
10y asset beta	0.74	0.68	0.58	0.68	0.67	0.70

Source: CAA

Table C.3 highlights the changes in empirical betas for comparators. In particular, the reduction in the 5y spot beta relative to IPs reflects the new cut-off date; the second major COVID-related shock event (the announcement of a vaccine for COVID-19⁴⁰) is no longer in the updated 5-year estimation window.

Table C.3: Change in asset beta estimates between 31 October 2025 and 31 March 2026

	AENA	AdP	Fraport	Zurich	Simple Average
2y asset beta	-0.01	-0.08	0.01	-0.02	-0.02
5y asset beta	-0.05	-0.07	-0.05	-0.01	-0.04
10y asset beta	0.02	0.01	0.01	-0.00	0.01

Source: CEPA analysis of Bloomberg data

C.2.2. Empirical tests conducted by Professor Mason

Separate analysis conducted by Professor Robin Mason on behalf of IATA in response to IPs runs Augmented Dickey-Fuller tests and Kwiatkowski-Phillips-Schmidt-Shin (KPSS) tests that support the conclusion that comparator airport betas are not constant.

C.2.3. Structural break analysis

An alternative perspective on COVID-impacted data is that, rather than being a set of one-off outliers due to anomalous equity market conditions, they represent a temporary shift in the true value of airport betas – i.e. a “structural break.”

⁴⁰ The 9 November 2020 announcement by Pfizer that its COVID-19 vaccine was successful in clinical trials ([link](#)).

This can be modelled using date-based dummy variables inside a simple linear regression⁴¹. Statistical tests such as Bai-Perron can be used to identify structural breaks, but these approaches are highly sensitive to assumptions and difficult to specify robustly.

We are conscious that structural break tests have been used with the purpose of excluding data. That is not the intent here – we present this structural break analysis to assess whether betas should be considered constant.

We present 10-year asset betas for the airport comparators, under three different structural break assumptions. We present results assuming that COVID-19 led to structural differences in the underlying beta for four different time periods:

- March 2020 only;
- March through May 2020; and
- February through December 2020⁴².

Table C.4: COVID-corrected airport asset betas, assuming structural breaks for different definitions of the COVID period. (CAA cutoff date)

Company	10yr asset beta	March 2020	Mar-May 2020	Feb-Dec 2020
AENA	0.74	-0.06	-0.08	-0.13
AdP	0.68	-0.03	-0.06	-0.14
Fraport	0.58	-0.01	-0.03	-0.07
Zurich (local index)	0.68	-0.03	-0.05	-0.07
Average	0.67	-0.03	-0.06	-0.10

Source: CEPA analysis of Bloomberg data

Taking the view that COVID-19 was a structural shift in the underlying asset beta rather than a set of one-off outliers, controlling for both the onset of COVID and the November vaccine announcement point to reductions of 0.08-0.10 in the average estimated asset beta.

C.2.4. Qualitative assessment of risk

The CAA has expressed its view that comparator airport capacity constraints are becoming more binding and that this is risk reducing. There is also detailed discussion of the impact of risk perceptions pre- and post-pandemic throughout the CAA's H8 and H7 decisions.

C.2.5. Contrast to England & Wales water

We consider the above results in contrast to the England & Wales water sector. Professor Mason shows that the ADF and KPSS test results indicate a non-stationary beta in airports, but reject a non-stationary beta in water.

On structural break tests around the COVID pandemic, the impacts in the water sector are very small, as shown below. The largest effect is for Pennon (PNN) which is considered a less suitable comparator prior to its disposal of Viridor in 2020.

Table C.5: COVID-corrected water company asset betas, assuming structural breaks for different definitions of the COVID period. (CAA cutoff date)

Company	10yr asset beta	March 2020	Mar-May 2020	Feb-Dec 2020
UU	0.31	+ 0.00	+ 0.01	+ 0.00
SVT	0.32	+ 0.00	+ 0.01	+ 0.01

⁴¹ As discussed during the PR24 appeals, the econometric specification includes a dummy variable that defines the COVID period, and an interaction term between the COVID dummy and market return variables.

⁴² This timeframe reflects our assumptions on pandemic dates for the Airline Business Plan, and captures both the onset of COVID and the November vaccine announcement shock date.

Company	10yr asset beta	March 2020	Mar-May 2020	Feb-Dec 2020
PNN	0.37	+ 0.01	+ 0.02	+ 0.03
Average	0.33	+ 0.00	+ 0.01	+ 0.01

Source: CEPA analysis of Bloomberg data

C.2.6. Conclusions

The evidence considered supports a view that the ‘true’ beta for comparator airport groups should not be considered constant. This would imply that more recent betas are likely to be more representative of risk in the sector, and that a 10-year beta regression that assumes constancy over a 10-year period is misspecified.

C.3. IS BETA DISTORTED BY OUTLIERS?

We look at the following evidence on whether betas should be assumed to be distorted by outliers:

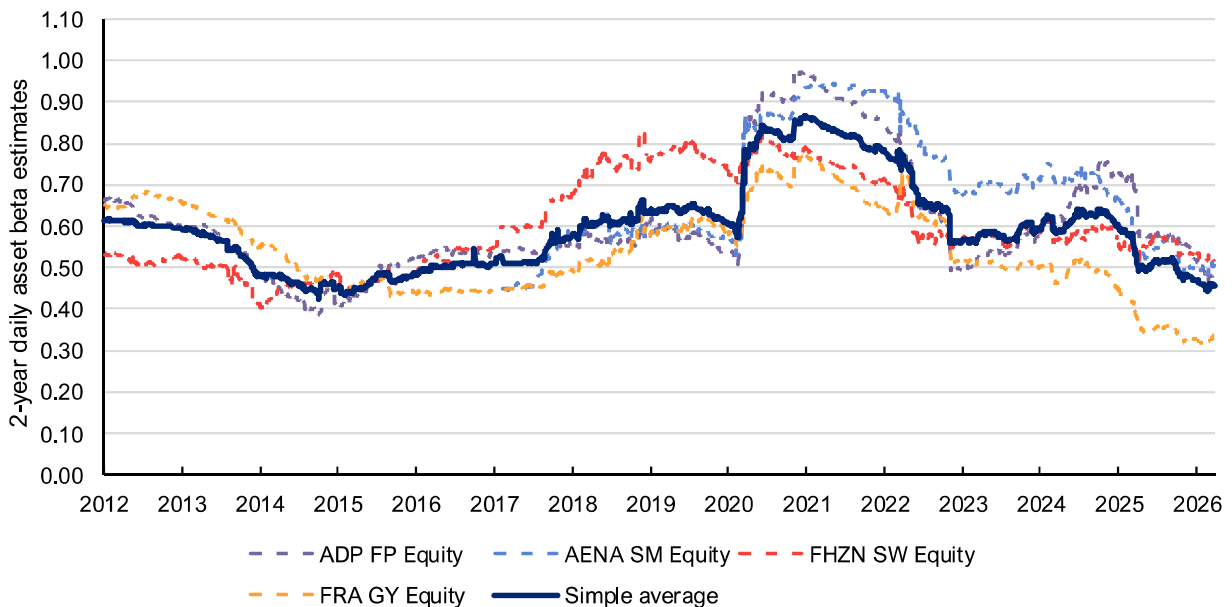
- Rolling betas
- Non-overlapping betas
- X-Y scatterplots
- Cook’s Distance
- Qualitative discussion of outliers (linked to CAA H7 approach)
- Robust regression approaches

As with the constant beta assumption, we similarly contrast listed airports to England and Wales water companies.

C.3.1. Rolling betas

It is widely understood that the COVID-19 pandemic and associated global restrictions on travel had a disproportionate impact on airport business models. Figure C.2 illustrates the sharp and short-lived increase in 2-year beta estimates for listed airports, prior to a re-normalisation after these trading days had left the estimation window:

Figure C.2: Rolling 2-year daily asset beta estimates for the CAA’s listed airport comparators



Source: CEPA analysis of Bloomberg data

C.3.2. Non-overlapping betas

We present results using non-overlapping beta estimates using data from 1 November 2015 to 31 October 2025 to illustrate whether shock events have impacted beta. For example, we estimate the median value from estimating betas from 1 November 2015 to 31 October 2016, 1 November 2016 to 31 October 2017 etc.

If there are no outliers, we would expect that a spot 10yr beta should be close to 10 x 1yr non-overlapping betas. Where there are outliers, those data points are highly leveraged in a single OLS regression and we would expect to see variation.

For the 90-day betas, we present both a simple median and the long-run average from estimating an AR(1) on the 90d non-overlapping datapoints (a 'realised beta' approach).

Table C.6: Approaches based on non-overlapping betas, using data to the CAA's cutoff date.

	AdP	AENA	Zurich	Fraport	Average	Difference to 10y spot beta
5 x 2yr beta	0.56	0.57	0.66	0.51	0.58	-0.09
10 x 1yr beta	0.64	0.58	0.64	0.52	0.60	-0.07
41 x 90d beta	0.59	0.64	0.65	0.52	0.60	-0.07
90d realised beta	0.63	0.57	0.57	0.55	0.58	-0.09

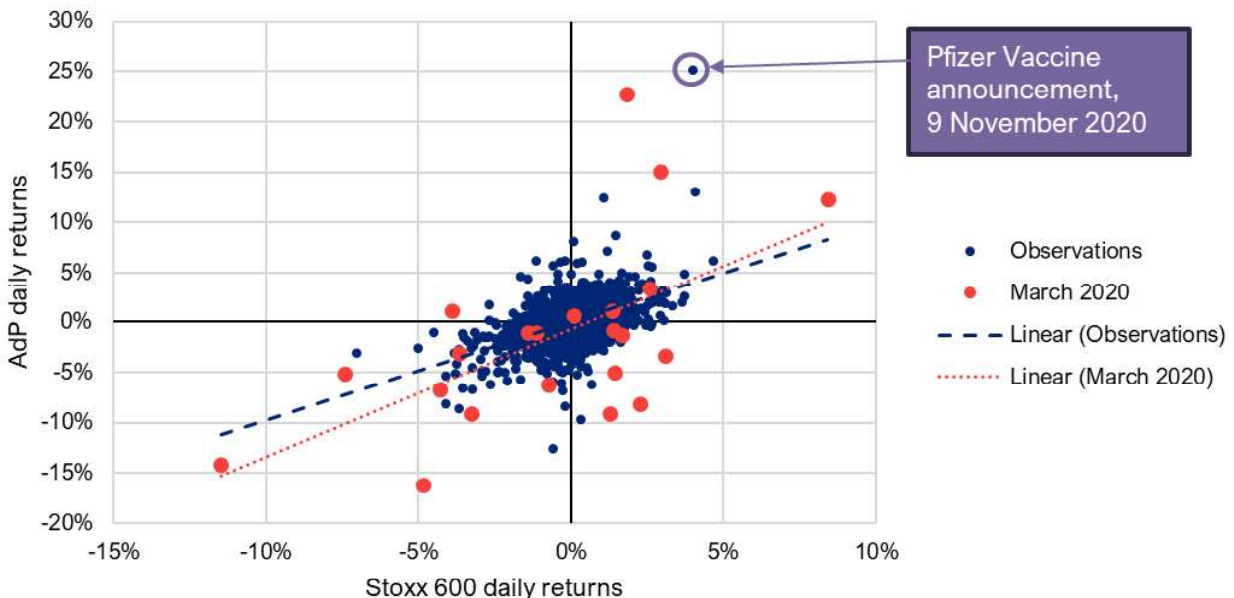
Source: CEPA analysis of Bloomberg data. Medians are presented for all methods, apart from 'realised beta' approach – where a long-run mean is used to reflect the nature of the technique.

We observe significant differences, which similarly supports that there are outliers distorting longer-term beta estimates.

C.3.3. X-Y scatterplots

We present a scatterplot of AdP's stock and market returns over the course of the CAA's 10-year estimation window in Figure C.3 below. For conciseness, we do not present scatterplots for all comparators, but they have a similar trend.

Figure C.3: Daily stock and market return scatterplot for AdP, 2 November 2015 to 31 October 2025



Source: CEPA analysis of Bloomberg data

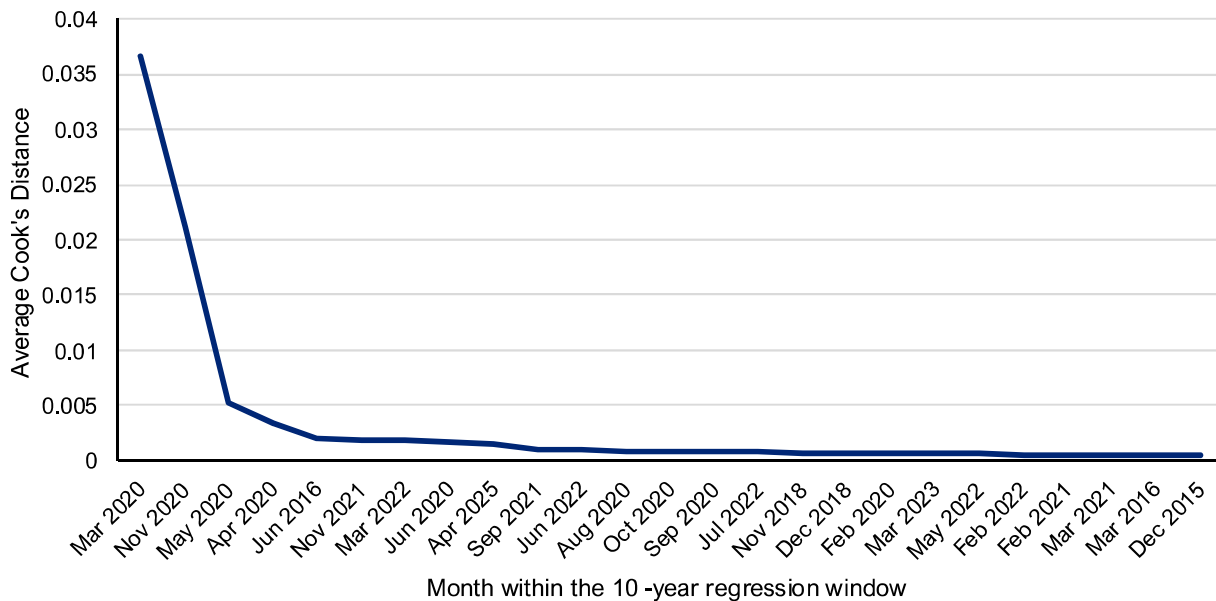
This analysis suggests that:

- Most observations cluster around a stable relationship between AdP’s stock returns and the market portfolio;
- The onset of COVID-19 in March 2020 and the November 2020 announcement of the Pfizer vaccine include several extreme observations, which materially affect the estimated beta⁴³.

C.3.4. Cook’s Distance

A further method for identifying outliers is based on Cook’s distance⁴⁴ – results of which are presented below for the items with the largest ‘power’ or leverage.

Figure C.4: Monthly average Cook’s distance (all airport comparators)



This analysis shows that March through May and November 2020 feature large outlying observations for all four main comparators, as a result of the COVID pandemic. The June 2016 Brexit referendum and the April 2025 changes in US trade policy also have high Cook’s distance – though less pronounced than the COVID pandemic.

C.3.5. CAA H7 approach

At H7, the CAA discussed that unadjusted OLS estimates would be distorted by outliers and would not represent a suitable basis for setting a forward-looking beta – see Box C.1.

⁴³ The equity beta estimated over the 22 daily observations from March 2020 is higher than the full 10-year beta by 0.29. It is well-understood that Ordinary Least Squares is susceptible to large outlying estimates by virtue of penalising the residual sum of squares.

⁴⁴ A regression diagnostic tool used to estimate the influence of a data point in a particular OLS regression.

Box C.1: Quotes from Flint Global on beta estimation (source: August 2021 report)

“Although we cannot be certain, the likelihood of a repeat of events with effects similar to the recent pandemic in the very near future is low. This means that a backward-looking approach of this type is likely to be inappropriate. Beta statistics derived from recent data would be likely to overstate systematic risks faced in the future...”

“Daily market or share price movements (or both) exhibit an unusually strong influence on the beta calculation, due to the basis of its mathematical formulation. So, the COVID-19 events of early 2020 (and the vaccine news later that year) would essentially dominate the beta calculation.”

“The data for the airport comparators during the COVID period reflects a series of unusual and extreme market and individual share price movements... The COVID data is more influential in defining the observed systematic risk relationship described by the beta. In simple terms, in the long-term beta calculation, the influence of the COVID data is amplified in line with its extremity.”

The CAA at H7 adopted a ‘pooled OLS’ approach to reduce the impact of those outlier observations. This led to lower values than spot beta estimates. The results under the CAA’s ‘pooled OLS’ approach would also lead to a lower beta than under a spot 10yr OLS beta if repeated with current evidence.

The qualitative assessment points in the same direction as the quantitative evidence in recognising that there is a distortion.

C.3.6. Robust regression approaches

Equity returns are empirically heavy-tailed⁴⁵ and can contain influential observations, meaning the estimated beta may be materially distorted by a small number of extreme stock-market return pairs.⁴⁶ This may motivate alternative designs aimed at mitigating the impact of outliers while preserving information in the bulk of the sample.

Under the view that COVID-impacted outliers are unrepresentative of forward-looking risk pricing, we present several objective and symmetrical approaches to controlling for their impact in the 10-year beta:

- **Influence-based deletion:** We delete observations based on their influence in the OLS regression using Cook’s distance. We follow a common rule of thumb of deleting all observations with a Cook’s distance greater than $4/n$.⁴⁷
- **Residual-based deletion:** We remove observations with large, standardised residuals (i.e., greater than 3SDs). If residuals are normally distributed this would account for roughly 0.1% of the data.
- **Winsorisation:** We winsorise extreme stock market and company returns at the 1st and 99th percentile.⁴⁸
- **Least Absolute Deviation (LAD):** We estimate beta using the LAD estimator. This involves replacing the objective function of the OLS estimator so that instead of minimising the sum of squares, beta minimises the sum of absolute deviations.
- **Robust regression:** We estimate the Huber-robust regression model. This involves placing different weight on normal observations and outliers. It can be thought of as a model in between OLS and LAD.⁴⁹

⁴⁵ Heavy-tailed is a technical term meaning the underlying distribution of returns contains more mass than an exponential distribution.

⁴⁶ Chan, Louis K. C., and Lakonishok, Josef (1992). *Robust Measurement of Beta Risk*. Journal of Financial and Qualitative Analysis.

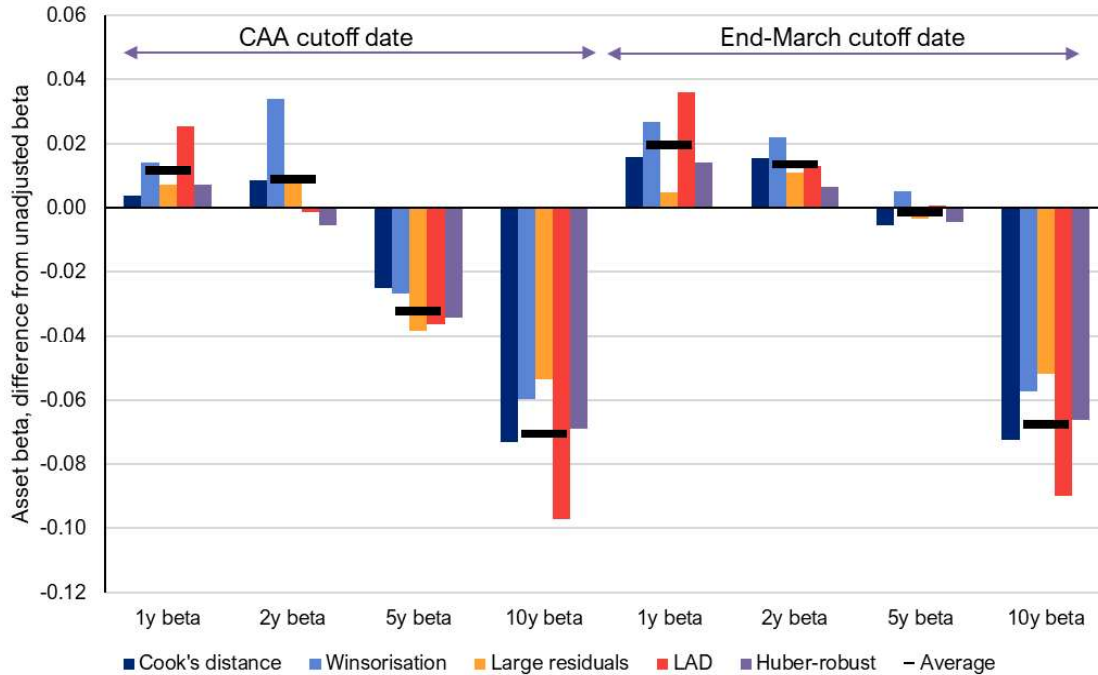
⁴⁷ This was the rule adopted by Ofwat in PR24.

⁴⁸ Winsorising is the process of putting a cap and ceiling on the observations.

⁴⁹ Huber, Peter J. (1964). *Robust Estimation of a Local Parameter*. Annals of Statistics.

We apply each of the five outlier-mitigation techniques described above to the 1-year, 2-year, 5-year and 10-year spot asset betas, as of the CAA’s cutoff date and an end-March cutoff date. Figures presented are an average across the CAA’s four main comparators.

Figure C.5: Outlier-corrected comparator-average asset betas at different horizons, difference to unadjusted beta.



Source: CEPA analysis of Bloomberg data. Figures presented are cross-sectional averages.

This analysis indicates that:

- The 10-year asset beta features significant upward bias, correcting for which reduces the asset beta by 0.06-0.07 or more.
- There is on balance downward bias in spot 1-year and 2-year betas, but not enough to “balance out” the upward bias featured in the 10-year beta.
- An update to the CAA’s cutoff date removes most of the bias featured in the 5-year beta (as the 9 November shock event leaves the estimation window).

We would not suggest that the CAA explicitly place weight on any single one of these approaches, and recognise the challenge of robustly and transparently controlling for outliers in beta regressions.

At the same time, this analysis indicates that five separate approaches point to similar degrees of material upward bias in the 10-year spot asset beta.

We measure a standard error for the 10-year equity beta of 0.06, and note that the average reduction in the equity beta implied by the five approaches considered above is -0.10, indicating that the degree of bias is large relative to a standard error.

C.3.7. Contrast to England & Wales water

COVID had a much smaller impact on risk pricing for regulated networks. To illustrate this, we have applied the outlier-mitigation approaches above to 10-year asset betas for the three listed UK water companies⁵⁰.

Table C.7: Outlier mitigation results for 10-year water company asset betas, difference to the 10-year asset beta.

Company	10-year asset beta	Cook's distance	LAD	Large Residuals	Huber-robust	Winsorisation
UU	0.31	-0.00	+0.00	+0.00	+0.01	+0.01
SVT	0.32	+0.01	+0.01	-0.01	+0.00	+0.00
PNN	0.37	+0.00	-0.00	-0.01	+0.00	+0.03
Average	0.33	+0.00	+0.00	-0.00	+0.00	+0.01

Source: CEPA analysis of Bloomberg data

Table C.4 shows that, at most, mitigation of outlying observations in 10-year water company betas leads to asset beta estimates typically within +/- 0.01 of the 10yr spot beta, with no consistent directional bias.

This contrasts with the experience of listed airports.

C.4. RECOMMENDED APPROACH AND RANGE

Where beta estimates over time do not fluctuate around a stable long-run average, this reinforces the view that historic beta estimates cannot be treated as constant, even on average. This is particularly the case when dealing with outliers. Our evidence shows that airport comparators are distinct from England and Wales water companies, therefore different tools and techniques need to be adopted.

We present three alternative methods for how the CAA could estimate beta, in light of evidence presented here. The approaches range in the degree of complexity, but consistently point to an estimate below the CAA's range.

We do not include the approach set out in the November 2025 CEPA report that was used for the ABP, given the CAA's rejection of such an approach. However, we consider that such an approach would still be valid and reflect the evidence discussed in this appendix.

C.4.1. Short-term spot OLS estimates

Our previous analysis indicates that short-term betas (e.g. 2yr and 5yr betas) are relatively free of outliers once the November 2020 COVID vaccine announcement drops out of the sample.

Using spot 2yr and 5yr betas with an end-March 2026 cut-off date gives a **0.45 to 0.56** asset beta.

Table C.8: Simple average asset beta estimates for different cut-off dates

	31 Oct '25	31 Mar '26
2y asset beta	0.47	0.45
5y asset beta	0.60	0.56
10y asset beta	0.67	0.68

Source: CAA and CEPA analysis of Bloomberg data

C.4.2. Robust regression techniques

We have set out a variety of robust regression techniques to assess beta and control for the distortionary impact of outliers on unadjusted OLS regressions.

⁵⁰ We estimate equity betas relative to the FTSE All-share (ASX) index, unlever with net debt gearing, and include a debt beta of 0.075. All betas are presented as of the CAA's cutoff date.

The measures give a broad range of **0.46 to 0.61** for the asset beta. Excluding the 10yr results would imply a narrow range of **0.46 to 0.56**.

Table C.9: Robust regression results, as of end-March 2026 cut-off.

	Spot beta	Robust regression delta	'Corrected beta'
2y asset beta	0.45	+0.01	0.46
5y asset beta	0.56	+0.00	0.56
10y asset beta	0.68	-0.07	0.61

Source: CAA and CEPA analysis of Bloomberg data

C.4.3. GARCH and time-varying beta models

A Generalised Autoregressive Conditional Heteroskedasticity (GARCH) model has been previously considered in regulatory determinations by Ofgem. This is a time-varying beta model.

A GARCH approach directly models the volatility of the underlying stock and market returns, and can be used to estimate time-varying betas that respond to periods of market stress or changing risk conditions. GARCH can be used to estimate both a long-run mean (“unconditional”) beta and a short-run “conditional” beta.

We present different backward-looking averages over the conditional betas as of the CAA’s cutoff date, and unconditional estimates⁵¹. This supports an empirical beta range of **0.48 to 0.55**.

Table C.10: GARCH estimates, using data to the CAA’s cutoff date.

	AdP	AENA	Zurich	Fraport	Average
1y	0.47	0.58	0.52	0.34	0.48
2y	0.56	0.60	0.59	0.37	0.53
5y	0.56	0.55	0.57	0.44	0.53
10y	0.58	0.53	0.61	0.50	0.55
Unconditional estimate	0.55	0.42	0.53	0.47	0.49

Source: CEPA analysis of Bloomberg data

While we have not presented other time-varying beta results in this report, other techniques are available to the CAA, for example a Kalman Filter⁵².

C.4.4. Conclusions

The CAA’s empirical asset beta range is 0.47 to 0.70, with a midpoint of 0.59. The lower bound is taken from spot 2-year OLS estimates and the upper bound from spot 10-year OLS estimates. We highlight our concerns with this approach:

- The spot 10-year OLS estimates remain affected by unusual or influential observations, in a manner consistent with the CAA’s own reasoning at H7. That drives an upper bound that is too high. HAL’s business plan, by contrast, identified an empirical beta upper bound of 0.62.
- The CAA’s range is very broad. At the lower end it approaches Ofcom’s recent assessment of BT Group’s asset beta; at the upper end it approaches Ofgem’s assessment of the long-term risk of asset-light GB energy retailers. That breadth does not provide a clear or credible statement of HAL’s risk profile.
- The breadth of the range also has a further consequence. It makes the CAA less likely to apply an appropriate relative risk adjustment, because any downward adjustment applied to both bounds would

⁵¹ We have not run results using an end-March 2026 cut-off date for GARCH, but would be willing to work with the CAA to develop estimates ahead of Final Proposals.

⁵² The Kalman filter treats beta as an observable state variable that evolves over time – as new daily returns data becomes available over time, this provides a noisy signal that is used to update the estimated beta.

make pre-TRS Heathrow appear closer to a water or energy network. The net effect is to bias beta upwards.

A 0.01 increase in asset beta increases the cost of equity by around 0.11%. Small changes in beta therefore have material effects on the allowed return. That is why the choice of method matters.

The three techniques involve lower bounds of 0.45 to 0.48. The upper bounds excluding the 10yr robust regression range from 0.55 to 0.56, or 0.61 with the 10yr robust regression. The CAA's H8 IPs asset beta range of 0.47 to 0.70 is materially overestimated and provides excessive compensation to HAL for the degree of risk faced.

A range of 0.45 to 0.61 covers the full breadth of data. More recent estimates or inclusion of Bologna and/or exclusion of Zurich may better support the lower parts of the range, while longer evidence (including non-overlapping betas, robust regressions and structural break analysis) may better support the upper part of the range.

We adopt an empirical beta of **0.53** for the purpose of developing an empirical beta (i.e. prior to the application of any adjustments for relative risk or the TRS mechanism).

Appendix D CAPACITY CONSTRAINTS – FURTHER INFO

This Appendix discusses capacity constraints at airports, linked to arguments around relative risk and capacity constraints reducing risk (as discussed in Appendix B). The material has been provided by airports to highlight that the capacity constraints at Heathrow Airport are not like capacity constraints at other airports that the CAA reference as being similarly capacity constrained.

The CAA has erred in not differentiating between types of capacity constraint and relying on informal conversations, rather than suitably detailed evidence. Airport capacity constraints take different forms. Airports can be constrained by runway movements, terminal processing capacity, aircraft stand and gate availability, planning limits, environmental restrictions, or the types of aircraft that can safely and efficiently use the airport. These constraints differ in severity and in how easily they can be eased.

This matters because two airports with the same number of passengers may face very different problems. HAL is capacity constrained with respect to peak-hour capacity constraints, planning / environmental / policy constraints, and most materially, runway and airfield capacity constraints. The last of these factors takes a long time to rectify at high cost, therefore making the capacity constraint more binding.

Table D.1: Discussion of types of capacity constraint

Type of constraint	Description	Ability to resolve / mitigate
Runway and airfield capacity constraints	The number of aircraft movements is constrained by runway availability, runway separation, taxiways, airspace, or runway alternation and noise rules.	Very difficult. Incremental airfield changes can help to some extent, but new runways tend to take longer to implement, be costly and subject to political debate.
Planning, environmental and policy constraints	The binding limit is not necessarily physical capacity, but permissions, noise restrictions, night-flight limits, emissions policy, or local acceptability.	Difficult. Easing requires regulatory, political and community support, not only investment.
Peak-hour capacity constraints	The airport may have adequate annual capacity, but demand exceeds available runway, gate, terminal, or border capacity at the most valuable times of day.	Moderate. Schedule smoothing, slot rules, pricing and collaborative decision-making can assist, but peak connectivity is valuable to users.
Terminal capacity constraints	Passenger processing areas, security, immigration, baggage reclaim, lounges, piers, or gates become binding before the runway system does.	Varies. Targeted terminal works may be sufficient to ease constraints or increase capacity, though major terminal expansion can take longer or be costly.
Aircraft-type constraints	The airport cannot accommodate certain aircraft, or can only do so with limits, because of runway length, pavement strength, stand size, gate configuration, taxiway geometry, or approach requirements.	Varies. Stand and gate works may be feasible; runway length, approach geometry and surrounding land constraints are much harder to change.
Operational and process constraints	The airport has physical infrastructure, but throughput is limited by staffing, security processing, baggage handling, turnaround performance, air traffic procedures, or disruption resilience.	Easier. These can often be eased through staffing, technology, operational coordination, queue management and better use of data.

We present evidence below in relation to hubs referenced by the CAA as capacity constrained. We continue to note that hubs are only part of the listed airport comparator groups and it is important to consider all airports within a group.

Runway movement evidence

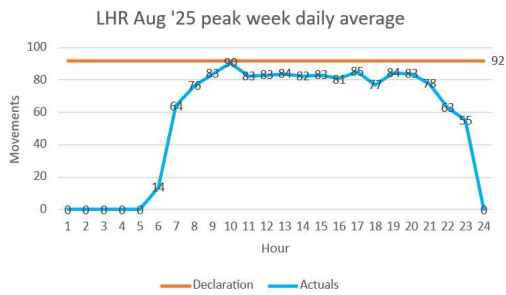
Barcelona (BCN), Madrid (MAD) and Charles de Gaulle (CdG) present very different runway movement capacity profiles from London Heathrow (LHR).

Where LHR is at or above 90% of its runway limit for much of the day, MAD, BCN and CDG all operate well below their declared limits (conditional formatting use >92.5% of declared capacity as red and >80% as amber).

Using an August '25 peak week, BCN's peak hour averages at 65 vs its declaration of 90; MAD at 82 vs 120; CDG at 96 vs 120. LHR by contrast is 90 vs 92 (or 91 vs 92 in Sept).

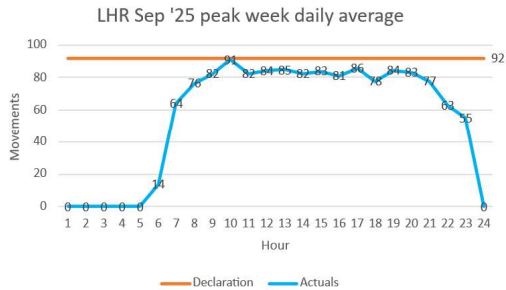
Further, LHR remains close to its limit through much of its operating day, whereas MAD, BCN and CDG are all significantly 'peakier'.

Evidence on schedule data is sourced from OAG.



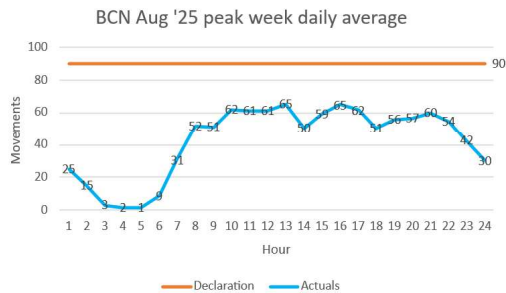
LHRAUG25	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Mon						13	62	79	82	91	81	81	82	80	80	81	78	62	77	70	73	59	52	
Tue						14	63	78	82	90	83	85	82	84	81	82	88	81	84	84	79	63	57	
Wed						14	68	76	85	90	87	83	87	84	82	77	86	82	84	87	80	60	56	
Thu						16	62	74	85	90	81	84	83	83	86	80	87	78	84	85	80	62	57	
Fri						14	63	77	84	91	83	83	86	83	83	82	86	76	87	86	75	66	54	
Sat						13	66	69	83	91	80	85	82	78	83	81	86	79	85	85	80	65	56	
Sun						13	63	80	83	90	83	80	85	83	85	82	86	82	88	87	77	64	54	
Average						14	64	76	83	90	83	83	84	82	83	81	85	77	84	83	78	63	55	

Declaration 92*
Peak average 90
Peak hour 91



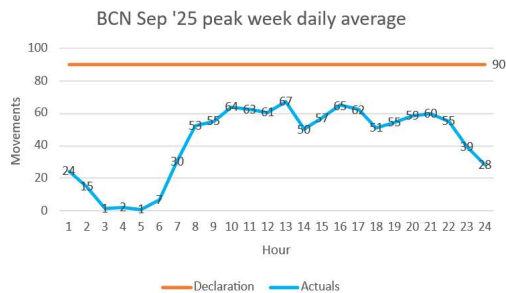
LHRSEP25	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Mon						14	63	77	84	91	82	84	87	83	84	80	87	81	88	85	76	65	54	
Tue						13	66	69	81	91	81	86	82	80	84	80	86	80	82	87	80	62	57	
Wed						14	67	77	83	91	86	85	87	84	83	82	85	79	85	85	79	60	57	
Thu						13	66	80	79	89	84	84	85	83	83	82	87	81	84	85	78	65	53	
Fri						13	62	79	82	90	81	82	83	80	82	81	80	83	77	69	71	61	52	
Sat						14	64	76	82	92	82	85	85	84	82	81	87	80	88	85	79	62	58	
Sun						16	61	75	86	91	79	82	84	82	86	80	88	79	85	85	79	64	55	
Average						14	64	76	82	91	82	84	85	82	83	81	86	78	84	83	77	63	55	

Declaration 92*
Peak average 91
Peak hour 92



BCNAUG25	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23					
Mon						24	14	4	2		13	31	51	45	57	64	56	65	49	65	61	62	46	47	51	56	43	37	30
Tue						27	12	2	2		6	32	51	51	62	60	59	64	42	64	59	66	43	52	51	59	57	40	26
Wed						23	18	3		2	9	29	55	51	67	58	64	68	53	54	72	63	47	65	53	64	59	48	30
Thu						24	16	2	1	1	6	31	50	52	62	59	63	66	53	54	60	63	64	64	62	60	61	44	32
Fri						24	14	2	3	1	9	31	54	60	67	64	61	64	53	57	65	56	54	50	61	58	54	50	32
Sat						27	14	3	1	1	9	32	51	49	59	70	64	61	51	59	71	63	52	55	63	64	51	44	32
Sun						25	17	2	1		8	29	52	49	61	55	62	70	51	63	67	58	48	59	57	58	56	34	28
Average						25	15	3	2	1	9	31	52	51	62	61	61	65	50	59	65	62	51	56	57	60	54	42	30

Declaration 90
Peak average 65
Peak hour 72



BCNSEP25	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23					
Mon						25	14	2	3	1	8	30	52	61	71	62	61	74	50	58	62	57	55	61	58	52	42	32	
Tue						25	14	1		1	6	32	50	52	60	65	64	64	51	58	66	71	55	52	60	67	54	38	33
Wed						24	20	1		1	9	27	58	55	68	65	59	68	51	56	71	56	47	59	64	67	61	44	28
Thu						23	14	1			6	30	52	54	64	62	61	68	54	56	66	66	49	61	57	54	53	35	26
Fri						26	14	1	1		10	31	53	51	53	65	58	62	55	56	61	60	47	48	50	53	48	36	26
Sat						24	13	1	1		4	32	52	56	66	57	62	67	37	61	63	65	44	44	57	57	60	39	25
Sun						22	16	2	3		6	31	51	56	66	63	61	68	53	55	66	61	60	64	63	62	59	42	27
Average						24	15	1	2	1	7	30	53	55	64	63	61	67	50	57	65	62	51	55	59	60	55	39	28

Declaration 90
Peak average 67
Peak hour 74

MAD Aug '25 peak week daily average



MAD AUG25	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Mon	16	10	1	1	3	23	29	53	42	65	74	68	63	80	70	86	57	43	45	71	43	47	52	44	
Tue	15	8	1		1	22	27	67	47	61	74	73	64	70	71	82	62	44	47	66	52	47	52	42	
Wed	17	6	1	1	5	20	28	60	45	66	87	75	65	74	65	78	61	54	48	71	55	57	56	46	
Thu	13	8	1	1	4	23	27	65	46	69	75	76	61	67	71	81	66	52	48	67	53	47	54	44	
Fri	13	9	2	1	5	20	29	60	52	63	76	77	64	67	71	83	62	43	54	68	54	53	54	43	
Sat	12	11			2	4	20	27	58	47	62	76	73	56	69	70	86	58	48	52	63	51	53	59	47
Sun	14	9	2	1	1	23	26	58	50	58	81	73	58	72	72	79	67	46	49	65	56	44	61	41	
Average	14	9	1	1	3	22	28	60	47	63	78	74	62	71	70	82	62	47	49	67	52	50	55	44	

Declaration 120
Peak average 82
Peak hour 87

MAD Sep '25 peak week daily average



MAD SEP25	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
Mon	12	9		1	5	21	28	62	51	64	78	76	71	66	69	81	61	48	55	68	64	54	54	41	
Tue	11	10			3	19	24	56	45	61	78	73	63	68	66	83	62	50	55	59	55	55	53	43	
Wed	14	7	1	1	5	20	25	60	43	68	88	75	70	73	65	77	64	57	52	66	61	55	55	42	
Thu	11	8	1		1	23	24	62	47	60	82	74	65	69	71	79	60	45	51	67	61	49	58	43	
Fri	14	9	1	1	2	24	27	55	42	66	78	74	66	75	69	80	56	39	45	68	45	46	47	43	
Sat	11	8	2		1	20	27	66	46	61	78	71	62	68	68	80	62	46	46	69	54	46	57	39	
Sun	12	9			1	4	22	29	62	46	69	80	76	61	67	67	79	64	51	47	67	60	50	52	45
Average	12	9	1	1	3	21	26	60	46	64	80	74	65	69	68	80	61	48	50	66	57	51	54	42	

Declaration 120
Peak average 80
Peak hour 88

CDG Aug '25 peak week daily average



CDG AUG25	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Mon			1			9	41	82	88	95	92	88	85	87	72	68	74	54	56	58	72	64	53	18
Tue				1		8	44	76	90	94	91	89	82	93	80	66	80	52	57	64	85	64	46	18
Wed		1		1		7	43	82	99	98	90	90	78	98	76	72	78	66	62	69	81	79	51	23
Thu					1	7	47	80	90	96	99	79	79	94	79	74	73	57	59	65	83	74	48	18
Fri		1			1	9	50	78	90	96	93	87	90	103	81	76	79	63	63	65	87	69	57	22
Sat				1	1	9	44	78	90	97	93	86	80	87	73	73	78	65	65	63	87	71	54	24
Sun						10	45	79	95	97	88	89	83	92	73	71	73	64	69	61	80	65	51	17
Average		1	1	1		8	45	79	92	96	92	87	82	93	76	71	76	60	62	64	82	69	51	20

Declaration 120
Peak average 96
Peak hour 103

CDG Sep '25 peak week daily average



CDG SEP25	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Mon		1				10	39	73	83	90	92	95	92	93	72	74	81	62	63	62	87	62	46	19
Tue			1			8	34	78	88	95	93	88	80	87	72	77	74	64	59	66	80	70	49	17
Wed						8	36	81	89	94	95	91	91	87	66	69	78	62	58	60	84	77	45	18
Thu						10	35	73	79	88	90	94	82	87	67	68	68	58	59	56	80	62	42	18
Fri						10	32	76	84	94	91	87	80	89	71	66	71	46	56	50	70	65	44	16
Sat						8	38	73	81	85	90	95	86	92	70	64	64	54	58	55	86	64	42	21
Sun						8	40	73	85	90	93	90	80	96	75	70	68	50	65	61	84	65	47	14
Average		1	1			9	36	75	84	91	92	91	84	90	70	70	72	57	60	59	82	66	45	18

Declaration 120
Peak average 92
Peak hour 96

Appendix E **INDICATIVE WACC ESTIMATE**

E.1. SUMMARY

We present our CPIH real pre-tax WACC of **4.68%** for H8, equivalent to 3.74% vanilla WACC. This is an indicative estimate following our analysis, for comparison purposes – rather than a detailed assessment of every parameter. We use a 31 March 2026 cut-off.

This compares to the CAA’s H8 equivalent pre-tax WACC of 5.85% (vanilla: 4.86%), using the mid-point of their range.

Table E.1: Comparison of WACC ranges for H8 (real, CPIH)

	CAA H8	CEPA H8
Cost of New debt	3.93%	3.57%
Cost of Embedded debt	2.77%	1.35%
Share of new debt	15.4%	15.4%
Issuance and liquidity costs	0.19%	0.15%
Cost of debt	3.14%	1.85%
RfR	2.33%	2.08%
TMR	6.82%	6.72%
EMRP	4.49%	4.64%
Asset beta	0.50	0.42
Debt beta	0.075	0.075
Equity beta	1.14	0.77
Cost of equity (post-tax)	7.44%	5.63%
Notional Gearing	60%	50%
Vanilla WACC	4.86%	3.74%
Assumed tax rate	25%	25%
Cost of equity (pre-tax)	9.92%	7.51%
Pre-tax WACC	5.85%	4.68%

Source: CEPA analysis.

The approach used for individual parameters is set out below.

E.2. DETAILED PARAMETER ESTIMATES

We adopt the following approaches for our indicative WACC estimate, drawing on the CEPA early WACC estimate in November 2025⁵³.

Notional gearing

We use 50%, consistent with our original CEPA paper – reflecting our view on a suitable capital structure.

Risk-free rate

⁵³ This report was estimating a real CPI rather than real CPIH WACC.

We use a one-month average of 20yr RPI index-linked gilts (2.04%) and use a net +4bps wedge to reflect the effects from RPI-CPI and CPI-CPIH wedges, based on official forecasts and swaps over the same 20yr horizon⁵⁴. This gives a 2.08% risk-free rate.

Total Market Return

We use the CAA's lower bound of 6.72%, which in our view better represents the available evidence than higher estimates in the CAA's range.

Asset beta

We use a 0.42 asset beta, with 0.075 debt beta. This is based on estimates in Table E.2 below.

We use a 0.53 empirical asset beta estimate, based on analysis contained in Appendix C.

The CEPA November 2025 paper proposed a relative risk adjustment to the asset beta of -0.15. We adopt the mid-point of that for our point estimate here (i.e. -0.075).

We have then adopted the CAA's mid-point assumptions for the impact of the TRS mechanism, but have not conducted a new full assessment of these input assumptions.

Table E.2: Asset beta estimate (using 0.075 debt beta)

	CEPA estimate
Empirical Asset Beta	0.53
Relative Risk Adjustment	-0.075
Heathrow pre-TRS asset beta	0.455
<i>Network Utility Asset Beta</i>	<i>0.360</i>
<i>Proportion explained by traffic risk</i>	<i>80%</i>
<i>Proportion mitigated by TRS mechanism</i>	<i>50%</i>
Impact of TRS mechanism	-0.04
Heathrow post-TRS asset beta	0.42

Cost of Debt

For the cost of debt, we use the same share of new and embedded debt as assumed by the CAA (15.4%). We apply 15bps for additional borrowing costs.

We estimate separate allowances for both embedded and new debt, fixed rate and index-linked debt. We assume a 75% share of fixed rate nominal debt, as per the CEPA November 2025 report.

We recommend that the fixed indexation approach set out in recommendation #7 is adopted for fixed rate nominal debt, but for the purpose of comparison derive a fully CPIH real estimate.

For embedded debt, we assume:

- a 13.5yr collapsing average of iBoxx GBP NFC A/BBB 10-15yr indices to derive a nominal cost;
- fixed rate nominal debt deflated by long-term 2.0% CPI assumption, with inclusion of 28bps for CPIH-CPI based on 10yr horizon; and
- index-linked debt deflated using 10-15yr CPI swaps (2.94%) with CPI-CPIH wedge included (+0.28%).

⁵⁴ We estimate the RPI-CPI wedge as +38bps and the CPI-CPIH wedge as -34bps at the 20yr horizon, as of March 2026.

For new debt, we assume:

- a 1m average of the iBoxx NFC A/BBB 10-15yr indices to derive a nominal cost; and
- inflation estimates as with embedded debt.

The combination of the assumptions leads to a 1.85% real CPIH cost of debt.

Table E.3: Cost of Debt estimation

		CEPA estimate
Embedded	Nominal cost of debt	3.90%
Embedded	Inflation – fixed rate debt (long-run OBR CPIH estimate)	2.28%
Embedded	Inflation – index-linked debt (10-15yr CPI swaps, w/ CPI-CPIH adjustment)	3.22%
Embedded	Real fixed rate debt cost	1.58%
Embedded	Real index-linked debt costs	0.66%
Embedded	Share of nominal fixed rate debt	75%
Embedded	Overall cost of embedded debt	1.35%
New	Nominal cost of debt (1m average of iBoxx A/BBB 10-15yr indices)	6.21%
New	Inflation – fixed rate debt (long-run OBR CPIH estimate)	2.28%
New	Inflation – index-linked debt (10-15yr CPI swaps, w/ CPI-CPIH adjustment)	3.22%
New	Real fixed rate debt cost	3.84%
New	Real index-linked debt costs	2.90%
New	Share of nominal fixed rate debt	75%
New	Overall cost of new debt	3.61%



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