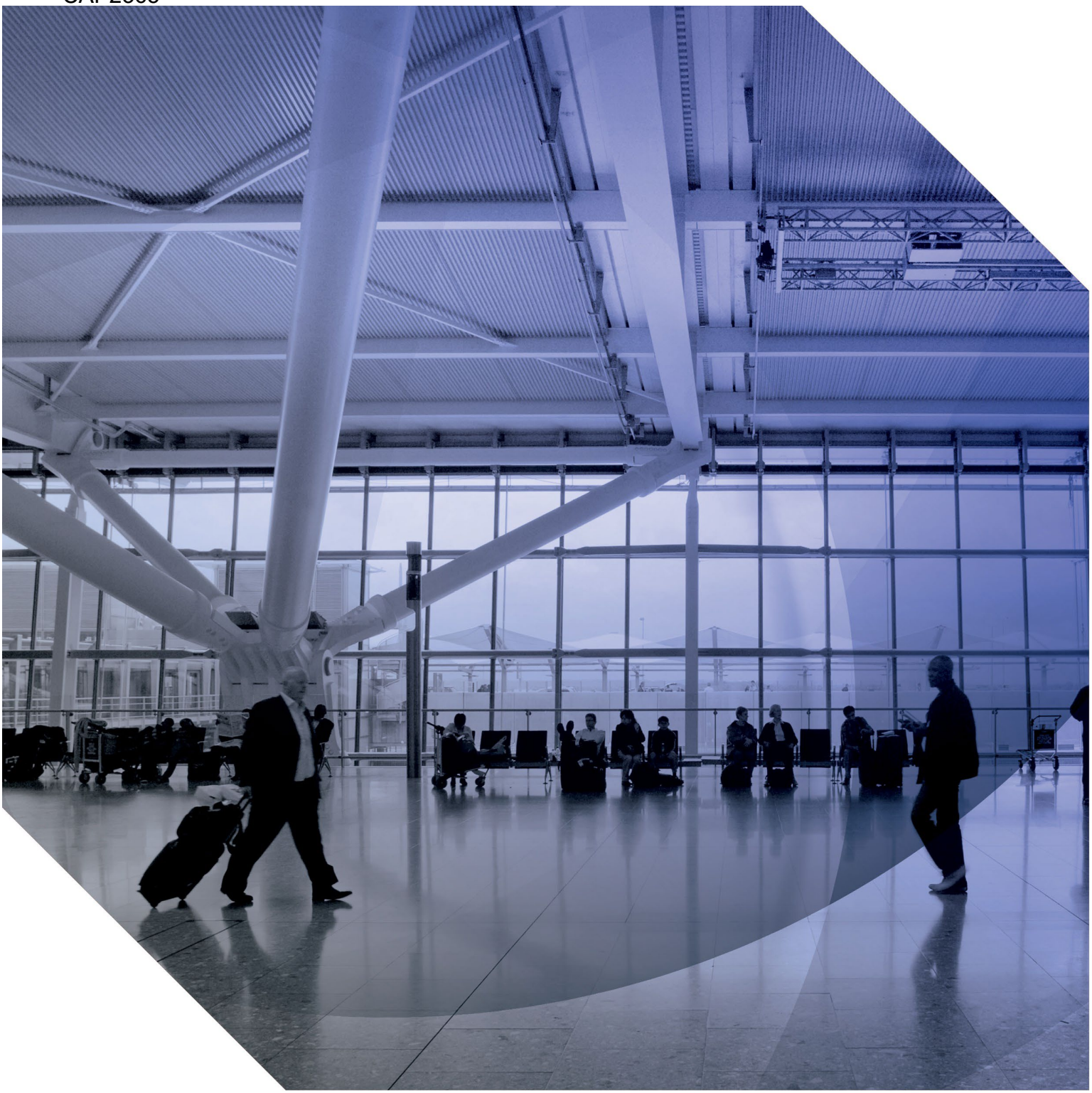
UK Civil Aviation Authority

Economic regulation of Heathrow Airport Limited: H7 Final Proposals

Section 3: Financial issues and implementation

CAP2365



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Contents

Chapter 9

Weighted average cost of capital

Introduction

9.1 The weighted average cost of capital ("WACC") is a key building block of the revenue we allow HAL to earn under the price control. It represents a return on the RAB and acts as a payment to investors and creditors for the risk they incur by committing capital to the business. Setting an appropriate WACC furthers the interests of consumers by helping to ensure that:

- HAL is able to finance the investment it needs to carry out its activities and meet the reasonable demands for AOS through providing a resilient and good quality airport experience; and
- efficient financing costs are reflected in the price control, which are no higher than necessary.

Setting an appropriate WACC is also one of the means by which we have regard to our duty to secure that HAL is able to finance its provision of AOS at Heathrow airport.

9.2 The WACC is estimated as a weighted average of the cost of equity and the cost of debt. The weights assigned to each are based on the proportion of debt and equity that we assume the notional company has in its financial structure (as discussed further below, and in chapter 12 (Financial framework) and chapter 13 (Calculating the price cap and financeability)). We refer to this as the "notional financial structure".

9.3 The cost of equity represents the expected return that the shareholders in a "notionally financed" airport operator would require in order to induce them to commit equity capital to the business. This expected return is not observable and so is estimated based on models that help to show how investors value equity investments. We have estimated the cost of equity for HAL based on the Capital Asset Pricing Model ("CAPM"). This model is used by economic regulators in the UK and has been used by stakeholders in their responses to our consultations. CAPM estimates the cost of equity based on three parameters:

- the equity beta (which we derive from estimates of the asset and debt betas)
- the risk free rate; and
- the total market return ("TMR").

9.4 The cost of debt provides HAL with an allowance to cover efficiently incurred borrowing costs. In estimating the cost of debt we take account of both of the following parameters:

- the cost of existing or "embedded" debt; and
- the cost of new debt.

9.5 This chapter starts by setting out important background information to our approach to setting the WACC and provides a brief summary of our final determination of the WACC. It then goes on to set out our analysis in detail on the following WACC parameters:

- asset beta;
- debt beta;
- TMR;
- inflation;
- risk free rate;
- cost of embedded debt;
- cost of new debt; and
- issuance and liquidity costs.

9.6 While the above analysis is helpful in informing a plausible range for the WACC, there remains an important element of judgment in finalising our estimate of HAL's WACC. These matters are discussed later in this chapter.

9.7 We then conclude by summarising our WACC estimate.

Background

Developments since Initial Proposals relevant to the WACC

Pandemic update

9.8 As discussed in the Summary, our work to set the price control has been conducted against a background of unprecedented uncertainty and in circumstances where elevated levels of uncertainty and risk are likely to continue for some time.

9.9 Given this context, it is important to distinguish between:

- shifts in investors' long-term perception of the risk exposure of airports due to the possibility of future pandemic-like events; and

- the residual effect or "tail" of the pandemic on HAL's WACC, which could, for example, result from uncertainty regarding the trajectory of the recovery.

9.10 The first of these factors will have an enduring impact on HAL's WACC, which will continue even once the immediate effects of the current pandemic, for example on traffic volumes, have abated.

9.11 Evidence in respect of the second factor is mixed. For example, we present evidence in this chapter and the accompanying report by our advisors, Flint Global ("Flint"), that the pandemic is no longer dominating the WACC of the comparator airports used to estimate HAL's WACC. On the other hand, HAL's passenger volumes are likely to remain below capacity for some time during H7. This implies that HAL's risk exposure compared with comparator airports remains elevated compared with the period prior to the pandemic when HAL benefitted from excess demand due to capacity constraints.

Higher inflation

9.12 We are also experiencing significantly higher inflation than has been observed for some considerable time.

9.13 Higher inflation can be positive for RAB-regulated businesses such as HAL, since their RAB is indexed to inflation. If a significant proportion of debt financing is fixed in nominal terms, higher inflation will reduce the real cost of debt to the benefit of consumers. We consider it appropriate to reflect this fall in the real cost of debt by allowing for a proportionate reduction in the assumed RPI-adjusted, real ("RPI-real") cost of debt.

9.14 We have also considered the impact of higher inflation on the cost of equity. It is common practice among UK regulators to assume that the RPI-real cost of equity is relatively stable over time, and generally unaffected by changes in interest rates and inflation. At the same time, there is evidence to suggest that both low interest rates and high inflation should imply a lower RPI-real cost of equity. For example, real UK equity returns have historically been negatively correlated with inflation. We consider the impact of higher inflation on the cost of equity as part of our assessment of the choice of point estimate within the WACC range, which is discussed further at the end of this chapter.

9.15 The Russian invasion of Ukraine that commenced at the end of February 2022 may have exacerbated the inflationary trends discussed above. They may also have contributed to a tightening of monetary policy and increases in interest rates in the broader economy. We consider that these effects are reasonably captured in the data we have used for estimating the WACC, which includes information up to 31st March 2022.

9.16 In the light of these developments, we have chosen to place greater weight on recent data, in order to capture the potential for these factors to influence market

variables on an ongoing basis. For example, we have shortened the averaging period we use to estimate the risk free rate and cost of new debt from 6 months to 1 month. This has the effect of increasing our estimate of both parameters, although the resulting increase in the WACC overall is marginal.

Interactions with other elements of the price control

9.17 Our assessment of the WACC has been based on various assumptions regarding other aspects of the price control and should be read in conjunction with the relevant chapters on those matters. Specifically, we have estimated the WACC on the assumption that:

- we will set a five-year, RPI-linked price cap;
- we will apply the £300m uplift to the H7 RAB that we announced in The April 2021 RAB Adjustment Decision;
- no further uplift will be applied to the opening H7 RAB in respect of losses incurred during the covid-19 pandemic, consistent with the reasoning set out in chapter 10 (The H7 Regulatory Asset Base and HAL's request for a RAB adjustment);
- a Traffic Risk Sharing ("TRS") mechanism will apply in H7 in the way discussed in chapter 2 (Regulatory framework); and
- we will provide an allowance for asymmetric risk in H7 that will reflect both the impact of the current pandemic and the mitigating impact of the TRS, as outlined in chapter 11 (Allowance for asymmetric risk).

Cut-off date for WACC estimate

9.18 We have estimated the WACC for H7 as of 31st March 2022, in order to:

- ensure that we have estimated each WACC parameter based on a consistent endpoint; and
- allow for sufficient time to carry out appropriate checks and quality assurance.

9.19 We are aware of the natural volatility in financial markets and that the period since 31 March 2022 has seen a significant amount of change in certain parameters that bear on the WACC. For the reasons described in the preceding paragraph we are content that it is appropriate to have a cut-off date. Being mindful of the current levels of market volatility our analysis has made use of shorter averaging periods than regulators typically use, as described elsewhere in this chapter.

Summary of WACC determination

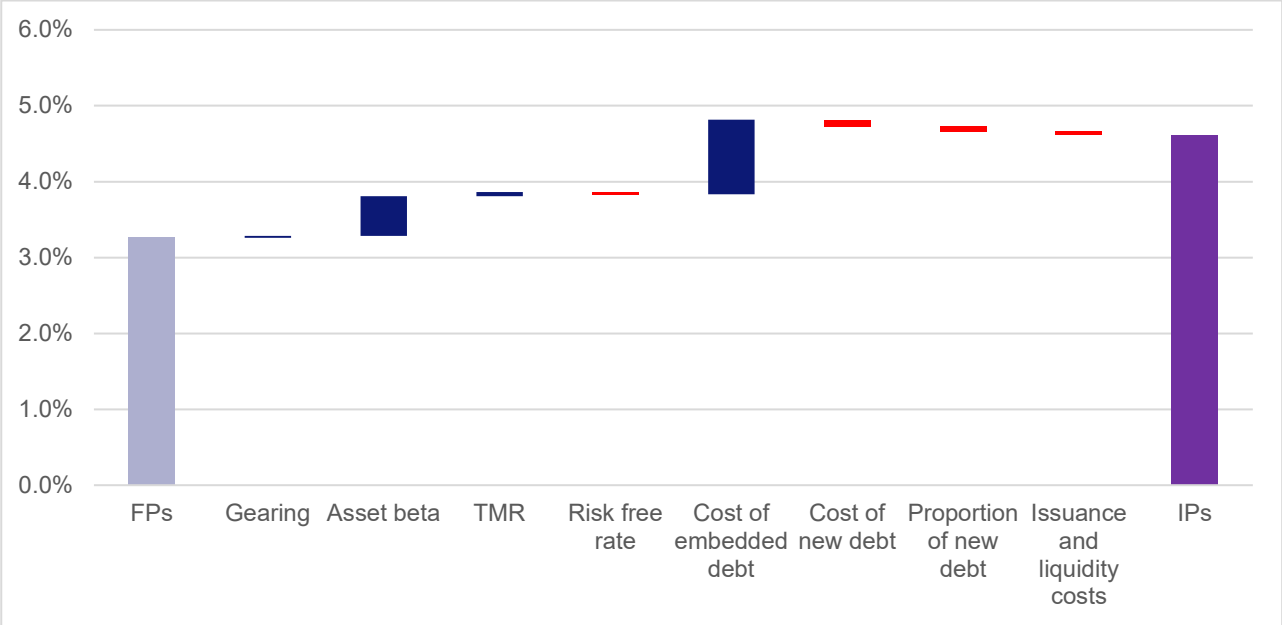
9.20 We have estimated an RPI-real, vanilla WACC of 3.26% for H7. This represents a 135bps reduction on the midpoint of our Initial Proposals range of 3.58%-5.64%. Our Initial Proposals estimated what we considered to be a reasonable range for the WACC based on the information that was available at that time. However, as indicated above, there have been important developments since then that have led us to reconsider our approach. We have also further refined our approach to take account of stakeholder feedback in some areas. Figure 9.1 below summarises the impact of changes in individual WACC parameters since our Initial Proposals on the WACC overall.

9.21 The most significant change since Initial Proposals has been a reduction in the real cost of embedded debt. This is predominantly driven by the increase in the inflation forecast for H7 since Initial Proposals, which has the effect of increasing the value RAB as this is indexed by the RPI, but the cost of HAL's nominal embedded debt will remain constant and its real cost will fall.

9.22 We have also more closely matched our notional benchmark to HAL's cost of Class A debt by introducing a HAL-specific premium of 8bps. This reflects our view that HAL's Class A debt has, on average, underperformed the benchmark index over the period under consideration. In addition, we have amended the historical period over which we estimate the notional cost of embedded debt from 20 years to 13.5 years. We consider that this better reflects the issuance profile of HAL's Class A debt, which has been issued more recently on average than a 20-year profile would imply.

9.23 The other key change since our Initial Proposals is a reduction in the asset beta. This principally reflects a larger downward adjustment in respect of the TRS mechanism, which we now apply to the entirety of the asset beta, not solely to the pandemic-related component as was the case in our Initial Proposals. We signalled our intention to make such an adjustment in our Initial Proposals, although we indicated that we would do so through the choice of the final WACC point estimate from within the range, rather than explicitly making an adjustment to the asset beta. The further analysis and assessment we have undertaken suggests that directly adjusting the asset beta is a more transparent and robust approach, rather than making an adjustment to the point estimate for the WACC.

Figure 9.1: Summary of changes in WACC determination between Initial and Final Proposals



Source: CAA

Asset beta

Context

9.24 The asset beta is a measure of the "systematic" risk to which a company is exposed. This is the proportion of total risk that cannot be eliminated by holding a diverse portfolio of assets. It is an important input into our cost of capital estimate because, under the CAPM, the beta is the parameter that determines shareholders' required return for holding a stock in a specific business, in this case Heathrow airport. We estimate that a 0.01 increase in the asset beta results in an 8bps increase in the WACC.

9.25 Consistent with the CMA's approach in its determinations of the PR19 water price controls and its previous decisions, we estimate the asset beta and then consider how this should translate into an estimated equity beta through our assumptions about the notional company's gearing and the debt beta. In our Initial Proposals[1], we set out a proposed approach for estimating the asset beta, which was informed by views from stakeholders and an expert report we commissioned from Flint[2]. We set out our view of:

- HAL's pre-pandemic asset beta;

[1] CAA (2021), Economic regulation of Heathrow Airport Limited: H7 Initial Proposals, October, Paragraphs 9.11-9.76.

[2] Estimating Heathrow's beta post covid-19, Flint, August 2021 www.caa.co.uk/cap2266E

- the impact of the pandemic on HAL's asset beta; and
- the effect of the TRS mechanism on HAL's asset beta.

9.26 Our Initial Proposals for the asset beta are summarised in Table 9.1 below.

Table 9.1: Initial Proposals estimate of asset beta components

Component	Range	
	Low	High
Pre-pandemic asset beta	0.50	0.60
Unmitigated impact of pandemic	0.04	0.14
Effect of regulatory mitigations	(0.02)	(0.07)
Asset Beta Estimate	**0.52**	**0.67**

Source: CAA

Pre-pandemic asset beta

9.27 In our Initial Proposals, we proposed a range for the pre-pandemic asset beta based on three airport comparators: AENA, ADP and Fraport[3]. The equity betas for these airports were estimated using daily data over 2- and 5-year windows, and based on a combination of spot rates, 2-year trailing averages and 5-year trailing averages.

9.28 We did not make any adjustment in our Initial Proposals for HAL's relative risk compared with the comparator airports, for example in respect of excess demand resulting from capacity constraints at Heathrow.

Unmitigated impact of pandemic

9.29 We then estimated the impact of the pandemic on HAL's asset beta. This was based on return data for a broader set of six comparator airports[4] prior to and during the pandemic.

9.30 Specifically, we carried out a weighted regression of daily returns for these airports against their respective market indices, where different weights were applied depending on whether the observation falls within or outside the pandemic period. A lower weight was applied to pandemic-period observations, reflecting an assumption of the frequency with which pandemic-like events might occur in the future (once every 20-50 years) and their duration (17-30 months).

3 These are the listed airport group companies whose largest airport holdings are Madrid Barajas, Paris Charles De Gaulle and Frankfurt airport respectively.

4 AENA, ADP, Fraport, Zurich, Vienna and Sydney.

We then compared this to a similar regression that assigned zero weight to pandemic-period datapoints to estimate a pandemic impact for each airport.

9.31 The pandemic impact for HAL was then estimated based on:

- the ranges for pandemic duration and frequency set out above; and
- 1, 4 and 6-company averages across the comparator airports.

Effect of regulatory mitigations

9.32 In our Initial Proposals we assumed that the introduction of a TRS mechanism would have the effect of mitigating the increase in the asset beta resulting from the pandemic.

9.33 We estimated that the TRS mechanism would insulate HAL from approximately 64% of cashflow losses in the event of a future pandemic-like event. On this basis, we reduced the impact of the pandemic by half to account for the effect of the TRS mechanism, noting that investors may not price in the full value of cashflow protections it offers, for example, because of uncertainty regarding the longevity of the mechanism.

9.34 We also said that the TRS mechanism would reduce the pre-covid asset beta for HAL. However, we noted that this effect is more difficult to quantify, since we lack a robust estimate of HAL's pre-pandemic equity volatility and said that we would reflect this impact in our choice of point estimate for WACC in making Final Proposals.

Stakeholders' views

9.35 Stakeholders commented extensively on the asset beta estimate used in our Initial Proposals as summarised below.

Airline stakeholders

9.36 Comments from airline stakeholders in respect of the asset beta were largely based on a report by CEPA, commissioned by the AOC/LACC.[5]

9.37 Other airline stakeholders also referred to the Initial Proposals asset beta as being too high or “exaggerated”, but the detailed comments underpinning these views were largely set out in CEPA’s report.

Pre-pandemic asset beta

9.38 CEPA made several statements in respect of pre-pandemic asset beta. In summary, these were that we:

[5] CEPA (2021), “Response to CAA H7 Initial Proposals: Cost of Capital”, December

- had incorrectly and arbitrarily excluded some asset beta estimates in concluding on a range;
- had not sufficiently explained our reasons for departing from our prior determination (including the Q6 price control review) of asset betas for HAL when estimating the pre-pandemic asset beta. CEPA considered that our implied view of HAL's risk exposure relative to comparators was unsubstantiated and contradicted our previous judgements;
- had not considered relevant methodological approaches that support a lower beta. CEPA referred specifically to the use of domestic or global market indices, and estimating gearing using the market rather book value of debt; and
- incorrectly rejected evidence from suitable comparators that were used at Q6, namely, Copenhagen and Auckland, and placed insufficient weight on Sydney and Vienna.

CEPA also disagreed with our choice of AENA as our preferred comparator, which it stated is at least as flawed as a comparator to HAL as ADP, Fraport or Sydney.

9.39 CEPA estimated that HAL's pre-pandemic asset beta should be in the range of 0.45-0.50.[6]

Unmitigated impact of pandemic

9.40 CEPA broadly supported our overall approach to capturing evidence on beta drawn from the Covid-19 pandemic and agreed that:

- it is appropriate to reflect evidence prior to the pandemic to avoid its long-term impact being overstated;
- it is appropriate to reflect evidence both during and after the pandemic since this is likely to continue to inform investors' expectations to a degree; and
- a robust estimate of the long-term beta for Heathrow Airport can be obtained as a weighted average of those two sources of evidence, with the weights dependent on the expected future frequency and duration of similar magnitude events.

9.41 However, CEPA challenged the following aspects of our estimate of the pandemic impact and stated that:

[6] CEPA (2021), "Response to CAA H7 Initial Proposals: Cost of Capital", December, table on Page 42,

- we had failed to interrogate evidence provided by them regarding the long-term impact of the pandemic: specifically, short-window asset betas and Winsorization;[7]
- the use of a simple average of asset betas estimated during and prior to the pandemic period[8] is preferable and more intuitive. CEPA stated that our approach gives significant and unwarranted power to outliers/high-leverage points in the sample;
- our assumption that a pandemic-like event will occur once in 20 years on average is not supported by evidence and that we have failed satisfactorily to rule out lower frequencies;
- our assumption of a pandemic duration of 30 months is speculative and overstated the impact of the pandemic on the volatility of airport stocks;
- the midpoint of our pandemic impact estimates may not be representative, due to the asymmetric impact of errors at the high end of the range compared with the low end of the range; and
- our estimate of the pandemic impact is inconsistent with evidence on the recovery of comparator airports' valuations since the onset of the pandemic.

9.42 CEPA estimated a range for the H7 asset beta of 0.46-0.52 once the impact of the pandemic is taken into account.

Effect of regulatory mitigations

9.43 CEPA agreed with our view that the TRS mechanism should reduce HAL's asset beta. However, they considered that we had failed to develop our own view of the impact of the TRS mechanism on the H7 asset beta, and that we should explicitly quantify this impact at Final Proposals.

9.44 CEPA estimated an overall range for the H7 asset beta of 0.38-0.48[9], taking into account its view of the impact of the TRS.

HAL

9.45 HAL also commented extensively on our Initial Proposals asset beta estimate in its main response. It commissioned a report from Oxera Consulting on the asset beta to support its response.

Pre-pandemic asset beta

9.46 HAL and Oxera did not express substantial concerns with our estimate of the pre-pandemic asset beta. Each concurred with our view that it is not appropriate

[7] Winsorisation refers to the process of transforming statistics by truncating extreme values.

[8] We refer to this as the "cross check" method for the remainder of this document.

[9] CEPA (2021), "Response to CAA H7 Initial Proposals: Cost of Capital", December, page 2

to include either Sydney or Vienna in the comparator set that we used to estimate the pre-pandemic asset beta.

Unmitigated impact of pandemic

9.47 HAL set out several challenges to the estimate in our Initial Proposals of the impact of the pandemic on its asset beta. Specifically, it considered that:

- our estimate of the H7 asset beta assumes only a modest increase over the CMA's RP3 determination of the beta for NERL, and hence is not credible;
- our estimate of the H7 asset beta is materially below the level implied by market data (meaning daily data since March 2020), and hence is flawed;
- our approach assumes that HAL's asset beta will fall to a new lower level from January 2022, but this is not consistent with recent estimates of asset beta. In addition, evidence from the information and technology sectors shows that sudden increases in asset beta may not be mean-reverting;
- our approach assumes that investors' response to risk is linear, when in fact investors could place greater weight on high risk periods;
- we have not fully accounted for differences in traffic mix, which HAL contends is a factor that has a significant influence over an airport's vulnerability in the face of a pandemic;[10]
- our approach of reweighting observations from historical periods contradicts the assumption that capital markets are efficient and that share prices and returns drawn from the most recent period best reflect market expectations of future risks and returns;
- Oxera has conducted an analysis of option-implied volatilities, which it considers implies a higher asset beta than implied by our analysis; and
- it is not appropriate to place weight on Sydney or Vienna given that these comparators were rejected by the CMA as being unsuitable, as well as their significant differences from Heathrow.

Effect of regulatory mitigations

9.48 While HAL acknowledged that the new TRS mechanism might have an impact on asset beta, it considered that the adjustment we made at Initial Proposals is erroneous. It stated that:

- our comparators all already benefit from some form of risk-sharing, and so observed betas already reflect the impact of the TRS mechanism;

[10] Oxera makes the same point. See Oxera (2022), "Cost of Capital issues for the H7 period", December, Section 2.6.

- the CMA did not adjust comparator betas at RP3, even though NERL had a TRS mechanism in place. HAL considered that applying an adjustment now would be inconsistent with regulatory precedent;
- the magnitude of our TRS adjustment to the asset beta is not consistent with our own previous estimates of the correlation of Heathrow risk to market risk; and
- the impact of the TRS is overestimated as we have not accounted for the in-period increases in the cost of capital during and after pandemic-magnitude events (a point also made by Oxera).

9.49 Based on recent market data for AENA, ADP, Fraport and Zurich, HAL considered that an asset beta estimate of 0.82 was appropriate.[11]

Our views

9.50 Our approach to estimating the asset beta for H7 largely preserves the framework we adopted at Initial Proposals but updates the analysis in light of new data up to March 2022. It also makes certain targeted adjustments based on feedback we have received from stakeholders and other evidence.

9.51 In line with our Initial Proposals, we have started by estimating the asset beta for HAL that we think would have been observed if the pandemic had not taken place and in the absence of any changes to the regulatory framework. We refer to this as the "pre-pandemic" asset beta.[12] For the reasons set out below, we now consider that the pre-pandemic asset beta would have been broadly in line with its Q6 level.

9.52 We then consider the impact of the pandemic. In our view, the pandemic has increased the H7 asset beta for two reasons:

- it has narrowed the risk differential that previously existed between HAL and comparator airports. HAL previously benefited from excess demand to a greater extent than airports such as ADP and Fraport, whose capacity constraints were less acute than HAL's. This meant that HAL was less exposed to fluctuations in unconstrained demand. However, the onset of the pandemic means that HAL is not expected to benefit from significantly greater levels of excess demand than comparator airports in H7 overall; and

[11] HAL (2021), "*Economic regulation of Heathrow Airport Limited: H7 Initial Proposals (CAP2265)*", December, p287.

[12] We distinguish the "pre-pandemic" asset beta from the "baseline" asset beta estimated by Flint, which represents the asset beta that would have prevailed in the absence of the pandemic, but assuming away any risk differential between HAL and comparator airports.

- it has resulted in higher asset betas for comparator airports that we assume will persist over the longer-term, albeit not to the extent observed in 2020 and 2021.

9.53 Finally, we have assumed that the application of a TRS mechanism will reduce HAL's asset beta, for two reasons:

- because it will mitigate the impact of future pandemic-like events on HAL's asset beta; and
- because the TRS mechanism will mitigate the impact of "business as usual" traffic volatility on HAL's equity returns, and hence reduce the pre-pandemic asset beta.

9.54 In our Initial Proposals, we estimated the impact of the first effect only, but signalled that would account for both at Final Proposals. We set out our estimates of the combined impact of both effects in this chapter.

9.55 In all of the above areas, we have had to exercise judgement, particularly given the absence of direct HAL share price data. Estimating the asset beta unavoidably requires that we make various assumptions, and we acknowledge that there are alternative assumptions and approaches that could be adopted. However, we are satisfied that the framework we have adopted is coherent overall, and that our proposed asset beta is reasonable given the available evidence.

9.56 Given the volume of stakeholder responses, and the technical nature of the assessment, we have commissioned a further expert report from Flint to support our approach to estimating asset beta for H7. We have asked Flint to provide its views on stakeholder comments in their report, and these have informed our own responses. The discussion below should therefore be read in conjunction with the updated Flint report accompanying this document.

9.57 We respond separately to stakeholder views on:

- the pre-pandemic asset beta;
- the impact of the pandemic; and
- the impact of the TRS mechanism.

Pre-pandemic asset beta

HAL's risk exposure relative to comparator airports

9.58 At Q6, we estimated an asset beta for HAL (0.42-0.52) that was below the estimated asset betas for Fraport (0.52-0.55) and ADP (0.59-0.60), and in line with the Q5 estimate (which was based on BAA's share price data). We justified the differential between HAL and ADP/Fraport on the basis that HAL exhibited

excess demand due to the capacity constraint, which insulated it from demand risk to a greater extent than comparator airports.

9.59 We indicated in our Initial Proposals that we did not consider it appropriate to rely on the BAA share price data, given that this is now over 15 years old. This means that we must rely on comparator asset beta estimates. CEPA has highlighted that we did not carry out a relative risk analysis, and as such we have assumed, without justification, that HAL exhibits a similar level of risk exposure to comparator airports. We acknowledge this observation.

9.60 In light of CEPA's feedback, we have re-considered whether there are reasons to expect that HAL's asset beta would be lower than comparator asset betas in the absence of the pandemic. We have concluded that we agree with CEPA's assessment that a full analysis of relative risk, excluding the impact of the pandemic, may suggest an asset beta for HAL below that of the comparator airports considered.

9.61 As noted above, the principal reason why we considered that a lower asset beta for HAL relative to comparator airports was warranted at Q6 was the presence of excess demand due to the existence of a capacity constraint. We consider that, in the absence of the pandemic, this would have continued to be the case in H7.

9.62 Overall, therefore, we consider that the pre-pandemic asset beta for HAL in H7 is likely to be in line with the level we previously determined for Q6 of 0.50. This is at the bottom of the range for Flint's baseline asset beta of 0.50-0.60. This difference arises because Flint has not carried out a relative risk analysis, and so its analysis effectively assumes away any risk differential between HAL and comparator airports.

9.63 We note that there is evidence (such as from the CMA's RP3 determination) to suggest that capacity constraints at comparator airports were becoming more binding prior to the pandemic. This could be seen as implying that comparator airports were, like Heathrow, becoming more insulated from business-as-usual fluctuations in demand risk due to the presence of excess demand. This in turn would suggest that capacity constraints were diminishing in importance as a distinguishing factor between HAL and comparator airports. We consider that is consistent with CEPA's observation that comparator asset betas were falling prior to the pandemic.[13]

Comparator set used to estimate Flint's baseline beta

9.64 Both HAL and the airlines have commented extensively on our choice of comparators and have suggested that our selection of comparators is inappropriate for various reasons.

[13] CEPA (2021), "*Response to CAA H7 Initial Proposals: Cost of Capital*", Figure 2.4.

9.65 Stakeholder feedback does not always clearly distinguish between the comparator set used to estimate the baseline asset beta and that used to estimate the pandemic impact. We comment on the baseline asset beta comparators immediately below and the pandemic impact comparators at paragraph 9.102.

9.66 We continue to consider that, in the absence of the pandemic, AENA, ADP and Fraport (the "baseline comparator set") would represent the best comparators for HAL. However, we also remain of the view that the use of a broader set of comparators is warranted for the purposes of estimating the impact that the pandemic has had on airport betas generally. This approach ensures that we reduce the effect of specific changes in investors' perception of risk at individual airports that might be company-specific and not relevant to Heathrow.

9.67 We are aware of limitations associated with both comparator sets. For example, we are conscious that the three airport comparators in the baseline comparator set, own portfolios of airports rather representing "pure-play" single airport comparators. We acknowledge that, all else being equal, this reduces their reliability as comparators. However, it is not obvious that this introduces a systematic bias into our assessment. On the one hand, the comparator betas may be higher due to the presence of smaller, and presumably riskier, airports in less-developed markets. On the other hand, because these holdings are in economies outside of Europe, their contribution to the observed group beta, which is measured against a European index, may reduce the observed beta.

9.68 We also note that our position with respect to the baseline comparator set is consistent with the position of the CMA in its redetermination of the RP3 price control.

9.69 In the case of the baseline comparator set, we focus on AENA, ADP and Fraport because:

- the groups are operators of large airports, including major hub airports;
- the listed entities are large companies with a significant volume of free-floating shares and there is significant liquidity in the market for these shares; and
- while the groups contain some businesses in addition to large European airports, these businesses represent a minority of their activities and, hence, are unlikely to exert a material impact on betas.

9.70 CEPA has suggested that we should not have excluded Sydney and Vienna from our baseline comparator set and for the same reasons has suggested that we assign them a higher weight in our broader comparator set. We address CEPA's remarks regarding each of these comparators below.

- **Sydney**: CEPA stated that differences in the regulatory framework alone do not constitute an adequate reason for exclusion. We agree that these differences do not necessarily point to a clear bias in the beta, and hence, on their own would not warrant exclusion. However, at a minimum, they limit the reliability of Sydney as a comparator. We disagree with CEPA that the use of the Australian stock index is at least as suitable as the stock return data used to estimate the TMR. The Sydney market index is less diversified and geographically differentiated than the market indices we have used for other airport comparators. We further note that there are other important differences that have not been addressed by CEPA: Sydney operates in a geographically distinct market from the other comparators and its demand is dominated by domestic traffic. It has also been subject to a takeover meaning that its stock is no longer traded. Collectively, we consider that these differences warrant the exclusion of Sydney from the baseline comparator set.
- **Vienna**: CEPA has stated that size does not constitute an important difference and highlighted that it operates at a similar scale to ENAV. We do not view CEPA's comparison to ENAV as relevant for the purposes of setting a price control for a large airport, since ENAV is also considerably smaller than Heathrow. We therefore continue to view size as an important difference. CEPA has also suggested that attaching zero weight to Vienna is not a proportionate response to its low observed liquidity. As we indicated at Initial Proposals, low liquidity has the potential to introduce bias into our beta estimation. Taken together, these factors lead us to exclude Vienna from our baseline comparator set.

9.71 CEPA has also stated that it was inappropriate for us to exclude Copenhagen and Auckland from both the baseline and broader comparator sets. We respond to these statements below.

- **Copenhagen** - CEPA suggests that Copenhagen's bid-ask spread is only slightly higher than Vienna's (an airport that we include in our broader comparator set), implying this justifies an equivalent treatment for both stocks. However, the bid-ask spread is only one of various measures of share-price liquidity. Given the very small proportion of free-floating shares at Copenhagen, which is materially lower than for our other comparators, we remain of the view that its beta cannot be estimated reliably, and we do not include it in either comparator set.

- **Auckland**: we agree with CEPA that Auckland's share of revenues from non-aviation activities is similar to some other comparator airports. However, we note that Auckland also undertakes significant property development activities that do not yield revenues. Moreover, we continue to view Auckland's beta as unreliable due to the lack of diversity in the NZ index. We do not consider that the secondary listing on the Australian index would materially improve reliability, since secondary listings tend to be less liquid. Finally, we note that CEPA itself does not place weight on Auckland in arriving at its estimate. We therefore continue to exclude this comparator from both comparator sets

9.72 In summary, we have decided to retain the selection and weighting of comparators for the baseline asset beta as used in our Initial Proposals. Issues relating to the comparator set used to estimate the pandemic impact are discussed at paragraph 9.102 below.

Rounding of asset beta estimates

9.73 CEPA has suggested that "The CAA and its advisers have incorrectly rounded relevant asset beta estimates".[14]

9.74 We disagree with CEPA's characterisation of our rounding of values as incorrect. Our use of rounded numbers results in a reasonable representation of the underlying values given the level of accuracy of the estimates. CEPA's proposal would constitute spurious accuracy (to within single-basis point precision) and in any case, the effect of this rounding is very small.

Methodological approaches supporting a lower asset beta

9.75 CEPA refers to two such approaches: (i) the use of a domestic or world market index as opposed to a European market index and (ii) the use of a market value of debt rather than a book value of debt for the de-levering and re-levering of the beta.

9.76 The choice of market index was considered explicitly in our Initial Proposals. A European index was chosen as we considered that it exhibited more desirable characteristics compared with domestic indices. For example, we noted that neither Fraport nor ADP are included in the domestic large-cap indices for their respective country of operations (the CAC40 and DAX). We also note that the statistical properties of beta regressions against world indices are markedly poorer than those against the Eurostoxx.

9.77 We acknowledge that we have relied exclusively on a book value measure of gearing to date. However, as noted by CEPA, there are significant practical obstacles to estimating gearing on a market value basis. Firstly, a substantial

[14] CEPA (2021), "*Response to CAA H7 Initial Proposals: Cost of Capital*", section 2.1.1.

proportion of HAL's debt is not actively traded, so estimating a market value measure of gearing for the notional company is not straightforward. Similar limitations apply to HAL's comparators.

9.78 Secondly, doing so would introduce further inconsistencies, since we lack a market value of equity for HAL. We would be required to estimate gearing using the market value of debt and a proxy for an enterprise market value, such as the RAB. This could produce misleading results. For example, if the market value of debt declined but the RAB remained relatively constant, this would suggest HAL's gearing had declined when this might not be the case. If we only used CEPA's proposed approach for comparators (but not for HAL), this could result in an inconsistent measurement of gearing between HAL and its comparators that could be equally misleading. We are, therefore, not persuaded that CEPA's proposed approach is superior to ours.

9.79 The use of a book value measure of gearing is also an established approach in UK regulation, particularly where robust market benchmarks are absent. For example, the CMA, following Ofwat's approach, applied this approach in its determination of the PR19 appeal. We are, therefore, satisfied that our approach is reasonable and appropriate.

Impact of the pandemic

HAL's risk exposure relative to comparator airports

9.80 We consider that HAL is likely to have exhibited lower risk exposure relative to comparator airports in the absence of the pandemic. However, the pandemic has had a significant effect on each of the drivers of differences in risk exposure between HAL and comparator airports:

- it is unlikely that HAL will exhibit materially greater excess demand in H7 than comparator airports. In fact, neither HAL nor the airports in our comparator set are likely to fully reach their capacity constraints in the near future;
- CEPA suggested that HAL is less exposed to risk due to its previously higher proportions of long-haul traffic and lower proportion of LCC traffic. However, HAL has exhibited a greater decline in traffic during the pandemic than most comparator airports, in part because long-haul traffic at HAL was more affected by the pandemic than short-haul and LCC traffic;
- CEPA suggested that HAL's traffic volatility has been lower than comparator airports. This has not been the case during the pandemic, and there is no evidence to suggest it will be the case in H7, particularly given that there will be limited capacity constraints for a substantial proportion of that period; and

- CEPA also suggested that other airports have greater growth and development risk than several comparator airports due to various investment projects taking place at these airports. This is unlikely to be the case in H7, as capex at most airports has been significantly scaled back due to the pandemic.

9.81 This suggests to us that the pandemic has effectively eliminated the risk differential that previously existed between HAL and comparator airports. We indicated above that we consider HAL's pre-pandemic asset beta to have been around 0.50. Flint has estimated the pre-pandemic asset beta for comparator airports to be 0.50-0.60. We therefore assume that the pandemic has increased HAL's asset beta by up to 0.1 due to the change in its relative risk compared with listed comparators. This is separate from and cumulative with the impact of the pandemic on comparator asset betas of 0.02-0.11 estimated by Flint.

Scale of the pandemic impact

9.82 HAL suggested that our asset beta estimate is not credible because it assumes only a small increase relative to the CMA RP3 determination. It has also suggested our estimate is flawed since it is materially below the level implied by market data, which refers to daily data since March 2020.

9.83 The CMA's RP3 determination estimated the WACC for NERL only and did not comment specifically on HAL's WACC or HAL's beta. For example, it did not consider or comment on HAL's risk exposure relative to NERL or any of the comparator airports considered at RP3. We therefore consider the CMA's determination for NERL to be of limited relevance to HAL in H7.

9.84 We disagree with the premise of HAL's statement that the scale of the increase in and of itself calls into question its credibility. Implicit within HAL's statement is the view that a substantial increase in the asset beta is self-evident and obvious, whereas we consider that the asset beta estimate should be guided by the evidence, without pre-conceptions regarding its ultimate level.

9.85 We also disagree with HAL's view that our asset beta estimate is flawed because it does not align with recent market data. We have already explained in our Initial Proposals why we consider our approach of weighting data points from before, during and after the pandemic period is appropriate. The Flint report accompanying this document explains this further. In short, we do not consider that what HAL regards as recent market data can be relied upon as an unadjusted indicator of forward-looking betas.

Assumptions underpinning the weighting of pandemic-period data

9.86 HAL has imputed various assumptions underpinning our analysis, with which it disagrees. It has suggested that we have assumed that HAL's equity beta will revert to its pre-pandemic level from the start of 2022 and that investors' risk

aversion is linear, which we have taken to mean that investors place greater weight on periods of market turbulence.

9.87 Both statements mischaracterise our approach:

- in the future, short-term observed values for airport betas are likely to be higher during periods of pandemic-like events and lower outside of these periods. Our modelled beta captures the relative frequency of such events, and the associated share price behaviours. This does not comprise a deterministic assumption that short-term betas will revert to any particular level at any particular point in time; and
- we disagree with HAL's view that using a linear OLS method means that we assume investors' perception of risk is linear. The weights we apply to pandemic and pre-pandemic data reflects their relative frequency of appearance in a long-run dataset used to estimate the beta. It does not give rise to an undue linear influence in defining the beta. Indeed, under OLS, outliers tend to exert a greater influence on the estimated beta than other values. This is also an important difference between our proposed approach and the cross-check method preferred by CEPA.

Evidence of mean reversion

9.88 Both HAL and the airlines have submitted evidence to us regarding mean reversion in share prices and equity betas. HAL has presented evidence from the information and technology sectors that, HAL suggests, demonstrates that sudden increases in asset beta need not be mean reverting. Similarly, CEPA has presented evidence regarding the share prices of the comparator airports we used to estimate HAL's asset beta and argues that this implies that the pandemic has had a limited enduring impact on HAL's systematic risk exposure. Both sets of evidence have limitations.

9.89 While equity betas may have remained elevated following shocks in other sectors at different points in time, we note that the short-term asset betas for comparator airports have already exhibited substantial convergence to pre-pandemic levels.

9.90 Nonetheless, we disagree with CEPA's implied view that the recovery of comparator airports' share prices indicates that the pandemic has had a limited effect on airports systematic risk, and that apparent share price volatility simply reflected investors' reaction to new information about the timing of risks that they already foresaw.

9.91 The fact that share prices may or may not have subsequently recovered does not tell us anything about the systematic risks observed during the pandemic period and, by extension, does not provide us with predictive power regarding

the behaviour of share prices and observed betas during potential future pandemic-like events.

Relevance of traffic mix to the pandemic impact

9.92 We note that different stakeholders have put forward opposing views regarding the impact of traffic mix on HAL's relative risk exposure.

9.93 While CEPA has implied that traffic mix suggests that the observed beta estimates for comparators exaggerate HAL's risk exposure, HAL and Oxera have argued that traffic mix has insulated comparators from risk relative to HAL.

9.94 These differing views are a good example of the difficulty in considering the effect of traffic mix on airports' vulnerability to pandemic-like events in isolation. We have, therefore, interpreted differences in traffic mix alongside other airport and group characteristics, as detailed in our Initial Proposals and the accompanying expert report by Flint. Overall, we see no strong case for adjusting our estimates based on comparator airports upwards or downwards with respect to traffic mix.

Consistency of our approach with finance theory

9.95 HAL and Oxera have suggested that our approach of applying different weights to pandemic and pre-pandemic periods contradicts the assumption that capital markets are efficient. They have suggested that share prices and returns drawn from the most recent period best reflect market expectations of future risks and returns.

9.96 This is not correct. Share prices and returns observed in the past may be efficient. This does not imply that the events driving these prices will be repeated in the future. Our approach recognises that similar events may occur again in the future, but not with the same prominence implied by recent market data.

Evidence from option-implied volatilities

9.97 HAL's advisors, Oxera, have presented evidence based on option-implied volatilities that it considers supports a significantly higher enduring asset beta for HAL in H7.

9.98 We interpret Oxera's evidence as suggesting that, in November 2021, investors did not expect the volatility of airport stocks relative to the market index to fall in the near-term. From this data, they extrapolate that asset betas for comparator airports will remain high. Since the option contracts on which Oxera's analysis is based exhibit a duration of between 6 and 12 months, this analysis supports the case that short window (6-12 month), backward looking betas will remain high in the 12-months to November 2022.

9.99 Oxera's analysis relies on two implicit assumptions:

- implied volatilities derived from option prices can be used to infer best estimates of the actual volatility over the 6- or 12-month period of the option contract. This assumption would need careful consideration to the extent that options markets were thinly traded; and
- the proportionate split of this volatility between systematic and non-systematic components will be the same in the future as it has been in the past. This may not be the case, for example, under a scenario where the market is pricing in a view of near-term future volatility that is, to a greater degree than in the past, not systematic in nature. For example, the outcome of a financially significant state aid decision to be made within a 6-12 month period, or a government policy on specific travel restrictions.

9.100 We do not dismiss the Oxera analysis of heightened implied volatility. However, we must balance this evidence with the actual observed volatility of airport stocks relative to the index. Specifically, we note that the one-year trailing observation of actual volatility of airport stock prices has decreased materially in recent months, alongside a correspondingly material reduction in one-year beta estimates.

9.101 These contradictory pieces of evidence are difficult to reconcile. We consider that they may well be an artefact of anomalies in option markets or of the implicit and explicit assumptions of Oxera's analysis set out above. Regardless, we place preferential weight on the evidence of actual observed short-term beta estimates in estimating the pandemic impact.

Comparator set used to estimate pandemic impact and weights applied

9.102 We comment below on stakeholder views regarding the broader comparator set used to estimate the pandemic impact: namely, AENA, ADP, Fraport, Zurich, Vienna and Sydney.

9.103 HAL has expressed its "disappointment" with our inclusion of Sydney and Vienna in the broader comparator set and noted that the CMA excluded both airports in its estimate of the asset beta for NERL at RP3. We are conscious of the limitations associated with each airport, as we have discussed above and have excluded them from the baseline comparator set for these reasons. However, we still consider that the use of a broader set of comparators is warranted for the purposes of estimating the impact of the pandemic. This approach ensures that we reduce the effect of changes in investors' perception of risk at individual airports that might be company-specific and not relevant to Heathrow.

9.104 CEPA challenged our exclusion of Copenhagen and Auckland from this set and stated that we should have applied greater weight to Sydney and Vienna. We have explained the reasoning behind the exclusion of Copenhagen and Auckland, and the weights applied to Sydney and Vienna above.

9.105 CEPA also challenged our choice of AENA as our preferred comparator, suggesting that it is just as flawed as ADP, Sydney or other comparators. We disagree. AENA is less diluted by smaller, unregulated airport holdings. Madrid and Barcelona airports account for the bulk of AENA's revenues, and the regulatory framework (DORA) applies to its entire portfolio of airports. By contrast, ADP and Fraport have substantially larger holdings in smaller, unregulated airports, many of which are outside of Europe. We have noted several differences exhibited by Sydney compared with Heathrow, many of which do not apply to AENA. We acknowledge that AENA also exhibits certain differences compared with HAL (e.g., in terms of traffic mix). However, we do not consider that the impact of these variables can be determined with sufficient confidence to warrant a change in our approach.

Re-weighting method vs cross-check method

9.106 CEPA suggested that our preferred approach gives significant power to outliers or high-leverage points in the sample. They have suggested that the cross-check method is preferable and more intuitive.

9.107 CEPA's proposed approach is not a widely adopted statistical technique: betas are almost universally estimated based on "pooled" time series of equity return data.

9.108 Importantly, the cross-check method also loses some of the inherent statistical properties of the data used. Under standard CAPM assumptions, OLS is the best linear unbiased estimator available, which implies that the cross-check approach is a less precise, and hence less appropriate, estimator.

9.109 We therefore continue to rely on our preferred approach of carrying out OLS on a weighted, pooled dataset.

Use of shorter estimation windows and Winsorization

9.110 CEPA has suggested that we have failed to interrogate evidence that it provided regarding the long-term pandemic impact on beta, including using shorter estimation windows.

9.111 We disagree. We have given due consideration to all evidence that has been presented to us throughout the H7 consultation process. With respect to shorter estimation windows, we examined and specifically commented on this evidence in our Initial Proposals.[15]

9.112 To reiterate, we do not consider that the methods proposed by CEPA, namely, relying on short window recent evidence and Winsorization, are appropriate as a basis for estimation. Short windows exhibit poor statistical properties that render

[15] These issues were also discussed at stakeholder engagement sessions at which CEPA where present.

them unsuitable. There is also other, conflicting evidence regarding the long-term impact of the pandemic on the asset beta, such as the analysis of implied volatilities put forward by HAL's advisors, Oxera.

9.113 Similarly, Winsorization would wrongly classify or "mute" pandemic-period datapoints as though these are characterised by error, which we do not consider to be the case.

Frequency of future pandemic-like events

9.114 CEPA suggested that we did not provide any evidence consistent with a 1 in 20-year pandemic frequency or satisfactorily rule out longer frequencies. It also cites developments since the previous century that it considers will reduce the expected frequency.

9.115 In addition, CEPA said that the estimated frequency of pandemic recurrence is disproportionately sensitive to the upper bound frequency assumption and that there is therefore a risk that the midpoint frequency assumption is not representative.

9.116 In our view, the fact that three pandemics have happened in the 20th century[16] does not rule out the possibility that pandemics could happen more frequently in future. Instead, this evidence seems to support a broad range of potential frequency assumptions, distributed symmetrically around 3.5%.

9.117 While CEPA cites factors which may reduce the frequency or probability of pandemic-like events in the future, there are other factors that may lead them to be more common. For example, increasing population density and economic interconnectedness, as well as new biological risks associated with environmental degradation.

9.118 We acknowledge that our midpoint frequency assumption is particularly sensitive to the upper bound assumption. However, we do not consider that CEPA's evidence shows our upper-bound frequency to be less credible, or more speculative, than our lower bound frequency assumption. We therefore propose to rely upon the same frequency assumptions that we did at Initial Proposals.

Duration of future pandemic-like events

9.119 CEPA also stated that our upper bound estimate of the duration of a future pandemic-like event of 30 months is speculative. It also suggests that it overstates the length of time over which the pandemic affected HAL's asset beta, which it suggests might abate prior to the full recovery of traffic volumes.

[16] https://www.cdc.gov/flu/pandemic-resources/basics/past-pandemics.html

9.120 We have updated our duration assumptions to include updated data since our Initial Proposals.

9.121 We assume that all data from February 2020 to March 2022 is affected by the pandemic, which is 26 months in total, or around 30% of our total dataset. We note that recent months appear to exhibit "milder" dynamics that might indicate that the pandemic is no longer significantly affecting asset beta estimates, as evidenced, for example, by asset beta estimates using shorter estimation windows. The inclusion of data from recent months within the "pandemic-affected" dataset therefore has two impacts:

- it increases the proportion of future periods that we assume will be affected by a pandemic-like event; and
- it reduces the impact of pandemic-like events in the periods that they take place.

9.122 Overall, Flint's analysis suggests that the inclusion or exclusion of recent datapoints from the "pandemic-affected" period does not materially affect the estimate of the pandemic impact.

9.123 We then set out an assumed range for the duration of future pandemic-like events:

- at the upper bound, we assume a duration of 150% of the observed pandemic window, amounting to 39 months, compared with 30 months at Initial Proposals; and
- at the lower bound, we assume a duration of two-thirds of the observed pandemic window, amounting to 17 months. This is consistent with our lower bound assumption in our Initial Proposals.

9.124 We do not agree with CEPA's characterisation of our inclusion of our upper bound estimate as speculative. The duration of future pandemic-like events is highly uncertain. For example, it is entirely conceivable that a future pandemic-like event could include multiple such shocks (for example, corresponding to additional waves or variants) that would prolong the impact on the beta. It is, therefore, reasonable to reflect this uncertainty by including a range about an evidenced midpoint.

9.125 We agree with CEPA that the estimated duration of future pandemic-like events should reflect the length of time over which asset betas are expected to remain elevated, rather than the duration of the impact on traffic volumes. This was the intention in our Initial Proposals and continues to be our intention now.

Impact of the TRS

Risk-sharing arrangements at comparator airports

9.126 HAL suggested that the comparators we have used to estimate the H7 asset beta all already benefit from some form of risk sharing, and so observed betas already reflect the impact of the TRS.

9.127 We disagree as in our view, none of the comparators benefit from traffic risk sharing in a way that has significantly mitigated pandemic risk.

- **AENA**: as HAL indicates, AENA's regulatory framework fixes tariffs for five years and sets out that it should bear all traffic risk except in exceptional circumstances. HAL is correct that AENA has applied to recover its pandemic-related losses for 2021 and 2022 in accordance with this rule. However, the Spanish Government has now rejected this application, and at present there are no arrangements in place for the recovery of pandemic-related traffic losses. We therefore consider that there are no material traffic risk sharing arrangements in place at AENA.
- **ADP and Fraport**: we note HAL's view that these airports have one-year price controls which in principle mitigate traffic risk through annual recalculation of their price caps. However, in the context of the pandemic, neither airport has been permitted to increase charges by more than 5% in nominal terms for the duration of the pandemic. This is far less than would be implied by a TRS mechanism given significant forecast traffic losses on a year-ahead basis. As such, we do not consider that the one-year price controls in place at these airports provides a material degree of risk sharing in practice.
- **Zurich**: we disagree with HAL's characterisation of Zurich's regulatory framework as being "flexible". The airport has entered into an arrangement with its largest airline users that the current charges will remain fixed at their current nominal levels until the airport has earned sufficient profit (EVA) to offset its pandemic losses or 2025, whichever is sooner. The airport itself has no discretion to alter this arrangement until one of these threshold dates is met. At that date, there will be a renegotiation of charges at the airport, but there is nothing in the current agreement that either specifies what the agreed charge will be from that date or prescribes any recovery of pandemic-related losses. In effect, Zurich currently operates under a fixed price control with no traffic risk sharing. At present, there is no indication that this arrangement will be terminated prior to 2025.
- **Vienna:** HAL has not explicitly commented on Vienna, but we note that the Austrian government explicitly intervened to remove any risk-sharing from Vienna's price formula in light of the pandemic, in order to protect users.

- **Sydney**: Sydney is subject to price-monitoring and so there is no regulatory framework within which a TRS mechanism could operate. However, we are not aware of any traffic risk sharing arrangements in place in Sydney's contracts with its airline users. Moreover, Sydney has maintained constant nominal charges since the start of the pandemic[17], which is consistent with this observation.

9.128 We therefore continue to consider it appropriate to apply a downward adjustment to asset beta values to take account of the impact of the TRS.

Consistency with RP3 approach with respect to the impact of the TRS on asset beta

9.129 We note that the CMA considered that there were various potential drivers of risk differentials between NERL and the three airport comparators considered, of which difference in volume risk exposure was one:

- "*Airports have a different regulatory regime, which in some cases means that they face higher risk, such as the pension protection identified by the CAA, but in other cases results in lower risk*
- ***Airports face different volume risk:*** *they are more exposed than NERL to switching between airports, but the large airports may be protected by capacity constraints*
- *The large airports all have large asset bases and therefore a much higher operating margin than NATS, which reduces the exposure of investors to systematic risks such as volume risk*
- *Airports are more exposed than NERL to commercial risks, including their exposure in their retail operations to consumer demand*"[18] [emphasis added]

9.130 On balance, the CMA considered that no adjustment was necessary, but only because other factors existed to offset this impact (such as smaller operating margins). These other factors do not apply in the current context, and hence we do not consider there to be an inconsistency between our proposed approach and the CMA's approach at RP3.

Consistency of adjustment with previous CAA estimates of correlation between HAL and market returns

9.131 HAL stated that the magnitude of our adjustment to the asset beta for the TRS is not consistent with previous CAA estimates of the correlation of Heathrow risk to market risk.

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[17] See p5 of Sydney Airport's Interim Financial Report for the Half Year Ended 30 June 2021 and p4 of its Interim Financial Report for the Half Year Ended 30 June 2020,

[18] CMA (2020), "*NATS (En Route) Plc /CAA Regulatory Appeal: Provisional findings report*", March, Paragraph 12.75.

9.132 HAL appears to be referring to our estimates of correlation coefficients for comparator airports and utilities in our response to HAL's request for a RAB adjustment.

9.133 There are two misconceptions within HAL's statement.

9.134 Firstly, we did not set out a view of the likely correlation between Heathrow's equity returns and the returns on the market in our response to HAL's request for a RAB adjustment. On the contrary, our position was that "*HAL is not listed and hence the correlation between equity returns and market returns cannot be directly observed*". Rather, we challenged HAL's implicit assumption that this correlation was precisely equal to 1 and noted that this assumption differed significantly from comparator airports and utilities. This did not constitute an estimate of the correlation coefficient. It remains our position that the correlation coefficient cannot be estimated robustly.

9.135 Secondly, the TRS adjustment we applied in our Initial Proposals did not make any assumptions regarding the correlation of HAL's returns and those of the market portfolio. On the contrary, we noted that "*there are no market benchmarks on which to base such an estimate*".

9.136 We provide further analysis of HAL's statement in Appendix H.

Relevance of in-period increases in the WACC

9.137 HAL and Oxera have suggested that we have overestimated the impact of the TRS as we have not accounted for the in-period increases in the cost of capital during and after pandemic-magnitude events.

9.138 We disagree. Our estimate of the pre-TRS asset beta explicitly assumes that the WACC will behave in a similar manner to that observed during the current pandemic in the context of future pandemic-like events.

9.139 Our adjustment for the TRS mechanism reflects our view that investors' expectations of long-term cashflow volatility, including during future pandemic-like events, will be reduced by the application of the TRS mechanism.

9.140 This is consistent with in-period increases in the WACC during pandemic-like events.

Impact of the TRS on HAL's pre-pandemic asset beta

9.141 CEPA has argued that we have failed to develop our own view of the impact of risk mitigations, and that the TRS impact on asset beta should be quantified.

9.142 In our Initial Proposals, we explicitly set out an estimate of the extent to which the TRS would mitigate the effect of the pandemic on the asset beta. We estimated that the TRS would reduce this impact by 0.02-0.07.

9.143 We acknowledge that we did not explicitly set out an estimate of the impact of the TRS on the pre-pandemic asset beta. This was because we considered that it was difficult to do so robustly and that we would need to rely primarily on regulatory judgement. As such, we considered that the most appropriate approach was to select a lower WACC point estimate from within the range for Final Proposals.

9.144 We have reconsidered our approach in the light of stakeholder feedback, and now consider that it would be appropriate to explicitly estimate the impact of the TRS on the pre-pandemic asset beta, notwithstanding the significant degree of judgement that this involves. We have set out the basis for our estimate below.

Our Final Proposals

9.145 Our Final Proposal for the estimate of the asset beta for H7 is comprised of several components that are summarised in Table 9.2 below.

Table 9.2: Summary of our Final Proposals estimate for the asset beta in H7

Component	Lo	Hi
Pre-pandemic asset beta	0.50	0.50
Impact of the pandemic on risk differential between HAL and comparator airports	n/a	0.10
Flint baseline asset beta	0.50	0.60
Impact of the pandemic on comparator airports asset betas	0.02	0.11
Impact of the TRS	(0.08)	(0.09)
H7 asset beta	**0.44**	**0.62**

Source: CAA

Pre-pandemic asset beta

9.146 We estimate that HAL's pre-pandemic asset beta was in line with the level that we estimated at Q6 of **0.50**.

9.147 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.

Impact of the pandemic on risk differential between HAL and comparator airports

9.148 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.

9.149 We estimate that this effect increases HAL's asset beta by **0.10** at the upper end of the range. When added to our estimate of the pre-pandemic asset beta for HAL, this corresponds to Flint's pre-pandemic asset beta range for comparators of 0.50-0.60.

Impact of the pandemic on comparator airports

9.150 In addition to the impact on relative risk, we estimate that the pandemic has increased the asset beta of airports generally. Flint has estimated a pandemic impact of **0.02-0.11** based on return data for a broader set of six comparator airports prior to and during the pandemic.

9.151 This was carried out in three stages:

- Flint estimated a weighted regression of daily returns for each airport against its respective market index, where different weights are applied depending on whether the observation falls within or outside the pandemic period. A lower weight is applied to pandemic-period observations, reflecting an assumption of the frequency with which pandemic-like events might occur in the future (once every 20-50 years) and their duration (17-39 months);
- Flint then estimated a regression that excludes pandemic-period datapoints entirely. It estimated the pandemic impact for each airport as the difference in the asset beta estimates between the two regressions; and
- Flint then aggregated the estimated pandemic impacts for each airport into a range for H7 based on 1, 4 and 6-company averages across the comparator airports (AENA, ADP, Fraport, Zurich Vienna and Sydney).

9.152 This implies an asset beta range of **0.52-0.71** for HAL in H7, before the impact of the TRS mechanism is taken into account.

Impact of the TRS mechanism

9.153 We have carefully considered the most appropriate method for estimating the impact of the TRS mechanism on the H7 asset beta. We have concluded that the best available approach is to apply a reduction that assumes a degree of convergence between the pre-TRS asset beta for HAL and the asset betas for regulated network utilities that are not exposed to traffic risk. This is similar to the approach proposed by CEPA.

9.154 We are conscious that network utilities operate in different sectors and are subject to somewhat different risks to HAL. However, they also exhibit various characteristics that make them suitable as a benchmark such as:

- they are asset-heavy businesses with significant operating margins under normal business conditions;
- their assets are generally long-lived, with a correspondingly long payback period and duration;
- they are natural monopolies subject to price caps that are reset with similar frequency to HAL's; and
- they are subject to incentive regulation that encourage them to reduce cost and service quality with corresponding opportunities to earn additional rewards if they outperform regulatory assumptions.

9.155 In our view, the principal driver of the difference in asset betas between HAL (at present) and network utilities is the exposure of HAL to volume risk. By contrast, network utilities are largely insulated from volume risk.

9.156 We previously noted that the CMA determined that regulated network utilities were not suitable comparators for NERL, on the basis that:

- volumes for NERL are likely to be significantly more variable than at water or energy utilities; and
- NERL's operating profit margins and equity capital are small relative to both opex and capex levels, leaving shareholders in particular vulnerable to relatively small changes in the macroeconomic environment.[19] We do not consider this consideration to be relevant to HAL.

9.157 We agree that direct estimation of HAL's asset beta based exclusively on network utilities would not be appropriate. However, we also agree with CEPA that our approach does not rely exclusively on network utility asset betas, but rather uses these asset betas to assist with the calibration of our overall estimate. We therefore do not view this as being inconsistent with the CMA's approach at RP3.

9.158 We estimate the post-TRS asset beta for H7 as follows:

- we compare the pre-TRS asset beta for HAL (0.52-0.71) with a suitable network utility benchmark. We agree with CEPA that the average of the PR19 and RIIO-GD2/T2 asset beta determinations of 0.342 is a reasonable estimate;

[19] CMA (2019), "*NATS (En Route) Plc / CAA Regulatory Appeal: Provisional findings report*", paragraph 12.46.

- we then set out an assumption regarding how much of the difference between these asset betas is due to traffic risk. As noted by CEPA, there are other factors that could account for this difference. We therefore do not consider it appropriate to assume that the entire gap is due to traffic risk, although we consider that it represents the principal factor. We therefore assume that traffic risk accounts for between 50% and 90% of the difference;
- we then assume that the TRS mechanism will reduce HAL's exposure to traffic risk by 50%, on the basis that the TRS sharing factors insulate HAL from approximately half of possible traffic-related cash-flow losses/gains under plausible (non-pandemic) traffic shock scenarios; and
- this implies that the TRS mechanism reduces the asset beta by between 25% and 45% of the difference between the pre-TRS asset beta and the network utility asset beta benchmark, or a reduction of 0.08-0.09. This is summarised in Table 9.3 below.

Table 9.3: Impact of the TRS on the H7 asset beta

	Low	High
A. Post-pandemic, pre-TRS asset beta	0.52	0.71
B. Network utility asset beta benchmark	0.342	0.342
C. Proportion of difference due to traffic risk	90%	50%
D. Proportion of traffic risk mitigated by TRS	50%	50%
E. Impact of TRS = (A - B) * C * D	0.08	0.09

Source: CAA

9.159 Deducting this amount from the pre-TRS asset beta results in a range for the post-TRS asset beta of **0.44-0.62**. We propose to adopt these values for H7.

9.160 We are cognisant that the adjustment for the TRS mechanism relies to a significant extent on judgement in several areas where there is limited evidence available with which to carry out a detailed quantification. We nonetheless consider that applying such an adjustment is preferable to the alternative of adopting an estimate of the asset beta that does not adjust for the impact of the TRS mechanism at all.

9.161 We also consider that it is preferable to the alternative we previously set out in our Initial Proposals of adopting a lower point estimate from within the overall WACC range. The approach we proposed in our Initial Proposals would still have required us to exercise our judgement, but the basis for the adjustment would be less transparent. Moreover, by restricting the adjustment to the choice of the

point estimate for the WACC overall, we might unduly limit the scale of the adjustment, since we would be limited by the lower bound of the WACC range.

Debt beta

Context

9.162 The debt beta represents the proportion of a company's systematic risk exposure that is attributable to debt. A company's asset beta can be defined in terms of the following formula:

Asset beta = gearing x debt beta + (1 – gearing) * equity beta

9.163 Rearranging the formula above demonstrates that the equity beta is a function of a company's asset beta, its gearing and its debt beta:

Equity beta = (asset beta – gearing * debt beta) / (1 – gearing)

9.164 The debt beta is, therefore, a necessary input when translating the asset beta into an equity beta. When a company is partly financed with debt, attributing the systematic risk exposure of the company entirely to equity will generally overstate the company's equity risk, since some of this risk will be borne by creditors. We estimate that a 0.01 increase in the debt beta results in a 5bps reduction in the WACC.

9.165 In our Initial Proposals, we assumed a range of 0.05-0.10 for HAL's debt beta based on the following:

- the lower bound estimate of 0.05 corresponded to an assumption that there is no difference in debt beta between HAL and its comparators; and
- the upper bound for the beta reflected the view that HAL's higher gearing implies a higher debt beta relative to comparator airports. We considered this to be a plausible assumption since the debt beta must logically vary to some extent with gearing, and we were not persuaded that the evidence put forward by HAL rules out this possibility.

Stakeholders' views

Airline stakeholders

9.166 We have not received further representations on the debt beta from airline stakeholders. In its report for the AOC/LACC, CEPA adopt a debt beta that aligns with the midpoint of our range at Initial Proposals.

HAL

9.167 HAL agreed that the lower bound of our Initial Proposals debt beta range (0.05) is an appropriate estimate for H7.

9.168 However, it has set out various challenges to the upper bound of our Initial Proposals range (0.10). It stated that:

- we have not provided evidence to support this estimate;
- our approach is inconsistent with the approach taken by the CMA for NERL at RP3;
- we have taken an inconsistent approach to debt beta by using a different value of debt beta when un-levering and re-levering comparator equity betas. HAL consider that no other regulator has adopted this approach; and
- we have not provided evidence as to why the debt beta of Heathrow's class A debt is higher than the debt beta of the debt of comparator airports

Our views

Evidence supporting upper bound of our debt beta range

9.169 We disagree with HAL's statement that we have not provided evidence in support of the upper bound of our debt beta range. We clearly explained in our Initial Proposals our reasoning for this estimate.

9.170 For example, we referred to a considerable volume of evidence presented at RP3 that would be consistent with our upper bound estimate, including estimation approaches pointing to higher debt beta estimates, and in some cases considerably higher.

9.171 We also note that Ofgem has adopted a similar estimate in its recent determination for the electricity and gas transmission and gas distribution networks: 0.075, which corresponds to the midpoint of our range. These networks exhibit similar levels of gearing to our notional gearing assumption. The CMA did not consider that this estimate was incorrect.

9.172 We are therefore satisfied that our approach is sufficiently evidenced.

Consistency with CMA determination of debt beta at RP3

9.173 We disagree with HAL's statement that our approach is inconsistent with the CMA's approach at RP3.

9.174 The CMA only determined the debt beta for NERL at RP3 and did not estimate or comment on the debt beta for HAL. Moreover, the CMA's determination of NERL's debt beta was set in the context of a notional gearing assumption that was half that of our notional gearing assumption, which provides a *prima facie* reason for expecting that HAL's debt beta will be higher.

9.175 We are, therefore, satisfied that our approach is consistent with the CMA's approach at RP3.

Debt beta of comparator airports and implications for un-levering and re-levering

9.176 We disagree with HAL's statement that our use of separate debt beta estimates for un-levering and re-levering comparator equity betas is inconsistent. We clearly set out in our Initial Proposals that there is a logical relationship between gearing and debt beta, which provides a *prima facie* reason for expecting that HAL's debt beta will be higher than comparators that exhibit markedly lower gearing.

9.177 While we acknowledge that this relationship is uncertain, we consider that we have appropriately reflected this uncertainty in our lower bound estimate, which assumes that there is no difference between HAL and comparator debt betas. We do not consider that it would be appropriate to categorically rule out the possibility that HAL's debt beta is higher than comparator debt betas by excluding higher values from our range.

9.178 Where we estimate that comparator debt betas are lower than HAL's debt beta at the notional gearing level, we consider that it is entirely internally consistent to use different debt betas when un-levering and re-levering comparator equity betas.

9.179 We are, therefore, satisfied that the debt beta estimates we have used to un-lever and de-lever comparator equity betas are internally consistent.

Our Final Proposals

9.180 In the absence of any compelling new evidence from stakeholders regarding the H7 debt beta, we have retained our Initial Proposals estimate of **0.05-0.10.**

Total market return

Context

9.181 The total market return (TMR) is the return required by investors for investing in a diversified basket of equity securities. It is an important input into our estimate of the cost of equity under the CAPM. We estimate that a 10bps increase in the TMR results in a 5bps increase in the WACC.

9.182 In our Initial Proposals, we proposed a TMR range of 5.2%-6.5% RPI-real, which is in line with the CMA's PR19 Final Determinations range.

Stakeholders' views

Airline stakeholders

9.183 CEPA restated its previous position that we should place exclusive reliance on CPI/CED-deflated historical market returns and place no weight on RPI/CED-deflated returns. CEPA's approach implied a TMR estimate of 5.2%-6.0% RPI-real.

HAL

9.184 HAL proposed a TMR estimate of 5.85% RPI-real, which is consistent with the midpoint of the CMA's range for the PR19 Final Determinations.

Our views

9.185 We have considered our position in respect of two aspects of the TMR estimate:

- the appropriate basis for deflating historical market returns; and
- the assumption we previously employed regarding the stability of the TMR over time.

9.186 We consider each point in turn.

Deflation of historical market returns

9.187 We have not seen further evidence to suggest a change to our Initial Proposals approach towards deflating historical nominal market returns. As such, we retain our previous approach of placing weight on both RPI/CED and CPI/CED-deflated returns.

Assumption of constant TMR

9.188 There has been a longstanding consensus among UK regulators that it is appropriate to assume that the TMR is stable over time, and specifically that the real TMR does not vary with the risk free rate or inflation.

9.189 Although we adopted this assumption at Initial Proposals, we have reflected further on whether it is appropriate in light of:

- a historically low real risk free rate; and
- RPI inflation that is higher than at any point in the last 20 years.

Low risk free rate

9.190 The risk free rate has declined significantly since Q6. Our previous assumption of a constant TMR therefore implies that the equity risk premium has increased significantly over the same period: from 5.8% at Q6 to 7.0%-8.3% at Initial Proposals. It is not obvious, based on the available evidence, that the equity risk premium moves 1-for-1 with changes in the risk-free rate. Although it is generally acknowledged that the total market return is more stable than the equity risk premium, there remains some uncertainty as to whether the total market return is entirely invariant to reductions in the risk free rate.

9.191 As we discuss in paragraphs 9.412 to 9.415 below, this phenomenon also gives rise to other, counterintuitive effects as stakeholders have observed. For example, the high implied equity risk premium means that the cost of equity is highly sensitive to the equity beta. This has led to significant reductions in the cost of equity for lower beta entities such as energy and water companies, whilst

the cost of equity for airports does not appear to have fallen at all, giving rise to an apparent "WACC premium" of airports over network utilities.

9.192 All else equal, this might suggest that there is a *prima facie* case for assuming a modest level of correlation between the TMR and the risk free rate, with a consequent reduction in the level of the TMR.

High inflation

9.193 We also note that the assumption of a constant real TMR implies very significant increases in the nominal TMR during inflationary periods such as H7. Effectively, we would be assuming that UK market-wide equity returns are fully inflation protected.

9.194 This is also arguably an extreme assumption. There is evidence to suggest that real equity market returns tend to fall during inflationary episodes.[20] All else equal, this might suggest that there is also a *prima facie* case for assuming a modest level of correlation between the real TMR and the level of inflation, with a consequent reduction in the level of the real TMR in H7.

Conclusion in respect of constant TMR assumption

9.195 The estimation of the TMR is a complex and imprecise exercise. It has also been the subject of extensive discussion in the context of several consecutive price control determinations and their subsequent appeals. Substantial evidence and analysis was submitted in the context of these discussions, which nonetheless concluded that a stable TMR was the appropriate assumption. As such, we do not propose to depart from the consensus approach to the TMR in our Final Proposals.

9.196 However, we do consider that the above observations warrant consideration as part of our determination of the point estimate for the WACC overall. We consider that our TMR estimate could be seen as generous in light of the prevailing macroeconomic circumstances, and the resulting skew in our proposed estimates warrant aiming significantly lower in the range than would otherwise be the case. These matters are discussed further at the end of this chapter.

Our Final Proposals

9.197 We propose to adopt the midpoint of the CMA's PR19 range as our estimate for H7, in line with HAL's proposed approach. This is a modest change to our Initial Proposals approach of using the full range estimated by the CMA at PR19. We have adopted this approach to avoid unnecessarily widening the WACC range

[20] See, for example, Ammer, J. (1994), "*Inflation, inflation risk and stock returns*", Board of Governors of the Federal Reserve System: International Finance Discussion Papers, Number 464, April.

overall, which would then place greater pressure on the choice of point estimate for the WACC.

9.198 As noted above, we do not propose to make any direct adjustment to the TMR for the low level of the risk free rate or the high level of forecast inflation in H7, but instead reflect these factors in our choice of the point estimate for the WACC.

Inflation

Context

9.199 This section sets out the approach regarding the inflation assumption we have used to estimate the cost of capital. The allowed return is estimated based on a real WACC applied to an inflation indexed RAB. However, several WACC components are estimated in nominal terms and must be deflated in order to avoid double-counting of inflation. These include:

- the yield on non-gilt securities used as an input into the estimate of the risk free rate; and
- the yield on the benchmark index of debt securities used to estimate the cost of embedded and new debt.

9.200 In our Initial Proposals,[21] we proposed to deflate the nominal risk free rate and cost of debt based on an average inflation forecast of 2.6%. We derived our forecast based on the following:

- the Office of Budget Responsibility's (OBR) forecast of RPI from 2022-2025, as set out in its March 2021 Economic and Fiscal Outlook[22]; and
- an RPI assumption of 2.9% in 2026.[23]

9.201 We also indicated that we would update our forecast at Final Proposals by taking into the account the latest available OBR forecasts.

Stakeholders' views

Airline stakeholders

9.202 CEPA disagreed with various aspects of our approach to inflation and deflating nominal variables, stating that:

[21] CAP2265C, paragraph 9.132 d).

[22] OBR (2021), "*Economic and Fiscal Outlook*", March, Table 2.9

[23] This corresponds to the government's 2% CPI target plus an RPI-CPI wedge of 0.9%.

- we had not provided a clear justification for our use of OBR forecasts, which it notes constituted the lowest inflation figure of the three set of inflation forecasts we presented in Table 9.6 in our Initial Proposals;
- we should use break-even inflation to deflate the nominal cost of debt, and that our failure to do so is inconsistent with the inclusion of an index-linked premium in our calculation of the cost of index-linked debt. CEPA also indicated that it is unclear which breakeven inflation measure we presented in Table 9.6 in our Initial Proposals and over which horizon; and
- using an unweighted mean assumption for inflation over H7 could lead to a biased estimate of the real cost of new nominal debt.

HAL

9.203 HAL similarly disagreed with various aspects of our approach to inflation and deflating nominal variables, stating that:

- our Initial Proposals approach to adjusting for inflation is incorrect, and specifically that use of medium-term inflation forecasts is not consistent with good practice, since these forecasts are vulnerable to short term swings in inflation expectations; and
- we should instead use a long-term measure of inflation.

Our views

Use of breakeven inflation

9.204 We disagree with CEPA's suggestion that we should use breakeven inflation to deflate nominal yields on either fixed-rate debt or index-linked debt. We consider each separately below.

Appropriate deflator for fixed-rate debt

9.205 We do not consider that breakeven inflation is the appropriate deflator for fixed-rate debt.

9.206 The nominal cost of fixed-rate debt is fixed, while the real cost varies with out-turn inflation. Our approach to the cost of debt entails remunerating interest costs in full within the confines of each five-year regulatory period. The best estimate of the real cost of fixed-rate debt during the H7 period is therefore the nominal cost deflated using the best estimate of inflation over a five-year forecast period.

9.207 Breakeven inflation is defined as the difference in yield between nominal and index-linked gilts. It is typically higher than expected inflation over the forecast horizon, due to the existence of an inflation risk premium embedded in nominal gilt yields.

9.208 This means that if we were to use breakeven inflation to deflate the nominal cost of fixed-rate debt, we would systematically understate the real cost of this debt.

Appropriate deflator for index-linked debt

9.209 We also do not consider that breakeven inflation is the appropriate deflator for index-linked debt.

9.210 The deflator for index-linked debt should account for:

- the inflation risk premium embedded in nominal yields on fixed-rate debt, which is not present in yields on index-linked debt; and
- differences in real yields between fixed-rate and index-linked debt due to the lower liquidity of corporate index-linked bonds.

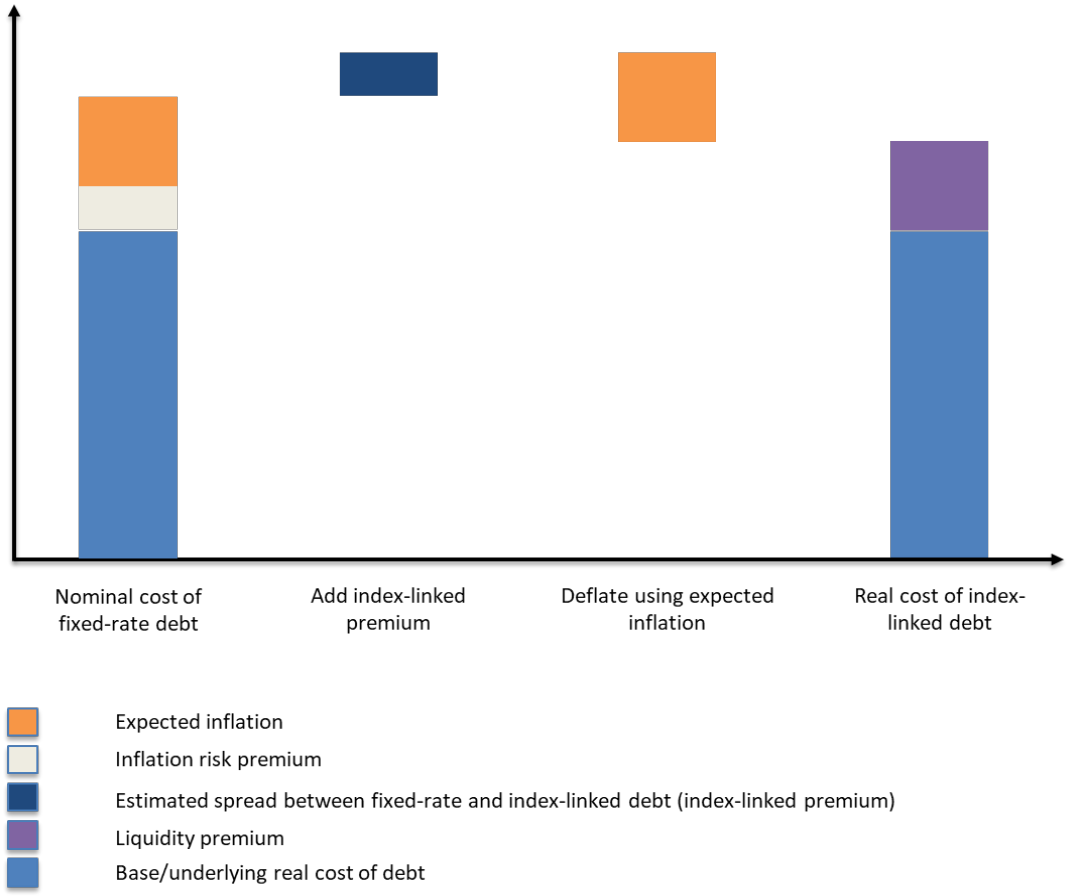
9.211 Breakeven inflation only adjusts for the first of these: index-linked gilt markets are more liquid than corporate index-linked markets, and so do not exhibit a material liquidity premium. As such, breakeven inflation is also likely to provide an upwards-biased deflator for index-linked debt.

9.212 Our preferred approach is to:

- estimate the nominal yield on fixed-rate bonds;
- deflate this yield using the relevant inflation measure, which is inflation expectations at issuance over the life of the relevant bond; and
- add an index-linked premium reflecting an estimate of the difference between the yields on fixed-rate and index-linked debt.

9.213 All else being equal, this should capture both the effect of the inflation risk premium on fixed-rate debt and the liquidity premium on index-linked debt. This is illustrated in Figure 9.2 below:

Figure 9.2: Preferred deflator for index-linked debt



Source: CAA

Use of long-term forecasts and expected inflation at issuance

9.214 HAL has suggested that we either deflate nominal yields using expected inflation at the time of issuance or a long-term estimate of inflation to deflate nominal yields. We consider these approaches separately for fixed-rate and index-linked debt.

Appropriate deflator for fixed-rate debt

9.215 We do not consider that either long-term inflation or expected inflation at issuance is the appropriate deflator for fixed-rate debt. As indicated above, the relevant deflator for fixed-rate debt is expected inflation over the forecast period.

9.216 Both of HAL's suggested approaches will lead to inappropriate estimates of the expected RPI-real cost of fixed-rate debt. To illustrate, consider a fixed-rate bond issued at par at a cost of 5%. Assume that:

- expected lifetime RPI inflation at the time of issuance is equal to the long-term average historical inflation level of 3%; and
- expected RPI inflation in H7 is 5%.

9.217 If we were to adopt HAL's approach, the RPI-real cost of debt allowance would be 2%.

9.218 If RPI inflation is in line with forecasts over the H7 period then, since the RAB is indexed to RPI inflation, HAL would receive a nominal, out-turn cost of debt allowance of 7%, whilst its actual nominal cost of debt would be 5%: an over-compensation of 2%. By contrast, our preferred approach would lead to an allowance of 5%, matching actual out-turn costs. We therefore consider our proposed approach of deflating the nominal cost of debt by forecast RPI inflation remains more appropriate for fixed-rate debt.

Appropriate deflator for index-linked debt

9.219 We agree with HAL that expected inflation at point of issuance is the appropriate deflator for index-linked bonds, since the real coupon on these instruments is fixed and generally priced based on inflation expectations at that time.

9.220 For embedded debt, it is difficult to estimate whole-life inflation expectations at each point in time, given limitations on data availability. As such, we agree with HAL that a measure of long-term inflation is an appropriate proxy, as we would expect that out-turn inflation will converge to inflation expectations in the longer-term. For the purposes of this assessment, we have assumed that investors would have expected long-term RPI inflation to be 2.5% up to 2014, and 2.9% thereafter[24]. This implies a long-term RPI inflation expectation of around 2.7%.

9.221 For new debt, we have attempted to estimate inflation expectations in each year of H7. This is complicated by the scheduled convergence of RPI to CPIH in 2030. We have therefore assumed that long-term inflation expectations will be a weighted average of:

- RPI from 2022-2026: which we assume is equal to the OBR's forecast in its March 2022 Economic and Fiscal Outlook;
- RPI from 2027-2029: which we assume is equal to the Bank of England's CPI target plus a wedge of 0.9%; and
- RPI during and after 2030: which we assume is equal to the Bank of England's CPI target of 2%.

Rationale for using OBR figures

9.222 In our Initial Proposals, we presented three potential measures of inflation:

- OBR forecasts of RPI inflation over H7;

[24] This date corresponds to the point at which investors would have understood that there had been a shift in the RPI measure of inflation, which increased the long-term wedge between RPI and CPI from 0.5% to 0.9%.

- a long-term RPI estimate based on the Bank of England CPI target plus a wedge; and
- breakeven inflation.

9.223 We have explained above why we do not consider that either of the latter two options are appropriate for fixed-rate debt. We propose instead to use the first option, namely OBR March 2022 forecasts of RPI inflation over H7.

9.224 Alongside OBR forecasts, we have also considered other sources of inflation forecasts such as Treasury consensus forecasts and IMF forecasts. However, of these, only OBR provides a consistent set of projections for the duration of H7. We therefore propose to continue using the OBR figures for H7.

Weights applied to inflation figures used to deflate the cost of new debt

9.225 We have considered whether the use of an unweighted average inflation estimate is appropriate for deflating the cost of new debt.

9.226 We acknowledge the importance of reflecting changes in the profile of new and embedded debt over time when estimating the weighted average cost of debt in H7. However, we do not consider that applying weights to the inflation estimates used to deflate the nominal cost of debt is the appropriate means of addressing this issue.

9.227 Instead, we propose to apply time-varying weights to the cost of embedded and new debt in each year of H7 to reflect their varying proportions. We consider that this should avoid the issue of over- or under-weighting the real cost of debt in any given year.

Our Final Proposals

9.228 Since Initial Proposals, we have observed a marked increase in expected inflation over H7, particularly in the first two years of the price control as set out in Table 9.4.

Table 9.4: Comparison of RPI forecasts at Initial and Final Proposals

	2022	2023	2024	2025	2026
OBR March 2021 RPI forecast	2.0%	2.4%	2.7%	3.0%	n/a
OBR March 2022 RPI forecast	9.8%	5.5%	2.3%	2.5%	2.7%

Source: Office for Budgetary Responsibility

9.229 This increase in inflation has a substantial impact on several WACC parameters. It is therefore very important that we adopt a considered approach to deflating

nominal variables. We are also conscious that stakeholders have proposed substantially different and opposing approaches to deflating nominal variables.

9.230 In the light of the newly inflationary outlook for H7 and feedback from stakeholders, we have reconsidered our approach to deflating nominal variables. We summarise our approach for different nominal variables below.

9.231 The consequence of our approach to inflation is that our Final Proposals estimate of the real cost of debt at H7 is significantly lower than was the case in our Initial Proposals. This reflects our assumption that the nominal cost of HAL's fixed-rate debt portfolio will not change significantly in H7, and hence its overall real cost of debt will fall due to higher inflation. However, we expect that the real cost of debt will fall by less than the increase in inflation expectations since Initial Proposals, as the notional company is expected to have raised a proportion of index-linked debt whose real cost will not be as affected by short-term changes in inflation.

Fixed-rate embedded debt

9.232 We propose to deflate the nominal cost of fixed-rate embedded debt by the March 2022 OBR forecast of RPI inflation in H7.

Index-linked embedded debt

9.233 We propose to deflate the "nominal" cost of index-linked embedded debt by an estimate of historical long-term inflation expectations of 2.7%.

New fixed-rate debt

9.234 We propose to deflate the nominal cost of new fixed-rate debt by the March 2022 OBR forecast of RPI inflation in H7.

New index-linked debt

9.235 We propose to deflate the "nominal" cost of new index-linked debt using estimated inflation expectations in each year of H7. We have assumed that long-term inflation expectations will be a weighted average of:

- RPI from 2022-2026: which we assume is equal to the OBR's forecast in its March 2022 Economic and Fiscal Outlook;
- RPI from 2027-2029: which we assume is equal to the Bank of England's CPI target plus a wedge of 0.9%; and
- RPI during and after 2030: which we assume is equal to the Bank of England's CPI target of 2%.

Risk free rate

Context

9.236 The "risk free rate" is the return that an investor would expect to earn on an asset that is not exposed to systematic risk. It is an input into our estimate of the cost of equity under the CAPM. However, changes to the risk free rate have a smaller impact on the H7 WACC than the other CAPM parameters. By way of illustration, we estimate that a 10bps increase in the risk free rate results in only a 1-2bps reduction in the WACC.

9.237 In our Initial Proposals, we estimated a risk-free rate estimate of -1.83%, RPI-real, which was estimated by placing equal weight on two reference points:

- the six-month trailing average yield on inflation linked gilts (ILGs); and
- the six-month trailing average yield on the iBoxx non-Gilts AAA-rated 10+ years and 10-15 years indices, deflated by forecast inflation.

9.238 Our proposed approach was broadly in line with the CMA's approach to its re-determination of the PR19 price control.

Stakeholders' views

Airline stakeholders

9.239 CEPA, on behalf of the AOC/LACC, estimated the risk free rate exclusively on the basis of evidence from UK Index-linked Gilts ("ILGs)".[25] They did not provide further evidence or argumentation in support of this position beyond what was set out in previous submissions.

9.240 CEPA also agreed with our position that we should not apply a forward adjustment.

9.241 Based on this approach, CEPA estimated a risk free rate of -2.44% RPI real.

HAL

9.242 HAL has continued to estimate the risk free rate based on a similar approach to that used by the CMA in its redetermination of the PR19 price control, updated to reflect movements in yields to the end of November 2021.

9.243 Based on this approach, HAL estimated a risk free rate of -2.1% RPI real.

[25] CEPA (2021), "*Response to CAA H7 Initial Proposals: Cost of Capital*", December pg.43

Our views

9.244 We have considered two aspects of our approach in the light of stakeholders' feedback and broader macroeconomic developments:

- whether or not to place exclusive weight on ILGs; and
- the impact of elevated H7 inflation forecasts on our approach.

Exclusive reliance on ILGs

9.245 We remain of the view that ILGs may exhibit a "convenience yield" or other specific factors that mean that the yields on ILGs may underestimate the "true" risk free rate. Stakeholders' submissions to date have not included new evidence that has altered this view. We therefore consider that there is still a case for placing weight on an alternative risk free rate benchmark that does not exhibit a convenience yield.

Relevant reference instruments for estimating the convenience yield

9.246 We have further considered our approach towards estimating the convenience yield. We have identified two issues with the approach we adopted in our Initial Proposals. These are the:

- **Impact of high short-term inflation**: inflation forecasts for the early part of H7 are considerably higher than long-term inflation forecasts. As a consequence, when nominal yields on the iBoxx AAA-rated non-Gilts index are deflated using short-term inflation forecasts, we obtain negative estimates of the convenience yield26. This counterintuitive outcome results from the fact that ILG yields are considerably less affected by temporary periods of high inflation than RPI-deflated yields on fixed rate bonds; and
- Impact of inflation risk premium: our previous comparison of the yield on an index of fixed-rate securities and on ILGs implicitly resulted in the inclusion of an inflation risk premium within our estimate of the convenience yield. This is likely to result in the overestimate of the convenience yield.

9.247 We have therefore considered an alternative approach for estimating the convenience yield as follows:

- we have identified the closest nominal gilt in maturity for each of the iBoxx non-Gilts AAA-rated 10+ years and 10-15 years indices;

[26] The six-month trailing average yields on the iBoxx non-Gilts AAA-rated 10+ years and 10-15 years indices as at 1st February 2022 were 1.43% and 1.27% respectively. When these are deflated by the March 2022 OBR RPI inflation forecasts for H7 of 4.56%, this results in RPI-real yields of -2.99% and -3.15% respectively. These are below the six-month trailing average yields on ILGs of -2.56%.

- we have deducted the yield on each gilt from the corresponding iBoxx index over the relevant averaging period; and
- we have averaged the difference in yields over this period.

9.248 Our estimate of the convenience yield using this methodology is 32bps. We consider that this approach will address both of the issues identified previously, because:

- higher short-term inflation is likely to impact nominal gilts and AAA-rated corporate bonds to a similar extent, and so should not materially influence our estimate of the convenience yield or the risk free rate; and
- by estimating the convenience yield by comparing the yield on two sets of fixed-rate instruments, we strip out the inflation risk premium from our estimated convenience yield.

Length of trailing average period

9.249 The broader economy has been subject to significant shocks in recent months, which have been particularly pronounced since the start of 2022. These shocks could plausibly have an enduring impact on certain WACC parameters. As such, we are concerned that a six-month trailing average period may not be appropriate for parameters such as the risk free rate where we are attempting to forecast the future evolution of yields: information from periods as recent as October 2021 may now be out of date and inappropriate for our forecasts. As such, we propose to shorten the trailing average window for estimating the risk free rate to one month to March 2022. This increases the estimate of the risk free rate by 3bps, all else equal.

Our Final Proposals

9.250 We propose to estimate the risk free rate by placing equal weight on the following reference points:

- the one-month trailing average yield on ILGs to 31st March 2022; and
- the one-month trailing average yield on ILGs over the same period plus a convenience yield of 32bps, in line with the approach set out above.

9.251 This suggests an RPI-real risk free rate of **-2.03%.**

Cost of embedded debt

Context

9.252 Like other economic regulators in the UK, we estimate the WACC by reference to the costs that would be incurred under a notional financing structure. Embedded debt is defined as debt the notionally company would already have issued at the start of H7 (i.e. by 31 December 2021). The cost of embedded debt

provides HAL with an allowance for servicing this debt. We estimate that a 10bps increase in the cost of embedded debt would result in a 5bps increase in the WACC.

9.253 In our Initial Proposals, we estimated the cost of embedded debt based on a 20-year collapsing average yields on the A and BBB 10+ year non-financials indices (our "benchmark indices"), which were 4.39% and 4.80% respectively as of 18 June 2021.

9.254 When we deflated the average of these nominal yields (4.60%) by our proposed range for RPI inflation of 2.62%, this implied an RPI-real estimate of the cost of embedded debt of 1.98%.

Stakeholders' views

9.255 Stakeholders commented extensively on our Initial Proposals cost of embedded debt estimate. These responses are summarised below.

Airline stakeholders

9.256 CEPA estimated an RPI-real cost of embedded debt of -0.31% to 0.47% based on a 10-15 year collapsing average of nominal yields on the £ iBoxx non-financials 10-15yr index, deflated by 10yr and 15yr breakeven inflation.

9.257 CEPA[27] supported the use of a notional benchmark but made the following observations:

- it reiterated its previous observation that comparator airports and airport groups on which the asset beta estimate has been based have materially shorter-term debt than our proposed debt tenor. It considers that this supports the use of shorter tenor instruments as the basis of the notional cost of debt benchmark;
- it stated that we have incorrectly assumed that energy and water precedent (in respect of the tenor of debt) should necessarily apply in the aviation sector;
- it noted that our notional benchmark and HAL's actual debt costs in H7 are based upon different inflation assumptions, and hence our notional benchmark could over-remunerate HAL's actual debt costs. Specifically, it noted that HAL's actual debt costs are 3.60% at end-June 2021, compared to 4.83% from the CAA's notional approach at the same point in time;
- It further noted that HAL's actual debt costs are a conservative view of the notional company's debt costs, given that the former includes junior debt and reflects higher levels of gearing than our notional assumption; and

[27] CEPA (2021), "*Response to CAA H7 Initial Proposals: Cost of Capital*", December.

- It stated that our decision not to apply a halo effect is inconsistent with our decision to apply an index-linked premium. It suggested that this is illustrative of an asymmetric and inconsistent approach adopted throughout the cost of capital by the CAA.

HAL

9.258 HAL estimated an RPI-real cost of embedded debt of 1.70% based on the actual cost of servicing the debt portfolio it held at 31 March 2021 over H7.

9.259 HAL has said we made various errors when comparing our notional benchmark to HAL's Class A debt costs[28] in our Initial proposals, including that:

- we estimated sterling equivalent yields on HAL's foreign currency bonds using 2021 currency swap curves rather than swap curves at the point of issuance;
- we did not include the cost of swaps when translating foreign currency yields into sterling yields;
- it would be preferable to measure spreads against swap rates rather than gilt rates;
- we should compare each of HAL's bonds with an iBoxx index of matching tenor;
- we should compare each of HAL's bonds with an iBoxx index of comparable credit rating;
- we have excluded most of HAL's sterling bonds from our analysis. HAL says that this approach is inappropriate, as it considers that sterling debt represents the most robust measure of HAL's actual cost of debt in respect of a notional company; and
- we should include Class B debt in our comparison. HAL has stated that we target a credit rating of BBB+ for the notional company and that therefore the analysis should include both Class A and Class B debt.

Our views

9.260 Our approach to estimating the cost of embedded debt in these Final Proposals is similar in many respects to the approach we adopted in our Initial Proposals. It is based on an index of corporate bonds of similar credit quality and tenor to our assumptions for the notional company.

[28] HAL (2021), "*Economic regulation of Heathrow Airport Limited: H7 Initial Proposals (CAP2265)*", December, Section 7.110.

9.261 Consistent with our approach at Initial Proposals, we have also carried out a "balance sheet check", similar to that carried out by the CMA at PR19, but focussed on HAL's Class A debt, which we consider represents the most appropriate comparison to the notional conpany.

9.262 For Final Proposals, we have decided to align our cost of debt allowance more closely with the actual cost of HAL's Class A debt in two respects:

- by including a HAL-specific premium above the benchmark indices. This reflects our updated view that HAL's Class A debt has been issued at a slightly higher cost than the benchmark indices, although the difference is relatively small; and
- by shortening the look-back period used to estimate the notional benchmark from a 20-year collapsing average to a 13.5-year fixed average. We consider that this more closely reflects HAL's actual profile of Class A debt issuance, which is more skewed towards recent years than a 20-year collapsing average would imply.

9.263 We have also been more explicit regarding our assumption for the cost of fixed-rate and index-linked debt respectively. This is particularly important in the context of high short-term inflation forecasts and uncertainty regarding the trajectory of inflation over the medium-term. The estimate of an explicit allowance for index-linked embedded debt reflects our view that the notional company would have historically issued such debt, the real cost of which will not have fallen to the same extent as fixed-rate debt.

9.264 We set out our views in respect of various detailed issues below.

Comparison of HAL's Class-A debt to iBoxx indices

9.265 The comparison of HAL's Class-A debt to our notional benchmark is an important aspect of our overall assessment since it provides a sense-check to ensure our notional benchmark does not over- or under-remunerate HAL's efficiently incurred cost of debt. This is equivalent to the "balance sheet" analysis carried out by Ofwat and the CMA at PR19.

9.266 We have updated the comparison we previously presented in our Initial Proposals between our notional benchmark and HAL's actual cost of Class A debt to include up-to-date data and to reflect certain methodological changes discussed below. Our updated assessment suggests that HAL's Class A debt has, on average, been issued at an 8bps premium relative to our benchmark indices. We have provided further detail on the estimation of this premium in Appendix H.

Analysis of foreign currency debt

9.267 We agree with HAL that the estimation of sterling equivalent yields on foreign currency bonds should be based on currency swap curves as at the point of issuance, rather than as at the point at which the analysis is carried out. We have, therefore, corrected our assessment using the swap curve at point of issuance for each bond.

9.268 We also agree that it would be appropriate to include the cost of foreign currency swaps when estimating sterling-equivalent yields. Since foreign currency swaps tend to be over-the-counter instruments whose pricing is not publicly known, we have asked our advisors Centrus to estimate reasonable swap costs based on their experience of such instruments. This is set out in Table 9.5 below for each relevant currency. Intuitively, currencies that are more thinly traded tend to exhibit greater costs.

Table 9.5: Estimated cost of foreign currency swaps

Currency	Tenor	Estimated charges (bps)
Australian dollar	10 years	12.5
	15-20 years	22.5
Canadian dollar	10 years	8.5
Swiss Franc	10 years	11.5
Japanese Yen	10+ years	3
Euro	5-10 years	5
	10-20 years	7.5

Source: CAA

Estimating spreads on HAL's bonds and the iBoxx

9.269 HAL has indicated that they estimate the spreads on their foreign currency-denominated bonds over a floating-rate benchmark rather than over a fixed-rate benchmark such as gilts. We have adopted a similar approach and have estimated the sterling-equivalent spread at issuance on HAL's foreign currency-denominated bonds and the contemporaneous iBoxx indices over LIBOR.

9.270 We continue to estimate the spread at issuance on HAL's sterling-denominated bonds and the contemporaneous iBoxx indices over gilts.

Tenor and credit rating of iBoxx indices

9.271 We agree with HAL that we should compare HAL's bonds to iBoxx indices of comparable tenor. We have, therefore, updated our assessment to reflect this approach.

9.272 We consider that the analysis already largely reflects the credit quality at issuance of the relevant bonds. HAL's Class A bonds have historically been rated at either A- or BBB+, which is close to the average of the A and BBB rated iBoxx indices. We therefore do not consider that any adjustment for credit rating is necessary.

Inclusion of sterling Class-A debt

9.273 We agree that it is appropriate to include HAL's sterling debt in the analysis, and acknowledge that we had, in error, excluded certain sterling instruments from our previous assessment.

9.274 We have now corrected this error and have included all of the sterling Class A bonds on which data is publicly available.[29]

Exclusion of Class-B debt

9.275 We disagree with HAL that we should include HAL's Class B debt in the assessment. We highlighted previously that HAL's gearing, inclusive of Class B debt, would be substantially higher than our notional assumption and would include structural features that we do not assume for our notional company.

9.276 We have historically (at Q5 and Q6) targeted a notional gearing of 60% and a notional credit rating of BBB+/A-, which is broadly consistent with HAL's Class A gearing and the credit quality of HAL's Class A debt. By contrast, HAL's Class B debt has taken HAL's gearing well above 60%. HAL's Class B debt has also historically exhibited a lower credit rating: around BBB. Following the pandemic, both HAL's Class A and Class B debt has been downgraded. Our assessment of credit ratings for H7 remains broadly consistent with HAL's Class A debt (but not HAL's Class B debt).

Comparison of HAL's all-in cost of debt to iBoxx indices

Projected increases in HAL's actual cost of debt

9.277 CEPA highlighted that HAL's actual debt costs were 3.60% as at the end of June 2021, compared with our Initial Proposals estimate of notional embedded debt costs for H7 of 4.83%. The implicit inference from this statement is that our notional benchmark over-remunerates HAL's actual cost of embedded debt.

9.278 As we set out in our Initial Proposals, CEPA's comparison of our notional embedded debt costs for H7 and HAL's actual cost of debt in a single year is misleading.

9.279 The relevant consideration for the notional benchmark is the expected cost over H7. HAL's actual costs of embedded debt in 2021 are likely to have been

[29] In particular, for which yields-to-maturity and spreads are available in Bloomberg.

depressed due to low inflation combined with a relatively high inflation exposure of HAL's debt.[30]

9.280 This high proportion of index-linked debt is likely to lead to a significant increase in the cost of debt in H7, given that inflation is now expected to be considerably above its historical average level.

Consistency of inflation assumptions

9.281 We acknowledge that the notional cost of debt we set out in our Initial Proposals reflected a lower level of forecast inflation than the inflation forecast underpinning HAL's projections.

9.282 This was because we were not provided with sufficiently granular information with which to apply consistent inflation estimates. However, we consider that this observation is no longer relevant as we are now adopting a considerably higher inflation assumption to deflate nominal yields in H7.

Relevance of HAL's all-in cost of debt to the notional benchmark

9.283 Our primary focus throughout the H7 process has been on ensuring that our notional benchmark provides remuneration comparable to the spreads at issuance on HAL's Class A debt. We consider that this affords a degree of protection to consumers, given the seniority of Class A debt within HAL's whole business securitisation. This seniority implies, through priority of payments, that our notional cost of embedded will be lower than HAL's actual cost of debt at the Heathrow SP Limited level.

9.284 CEPA's statements imply that we should have carried out our own analysis of HAL's "all-in" cost of debt, that is, including Class B debt and other subordinated debt at the Heathrow SP level. As well as being unnecessary for the reasons set out above, there are substantial practical challenges associated with doing so. We have already observed that the presence of inflation swaps, for example, can complicate the forecasting of HAL's cost of debt. Our approach avoids these issues.

9.285 We are, therefore, satisfied that our approach is sufficient to ensure we avoid over-remunerating HAL's actual cost of debt.

Averaging period for notional benchmark

9.286 In our Initial Proposals, we estimated the cost of embedded debt based on a 20-year collapsing average of the yields on the benchmark indices. This reflected an

[30] HAL's debt portfolio includes both index-linked instruments and RPI swaps. The presence of these instruments mean that HAL's nominal cost of debt varies significantly with RPI inflation. When RPI inflation is low, HAL's nominal cost of debt is low and vice versa.

implicit assumption that the notional company would evenly raise debt over the course of its useful asset life of 20 years.

9.287 We have reconsidered whether this assumption is appropriate in the light of the HAL's actual profile of Class A debt issuance. The latter is somewhat complicated by the restructuring that took place in 2008, under which certain debt instruments were migrated from BAA Limited to HAL and other group companies. The "true" issuance date of the migrated bonds is not generally publicly available.[31]

9.288 BAA Limited's December 2007 annual report shows that BAA had issued three bonds that were outstanding prior to the restructuring that would still be outstanding during H7. One bond with a face value of £738m would have matured in Feb 2023; the other two bonds worth £1.1 billion would have remained outstanding for the duration of H7. On the assumption that these bonds were all novated to HAL, we can infer the following debt issuance profile for HAL's Class A bonds as set out in Table 9.6.

Table 9.6: Notional vs actual (Class A) debt issuance profile

Period	HAL Class A bonds	IPs notional assumption
Pre-2007	17%	25%
2007-2011	14%	25%
2012-2016	28%	25%
2017-2021	41%	25%

Source: BAA Limited 2007 annual report, CAA analysis

9.289 This implies that HAL's Class A debt issuance has been significantly skewed towards recent years compared with the assumption used for our Initial Proposals of uniform debt issuance since 2002.

9.290 This is important because yields on our notional benchmark, as well as interest rates more generally, have declined significantly since 2002. A skew towards debt issuance in recent years will, therefore, imply a lower cost of embedded debt, all else being equal.

9.291 There are logical reasons why both the actual and notional companies would exhibit this skew in debt issuance. For example, such a pattern is consistent with an increasing RAB, which would require proportionally more debt to be issued in later years compared with earlier years.

[31] For example, the earliest Class A bond issue date recorded on Bloomberg is August 2008.

9.292 In the light of these observations, we consider that it would be appropriate to shorten the trailing average period to reflect the skew in Class A debt issuance profile towards recent years. We have decided to adopt a trailing average period commencing in mid-2008. This date is more in line with HAL's actual issuance profile than our previous assumption.

Notional tenor at issuance

9.293 We have continued to assume an average tenor at issuance of 20 years for embedded debt issued by the notional company. This tenor is close to HAL's average useful life of assets, and reflects an assumption that the notional company will attempt to approximately match its debt liabilities with its assets.

9.294 The assumption of an average tenor at issuance of 20 years is consistent with a distribution of tenors for individual bonds, in which some bonds have shorter than average tenor and other bonds have longer than average tenor. HAL's Class A bonds, for example, exhibit a spectrum of tenors at issue ranging from 6 to 33 years.

9.295 We therefore continue to assume that a proportion of embedded debt will mature in H7. Maturing debt will tend to exhibit shorter tenors, but also from earlier in the averaging period. We assume that these two factors will broadly offset each other, meaning that the cost of maturing debt will exhibit a similar cost to the average cost of embedded debt. As such, the cost of embedded debt is assumed to remain approximately constant over H7. Based on these assumptions, we have based our estimate of the cost of embedded debt on a fixed, rather than collapsing, averaging period.

9.296 We address stakeholder views on the assumed notional tenor at issuance below.

Tenor of comparator airport debt

9.297 We were clear in our Initial Proposals regarding why we do not consider the debt tenor of comparator airports to be conclusive for purposes of determining the appropriate cost of debt benchmark for HAL, and CEPA has not put forward additional evidence that would change our assessment.

9.298 Specifically, we noted the following reasons why airport comparators could be issuing debt at shorter tenors than HAL, none of which suggest a strong case for reducing our assumed notional tenor:

- their asset lives could be shorter, requiring shorter tenor debt in order to match assets to liabilities;
- they could face restrictions on their ability to issue longer-term debt due to the lower liquidity at the longer end of the yield curve in non-sterling markets; and

- they could be intentionally issuing debt at shorter tenors than their asset lives.

9.299 We also noted that we did not consider that HAL's higher gearing or risk profile provided a strong reason for adopting an assumed tenor below HAL's average asset life.

9.300 We therefore remain unpersuaded that the tenor of airport comparator debt is conclusive evidence that our assumed notional tenor is too high.

Tenor of debt assumed in energy and water determinations

9.301 In our view, CEPA has not adequately explained why it is "incorrect", as opposed to contrary to CEPA's preferred approach, to apply CMA precedent in this instance. We consider that it is entirely legitimate to adapt our approach given the emergence of new, relevant precedent.

9.302 Regardless, we have been clear regarding the logic that has underpinned our decision to adopt a 20-year notional debt tenor, which is to ensure reasonable consistency between HAL's average asset life and our cost of embedded debt allowance. As such, the CMA's precedent was only one factor in arriving at our preferred tenor. Overall, CEPA has not provided further evidence that suggests to us that this approach is incorrect.

9.303 We also disagree with CEPA's suggestion that we have materially changed our approach since Q6.[32] At Q6, our cost of embedded debt was based on a weighted average of yields to maturity on HAL's bonds[33]. Although the time to maturity varied considerably across the bonds considered, HAL's actual average tenor at issuance at that point in time was close to 20 years.

Consistency of our halo effect / HAL-specific premium and index-linked premium assumptions

9.304 We acknowledge that we may have applied an inconsistent standard of evidence in our Initial Proposals with respect to the evaluation of the halo effect and the index-linked premium. Specifically, we chose not to apply a halo effect based on a larger number of bonds than we considered justified the application of an index-linked premium. We firmly disagree that this single discrepancy is symptomatic of a broader asymmetry or inconsistency in our approach.

9.305 As set out below, we have applied both a HAL-specific premium and an index-linked premium in making our Final Proposals estimate.

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[32] We acknowledge that we stated in error at Initial Proposals that, "We note that this is a longer tenor than our Q6 approach". For avoidance of doubt, this was not the case.

[33] PwC (2013), "Estimating the cost of capital for designated airports: A report prepared for the Civil Aviation Authority (CAA)", Table 7.2 and subsequent text.

Our Final Proposals

9.306 We have separately estimated the cost of fixed-rate and index-linked embedded debt.

9.307 We estimate a nominal cost of fixed-rate embedded debt as the sum of:

- the average yields on the £ iBoxx non-financials A-rated and BBB rated indices from August 2008 to December 2021; plus
- a HAL-specific premium of 8bps, reflecting the difference between the spreads at issuance of HAL's Class A bonds and the contemporaneous spreads on the above indices.

9.308 This is then deflated using forecast RPI over the H7 period based on the March 2022 OBR Economic and Fiscal Outlook. The resulting nominal and real costs of fixed-rate embedded debt are set out as set out in Table 9.7 below.

Table 9.7: Estimated cost of fixed-rate embedded debt for H7

(%)	2022	2023	2024	2025	2026
iBoxx yields	4.14	4.14	4.14	4.14	4.14
HAL-specific premium	0.08	0.08	0.08	0.08	0.08
Nominal cost of fixed-rate embedded debt	4.22	4.22	4.22	4.22	4.22
OBR March 2022 RPI forecast	9.80	5.50	2.30	2.50	2.70
RPI-real cost of fixed-rate embedded debt	(5.08)	(1.21)	1.88	1.68	1.48

Source: CAA

9.309 We have estimated the cost of index-linked embedded debt using the same nominal cost as for fixed-rate debt. We then deflate this figure by an estimate of historical long-term RPI inflation expectations of 2.73%. We also include an index-linked premium of 15bps, in line with HAL's estimate of the difference in cost between its index-linked and fixed-rate debt in its Business Plan.[34]

9.310 The resulting nominal and real costs of index-linked embedded debt are set out in Table 9.8 below.

[34] HAL (2020), "*H7 Revised Business Plan (Detailed)*", December, p412.

Table 9.8: Estimated cost of index-linked embedded debt for H7

(%)	2022	2023	2024	2025	2026
Nominal cost of fixed-rate embedded debt	4.22	4.22	4.22	4.22	4.22
Estimate of historical long-term inflation expectations	2.73	2.73	2.73	2.73	2.73
Index-linked premium	0.15	0.15	0.15	0.15	0.15
RPI-real cost of index-linked embedded debt	1.60	1.60	1.60	1.60	1.60

Source: CAA

9.311 The RPI-real cost of index-linked embedded debt is considerably higher than the RPI-real cost of nominal debt in the first two years of H7, reflecting the fact that the real cost index-linked debt is generally less affected by changes in inflation than fixed-rate debt.

9.312 In order to estimate the cost of embedded debt overall, we then weigh the real costs of fixed-rate and nominal embedded debt by their respective proportions in the assumed notional debt structure.

9.313 In line with our approach at Q6, we have assumed that the notional company's debt is comprised of 70% fixed-rate debt and 30% index-linked debt.

9.314 This implies the following cost of embedded debt in each year as set out in Table 9.9:

Table 9.9: RPI-real cost of embedded debt per year in H7

(%)	2022	2023	2024	2025	2026
RPI-real cost of fixed-rate embedded debt	(5.08)	(1.21)	1.88	1.68	1.48
RPI-real cost of index-linked embedded debt	1.60	1.60	1.60	1.60	1.60
RPI-real cost of embedded debt	(3.07)	(0.37)	1.80	1.66	1.52

Source: CAA

9.315 We have also assumed that the notional company's proportion of embedded debt will decline over the course of H7 as it matures. The average cost of embedded debt in H7 can then be estimated as the weighted average of the cost of embedded debt in each year, where the weights are given by the proportion of total debt in that year that was outstanding as at 31st December 2021. This is summarised below in Table 9.10:

Table 9.10: Weighted average cost of embedded debt for H7

(%)	2022	2023	2024	2025	2026
RPI-real cost of embedded debt	(3.07)	(0.37)	1.80	1.66	1.52
Proportion of embedded debt	99%	96%	91%	81%	76%
Weighted average cost of embedded debt	0.17				

Source: CAA

9.316 We therefore assume an RPI-real cost of embedded debt of **0.17%** for H7.

Cost of new debt

Context

9.317 New debt is defined as debt that we would expect HAL to issue in the course of H7 under the notional financial structure. The cost of new debt provides HAL with an allowance for servicing this debt. The impact of the cost of new debt on the WACC depends on the extent of new debt issuance that is expected in H7. Under current assumptions, we estimate that this impact is relatively limited: a 10bps increase in the cost of new debt results in a 1bp increase in the WACC.

9.318 At Initial Proposals,[35], we estimated the cost of new debt based on the six-month trailing average yield on the A- and BBB rated 10+ year non-financial iBoxx indices, which was 2.12% and 2.37%, respectively as of 17th May 2021.

9.319 We deflated the average of the above values using our proposed estimate of RPI inflation during the H7 period of 2.62%, resulting in an estimate of -0.37% RPI-real.

9.320 Finally, we added a premium in respect of index-linked debt of 5bp, which resulted in an estimate of -0.32% RPI-real.

9.321 We assumed a weighting on new debt of 16%-17%, which was broadly in line with our price control modelling results at Initial Proposals.[36]

We also confirmed our intention to introduce a mechanism that will adjust HAL's opening RAB for H8 to reflect the difference between our cost of new debt allowance and the out-turn value of the A- and BBB rated 10+ year non-financial iBoxx indices. Following publication of our Initial Proposals, we shared a working model with stakeholders that illustrated how this mechanism would function in practice.

[35] CAP2265C, paragraph 9.224.

[36] CAP2265C, Chapter 8

Stakeholders' views

Airline stakeholders

9.322 CEPA estimated an RPI-real cost of new debt of -1.64% to -1.58%, based on a six-month average of nominal yields on the iBoxx 10-15yr non-financials A and BBB indices, deflated by 10yr and 15yr breakeven inflation.

9.323 Several of the comments CEPA made in respect of our cost of embedded debt allowance (set out in paragraph 9.257 above) also apply to our cost of new debt allowance. CEPA did not provide further comments specifically in respect of the cost of new debt.

HAL

9.324 HAL estimated an RPI-real cost of new debt of 0.32% RPI real. This was based on a six-month average of nominal yields on the iBoxx 10+yr non-financials A and BBB indices together with:

- a forward adjustment of 0.13%;
- a HAL-specific premium of 0.62%, reflecting six-month average trading spreads of HAL's Class A bonds over the iBoxx index up to November 2021;
- a "New Issue Premium" of 0.1%-0.2%; and
- an index-linked premium of 0.05%.

9.325 HAL also commented that our assumption about the proportion of new debt is not consistent with the assumptions in other parts of the proposed price control. It considers it appropriate to assume that 25% of the notional company's debt will be replaced in each five-year period, resulting in an average share of new debt of 12.5%.

Our views

Forward adjustment and New Issue Premium

9.326 HAL has presented no additional evidence to support the inclusion of a forward adjustment or New Issue Premium.

9.327 We explained in our Initial Proposals why we did not consider that it would be appropriate to include either adjustment. We noted that the benchmark spreads at issuance, on which our comparison of HAL's Class A debt to the notional benchmark is based, will already capture any New Issue Premium or discount. We further highlighted the view of the CMA at PR19, with which we agreed, that forward rates represented poor predictors of future spot rates.

9.328 This remains our position and as such we have not included either adjustment in our Final Proposals.

HAL-specific premium

9.329 We have reviewed our position regarding whether it would be appropriate to apply a HAL-specific premium to the iBoxx index yields when estimating the cost of new debt.

9.330 In our Initial Proposals, we noted that the average spread at issuance on HAL's Class A bonds was broadly in line with the corresponding spreads on the £ iBoxx non-financial 10+ year A/BBB indices in 2020 and 2021. We therefore concluded that no HAL-specific premium was warranted.

9.331 We have updated our comparison of HAL's Class A bond issuance spreads to the trading spreads on the iBoxx index. Our updated analysis suggests that the issuance spreads on HAL's Class A debt in 2020 and 2021 were, on average, 16bps above the spreads on the average of the A and BBB rated iBoxx non-financial 10+ years indices. They were around 7bps above the spreads on the BBB rated iBoxx non-financial 10+ years index.

9.332 Consistent with our position in respect of the equity beta for H7, we do not consider that data from during the pandemic period represents a useful benchmark for the H7 period. The circumstances that underpinned the observed issuance spreads are unlikely to persist throughout H7, and there are signs that pandemic-related premiums have already significantly abated. Moreover, even if we were to assume that observed spreads during the pandemic will persist into H7, the resulting uplift to the cost of new debt would be relatively small.

9.333 At the same time, we consider that it is important to ensure that our cost of new debt estimate appropriately reflects the forecast credit quality of the notional company. As indicated in chapter 13 (Calculating the price cap and financeability), there remains a degree of uncertainty regarding the trajectory of the notional company's credit metrics and its ability to retain a BBB+ credit rating. We have, therefore, assumed that the notional company will incur a cost of debt in line with the BBB rated iBoxx non-financials 10+ years index, rather than the average of the A-rated and BBB rated indices as in our Initial Proposals.

9.334 We have also decided to apply the HAL-specific premium we estimated in respect of HAL's embedded debt. This reflects an assumption that HAL will continue to issue debt at a premium to the benchmark indices as it has done in the past.

9.335 We continue to disagree with HAL that the trading spreads on its debt instruments are the appropriate basis for estimating a HAL-specific premium. We have still seen no evidence that traded yields on HAL's bonds have been a good predictor for the cost of debt issued during the pandemic. Moreover, as indicated above, we do not consider that data from the pandemic period represents a useful benchmark for H7. Indeed, we note that trading spreads have nearly halved between HAL's first and second business plan updates, which highlights

the volatility of these spreads and their consequent unreliability for the purposes of estimating the cost of new debt.

Index-linked premium

9.336 We continue to agree with HAL that it is appropriate to include a premium in respect of index-linked debt, reflecting the higher observed spreads at issuance on HAL's index-linked debt compared with its fixed-rate debt.

9.337 In our Initial Proposals, we applied a 5bps premium to the cost of new debt, which comprised a premium of 15bps applied to the proportion of debt that was assumed to be index-linked (30%).

9.338 We propose to continue to apply a premium of 15bps to the proportion of debt that is assumed to be index-linked (30%) for our Final Proposals.

Proportion of new debt in H7

9.339 We agree with HAL's view that a notional company in a "steady state" will need to replace approximately 25% of is embedded debt with new debt in any given price control period.

9.340 We further acknowledge that there was a small discrepancy in our Initial Proposals between the proportion of new debt assumed in our WACC estimate and that implied by our Price Control Model. We do not consider that such small discrepancies had a material impact on our assessment. Moreover, there is a degree of circularity between these assumptions that can be difficult to fully resolve. For example, a higher proportion of new debt can increase the WACC when new debt is more expensive. However, a higher WACC estimate increases allowed revenues which can reduce the need for new debt issuance.

9.341 For our Final Proposals, we have assumed that 24% of the notional company's total debt outstanding will be new debt by the end of H7,[37] which implies an average proportion of new debt in H7 of 12%. These values are very similar to HAL's "steady state" example. This is consistent with the proportion of new debt implied by our Price Control Model (which is also 12%). We are, therefore, satisfied that our assumption is reasonable.

Length of trailing average period

9.342 As we indicated previously, the broader economy has been subject to significant shocks in recent months, which have been particularly pronounced since the start of 2022. These shocks could plausibly have an enduring impact on certain WACC parameters. As such, we are concerned that a six-month trailing average period may be excessively long for parameters such as the cost of new debt

[37] This is based on our Price Control Model with a single iteration of the WACC included (that is, without attempting to resolve the circularity between the WACC and gearing / new debt).

where we are attempting to forecast the future evolution of yields: information from periods as recent as October 2021 may now be out of date and inappropriate for our forecasts. As such, we propose to shorten the trailing average window for estimating the nominal cost of debt to one month to 31 March 2022. This significantly increases the estimated cost of new debt by around 70bps compared with a 6-month trailing average.

Our Final Proposals

9.343 We have separately estimated the cost of new fixed-rate and index-linked debt.

9.344 We estimate the nominal cost of fixed-rate debt based on the average yields on the £ iBoxx non-financials BBB rated index during March 2022. We then deflate this figure by the March 2022 OBR inflation forecasts over H7. The resulting nominal and real costs of fixed-rate embedded debt are set out as set out in Table 9.11 below.

Table 9.11: Estimated cost of new fixed-rate debt for H7

(%)	2022	2023	2024	2025	2026
Nominal cost of new fixed-rate debt	3.60	3.60	3.60	3.60	3.60
OBR March 2022 RPI forecast	9.80	5.50	2.30	2.50	2.70
RPI-real cost of new fixed-rate debt	(5.65)	(1.80)	1.27	1.07	0.87

Source: CAA

9.345 We have estimated the cost of new index-linked debt using the same nominal cost as for fixed-rate debt. We then deflate this figure by an estimate of long-term, forward-looking inflation, in line with the approach set out in paragraph 9.235. We also include an index-linked premium of 15bps.

9.346 This provides an estimate of the RPI-real cost of issuing index-linked debt in each year of H7. Because the RPI-real cost of an index-linked bond is fixed throughout its life, the aggregate cost of index-linked debt in H7 will be equal to the cumulative average of the RPI-real cost of index-linked bonds issued in each year.

9.347 This is set out as set out in Table 9.12 below.

Table 9.12: Estimated cost of new index-linked debt for H7

(%)	2022	2023	2024	2025	2026
Nominal cost of new fixed-rate debt	3.60	3.60	3.60	3.60	3.60
Long-term RPI inflation expectations in H7	2.78	2.39	2.21	2.20	2.17
Index-linked premium	0.15	0.15	0.15	0.15	0.15
RPI-real cost of new index-linked debt (in year)	0.95	1.33	1.51	1.52	1.55
RPI-real cost of new index-linked debt (cumulative)	0.95	1.21	1.37	1.45	1.47

Source: CAA

9.348 The RPI-real cost of new index-linked debt is considerably higher than the RPI-real cost of new fixed-rate debt in the first two years of H7, reflecting the fact that the real cost index-linked debt is generally less affected by changes in inflation than fixed-rate debt.

9.349 In line with historical CAA practice, we have assumed that the notional company's debt is comprised of 70% fixed-rate debt and 30% index-linked debt.

9.350 This implies the following cost of new debt in each year as set out in Table 9.13:

Table 9.13: RPI-real cost of new debt per year in H7

(%)	2022	2023	2024	2025	2026
RPI-real cost of new fixed-rate debt	(5.65)	(1.80)	1.27	1.07	0.87
RPI-real cost of new index-linked debt	0.95	1.21	1.37	1.45	1.47
RPI-real cost of new debt	(3.67)	(0.90)	1.30	1.18	1.05

Source: CAA

9.351 We have also assumed that the proportion of new debt will increase over the course of H7 as new debt is issued to fund maturing embedded debt and meet other cash requirements. The cost of new debt can then be estimated as the weighted average of the cost of new debt in each year, where the weights are given by the proportions of new debt in that year. This is summarised in Table 9.14 below:

Table 9.14: Weighted average cost of new debt for H7

(%)	2022	2023	2024	2025	2026
RPI-real cost of new debt	(3.67)	(0.90)	1.30	1.18	1.05
Proportion of new debt	1%	4%	9%	19%	24%
Weighted average cost of new debt	0.89				

Source: CAA

9.352 We therefore assume an RPI-real cost of new debt of **0.89%** for H7

9.353 As signalled in our Initial Proposals, we intend to introduce a mechanism that will adjust HAL's opening RAB for H8 to reflect the difference between our cost of new debt allowance and the out-turn value of the BBB rated 10+ year non-financial iBoxx index.

9.354 A working model has been published alongside these proposals that illustrates how this mechanism will function in practice.[38]

Issuance and liquidity costs

Context

9.355 Issuance and liquidity costs represent the additional costs associated with issuing debt that is incurred by issuers and not captured directly within the base cost of the debt allowance. Issuance costs represent one-off transaction costs associated with issuing debt and include, for example, legal costs and bank fees. Liquidity costs represent the cost of maintaining committed facilities to ensure that funding is available to repay bond principle as it comes due and to fund capex requirements. They are typically a prerequisite of accessing bond finance. We estimate that a 10bps increase in issuance and liquidity costs results in a 6bps increase in the WACC.

9.356 At Initial Proposals, we assumed that the allowances for energy and water companies at PR19 and RIIO2 represented suitable benchmarks for HAL's issuance and liquidity costs.

9.357 We therefore proposed to use an estimate of 0.1% for issuance and liquidity costs combined.

38 The working model has been published on the CAA website alongside this document

Stakeholders' views

Airline stakeholders

9.358 CEPA, on behalf of AOC/LACC, proposed an allowance of 0.1% for transaction costs,[39] which we understand is equivalent to issuance and liquidity costs.

9.359 We have not received further representations on the level of issuance and liquidity costs from the AOC/LACC.

HAL

9.360 HAL updated its previous issuance and liquidity costs estimate which is summarised and compared to its previous update in Table 9.15 below.

Table 9.15: Comparison of HAL estimates of issuance and liquidity costs

	RBP update 1	RBP update 2
Issuance costs	0.06%	0.06%
Base liquidity costs	0.12%	0.10%
Additional liquidity for 2022 and run down in 2023	n/a	0.19%
Total issuance and liquidity costs	**0.18%**	**0.35%**

Source: HAL

9.361 HAL has reduced its estimate of liquidity costs, reflecting a lower non-utilisation fee of 0.25% compared with 0.44% previously. This is partially offset by a higher assumed facility size of £3,169m compared with £2,309m.

9.362 However, it has also included an additional proposed allowance of 0.19% to reflect the cost of funding cash balances accumulated over the course of the pandemic period, and which HAL states will take time to "run down". HAL assumes that these cash balances have been funded through debt issuance at the cost of new debt, partially offset by interest earned on term deposits.

9.363 HAL has also set out several challenges to our Initial Proposals estimate of issuance and liquidity costs. Specifically, it considers that:

- we did not present any evidence as to why the issuance and liquidity costs of Heathrow would be expected to be the same as that of water and energy companies; and
- our approach not to base the estimate of issuance and liquidity costs on Heathrow's actual costs is not consistent with that of the CMA.

39 CEPA (2021), "Response to CAA H7 Initial Proposals: Cost of Capital", December, Table 3.1.

Our views

9.364 We have reflected on stakeholder feedback in respect of issuance and liquidity costs. Our updated position is set out separately for each component of the allowance below.

Issuance costs

9.365 We propose to estimate the issuance costs for the notional company based on third-party evidence on network utilities. We see no reason why the notional company should incur higher issuance costs than these entities, for example, given their comparable size and credit ratings and, therefore, consider this represents an appropriate benchmark for the notional company.

9.366 HAL has referred to a Europe Economics paper[40] that estimates issuance costs for water companies between 1993 and 2007. The paper estimated that issuance costs for water companies ranged from 3 to 5bps. It also noted that Artesian[41] debt issuance costs were 6bps and expanded its estimated range to include this value.

9.367 We do not consider that Artesian debt issuance is a good proxy for HAL's issuance costs, given HAL's substantially larger and more frequent average debt issuance compared with Artesian debt issues. We therefore exclude Artesian issuances from the range, and instead propose an allowance of **4bps** for issuance costs, corresponding to the midpoint of the range for non-Artesian water company issuance costs.

Liquidity costs

9.368 HAL has not attempted to benchmark its liquidity costs against comparable issuers such as other hub airports or network utilities, beyond unsubstantiated suggestions such as "*these costs are likely to be similar for Heathrow and Water and Energy companies*".

9.369 We have therefore carried out our own assessment of the appropriate size and cost of liquidity facilities that the notional company would require in H7.

9.370 We have started by estimating the size of the notional company's liquidity requirement in H7. We consider that the Standard & Poor's (S&P) methodology for examining liquidity requirements represents a reasonable benchmark. S&P

[40] Europe Economics (2017), "PR19 — Initial Assessment of the Cost of Capital", Table 10.1.

41 Artesian was a project undertaken by Royal Bank of Scotland and intended to facilitate access to flexible and index-linked debt funding for water companies – particularly smaller water companies that might otherwise find it more difficult to access debt capital markets on more favourable terms. It involved the creation of a special purpose vehicle that would issue guaranteed bonds on behalf of water companies and then loan the proceeds to water companies. In this way, the debt funding needs of the smaller water companies could be pooled in a cost-effective manner.

considers that sources of liquidity include undrawn committed facilities, cash on hand and positive funds from operations. It defines liquidity requirements as comprising capex, maturing debt and forecast cash losses.

9.371 S&P then classifies liquidity as:

- "Strong" where sources of liquidity exceed 1.5x liquidity requirements within the next 12 months and 1.0x liquidity requirements in the following 12 months; and
- "Adequate" where sources of liquidity exceed 1.2x liquidity within the next 12 months.

9.372 We consider that it would be appropriate to target "strong" liquidity in 2022 and 2023 and "adequate" liquidity thereafter. This is because we consider that adequate liquidity is likely to be sufficient to maintain a strong investment grade credit rating in the longer-term. However, in the immediate aftermath of the pandemic we consider that credit rating agencies are likely to place greater weight on HAL's liquidity, and that a strong level liquidity would be prudent in these circumstances.

9.373 We assume annual peak capex of £1bn[42] and annual debt maturity of £510m[43] in H7. This suggests an average total liquidity requirement in H7 of c.£2,600m. This is summarised below.

Table 9.16: Estimate of liquidity requirement in H7

£m	2022	2023	2024	2025	2026
Sum of peak capex and annual debt maturity	1,500	1,500	1,500	1,500	1,500
Target liquidity rating	Strong	Strong	Adequate	Adequate	Adequate
Liquidity requirement in-year	3,775	3,775	1,812	1,812	1,812
Average liquidity requirement	2,597				

Source: S&P, CAA analysis

9.374 We have then considered how much of this liquidity requirement should be met through a committed liquidity facility or facilities, as opposed to through funds from operations.

9.375 To facilitate this, we have compared liquidity requirements with the size of liquidity facilities at comparable issuers. This summarised below in Table 9.17.

[42] Broadly in line with our capex allowances for H7.

[43] Based on an assumed RAB of £17bn, notional gearing of 60% and assumed debt tenor of 20 years.

Table 9.17: Peer comparison of liquidity facility cover

HAL	0.40x
Severn Trent	1.06x
United Utilities	0.55x
Ferrovial	0.65x
Average	**0.67x**

Source: CAA and company accounts

9.376 Based on this, we estimate that 67% of the notional company's liquidity requirement will be met with a liquidity facility, with the remainder being funded via funds from operation. This implies a liquidity facility with face value of c.£1,730m.

9.377 We have not been able to access data on set-up costs and non-utilisation fees for comparable issues since this information is not generally publicly available. We have, therefore, relied on HAL's proposed costs to estimate the resulting liquidity cost allowance, namely:

- set-up costs of 0.75%, spread evenly over a 5-year facility life; and
- non-utilisation fees of 0.25% incurred annually.

9.378 Applying these cost rates to the estimated facility size above suggests an annual liquidity cost of £7m per annum, or **7bps** with respect to total notional debt.

9.379 We note that our combined issuance and liquidity cost allowance of 0.11% is close to our proposed level in our Initial Proposals and similar allowances at PR19 and RIIO-GD2/T2 suggesting that our estimate is reasonable.

Funding of pandemic period cash balances

9.380 We have considered HAL's request for an allowance to cover the costs of cash balances accumulated during the pandemic period as a means of meeting liquidity requirements.

9.381 We consider that there are legitimate reasons why such an allowance might be justified. These are:

- it may not have been possible for the notional company to re-size its pre-pandemic liquidity facility during the pandemic given the significant financial pressure faced by HAL during the pandemic and the uncertainty regarding its duration;
- it also could not have relied on funds from operation to cover its liquidity requirement, since these were negative in 2020 and 2021. Indeed, the

negative cashflow would itself have contributed to HAL's liquidity requirement; and

- strong liquidity was a factor in maintaining HAL's credit rating during the pandemic, and it is likely that it would also have been important for the notional company. This might have increased the notional company's liquidity requirement relative to its pre-pandemic level.

9.382 In the absence of access to other sources of liquidity, we consider it plausible that the notional company may have issued additional term debt (over and above that necessary to fund capex and maturing debt) and retained the cash proceeds as a liquidity buffer.

9.383 We have, therefore, estimated the scale of cash that might have been accumulated in this manner and its ongoing cost in H7.

9.384 In addition to the three components of the liquidity requirement set out in paragraph 9.370 above, we have included debt service (interest) costs during the pandemic period. This is in line with S&P's approach, which modified the definition of its liquidity requirement during the pandemic to include debt service in addition to debt maturity (but subsequently reversed this modification).

9.385 We have also assumed that the notional company would have needed to maintain "strong" liquidity, requiring coverage of 1.5x the next 12 months' liquidity requirements, in addition to 1.0x the following 12 months' liquidity requirements as set out in Table 9.18.

Table 9.18: Estimate of liquidity requirement in 2020-21 (£m)

	2020	2021	2022
Capex	447	279	293
Maturing debt	525	525	525
Debt service	429	472	465
Negative FFO[44]	459	184	n/a
Total liquidity requirement	**4,250**	**3,473**	**n/a**

Source: CAA analysis

9.386 We have further assumed that the notional company would have entered the pandemic with a liquidity facility of similar size to that we have estimated for H7, namely c.£1,730m. We assume that the notional company would then have

[44] FFO is "funds from operations"

needed to issue £2,520m of debt in 2020 and retain the cash proceeds to meet its residual liquidity requirement.

9.387 Because the total liquidity requirement in 2021 was £777m lower than in 2020, we consider that the notional company could have used this quantum of its cash balances to fund capex and maturity debt. This would have resulted in lower debt issuance in 2021, and hence a lower aggregate amount of debt outstanding at the start of H7. As such, we assume that the net quantum of cash balances that would need to be funded in H7 is £1,743m, based on the 2021 liquidity requirement less the assumed size of the liquidity facility.

9.388 We assume that the notional company would have incurred a nominal cost of new debt of 3.60% on debt issued to fund its cash balances but would have earned a deposit rate of 0.15% on these balances[45], resulting in a net cost of 3.45%. We adopt HAL's estimate of an 18-month "run down" period for this cash, but we assume that the balances decline linearly over the run-down period.

9.389 Based on these assumptions, we estimate a total cost in H7 of £45m. Spread over the five years of the period, this amounts to a cost of cash balances of **7bps**.

9.390 We would emphasise that this additional cost of cash balances is a one-off allowance that we have allowed due to the unique circumstances of the pandemic and its immediate aftermath. We would not expect to provide this allowance in future price controls unless there are similarly exceptional circumstances.

Our Final Proposals

9.391 We propose to set a combined allowance for issuance, liquidity and cash costs of **18bps** in H7. This comprises:

- an issuance cost of 4bps;
- liquidity cost of 7bps; and
- a cost of funding pandemic-period cash balances of 7bps.

Choice of a point estimate

Context

9.392 There is a degree of uncertainty associated with estimating each of the parameters used to assess HAL's WACC, so we have estimated a range of plausible estimates for each parameter. To determine a single point estimate for the WACC for the H7 price control, we need to determine the appropriate

[45] In line with HAL's estimates in its Business Plan.

balance between the risk of setting the WACC too high, leading to consumers paying too much; and setting the WACC too low, and potentially undermining long-term financeability and/or incentives for investment.

9.393 Our Initial Proposals did not specify a point estimate. Instead, we set out the following principles that we indicated would guide our choice of point estimate at Final Proposals:

- we will be guided by our statutory duties in applying regulatory judgement to determine the point estimate;
- we might consider a wider set of issues than those identified by the CMA in the context of PR19;
- aiming up (above the midpoint of the range) may be warranted by the need to provide the right incentives and environment for investment; and
- the application of a TRS mechanism might lead to a point estimate that is below the mid-point.

9.394 Our starting point for Final Proposals is to assume it is appropriate to use the midpoint of the range as the point estimate unless there is strong and compelling evidence to deviate from this assumption. This is consistent with recent precedent such as Ofgem's determination for RIIO-GD2 and RIIO-T2, where the midpoint was used.

Stakeholders' views

Airline stakeholders

9.395 CEPA did not explicitly propose a point estimate within its range, nor did it indicate where within our range we should choose our point estimate. However, it did state that we had "aimed up" on many WACC parameters.[46]

HAL

9.396 HAL continued to propose that we should set a point estimate for the WACC above the midpoint of the range.

9.397 HAL commissioned Oxera to carry out Monte Carlo simulation in line with the CMA's approach in PR19. This analysis employed probabilistic analysis based on the ranges for individual cost of equity parameters to construct a distribution for the cost of equity. It then identified the uplift to the midpoint of the cost of equity range that was equivalent to the 77th percentile of the distribution. This suggested an uplift 0.5% to 0.6% would be appropriate.[47]

[46] CEPA (2021), "*Response to CAA H7 Initial Proposals: Cost of Capital*", December.

[47] Oxera (2021), "*Cost of Capital issues for the H7 period*", Section 3, December.

9.398 Based on the output of Oxera's analysis, HAL suggested that an uplift of 50bps to the cost of equity would be appropriate.

Our views

9.399 We consider the issues that are relevant to our choice of the point estimate below. These include the areas discussed by the CMA for PR19, together with other relevant considerations specific to the H7 price control.

Welfare effects and investment

9.400 We previously recognised that the choice of point estimate could affect consumer welfare through two effects:

- if the WACC is set too low, this could lead to necessary investment and refurbishment not being undertaken, with adverse consequences for consumer welfare (that is, the interests of consumers); but
- if the WACC is set too high, consumers would suffer welfare losses in the near-term from higher airport charges, as well as longer-term detriment associated with the costs of inefficiently high investment.

9.401 Precedent, particularly from the 2018 UKRN paper on the cost of capital,[48] suggests that there is likely to be an asymmetry in terms of the magnitude of detriment associated with each of the above. This paper suggests that, with respect to investment, the consequences of setting the WACC too low are greater than the consequences of setting the WACC too high. All else equal, this would imply that we should set a WACC in the top half of the range.

9.402 The extent to which this is the case in the current context is not obvious. The 2018 UKRN paper suggests that it depends in part on the extent of new investment being undertaken within a price control. Specifically, it suggests that a point estimate at the 90th percentile of the range could be warranted for new investment, whereas the midpoint might be appropriate for existing or sunk investment.[49] We also note that the CMA considered that "aiming up" could be warranted to ensure that an appropriate level of investment took place over the longer-term.

9.403 For H7, we expect that HAL will undertake a reasonably significant volume of new investment: approximately £3.6bn, or 20% of the opening RAB. Applying the 2018 UKRN framework without any further adjustments would therefore suggest

[48] Wright, S., Burns, P., Mason, R. and Pickford, D. (2018), "*Estimating the cost of capital for implementation of price controls by UK Regulators: An update on Mason, Miles and Wright (2003)*", p71.

[49] Wright, S., Burns, P., Mason, R. and Pickford, D. (2018), "*Estimating the cost of capital for implementation of price controls by UK Regulators: An update on Mason, Miles and Wright (2003)*", p72.

a point estimate at the 60th percentile of our range, equivalent to aiming up of around 15bps on the vanilla WACC or 40bps on the post-tax cost of equity.

9.404 At the same time, this figure is itself subject to various assumptions, including:

- the extent to which investment would take place regardless of the level of WACC that we set: this is particularly relevant where we provide explicit incentives for such investment to take place as forecast. For example, in H7 we are introducing new capex incentives that we consider will encourage HAL to undertaken efficient investment; and
- the scale of consumer detriment associated with under-investment: the 2018 UKRN paper's authors note that the assumptions they have used to estimate the optimal degree of aiming up for new investment are "*as stark as possible*" such that setting a WACC that is too low will entail "*a complete loss of [consumer] surplus*". It is plausible that the actual consumer detriment would be much lower than this in practice.

9.405 At the start of the H7 price review we were concerned with how best to deal with the expansion of capacity at Heathrow and how best to support the financing of the very large capital programmes associated with expansion. In these circumstances a degree of "aiming up" on the WACC may have been appropriate. There is a significantly reduced case for such an approach in the circumstances of the H7 price control. We note that HAL has undertaken substantial investment historically, suggesting that our previous WACC estimates have not resulted in systematic under-investment or consumer detriment. On the other hand, new investment could be seen as particularly important in the context of securing the recovery from the pandemic.

9.406 Overall, we consider that there may be a degree of "aiming up" that is warranted due to welfare effect and investment considerations in the specific circumstances of the H7 price control. However, we are not necessarily persuaded that this will be the case at H8 and future price control reviews.

Asymmetry in the WACC parameter ranges

9.407 In light of stakeholder feedback and additional analysis since our Initial Proposals, we have reconsidered our previous position that there is no material asymmetry in our estimates of the WACC parameters that would warrant any "aiming off" with respect to our choice of a WACC point estimate.

9.408 We noted in paragraphs 9.193 to 9.195 above that we have based our estimate of the TMR on the assumption that it is "stable" and does not vary with respect to either the risk free rate or inflation. We further noted that this assumption, together with a marked fall in the risk free rate, has given rise to a significant increase in the equity risk premium since Q6. The underlying reason for this increase in the equity risk premium is not clear, and not obviously explained

either by increases in investor risk aversion or improved prospects for future equity market returns.

9.409 The increase in the equity risk premium has also given rise to a counterintuitive WACC premium for HAL over water and energy networks that is not explained by changes in systematic risk exposure.

9.410 We have considered two alternative assumptions, both of which would have resulted in a lower TMR and cost of equity:

- a small correlation between the TMR and the risk free rate: for example, if we assume that a 1% fall in the risk free rate translates into a 0.1% fall in the TMR, this would imply a 30bps reduction in the TMR. This in turn would imply a reduction in the cost of equity of 36bps; and
- a small correlation between the TMR and inflation: if we assume that a 1% increase in RPI translates into a 0.1% fall in the TMR, this would imply a 17bps reduction in the TMR. This in turn would imply a reduction in the cost of equity of 20bps.

9.411 All else equal, we would consider that the assumption of a stable TMR therefore gives rise to an upward skew within our parameter range. In principle, this warrants a degree of aiming down on the choice of the WACC point estimate. As with welfare effects and investment, the precise degree of aiming down that would be warranted is uncertain and subject to judgement. However, given the scale of the impacts set out above, we consider that the degree of aiming down is potentially material.

Asymmetry in the broader price control

9.412 Consistent with our previous position, we do not consider that there is any material uncompensated asymmetry remaining within the H7 price control. Although we consider that HAL is subject to significant asymmetric risk associated with passenger volumes due to one-off shocks, we have explicitly taken account of this through the application of a shock factor and asymmetric risk allowance.

9.413 We therefore do not consider that there are any other material sources of asymmetric risk within the H7 price control.

Market cross-checks

9.414 We continue to consider that we lack robust market benchmarks that we can use to cross-check our CAPM-based WACC estimates for H7. We note that CEPA has highlighted that the share prices of some listed comparator airports have recovered to close to their pre-pandemic levels, which they consider indicates that the cost of equity for these airports (and by extension, HAL) is likely to have similarly returned to its pre-pandemic level.

9.415 In our view, it is difficult to draw meaningful conclusions from this evidence. Not all of the listed comparator airports are subject to RAB-based regulation. This makes the estimation of Market Asset Ratios[50] difficult. Those that are subject to RAB-based regulation exhibit other significant differences, both in terms of their regulatory frameworks and operational characteristics.

9.416 We are therefore sceptical that this evidence provides a strong justification to deviate from the mid-point of our proposed range.

Financeability

9.417 We consider debt and equity financeability for the notional company in chapter 13 (Calculating the price cap and financeability) based on the midpoint of the WACC range set out in this chapter. Our assessment suggests that financeability considerations alone do not warrant deviating from the mid-point of our proposed range.

9.418 Furthermore, we consider that financeability issues, when they arise, should be addressed using NPV-neutral remedies such as reprofiling in the first instance. We consider that an adjustment to the WACC point estimate to address financeability issues should be considered a last resort, and only used in exceptional circumstances.

Our Final Proposals

9.419 We have summarised the factors that we have considered in respect of the choice of the point estimate for the WACC in Table 9.19 below.

Table 9.19: Summary of considerations in respect of WACC point estimate

Consideration	Implication for choice of point estimate
Welfare effects and investment	↑
Asymmetry in WACC parameter estimates	↓
Asymmetric in broader H7 price control	–
Market cross-checks	–
Financeability	–
Overall conclusion	–

Source: CAA

[50] Market Asset Ratios have been used by other regulators as a means of determining whether market valuations of regulated utilities exceed their RAB values – which has been interpreted as evidence of overestimation of the WACC historically.

9.420 Overall, we consider that the balance of evidence does not present a strong case for aiming either up or down. In our view, the evidence in respect of parameter asymmetry broadly balances the need to aim up to ensure adequate investment incentives. We therefore propose to adopt a point estimate at the midpoint of our proposed range.

Our Final Proposals for the WACC range

9.421 Our Final Proposals estimate of the H7 WACC are set out in Table 9.20 below. The table also provides comparisons to our H7 Initial Proposals and Q6 Final Proposals. We separately compare our Final Proposals estimate of the H7 WACC with determinations from other regulated sectors, namely, the CMA's determination for PR19 and Ofgem's RIIO-GD2/T2 determination, in Appendix H (WACC).

9.422 We note that stakeholders (particularly CEPA) have commented on both the evolution of our WACC estimate since Q6 and the level of our WACC estimate relative to determinations in other regulated sectors. We respond to each of these points in turn.

Comparison of H7 Final Proposals to Q6 WACC

9.423 Our Final Proposals WACC represents a significant reduction relative to our Q6 WACC estimate. This has primarily been driven by a cost of debt estimate that is 277bps lower than at Q6. It is partly offset by a cost of equity that is somewhat (68bps) higher.

Stakeholder views

9.424 CEPA commented that "[our] view of Heathrow's 'pre-2020' cost of capital has increased substantially relative to Q6, when across other sectors the pre pandemic cost of capital was consistently falling".[51]

Our views

9.425 We would firstly highlight that CEPA's statement is factually incorrect. The range for the vanilla WACC implied by our pre-pandemic asset beta in our Initial Proposals was 3.44%-5.06%. Both the upper and lower bounds of this range lie below the corresponding values at Q6, and the midpoint of this range (4.25%) was 28bps below the midpoint of the Q6 range (4.53%).

9.426 We assume that CEPA was in fact referring to the cost of equity, which was substantially higher at Initial Proposals than at Q6, but more than offset by a reduction in the cost of debt. The increase in the cost of equity at Initial Proposals compared with Q6 was driven almost entirely by a higher assumed

[51] CEPA (2021), "*Response to CAA H7 Initial Proposals: Cost of Capital*", p5.

asset beta. If the Q6 values for the asset beta were used instead, the cost of equity would have been close to its Q6 level.

9.427 Our position in respect of the asset beta, including why it was higher than Q6, was set out in our Initial Proposals, and has been further elaborated on in this document. We consider that the pandemic has both weakened factors[52] that previously insulated HAL from risk relative to comparator airports and increased systematic risk across the sector. At the same time, regulatory mechanisms have partly, but not fully, mitigated this increase in risk. We have, however, assumed a somewhat smaller impact than we did at Initial Proposals.

9.428 We comment further on how our Final Proposals compare to recent determinations in the water and energy sectors in the Appendix H (WACC).

[52] In particular, excess demand resulting from capacity constraints at Heathrow prior to the pandemic.

Table 9.20: CAA WACC estimates for HAL

	H7 Final Proposals		H7 Initial Proposals		Q6 Final Proposals	
	High	Low	High	Low	High	Low
Gearing	60%	60%	61%	62%	60%	60%
Risk free rate	-2.03%	-2.03%	-1.83%	-1.83%	0.50%	1.00%
TMR	5.85%	5.85%	6.50%	5.20%	6.25%	6.75%
ERP	7.88%	7.88%	8.33%	7.03%	5.75%	5.75%
Asset beta	0.62	0.44	0.67	0.52	0.52	0.42
Debt beta	0.05	0.10	0.05	0.1	0.10	0.10
Equity beta	1.47	0.95	1.63	1.20	1.15	0.90
Post-tax cost of equity	**9.56%**	**5.45%**	**11.78%**	**6.62%**	**7.61%**	**5.68%**
Cost of new debt	0.89%	0.89%	-0.32%	-0.32%	2.65%	2.20%
Cost of embedded debt	0.17%	0.17%	1.98%	1.98%	3.65%	3.15%
Proportion of new debt	11.61%	11.61%	16.62%	16.33%	30%	50%
Issuance and liquidity costs	0.18%	0.18%	0.10%	0.10%	0.10%	0.10%
Cost of debt	**0.43%**	**0.43%**	**1.70%**	**1.70%**	**3.45%**	**2.78%**
Vanilla WACC	**4.08%**	**2.44%**	**5.64%**	**3.58%**	**5.12%**	**3.94%**
Point estimate	**3.26%**		**n/a**		**4.65%**	

Note: All figures are expressed in RPI-real terms unless otherwise specified

Source: CAA

Chapter 10

The H7 Regulatory Asset Base and HAL's request for a RAB adjustment

Introduction

10.1 The regulatory asset base ("RAB") reflects the value of the investments that HAL has made in the regulated business. We set price controls on the basis that HAL can expect (but does not have a guarantee) that it will:

- recover its efficiently incurred investments over the life of the relevant assets, through the allowances we make for regulatory depreciation; and
- earn a return on that investment each year on the undepreciated part of the investment that remains in the RAB.

10.2 The use of a RAB helps us to further the interests of consumers, since it is one of the means by which we seek to:

- secure that HAL can finance its activities by facilitating the financing of new investment; and
- secure that the reasonable demands of consumers are met by supporting such investment.

10.3 This chapter sets out how we have calculated the value of HAL's RAB for the H7 price control period. Aspects of these calculations build on the practice established at previous price controls and are designed to provide an appropriate degree of certainty about the calculation of the RAB. This is particularly important given the large size of HAL's RAB and the advantages for consumers and investors of consistency with previous price control settlements.

10.4 However, the exceptional circumstances of the covid-19 pandemic have raised new issues that have not been faced before. The fall in passenger numbers during 2020 and 2021 meant that HAL was able to recover much less revenue from airport charges than it did in 2019. HAL has said that it was not able to recover its regulatory depreciation for these years and that we should therefore make a compensating RAB adjustment at this price control review. These matters require a greater degree of judgement than is normally the case at a price control review, which typically involves a relatively mechanistic role forward of the RAB.

10.5 The remainder of this chapter is structured as follows:

- we summarise our approach at Initial Proposals and respondents' views;

- we explain our approach to the issues around the RAB adjustment we applied in our April 2021 decision and HAL's request for a further RAB adjustment; and
- we summarise our final approach to calculating the RAB for the H7 price control period.

Background

10.6 In our April 2021 decision ("the April 2021 RAB Adjustment Decision") on HAL's application for an adjustment to its RAB, we said that the RAB adjustment should be £300m. This is significantly smaller than the adjustment of around £2.5 billion that HAL had sought. In the April 2021 RAB Adjustment Decision, we explained that the £300m figure represented a transparent and proportionate adjustment that was needed at that time to further the interests of consumers. We considered that it would do this by:

- incentivising additional investment by HAL to maintain service quality and provide necessary capacity in 2021 in the event of a stronger than expected recovery in passenger traffic; and
- helping to avoid a higher cost of debt finance for HAL that could increase charges to consumers in the future.

10.7 In taking this decision, we took note of the weight that credit rating agencies place on their qualitative assessment of the regulatory framework and the possible benefits of signalling support for the notional efficient company being able to access investment grade finance. We also noted that peak notional gearing levels were high relative to certain thresholds used by credit rating agencies.

10.8 We indicated in the April 2021 RAB Adjustment Decision that we would consider whether it would be consistent with our statutory duties to apply any further adjustment as part of the H7 price review process.

Initial Proposals

10.9 Our Initial Proposals considered the arguments that HAL had made on the need for a further RAB adjustment, including representations that HAL submitted to us on:

- regulatory principles applying to the recovery of regulatory depreciation;
- the impact of different RAB adjustments on the H7 WACC;
- the scope for reprofiling H7 revenues and depreciation;
- the impact on H7 investment, opex and service quality; and

- financeability.

10.10 Our view was that no further RAB adjustment had been justified in the interests of consumers. This is because such an adjustment is either:

- not needed to further their interests in relation to lowering the level of airport charges or funding future investment; or
- to the extent that there might be benefit to them, the adjustment HAL has argued for was not proportionate to the benefit to consumers that it would bring.

10.11 We therefore proposed to calculate the H7 opening RAB as the sum of:

- the opening Q6 RAB;
- actual capex additions in each year between 2014 and 2021;
- HAL's efficient Category B and Category C costs incurred by HAL in respect of expansion, including relevant financing costs, which we have previously said would be added to its RAB;
- adjustments relating to our Q6 capex efficiency review;
- the £300m RAB adjustment discussed above; and
- adjustments for RPI indexation; less
- regulatory depreciation.

10.12 Our calculation of the opening RAB was £16,692 million in nominal prices. We stated that this calculation would be updated in our Final Proposals once all actual values for 2021 had become known.

Stakeholders' views

HAL

10.13 HAL considered that the CAA was correct to decide that a RAB adjustment is an appropriate measure to deal with the unprecedented shock of the pandemic, but wrong to conclude that £300m was a sufficient final level for that adjustment. HAL argued, in particular, that:

- the CAA had created a legitimate expectation in its Q6 decision that it would intervene in "exceptional circumstances"; and
- by not now making the full RAB adjustment sought by HAL, the CAA risked creating a perception among investors of an unpredictable regulatory regime, potentially increasing the future cost of capital.

10.14 HAL also stated that the CAA's £300m adjustment is:

- insufficient to secure financeability;
- inconsistent with the adjustment that which would have resulted from treating the Q6 covid shock in line with the CAA's H7 risk-sharing proposals; and
- not enough to ensure that recovery of depreciation for efficiently incurred investment.

10.15 HAL's response included a report by KPMG which supported HAL's position on these matters.

10.16 HAL subsequently submitted a further paper on the RAB adjustment to the CAA in May 2022. That submission included a restatement of many of the arguments in HAL's earlier submissions, but also made additional points, including on:

- the effect that the pandemic has had on asset utilisation and asset lives, with implications for the appropriate level of depreciation in 2020 and 2021;
- HAL's exposure to covid losses compared to businesses in other markets;
- recent developments in European airport regulation; and
- alleged errors in the CAA's calculation of the £300m figure in the April 2021 RAB Adjustment Decision.

Airlines

10.17 Airlines stated that they remained opposed to any RAB adjustment relating to pandemic losses. The joint AOC/LACC and IATA response stated that the benefits that the CAA had cited in the April 2021 RAB Adjustment Decision in relation to capital expenditure and financeability were not visible to airlines.

10.18 BA welcomed the CAA's proposal not to make a further RAB adjustment, but considered that our proposal to retain the £300m RAB adjustment we applied in the April 2021 RAB Adjustment Decision was an "error" and "irrational" for the following reasons:

- the framework used for the April 2021 RAB Adjustment Decision was inconsistent with the framework used to assess HAL's requested further RAB adjustment at Initial Proposals;
- the 70% gearing threshold considered in the April 2021 RAB Adjustment Decision would not have been breached even in the absence of a RAB adjustment;
- the RAB adjustment did not improve the notional entity's debt financeability;

- the RAB adjustment did not fund additional investment;
- the RAB adjustment did not improve capacity and service quality;
- the RAB adjustment did not reduce the cost of capital; and
- the CAA did not invoke promised additional protections in the event of a failure by HAL to deliver an appropriate quality of service in 2021.

10.19 VAA also suggested that the adjustment granted could be reversed in a structured manner.

Our views

10.20 Many of the points that stakeholders submitted in their responses have been reviewed and assessed as part of the April 2021 RAB Adjustment Decision and/or in our Initial Proposals document. In a number of cases, little or no new evidence or arguments have been put forward in the context of whether an adjustment is appropriate at this stage. As a result, we focus below on the lines of argument that stakeholders gave particular emphasis to in their most recent submissions.

10.21 In the section below we respond to arguments put forward by HAL and airlines that argue for alternatives to our Initial Proposals position. These alternatives differ considerably. HAL has argued for a much higher RAB adjustment, while the airlines have argued for reversing the April 2021 RAB Adjustment Decision and making no adjustment rather than the £300m that was allowed. We first respond to the arguments put forward by HAL in respect of the further RAB adjustment, where appropriate, referring to relevant comments by the airlines. We then respond to arguments put forward by the airlines in respect of the RAB adjustment applied in the April 2021 RAB Adjustment Decision, where appropriate, referring to relevant comments by HAL.

10.22 We address each of these arguments in turn and on their own merits. However, we consider that our overall decision about the RAB adjustment should ultimately be considered in the context of our statutory duties, having regard to all the relevant arguments, evidence and analysis. This is the approach we adopted both in the April 2021 RAB Adjustment Decision and in our Initial Proposals.

Further RAB adjustment requested by HAL

Legitimate expectations

10.23 The issue of investor expectations was examined in Appendix D to the February 2021 Consultation on HAL's request for a RAB adjustment. In light of the focus that HAL gave to this matter in its response to Initial Proposals, we have reconsidered the position that the CAA and the Competition Commission ("CC") adopted in previous published reports. We have inferred from this what

expectations investors could reasonably have taken from published statements of policy.

Q5 review

10.24 The allocation of traffic risk, including the allocation of asymmetric traffic risks, has been an explicit point of consideration in airport price control reviews since the Q5 price control review in 2007-08.

10.25 During the CC's 2007 inquiry into the price control arrangements at Heathrow and Gatwick Airports, HAL's then owners, BAA, drew the CC's attention to what it saw as a distinction between "business risks" and "catastrophic risks". BAA asked that the CC should make an allowance for catastrophic risks outside of the CAPM-based rate of return.

10.26 The CC, in response to this submission, was clear[53] that communicable diseases can be considered a normal business risk and that Heathrow Airport's shareholders are compensated for bearing such risks through the allowed cost of capital.[54] The CC also demarcated the kinds of risk that were not captured by the allowed cost of capital specifically as risks that can potentially "render an airport inoperable for a sustained period". The CC said that if these genuinely catastrophic risks were to crystallise during the Q5 period, they would need to be dealt with outside of the framework of economic regulation.

Q6 review

10.27 The Q6 review took place after a period in which traffic volumes had been adversely affected by a number of downside events (such as the 2010 volcanic eruption in Iceland). During this review, HAL once again asked the CAA to consider the regulatory treatment of what HAL saw as an asymmetry in traffic risks. In its Q6 final proposals, the CAA accepted that the evidence from the preceding two decades indicated that HAL was exposed to risks relating to external downside shocks. The CAA responded to this evidence by including a shock factor within its Q6 traffic forecasts. The CAA was also clear that the financial consequences that could subsequently arise from differences between actual and forecast volumes would sit with HAL's shareholders:[55]

> "The allowances for demand shocks in the traffic forecasts and in the cost of capital are two different concepts. The CAA does not, therefore, consider

[53] Competition Commission (2007), BAA Ltd: a report on the economic regulation of the London airport companies (Heathrow Airport Ltd and Gatwick Airport Ltd), appendix F, paragraphs 137 to 145. The Commission also places natural disasters, geopolitical upheaval and technological failure of either aircraft or airport systems under the same heading. See:

[54] We note that the CAA rolled forward the Competition Commission's Q5 beta unchanged into HAL's Q6 price control.

[55] CAA (2013), Economic regulation at Heathrow from April 2014: final proposals, paragraphs 3.10 to 3.14.

> that its proposals constituted double-counting. For example, the CAA may set the price control on the basis of a forecast level of shocks of 1% per annum. However, there could be a 10% chance that the out-turn level of shocks exceeds the forecast level by one percentage point or more. The risk that the out-turn is different is borne by the company and its shareholders. The CAA therefore allows a higher rate of return for the company than would otherwise be the case to compensate for this risk." (emphasis added)

10.28 Near-identical words were subsequently included in the CAA's notice of the proposed licence[56] and notice granting the licence[57].

Conclusion in respect of legitimate expectations

10.29 Having considered this explicit exposition of the CC's approach and CAA's subsequent policy position, we cannot agree with HAL's contention that it had a legitimate expectation that we would intervene as regulator to protect HAL from the financial consequences of an exceptional traffic shock. On the contrary, we consider that the CAA was clear, and that HAL's investors should have understood, that downside risks, including pandemic-related risks, were expected to be borne by HAL in accordance with the risk allocation set out in the CAA's Q6 final proposals document. We also note that HAL had the option of appealing the Q6 price control settlement to the CMA and chose not to exercise that option.

Price control reopening

10.30 HAL has drawn attention to statements that the CAA made in its Q6 final proposals. In particular, HAL has pointed out that, in deciding not to include a self-modifying condition in the licence, the CAA stated that:

> "Any party materially affected by a price control could request that the CAA uses its powers under section 22 to modify the licence in [extreme] circumstances and the CAA will consider each request on its merits."[58]

10.31 We consider that HAL is wrong to ascribe a meaning to these words that goes beyond a statement of facts about a licence holder's ability to request a licence modification and about the process that the CAA would follow on receipt of such a request. The same observation applies in the case of the statement that the CAA made in its notice granting HAL's licence when discussing the selection of a five-year duration of the Q6 control:

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[56] CAA (2014), Economic regulation at Heathrow from April 2014: notice of the proposed licence, paragraph B14.

[57] CAA (2013), Economic regulation at Heathrow from April 2014: notice granting the licence, paragraph B14.

[58] CAA (2013), Economic regulation at Heathrow from April 2014: final proposals, paragraph 12.114.

> "HAL may request that its price control be reopened at any time. The CAA would consider such a request in light of its statutory duties under the circumstances prevailing at the time."[59]

10.32 These statements are wholly unremarkable in that they simply describe the statutory framework within which the CAA must operate. While these statements may have created a legitimate expectation that the CAA would consider (but no more) a request to reopen the price control, they create no legitimate expectation of any kind about the outcome that might arise from the CAA's consideration of such matters.

10.33 Our response to HAL's request for a pandemic-related RAB adjustment can clearly be seen, in practice, to have been entirely consistent with the way in which we described our approach to these matters in late 2013 and early 2014. After receiving HAL's request in 2020 we:

- consulted with stakeholders in October 2020 and February 2021 on the response that we should make;
- evaluated in detail the different regulatory options that were available to us;
- issued the the April 2021 RAB Adjustment Decision, in accordance with our duties in CAA12, that provided for a £300m uplift to HAL's RAB;[60] and
- continued to consult on and assess the case for a further RAB adjustment as part of the wider H7 price review process.

10.34 We do not consider that these actions can be reasonably said to deviate from the limited expectations that HAL could legitimately have formed based on the policy position the CAA set out in its Q6 published documents. Nor do we consider that the April 2021 RAB Adjustment Decision, since it was taken in line with our statutory duties, can be said to have confounded any legitimate expectations, since no such legitimate expectations can have existed. Instead, we are of the view that we have exercised our powers under the CAA12 in the way we signalled we would at the time we set the Q6 price control.[61]

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[59] CAA (2014), Economic regulation at Heathrow from April 2014: notice granting the licence, paragraph A12.

[60] The £300m adjustment validates the observation that the CAA made in its Q6 cost of capital analysis that: "*the ability of a licensing regime to revisit the price control if key assumptions, such as traffic, are significantly worse than forecast, could be a credit strength*".

[61] Moreover, we consider that our actions validate the statement that we made in the notice granting the licence when we said that "the ability of a licensing regime to revisit the price control if key assumptions, such as traffic, are significantly worse than the forecast, could be a credit strength" as compared to a regime in which HAL has no right to request a reopening of the price control in period.

10.35 For the reasons set out above, we do not consider that we are bound by any previous statement made either by the CC or by the CAA to provide HAL with the adjustment to its RAB of around £2.5 billion that HAL is seeking. Rather, we consider that we were required, and are required, to assess HAL's request for a pandemic-related RAB adjustment in accordance with our statutory duties. The outcome of this assessment is set out in the April 2021 RAB Adjustment Decision and in the remainder of this chapter.

10.36 We therefore reject HAL's suggestions that our actions in this H7 review undermine the credibility of the regulatory regime. On the contrary, we consider that our actions both protect consumers and reasonably support debt and equity financeability, and on this basis should not undermine investor confidence.

Miscalibration of the Q6 framework

10.37 HAL and KPMG have argued that the Q6 framework was "miscalibrated", in that it did not adequately compensate HAL for the possibility of a future pandemic-magnitude event – for example, through an allowance such as a higher shock factor, or an equivalent mechanism. HAL argued that the CAA noted that this could be dealt with flexibly through the ability to reopen, therefore a reopening is required and a quantification of intervention which takes this into account is appropriate. They conclude from this that HAL is entitled to retrospective compensation for the revenues it would have been allowed if the Q6 framework had been "correctly" specified.

10.38 We disagree with HAL and KPMG's characterisation of the Q6 price control settlement as "miscalibrated". We consider that it was adequately calibrated based on the information that was available at the time and note that HAL was able to access substantial volumes of capital during Q6 on the basis of that framework. Furthermore, as noted above, HAL had the opportunity to appeal this determination if it considered that it was materially miscalibrated, but chose not to do so.

10.39 The fact that a pandemic subsequently occurred does not imply that the framework was miscalibrated given the information that was available at the time. It also does not follow that we should retrospectively amend the Q6 framework. It is in the nature of price control determinations that the forecasts on which the determination is based are typically different from out-turn. Under incentive regulation, we do not retrospectively correct for these forecast errors, even when they are material[62]: this provides the regulated entity an incentive to

[62] There are exceptions to this: for example, where we explicitly introduce mechanisms for truing up against out-turn data, such as the TRS mechanism and cost of new debt indexation mechanism we are introducing at H7. However, these should be clearly signalled and defined upfront. This is not the case with HAL's proposed RAB adjustment.

manage risks and act efficiently. If we were to adopt the practice of retrospectively amending forecasts in light of out-turn data, this would constitute rate of return regulation. We do not consider that this would be in consumers' interest – particularly at a time when the transition would significantly benefit HAL at consumers' expense.

10.40 We therefore do not consider that we should provide a further RAB adjustment to compensate for any alleged "miscalibration" at Q6.

Relevance of the H7 traffic risk-sharing framework

10.41 In the February 2021 Consultation, we said that it is possible that the credibility of any new TRS mechanism might be bolstered by some compensation for retrospective losses in relation to the impact of the pandemic. HAL in its response to Initial Proposals took the position that:

> "without a further Q6 RAB adjustment, the CAA would apply inconsistent risk-sharing frameworks between price controls despite in principle agreement that the economic conditions necessitating risk sharing in H7 are largely identical to those in Q6 … Discriminating between price controls in this way risks signalling to investors that the CAA's commitments to intervene cannot be considered credible."

10.42 The framework provided by CAA12 permits the CAA to allocate risks in one particular way during one regulatory period and to consciously and explicitly apply a different allocation of risk at the start of the next regulatory period. This kind of recalibration is a standard and familiar feature of periodic reviews across regulated industries. It is highly unlikely that investors would consider a new risk allocation to be "credible" only if a regulator retrospectively applies the same arrangements to historical periods. It is legitimate and reasonable for regulators to change approach in response to new information and risks, and provided this is appropriately justified should support investor confidence in the regulatory regime.

10.43 In the specific case of traffic risk-sharing, we reproduced in paragraph 10.27 above text from the Q6 final proposals document which sets out the allocation of risk for Q6. We explain in chapter 2 (Regulatory framework) that the pandemic represents a change of circumstances that necessitates a change in the hitherto established allocation of traffic risk and that we intend to modify HAL's licence so that the recovery of TRS revenues can start within the H7 period. In chapter 9 (Weighted average cost of capital), we explain how we have accounted for the new TRS in our calculation of the cost of capital. We therefore consider that the new risk allocation is well justified and credible[63]. We disagree with HAL's view

[63] We consider that further confidence can be provided to investors where the implementation of new

that retrospective application of our new framework is necessary to ensure investors' confidence in the operation of the regulatory regime.

Financeability

10.44 HAL's ongoing ability to finance its activities is a key part of our assessment as set out in chapter 13 (Calculating the price cap and financeability). However, the financeability analysis conducted by HAL and its advisors (KPMG) has tended to focus on the historical losses it has incurred due to the pandemic. By including 2020 and 2021 within its financeability assessment, HAL and KPMG have generated financial metrics that appear to show key metrics falling below relevant thresholds.

10.45 By including historical periods in its analysis, HAL and KPMG are implicitly testing whether a creditor or investor with perfect foresight would, at a particular date in the recent past, have committed capital to the business knowing that a global pandemic was about to occur. It is not clear that this question is relevant to our statutory duties.

10.46 By contrast, our analysis of financeability, set out in chapter 13 (Calculating the price cap and financeability), is based on forward-looking metrics and thresholds, which seems most relevant to HAL's ability to finance future investment and the reasonable discharge of our statutory duties. This analysis demonstrates that the notional entity should be in a position to obtain new finance from both debt and equity investors on reasonable terms without any further RAB adjustment. We therefore disagree with HAL's view that a RAB adjustment is necessary to ensure financeability.

Remuneration of historical expenditure

10.47 HAL's response to the Initial Proposals restated representations that HAL had made previously about the importance of ensuring that investors receive full recovery of amounts included in the RAB. The argument that HAL makes is that:

> "non-recovery of depreciation has never been considered, either by investors or regulators in setting the allowable WACC".

10.48 We disagree with this view for the reasons set out in paragraph C3 of the April 2021 RAB Adjustment Decision and paragraphs 6.29 to 6.32 of our Initial Proposals document. In short, these are that:

- the inclusion of an *ex ante* allowance for regulatory depreciation within the CAA's price controls does not constitute an absolute guarantee that

mechanisms such as the TRS are included in a licence condition and would be subject to appeal if changed.

HAL will be able to recover that revenue irrespective of what happens to traffic levels during the regulatory period; and

- more generally, HAL is wrong to state that there is a fundamental principle of UK regulation that companies are guaranteed a recovery of regulatory depreciation, unless this has been explicitly set out as part of the regulatory framework.

10.49 Corroboration for this view can be found in the CC's 2008 statements about the "split cost of capital" proposition that has been put forward on a number of occasions by Professor Dieter Helm. In a report on Stansted Airport, then owned by BAA, the CC observed that:[64]

> "The convention of using the RAB as an input into the calculation of price caps gives investors the opportunity to recoup their investments, but deliberately puts that return at risk (i.e. it is conditional upon the efficient and competent operation of the assets that are built). As such, it is entirely conceivable (and, indeed, desirable) that the actual return on the RAB will turn out to be higher or lower than the expected return seen in the WACC x RAB calculation.
>
> Professor Helm was not able to persuade Panel members that the return of and on Stansted's RAB is somehow 'safe' and capable of being disentangled from an airport's performance against its price cap, or that the financiers of historical investment included in the RAB would not see the value of their capital increase or diminish in line with the fortunes of the regulated business."

10.50 Nonetheless, in setting a new price control it is important that the overall risk and reward package is calibrated in way that reflects the information that is available on future business risks. We have taken appropriate steps at this price control review such that investors can reasonably expect to recover regulatory depreciation in future, including the TRS arrangements in chapter 2 (Regulatory framework). Where there are residual risks, these are addressed in our approach to calibrating the H7 cost of capital (see chapter 9 (Weighted average cost of capital), the asymmetric risk adjustment and passenger shock factor (see chapter 11 (Allowance for asymmetric risk)).

Asset utilisation, asset lives and depreciation

10.51 HAL stated in its May 2022 submission that we had falsely equated the view that it has no absolute guarantee of recovery of investment with taking no action in relation to its inability to recover regulatory depreciation. HAL argued that the

[64] Competition Commission (2008), Stansted Airport Ltd: Q5 price control review, appendix L, paragraphs 7 to 12.

correct approach was for the CAA to consider, with the benefit of hindsight, whether recognition ought to be given in the H7 price control for depreciation foregone during Q6. HAL has suggested various possible alternatives, all of which involve the recovery in H7 of some degree of foregone depreciation from 2020 and 2021, including:

- "pausing" depreciation for all or part of HAL's assets for some or all of the pandemic disruption period; and
- retrospectively linking depreciation to passenger numbers.

10.52 When applied on a retrospective basis as HAL proposes, these approaches would provide for the recovery of losses incurred in 2020 and 2021. We have explained at Initial Proposals why we do not consider that allowing further recovery of historical losses would be in the interest of consumers. We do not consider that the resulting cost would not be sufficiently offset by a lower cost of capital[65], more investment[66] or better service quality[67]. We also do not consider that it is necessary to support financeability as we demonstrate in chapter 13 (Calculating the price cap and financeability).

10.53 We summarise in paragraph 10.50 above the broad steps we have taken such that HAL's investors can reasonably expect that regulatory depreciation will be recovered during H7 price control period and the adjustments we have made to the risk and reward package to take account of the residual risks that HAL's investors face.

Comparisons with other industries

10.54 HAL states that companies in competitive markets, including airlines operating from Heathrow, may benefit from current/future upswings in demand, whereas HAL's losses due to the pandemic will be permanent with no opportunity for recovery.

10.55 We disagree with HAL's view that there are no prospects for outperformance under the current regulatory framework. Although overall charges are capped, there are various opportunities for HAL to earn outperformance if it acts efficiently and in the interests of consumers: for example, HAL benefitted from passenger forecasts that exceeded forecasts over the Q6 period. Outperformance can also be achieved through realising cost efficiencies and delivering excellent service quality to consumers as well as through driving

[65] See CAP2265C: paragraphs 6.33-6.39.

[66] See CAP2265C: paragraphs 6.49-6.54.

[67] See CAP2265C, *Op. Cit.*

increased commercial revenues above the levels forecast for the price control period.

10.56 We also disagree with HAL's characterisation of companies operating in competitive markets as benefitting from uncapped opportunities for outperformance. The implicit assumption behind this statement is that such companies will, absent severe shocks such as pandemic-like events, earn supernormal profits. However, in competitive markets, competition between market participants acts in a similar way to a price cap: to restrict prices and profitability.

10.57 We therefore disagree with HAL's suggestion that the fact that its charges are capped warrants a further RAB adjustment or any further retrospective compensation for historical losses.

European airport regulation

10.58 HAL's May 2022 submission cited five European countries in which there are ongoing discussions between airports and regulators about the response to the pandemic.

10.59 None of these regulators have provided for an adjustment that is comparable in terms of scale to that HAL is seeking in respect of historical losses. Where compensation has been provided, it is an order of magnitude smaller than HAL's requested level of compensation, and generally similar in scale to the adjustment we applied in the April 2021 RAB Adjustment Decision. In most cases, there has not been any compensation provided in respect of historical losses to date.

10.60 HAL also referred to a report from the Thessaloniki Forum of Airport Charges Regulators on airport charges in times of crisis. The report provides a perspective on the options that are available to regulators, but is not binding on any regulatory body and, as such, should be read as a contribution to the debate rather than a constraint on our decision-making. In any case, the report recognises the importance of the starting allocation of traffic risk and goes only as far as to suggest that regulators should "consider" the treatment of losses, including by investigating the impact on financeability. This is consistent with the way that we have responded to HAL's request.

Adjustment applied in the April 2021 RAB Adjustment Decision

Proposed reversal of adjustment

10.61 We have considered the suggestion made by some airlines that we should reverse the £300m RAB adjustment we applied in the April 2021 RAB Adjustment Decision. For avoidance of doubt, the April 2021 RAB Adjustment Decision was intended to be our final decision to give effect to the inclusion of the £300m in HAL's opening RAB for H7 RAB.

10.62 Bearing this in mind, there is a relatively high evidential threshold for us to consider reversing this decision. We would, for example, need to consider the adverse impact that this would have on investor confidence and hence on HAL's cost of capital and the level of airport charges. Nonetheless, this change will be put into effect through the same licence modifications that will introduce the H7 price control. As such, airline stakeholders will be able to appeal this decision to the CMA if they disagree with our reasoning and approach to these matters.

10.63 We also note that the reversal of amounts previously included in the RAB has also been explicitly proscribed in a previous CMA appeal. In the appeal by Phoenix Gas Networks of its price control in 2021, the CMA was clear that it would not be appropriate for a regulator to seek to reverse, *ex post*, amounts previously added to the RAB.

Consistency of frameworks used in the April 2021 RAB Adjustment Decision and at Initial Proposals

10.64 Some airlines have suggested that the framework we have used to assess HAL's request for a further RAB adjustment is inconsistent with the decision to apply a £300m RAB adjustment.

10.65 We disagree. Ultimately, the framework we used to assess both sets of interventions was our statutory duties, and this was clearly set out in both cases. There are also important differences in circumstance between the April 2021 RAB Adjustment Decision and our decision at Initial Proposals not to grant HAL's request for a further RAB adjustment.

10.66 The April 2021 RAB Adjustment Decision was undertaken at a time of significant uncertainty regarding the shape and form of the recovery from the pandemic. There was genuine concern regarding a potential recovery of passenger volumes in the summer 2021 and the need to ensure that HAL had sufficient financial flexibility to accommodate this without undue disruption to passengers.

10.67 Different circumstances prevailed at the time of our Initial Proposals. At that time, we were able to consider how best to incentivise needed investment within the context of a broader price control review, including a new TRS mechanism and other arrangements. In addition, the scale of HAL's requested further adjustment was significantly greater than the amounts needed to accommodate a near-term recovery in passenger volumes, particularly as we had already provided a £300m RAB adjustment to that end.

10.68 Overall, we are satisfied that our decisions were reasonable in the changing circumstances and are consistent with our statutory duties.

Relevance of the 70% notional gearing threshold considered in the April 2021 RAB Adjustment Decision

10.69 BA has suggested that the notional company's gearing did not reach the 70% level expected in April 2021. They infer from this that the RAB adjustment we applied in the April 2021 RAB Adjustment Decision was unnecessary and "in error".

10.70 This appears to be based on a review of the Price Control Model we shared with stakeholders alongside Initial Proposals, adjusted to strip out the impact of the £300m.

10.71 The notional gearing estimates we set out in this model were based on a different set of projections and inputs than were available to us at the time we published the April 2021 RAB Adjustment Decision. In particular, they were based on different forecasts for passenger volumes, costs and other variables that only came to light several months later.

10.72 At the time of publication, our analysis suggested a realistic prospect of notional gearing exceeding 70% in 2021. Based on this analysis, we concluded that it was appropriate to intervene for the reasons we have previously stated. The fact that these projections were subsequently superseded does not, however, imply that our decision was inappropriate at the time or an "error" as BA has suggested. It is in the nature of price control determinations that projections made at the time of a determination will be superseded.

10.73 We therefore do not agree with BA that our justification for the April 2021 RAB Adjustment Decision was in error.

Impact of the RAB adjustment on debt financeability more broadly

10.74 BA has further stated that the RAB adjustment we applied in the April 2021 RAB Adjustment Decision did not support debt financeability in the manner we indicated at that time. It noted our view at Initial Proposals that the further RAB adjustment requested by HAL did not materially influence whether or not the notional entity was financeable. It therefore inferred that it was "irrational" for us to have concluded that the April 2021 RAB adjustment was necessary.

10.75 We do not agree that our conclusion was in error or irrational. Our conclusion in the April 2021 RAB Adjustment Decision regarding financeability was partly based on our concern regarding the 70% threshold for notional gearing: based on the information available to us at the time of the April 2021 RAB Adjustment Decision, an intervention appeared warranted to avoid a potential credit rating downgrade of the notional entity. This was not the case at Initial Proposals.

10.76 In addition to financial ratios, we were also concerned with credit rating agencies' assessment of the notional entity's business risk. We considered that a targeted

intervention could signal that the regulatory framework was supportive and could help avoid or mitigate a negative re-evaluation of the notional entity's business risk profile. This was unnecessary at Initial Proposals, in part because we had already provided a £300m RAB adjustment in the April 2021 RAB Adjustment Decision.

10.77 BA has noted that credit rating agencies have placed little weight on the £300m RAB adjustment in their reports. They have stated that credit rating agencies place greater weight on HAL's longer-term attributes such as traffic outlook. However, it is clear from our assessment of rating agency publications that they put significant weight on the stability and supportiveness of the regulatory framework, of which the RAB adjustment is one aspect.

10.78 We therefore consider that it was reasonable for us to have expected the RAB adjustment to support the financeability of the notional entity at the time of the April 2021 RAB Adjustment Decision. We also consider that this reasoning was consistent with our view at Initial Proposals that a further RAB adjustment was not necessary to support debt financeability.

Consumer outcomes and investment

10.79 BA has suggested that the RAB adjustment did not fund additional investment during 2021, and that consequently we were in error in our decision to intervene on this basis.

10.80 We reached the April 2021 RAB Adjustment Decision with the expectation that HAL would be proactive in undertaking necessary investment to maintain service quality and provide necessary capacity during 2021 in the event of a stronger than expected recovery in passenger traffic.

10.81 The recovery in passenger numbers was, in fact, relatively subdued during 2021. As such, it is not clear to us that it would have been in consumers' interests for HAL to have undertaken a materially greater volume of capital expenditure in that year than it did in practice. Nonetheless, it was important to have allowed HAL the flexibility to respond to changing circumstances and, on this basis, we continue to consider that the £300m RAB adjustment was warranted.

10.82 BA has also referred to our statement at Initial Proposals that the RAB adjustment would "*maintain service quality and provide necessary capacity in the event of a stronger than expected recovery in passenger traffic*"[68]. It has indicated that we made an error in our reasoning, as "*the RAB adjustment does not fund operating expenditure in the manner suggested*"[69].

[68] CAP2140 paragraph 4

[69] British Airways (2021), "*British Airways Response to CAP2265: Economic regulation of Heathrow Airport Ltd*

10.83 This statement misrepresents our position: we did not at any point state or imply that the RAB funded operating expenditure, nor did we rely on this proposition in reaching the April 2021 RAB Adjustment Decision.

10.84 Our reasoning was that providing a RAB adjustment could alleviate balance sheet constraints faced by the notional entity that might otherwise prevent it from undertaking capital expenditure needed to accommodate a potential recovery of passenger volumes in the summer of 2021. We continue to consider that this was a reasonable assumption in the context of the prevailing circumstances at the time of the April 2021 RAB Adjustment Decision.

10.85 BA has also referred to our statement in the April 2021 RAB Adjustment Decision that we would consider

> "*reducing the £300m RAB adjustment or making offsetting reductions to revenue*"[70] should evidence emerge of Heathrow failing to deliver on an appropriate quality of service in 2021.

It has further suggested that we made an error at Initial Proposals when we stated that:

> "HAL has re-opened terminal capacity in a way that has allowed airline demand to be met, and that service quality performance has been good when measured against the metrics".[71]

10.86 We disagree that we made an error at Initial Proposals in relation to our assessment of HAL's investment and operational performance. At that point in time, the evidence suggested to us that there were no clear grounds for further intervention in the interest of consumers.

10.87 However, we are particularly conscious of the importance of the summer period in 2022 in terms of the potential stresses on airport and other infrastructure and service providers, the potential impact of large numbers of passengers and more broadly on the recovery of passenger numbers at Heathrow. If it is appropriate, we will review HAL's operational performance in the Autumn of this year, with a view to ensuring that the interests of consumers are properly protected.

Impact of the RAB adjustment on the WACC

10.88 BA has referred to our previous statement that

H7 Initial Proposals", December, paragraph 8.35.

[70] CAP2140, paragraph 32.

[71] CAP2265C, paragraph 6.16.

> "the benefits to consumers from a lower cost of capital and greater service quality in H7…outweigh these costs from the RAB adjustment"[72].

It has then indicated that

> "the CAA has made an error in its decision, as the RAB adjustment has not reduced the cost of capital in the CAA's H7 WACC".

10.89 We disagree with BA's statement that the RAB adjustment has not reduced our H7 WACC. Our current WACC estimate will at least partially capture the impact of the RAB adjustment on the cost of debt since it is credit positive and one of the factors supporting our assumption that HAL will continue to be able to access investment grade finance.

10.90 BA has also referred to our statement in paragraph 3.62 of the April 2021 RAB Adjustment Decision that we would "*take account of the RAB adjustment in coming to a view on the cost of capital for H7*"[73]. It has inferred from this that "*the RAB adjustment … should be clearly and transparently attributable to a WACC reduction and net reduction of consumer charges*".[74]

10.91 The statement in the April 2021 RAB Adjustment Decision should be interpreted as an indication of our intention to estimate the WACC for H7 in a manner that is consistent with the April 2021 RAB Adjustment Decision. We are satisfied that this is the case.

HAL's comments on the calculation of the £300m adjustment

10.92 We have noted above that HAL has said that we should have made a much larger RAB adjustment. We have also set out the reasons why such a RAB adjustment would not be in the interests of consumers. HAL has also made more detailed points on the calculation of the £300m adjustment, suggesting it was flawed because:

- we had an undue focus on the effect of a RAB adjustment on HAL's gearing, to the exclusion of other relevant metrics;
- our reference to a maximum gearing figure of 70% was arbitrary; and
- some of the forecasts that we made when assessing whether a notionally financed HAL would be able to stay below this maximum proved to be incorrect.

[72] CAP2140 paragraph 31.

[73] CAP2140, paragraph 3.62.

[74] British Airways (2021), "*British Airways Response to CAP2265: Economic regulation of Heathrow Airport Ltd H7 Initial Proposals*", December, paragraph 8.41.

10.93 We deal with these points below:

- The April 2021 RAB Adjustment Decision was, in fact, based on consideration of a suite of financial metrics, including FFO to debt, debt to EBITDA, gearing, EBITDA margin and FFO interest cover;[75]
- we explained in the April 2021 RAB Adjustment Decision that intervening with a view to maintaining forecast gearing below a guideline 70% figure that some rating agencies have set for a strong investment grade credit rating would send a strong signal that the notionally financed entity will remain financeable even in the unprecedented circumstances of covid-19. We do not, therefore, agree that 70% can be described as an arbitrary number. We also do not agree that there would have been clear benefit to consumers in targeting a gearing level materially below 70%; and
- as noted earlier, the fact that forecast numbers have been superseded by out-turn numbers does not invalidate the calibration of our RAB adjustment, which was based on the best information available at the time.

Final Proposals

Pandemic-related RAB adjustment

10.94 The evidence we have examined suggests that an additional RAB adjustment on the scale proposed by HAL would not further the interests of consumers regarding the range, availability, continuity, cost and quality of AOS.

10.95 It would result in significant additional costs being passed to consumers that will be borne for several years over multiple price control periods. By contrast, as we have previously discussed, we do not consider that it will provide sufficient offsetting benefits to consumers: for example by reducing the WACC or providing essential support for future investment.

10.96 We consider that our approach is consistent with the Better Regulation Principles. We disagree with HAL that our prior statements or decisions gave rise to a legitimate expectation that we would remunerate historical losses, either in full or in part. We also consider that our approach is consistent with the approach to pandemic risk set out by the CC in 2007.

10.97 We have had regard to the need to secure that each licensee is able to finance its licensed activities as set out in chapter 13 (Calculating the price cap and financeability). Based on this analysis, we do not consider that a RAB adjustment is necessary to satisfy this requirement. This is, in part, because we do not

[75] See, for example, tables 1, 2, 3 and 7 in CAP2098A.

consider that remuneration of historical losses is a precondition for ensuring financeability. Rather, we consider that our price control determination must be financeable on a forward-looking basis.

10.98 While we do not accept HAL's arguments that we should make retrospective adjustments for the recovery of regulatory depreciation for the 2020 to 2021, we consider that in setting the H7 price control we have taken appropriate steps such that investors can reasonably expect to recover of future regulatory depreciation. These include the TRS arrangements set out in chapter 2 (Regulatory framework), and where there are residual risks these are dealt in our approach to calibrating the HAL's cost of capital (see chapter 9 (Weighted average cost of capital)), the asymmetric risk adjustment and passenger shock factor (see chapter 11 (Allowance for asymmetric risk)).

10.99 We do not consider that the reversal of the £300m RAB adjustment, as proposed by some airline stakeholders, would further the interests of consumers. We remain of the view that this adjustment was justified and appropriately calibrated given the information available at the time. To reverse this now would tend to increase investor perceptions of risk, increase the cost of capital and put upward pressure on airport charges, which would not be in the interests of consumers.

10.100 We therefore intend to apply the £300m RAB adjustment set out in the April 2021 RAB Adjustment Decision but make no further adjustment to the H7 opening RAB.

Calculation of H7 opening RAB and implementation

10.101 Our updated calculation of the opening H7 RAB are set out in table 10.1.

Table 10.1: Roll-forward of Q6 RAB

£m, December of current year prices	Q6	Q6	Q6	Q6	Q6	Q6+1	iH7	iH7
	2014	2015	2016	2017	2018	2019	2020	2021
Opening Basic RAB	14,816	14,859	14,921	15,236	15,707	15,993	16,139	15,947
Additions in year	392	586	668	618	666	619	447	284
Assumed ordinary depreciation	(505)	(703)	(723)	(772)	(802)	(823)	(830)	(870)
Indexation to December	157	178	371	624	422	351	191	1,179
Closing Basic RAB	14,859	14,921	15,236	15,707	15,993	16,139	15,947	16,540
CAA end-of-period adjustments								926

Closing RAB after CAA adjustments	14,859	14,921	15,236	15,707	15,993	16,139	15,947	17,466

Note: Q6 only included the last 9 months of 2014.

Source: CAA calculations

10.102 The calculations in this table are different from those in the Initial Proposals due to:

- updated, lower capex additions for 2021;
- more negative assumed ordinary depreciation for 2021 caused by higher out-turn inflation in late 2021;
- a correction to our indexation for 2014 (over nine months instead of over one year);
- higher indexation for 2021 caused by higher out-turn inflation in late 2021;
- updated higher CAA end-of-period adjustments caused by higher out-turn inflation in late 2021.

10.103 The end-of-period adjustments comprise the following elements.

Table 10.2: Composition of CAA adjustments to the RAB in 2021

£m, December of current year (2021) prices	2021
Targeted RAB adjustment	338.48
Q6 capex review	(14.37)
Early expansion cost review (including financing cost)[76]	601.57
CAA adjustments	925.68

Source: CAA calculations

10.104 These adjustment items are all bigger in size in absolute terms compared to Initial Proposals due to higher out-turn inflation in late 2021.

10.105 Based on our calculations, the H7 opening RAB is equal to £17,466m in December 2021 prices.

[76] This figure includes actual and forecast expansion costs incurred by HAL between the end of October 2016 and 2021 and reflects efficiency adjustments made by the CAA (including the upper end of the range proposed in Appendix E, which is subject to consultation). The costs included are Category B costs (and the associated Interest During Construction), Category C costs, wind down costs, appeal costs and IPHS. Some costs are subject to further adjustments in light of result of efficiency assessments.

10.106 This is used in the calculation of the H7 price control set out in chapter 13 (Calculating the price cap and financeability).

Chapter 11

Allowance for asymmetric risk

Introduction

11.1 In setting HAL's price control, we make projections of its costs and revenues and use these alongside our forecast of passenger numbers and other assumptions to determine the maximum level of airport charges. Our intention is to set HAL's price control in a way such a way that, on the basis of the expected forecasts, the expected opportunities for HAL to outperform are broadly matched against the risk that HAL could underperform. Otherwise, the price control arrangements will contain bias that could either:

- lead to windfall profits for HAL at the expense of consumers; or
- create expectations of losses that could damage incentives for new investment and the provision of AOS by HAL, which would be contrary to consumers' interests.

11.2 In the case of passenger forecasts, historical experience suggests that the risks that HAL could encounter sudden downside shocks to traffic, such as those experienced during the pandemic, are not likely to be accompanied by an equal and offsetting set of possible upside events. To address this, it is appropriate to consider adjustments for these asymmetric risks.

11.3 This chapter:

- provides background information on these matters and summaries the approach we adopted in our Initial Proposals;
- discusses stakeholder responses to our Initial Proposals;
- summarises our views and Final Proposals on these matters;
- sets out next steps and our approach to implementation.

Background

11.4 In our Q6 price control decision, we made allowance for the asymmetry of risks around volume forecasts by applying a "shock factor" adjustment of -1.2% each year to our Q6 traffic forecasts. This -1.2% figure was calibrated to match the average annual loss of volumes that HAL experienced over the period from 1991 to 2012 as a result of one-off events such as the Gulf War, the 9/11 terrorism attacks, SARS and the disruption caused by Icelandic volcanic ash.

11.5 The last two years of the Q5 period (2012 and 2013) and the first five years of the Q6 period (2014 to 2018) subsequently turned out to be a comparatively

benign period during which traffic growth was relatively constant. However, in 2020, HAL was severely affected by the impact of the pandemic, a shock whose scale and duration has far exceeded any of the downside events that HAL had previously encountered.

11.6 In the light of historical evidence and the recent experience of pandemic risk, we said in our Initial Proposals that we needed to consider how to account within our H7 price cap calculations for the asymmetry of traffic risks that HAL now faces during the period from 2022 to 2026. We explained, in particular, that the CAPM framework that we use when assessing the allowed return on equity assumes that risks faced by investors are symmetrically distributed and, hence, that any allowance for asymmetric risk would need to be provided outside of the allowed return by means of a separate mechanism.

Initial Proposals

11.7 Our Initial Proposals categorised the asymmetric risks that HAL faces into two types:

- medium frequency, low impact shocks of the type seen prior to 2020; and
- low frequency, high impact shocks that the current pandemic typifies (we use the term “pandemic-magnitude event” as a shorthand for these shocks in the discussion below).

11.8 In the former case, we proposed that the “shock factor” method that we used in our Q6 determination could be used again to provide an appropriate allowance for the non-pandemic shocks that HAL could face in the H7 period. Our proposed “shock factor” adjustment was -1.07%, which we applied to our traffic forecast for each year between 2022 and 2026.

11.9 In the case of pandemic-magnitude events, we provisionally concluded that it would be more transparent and administratively simpler to make a stand-alone revenue allowance to compensate HAL for the risks of a new, major disruption to traffic. We set out a proposed calculation method for this allowance which involved the following steps:

- step 1: estimate the traffic loss that HAL might expect to encounter if a pandemic-magnitude events occurs;
- step 2: calculate the annual losses of profit that HAL would suffer if a pandemic-magnitude event were to crystallise in any given year of the H7 control period;
- step 3: evaluate how frequently a pandemic-magnitude event might be expected to occur in the future, and calculate the equivalent probability of one occurring in any given year; and

- step 4: weigh the losses of profit identified in step 2 by the probability identified in step 3 and add these amounts to our modelling of HAL's H7 price control revenues.

11.10 In step 1, we assumed, based on the experience of the pandemic, that a future pandemic-magnitude event would impact passenger numbers over a three-year period and have a similar profile to that seen in / anticipated for 2020, 2021 and 2022. At the time of the Initial Proposals, this equated to traffic reductions of -57%, -73% and -37% respectively.

11.11 In step 2, we undertook a modelling exercise to identify the loss of profit HAL would suffer if price control revenues were to fall in line with the above-mentioned traffic reductions and if opex and commercial revenues varied in line with the elasticities identified by CTA in their work to support our analysis of these costs and revenues. We also accounted at this point for the protection that HAL would be entitled to under the new TRS.

11.12 In step 3, we said that it is not straightforward to estimate the frequency of pandemic-magnitude events. We therefore allowed for a likelihood that sits between a 1-in-20 year and 1-in-50 year occurrence, or the equivalent of a 3.5% probability that a new pandemic-magnitude event might begin in any given year, starting from 2023.

11.13 In step 4, we brought the inputs from steps 1 to 3 together into a calculation of probability-weighted, expected annual losses. We then calculated a flat annual allowance for each year of the H7 period that would exactly offset these expected losses, as set out in Table 11.1.

Table 11.1: Revenue allowance for asymmetric risk, £m nominal

£m	2022	2023	2024	2025	2026
Lower quartile	30	30	30	30	30
Upper quartile	26	26	26	26	26

Source: CAA

Stakeholders' views

11.14 In their responses to our Initial Proposals, airlines said the inclusion of allowances for asymmetric risk allowance was not justified.

11.15 The AOC/LACC and IATA stated that the combination of (i) a fixed *ex ante* allowance, (ii) the higher beta that we included in our Initial Proposals and (iii) the TRS mechanism results in the elimination of all downside risk borne by HAL without an appropriate reflection within the WACC.

11.16 The AOC/LACC and IATA submitted a paper by CEPA in support of its response which made a number of more detailed points. These included suggestions that:

- the CAA's calculations wrongly focused on the impact of a pandemic-magnitude event on cashflows rather than company value;
- the CAA's 3.5% probability is equivalent to a roughly 1-in-28 years occurrence, which is not the mid-point of a 1-in-20 years occurrence and a 1-in-50 years occurrence; and
- it is wrong for the CAA to think, in effect, that slightly more than one in every 10 future years will be impacted by a pandemic-magnitude event.

11.17 VAA suggested that the CAA had erroneously provided a "triple count" of protection.

11.18 BA in its response disagreed that the price control as a whole necessarily presents HAL with an asymmetric distribution of risks. It also said that any asymmetries would be captured in our estimate of beta. BA therefore stated that both the proposed 'shock factor' and the standalone asymmetric risk allowance were duplicative, unjustified and, applied as a revenue adjustment, likely to undermine incentives across the price control by discouraging HAL from taking on and managing risk.

11.19 BA also made a number of detailed points, arguing that:

- the traffic losses seen since 2020 are a consequence of the UK government's unprecedented travel restrictions, and the CAA is wrong to assume that a future pandemic-magnitude event would lead to a repeat of the same restrictions and the same reductions in traffic;
- the CAA's calculations of possible future loss of profit are unreliable due to errors identified elsewhere in BA's response relating to the calculation of the H7 price control building blocks;
- the frequency of future pandemic-magnitude events will be far lower than the CAA assumes; and
- it is wrong to smooth the asymmetric allowance into a constant annual amount.

11.20 HAL, on the other hand, said in its response that it agreed with the overall principles of the CAA's approach to asymmetric risk. HAL sought the CAA's assurance that the asymmetric risk allowance would be a long-term feature of its price control framework.

11.21 HAL did, however, propose changes to the CAA's calculations, including:

- bringing forward the possible start date for the next pandemic-magnitude event from 2023 to 2022;
- an increase in the assumed length of a pandemic-magnitude event from three years to four years; and
- updating the assumed loss of traffic to reflect the latest information on the actual/forecast impact of the pandemic during the period 2020-23.

11.22 HAL also proposed an updated "shock factor" value of 0.87%, slightly lower than the CAA's proposed 1.07% value.

Our views

11.23 We do not agree with the airlines' view that allowances for asymmetric risk are unnecessary and duplicative. The need for such allowances arises as a consequence of the way in which we calculate the allowed cost of equity. As we explained in our Initial Proposals, CAPM is a mean-variance model which assumes that all risks are symmetrically distributed. If risks during the H7 period are not in fact symmetrically distributed, the CAPM beta and the allowed cost of equity, by design, will not compensate shareholders for bearing asymmetric risks. Hence, it becomes necessary to make a separate, additional allowance for asymmetric risks elsewhere within the price control calculation.

11.24 We consider that this is precisely the situation that we are faced with in this review.

11.25 In the Q6 review, airlines recognised that airline and airport businesses have historically encountered a series of small-scale 'shocks' which resulted in temporary losses of passenger volumes. All parties also accepted that the inclusion of a shock factor within a traffic forecast was likely to produce a more accurate traffic forecast than the use of 'unshocked' forecasting models.

11.26 In this H7 review, we also have to reflect on the experience of the pandemic. The unprecedented, large-scale shock to traffic over a period of three years constitutes incontrovertible, additional evidence that HAL can encounter events outside of its control that have the potential to impose significant losses on shareholders.

11.27 We do not consider that the downside risks facing HAL are matched by equal and offsetting upside opportunities. The record of passenger numbers from the period 1991 to 2019 contains no upside equivalents to the downsides of wars, terrorist incidents and natural disasters. And it does not seem plausible that HAL could benefit from shocks that would unexpectedly add the kind of passenger numbers that HAL lost during the pandemic.

11.28 We also do not consider that the new TRS mechanism removes such asymmetry. The TRS is intended to reduce the incremental profits and

incremental losses that HAL can encounter when traffic volumes turn out to be higher or lower than we forecast at the time of a periodic review. However, the TRS does not fully protect HAL from traffic risk or remove the inherent skew in the distribution of risks.

11.29 Accordingly, we are satisfied that it is necessary and appropriate to make separate, stand-alone allowances for asymmetric risks as part of these Final Proposals. For the avoidance of doubt, such allowances do not "eliminate" risks, as the airlines have argued. Rather, the allowances we set out below are intended to provide a reasonable allowance for HAL that over time will provide compensation for future pandemic-magnitude events.

11.30 We consider the other detailed points that HAL and airlines have made in relation to the calibration of these allowances in the next section.

Final Proposals

Calibration of allowance: non-pandemic shocks

11.31 As set out in chapter 1 (Passenger forecasts), we have applied an annual shock factor of -0.87% to our H7 traffic forecasts as recognition for the likely incidence of non-pandemic shocks. This figure is lower than the -1.07% per annum shock factor that we included in our Initial Proposals in line with the additional evidence that HAL provided on the incidence of such shocks up to the end of 2019.

Calibration of allowance: pandemic-magnitude events

11.32 For the reasons set out above, we will also apply a separate allowance for pandemic-magnitude risks. This will be calculated using the four-step method that we first set out in our Initial Proposals, as updated below. The calculations focus on the loss of shareholder value that HAL might expect to suffer in the event that a pandemic-magnitude event were to occur, inclusive of the initial cashflow impact and the subsequent regulatory adjustments made under the TRS arrangements.

Step 1: estimate the traffic loss that HAL might expect to encounter if a pandemic-magnitude event occurs

11.33 The experience of the pandemic provides us with very recent data on the way in which a pandemic-magnitude event can cause a near shutdown of domestic and international travel. We consider that it is appropriate to draw on this experience as a relevant point of reference to use when calibrating the H7 allowance.

11.34 We note that airlines have offered a different view, arguing that the restrictions on movement imposed by governments between 2020 and 2022 in the UK and overseas were unprecedented and unlikely to be repeated in the future. We recognise that there is considerable uncertainty what the next pandemic-magnitude event will entail or how individuals and policymakers will respond.

However, we do not consider that the airlines have presented us with a better evidenced, alternative benchmark for how a future pandemic-magnitude might unfold than the experience of the last three years.

11.35 If an event of similar magnitude occurs in the future, we therefore assume that it will:

- have an impact on passenger numbers over a three-year period;
- have an impact with a similar profile to that seen in and/or anticipated for 2020, 2021 and 2022: that is, precipitating a traffic reduction of -73%, -76% and -32% in each of the three years respectively.

11.36 The first of these assumptions is consistent with the known duration of the pandemic at the time of these Final Proposals, but does not pre-judge that the pandemic will have continuing relevance from the start of 2023. The second assumption, similarly, is consistent with the latest data that is available to us at the time of formulating these Final Proposals.

Step 2: calculate the annual losses of profit that HAL would suffer if a pandemic-magnitude event were to crystallise in any given year of the H7 period

11.37 We have undertaken modelling to calculate the loss of profit that HAL would incur in the event of the recurrence of a pandemic-magnitude event during the H7 period. The calculations start from 2023 on the basis that it is unlikely that a brand new pandemic-magnitude event will emerge during the remainder of 2022. The analysis assumes that opex and non-aeronautical revenues will vary in accordance with the elasticities used in the analysis in chapter 4 (Operating expenditure) and chapter 5 (Commercial revenues). These calculations are summarised in Table 11.2 below.

Table 11.2: Possible in-period losses due to pandemic-magnitude event, £m 2020 CPI real prices

	2022	2023	2024	2025	2026
If next pandemic starts in 2023	-	1,392	1,627	724	0
If next pandemic starts in 2024	-	-	1,556	1,714	706
If next pandemic starts in 2025	-	-	-	1,640	1,672
If next pandemic starts in 2026	-	-	-	-	1,600

Source: CAA calculations.

11.38 It is also important to account for the protection that the new TRS mechanism will offer. In each year, the TRS would provide an amount to be recovered through future charges equivalent to:

- 50% of the first 10% of lost revenue from airport charges; and
- 105% of all remaining losses of revenue from airport charges above that 10% threshold.

11.39 Under our Final Proposals, these amounts would be recovered over a period of 10 years, commencing 2 years after the losses were incurred.

11.40 Our calculations of the TRS "payments" that HAL will accrue in the event of a future pandemic-magnitude event are set out in Table11.3 below.

Table 11.3: TRS "payments" following a pandemic-magnitude event, £m 2020 CPI real prices

	2022	2023	2024	2025	2026
If next pandemic starts in 2023	-	1,217	1,368	534	-
If next pandemic starts in 2024	-	-	1,305	1,406	514
If next pandemic starts in 2025	-	-	-	1,341	1,355
If next pandemic starts in 2026	-	-	-	-	1,292

Source: CAA calculations.

11.41 HAL's resulting net exposure to pandemic-magnitude events, once the offsetting impact of the TRS is taken into account, is summarised in Table 11.4 below.

Table 11.4: HAL's net exposure to pandemic-magnitude events, £m 2020 CPI real prices

	2022	2023	2024	2025	2026
If next pandemic starts in 2023	-	174	258	190	-
If next pandemic starts in 2024	-	-	252	308	192
If next pandemic starts in 2025	-	-	-	299	317
If next pandemic starts in 2026	-	-	-	-	308

Source: CAA calculations.

Step 3: evaluate how frequently a pandemic-magnitude event might be expected to occur in the future, and calculate the equivalent probability of a shock occurring in any given year

11.42 We note that airlines told us that we had overstated the likelihood of a new traffic-reducing event in our Initial Proposals. In our Initial Proposals, we highlighted that the US CDC has highlighted three major global pandemics during the 20th century[77] with a death toll of over 1 million, which we considered was consistent with our frequency assumption of 3.5%. We acknowledge that extrapolating from this statistic to estimate the frequency and impact of future pandemics is not straightforward since:

- as the aviation market evolves and grows, it is arguably becoming more exposed to global pandemics over time;
- similarly, the global population and economy has become more interconnected and interdependent', meaning that it is reasonable to expect that pandemics are more likely in the 21st century than in the 20th century;
- on the other hand, the recent pandemic has possibly increased the level of vigilance on the part of global populations and governments, which could reduce their likelihood in future;

[77] https://www.cdc.gov/flu/pandemic-resources/basics/past-pandemics.html

- we note that two of the pandemics that took place during the 20th century (in 1958 and 1968) were less severe in terms of the number of cases and their impact on aviation than the recent pandemic, though in our view this does not warrant their exclusion from consideration;[78] and
- there are also examples of more recent pandemics such as H1N1 in 2009 that have had only a limited impact on air passenger traffic in Europe.

11.43 Taking all of the above evidence into account, we consider that pandemic-like events could plausibly be more or less frequent than they were during the 20th century. We have therefore allowed for a probability that sits between a 1-in-20-year and 1-in-50-year range, consistent with the assumptions that we are applying in chapter 9 (Weighted average cost of capital). We take the mid-point of a corresponding 5% and 2% range as the probability of a new pandemic-magnitude event beginning in any given year, starting from 2023. This translates into an annual probability of 3.5%.

Step 4: weigh the losses of profit identified in Step 2 by the probability identified in Step 3 and add these amounts to HAL's H7 aeronautical revenue allowance

11.44 We next weight the annual losses shown in Table 11.4 on the assumption that there is a 3.5% probability of a new pandemic-magnitude event beginning in any given year, starting from 2023. This results in the expected annual losses shown in Table 11.5

[78] We note that CEPA has implied that we should exclude pandemics of lesser severity than the covid-19 pandemic from consideration. We disagree. An appropriate approach is to include all pandemics of similar magnitude to covid-19 within a certain tolerance. As a proxy, we have used the CDC definition of pandemics with global fatalities of more than 1 million. On average, the three pandemics that met this definition in the 20th century can be considered appropriate comparators to covid-19.

Table 11.5: Probability-weighted, expected net loss due to pandemic-magnitude events, £m 2020 CPI real prices

	2022	2023	2024	2025	2026
If next pandemic starts in 2023	-	6	9	7	-
If next pandemic starts in 2024	-	-	8	10	6
If next pandemic starts in 2025	-	-	-	10	10
If next pandemic starts in 2026	-	-	-	-	10
Total	-	**6**	**18**	**27**	**27**

Source: CAA calculations.

11.45 The amounts in the final row of Table 11.5 are the amounts of revenue that we consider that we have to provide for in our H7 price cap calculation in order to compensate HAL for the expected loss of profit arising from a future pandemic-magnitude event. In a small change from our Initial Proposals, we factor these amounts unsmoothed into our financial modelling and provide for the profiling of payments to be carried out as part of the overall profiling of HAL's price cap.

Next steps and implementation

11.46 The annual shock factor has been applied to our base H7 passenger volume forecast, as set out in chapter 1 (Passenger forecasts). The allowance shown in Table 11.5 above is added to the calculation of price control revenue in chapter 13 (Calculating the price cap and financeability). We recognise that there can be arguments for different assumptions to calculate the allowance we have made, but we consider that the approach we have adopted is reasonable based on the available evidence.

11.47 We note HAL's suggestion that the asymmetric risk allowance should be a long-term feature of its price control framework. While we are of the view that future price control settlements will need to take account of asymmetric risks we are also conscious that these are new arrangements and that we cannot rule out the possibility of learning from experience and a different mechanism or approach being appropriate in the future.

Chapter 12

Financial framework

Introduction

12.1 The design of the financial framework we use in setting HAL's price control is a key element of the way in which we have regard to the need to secure that HAL can finance its activities at Heathrow. It is also important in furthering the interests of consumers as the financial framework influences the overall level of charges and supports HAL in financing new investment.

12.2 Our overall approach to the financial framework is designed to secure that HAL can finance its activities through an appropriate mixture of debt and equity.[79] As part of this, we have retained our focus on a "notional company" (which as discussed below is based on our assumptions about efficient financing rather than the actual financing structure adopted by HAL). This is separate from our work on the financial resilience and ring fencing rules applicable to HAL, which is discussed in Appendix I (Financial resilience and ring fencing).

12.3 In this chapter we discuss:

- the capital structure (in particular our approach to the financing structure of the notional company and the associated level of gearing) and regulatory depreciation;
- our approach to price indexation; and
- our approach to making an allowance for corporation taxation.

12.4 Where appropriate we have sought to act consistently with or build on the approach adopted at the Q6 review, bearing in mind the advantages of a predictable approach to regulation, as this should help avoid unnecessary uncertainty that could increase HAL's cost of capital, which would increase costs for consumers. Nonetheless, there are important aspects of our overall approach that have changed in response to the pandemic including:

- introducing a TRS mechanism to allocate volume risk between consumers and HAL in the future (see chapter 2 (Regulatory framework));
- updating our analysis of the cost of capital to reflect the impact of the covid-19 pandemic and its interaction with the TRS (see chapter 9 (Weighted average cost of capital)); and

[79] We refer to the constituent elements of this a "debt financeability" and "equity financeability".

- making an explicit allowance for asymmetric risk in respect of future events that may have comparable impact to the covid-19 pandemic (see chapter 11 (Allowance for asymmetric risk)).

Gearing and regulatory depreciation

Our Initial Proposals

12.5 In our Initial Proposals, we proposed to retain our focus on the financeability of the notional company. We considered that this was consistent with the interests of consumers as it makes clear that our approach is to set a price control at a level that secures that a notional company carrying out the activities of HAL would be able to finance its provision of AOS. HAL's directors and shareholders are then responsible for determining the actual capital structure that they consider to be appropriate, and they bear the risks and rewards of their decisions.

12.6 We assumed that the notional company would have begun 2020 with gearing of 60% (consistent with our Q6 price control determination) and would have raised debt to fund cash shortfalls caused by the impact of the covid-19 pandemic. We also assumed that the notional company would have subsequently sought to return to 60% gearing during the H7 price control period as passenger numbers increased and cashflows improved, including by forgoing dividends for as long as is necessary.

12.7 We said that this approach to gearing is broadly consistent with previous practice and would support the notional company's financeability and the continuing investment necessary to further the interests of consumers.

12.8 Regulatory depreciation reflects the amount that is deducted from the RAB in each year and allowed as cash flow in the calculation of the price cap. In doing so it remunerates capex which has previously been added to the RAB. Regulatory depreciation is an important issue for consumers as it directly affects the level of charges and HAL's overall financeability and its ability to fund new investment.

12.9 For regulatory depreciation, our Initial Proposal was to use HAL's regulatory depreciation profile from its RBP update. We considered that this was consistent with our wider assessment of affordability and financeability. We also considered that this approach appropriately balanced the interests of present and future consumers.

Stakeholders' views

HAL

12.10 HAL supported the use of a notional level rather than HAL's actual gearing, the proposed 2020 starting assumption of 60% and the assumption that the notional company would have financed cash shortfalls in 2020 and 2021 by raising new debt. However, it disagreed with the level of dividend forbearance that we assumed and argued that we should provide for dividend payments resuming in 2023. HAL also noted a modelling error in which the opening gearing in the financial model was set at 55% rather than 60%.

12.11 HAL agreed that our proposed depreciation allowance acted as a reasonable starting point for the calibration of the H7 price control. However, it also proposed that £635m of depreciation could be deferred each year in the H7 period and recovered in future periods once passenger volumes had recovered if we were to implement HAL's proposed adjustment to the regulatory asset base of around £2.5 billion (discussed further in chapter 10 (The H7 Regulatory Asset Base and HAL's request for a RAB adjustment)).

Airlines

12.12 BA supported the continued use of the concept of the notional company for assessing financeability. BA suggested that:

- the gearing level for the notional company should be chosen so as to minimise the WACC; and
- it was not appropriate to increase the gearing in response to the pandemic, noting that it was not typical to adjust gearing for out-turn performance.

12.13 On regulatory depreciation, BA suggested that the CAA's approach ought to be better reasoned and more transparent.

Our views

12.14 We agree with BA and HAL that it is appropriate to set the price control on the basis of a notional company. Assessing the price control on the basis of a notional company means that consumers fund an estimate of efficient financing arrangements. It also makes clear the division of responsibilities between regulator and regulated company. In particular, that HAL's management and shareholders are responsible for their decisions in respect of HAL's capital structure and consequently they will bear the risks and rewards of their chosen capital structure.

12.15 The approach we have taken to estimating the cost of capital assumers that there is a range over which the cost of capital will be broadly flat in response to changes in gearing, followed by a point at which the cost of capital would start to

increase with very high levels of gearing. We consider that the notional gearing figure of 60% is within the range noted above and at an efficient level.

12.16 In addition, we consider that it is important that our approach to gearing maintains an appropriate degree of consistency from one price control period to the next and we note that at the Q6 price control the CAA also assumed gearing would be at 60%.

12.17 We agree with BA's comment that it is not typical for an economic regulator to adjust gearing in respect of out-turn financial performance. However, we also consider that the covid-19 pandemic is not a typical event and that that we will provide additional assurance to investors if our approach reasonably takes account of exceptional events. Consumers would then benefit from the greater certainty this would bring and from avoiding any undue upward pressure on the cost of capital.

12.18 We note HAL's comments about dividend forbearance. Our updated base case financial modelling shows that the notional company would resume dividend payments in 2023. We have also examined the modelling issue highlighted by HAL in respect of the opening gearing and concluded that it was indeed an error. We have corrected this error prior to finalising our Final Proposals and confirm that the opening gearing in our financial modelling commences at 60%.

12.19 We note BA's comments suggesting that our approach to depreciation policy ought to be more fully reasoned and, in response, we have looked again at alternative policy options that are available to us in respect of regulatory depreciation. In doing so, we considered first the possibility of linking depreciation to the usage of certain assets but noted there are several drawbacks to such an approach. The airport as a whole is composed of many different assets and while some may depreciate less when used less intensively others will depreciate at more or less the same rate regardless of utilisation. Identifying an appropriate rate of depreciation would be a subjective exercise, would not be consistent with our approach to date, and making such a change at this stage in the process risks increasing perceptions of regulatory risk. It does not appear to be either a necessary or proportionate step for our approach to considering how best to secure the financeability of the notional company.

12.20 We have also considered whether it may be appropriate to defer an element of depreciation to future regulatory periods when it would be possible to recover that depreciation from a larger passenger base. Our analysis shows that doing so could put financial metrics that are important to debt financeability under significant strain and this would have the potential to make financeability more difficult. We are also content that the profile of airport charges set out in chapter 13 (Calculating the price cap and financeability) is consistent with furthering the interests of both present and future consumers and so there is no compelling case to reprofile regulatory depreciation.

12.21 We specifically looked at the implications of HAL's depreciation proposal but considered that this is not appropriate because we consider that it is not in consumers' interests to provide for the RAB adjustment that HAL is seeking (see chapter 10 (The H7 Regulatory Asset Base and HAL's request for a RAB adjustment)).

Our final proposals

Gearing

12.22 We have assessed financeability on the basis of the notional company. This approach is consistent with our own and other regulators' regulatory precedent as well as our duty to have regard to the need to secure that HAL can finance its activities at Heathrow Airport as explained above.

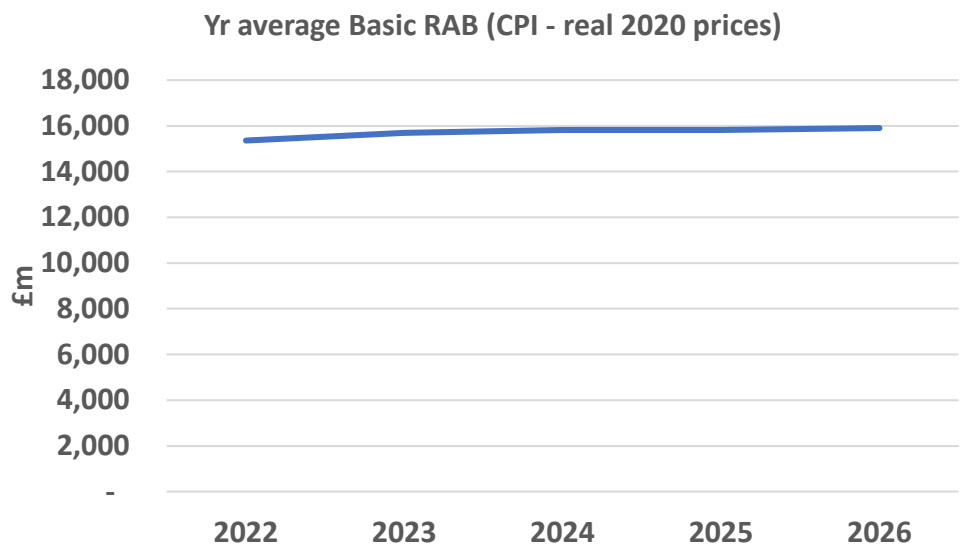
12.23 Consistent with the approach described above, we have modelled gearing of 60% at the start of 2020 and then assumed that the notional company issued additional debt to fund the shortfall from operational cash flows during 2020 and 2021. This modelling leads to a gearing of 65.4% at the start of 2022. We then assume that cash flow is retained by the notional company (instead of being used for dividends) until gearing reaches 60%. On this basis our modelling shows that the gearing of the notional company would return to 60% by the end of 2022.

12.24 This marks a relatively swift return to the level of gearing we used for the Q6 price control compared to the trajectory that we identified in our Initial Proposals. The return to 60% gearing level reflects both the contribution of retaining operational cash flows (which reduce net debt) and the increase in the value of RAB due to the relatively high rates of inflation at the end of 2021 and at the beginning of the H7 period. As a consequence our modelling also shows that the notional company is able to resume the payment of dividends from 2022 (see chapter 13 (Calculating the price cap and financeability)).

Regulatory depreciation

12.25 HAL's depreciation profile in its RBP Update 2 is based on its forward view of accounting depreciation. We have based our regulatory depreciation figures on this profile and adjusted it to take account of the difference between HAL's proposed capex plan and our final proposals for capex. This approach is consistent with our policy in setting the Q6 price control, and acts to produce a relatively stable RAB balance in the H7 period as shown in Figure 12.1 below.

Figure 12.1: RAB profile



Source: CAA analysis

Inflation indexation

12.26 There has been a significant change in the outlook for inflation since we published our Initial Proposals in October last year. The large, rapid and mainly unanticipated rise in inflation creates challenges that regulators have not previously had to confront when setting price controls. In our assessment, this requires us to refine certain aspects of our approach to setting the H7 price control to protect the interests of customers.

12.27 In our assessment of costs and revenues we have taken account of latest available inflation forecasts. The treatment of inflation in the financial framework is set out below under the following headings:

- selection of the inflation measure to be used when indexing HAL's price cap;
- indexation of the RAB;
- calculation of HAL's revenue requirement; and
- amendment of HAL's price control licence condition.

12.28 There is a broadly established approach to how inflation is considered in a CPI-X price control. We continue to follow that approach, and we have considered whether we need to make any changes to ensure consumers' interests are properly considered in how we calculate our final proposals.

Selection of the inflation measure for indexation of the price cap

12.29 Up to and including Q6, HAL's price cap was indexed in line with the RPI measure of inflation. However, following reviews carried out by the National

Statistician and the UK Statistics Authority, which identified serious flaws in the approach used to calculate the RPI index, RPI is no longer a national statistic and the UK's economics regulators, including the CAA, have been advised to move away from using the RPI to index price caps.

12.30 The ONS's preferred measure of inflation is CPIH (the Consumer Prices Index including owner-occupied housing costs) and we note that Ofgem and Ofwat have switched to CPIH indexation for their price controls. We have considered the practicalities of moving to CPIH indexation but have encountered significant difficulties identifying reliable, current forecasts of CPIH inflation for the period to 2026. At a time when inflation is moving in an atypical way, this represents a significant issue and difficulty.

12.31 We have decided, therefore, to index HAL's price control by reference to the CPI measure of inflation. CPI is closely related to CPIH and does not suffer from the statistical deficiencies that afflict RPI. The OBR's most recent economic forecasts also contain forecasts for CPI through to the end of the H7 period, that we use to make projections of HAL's costs and revenues on a CPI real basis.

12.32 In our Initial Proposals we included a placeholder in the accompanying draft licence modifications indicating that we might use either RPI or CPI. In line with the reasoning above the draft price control licence condition in Appendix C (Notice of the CAA's proposal to modify HAL's licence) to these Final Proposals provides for a CPI-X price control design starting from 2023.

Indexation of the RAB

12.33 Notwithstanding this switch to CPI indexation of HAL's price cap, we also remain of the view that it is appropriate to continue indexing the RAB in line with RPI. This is in line with our approach at Initial Proposals.

12.34 In principle, we could switch to CPI indexation of the RAB from 1 April 2022. However, this would mean reversing at a relatively late stage of the price review process a decision that we made in December 2017 to continue with RPI indexation. The choice of linking to RPI or CPI is highly material due to the size of the RAB. For example, for a RAB of £17bn and a gap between RPI and CPI of one percentage point, this policy choice leads to a difference in the RAB of £170m in a single year.

12.35 Given the materiality of the issue and the weight that investors attach to the indexation of the RAB we are mindful that to change approach between initial and final proposals would risk harming the CAA's reputation for stable and predictable regulation. To the extent that investors perceived the CAA to be less stable and predictable this could harm consumers' interests through a higher cost of capital

12.36 We have also considered the direct impact on consumers of retaining RPI RAB indexation. A switch to CPI indexation of the RAB would need to be accompanied by a switch from an RPI-stripped cost of capital to a CPI-stripped cost of capital. HAL's cost of capital is lower in RPI-stripped terms compared to CPI-stripped terms because the RPI typically increases by around 1 percentage point more than the CPI.

12.37 This means that a switch to CPI indexation of the RAB and a CPI-stripped cost of capital would require us to give HAL a significantly higher allowed return. Conversely, retaining the RPI linkage of the RAB avoids the need for this higher cost of capital. Therefore consumers' interests are not harmed by retaining the RPI linkage of the RAB.

Calculation of HAL's revenue requirement

12.38 We are mindful that indexing charges and the RAB by reference to different inflation indices creates certain complexities in the price control calculations, including:

- forecasting in nominal prices;
- translating nominal allowances into CPI prices for the licence; and
- the choice of inflation reference date for indexation of the price cap.

12.39 In our Initial Proposals we included a placeholder in the accompanying draft licence modifications indicating that we were considering linking charges to either RPI or CPI. For the purposes of calculating a revenue requirement we linked charges to RPI.

Forecasting in nominal prices

12.40 The H7 price control is calculated in accordance with our projections of costs and revenues over a five-year period. In making these forecasts, it is important that we allow for the roll forward of the RAB in line with RPI inflation, even though we are ultimately calculating a price cap that will index with CPI inflation.

12.41 The modelling approach that we have adopted involves making projections of all cost and revenue items in nominal prices. This enables us to accommodate projections of both annual CPI and annual RPI inflation as necessary and appropriate for each individual price control building block. We then combined the projections of each price control building block in nominal terms into an initial calculation of HAL's revenue requirement and associated price cap in nominal terms.

12.42 The specific inflation forecasts that feed into these calculations are the annual inflation forecasts produced by the Office for Budget Responsibility (OBR) as

part of its March 2022 economic and fiscal outlook.[80] We have used these forecasts as they are recent, independent, authoritative and extend to the end of the H7 period.

Translating nominal allowances into CPI prices for the licence

12.43 Having determined the overall airport price cap in nominal terms, we have deflated the price cap into CPI real terms to be consistent with our decision to index the price cap during the H7 period in line with CPI indexation. The value of X in our CPI-X formula has then been calculated as the annual change in HAL's price cap in CPI real terms.

The choice of inflation reference date for indexation of charges

12.44 In addition to specifying which index we will apply as part of the indexation of the price cap, we also need to specify the particular reference date that will be used in the licence for the calculation of each out-turn annual inflation indexation percentage.

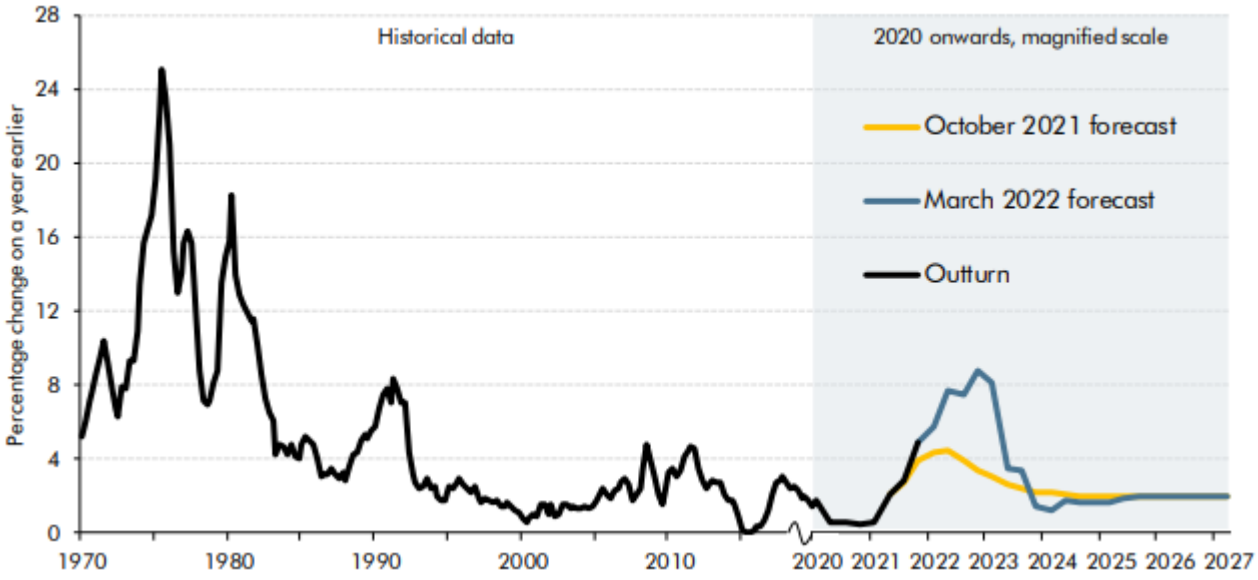
12.45 In Q6, the price cap for year t was determined with reference to inflation over the year from April in year t-2 to April in year t-1. In our Initial Proposals we included draft licence modifications that would have continued this approach.

12.46 Historically, inflation has tended to be relatively stable over time so that inflation in the year from t-2 to t-1 tended to be similar to inflation over the year from t-1 to t. In years where there were relatively small perturbations in the rate inflation, the lagged inflation adjustment ensured, in effect, that HAL was compensated for higher- or lower-than-expected inflation no more than two years in arrears.

12.47 Figure 12.2 below shows that the outlook for inflation for the H7 period is very different from recent experience. In particular inflation forecasts have changed materially since we prepared our Initial Proposals.

80 See https://obr.uk/efo/economic-and-fiscal-outlook-march-2022/

Figure 12.2: CPI inflation actuals and forecasts



Source: Bank of England, ONS, OBR[81]

12.48 As noted above, we have sought to reflect the outlook for inflation shown in Figure 12.2 in our:

- approach to the price control building blocks[82];
- calculation of the HAL's revenue requirement in nominal prices; and
- calculation of the deflated CPI real price cap.

12.49 It is important that the inflation indexation formula in the licence is consistent with our overall approach to inflation and, in particular, that, all other things being equal:

- HAL obtains the calculated nominal revenue entitlement if inflation turns out to be in line with the OBR's inflation forecasts; and
- HAL is able either (i) to collect revenues appropriately higher than our calculated nominal revenue requirement if out-turn inflation during the H7 period is higher than the OBR forecast or (ii) to collect appropriately lower revenues if out-turn inflation during the H7 period is lower than the OBR forecast.

12.50 We have identified that reinstating the April *t-2* to April *t-1* reference dates that previously appeared in the licence will not meet these conditions. Specifically, there would be a potentially sizeable mismatch between lagged April-to-April inflation and the contemporaneous calendar year inflation forecasts that are used

81 See chart 1.1 in the OBR's March 2022 economic and fiscal outlook: https://obr.uk//docs/dlm_uploads/Exec-sum.pdf

82 We have done so by using the latest available inflation forecasts in conducting our analysis of costs and revenues.

in our building block calculations. This could result in HAL recovering more revenue than we have determined it requires.[83] While this issue is amplified by the spike in inflation shown in figure 12.2 , our proposed new approach would more accurately reflect inflation expectations even when inflation is relatively stable.

12.51 We propose to eliminate any scope for mismatch by setting the reference dates in the price control licence condition to calendar year inflation. This means that HAL's entitlement to inflation indexation for the year 2023 will be set in accordance with out-turn CPI inflation in 2023 compared to 2022. Similarly, HAL's entitlement to inflation indexation for the year 2024 will be determined by reference to out-turn CPI inflation in 2024 compared to 2023.

12.52 This is a non-trivial change, because HAL will be required to make a forecast of inflation when consulting on and setting its charges ahead of the start of each new calendar year. It is important to note in this regard that the licence imposes on HAL an obligation to set charges in a manner that is best calculated to adhere to its price cap. We would therefore expect HAL to make use of an up-to-date and publicly available forecast of inflation (such as the most recently published OBR inflation forecast) when calculating charges and that this would be an appropriate way for HAL to seek to comply with its obligations under the price control.

12.53 We further note that the K-factor term in the price control provides for any over- or under-forecasting of inflation to be trued up in the calculation of the price cap for a given regulatory year, with a lag of two years. Within the K-factor, the interest rate applied to over-recovery of revenue is higher than the interest rate applied to under-recovery of revenue, thus further reinforcing the incentive that HAL has to forecast inflation as accurately as possible.

Corporation tax

Introduction

12.54 As well as incurring operating and capital costs and providing a return on the investments it has made, HAL will need to fund payments of corporation tax. We seek to further the interest of consumers by making efficient allowances for corporation tax, which feed through to our calculations of airport charges. Making allowances for corporation tax also support the financeability of the notional company.

[83] In principle these sorts of inflation lag effects can cancel each other out over time. However, in this case it is unlikely that the over-recovery that the *t-2* to *t-1* approach would generate would be cancelled out. That is because inflation is expected to reduce over the H7 period so there would not be a time where the forecast inflation for the coming year is higher than the *t-2* to *t-1* inflation.

12.55 In deciding on an approach that best furthers the interests of consumers, we have considered the wider implications of our tax policy, including how we can:

- promote economy and efficiency on the part of HAL by incentivising HAL's management to run the business (including its tax affairs) efficiently;
- secure that the reasonable demands of consumers are met through an approach to corporation tax that supports efficient new investment; and
- ensure that the approach to tax allowances is consistent with our approach to other elements of the price control, and, where appropriate, over time.

Our Initial Proposals

12.56 In consultations prior to our Initial Proposals we discussed two possible approaches to remunerating tax costs:

- setting a tax allowance in line with forecast corporation tax payments;
- making an upward adjustment to the cost of equity and the WACC to allow for corporation tax (a "pre-tax" allowed cost of capital).

12.57 The tax allowance approach should, in principle, more accurately match the year-to-year cash flows associated with tax payments. However, this approach can be complex as it relies on a detailed set of assumptions about the tax affairs of the notional company. By contrast setting a pre-tax allowed cost of capital is much simpler and while it may produce over- or under-recoveries year-to-year it should remunerate a broadly correct amount over time.

12.58 Our Initial Proposals discussed that, given the current uncertainty and the scale of change elsewhere in the regulatory framework (such as the introduction of TRS, new incentives for capital expenditure, and OBR), it would be advantageous to maintain the stability of other aspects of the regulatory regime, including in relation to the calculation of allowances for corporation tax.

12.59 We proposed to adopt the pre-tax approach for setting tax costs and consulted on the adoption of "tax clawback" and "tax uncertainty" mechanisms to ensure that the pre-tax approach is consistent with furthering the interests of consumers and ensure that we had had appropriate regard to securing HAL's financeability.

12.60 The tax uncertainty mechanism we proposed would adjust for differences arising from changes in the statutory rate of corporation tax. This adjustment would be calculated as a difference between the tax allowance calculated for the pre-tax WACC for H7 and the revised tax allowance that would have resulted from using the actual statutory corporation tax rates that HAL experienced during H7. We proposed that it could be implemented through an adjustment to the RAB at the beginning of the H8 price control period.

12.61 The tax clawback mechanism would share the benefits with consumers resulting from HAL's actual gearing being higher than the notional company's gearing.

This would help ensure that our tax allowance aligns more closely with actual tax costs while retaining the benefits of the existing approach. We said that our initial view was that consumers should share at least 50% of these benefits.

12.62 We outlined a potential approach to calculating tax clawbacks and said this could be implemented through an adjustment to the RAB at the beginning of the H8 price control period. We discussed whether this approach should involve re-calculating the cost of equity and cost of debt and said we would consider these issues further.

Stakeholders' views

HAL

12.63 HAL welcomed the retention of the pre-tax approach to setting tax allowances. and said the tax uncertainty mechanism, and its implementation through an adjustment to the RAB, would be appropriate. It suggested that an alternative approach to implementation would be to make a revenue adjustment.

12.64 HAL said the tax clawback mechanism was unnecessary and would add to complexity for little additional benefit. HAL suggested that under CAPM, the amount of tax payable would be expected to increase with higher levels of gearing. This is because the cost of equity, and hence the returns on which tax is paid, increases more quickly than the gearing decreases. HAL agreed that Heathrow (SP) Ltd should be the entity to consider when assessing the actual entity's gearing level.

Airline stakeholders

12.65 BA considered that the post-tax approach would be in the interests of consumers and encouraged the CAA to further its understanding of HAL's tax affairs, including a fuller understanding of capital allowances that stem from consumers' funding of assets.

12.66 It agreed with the implementation of the tax uncertainty mechanism, stating that it would protect consumers from excessive costs and capture drivers of tax allowances that are beyond HAL's control. It queried whether a revenue adjustment in the H8 period would be more appropriate than a RAB adjustment.

12.67 BA noted that the tax rate for the calendar year in 2023 should be blended between 19% and 25% to account for the change in UK corporation tax rate at the start of the tax year.

12.68 BA supported a tax clawback mechanism; however, it disagreed that Heathrow (SP) Ltd should be the entity to consider for the actual entity's gearing level. BA considered that FGP Topco Ltd, which consolidates the entire Heathrow group, should be considered.

12.69 It said that the CAA should introduce a licence obligation, similar to that required by Ofgem, that would require HAL to provide an annual tax reconciliation between its notional and actual liabilities.

Our views

Overall approach

12.70 As we noted in our Initial Proposals, the H7 price control is being set at a time of significant uncertainty. We are also making a number of changes to the regulatory framework such as the TRS mechanism, *ex ante* capex incentives and OBR. We have evaluated the merits of the post-tax and pre-tax approaches and, on balance, we consider that maintaining the pre-tax approach, would be a transparent, proportionate and reasonable approach to calibrating tax allowances for HAL.

12.71 We note BA's comments that it may be beneficial for HAL to provide an annual tax reconciliation between the notional and actual liability. However, this would be more appropriate and beneficial under a post-tax regime. We therefore do not plan to introduce such a requirement for the H7 period.

Tax uncertainty mechanism

12.72 We maintain the view that the introduction of a tax uncertainty mechanism will be in consumers' interests as the existing pre-tax approach does not consider the impact on the allowance of any differences arising from changes to the statutory rate of corporation tax. Such a mechanism will allow for the tax allowance more closely to align with actual tax costs while retaining the benefits of the current arrangements and not undermining the incentives on HAL's management to manage its tax affairs efficiently.

12.73 We have evaluated the merits of the different approaches to implementation suggested by stakeholders. Overall, we consider a revenue adjustment in H8 would be more appropriate for the following reasons:

- there should be minimal impact on the affordability of charges as we anticipate that the amount to be added/deducted should be relatively small;
- consumers or HAL (depending on the output of the mechanism) should see the benefits of the mechanism faster compared to the RAB adjustment method; and
- a revenue adjustment avoids adding or deducting additional items to the RAB which is simple and aids transparency.

12.74 We agree with BA that the rate for the calendar year in 2023 should be blended between 19% and 25% to account for the change in tax rate at the start of the tax year.

Tax clawback mechanism

12.75 The tax clawback mechanism is intended to return to consumers a proportion of any additional tax benefits accruing to HAL from any higher level of gearing adopted by the actual company as compared to the level we use to set the tax allowance at the price control review. We disagree with HAL's suggestion that the amount of tax payable would be expected to increase with higher levels of gearing. HAL's reasoning appears to assume that the revenue would increase with gearing which is not our intention for the tax clawback mechanism.

12.76 We previously discussed a proposed method which included re-estimating a pre-tax WACC. This was underpinned by the fact that the level of gearing affects the equity beta and subsequently the pre-tax WACC. However, we recognise the complexity of this approach and that the intention would be to capture a proportion of the tax benefits from higher levels of gearing rather than alter the allowed return. Therefore, we have also considered the revised calculation method set out below.

Step 1: Calculate the pro-forma tax payable for the notional company:

- RAB*WACC = Earnings before Interest and Tax (EBIT)[84]
- Interest cost = Notional gearing * Cost of Debt * RAB
- EBIT – Interest cost = Profit before tax
- (EBIT – interest cost) * tax rate = Tax payable.

Step 2: Recalculate the pro-forma tax payable for actual company using actual gearing:

- where EBIT is the same from Step 1, assuming the WACC is unchanged; and
- where Interest cost = Actual gearing[85] * Cost of Debt *RAB.

Step 3: Calculate the difference between 1 and 2. This is the benefit that could be subject to be claw back.

12.77 If we were to assume that HAL's actual gearing is 75% throughout H7 and that consumers will receive the full benefits of the tax clawback mechanism, this would allow us to assess the magnitude and materiality of the mechanism. A gearing level of 75% would provide an indicative estimate of the scale of the

[84] Return on the RAB represents a pro-forma EBIT under the tax clawback mechanism since other items leading to EBIT would be unaffected and can be ignored for simplicity in demonstrating the calculation methodology

[85] This would be the gearing level of Heathrow (SP) Ltd

potential clawback amount as it is materially above the 60% assumed for the notional company.

12.78 However, our analysis of this mechanism raises questions as to whether the approach would be proportionate. For instance, assuming actual gearing of 75% and notional gearing of 60% generates a possible claw back amount of less than £14million (nominal) across H7. This is, in part, a result of the higher inflation forecasts leading to a lower real cost of debt which forms the basis of the calculation of our interest costs.

12.79 Further, we understand there are limitations on these relatively simple calculations of clawback amounts. We set a pre-tax WACC using a real cost of debt allowance with an inflation allowance coming through the indexation of the RAB. In contrast, the tax paid is based on nominal cash flows which account for nominal interest payments. Over the period of the 5-year price control there would be considerable uncertainty as to whether the mechanism would appropriately reflect underlying differences in tax costs.

12.80 On balance we consider that these issues and difficulties mean that for the H7 price review a tax clawback mechanism would not be an appropriately targeted or proportionate approach to the regulation of HAL.

Our Final Proposals

12.81 We consider that using a pre-tax approach to setting HAL's tax allowance will further the interests of consumers by allowing for a transparent and proportionate approach to calibrating tax allowances for setting the H7 price control that is consistent with the approach in Q6. As there may be differences between these pre-tax allowances and the rate of corporation tax actually experienced by HAL during the H7 period, we consider that this approach should be coupled with a tax uncertainty mechanism to provide further protection for the interests of consumers and to support HAL's financeability, by correcting for any such differences that arise.

12.82 The tax uncertainty mechanism will account for changes in the statutory rate of corporation tax during the H7 price control period. Any adjustment made under this mechanism will be calculated as the difference between the tax allowance calculated for the pre-tax WACC for H7 and the revised tax allowance that would have resulted from using the actual statutory corporation tax rates that HAL has experienced during H7. We propose to implement any adjustments arising from this tax uncertainty mechanism through a revenue adjustment in the H8 price control period.

12.83 We do not propose to introduce a tax clawback mechanism for the reasons set out above.

Next steps and implementation

12.84 Our Final Proposals for both regulatory depreciation and gearing are reflected in the price control model that we have used to calculate the charges for the H7 period as set out in chapter 13 (Calculating the price cap and financeability).

12.85 In relation to price indexation our approach is implemented:

- through the financial modelling and price control calculations discussed in chapter 13 (Calculating the price cap and financeability);
- our proposed licence drafting which shows how allowed charges per passenger are to be uplifted from one year to the next; and
- our RAB rules [86] which shows how the RAB will be uplifted annually.

12.86 The tax allowance (calculated on a pre-tax basis) is implemented through our calculation of the price cap. The base level of allowance included within the licence will include an allowance for tax in line with our proposals set out above. Our proposals for the tax uncertainty mechanism will be implemented through an adjustment to revenue at the H8 price control review.

12.87 Table 12.1 below shows how we have uplifted the vanilla WACC to a pre-tax WACC. All figures are presented in RPI-real terms. The table below uses the average H7 gearing and an average of the tax rates projected for H7 to illustrate overall WACC.

Table 12.1: uplifting of vanilla to pre-tax WACC

Parameter, RPI-real	High	Low
Gearing	60%	60%
Post-tax cost of equity	9.56%	5.45%
Tax rate	23.5%	23.5%
Pre-tax cost of equity	12.49%	7.13%
Cost of debt	0.43%	0.43%
Vanilla WACC	4.08%	2.44%
Vanilla WACC (point estimate)	3.26%	
Pre-tax WACC	5.26%	3.11%
Pre-tax WACC (point estimate)	**4.18%**	

Source: CAA

[86] Insert cross reference to where these can be found

Chapter 13

Calculating the price cap and financeability

Introduction

13.1 Setting the level of the price cap is central to the CAA's considerations in discharging its duty to further the interests of consumers.

13.2 In furthering the interests of consumers we are required to "have regard to" the matters set out in CAA12. These include the need to secure that HAL is able to finance its provision of airport operation services at Heathrow airport. Consistent with the broad approach taken by other economic regulators, our approach is to focus on whether an efficiently financed licensee (the "notional company") carrying on its licensed activities would be financeable.

13.3 As explained in chapter 12 (Financial framework) our approach to furthering the interest of consumers and having regard to the matters set out in our secondary duties is to set a price control that facilitates the notional company having ongoing access to sufficient capital to allow it to develop, maintain and operate Heathrow airport to be safe, secure and resilient and meet the needs of consumers.

13.4 Nonetheless, we do not (and cannot) provide an absolute guarantee that the notional company will be financeable in all possible scenarios. In particular, given the size of HAL's RAB we cannot guarantee that the notional company would be financeable if passenger volumes were to be very low for an extended period of time.

13.5 We have been mindful of the importance of both financeability and the affordability of charges, not only in the analysis set out in this chapter but more generally in developing proposals for the H7 price control, including in respect of:

- the allowed cost of capital (chapter 9 (Weighted average cost of capital));
- regulatory depreciation (Chapter 12 (Financial framework)); and
- the TRS mechanism chapter 2 (Regulatory framework).

13.6 This chapter:

- discusses stakeholder responses to our Initial Proposals on calculating the price cap and financeability;
- summarises our views on these responses;
- sets out our approach and the assumptions we have made in developing our Final Proposals for the level and profile of the price cap for the H7 price control; and

- discusses our assessment of debt and equity financeability in the light of the assumptions we have made about financial structure, costs and the levels of the price cap.

Our Initial Proposals

13.7 Our Initial Proposals set out a range for the overall level of the H7 price control, based on low and high case assumptions. These ranges were calculated on the basis of a "building block" approach for determining the price control consistent with our approach in Q6 and the price control arrangements used in a number of other sectors subject to economic regulation.

13.8 We presented a summary of the level of the price cap that would result from a direct application of the building block approach and in the absence of any reprofiling of revenues. We noted that such a profile of charges would represent a material increase in 2022, with even the low end of the range representing an approximately 75% increase in charges compared to the price cap at the end of Q6.

13.9 In the light of our concerns about the potential for a very large increase in charges in 2022, we proposed that the price cap for the H7 period would be profiled so as to be "flat" in real terms across the period. We noted that, in spite of this re-profiling, the top of the range would still result in relatively high charges in comparison to Q6. We also noted how the bottom of our proposed range could put pressure on financeability.

13.10 We described how our assessment of debt financeability is informed by our understanding of the amount of debt that the notional company would need to raise during H7. We noted the importance of credit ratings in facilitating access to debt markets and the importance of an appropriate investment-grade credit rating for the notional company.

13.11 We set out our view that the notional company would be able to raise the £1.9 billion (nominal) in debt finance that we assessed it would require during the H7 period with either a BBB or BBB+ credit rating. We also described our reasoning for assessing credit metrics against the threshold for a BBB+ credit rating (which was the same rating as HAL's Class A debt) while also considering the ability of the notional company to raise the debt it required with a BBB credit rating. We described how this approach should provide additional comfort on the financeability of the notional company as it would be able to continue to raise finance even if it were to be rated at a "notch" below HAL's Class A debt.

13.12 As discussed in chapter 12 (Financial framework), our approach to the gearing of the notional company was to set gearing equal to 60% at the start of 2020, consistent with our policy in Q6, and then to model gearing during 2020 and 2021 in line with the notional company's debt requirements.

13.13 We concluded that an equity injection would not provide immediate benefits to consumers in the context of the financing challenges that the notional company faces at the start of the H7 period as it would provide only limited support to those credit metrics that are under most under pressure. We did, however, note that there is market and regulatory precedent for an equity injection.

13.14 Debt financeability was assessed by considering a range of qualitative factors and credit metrics. We looked, in particular, at the credit metrics used by Fitch and Standard & Poors' (S&P"), the agencies that rate HAL's Class A debt. We presented the results of our quantitative analysis which showed a strongly improving trend in credit metrics, but levels below the BBB+ threshold in 2022 and, in some cases, 2023.

13.15 We considered that the credit metric analysis we had undertaken suggested the notional company would be able to issue the debt it needed and would be rated at least BBB+ towards the end of H7. We noted a weakness with a particular metric, PMICR, [87] in 2022 and 2023 and outlined how this could be seen as a consequence of a marked difference between our assumptions about capex and regulatory depreciation over the H7 period.

13.16 We presented the results of our stress test analysis which showed that, if passenger demand recovers much more slowly than anticipated by our base case, then financeability would be challenged. We noted that the TRS would provide some support, but noted its limitation in not being able to provide immediate cash flow.

13.17 We also conducted an assessment of equity financeability which considered three metrics: internal rate of return ("IRR"), return on regulatory equity ("RORE") and dividends. We additionally considered qualitative factors that affect equity financeability. Our analysis showed that RORE would, on average, be below that allowed for cost of equity and that shareholders would make the bulk of their return in the second half of the H7 period. Our analysis of IRR showed returns in excess of the allowed cost of equity.

13.18 Finally, our analysis of dividends showed that the notional company would return to paying dividends in 2024 and that subsequent dividends would be comparable in size to those paid by Heathrow (SP) Limited in the period since 2015. We assessed the dividend profile with respect to analyst expectations and historical precedent and concluded that the profile was appropriate in the context of recovery from the pandemic.

[87] Post Maintenance Interest Cover Ratio - this metric calculates how much cash flow is available for the payment of interest after deducting an amount equal to the regulatory depreciation allowance.

13.19 We concluded that given our base case assumptions and the associated range of price controls then the notional company should be financeable.

Summary of stakeholders' and our views

Credit rating

Airlines

13.20 BA stated that CAA has the freedom to choose the most efficient possible financing structure and that it would be "illogical and irrational" for CAA to provide additional headroom within the assessment of financeability as even a BBB- rating remains within investment grade parameters. VAA, and the AOC/LACC responses made similar points about BBB- still being an investment grade credit rating.

13.21 BA also stated that it would be an error of law for the CAA to be persuaded by HAL that the actual rather than the notional company needed to achieve an A- rating by the end of H7 and there was no such requirement in HAL's licence.

13.22 BA was also of the view that HAL's investment grade credit rating reflects its "long term attributes" and that only limited action would be taken in response to events that did not affect the underlying creditworthiness of the asset class. BA went on to suggest that the value of a single credit metric in a single year is not likely to be determinative of the credit rating.

HAL

13.23 HAL stated that it would be in consumers' interests that he actual company (rather than the notional company) avoids being further downgraded in 2022 and is able to restore an A- credit rating during H7. HAL stated that this would be necessary to finance its activities during the H7 period efficiently.

13.24 HAL argued that a further downgrade for "actual HAL" (Heathrow Funding Limited) ("HFL") would lead to investors selling their positions or choosing not to invest further. This would happen because some investors have portfolio mandates which constrain them to holding A- rating bonds whilst others would face higher capital requirements to continue holding Heathrow bonds. HAL also stated that a further downgrade would materially reduce the size of the liquidity facility that it is able to access as banks' willingness to provide access to these facilities at lower ratings is more limited and comes at higher cost.

13.25 HAL also set out the importance of being able to access non-Sterling debt markets and the importance of an A- credit rating in being able to obtain the swaps necessary to allow debt issuance in non-Sterling currencies.

13.26 HAL further commented that the CAA should not infer from HAL's debt issuance profile since the onset of the covid-19 pandemic that HAL is in a secure position

to continue to raise the debt it will require to refinance maturing debt cost effectively. HAL suggested that its debt issuance in the last 18 months was only possible due to:

- investors seeing the covid-19 pandemic as a temporary issue prior to the CAA's reset of the price cap; and
- HAL issuing debt with higher spreads than prior to the pandemic.

Our views

13.27 In assessing the level of credit rating that would be appropriate for the notional company in H7, we have looked at the costs and benefits of higher or lower ratings.

13.28 As set out in our Initial Proposals, we maintain the view that achieving an "A-" credit rating during the course of H7 is not a priority for the notional company. Significant headroom would be required above the targets we have identified for credit metric thresholds, and this would be costly for consumers.

13.29 Our analysis for these Final Proposals shows that the notional company would need to raise £3.5 billion (nominal) in debt in total during H7, equivalent to an average of about £0.7bn each year. Analysis conducted by our strategic financial advisors, Centrus, showed that the largest BBB/BBB+ issuers in the UK have issued an average annual amount of £0.3bn-£2.5bn (nominal) over each of the last three years. We note that the last three years have been affected by the impact of the covid-19 pandemic, but consider this evidence suggests that the notional company would very likely be able to issue all the debt it needs to at a BBB+ or BBB rating.

13.30 As for HAL's comments on access non-sterling debt markets, it is not clear this is necessary for the notional company which (as we note above) we expect to issue around £3.5 billion in total debt across the five-year period. We also note that, in making its own decisions on financial structure, HAL is not bound by the assumptions we make for the notional company, and it can choose to target a different financing structure and credit rating.

13.31 We disagree with airlines' view that targeting the lowest level of investment grade rating, a BBB- rating, would be sufficient and financeable for the notional company. Firstly, a BBB- rating would likely result in difficulties in issuing the required amount of new debt required due to the limited depth and liquidity within the debt market for debt issued at the lowest investment-grade credit rating.

13.32 Secondly, if we were to target a BBB- rating in our "base" case, the notional company would be more vulnerable to the loss of its investment grade status in the "stress" cases, which could put significant upward pressure on its cost of debt finance and make it difficult for the notional company to regain its investment grade credit rating. These costs would likely be borne by consumers

in the medium and longer term. Compared to these costs, the incremental cost of maintaining a higher credit rating would be relatively small and so it would be better for consumers to target a credit rating that is above BBB-.

13.33 We recognise that the notional company does not have the same financial structure as HAL, but consider that the way in which rating agencies assess HFL provides a relevant benchmark for our assessment of the notional company. HFL is the company within HAL's "whole business securitisation" ("WBS") financing structure that has issued its Class A and Class B debt. The Class A debt is of a similar amount as used for our assumption for the gearing of the notional company and is current rated as BBB+.

13.34 In S&P's February 2022 ratings update, HFL's debt was placed on CreditWatch negative. S&P indicated that a combination of a lower traffic forecast and a H7 tariff lower than the holding cap could result in the weighted-average FFO to senior debt for 2022 to 2024 being less than the 7% threshold resulting in a downgrade. S&P also indicated that if the regulatory framework in the H7 Final proposals were to be deemed not sufficiently supportive (including, for instance in terms of cash flow support from the TRS) then the qualitative business risk profile of HAL (which S&P currently rate as excellent) may be adjusted downwards.

13.35 As we explain further below, our base case financial modelling is consistent with S&P's target for FFO/debt and we have taken steps to provide greater regulatory protections from traffic risk. On this basis, we are reasonably confident about the financial position of the notional company, while recognising the challenges of emerging from the pandemic. Further, our analysis suggests a one notch downgrade to the notional company (from BBB+ to BBB) would only have a limited impact on the cost of debt, of approximately 15 to 30 basis points. As noted above, market precedent suggests that the notional company would still be able to issue sufficient debt. Therefore, even with a one notch downgrade to BBB that notional company would continue to be financeable.

Impact of creditor protections on credit rating

Airlines

13.36 BA disagreed with the need to apply a one notch uplift from BBB due to the creditor protections included within the WBS. BA consider that doing so confuses the actual company with the notional company. BA then argued that the notional company should be able to withstand assessment at a lower credit rating since "actual HAL" will benefit from the WBS.

HAL

13.37 HAL said that credit rating agencies give a one notch uplift in recognition of the creditor protections included within the WBS. HAL highlighted that the notional

company would not have a WBS and that this implied that, for the notional company to be rated at BBB+, it would be necessary to achieve credit metrics which, for HFL, would be consistent with an A- rating.

Our views

13.38 We broadly agree with HAL's point relating to the one notch uplift to credit rating provided by the creditor protections in its financing platform. However, this does not change our view that the notional company would remain financeable with a BBB/BBB+ credit rating since, as described above, we consider that the evidence indicates that, even at BBB, the notional company would be able to issue sufficient debt to finance its activities.

13.39 We have considered the implications of a WBS structure for a notional company and understand there are companies with highly covenanted structures and regulatory ringfences that benefit from rating uplifts without the full WBS structure. For example, South Staffordshire Water plc receives some rating benefit from the regulatory ring fence and financial covenants without the full WBS structure.[88] Therefore, the notional company could also benefit from some rating uplift without the implementation of a WBS structure.

Assessment of financeability

Airlines

13.40 VAA suggested that our approach is inconsistent with the CMA's approach to the assessment of financeability in the sense that our approach relies "almost exclusively" on ratios.

13.41 VAA highlighted the following points regarding credit rating agencies, that they:

- consider a long-time horizon as evidenced by their estimates that passenger traffic and credit metrics for UK airports should improve in the next 3 years;
- would give leeway to any mid-term financeability issues that HAL encounters since Heathrow is an essential asset with regulated earnings; and
- The HL[89] report referred to the March 2021 S&P note which stated in relation to HAL:

> "*Although our traffic assumptions for 2021 have decreased, we assess airports over a longer-term horizon due to their essential infrastructure status and often regulated earnings*".

13.42 In respect of our stress test analysis, BA argued that the passenger volumes we had used were "particularly low" and would lead to "unrealistic outcomes". BA

[88] For further discussion of South Staffordshire Water plc's structure and its impact on credit rating see table 1 of Ofwat's December 2021 paper titled "Financial resilience in the water sector"

[89] Houlihan Lokey report commission by VAA representing the Airline community

also argued that the TRS would support debt financeability in a stressed scenario.

HAL

13.43 HAL presented the data taken from the CMA PR19 Water Determinations set out in Table 13.1 below on the minimum credit metric levels at different levels of credit rating.

Table 13.1: Summary of credit metric thresholds shown in HAL's response to Initial Proposals

Credit metrics	Funds from operations/Net debt	Adjusted interest cover ratio
BBB+	9%	1.5x
BBB	8%	1.3x
BBB-	6%	1.1x

Source: Heathrow, CMA

13.44 HAL noted that the thresholds have been identified by the CMA as being appropriate for a notional water company with 60% gearing. As such HAL argued that they are directly applicable to a notionally financed Heathrow and should be used as targets for our financeability assessment.

13.45 HAL considered it necessary that the CAA should ensure that:

- the ratio of funds from operations ("FFO") to debt is, on average over the H7 period, greater than 9.0% to ensure BBB+ is achievable by end of H7;
- FFO/Debt on average over the first three years is greater than 8.0% to ensure BBB rating is achievable in early years of H7;
- FFO/Debt does not fall far below 6.0% in 2022 to avoid risk of downgrade; and
- average FFO/Debt for 2022 and 2023 combined is greater than 7.0% to be consistent with investment grade credit rating.

13.46 HAL noted the following additional concerns with our financeability analysis:

- the initial level of gearing in the financial modelling was not set at the intended level of 60%;
- the assumption on capex was too low and the opex and commercial revenues assumptions were unrealistic; and
- our assumption that links dividends to gearing returning to 60% was inappropriate and led to unduly optimistic financial ratios in the early years of the H7 period.

13.47 HAL suggested that credit rating agencies would not look at the five-year price control in their analysis of credit metrics since their method is based on three-year averages. Low values in credit metrics would not be treated as isolated events due to the sub-threshold metrics already achieved in 2020 and 2021. HAL also said that since HFL had already been downgraded one notch, the notional company should equivalently be viewed as having been downgraded one notch to BBB and any further downgrade would severely limit access to financing.

Our views

13.48 We disagree with VAA's assessment that we have "focused almost exclusively on ratios". We have considered a range of qualitative factors including equity financeability and the role of shareholders, TRS and RAB adjustment alongside our assessment of credit metrics. These factors have all contributed to our assessment of debt financeability.

13.49 We also disagree with HAL's suggestion that we should focus on the credit metric thresholds from the CMA's PR19 water determinations. We consider that the water companies in the CMA water determinations are not necessarily the most relevant comparators for the notional company since water companies have a considerably different risk profile to airport operators. This can be seen from the fact that the aviation industry has also been more severely impacted by the covid-19 pandemic. The last two years have also demonstrated that rating agencies have some flexibility in setting credit metric thresholds.

13.50 Further, we consider that its suggested approach to specific ratio thresholds is unduly narrow and prescriptive and not properly supported by evidence. In addition, HAL has not set out a proper consideration of the relevant qualitative factors or given qualitative factors sufficient weighting. Ensuring all the credit metric thresholds that HAL has suggested are met would be an overemphasis on the financial ratios in the financeability assessment. For example, we do not consider it necessary to meet certain ratio thresholds in single years as rating agencies tend to focus on three-year averages.

13.51 As we have noted above, S&P has provided indication to the time period and threshold level to which a rating action would be necessary for HFL. S&P indicated that, if weighted average FFO/debt for 2022-24 does not achieve 7.0%, HFL's Class A debt would be downgraded. We have also explained that HAL's class A debt is a similar seniority to our notional company's debt and represents a similar share of the RAB to the gearing we assume for the notional company. We consider that HAL's Class A debt therefore acts as a reasonable proxy for the debt of the notional company and the rating thresholds and time period specified by S&P are relevant for the notional company when evaluating credit metrics.

13.52 We agree with BA that a single year's ratio is unlikely to determine a credit rating and are of the view that three-year averages are likely to be more important.

Assessment of qualitative factors

Airlines

13.53 BA and AOC/LACC both agreed on our assessment of the PMICR metric and stated that it is only natural that the metric may be constrained in periods with lower capital programmes.

13.54 BA agreed that the TRS mechanism would reduce the business risk of the notional company and argued that the TRS should lead to a significant reduction in the WACC as it reduces the risks HAL faces.

HAL

13.55 HAL disagreed with our assessment of PMICR and suggested instead that the weak ratio implies that the level of capex allowed is insufficient.

13.56 On the qualitative criteria, HAL suggested that debt investors would not take much comfort from the TRS mechanism. HAL was of the view that this is a result of the mechanism making no difference to cash flows within period and creditors would likely give the mechanism little weight unless the CAA were also apply the risk sharing approach to the losses it has incurred during the pandemic.

13.57 On the RAB adjustment, HAL suggested the CAA had set out a clear expectation ahead of Q6 that exceptional circumstances would lead to an appropriate adjustment and that the limited adjustment to the RAB made by the CAA is likely to undermine investors' confidence that the CAA will act appropriately in such situations in the future and will be seen in a negative light.

Our views

13.58 We disagree with HAL that the RAB adjustment would be perceived as strongly negative by investors. As set out in our Initial Proposals, our proposal is consistent with our previous statements about the allocation of volume risk and the process that we would follow after receiving an application from HAL to reopen the price control. Our analysis suggests a further RAB adjustment is not necessary to reasonably support HAL's financeability.

13.59 We disagree with HAL that creditors would give the TRS mechanism little weight unless applied retrospectively to historical losses. As set out in chapter 2 (Regulatory framework), the TRS is a forward-looking mechanism and so should provide investors with appropriate comfort about the future. We note that there is ample regulatory precedent of regulators introducing new policy measures on a prospective basis without also implementing them retrospectively. Additionally, the TRS mechanism will be explicitly included in the licence which provides a level of regulatory certainty that investors have generally been comfortable with.

13.60 Nonetheless, we have revisited the design of the TRS mechanism in light of comments from rating agencies and other stakeholders. We are mindful of concerns raised by these stakeholders that the TRS mechanism would not provide timely cash flow support to HAL in the event of it being triggered. As described in chapter 2 (Regulatory framework), we are now proposing that the TRS would lead to adjustments in HAL's price cap to account for differences between our passenger forecast and out-turn passenger numbers with a two-year lag and that the true-up would be completed over a period of ten years. We therefore consider that the TRS would be a materially positive factor in assessment of credit rating for the notional company.

13.61 Our Initial Proposals set out a view that periods of low PMICR that coincide with periods of low capex do not necessarily pose a financeability issue. This was on the basis that PMICR attempts to consider an entity's ability to cover its interest costs after meeting capital maintenance expenditure. We understand, following discussions with rating agencies, that regulatory depreciation is the measure that they would use for PMICR and they would not adjust the PMICR calculation to take account of periods of low capex. It should also be noted that for final proposals our assessment of the efficient level of baseline capex for H7 has increased materially (over £1.1bn higher) from Initial Proposals. This brings our "mid case" estimates to similar levels to actual total capex during Q6.

Affordability and profile of charges

Airlines

13.62 BA stated that it would be economically logical for charges to be restrained in the early part of the price control period and for them to be predictable to allow long-term network and fleet planning to take place.

HAL

13.63 HAL noted that excess demand at Heathrow has resulted in increases in fares and the emergence of a congestion premium. HAL suggested that increases in airport charges will likely, therefore, to have no effect on the charges paid by consumers and will not impact their choice of routes.

Our views

13.64 In deciding on the profile of charges, it is appropriate to take a balanced view, with the profile of charges being consistent with both the interests of consumers and also reasonably supporting the financeability of the notional company. Nonetheless, we agree with BA that undue volatility in the level of the airport charge is undesirable.

13.65 We have previously concluded that some level of scarcity rents were present at Heathrow prior to the onset of the covid-19 pandemic, although it was

challenging to quantify them robustly.[90] In the current context of recovery from the pandemic and broader factors like higher fuel prices, it is not clear how airline yields will develop, particularly through H7. In these circumstances, and given the financial pressures across the sector, it is likely that airport charges would be one of several important factors that airlines consider when making decisions about pricing and which routes to serve. Therefore, setting an appropriate level and price profile for airport charges remains a key objective for this price control review and we are not persuaded by HAL's argument that fares and the availability of routes would be unaffected by the airport charge.

Equity financeability

Airlines

13.66 BA suggested that we should not place too much weight on the RORE analysis given the "contrary" position indicated by the IRR analysis and the projected dividend profile. BA also said that it would be wrong for us to assume that dividend payments were required in H7.

13.67 VAA commented that we have not properly assessed what would be an appropriate level of dividends for HAL's shareholders. VAA also said that we were wrong to benchmark projected dividends against HAL's actual past dividends as these past dividends were very high.

13.68 BA made the point that assuming a shareholder cash injection into the notional company would be consistent with regulatory precedent and cited Ofgem's comments in the RIIO-2 Final Determinations to support this view. VAA stated that we had failed to "adequately investigate" whether HAL's shareholders should be expected to provide a cash injection.[91] VAA highlighted how a shareholder cash injection would support the net debt to EBITDA metric and provide some qualitative benefit.

13.69 BA supported the view that reducing dividends is more appropriate than injecting new equity into the notional company as a means of reducing leverage in the H7 period. BA also suggested that it would be appropriate to introduce a new mechanism to ensure that the proceeds of the asymmetric risk allowance would be retained within the notional company.

13.70 The AOC/LACC response suggest it would be an error to set the cost of capital that is "predicated" on supporting HAL's financeability.

[90] See CAP 1871

[91] For the avoidance of doubt, VAA's comments were in relation to HAL, the actual company,` rather than the notional company.

HAL

13.71 HAL argued that we had not adequately justified the reasonableness of our assumption for the dividend profile, nor our assumption that dividends in the notional company would be withheld until gearing had returned to 60%. HAL said that the approach to dividends for the notional company should ensure dividends commence in 2023 and set a smooth dividend profile that results in gearing being at 60% at the end of H7. Further, it said that the profile of dividends presented in our Initial Proposals would not be possible once the opening gearing error was corrected.

13.72 HAL went on to say that if the notional company were not paying dividends for a period, then it would be appropriate that the notional company should also have access to a high level of liquidity and that the costs of this access should be allowed for.

13.73 It also argued that RORE should not ever be negative in respect of the expectation in the determination and that the CAA should mandate this as a policy for H7. HAL also suggested that rather than comparing projected dividends with actual dividends paid by Heathrow (SP) Limited it would be more appropriate to compare them with the net restricted payments made by Heathrow (SP) Limited on the basis that this would provide a more accurate picture of cash flows to equity.

Our views

13.74 Since the publication of our Initial Proposals, we have looked in detail at what drove the RORE and IRR calculations and considered further the extent to which each provides useful information about the equity financeability of the price control proposals.

13.75 We have concluded that the formulation of RORE that we used in our Initial Proposals did not provide much additional information on equity financeability. That formulation of RORE took an accounting measure of profit after tax and expressed that as a proportion of the equity wedge.[92] By using an accounting measure to determine "return", this formulation of RORE fails to take account of the value that HAL will obtain from the indexation of its RAB during the H7 period.[93] This limitation significantly reduced its usefulness as a measure of equity financeability.

13.76 We recognise VAA's concerns that it is not always appropriate to benchmark against historical returns, whilst a longer-term historical trend may be of interest, there is no intrinsic reason to believe that historical levels of dividends in any

[92] The equity wedge being the part of the RAB that is notionally financed by equity.

[93] See above a description of the real-nominal mismatch.

particular year were necessarily at an appropriate level. At the same time, investor expectations are generally conditioned by past experiences and projected future levels of dividends will inevitably be compared with historical levels.

13.77 We therefore continue to present information in the Final Proposals about projected dividends for the notional company alongside historical dividends for the actual company. While this places these results in their historical context, we do not infer from this analysis alone whether the projected level of dividends is appropriate.

13.78 We have continued to investigate the reasonableness, costs and benefits of assuming that the notional entity receives a cash injection from shareholders. In particular, we have looked at a "stress case" in which passenger numbers are lower than expected, what that would imply for debt financeability and the extent to which a shareholder cash injection would be effective in addressing debt financeability concerns. We have also considered whether the cash injection would be a credible investment prospect for the shareholders in the notional company.

13.79 A key conclusion from that analysis is that a shareholder cash injection is of limited benefit in supporting the particular credit metrics which would be most under stress in such a downside case (including FFO[94]/net debt, net debt to EBITDA or PMICR metrics). Nonetheless, as we discuss further below, an injection of shareholder cash may be useful in terms of providing liquidity and transitioning to a lower of gearing, which would be credit positive.

13.80 In chapter 9 (Weighted average cost of capital), we describe our approach to determining the cost of capital, which is based on a robust assessment of each of the parameters that drive the cost of capital rather than being "predicated" on supporting HAL's financeability.

13.81 We have considered the related issues of the profiles of dividends and gearing. These issues are related since reducing gearing requires that cash be retained in the notional company and so limits the cash available for distribution as dividends. We continue to recognise the importance of restoring the gearing of the notional company to 60% in a timely way after the heavily pandemic-affected years of 2020 and 2021. Our analysis of financeability in the base case shows that our Final Proposals would allow gearing to be reduced to 60% in 2022 and then to remain at 60% for the rest of the price control period.[95] We therefore no longer consider that an extended period of dividend forbearance is likely to be

[94] FFO – Funds From Operations

[95] See discussion above for the results of our analysis of financeability.

required and the notional company is financeable even without dividend forbearance.

13.82 We have considered the appropriateness of comparing projected dividends of the notional company to the net restricted payments of the actual company as suggested by HAL. Net restricted payments take account of cash flows in respect of debt (both principal and interest) to and from entities higher up HAL's group structure. Net restricted payments therefore reflect not only dividends paid based on cash generated by the operating company, but also reflect the financing decisions of HAL's management. Therefore, we do not consider that net restricted payments would be an appropriate measure to compare with dividends.

Final Proposals

The overall level and profile of the H7 price control

13.83 We have calculated the level of the price control using the same building block approach as used in Q6 and in other RAB-regulated sectors. This involves determining allowances for operating costs, the allowed return on the RAB and regulatory depreciation. We also take account of commercial and other revenues and forecasts of passenger numbers to derive price-controlled airport charges per passenger.

13.84 At Initial Proposals, given the uncertainty created by the pandemic, we set out a range for the price control based on lower and upper quartile assumptions of operating costs and commercial revenues, and our range for allowed returns. We have since conducted further analysis to develop our base case building blocks for Final Proposals, as summarised in Table 13. 2 below. The summary is presented in constant 2020 prices to aid comparisons across years.

Table 13.2: Summary of our Final proposals

Final proposals						
£m 2020, CPI-real	**2022**	**2023**	**2024**	**2025**	**2026**	**Total[96]**
Operating costs	1,127	1,143	1,192	1,227	1,210	5,899
Regulatory depreciation	841	879	918	970	1,022	4,629
Allowance for asymmetric risk	-	6	18	28	27	79
Allowed return (incl. tax)	644	658	663	663	667	3,295

[96] The figures in the 'total' column for unprofiled yield per pax is a weighted average rather than a total.

Final proposals						
Service quality bonus [97]	-	4	-	-	-	-
Gross revenue requirement	**2,611**	**2,690**	**2,791**	**2,888**	**2,925**	**13,905**
Commercial revenues (incl. ORCs)	(852)	(955)	(1,052)	(1,115)	(1,122)	(5,096)
Cargo revenues	(45)	(28)	(18)	(11)	(11)	(114)
Net revenue requirement	1,714	1,707	1,721	1,762	1,792	8,696
Passengers (m)	55	67	75	81	82	360
Unprofiled yield per pax (£)	31.22[98]	25.37	22.82	21.75	21.96	24.14

Source: CAA

13.85 Overall allowances in our final proposals are lower than the mid-point from our Initial Proposals of £29.50 (CPI-real 2020). This is a consequence of the combination of:

- an improved outlook for passenger growth (a decrease of approximately £1.80);
- a change in inflation expectations (an increase of approximately £0.80);[99]
- a change in the cost of capital (a decrease of approximately £3.20); and
- the cumulative effect of the changes that we have made to our Initial Proposals for each of the other price control building blocks (a decrease of approximately £0.80).[100]

13.86 We used the mid-point of our Initial Proposals to set a "holding price cap" for 2022 and HAL has subsequently set its airport charges for 2022 on the basis of this holding price cap. We also note that the spring of 2022 has seen a robust recovery in passenger numbers at Heathrow airport. Bearing this information in mind, we are of the view that a price cap in the bottom half of our Initial Proposals range will not unduly limit or restrict the recovery in passenger

[97] Represents service quality bonuses earned in 2020 and 2021. Bonuses earned thereafter are recovered through airport charges as set out in the licence.

[98] This figure is different to the £30.19 (nominal) charge that applies for 2022. The figure shown here reflects the sum of the building block calculation for 2022. The difference between this figure and the £30.19 (nominal) is spread over the remaining years of the H7 period such that the total allowances for H7, taking account of the £30.19 (nominal) charge for 2022, match the total of the building block calculations.

[99] The increase of approximately £0.80 takes account of the increase in the opening RAB due to inflation being higher than expected at initial proposals.

[100] Note that the sum of these changes produces a figure of £24.50 which equals the average of the profiled charges (shown in Table 13.3 below). The profiled and unprofiled charges have the same net present value.

numbers at Heathrow and is consistent with our primary duty to further the interests of consumers.

13.87 In previous price reviews, we have sought to present consumers with a smoothed profile of charges over a five-year period and we consider that it is in consumers' interests for us to also to focus on a smooth profile of charges in this H7 review.[101]

13.88 As noted above, our Initial Proposals also introduced a holding price cap for 2022. Given the advantages to consumers of HAL signalling price changes in advance and acting consistently with the obligations created by the Airport Charges Regulation[102], we are making no further changes to the level of the price cap for 2022, and instead are assuming that it is the level of charges for 2023 to 2026 that flex in order to ensure that HAL recovers revenue over the period 2022 to 2026 that is consistent with our building block calculations. In deciding on the profile of charges for the period 2023 to 2026 we have considered two main options:

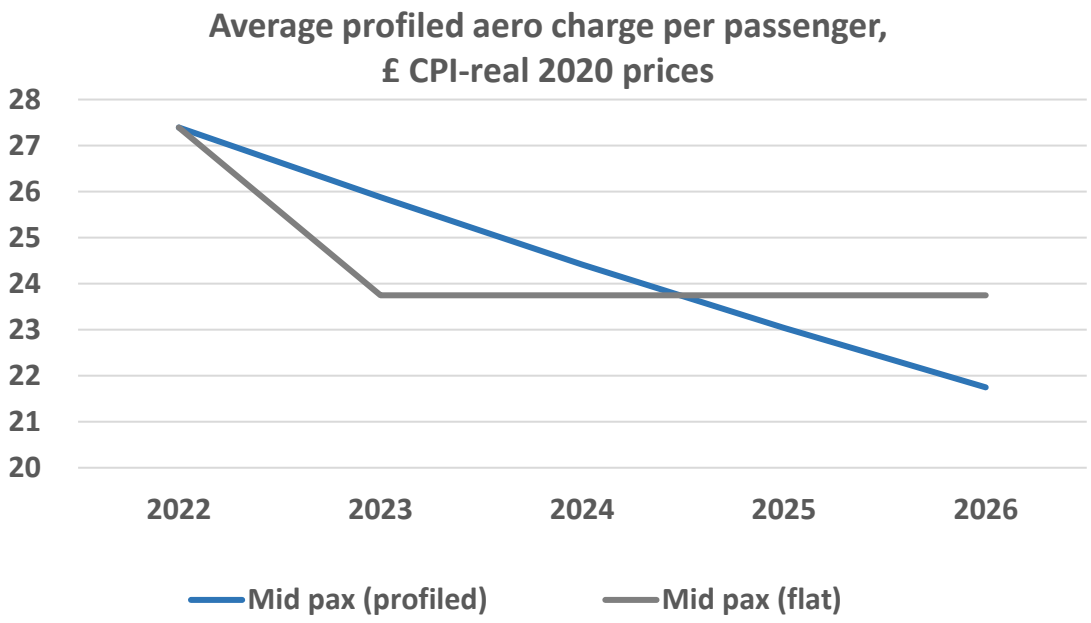
- a step down in the price cap in 2023 followed by a price cap that remains constant in real terms for the rest of H7; and
- a fixed percentage, real terms reduction in the level of the price cap over the period 2023 to 2026.

13.89 These options are illustrated in Figure 13.1 below.

[101] We note that while the profile we are proposing is smooth and avoids fluctuations it is different to the flat profile we have adopted in previous price controls.

[102] The Airport Charges Regulation establishes a common framework by which airports consult their airline customers about airport charges, service level agreements and major infrastructure projects

Figure 13.1 : illustration of charge profile options

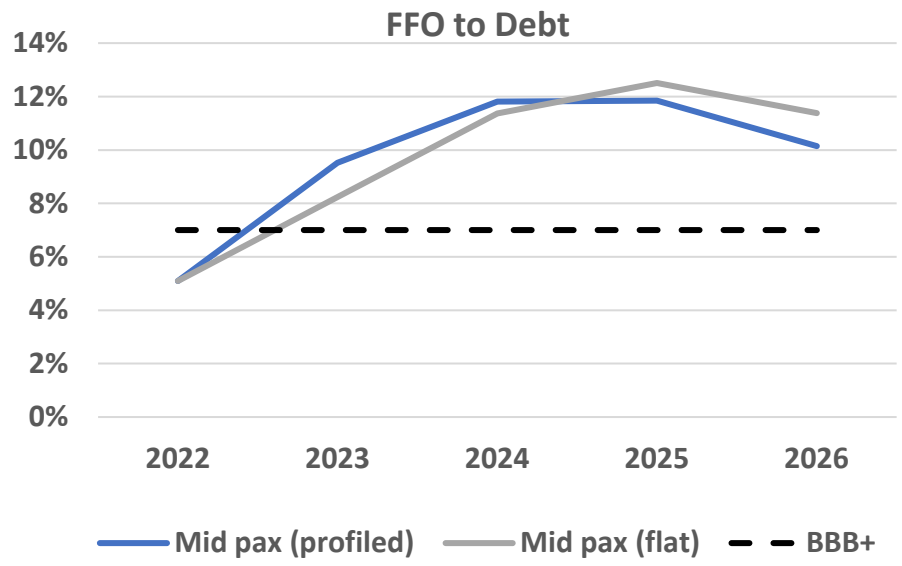


Source: CAA analysis

13.90 We note that the steadily reducing profile in Figure 13.1 is more in line with the unprofiled yield per passenger shown in Table 13.2. There are advantages to this profile as it best aligns price levels with the likely medium-term requirements of the business and so is a more stable long-term approach. The early years of the price control period have higher unprofiled charges largely as a result of the lower forecast traffic volumes. The regular real reductions in charges would also tend to offset some of the impacts of inflation. By contrast, a step down in the price cap in 2023 would provide an earlier benefit to consumers in the form of lower charges, but would lead to higher prices in the medium-term. Both profiles can be reasonably said to be in the interests of consumers as they are equivalent in present value terms over the five-year period of the price control.

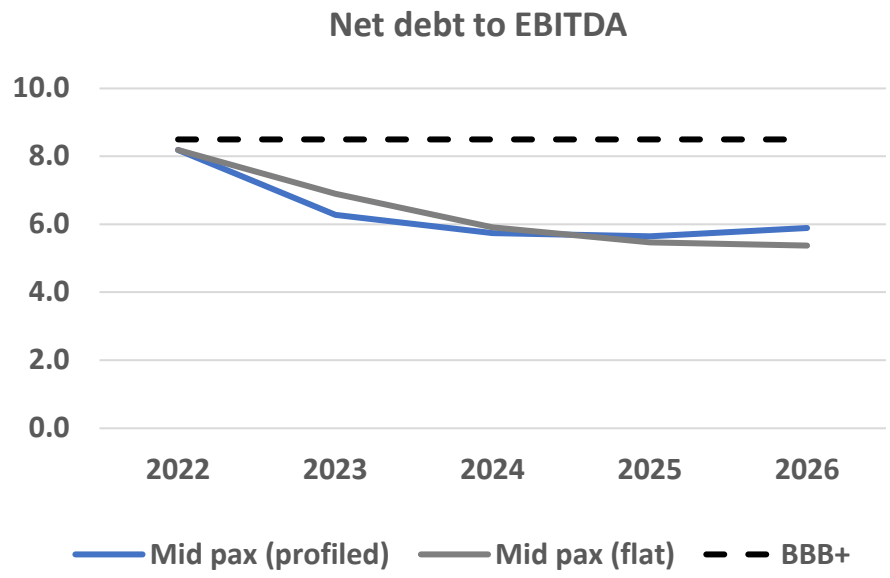
13.91 We have also considered the impact of price profiles on financeability. Figure 13.2 and Figure 13.3 below show the profile of the FFO to net debt and net debt to EBITDA metrics for the two profile options we considered.

Figure 13.2: FFO to net debt for different charge profiles



Source: CAA analysis

Figure 13.3: Net debt to EBITDA for different charge profiles



Source: CAA analysis

13.92 Figure 13.2 and Figure 13.3 show that, while the two charge profiles produce broadly similar profiles of credit metrics, the declining profile results in stronger credit metrics in 2023 and 2024 following the pandemic-affected years of 2020 to 2022.[103] Given that credit rating agencies have emphasized the importance of

[103] The charts show identical values in 2022 as the charge for 2022 has already been set on the basis of the one year holding cap.

these years we consider that the profile of FFO to debt that results from a declining profile of charges better supports financeability.

13.93 Both price profiles further the interests of consumers and as there is a degree of greater pressure on HAL's financeability in the early years of the H7 period we have adopted the fixed percentage reduction, which as noted above better supports financeability in 2023 and 2024.

13.94 We therefore propose to provide for the price cap profile shown in Table 13.3. The profile may be described as a CPI+ X% price cap in which the value of the X-factor is -5.74%.

Table 13.3: Price cap profile

Final proposals						
£m 2020, CPI-real	**2022**	**2023**	**2024**	**2025**	**2026**	**Average** [104]
Profiled yield per pax	27.39	25.88	24.42	23.04	21.75	24.50

Source: CAA

Assessment of debt financeability

13.95 As noted above, we have a statutory duty to have regard to the need to secure that HAL can finance its provision of AOS at Heathrow in determining how we can best discharge our primary duty to further the interests of consumers. In doing so, we consider this "financeability" in respect of both debt and equity finance. Debt financeability is about the notional company being able to access the debt finance it needs, when it needs it, at a reasonable cost. We assess debt financeability quantitatively using the same credit metrics and thresholds used by credit rating agencies. We also consider qualitative factors that are likely to influence the rating agencies' assessment of credit quality.

13.96 Our assessment of debt financeability is informed by our understanding of the amount of debt that the notional company would need to raise in H7. As noted above, it is important that the notional company has ongoing access to cost effective finance. The credit rating that the notional company would need to be able to access cost effective finance is influenced by the amount of debt it would need to raise. We recognise that, all else being equal, debt will be cheaper the higher the credit rating. But given that there is a cost to consumers of supporting higher credit ratings, it may be that it is not always, in net terms, cheaper to have a higher credit rating.

13.97 As noted above, our modelling suggests the notional company will need to issue about £3.5 billion (in nominal prices) in total during H7. In the context of the size

[104] The average shown is a straight average over the H7 period

of the RAB and historical levels of debt issuance by the actual company, this appears to be a relatively manageable amount of debt issuance.

13.98 Consistent with our approach in Initial Proposals, we have assessed the credit metrics of the notional company against the threshold required for a BBB+ credit rating and have also assessed its ability to raise sufficient debt for H7 at BBB. The BBB+ rating reflects the rating on HAL's existing Class A debt, which is broadly similar in quantum to our assumption of the level of debt associated with HAL's notional level of gearing (discussed below) and is a useful benchmark for the notional company. It is also a reasonably prudent approach as we are aware that HAL's actual credit rating benefits from a one notch uplift of HAL's whole business securitisation. We are also conscious of the advantages in the notional company retaining a rating above BBB-, at which level debt markets tend to be less liquid as it is the lowest rating for investment grade debt.

13.99 As described in chapter 12 (Financial framework), we have calculated the notional gearing at the start of H7 period using the following assumptions:

- 60% notional gearing at the end of 2019 (consistent with the Q6 settlement) which we then rolled forward the gearing in line with the notional company's requirements for further debt finance; and
- for 2020 and 2021, we calculated an amount of debt drawn such that the notional company sustained itself despite the reduced operational cashflow resulting from the impact of the covid-19 pandemic.

Credit metrics analysis for our Final Proposals base case

13.100 The metrics we have used to assessing debt financeability are summarised below:

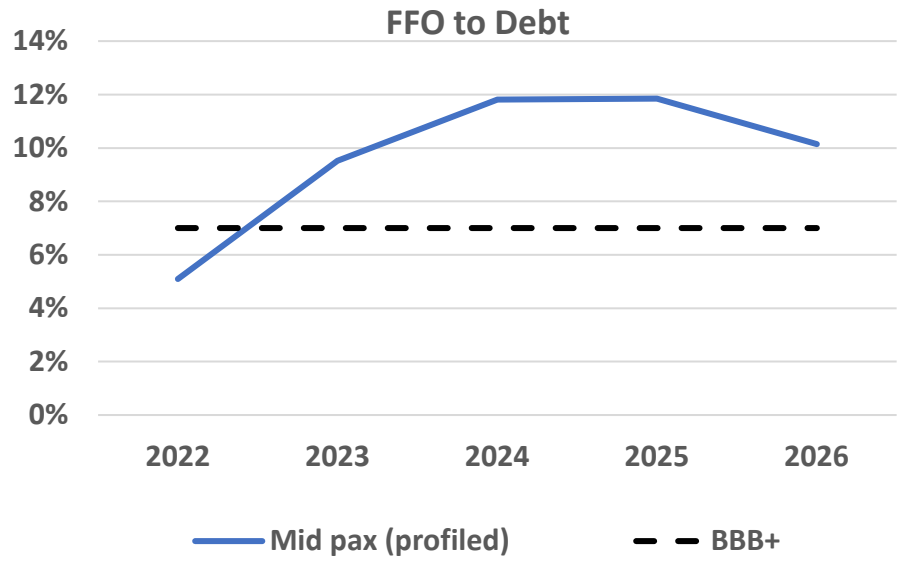
- ratio of Funds From Operations ("FFO") to net debt. This is an important metric for S&P and looks at the notional company's leverage in terms of the cash it is generating from operating its business;
- ratio of net debt to EBITDA.[105] This metric is similar to the ratio of FFO to net debt, albeit that it uses EBITDA to assess cash generation. It is an important metric for Fitch;

[105] EBITDA is earnings before interest, tax, depreciation and amortisation. It can be interpreted as an approximate measure of cash generated from operations.

- Post Maintenance Interest Cover Ratio ("PMICR"). This metric calculates how much cash flow is available for the payment of interest after deducting from FFO an amount equal to the regulatory depreciation allowance. In doing so, it takes account of the need for a business such as an airport to continue to invest in new capital equipment to replace older assets which have reached the end of their useful economic life. It is an important ratio for Fitch; and
- ratio of net debt to RAB. Businesses which are regulated on the basis of a RAB are generally able to raise finance against the value of the RAB. This ratio is, therefore, an important measure of how much additional scope there is for raising debt.

13.101 Figures 13.4 to 13.7 below present the results of our credit metric analysis for each of the metrics described above. For each metric, we show the level implied by the base case of our Final Proposals with the price profile falling in real terms after 2022. The charts also show the threshold level that we understand would be required to be achieved to avoid a downgrade below BBB+.[106]

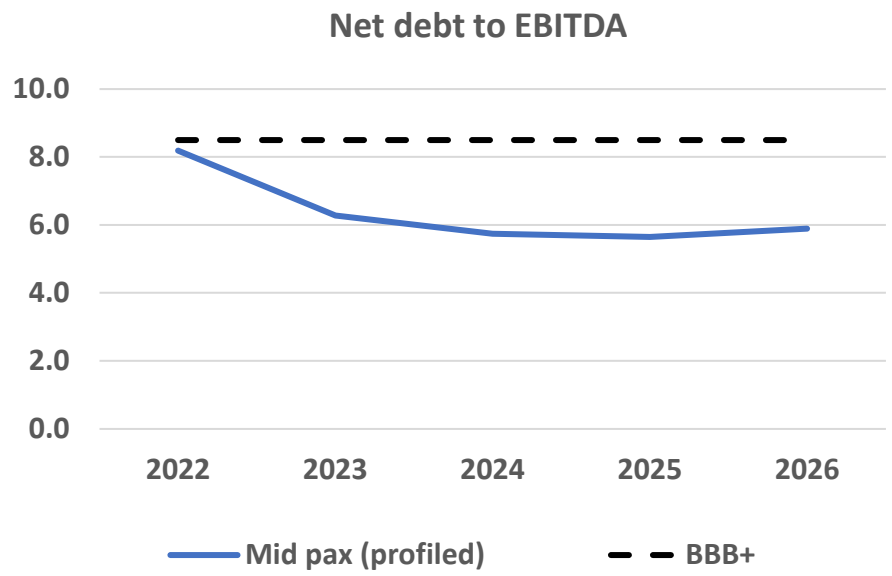
Figure 13.4: FFO to net debt



Source: CAA analysis

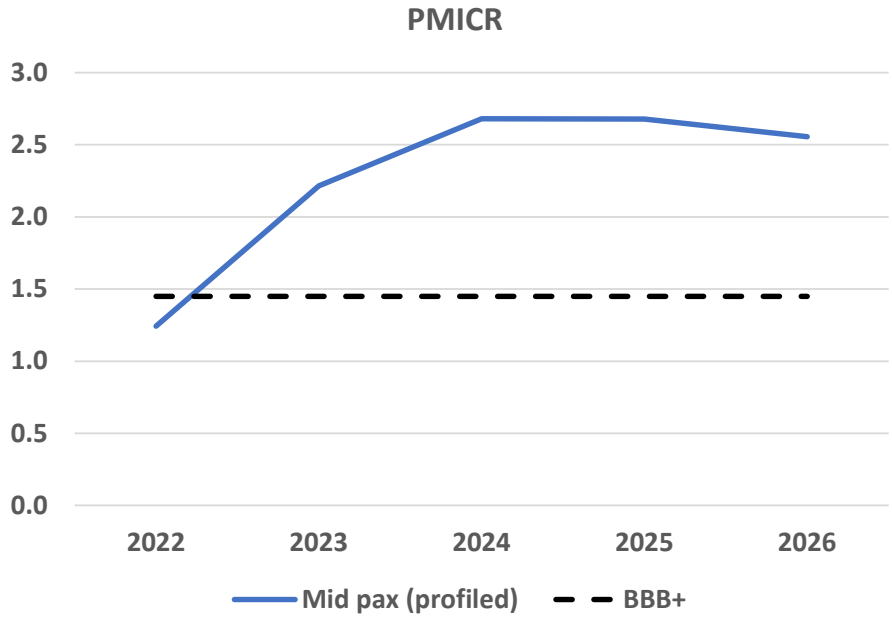
[106] Noting our comments in paragraph 11.83-11.86 about the range of factors that bear on the overall rating assessment.

Figure 13.5: net debt to EBITDA



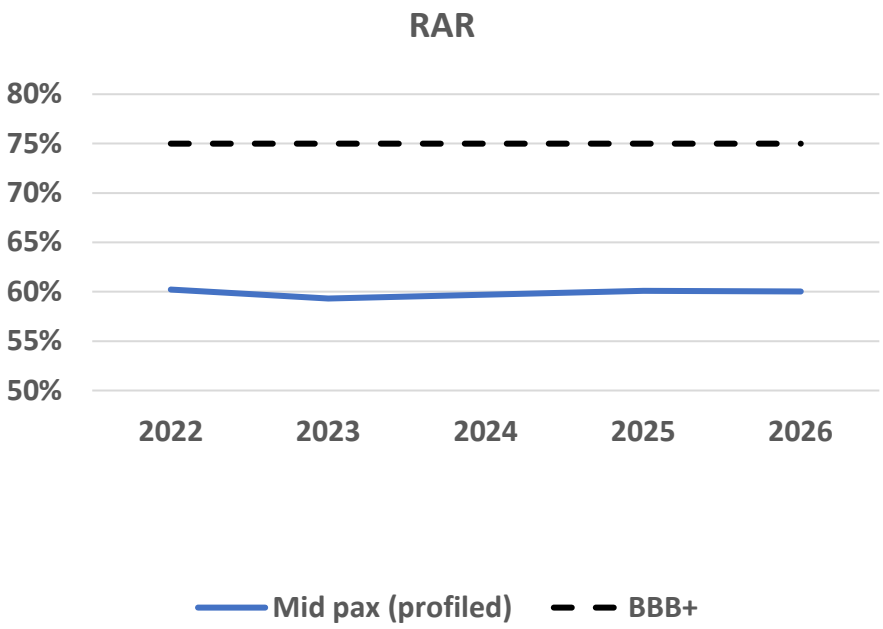
Source: CAA analysis

Figure 13.6: Post maintenance interest cover ratio



Source: CAA analysis

Figure 13.7: Net debt to RAB



Source: CAA analysis

13.102 From the analysis presented in Figure 13.4 to Figure 13.7, we observe that credit metrics in 2022 are under pressure. However, metrics from 2023 onwards look much stronger.

13.103 Our base case for 2022-2024 produces a weighted average FFO/Debt of 8.8% which exceeds the downgrade threshold, of 7%, set out by S&P for HAL's Class A debt. Therefore, we consider a one-notch downgrade due to credit metrics to be unlikely and, hence, the notional company should maintain a BBB+ rating and be able to issue cost effective debt. Further, even if the notional company were to be downgraded to BBB, our analysis suggests there is sufficient capacity in the market for it to continue to access debt finance.

13.104 We note that PMICR is weak in 2022. However, the trend of this ratio is positive and moves above the threshold that we understand Fitch would normally apply for a BBB+ rating as soon as 2023. Our assessment is therefore similar to our evaluation of FFO/Debt in that we do not consider our base case metrics for PMICR are incompatible with a BBB+ rating.

13.105 The net debt to EBIDTA and net debt to RAB ratios both look to be comfortably in line with the level required for a BBB+ rating throughout all five years of the H7 period.

13.106 As set out in our Initial Proposals and above, we have also considered the qualitative factors that influence debt financeability. We are aware that credit rating agencies conduct a detailed assessment of the business risk profile of the

entities that they rate and that this assessment forms an important part of their overall rating process.

13.107 As set out below, our base case indicates that dividends are payable to shareholders from 2022 and throughout H7 albeit at a lower level than Q6. This is important for debt financeability as dividends essentially act as a buffer to debt financeability as the cash could be diverted to cover interest payments if required.

13.108 We understand that a stable and predictable regulatory regime is a key factor in business risk evaluation. As mentioned above, we have carefully considered the stakeholder feedback on TRS and decided to modify it such that it provides more timely cash flow support and produces additional revenues in H7 in cases if passenger volumes were to underperform against our forecasts in 2022, 2023 and/or 2024. Our mechanism has been calibrated such that it can be credibly implemented and provide support for financeability where necessary. We consider the revised TRS mechanism would be a materially positive factor in assessment of credit rating for the notional company. Despite the criticisms made by airline stakeholders we have retained the £300m RAB adjustment as discussed in chapter 10 (The H7 Regulatory Asset Base and HAL's request for a RAB adjustment), which we also regard as positive from a credit perspective.

13.109 Overall, our conclusion in respect of debt financeability is that, on the basis of our base case, the notional company will be financeable in H7, and HAL should be able to access cost effective, investment-grade debt finance in a timely way.

Assessment of equity financeability

13.110 By looking at the price control from the perspective of equity investors, we can consider whether it provides reasonable returns in terms of the size, timing and likelihood of receiving those returns. This forms part of our overall consideration of financeability.

13.111 We have previously described the three metrics that we would use to assess equity financeability:

- return on regulatory equity ("RORE");
- internal rate of return ("IRR"); and
- running yield and dividends.

Return on regulatory equity

13.112 The measure of RORE that we have used to date is based on accounting profits. In reviewing our financial modelling in preparation for these Final Proposals, it has become clear that there is a significant difference between our calculation of

RORE and the approach to these matters taken by other economic regulators,[107] as it is more usual to base RORE on an economic rather than accounting measure of profit/return.

13.113 Bearing this in mind, and as noted in praragraph 13.75 above, we consider that the use of RORE calculated on the basis of accounting profits does not add significantly to our understanding of equity financeability as our financial modelling already includes measures of accounting profit.

13.114 Nonetheless, we continue to have regard to IRR and the dividend profile when assessing equity financeability, as well as considering qualitative factors that may also bear on equity financeability.

Internal rate of return

13.115 IRR measures the return generated over a period of time taking account of any change in the underlying value of the asset over that period. In calculating IRR, it is necessary to make assumptions about the capital value of the notional company at the start and end of the H7 price control period. We have assumed that the value of the equity is equal to the equity portion of the RAB.

13.116 Specifically, that the equity was worth 35% of the RAB at the start of the period,[108] and 40% of the RAB at the end of the period, consistent with the profile of gearing. This produces an IRR of 12.2% (nominal). This compares to an allowed nominal cost of equity of 12.4%.

13.117 Firstly, we observe that the nominal equity IRR is almost equal to the allowed nominal cost of equity. This is to be expected as, in the base case, actual costs are assumed to match the allowances for those costs and hence the residual cash flows which can be paid out in dividends are those generated by the allowance for the cost of equity.

13.118 Secondly, we note the difference of approximately 20 basis points between the nominal equity IRR and the allowed nominal cost of equity. The IRR we have calculated reflects the assumptions we have made in our modelling about how the notional company manages its liquidity. We have assumed that the notional entity maintains a cash balance sufficient to meet forward looking cash requirements for capex, dividend payments and repayment of debt. The assumptions we have made reflect our assessment of a reasonable and prudent liquidity management policy and are informed by discussions with both HAL's treasury team and our corporate finance advisors (Centrus).

13.119 Adjusting these assumptions about how much cash is retained within the notional company impacts the IRR. Reducing the requirement to hold cash

[107] In particular Ofgem and Ofwat

[108] This is to be consistent with the gearing that we model for 31 December 2021 which is 64.7%.

allows for higher dividend payments and thus a higher IRR. We have examined the sensitivity of the IRR to the assumptions about liquidity management and concluded that the 20 basis point difference noted above is within the range of variability that these assumptions can generate.

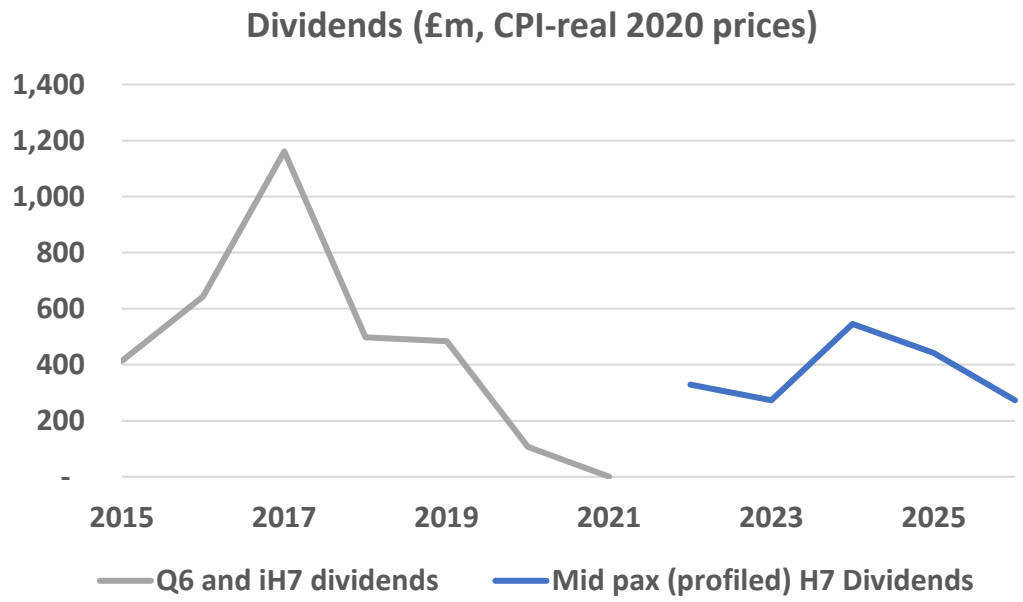
13.120 We therefore conclude that the IRR analysis demonstrates that the notional company is capable of generating cash returns equal to the allowed cost of equity. The significant amount of analysis we have undertaken to develop our allowance for the cost of equity (see chapter 9 (Weighted average cost of capital)) also provides us with comfort that the allowance is appropriate. The IRR analysis demonstrates that the cost of equity allowance translates into an equivalent cash return.

Dividends and shareholder cash flows

13.121 We have also examined the profile of dividend payments in our financial modelling. We note that there is a view that shareholders should generally be indifferent to the exact timing of dividend payments as this does not affect the value of the business. Nonetheless, we consider that a resumption of dividend payment by the notional company in the H7 period would be an important signal to shareholders that would help to demonstrate equity financeability.

13.122 Figure 15 below shows the profile of HAL's actual dividends up to 2021 and projections for dividends paid by the notional company in the H7 period.

Figure 13.8: Historical actual[109] and projected notional dividends



Source: CAA analysis, HAL

13.123 Figure 13. 8 shows that the notional company would be able to pay dividends in each year of H7. We consider that this is a very positive indicator of equity financeability in the post-pandemic period, including the ability to pay dividends so soon after the most significant impacts of the pandemic.

13.124 The average annual dividend payment in H7 is projected to be £373m (CPI-real 2020) while the average nominal yield is projected to be 5.9%.[110] For reference, the average yield of FTSE100 companies over the period 2015-2021 was 3.88%.

13.125 The average annual dividend payment is somewhat lower than average of £551m (CPI-real 2020) paid in the period 2015-2021. We do not consider this a cause for concern since cash returns will naturally vary over time and the Q6 period saw significant outperformance on passenger volumes which was a key driver of the large dividends shown in Figure 13.8.

13.126 We consider that our Final Proposals, which allows the notional company to return to paying dividends ahead of certain other companies owning European airports, are highly positive from an equity financeability perspective. We have considered market expectations as reflected in a research note prepared by

[109] Historical actual dividends are in respect of Heathrow (SP) Limited as this is the real world entity that appears to most closely resemble the notional company. Specifically because it is the lowest point within the group at which the debt financing activities of Heathrow Funding Limited and the licenced activities of Heathrow Airport Limited are consolidated

[110] Note that this measure of yield looks only at dividends and does not take account of the increase in capital value due to the indexation of the RAB.

Barclays.[111] In their note Barclays states its expectation that only one aviation infrastructure entity, namely ENAV, has a prospect of paying dividends in 2022. Barclays expect that Zurich and AENA should be able to pay dividends in 2023 while AdP and Fraport will likely have to wait until 2024 before being able to pay a dividend.

13.127 We note there are limitations to how much weight we can put on this evidence as it comes from a single source and while only several months old it was produced at a time when forecasts of recovery in passenger demand were weaker. However, notwithstanding these limitations, we consider this evidence indicates that our Final Proposals allow for a return to dividends relatively quickly and this would be broadly consistent with investor's 'best case' expectations.

13.128 We conclude from the above analysis that the projected profile of dividends in our base case is reasonable and allows for a return to dividends relatively quickly. It allows for some cash return to shareholders in the context of overall returns to shareholders that are consistent with the allowed cost of equity. Given our base case does not involve an equity injection, we have not allowed for costs associated with issuing new equity. More broadly, our base case appears to be consistent with equity financeability.

Stress testing

13.129 There is significant uncertainty about the future trajectory of the recovery in passenger numbers and the economic "headwinds" that may be created either by the covid-19 pandemic or the macroeconomic challenges in the wider economy. Therefore, we have conducted stress testing analysis to examine what will happen to the debt and equity financeability of notional company if passenger numbers fall short of expectations.

13.130 Our stress test scenario assumes that prices would be set in accordance with our Final Proposals, but that out-turn passenger numbers would be 10 per cent lower over the period 2023 to 2026, as shown in Table 13.4 below.

Table 13.4: base and stress case passenger volume assumptions

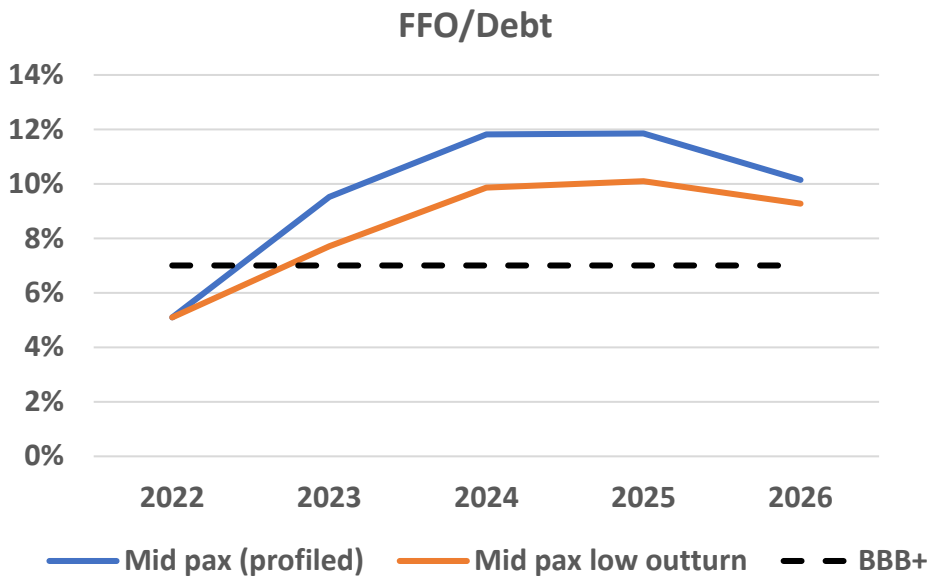
millions of passengers	2022	2023	2024	2025	2026
Final proposals assumption	54.9	67.3	75.4	81.0	81.6
Stress test assumption	54.9	60.6	67.9	72.9	73.4

[111] Barclays Equity Research, European transportation – aviation infrastructure; The route to reinstating dividends, 4 January 2022

Source: CAA

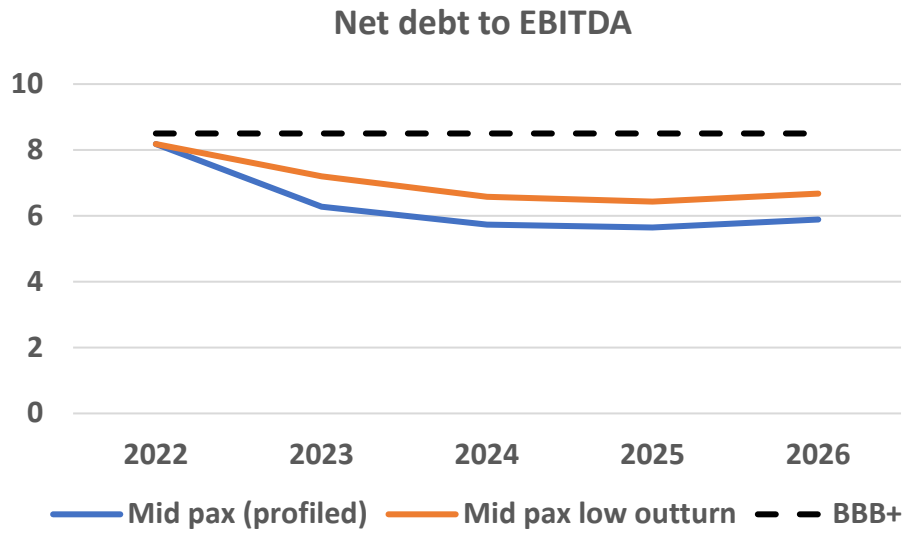
13.131 We consider this stress case a more likely downside scenario compared to the stress case we presented at Initial Proposals given the recent buoyant bookings and out-turn year to date passenger numbers. The stress test would lead to lower revenues and consequently lower credit metrics as set out in Figure 13.9 to 13.12 below.

Figure 13.9 stress test FFO to debt



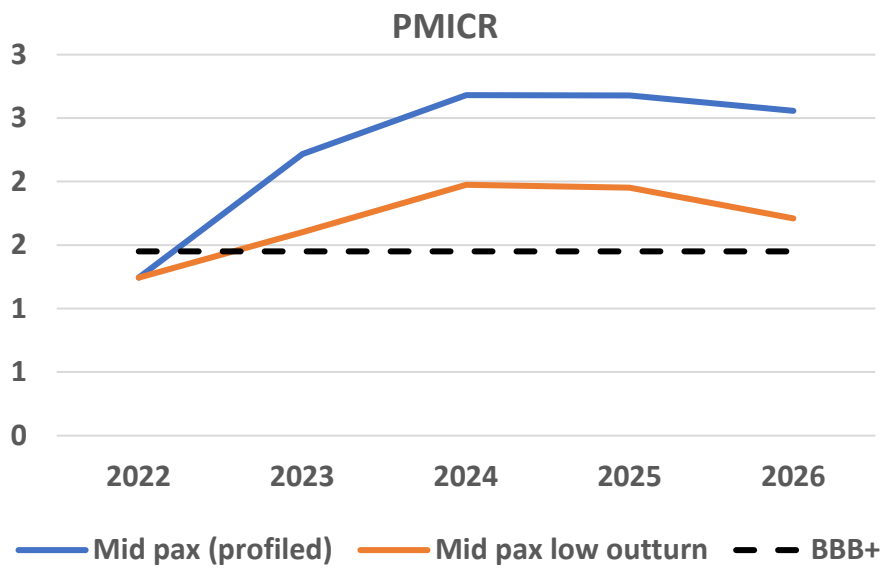
Source: CAA analysis

Figure 13.10: stress test net debt to EBITDA



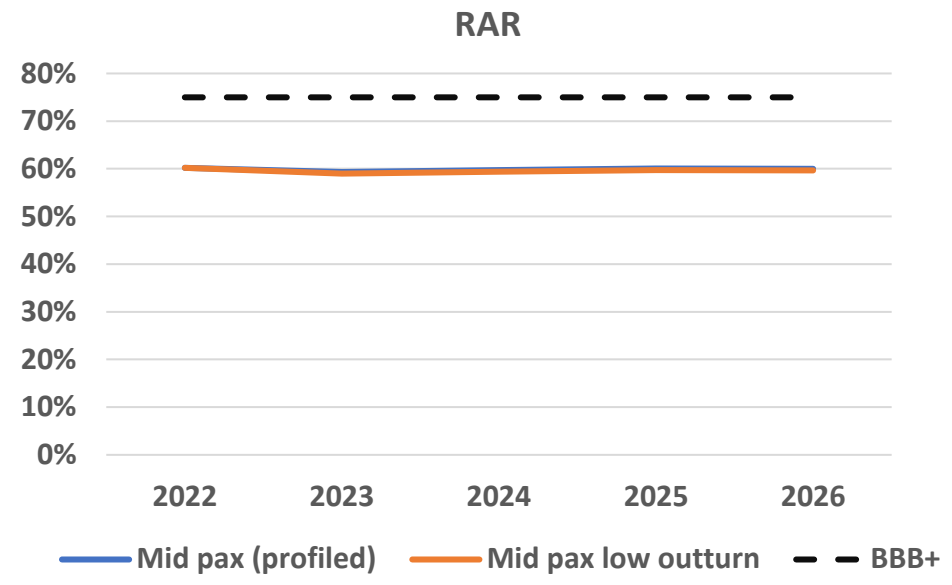
Source: CAA analysis

Figure 13.11: stress test post maintenance interest cover ratio



Source: CAA analysis

Figure 13.12: stress test net debt to RAB



Source: CAA analysis

13.132 The stress test results shown in Figure 13.9 to 13.12 show that, if passenger volumes were to be materially lower than the assumptions we have used to calculating the price cap, the credit metrics would become more depressed compared to the base case, with an average of 7.6% for FFO/Debt in 2022 to

20224. A one notch rating downgrade to BBB seems unlikely on the basis of these credit metrics (and in any case as we note above, we would not expect a one notch downgrade to result in a materially higher cost of debt).

13.133 Nonetheless, S&P and other rating agencies will take their own views on the creditworthiness of HAL and its various classes of debt finance. On 8 June 2022 S&P published a further note on its views of the prospects for European aviation and the recovery in passenger traffic. This provided a range for the recovery in passenger traffic for 2022 to 2024 and noted that airports that depend more on long-haul traffic 'are likely to be at the lower end of these ranges'. In our view the lower end of the ranges suggested by S&P are unduly pessimistic for Heathrow airport and in some years the lower end of the S&P range is below the passenger forecast used for this stress test. Combined with our Final Proposals for airport charges traffic levels at the low end of the S&P ranges would put very significant pressure on HAL's credit metrics, which could result in a downgrade of its Class A debt.

13.134 If a multi-notch downgrade were to materialise, perhaps as a result of reduction in HAL's business risk profile, then debt financeability would be more difficult. Our assumptions in this case, consistent with CMA precedent, would be that additional equity would need to be made available to meet the short term liquidity requirements (such as financing new investment).

13.135 To test the robustness of this assumption, we have considered the impact of restricted debt capacity from a double-notch downgrade for the notional company. Analysis on market capacity by Centrus,[112] suggests that the notional company would be able to issue £300-400m per annum at BBB- credit rating.

13.136 Under these circumstances, we consider the notional company would have the option of raising additional equity to meet its liquidity requirements and reduce gearing until the end of the H7 period, when its credit metrics should recover, and it should have better access to debt markets. If the notional company were able to issue £350m of debt per year, this would leave a liquidity requirement of £1.75bn in total in the H7 period to be met by shareholders.

13.137 This incremental financing would be required to support the notional company through a period in which it has reduced access to debt capital markets. That period would not last indefinitely provided that eventually passenger numbers were to recover. The investment proposition would, therefore, be of the nature of a rescue or short-term support financing. While investors might not expect the

[112] Centrus produced analysis which showed the amount of debt issued by BBB- and BB+ rated UK entities that has issued debt over the last five years. This showed that the entities in question raised approximately £1.5bn-£2.0bn in the five years 2017-21, implying annual issuance of approximately £300-400m.

incremental equity funding to generate significant additional returns, it would still be a rational investment as it would protect the value of their existing investments by avoiding an insolvency that could see them lose the ownership and control of the notional company.[113]

13.138 Based on the precedent for shareholder support transactions in the aviation sector in 2020 and 2021 (as set out in Table 13.5 below) we consider that it is reasonable to assume that shareholders in the notional company would be willing and able to provide the additional liquidity required in the stress test scenario. The transactions shown in Table 13.5 were all made into the aviation sector at a time when the sector was being significantly adversely affected by the covid-19 pandemic. We expect, therefore, that the majority, if not all, of these transactions would have been motivated by a desire to support the business through a liquidity shortage much as we assume would be the case in the stress test.

Table 13.5: Summary of shareholder cash support transactions

Entity	Date	Transaction
Birmingham airport	August 2021	£65m shareholder loan facility
London City Airport	May and October 2020	£200m in each of May and October
Heathrow Airport	September 2020	£750m loan from ADIF2 to Heathrow Finance Group[114]
Manchester Airport	July 2020	£300m from shareholders; £250m finance package from various Manchester councils[115]
Stobart	June 2020	£100m equity issuance to new and existing shareholders
Jet2	May 2020	Raised £172m in equity raise
EasyJet	September 2020	Sought to raise £1.2bn through a rights issue
Air France	April 2021	Capital increase of up to €1bn
Rolls Royce	October 2020	£2bn fully underwritten rights issue

[113] While the above paragraph is written in terms of incremental investment from the incumbent shareholders in the notional company the same basic logic would apply with new investors.

Entity	Date	Transaction
IAG	October 2020	Raised €2.75bn in a rights issue with 100% take-up from shareholders.
Ryanair	September 2020	Completed a non-pre-emptive share placing of €400m

Source: CAA

13.139 Additionally, the TRS mechanism would provide support to the value of the business if passenger volumes were lower than forecast and there would be a positive adjustment to the RAB. The support through the RAB, which shareholders would be remunerated through over the long term, would provide additional comfort for shareholders and could be used to support further borrowing.

13.140 Therefore, we conclude that, even in the difficult circumstances of a stress test situation and multi-notch downgrade, our Final Proposals would enable the notional company to finance its activities, with this in part relying on availability of equity finance if circumstances were such that the notional company had restricted access to debt markets. We consider that this assessment is consistent with duty to have regard to the need to secure that HAL (as represented by the notional company) is able to finance its activities.

Next steps and implementation

13.141 The calculations of the price control summarised in this chapter form the basis of the licence modification that sets out the new H7 price control as part of our Final Proposals and set out in Appendix C (Notice of the CAA's proposal to modify HAL's licence).

Chapter 14

Licence implementation

Introduction and background

14.1 This chapter provides a summary of the general comments and common issues raised by stakeholders in relation to our proposed modifications to HAL's licence[116] set out in Draft Licence Consultation,[117] together with our response to them. It also sets out a guide to how our policy proposals in these Final Proposals relate to the proposed licence modifications in Appendix C (Notice of the CAA's proposal to modify HAL's licence).

14.2 The Draft Licence Consultation provided drafts of possible modifications to HAL's licence showing how we would implement the policy proposals in the Initial Proposals. On 22 December 2021 we published a separate decision to modify HAL's licence to set a "holding price cap" for the regulatory year 2022, with the modifications taking effect on 2nd February 2022.[118]

The Draft Licence Consultation

14.3 The Draft Licence Consultation covered most of the policy proposals in the Initial Proposals, along with some other minor or consequential changes that we are considering making to the licence for H7. We also noted that not all of the policy proposals would necessarily require extensive licence modifications. For example, our projections for costs, revenues, allowed returns and passenger numbers are reflected in the calculation of the price cap itself, and details of the policy decisions and assumptions that underlie the price cap are set out elsewhere in these Final Proposals. Other policy proposals, such as the move to outcome-based regulation ("OBR") in Schedule 1 to the licence required extensive changes to the licence and drafts of these were set out in chapter 2 of the Draft Licence Consultation.

14.4 The main changes we proposed may be summarised as follows:

[116] https://www.caa.co.uk/Commercial-industry/Airports/Economic-regulation/Licensing-and-price-control/Economic-licensing-of-Heathrow-Airport/

[117] CAP2275 H7 Initial Proposals – Draft Licence Modifications at www.caa.co.uk/CAP2275

[118] CAP2305 Notice of licence modifications December 2021 at www.caa.co.uk/CAP2305

- Condition C1 (Price Control): a new opening price cap, with amended adjustment terms to reflect our policy proposals for the H7 period, a new adjustment term to allow for uncertainty over the terminal drop-off charges and removal of the expansion planning costs pass through term as it is no longer relevant;
- Condition C2 (Charges for other services): clarifying when and how the CAA can require changes to the cost allocation mechanism, removing some items from the list of Specified Facilities and allowing further changes if HAL, airlines and the CAA all agree, along with other clarifications;
- Condition D1 (Service quality standards, rebates, bonuses and publication): changes to reflect our move to OBR and mechanism for making changes to the OBR arrangements in Schedule 1;
- Condition E2 (Financial Resilience): changes to clarify and enhance the existing arrangements;
- Condition F (Consultation conditions): changes to clarify and strengthen the governance and consultation arrangements; and
- Schedule 1:[119] replacement of the existing Schedule 1 with a new schedule to implement the OBR arrangements.

We also proposed a number of changes to defined terms and consequential amendments.

14.5 At the time of the Draft Licence Consultation, some issues remained outstanding, including:

- our proposals for the TRS mechanism and capex incentives, including whether these should be set out in the licence or binding policy statements;
- our approach to enabling HAL to request a capex adjustment for capex in addition to that included in the H7 “capex envelope”;
- confirming the price index to be used in Condition C1 Price Control;
- a limited number of issues in the OBR framework; and
- confirming the timescales for the introduction of some (or all) of the new OBR measures to allow for an orderly transition to the new arrangements.

14.6 Having considered stakeholder’s comments, we have also developed the proposed licence modifications further. In those instances where our proposals have changed, or we have developed drafting to address the outstanding issues, we have engaged with HAL and airline stakeholders further on the relevant text.

[119] Previously known as Schedule 1 Statement of Standards, Rebates and Bonuses

We have considered their further comments in preparing the modifications set out in the Notice set out at Appendix C (Notice of the CAA's proposal to modify HAL's licence). This chapter deals with the most important issues not covered by other chapters.

Stakeholders' responses

14.7 We received limited responses to the Draft Licence Consultation, although a significant number of the responses to our Initial Proposals were also relevant to the draft modifications and these are summarised in the relevant chapters in these Final Proposals (as set out in Table 14.1 below).

14.8 Much of the stakeholder response to the Draft Licence Consultation reflected comments made on our Initial Proposals. We have considered all these comments, and stakeholders' views are discussed in the relevant chapters of these Final Proposals.

14.9 HAL reiterated comments it had made on our Initial Proposals, that:

- there was not enough information in the Initial Proposals or Draft Licence Consultation to make a fully informed response on capex reconciliation; and
- the CAA had unilaterally imposed a change to price indexation in the licence modifications for the holding price cap for 2022 and needed to give a detailed explanation of this significant change.

14.10 HAL also argued that the proposals to require it to agree protocols under Condition F and subsequently comply with them could increase bureaucracy and disputes, was unprecedented compared to other sectors and should be amended or abandoned. It also said the proposed changes would widen the dispute mechanism disproportionately, and the process proposed was vague, as well as questioning whether the CAA had the power to grant itself dispute resolution powers.

14.11 HAL's comments on individual conditions included:

- opposing removal of the expansion cost pass through;
- suggesting that the non-discrimination clause relating to commercial arrangements was no longer necessary and should be removed;
- suggesting an additional pass-through term for CAA Licence fees;
- disagreeing with our proposal to require reasonable endeavours, rather than reasonable steps in Condition D2, to ensure that airlines and ground handlers comply with rules of conduct; and
- suggesting that the continuity plan required under Condition E3 should only be reviewed once every 2 years instead of annually.

14.12 The airline community's comments were mainly aimed at our policy proposals in the Initial Proposals but it made some comments on the Draft Licence Consultation. These included:

- broadly agreeing with the enhancements within the licence that were designed to improve governance and consultation arrangements;
- suggesting that HAL should be compelled to respond to specific requirements, provision of data and meet timetables for these set by the CAA; and
- encouraging further CAA involvement in the review of the protocols proposed in Conditions F1.3 and F1.7.

Our views

14.13 More details on our responses to HAL's comments that reiterate its response to the Initial Proposals, and on some of the more detailed comments on the draft licence changes relating to those high level comments, can be found in the relevant chapters. Table 14.1 sets out the chapters where the reasons for, and effects of proposed modifications can be found.

14.14 Other comments on significant issues relating to the drafting of the proposed licence modifications not dealt with in those relevant chapters is set out below, together with an explanation of why we have not taken forward some of the suggested changes.

Condition A3 (Definitions)

14.15 We do not propose to reintroduce the conditions relating to commercial arrangements that were included for "iH7". This material was deleted when the "holding price cap" for the Regulatory Year 2022 was introduced.

14.16 Both HAL and airlines have said that this condition was not required as they were not planning to seek to make further commercial arrangements during H7. We considered reintroducing some elements of these obligations relating to non-discrimination but note that HAL is already subject to non-discrimination obligations in other legislation, including the Airport Charges Regulations 2011 and under competition law, so do not propose to reintroduce this material at this stage. However, we may reconsider in future whether a specific non-discrimination clause in required in the licence.

Condition C1 (The Price Control Condition)

14.17 We propose to introduce an additional correction factor to deal with the over-recovery of airport charge revenues in 2020 and 2021 compared with the maximum yield described in the price control formula. We are introducing a bespoke arrangement so that this unusually large correction can be spread over

several years during the remainder of H7. The new mechanism provides flexibility for HAL to determine how the adjustment is spread over the period from 2023 to 2026. In view of the size of the adjustment and the longer time delay, we propose that the adjustments in each year are uplifted by RPI inflation and the RPI-real WACC (rather than the Treasury Bill discount rate used in the Q6 correction factor).

14.18 Under or over-recoveries from 2022 onwards will be dealt with through the same correction factor as was applied in Q6 and earlier periods.

Condition D2 (Operational Resilience)

14.19 We are proposing to change the requirement currently in Condition D2.14 from one that requires HAL to take "all reasonable steps" to ensure that airlines and suppliers of ground handling services comply with the rules of conduct, to a similar rule that requires HAL to use "all reasonable endeavours" to the same end. We consider that this change clarifies the obligation on HAL since there is extensive legal authority on the meaning of "all reasonable endeavours", unlike for "reasonable steps" so that the nature of this obligation is well understood. As a result, we consider that this change will clarify the nature of the behaviour that the licence obligation requires and, so, will be more transparent and proportionate to enable HAL to comply.

Condition E3 (Continuity of service plan)

14.20 We do not agree that the continuity plan required under Condition E3 should only be reviewed once every 2 years instead of annually. We consider that HAL has some flexibility in the way it designs its continuity plan so as to reduce the burden on it from this annual review.

Condition F1.1 (Governance and Consultation)

14.21 The proposed requirements set out in Condition F1.1 to develop, agree and then comply with governance arrangements relating to Capital Expenditure, Service Quality and Other Regulated Charges proposals are designed to ensure that the process and policies that are agreed between HAL and the airline community are more closely linked to requirements in the licence so that they benefit from a greater degree of oversight and accountability.

14.22 The proposed modifications are intended to support this by requiring HAL to use reasonable endeavours to develop and agree the necessary processes and rules with airlines to drive improvements in these areas. The proposed obligations do not specify the details of those agreements. While the CAA may issue guidance on what should be included in these agreements, and we have set out some high level principles in chapter 8 (Other regulated charges), we expect the parties to work together to develop and agree the relevant materials.

14.23 Having considered the nature of the obligation that should be placed on HAL further, we consider that it is appropriate for the condition to require HAL to use reasonable endeavours to negotiate and agree the governance arrangements. This is appropriate and does not expose HAL to risk of a licence breach if it uses reasonable endeavours and agreement cannot be achieved. It also envisages that there may be areas where HAL and the airlines cannot agree. In such cases, the proposed modifications are designed to allow the CAA to step in to determine what the processes and rules should be. As with other decisions under the licence, the CAA would be subject to its duties under CAA12 in such circumstances.

14.24 Ultimately, if HAL and airlines cannot agree appropriate governance arrangements, or agree to be bound by them, we may have to consider alternative mechanisms through the licence framework to hold HAL to account in these areas.

14.25 The proposed modifications to Condition F1.1 also include requirements on HAL to consult on changes to other airport services it provides. Most of these were already included in the licence but we are proposing to add the need to consult on changes to the terminal drop-off charge that are more than 10% above the current 2022 charge. Further discussion of our treatment of the terminal drop-off charge is set out in chapter 5 (Commercial revenues).

14.26 We are also proposing to include more specific consultation requirements for the non-airline users of the ORC services. It is important that these users also have the same level of transparency as airline users on the charges they are required to pay (and the rules and procedures that govern those charges). That said, it would add too much complexity, and not be proportionate, to require HAL to develop and agree separate governance arrangements with all of those users. Combined with the requirements for greater transparency for those users within Condition C2 discussed in chapter 8 (Other regulated charges), we consider that the proposed modifications across these conditions together provide a suitable level of transparency and engagement for those users.

Further modifications proposed by HAL

14.27 Price control reopener: for the reasons set out in chapter 2 (Regulatory framework), we have decided not to include such a provision.

14.28 Expansion trigger: we do not currently consider that expansion will be a significant issue during H7. As a result, we have decided not to include provisions in relation to expansion. However, should plans for expansion re-emerge, we consider that it would be more appropriate for us to address these in the light of the circumstances prevailing at that time.

14.29 CAA fees: we have not proposed a pass through of CAA fees. However, as discussed in chapter 4 (Operating expenditure), we have included an additional allowance in the price control for the level of CAA licence fees to be paid by HAL.

Our guide to policy proposals and corresponding licence amendments

14.30 In addition to the issues discussed above, we set out the detail of the reasons for, and effects of, the licence modifications that we are proposing in Appendix C (Notice of the CAA's proposal to modify HAL's licence) in the relevant chapters of these Final Proposals. Table 14.1 below provides a guide to where the details of the relevant policies are to be found.

Table 14.1: Policy proposals and corresponding licence amendments

Section of the licence	Policy area	Policy justification for proposed licence amendments
Condition A3 – Definitions	Definition of H7	Chapter 2 (Regulatory framework)
Condition C1 – Price Control	Traffic Risk Sharing	Chapter 2 (Regulatory framework)
	Expanded 'S factor'	Chapter 2 (Regulatory framework)
	Terminal drop off charge (TDOC)	Chapter 5 (Commercial revenues)
	Capex envelope adjustment mechanism	Chapter 7 (Capex incentives)
	Application for adjustment to capex cap	Chapter 7 (Capex incentives)
	Inflation indexation	Chapter 12 (Financial framework)
Condition C2 – Charges for other services	Scope of Other Regulated Charges (ORCs)	Chapter 8 (Other regulated charges)
	Business Rates	Chapter 8 (Other regulated charges)
	Governance	Chapter 8 (Other regulated charges)
	Dispute Resolution	Chapter 8 (Other regulated charges)
Condition D1 – Service Quality	Outcomes, Measures, Targets and Incentives	Chapter 3 (Outcome Based Regulation)

Section of the licence	Policy area	Policy justification for proposed licence amendments
	Continuous improvement and implementation	Chapter 3 (Outcome Based Regulation)
	Self-modification of the licence	Chapter 3 (Outcome Based Regulation)
Condition E2 – Financial Resilience	Financial Resilience	Appendix I (Financial resilience and ring fencing)
Condition F – Consultation and Governance Conditions	Consultation and Governance Conditions	This chapter and Appendix C (Notice of the CAA's proposal to modify HAL's licence)
Other minor, consequential changes throughout the licence	n/a	Appendix C (Notice of the CAA's proposal to modify HAL's licence)
Schedule 1 – Statement of Measures, Targets and Incentives (previously known as Statement of Standards, Rebates and Bonuses)	Outcomes, Measures, Targets and Incentives	Chapter 3 (Outcome Based Regulation)

14.31 The detail of all the modifications we are proposing to HAL's licence is set out in the Notice set out at Appendix C (Notice of the CAA's proposal to modify HAL's licence), alongside the reasons for and effects of those proposed modifications (or signposting to where those reasons and effects are discussed in more detail).