Consumers and Markets Group

UK Civil Aviation Authority

Economic Regulation of Heathrow Airport: H7 Final Proposals Section 1: Regulatory Framework

CAP2365

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CHAPTER 1

Passenger forecasts

Introduction

1.1 The number of passengers using Heathrow airport is of central importance to the overall economics of the airport and the passenger forecast we make is a key driver of our calculation of the level of airport charges. It is also an important driver of our forecasts of operating costs, capital expenditure and commercial revenues, each of which is affected by the number of passengers that use the airport.

1.2 Together, these matters then feed into our assessment of the affordability of HAL's airport charges and the ability of HAL to finance its activities. Therefore, developing appropriate forecasts of passenger numbers is a fundamental step in allowing us to properly discharge our statutory duties, including furthering the interests of consumers.

1.3 The impact of covid-19 has demonstrated the vulnerability of the wider aviation sector and Heathrow to pandemic risk, with significant reductions in passenger numbers in 2020 and 2021. While the impact of the covid-19 pandemic on the aviation industry has subsided in recent months as discussed in the Summary chapter, and the recovery in air travel continues to gather pace and momentum, the industry faces continued uncertainty, for example from the possibility of new variants of covid-19 bringing renewed travel restrictions. At the same time, the recovery in aviation faces new headwinds, for example from the impact that very significantly higher energy prices are having in driving considerable inflationary pressure with the knock-on effect on the cost of living generally. There are increasing concerns that the overall economy will enter a recession and wider uncertainties created by the Russian invasion of Ukraine. These factors increase the risk and uncertainty around the recovery of global air travel and passenger volumes at Heathrow over the H7 period.

1.4 Despite the new TRS mechanism discussed in chapter 2 (Regulatory Framework), which is designed to mitigate the impacts associated with variations in passenger numbers, the base (or "Mid" case) forecast of passenger numbers we use remains at the core for setting an appropriate price control. The expected number of passengers is the denominator we apply to HAL's revenue requirement when we set the airport charge (because it is set on a "per passenger" basis). This chapter describes our approach to forecasting

passenger volumes at Heathrow over the H7 period. The rest of this chapter is structured as follows:

- a summary of our Initial Proposals and what stakeholders said in response (including their own revised passenger forecasts) together with our responses to these views and information;
- our Final Proposals, based on our work in creating a synthesis of a range of forecasts;
- a summary of our approach to quality assurance; and
- next steps in the light of the continuing uncertainty with respect to the passenger forecast.

Our Initial Proposals

CAA's passenger forecast

1.5 The onset of the covid-19 pandemic in early 2020 was an unprecedented shock to the aviation industry. HAL's established approach to forecasting was not designed to deal with the size or the uncertainty associated with it, and HAL adapted its approach to passenger forecasting specifically to model the impact of travel restrictions related to the covid-19 pandemic.

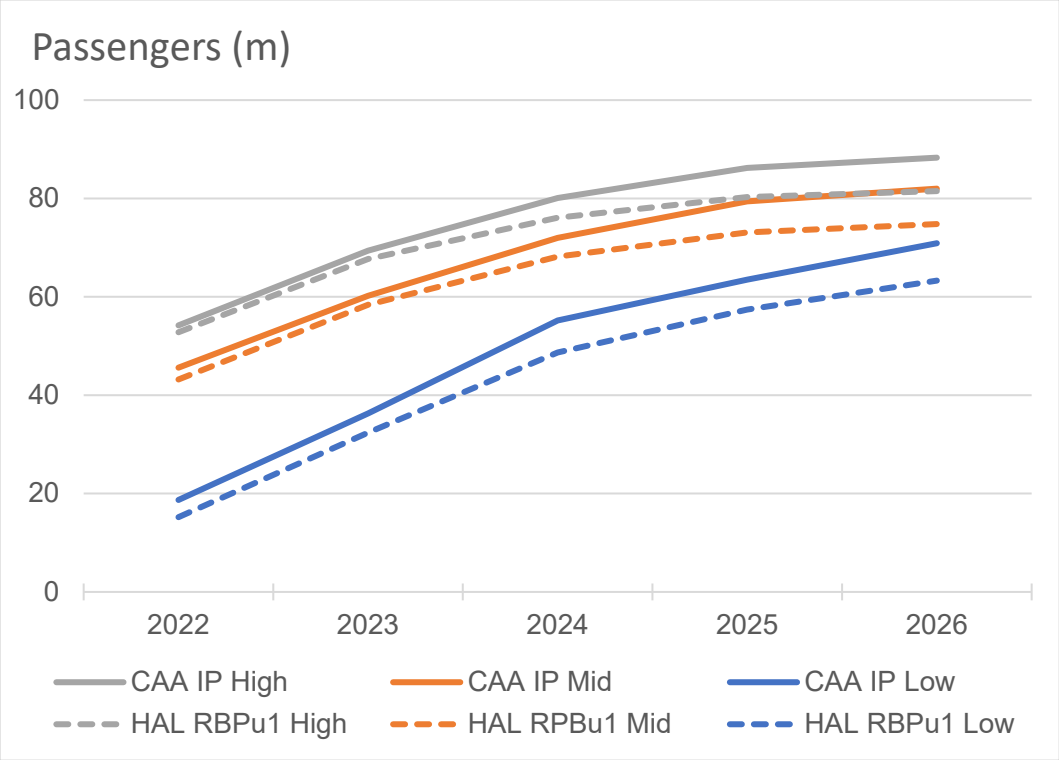
1.6 HAL shared its models with the CAA and we reviewed them thoroughly during early 2021. We generally considered that they represented a reasonable approach to modelling passenger volumes in the difficult and uncertain circumstances of the covid-19 pandemic. In this light, we decided to use HAL's models as the basis for our passenger forecast for Initial Proposals. However, there were several areas of modelling and assumptions that we disagreed with, and, where this was the case, we either made adjustments in the models or corrected the output to reflect the likely effect of such differences. These are summarised below and were discussed further in our Initial Proposals:

- we identified and corrected for a bias arising from asymmetric distributions for the Monte Carlo analysis which HAL had used;
- we disagreed with HAL's assumption that there would be fare increases in response to a reduction in business travel;
- we disagreed that there should be supply capping applied to the passenger forecast;
- we disagreed with HAL's fleet assumptions concerning retirement of A380 aircraft;
- we disagreed with HAL's assumption that Heathrow market share would be constrained to 2019 levels; and

- we disagreed with the size of passenger demand shocks[1] which HAL had factored into its forecast.

1.7 These adjustments led to the passenger forecast used in our Initial Proposals of 339.2m, which was 6.8% higher than HAL's forecast of 317.7m. The forecast scenarios used are summarised in Figure 1.1 and Table 1.1, together with comparisons against HAL's RBP Update1 forecast scenarios.

Figure 1.1 : CAA Initial Proposals passenger forecasts compared with HAL RBP Update1, H7



Source: CAA

[1] HAL had applied a 1.46% demand shock in its RPB Update 1 forecasts to cover temporary non-economic shocks (such as volcanic eruptions, wars, terrorism).

Table 1.1: CAA Initial Proposals passenger forecasts compared with HAL RBP Update1, H7

	2022	2023	2024	2025	2026	H7
HAL RBPu1 High	52.8	67.7	76.1	80.3	81.5	**358.5**
HAL RPBu1 Mid	43.2	58.4	68.2	73.1	74.8	**317.7**
HAL RBPu1 Low	15.2	32.4	48.7	57.4	63.3	**217.0**
CAA IP High	**54.2**	**69.4**	**80.1**	**86.2**	**88.3**	**378.1**
CAA IP Mid	**45.6**	**60.2**	**72.0**	**79.4**	**82.0**	**339.2**
CAA IP Low	**18.7**	**36.3**	**55.2**	**63.5**	**70.9**	**244.5**

Source: CAA

Stakeholders' views

1.8 Following our Initial Proposals, HAL and the AOC/LACC, on behalf of airlines, released new passenger estimates for the H7 period. In the case of the AOC/LACC, this formed part of their consultation response to our Initial Proposals. The AOC/LACC set out a projection of 398m passengers for H7, with the recovery in 2022 expected be to 89% of 2019 levels. This forecast was predominantly based on a UK flight forecast by Eurocontrol dated October 2021[2], and was supported by planned schedules and data on recent booking trends in 2022. HAL's RBP Update 2 forecast 317m passengers for H7, which was a small reduction compared to its previous forecast.

1.9 Airlines argued that our forecasts were unduly pessimistic, referring to recent Eurocontrol forecasts for total flights and schedule data for 2022 as evidence that the recovery will be faster than we had suggested. They also

- expressed concern over a lack of access and transparency to the forecasting process and the actual models used in our analysis;
- were uncomfortable with a perceived overreliance on using HAL's forecast models for our approach;
- contended that the forecasts (which we produced in July 2021 using HAL modelling carried out in April/May 2021) were out of date; and
- highlighted the recommendations made by our advisors, Skylark Consulting Group ("Skylark"), in its quality assurance of our approach to forecasting for Initial Proposals,[3] that we should challenge further HAL's use of "covid

2 https://www.eurocontrol.int/sites/default/files/2021-10/eurocontrol-7-year-forecast-2021-2027.pdf

3 H7 Forecast Review Passenger Forecasting, Skylark, October 2021 http://www.caa.co.uk/cap2266D

decay functions",[4] that there is little evidence for a permanent shift in business travel and that we should consider removing our Low scenario.

1.10 BA also continued to oppose the use of a shock factor in our modelling.

1.11 HAL argued that our forecasts were too optimistic and, specifically, that our High case passenger projections (88.3m in 2026) could not be accommodated by Heathrow airport without further investment in capacity. It also:

- requested that we run the HAL forecast models fully for future modelling, rather than making off-model adjustments to HAL outputs;
- argued that its use of asymmetric distributions is justified, and that our concern over bias resulting from this use is not relevant as the distributions reduce downside risk;
- disagreed with our estimation of Heathrow's share of the London market, which relied on analysis of passenger volume trends;
- argued that our analysis should consider the effect of carbon pricing on air fares and therefore on volumes;
- disagreed with our adjustments to its model, which it claimed were opaque and did not reflect real-world constraints such as airline supply constraints;
- defended its assumptions on the recovery of business travel volumes (a long-term reduction in overall business travel) and disagreed with our approach of not adjusting fares as a result of forecast trends in business travel.

1.12 ACI Europe stated that industry forecasts made previously in the pandemic had consistently proved to be optimistic and did not anticipate the emergence of new variants and reimposition of travel restrictions. It said that, aside from public health considerations, macroeconomic conditions, the weakness of the Chinese economy, inflation in the UK and globally, and geopolitical tensions on Europe's borders may all put downward pressure on traffic levels in the years to come.

Our views

Our overall approach to developing our passenger forecast

1.13 We acknowledge that forecasting passenger volumes during the covid-19 pandemic is particularly challenging and that, at the time of producing our

[4] An exponential decay function used as a demand overlay to model the impact of travel restrictions on demand over and above other factors (such as economic factors).

forecasts for Initial Proposals, we were in the relatively early stages of the recovery from the covid-19 pandemic.

1.14 We have recently seen a strong recovery in passenger numbers at Heathrow, but there remain uncertainties about the path of the recovery in the light of macroeconomic headwinds and other uncertainties. There are also challenges within the aviation "ecosystem" to recruit sufficient staff to deliver some airlines schedule plans.

1.15 We also recognise that, despite repeated requests for it to do so, HAL has refused to make its passenger forecast models openly and transparently available to stakeholders. This has undermined our confidence in the credibility and robustness of HAL's passenger forecasts and caused us to place less weight on this evidence.

1.16 This has contributed towards a challenging set of circumstances where:

- there is significant uncertainty about future passenger numbers;
- stakeholders' views of the future are very different; and
- HAL has not been prepared to share its modelling in a full and transparent way with stakeholders.

1.17 Therefore, we have decided to modify the approach we used for our Initial Proposals in developing our forecast for these Final Proposals. Our latest approach has been to source and consider a range of traffic forecasts, alongside other relevant information and evidence, including inputs from stakeholders during engagement, macroeconomic forecasts, the evolution of actual passenger data and assessment of the current challenges facing the industry. In all cases, we have carefully assessed the information at our disposal to make informed decisions. This includes:

- sourcing independent traffic forecasts from different sectors of the industry and assessing the merits of each forecast. In so doing, we have decided not to use forecasts that are insufficiently granular or are not reasonably up to date;
- developing a method to consistently derive Heathrow-specific forecasts of passengers where independent forecasts do not directly provide this information;
- assessing the recent developments in the covid-19 pandemic, the evolving macroeconomic outlook and the impact of the Russian invasion of Ukraine in line with evolving passenger numbers and forward bookings information, and how more recent developments could affect earlier forecasts;
- exploring the latest developments in the industry with stakeholders; and

- considering all forecasts, evidence and information obtained from all these sources, and synthesising from these a passenger forecast for H7.

1.18 This is a broader approach that uses a much wider range of information than we used for Initial Proposals. As a result, HAL's forecast and forecasting method has been given less weight in the development of our forecast, as it has become one of a number of forecasts that we have considered.

1.19 Given the substantial downside risks at the time of Initial Proposals (many of which continue, including the potential impacts of the emergence of further covid-19 variants, as was since evidenced by the "Omicron wave"), we considered it was appropriate to include a Low scenario. We have continued to produce forecasts for a Low scenario in developing our Final Proposals, to enable us to assess the extent of downside risk. Nonetheless, it is the Mid scenario that drives our calculation of airport charges. In this context, we consider that use of a shock factor continues to be appropriate as the possibility for unforeseen external demand shocks remains.

How we have used HAL's model

1.20 Under our revised approach, a forecast using our assumptions and HAL's model remains the starting point for developing our own forecasts.

1.21 In relation to Heathrow's market share constraints and the use of asymmetric distributions in HAL's model, we have engaged further with HAL to understand its arguments. However, we continue to have concerns over these elements of HAL's modelling suite and, therefore, we applied similar adjustments to those we made in the forecasts we used for our Initial Proposals. In this context, we consider that:

- the bias which arises from the asymmetric distributions in HAL's Monte Carlo analysis is driven solely by the chosen mode, high and low values and is not properly related to a real-world distribution of risk for passenger volumes at the airport, which we believe are already catered for elsewhere in the modelling process. Therefore, we have retained the approach we used to these matters for our Initial Proposals. As such, we consider our adjustment to HAL's model in this respect is valid; and

- HAL notes that our market share calculation does not fit well with the monthly or annual data for 2020 and 2021. However, these periods are unlikely to be typical of H7, and we note that HAL's proposed annual market share calculation also does not fit well with this data. We also consider that there is a rationale for our approach (as the size of the London market increases, the capacity constraints at Heathrow mean that it captures a smaller market share) and are not aware of one for HAL's approach (a continuing decline in Heathrow market share over time) and

we find that our assumption correlates better with the pre-pandemic historical data than HAL's.

1.22 Despite the comment in HAL's response to our Initial Proposals relating to carbon pricing, our forecasts did retain the same assumption which HAL used for the effect of carbon pricing. However, we note that HAL has changed its carbon pricing assumption in its subsequent RBP Update 2 forecast, and we have since assessed the validity of that update as discussed further below.

1.23 Forecasting future trends in business travel is very challenging given current uncertainties, and we note that stakeholders have expressed wide-ranging views on this topic. We have sought external advice from Skylark on this complex issue.[5] These matters are also discussed further below.

1.24 We note that both HAL and airline stakeholders raised valid concerns on the expected recovery profile. We have continued to engage closely with HAL and airline stakeholders to understand the basis for their forecasts and the likely profile of, and the risks associated with, the recovery. These matters are central to our decisions on the passenger forecast that supports as discussed in the Final Proposals section of this chapter.

Forecast updates by HAL and the AOC/LACC

1.25 HAL produced an update of its passenger forecast in December 2021 as part of its RBP Update 2. In its response to our Initial Proposals, the AOC/LACC also provided an alternative forecast for Heathrow passenger numbers over H7.

1.26 In late April 2022, HAL produced a further update to its mid-case forecast for 2022 as part of its 2022 Q1 financial results presentation.[6] These forecasts are summarised below and shown in Figure 1.2 and Table 1.2.

HAL RBP Update 2 passenger forecast

1.27 HAL's RBP Update 2 is based on the same method as it had used previously, and included the following key updates:

- an updated Travel Restrictions Model (TRM),[7] with more recent data and updated modelling of demand according to level of covid-19 related travel restrictions;

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5 Skylark's report is published alongside this document.

6 https://www.heathrow.com/content/dam/heathrow/web/common/documents/company/investor/reports-and-presentations/financial-results/2022/2022_Q1_Heathrow_(SP)_Limited_Results_Presentation_Final.pdf

7 The TRM is an overlay that HAL applied to its core forecasting models to model the impact of covid-19 related travel restrictions. This is explained in Section 1 of the CAA's H7 Initial Proposals:

- refreshed assumptions regarding such travel restrictions and the pace of recovery;
- refreshed econometric assumptions, including the use of the latest Oxford Economics forecast (October 2021), and maintaining its outlook for business travel;
- use of an updated carbon price assumption (sourced from BEIS), which now reflects the social cost of carbon where previously this was based on a reduced carbon price, and;
- a reduction in the shock factor from 1.46% to 0.87% based on an updated estimate which also excludes pandemic risk from the shock factor calculation, in line with the CAA's methodology on the asymmetric risk allowance in Initial Proposals.

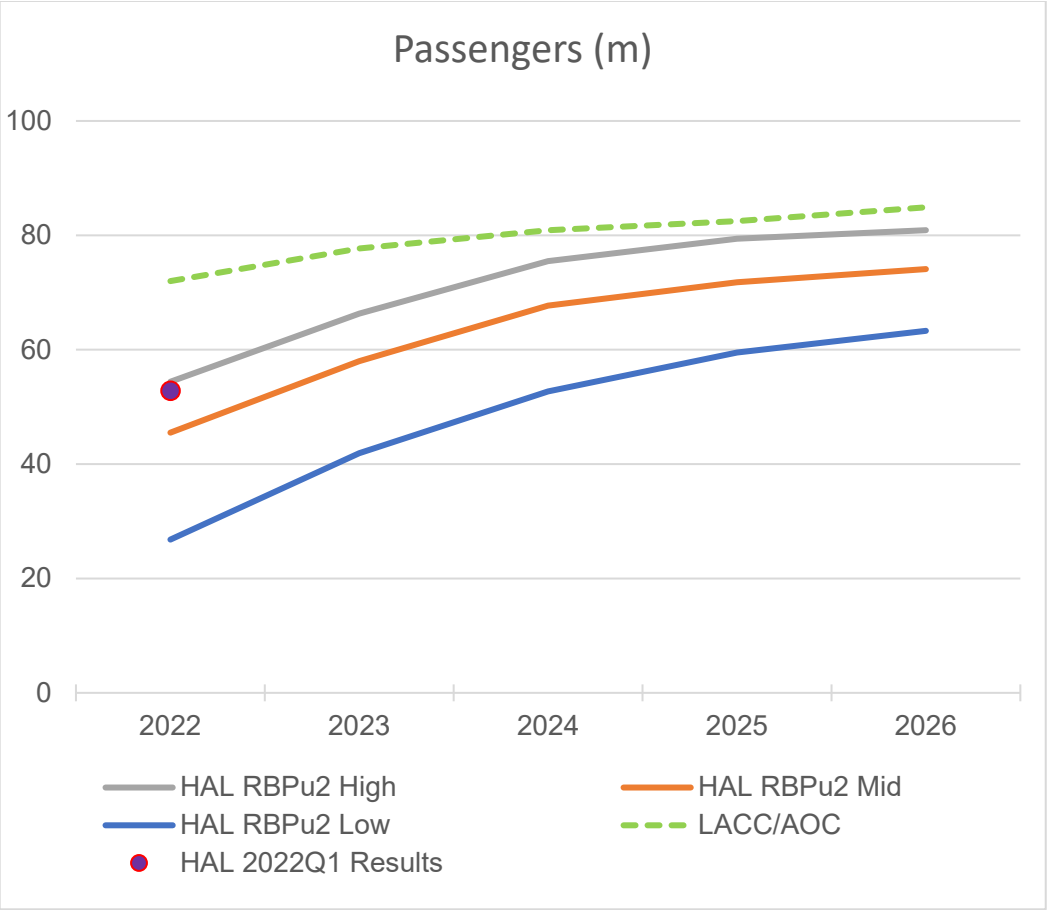
1.28 In its 2022 Q1 results, published in April 2022, HAL revised its passenger forecast for 2022 from 45.5m to 52.8m to reflect "faster than expected removal of UK travel restrictions" and "stronger expected demand through to summer."[5]

AOC/LACC forecast

1.29 The forecast for H7 that AOC/LACC presented in its consultation response used airlines' scheduling and booking data to predict passengers for 2022 and the growth rates for UK flights as forecast by Eurocontrol in its October 2021 forecast, but with amendments in the later years to take into account capacity constraints at Heathrow. It used the observed differences between Heathrow and UK and between Heathrow and Gatwick traffic levels in 2021 to corroborate its forecast assumptions. These are set out, together with HAL's RBP Update 2 forecast in Figure 1.2 and Table 1.2 below.

https://publicapps.caa.co.uk/docs/33/CAP2265B%20H7%20Overall%20approach%20and%20building%20blocks%20(p).pdf

Figure 1.2: HAL RBP Update 2 and AOC/LACC passenger forecasts (December 2021), H7



Source: HAL RBP Update 2, AOC/LACC, December 2021

Table 1.2: HAL RBP Update 2 and AOC/LACC passenger forecasts (December 2021), H7

	2022	2023	2024	2025	2026	H7
HAL RBPu2 High	54.4	66.3	75.5	79.4	80.9	**356.6**
HAL RBPu2 Mid	45.5	58.0	67.7	71.8	74.1	**317.1**
HAL RBPu2 Low	26.8	41.9	52.7	59.5	63.3	**244.1**
AOC/LACC	72.0	77.7	80.9	82.5	84.9	**398.0**
HAL 2022Q1 Forecast	52.8					

Source: HAL RBP Update 2, AOC/LACC, December 2021

Our views on AOC/LACC's passenger forecasts for H7

1.30 We have reviewed the AOC/LACC's forecasting method as set out in its and individual airlines' responses to our Initial Proposals. Although relatively simple, it would appear to be evidence-based and logical. However, we consider that it has some weaknesses, which are likely to lead to it being an overestimate of traffic in H7. These are:

- the forecast for 2022 is based on airline schedules and forward booking trends. However, in the early part of 2022 we have already seen that airlines have not fulfilled all the flights which they had scheduled at the start of the year and load factors were not at 2019 levels. Airline schedules for Heathrow for later in the year have also been reduced. Indeed throughout 2020 and 2021, airlines' schedules were generally at or near 2019 levels up until three or four weeks before the relevant departure date and it was only at this point that airlines reduced them. Forward bookings made the year before generally represent only a very small fraction of the total bookings for the year. Therefore, the fact that these are at or near 2019 levels cannot be confidently extrapolated to the whole year; [8]

- the Eurocontrol forecast, on which much of the AOC/LACC's forecast is based, represents numbers of flights in UK airspace, not passengers using those flights. We can see that these evolve at different rates by looking at the 2020 and 2021 out-turns. Flights in UK airspace were at 40% and 41% of 2019 levels respectively, while passengers at Heathrow airport were only at 27% and 24%; and

- the Eurocontrol forecast used by the AOC/LACC also includes UK overflights,[9] which we would expect to evolve differently over the course of the pandemic and recovery from it. They are not directly relevant to Heathrow traffic or passenger numbers.

1.31 In producing our forecast for these Final Proposals, we have considered the AOC/LACC's forecast. That it is still based on airline intentions to fly and does not account for possible lower load factors than in 2019, and that it does not appear to properly account for downside risks, makes it appear more likely to represent a high, rather than a mid-case, forecast.

Final proposals

1.32 As discussed above, following our Initial Proposals, we have carefully considered stakeholder's views, reviewed the latest forecasts and market intelligence, and amended our forecasting approach accordingly. As further noted above, there is both:

- a significant divergence between the views of HAL and airlines on passenger forecasts; and

8 IATA and some airlines have kept us updated on the state of forward bookings for 2022 as we have produced our Final Proposals, which has provided helpful intelligence for us in producing our own forecasts.

9 Flights that do not take off or land at UK airports but fly through UK airspace on their journey.

- a great deal of continuing uncertainty over how developments in the industry, the economy, the aviation market and the course of the covid-19 pandemic will affect traffic at Heathrow.

1.33 For these reasons, we consider that consumers are best served if we take into account a range of views and evidence before using our judgement to synthesise a passenger forecast for these Final Proposals.

1.34 We have continued to take account of HAL's model, using both HAL's assumptions and those we have decided to amend, as well as the AOC/LACC's forecast, but we have also taken into account other air traffic forecasts, modifying them where we consider it necessary to make them more applicable to Heathrow over H7.

External forecasts

1.35 We explored a broad range of external forecasts for potential use in our synthesised forecast. We identified ten forecasting products in addition to the HAL and AOC/LACC forecasts, seven of which we determined to be of sufficient detail, relevance, and robustness to be of use for forecasting passenger numbers for H7.

1.36 All key sectors of aviation are represented by the sources, covering airports (ACI), airlines (IATA/TE[10]), airspace (Eurocontrol), aircraft manufacturers (Airbus and Boeing) and global aviation organisations (ICAO). These are all established organisations that regularly produce and publish forecasts.

1.37 All sources were found to provide different outputs. These vary by:

- the scope of the forecast (including passengers, flights, RPKs[11]);
- the geographical coverage (such as, Heathrow, UK, Europe, World);
- the length of the forecast period; and
- the granularity of the forecast (monthly, annual, time intervals greater than one year).

These forecasts are summarised in Table 1.3 below.

1.38 The forecasts that we identified from the long list as not suitable for informing our Final Proposals were not deemed granular enough or were too out of date to be used in our forecast of passengers at Heathrow.

[10] Tourism Economics, a subsidiary of Oxford Economics that jointly produces air passenger forecasts with IATA.

[11] Revenue Passenger Kilometres, a composite measure of number of passenger and distance flown.

Table 1.3: Summary of external forecast providers/products

Product	Key Output	Period	Coverage
Forecasts used to inform FPs			
Tourism Economics/ IATA	Pax	2022-2041	UK
Eurocontrol STATFOR	Flights	2021-2027	UK*
ACI World Airport Traffic Forecasts	Pax	2021-2040	UK
ACI European Economic Forecasts	Pax (%2019)	2021-2026	Europe
Airbus Global Market Forecasts	RPKs	2021-2030	Global
ICAO Economic Impact Analysis (C-19)	Pax	2022 only	Europe
Bain Air Travel Forecast	RPKs (%2019)	2022-2023	Global
Forecasts not used to inform FPs			
Boeing Commerical Market Outlook	RPKs	2021-2040	Europe
ICAO Post Covid Recovery Forecasts	RPKs	2018-2050	Europe
ICAO Long Term Forecast	Pax	2017-2036	LHR,UK

* Includes flights overlying UK as well those landing and taking off from UK airports.

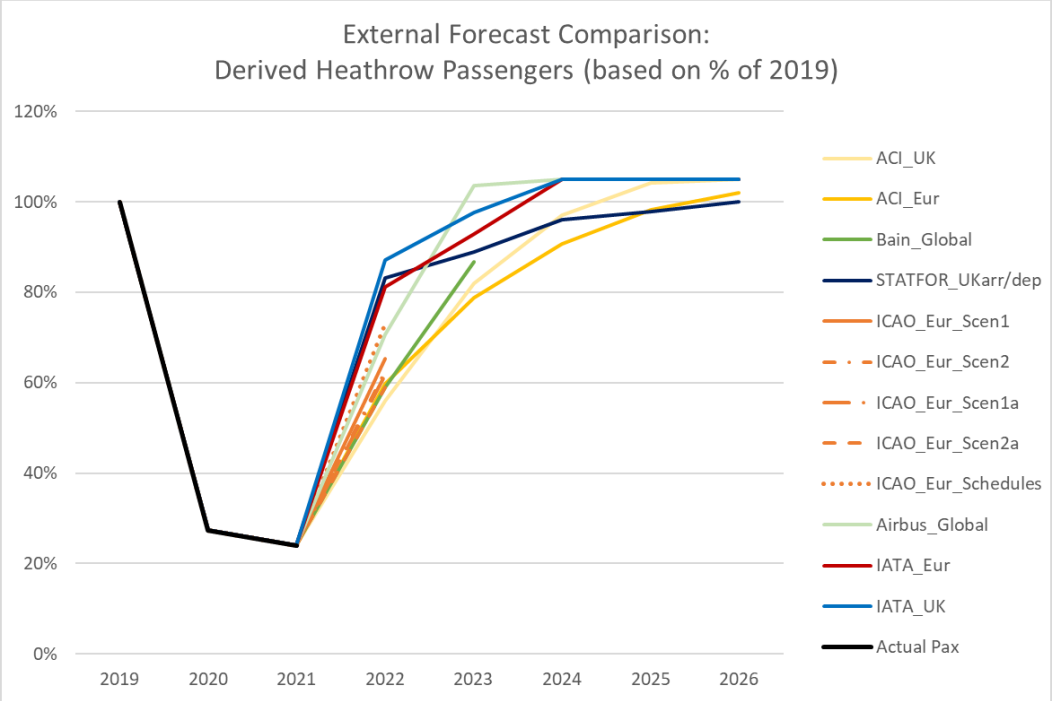
Source: CAA

1.39 Having identified the forecasts that we were to use, we standardised the output of the forecasts to the proportion of 2019 values (the last full year of data prior to the covid-19 pandemic), as this is the benchmark widely used in tracking the recovery from the covid-19 pandemic.

1.40 Most of the forecasts overestimated the number of passengers at Heathrow for 2020 and 2021. As a result, we corrected for this using a linear relationship to derive the recovery profile of Heathrow passengers, such that the difference tapers to zero the nearer to 2019 equivalent values are achieved. We also checked the forecasts to ensure that forecasts over 2019 levels would not exceed the likely capacity of Heathrow over the H7 period. These forecasts are set out in Figure 1.3 below.

1.41 Where scenarios were provided in the forecasts, we took these into consideration to gain an understanding of the forecast range that other forecast providers and industry sectors judged the recovery could follow. These informed our Low and High scenarios.

Figure 1.3: Derived external forecasts for Heathrow passengers (base cases only)



Source CAA

The CAA's use of an amended version of HAL forecast

1.42 In addition to the external forecasts and those of HAL and the AOC/LACC, as discussed above, we updated the amended version of the HAL forecast we used for our Initial Proposals.[12] As well as the adjustments we made for Initial Proposals, listed in paragraph 1.7, we also adjusted HAL's model for the reasons set out below.

Reduction in business travel

1.43 In its model, HAL assumed that there would be a permanent reduction in business travel for all scenarios (and of 20% for the two most likely scenarios) and a corresponding increase in average fares to compensate airlines for the loss of revenue from higher-yielding business passengers. Although business travel appears to be recovering more slowly than leisure travel from the pandemic, airlines disagree that such a permanent reduction will take place and that average fares would increase as a result.

[12] As noted above, while for Initial Proposals, we predominantly amended the forecast using off-model adjustments, for our Final Proposals the adjustments were applied internally to the models' functionality. This allowed us to perform full and consistent runs accounting for all of our adjustments.

1.44 In our forecasts for Initial Proposals, we accepted HAL's assumption on the long-term reduction in business travel, but said we would review this for Final Proposals as more evidence becomes available. However, we disagreed with HAL's assumption that this would drive an increase in average fares.

1.45 We commissioned a study into trends in business travel by Skylark, which is published alongside these Final Proposals.[13] Skylark anticipates that there will be a long-term, permanent reduction in business travel but consider that this shift is unlikely to lead to a material increase in airline fares due to competitive and other constraints on airlines. It also considers that Heathrow is likely to undergo a stronger recovery of business passenger volume and demand than other London and UK airports.

1.46 Taking the conclusions of Skylark's study into account, we decided to retain some long-term reduction of business travel in all but the most optimistic scenario, but to reduce that long-term impact from 20% to 10% in the most likely scenario for these Final Proposals. We decided not to alter our assumption on the associated impact of business travel demand on fares for these Final Proposals.

Carbon Pricing

1.47 In its latest business plan, HAL assumed a higher impact of carbon costs on fares and from our analysis we estimate that it now accounts for a decrease in demand of between 1.5% and 4.0% dependant on the market and scenario.[14] We understand that HAL has used the BEIS total costs of carbon in its calculations, and has assumed that the passenger, through airfares, will be required to meet this cost. However, the BEIS total cost of carbon now includes the "social" element and not the forecast trading price (as it did in previous iterations) which airlines may be required to pay in future.

1.48 HAL appears to have taken no account of the likely mechanisms through which these costs would pass to airlines and therefore passengers through the H7 period. The most likely ones are the UK Emissions Trading Scheme and ICAO's CORSIA carbon trading scheme. Our view (based on airline activity and free carbon credit allowances currently available for these schemes) is that the increase in airline operating costs is unlikely to as high as that suggested by HAL.

1.49 However, we expect that airlines will be required to offset their carbon emissions to some extent in the H7 period. Therefore, we maintained the same increases to

[13] The Skylark report on business travel trends is published alongside this document

[14] The fare increase was between 4.8% and 11.0% depending on the year and demand scenario used.

fares as a result of increased costs to airlines that we previously used for Initial Proposals.

Covid demand overlays

1.50 We have looked again, and in more detail,[15] at HAL's use of "covid demand overlays" in its demand model, and in particular the effect of revising these overlays for its RBP Update 2 forecast. In the demand model, the covid demand overlay performs a similar role as the TRM does in HAL's supply model. It represents the effects of the covid-19 pandemic on air travel over and above the effect on factors which are already captured by the model (such as economic effects and airline fleet change). As such, we would expect developments in these assumptions to move broadly in step with updates of HAL's models.

1.51 However, HAL confirmed to us that there was no explicit link between the two sets of assumptions, and while the TRM was updated by new intelligence around route restrictions and re-openings, the covid demand overlays were simply refitted to the mathematical equation assumed to model the demand recovery from the pandemic. This resulted in an overall decrease in traffic forecast for H7 in the central scenarios even though the amendments to the TRM generally gave rise to an improvement in demand.

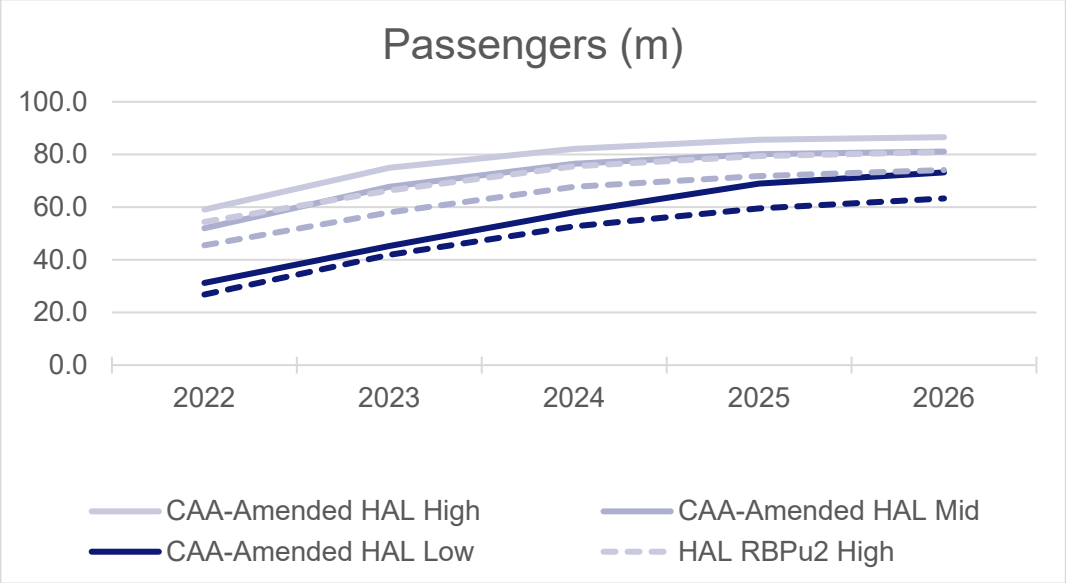
1.52 Having reviewed the covid demand overlays in the light of the latest traffic data and the disparity above, we consider that it was more appropriate to use the covid demand overlays which had been in the HAL model for Initial Proposals.[16]

1.53 Figure 1.4 and Table 1.4 show the CAA-amended HAL passenger forecasts for the Mid, Low and High cases in comparison to those produced by HAL. The CAA-amended HAL Mid forecast predicts 357.4m passengers for H7 compared to HAL's forecast of 317.1m.

[15] As recommended in Skylark's report and requested by some stakeholders.

[16] Except for Scenario 4, the most pessimistic scenario, for which HAL's new covid demand overlays were clearly more in keeping with its TRM than the old ones.

Figure 1.4: HAL RBP Update 2 and CAA-amended HAL passenger forecasts



Source: CAA

Table 1.4: HAL RBP Update 2 and CAA-amended HAL passenger forecasts, H7

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HAL RBPu2 High	54.4	66.3	75.5	79.4	80.9	**356.6**
HAL RPBu2 Mid	45.5	58.0	67.7	71.8	74.1	**317.1**
HAL RBPu2 Low	26.8	41.9	52.7	59.5	63.3	**244.1**
CAA-Amended HAL High	**59.1**	**74.9**	**82.2**	**85.6**	**86.6**	**388.4**
CAA-Amended HAL Mid	**52.0**	**67.7**	**76.5**	**80.1**	**81.1**	**357.4**
CAA-Amended HAL Low	**31.2**	**45.3**	**58.0**	**69.0**	**73.2**	**276.7**

Source: CAA

The CAA's synthesised passenger forecast process

1.54 As explained earlier in this chapter, we have assessed publicly available forecasts of air traffic, produced by organisations covering all the key elements of the aviation industry. While the outputs of these forecasts varied by geographical coverage and by measure, we considered that the best approach to enable us to use these various forecasts was to apply a simple, transparent adjustment to convert all forecasts to a comparable, common basis to allow consistent synthesis. This was a two-stage process:

- first standardising the forecasts in terms of 2019 volumes (as discussed above); and then
- deriving Heathrow passenger estimates using adjustments for historical differences between Heathrow passengers and the outputs in the external forecasts and for Heathrow capacity constraints.

1.55 To complement the independent external forecasts that we assessed, we also took into account the AOC/LACC's forecast summarised above, HAL's RBP Update 2 forecast and a CAA-amended HAL forecast, which used HAL's RBP Update 2 forecast as a basis, but with amendments applied to areas where we did not agree with HAL's assumptions or modelling as described above.

1.56 We sense-checked the forecasts against the latest data by creating and applying monthly profiles to each of them. The out-turn for the first few months of 2022 was much lower than in 2019 and called into question some of the higher forecasts for 2022. We also examined whether the remaining months of 2022 would need to exceed 2019 levels to achieve the annual forecasts, and whether they looked reasonable in context of the monthly profiles.

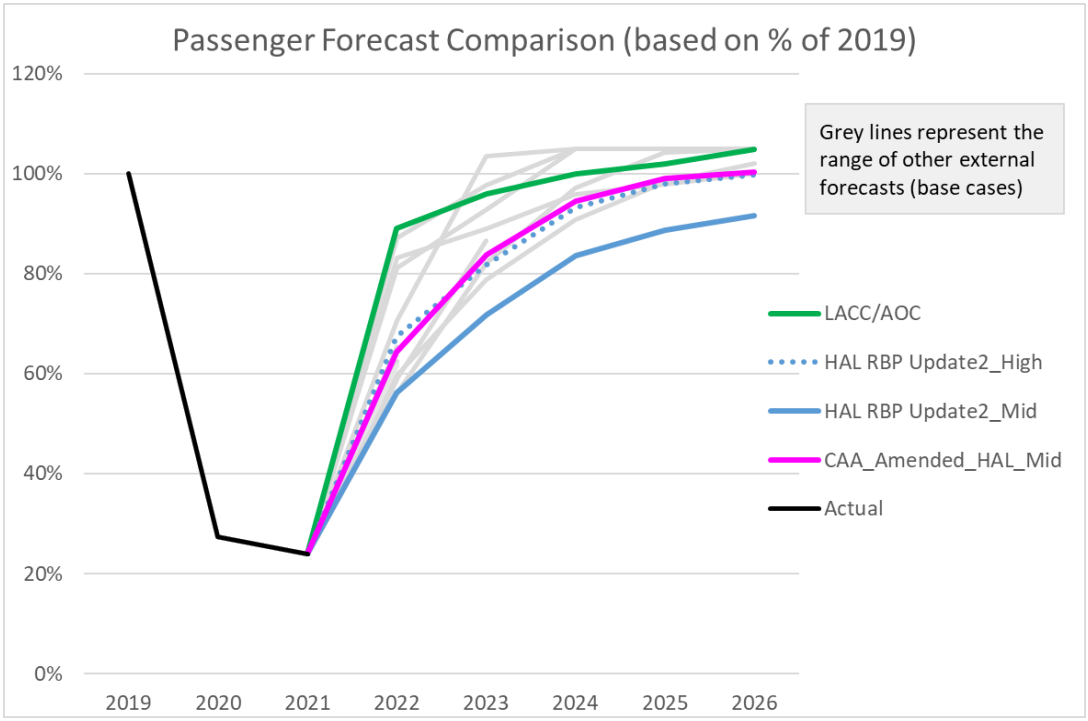
1.57 All external forecasts pre-dated the Russian invasion of Ukraine, and the majority pre-dated the "Omicron wave" of covid-19. In our forecast synthesis, we took account of the evolution of these factors and their impact on travel. For the covid-19 pandemic, we noted that each successive wave has, so far, been less severe than the last in terms of the governmental travel restrictions that it has prompted and the impact it has had on passengers' confidence to travel. We also analysed the impact of the Russian invasion of Ukraine on flight bookings and this was found to be negligible, so far, for Heathrow.

1.58 Over the last 6-12 months, the economic outlook has deteriorated, with significant macroeconomic headwinds appearing, not least the rise in energy prices which is having a significant impact on the overall cost of living. We have considered the most recent OBR and Oxford Economics forecasts and taken note of the change to economic drivers and the outlook compared to six months ago. As the effect of the covid-19 pandemic subsides (risks aside), we expect economic factors will begin to take precedence as the driver of demand growth.

1.59 Figure 1.5 compares the AOC/LACC, HAL RBP Update 2 and CAA-amended HAL Mid case passenger forecasts to the range of base case external forecasts which the CAA considered in preparing its Final Proposals forecast. The HAL RBP Update 2 High case is also shown for context as it aligns closely with the CAA-amended HAL Mid case.[17]

[17] CAA forecasts include a passenger shock factor of 0.87% as already applied to HAL's RBP Update 2 forecasts.

Figure 1.5 Passenger Forecast comparisons



Source CAA

1.60 In developing our Mid case passenger forecast for Final Proposals, our starting point was to consider all external forecasts, including those of the AOC/LACC and HAL's RBP Update 2, as well as our own CAA-amended HAL forecast, as described earlier in this chapter.

1.61 Comparing the CAA-amended HAL Mid case forecast with other external base or central case forecasts, as shown in Figure 1.5, we noted that this was broadly in the overall range of datapoints considered. Given the extensive work we did in this area to evaluate the detail and develop the amendments, we consider this to be a reassuring result and an appropriate baseline from which to develop our Final Proposals. We assessed how to take account of the various external forecasts, noting the dates the forecasts were produced, the measure being forecast and the geographical coverage of each. From this, we used our regulatory judgement to apply further adjustments to reflect the extent of these in the passenger forecast for Final Proposals.

1.62 In setting our Final Proposals forecasts, we used our judgement to account for two separate considerations:

- what will happen in 2022; and
- what will happen in the remainder of H7.

We took this approach because there appears to be more uncertainty for 2022 and because we have more up to date information (about traffic, the covid-19 pandemic and the economy) than the forecasts that we are considering.

Passenger forecast for 2022

1.63 For 2022, the forecasts we have considered (as shown in Figure 1.5) ranged from 89% of 2019 levels (AOC/LACC) down to 56% (HAL) with the adjusted external forecasts ranging from 87% (IATA) down to 56% (ACI). This demonstrates the uncertainty in Heathrow passenger numbers that is particularly apparent for 2022. The CAA-amended (unshocked) HAL forecast for 2022 is 65% of the number of passengers in 2019.

1.64 At the time of forecasting, we knew that January and February 2022 passenger numbers at Heathrow, affected by the restrictions due to the Omicron covid variant, were at 48% of 2019 levels. We expected March to be between 55% and 65% of 2019 levels on the basis that covid restrictions were being lifted in the UK and other European countries.[18]

1.65 We considered the likely accuracy of some forecasts in the light of the latest traffic data. We also considered what traffic levels would be required for the rest of the year to meet these forecasts and what that would mean for recovery in 2023. Given the passenger numbers already reported in the early part of the year, in order to meet the airlines' or IATA's predictions, passenger numbers for the remainder of 2022 would have to be virtually at 2019 levels, which we considered highly unlikely. On the other hand, to achieve HAL's or ACI's forecast would require 2022 traffic for the remainder of the year to remain at around the same level of Jan-Mar which also seemed highly unlikely given markets were opening up and capacity was scheduled to increase.

1.66 IATA and some airlines provided us with bookings data for the early part of the year and similar data from 2019 as a comparison. Despite the likelihood that covid restrictions in force in the early part of the year would provide a disincentive for consumers to book travel in 2022, bookings for the year at the time of forecasting were 62% of the levels seen at a similar point in 2019. We considered that this was evidence of a level of pent-up demand and **concluded that 62% of 2019 levels was a likely lower bound** for the forecast for the whole of 2022.

1.67 Since our baseline (CAA-amended (unshocked) HAL Mid case) forecast for 2023 was 84% of 2019 levels, we considered that it would be unlikely that the remainder of 2022 be higher than 80% of 2019 levels. Taking into account the known and expected passenger levels for January to March 2022, this was equivalent to total passenger for the year of 74% of 2019 levels. **We concluded that this (i.e. 74%) was therefore a likely upper bound** for Heathrow passengers in 2022. **Further, we concluded that an appropriate forecast**

[18] March 2022 passengers at Heathrow proved to be 64% of 2019 levels, at the high end of this range.

should be around the midpoint of this and the lower bound described above.

1.68 Alongside the above considerations, we also took account of recent developments which might not have been factored into our CAA-amended HAL baseline forecast. It was not practicable to quantify the expected effect of all of these developments, so we first considered them qualitatively:

- the latest economic factors: increasingly likely to weigh on consumer sentiment as inflation and interest rates are both forecast to increase. However, for 2022 this is more than counteracted by strong consumption supported by significant excess savings that were built up during the last two years of the pandemic and a strong desire for travel in 2022 for leisure and to visit friends and relatives which for many may not have been possible in 2020 or 2021. Also, fuel price increases are mitigated by airline hedging strategies effective through summer 2022;
- the Russian invasion of Ukraine: at this stage minor in terms of traffic and bookings but remaining a downside risk for the rest of the year;
- short term challenges of the industry in recruiting: it could take a number of months or longer before delays and cancellations return to more normal levels. Although we see downward revisions to schedules to manage the operational challenges posed by returning demand, these schedules were at levels much closer to 2019 than our passenger forecast so this supports our level of forecast; and
- the risk of further waves of covid-19: as successive waves of covid-19 have had less of an impact on air travel due to rollout of vaccines and improved treatments, we expect any disruption caused by further waves to continue to diminish.

1.69 Combining our views on the upper and lower bounds for 2022 traffic and our considerations of the latest data, we decided it was appropriate to make an adjustment of approximately 6% or 3m passengers to the unshocked CAA forecast to bringing it up to **68% of 2019 levels, the middle of the range discussed above.**

Passenger forecast for 2023 to 2026

1.70 For the remainder of H7, beyond 2022, there is less by way of emerging evidence and instead we place more reliance on our CAA-amended HAL forecast, identifiable longer term trends and how we expect Heathrow traffic to be affected by them. We expect that, for this period, forecasts are more affected by the standard economic and supply drivers of passenger demand and less by covid-19.

1.71 Almost all of the forecasts we considered which covered the whole H7 period predicted a return to 2019 levels of traffic (HAL's being an outlier in the overall sample of forecasts that did not predict a return to 2019 levels). Our unshocked CAA-amended HAL forecast reached 100% of 2019 traffic in 2025. The external forecasts suggested a range of 98% to 105% of 2019 passengers for 2025 and we see this as confirmation that a return to at least very nearly 2019 levels of traffic in 2025 is appropriate.

1.72 By the start of 2023, we would expect the issues related to industry staffing shortages to have been largely resolved. However, we expect the buoyant consumer expenditure seen in 2022 to gradually unwind as negative real wage growth and a squeeze on disposable incomes will likely weigh on consumption decisions. An expected increase in the energy price cap in October 2022, at a time when consumption of energy will naturally increase, could, as part of general cost of living pressures, dampen travel bookings around the end of 2022, through 2023 and into 2024.

1.73 Airlines also face the prospect of increased operating costs in the near to medium term. Existing hedging on fuel will be expiring over the course of 2022, while there has been a considerable rise in oil prices due to the Russian Invasion of Ukraine. Major restructuring of the energy supply markets as a result of this is expected to keep prices high in the medium term, so we expect Airlines to bear higher fuel costs in the foreseeable future. Staffing costs could also face upward pressure given the existing recruitment challenges. The upward pressure on operating costs is likely to lead to higher fares as has already been predicted by some airline chief executives.

1.74 However, the effect of these factors on passengers is tempered by a consideration of how demand at Heathrow has historically been more robust in the face of economic headwinds than that at the rest of the UK airports, helped by the pressure on airlines to protect valuable Heathrow slots.

1.75 In the final two years of H7, risks aside, we expect the effect of covid-19 to have largely subsided. At that time, the size of the economy is predicted to be larger than before the covid-19 pandemic, supports our view that Heathrow could reach and surpass 2019 passenger volumes by 2025, albeit constrained by legislative and practical limits on runway and terminal capacity.

1.76 On balance, it seems appropriate to allow for a modest reduction in passenger numbers 2023 to 2024 (largely reflecting economic pressures) and a modest increase 2025 to 2026 (reflecting the longer-term resilience of passenger traffic at Heathrow airport). These changes smooth the path of the forecast over the remainder of H7 without significantly altering the overall passenger volumes for H7.

Combining the 2022 and 2023-26 forecasts

1.77 We continue to consider that the application of a shock factor to cover temporary and difficult-to-predict non-economic shocks (such as major volcanic eruptions, terrorism events, wars) to air travel is appropriate. This is in line with regulatory precedent, in the form of previous adjustments made by the CAA in the Q6 HAL price control and as well as in our Initial Proposals. Our forecasts for Final Proposals are presented inclusive of a 0.87% demand shock, consistent with the updated estimate HAL applied to its RBP Update 2 forecasts.

1.78 The synthesis of our Final Proposal passenger forecasts from our CAA-amended HAL forecast are presented in Table 1.5 below.

Table 1.5: Summary of CAA forecast synthesis process, H7

	2022	2023	2024	2025	2026	H7
CAA-Amended HAL Mid (shocked)	**52.0**	**67.7**	**76.5**	**80.1**	**81.1**	**357.4**
CAA-Amended HAL Mid (unshocked)	52.4	68.3	77.1	80.8	81.8	**360.5**
Adjustment	+3.0	-0.4	-1.1	+0.9	+0.5	**+2.9**
CAA FP Mid (unshocked)	55.4	67.9	76.0	81.7	82.3	**363.4**
CAA FP Mid	**54.9**	**67.3**	**75.4**	**81.0**	**81.6**	**360.2**

Source: CAA

High and Low passenger forecasts

1.79 Our Mid forecast is accompanied by High and Low scenarios, which, as with our forecasts for Initial Proposals, are intended to illustrate a reasonable range of possible outcomes given the present uncertainties associated with the recovery in passenger numbers. Our High scenario is based on a more optimistic macroeconomic situation, and reduced impact of covid-19. In contrast, the Low scenario is based on an assumption of significant disruption caused by more severe and virulent covid-19 variants that could be capable of evading vaccines, with the consequence that we could see a return of more stringent travel restrictions. This scenario also factors in the possibility of a worsening macroeconomic situation.

Quality assurance

1.80 Skylark undertook an independent quality assurance of our modified approach to forecasting passenger volumes at Heathrow for the H7. The aim of this assurance was to assess the reasonableness of our method and provide a view on the completeness of the resulting analysis.

1.81 Skylark reviewed the various stages of our approach and considered the range of external forecasts which we looked at. It also considered the evidence that we

used and the various judgements that we have applied in combining these aspects to arrive at our passenger forecasts for these Final Proposals.

1.82 In its technical note, which is published alongside our Final Proposals, Skylark:

- considered our approach of viewing the available evidence "in the round",[19] given our in-house experience and expertise, would more likely result in a realistic traffic outlook for the H7 period;
- considered that the external forecasts we had used represented an appropriately wide cross-section of sources and stakeholders, and;
- agreed with our assessments of the operational challenges faced by the sector, the macroeconomic outlook and its impact on the aviation industry, and the potential ongoing impact of the covid-19 pandemic.

1.83 Skylark raised two points for attention:

- that our forecast may prove pessimistic for 2022 given more recent actual data; and
- that our mid case forecast for 2026, at 101% of 2019 levels, could be erring on the optimistic side, given retirements of large aircraft and the runway constraint that already applied in 2019 would continue to apply.

1.84 In response to these points:

- we note the positive out-turn of March 2022 and April 2022 (where passenger demand reached 75% of 2019 levels) compared to February 2022. We have said above that headwinds and risks remain for the rest of the H7, but also set out below in the "Next Steps" section the steps we will take to review the passenger forecast later in the year as part of our process for making our Final Decisions on the price control licence modification; and
- while B747s have been retired from Heathrow, they are expected to be replaced by with B777Xs which have similar seating capacity. Furthermore, we consider that capacity constraints will encourage airlines to optimise the use of the runway by accommodating demand on aircraft through higher load factors and/or larger aircraft overall. Consequently, we judge that passenger throughput at Heathrow greater than 2019 levels can be achieved despite the limits on runway capacity, up to the terminal capacity of 85m passengers.[20]

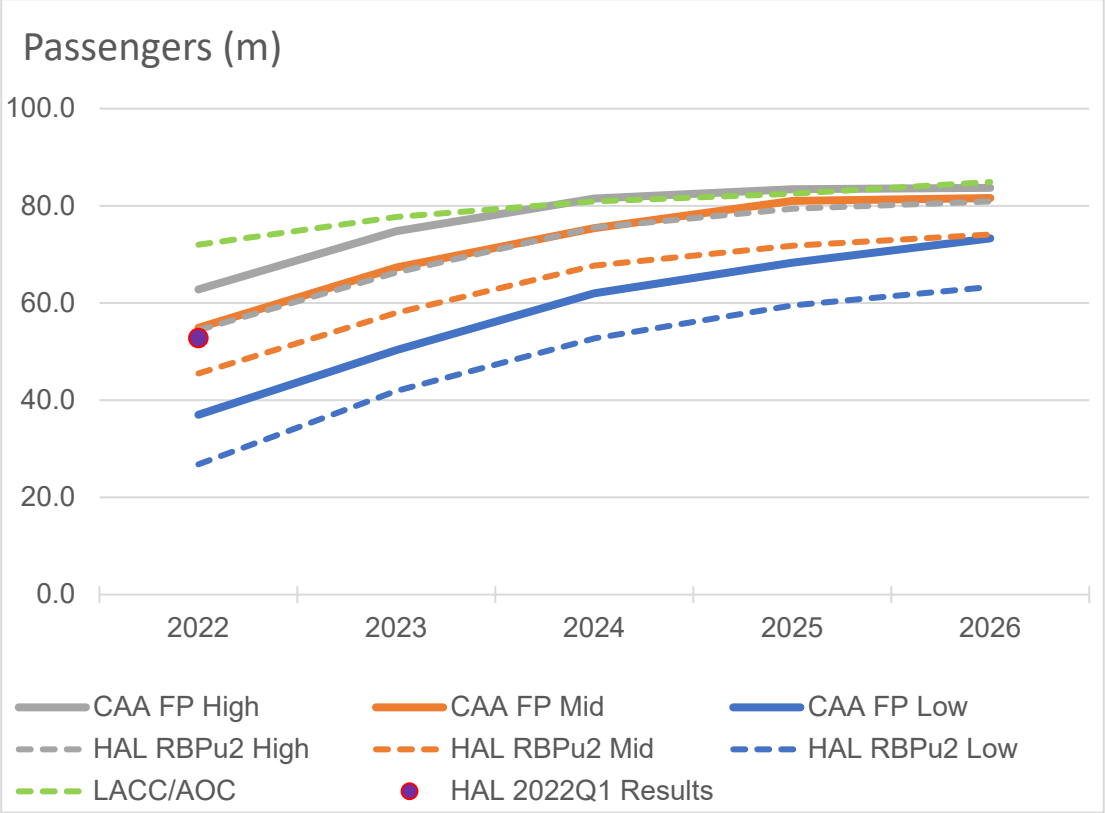
[19] "in the round" refers to our wider assessment of all forecasts, data and evidence using our regulatory judgement to produce the passenger forecast for Final Proposals, as explained in the section "The CAA's synthesised passenger forecast process".

[20] Taken from a technical note by HAL shared with the CAA.

Our passenger forecast for Final Proposals

1.85 Our Final Proposal forecast scenarios for H7 are summarised in Figure 1.6 and Table 1.6

Figure 1.6: CAA Final Proposals passenger forecasts compared with HAL and AOC/LACC forecasts, H7



Source CAA

Table 1.6: CAA Final Proposals passenger forecasts compared with HAL and AOC/LACC forecasts, H7

	2022	2023	2024	2025	2026	H7
AOC/LACC	**72.0**	**77.7**	**80.9**	**82.5**	**84.9**	**398.0**
HAL RBPu2 High	**54.4**	**66.3**	**75.5**	**79.4**	**80.9**	**356.6**
HAL RBPu2 Mid	**45.5**	**58.0**	**67.7**	**71.8**	**74.1**	**317.1**
HAL RBPu2 Low	**26.8**	**41.9**	**52.7**	**59.5**	**63.3**	**244.1**
HAL 2022Q1 Results	**52.8**					
CAA FP High	**62.8**	**74.8**	**81.5**	**83.4**	**83.7**	**386.2**
CAA FP Mid	**54.9**	**67.3**	**75.4**	**81.0**	**81.6**	**360.2**
CAA FP Low	**37.0**	**50.3**	**62.0**	**68.3**	**73.3**	**291.0**

Source: CAA

Next steps

1.86 As discussed in the Summary chapter, if conclusive evidence were to emerge during the period of consultation on these Final Proposals that indicated our Mid-case was no longer a credible average forecast for 2022 and beyond, and that retaining this forecast would create significant bias, then we would consider adopting a new passenger forecast and revising our proposals for the H7 price control on this basis.

CHAPTER 2

Regulatory framework

Introduction

2.1 In our previous consultations,[21] we have confirmed that we intend to set a five-year price control for the H7 period, calculated on the basis of the continued use of:

- a "single till" covering commercial and regulated revenues;
- a RAB and allowed return/cost of capital; and
- assumptions about passenger numbers, operating and capital costs and commercial revenues (the key price control "building blocks").

2.2 We have applied similar price controls to HAL in previous regulatory periods, and they have also been used in many other regulated industries. This approach is designed to further the interests of consumers, since without the price control and associated incentive arrangements, there would be a risk of higher prices, lower value for money in the services HAL provides and inefficiency on the part of HAL.This framework is also well understood by investors, and continued use of this approach should help to minimise the cost of capital.

2.3 In view of the significant uncertainty still affecting the H7 period, we have proposed some changes to our previous approach to setting price controls for HAL, most notably the introduction of a new traffic risk sharing ("TRS") mechanism. This approach is designed to ensure that the risks associated with variances between our forecast of passenger numbers and out-turn passenger numbers are shared between HAL and consumers in an appropriate way. It should prevent undue upward pressure on HAL's cost of capital and airport charges, and so should further the interests of consumers. It also supports HAL's financeability, as discussed in chapter 13 (Calculating the price cap and financeability).

2.4 This chapter:

- summarises our Initial Proposals for risk sharing arrangements;

[21] CAP2265A: Economic regulation of Heathrow Airport Limited: H7 Initial Proposals Summary (caa.co.uk) ; CAP2139: Economic regulation of Heathrow Airport Limited: Consultation on the Way Forward (caa.co.uk)

- explains the main points made by stakeholders on these matters and our overall approach to regulation; and
- sets out our Final Proposals.

Our Initial Proposals

2.5 Our Initial Proposals included a new TRS mechanism for HAL in H7. This was intended:

- to clarify the risks that HAL is expected to bear during the H7 price control period and to reduce the risk of significant gains or losses for HAL arising from changes in passenger numbers (over which it has limited control). This will benefit consumers by limiting the upward pressure on HAL's cost of capital which would otherwise feed through into higher airport charges; and
- to allow us to continue to set a five year price control for HAL by reasonably supporting HAL's financeability. This will generate benefits for consumers as a result of a stable regulatory regime, stronger efficiency and growth incentives for HAL, and a greater ability for both HAL and airlines to plan their businesses.

2.6 The specific TRS mechanism we proposed for the H7 period featured:

- moderate risk sharing in a central band around the passenger forecast we used to calibrate the price control. We proposed a risk sharing factor in the range of 40 to 60 per cent. This aimed to preserve reasonably strong growth incentives for HAL, while also blunting the impact of forecasting risk; and
- stronger risk sharing in an outer band, which would start to apply if cumulative traffic levels in H7 turn out to be more than 10 per cent higher or lower than our forecast. We proposed a risk sharing factor in the range of 90 to 100 per cent. This was intended to reduce HAL's exposure to the risk of extreme events significantly, while preserving some incentive to generate additional traffic.

2.7 We commissioned a review[22] of the calibration of the TRS mechanism included in our Initial Proposals.

2.8 We proposed that the TRS mechanism should be implemented by adjusting HAL's RAB. Compared with the alternative of adjusting charges in a single year shortly afterwards (which has been used in similar mechanisms elsewhere), implementing TRS through the RAB would allow the impact on airport charges to be spread over a number of years. This would reduce the risk that the

[22] This report ,from our consultants Deloitte, is published alongside this document

mechanism would lead to very significant increases in charges at a time when airlines might still be facing the impact of lower than expected demand.

2.9 We stressed that our proposed TRS mechanism was designed for the specific circumstances of H7, including the exceptional level of uncertainty about future traffic levels. It may be the case that a similar risk sharing arrangement will be appropriate for future price control periods, but we will make such decisions as part of those future price control reviews.

2.10 We also disagreed with HAL's proposal for a formal reopener condition in its licence, but we said we considered that policy guidance on our approach to reopening a price control might be helpful.

2.11 In addition, in our Draft Licence Consultation[23] we indicated some other possible changes to HAL's price control formula, including that:

- the "S factor" would cover costs arising from changes in required health and safety standards (as well as changes in required security standards); and
- inflation indexation might be based on the Consumer Prices Index ("CPI") instead of the current Retail Price Index ("RPI").

Stakeholders' views

Traffic risk sharing

2.12 HAL agreed that a risk sharing mechanism is required for H7. While continuing to favour a revenue risk sharing mechanism, it accepted a TRS mechanism in line with our proposals though it suggested several amendments. Regarding the design of the mechanism, HAL:

- reiterated its previously stated view that the central band should be a 'dead-band' with no risk sharing. Among other things, it argued that it should face some degree of risk within reasonable bounds, and that it is in consumers' interests that it retains incentives in relation to traffic, commercial revenues and opex. It also stated that a mechanism that sought purely to mitigate the impact of windfall gains and losses outside the normal course of business would be future proof;
- supported a threshold of 10 per cent before stronger risk sharing kicks in, stating that risk sharing above this threshold would capture circumstances that were beyond general variations in traffic experienced in other regulatory periods;

[23] CAP2275 H7 Initial Proposals – Draft Licence Consultation at www.caa.co.uk/CAP2275

- proposed risk sharing in the outer band of 95 per cent plus an additional £5.28 per passenger to reflect sharing of the non-aeronautical revenue impact of traffic changes; and
- argued that risk sharing adjustments should be based on annual rather than cumulative differences from our traffic forecast, and that details of the mechanism should be set out in its licence.

2.13 Most of the airlines' comments on our proposed TRS mechanism concerned the impact on HAL's cost of capital, generally arguing for a significantly larger reduction than we included in our Initial Proposals. The AOC/LACC also commented that our proposed mechanism would result in an imbalance of risk as it would provide downside protection against very large reductions in traffic, but the upside would be limited due to capacity constraints. Along with IAG and VAA, it commented that any additional revenues that HAL earns due to traffic outperformance during H7 would not be returned to consumers until H8.

2.14 BA stated that it was opposed to stronger risk sharing in the outer band. It stated that it is unacceptable to transfer this risk to consumers without reflecting it in HAL's cost of capital. It also raised concerns that having differential sharing rates would place incentives on HAL to restrict capacity artificially to avoid entering the outer band, and that HAL would have incentives to set high tariffs associated with low volumes in order to minimise costs.

2.15 BA also made a number of more specific comments on our proposed TRS mechanism, including our proposal to exclude the correction factor from the allowed yield in the calculation, and to base the calculation on a passenger forecast that includes the "shock factor[24]". It also repeated its alternative proposal for a mechanism baselined on the invested capacity of the airport and then applying elasticities to establish the efficient level of opex and commercial revenues for out-turn traffic levels.

Other aspects of the regulatory framework

2.16 HAL welcomed our intention to retain a five-year price control. However, it continued to argue for a reopener condition in its licence to facilitate any request that its price control be adjusted if there is a major change in assumptions from those on which the price control was based or a material change in Heathrow's circumstances. It also argued for an "expansion trigger" that describes a process to develop the regulatory framework for capacity expansion should the need arise, stating that setting out a clear process ahead of time is feasible and worthwhile.

[24]See chapter 11 (Allowance for asymmetric risk) for a detailed discussion on shock factors

2.17 BA made a number of comments about the wider regulatory framework, arguing for example that economic regulation should be aiming to replicate the outcome of a competitive market, and that CAA should ensure its approach to regulation provides a path to promote competition in the provision of airport operating services. It highlighted the growth in HAL's RAB since privatisation (and specifically since the Ferrovial takeover) and stated that a different length of price control could be more appropriate, where periodic reviews are replaced with competitive bidding for the cost of capital and opex, and HAL's operations are broken up to reflect different specialist activities.

2.18 In its response to our Draft Licence Consultation, the AOC/LACC noted and welcomed the possible switch to CPI indexation in the price control formula. It also welcomed the clarification that the 'S factor' will cover health and safety measures as well, noting that this was a source of uncertainty during the Q6/iH7 period.

2.19 BA also argued that CAA should move away from RPI to alternative indices, and further questioned whether any indexation at all was appropriate. It also stated that it did not agree entirely with pass through arrangements for particularly uncertain costs, such as costs arising from changes in health and security requirements.

Our views

Traffic risk sharing

2.20 We continue to consider that some form of additional risk sharing is required in H7 to allow us to set a five year price control in a time of additional and unusual uncertainty. In addition, we continue to consider that a TRS mechanism will further consumers' interests to a greater extent than the main alternatives such as revenue risk sharing (which would distort HAL's incentives to optimise commercial revenues).[25]

Level of risk sharing

2.21 We also continue to consider that the TRS mechanism should feature a central band with moderate risk sharing and an outer band with much stronger risk sharing. As set out in chapter 1 (Passenger forecasts), the future traffic outlook for H7 remains very uncertain, particularly the timing and trajectory of the recovery to reach similar volumes to pre-pandemic levels. Under such conditions, if we were to introduce a TRS mechanism with no risk sharing in the central band (as favoured by HAL), there would be a material risk that HAL would see significant gains or losses simply because traffic recovers at a

[25] For a summary of the main reasons why we have proposed TRS rather than revenue risk sharing, see paragraphs 1.17 to 1.19 of CAP2265B.

different pace than in our forecasts, due to factors that HAL has limited ability to influence. Nevertheless, with the moderate level of risk sharing we propose for the central band, HAL will still have an incentive to maximise volumes as it will retain 50 per cent of the airport charges revenues generated by additional passengers, and its profits will be further boosted by increased commercial revenues (which are likely to exceed any increase in opex due to the extra passengers).

2.22 The level of risk sharing in the central band is something that could be adjusted at a future periodic review if a TRS mechanism is retained. Despite HAL's statement that a mechanism with no sharing in the central band would be future proof, we consider it would be very straightforward to adjust any of the risk sharing factors (or indeed the size of the central band) as part of a future price control review. We think it is important to design the TRS mechanism for the H7 period to match the specific circumstances of H7.

2.23 We do not agree with BA's arguments against a TRS mechanism with different sharing rates, and consider that an outer band with strong risk sharing is important both to clarify HAL's risk exposure and to provide a relatively high (but not complete) degree of protection from the impact of extreme events. As the higher sharing rate would only apply to changes beyond the threshold, and even here HAL would still have a small incentive to increase traffic volumes, we do not agree that HAL would face incentives to avoid entering the outer band. We consider that BA's more general points about the risk of HAL artificially restricting capacity could, in theory, be relevant if we had proposed a strict revenue cap, but that is not the case.

2.24 BA and other airlines also argued that there should be a larger adjustment to HAL's cost of capital to reflect the impact of the TRS mechanism on HAL's risk exposure. We explain our updated proposals in chapter 9 (Weighted average cost of capital).

2.25 Regarding the level of risk sharing in the outer band, we agree in principle with the reasoning behind HAL's proposal for an extra fixed sum per passenger (in addition to risk sharing at 95 per cent) to reflect the commercial revenues associated with higher or lower passenger numbers. It was a similar rationale that led us to propose a range of risk of risk sharing for the outer band that could go as high as 100 per cent.

2.26 Based on CEPA/Taylor Airey's updated analysis of opex and commercial revenues, we now agree that the variability of commercial revenues means that even a TRS sharing rate of 100 per cent might still leave HAL exposed to a significant amount of risk in the event of extreme events. However, rather than adding an extra fixed sum to the adjustment, our preferred approach is to apply a TRS sharing rate greater than 100 per cent. Despite this apparently high sharing rate for airport charges revenues, we expect that, overall, HAL will still face a

small positive incentive to increase traffic volumes (or to limit any further decrease). This reflects the fact that, following a large decrease in passenger numbers for example, commercial revenues are likely to fall by more than opex. Many types of commercial revenue are likely to vary closely with passenger numbers, whereas some costs (such as business rates) are likely to be fixed and many others are only partly variable. Therefore, HAL would not only experience reductions in its revenues from airport charges, but its commercial revenues would likely fall faster than its operating costs, so exaggerating the financial impact of the reduction in passenger numbers.

Implementation approach

2.27 In our Initial Proposals, we proposed that the TRS mechanism should be implemented by adjusting HAL's RAB in H8. The main reason for this was that it would allow the impact on airport charges to be smoothed over time and, therefore, reduce the risk of airport charges increasing very significantly at a time when airlines are already facing lower than expected demand.

2.28 We continue to consider that the adjustment to airport charges should be smoothed over a number of years, rather than a one off adjustment, typically two years later, as is seen in some other risk sharing mechanisms. However, mindful of comments from both stakeholders and credit rating agencies about the potential disadvantages of delaying any adjustment to charges until H8, the proposed TRS mechanism set out in the next section now starts to adjust charges two years after the original divergence between forecast and out-turn traffic levels, with the adjustment then spread out over a period of ten years.

2.29 This revised approach to implementing TRS has two further implications:

- the implementation of the TRS mechanism will now be split between (a) an additional term in HAL's price control formula to allow some adjustments to charges during H7, and (b) an adjustment to HAL's RAB to reflect that part of the TRS adjustment that will be carried forward into future control periods; and
- the TRS adjustments will now be based on the difference between out-turn and forecast traffic levels in each individual year, rather than cumulative differences over H7 as a whole. This change simply reflects the complexity and practical difficulties (including possible volatility of charges) that could arise if we were to try to retain a cumulative approach with the new implementation method described above.

2.30 Notwithstanding the change from a cumulative to an annual approach, we continue to consider that stronger risk sharing should start once traffic volumes are more than 10 per cent above or below our original forecast. This was supported by HAL. We recognise that, in principle, certain patterns of traffic out-turn might now pass the 10 per cent threshold and trigger stronger risk sharing,

whereas this would not have happened under our previous cumulative approach. However, this depends on the specific sequence of events and, if we were to expand the central band in order to adjust for this, it could leave HAL more exposed to other types of traffic downturn.

Other aspects of the regulatory framework

2.31 For the reasons set out in the April 2021 Way Forward Document and our Initial Proposals, we continue to disagree with HAL's proposal for a formal reopener condition in its licence. This reflects, among other things, the fact that, following the introduction of a TRS mechanism, the circumstances that might justify reopening a price control in future could be complex in nature and difficult to enshrine in a formal licence condition.

2.32 As our proposed TRS mechanism includes strong risk sharing for large differences between out-turn and forecast traffic levels, this should significantly reduce the likelihood of there being a compelling case to reopen HAL's price control in future, especially in circumstances that are mainly or solely brought about by traffic shocks. Nevertheless, the last few years have demonstrated the ability of unexpected extreme events to disrupt the aviation industry in ways that could not have been foreseen, and we cannot simply assume that the TRS mechanism will protect HAL from all possible future events. The proposals set out below therefore include proposed guidance on our approach to considering a request to reopen HAL's price control.

2.33 We disagree with BA's suggestions that HAL should no longer be protected from the impact of general price inflation or certain other cost changes that are outside its control (such as the impact of changes in security requirements). We continue to consider that such provisions are in consumers' interests where the impact is likely to be material and where they relate to matters that are genuinely outside of HAL's control. In the case of security costs, for example, the pass through provision applies only to changes in formal requirements (for example as a result of new government regulations) rather than other changes in HAL's costs (for example if costs change simply as a result of changing passenger numbers).

2.34 We also continue to disagree with HAL's proposal for an expansion trigger in its licence, for the reasons set out in our Initial Proposals.

Final proposals

2.35 We are proposing a TRS mechanism similar in structure to that included in our Initial Proposals, but implemented in a somewhat different way. We consider this TRS mechanism to be in consumers' interests as:

- it will reduce the risk of significant gains or losses for HAL that could arise from changes in passenger numbers over which it has only limited control. This will allow us to continue to set a five-year price control for HAL, which will provide greater certainty for stakeholders and stronger efficiency incentives for HAL, which in the longer term should lead to lower charges and better service quality for consumers; and
- by clarifying the risks that HAL is expected to bear during H7 and by reducing HAL's exposure to the current uncertain environment, it should help avoid unnecessary upward pressure on HAL's cost of capital which will lead to lower charges for consumers than they otherwise would be.

2.36 The main substantive change from our Initial Proposals is in the way that TRS adjustments will be implemented. In summary, the proposed mechanism will work as follows:

- for each calendar year, the difference between out-turn allowed revenues and forecast allowed revenues will be calculated by multiplying the maximum allowable airport charge (excluding the correction factor and other adjustment factors)[26] for that year by the difference between out-turn passenger numbers and our forecast of passenger numbers;
- the amount of risk to be shared for that year will be calculated as:
  - 50 per cent of any difference up to 10 per cent of forecast allowed revenues; and
  - 105 per cent of any difference above 10 per cent of forecast allowed revenues;
- the risk shared for each year t will be recovered over a period of 10 years from year t+2 to year t+11. For those years that fall within the H7 period, the adjustment will be implemented through an additional term in the price control formula in HAL's licence. For the remaining years, there will be an adjustment to HAL's RAB which will lead to higher or lower charges in future control periods;[27]

[26] The reason for excluding these terms is that they appear in the price cap formula or are calculated with Q_t (that is out-turn passenger numbers) as the denominator. These parts of the calculation of the maximum allowed charge will automatically adjust, therefore, to higher or lower traffic volumes and to reflect them as well in the TRS calculations would lead to double counting.

[27] Taking 2023 as an example, if out-turn traffic differs from our forecast then 20 per cent of the TRS adjustment will be implemented by adjusting the price control formula in 2025 (year t+2) and 2026 (the final year of H7), and the remaining 80 per cent of the adjustment will be implemented through an adjustment to HAL's RAB that will affect allowed charges in the eight years from 2027 to 2034.

- the adjustment to allowed revenues from airport charges for each year within the H7 period will be calculated as one-tenth of the total relevant TRS adjustment(s), uplifted for the real WACC and general price inflation (as measured by the Retail Prices Index, for consistency with the real WACC) for each year since the original divergence between out-turn and forecast traffic levels;
- the adjustment to the opening RAB for H8 will be calculated as the sum of the remaining TRS adjustments (that is, those that have not already been reflected in higher or lower charges during H7) uplifted using the real WACC for the period between the original divergence between out-turn and forecast traffic levels and the start of H8. As with the TRS mechanism included in our Initial Proposals, HAL will be able to update its RAB during the course of H7 to reflect these adjustments, but the only impact on charges during H7 will be through the additional term in the price control formula described above; and
- the adjustments to the opening RAB for H8 will then be depreciated over a period of between seven and ten years. The adjustment to reflect out-turn traffic in 2022 will be depreciated over seven years (as there will have already been three years of charges adjustments during H7), whereas the adjustments to reflect out-turn traffic in 2025 and 2026 will be depreciated over ten years (as there will not have been any corresponding adjustments to charges during H7). We expect to apply a slightly backloaded depreciation profile, so that the overall impact on HAL's allowed revenues (which reflects both depreciation and the allowed rate of return) will be roughly the same in each of the seven to ten years.

2.37 This revised implementation approach preserves the main benefit of our previous proposal, as the adjustment to airport charges will be spread out over a number of years and this will reduce the risk of airport charges increasing very significantly at a time when airlines are already facing lower than expected demand. It also avoids the main disadvantage of that proposal which would delay any adjustment to charges until the H8 period.

2.38 The reason for not starting the adjustment to allowed charges until year t+2 is purely a practical one, reflecting the timing of when traffic out-turns are known and when HAL sets its charges for the forthcoming year. Under the Airport Charges Regulations 2011,[28] HAL is required to consult on proposed changes to its charges at least four months before they take effect. For its 2022 charges, for example, HAL launched a consultation in August 2021. At this point, HAL would have known the traffic out-turn for 2020, and so if TRS had been in operation it

[28] S.I. 2011/2491

could have factored the first year of any TRS adjustment for 2020 into its proposed charges for 2022, but it would not yet know the traffic out-turn for 2021.

2.39 The structure of our proposed TRS mechanism is very similar to that included in our Initial Proposals, with moderate risk sharing in a central band and stronger risk sharing in an outer band. As noted above, the central band still covers differences of up to 10 per cent from CAA's passenger forecast although, because of the new implementation method, this is assessed on a year by year basis rather than cumulatively over H7 as a whole. Before the covid-19 pandemic, this threshold would have been passed only twice in the previous three control periods, in each case only by small amount, and both of these cases reflect the particular circumstances of Q5 when out-turn traffic levels were already well below CAA's forecast at the very start of the period.

2.40 Our Initial Proposals included a range of 40 to 60 per cent for the risk sharing rate in the central band. Other than HAL's statement that there should be no risk sharing at all in the central band, stakeholders did not provide specific comments on this proposal. Mindful of the need to strike a balance preserving HAL's incentives to facilitate traffic growth while also reducing the risk of significant gains or losses, our Final Proposal is for a risk sharing rate of 50 per cent for the central band.

2.41 We estimate that this sharing rate in the central band of the TRS mechanism will protect HAL from around 43 to 45 per cent of the expected overall impact on its EBITDA of traffic levels being up to 10 per cent higher or lower than expected. The reason for the difference between the rate in the TRS mechanism and the effective rate of sharing of EBITDA risk is the additional impact of traffic changes on HAL's commercial revenues and opex. We have based our assessment of these impacts on comparisons between CEPA/Taylor Airey's forecasts of opex and commercial revenues for each of our Mid case, High case and Low case traffic forecasts.

2.42 The purpose of the risk sharing factor in the outer band is to provide HAL with a relatively high degree of protection from the impact of extreme events, while also preserving some incentive for it to take actions to facilitate traffic growth. Because we are aiming to achieve a high degree of risk sharing, but need to be careful to avoid eliminating HAL's incentives altogether, it is especially important to take account of how opex and commercial revenues are likely to change in response to changes in traffic levels. Analysis of the difference between CEPA/Taylor Airey's forecasts for our "Mid" and "Low" case passenger forecasts suggests that, on average, for every £1.00 reduction in HAL's revenues from airport charges in H7, it would be expected to lose an additional £0.30 of commercial revenues as a result of the drop in traffic, which would only be partially offset by an expected opex saving of £0.18.

2.43 Even if we were to set the risk sharing factor in the outer band at 100 per cent, therefore, which would effectively guarantee HAL's revenue from airport charges, it would still face an expected net loss of around £0.12 for every £1 reduction in airport charges that would have occurred in the absence of TRS. For this reason, we are proposing to adopt a risk sharing factor for the outer band of slightly more than 100 per cent. Even though this will more than compensate HAL for the loss of airport charges revenues, after taking account of the expected impacts on commercial revenues and opex we would still expect HAL to have a positive incentive to increase passenger numbers.

2.44 On this basis, our Final Proposal for the sharing rate for the outer band is 105%. We estimate that this will protect HAL from between 91 and 94 per cent of the expected impact on its EBITDA of traffic changes in the outer band.

2.45 Our proposed TRS mechanism for HAL has some similarities to mechanism that has been applied to NATS (En Route) plc ("NERL") for many years up to 2019, including the use of higher sharing rates once the difference between out-turn and forecast traffic volumes crosses a certain threshold. A key difference, however, is that our proposed TRS mechanism for HAL will spread any required adjustment to airport charges over a period of ten years whereas, in common with many other long-standing TRS mechanisms, the adjustment to NERL's changes was concentrated in a single year (two years after the original divergence). In order to avoid very large increases in NERL's charges in 2022 and 2023, we have are making special arrangements for 2020 to 2022 to deal with the very low traffic levels. These include a reconciliation of revenues and costs for these years based on estimates of efficient costs, and allowing the revenue shortfall to be recovered over a longer period.[29] For the NR23 period (2023 to 2027), NERL has proposed changes to the TRS mechanism, including spreading the adjustment over several years where out-turn traffic volumes are more than 10 per cent below forecast.[30]

Other aspects of the regulatory framework

2.46 We are proposing to issue guidance on our future approach to responding to any request to reopen HAL's price control. We already have the ability to amend an existing price control, using the process set out in section 22 CAA12, or to achieve a similar impact through other means (such as adjusting the opening RAB for the next control period). The draft guidance set out in Appendix J (Policy on reopeners) simply clarifies the existing situation (which was the subject of some disagreement between stakeholders during our consideration of HAL's application for a covid-related RAB adjustment), and stresses that we would only

29 See CAP 2119.

30 See https://www.nats.aero/investors/nr23-business-plan/ page 53.

expect there to be a strong case for reopening a price control in exceptional circumstances.

2.47 The draft guidance is not intended to make it either more or less likely that we would agree to any future request to reopen a price control. It repeats the statement made during the Q6 review that we would consider any such request in the light of our statutory duties under the circumstances prevailing at the time. However, it does also point out that the introduction of a TRS mechanism should reduce the likelihood that the exceptional circumstances that might justify reopening a price control could arise solely as a result of traffic being higher or lower than forecast.

Implementation

2.48 The proposed TRS mechanism described above will be implemented through a combination of adjustments to HAL's price control formula during H7 and adjustments to HAL's RAB (which will affect charges in future control periods). The proposed adjustment to HAL's price control formula is set out in a new licence condition C1.17 and C1.18 in Appendix C (Notice of the CAA's proposal to modify HAL's licence). The method for updating HAL's RAB is set out in Appendix K (Rolling forward the RAB).

2.49 Other specific changes to HAL's price control formula for H7 include:

- the use of the CPI (rather than the RPI) for inflation indexation, as discussed in chapter 12 (Financial framework);
- an expanded 'S factor', as set out in our Draft Licence Consultation, which will cover costs arising from future changes in required health and safety standards as well as changes in required security standards. As noted above, this applies only to new changes in formal requirements, for example as a result of new government regulations; and
- a new partial pass-through arrangement for HAL's revenues from the terminal drop-off charge, as described in chapter 5 (Commercial revenues).

2.50 We have also taken account of the proposed TRS mechanism in a number of other parts of our Final Proposals, including our assessment of HAL's cost of capital and financeability, and the calculation of the proposed allowance for asymmetric risk.

CHAPTER 3

Outcome Based Regulation

Introduction

3.1 Consumers' interests are furthered not only by ensuring that the cost to them of the airport operation services provided by HAL is appropriate, but also by seeking to ensure that the services HAL provides meet their needs in terms of their range, availability, continuity and quality.

3.2 HAL's recent price controls have included a framework of service quality rebates and bonuses ("SQRB") that was designed to identify the service standards that consumers and airlines can expect from HAL and to incentivise improvements in service quality. While aspects of the SQRB scheme have worked well it has been focused almost exclusively on aspects of airport operation services that are directly within HAL's control. However, consumers' experience at Heathrow is driven by the outcomes they receive in terms of the overall service, rather than solely by the inputs provided by HAL.

3.3 Following the December 2016 Consultation,[31] we confirmed in the April 2017 Guidance[32] that we intended to transition towards outcome based regulation ("OBR"). We said that OBR should be an evolution of the SQRB scheme, with H7 as the first step in this direction, and that HAL would be responsible for the initial development of OBR, in discussion with airlines and the Consumer Challenge Board ("CCB"). We also said that the services that HAL provides to airlines should remain a key part of the new framework as these directly affect the service quality provided to consumers.

3.4 We said that the new framework should include:

- outcomes: overarching objectives that identify the most important aspects of airport operation services that consumers value;
- measures: specific performance measures that indicate progress towards one or more outcomes;
- targets for each measure, based on evidence and taking account of consumer preferences and the scope for performance improvements;

[31] See CAP1476 https://www.caa.co.uk/cap1476.

[32] See CAP1540 https://www.caa.co.uk/cap1540.

- incentives to meet these targets, which may be either financial or reputational; and
- a "continuous improvement" approach that allows the OBR framework to be updated during the H7 period.

3.5 During the course of the H7 review, HAL has engaged with airlines and the CCB and drawn on consumer research to develop an initial OBR framework for H7 which was included in its RBP.[33] Although HAL and airlines reached agreement on some changes to the current framework, airlines also developed their own proposals[34] (including alternative outcomes and measures) which were generally more narrowly focused on the aspects of services provided directly by HAL. Both HAL and airlines provided updated proposals as part of their responses to our Initial Proposals.

3.6 This chapter sets out:

- a summary of our Initial Proposals;
- a summary of stakeholders' views, based on their responses to our Initial Proposals, the OBR Working Paper and the Draft Licence Consultation;
- our views on the main issues raised by stakeholders; and
- our Final Proposals for OBR in H7.

Our Initial Proposals

3.7 Our Initial Proposals were set out in the Initial Proposals document and the subsequent Working Paper on OBR.[35] They included proposals for outcomes, measures, targets, incentives and continuous improvement.

Outcomes

3.8 We proposed to adopt the outcomes put forward by HAL, namely:

- an airport I want to travel from that offers me a good value choice of flights;
- I am confident I can get to and from the airport;
- I have a predictable and reliable journey;
- I feel comfortable and secure at the airport;
- I have an enjoyable experience at the airport; and

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33 See chapter 9.2 of the RBP https://www.heathrow.com/company/about-heathrow/economic-regulation/h7-update.

34 These are described in paragraphs 5.10 to 5.12 of the April 2021 Way Forward Document.

35 CAP 2274.

- I feel cared for and supported.

Measures

3.9 We proposed a list of 35 measures. Whereas the SQRB framework has covered aspects of service quality that are directly within HAL's control and HAL faces financial incentives for nearly all of the current targets, the new OBR framework will also cover important aspects of service quality that are valued by consumers and that are jointly delivered by HAL and other parties. In general, HAL will not face financial incentives for measures over which it has only limited control. Instead, a number of the new proposed measures will provide reputational incentives as performance will be reported regularly and can be assessed in comparison with either our targets or past performance.

3.10 Our Initial Proposals included:

- four survey-based measures with financial incentives. These included two measures that are part of the current SQRB framework (cleanliness and wayfinding) and two measures (helpfulness/attitude of security staff and wi-fi performance) for which HAL does not currently face financial incentives;
- fourteen operational measures with financial incentives. Many of these were existing SQRB measures focused on security queues and the availability of key infrastructure. We also proposed three new measures relating to check-in infrastructure, hygiene safety testing and the timely delivery of bags from HAL's (departures) baggage system;
- ten survey-based measures with reputational incentives. These were all new measures, covering a mixture of high level indicators (such as overall satisfaction or an airport that meets my needs) and some more focused measures (such as the helpfulness/attitude of airport staff); and
- seven operational measures with reputational incentives. These were also new measures, covering several different aspects of punctuality plus wider indicators such as passenger injuries and Heathrow's carbon footprint.

3.11 We said we would be giving further consideration to some specific issues, including the grouping of control posts and whether to adopt a further measure of baggage performance, such as HAL's proposed baggage misconnect rate measure. We also noted that airlines had argued that HAL's performance on some measures (including security queues and a number of asset availability measures) should be recorded on a daily basis rather than the current monthly averages. We said this should be considered further with the option of introducing changes either later in H7 or in a future price control period.

Targets

3.12 We proposed targets for almost all of the measures with financial incentives and for some of the new measures with reputational incentives. Most of these proposed targets were the same as the targets in the version of HAL's Updated RPB associated with its "optimal" capex plan. Our technical adviser, Arcadis, considered that these targets could be delivered with the expenditure allowances included in our Initial Proposals. For those measures that are in the current SQRB framework, HAL's proposed targets were the same as, or in two cases higher than, the current SQRB targets.

3.13 Nonetheless, having considered the evidence provided by Arcadis' findings, in our Initial Proposals we included targets higher than those in HAL's Updated RPB for three measures: cleanliness, wayfinding and wi-fi performance.

3.14 We did not have access to sufficient baseline data to set targets for some of the new measures. We noted that HAL would be gathering data and proposing targets for some of these later in 2021 or during the first part of 2022. And we said that where any issues cannot be resolved in time for our Final Proposals we would set out a process and timetable for addressing these during the course of H7.

Incentives

3.15 Our Initial Proposals retained our earlier suggestion that HAL's maximum exposure to service quality rebates should be 7 per cent of airport charges revenues, and its maximum potential bonus receipts should be 1.44 per cent of airport charges revenues, in each case the same as the current level used for the SQRB scheme. We also confirmed that we intend to retain the current "knife edge" incentives for rebates, so that HAL will pay a simple rebate to airlines whenever it misses a target for a measure subject to financial incentives.

3.16 We then set out proposals for how these totals should be allocated between the different measures subject to financial incentives. For rebates, the starting point for our proposals was the existing SQRB rebates. We adjusted these to:

- accommodate the introduction of new measures subject to financial incentives (in most cases we based the rebates for these on the rebates for similar measures already in the SQRB framework); and
- allow for a lower cap on the total rebates for the runway operational resilience measure (as these rebates are specified as fixed amounts per incident, and we considered the previous cap to be disproportionately large compared with the penalties HAL might realistically incur for individual incidents).

3.17 For bonuses, we proposed that HAL should continue to be able to earn bonuses if it achieves a higher level of performance for cleanliness and wayfinding. As the

other two measures previously eligible for bonuses were not included in our Initial Proposals for the OBR framework, we proposed that in H7 HAL should be able to earn bonuses if it achieves a certain performance threshold in relation to central search security queues and the timely delivery of baggage.

Continuous improvement and implementation

3.18 HAL's licence already contains a provision that allows us to modify certain parts of the SQRB framework if there is agreement between HAL and airlines, or if there is not agreement either party can request that we determine the modification. We said that when considering any proposals put to us for determination we would need to ensure we maintain an appropriate degree of consistency with the broader price control settlement.

3.19 In addition, we proposed a specific mid-term review that might cover any issues that could not be fully resolved during the current review, any specific issues arising with new or untested measures or following the installation of new equipment, or other changes required due to changing circumstances. We did not set a specific date for this review, but said that we consider there are benefits in undertaking it before the half way point in the H7 price control period.

3.20 We also proposed one specific change to the process for agreeing exclusions to the OBR regime during major operational disruption events, which would allow HAL to request a determination from us (and for us to make such a determination) if it cannot reach agreement with airlines on a particular exclusion.[36] This will remedy a weakness in the current framework.

Stakeholders' views

3.21 This section summarises the responses to our Initial Proposals and the OBR Working Paper that we received from HAL and the AOC/LACC. HAL also submitted a report by Frontier Economics and three new pieces of consumer research, and the AOC/LACC also submitted a report by ICF.

3.22 Many airlines also submitted individual responses that supported the AOC/LACC's views. Additional points raised by individual airlines included the following:

- VAA stated that the CAA should have done more to gather research and data, rather than relying on HAL's consumer research, and that the outcomes in OBR should be derived from the best possible understanding of what consumers want when using Heathrow in the context of our regulation of HAL's performance; and

[36] This is the exclusion set out in paragraph 2.28(o) of Schedule 1 of HAL's current licence.

- Star Alliance highlighted several places in the Initial Proposals where we referred to services jointly delivered by HAL and other parties. It stated that this implies that airline activities will be under scrutiny by the CAA, and airlines have consistently argued that this should not happen.

Outcomes

3.23 HAL welcomed our proposal to adopt its proposed H7 outcomes, stating that these can be tracked back to the results of extensive consumer research that were subject to robust challenge by the CCB.

3.24 In contrast, the AOC/LACC stated that it did not agree that the proposed outcomes were specific enough to provide a clear definition of the best outcomes for the consumer, and that there were no specific performance indicators associated with the proposed outcome as seen in other regulated industries. It stated that outcomes should be concerned with the regulated body's specific areas of responsibility, and that the airline community's alternative proposed outcomes were a better match for the CAA's objectives for OBR.

Measures

3.25 HAL welcomed the inclusion of more reputational measures. It was broadly supportive of our proposals for measures in H7 with just three areas of concern:

- the proposed removal of measures on value for money and offering flights that consumers want: it argued that it can influence these measures as its services and facilities influence perceived value for money and that it works with existing and new airlines to influence the route network and identify key gaps;
- the introduction of a check-in availability measure: it argued that service outages of its check-in infrastructure are "largely driven" by failures linked to airline operations including software issues, and that a measure focusing purely on infrastructure availability does not measure the key driver of passenger satisfaction (which it argued is "ease of experience"); and
- the omission of a measure for baggage misconnect rates: this measure would allow HAL to report on whether all parties operating at Heathrow are able to deliver the key requirement of bags reaching their destination at the same time as passengers, and allow stakeholders to develop joint performance improvement plans.

3.26 It also agreed with our proposal to retain a monthly approach to measurement, noting that daily measurements could increase the cost required to meet targets, expose it to increased risk of failure due to external events, and require it to seek more alleviations (increasing the time and resources needed by all parties for no demonstrable benefit).

3.27 More specific comments from HAL included that:

- the timely delivery of baggage measure should be reputational rather than financial as performance is affected by a number of different parties. It provided examples of failures that it argued should not be attributable to HAL, and stated that financial incentives could disincentivise current behaviours (such as agreeing to later bag tipping times and accepting late checked-in bags) that currently support the overall outcome of customers travelling with their bags; and
- it proposed the removal of the "ability to socially distance" measure, as guidance on social distancing has changed and consumer behaviour and views have altered as a result, and stated that the "ease of understanding Heathrow's Covid-19 safety information" measure should be kept under review.

3.28 The AOC/LACC stated that airlines remain concerned that we did not adopt Net Promoter Score ("NPS") as the overarching measure to understand how consumers feel about their Heathrow experience. It repeated its previous proposal that targets for security queues and some other measures should be set on a daily rather than a monthly basis. The AOC/LACC also expressed concern that the installation of new queue measurement technology might not take place until after the security transformation programme is complete. Other more specific comments on our proposed measures included that:

- ease of access to the airport, departure punctuality and reduction in Heathrow's carbon footprint were not in HAL's direct control and therefore were not appropriate measures for OBR. It also identified a number of reputational measures that it considered could be summarised instead with the NPS measure;
- the helpfulness/attitude of security staff, wi-fi performance and hygiene safety test measures should have reputational rather than financial incentives, arguing that HAL already has incentives to improve wi-fi performance due to the personal information it can collect and associated marketing opportunities, and it already has financial incentives related to cleanliness through the existing cleanliness measure;
- it did not agree with performance under the "provision of stand facilities" measure being assessed as an average across three or four different types of asset, and recommended that HAL be required to meet a 99 per cent availability target for each type of asset in order to meet the overall target;
- queue standards for central and transfer search should be harmonised;
- it expressed disappointment that we had not adopted airlines' proposed measure for the availability of departure gate facilities;

- it suggested alternative ways that some aspects of performance should be recorded which it considered were more "outcome based", for example more specific questions for the wayfinding measure and measures of speed and bandwidth rather than survey questions for wi-fi performance; and
- it stated that the cleanliness measure should be supplemented by inspections carried out by airport community staff. It pointed out that the current measure does not recognise cleanliness issues "back of house", and also suggested that the hygiene safety test measure should also apply to back of house facilities.

Targets

3.29 HAL argued that Arcadis' analysis, which informed our proposed targets, was fundamentally flawed because it assessed historical performance on an annual rather than a monthly basis and did not deal with the question of whether or not historical performance can be an accurate indicator of future performance. It also referred to a report by Frontier Economics which argued that proposed targets should take account of our decisions on cost allowances, the impact of uncertain future demand, changing consumer preferences and expectations, and the age of HAL's asset portfolio.

3.30 Its specific comments included that:

- it disagreed with our proposals to increase targets for wi-fi, wayfinding and cleanliness, arguing the evidence base we used is not robust and we have not allowed the opex and capex necessary to improve services. It also argued that consumers' expectations of cleanliness have increased;
- we had stated that the SQRB regime is intended to incentivise "good" behaviour, but by setting targets of 4.00 and above we are expecting HAL to provide service levels above this; and
- it proposed new targets for four measures where it now had sufficient baseline data, and it reduced its previous proposed target for "feeling safe and secure" based on changes in consumers' interpretation of the survey question since Covid-19 and concerns that performance in 2019 (which had informed its previous proposed target) was an outlier.

3.31 The AOC/LACC expressed disappointment with our "cautious" approach to setting stretch targets, noting that in some cases we were proposing targets at a level below HAL's current performance. It stated that, as an absolute minimum, current performance should form the baseline for any targets, and provided specific comments on many of our proposed targets (often arguing for higher targets than our Initial Proposals).

Incentives

3.32 HAL argued that our approach to allocating rebates and bonuses was not in line with our policy, as we used the Q6 framework as a starting point rather than consumer research. It repeated its previous description of how it derived its own proposals from an exercise to understand the relative importance of different measures within our proposed package.

3.33 It provided some examples of proposals by us that it considered counterintuitive, including our proposal to give check-in infrastructure availability the same weighting as runway operational resilience, and the high weightings for the provision of stand facilities and the availability of lifts, escalators and travelators. It also proposed a change to the split of rebates for security queues, giving more weight to the 10 minute target and less weight the 5 minute target, arguing this was supported by its further analysis of consumers' satisfaction levels.

3.34 HAL repeated its previous arguments for "sliding scale" incentives for rebates, including that this is consistent with our policy and that its evidence shows that passengers place a clear monetary value on both increases and decreases in service levels. It also referred to Frontier's report which states that regulatory precedent supports the use of sliding scale incentives.

3.35 It also continued to argue that the scope for bonuses should be increased beyond the current 1.44 per cent of airport charges revenues, as the balance of incentives is asymmetric and this does not reflect our policy. It argued that the timely delivery measure should not attract bonuses as it should be a reputational measure only as well as repeating arguments it provided before the Initial Proposals about why other specific measures should be considered for bonuses.

3.36 The AOC/LACC considered that the existing SQRB rebates have broadly worked and that no compelling evidence had been presented to suggest otherwise. It supported our approach to setting rebates, though it stated that specific weightings should be reconsidered given its view that certain measures should have reputational incentives only. It also agreed with the retention of knife edge incentives for rebates, arguing that sliding scale incentives would introduce the concept of "acceptable failure", could create uncertainty about the service levels that airlines require, and cause regulatory complexity.

3.37 The AOC/LACC stated that airlines remain principally unsupportive of bonuses, but provided comments on our proposals including that:

- the bonus target proposed for central search queues is not a stretch target. Instead it suggested bonuses could be paid if there are no days in the month where queues are longer than 5 minutes in more than two 15 minute periods;

- although wayfinding and cleanliness are important at Heathrow, it did not believe that these measures should attract bonuses. It suggested they be replaced with transfer search and control post queues, with a similar threshold as that noted above for central search queues.

Continuous improvement and implementation

3.38 HAL supported the general principle of continuous improvement, but that it would be inappropriate for us to expose it to changing levels of financial risk without allowing for this in the overall settlement. It stated that the inclusion of continuous improvement could incentivise it to minimise outperformance. If continuous improvement is introduced, it should be narrowly focused on the removal or introduction of measures based on robust consumer insight and should allow time to ensure that realistic targets can be set, and ensure that any changes to reputational targets during the period are closely aligned to changes in capex allowances so that it has a fair chance of being able to meet the new target.

3.39 HAL disagreed with the proposal that would allow us to make binding decisions on disputes about exclusions to the OBR regime during major operational disruption events. It agreed that the covid-19 pandemic had highlighted some weaknesses in the current mechanisms, but stated that this should be addressed through its own proposal for a force majeure mechanism with provision to refer disputes to a third party.

3.40 HAL also made a number of comments on the proposed revisions to Schedule 1 of its licence, including detailed observations on the definitions of some measures, and urged us to consider the list of proposed additional exclusions that it had previously submitted.

3.41 The AOC/LACC stated that airlines maintain their “in principle” support for the concept of continuous improvement but were concerned that under the existing governance framework there is no incentive or mechanism that would compel HAL to agree to a change in targets. It therefore stated that stretch targets should be automatically applied at a set point in the control period, unless there is clear evidence that this is not possible or would require significant investment. It proposed that there should be annual reviews, with the scope developed in a tripartite manner between HAL, airlines and the CAA.

3.42 It stated that alleviation of service standards should only be provided through the airline community. It said that appropriate alleviations are never withheld, and that the few challenges that occur each year are a healthy reflection of the process. It therefore opposes the proposal that would allow us to make a determination if HAL cannot obtain airlines’ agreement for an alleviation during major operational disruption events.

Our views

3.43 In addition to considering stakeholders' responses, we have continued to engage extensively with both HAL and airlines to examine some of the detailed issues that were still outstanding after our Initial Proposals and those issues that we said we would consider further in advance of our Final Proposals. We thank all parties for their participation in this process. The views set out in the rest of this section, and encapsulated in these Final Proposals, draw on both the formal stakeholder responses and our more recent engagement.

Outcomes

3.44 We continue to consider, as we stated in our Initial Proposals, that the outcomes proposed by HAL cover the main aspects of airport operation services that are important to consumers. We note that these outcomes can be traced back to the results of HAL's consumers research and were supported by the CCB.

3.45 Our view remains that the role of outcomes is to help identify overarching aspects of airport operation services that are most important to consumers and which can then be reflected in a more detailed set of measures. The AOC/LACC stated that there are no specific performance indicators associated with the proposed outcomes, but we do not see this as inconsistent with the role of outcomes described above.

Measures

3.46 We disagree with Star Alliance's statement that expanding the OBR framework to cover services provided jointly by HAL and other parties amounts to CAA scrutiny of airlines. Our focus continues to be on the regulation of HAL which, in its role as airport operator, is best placed to co-ordinate inputs from multiple parties, including for example identifying any problems emerging and encouraging all parties to work together to the benefit of consumers. For similar reasons, we disagree with airlines' arguments that certain other measures are not appropriate for the OBR framework simply because they are not in HAL's direct control. We are looking to create a framework that reflects outcomes that are valued by consumers, and the research indicates, perhaps unsurprisingly, that consumers do not necessarily distinguish between those parts of their journey provided by HAL or those provided by other parties.

3.47 Equally, we have been clear that OBR forms part of our regulation of airport operation services, and it should not be extended to cover almost exclusively airline activities over which HAL has very little or no control at all. We continue to consider, therefore, that HAL's proposed measures relating to value for money and offering flights that consumers want should not form part of the OBR framework for H7.

3.48 The distinction in our Initial Proposals between measures with financial incentives and those with only reputational incentives was based on the degree of control that HAL is likely to have over specific aspects of service quality. Where HAL has a high degree of control over a measure, we continue to consider that it should face financial incentives and, therefore, we do not agree with airlines' suggestions that there should be reputational incentives only for measures such as wi-fi performance, helpfulness/attitude of security staff and hygiene safety tests. As noted below, however, we have reconsidered the size of the financial incentives attached to some of these measures.

3.49 HAL and airlines have different views over the suitability for financial incentives of some of the other measures we proposed. While there have been some cases where problems with HAL's check-in infrastructure may have been attributable to airlines, for example because of the interface with a particular airline's software, we understand that the number of such cases has been relatively small and we consider they can be addressed through specific alleviations to cover any future cases where HAL misses a target because of a problem caused by an airline (or its agent). Therefore, we continue to consider that HAL should face financial incentives in relation to the availability of check-in infrastructure. That said, to address its concerns:

- we have confined the measure to "common use self service" ("CUSS") and "self bag drop kiosks", so it will not also cover baggage belts in the check-in area; and
- our proposed licence changes include an additional exclusion so that HAL does not have to pay rebates for faults that are caused by airlines.

3.50 The parties also disagreed over the proposed "timely delivery from departures baggage system" measure, which in the Initial Proposals we said should have financial incentives. While it is very important from a consumers perspective that as many bags as possible travel on the same aircraft as their owners, our understanding is that problems attributable to HAL's baggage system (which would be picked up by this measure) account for only a small proportion of the total number of misconnected bags at Heathrow. Furthermore, we have some sympathy with HAL's arguments that attributing responsibility for specific failures could be onerous and could distract parties from working together to process as many bags as possible, and that the introduction of financial incentives could discourage HAL from agreeing to airline requests to adopt a flexible operational approach. We now consider, therefore, that this "timely delivery" measure should have reputational rather than financial incentives.

3.51 We said in the Initial Proposals that we would consider whether to include another measure of baggage performance in our Final Proposals. Based on our understanding that the "timely delivery" measure will only pick up only a relatively small proportion of the misconnected bags at Heathrow, we have decided to

include the overall baggage misconnect rate as an additional reputational measure in our Final Proposals. Problems with HAL's baggage system will account for some of the misconnected bags, and HAL may be able to play a co-ordinating role for example in identifying other specific problems that can be addressed by the relevant parties working together. Nevertheless, recognising the strong role of airlines and their ground handlers in overall baggage performance, we are currently including the baggage misconnect rate as a reporting measure and are not proposing to set a specific performance target.

3.52 Among the other measures subject to financial incentives, the AOC/LACC disagreed with our proposed approach to measuring HAL's performance under the provision of stand facilities measure, which was an amalgamation of four previously separate measures (for jetties, fixed electrical ground power, stand entry guidance, and pre-conditioned air). We had included this as a combined measure in our Initial Proposals as we had understood that it had been agreed by both HAL and airlines. As this does not seem to have been the case, we have now reverted to four measures covering each type of asset separately.

3.53 We commented in the Initial Proposals on airlines' proposals that certain measures should be implemented as daily rather than monthly averages. We continue to consider this is an important issue and, consistent with our comments in the Initial Proposals, we intend to give it further consideration in advance of the mid-term review discussed below. Rather than a simple choice between daily or monthly averages, it will be important for us to examine all of the implications (including any required adjustments to targets) of possible changes in the level of granularity, in order to consider what approach is likely to be in consumers' best interests. If this suggests that a change from the current approach would be beneficial, we will then need to consider wider implications (including, for example, practical considerations and any likely impact on opex) before reaching conclusions on the nature and timing of any proposed change.

3.54 We consider that several related issues raised by airlines, such as whether performance should be monitored for each individual control post (rather than groups of control posts as at present) and whether performance standards should be harmonised for central and transfer security queues, could be addressed at the same time as this review of measurement granularity. And we will also be able to take account of more up to date information on the progress of HAL's security transformation plan and associated initiatives (which we understand might include possible changes to the number of control posts), as well as progress in installing new measurement systems for security queues.

3.55 Another general issue raised during our engagement with HAL and airlines was the possibility of measuring asset availability on a "when required" basis rather than the current approach based on fixed time windows. Though both sides expressed some interest, it was clear that there had been little substantive

discussion and there did not seem to be a common understanding of what this approach might mean in practice and what other adjustments (for example to targets) might be required at the same time. We would encourage HAL and airlines to continue discussions with a view to considering a change at in the future (perhaps at the time of the mid-term review, if there is broad agreement on this). But this idea was not sufficiently well developed for us to consider it in these Final Proposals.

3.56 Regarding some of the other issues raised by airlines:

- they suggested that their proposed Net Promoter Score ("NPS") measure could replace up to six of our current proposed measures. While we understand the attraction to airlines of a single headline measure, we consider that, in the event of a change in consumers' perceptions of Heathrow, HAL's proposed high level measures could provide a richer source of information than a single NPS measure about what might lie behind this change. In addition, we note that HAL has previously argued that NPS is not well correlated with actions it can take to improve passenger experience;
- we continue to consider that the airlines' proposed measure for "departure gate facilities" is a lower priority than some of the other new measures we have introduced. Poor performance may cause inconvenience for airlines and possibly passengers, but seems unlikely to be as disruptive as, say, a failure of check-in kiosks or the departures baggage system. We have not included it in our Final Proposals but this is an issue that we could reconsider in future control periods, once the current changes to the OBR framework have bedded in and if there is evidence that introducing such a measure would be in consumers' interests; and
- we note airlines' comments about "back of house" cleanliness and the suggestion of unannounced inspections. We consider such issues should be addressed at an operational level between airlines and HAL. Attempting to address them instead through the cleanliness measure would represent a significant expansion of both the level of scrutiny and the scope of the OBR framework, which we would be unlikely to consider unless there was evidence of a significant consumer detriment.

Targets

3.57 We do not agree with HAL's criticisms of Arcadis' report on OBR targets. We note, among other things, that although Arcadis illustrated its report with annual performance data, it also had access to some monthly data and was able to take this into account when reaching its conclusions. In some cases Arcadis' report considered explicitly whether there were specific reasons why historical performance levels may not be repeatable during H7.

3.58 More importantly, Arcadis has now provided a substantially updated report which takes account of stakeholder comments on its original report as well as new data provided by HAL and updated information on CAA's proposed expenditure allowances. This report[37] is discussed in the next section.

3.59 We disagree with HAL's argument that targets for Quality Service Monitor scores should be set at 4.00 as our stated intention is to incentivise only a "good" level of service. This argument appears to be based on a particular interpretation of a simple reference to "good performance" in an introductory paragraph of our Initial Proposals, which was a general statement and not intended as a reference to a specific score in a particular customer survey.

3.60 We also disagree with the AOC/LACC's statement that, as an absolute minimum, HAL's current performance should form the baseline for any targets. An important practical consideration is that recent performance levels may not be repeatable over H7 as a whole because of the specific circumstances of 2020 and 2021 (including low passenger numbers for much of the period). More generally, in the Initial Proposals we explained the reasons for our cautious approach to setting stretch targets, which included the challenges HAL faces in reinstating services after a period of very low demand, possible changes in passenger priorities or expectations, and possible disruption during the implementation of the security transformation programme.

Incentives

3.61 In our Initial Proposals we set out a number of reservations about the specific way that HAL had used consumer research findings to generate a proposed set of rebates, and we drew attention to surprising changes that resulted from this, such as higher weighting for wayfinding and lower weightings for passenger security queues. We also listed more general reasons why it would be necessary to exercise caution when considering any attempt to translate the findings from one or more studies into a specific set of rebates.

3.62 We remain of the view that there would be advantages if the implementation of the OBR framework could be informed by relevant findings from consumer research. But with a large volume of research available, and a wide range of judgements to be made about which studies to use and how precisely to convert their findings into a specific set of rebates, we continue to consider that the existing set of rebates is a more sensible starting point for consultation with stakeholders than the set of rebates put forward by HAL.

[37] The Arcadis report is published alongside this document

3.63 We also reject HAL's statements that our method leads to counterintuitive outcomes, and note that the examples it give in an attempt to demonstrate this point can be easily explained, including:

- it drew attention to our proposal that check-in infrastructure availability should have equal weighting to runway operational resilience. However, as HAL is aware, the weighting attached to runway operational resilience has almost no impact in practice, as rebates are calculated as a fixed amount per incident (depending on the number of movements deferred because of the incident) and are not affected by the "weighting" that HAL draws attention to. As explained in our Initial Proposals, this weighting simply acts as an annual cap and would only come into effect if there were a very large number of incidents; and
- two other cases that HAL drew attention to were the apparently large weightings attached to measures for the provision of stand facilities and the availability of lifts, escalators and travelators. As we explained in the Initial Proposals, the high weightings assigned to these measures simply reflected the fact that each of them was replacing several different SQRB measures that were now being combined to form single composite measures in the OBR framework. We consider it would be wrong if simple reclassifications of this sort were to lead automatically to significant changes between Q6 and H7 in the rebates payable for the same kinds of fault. There may well be legitimate reasons for changing rebates between control periods, but the unintended consequence of adjusting the way that performance is recorded is unlikely to be one of these.

3.64 As set out below, we have made changes to our proposed rebates and bonuses to reflect some of the specific comments that stakeholders made in response to our proposals. But we have not implemented HAL's proposed rebalancing of rebates for 5 minute and 10 minute security queues, which appears to be a late change based on limited evidence and which does not appear to have been discussed with airlines. This is a change we could consider at the mid-term review, for example, if HAL can provide a strong evidence base and/or obtain the support of airlines, but it is not something we are persuaded should be included in these Final Proposals.

3.65 In relation to bonuses, we considered again the arguments from willingness to pay studies and passenger priority research that HAL had previously submitted to us and that it also included in its response to our Initial Proposals. For the reasons set out in our Initial Proposals we continue to consider that this does not make a strong case for increased bonuses. Moreover, we note that more recent research submitted by HAL suggests that once performance has reached a certain level then the incremental benefits from further improvements may be

small.[38] We continue to consider, therefore, that HAL's maximum potential bonus receipts should remain at 1.44 per cent of airport charges revenues.

3.66 Regarding the structure of incentives, we have considered the arguments put forward by HAL and Frontier in favour of "sliding scale" rather than "knife edge" incentives. These largely reflect arguments that HAL had already put forward in previous consultations. For the reasons set out in our Initial Proposals, therefore, we continue to consider that the current knife edge system of rebates is more suitable for H7 than HAL's proposed sliding scale incentives.

Continuous improvement and implementation

3.67 While we are keen that the OBR framework remains flexible and can adapt to changing circumstances, we have also stressed the importance of maintaining consistency with the broader price control settlement. We recognise HAL's concerns about changing levels of financial risk or unknown regulatory risk, but consider these concerns are unfounded given the statements we have already made about not undermining the current structure of five-yearly price control reviews, not exposing stakeholders to additional risk, and not revisiting the maximum level of bonuses and rebates (unless there was agreement from both HAL and airlines).

3.68 For the same reasons, we are cautious about airlines' suggestions for annual reviews and we do not agree with their proposal that stretch targets should be automatically applied. In the Initial Proposals, we proposed a single mid-term review in H7, with a pre-defined scope, to deal with specific issues arising from the introduction of OBR. Outside of this mid-term review, we would encourage HAL and airlines to discuss any issues arising. If they reach agreement on a proposed change, the licence already allows us to modify certain parts of the service quality framework with immediate effect. But it is for the parties themselves to decide if a particular process (such as an annual review) should be adopted, and the nature and scope of any bilateral discussions.

3.69 Both HAL and airlines commented on the proposal that would allow us to make binding decisions on disputes about exclusions to the OBR regime during major operational disruption events. We understand airlines' opposition to the proposed change, as they currently have the final say, but we continue to consider that recent experience has shown that a change is needed. Our proposed mechanism will only apply to alleviations requested by HAL under one particular exclusion (that is, during major operational disruption events which have a major impact on security staff resources, passenger volumes or off-schedule activity), and we will only consider the most serious cases where the risk of consumer harm or the financial impact on HAL is significant. If we decline to consider a

[38] Incite, Service Degradation Research, October 2021.

case, then the airlines will still have the final say. We remain supportive of, and continue to encourage HAL and airlines to resolve disputes between themselves, including where appropriate through engagement at senior Executive level.

3.70 We do not agree with HAL's proposals for an alternative *force majeure* mechanism or to refer disputes to a third party, which we consider would be disproportionate and possibly also ineffective (given the specific nature of any likely dispute and the need to understand the wider context of the OBR framework). We also disagree with the list of extra exclusions that HAL proposed, which we consider are too broad in scope, disproportionate or are already adequately covered by existing exclusions.

Final proposals

3.71 This section sets out our Final Proposals for the transition towards OBR in H7. Further details, such as specific definitions for each measure and details of the way that rebates and bonuses will be calculated and paid are in Schedule 1 Appendix C (Notice of the CAA's proposal to modify HAL's licence).

3.72 In a small number of cases we were not able to confirm the definition of a proposed measure or obtain the data that would allow us to set a proposed target. Where possible, we have retained these measures in our Final Proposals though as reporting measures only (with no targets). We will aim to address such issues during the proposed mid-term review.

Outcomes

3.73 Consistent with our Initial Proposals, we propose to adopt the outcomes put forward by HAL. These are:

- an airport I want to travel from that offers me a good value choice of flights;
- I am confident I can get to and from the airport;
- I have a predictable and reliable journey;
- I feel comfortable and secure at the airport;
- I have an enjoyable experience at the airport; and
- I feel cared for and supported.

3.74 We consider that these cover the main aspects of airport operation services that are important to customers, and they are fit for purpose for the introduction of OBR in H7. Nevertheless, it may be useful to revisit these at the time of future period reviews, drawing on the experience of applying OBR in practice at Heathrow, to consider whether any changes would be useful.

Measures

3.75 We have made a small number of changes to the list of measures set out in our Initial Proposals. For the reasons discussed in the previous section, we now propose that timely delivery from departures baggage system should have reputational rather than financial incentives, and we have introduced the baggage misconnect rate as a further reputational measure. We have also restored the four separate measures of stand facilities that are in the current SQRB framework rather than the combined measure that was in our Initial Proposals.

3.76 Two further changes we have made since our Initial Proposals are that we have omitted the measures we proposed previously for being able to social distance and the reduction in Heathrow's carbon footprint. The first of these is because passengers are no longer required to socially distance and this does not seem an appropriate measure to introduce for the whole of H7. As for Heathrow's carbon footprint, we have excluded this measure at this stage because we do not yet have a sufficiently detailed proposal for how Heathrow's carbon footprint should be defined and measured.[39] As this measure should accurately reflect changes over time, it is important that there is a detailed definition and measurement approach that can be carried forward from one year to the next. We will aim to introduce a suitable measure at the mid-term review discussed below. Improving the sustainability of aviation is an important priority for the CAA, so we are particularly keen to make progress on this measure as part of the mid-term review.

3.77 The full list of measures is set out below in Table 3.1 (for measures with financial incentives) and Table 3.2 (for other measures). The detailed definitions for these measures are included in Schedule 1 Appendix C (Notice of the CAA's proposal to modify HAL's licence). Some specific points to note include:

[39] HAL's most recent proposal, for example, refers to "carbon emission from aircraft" without any indication of the points where emissions should start being measured for arriving aircraft or stop being measured for departing aircraft.

- pending the further analysis of measurement granularity discussed above, we have retained groupings of control posts rather than addressing them individually. These groupings are based on HAL's most recent proposal though we have added CP16 and CP24a. The latter is simply a confirmation of what we understand to be current practice (as queue times for CP24 and CP24a are measured together). HAL had proposed removing CP16 from regulation on the basis of low usage, but we understand this reflected the specific circumstances of the pandemic and airlines consider it should continue to be monitored during H7. We also understand that HAL is considering reducing the number of control posts in future, possibly including the closure of CP16 and others. Such changes can be reflected in OBR definitions once they have gone through appropriate governance and are at the point of implementation. However, for the moment we consider that it is most appropriate to propose groupings based on current operations at Heathrow. We have not included CP12a, as we understand that HAL would need to incur additional opex and, possibly, capex in order to ensure that queues at CP12a can be measured; and
- we have set the threshold for the timely delivery from the baggage system measure at 30 minutes, as we received strong evidence from airlines that a shorter window would be incompatible with their operational requirements. HAL argued that 20 minutes is an agreed industry standard time used by other airports to track timely delivery of bags, and is the agreed time that goes into the calculation of minimum connection times between flights at Heathrow. It stated that we should use 20 minutes so as to avoid increasing passenger connection times at Heathrow. We do not agree that, simply because we decide to adopt a 30 minute window for the specific purpose of reporting performance within the OBR framework, this would also mean that HAL would need to increase connection times at Heathrow.

3.78 We have retained HAL's proposed measure of overall satisfaction with the special assistance service for passengers with reduced mobility (PRMs), though we have changed the name to remove the reference to the wider group that HAL calls "passengers requiring support" as these are not relevant to this specific measure. While airlines suggested adding further survey questions and some operational measures, we note that (along with other airports) HAL's service to PRMs is also monitored under CAA's accessibility framework. This deals, among other things, with the services that airports should provide and the monitoring of service standards that they should carry out. The latest report on airports' performance in due later this year, and we recently wrote to airports expressing

concern about reports of significant service failings and seeking information about the measures airports and others are taking to address the situation.[40]

Targets

3.79 Tables 3.1 and 3.2 show our proposed targets. We have not proposed targets for a small number of measures. This is because:

- for four reputational measures – "an airport that meets my needs", "ease of understanding Heathrow's Covid-19 safety information", "airport departures management" and "airport arrivals management" – we do not yet have the baseline data necessary to set a target. HAL will still be required to report performance for these measures, and we intend to set at target for each of them at the mid-term review;[41]
- for the baggage misconnect rate, we have chosen not to set a target as this measure will be strongly (but not exclusively) influenced by the performance of airlines and ground handlers; and
- the public transport and passenger injuries measures cover important issues where HAL and other parties should strive for as good a level of performance as possible. But these touch on wider public policy areas concerning transport policy and health and safety, and we do not consider that it is appropriate for a specialist aviation regulator to be setting targets in these areas. In addition, we wish to avoid any risk of complacency that could arise if it became clear that the Heathrow community had done enough to meet a particular target. For similar reasons, we will consider carefully whether we should set targets for the reduction in Heathrow's carbon footprint when that measure is introduced (which we expect to be at the mid-term review). We will keep this situation under review, and would consider setting targets in the future if there is evidence that this would be in consumers' interests or would support our wider statutory duties.

3.80 Almost all of the targets for measures with financial incentives are unchanged from our Initial Proposals. The only exceptions are:

40 See https://www.caa.co.uk/media/cb4mqahj/june-2022-prm-letter.pdf.

41 For the airport departures management and airport arrivals management measures, when we set a target we will also need to specify the time within which a target proportion of flights must complete their movements, and may need to consider whether this should vary, for example for flights using different terminals.

- the new measure for “check-in infrastructure”, for which there was no target in the Initial Proposals. There is still only limited data available to inform our selection of a target. For this reason we are proposing a cautious target of 98 per cent availability initially, but we will consider in the mid-term review whether this can be increased to 99 per cent; and
- the four separate measures for “stand facilities” which were included as a single combined measure in our Initial Proposals. We have reverted to the current targets for these, which are 98 per cent availability for “pre-conditioned air” and 99 per cent availability for the other three measures. HAL is planning to upgrade its provision of pre-conditioned air during H7, and we will consider in the mid-term review whether the target for this measure can be increased to 99 per cent.

3.81 Retaining our Initial Proposals targets means that we have kept our approach of setting targets at the bottom end of the possible range of stretch targets suggested by our consultants, Arcadis, as being achievable for certain measures. We consider this cautious approach is appropriate in the light of the uncertainties around possible changes in passenger perceptions and priorities, which might affect the cleanliness measure in particular, and also possible questions about how passengers will expect to find their way around airports in future. We consider that the targets for cleanliness and wayfinding should be reconsidered at the next price control review (alongside the two car target for the T5 transit system and the new reputational measure for helpfulness/attitude of security staff). For wi-fi performance, however, we plan to consider at the mid-term review whether the target can be increased to 4.10.

3.82 Our Initial Proposals included targets for only some of the proposed reputational measures. We have retained all of these except for the target for feeling safe and secure. HAL had originally proposed a target of 97.5 per cent of passengers agreeing that they felt safe and secure, and we adopted this target for our Initial Proposals. HAL has now reduced its proposed target to 95.5 per cent, stating that this is because of changes in consumers’ interpretation of the survey question since Covid-19 and concerns that its performance in 2019 (which had informed its previous proposal) was an outlier. For our Final Proposals we have adopted a target of 96 per cent, which is at the lower end of the range that Arcadis advised us that it considers to be achievable.

3.83 The remaining targets for reputational incentives that are set out in Table 3.2 are generally based on HAL’s proposals which have been reviewed by Arcadis. The only exception is the “timely delivery from departures baggage system”, because HAL has not yet proposed a target for this (and, as noted above, HAL argued for a cut-off point of 20 minutes rather than our proposal of 30 minutes). Based on our assessment of Arcadis’ analysis, we have proposed a target of 98 per cent of bags being delivered not less than 30 minutes before the scheduled departure

time. While this target would have been breached on a small number of specific occasions in the period before the pandemic, we note that this measure has only reputational rather than financial incentives.

3.84 For some measures, Arcadis commented on differences between terminals and specific cases where a higher target could be considered for particular terminals. Having considered these comments, in general, we consider that we should set the same minimum performance standards for all terminals at Heathrow, and should not consider ratcheting up the target for a specific terminal simply because recent performance levels there have been better than in other terminals. Nevertheless, this is an issue that could be considered at future price control reviews, if there were to be a compelling case why introducing different targets for particular terminals would be in consumers' interests.

Incentives

3.85 For the reasons set out above, we continue to consider that HAL should face "knife edge" incentives in relation to rebates. If, in a particular month, HAL misses one or more of the targets set out in Table 3.1, it will be liable to pay a rebate calculated as one-sixth of the maximum shown in that table (except for the runway operational resilience measure, for which rebates are calculated on a different basis as set out in the licence).

3.86 The proposed rebates shown in Table 3.1 include some differences from those included in our Initial Proposals. These are:

- we have reduced the rebates payable for helpfulness/attitude of security staff and wi-fi performance. This is in response to comments from HAL (which did not consider wi-fi performance should as high a weighting as for arrival baggage carousels) and from airlines (which stated that both should have reputational rather than financial incentives);
- we have shown separate rebates for stand facilities (jetties, fixed electrical ground power, stand entry guidance and pre-conditioned air) based on the weightings for these facilities proposed by airlines;
- we have removed the rebate for timely delivery from departures baggage system, as this is now a reputational measure only; and
- we have made other minor adjustments to round rebates up or down and to ensure the total comes to 7 per cent of airport charges revenues.

3.87 Table 3.3 shows our amended proposals for bonuses. Some change was required as we had previously proposed that HAL should be able to earn a bonus in relation to timely delivery from departures baggage system, but we are now proposing that this should be a reputational measure only. In place of this measure, we now propose that HAL should be able to earn bonuses in relation to security queues for transfer passengers. This measure has some support from

airlines (albeit with a more onerous threshold) and, consistent with the criteria applied in our Initial Proposals, it is a measure that is important to consumers and where improved performance may directly benefit them. However, because this measure applies only to a subset of passengers,[42] we have allocated to transfer security queues only half of the bonus that was previously allocated to timely delivery, and have allocated the other half to central security queues.

[42] In 2018 transfer passengers accounted for 30% of passengers at Heathrow (https://www.heathrow.com/company/about-heathrow/facts-and-figures).

Table 3.1 Measures subject to financial incentives

Measure	Metric	Target	Maximum rebate (% of airport charges revenues)
Cleanliness	Survey score	4.15	0.4
Wayfinding	Survey score	4.20	0.4
Helpfulness/attitude of security staff	Survey score	4.10	0.2
Wi-Fi performance	Survey score	4.05	0.2
Security queue time – central search	% of queues < 5 mins % of queues < 10 mins	95% 99%	1.0
Security queue time – transfer search	% of queues < 10 mins	95%	0.5
Security queue time – staff search	% of queues < 10 mins	95%	0.4
Control post vehicle queue time	% of queues < 15 mins	95%	0.4
Availability of lifts, escalators and travelators	% of time available for use	99%	0.7
Availability of check-in infrastructure	% of time available for use	98%	0.5
Availability of arrivals baggage carousels	% of time available for use	99%	0.35
Availability of T5 track transit system (TTS)	% of time available for use 1 train 2 trains	 99% 97%	 0.3 (T5 only)
Availability of stands	% of time available for use	99%	0.2
Availability of jetties	% of time available for use	99%	0.2
Availability of fixed electrical ground power	% of time available for use	99%	0.15
Availability of stand entry guidance	% of time available for use	99%	0.2
Availability of pre-conditioned air	% of time available for use	98%	0.2
Pier-served stand usage	% of passengers served	95%	0.3 (not T5)
Hygiene safety testing	% of amber tests resolved within 24 hours % of red tests resolved within 4 hours	100% 100%	0.2
Runway operational resilience	Fixed rebate (£) per type of incident		0.5

Table 3.2 Measures not subject to financial incentives

Measure	Metric	Target
Overall satisfaction	Survey score	4.26
Customer effort (ease)	% of passengers reporting 'easy' or 'very easy'	91%
Enjoy my time at the airport	% of passengers reporting 'enjoyable' or 'very enjoyable'	80.5%
Feel safe and secure	% of passengers agreeing they felt safe and secure	96%
Ease of access to the airport	Survey score	4.44
Helpfulness/attitude of airport staff	Survey score	4.36
Passengers with reduced mobility – overall satisfaction	Survey score	4.0
Immigration queue times	% of queues < 45 mins (non-EEA) or 25 mins (EEA)	95%
Timely delivery from departures baggage system	% of bags delivered >30 mins before departure time	98%
Departures flight punctuality	% of flights taking-off within 15 mins of scheduled departure time	80.5%
Airport that meets my needs	% of passengers agreeing the airport meets their needs	n/a
Ease of understanding Heathrow's Covid-19 safety information	% of passengers agreeing the information was clear and easy to understand	n/a
Airport departures management	Average time between start request and take-off	n/a
Airport arrivals management	Average time between touch down and chocks on	n/a
Baggage misconnect rate	% of bags that miss their intended flight	n/a
% of UK population with 3 hours (and one interchange) of Heathrow by public transport	% of UK population	n/a
Passenger injuries	Number of passenger injuries	n/a

Table 3.3 Proposed bonuses

Measure	Maximum bonus (% of airport charges revenues)	Lower performance threshold	Upper performance threshold
Cleanliness	0.36	4.35	4.65
Wayfinding	0.36	4.40	4.70
Security queue time – central search (queues < 5 minutes)	0.54	97.0	99.0
Security queue time – transfer search (queues < 10 minutes)	0.18	97.0	99.0

Continuous improvement and implementation

3.88 The detailed provisions necessary to implement our Final Proposals are set out in Appendix C (Notice of the CAA's proposal to modify HAL's licence). Once they take effect, HAL will be subject to the new OBR targets, rebates and bonuses rather than the current SQRB framework.

3.89 The proposed licence modifications also include a proposal that would allow us to make binding decisions on disputes about exclusions to the OBR regime during major operational disruption events. As stated above, we would only expect to consider the most serious cases where the risk of consumer harm or the financial impact on HAL is significant. Before considering a case, we would expect to see evidence that all parties have made a genuine attempt to resolve the disagreement on a bilateral basis, including if necessary with senior Executive involvement, before referring the matter to us.

3.90 We expect to carry out a mid-term review of the OBR framework that will cover the following:

- issues that could not be resolved in time for inclusion in these Final Proposals, including the definition of a measure relating to Heathrow's carbon footprint, finalising the definitions of the airport departures management and airport arrivals management measures, and setting targets for these two measures together with targets for an airport that meets my needs and ease of understanding of Heathrow's covid-19 safety information;

- any specific issues arising from the application of new measures and targets. This could include any definitions that are difficult to apply or measure in practice, or any targets that now appear unachievable for reasons outside of HAL's control. In the opposite case, however, if a target appears potentially too low we would not generally expect to make any adjustment until the next price control review;
- any changes that are specifically required as a result of new investment projects that have been agreed between HAL and airlines;
- the most appropriate level of granularity for targets such as security queues and asset availability measures, including whether targets should be set on a monthly, daily or other basis, whether targets should be set for individual control posts or groups of control posts, and the possible harmonisation of security queue targets. We intend to consider these issues in advance of the mid-term review, including the nature and timing of any possible change. For the avoidance of doubt, if we were to propose any changes that would take effect during H7, we would aim to ensure that these had a neutral impact on the net revenues that HAL might expect to earn from bonuses and/or pay out as rebates during the remainder of H7;
- any changes to security queue measures and targets necessary to reflect (in a neutral way) the impact of the security transformation programme and the installation of new queue measurement systems. This could also include any proposals to rebalance the rebates for different security queue times, especially if this is backed up by a strong evidence base and/or broad agreement between HAL and airlines;
- possible changes to the way that asset availability targets are applied, if there is reasonable agreement between HAL and airlines on an alternative approach; and
- in a strictly limited number of cases, we will consider a possible increase in targets. These are discussed above and are:
  - a possible increase in the wi-fi performance target to 4.10,
  - a possible increase in the availability of check-in infrastructure target to 99 per cent, and
  - a possible increase in the availability of pre-conditioned air target to 99 per cent.

3.91 We are not setting a specific date for this review, but continue to consider that there will be benefits in undertaking it before the half way point in the price control period. However, we note also that it is important for there to be a

sufficient period of evidence of how the new framework is working in practice to inform a this review.

3.92 Outside of this mid-term review, if HAL and airlines are able to reach agreement on changes to certain parts of the OBR framework, then the licence allows us to make the changes with immediate effect. Outside of this process, if HAL and airlines are not able to reach agreement on a proposed change, then either party may request that we modify the licence. In those circumstances, if we decided that a modification was required in the interests of consumers, we would use the procedure set out in section 22 of CAA12 to make the modification, as this would give relevant parties a right of appeal, rather than the current condition D1.8 which we are proposing to remove from the licence (see Appendix C (Notice of the CAA's proposal to modify HAL's licence) and a further discussion in chapter 8 (Other regulated charges) on the design of self modification rules).

3.93 Considering the OBR framework as a whole, we consider that these Final Proposals will further consumers' interests by ensuring that the services HAL provides meet their needs in terms of their range, availability, continuity and quality of the airport operating services that it provides. Among other things, we consider that the proposed OBR framework will:

- strengthen the link between economic regulation and consumers' needs and priorities, thereby securing that consumers' reasonable demands for airport operation services are met in terms of the outcomes incentivised;
- incentivise HAL to deliver more innovative solutions and service improvements as circumstances change, so promoting economy and efficiency in the way in which those outcomes are delivered; and
- improve transparency, and encourage HAL to exercise its co-ordinating role across the airport to improve outcomes for consumers, again promoting HAL in meeting the reasonable demands of consumers and doing so efficiently.

3.94 At the same time, we have considered the financial impact of the rebates and bonuses on HAL, and do not consider them to be set at a level that is likely to have a material impact in practice on its ability to finance its provision of AOS at Heathrow airport.