



Heathrow Interim H7 Price Control: Review of HAL's initial submission

28 February 2019

Civil Aviation Authority

PHASE ONE REPORT



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EXECUTIVE SUMMARY

CEPA has been commissioned by the Civil Aviation Authority (CAA) to review Heathrow Airport Limited (HAL)'s business plan for the interim price control, iH7. iH7 is due to run from 2020 to 2021, with a possible third year extension.

The CAA already consulted on HAL's headline price path during this period (at RPI-1.5%) in April 2018, but as part of its price review, it was also expecting to reset elements of the underlying building blocks that are typically used to calculate the price path. Under this arrangement, the rate of depreciation would be adjusted to match the underlying requirement with the headline price path.

In parallel to our study, HAL has been negotiating commercial pricing arrangements with airlines, with the intention of any agreement reached replacing the CAA's price review. As a result, this report will be used by the CAA to test whether any commercial arrangement agreed between HAL and airlines is in the interests of consumers.

Core assumptions and approach to forecasting

HAL has taken a relatively simple approach to forecasting each of the revenue building blocks that are being reset, forecasting forwards from a 2018 baseline using key drivers and then adjusting for any anticipated step changes. However, HAL provides little justification for its 2018 estimates. While we understand the desire to be proportionate, we do not consider that this displaces the requirement to be transparent.

Additionally, there is a material lack of evidence surrounding estimates for additional cost drivers, particularly the underlying calculations used to form the estimates. As a result, we have excluded many of these from our forecasts, with a view to incorporating them if better evidence is provided.

HAL uses a no-deal EU exit scenario as the basis of its forecasts. These have a significant impact on passenger numbers, as well as on non-aeronautical revenues and on inflation rates. Using this as the core scenario opens up the possibility of Heathrow receiving a windfall gain if a less negative outcome comes to pass. Clearly there is substantial uncertainty around the UK's exit from the EU. However, at this stage the **CAA has asked us to assume that the UK government will achieve its stated ambition to agree an orderly withdrawal, with a transition period.** Use of an orderly Brexit scenario in place of HAL's no deal assumption creates a significant difference between our forecasts and HAL's; this is the largest single amendment that we make. This assumption can be revised as necessary during Phase 2 of our study when there may be more certainty surrounding the outcome of EU exit negotiations.

Passenger forecasts

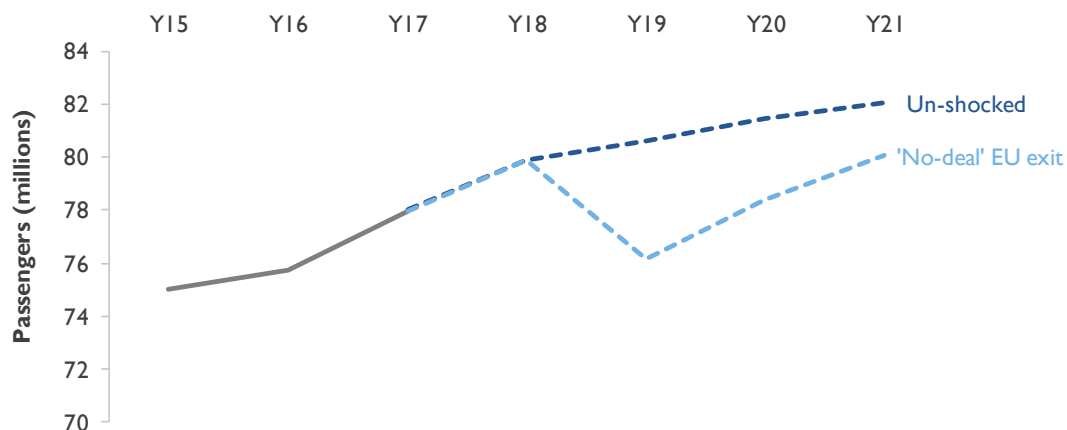
HAL has experienced strong passenger growth during Q6, amidst a backdrop of strong global economic growth and low oil prices. On the supply side, this growth has been driven by airlines moving to larger aircraft with more seats. HAL believe that this growth is unlikely to continue into iH7 and assumes that even in a scenario where the UK leaves the EU with a negotiated agreement, growth will be less strong during the period from 2019 to 2021 than has been the case in recent years.

In the event the UK leaves the EU without a deal HAL forecasts a substantial decline in passenger numbers in 2019 with a gradual recovery in 2020 and 2021. This scenario assumes that there will be a partial loss of traffic rights for airlines flying to and from the UK leading to a sharp reduction in passenger numbers. In this 'no-deal' EU exit scenario, HAL has also included a shock allowance to the forecast in 2020 and 2021, in line with the adjustment used in the Q6 determination. Figure 1.1 compares the no-deal EU exit scenario



with a scenario where it is assumed there will be a negotiated withdrawal from the EU and no shock adjustment.

Figure 1.1: HAL forecast passenger numbers under 'negotiated withdrawal' and 'no-deal' EU exit (2015-2021)



Source: HAL iH7 submission (2018)

We consider this to be a rather extreme approach and as such we predict higher passenger numbers than assumed in HAL's no-deal EU exit scenario. Table 1.1 summarises the key differences in assumptions. We forecast stronger growth in passenger numbers than presented in HAL's un-shocked scenario, as we assume load factor growth will continue the recent trend rather than slowing down as assumed in HAL's submission. We believe this is more realistic given that load factors at Heathrow significantly trail other European airports with similar traffic profiles, and a number of external forecasts assume continued strong growth during this period.

We have included a shock allowance consistent with the principle set in Q6 but our allowance is smaller than the 1.07% estimated by Heathrow. Taking the Q6 allowance and updating it using assumptions around the existence of demand shocks since 2012, we have estimated it at around 1%. For consistency, we have applied this shock allowance to all forecast years, rather than just 2020 and 2021. **Our revised version of the shocked forecast is used as the core passenger forecast for each of the building blocks that we consider.**

Table 1.1: CEPA and HAL forecasts of passenger numbers, 2018-2021

	2018	2019	2020	2021
HAL				
Load factor (%)	79.2%	79.9%	79.7%	79.9%
Passengers, un-shocked (millions)	79.9	80.6	81.5	82.0
Shock allowance (%)	-	-	1.07%	1.07%
Passengers, shocked (millions)	79.9	80.6	80.6	81.2
Passengers, no-deal EU exit (millions)	79.9	76.2	78.4	80.1
CEPA				
Load factor (%)	79.2%	80.2%	81.2%	82.2%
Passengers, un-shocked (millions)	79.9	80.9	83.0	84.4
Shock allowance (%)	-	1.00%	1.00%	1.00%
Passengers, shocked (millions)	79.9	80.1	82.2	83.6

Source: CEPA analysis



Operating expenditure

In Q6 so far, HAL's actual opex has been consistently similar to, although somewhat higher than, the CAA's determination. During this period however annual opex has been declining, with a reduction of 5% per passenger occurring between 2014 and 2017.

HAL believes that this reduction in opex per passenger means that it now operates efficiently. As such, it has used 2018 estimates for opex as the basis for forecasting future expenditure. Figure 1.2 illustrates the approach taken by HAL to produce the opex forecasts (excluding inflation). HAL is forecasting an 18% increase in opex between 2018 and 2021, in nominal terms. The inflation assumptions used by HAL form the biggest single component of the forecast growth rate; in real terms, HAL forecast an increase of approximately 6%. HAL also use a different passenger forecast for estimating future opex, to what is used elsewhere in its submission. We do not believe however, that there is any justification for using different passenger forecasts for different building blocks.

Figure 1.2: Steps taken by HAL to forecast opex for iH7 (£m, 2016 prices)

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Source: CEPA analysis of HAL submission

Based on our analysis, we have adjusted HAL's methodology to establish a forecast which is more analytically robust, taking the following steps:

- Use HAL's 2018 forecast, with a catch-up efficiency adjustment, as our baseline;
- Using our shocked passenger growth forecasts alongside an elasticity value of 0.4 (same as HAL's); and
- Assuming an efficiency factor of 1.65% per annum, based on a frontier shift estimate of 0.9% and a catch-up efficiency estimate of 0.75%.

The result of our adjustments is a decrease in HAL's forecast operational expenditure, as shown in the table below.

Table 1.2: Summary of CEPA operating cost forecast (£m, 2016 prices)

Forecast	2018	2019	2020	2021
CEPA forecast	1,078.1	1,080.1	1,074.1	1,064.7
HAL forecast	1,086.6	1,128.0	1,136.3	1,149.3
Difference	-8.5	-47.9	-62.2	-84.6

Source: CEPA analysis

Non-aeronautical revenues

Overall, HAL is forecasting that non-aero revenues will grow from £1,217m in 2018 to £1,325m in 2021 at a compound annual growth rate (CAGR) of 3.2% in nominal prices. In real terms, this equates to a CAGR of -0.4%.

Although our benchmarking of Heathrow against other European airports found that HAL was already amongst the top performers in relation to non-aero revenues, our review has highlighted a number of areas where we consider that HAL's forecast is less ambitious than it could be. We have revised the forecast to address these issues. Our forecast assumes non-aero revenues of £1,205m in 2020 (8% increase on HAL's forecast) and £1,236m in 2021 (11% increase on HAL's forecast) in 2016 prices.



Table 1.3: Summary of CEPA non-aeronautical revenue forecasts (£m, 2016 prices)

Forecast	2018	2019	2020	2021
CEPA forecast	1,135.4	1,168.9	1,204.6	1,235.5
HAL forecast	1,135.8	1,123.9	1,116.6	1,111.3
Difference	- 0.4	45.0	88.0	124.2

Note: Difference in 2018 forecasts due to different estimates for 2018 inflation.

Capital expenditure and regulatory depreciation

HAL has not provided any detail of its non-expansion capex plans beyond headline estimates of future expenditure. This is because the pipeline of projects that is likely to be delivered during this period is uncertain and evolving. The headline estimates of non-expansion capex presented in the table below are based on what HAL believe is deliverable during this period, given the planning pipeline and resourcing requirements.

Category B expansion costs have been revised upwards very substantially. For both Category B and Category C costs, insufficient detail has been provided to warrant further analysis at this stage. The headline estimates are subject to potentially significant further revision for HAL's revised submission due in April 2019. As a result, we have not completed any detailed scrutiny of HAL's figures for reasonableness.

Table 1.4: HAL capex plans, 2018-2021 (£m, 2016 prices)

	2018	2019	2020	2021
Run the Airport		616	784	965
Masterplan		518	491	629
Non-expansion Sub-Total		98	293	336
Category B		177	69	33
Category C		144	347	865
Expansion Sub-Total		936	1,200	1,862
Total	839	616	784	965

We have considered the deliverability of HAL's non-expansion capex plans given the overall quantum being considered. Whilst HAL has shown historically that it is able to scale up capital expenditure over a short period, it is less clear whether the projects within the planning pipeline are sufficiently mature to actually be delivered during iH7.

We also believe that HAL's approach to capex for this submission assumes a significant departure from the current regulatory approach. If the CAA is willing to accept HAL's assertion that the capex plan should evolve over the course of the control period, we recommend greater scrutiny through the capex governance process. We also expect that CAA will want to take a view from airlines on this matter.

Notwithstanding that debate, further information will be required if the CAA is minded to set a capex envelope for iH7 that is meaningful at the outset. Doing so will require some further development of the analysis that currently sits behind the high-level numbers presented in HAL's submission.



Revenue requirement

As a result of the changes that we have made, and primarily driven by our use of a less negative EU exit scenario, our forecast revenue requirement is significantly lower than that estimated by HAL. Our forecasts are summarised in the table below and compared with a number of other scenarios:

- **Headline price path (RPI-1.5%)** presents the revenue requirement and maximum aeronautical yield under a scenario where the price path changes by RPI-1.5%;
- **CAP1658 (CAA capex)** presents the results of a scenario where there is a simple reset of some of the building blocks, as presented by the CAA in CAP1658;
- **HAL iH7 Submission** presents the impact of HAL's initial submission on the aeronautical yield; and
- **CEPA (CAA capex)** presents the results of a scenario using our forecasts of each of the building blocks, and the CAA's forecasts of capex as assumed in CAP1658.

Table 1.5: CEPA forecast revenue requirement, 2020-2021 (£m, 2016 prices)

£ million, 2016 prices	Headline price path (RPI-1.5%)		CAP1658 (CAA capex)		HAL iH7 Submission		CEPA (CAA capex)	
	2020	2021	2020	2021	2020	2021	2020	2021
Total aero revenue requirement	1,614	1,596	1,447	1,492	1,537	1,601	1,345	1,328
Passenger numbers (million)	77.8	78.1	78	78	78	80	82	84
Required aero yield (£)	20.74	20.43	18.59	19.10	19.60	19.99	16.37	15.88
Additional revenue			167	104	77	- 5	269	268



I. INTRODUCTION

I.1. BACKGROUND

CEPA has been commissioned to review and assess Heathrow Airport Limited's (HAL) business plan for iH7; the interim period before the main H7 regulatory price control starts in 2022.

HAL is subject to economic regulation by the Civil Aviation Authority (CAA) because it has substantial market power. The CAA regulates HAL using a price cap expressed in the form of RPI-X over a price control period. HAL's current price control, Q6, is due to end in December 2019 following a decision by the CAA to extend it for one year. The next price control, iH7, is due to run until at least the end of 2021 and is an interim control period designed to align the regulatory cycle with the timetable for expansion at Heathrow Airport. The CAA has indicated that it may extend this interim control further depending on how the timetable for expansion evolves.

For this interim price control, the CAA proposed a headline price path of RPI-1.5% in its April 2018 consultation document, CAP1658.¹ The CAA also proposed updating the assumptions applied to some of the underlying revenue 'building blocks' and adjusting the rate of depreciation to match the difference between:

- (i) The updated building blocks; and
- (ii) The proposed price path.

The regulatory process for the iH7 price control formally began with the submission of HAL's business plan in October 2018. This set out HAL's view of the business' underlying revenue requirement, supported by forecasts for each of the key revenue building blocks. The objective of this study is to independently review HAL's building block assumptions and to estimate the underlying revenue allowances.

While this study was originally intended to inform the CAA when it set the price control for iH7, HAL and some of the major airlines operating at Heathrow, have in parallel, been negotiating commercial pricing arrangements for the interim period. It is intended that the arrangements would replace the price review process. As a result, the study will now be used by the CAA to help assess whether commercial arrangements proposed by HAL and airlines are in the interest of consumers.

The study has two phases:

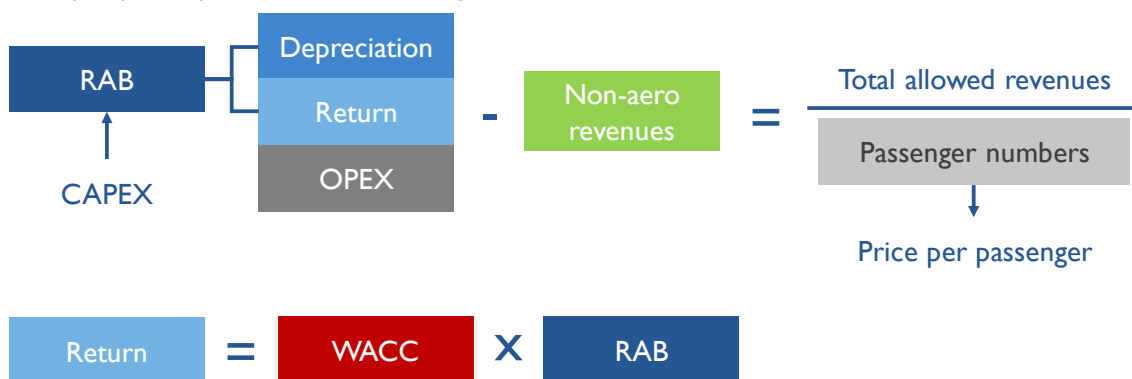
- **Phase one** is an assessment of HAL's initial submission (concluding in this report). The conclusions of phase one will be used to inform the CAA's initial consultation for the iH7 price control.
- **Phase two** will be to update this report following comments from HAL and other stakeholders in response to the CAA's consultation. The conclusions of phase two will be used to inform the CAA's final proposals for iH7.

I.2. REGULATORY BUILDING BLOCKS

Price caps, as applied at Heathrow, are set by reference to revenue building blocks. Figure I.1 describes the building blocks used in the HAL price control and shows how they are used to calculate the revenue requirement, typically expressed in *price per passenger* form rather than *total allowed revenues* form.

¹ [Civil Aviation Authority \(2018\) Economic regulation of capacity expansion at Heathrow: policy update and consultation. CAP1658](#)

Figure 1.1: Airport price cap and the revenue building blocks



Source: CEPA

1.3. SCOPE OF STUDY

Our review has assessed the reasonableness of the assumptions and methodologies underpinning HAL's forecasts, considering the arguments made by HAL in support of its plans and the evidence that it has presented to support its forecasts. In certain areas we have undertaken additional benchmarking analysis and have reviewed previous consultancy studies commissioned by the CAA, which have assessed aspects of HAL's performance during Q6. We have also undertaken some stakeholder engagement, though we expect further comments in response to the CAA's consultation.

As part of this study, we have reviewed HAL's proposals for each of the following building blocks:

- Passenger forecasts
- Operating expenditure (opex)
- Capital expenditure (capex)
- Depreciation
- Non-aeronautical revenues

Whilst the CAA was also proposing to reset aspects of the cost of capital, reviewing HAL's proposals on these was outside the scope of this study.

This report details our findings, summarising stakeholder views on the submission and presenting our own alternative forecasts for each of the building blocks. It is structured as follows:

- In Section 2, we review the general approach HAL has used to produce their forecasts, including their assumptions regarding the UK's exit from the EU;
- In Section 3, we review HAL's passenger forecasts and provide our own forecasts;
- In Section 4, we review HAL's estimates for future operating expenditure and provide alternative forecasts;
- In Section 5, we assess HAL's forecasts for non-aeronautical revenues and present our own forecasts;
- In Section 6, we assess HAL's proposed treatment of capital expenditure for iH7;
- In Section 7, we present HAL's proposals for a partially reset cost of capital, and compare them against proposals from PwC;



- In Section 8, we present our estimates of the underlying revenue requirement based on our forecasts and compare them with HAL's proposals from its iH7 submission and the CAA's estimates in the CAPI658 consultation document on iH7; and
- In Section 9, we summarise the additional evidence we require from HAL for Phase 2 to effectively scrutinise their iH7 plans.



2. CORE ASSUMPTIONS UNDERPINNING FORECASTS

In this section we consider the forecasting approach taken by HAL for its iH7 submission and summarise our view of the quality of the evidence underpinning the forecasts. We also review HAL's treatment of the uncertainty surrounding the UK's exit from the EU in its forecasts.

2.1. FORECAST APPROACH

HAL has taken a relatively simple approach to forecasting operating expenditure and non-aeronautical revenues. They have used their 2018 forecasts as a base year and then projected forwards using some high-level drivers and adjustments. These include:

- adjustments related to macroeconomic indicators such as inflation, exchange rates and GDP growth;
- impacts from changes in passenger numbers;
- step changes arising out of additional cost items or revenue drivers; and
- adjustments to reflect estimated efficiency or productivity improvements.

As this is an interim price control, and given the CAA's desire to take a proportionate approach, we believe this is a logical approach to take. However, we do have concerns about the use of an incomplete year, 2018, as base year. This may not reflect an appropriate baseline to project from. We have therefore undertaken a review of the 2018 forecasts and assessed whether they are reflective of an efficient baseline for the forecasts being made.

Although the approach taken to forecasting is generally proportionate, in many areas HAL has provided insufficient evidence to justify its key assumptions. In particular, HAL has provided little in the form of justification for additional cost items and has not provided the calculations underlying adjustments to the forecasts. Without evidence, we are unable to effectively scrutinise these adjustments or additional calculations, and as a result, we have used our own analysis in those areas.

While we understand the desire to be proportionate, we do not consider that this displaces the requirement to be transparent. For Phase 2, further scrutiny in those areas where there has been insufficient evidence from HAL to justify the inclusion of their estimates will be necessary.

2.2. EU EXIT SCENARIO AND ECONOMIC ASSUMPTIONS

The final year of Q6, 2019, coincides with the UK's exit from the European Union. The short and medium-term implications of the UK's exit on Heathrow are presently uncertain and dependent on parliamentary processes that are yet to be completed.

Given the uncertainty surrounding Brexit, HAL has proposed using a 'no-deal' EU exit scenario as the core underpinning assumption of the iH7 submission. Such a scenario inevitably assumes lower GDP growth, higher inflation and a weaker pound than alternate scenarios that assume agreement between the UK and EU. The scenario additionally assumes a sharp reduction in supply in April 2019 resulting from a partial loss of air traffic rights, and a smaller reduction in demand, leading to a substantial decrease in passenger numbers. Under the scenario, Heathrow recovers from the shock by 2022.

The reduction in passenger numbers which is one of the key revenue building blocks, also indirectly affects assumptions around likely operating expenditure and non-aeronautical revenues. The economic impacts that HAL assume arise from a 'no-deal' EU exit, are summarised in Table 2.1. These have been taken directly from, or adapted from, forecasts produced by Oxford Economics. The inflation assumptions shown



in the table affect each of the building blocks, whilst the GDP growth and exchange rate impacts, affect forecast non-aeronautical revenues.

Table 2.1: Economic assumptions in iH7 submission

	2018	2019	2020	2021
RPI growth (year average), %	3.5%	4.6%	3.6%	2.7%
UK GDP growth, %	1.3%	0.5%	1.0%	1.6%
US \$ per £	1.32	1.16	1.27	1.37
Euro per £	1.12	1.02	1.06	1.12

Source: HAL submission

The scenario proposed by HAL is negative, heading towards the most extreme of possible scenarios arising from the UK's exit from the EU. Using this as the core assumption raises the possibility of Heathrow receiving a windfall gain if a more positive outcome is achieved. Conversely, we recognise that using a scenario that assumes the status quo could lead to windfall losses for Heathrow.

We have therefore agreed with the CAA that we will, for now, assume that the UK achieves a planned and orderly exit from the EU. Consequently, we adopt an alternative set of economic assumptions. However, we consider that there may be greater certainty by April 2019 when Phase 2 of this study will commence. As such, the chosen EU exit scenario and related economic assumptions can be revisited for Phase 2.

2.3. Price base

The CAA has historically modelled each of the building blocks in real terms, with the adjustment for inflation made when calculating the price path. We have followed this approach in our forecasts, presenting them in 2016 prices. Whilst we do not explicitly use any of the economic assumptions in our forecasts, in Table 2.2 we present for comparison with those proposed by HAL, economic forecasts under a 'negotiated withdrawal' EU exit scenario.

Table 2.2: Economic assumptions under a 'negotiated withdrawal' EU exit scenario

	2018	2019	2020	2021
RPI growth (year average), %	3.5%	3.1%	3.1%	3.2%
CPI growth (year average), %	2.6%	2.0%	2.0%	2.1%
UK GDP growth, %	1.3%	1.6%	1.4%	1.4%

Source: Office for Budget Responsibility (2018) Economic and Fiscal Outlook

3. PASSENGER AND TRAFFIC FORECASTS

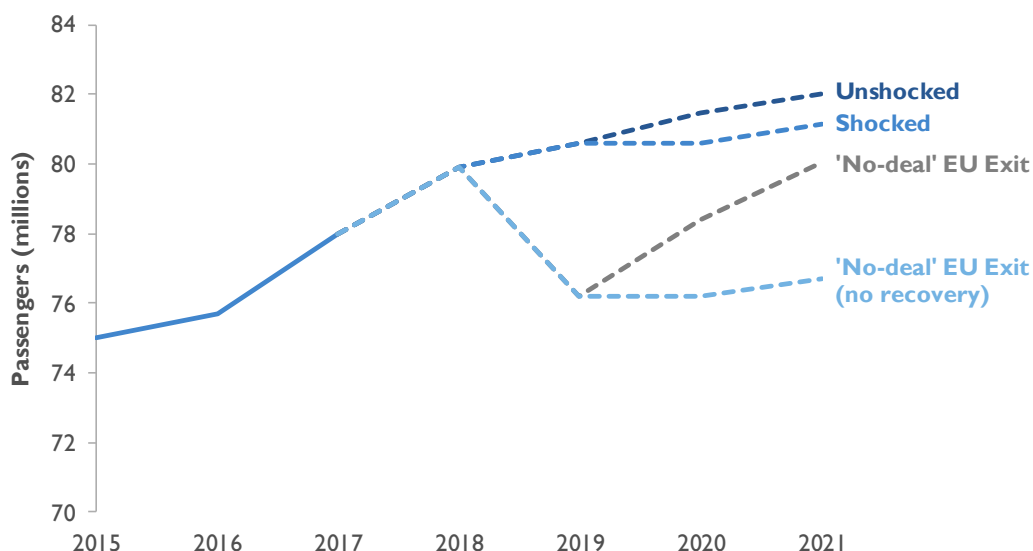
In this section we review historic passenger numbers at Heathrow and HAL's forecast for iH7. We consider the methodology and assumptions used to construct HAL's forecasts. We also consider alternative forecasts for passenger numbers at Heathrow before presenting our forecasts.

3.1. HAL PROPOSALS

HAL has produced four different passenger forecasts for its submission, presented graphically in Figure 3.1:

- An **un-shocked forecast** produced using HAL's standard modelling suite and assuming an EU exit with a deal between the UK and the EU. This forecast is used for operating expenditure.
- A **shocked forecast**, which is an annual adjustment to the un-shocked forecast to reflect that, as a capacity constrained airport, non-economic passenger shocks affect Heathrow asymmetrically (i.e. whilst negative demand shocks reduce passenger numbers, positive demand shocks do not increase passenger numbers significantly as Heathrow is capacity constrained). As such, the mean number of passengers at the airport would be lower than estimated in the un-shocked forecast.
- A **'no-deal' EU exit forecast**, which as discussed earlier is the core scenario in HAL's submission and the scenario used by HAL for planning purposes.
- A **'no-deal' EU exit forecast with no recovery in air traffic rights**, which is used only as an illustrative scenario of an alternative outcome. In this scenario, there is no recovery of flight numbers or demand following a 'no-deal' EU exit.

Figure 3.1: Passenger numbers at Heathrow, 2015-2021



Source: HAL iH7 submission

3.1.1. Business as usual (BAU) forecasts

Two different models have been used by HAL to produce the un-shocked forecasts; a medium-term model used for the 2019 forecast and a long-term model used to produce the estimates of passenger numbers in 2020 and 2021.



The medium-term model derives passenger numbers via a bottom-up assessment of:

- **Total ATMs**, using published schedules for the winter 2018/19 season and discussions with airlines regarding their intentions for the summer season and subsequent winter season. HAL adjust the number of ATMs downwards to reflect typical airline slot utilisation rates. In other words, not all routes will run fully to schedule due to cancellations or changes in airline plans.
- **Average seats per ATM**, using a mixture of historic trends, published schedules and discussions with airlines.
- **Average load factors per ATM**, using assumptions that reflect historic load factors and cross-checked against the results of econometric demand modelling

These assumptions are set separately for each route / airline combination, and then aggregated to estimate total passenger numbers.

The long-term model separately estimates passenger numbers using both a 'bottom-up' supply model and a 'top-down' demand model. The supply model takes a similar approach to modelling available seat capacity and load factors as the medium-term model, but at a less granular level. To reflect the uncertainty in the forecasts, the supply model uses Monte Carlo analysis to produce a range of possible outcomes (with the central scenario being the 50th percentile of possible outcomes).

The demand model uses econometric analysis to estimate how key explanatory variables (such as GDP levels) affect the demand for air travel between the UK and international markets, and the demand for transfer air travel via hub airports. The model then estimates the share of such demand Heathrow can expect to gain both for UK origin and destination travel and for transfer traffic, given capacity constraints. We have been informed by HAL that both the demand and supply models have produced similar forecasts for the years in question, though we have not had access to the model outputs to confirm this.

3.1.2. Shocked forecasts

As noted above, a shock adjustment was introduced in the passenger forecasts underpinning the Q6 determination.² This adjustment reflects an observation that Heathrow as a congested airport is affected by exogenous demand shocks asymmetrically, in the sense that Heathrow is less able to capitalise on positive demand shocks due to capacity constraints but is still exposed to the full effect of negative demand shocks. Without an explicit allowance for such shocks there may be an upward bias to the passenger numbers. These shocks include large events such as 9/11 and the volcanic ash cloud, as well as events that had a smaller impact on passenger numbers, such as the SARS outbreak. The shock adjustment is an allowance for the existence of such shocks, recognising that the passenger numbers in any one year will be closer to the un-shocked forecast but the mean number of passengers over a period of time will be closer to the shocked forecast.

Using data from 1991 to 2012, the adjustment was calculated at 1.2% per annum for the Q6 determination by the CAA.³ HAL has revised this assumption using data from Q6 and estimated it to be 1.07%, but have only applied it from 2020 onwards.

² See [Civil Aviation Authority \(2013\) Economic regulation at Heathrow from April 2014: initial proposals, CAP1027](#) and [Civil Aviation Authority \(2013\) Economic regulation at Heathrow from April 2014: final proposals, CAP1103](#)

³ HAL had originally estimated the shock adjustment to be 1.4% per annum, but this was revised down by the CAA.



3.1.3. EU exit forecasts

Both EU exit forecasts assume that, following a no-deal exit from the EU, there will be a partial loss of air traffic rights between the UK and certain countries for which the rights are currently exercised via the UK's membership of the EU. These countries include both EU countries, such as Germany, France, Italy and Belgium, and non-EU countries for which traffic rights are negotiated via the EU, such as the USA.

In its core scenario, HAL assumes that in the first week of April 2019 there will be a 35% reduction in capacity on affected routes, varying levels of demand and capacity reductions on routes dependent on transfer traffic or cargo volumes, and a general 2% demand reduction on all routes. For the remainder of 2019, this is followed by a 10% capacity reduction on affected routes, smaller reductions in demand and capacity on routes dependent on transfer traffic and cargo volumes, and a 2% demand reduction on all routes. These assumptions lead to an overall reduction in passenger numbers of 5.5% in 2019.⁴

Both demand and supply are expected to gradually recover through 2020 and 2021, and the EU Exit impact dissipates by 50% and 75% respectively. The effect of this is summarised in Table 3.1.

Table 3.1: 'No-deal' EU exit assumptions, 2018-2021

	2018	2019	2020	2021
Reduction in passenger numbers, %	-	5.5%	2.7%	1.4%
Reduction in passenger numbers, millions	-	4.4	2.2	1.1

Source: HAL iH7 submission

HAL also presents an alternative scenario to illustrate the potential impact of an even more negative EU exit outcome. In this scenario, the reduction in seat capacity and demand is not expected to recover in 2020 and 2021 and instead leads to permanently lower passenger numbers.

3.2. CEPA ANALYSIS

3.2.1. Review of historic passenger growth

A planning cap of 480,000 air transport movements (ATMs) per annum exists at Heathrow airport. For several years the airport has operated at close to this cap, which has left limited room for further growth in passenger numbers through more ATMs. However, passenger numbers in recent years have continued to grow through a gradual move towards higher capacity planes achieving higher load factors.

As shown in Figure 3.2, passenger growth has exceeded the forecasts assumed in the CAA's Q6 determination but was below the forecasts assumed in Q4 and Q5. Lower passenger numbers during Q4 and Q5 were largely the result of increased oil prices and the 2008 recession, whilst a strong recovery in global economic growth and a period of low oil prices have led to stronger demand for air travel from Heathrow during the Q6 price control.

⁴ The original HAL submission stated the reduction was 5.7% but we believe this is a calculation error.