H8 Passenger Forecast – shock factor issues

19 August 2026

Context

- The shock factor is a downward adjustment applied to the annual passenger forecast to reflect that there will be unpredictable events during the period that cause a **non-recoverable reduction** in passenger volumes (such as adverse weather, volcanic eruptions, terrorist events and international conflicts).
- The value is estimated with reference to historical data and the estimated impacts of observed shocks.
- In our H8 Initial Proposals (IPs), we said "prior to making our final decision, we intend to update the calculation of the shock factor to include data from year 2025" (para 2.70).
- In their response to the IPs, airlines argued against inclusion of the shock factor at all, but also highlighted methodological areas where if it is to be retained they consider it should be revised.
- Heathrow Airport Limited (HAL) did not raise the shock factor in their responses to the IPs, but have subsequently suggested that the power outage in March 2025 should be considered a shock event.
- Given the complexity of the issues and the materiality of the traffic forecast to the price control setting, we consider further consultation and stakeholder feedback is appropriate for some of the options under consideration, to help inform our H8 Final Proposals. The contents of this pack should not be considered exhaustive in terms of the issues and potential policy options.
- We invite stakeholders to share views on the following questions and issues set out in the attached slide pack, and to share any additional relevant information by **Thursday 10 September 2026.**
- Please send responses to Judith Corbyn (judith.corbyn@caa.co.uk) and Elise Weeder (elise.weeder@caa.co.uk).

Issues for consideration

1. Treatment of 2025 power outage as a shock event – should this event be identified as a shock for the purposes of the shock factor estimate calculation?
2. Length of shock event data series used for H8 shock factor estimate – which of the following options would you support and why:
    a. No change to starting point of series, first year 1991
    b. Update series, first year 1992
    c. Update series, first year 2002
3. Impact of the Middle East conflict on H8 passenger forecast and shock factor

1. Treatment of 2025 power outage as a shock event

- On 21 March 2025 there was a power outage at Heathrow which closed the airport for approximately 16 hours.
- For inclusion as a shock event, the power outage would need to reflect an event causing a **non-recoverable reduction** in passenger volumes.
- If no recovery is assumed, applying the current HAL methodology estimates an impact on the year's traffic of -0.30% as set out on slide 7.
- Full year 2025 reported data showed outturn passengers of 84.5m to be higher than the HAL Business Plan forecast of 84.2m (shared July 2025, and originally shared during Round 2 of Constructive Engagement in early March 2025). 2025 also had the highest ever reported Passenger Air Transport Movements (PATMs) at 475.6k (~99.1% of the allowed 480k cap).
- The following slides set out:

a) a summary of the event;

b) calculation of the shock; and

c) supporting data analysis.

1. Do you consider the months March/April 2025 should be identified as a shock for the purposes of the shock factor estimate calculation? Please set out the reasoning supporting your response.

a) Summary of the event

- Compared to other events in the shock data series the airport closure on 21 March 2025 is unusual in that it was:
  - technological/infrastructure disruption to the airport system (rather than a natural hazard or security event)*;
  - of limited duration with the airport closed for less than 24 hours; and
  - did not negatively impact on the wider UK aviation or transport system but was specific to Heathrow.

- Approximately 1,300 flights did not operate on 21 March 2025. The DfT alleviated some night flight restrictions on 21/22 March 2025 to support the recovery of the airport, including aircraft placement to minimise further passenger disruption.

- Passengers were either:
  - delayed or re-rerouted at the time of the event; or
  - rescheduled on flights to/from either Heathrow or another airport at a later date; or
  - some may not have flown at all.

- Prior to Covid-19, Heathrow was operating at a level further below the ATM cap of 480k per annum. Now the airport is operating closer to this constraint, all stakeholders (HAL, Airport Coordination Limited and airlines) have the incentive to move unused capacity to later in the year which could allow for recovery of passenger volumes.

- However, the ATM cap operates from 1 April to 31 March each year, meaning that in 2025 it would not have been feasible to reallocate unused capacity from 21 March 2025 during the remainder of the ATM cap year.

* Final report from the review into the North Hyde Substation outage | National Energy System Operator

b) Calculation of March 2025 shock – (i) method applied

- To estimate the size of a shock, the **difference** between the **expected** number of passengers in the event month(s) and the **outturn** is then divided by the **expected annual total** in the event year.

- There are 2 methods used by HAL to estimate the expected number of passengers in an event month:

    - Method 1 interpolates the event month's passengers using outturn data from the same month in the year before and the year after, taking the mid-point as the expected passengers for the month in the event year. This is the default approach used when the next years' data is not considered to be in shock.

    - Method 2 is the alternative method and is used where the event month in the following year is also considered to be in shock. This approach applies the unweighted average of the monthly growth of the remaining "unshocked" months in the event year to the prior years' event month passengers.

- The method used to estimate March 2025* expected passengers depends on whether March 2026 outturn is considered to be in shock too – whilst this cannot be explicitly determined yet according to the current methodology, it is reasonable to consider it is appropriate to use Method 2, given March 2026 is the first month of the Middle East conflict 2026.

*For all shock factor calculations, the months of **March and April are combined** to remove the impact of moving Easter dates between years. Where "March" is used here, it refers to "March and April".

b) Calculation of March 2025 shock – (ii) outcomes

- The monthly change in outturn passengers* between March/April 2024 and March/April 2025 is -0.82%.
- The overall annual outturn increase in passengers from 2024 to 2025 is +0.71%
- Applying Method 2 outlined on the previous slide estimates a shock event of -0.30% with an estimated loss of ~250,000 passengers. However, it is noted that the 2025 growth rate estimated using this method will be affected by any passengers displaced beyond the end of April 2025 into future months, and that this could potentially lead to an over-estimation of the level of “expected” passengers in March 2025.

	Method 1 – March 2026 not in shock	Method 2 – March 2026 in shock
Estimated March 2025 growth rate	-0.22%	+1.05%
Estimated 2025 shock	-0.10%	-0.30%

* Calculations based on LHR terminal and transit passengers, CAA Airport Statistics 2024 - 2026

c) Supporting data analysis

	2024	2025
Total passengers (m)	83.9	84.5
Total passenger air transport movements (k)	471.3	475.6

Figure 1: LHR monthly passenger totals, 2024 and 2025

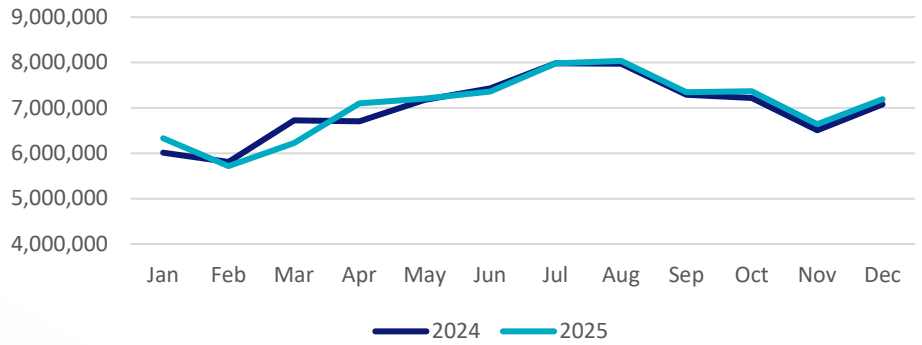


Figure 2: LHR passengers, monthly % change, 2025 vs 2024

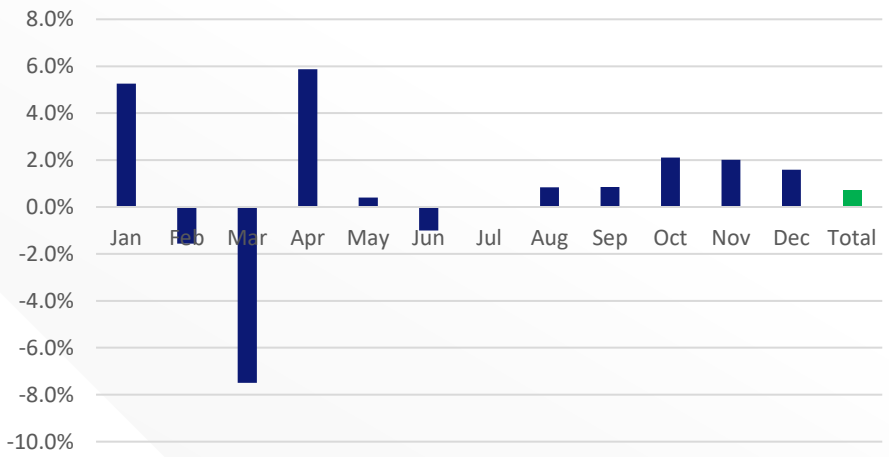
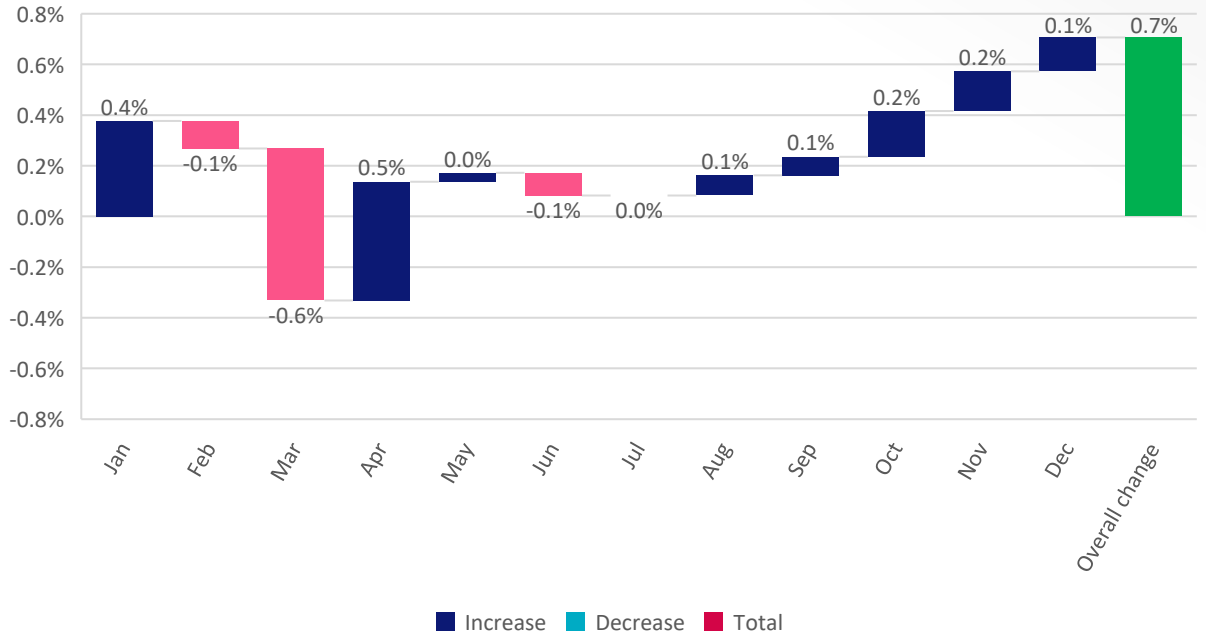


Figure 3: Distribution of annual % change in LHR passengers by month (monthly change weighted by 2024 monthly passengers)



Source: CAA Airport Statistics, terminal and transit passengers, data provided in Appendix B

Note: March / April variation is also impacted by Easter dates, Good Friday was on 29 March 2024 and 18 April 2025

2. Length of shock event data series used in H8

- In response to our Initial Proposals, airlines have argued for the removal of the shock factor from the passenger forecast or, alternatively, its recalculation.

- Concerns have been raised with the length of the shock events series used in the average shock factor calculation, and specifically the inclusion of the first data point in the event series of the 1991 Gulf War (estimated as a -8.00% shock, the largest event in the series by some margin, the next largest shock being 5.22% in 2001). The full available series consists of 31 data points over 35 years, with 4 years (2020 – 2023) excluded due to Covid (see Appendix).

- The airlines argue that:
  - The 1991 shock estimate incorporates economic as well as non-economic impacts, and that
  - older shock events may be less representative of the H8 period given improvements in airline operations, airport management, technology and resilience planning.

- We recognise the concerns around the sensitivity of the shock factor calculation to the first data point and note the apparent trend over time towards lower impacts of shocks - since 2001 there hasn't been a year with a shock > 5%, and only one greater than 1% since 2007. The current outturn data following the 2026 US-Iran conflict also supports the argument that an ongoing continuation of the underlying data series from 1991 without further review no longer seems appropriate.

2. Review of time series length on shock factor estimate

- We have investigated the impact of revising the length of the time series to:
  - Maintain a 30-year length following the inclusion of 2025, rolling forward a year to start in 1992; or
  - Truncate the series to recognise significant changes in the sector following 9/11.

- We set out 3 options for the series basis to be used in the Final Proposals. The average shock factors calculated are shown to 2024 for comparison and for both treatments for 2025.

Option	t	From t to 2024	No of years in series starting t including 2025	2025 = no shock	2025 = -0.30% shock
a	1991	-0.84%	31	-0.81%	-0.82%
b	1992	-0.59%	30	-0.57%	-0.58%
c	2002	-0.59%	20	-0.56%	-0.58%

2. Which option for the shock factor event series do you support and why?

Notes:
- All calculations exclude the 4 Covid years 2020 – 2023 inclusive.
- The shock events data series requires passenger data starting at t-1, where t is the first year of the series.
- The magnitude of the shock events calculated are independent of the year assigned to t-1 and whether t-1 is considered a year in shock itself.
- Further detail on the calculations are shown on slide 6.

3. Impact of the Middle East conflict on passenger forecast and shock factor

- Assumptions made around the **2026 Middle East conflict and related recovery** will be considered within the H8 base forecast in our Final Proposals, with the estimated shock factor using data up to 2025 overlaid. The shock factor is intended to take account of unpredictable events that may occur during the price control period that are not related to existing known determinants of the forecast.

- 2026 outturn data will not be used in the estimation of the shock factor for H8 as:

    - a full year's data will not be available at the time of the Final Proposals, and
    - the Middle East conflict continues to impact.

- Consideration of whether and how the impact of the conflict could inform the shock factor will be given in future price controls.

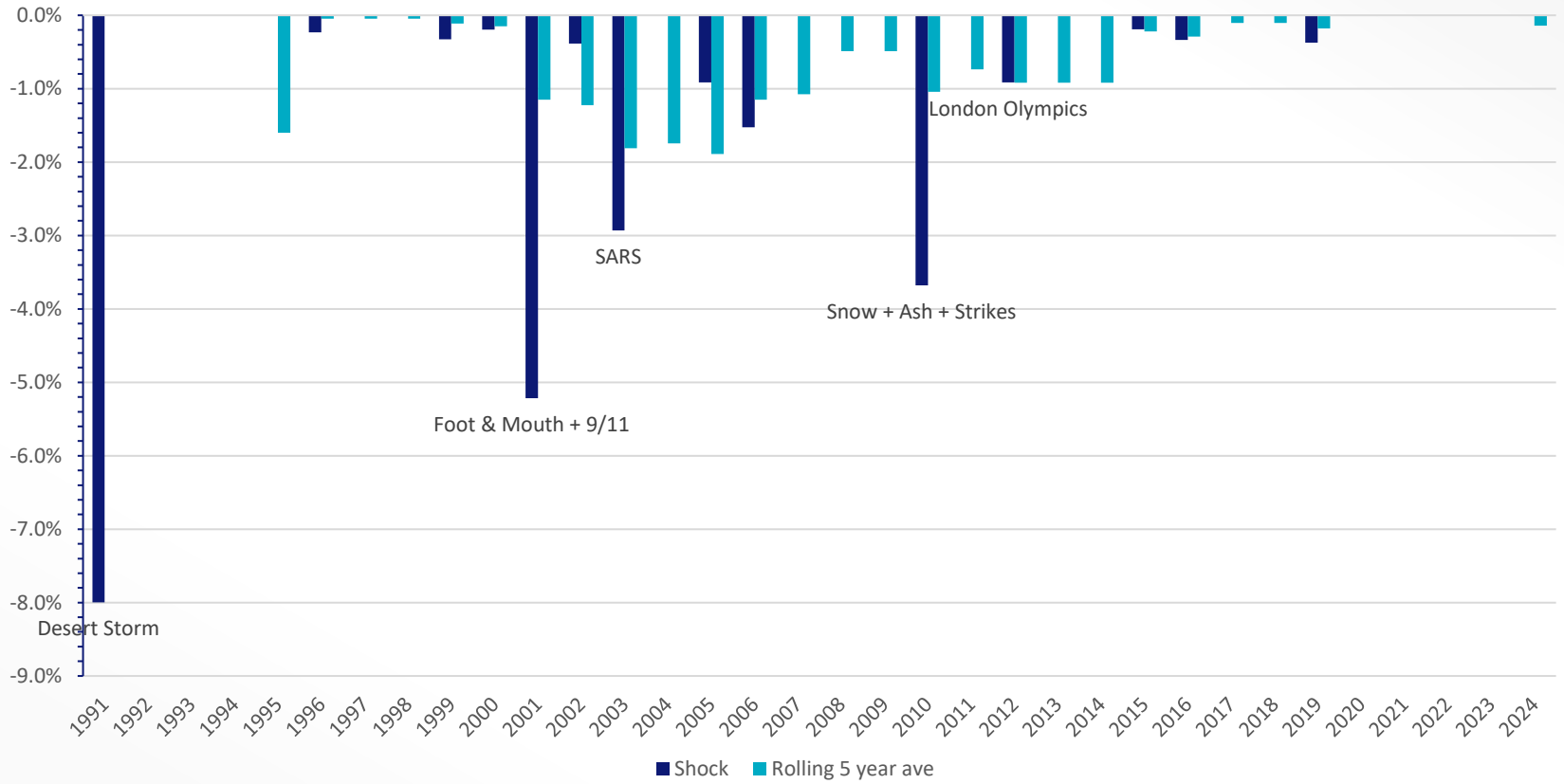
3. We welcome stakeholders' views on the exclusion of 2026 data from the H8 shock factor calculation.

APPENDICES

APPENDIX A: Estimated shock impacts since 1991

UK Civil Aviation Authority

Figure 4: Shocks as calculated since 1991 and rolling 5 year averages



Source: HAL shock factor calculations and methodology, CAA analysis
Data provided on following slide

APPENDIX A - Data

Figure 4: Shocks as calculated since 1991 and rolling 5 year averages

Year	Estimated shock	Rolling 5 year average	Year	Estimated shock	Rolling 5 year average	Year	Estimated shock	Rolling 5 year average	Year	Estimated shock	Rolling 5 year average
1991	-8.00%		2001	-5.22%	-1.15%	2011	0.00%	-0.74%	2021	N/A	N/A
1992	0.00%		2002	-0.38%	-1.22%	2012	-0.91%	-0.92%	2022	N/A	N/A
1993	0.00%		2003	-2.93%	-1.81%	2013	0.00%	-0.92%	2023	N/A	N/A
1994	0.00%		2004	0.00%	-1.75%	2014	0.00%	-0.92%	2024	0.00%	-0.14%
1995	0.00%	-1.60%	2005	-0.91%	-1.89%	2015	-0.19%	-0.22%			
1996	-0.23%	-0.05%	2006	-1.53%	-1.15%	2016	-0.34%	-0.29%			
1997	0.00%	-0.05%	2007	0.00%	-1.07%	2017	0.00%	-0.11%			
1998	0.00%	-0.05%	2008	0.00%	-0.49%	2018	0.00%	-0.11%			
1999	-0.33%	-0.11%	2009	0.00%	-0.49%	2019	-0.37%	-0.18%			
2000	-0.19%	-0.15%	2010	-3.68%	-1.04%	2020	N/A	N/A			

Source: HAL shock factor calculations and methodology, CAA analysis

APPENDIX B: Slide 8 data

Figure 1: LHR monthly passenger totals, 2024 and 2025		
	2024	2025
Jan	6.0	6.3
Feb	5.8	5.7
Mar	6.7	6.2
Apr	6.7	7.1
May	7.2	7.2
Jun	7.4	7.4
Jul	8.0	8.0
Aug	8.0	8.0
Sep	7.3	7.3
Oct	7.2	7.4
Nov	6.5	6.6
Dec	7.1	7.2
Total	83.9	84.5

Figure 2: LHR passengers, monthly % change, 2025 vs 2024	
Jan	5.3%
Feb	-1.6%
Mar	-7.5%
Apr	5.9%
May	0.4%
Jun	-1.0%
Jul	0.0%
Aug	0.8%
Sep	0.9%
Oct	2.1%
Nov	2.0%
Dec	1.6%
Total	0.7%

Figure 3: Distribution of annual % change in LHR passengers by month (monthly change weighted by 2024 monthly passengers)	
Jan	0.4%
Feb	-0.1%
Mar	-0.6%
Apr	0.5%
May	0.0%
Jun	-0.1%
Jul	0.0%
Aug	0.1%
Sep	0.1%
Oct	0.2%
Nov	0.2%
Dec	0.1%
Total	0.7%

Source: CAA Airport Statistics, terminal and transit passengers