SHORT (& MEDIUM) TERM MEASURES - EXECUTIVE SUMMARY

MEASURE SET	**Airport operations**
MEASURE TITLE	Operational freedoms at Heathrow
MEASURE SUMMARY	This measure explores the scope for a set of operational freedoms to be established permanently at Heathrow to enable the greater use of tactical measures in defined and limited circumstances to prevent or mitigate disruption and to facilitate recovery, as recommended by the Government's South East Airports Taskforce (SEAT). A trial to assess the impact of operational freedoms on the local community, the environment, passengers and airport operations has recently been completed at Heathrow. This measure would result in a set of modified operational freedoms, based on lessons learnt during the trial, becoming permanent.
MEASURE INVOLVES	☐ Behavioural Change ☒ Operational Change ☐ Technical Change ☐ Infrastructure Change ☐ Regulatory Change ☒ Policy Change

WHAT DOES THIS ADDRESS?

Under current operating procedures, Heathrow runways are used mainly in segregated mode; that is one runway is used for arrivals and the other is used for departures. There are exceptions to this when, under certain circumstances, both runways can be used contemporaneously for arrivals to a limited extent for arrivals – so-called tactically enhanced arrivals measures (TEAM). For operations towards the west, application of TEAM is based on a trigger condition of 20 minutes arrival delay being met and is limited to six arrivals on the departure runway per hour. Use of the designated departures runway for arrivals during operations towards the east is more flexible and is based on operational prerogatives.

Simultaneous use of both runways for departures only occurs to a very limited extent. Once they have taken-off, departing aircraft a routed via a standard instrument departure route (SID) normally at the centre of a broad swath of the noise preferential route defining the acceptable flightpath based on noise considerations.

These processes constrain capacity because of the necessity to maintain adequate spacing (dependent on the relative sizes of the leading and following aircraft) between adjacent aircraft in the arrival stream and similarly between adjacent aircraft in the departure stream both on approach to and departure from the runway as well as along the SID. This limits throughput.

WHAT WOULD BE DONE?

Operational freedoms introduce additional operational flexibility in the use of runways for arrivals and departures as well as operating the SIDs more flexibly to reduce these throughput constraints, to address mitigation against and recovery from moderate disruption (operational freedoms are likely to provide an incremental increase in capacity for resilience purposes and will, hence, be of limited use against major disruption). Operational freedoms would not enable any additional flights.

WHAT IS THE IMPACT?

The expected positive impacts of operational freedoms associated with improvement in operational resilience are:

- increased runway throughput during adverse conditions
- reduced arrival and departure holding delays related to queuing to use Heathrow's runways, resulting in reduced fuel burn, lower emissions and time savings
- potentially, reduced need for operations post-23:00 hours to recover from disruption
- reduced taxi-times and runway crossings, especially for aircraft using Terminal 4.

Operational freedoms are likely to have mainly negative but some limited positive noise impacts, due to the redistribution of noise:

- periods of noise respite provided to residents under the westerly flight paths would be reduced when operational freedoms were applied
- more flexible use of the SIDs would redistribute flights within the noise preferential route swath meaning that those most affected now might see some noise reduction but others, currently little-affected, would hear an increase in noise.

MEASURE SET:	Airport operations	Short Term	☒
MEASURE TITLE:	Operational freedoms at Heathrow	Medium Term	☐

MEASURE SUMMARY

Proposed by:	BAR UK(008), Heathrow Airport Limited (024), IoD (039), LACC/AOC (043), London Councils 046), NATS 053)	
Proposal: ApOP-HOF-1 ApOP-HOF -2 ApOP-HOF -3 ApOP-HOF-4	The operational freedoms measure comprises four proposals to introduce more flexible use of the runways and departure routes at Heathrow: • allocating arrivals to the departure runway as needed to improve overall efficiency (TEAM) • vectoring of departures from the SID centreline to maximise departure capability • allocating departures to the arrivals runway to improve overall efficiency as circumstance allow (TED) • tactical use of the southern runway for T4 and A380 arrivals All of these proposals have the potential to be enacted in the short-term.	
Approach	• For arrivals when delay is occurring or anticipated, the designated departure runway can be used for arrivals to increase the overall arrival rate (TEAM). • For departures, when delays are anticipated / occurring, vectoring would be allowed off the centre-line of the noise preferential routes to reduce separation between departures and enable the flow rate along the routes to be increased. • In addition, when conditions allow and departure delays are anticipated / occurring, the designated arrivals runway would be used for departures (TED). • It would also be possible to use the southern runway on a tactical basis for T4 and A380 arrivals, minimising the distance that they need to taxi to their stands and minimising impact of A380 large wake vortex separations. Freedoms could be applied based on operational judgement with no formal trigger condition required. As the overall system is closed, using the departures runway for arrivals decreases the departure rate and vice versa. Thus measures are self-regulating. TEAM and TED would not be applied simultaneously	Stated Capital Cost: Not Stated Capacity (mppa): None Capacity (atm): None
Benefits	Benefits are likely to include: • higher runway throughput • reduced holding delays for both arrivals and departures • reduced requirement for night movement dispensations for recovery from disruption • reduced taxi times, particularly for T4 arrivals, associated with a reduced runway crossings. These benefits are likely to be realised during the periods of moderate disruption, e.g. high winds, that occur at Heathrow very frequently.	
Issues & Risks	Application of TEAM increases the level of arrivals using the departure runway, has a negative impact on the benefits of runway alternation (on westerly operations) and likely reduces respite. The application of TED has the same impact for departures. Early vectoring has the effect of moving aircraft from the centreline to the edges (or slightly outside) the noise preferential routes and results in a redistribution of the noise footprint, affecting communities that are not or are only marginally affected under current operations. Conversely, those living under the centreline would likely suffer less noise – this is an example of noise dispersion. An major airline using Heathrow suggested that their experience of the operational freedoms trial was that freedoms tested were of limited value in increasing resilience. The level/magnitude of resilience that could be provided by operational freedoms against major disruption is also not clear.	
Mitigations	Enhanced noise mitigation and compensation could be envisaged for those affected by operational freedoms.	
Dependencies	Implementation of operational freedoms depends on policy-level approval, most likely based on the conclusions of the trial. There are some technical enhancements that would also need to be made to increase the efficiency of operational freedoms, to enable independent parallel approaches and departures and to redesign the SIDs to improve their efficiency.	

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ASSESSMENT SUMMARY

Strategic Fit	Not stated – depends on long-term options.
Economy	Operational freedoms could have a number of positive economic impacts however, the CAA have suggested that the results of the trial struggled to demonstrate those benefits quantitatively. • reduced airline operating costs arising from reduced delays • passenger value of time savings and improved passenger experience.
Surface Transport	No impact.
Environment	Operational freedoms would likely have both positive and negative environmental impacts: • aircraft holding would be reduced on the ground (improving LAQ and reducing GHG emissions) and in the air (reducing GHGs) • noise respite would be reduced for arrivals and also for departures if TED is applied • noise footprints would be redistributed around the departure routes due to vectoring and TED.
People	Operational freedoms are likely to be unpopular with those residents: (i) that were previously unaffected or only marginally affected by noise but become affected due to vectoring of aircraft off the SID centreline; (ii) those whose noise respite is reduced by the application of TEAM and TED. The negative impact of TEAM and TED is likely to be higher for westerly operations than easterly, which currently have more flexibility. However, both directions of operation are likely to be equally affected if runway alternation is applied in the easterly direction as it currently is in the westerly direction. Operational freedoms are likely to improve passenger experience through the reduction of delays.
Cost	Costs associated with operational freedoms are likely to be small. There is a potential cost associated with additional taxiways needed to enable fully flexible operations in the easterly direction. There is also a potential cost involved in any necessary changes to existing ATC procedures including for airspace consultation if required.
Operational Viability	The proposal is operationally viable with the possible exception of TED that proved difficult to apply during the recent trial due to airspace constraints. Operational freedoms alone are not likely to deliver sufficient headroom to counter major disruption. To derive full benefits it is likely that additional enablers would be needed, including: • independent parallel approaches • redesigned SIDs to ease early vectoring and to enable TED. The CAA consider that redesigned SIDs are necessary for the safe long term use of vectoring.
Delivery	The main risks to delivery are: • lack of support from stakeholders, some of whom are not convinced of the benefits • potential resistance from local communities and other stakeholder groups.