

Increasing airport resilience – discussion paper

21 June 2016

Overview

Introduction

1. The purpose of this paper is to set out our latest policy thinking on the H7 strategic theme of 'increasing airport resilience' at Heathrow Airport and to give stakeholders the opportunity to provide input. This paper also seeks to provide clarity on the scope of the H7 resilience workstream and wider resilience work being undertaken by the CAA.
2. We would like to use the seminar to consider the following:
 - Section 1 - Scope of workstream
 - Section 2 - Review of progress made in increasing airport resilience
 - Section 3 – Proposed approach to increasing airport resilience through H7: next steps

The CAA's statutory duties

3. The Civil Aviation Act 2012 (The Act) gives the CAA a duty to further the interests of users of air transport services in respect of its economic regulation functions. Under the Act, users of air transport services are defined as present and future passengers and those with a right in property carried by the service i.e. cargo owners. For the sake of simplicity we use the term 'consumers' to mean both present and future passengers and cargo owners. We stated in the discussion document that we intend to go much further than we have previously to put consumers at the heart of our airport economic regulation.

Section 1 – Scope of workstream

The following section provides further detail on the proposed scope of the ‘increasing airport resilience’ workstream setting out:

- Our rationale;
- How it relates to ongoing resilience requirements in HAL’s licence;
- How it relates to wider resilience work; and
- How it relates to airspace issues.

Rationale – the problem we are trying to address

4. Within the context of our statutory duties, the problem we are trying to address in the H7 ‘increasing airport resilience’ workstream is the day-to-day impact and knock-on effects that congestion and a lack of spare runway capacity at Heathrow Airport have on consumers. This is in the context of increasing demand and passenger growth and an absence of additional runway capacity for at least ten years.
5. This capacity constrained environment presents significant day-to-day challenges for Heathrow Airport Limited (HAL), the airlines and other stakeholders in optimising the use of existing capacity, improving performance and reducing the impact disruption has on consumers. We consider the H7 review presents an opportunity to build on the progress made in Q6 by encouraging greater industry collaboration, innovation and ongoing improvements in addressing these challenges. In doing this, we are furthering the commitment made in our 2016-2021 Strategic Plan to think creatively about how existing capacity can be planned and operated to meet stakeholders’ expectations, and what the CAA can do to ensure this issue is addressed.
6. Heathrow is exceptionally highly utilised and is limited by an annual cap of 480,000 Air Transport Movements (ATM) imposed by a planning condition for the development of Terminal 5 in 2001. In 2015, Heathrow operated around 472,000 ATMs or 98 percent of its total runway capacity.

Heathrow is also designated as a 'co-ordinated' airport¹ as there is insufficient capacity to meet demand.

7. One of the consequences of Heathrow operating at the margin of full capacity is that it has little room to spread the impact of disruption across the day, with even minor disruptions having a knock-on effect. Heathrow therefore has a high number of delays compared to other European airports which can use additional spare capacity as a buffer to recover from delay and minimise knock-on effects. This also leads to a decline in on-time performance, which affects consumers. Greater slot productivity through the increase in larger aircraft to accommodate growing demand also places additional pressure on terminal capacity and groundhandling activities, including baggage systems and groundhandlers' performance. We consider these areas or pressure points associated with the use and management of the runway need to be explored in H7. See section 3 for more information.

Ongoing resilience requirements in HAL's licence

8. The resilience condition in HAL's licence contains an overarching requirement² for HAL to: *secure the availability and continuity of Airport Operation Services³ at the Airport⁴ particularly in times of disruption to further the interests of users of air transport services in accordance with best practice and in a timely efficient and economical manner.*
9. HAL is also required to:
 - consult on, develop and maintain resilience plans and processes in line with any guidance issued by the CAA;
 - facilitate a governance forum to foster a more cooperative and collaborative approach to managing disruption;

¹ These rules are set out in European Regulation 95/93/EEC, as amended by Regulation 894/2002/EC and 793/2004 EC. These were implemented in the UK by the Airport Slot Allocation Regulations 1993 (SI 1993/1067) which came into effect in May 1993.

² See condition D2.1 in HAL's licence
<http://www.caa.co.uk/WorkArea/DownloadAsset.aspx?id=4294975875> (PDF).

³ See section 68 Civil Aviation Act 2012.

⁴ See sections 66 and 67 Civil Aviation Act 2012.

- lead on coordination and communication between itself, the airlines and the groundhandlers to ensure a more coherent response to disruption including developing a ‘rules of conduct’ for airlines and groundhandlers, in consultation with those bodies, setting out what HAL would need from those bodies to support it in meeting its licence obligations; and
- publish information relevant to other service providers and passengers as far as possible to help them plan their response to disruption.

10. While there have been many improvements by HAL, the airlines and other stakeholders to improve resilience under the licence, this work has largely focused on planning, managing and recovering from **significant disruptive events**.⁵ However, the overarching requirement noted above is very broad covering all aspects of resilience at the airport and was always intended to encompass **day-to-day ‘business as usual’ service continuity** as well as significant disruptive events. It was also considered that improvements to resilience under the licence would be an on-going, iterative process. As such, we consider looking at the effects that capacity constraints have on the airport is the natural progression in improving resilience under the licence. We also note that this issue was raised in the development of the Q6 resilience proposals. At the time, we considered there needed to be a wider debate with stakeholders on this aspect of resilience which we intend to progress in H7.

Wider resilience work

11. The CAA is also undertaking a wider piece of work on the operating resilience of the UK’s aviation infrastructure in the context of increasing capacity constraints, and will shortly be publishing a request for information from a wide range of stakeholders.⁶ This covers two key

⁵ Such as adverse weather, equipment failures, closure of terminals or industrial action etc.

⁶ The operating resilience of the UK’s aviation infrastructure: A request for information, June 2016.

questions from a UK perspective, recognising that the issues are likely to be more severe in the South East of England:

- How can the performance of the aviation network be improved or optimised?
- How effective is the current regime, and how are consumer interests represented?

12. The CAA aims to publish recommendations in these two areas by spring 2017. This may include, for example, options around better coordination and information sharing to improve capacity planning across the airport and in airspace amongst stakeholders, particularly across the South East.
13. While this project sits outside the H7 process we have been and will continue to work closely together in developing our approach to improving resilience for the benefit of consumers and the industry.
14. One particular issue we are jointly considering is consumers' experiences of and attitudes towards day-to-day disruption that results from runway congestion and capacity constraints. We would like to understand better how consumers view the trade-offs between capacity, cost and service levels and the extent to which resilience (or the lack of it) is an issue. We are in the process of commissioning consumer research to consider this issue which we expect to be finalised in September 2016. We propose to use this research as a platform for dialogue with stakeholders in helping us develop evidence based policies that reflect consumers' attitudes and preferences. We have also asked HAL and the airlines if they are willing to share any complementary research in this area which we will consider alongside the commissioned research.
15. Additionally, the CAA has been discussing with industry representatives what possible short term actions can be taken to improve resilience for summer 2016. Of necessity, this has mainly been around information sharing and includes: NATS using consolidated scheduling data to anticipate busy sectors; early identification of significant volumes of diplomatic flights which may place greater stress on scheduled services;

and exploring options with NATS on resilience measures around prioritisation under the Air Traffic Services licence. The industry will be using the lessons learned from this exercise to inform planning for future scheduling seasons.

Airspace issues

16. The issue of airspace redesign has been raised by stakeholders in the context of H7. While we fully recognise the symbiotic relationship between the airport and airspace, we consider the pursuit of resilience in H7 should fall within the relevant definitions under the Act and the licence⁷ focusing on Airport Operation Services' (AOS)⁸ which take place at the Airport⁹. We also note the definition of AOS explicitly excludes Air Traffic Services.¹⁰ Therefore, we consider H7 is not the correct forum to address airspace redesign or other airspace related projects and that there are separate processes and forums in which to engage on these issues.¹¹ The purpose of this seminar is to open a debate with stakeholders on how to increase resilience at Heathrow Airport within the framework under the Act and licence.
17. We understand HAL and the airline community's views¹² on the importance of airspace redesign in driving resilience improvements at Heathrow and acknowledge that the airline community also consider that further progress in enhancing operational performance at Heathrow would

⁷ Under the licence, HAL is required to: secure the availability and continuity of Airport Operation Services at the Airport particularly in times of disruption to further the interests of users of air transport services in accordance with best practice and in a timely efficient and economical manner.

⁸ See section 68 Civil Aviation Act 2012.

⁹ See sections 66 and 67 Civil Aviation Act 2012.

¹⁰ Air Traffic Services are defined as having the same meaning as in Part 1, section 98 Transport Act 2000. In particular, section 98 (1) (c) states that Air Traffic Services include 'managing the flow of air traffic with a view to securing the most efficient use of airspace.'

¹¹ For example the CAA's consultation on its airspace change process <http://www.caa.co.uk/Commercial-industry/Airspace/Airspace-change/Airspace-Change/>

¹² In their response to the March discussion document and in further engagement.

not be possible without such changes and the delivery of other airspace related projects.¹³

18. Whilst we fully recognise that airspace redesign and other airspace related projects are important factors in driving resilience improvements, they should not prevent the industry from exploring other improvements which could enhance resilience at the Airport (see section 3 below).
19. We also recognise that improving resilience in a capacity constrained environment increasingly requires industry-wide collaboration between stakeholders at local, national and European level and that this goes wider than local airport operations. Indeed one of the key principles upon which the resilience licence condition was based recognises the need for HAL to ‘cooperate and collaborate with relevant parties’ in meeting its overarching resilience obligation¹⁴ using proactive leadership to coordinate the response to disruption in the interests of consumers. Therefore, within the context of HAL’s licence requirements, we welcome and encourage collaboration and cooperation by the industry in finding further resilience improvements at the airport and consideration of whether there are wider resilience issues that could be addressed.
20. We also note the airline community’s view on the CAA’s pursuit of airspace resilience through the regulation of NATS under the Air Traffic Services licence. As noted above,¹⁵ we are exploring options with NATS on resilience measures around prioritisation under the Air Traffic Services licence and will share this with the industry in due course.

¹³ Such as London Airspace Management Programme (LAMP).

¹⁴ HAL is required to: secure the availability and continuity of Airport Operation Services at the Airport particularly in times of disruption to further the interests of users of air transport services in accordance with best practice and in a timely efficient and economical manner.

¹⁵ See paragraph 15 above.

Section 2 – Review of progress made in increasing airport resilience

The following section provides a summary and general overview of progress made by HAL, the airlines and other stakeholders in increasing airport

Introduction

21. The following section provides a summary and general overview of the progress made by HAL, the airlines and other stakeholders in increasing airport resilience in recent years. It considers the recommendations made by the South East Airports Taskforce (SEAT) and further work undertaken by the sub-group on punctuality, delay and resilience.¹⁶ We have also engaged with stakeholders to get a better understanding of current and planned initiatives to improve resilience at Heathrow. Some of these key initiatives are noted below and further detail can be found in Annex 1.
22. The SEAT recommended a package of measures to address punctuality, delay and resilience based on detailed work by the sub-group. This was followed by the formation of the cross-industry Airport Performance Facilitation Group (APFG), chaired by the CAA to oversee the industry's implementation of the recommendations.¹⁷ The package of measures recommended by SEAT relating to punctuality, delay and resilience and progress in these areas are noted below.

Operational freedoms

23. The SEAT recommended a set of operational freedoms to allow certain tactical measures to be applied to anticipate, prevent and mitigate disruption and to facilitate recovery. A significant trial took place at Heathrow between 2011-2013 testing whether enhanced arrival and departure flow rates could improve recovery from disruption and maintain

¹⁶ See <https://www.gov.uk/government/publications/south-east-airports-taskforce-report>. The sub-group produced two reports in May and July 2011.

¹⁷ See Airport Performance Facilitation Group (APFG) Report for the Minister of State, published November 2012.

performance against the schedule. HAL¹⁸ and the CAA¹⁹ published separate reports on the trial.

Performance charter

24. The SEAT recommended a **performance charter** to motivate stakeholders to take decisions based on the best interests of the whole airport rather than being driven principally by their own individual commercial interests. The charter would set out the level of service that airline customers and their passengers should expect to receive including the roles and responsibilities of parties, defining how each party was held accountable. At the time, it was considered that progress with the charter was slow and more could be done, whilst recognising that the management of disruptive events relies on different parties each with their own commercial and legal obligations. However, the concept of the performance charter became the starting point for the development of the resilience conditions in HAL's licence. Since the licence came into force, there has been progress²⁰ and we have seen a gradual change in the industry's approach to 'pulling in the same direction' to improve resilience and reduce the impact of significant disruptive events on consumers.²¹

Capacity policy guidelines

25. The SEAT recommended a set of **capacity policy guidelines** to optimise the utilisation of runway resources. This recommendation made little progress at the time perhaps reflecting the inherent conflict between introducing a greater emphasis on resilience and recovery on the one hand, and the commercial incentives faced by HAL and the airlines to maximise passenger and service throughput. However, in recent years there have been improvements to achieve a better balance between

¹⁸ See http://www.heathrow.com/file_source/HeathrowNoise/Static/Operational-Freedoms-Final-Report-Heathrow.pdf.

¹⁹ The CAA's role was to provide oversight of the trial. See www.caa.co.uk/cap1117.

²⁰ For example, the 'rules of conduct' and resilience plan required under the licence provide clarity on the roles and responsibilities of stakeholders during disruption and help provide a better planned and coordinated response to disruption.

²¹ For example, the development of protocols such as HADACAB and Demand v Capacity, APOC and forums like the Heathrow Resilience Partnership.

capacity, scheduling and demand, with the ultimate aim of working towards a deliverable schedule and operating to plan. For example, there was a recent overhaul of the Runway Scheduling Limits (RSL) process and governance, including the formation of the Runway Scheduling Limits Working Group. The Working Group has recently been looking at ways to smooth the number of flights scheduled in any given period down to 5 minutes to provide a more deliverable and predictable schedule with no unrealistic peaks or bunching.

26. A Slot Performance Working Group was also formed to conduct initial discussions with airlines pertaining to specific performance issues. The Working Group develops and maintains Slot Improvement Action Plans with the airlines concerned and reports back to the Slot Performance Committee on progress made and to take directions on next steps.

Other initiatives

27. Other initiatives that are already in place or due to start in Q6 or planned for H7 to improve performance, tactical operations and balance demand and capacity include: Airport Collaborative Decision Making (A-CDM), the Airport Operations Centre (APOC), Demand v Capacity process, Time Based Separation, Enhanced Instrument Landing System (eILS), the Demand Capacity Balancing Tool, and a number of airfield asset replacement projects to improve infrastructure such as widening of taxiways. Further information can be found in Annex 1.

Conclusion

28. Overall, the industry has made good progress since the SEAT recommendations in addressing the day-to-day challenges the capacity constrained environment presents. It is also clear that greater industry collaboration and investment in facilities, procedures and systems are having a positive effect. It is also encouraging to see further improvements planned in Q6 and beyond. However, we would like the industry to explore further improvements in H7 because of growing pressure on capacity due to increasing demand and the ever-more

challenging environment in which Heathrow operates. In addressing these challenges, we expect the industry to continue to use a collaborative approach in finding innovative ways to improve airport resilience. See section 3 for more information.

Section 3 – proposed approach to increasing airport resilience through H7: next steps

The following section sets out our proposed approach and next steps on increasing airport resilience through H7.

Approach

29. In considering how we can encourage the industry to further improve airport resilience for consumers in H7, our preference is to encourage a collaborative approach where the industry works together to pursue innovative and ambitious options in addressing the day-to-day challenges capacity constraints present. We consider the industry is best placed to do this using proactive airport leadership to coordinate and facilitate resilience activities under the licence using CAA support and intervention where appropriate. By proactive leadership, we mean that HAL must take responsibility and be able to encourage and require certain activities and behaviours from others using the tools it has at its disposal. Further regulatory intervention by the CAA may be needed if research or other evidence indicates that it is in the consumer interest to do so.
30. We consider there are likely to be several areas in which to improve resilience at the airport that could be usefully explored through the H7 process. As noted above in section 1, we consider these should be focused on areas or pressure points associated with the use and management of the runway.
31. We set out below some possible areas for the industry to consider in developing innovative proposals around airport resilience. However, given

that we are still in the early stages of the H7 process, we stress that these areas are indicative and welcome other suggestions from stakeholders.

32. After considering feedback from the seminar on these proposed areas and other areas that stakeholders might suggest, we propose to agree a programme of measures for the industry to develop in the early part of the H7 process informed by high-level guidance. We consider the seminar and subsequent discussions with stakeholders will be valuable to assist us in the process of framing that guidance.

Groundhandling activities

33. We consider there is scope for the industry to explore resilience improvements in groundhandling activities which have not been a key area of focus under the licence even though they are included under the Act.²² We also consider this is consistent with our statutory duty to cargo owners. Such activities are wide-ranging²³ involving the airport, airlines and groundhandling agents, and can have a significant impact on runway and turnaround performance and the overall consumer experience. We also note our live consultation on the UK's groundhandling market in respect of our role under the Airports (Groundhandling) Regulations 1997 (the GH Regulation).²⁴
34. The primary commercial relationship is between airlines and groundhandlers through which airlines require handlers to achieve contracted service levels and performance standards. However, HAL also plays a role in requiring, monitoring and encouraging good performance

²² Section 68(3) Civil Aviation Act 2012 incorporates the definition of groundhandling under the European Groundhandling Directive and UK implementing Regulation.

²³ Including freight and mail handling, ramp handling, catering services, aircraft services and baggage handling.

²⁴ See <https://consultations.caa.co.uk/policy-development/access-to-the-groundhandling-market-at-uk-airports>.

across the whole airport under the Ground Operations licences,²⁵ monthly performance reports²⁶ and via scorecards.²⁷

35. We consider there is scope for the industry to explore improvements in groundhandling performance across the airport as a whole. For example through greater collaboration, planning and sharing of information to better understand and address performance issues on a 'business as usual' basis and during disruptive events. We would also like to explore the case for HAL, as the licensed company, to lead on the coordination of collaborative efforts to deal with systematic performance issues and also support the role of all airlines and groundhandlers to improve performance, without cutting across existing arrangements.
36. One key groundhandling activity that is particularly important to consumers is baggage handling. The existing Service Quality Rebates and Bonuses (SQRB) scheme only measures the availability of baggage reclaim belts. As noted in the 'incentivising the right outcomes' seminar, our initial view is that under an outcomes-based framework, we expect consumer research to highlight a stronger focus on baggage performance and resilience if warranted. We would like the industry to explore further how consumer preferences regarding baggage performance could be reflected at the airport. For example, what further baggage performance measures could be considered and what further improvements could be made to improve the misconnect rate.

Aerodrome Congestion Team

37. We would like to gather stakeholders' views on the effectiveness of the Aerodrome Congestion Term (ACT) in the SQRB scheme and whether it

²⁵ See http://www.heathrow.com/file_source/Company/Static/PDF/Partnersandsuppliers/Ground_Operations_Licence_Final_2014.pdf.

²⁶ See http://www.heathrow.com/file_source/Company/Static/PDF/Partnersandsuppliers/Ground_Handler_Performance_Report-June15.pdf.

²⁷ These are divided into three categories: safety, compliance and service delivery. Reputational incentives and specific parameters are set in each area which are reviewed and endorsed by HAL and the Airport Users' Committee (AUC) Working Group. There is also a monthly presentation of scorecard performance where handlers can compare performance.

could be used to improve resilience. HAL is required to pay a rebate²⁸ to the airlines for material events that generate material operational impacts caused primarily by a failure on the part of HAL, or the provider of air traffic services at Heathrow or their respective agents or contractors.²⁹ HAL can estimate its proportion of responsibility if there are contributory causes beyond its control. HAL also has to fulfil data collection and communication obligations, such as compiling a superlog spreadsheet documenting events at the airport that could have a potentially material effect on operations. Further details of the ACT are in part 2(e) of Schedule 1 to the HAL licence.

Capacity planning

38. As noted in section 2, there have been improvements to achieve a better balance between capacity and demand in recent years. We are interested in stakeholders' views on further improvements that could be made. For example, whether there might be benefits in incorporating and aligning existing capacity planning processes and governance within the operational resilience plan for greater transparency.
39. The CAA's wider resilience work (see section 1 above) will also consider the capacity declaration and scheduling process from a UK perspective, particularly whether there is a need for greater consideration of resilience as part of the process, how decisions are made and what safeguards are in place to ensure the consumer interest is taken into account. We will have regard to any recommendations that are produced from this work. Also, as noted above³⁰ we are interested in exploring with the industry options around better coordination and information sharing to improve capacity planning across the airport and in airspace amongst stakeholders

²⁸ Exceptions to the payment of rebates are set out in part 2(e) paragraph 2.44 of Schedule 1 to the HAL licence.

²⁹ Which excludes bodies carrying out activities specified in the annex to the EU Groundhandling Directive.

³⁰ See paragraph 12.

particularly across the South East. We consider this will require a much wider debate with the industry.

Airport charges

40. We would also like HAL and the airlines to explore innovative options in considering how the structure of airport charges, such as the parking charge, could be used to incentivise better on-time performance and the efficient use of the runway. For example, one method could be to reward airlines who adhere to the schedule and achieve good punctuality and turnaround performance.

Review of progress made in increasing airport resilience

41. Section 2 above provides a summary and general overview of the progress made by HAL, the airlines and other stakeholders in increasing airport resilience in recent years. It considers the recommendations made by the South East Airports Taskforce (SEAT) and further work undertaken by the sub-group on punctuality, delay and resilience.³¹
42. We have also engaged with stakeholders to get a better understanding of current and planned initiatives to improve resilience. This annex provides further detail on some of these initiatives.
43. **Airport Collaborative Decision Making (A-CDM)** – This initiative aims to improve the efficiency of airport operations by facilitating the sharing of operational processes and data to allow better informed decisions to be made. Benefits are visible at a local network level, with more accurate take-off information feeding into the air traffic flow and capacity management system run by Eurocontrol's Network Manager. A-CDM has been in operation at Heathrow since 2013 and continues to be developed to include new functions including snow clearing, de-icing, towing and turn-around management.
44. **Airport Operations Centre (APOC)** – HAL introduced a new facility to help predict and proactively manage the airport's operations. The facility brings together all stakeholders involved in operational planning allowing a much more rapid and integrated response to disruption.
45. **Demand v Capacity process** – HAL has introduced a voluntary process in collaboration with NATS, the airlines and the Met Office for proactively reducing demand for periods of disruption lasting less than 24 hours. This

³¹ See <https://www.gov.uk/government/publications/south-east-airports-taskforce-report>. The sub-group produced two reports in May and July 2011.

process has worked well on a number of occasions by reducing disruption and allowing early notification to passengers of cancellations and possible delays, and also minimising the number of last minute cancellations.

46. **Time Based Separation** – Time Based Separation has been in operational use at Heathrow since May 2015. The project has changed the separation rules for aircraft and reduced the impact of headwinds on the landing rate. Benefits include an estimated extra four movements per hour in strong wind conditions, reduced airborne holding and fewer cancellations.
47. **Enhanced Instrument Landing System (eILS)** – The new ILS is based on new navigation technology which reduces the potential for beam interference and distortion thereby providing Heathrow with the capability to increase the number of aircraft that can land in low visibility. The remaining two systems are planned for completion by mid/late 2016.
48. **Demand Capacity Balancing Tool** – This is a new tool under development which aims to enhance flight predictability by taking a forward looking approach to flight planning by using advanced predictive algorithms to forecast jet streams, cancellations and delay. It is envisaged that this will facilitate a more accurate view of the day and more informed planning decisions.
49. **Airfield asset replacement** – HAL is also undertaking a number of airfield asset replacement projects to improve infrastructure, such as widening taxiways for A380s.