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Airspace Modernisation: Respite Concepts

NACF

Heathrow's Understanding of Respite

The research activities led by Anderson Acoustics and CAA provide a number of key findings which have further informed Heathrow's understanding of respite:

1. Respite is a *"break from or a reduction in aircraft noise"*
2. Respite is (genuinely) valued by people when they are informed of it – and they certainly don't want it removed or reduced
3. Effectiveness of respite is dependent on both acoustic and non-acoustic factors (e.g. trust, awareness)
4. Respite can be predictable or unpredictable ("relief")
5. Three different respite types can be defined based on noise level differences between operating modes i.e. is the respite being provided:
   - ***Valued (>9dB LAeq T),***
   - ***Noticeable (4-9dB LAeq T), or***
   - ***Worth having (<4dB LAeq T)****?*

Heathrow's Understanding of Respite

The research activities led by Anderson Acoustics and CAA provide a number of key findings which have further informed Heathrow's understanding of respite:

6. There is evidence that where respite through runway alternation has been in place for some time, annoyance is lower, particularly in areas where noise level differences can be considered *valued*
7. Research shows respite might be valued more highly where noise levels are higher
8. Respite can be perceived as a benefit (for those already overflown) or considered helpful as a mitigation measure (for those newly overflown)
9. Research results are based on people who are already overflown (who benefit from respite) rather than on people who are not currently overflown (who may see respite – and the "sharing" of noise – as a cost)

Airspace Modernisation at Heathrow: Respite Concepts

Heathrow's ACP to introduce Airspace Modernisation is considering three respite concepts, which can potentially be applied to any of the airspace design options:

1. Extending Departure Respite Through Runway Alternation
2. Departure Respite Through Route Alternation
3. Respite Through Alternation of Vectored Arrivals

Separate to this ACP, Heathrow is also in the process of progressing a planning application for airfield works to enable runway alternation when on easterly operations (the project is known as "Easterly Alternation"). This ACP includes the design of flight paths to and from each of Heathrow's runway ends and assumes that runway alternation will be possible on both westerly and easterly operations by the time the airspace change is implemented.

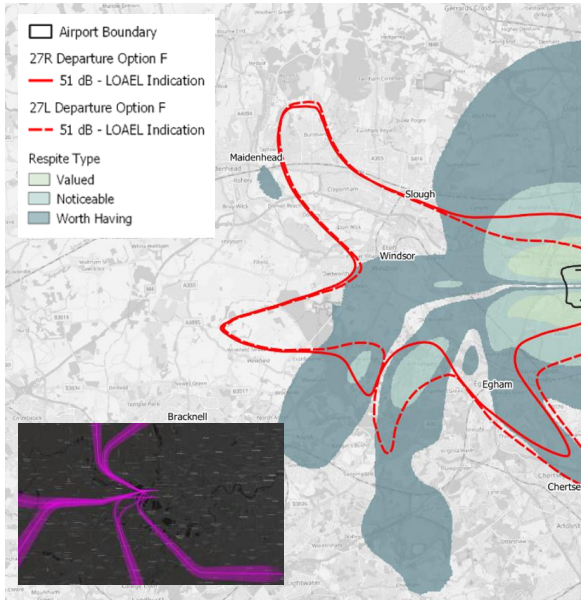
Respite Concept 1: Extending departure respite through runway alternation

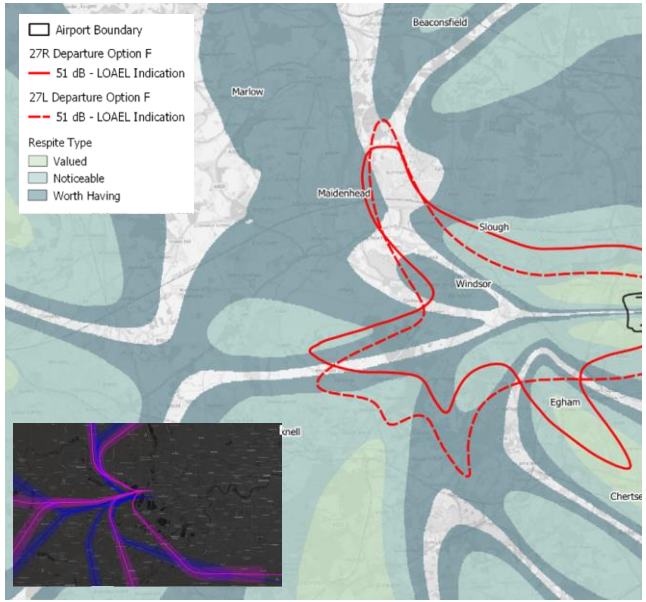
- Runway alternation has been an important part of noise management at Heathrow since the 1970s.
- It benefits those affected by either departures or arrivals
- The measure is most effective under final approach and immediately beneath departure runway ends
- This concept explores whether benefits of respite from runway alternation could be extended to areas further from the airport by keeping departure routes from each runway apart for much longer

Example of departure routes from both runways which converge shortly after departure

Example of departure routes which are kept apart for longer after departure

Respite Concept 1: Extending departure respite through runway alternation



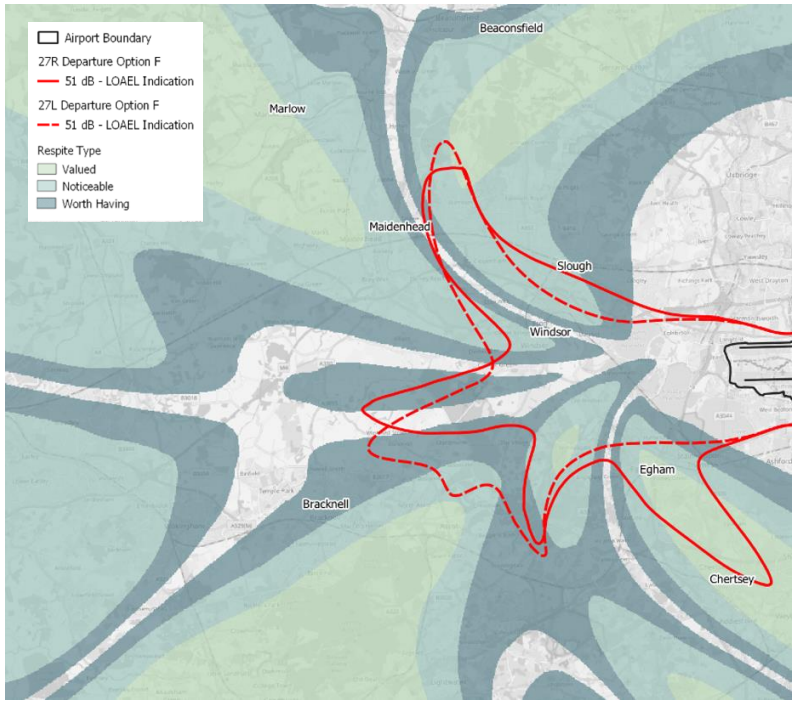


- Testing of the concept using the airspace design options has shown the potential to provide improved respite for areas currently overflown
- However, the effectiveness of this concept will be limited by the need for routes from each runway to cross each other in places

Respite Concept 2: Departure respite through route alternation

- This concept assumes that respite could be provided by alternating between the use of different departure routes
- The test has considered a range of different separations between routes to provide insight on how far apart the two alternating routes should be to provide benefit
- The test considered what type of respite could be provided if all departure routes from a single runway were alternated (i.e. *valued*, *noticeable* or *worth having*)

Respite Concept 2: Departure respite through route alternation



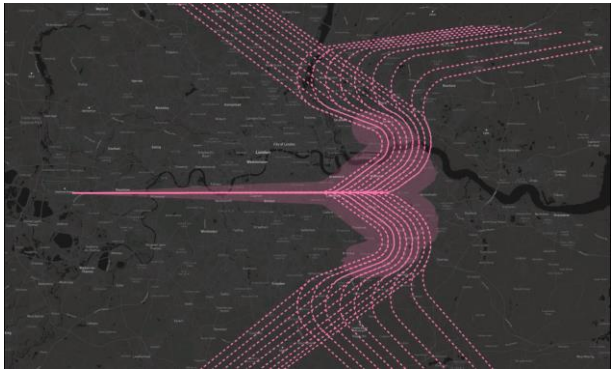
The test has indicated that:

- **Route alternation has the potential to provide respite both within the LOAEL and beyond**
- The technique has limited impact around departure runway ends (since those very close to the runway will hear aircraft on both routes)
- Route separations of around 1nm have the potential to provide *'noticeable'* respite for some areas
- Route separations of around 3nm could provide large areas of *'valued'* respite
- The way in which the concept is applied alongside runway alternation will require careful consideration to maximise benefits
- Next steps will include considering the benefits of applying route alternation over different time periods (e.g. once per week, once per day, multiple times per day)

Respite Concept 3: Respite through alternation of vectored arrivals

- This concept explores whether respite can be provided by alternating the point at which vectored arrivals join final approach
- A number of vectored arrival options with varying joining points have been included in the airspace design options
- Testing of the concept has explored the potential for this concept to deliver respite for those overflown by arrivals

Test1: Alternating from 8-12nm to 18-22nm



Test2: Alternating from 8-12nm to 11-15nm

Respite Concept 3: Respite through alternation of vectored arrivals

Test1: Alternating from 8-12nm to 18-22nm

Test2: Alternating from 8-12nm to 11-15nm

The test has indicated that:

- **It is possible to provide respite within the LOAEL by varying the joining points for vectored arrivals**
- The biggest respite benefits would occur further away from the airport
- Extending the joining point would have the effect of increasing the size of the LOAEL, increasing the number of people who experience *adverse effects*
- Next steps will include considering the benefits of applying alternation of vectored arrivals over different time periods (e.g. once per week, once per day, multiple times per day)

All three concepts have the potential to offer respite benefits to some overflown areas

For Arrivals:

- Varying the joining point for vectored arrivals could provide *'valued'* respite for areas further from the airport, but increase the number of people adversely effected close to the airport

For Departures:

- Even relatively small route separations (less than 1nm) could provide *'noticeable'* respite
- There may be some routes where *'valued'* respite could be provided if routes are kept sufficiently separated from each other

However, the benefits of providing respite through these concepts needs to be considered alongside:

- The impact the concept might have on total adverse effects
- The feasibility of making the operation predictable (given people benefit from knowing *when* to expect respite)
- Any carbon costs associated with the concept (we need to ensure these are not "disproportionate")
- The impact of overflying *more* people and newly overflown people (i.e. there is a *cost* of respite as well as a benefit)
- The operational viability of the concept

All respite concepts are being carried into Stage 3 of our ACP to be incorporated into our **system options** (arrivals and departures for easterly & westerly operations)

Respite Concepts: Next Steps for Heathrow

As the initial options are converted into system options at Stage 3, our next steps will include:

- Exploring the viability of delivering each of the concepts within an operational system
- Considering when concepts could be implemented (e.g. all day or during less busy periods only) and how they would work operationally (e.g. alternating between different routes or switching half-way through the day)
- Understanding where respite has benefits for currently overflown communities, or is offered as a mitigation measure for newly overflown communities
- Assessing the potential costs or negative impacts of any of the concepts
- Engaging and working with stakeholder representatives to understand the value of these, or other, potential concepts, prior to our public consultation at Stage 3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