

AIRSPACE STRATEGY | STAKEHOLDER ENGAGEMENT

Report of residents’ focus groups
03 July 2018

Contents

<u>CONTENTS</u>	1
<u>1. OBJECTIVES</u>	2
<u>2. METHODOLOGY</u>	2
<u>3. STRUCTURED DISCUSSION</u>	5
<u>4. FINDINGS</u>	6
Attitudes to headline design principles	6
Minimise fuel requirements and greenhouse gas emissions	6
Minimise noise impact.....	7
Incentivise airlines to use the most modern aircraft.....	8
Simple and efficient flight paths for operational efficiency	8
Minimise impact on other airspace users.....	8
Attitudes to noise impact principles	9
Spreading vs. concentrating noise impact	9
Minimise the number of people newly affected by noise	10
Minimise the total number of people affected by noise.....	10
Spreading the impact of noise: predictable respite vs. multiple active routes	11
Avoiding multiple paths over one community.....	11
Prioritise flight paths over rural areas rather than urban areas.....	11
Prioritise flight paths over parks and open spaces rather than residential areas	12
<u>5. CONCLUSIONS</u>	14
<u>APPENDIX 1: STIMULUS MATERIALS</u>	15
<u>APPENDIX 2: PRINCIPLE SCORING</u>	21
Headline design principles.....	21
Noise impact principles.....	21

1. Objectives

As part of its stakeholder engagement on airspace strategy, Heathrow sought to supplement its public consultation by hearing from residents in areas which were less represented in consultation responses.

The goal was to present information on the design principles to an audience which is yet to engage in debates on airspace design or airport expansion, and seek to understand which of the design principles they would prioritise, and why.

Stonehaven was asked to support this work. In consultation with Heathrow, Stonehaven made a recommendation on the research methodology, conducted five focus groups (moderated by an Association of Qualitative Research-qualified moderator), and wrote this report of the research findings.

2. Methodology

Five focus groups were held on 19 and 20 June 2018, each lasting 90 minutes and attended by eight participants (one group contained seven participants because one participant failed to attend). Participants were recruited by independent qualitative fieldwork agency Leftfield International, and were each incentivised with a £50 cash payment, as is standard practice in market research.

Participants were recruited using a recruitment screening questionnaire. In each group there were equal number of men and women, from a mix of socio-economic backgrounds. Two of the five groups were younger (25-45 years old) and two older (45-65 years old); the final group was of middle age (35-55 years old). This division was implemented because group dynamics are most efficient when a relatively homogenous group of participants is convened, creating a comfortable environment in which honest views are likely to be expressed.

In order to speak to residents who are yet to engage in the ongoing debate, we screened participants to exclude those with strong views in favour or against the third runway expansion at Heathrow. Participants working in (or with close family members working in) advertising, journalism, public relations and market research were excluded. Those working at Heathrow or for an airline were also excluded.

The groups were held in the following locations, with participants recruited from the surrounding areas:

- Two groups with urban residents near Clapham in south London
- Two groups with suburban and ex-urban residents near Watford
- One group with rural residents near Beaconsfield

In selecting the location of the groups, we sought to meet the following criteria:

- From areas that were underrepresented in the airspace strategy consultation responses (see Fig. 1)
- From areas that are affected by flight paths currently, or plausibly might be in the future (see Fig. 2)
- From areas that contain fewer people with strong views about Heathrow and noise, as indicated by the number of noise related complaints coming from those areas (see Fig. 3)

- Representing a mix of different residential types: urban, suburban and rural

We considered six prospective areas to conduct the focus groups, marked A through F on the figures below, and ultimately selected areas A, B and C.

Selected areas

- Area A – urban residents of Clapham and the surrounding area, overflowed by arrival flights, and surprisingly underrepresented in the consultation responses compared to nearby areas
- Area B – suburban and ex-urban residents of Watford and the surrounding area, overflowed by a mix of arrival and departure routes but with few consultation responses,
- Area C – rural residents near Beaconsfield, currently overflowed by arrival and departure routes, but underrepresented in the consultation responses and with very few noise complaints

Rejected areas

- Area D – rural residents in the area between Reading and Windsor. This area was rejected because of its similarity to area A, in terms of being directly under one of the points where arriving planes converge onto the same route.
- Area E – rural residents in the area between Camberley and Egham. This area was rejected because of the number of complaints and existing engagement with this area.
- Area F – suburban residents in the area around Weybridge. This area was rejected because of the number of complaints and existing engagement with this area.



Fig. 1 – Responses to the airspace design principles consultation

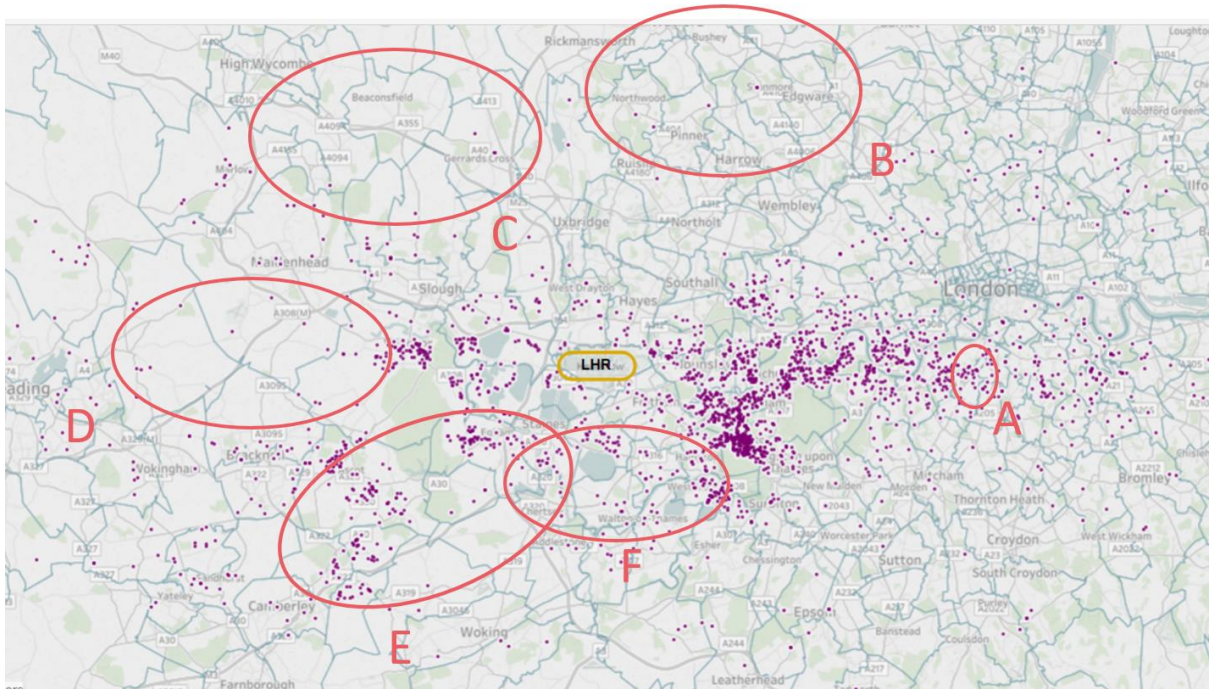


Fig. 2 – Noise complaints to Heathrow

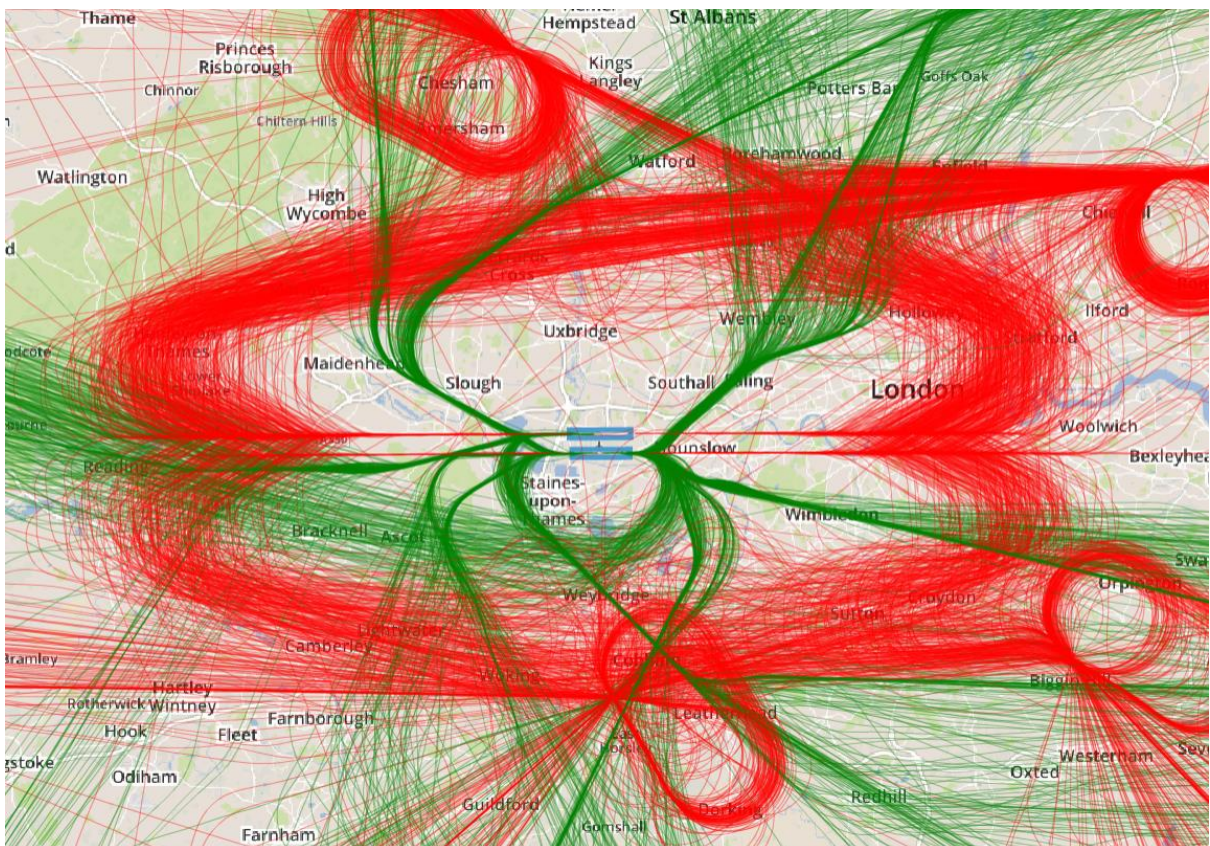


Fig. 3 – Existing arrival (red) and departure (green) flight paths to and from Heathrow

3. Structured discussion

Every discussion followed the following structure:

- Introduction
- Associations with Heathrow
- Exploration of why airspace modernisation is needed and an introduction to Performance Based Navigation
- Presentation of five headline design principles, and a discussion of prioritisation:
 1. Minimise the impact of aircraft noise
 2. Minimise fuel requirements and greenhouse gas emissions
 3. Simple and efficient flight paths for operational efficiency
 4. Incentivise airlines to use the most modern aircraft
 5. Minimise impact on other airspace users
- Presentation of five design principles related to noise reduction and discussion of prioritisation:
 - A. Minimise the number of people newly affected by noise
 - B. Design multiple flight paths, with only one flight path active at a time to provide predictable respite from noise
 - C. Design multiple flight paths to be active at the same time so that flights are spread over a wider area
 - D. Minimise the total number of people affected by noise
 - E. Avoid multiple flight paths over one community
- Presentation and discussion of two further design principles:
 - F. Prioritise flight paths over rural areas rather than urban areas
 - G. Prioritise flight paths over parks and open spaces rather than residential areas

The explanation of airspace modernisation, PBN and each of the design principles was presented in a printed handout given to each participant (containing text and illustrative diagrams) that was read out and explained by the moderator. The stimulus shown to participants can be found in the appendix on page 16.

Three headline principles were presented to the participants briefly but not included in the prioritisation discussion, because they are requirements for Heathrow to fulfil in its design:

1. Be safe
2. Meet the NPS capacity requirement
3. Minimise impacts on local air quality from aircraft below 1000ft

One further noise principle (“Prioritise flight paths over industrial and commercial areas rather than residential areas”) was not included in the discussion because Heathrow identified it as a self-evident benefit with no obvious trade-offs.

After the presentation and brief discussion of each set of principles, participants were given 20 tokens with which to indicate the principles they would choose to prioritise – the more tokens they voted against a particular principle, the higher priority they were placing on it. The results of these votes were recorded and are shown in the Appendix on page 22. However, the main purpose the voting served was to stimulate discussion, with the participants debating and deciding between the principles after the vote. Given the complexity of the issues, and the ways in which some participants changed their views in the light of greater information and debate, our conclusions are primarily based on the results of these discussions rather than the vote tabulation shown in the Appendix.

4. Findings

Attitudes to headline design principles

Minimise fuel requirements and greenhouse gas emissions

Fuel and CO₂ concerns emerged as the narrowly most important consideration. Both noise and CO₂ were deemed of high importance and significantly outweighed any other considerations. When pushed into making a direct choice between them, it was CO₂ and fuel chosen as the top priority by a narrow majority. This may at first seem surprising because it appears to contradict their own narrow self-interest. However, for the majority of respondents, they felt themselves to be only mildly affected by aircraft noise and, based on where they lived, did not foresee much likelihood of that changing. Because they didn't have that personalised fear, they felt more able to look beyond noise impact and consider the wide impact of flight paths on the whole of society more generally.

The main reason for their prioritisation of CO₂ over noise was an emotional association with environmental damage as a long-term problem that cannot be avoided or mitigated by individuals' choices. This was contrasted with noise, which is thought of as irritating but without long-term consequences, and where the individual can make choices to avoid it, i.e. not living underneath flight paths. It is important to note that while these assertions do not necessarily represent the truth about noise impact, they do represent the majority understanding of the residents we spoke to.

"I'd rather reduce [CO₂]. I don't notice the noise at all here with the planes going over."

Male resident, Beaconsfield

"The more pollution, it affects everyone, whereas some of the other bits won't affect quite so many people I think."

Male resident, Clapham

"And I know whether I can tolerate it or not. So that's my decision to kind of, yes I can deal with this. But gas [CO₂] I don't feel we know exactly the impact that it's going to have."

Female resident, Clapham

"This is going to be a permanent thing isn't it... You want to make sure that for future generations we're making the right choice."

Female resident, Clapham

Concerns about CO₂ were conflated with air quality concerns. Even when challenged on the distinction between global climate change impact and local health impact, most participants maintained that the total quantity of air pollution was a valid concern related to the length and complexity of flight paths, regardless of exactly where the pollution was created. (A minority did argue that air pollution created over less populated areas was preferable). The conflation of these two environmental concerns may mean that this principle received higher priority from participants than if they had been forced to consider CO₂ impact on its own. However, the fact that they did conflate the issues, and the priority that they did give to them, shows the strength of feeling in their attitudes to the overall environmental impact of flight paths.

“We’re on the outskirts of London you’re not living in an area where it’s highly polluted so our worry would be that we don’t want to become polluted.”

Female resident, Watford

“The noise from the aircraft isn’t going to damage your hearing. But the air quality is going to damage your health.”

Female resident, Watford

Minimise noise impact

As noted above, noise impact is a highly important consideration for the participants we spoke to. It was the most obvious consequence of changing flight paths, and the top of mind response when the concept of airspace redesign was raised. Exactly which principles to minimise noise impact the participants prioritised is explored in the section below.

Overall noise impact is prioritised because of its current and potential future impact on day-to-day life. Participants were especially likely to mention noise impact in the early morning, evening and night-time. The disruption to daily life (working from home, for example), the ability to enjoy the outdoors, and the impact on sleep, were all factors mentioned in their prioritisation of noise impact.

“I put noise as I think for CO₂ you can worry about cars and stuff like that, which are going to have greater impact than the airplanes.”

Male resident, Clapham

“We’re lucky because we have a good quality of life here and the noise isn’t intrusive. It can create all sorts of problems. And I think if they’re talking about increasing the number of planes then that would be a massive factor.”

Female resident, Beaconsfield

However, a majority of respondents (especially those in Clapham and Beaconsfield overflowed to a greater extent) acknowledged that they already experienced some measure of noise impact from aircraft and find it tolerable. Those living in built-up areas (Clapham and Watford) acknowledged that urban/town dwelling was already significantly affected by noise from other sources (primarily road and rail) and therefore the contribution of aircraft noise was less significant. In general, participants in these groups felt that, given their distance from the airport (even though they live within the theoretically affected area), their experience of aircraft noise was unlikely to change significantly. Therefore, they were more likely to give noise consideration less weight than might have been expected. They did state that people closer to the airport and more likely to be affected by the third runway would probably have different views.

“The noise is bad, but also we originally said we live in a noisy city and obviously I think we’re more oblivious to the flight path as it is.”

Male resident, Clapham

“I don’t think it does [have an impact] really. I mean they’re very frequent. I mean we can sit in our garden and see them coming and going. I think it’s nice.”

“You get used to it, because it still goes all the time.”

Male and female residents, Beaconsfield

Incentivise airlines to use the most modern aircraft

For most participants, this was an obvious principle to implement, without a strong counter argument. They understood the argument that requiring more modern technology likely meant more modern/efficient planes, and the attendant noise and pollution reduction. When explained to them, they could understand the potential cost to certain airlines (and their passengers) of the changes, but this was far outweighed by the perceived benefits. They were in general very positive about the benefits that PBN could bring. They therefore didn't understand why Heathrow might sacrifice those benefits to maintain an older fleet of aircraft.

However, for the most part, participants were much more focussed on the noise and pollution benefits that this principle makes possible, rather than the technical requirement being placed on airlines. They viewed the modernisation of aircraft as a trend that was underway anyway, and that there was no harm in airports such as Heathrow seeking to accelerate that process. They believed that the third runway was going to bring an absolute increase in noise and pollution, and therefore structural changes that could minimise this impact in other ways should be welcomed. As a result it may be more accurate to see their views on aircraft modernisation in terms of their priority on noise and pollution reduction, not a specific priority being placed on PBN requirements in airspace design.

"We are massively polluted, so you should fly with the most modern aircraft you can."

Male resident, Beaconsfield

"You're going to have to upgrade them in the end, aren't you, so why not do it?"

Female resident, Clapham

"In order to have this new runway put in they're going to have to think about the new aircrafts and I do think that would be more efficient if they can make it in a way that it uses less fuel."

Female resident, Watford

Simple and efficient flight paths for operational efficiency

Increasing flight path efficiency and simplicity was mostly understood in terms of reducing air pollution and CO₂ rather than increasing operational efficiency (very similarly to the principle to incentivise the use of most modern aircraft discussed above). Therefore, where this principle was supported, it was mostly complementary to the fuel/CO₂ criteria, rather than direct support for operational efficiency as an airspace design principle. There was only a handful of participants who prioritised this principle explicitly to reduce flight times and delays for personal benefit. The benefits to pilot and air traffic control workload was not a persuasive factor.

"Simply from a personal point of travelling with kids and I just want to get in and out. So, you know, as short and simple route as possible to be honest."

Male resident, Clapham

"It's contributing towards the savings of the CO₂, time in the air, lost time."

Male resident, Watford

Minimise impact on other airspace users

This principle very clearly received the lowest priority. While acknowledging the potential impact on other airports and airfields, participants:

- i. Put much higher priority on issues like noise and CO₂ impact where they could see personally relevant consequences.
- ii. Did not believe Heathrow would be allowed to impact unfairly on other airports.
- iii. Believed that it was a matter that could be resolved through negotiation between the affected parties.

“That's just politics isn't it, between the airports? I mean if it affects Gatwick, and Luton, and all the others, then they've got to work amongst themselves to sort that out. And it's not really for the general public to know about, is it?”

Male resident, Beaconsfield

“I think they'd have to be conciliatory, you know, and compromise is the whole thing.”

Male resident, Clapham

Attitudes to noise impact principles

Spreading vs. concentrating noise impact

Although it provoked nuanced discussion, there was majority support¹ for the principle of sharing noise impact out between residents rather than impacting a smaller group more intensely. The overriding emotional driver of this was the principle of fairness. Most participants felt that it would be unfair for the benefits of the airport (jobs, connectivity etc.) to be shared widely, but for the noise impact to be concentrated on a small number (and smaller number than today). Their conclusion was that the potential concentration of noise would be unfair, and not what residents could have expected when they bought their house. The issue of house prices was particularly emotive – in every group someone raised the prospect that the change could reduce house prices for certain areas.

Finally, there was some sense of loss aversion for the communities who were already somewhat affected by aircraft noise. They understood that they might stand to benefit from a concentration of noise, because they might no longer be affected at all; equally, they might be under one of the more concentrated routes. The fear of potential loss outweighed the potential gain, leading to them supporting the status quo in terms of sharing the noise impact.

“If everybody's going to be affected by noise, everybody should be affected, not that certain community should be affected more. It's not fair. No, everybody uses a plane, everybody gets affected.”

Female resident, Beaconsfield

“Can you imagine if there are such narrow corridors for the planes to fly, probably the property market will be affected?”

Female resident, Clapham

“If I was one of the people affected by it more than everyone... I'd be furious about that.”

Male resident, Clapham

“I think part of the reason we don't notice the noise here is because... they are spread out. I just think it's fairer.”

Male resident, Beaconsfield

¹ The two main noise sharing principles received the most votes when taken together, outscoring the criteria to minimise the total number affected and the number newly affected

Minimise the number of people newly affected by noise

This question led to some of the most extensive debate, with participants seeking to resolve the trade-off between people being newly affected and the total number affected. Most participants landed on the side of minimising new impact. The Watford community was most strongly in favour of prioritising this principle (because they felt they were barely affected at the moment) although focus groups in other communities also settled on this principle as a priority.

The issue of fairness was prevalent again. Many participants felt that residents who had chosen to live away from existing flight paths deserved to have that choice protected as they couldn't have known to expect the change. The issue of prices was relevant here again.

"I think it's a fear thing. I don't want the flight path to suddenly go over me. The people that have already got it are going let them have some noise, why have we got to have more noise?"

Male resident, Watford

"Suddenly if the flight paths were changed, their property prices could crash, and they have no noise."

Female resident, Beaconsfield

"Just selfishly, when you choose to live somewhere... you choose it because it's quieter. It's nice, you can hear the birds..."

Male resident, Beaconsfield

Minimise the total number of people affected by noise

This principle proved to be less important for residents than those discussed above, while still being important to prioritise, all else being equal. Minimising the total number of people affected was the starting point for noise reduction when the issue was first raised and discussed (when in comparison with reducing CO₂ impact for example) but was deprioritised in a more nuanced discussion about exactly how Heathrow should reduce noise impact.

Those participants who made an explicit argument in favour of this principle in comparison to spreading the impact of noise argued that the "pain" of noise impact was going to be felt wherever the flight paths were designed and therefore the total number of people affected should be limited wherever possible. When drawing the contrast with the principle of minimising the number of people newly affected they argued that newly affected residents would become used to the noise impact over time and therefore shouldn't be given special consideration.

"It's going over farmers' fields and 100 houses or just smashing it over Slough and Hounslow every 90 seconds."

Male resident, Watford

"You get used to anything. It's not the only type of noise. Ambulance and police sirens, you know, in an awful lot of areas in London are a constant."

Male resident, Clapham

"Just because you're in Zone Two in south London, but you might be in Zone Three in north London, it's not like you should be protected or any more protected than anyone else."

Female resident, Clapham

Spreading the impact of noise: predictable respite vs. multiple active routes

The participants we spoke to were closely divided on this question, with the priority narrowly going in favour of predictable respite. The arguments for predictable respite turned on allowing people to make plans for outdoor activity, and on giving those who are heavily impacted by noise (i.e. close to the airport) regular and complete breaks. The arguments for dispersal were that planes being over your house so frequently, more intensely than today, would be unacceptable and that residents would fail to take advantage of and plan around periods of respite even if they were available.

“I picked [predictable respite] because then you can live your life to a schedule, can't you? That's the day you can have your barbecue.”

Female resident, Watford

“It would get to a point in time where you wouldn't even notice that, you know, oh today's Monday, the planes are coming. It'd just be part of life but at least you've got the rest of the week with a bit of silence, a bit of quiet.”

Male resident, Clapham

It was notable how many participants argued that, for this principle, their opinions on this question were less relevant than those who lived closer to the airport. They didn't have a clear preference themselves because they didn't have the direct experience of serious aircraft noise. They were happy, therefore, to defer to the preferences of residents for whom noise impact was worse.

“I don't know how they would think so I based my decision based on me trying to sort of empathise with a resident living close to the flight path, but obviously I could be wrong because I don't know what they're thinking.”

Female resident, Clapham

“It'd be really interesting to know that those people that are currently affected with the most noise pollution, how many of those are currently immune or used to the actual noise itself today, and would be probably better to ask them because they're closely related to it.”

Male resident, Watford

“If [we're talking about] here, I'd prefer constant because the planes are so high. But if I lived under Heathrow, I might think different.”

Female resident, Beaconsfield

Avoiding multiple paths over one community

This principle received very little priority from participants. It appeared to them to be a valid way of implementing the principle of spreading out the impact of aircraft noise, but the specifics of exactly how this was done didn't matter to them. A possible factor in this was that participants tended to focus much more on arrival routes than departure routes as a cause for concern when discussing noise impact.

Prioritise flight paths over rural areas rather than urban areas

This principle generated significant debate and there was no clear conclusion reached on whether it was a good principle to implement. The rural residents near Beaconsfield clearly prioritised protecting

rural areas. However, the urban and suburban residents near Clapham and Watford were much more divided.

The argument for protecting urban areas was an extension of the principle of minimising the total number of people affected. With fewer people living in rural areas than urban areas it was reasonable to fly over those less populated areas. Some people argued that air pollution was a lesser concern over rural areas compared to already polluted urban areas.

“People have to sleep, and less people would be affected I think.”

Female resident, Watford

“Because we’re in the city we’ve still got a right to a quieter city than if you were in the country.”

Female resident, Clapham

“You’re going to be in your house every day. So why have that noise every day and then one day, you know, in six months, you go to the nature reserve?”

Female resident, Clapham

The argument for protecting rural areas was that residents of rural areas had a greater expectation of peace and quiet because they had chosen to live in an area with less noise from road and rail traffic. Residents of built up areas also valued the countryside as a place for them to visit as a contrast from urban areas.

“I go into the countryside to walk the dog... To suddenly get the planes, it would detract from the countryside.”

Male resident, Beaconsfield

“If you’re going to Box Hill or something with your children you don’t want to hear the planes going over really.”

Male resident, Clapham

On the basis of his lack of consensus on this point, we suggest that the focus group discussions do not provide firm evidence either way on this principle. Based on the focus group response it is suggested that Heathrow should focus the airspace strategy on the higher priority principles of minimising new people affected, maximising sharing, and minimising total people affected, omitting this principle from consideration.

Prioritise flight paths over parks and open spaces rather than residential areas

This principle also generated significant debate, with a narrow preference emerging for protecting residential areas over parks and open spaces. Following similar arguments to those set out above, participants wanted to protect both the densely populated residential areas and the opportunity to enjoy open spaces. The greater number of people affected by flying over residential areas was the narrowly deciding factor for many participants.

Several participants argued for making a distinction based on time of day when applying this principle: protect residential areas in the morning and evening when people are more likely to be at home and children may be trying to sleep; protect open spaces during the day when people are more likely to be enjoying the outdoors.

“If it starts at 4 o’clock in the morning, then it’s definitely better over the park. But during the daytime, maybe I don’t know, but my choice would be over the park.”

Female resident, Clapham

“They should go over the parks, because of the noise part of it, and then take the pressure off from the houses living around the parks.”

Female resident, Clapham

5. Conclusions

Based solely on the findings of this research, and without considering the other elements of stakeholder engagement that Heathrow is conducting, Heathrow should consider giving priority to its airspace design principles in the following order:

- i. Minimise fuel requirements and greenhouse gas emissions
- ii. Minimise the impact of aircraft noise
- iii. Incentivise airlines to use the most modern aircraft
- iv. Simple and efficient flight paths for operational efficiency
- v. Minimise impact on other airspace users

There was only a narrow difference in the priority placed on the first two principles (noise impact and CO₂ impact) – participants would like to see these principles with nearly equal priority. The priority placed on the principle to reduce fuel and CO₂ requirements should also be seen in light of its conflation with air quality concerns.

They place much less priority on the remaining three principles. The priority placed on the principles to incentivise the use of the most modern aircraft and to increase operational efficiency through simple flight paths should be viewed mostly in terms of their benefits to noise and pollution reduction; there was little priority placed on their operational specifics and implications.

Within the principle of minimising noise impact, Heathrow should consider giving priority to its design principles in the following order:

- i. Minimise the number of people newly affected by noise
- ii. Design multiple flight paths, with only one flight path active at a time to provide predictable respite from noise, rather than spreading noise, as the preferred method
- iii. Minimise the total number of people affected by noise
- iv. Avoid multiple flight paths over one community
- v. Prioritise flight paths over parks and open spaces rather than residential areas

There was no clear preference for prioritising flight paths over rural areas rather than urban areas, and so this is not included in the above recommendation.

Appendix 1: Stimulus materials

Why is Heathrow making changes to its flight paths?

Airspace – the space above land that aircraft fly in – is a crucial, and limited, resource. It allows passengers and businesses to connect around the world.

The basic structure of the UK’s airspace today was developed over 50 years ago, when aircraft and navigation systems were much less sophisticated.

A lot has changed since this airspace was designed:

1. **Demand for aviation** has increased a hundred-fold, and will continue to increase both for existing airspace users and future users like drones.
2. **New technologies have evolved**, providing us with more efficient ways of flying and navigating aircraft.
3. **A possible new runway at Heathrow** will lead to further changes in where and how planes fly into and out of London.

Regardless of the proposed expansion of Heathrow, as part of the UK government’s Future Airspace Strategy to modernise the UK’s airspace, airports across the country, including Heathrow, are updating and simplifying their airspace, to enable the following things:

1. Make the airspace more efficient and improve punctuality
2. Cut CO₂ emissions
3. Reduce noise
4. Ensure there is capacity to meet future demand

What airspace looks like today:



What Heathrow is aiming to achieve:



**NB these are indicative diagrams of what airspace change is aiming to achieve and do not represent a specific location*

Performance Based Navigation: From ground-based to satellite navigation

Performance Based Navigation, or PBN, is a modern navigation system that uses modern satellite technology to direct aircraft. This is in contrast to the current system of ‘conventional’ navigation, which is based on aircraft flying between ground-based beacons.

Aircraft following a PBN route can fly much more accurately because they are satellite based. This enables more flexible positioning of routes, mainly because they no longer have to be anchored on fixed ground-based beacons.

However, because this technology will enable aircraft to follow a route more precisely, it will potentially lead to routes becoming narrower and more concentrated than they are today.

But what it does also provide, is the flexibility to potentially introduce alternative flight paths that can be switched on and off to provide areas overflown with periods of respite from aircraft noise.

This new system is crucial to modernising airspace, and is being introduced around the world.

A broad flight corridor using ground-based navigation



A narrow flight corridor using accurate satellite navigation (PBN)



What does this mean for me?

As Heathrow reviews their airspace, they want to make the most of this opportunity by designing it to be as efficient as possible, and reducing Heathrow’s impacts on local communities as much as possible. To do this, Heathrow need to know which issues matter most to you.

There are many options for how Heathrow’s future air design could look, each with different outcomes for the ways in which local communities are affected. In this focus group, each of these options will be discussed to understand your views and preferences for Heathrow’s future airspace.

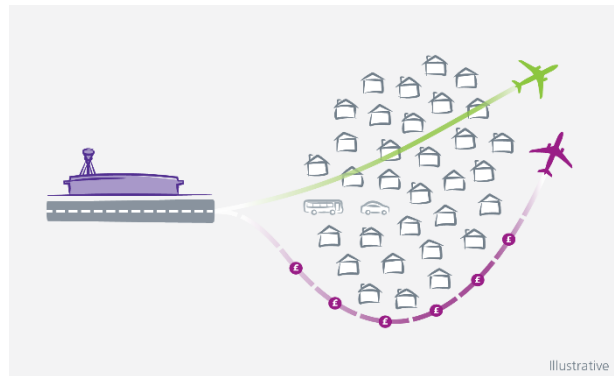
Minimise the impact of aircraft noise

Future airspace design will comply with Government regulation and policy on noise impact. In addition to this Heathrow will aim to reduce effects on health and quality of life from noise by considering local circumstances, and by contributing to improvements where possible.



Minimise fuel requirements and greenhouse gas emissions

Heathrow would seek to minimise the amount of fuel and CO2 emissions required by our flight paths, by keeping flight paths as short and direct as possible. Heathrow would avoid long and complicated paths that require more fuel (and therefore greater cost) for airlines.



Simple and efficient flight paths for operational efficiency

Heathrow would prioritise simple flight paths that minimise the workload of pilot and air traffic control, and reduce delays for airlines and passengers.

An illustration of an airport departures board. It features a yellow airplane icon and the word 'Departures' in yellow. Below is a table with columns for TIME, TO, GATE, and REMARK. The data is as follows:

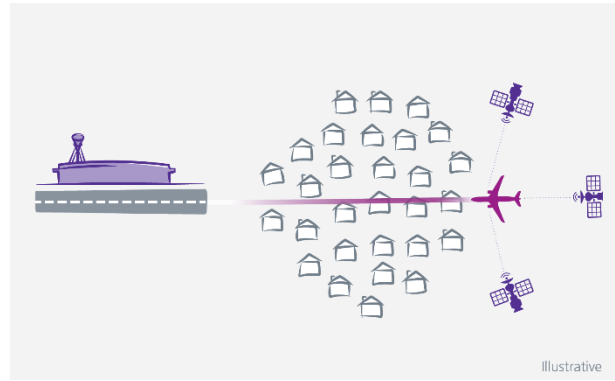
TIME	TO	GATE	REMARK
12:00	SYDNEY	A09	ON TIME
12:04	PARIS	A23	ON TIME
12:09	NEWYORK	B31	ON TIME
12:15	TOKYO	A27	ON TIME
12:19	HONG KONG	B25	ON TIME
12:21	BERLIN	B17	ON TIME
12:23	PEKING	A07	ON TIME
12:26	SYDNEY	A26	ON TIME

The word 'Illustrative' is written in the bottom right corner.

Incentivise airlines to use the most modern aircraft

Heathrow would base the airspace design on the latest navigation technology, requiring airlines to use the most modern aircraft.

This would give Heathrow more flexibility when designing flight paths, and would lead to planes flying routes more accurately. It would reduce pilot and air traffic control workload and lead to more capacity, even better safety, and less delay.



Illustrative

It would also make it more likely that airlines use more modern, quieter and less polluting planes when flying into Heathrow.

Minimise impact on other airspace users

Heathrow would minimise our impact on other airspace users, especially neighbouring airports of Luton, Gatwick and RAF Northolt.

This means Heathrow are willing to share airspace where necessary, only seek extra airspace where justifiable and look for opportunities to give away airspace that is not essential for future operations.



Illustrative

Minimise the number of people newly affected by noise

Where possible, Heathrow would avoid putting in routes over those who are not currently overflowed. This would mean keeping routes as close to today's flight paths as possible. This is likely to mean that areas currently overflowed would experience more planes overhead.



Design multiple flight paths, with only one flight path active at a time to provide predictable respite from noise

Heathrow would provide local communities with predictable respite from noise by scheduling the use of different flight paths by day/week/month so that communities can look ahead and know when they are likely to be overflowed. The use of additional flight paths would mean each flight path was flown less frequently but more people would be affected by noise.



Design multiple flight paths to be active at the same time, so that flights are spread over a wider area

Heathrow would spread routes over a wider area to share the impact of noise. The use of additional flight paths would mean each flight path was flown less frequently but more people would be affected by noise.



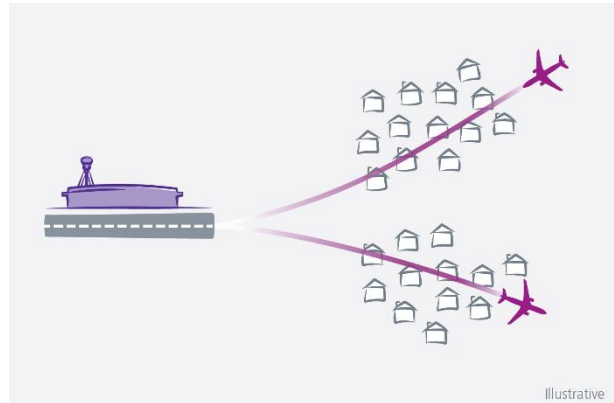
Minimise the total number of people affected by noise

Heathrow would aim to put flight paths over the areas with the lowest number of people. This will mean fewer people overflowed, but each of those communities would be more affected compared to options B and C. This will lead to planes concentrated over a smaller number of routes.



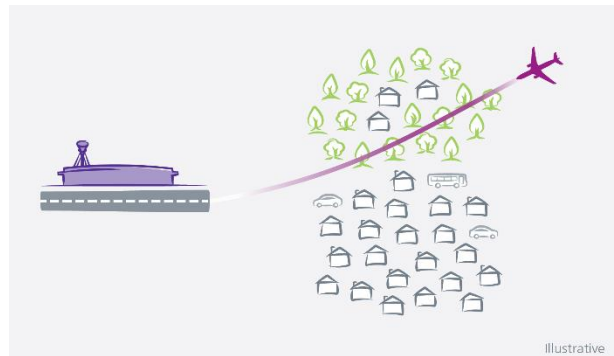
Avoid multiple flight paths over one community

Heathrow would aim for arrivals and departure flight paths to be placed over different communities and avoid using the same airspace as routes from nearby airports.



Prioritise flight paths over rural areas, rather than over urban areas

Heathrow would aim to put planes over rural areas rather than urban areas, as they are less populated.



Prioritise flight paths over parks and open spaces, rather than over residential areas

Heathrow would aim to put planes over parks and open spaces rather than residential areas in towns and cities.



Appendix 2: Principle scoring

Headline design principles

	Clapham, younger	Clapham, older	Beaconsfield	Watford, younger	Watford, older	TOTAL
Minimise fuel requirements and greenhouse gas emissions	51	58	39	41	54	243
Minimise impact of aircraft noise	39	51	62	24	48	224
Incentivise airlines to use the most modern technology	29	40	33	44	20	166
Simple and efficient flight paths for operational efficiency	11	8	20	44	26	109
Minimise impact on other airspace users	11	3	5	7	11	37

Noise impact principles

	Clapham, younger	Clapham, older	Beaconsfield	Watford, younger	Watford, older	TOTAL
Minimise the total number of people affected by noise	60	31	0	67	46	204
Minimise the number of people newly affected by noise	5	17	27	67	69	185
Design multiple flight paths, with respite	39	66	24	31	20	180
Design multiple flight paths, active at the same time	28	19	80	21	21	169
Avoid multiple flight paths over one community	8	27	29	0	4	68