



**AIRSPACE &  
FUTURE OPERATIONS  
CONSULTATION**

# **MAKING BETTER USE OF OUR EXISTING RUNWAYS**

JANUARY 2019



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**Heathrow**



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The consultation runs from **8 January – to 4 March 2019.**

We would like to know if there is anything you think we should take into account in your area when designing new flight paths for IPA.

# Section 1 – Introduction

Heathrow is one of the world's busiest two runway airports, serving over 200,000 passengers a day, flying to over 180 destinations in 90 countries. As the UK's only hub airport it plays a vital economic role both for the UK and the local community. Already the UK's largest port by value for non-EU exports, Heathrow handles over 30% of the UK's exports to these markets.

Heathrow operates at 98% of its capacity which means that any disruption or delays during the day can have a knock-on effect to the punctuality of flights resulting in delays to passengers. Because of this, we are always looking for new ways to improve how the airport operates. Using new technology to improve how we manage aircraft arriving at Heathrow during particularly busy periods is one way this could be done.

A new procedure called Independent Parallel Approaches (IPA) has been identified as one way we can achieve this. The introduction of IPA will mean making a change to how **fewer** than 10% of our arrivals land at Heathrow, using our current two runways, which is why we are seeking your views on it.

Used as part of Heathrow's current operations, IPA would improve punctuality, reduce flight cancellations and will mean that the airport can recover more quickly from delays. The proposed changes would also help to reduce the number of late running flights into the night which are disruptive to local communities. For airlines and travelling customers, this would mean less disruption and more flights operating on time.

Heathrow is responsible for developing proposals for any changes to flight paths into and out of the airport. There will be two consultations on our proposals to introduce IPA and this is the first of them.

## **This booklet contains information on the following:**

- Heathrow's current operations
- An explanation on what IPA is and its potential benefits and impacts
- IPA in the context of Heathrow expansion
- The design envelopes for proposed IPA flight paths
- The Civil Aviation Authority's (CAA) Airspace Change Process
- How you can respond to this consultation

### **What is IPA?**

When the airport is experiencing delays Heathrow sometimes needs to land aircraft on both runways. IPA is a way of making the arrivals process more efficient when this happens. More information on IPA can be found in section 3 of this document.



Before explaining Independent Parallel Approaches in more detail, it is important to understand how Heathrow currently operates.

## Section 2 – Understanding Heathrow’s current operation

### Wind direction

Flights arriving in to Heathrow today use our two runways – known as the northern and southern runways which run in parallel east to west.

For safety reasons, aircraft typically land into the wind. In the UK, the prevailing winds are mostly south-westerly (from the south west). As a result, the majority of aircraft (approximately 70% a year) make their final approach<sup>1</sup> to Heathrow towards the west. This is known as **‘westerly operations’**.

When the wind blows from the east (and over five knots at ground level<sup>2</sup>), the direction of operation is switched and aircraft land towards the east. This is known as **‘easterly operations’** and occurs approximately 30% of the time.



<sup>1</sup> The last stage of an aircraft’s flight, when the aircraft is lined up with the runway and descending for landing

<sup>2</sup> The direction of operation can sometimes be affected by the wind speed on direction at higher altitudes

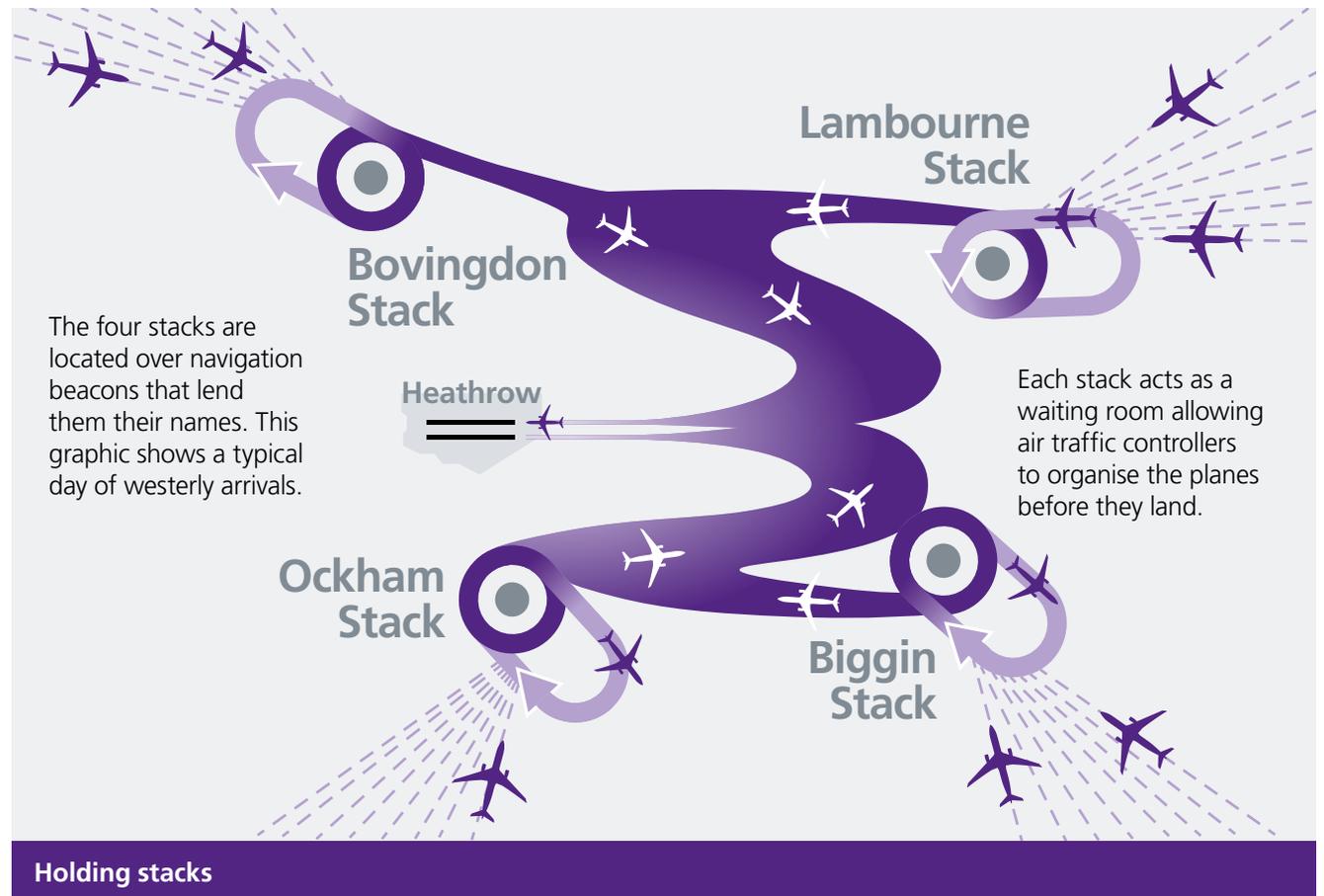
## Our holding stacks

Because Heathrow is busy, aircraft coming into land are frequently held in 'holding stacks' where they circle above 7,000ft until there is space in the queue to land at the airport.

There are four holding stacks at Heathrow – known as 'Bovingdon', 'Lambourne', 'Ockham' and 'Biggin'. IPA flight paths will start at these stacks.

The stacks have been in the same position since the 1960s and we are not proposing to change the stacks with IPA.

There are currently no precise flight paths for planes flying from the holding stacks to land. While the overall patterns that aircraft fly are similar to each other, the precise position of aircraft in the sky varies from flight to flight and day to day.



## Minimum final approach joining point

Aircraft leave the stacks to join the final approach. Government rules<sup>3</sup> state that arriving aircraft joining the final approach cannot do so below certain altitudes and/or distance from the runway.

These rules vary according to the runway in use and the time of day, but aircraft are typically not permitted to join final approach closer than 8 nautical miles<sup>4</sup> (nm) from the runway.

IPA will require a change to this rule for those aircraft following the new IPA flight paths to the departure runway<sup>5</sup>. The main flow of arriving aircraft to the main arriving runway will still adhere to the existing minimum final approach joining point rules.



<sup>3</sup> UK AIP EGLL AD 2.21 Para 10 (a) – (d) [http://www.ead.eurocontrol.int/eadbasic/pamslight-F53D06F4910E6A84C5C3B6151357E1F2/7FE5QZZF3FXUS/EN/AIP/AD/EG\\_AD\\_2\\_EGLL\\_en\\_2018-12-06.pdf](http://www.ead.eurocontrol.int/eadbasic/pamslight-F53D06F4910E6A84C5C3B6151357E1F2/7FE5QZZF3FXUS/EN/AIP/AD/EG_AD_2_EGLL_en_2018-12-06.pdf)

<sup>4</sup> A nautical mile is slightly more than a statute (land measured) mile (1 nautical mile = 1.1508 statute miles)

<sup>5</sup> See section 3 for more details on IPA

## Runway alternation

During the day<sup>6</sup> on westerly operations we use a procedure known as 'runway alternation'. This means that for part of the day we use one runway for landings and the other for take-offs, then halfway through our day at 3pm, we switch over.

Our runway alternation pattern follows a two week cycle which provides local communities living under the final approach into the airport with predictable periods of relief from aircraft noise. Residents place great importance on the alternation system at Heathrow and every effort is made to adhere to it, except in exceptional circumstances.

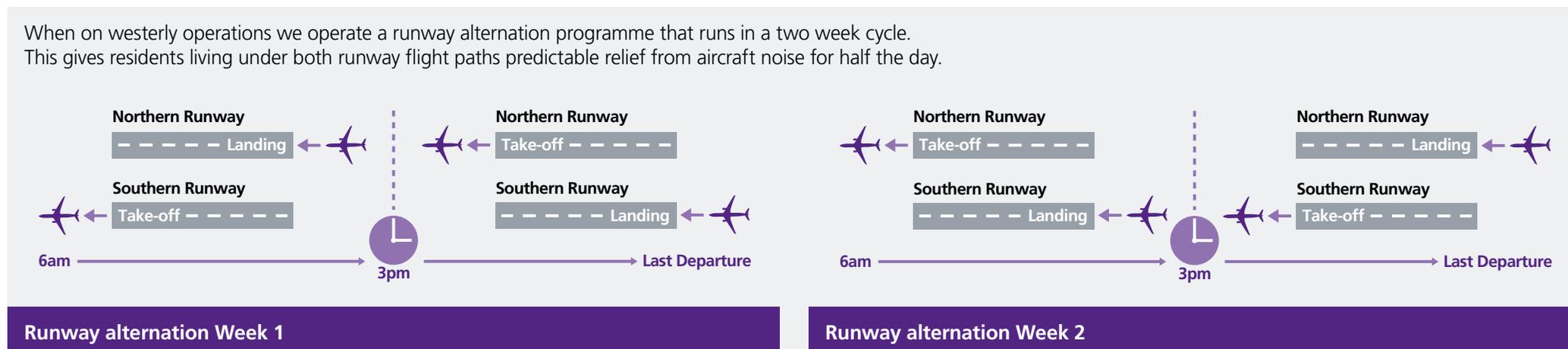
On easterly operations, Heathrow cannot alternate the runways because of the 'Cranford Agreement', a historic agreement which prevented us from

using the northern runway for departures during the day. This means we use the northern runway as the main landing runway and the southern runway as the main departure runway throughout the day.

The Cranford Agreement has now ended, and we plan to develop the infrastructure we need to allow easterly alternation. You can find more information on the Cranford Agreement in the FAQs on our website [www.heathrowconsultation.com](http://www.heathrowconsultation.com)

Since there are far fewer aircraft that take-off or land after the last scheduled departure around 11pm, during the night<sup>7</sup> it is possible to alternate the runways when the airport is operating in either an easterly or westerly direction. The alternation pattern at night up until 6am runs on a weekly basis between the northern and southern runways and, weather permitting, between easterly and westerly operations. There's more information about alternation patterns on our website [www.heathrow.com/noise/future-operations](http://www.heathrow.com/noise/future-operations)

When on westerly operations we operate a runway alternation programme that runs in a two week cycle. This gives residents living under both runway flight paths predictable relief from aircraft noise for half the day.



<sup>6</sup> Day time is defined as 7am – 11pm local however this alternation pattern begins at 6am

<sup>7</sup> Night time is defined as 11pm – 7am local

## **Use of the departure runway for landing**

During the day, when delays build up in the holding stacks, we can use both runways for landing. We set out when this can happen below:

### **Landing before 6am**

Use of both runways for landing is not permitted before 6am.

### **Landing between 6am and 7am**

The hour between 6am and 7am is the busiest time of the day at Heathrow for arrivals so we can use both runways for landing during that time. This can occur when there is a minimum delay for arrivals forecast between 5 – 10 minutes. There are no restrictions on the number of arriving flights that can land on the departures runway and because delay is common at this time, the use of both runways is a daily occurrence in this hour. This is the case for both westerly and easterly operations.

### **Landing after 7am until the last arriving aircraft**

After 7am we allow a maximum of six arrivals an hour<sup>8</sup> to land on the departures runway and only where there is a predicted delay of at least 20 minutes per flight. This only applies to westerly operations. We apply a similar, but not identical, practice to easterly operations.

Landing aircraft on the departures runway results in fewer aircraft being able to depart from the airport during that time. Whilst the maximum number of aircraft permitted to land in this circumstance is six per hour, we must balance the arrival delay with any departure delay and so we will frequently choose to land less than the maximum allowed.

<sup>8</sup> Rare exceptions may occur for safety reasons

## Section 3 – Independent Parallel Approaches (IPA)

### What is IPA?

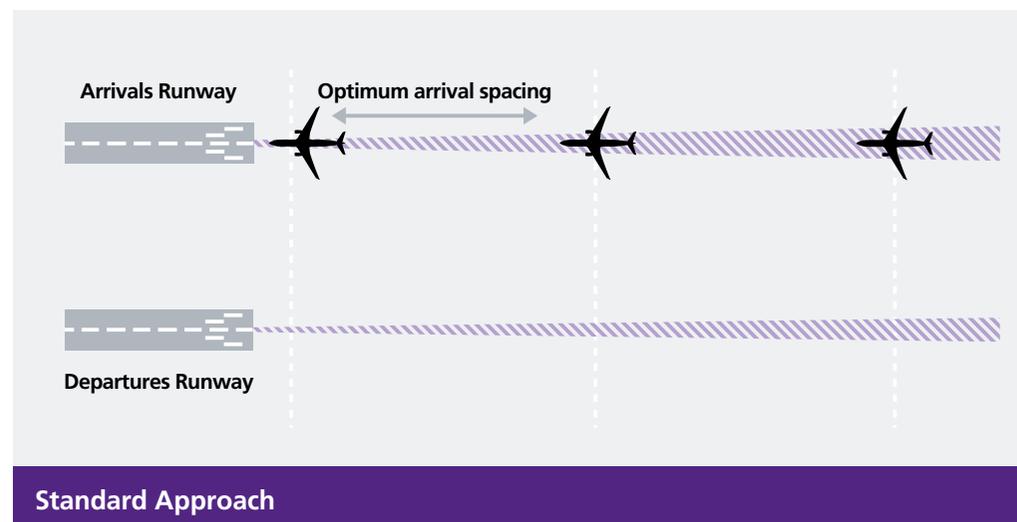
When the airport is experiencing delays Heathrow sometimes needs to land aircraft on both runways. IPA is a way of making the arrivals process more efficient when this happens.

It uses a modern aircraft satellite-based navigation system, called Performance Based Navigation (PBN), which allows aircraft to follow a route with more precision and consistency.

This gives us new opportunities to fly aircraft differently during the periods when they are landing on both the arrivals and departures runways. For more information on PBN, please read our **What is airspace modernisation?** document.

### How does IPA work?

For the majority of the time, Heathrow uses one runway for arrivals and one runway for departures. Aircraft that arrive on the arrivals runway are individually directed by air traffic controllers to ensure a safe distance is maintained between the aircraft.

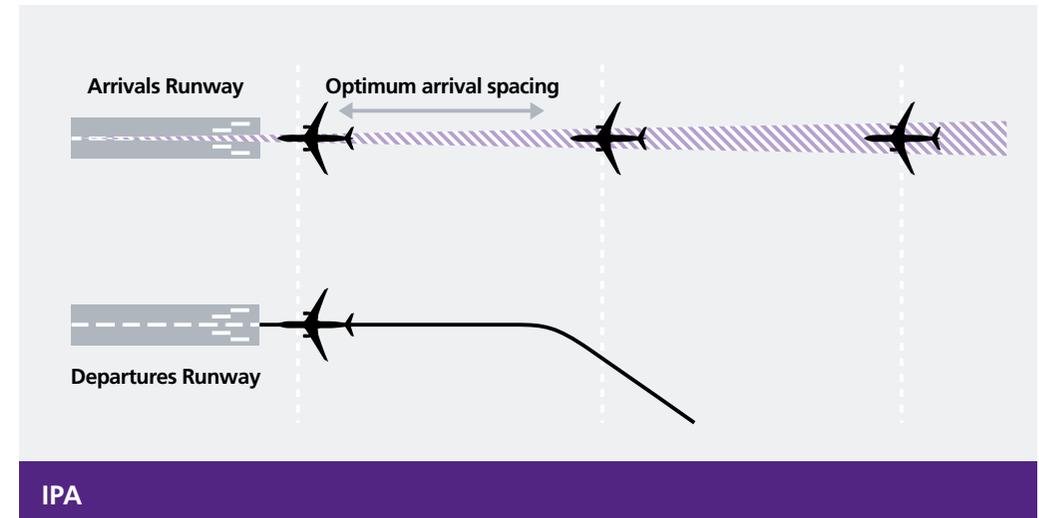
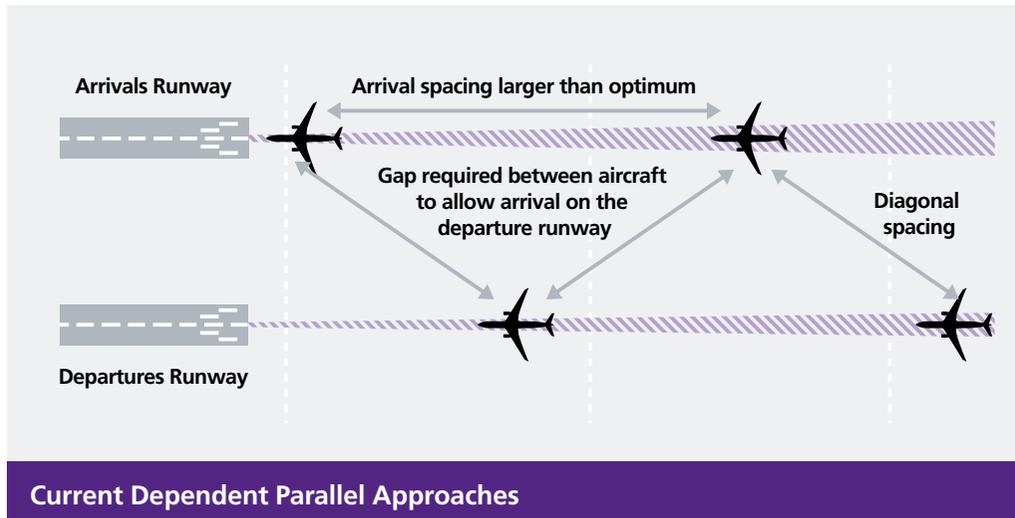


Currently, an aircraft landing on the departure runway must be diagonally spaced by a specified distance from aircraft landing on the arrival runway.

To achieve this, the spacing between aircraft landing on the arrival runway has to be increased compared to when only one runway is used for landing.

This additional spacing means that fewer aircraft are able to land on the arrival runway in that hour. So even though both runways are being used for landings, there is only a small gain in the total number of arrivals. This is illustrated by the fact that even if six aircraft were to land on the departure runway in one hour, the overall landing rate across both runways for that hour may on some occasions only increase by two landings.

With the introduction of IPA, aircraft landing on the arrival runway would continue to be directed as they are today. However, aircraft landing on the departure runway would follow new precise flight paths from the holding stacks to the final approach.



As shown in the figure above right – because the aircraft is following a very precise arrival flight path using PBN, the aircraft can be classed as operating independently. This is because PBN technology gives us certainty that aircraft will be safely separated when landing in parallel and removes the need for the diagonal spacing between arriving flights. This would prevent any reduction in the number of aircraft that can land on the arrival runway, resulting in a much more efficient use of the arrival process.

Only aircraft certified to use this type of PBN approach required for IPA will be able to use the new flight paths. It is costly for older aircraft types to be upgraded with the required technology for IPA and so we expect the vast majority of aircraft that could use the IPA flight paths will be modern aircraft such as the Boeing 787, A320neo and the Airbus 350. Airline forecasts have demonstrated to us that there will be a sufficient number of certified aircraft to fly the IPA flight paths.

Use of the IPA flight paths would not be possible in all weather conditions. For example, during fog, thunder storms and/or extremely windy conditions. In these circumstances, we will continue to land on the departure runway the way we do today using the diagonal spacing.



## The benefits of IPA

The introduction of IPA has the potential to increase the efficiency and resilience of the airport. IPA will make our arrivals procedures more efficient which will reduce arrival delays. Typical savings are estimated to be up to 13 hours<sup>9</sup> of arrival flight delay per day, which is a benefit to all passengers.

This will lead to further benefits including:

- Reducing fuel burn from aircraft queuing in Heathrow's holding stacks on arrival, leading to a reduction in carbon emissions
- Improving the punctuality of flights including a reduction in the number of late running flights and cancellations
- Enabling the airport to prevent and recover from arrival delays more quickly. This is expected to result in fewer flights departing in the night time period
- Reducing the number of aircraft that land on the departure runway which will improve periods of respite from aircraft noise via runway alternation for residents living under the final approach into Heathrow
- Supporting airline cost savings associated with delays
- Contributing to meeting the UK's legal obligation to implement PBN flight paths at Heathrow<sup>10</sup>.

In addition to the benefits we have already mentioned, by making more efficient use of our two runways, IPA could also be a step towards delivering a longer period at night without scheduled flights. However, Heathrow is not presently proposing or consulting on that change as part of the IPA airspace change proposal.

There are clear benefits to IPA and those are our rationale for the IPA proposal. However, IPA could also be used to facilitate additional capacity in advance of the third runway being brought into operation, should that be permitted as part of expansion. More information on this is set out later in this section. In that instance, it should be noted that the scale of some of the benefits set out on this page may vary.

Full details of the impacts of any additional capacity will be discussed in our June 2019 consultation and are not the subject of this consultation. Heathrow has stated that if we put forward proposals for additional capacity it would be only be implemented at the same time as a longer period at night without scheduled flights.

<sup>9</sup> Early estimates of delay savings and other benefits will be updated as the project matures.

<sup>10</sup> See ATM Functionality 1 of EU 716/2014 and EU 2018/1048

## What this could mean for local communities

As well as improving the overall performance of the airport and reducing delays for Heathrow's passengers, the introduction of IPA would mean a number of flights flying over areas that do not routinely see arriving aircraft today from 6am onwards. These new flight paths would use PBN which means aircraft using IPA would follow the flight paths with increased precision and consistency compared to existing flight operations.

### What changes would IPA introduce?

- The introduction of IPA would require new PBN arrival flight paths from Heathrow's holding stacks to the departure runways
- When we are using both runways for landing, only those aircraft landing on the departure runway will use the new IPA flight paths
- Aircraft would fly these new flight paths precisely
- New IPA arrival flight paths would mean a number of flights going over some areas that do not routinely see arriving aircraft today. See **Section 4** for more information on this and **Section 5** for more information on the IPA airspace design envelopes.
- IPA aircraft will be joining the final approach closer than the 8nm that they do today (only for IPA arrivals to the departure runway<sup>11</sup>). This is because the aircraft landing on the main landing runway must be established on their final approach before coming within 2.5nm of the aircraft following the IPA flight path.

<sup>11</sup> This proposal will require a change to Heathrow's Noise Abatement procedures for IPA arriving aircraft which will need approval from the Department for Transport



### How many flights would use the new flight paths?

The new IPA flight paths will only be used by aircraft landing on the departure runway.

The table below shows the average number of aircraft landing on the departures runway each day over the last 5 years<sup>12</sup>. We publish the number of aircraft that land on the departures runway each day on our website at [www.heathrowoperationaldata.com](http://www.heathrowoperationaldata.com).

Time period and mode of operation	Average number of aircraft that landed on the departure runway during the last five years
6am - 7am (westerly operations)	18 an hour
After 7am (westerly operations)	15 per day
6am - 7am (easterly operations)	16 an hour
After 7am (easterly operations)	23 per day

The table above gives the average number of aircraft. Between 6am and 7am, the maximum number of aircraft landing on the departure runway was 26 whilst the most common amount was between 19 and 22 aircraft. After 7am there is a maximum 6 aircraft per hour.

The following estimates will be refined as the project progresses.

### Aircraft landing before 6am

The new IPA flight paths will not be used by aircraft landing at Heathrow before 6am.

### Aircraft using the new IPA flight paths between 6am and 7am

The feasibility work to date has demonstrated that we are unlikely to land more than 25 arrivals on the departure runway in this hour using new IPA flight paths. However, the average number of aircraft landing on the departure runway in this hour is expected to remain in line with the figures in the table to the left.

As the landing rate on the main arrival runway would no longer need to reduce, the total number of aircraft landing at Heathrow, on both runways, during this hour could be expected to increase compared to today.

### Aircraft landing from 7am onwards

After 7am on westerly operations the maximum number of aircraft using the new IPA flight paths would be limited to 6 per hour and will only take place when landing on the departure runway.

IPA is more efficient than current procedures for landing on the departure runway which means we can recover more quickly from delay. Therefore, the average daily numbers of aircraft landing on the departure runway after 7am would be expected to **reduce**.

On easterly operations we will also rarely land more than 6 aircraft per hour on the departure runway, because as today, landing on the departure runway reduces the number of aircraft that can depart from that runway.

<sup>12</sup> Between 1st May 2013 and 30th April 2018. Note that these are average daily numbers, higher and lower daily numbers can be experienced

## IPA in the context of Heathrow expansion

On 25th June 2018, Parliament formally backed Heathrow expansion, with MPs voting in support of the Government's Airports National Policy Statement (ANPS).

The ANPS sets out Government policy for new airport infrastructure for a new north-west runway at Heathrow. The ANPS requires that an expansion of Heathrow will enable at least an additional 260,000 Air Traffic Movements (ATMs) from the airport. If consent for expansion is granted, the planning restriction of a maximum of 480,000 ATMs per year, on Heathrow's current two runways, would be increased.

The new IPA flight paths are planned for Heathrow's existing two runways. If Heathrow is successful in obtaining consent for expansion, once the new third runway is constructed, the airspace, including these new IPA flight paths would be redesigned for our three-runway operations. For more information please see our **Heathrow's Airspace and Future Operations Consultation** document.

However, we are exploring plans to use the existing runways more to create up to 25,000 ATMs per year. This would be in advance of the completion of the third runway and could only happen if consent for expansion is granted. This would be an initial phase of the additional ATMs per year that expansion will permit.

Any such proposals to add capacity before the third runway opens would be the subject of further consideration as part of the development of the proposals for expansion more broadly.

This would take place through stakeholder engagement and then our statutory consultation on airport expansion proposed for June 2019 and therefore does not currently form part of this consultation.

It is in that June consultation that we would set out the implications of all elements of expansion, including any proposal to add capacity early alongside our proposals to mitigate any negative impacts. This will also provide details of what effect such additional movements would have on the number of flights expected to use the IPA flight paths.

### **What do we expect the additional movements to do to the numbers of flights expected to use the IPA flight paths?**

We would anticipate that the average daily number of flights landing on the departure runway would rise back up to a similar order of magnitude to those observed today, or slightly higher. However, the numbers of aircraft using the IPA flight paths in any one hour, including the 6am – 7am hour, would not be expected to increase above the estimates we have provided.

Heathrow intends to progress the introduction of IPA, regardless of whether Heathrow expands. This is because of the overall improvements that IPA would bring to our current two runway operation.

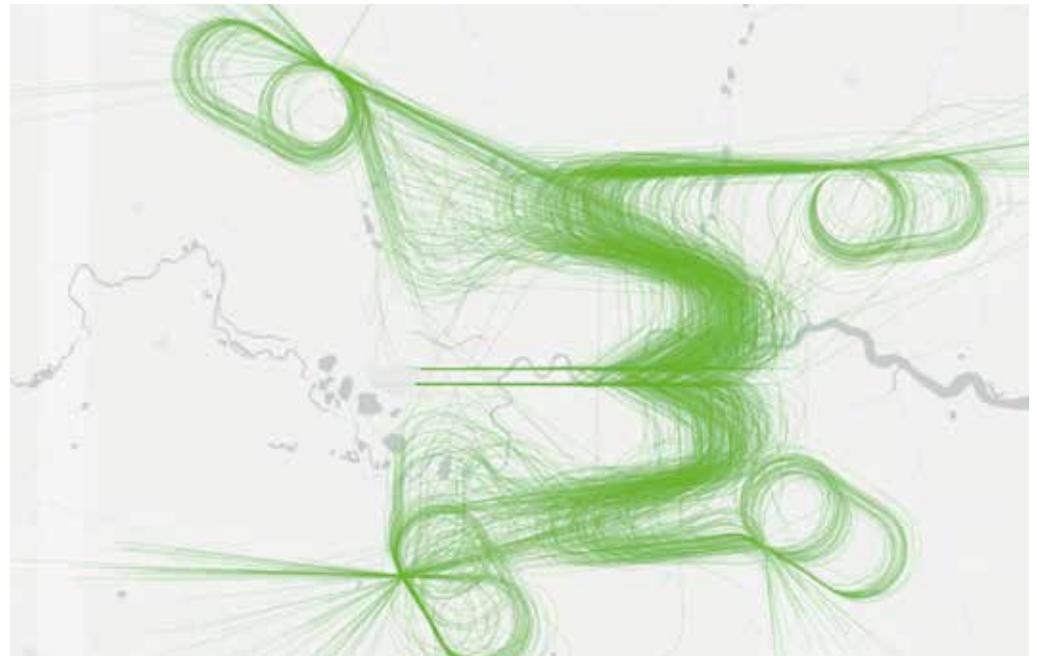
## Section 4 – Developing new Independent Parallel Approach (IPA) flight paths

The new flight paths needed for IPA must 'fit' into Heathrow's existing airspace and for safety reasons<sup>13</sup> must be designed to avoid the main existing arrival flow of aircraft into Heathrow. This is so those aircraft can follow flight paths independently to the majority of arrivals being manually directed by air traffic control onto the landing runway.

These existing flows are shown in the following images:



Easterly operations at Heathrow



Westerly operations at Heathrow

<sup>13</sup> For detailed technical information on this, see 'Our feasibility assessment of Independent Parallel Approaches at Heathrow'.

### **Key considerations**

When designing new flight paths, there are a range of factors we must take into account. This is to make sure flight paths will be fit for purpose and fit into the existing operations at Heathrow. We must consider:

- The amount of airspace available
- Flights in and out of Heathrow and other London airports
- CAA requirements for airspace change
- Safety requirements
- International rules on the design of flight paths

### **Design envelope development for IPA**

A design envelope represents a geographical area within which it is technically possible to position a flight path or flight paths. It does not mean that final flight path or paths will be spread across the extent of the envelope, it shows the geographical area within which a flight path could be positioned. For more information on design envelopes please see our

**Understanding our design envelopes** document.

The width of the IPA design envelopes takes account of the potential for overflight noise to affect communities either side of a flight path based on the CAA's definition of overflight. This definition can be found here:

**[www.publicapps.caa.co.uk/cap1498](http://www.publicapps.caa.co.uk/cap1498)**

This is to ensure that the IPA design envelopes cover areas which would not be directly under a flight path, but may still be close enough to be considered as overflown.

Our assessment work has shown that it is not possible to position IPA flight paths outside of the design envelopes. This may be for technical, safety or operational reasons.

The following pages show the IPA design envelopes we have developed. Each IPA design envelope will accommodate at least one new IPA flight path that will connect aircraft from one of the holding stacks to land on the departures runway.

Our proposal is for IPA flight paths from our holding stacks to three out of four of Heathrow's runway ends. Heathrow does not currently alternate runways during easterly operations and as a result our northern runway is nearly always the main landing runway in this circumstance. Therefore, no IPA flight paths are currently being proposed to our northern runway on easterly operations. When Heathrow begins the airspace change process of introducing easterly alternation, we will engage with our identified stakeholders.

## Section 5 – The IPA design envelopes

### How to understand the design envelopes

By providing information on the number, height and noise of potential flights over your area, our consultation material aims to give you an understanding of the potential impact of flights in the future and enables you to respond to this consultation.

- **Find your location of interest on the maps provided overleaf**

If you are within one or more design envelope, it means there is potential for the future flight paths to be positioned overhead.

- You can also view these maps online at [www.heathrowconsultation.com](http://www.heathrowconsultation.com), and a postcode checker will help you identify which design envelopes are of interest to you.

- **The envelopes have been divided into sections to show the heights of aircraft that could be flying in that section of the envelope.**

All height values given are in feet above mean sea level – if for example, the location of interest is on high ground then its height should be factored in.

- **Use the key to determine the height band you are in – this gives a typical height of future flights**

The table then indicates how many aircraft you could expect to use that flight path in the future. This is shown as a number of flights per hour, which will vary between zero (when that route is not in use), to a maximum number of hourly flights, which would only occur in very busy periods.

- **See an indication of the number of flights likely to exceed certain thresholds**

We have also provided an indication of the number of flights likely to exceed 65 decibels or 60 decibels. These measures, known as “N65” or “N60”, are used because they are recommended by both the Secretary of State’s Air Navigation Guidance and the CAA’s Airspace Design Guidance. 65 decibels is a measure for daytime operations; the measure for night time operations is 60 decibels.

If you would like to understand more about the noise generated by aircraft at different heights, you can refer to the noise tables provided in the **Understanding our design envelopes** information paper.

Noise	Noise level (decibels)
Chainsaw at 1 metre distance	110
Disco, at 1 metre from speaker	100
Diesel truck passing by 10 metres away	90
Kerbside of a busy road, 5 metres away	80
Vacuum cleaner, 1 metre away	70
Background noise in a busy office	65
Conversation speech, 1 metre away	60
Quiet office	50
Room in a quiet suburban area	40
Quiet library	30

If you would like to understand more about the noise generated by different aircraft types at different heights, you can refer to the noise tables provided in our **Understanding our design envelopes** document.

## Hear for yourself

We will have sound demonstrations at some of our consultation events. These demonstrations let you hear what different planes sound like at different heights.

For more information on which venues these will be at please visit [www.heathrowconsultation.com](http://www.heathrowconsultation.com)

**We would like to know if there is anything you think we should take into account in your area when designing new flight paths for IPA.**

Our design process will identify and take account of publicly available information on the location of 'noise sensitive receptors' such as schools, hospitals, community centres and nursing homes within the IPA design envelopes. This information will help us identify and evaluate options for the precise position of the new flight paths, in accordance with our IPA design principles. **However, we recognise that there may be other specific sites or locations which are particularly sensitive to the effects of aircraft flying overhead that we may not be aware of and this is what we would like your feedback on.**

Please consider this information for your area(s) of interest and let us know whether there are any sites or locations that you think require special consideration by us in determining where future flight paths should be. Please describe the special characteristics of these locations, stating why they would be sensitive to flights overhead. For example, this could be because they would be sensitive to noise or visual impacts associated with flights overhead.

## Our IPA design envelope for our existing northern runway during westerly operations

### IPA A1

There will be at least one IPA flight path starting from each of three out of the four Heathrow holding stacks (Bovingdon, Lambourne and Ockham) to this runway:

This proposal does not propose flight paths from the Biggin holding stack to this runway as this would not be possible without changes to other Heathrow flight paths.

This envelope, IPA A1, shows the maximum extent of the geographical area that could potentially be affected by IPA flight paths when Heathrow is on westerly operations and our northern runway is the main departure runway.

### Further information

We expect the vast majority of aircraft that could use the IPA flight paths will be modern aircraft such as the Boeing 787, A320neo and the Airbus 350. We also expect some of the Boeing 737, Boeing 767, Boeing 777 and Airbus 330 fleets to be able to fly the IPA flight paths.

IPA A1	Flights per hour between 6am - 7am	Number of flights above 60 decibels	Number of flights per hour after 7am	Number of flights above 65 decibels	Info
Approx 1,000ft - 2,000ft	0-25	0-25	0-6	0-6	Up to 40* flights per day in total after 7am.
Approx 2,000ft - 3,000ft	0-25	0-25	0-6	0-6	
Approx 3,000ft - 4,000ft	0-25	0-25	0-6	0-3	
Approx 4,000ft - 5,000ft	0-25	0-25	0-6	0	
Approx 5,000ft - 6,000ft	0-25	0-2	0-6	0	
Approx 6,000ft - 7,000ft	0-25	0	0-6	0	
Approx 7,000ft +	0-25	0	0-6	0	

\* It is possible that this number could be exceeded on very rare occasions.

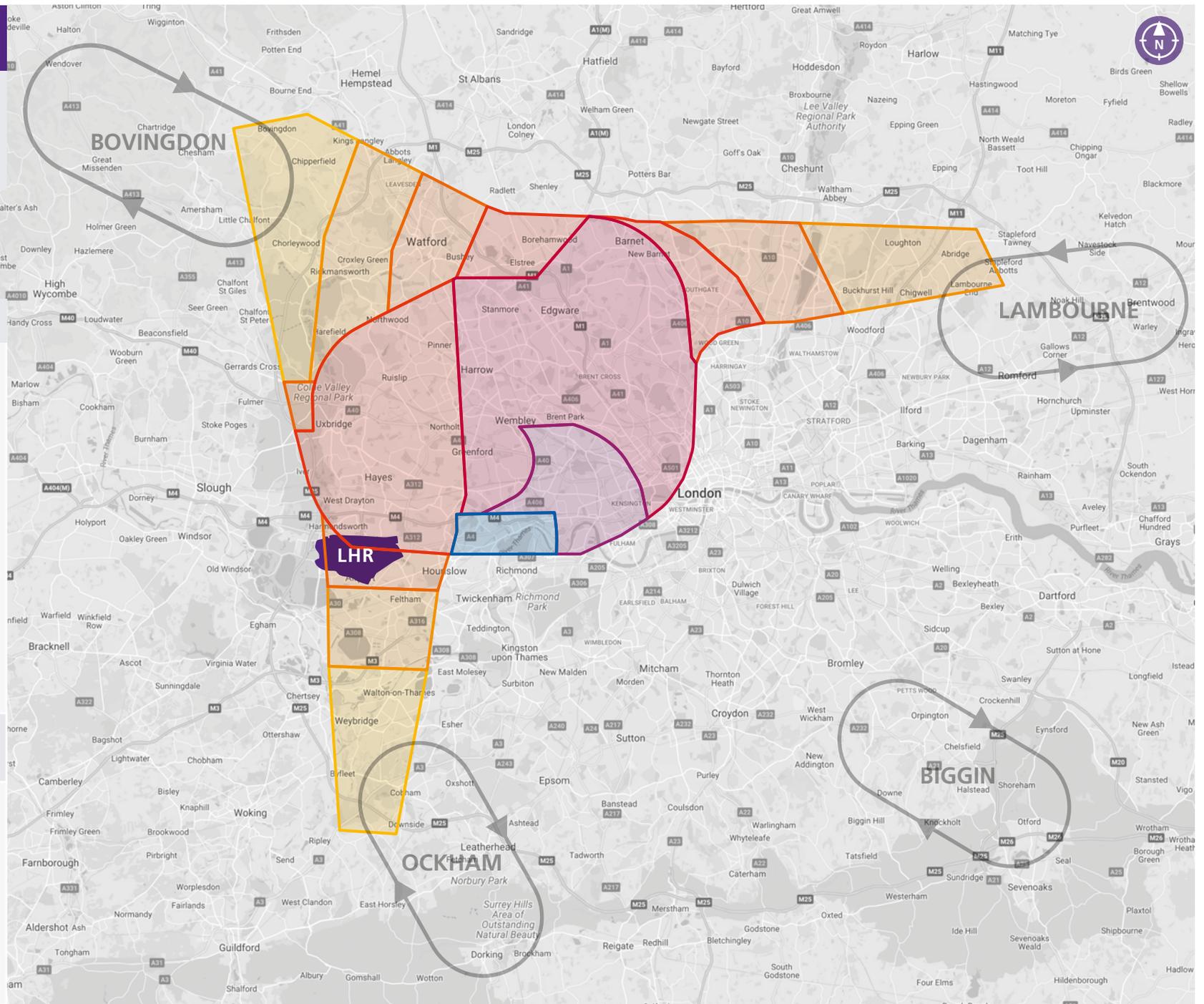
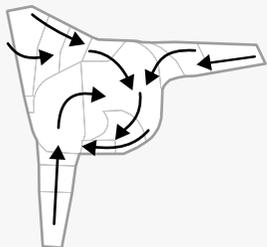
# IPA A1

Our IPA design envelope for our existing northern runway during westerly operations.

## KEY:

-  Design envelope
-  Holding stack
-  Heathrow Airport
-  1,000 - 2,000ft
-  2,000 - 3,000ft
-  3,000 - 4,000ft
-  4,000 - 5,000ft
-  5,000 - 6,000ft
-  6,000ft - 7,000ft
-  7,000ft +

Direction of descending aircraft within the envelope IPA A1



## Our IPA design envelope for our southern runway during westerly operations

### IPA A2

There will be at least one IPA flight path starting from each of three out of the four Heathrow holding stacks (Bovingdon, Lambourne and Ockham) to this runway:

This proposal does not propose flight paths from the Biggin holding stack to this runway as this would not be possible without changes to other Heathrow flight paths.

This envelope, IPA A2, shows the maximum extent of the geographical area that could potentially be affected by IPA flight paths when Heathrow is on westerly operations and our southern runway is the main departure runway.

#### Further information

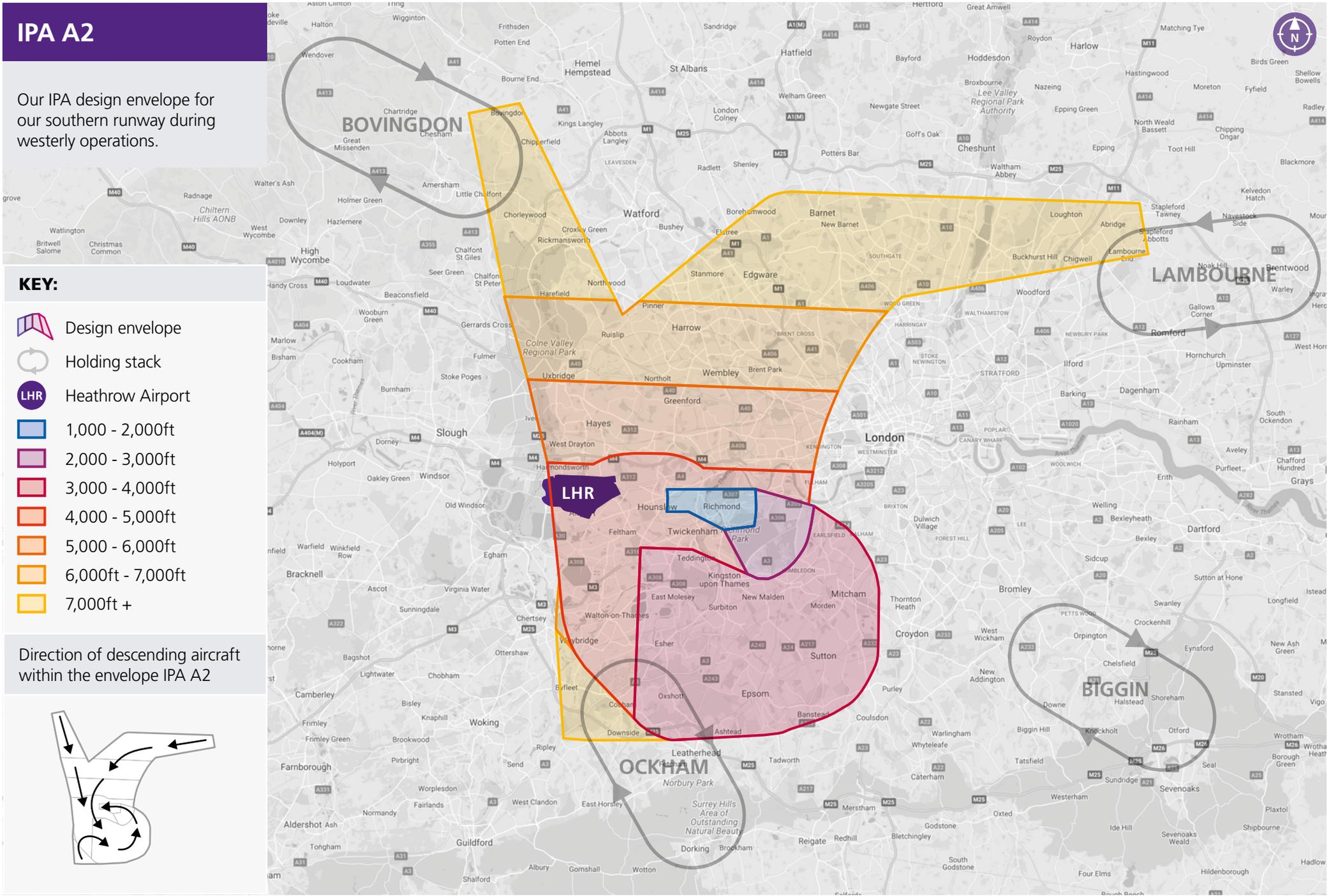
We expect the vast majority of aircraft that could use the IPA flight paths will be modern aircraft such as the Boeing 787, A320neo and the Airbus 350. We also expect some of the Boeing 737, Boeing 767, Boeing 777 and Airbus 330 fleets to be able to fly the IPA flight paths.

IPA A2	Flights per hour between 6am - 7am	Number of flights above 60 decibels	Number of flights per hour after 7am	Number of flights above 65 decibels	Info
Approx 1,000ft - 2,000ft	0-25	0-25	0-6	0-6	Up to 40* flights per day in total after 7am.
Approx 2,000ft - 3,000ft	0-25	0-25	0-6	0-6	
Approx 3,000ft - 4,000ft	0-25	0-25	0-6	0-3	
Approx 4,000ft - 5,000ft	0-25	0-25	0-6	0	
Approx 5,000ft - 6,000ft	0-25	0-2	0-6	0	
Approx 6,000ft - 7,000ft	0-25	0	0-6	0	
Approx 7,000ft +	0-25	0	0-6	0	

\* It is possible that this number could be exceeded on very rare occasions.

# IPA A2

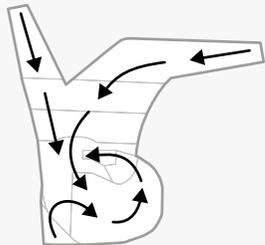
Our IPA design envelope for our southern runway during westerly operations.



### KEY:

-  Design envelope
-  Holding stack
-  Heathrow Airport
-  1,000 - 2,000ft
-  2,000 - 3,000ft
-  3,000 - 4,000ft
-  4,000 - 5,000ft
-  5,000 - 6,000ft
-  6,000ft - 7,000ft
-  7,000ft +

Direction of descending aircraft within the envelope IPA A2



## Our IPA design envelope for our southern runway during easterly operations

### IPA A3

There will be at least one IPA flight path starting from each of Heathrow's four holding stacks (Bovingdon, Lambourne, Ockham and Biggin) to this runway:

This envelope, IPA A3, shows the maximum extent of the geographical area that could potentially be affected by IPA flight paths when Heathrow is on westerly operations and our southern runway is the main departure runway.

#### Further information



We expect the vast majority of aircraft that could use the IPA flight paths will be modern aircraft such as the Boeing 787, A320neo and the Airbus 350. We also expect some of the Boeing 737, Boeing 767, Boeing 777 and Airbus 330 fleets to be able to fly the IPA flight paths.

IPA A3	Flights per hour between 6am - 7am	Number of flights above 60 decibels	Number of flights per hour after 7am	Number of flights above 65 decibels	Info
Approx 1,000ft - 2,000ft	0-25	0-25	0-6	0-6	Up to 40* flights per day in total after 7am.
Approx 2,000ft - 3,000ft	0-25	0-25	0-6	0-6	
Approx 3,000ft - 4,000ft	0-25	0-25	0-6	0-3	
Approx 4,000ft - 5,000ft	0-25	0-25	0-6	0	
Approx 5,000ft - 6,000ft	0-25	0-2	0-6	0	
Approx 6,000ft - 7,000ft	0-25	0	0-6	0	
Approx 7,000ft +	0-25	0	0-6	0	

\* It is possible that this number could be exceeded on very rare occasions.

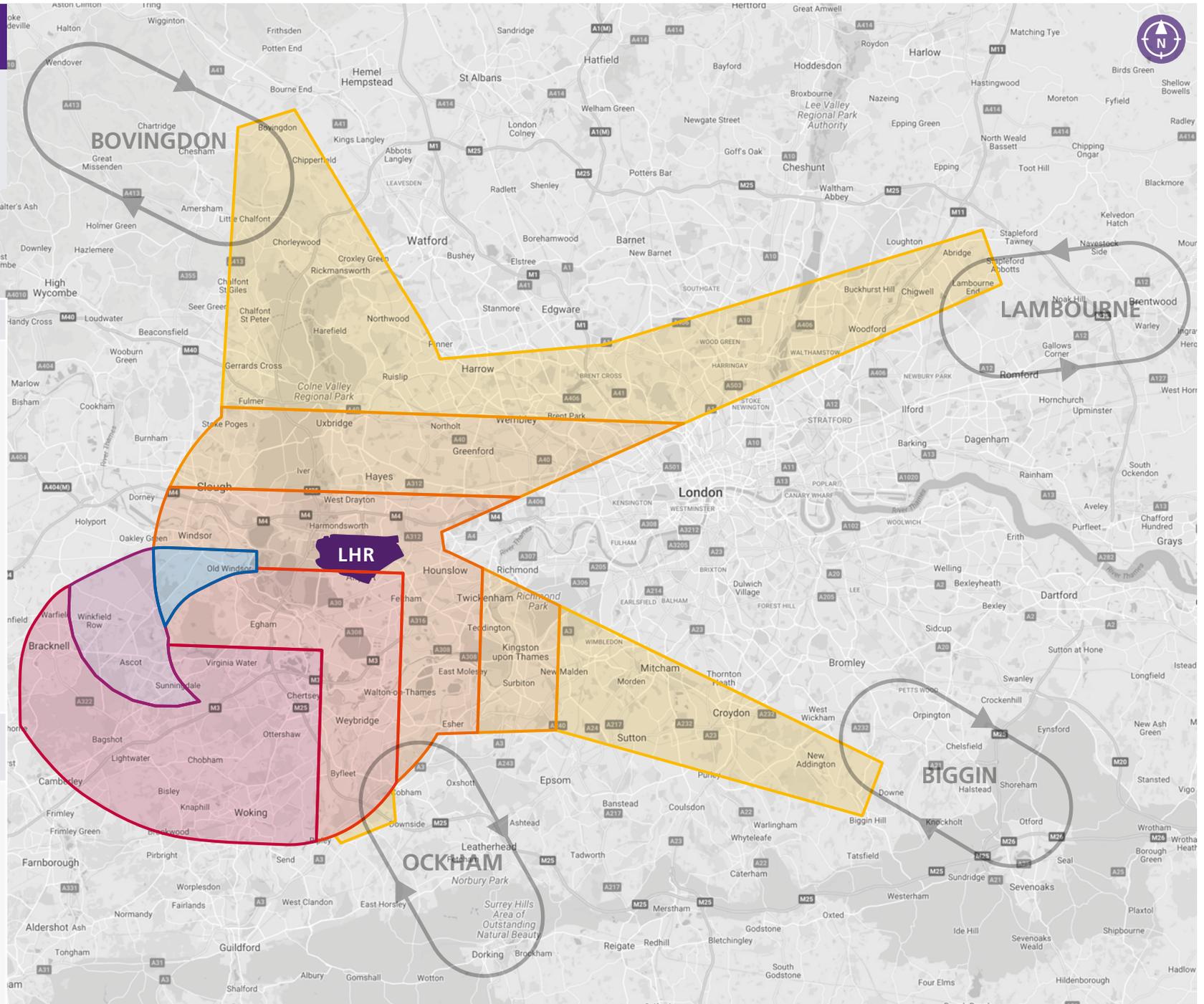
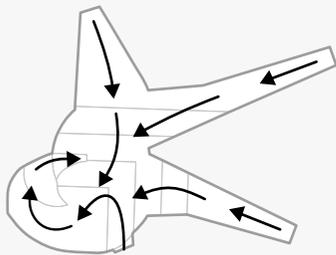
# IPA A3

Our IPA design envelopes for our southern runway during easterly operations.

### KEY:

-  Design envelope
-  Holding stack
-  Heathrow Airport
-  1,000 - 2,000ft
-  2,000 - 3,000ft
-  3,000 - 4,000ft
-  4,000 - 5,000ft
-  5,000 - 6,000ft
-  6,000ft - 7,000ft
-  7,000ft +

Direction of descending aircraft within the envelope IPA A3





## Section 6 – The airspace change process

The Civil Aviation Authority (CAA) is responsible for airspace regulation.

When changes to airspace are proposed, applicants are required to follow the CAA's Airspace Change Proposal (ACP) process. This places great importance on engaging and consulting on airspace proposals with a wide range of stakeholders, including potentially affected communities.

For more information on the Airspace Change Process please see our **How do we seek approval to make better use of our existing runways?** document.

### Establishing our airspace design principles for Independent Parallel Approaches (IPA)

Airspace design principles are a set of specific objectives which the proposed airspace design options should aim to meet. They also provide a way of analysing the impact of different designs which helps us to choose between flight path options.

We have engaged with the Heathrow Community Engagement Board, the Heathrow Community Noise Forum, local authorities and industry bodies to develop a set of design principles for the proposed IPA airspace change. These will be used to guide the design and structure of the flight paths. These principles, which are different to those developed for an expanded Heathrow, must be accepted by the Civil Aviation Authority (CAA) before we develop flight path options for IPA.



## Developing flight paths

We will develop flight path options for IPA using the design principles accepted by the CAA and feedback received from this consultation, combined with our own technical assessments.

There will be two consultations on our proposals to introduce IPA. This is the first of the two consultations.



Consultation 1

### 1. Our first consultation on IPA design envelopes – we are at this stage

Our team of airspace specialists has developed design envelopes within which new IPA flight paths would be located. **Further information on design envelopes is set out in section 5.** The design envelopes have allowed us to identify the areas which could potentially be affected by new IPA flight paths.

This consultation is your opportunity to tell us if there is anything you think we should take into account in your area when designing new flight paths.

We will use the feedback we receive from this consultation to inform the design of flight paths that aircraft would use.



Consultation 2

### 2. Our second consultation on flight path options

The second consultation, currently planned for 2020, will present the proposed options for the locations of the flight paths, together with information on the impacts of those flight paths.

## Submitting our proposals for approval

Using the accepted IPA design principles and feedback from our consultations, together with our own assessments, we will select the preferred flight paths and submit them to the CAA for consideration.

The CAA will decide whether to approve the change. Their decision is based on a number of considerations, including the feedback received from our consultations.

If our application is successful we plan to implement IPA flight paths from 2022.

## Section 7 – Have your say

There are a number of ways you can find out more about our proposals and provide us with your comments.

### **Come to one of our consultation events**

We are holding consultation events at venues throughout the consultation period. Details of these events can be found on our website: [www.heathrowconsultation.com](http://www.heathrowconsultation.com).

Members of the project team will be on hand to answer your questions and provide advice on how you can respond to the consultation. You can also pick up copies of the project documents.

We will have sound demonstrations at many of our events. These demonstrations will let you hear what different planes sound like at different heights.

### **Visit our website**

You can visit our website to find more information on the project and fill in our online consultation feedback form: [www.heathrowconsultation.com](http://www.heathrowconsultation.com)

You can use the postcode checker and videos to help you understand the information and how you might be affected by future flight paths.

### **Visit one of our document inspection locations**

You can view copies of the all the materials we've produced to inform this consultation at any of our unmanned document inspection locations. For more information please go to our website [www.heathrowconsultation.com](http://www.heathrowconsultation.com)

### **Tell us what you think**

Your feedback is very important. The deadline for submitting feedback to our consultation is **11.55pm on 4 March 2019**. Feedback received after this date may not be taken into consideration although you will have further opportunity to comment in our next consultation for IPA planned for 2020. You can provide us with your feedback in a number of ways.



**online** via our project website:  
[www.heathrowconsultation.com](http://www.heathrowconsultation.com)



complete a **feedback form**, available at our exhibition events or on request using the contact details provided in this leaflet



send an **email** to us at  
[feedback@heathrowconsultation.com](mailto:feedback@heathrowconsultation.com)



**write** to us at:  
**Freepost LHR AFO CONSULTATION**

All feedback received through these channels will be considered. While all feedback we receive will be recorded, we will be unable to respond to you individually.

### Get in touch

If you would like any help in providing your feedback, information about the consultation or how to take part, or to request copies of documents you can:



**call** our freephone number  
0800 307 7996 (open Monday to Friday, 9am-6pm)



send an **email** to us at  
[info@heathrowconsultation.com](mailto:info@heathrowconsultation.com)

### Next Steps

After the consultation has closed, we will review our proposals taking into account the comments you provide.

Following analysis of your feedback and consideration of a range of factors and issues, we will develop our flight path options for IPA.

We will then assess each option against our IPA design principles, once approved by the CAA.

The IPA flight path options will then be presented in our next IPA consultation, currently planned for 2020, where you will have another opportunity to provide your feedback.





**AIRSPACE &  
FUTURE OPERATIONS**  
CONSULTATION

If you would like a large text or alternative format of this document,  
please contact us on 0800 307 7996 or send an email to us at:  
[info@heathrowconsultation.com](mailto:info@heathrowconsultation.com)

There are lots of ways you can contact us or find out more



**online** via our project website  
[www.heathrowconsultation.com](http://www.heathrowconsultation.com)



send an **email** to us at  
[info@heathrowconsultation.com](mailto:info@heathrowconsultation.com)



**call** our freephone number  
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