

## The Airspace Change Process (ACP)

### Why are Heathrow consulting when some aircraft are already flying SSA?

We are consulting on this airspace change to make SSA **permanent** at Heathrow - up until now, SSA have been in place on a temporary basis whilst Heathrow prepares and submits an Airspace Change Proposal (ACP) for their permanent adoption.

Between 2015-17 we held two SSA trials and since the second trial SSA have continued to be in operation, as the CAA permitted this on a temporary basis. As part of the ACP process outlined in the CAA's CAP1616 document, we are required to undertake a consultation as part of Stage 3. This is where we are now and we are asking the question 'Do you support the permanent adoption of slightly steeper approaches at Heathrow airport?'

### Why can't I respond to the consultation via email?

In accordance with the CAA's airspace change guidance (CAP 1616), we would request that you send your consultation response via the [online portal](#) (Citizen Space). CAP1616 states that "*The CAA sees no justification for allowing responses by email direct to the change sponsor or to the CAA, rather than using the online portal. We will therefore permit sponsors to disregard such responses as they could equally have been made via the portal*".



## About Slightly Steeper Approaches (SSA)

### **Will this affect the height or position of aircraft before they join the final approach?**

SSA increase the angle of approach for some aircraft arriving at Heathrow, meaning that some aircraft stay slightly higher for longer. SSA do not affect the lateral tracks of aircraft on final approach at Heathrow. There is more information about this in Section 3 of our [Consultation Document](#).

### **Is this Airspace Change a form of PBN?**

SSA use Global Navigation Satellite Systems (GNSS) which is a form of Performance Based Navigation (PBN). The Slightly Steeper Approach procedures follow exactly the same lateral profile as the Instrument Landing System (ILS) but rely on on-board equipment and satellite navigation as opposed to physical infrastructure.

### **Why do only a small number of arrivals use Slightly Steeper Approaches?**

During the first SSA trial in 2015 it was identified that the number of aircraft able to operate SSA is limited due to Air Traffic Control workload. This is because of the type of satellite-based procedure that SSA use, not because the angle of approach itself is steeper. There are several other reasons that contribute to the number of aircraft that operate SSA and more information regarding this can be found within the 'Current SSA usage' section of our [Consultation Document](#).

### **Are there any negative effects from increasing the angle of approach?**

Our Full Options Appraisal demonstrated that, based on the levels of uptake observed in the trials and current operations, there are no negative impacts associated with permanently adopting SSA. The Full Options Appraisal is included in the consultation documents.



## **Do you plan to use a steeper angle than 3.2 degrees in future?**

The options for different approach angles were considered as part of this ACP and you can find more information with Section 3 of our [Consultation Document](#). All future airspace change remains under review and any plans for extending the usage of 3.2 degrees or a steeper angle will be communicated through the established stakeholder channels when known.

## **Why did you choose 3.2 degrees and not a steeper angle?**

As part of Stage 2 of this Airspace Change Proposal, we explored options to introduce 3.2°, 3.5° or steeper than 3.5° RNAV approach angles, as well as reverting to RNAV approaches operating at 3.0°. Each option was then assessed against the Design Principles from [Stage 1B](#) and the outcome was that 3.2° SSA progressed to the next stage and the other options were discounted. There is more information about how we considered different approach angles and how they were discounted within Section 3 'Steeper Approach Angles Considered' (page 20) of our [Consultation Document](#).

## **Will slightly steeper approaches have any impact on the number of aircraft landing at Heathrow?**

The permanent adoption of SSA will not change the number of aircraft arriving (or departing) at Heathrow. Heathrow will continue to operate within its legal operating cap of 480,000 aircraft movements a year (arrivals and departures) with or without SSA. SSA will not have any impact on Heathrow's operating hours.

## **Does the landing gear need to be deployed earlier on a slightly steeper approach?**

We did not find any evidence of this in our trials. Landing Gear deployment is associated with an airline's Standard Operating Procedure (SOP), which for most airlines is on passing a certain height. Therefore, with a slightly steeper approach, that height is reached slightly closer to the runway compared to 3.0° approaches. The data gathered during the trials showed that for medium aircraft the landing gear was deployed at the same distance from the runway, but the aircraft was higher. For larger aircraft, the trials showed the landing gear was deployed slightly closer to the runway and the aircraft was at a similar height to the standard approaches.

More information on the deployment of the landing gear can be found in the trial reports [here](#) and [here](#).



## What are the impacts of temperature on slightly steeper approaches?

Temperature only affects RNAV approaches, not the ILS. Our slightly steeper RNAV approaches use a type of vertical guidance, where the aircraft's height is determined with reference to barometric air pressure. As a result, the angle of the approach (the aircraft's height over the ground) varies with temperature. The published descent angle is based on the angle at the International Standard Atmosphere (ISA) temperature at mean sea level which is 15°C. When the temperature is not exactly 15°C, the barometric approach angle starts to alter slightly. The colder the temperature, the shallower the approach angle. The warmer it gets, the steeper the approach angle. This applies to 3.2° RNAV slightly steeper approaches and if we were to revert to 3.0° RNAV approaches; the table below shows the impact of temperature on the angle of approach.

Temperature (°C)	0°	15°	30°
Published Approach Angle	Aircraft Angle of Approach		
3.0°	2.84°	3°	3.16°
3.2° (SSA)	3.03°	3.2°	3.37°

The procedures have a required minimum temperature to ensure that a safe approach angle is maintained. You can find further detail in the trial reports [here](#) and [here](#).

## Does a slightly steeper approach increase the likelihood of go-arounds and if so, is that a safety concern?

Design Principle 3 for this airspace change proposal is "Must not increase the number of go-arounds". Therefore, an option that contradicted this would not have progressed through the airspace change process.

Prior to the 2015-2017 trials, some airlines raised concerns regarding a potential increase in the number of go-arounds, early landing gear deployments and poor speed adherence. None of these issues materialised during the 1st or 2nd trial. SSA have continued to be flown since the end of the trial period and there has been no safety reports made by airlines regarding SSA.

More information on go-arounds can be found in the trial reports [here](#) and [here](#).

