

Project: **London City Airport**  
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Subject: **Aircraft noise levels with EMAS development**

## 1.0 INTRODUCTION

London City Airport (LCY) is introducing an Engineered Materials Arrestor System (EMAS) at each end of the runway that will enhance safety. As part of this project, the landing thresholds will also be moving. Bickerdike Allen Partners LLP (BAP) have been retained by LCY to consider if any effect on aircraft noise levels is expected to arise because of this project.

## 2.0 DEPARTURE NOISE LEVELS

Although there will be changes to the Departure End of Runway (DER), the start of roll location, where aircraft commence their departure procedure, is not changing and the EMAS is not expected to change any airline operating procedures. Therefore, noise levels produced by departures are not expected to change.

## 3.0 ARRIVAL NOISE LEVELS

The change in the location of the arrival thresholds mean that aircraft on final approach (at 5.5 degrees) will be approximately 9 metres lower for Runway 09 and 6 metres lower for Runway 27 during their final descent, when compared to current operations. Considering a point 2 nautical miles from either end of the runway under the flightpath, the predicted maximum noise levels from the Embraer E190 are presented below. This is currently the most common aircraft type operating at LCY.

Runway End	Scenario	Noise Level, dB L <sub>ASmax</sub>
09	Pre-EMAS	73.56
	Post-EMAS	73.91
	Difference	+0.35
27	Pre-EMAS	73.69
	Post-EMAS	73.95
	Difference	+0.26

**Table 1: Predicted Changes in Noise Level**

The noise level differences presented in Table 1 are less than 0.5 dB L<sub>ASmax</sub>, unlikely to be perceptible, and not significant.

#### 4.0 NEW AIRCRAFT TYPES

Currently the most common aircraft type operating at LCY is the Embraer E190. It is anticipated that over time this will be replaced by the Embraer E190-E2 and Embraer E195-E2. It is understood that although these aircraft are able to operate without the EMAS installed, it will enable them to operate more efficiently, in particular the E195-E2, and therefore assist their introduction.

Different aircraft types can be compared objectively by reviewing their noise certificates. The noise levels they show are derived from standardised tests in accordance with the International Civil Aviation Organisation (ICAO) certification process. Noise levels are provided at 3 points, known as Lateral, Flyover and Approach.

The noise certificate data for the most common operators of the E190 and the E190-E2 at LCY is shown in Table 2 below, alongside the data for an E195-E2 aircraft which carried out a test flight in 2022. This demonstrates that noise improvements are expected from the new aircraft types compared to the E190, particularly on departure.

Aircraft Type	Operator	MTOW (kg)	Noise Levels (EPNdB)		
			Lateral	Flyover	Approach
E190	BA	45,990	93.0	81.4	92.5
E190-E2	Swiss	54,000	85.4	77.7	91.4
E195-E2	Test Flight	61,500	86.4	79.2	91.7

**Table 2: Summary of Noise Certificate Data**