



## **Comparing noise levels of the A320neo with the E190 and other aircraft: Lessons for London City Airport**

An Aviation Environment Federation report for HACAN East

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## **Executive summary**

London City Airport (LCY) has applied to the Civil Aviation Authority to permit a shallower approach for the Airbus A320neo, a new generation aircraft that is larger than the current fleet. The proposals outline various new glide angle options ranging from 4.05 to 4.49 degrees, as the A320neo is not able to land using the current glideslope (5.5 degrees). The airport is suggesting that the proposals will reduce the noise footprint of the airport, but there are a number of outstanding questions to consider to understand the full noise impacts.

This report compares the A320neo with key aircraft operating at LCY, using noise certificate data, real-world measurements from other airports and modelling at LCY. These comparisons help to assess whether the proposed changes would align with government policy of limiting and where possible reducing impacts of aviation noise when updating airspace.

Based on a review of published data, the A320neo was generally quieter than the Embraer E190 but louder than other new generation aircraft at LCY, including the Airbus A220, Embraer 190 E2 and Embraer 195 E2. However, the margins of difference vary significantly between aircraft variants and noise measurement points, and in some cases the benefit of the A320neo is very marginal.

The airport's proposal focuses narrowly on the E190 for the purposes of making a comparison, as this is the currently most used aircraft at LCY today, despite the new generation aircraft listed above being projected to largely replace the E190 by 2036. The results suggest that real-world measurements at LCY are needed to determine how introducing the A320neo on a shallower glide slope would affect overall noise impact, including any changes in the tonal nature of noise events that may not be reflected in the sound measurement. Serious consideration should be given to the projected fleet mixes under the baseline and proposal scenarios. Transparency in the data behind these projections would assist with allowing a full assessment of the noise from the implementation vs the baseline scenarios.

## Introduction

Currently only a limited number of small aircraft are permitted to use London City Airport (LCY). This is due to the operating restrictions imposed by the short runway and steeper than standard glide angle of 5.5 degrees (in place due to the airport's proximity to tall buildings and to provide noise mitigation for the heavily residential local area). The baseline fleet mixes per year from 2027 to 2038, as produced by the London City analytics team, are presented below in Table 1.

**Table 1: Forecasted fleet mix and traffic growth at LCY in the baseline scenario<sup>1</sup>**

	Year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12
		2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Without airspace change scenario	<b>Commercial Flights</b>												
	Airbus A220-100	7,000	7,600	8,200	8,700	9,500	10,300	11,200	12,100	13,100	15,300	17,900	20,100
	ATR 72	2,400	2,500	2,500	2,600	2,700	2,800	2,900	3,000	3,000	3,000	3,100	3,100
	DHvilld-Bombardier DHC8 Dsh 8-400/8Q	3,800	4,100	4,400	0	0	0	0	0	0	0	0	0
	Embraer 190	36,600	36,500	36,500	36,100	36,600	30,000	25,800	20,500	14,900	10,700	7,900	3,900
	Embraer 190 E2	1,400	1,500	1,600	1,700	1,800	2,000	2,200	2,300	2,500	2,900	3,400	3,900
	Embraer E195-E2	1,600	2,600	3,700	7,300	8,800	16,100	21,500	27,900	34,600	45,300	56,200	67,000
	<b>Private Operator Flights</b>												
	Jet Centre	3,514	3,514	3,514	3,514	3,514	3,514	3,514	3,514	3,514	3,514	3,514	3,514
	<b>Air Traffic Movements</b>												
	Total number of air traffic movements (commercial + private operator flights)	56,314	58,314	60,414	59,914	62,914	64,714	67,114	69,314	71,614	80,714	92,014	101,514
	<b>Passenger numbers (millions)</b>												
	Total number of passengers	4.1	4.2	4.4	4.6	4.8	5.1	5.4	5.7	6.0	6.9	8.0	9.0

LCY has recently applied to the Civil Aviation Authority (CAA) to allow the Airbus A320neo to use the airport with a shallower approach of between 4.05 and 4.49 degrees. The A320neo is a new generation aircraft that is larger than any aircraft to have previously used the airport and its performance capabilities would require this shallower glide path to land. Proposals to alter airspace use must follow the CAA's CAP1616 Airspace Change Process. The airport has recently submitted its Stage 2 report as part of this process and this document refers to details from this Stage 2 report throughout, as the most up to date information available relating to the application at the time of writing. The airport has previously suggested that bringing in the A320neo, even at a shallower angle, will reduce the noise footprint of the airport. Key to this assertion is the airport's comparison between the A320neo and the Embraer E190—a current generation aircraft that is the most widely used plane at LCY today.

This report provides additional information on how the noise impact of the A320neo compares to aircraft currently using the airport by collating and reviewing data from the official database of aircraft noise certificates (NoisedB) and real world measurements at other airports. For the CAP1616 process, new designs are assessed at years 1 and 10 (in this case, 2027 and 2036). Accordingly, based on Table 1, the E190 is the initial focus of this report, with further comparisons looking at other new generation aircraft that are forecast to make up large proportions of the future fleet, i.e. the Airbus A220-100 (A220), the Embraer E190-E2 (E290) and the Embraer E195-E2 (E295). This selection of aircraft is validated by their use in the preliminary aircraft noise comparison data provided by LCY within their Stage 2 report.

<sup>1</sup>Table 1 and Figure 3 have been updated to the latest forecasts from LCY's Stage 2 report—see footnote on page 11 for further comments.

The following research questions are investigated in this report:

1. How do the noise certificates of aircraft currently using LCY compare to the A320neo?
2. How do these aircraft compare when examining real world noise monitoring?
3. Will the introduction of the A320neo at 4.05-4.49 degrees meet the Government's noise policy of, 'limiting, and where possible reducing, the total adverse impacts on health and quality of life from aviation noise'. [[DfT, 2023](#)]

## Noise Data

### A) Aircraft type noise certificates

Each aircraft type is required to have a noise certificate which shows compliance with the noise standards applicable at the time of production. These standards are determined by the International Civil Aviation Organisation and, through inclusion in national laws, become legal requirements. For subsonic aircraft above 55 tonnes maximum take-off weight (MTOW), there are three certification points:

**Flyover:** noise is measured 6.5 km from the brake release point, directly under the takeoff flight path.

**Sideline:** noise is measured at the point of maximum noise level, 450 meters from the runway centerline during takeoff.

**Approach:** noise is measured 2 km from the runway threshold, under the approach flight path

The unit of measurement is the Effective Perceived Noise Level (EPNdB). EPNdB takes the duration and tonality of the noise into account, which is more likely to reflect how humans perceive the sound.

According to the official noise certification database (NoisedB), the A320neo and the Embraer E190 display the following information in their noise certificates (note: each variant or engine configuration requires a new noise certificate. This results in a large number of entries for both aircraft so the tables below reflect a selection based on variable operating weights.

**Table 2: Noise certification data for Embraer E190 (source: NoisedB)**

#	IDavion	Production Aircraft	Manufacturer	TYPE	Version	MTOM(kg)	Engine	Modif. descr. eng	FO(EPNdB)	Lateral/Full Power(EPNdB)	Approach (EPNdB)
12224	EMBRAER_10257	Out of Production	EMBRAER	ERJ 190-100	LR	47790	CF34-10E5A1	Low Loss Chevron Nozzle (LLCN)	83.7	93.3	92.7
12243	EMBRAER_10288	In Production	EMBRAER	ERJ 190-100	LR	47790	CF34-10E5A1	Improved Acoustic Chevron Nozzle (IACN) - Block 02	82.5	92.8	91.8
12258	EMBRAER_10313	Out of Production	EMBRAER	ERJ 190-100	LR	50300	CF34-10E5A1	Low Loss Chevron Nozzle (LLCN)	85.1	93.1	92.7
12292	EMBRAER_10416	In Production	EMBRAER	ERJ 190-100	LR	47790	CF34-10E5A1	Improved Acoustic Chevron Nozzle (IACN) - Block 02	82.5	92.8	92.5
12297	EMBRAER_10421	In Production	EMBRAER	ERJ 190-100	LR	50300	CF34-10E5A1	Improved Acoustic Chevron Nozzle (IACN) - Block 02	83.6	92.6	92.5
12311	EMBRAER_10436	In Production	EMBRAER	ERJ 190-100	LR	50300	CF34-10E5A1	Improved Acoustic Chevron Nozzle (IACN) - Block 02	83.6	92.6	91.8
13402	EMBRAER_10668	In Production	EMBRAER	ERJ 190-100	LR	50300	CF34-10E5A1	"Improved Acoustic Chevron Nozzle (IACN) - Block 02 and installed Placard PN 171-22644-0001 - "Stage 4 / Chapter 4 Noise Compliant Aircraft""	83.6	92.6	91.8
13414	EMBRAER_10680	In Production	EMBRAER	ERJ 190-100	LR	47790	CF34-10E5A1	"Improved Acoustic Chevron Nozzle (IACN) - Block 02 and installed Placard PN 171-22644-0001 - "Stage 4 / Chapter 4 Noise Compliant Aircraft""	82.5	92.8	91.8
13448	EMBRAER_10714	In Production	EMBRAER	ERJ 190-100	LR	50300	CF34-10E5A1	"Improved Acoustic Chevron Nozzle (IACN) - Block 02 and installed Placard PN 171-22644-0001 - "Stage 4 / Chapter 4 Noise Compliant Aircraft""	83.6	92.6	92.5
13462	EMBRAER_10728	In Production	EMBRAER	ERJ 190-100	LR	47790	CF34-10E5A1	"Improved Acoustic Chevron Nozzle (IACN) - Block 02 and installed Placard PN 171-22644-0001 - "Stage 4 / Chapter 4 Noise Compliant Aircraft""	82.5	92.8	92.5
13485	EMBRAER_10751	Out of Production	EMBRAER	ERJ 190-100	LR	47790	CF34-10E5A1	"Low Loss Chevron Nozzle (LLCN) and installed Placard PN 171-22644-0001 - "Stage 4 / Chapter 4 Noise Compliant Aircraft""	83.7	93.3	92.7
13498	EMBRAER_10764	Out of Production	EMBRAER	ERJ 190-100	LR	50300	CF34-10E5A1	"Low Loss Chevron Nozzle (LLCN) and installed Placard PN 171-22644-0001 - "Stage 4 / Chapter 4 Noise Compliant Aircraft""	85.1	93.1	92.7

**Table 3: Noise certification data for the Airbus A320neo (source: NoisedB)**

#	IDavion	Production Aircraft	Manufacturer	TYPE	Version	MTOM (kg)	Engine	Modif. descr. eng	FO (EPNdB)	Lateral/ Full Power (EPNdB)	Approach (EPNdB)
13375	AIRBUS_28783	In Production	AIRBUS	A320	271N	79000	PW1127G-JM	Installation of Block D combustor	81.8	86.2	92.1
13374	AIRBUS_28784	In Production	AIRBUS	A320	271N	70000	PW1127G-JM	Installation of Block D combustor	78.3	86.5	92.3
13375	AIRBUS_28785	In Production	AIRBUS	A320	272N	79000	PW1124G1-JM	Installation of combustor Block D	82.9	85.2	92.3
13376	AIRBUS_28786	In Production	AIRBUS	A320	272N	70000	PW1124G1-JM	Installation of combustor Block D	79.8	85.5	92.1
13377	AIRBUS_28787	In Production	AIRBUS	A320	273N	79000	PW1129G-JM	Installation of Block D combustor	80.7	87	92.3
13378	AIRBUS_28788	In Production	AIRBUS	A320	273N	70000	PW1129G-JM	Installation of Block D combustor	77.4	87.3	92.1
14033	AIRBUS_28805	In Production	AIRBUS	A320	253N	79000	LEAP-1A29	Booster Step 2	80.3	87.1	92.3
14034	AIRBUS_28806	In Production	AIRBUS	A320	253N	70000	LEAP-1A29	Booster Step 2	77	87.5	92.2
14065	AIRBUS_28815	In Production	AIRBUS	A320	251N	79000	LEAP-1A26	Booster Step 2	81.5	86.2	92.3
14066	AIRBUS_28816	In Production	AIRBUS	A320	251N	70000	LEAP-1A26	Booster Step 2	78	86.5	92.2
14067	AIRBUS_28817	In Production	AIRBUS	A320	252N	79000	LEAP-1A24	Booster Step 2	82.8	85.1	92.3
14068	AIRBUS_28818	In Production	AIRBUS	A320	252N	70000	LEAP-1A24	Booster Step 2	79.1	85.4	92.2

A precise indication of the variant of E190 and A320neo aircraft using/likely to use London City would help to refine the ranges, but Table 4 below provides an overview of the results and includes Swiss noise certification data for other aircraft types known to use London City such as the E290 and E295.

**Table 4: Comparison of noise certification results for the A320neo, E190, E290, E295 and the A220**

Aircraft type	Take-off (EPNdB)	Sideline (EPNdB)	Approach (EPNdB)
A320neo	77 - 82.9	85.2 - 87.5	92.1 - 92.3
E190	82.5 - 85.1	92.6 - 93.3	91.8 - 92.7
E290	76.3	85.6	91.4
E295	79.6	86.1	91.7
A220	77.8	88.1	91.5

Based on the certified data only, and operating in standard test conditions at the same altitude, the A320neo has potential to be less noisy than the E190 on take-off and sideline, but offers no benefit on approach.

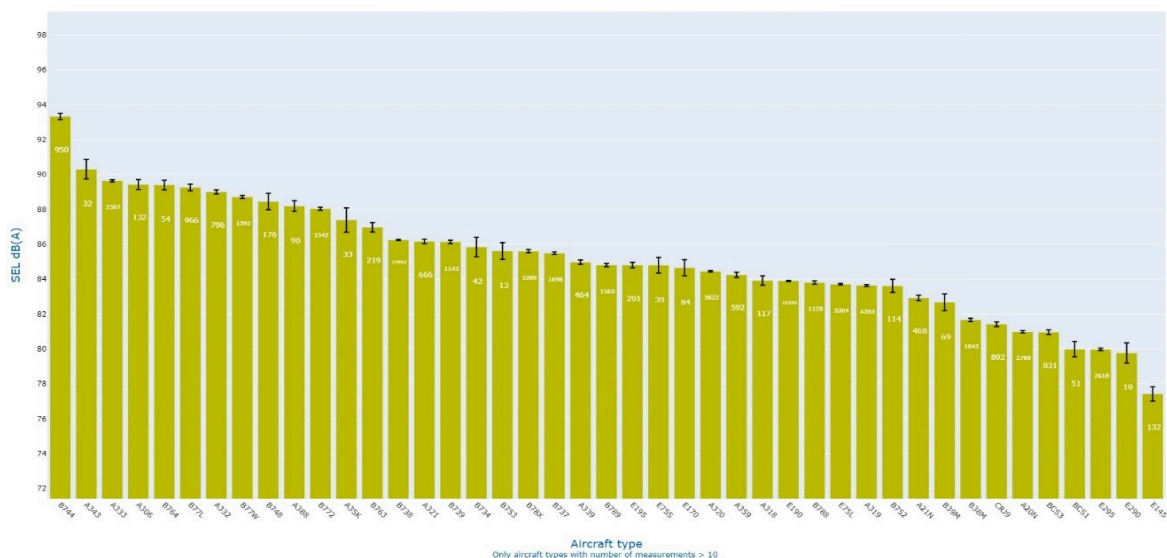
### B) Measured noise levels

To supplement these noise certificate measurements that are recorded in test conditions, the following section assesses how these aircraft perform in daily operational situations. Available public data that separates noise events by aircraft type is limited, however the following data sources were identified for this report.

#### 1. Schiphol airport

In 2024, the consultancy M+P Consulting engineers produced a noise [report](#) on Schiphol Airport in Amsterdam. Data on over 240,000 flyovers was collected between October 2022 and April 2024 at two measuring stations, one under each of the Aalsmeerbaan and Kaagbaan runways. The figure below ([larger version](#)) is produced from measurements of aircraft departures from the Kaagbaan runway taken ~2km south west from the runway.

**Figure 1: Average sound exposure level for Kaagbaan departures**



The data shows average sound exposure level (SEL) values for different departing aircraft types. SEL is a metric that measures the total sound energy produced in a noise event, normalised to 1 second.

The values for key aircraft are (approximately):

- E190: 84dB
- A320neo: 81dB
- A220, E290, E295: All ~80dB

While the above figure provides an average for the A320neo (weighted towards the quieter variants which account for more movements at the airport), the report [shows](#) a difference of around 1.5dB on departure between the two engine varieties of the A320neo, with the PW1100G louder than the CFM56-LEAP.

## 2. Ronald Reagan Washington Airport

Ronald Reagan Washington Airport (DCA) is a large city airport located 8km south of central Washington DC that operated 296,249 flights in 2024, serving 26,290,722 passengers. It provides a useful comparison for London City due to similarities in the proximity of the airports to their city centres, the riverside locations and presence of airspace restrictions. Aircraft at DCA follow typical arrival and takeoff angles, although aircraft have to avoid prohibited airspace over the Naval Observatory, National Mall, and White House as well as making a final turn at ~200 feet altitude when arriving at runway 19. There are also similarities in the aircraft mix, with the E190, A320neo and A220 flying from both airports. Noise monitoring is carried out at 15 locations around the city, with monitoring data published monthly.

The noise monitoring data includes measurements of every aircraft noise event, with the date, time, LEQ, SEL, LAMax, aircraft type, runway used and operation type (arrival or departure) recorded monthly from February 2015 onwards. LAMax describes the loudest point of a noise event and is the key metric used in this report. LEQ describes the equivalent constant noise level, capturing the cumulative noise exposure from a noise event and averaging it over a defined period of time.

Maps of the noise monitors and the runways are below, taken from the annual noise [report](#) for Washington airports. Data from monitoring stations closest to the airport was deemed most relevant to the LCY comparison, therefore analysis was focused on noise monitors 6, 8 and 17 (7.1km, 4.8km and 3.1km from the airport respectively). For simplicity, only data from runways 1/19 was analysed, covering 95% of arrivals and 83.9% of departures.

Figures 2a and 2b: a) Noise monitors at DCA. b) DCA runways map with usage rates



## 6 month noise event averages of the E190 and A320neo

The data below represents an analysis of 6 months of data (Dec 2024-May 2025) at 3 noise monitors (NMT 6, 8 and 17) comparing the E190 and A320neo. LAMax figures represent the mean over 6 months.

**Table 5a-c: 6 month comparisons of the E190 and A320neo at a) NMT6, b) NMT8 and c) NMT17**

### NMT 6

E190	Total flights	LAMax		A320neo	Total flights	LAMax
<b>All Flights</b>	1272	68.5		<b>All Flights</b>	498	64.5
<b>Arrivals</b>	545	65.0		<b>Arrivals</b>	180	62.8
<b>Departures</b>	727	71.2		<b>Departures</b>	318	65.5

### NMT8

E190	Total flights	LAMax		A320neo	Total flights	LAMax
<b>All Flights</b>	1327	70.3		<b>All Flights</b>	484	69.0
<b>Arrivals</b>	959	69.6		<b>Arrivals</b>	309	67.6
<b>Departures</b>	368	71.9		<b>Departures</b>	175	71.5

### NMT17

E190	Total flights	LAMax		A320neo	Total flights	LAMax
<b>All Flights</b>	292	68.5		<b>All Flights</b>	198	63.6
<b>Arrivals</b>	26	59.8		<b>Arrivals</b>	8	58.0
<b>Departures</b>	266	69.4		<b>Departures</b>	190	63.8

The above shows that the A320neo was quieter when looking at all flights, arrivals and departures at all 3 NMTs, however the differences in LAMax were small: arrivals were between 1.8 and 2.2 dB and departures were between 0.4 and 5.7dB. The larger differences were observed at NMT 6 which is further away from the airport: at NMT 8 and 17 (3-5km from the runway) the differences become less obvious, and in any case, LAMax changes of less than 3dBA are difficult for the human ear to detect.

It is possible that the larger variation in departure LAMax is due to differing takeoff angles between the aircraft. Initial analysis at NMT 6 suggested that at the point that the aircraft passes the noise monitor, the A320neo could be ~200ft higher than the E190.

## Comparison of the A320neo and the A220

The A220 is one of the new generation aircraft that uses London City Airport and is projected by the airport to be the second most used aircraft at LCY in 2036. At this point, the E190 is expected to be largely phased out in favour of newer aircraft. This represents the best available analysis of the A320neo versus other new generation aircraft used at LCY, as the other new generation aircraft potentially coming into use at the airport (e.g. the E290 and E295) do not currently operate at DCA and no data for comparison was available from other

airports. The results below show a one month analysis of the A320neo compared to the A220 at NMT 6 for January 2022. The A220 has flown infrequently from DCA—January 2022 was selected as the best month for comparison as it had the most A220 flights (55) of any month from 2022-2025.

**Table 6: 1 month comparison of the A220 and A320neo at NMT6**

<b>A220</b>	<b>Total</b>	<b>LAMax</b>		<b>A320neo</b>	<b>Total</b>	<b>LAMax</b>
<b>All Flights</b>	64	60.9		<b>All Flights</b>	55	63.8
<b>Arrivals</b>	19	59.5		<b>Arrivals</b>	19	62.0
<b>Departures</b>	45	61.4		<b>Departures</b>	36	64.7

From this snapshot, the A220 is close to 3dB quieter than the A320neo at DCA for both arrivals and departures. The A220s currently operating at LCY may also be quieter than at DCA, as they require a lower take-off weight than the typical A220 to use the airport.

## **Discussion**

Based on noise certificates and real-world results, the A320neo is generally quieter than the E190 in most situations, although the margins vary from little or no difference to a noticeable reduction. The results from Reagan airport suggest that on arrival the A320neo is ~2dB quieter than the E190. A bigger margin is observed on take-off at distances of 7-8km from the airport, but this improvement is less at distances of 3-4km. However, there are additional considerations that are beyond the scope of this report that need addressing to determine whether introducing the A320neo at LCY would limit or reduce the impact of noise.

Primarily, these results do not take into account the proposed glide slope change at LCY. The two final approach options carried forward at Stage 2 of the airspace change process would result in aircraft starting their final approach descent between 0.7 and 1.79 nautical miles earlier and passing their former commencement point between 340 and 740ft lower than other air traffic. These are major changes that will increase noise relative to the same plane using the current glide path. The size of this increase is not fully clear but given how similar the E190 and A320neo LAMax results are at Reagan airport at 3-4km, a small increase in noise from flying at lower altitudes could result in the A320neo being louder than the existing E190s. As a general rule, doubling or halving the altitude results in a 10dBA decrease or increase respectively in the LAMax value. This implies that the observed results will be sensitive to changes in altitude.

Recently [published](#) data by LCY in Appendix B: Preliminary aircraft noise comparison data of the Stage 2 report does consider the impact of these glide slope changes on noise. For this comparison, Bickerdike Allen Partners LLP used the Aviation Environmental Design Tool to compare the difference in noise levels for the A320neo arriving at an approach angle of 4.49° with the E190, E290, E295 and A220N at the current 5.5° approach angle. Data for the E190, E290 and A220 was validated with measured noise data. Noise levels were predicted at 10 locations in 0.5 km steps from Runways 09 and 27, with the noise level expressed in SEL. The results are displayed in the two tables below.

**Table 7a: Arrival noise levels at Runway 27**

Assessment Location	Distance from Rwy 27 Threshold, km	Noise Level, dB(A) SEL	Noise Level Difference, dB(A) SEL			
		Airbus A320neo 4.49°	Airbus A220-100 5.5°	Embraer E190 5.5°	Embraer E190-E2 5.5°	Embraer E195-E2 5.5°
		A	0.5	93.5	-0.8	+2.2
B	1.0	90.5	-1.3	+1.7	-1.5	-1.4
C	1.5	88.5	-1.5	+1.5	-1.5	-1.3
D	2.0	86.8	-1.7	+1.3	-1.4	-1.1
E	2.5	85.5	-1.8	+1.2	-1.4	-1.0
F	3.0	84.3	-1.8	+1.2	-1.3	-0.8
G	3.5	83.4	-2.3	+0.7	-1.2	-0.9
H	4.0	82.4	-2.7	+0.3	-1.3	-0.9
I	4.5	81.6	-3.2	-0.2	-1.3	-0.9
J	5.0	80.8	-4.0	-1.0	-1.9	-0.9

**Table 7b: Arrival noise levels at Runway 9**

Assessment Location	Distance from Rwy 09 Threshold, km	Noise Level, dB(A) SEL	Noise Level Difference, dB(A) SEL			
		Airbus A320neo 4.49°	Airbus A220-100 5.5°	Embraer E190 5.5°	Embraer E190-E2 5.5°	Embraer E195-E2 5.5°
		K	0.5	93.5	-0.8	+2.2
L	1.0	90.5	-1.3	+1.7	-1.5	-1.4
M	1.5	88.4	-1.5	+1.5	-1.5	-1.3
N	2.0	86.8	-1.7	+1.3	-1.4	-1.1
O	2.5	85.5	-1.7	+1.3	-1.3	-0.9
P	3.0	84.3	-1.8	+1.2	-1.2	-0.8
Q	3.5	83.3	-2.3	+0.7	-1.3	-0.9
R	4.0	82.4	-2.7	+0.3	-1.3	-0.9
S	4.5	81.6	-3.2	-0.2	-1.3	-0.9
T	5.0	80.8	-3.9	-0.9	-1.8	-0.9

Departure noise levels were also modelled, with these shown in the two tables below:

**Table 8a: Departure noise levels at Runway 27**

Assessment Location	Distance from Rwy 09 Threshold, km	Noise Level, dB(A) SEL	Noise Level Difference, dB(A) SEL			
		Airbus A320neo	Airbus A220-100	Embraer E190	Embraer E190-E2	Embraer E195-E2
		K	0.5	93.4	-0.9	+4.6
L	1.0	90.3	-0.9	+4.6	-1.6	+0.4
M	1.5	88.4	-1.1	+4.5	-1.9	-0.3
N	2.0	86.7	-0.7	+4.8	-2.7	-0.4
O	2.5	85.1	-1.1	+4.4	-2.5	-1.2
P	3.0	83.9	-1.1	+4.4	-2.5	-1.3
Q	3.5	83.0	-1.0	+4.5	-2.5	-1.4
R	4.0	81.8	-0.6	+4.9	-1.9	-1.3
S	4.5	80.2	-0.1	+5.6	-1.2	-0.8
T	5.0	79.6	-0.3	+5.3	-1.6	-0.9

**Table 8b: Departure noise levels at Runway 9**

Assessment Location	Distance from Rwy 27 Threshold, km	Noise Level, dB(A) SEL	Noise Level Difference, dB(A) SEL			
		Airbus A320neo	Airbus A220-100	Embraer E190	Embraer E190-E2	Embraer E195-E2
		A	0.5	93.4	-0.9	+4.6
B	1.0	90.4	-0.9	+4.6	-1.6	+0.4
C	1.5	88.5	-1.1	+4.5	-1.9	-0.3
D	2.0	86.8	-0.8	+4.7	-2.7	-0.5
E	2.5	85.3	-1.1	+4.4	-2.5	-1.2
F	3.0	84.0	-1.2	+4.3	-2.5	-1.4
G	3.5	82.7	-1.1	+4.5	-2.5	-1.5
H	4.0	81.3	-0.8	+4.8	-2.1	-1.4
I	4.5	79.9	-0.3	+5.2	-1.6	-1.1
J	5.0	79.0	-0.2	+5.3	-1.5	-1.1

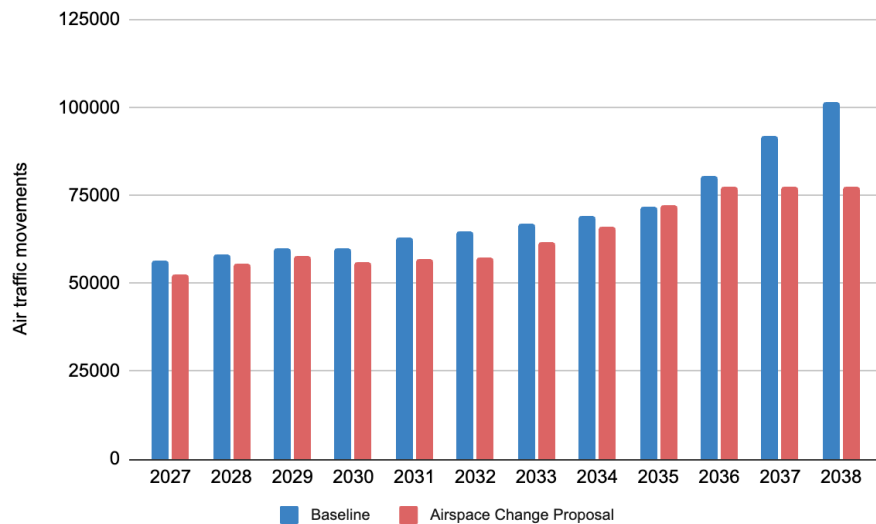
These results show that for every prediction point other than Locations A and B for departures at Runway 9, the new generation aircraft already at LCY are quieter than the A320neo by up to 4.0 dB. The E190 is louder than the A320neo on arrival except for Locations I and J and is louder on departure by 4.6 to 5.3 dB. The glide slope used for A320neo arrivals data (4.49 degrees) is steeper than the airspace change proposals which would allow aircraft to use an approach angle as shallow as 4.05 degrees for Runway 27 and 4.40 degrees for Runway 09. Modelling at these shallower approach angles would likely increase the noise disparity between the A320neo and other new generation aircraft flying the typical glide slope.

The noise data analysed in this report suggests that the A320neo will be louder than other new generation aircraft at the proposed angles. There are additional variables associated with the new glide path that could also affect total noise, including the impact of the angle change on flap noise and possible changes in tone of a new aircraft (for example, see [2024 study](#) into A320 family noise profile). Thorough real-world testing and monitoring at LCY are needed to determine the exact noise impact of these prospective changes, as estimates based on data from certificates and other airports only paint a partial picture.

The evolution of the fleet at LCY is key to determining the effects of introducing the A320neo. The baseline scenario provided by LCY in Table 1 shows that the E190 will be largely replaced by the A220, E290 and E295 by 12 years post implementation. When compared to these new generation aircraft that are projected to make up the bulk of the fleet, results suggest that the A320neo is louder. This applies both for the noise data that does not factor in the lower glide angle for the A320neo (Schiphol and Reagan) and the data that

does (London City). With the E190 already projected to be steadily replaced in the baseline, Fleet projections made by LCY suggest that introducing the A320neo could replace uptake of other quieter, new generation aircraft, possibly increasing noise impacts of LCY.<sup>2</sup>

**Figure 3: Projected traffic volumes at LCY under baseline and airspace change conditions**



Similarly, the size of the fleet is important to noise impacts—if quieter aircraft are added to the fleet mix but the fleet increases significantly in size then any potential noise benefits will be lost. Whilst it is possible that introducing the A320neo would allow ‘more passengers to be carried on fewer flights’ (Stage 2 engagement workshop [slides](#)), the appeal of operating a popular new aircraft, with larger capacities than seen before at LCY could result in an increase in flights on the baseline. Within LCY’s Stage 2 report it is stated that, ‘The scope of this airspace change is for the introduction of an RNP AR procedure that will not require steep approach certifications at LCY, improving access to a wider range of modern aircraft at the airport.’ Whilst this may not be directly referring to adding additional aircraft beyond the A320neo, certification of additional larger aircraft would further impact the fleet mix and size.

In *Figure 3*, LCY has projected very similar ATMs for both options out to Year 10 (2036), however flight numbers then jump significantly in the baseline scenario. The average yearly increase in ATMs from 2027 to 2035 is 1,913, whereas for 2035-2038, the figure is 9,967. LCY is also projecting that the implementation of the airspace change will allow the 9 mppa cap to be met with 24,100 fewer flights. Further explanation as to how the fleet mix projections are carried out, and any assumptions around load factors and seating capacities of aircraft would be useful in providing context.

We note that in their options appraisal, the CAA requested LCY ‘outline any assumptions made to produce the traffic forecasts for the purposes of transparency’ and LCY proceeded

<sup>2</sup> In a previous version of the forecast provided in the Engagement Workshop Slides, the E190 was predicted to be fully phased out in 2036, a difference of 10,700 aircraft. The total flight numbers and projections for other aircraft have also shifted—clarification on why this baseline forecast has changed would be useful.

to add details on the broad assumptions underpinning their forecasting. The suggestions for explanations around the fleet mix modelling in this report are additional to these details already provided by LCY in response to the CAA. This discussion highlights that there are additional questions and uncertainties relating to the fleet mix data which underpin some of the analysis in the airspace change proposal. The changing of the baseline projections between the Engagement Workshop Slides and the Stage 2 report, published 3 weeks apart, highlights the variability of these forecasts.

## **Conclusion**

Illustrative data collected for this report and by London City Airport suggest that implementing this airspace change could risk increasing the noise impacts of the airport's operations on the local area. Real-world trial data, and a full comparison with the projected fleet, are necessary to assess whether the A320neo operating with a glide slope of 4.05 to 4.49 degrees would contribute to limiting or reducing the total adverse impacts on health and quality of life from aviation noise at London City Airport.