



London Luton Airport



# Noise Abatement Departure Procedure Trial Project Plan

## Introduction

At London Luton Airport, operators use a mix of Noise Abatement Departure Procedures. These are known as Noise Abatement Departure Procedure 1 (NADP1) and Noise Abatement Departure Procedure 2 (NADP2). These procedures are designed to distribute the noise from an aircraft in different ways.

As part of our Noise Action Plan (2019-2023) LLAOL committed to conduct a review of the NADP procedures. The exact target is shown below.

1.5	Undertake a review of Noise Abatement Departure Procedures used at London Luton Airport to evaluate their effectiveness and work with our airline partners to identify and implement improvements.	Departure Noise	2019	Evidence of the review.	Residents within 55dB L <sub>den</sub>	To assess the effectiveness and establish targets for noise reduction.
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The aim of this study is to evaluate the effectiveness of the Noise Abatement Departure Procedures (NADP) used at London Luton Airport. This study will undertake a NADP review and work with airlines to identify and implement improvements.

## Stakeholders effected

Although it is expected that there would only be changes within the 55dB Lden noise contour area, it is likely that community stakeholders will be interested in our proposals. A map of the area within this contour is shown in Figure 1. Please note, initially this trial will only be conducted on westerly MATCH operations to gather data.

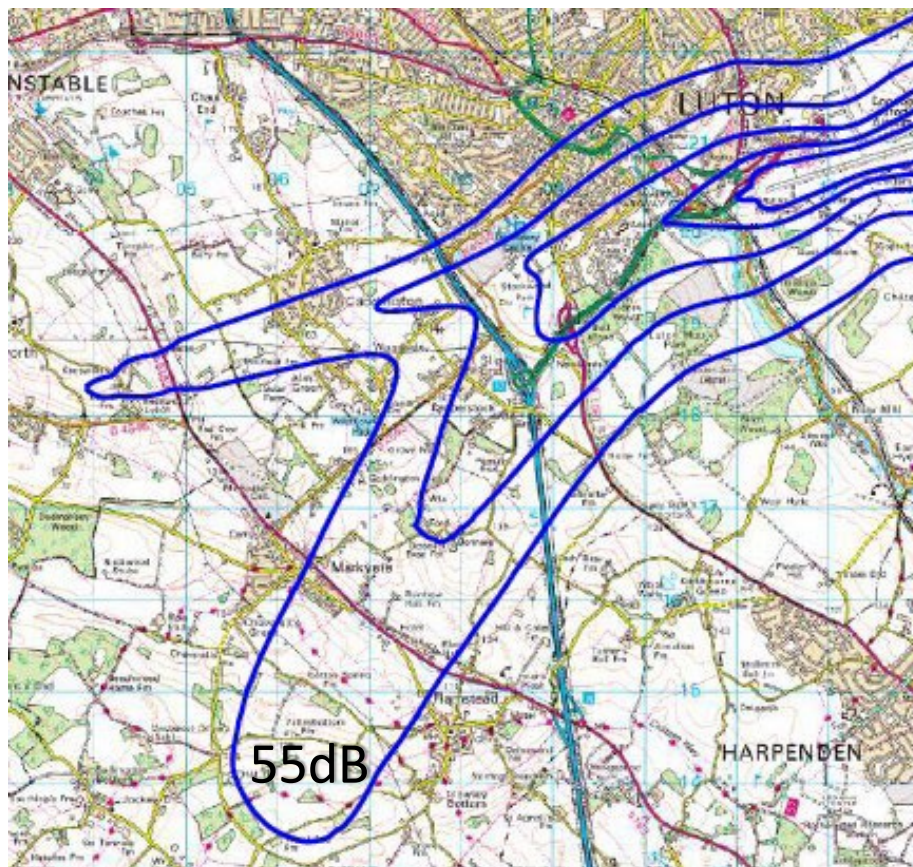


Figure 1: 2019 Lden contour, outlining the area where community stakeholders may notice change.

## Differences between NADP 1 and NADP 2

There are two common departing procedures for aircraft operating at LLA and within the wider aviation industry– they are known as Noise Abatement Departure Procedure 1 (NADP 1) and Noise Abatement Departure Procedure 2 (NADP 2). There are key differences in the flight profile between the two procedures, which produce different noise profiles for communities on the ground.

When an aircraft operates NADP 1, the aircraft climbs quicker initially with a reduction of thrust, reducing noise close to the airport. The aircraft has flaps/slats out for longer, increasing drag, which results in higher noise further from the airport.

When an aircraft operates NADP 2, the aircraft does not reduce thrust at 800 feet therefore creating more noise at the airport. However, the aircraft retracts the flaps sooner and generates less noise further from the airfield.

Figure 2 below shows the general climb profile for both NADP 1 and NADP 2. There is no difference in the procedure when above 4,500ft.

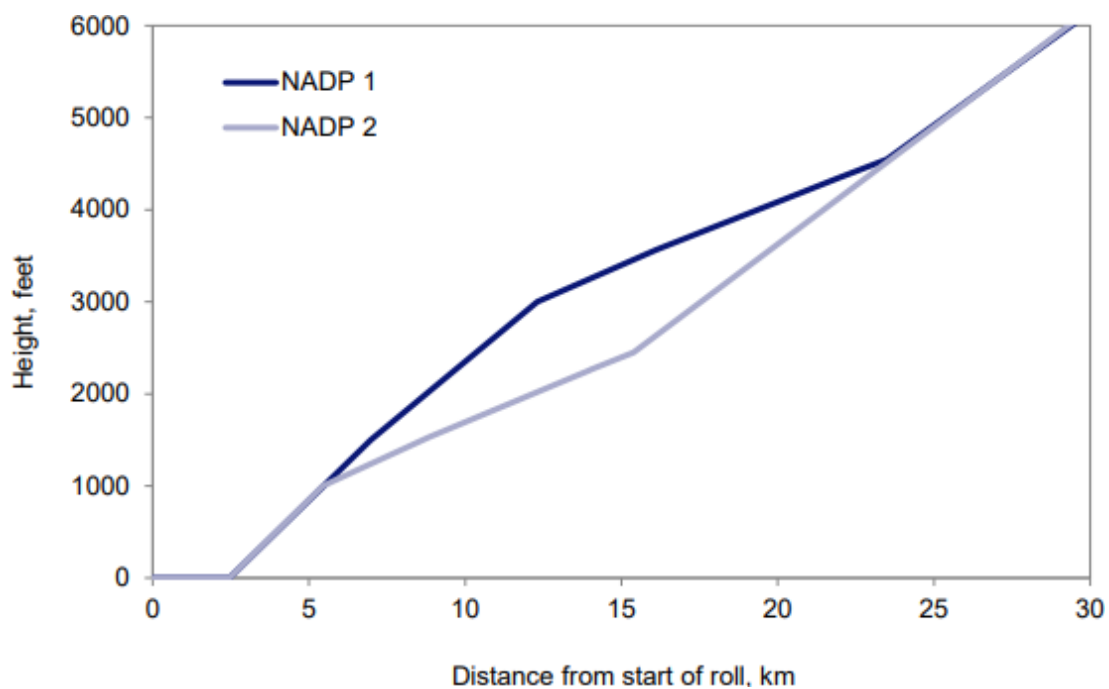


Figure 2: Graph showing the altitude and distance from the airport for each NADP procedure (Source: CAP 1619)

As a general guide, NADP 1 reduces noise closest to the airport and NADP 2 reduces noise between 3,000 and 4,000ft.

Airlines decide which procedure to follow at each airport as part of their standard operating procedure based on the requirements of their operation. Airports may recommend a preferred procedure to operators but have no formal powers to enforce this. There is not currently a preferred Noise Abatement Departure Procedure (NADP) at LLA.

It should also be noted that some operators also have the ability to fly a hybrid alternative NADP, whereby they retract the flaps at a certain altitude and increase thrust at a certain altitude. This can be designed to work with the geography of communities around an airport.

## Operators at LLA

In 2018 a survey of operators was conducted to understand which Noise Abatement Departure Procedure they typically used from LLA. This can change for each departure route, but the majority were using NADP2.

Some operators were using a hybrid NADP whereby they reduce the thrust at a certain altitude, this was true for Wizz Air and London Executive Aviation.

Figure 3 below shows the NADP procedure by operator from the survey in 2018.

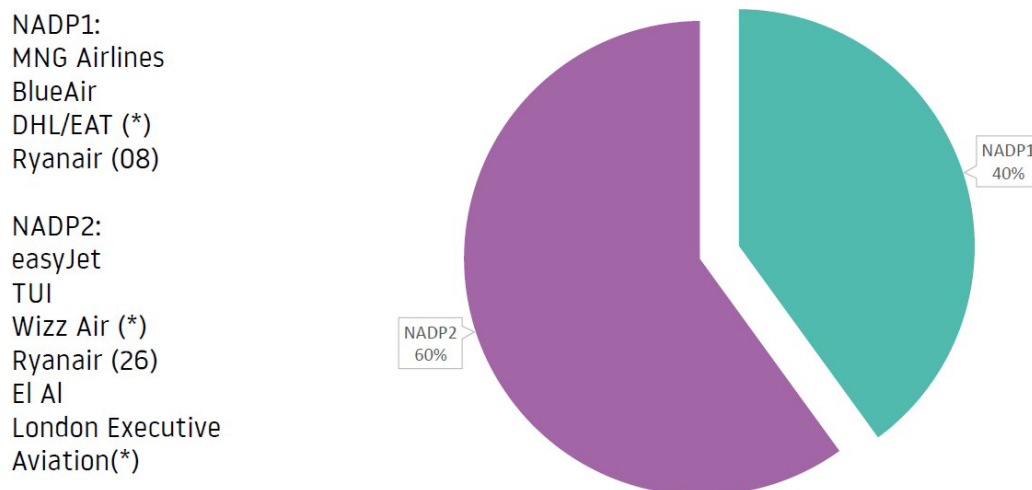


Figure 3: NADP by operator at LLA (data from 2018)

## Proposed trial

LLA is planning to conduct a trial commencing in August 2022, for a period of at least two months when movements are expected to increase, allowing for a good sample of data to be collected. This trial period may be extended if the runway operating direction changes due to wind.

Operators participating in the trial will be asked to use each NADP procedure for a period of one-month. Noise readings will then be collected by both fixed and portable noise monitors for desktop download.

The noise monitors will provide departure LASmax and SEL noise results, which will be compared between movements. In addition, data on radar tracks, flight profiles and aircraft load will also be gathered.

In addition, we will be monitoring NOx emissions and fuel usage during this period. We currently have many NOx monitoring sites around the airport, but we will need to understand if changing the NADP creates a significant impact on air quality between the two procedures.

It is expected that five airlines will be taking part in the trial, composed of three Boeing operators and two Airbus operators. During the trial, operators will be exempt from noise and track violations.

## Noise Monitor positions

To collect results on noise levels between the two NADP, we are proposing to set up five mobile noise monitors in the community, in addition to the two fixed noise monitors already installed.

The proposed locations are: South Luton, Markyate, Slip End, Pepperstock, Flamstead, Markyate and Redbourn. The two fixed noise monitors are located 6.5km from the runway at Grove Farm and Pepsal End. Figure 4 below shows the expected positions of the portable noise monitors.



Figure 4: Proposed locations for noise monitoring terminals.

The noise monitors will be placed in these locations for a period of at least 3 months beginning in June. A month of baseline data will be collected in July, with the trial commencing in August. The noise monitors will be collected in early-October.

### **Outputs from the trial**

The noise, air quality and movement data will be compared and analysed towards the end of 2022. This will allow LLA to understand if there are noise and air quality benefits associated to certain NADP procedures. This data will be shared with the Noise and Track Sub-committee.

This will allow LLAOL and NTSC to make a recommendation to operators as to which NADP is preferred at LLA.