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# London Luton Airport Expansion

Planning Inspectorate Scheme Ref: TR020001

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**7.08 Green Controlled Growth Framework Appendix C:  
Aircraft Noise Monitoring Plan**

Application Document Ref: TR020001/APP/7.08

APFP Regulation 5(2)(q)

**The Planning Act 2008**

**The Infrastructure Planning (Applications: Prescribed Forms and Procedure)  
Regulations 2009**

**London Luton Airport Expansion Development Consent  
Order 202x**

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**7.08 GREEN CONTROLLED GROWTH FRAMEWORK APPENDIX C -  
AIRCRAFT NOISE MONITORING PLAN**

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# Appendix C

## C1 Introduction

### C1.1 Overview of document

- C1.1.1 This Monitoring Plan for aircraft air noise has been submitted as part of the proposed **Green Controlled Growth (GCG) Framework [TR020001/APP/7.08]**.
- C1.1.2 It is intended that this Monitoring Plan will be approved as part of the application for development consent, and paragraph 21 of Schedule 2 to the **Draft Development Consent Order [TR020001/APP/2.01]** will require the airport operator to undertake monitoring and reporting in accordance with this Monitoring Plan as part of their GCG responsibilities.
- C1.1.3 As such, this document will establish monitoring and reporting requirements for aircraft air noise within the GCG Framework and the Noise Envelope. Failure to carry out monitoring and reporting in line with this document will constitute a breach of the Development Consent Order (DCO) and may result in enforcement action as detailed in Section 2.7 of the **GCG Framework Explanatory Note [TR020001/APP/7.07]**.
- C1.1.4 It is intended that this Monitoring Plan can be revised in the future, for example in response to new monitoring technology or guidance. Any revisions would need to be agreed by both the airport operator and the Environmental Scrutiny Group (ESG), a new body established through the DCO to provide independent scrutiny of airport impacts. Paragraph 21 of Schedule 2 to the **Draft Development Consent Order [TR020001/APP/2.01]** sets out the mechanism for this.

## **C2 Green Controlled Growth (GCG) and the Noise Envelope**

- C2.1.1 Noise is an important issue for people who live and work around the airport and beneath flight paths. The noise effects associated with the airport's operations are primarily associated with aircraft air noise, which occurs when flights arrive at or depart from the airport.
- C2.1.2 As part of the application for development consent, the Applicant is putting forward proposals for a Noise Envelope for aircraft air noise, in line with policy expectation and guidance<sup>1</sup>. The Applicant has included in its DCO application a binding GCG framework and under the terms of the Environmental Noise (England) Regulations 2006, the airport operator is also required to publish noise maps as well as develop and engage on a Noise Action Plan (NAP) every five years.
- C2.1.3 The Noise Envelope, Noise Action Plans and GCG framework have similar principles and common elements. As such, to provide a single integrated approach to noise control, the Noise Envelope is defined as the noise component of GCG, and the GCG Noise Envelope will be reviewed every five-years to align with the development and publishing of NAPs.
- C2.1.4 The noise Limits and Thresholds for the GCG Framework are expressed in terms of noise contour areas.
- C2.1.5 In line with guidance (Ref 2.1) and the recommendations of the Noise Envelope Design Group (NEDG), the contours used in GCG for noise Limits and Thresholds are the 54 dB and 48 dB equivalent continuous noise levels ( $L_{Aeq,T}$ ), for the day (0700-2300) and night (2300-0700) respectively, calculated as the average for the 92-day summertime period (to reflect when the airport is usually busiest and when people tend to open windows and use gardens / open space more frequently).
- C2.1.6 This document sets out how noise contours will be calculated for the operational airport as it expands and how they will be used to assess the noise performance of the airport against the Limits and Thresholds set out in the noise envelope of the GCG Framework.
- C2.1.7 This document also sets out the additional noise indicators that will be monitored and reported to support engagement with communities and stakeholders and to provide additional information to support the optimisation of noise control at the airport in line with guidance (Ref 2.2) and NEDG proposals.
- C2.1.8 Regarding noise monitoring, the airport operator will engage with the community and stakeholders via the Noise and Track Subcommittee of the London Luton Airport Consultative Committee in line with guidelines (Ref 2.3).

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<sup>1</sup> E.g. Airports NPS para 5.60, CAA CAP1129 and Aviation Policy Framework 2013

### C3 Monitoring Aircraft Noise

#### C3.1.1 Monitoring shall comprise of:

- a. monitoring compliance with GCG noise limits;
- b. monitoring compliance with the Night Quota Period movement cap;
- c. the use of quota counts for the purpose of planning airport operations (if required);
- d. wider monitoring as part of engagement with the community and informing noise management at the airport; and
- e. a complaint handling system.

C3.1.2 **Compliance with GCG** (see Section C4): There are many different indicators/metrics and methods of measuring and reporting noise. To have a clear and unambiguous measure of compliance with the GCG / Noise Envelope, it is necessary to use a single metric for daytime and night-time to compare against the Limit. In line with recommendations of the NEDG and CAA guidance (Refs 3.1 and 3.2), this is the noise contour area (measured at 54dB  $L_{Aeq,16h}$  during the day and 48dB  $L_{Aeq,8h}$  during the night) for average summer<sup>2</sup> daytime and night-time, calculated using the methodology defined in **Annex C1** at the end of this Appendix.

C3.1.3 **Compliance with Night Quota Period movement cap** (see Section C6): The Applicant is committed to maintaining the existing cap on night-time quota period (2330 to 0600) movements (9,650 movements over a 12-month period) and this will be secured as a Requirement to the DCO.

C3.1.4 **Wider monitoring** (see Section C7): As noted in CAA guidance (Ref 3.1) and as requested by the NEDG, other indicators/metrics can be usefully used to communicate airport noise to different audiences, provide a wider indication of the airport's noise performance and hence provide noise management targets (although these do not form GCG Limits). The reasoning for this approach is described in **Annex B of Appendix 16.2 Operational Noise Management (Explanatory Note)** of the **Environmental Statement [TR020001/APP/5.02]**.

C3.1.5 The airport operator will continue to operate and maintain a **complaint handling system**.

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<sup>2</sup> 92 day period, 16th June to 15th September

## **C4 Compliance with Green Controlled Growth**

### **C4.1 Compliance with GCG Noise Limits and reporting against GCG Thresholds**

- C4.1.1 Noise contours will be produced annually for the second quarter of each year, based on the previous 92-day summer period (16th June to 15th September).
- C4.1.2 As per Section 3.3 of the **GCG Framework [TR020001/APP/7.08]**, noise contours will be produced using the DCO Noise Model and associated assumptions defined in **Annex C1** at the end of this Appendix.
- C4.1.3 For the purposes of compliance, the 92-day summer  $L_{Aeq,T}$  contours will be calculated using scheduled movements and early and late running aircraft (daytime and night-time) but not dispensed movements<sup>3</sup> as these are not directly in the airport's control.
- C4.1.4 The DCO Noise Model validation will be checked every year using airport noise monitoring terminals (see Section C4.2).
- C4.1.5 For compliance purposes, the area of the 54dB  $L_{Aeq,16h}$  (0700 to 2300) and 48dB  $L_{Aeq,8h}$  (2300 to 0700) contour will be calculated in line with sections C4.1.1 to C4.1.3 above in km<sup>2</sup> and compared to the applicable contour area noise Limit or Threshold from Table 3.1 in the **GCG Framework [TR020001/APP/7.08]**.
- C4.1.6 The airport operator will annually report the above metrics, compliance with the applicable GCG noise Limits and comparison to the relevant GCG noise Thresholds in the annual Monitoring Report produced in accordance with paragraph 21 of Schedule 2 to **Draft Development Consent Order [TR020001/APP/2.01]**.

### **C4.2 Checking the DCO Noise Model validation: Noise and Track-keeping data**

- C4.2.1 Every year, the airport operator will check the validation of the DCO Noise Model against the airport's noise and track-keeping data and update the model assumptions to improve validation as required (see **Annex C1**). The airport operator will do this in line with Category B in CAP 2091: CAA Policy on Minimum Standards for Noise Modelling. The airport operator will do this in consultation with the Noise and Track Subcommittee of the London Luton Airport Consultative Committee and the GCG Noise Technical Panel.
- C4.2.2 The airport operator will, as an initial minimum, maintain the permanent aircraft noise monitoring stations in place at the time of the DCO application – see **Figure C1**. As the airport expands, the airport operator will review and, if

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<sup>3</sup> 'Dispensed flights' are those which, under the legal framework through which the government sets night flight operating restrictions at designated airports, meet specific criteria that allow them to be disregarded for the purposes of noise restrictions. The list of qualifying criteria is included in Night flight restrictions at Heathrow, Gatwick and Stansted: Annex F Guidelines on Dispensations, Department for Transport, July 2014

necessary, improve the noise monitoring stations in line with ISO 20906 (Ref 4.3) and SAE-ARP-4721 (Ref 4.4).

- C4.2.3 In line with NEDG recommendations, the airport operator will consult with the Noise and Track Subcommittee and agree with the GCG Noise Technical Panel the locations for additional permanent noise monitors on departure routes located at 2.5km and beyond 6.5 km from start-of-roll. This is to better understand aircraft noise performance close to and further from the airport.
- C4.2.4 The monitoring station(s) beyond 6.5 km from start-of-roll will be implemented in line with CAA guidance (CAP 1691 (Ref 4.5)). Once agreed and implemented, the airport operator will utilise monitoring outputs from these additional permanent monitors, as part of the five-yearly check on the validation of the DCO Noise Model.

Figure C1: London Luton Airport noise monitoring stations and radar tracks, 2019





## **C5 Use of Quota Counts in forward planning of airport operations**

- C5.1.1 When a Level 1 Threshold is exceeded, the airport operator will convert current and future Level 2 Threshold and Limit noise contour areas into equivalent total 16-hour daytime and total 8-hour night-time quota counts<sup>4</sup>. The airport operator will use total scheduled and forecast daytime and night-time quota counts (and their comparison to the relevant Level 2 Threshold Equivalent QC and the Limit Equivalent QC):
- a. to inform forward planning of airport operations (both annual and five-year forward plan);
  - b. to incentivise airlines to operate the quietest aircraft available in response to the opportunity of growth; and
  - c. as part of the bi-annual process<sup>5</sup> of slot management and capacity declaration.
- C5.1.2 If a Level 1 Threshold has been exceeded, the airport operator will include in a Monitoring Report how noise contour areas have been converted into quota counts, and the QC points that have been made available for use by aircraft operators in future seasons. Where in the forward plan the Level 2 Threshold Equivalent QC or Limit Equivalent QC is exceeded, the airport operator will include in a Monitoring Report proposals for slot management measures, additional interventions or mitigation to ensure that the Limit will not be exceeded.

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<sup>4</sup> Based on regression analysis of the relationship between scheduled QCs and actual noise contours from the previous five-years of operation.

<sup>5</sup> Twice each year, once for winter and once for summer

## **C6 Compliance with Night Quota Period movement cap**

- C6.1.1 The annual number of scheduled Air Traffic Movements (ATMs) in the Night Quota Period 2330 to 0600 is capped at a maximum of 9,650. This is secured by a Requirement to the DCO, separate from the GCG Framework.
- C6.1.2 The airport operator will record the annual ATMs in the Night Quota Period for the previous year and will report this as part of its annual Noise Monitoring Report.

## C7 Wider Reporting of Aircraft Noise information

C7.1.1 For information, the actual and forecast total number of aircraft movements for the preceding and next 12 months will be reported to the Local Planning Authority every three months. Such reports shall be made publicly available and shall also include statistics relating to aircraft movements, noise monitoring, aircraft activity complaints and sample actual flown tracks of London Luton Airport aircraft operations.

C7.1.2 In addition, as requested by the NEDG, the following additional noise indicators/metrics will be reported annually in the Monitoring Report for information:

- a. Total annual Quota Counts (QC) in the Night Quota (2330-0600), night-time (2300-0700) and daytime (0700-2300) periods.
- b. Total annual number of Air Traffic Movements.
- c. Application of and compliance with Departure Noise Limits applied at monitoring locations as part of noise management at the airport, using a set limit for all operations that gradually reduces over time.
- d. The following additional noise contours:
  - i. daytime noise contours in 3 dB bands starting at 51 dB LAeq,16h;
  - ii. night-time noise contours in 3 dB bands starting at 45 dB LAeq, 8h; and
  - iii. the contour for the 55dB LAeq, 8h which represents the night-time Significant Observed Adverse Effect Level value used by Luton Rising.

These are to be produced for the following situations:

- iv. summer average (based on the fixed standard modal split noted in Annex C1);
- v. summer average (based on actual modal split);
- vi. summer average, single mode operations;
- vii. annual average (based on the fixed standard modal split noted in Annex C1);
- viii. annual average (based on actual modal split); and
- ix. annual average, single mode operations.
- e. The following additional noise indicators
  - i. summer average day N65 contours
  - ii. summer average night N60 contours
 at the following values (where applicable)

iii. 25, 50, 100, 200, 400

C7.1.3 For all contours, the area for the various contour bands shall be provided. Additionally, for the contours that form the Noise Envelope Limits (92 day summer daytime  $L_{Aeq,16h}$  and night-time  $L_{Aeq,8h}$  using the fixed standard modal split noted in **Annex C1**), the number of households and the population enclosed by the various contour bands shall be provided.

## **ANNEX C1: THE DCO NOISE MODEL TO BE USED FOR DEMONSTRATING COMPLIANCE WITH GCG / NOISE ENVELOPE LIMITS AND THRESHOLDS**

The Noise Model for demonstrating compliance with the GCG / Noise Envelope Limits and Thresholds (“The DCO Noise Model”) should be consistent with the model used for the noise assessment presented in **Chapter 16** of the **Environmental Statement [TR020001/APP/5.01]**. The DCO Noise Model was created using Aviation Environmental Design Tool (AEDT) 3e and used the following assumptions/parameters:

- a. Ground tracks developed using airport radar data.
- b. Departure profiles developed using altitudes and ground speed data from airport radar data.
- c. Default AEDT approach profiles.
- d. Adjustments for approach and departure Noise Power Distance curves based on noise monitoring data (see Section C4.2).
- e. The modal split of 23% easterlies and 77% westerlies taken from the 10-year 92-day summer average from 2010 to 2019.
- f. Weather conditions taken from the 2019 92-day summer average: temperature of 60°F, pressure at 1012 mbar, 80% humidity and windspeed of 8.5 knots.
- g. Terrain data: OS Terrain50 downloaded from OS Open Data in 2022.
- h. Atmospheric absorption calculated using SAE-ARP-5534.
- i. Population counts based on mid-2019 population estimation data at Census Output Areas level from the Office of National Statistics.
- j. User defined metrics were used to calculate the  $L_{Aeq,16h}$  and  $L_{Aeq,8h}$  noise contours.

Departure from the above parameters/assumptions, such as the use of more up-to-date software and methodologies, shall be allowable if agreed with the GCG Noise Technical Panel.

## GLOSSARY AND ABBREVIATIONS

Term	Definition
CAA	Civil Aviation Authority
DCO	Development Consent Order
ESG	Environmental Scrutiny Group. The ESG will be established through the DCO to independently oversee operation of the GCG framework. Its membership will include an independent chair, an independent aviation expert, representatives of local authorities and an airline industry body. The ESG will have a range of powers enshrined in its Terms of Reference, that can be utilised at its discretion.
Monitoring Plan	Individual plans secured through the DCO for each of the four environmental topics of the GCG Framework, setting out the monitoring and reporting requirements associated with the relevant Limits of that topic.
Monitoring Report	A report (or reports) produced by the airport operator annually, to set out the monitoring results for each of the GCG Limits, with its content defined by the Monitoring Plans.
Technical Panel	Technical Panels will be established through the DCO for each of the four environmental topics within the GCG Framework. They will be staffed by a combination of independent experts and representatives of local authorities, in order to review information submitted by the airport operator (Monitoring Reports, Level 2 Plans, Mitigation Plans) and providing comment and recommendations to the ESG.

## REFERENCES

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- Ref 2.1 Flightpath to the Future, 2022, and Aviation 2050, 2019; HM Government
- Ref 2.2 CAA CAP1506 Survey of Noise Attitudes 2014: Aircraft Noise and Annoyance, Second Edition, 2021
- Ref 2.3 Guidelines for Airport Consultative Committees, DfT 2014
- Ref 3.1 CAP 1506 Survey of Noise Attitudes 2014: Aircraft Noise and Annoyance, Second Edition
- Ref 3.2 CAP 2161 Survey of Noise Attitudes 2014: Aircraft Noise and Sleep Disturbance)
- Ref 4.3 ISO 20906:2009, Amended 2013. Unattended monitoring of aircraft sound in the vicinity of airports.
- Ref 4.4 SAE-ARP-4721:2006. Part 1: Monitoring Aircraft Noise and Operations in the Vicinity of Airports: System Description, Acquisition, and Operation. Part 2: Monitoring Aircraft Noise and Operations in the Vicinity of Airports: System Validation.
- Ref 4.5 CAA CAP 1691 Departure Noise Mitigation: Main Report, 2018