Luton Rising
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London Luton Airport Expansion

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7.08 Green Controlled Growth Framework Appendix C - Aircraft Noise Monitoring Plan (Tracked Change Version)

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

7.08 GREEN CONTROLLED GROWTH FRAMEWORK APPENDIX C - AIRCRAFT NOISE MONITORING PLAN (TRACKED CHANGE VERSION)

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Revision 4	February 2024	Additional Submissions – Deadline 11

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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~~0~~ 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 Explanatory Note [TR020001/APP/7.07]**.

C1.1.4 It is intended that this Monitoring Plan 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~~0~~ of Schedule 2 to the **Draft Development Consent Order [TR020001/APP/2.01]** sets out the mechanism for this.

C1.1.5 This Monitoring Plan provides information relating to the GCG Framework and the Noise Envelope. There are also additional noise controls in the **Air Noise Management Plan [TR020001/APP/8.125~~REP6-051~~]** which are separately secured by a Requirement in Schedule 2 to the DCO.

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 (Ref 1, 2, 3). 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 (NAPs) 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. This is secured via the **GCG Framework [TR020001/APP/7.08].**

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 4, 5) 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 6) and NEDG recommendations.

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 7).

C3 Monitoring Aircraft Noise

C3.1.1 Monitoring shall comprise of:

a. monitoring compliance with GCG noise Limits;

b. the use of Quota Counts (QC) for the purpose of planning airport operations (if required); and

c. wider monitoring as part of engagement with the community and informing noise management at the airport.

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 GCG / Noise Envelope, it is necessary to use a single metric for daytime and nighttime to compare against the Limit. In line with recommendations of the NEDG and CAA guidance (Ref 4, 5) 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[1] daytime and nighttime, calculated using the methodology defined in Annex C1 at the end of this Appendix. As part of compliance with GCG a mechanism has been introduced requiring the use of QC for the purpose of planning airport operations when above a Level 1 Threshold (see Section C5).

C3.1.3 Wider monitoring of aircraft noise information (see Section C6): as noted in CAA guidance (Ref 4) 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~~REP4-023~~].**

C3.1.4 The airport operator will continue to operate and maintain a **complaint handling system**.

[1] 92-day period, 16th June to 15th September inclusive

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 as soon as reasonably practicable and no later than 30 June, 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). Where the exceedance of a Threshold or Limit occurs as a result of circumstances beyond the control of the airport operator, the mechanism described in paragraphs 2.2.37 to 2.2.43 of the **GCG Explanatory Note [TR020001/APP/7.07]** will apply.

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^2 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~~0~~ of Schedule 2 to **Draft Development Consent Order [TR020001/APP/2.01]**.

C4.2 Checking the DCO Noise Model validation: Noise and Track-keeping system

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 system 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 (Ref 8). 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.

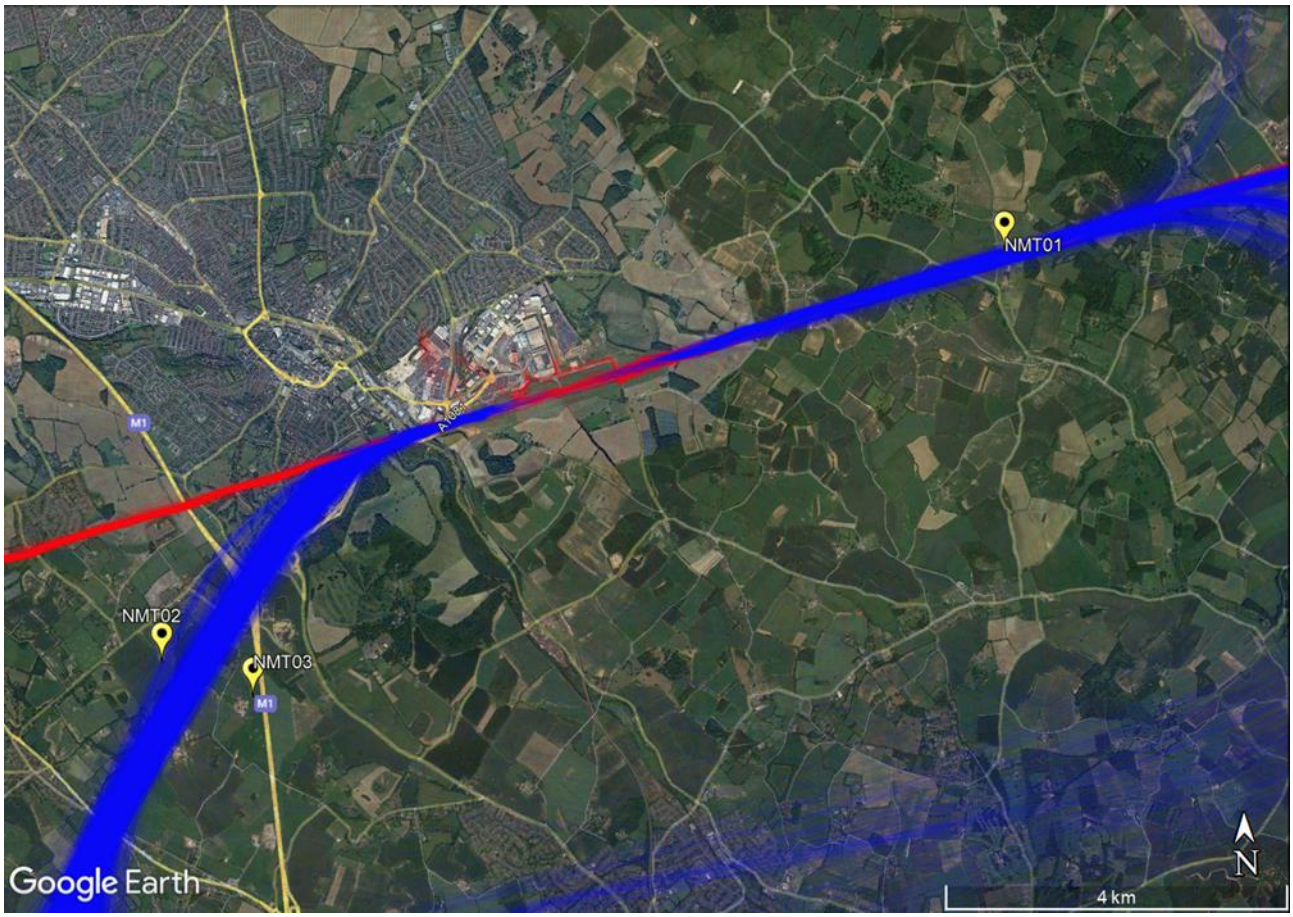
C4.2.2 The airport operator will, as an initial minimum, maintain the permanent aircraft noise monitoring stations in place at the time of the DCO application – see Figure C1. As the airport expands, the airport operator will review and, if necessary, update the noise monitoring stations in line with ISO 20906 (Ref 4.9) and SAE-ARP-4721 (Ref 10). The principal criteria for the requirement for new or updated locations of noise monitoring terminals as part of such a review

would be if updates were required to meet the minimum standards of noise monitoring terminals with respect to validation of aircraft noise modelling as per Civil Aviation Authority standards (Ref 8).

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 beyond 6.5 km from start-of-roll and at locations closer to the airport (for example within 2.5km from each end of the runway). 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 11)). 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 Each year, 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[2]. 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[3] of slot management and capacity declaration.

C5.1.2 The airport operator will include in the Monitoring Reports 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 within the annual Monitoring Report proposals for slot management measures, additional interventions or mitigation to ensure that the Limit will not be exceeded.

[2] The conversion factor from contour area to QC will be based on regression analysis of the relationship between scheduled QCs and actual noise contours from the previous five-years of operation.
[3] Twice each year, once for winter and once for summer

C6 Wider Reporting of Aircraft Noise information

C6.1.1 For many years the airport operator has reported detailed aircraft movement and noise information in quarterly and annual reports. The following lists of reporting requirements secure continuation of the historic reporting undertaken by the airport operator as well as additional reporting recommended by the NEDG.

C6.1.2 The Quarterly Reports and Annual Monitoring Reports shall be made publicly available.

C6.2 Quarterly Reports

C6.2.1 For information, the airport operator shall provide Quarterly Reports (on or before 1st March, 1st June, 1st September and 1st December) containing details of:

a. monthly aircraft movements;
b. monthly aircraft fleet information;
c. monthly passenger numbers;
d. runway usage;
e. departure route usage;
f. arrival details including Continuous Descent Approach usage;
g. measured departure noise levels;
h. departure noise limit violations;
i. track violations;
j. complaint statistics and analysis;
k. dispensed aircraft and rationale;
l. quarterly night noise contours;
m. actual total number of aircraft movements for the preceding 12 month period, and the following breakdown of monthly totals:
    - for the time 00:00 to 00:00 (24 hours);
    - for the time 23:30 to 06:00 (Night Quota Period); and
n. actual total noise Quota Count usage for the preceding 12 month period, and a breakdown of monthly totals;
o. forecast total number of aircraft movements for the following 12 month period:
    - for the time 07:00 to 23:00 (daytime);
    - for the time 23:00 to 07:00 (night-time); and
    - for the time 23:30 – 06:00 (Night Quota Period).

C6.3 Annual Monitoring Reports

C6.3.1 For information, the airport operator shall provide annual Monitoring Reports (as soon as reasonably practicable and no later than 30 June), based on the previous calendar year) containing details of: containing details of:

a. annual aircraft movements;
b. annual passenger numbers;
c. the noise Limits and Thresholds in force for the relevant year;
d. annual aircraft fleet information;
e. runway usage;
f. departure route usage;
g. arrival details including Continuous Descent Approach usage;
h. measured departure noise levels;
i. departure noise limit violations;
j. track violations;
k. complaint statistics and analysis;
l. total aircraft movements for the preceding year for the time 23:30 to 06:00 (Night Quota Period); and
m. actual annual movements of marginally compliant Chapter 3 aircraft;
n. forecast total aircraft movements for the following year:
    - 92-day summer period for the time 07:00 – 23:00 (daytime);
    - 92-day summer period for the time 23:00 – 07:00 (night-time);
    - annual Night Quota Period 23:30 – 06:00;
o. actual Quota Count annual usage:
    - for the time 07:00 – 23:00 (daytime);
    - for the time 23:00 – 07:00 (night-time); and
    - for the time 23:30 – 06:00 (Night Quota Period).

C6.3.2 The annual Monitoring Reports shall contain the following noise contours:

a. daytime noise contours in 3 dB bands starting at 51 $dBL_{Aeq,16h}$;
b. night-time noise contours in 3 dB bands starting at 45 $dBL_{Aeq,8h}$; and
c. the contour for the 55 $dBL_{Aeq,8h}$ which represents the night-time Significant Observed Adverse Effect Level.

C6.3.3 The noise contours in paragraph C6.3.2 are to be produced for the following situations:

a. 92-day summer average (based on the fixed standard modal split noted in Annex C1);
b. 92-day summer average (based on actual modal split);

c. 92-day summer average, single mode operations;
d. annual average (based on the fixed standard modal split noted in Annex C1);
e. annual average (based on actual modal split); and
f. annual average, single mode operations.

C6.3.4 The annual Monitoring Reports shall contain the following additional noise contours:

a. 92-day summer average daytime N65 contours (07:00 – 23:00); and
b. 92-day summer average night-time N60 contours (23:00 – 07:00).

C6.3.5 The noise contours in paragraph C6.3.4 shall be reported at the following values (where applicable): 25, 50, 100, 200 and 400.

C6.3.6 For all contours in the annual Noise Monitoring Report, 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~~REP1-003~~]**. 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
AEDT	Aviation Environmental Design Tool
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.
GCG	Green Controlled Growth
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.
NAPs	Noise Action Plans
NEDG	Noise Envelope Design Group
OS	Ordnance Survey
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.

Term	Definition
QC	Quota Counts

REFERENCES

Ref 1 Department for Transport (2018). Airports National Policy Statement: new runway capacity and infrastructure at airports in the South East of England.
Ref 2 Civil Aviation Authority (2013), CAP1129 Noise Envelopes
Ref 3 Her Majesty's Stationery Office (2013), The Aviation Policy Framework.
Ref 4 Civil Aviation Authority (2021) CAP1506 Survey of Noise Attitudes 2014: Aircraft Noise and Annoyance, Second Edition, 2021
Ref 5 Civil Aviation Authority (2021), CAP2161: Survey of Noise Attitudes 2014: Aircraft Noise and Sleep Disturbance
Ref 6 Department for Transport (2017), Air Navigation Guidance.
Ref 7 Guidelines for Airport Consultative Committees, DfT 2014
Ref 8 Civil Aviation Authority, (2021); CAP 2091: CAA Policy on Minimum Standards for Noise Modelling
Ref 9 ISO 20906:2009, Amended 2013. Unattended monitoring of aircraft sound in the vicinity of airports.
Ref 10 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 11 CAA CAP 1691 Departure Noise Mitigation: Main Report, 2018