Annual
Performance
Report 2021

Annexes

LONDON CITY AIRPORT

01 June 2022

Contents

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Annex 1

Summary of CADP1 APR Requirements & References

LONDON CITY AIRPORT

Requirements	Source: Approved Document or Condition	Condition /AOD References	APR Section	Format	APR Reference/ Source
Approved PCCS (AODS)					
Condition 18 AOD Aircraft Noise Categorisation Scheme (October 2017) – paras 1.1.21, 4.1.3 & 5.2.2 (1.1.21) Publish daily aircraft noise monitoring in the APR (5.2.2) Produce a report as part of the APR that records the results of the assessments undertaken as part of the quota count regime. Including but not limited to: the quota counts for each aircraft type; the total annual quota arising from aircraft operations; the results of noise monitoring, expressed for each aircraft and airline as averages in relation to sideline, flyover and approach noise levels, quota counts to be used for each aircraft and the exceptional total annual quota for the forthcoming calendar year. (4.1.3) publish in the APR a league table setting out the performance of each aircraft type, by airline, relative to its previous years' performance.	Condition & Approved Document	18 AOD paras 1.1.21, 4.1.3 & 5.2.2 19 31 31 AOD A.8, Appendix C paras C.3 and C.7	Environment	Summary in text and report in Annex	Sections 2.2 & 2.4 Annex 3: ANCS Report Annex 2: NOMMS, Section 11 & Appendix 11 Annex 4: Annual Community & Airline Report
Condition 31 AOD NOMMS (March 2019) A.7 – Complaints Handling Report complaints about environmental impact of the operation of the airport and any action taken to address such complaints in the APR.	Condition & Approved Document	31 31 AOD A.7 59	Environment	Summary in text	Section 2.12
Condition 31 AOD NOMMS (March 2019) A.8 – Reporting Publish noise monitoring data in APR in June each year, including air noise contours (actual and predicted), an aircraft noise categorisation report and a noise management report, average departure and arrival noise levels, data on reverse thrust and data on flight track keeping performance.	Condition & Approved Document	18 AOD 5.2.2 31 31 AOD A.8	Environment	Summary on text, report in Annex	Section 2.3 Annex 2 NOMMS Annex 3 ANCS Section 4 and Appendix 3
Condition 31 AOD NOMMS (March 2019) – Appendix C para C.2.7 Produce an annual Community and Airline Report as part of the APR describing aircraft/airline performance with regard to noise monitoring and flight track keeping in terms of good and poor performance and league tables.	Condition & Approved Document	31 31 AOD Appendix C para C.2.7	Environment	Summary in text and report in Annex	Section 2.4 Annex 4: Annual Community & Airline Report Annex 2: NOMMS Section 2,4 and Appendix 3
Condition 31 AOD NOMMS (March 2019) Appendix C para C.3 (iv) and (v) Publish an annual Community and Airline Report that highlights the performance of the scheme and identify the most improved airline for the previous calendar year. Identify the details of the community projects that have been sponsored in the previous year in partnership with the winning airline. Publish as part of the APR.	Condition & Approved Document	31 31 AOD Appendix C para C.3 (iv) and (v)	Environment	Summary in text and report in Annex	Section 2.4 Annex 4: Annual Community & Airline Report Annex 2: NOMMS Section 2,4 and Appendix 3

Requirements	Source: Approved Document or Condition	Condition /AOD References	APR Section	Format	APR Reference/ Source
Approved PCCS (AODS)					
Condition 31 AOD NOMMS (March 2019) – Appendix D Control of Ground Noise, paras D2 (Ground Engine Running Strategy), D.5.2 (Ground Running of Engines for Test and Maintenance Purposes) and D.5.4 (Ground Running Annual Performance Report) D2: A report as part of the APR on the performance and or compliance during the previous calendar year with the approved targets in the Ground Engine Running Strategy (Cond. 48) D.5.2: A report as part of the APR on the performance and or compliance during the previous calendar year with the targets in the Ground Running, Testing and Maintenance Strategy. (Cond.49) D.5.4: A report as part of the APR, including details of the number, duration and power setting of ground runs and the types of aircraft involved and written measurements and calculations to show whether the Ground Running Noise Limit has been exceeded as a result of Ground running during the preceding calendar year. (Cond. 52)	Condition & Approved Document	31 AOD Appendix D, H.3 44 AOD para 1.9 47 AOD para 1.9 48 48 AOD para 6.2.1 49 49 AOD para 5.1.1 51 AOD para 4.1.2 52 58 AOD para 1.5	Environment	Summary in text and report in Annex	Section 2.5 Annex 2 NOMMS Section 5
Condition 31 AOD NOMMS (March 2019) – H.3 Report in the APR details of the use of APUs at the airport the previous calendar year. LCA will determine the current aircraft that require essential use of APUs and submit to the LPA for approval for the continued APU operation of the identified aircraft.	Condition & Approved Document	31 31 AOD, H.3 58 AOD para 1.5 (measure 2)	Environment	Report in Annex	Annex 2: NOMMS, Section 8.0 Annex 6: AQMS Action Plan (Measure 2)
Condition 31 AOD NOMMS (March 2019) – Appendix F (Annual Noise Contours) Produce annual daytime noise contours depicting air noise produced during an average summer day following defined method.	Condition & Approved Document	31 31 AOD Appendix F	Environment	Contours in Annex and summary in text	Section 2.7 Annex 2: NOMMS Appendix 6
Condition 44 AOD Ground Power Strategy (June 2020) – para 1.7 Monitoring of Ground Power performance to be reported annually in APR. Paragraph 1.6 confirms the monitoring approach is described in the Air Quality Management Strategy (AQMS) (condition 58). Relevant measures in the AQMS are: 1, 2 and 3.	Approved Document	44 AOD para 1.7 58 AOD para 1.5	Environment	Summary in text and report in Annex	Section 2.5 Annex 2 NOMMS Annex 6 Air Quality Action Plan Progress Update
Condition 47 AOD Auxiliary Power Units Strategy (February 2020) –para 1.9 Report annually as part of the APR all current aircraft operational at the airport which require essential use of APUs and APU run times that have ran for longer than specified in the Airport Operating Instructions	Condition & Approved Document	47 AOD para 1.9 31 31 AOD Appendix D	Environment	Report in Annex	Annex 2 NOMMS Section 8.0 & Appendix 7 Annex 6 Air Quality Action Plan Progress Update

Requirements	Source: Approved Document or Condition	Condition /AOD References	APR Section	Format	APR Reference/ Source
Approved PCCS (AODS)					
Condition 48 AOD Ground Engine Running Strategy (September 2020) - paras 4.1.3 and 6.2.1 A report as part of the APR on the performance and or compliance during the previous calendar year with the approved targets in the Ground Engine Running Strategy. To compare against the stated targets, by aircraft type and airline, including the: average engine running time on stands; average time for aircraft to taxi into a stand on arrival; and average time from an aircraft leaving a stand to the time of departure.	Condition & Approved Document	48 AOD paras 4.1.3 and 6.2.1 31 31 AOD Appendix D	Environment	Summary in text and report in Annex	Section 2.5 Annex 2 NOMMS Section 5.2 & Appendix 5
Condition 49 AOD Ground Running, testing and Maintenance Strategy (October 2020) – para 5.1.1. A report as part of the APR recording engine ground running during the preceding calendar year, including details of the number, duration and power setting of ground runs and the types of aircraft involved and written measurements and calculations to show whether the Ground Running Noise Limit has been exceeded during the preceding calendar year.	Condition and Approved Document	49 49 AOD para 5.1.1 31 31 AOD Appendix D	Environment	Summary in text and report in Annex	Section 2.5 Annex 2 NOMMS Section 5.3 & Appendix 5
Condition 51 AOD Ground Running Noise Limit Strategy (January 2017) - para 4.1.2 Provide written measurements and calculations in the APR to show whether the Ground Running Noise Limit is being approached.	Condition & Approved Document	51 A0D para 4.1.2 52 48 49 31 AOD Appendix D	Environment	Summary in text and report in Annex	Section 2.5 Annex 2 NOMMS Section 5.0 & Appendix 5
Condition 56 AOD Sustainability and Biodiversity Strategy (March 2021) – para 1.8 Report on the individual targets in the APR.	Condition & Approved Document	56 56 AOD para 1.8 70 AOD para 4.7	Environment	Summary in text and report in Annex	Section 2.11 Annex 7 Sustainability and Biodiversity Action Plan Progress Update
Condition 57 AOD Air Quality Monitoring Strategy (December 2020) – para 2.11 Include the annual Air Quality Monitoring Report in the APR	Condition & Approved Document	57 57 AOD para 2.11	Environment	Summary in text and report in Annex	Section 2.6 Annex 5
Condition 58 AOD Air Quality Management Strategy (March 2021) - Measures 1 to 18 – para 1.5 Progress on each measure/target will be set out in the APR each year. All targets and strategies are set out in Box 1 of the approved strategy.	Approved Document	58 AOD para 1.5 31 AOD, H.3 44 AOD para 1.7	Environment	Report in Annex	Annex 6 Air Quality Action Plan Progress Update

Requirements	Source: Approved Document or Condition	Condition /AOD References	APR Section	Format	APR Reference/ Source
Approved PCCS (AODS)					
Condition 60 AOD Use of River Thames For Construction – Para 4.2 Report the number of vehicles taken off the road each year as part of APR.	Approved Document	60 AOD para 4.2	Environment	Summary in text	Section 4.3
Condition 70 AOD Waste Management Strategy – Para 4.7 Report progress annually on the targets for the management and recycling of CADP1 construction wastes.	Approved Document	70 AOD para 4.7 56 56 AOD para 1.8	Environment	Summary in text and report in Annex	Section 2.11 Annex 7 Sustainability and Biodiversity Action Plan Progress Update (measure WST1)
Condition 71 AOD Travel Plan (November 2019) – Paras 5.8 & 5.16 Results of passenger and staff travel surveys will be included within the APR.	Approved Document	71 AOD paras 5.8 & 5.16	Surface Access	Summary in text	Section 4.2

Requirements	APR Section	Format	APR Reference/ Source
SECTION 106 PLANNING AGREEMENT			
Schedule 8 produce noise contours – Para 2 (30 Noise Monitoring System & 31 NOMMS – Appendix F) Publish noise contours each year as part of the APR (to include 54dB contour), noise contours for the Sound Insulation Scheme & produce annual daytime noise contours depicting air noise produced during an average summer day following defined method.	Environment	Contours in Annex and summary in text	Section 2.7 Annex 2 NOMMS Section 7 and Appendix 6
Schedule 9 Purchase Offer – Para 8.2 - any residential dwelling with any part of its external elevation which is situated within the actual 69dB contour for the purposes of the purchase scheme and within three months of that date they shall notify the owner/occupier of any dwelling so identified in the APR that they are entitled to benefit from the purchase scheme and invite applications from the owner/occupier under the purchase scheme.	Environment	Summary in text and report in Annex	Section 2.7 Annex 2 NOMMS Section 10 and Appendix 9
Schedule 9 Reinspection Scheme – Para 5.3 - a list of properties which have become eligible for the Reinspection Scheme in the preceding 12 months.	Environment	Summary in text and report in Annex	Section 2.7 Annex 2 NOMMS Section 10 and Appendix 9
Schedule 11 – Para 1.3 Provide list of existing employers	Employment	Summary in text and schedule in Annex	Section 3.2 Annex 8
Schedule 11 – Paras 1.5 Report job numbers and target performance to LBN and LCACC (a) the percentage of jobs advertised at the Airport in the preceding calendar year to which residents living (i) in the Local Area; and (ii) the London Borough of Newham were recruited; (b) the percentage of jobs advertised by the Operator in the preceding calendar year to which residents living in (i) the Local Area; and (ii) the London Borough of Newham were recruited; (c) the numbers of full-time equivalent jobs at the Airport and the number of full-time equivalent jobs made available directly by the Operator; (d) the total number of full-time and part-time employees at the Airport and those employed directly by the Operator	Employment	Stats in text	Sections 3.2 and 3.3
Schedule 11– Para 3.2 Maximise supply chain opportunities for LBN and local area businesses and report progress (a) the number of contractors being used on site; and (b) details of those based in Newham and the remainder of the Local Area; (c) name and postcode of contractor/supplier; and (d) the aggregate values of different categories of contracts	Employment	Stats in text and list in Annex	Sections 3.4 & 3.5 Annex 8

Requirements	APR Section	Format	APR Reference/ Source
SECTION 106 PLANNING AGREEMENT			
Schedule 11 – Recruitment Policy – Para 1.4 - to continue to provide the Council annually with details in writing of the policy adopted by the Operator to fill its job vacancies and the Operator shall consult the Council about such policy on not fewer than one occasion each year in conjunction with the APR	Employment	Summary in text and policy in Annex	Section 3.3 Annex 10
Schedule 12 Value Compensation Scheme (VCS 1) - which payments have been made under VCS 1	Financial Contributions	Summary in text	N/A for 2021
Schedule 12 VCS 2 - which payments have been made under VCS 2 + The existence of the adopted VCS2 and its closing date will be published by its inclusion in the annual performance report which the Airport is obliged to publish every year and (within three months of the start of VCS2) through written notification of the owners of Eligible Interests in Eligible Sites, insofar as the Airport is able to identify them through Land Registry searches.	Financial Contributions	Summary in text	N/A for 2021
Schedule 9 NIPS 1 para 6.2 - which payments have been made under NIPS 1	Financial Contribution	Summary on text, report in Annex	Section 5.2 Annex 2, para 10.3
Schedule 9 NIPS2 para 7.2 - which payments have been made under NIPS 2	Financial Contribution	Summary in text, report in Annex	Section 5.2 Annex 2, para 10.3
Annexure 2 – First Tier Scheme - para 3.1 - with effect from the Commencement of Development the APR shall specify the geographic area within which the properties which are eligible for this Scheme are situated.	Compensation	Summary in text, report in Annex	Section 2.7 Annex 2
Annexure 3 – NIPS – para 3.8 - the existence of NIPS (once adopted) will be published by its inclusion in the APR	Compensation	Summary in text and link to LCY website	Section 5.2
Annexure 4 – NIPS2 – para 3.8 - the existence of NIPS2 (once adopted) will be published by its inclusion in the APR	Compensation	Summary in text	Section 5.2
Annexure 7 – Second Tier Noise Insulation Scheme – para 3.1 - the geographic area within which the properties which are eligible for this Scheme are situated.	Compensation	Summary in text, report in Annex	Section 2.7 Annex 2 NOMMS

Requirements	APR Section	Format	APR Reference/ Source
SECTION 106 PLANNING AGREEMENT			
Annexure 8 – VCS – para 5.1 - written notification of the owners of Eligible Interests in Eligible Sites, insofar as the Airport is able to identify them through Land Registry searches.	Compensation	Summary in text and link to LCY website	Section 5.2
Annexure 9 – VCS2 – para 5.1 Publicise existence of VCS2 and closing date in APR and written notification of the owners of Eligible Interests in Eligible Sites, insofar as the Airport is able to identify them through Land Registry searches.	Compensation	Summary in text and link to LCY website	Section 5.2
Annexure 12 – Intermediate Tier Scheme – para 3 - specify the geographic area within which the properties which are eligible for this Scheme are situated.	Compensation	Summary in text, report in Annex	Section 2.7 Annex 2
Schedule of Payments Made	Financial Contributions	Summary of annual payments in text	Section 5.1

Requirements	Source: Approved Document or Condition	Condition /AOD References	APR Section	Format	APR Reference/ Source
Conditions					
19 Review and Reporting on Aircraft Noise Categorisation Scheme (ANCS) A report as part of the APR on the performance and/or compliance with the approved ANCS during the previous calendar year.	Condition & Approved Document	19 18 AOD paras 1.1.21, 4.1.3 & 5.2.2	Environment	Summary in text and report in Annex	Section 2.2 Annex 3 ANCS Report
31 Noise Management and Mitigation Strategy (NOMMS) Report on the performance and compliance with the approved NOMMS during the previous 12 months in the APR	Condition & Approved Document	31 31 AOD 18 AOD para 5.2.2	Environment	Summary in text and report in Annex	Sections 2.3, 2.4 & 2.12 Annex 2 NOMMS
47 Auxiliary Power Units A report containing details of the use of Auxiliary Power Units at the Airport in the previous calendar year	Condition & Approved Document	47 AOD para 1.9 31 AOD-H3	Environment	Report in Annex	Annex 2 NOMMS Section 8.0
48 Ground Engine Running Strategy (September 2020) A report as part of the APR on the performance and or compliance during the previous calendar year with the approved targets in the Ground Engine Running Strategy.	Condition & Approved Document	48 48 AOD para 6.2.1 31 AOD Appendix D	Environment	Summary in text and report in Annex	Annex 2 NOMMS Section 5.2 & Section 2.5 Appendix 5
49 Ground Running, Testing and Maintenance Strategy A report as part of the APR on the performance and or compliance during the previous calendar year with the targets in the Ground Running, Testing and Maintenance Strategy.	Condition & Approved Document	49 49 AOD para 5.1.1 31 AOD Appendix D	Environment	Report in Annex	Annex 2 NOMMS Section 5.3 & Appendix 5
52 Ground Running Annual Performance Report A report as part of the APR, including details of the number, duration and power setting of ground runs and the types of aircraft involved and written measurements and calculations to show whether the Ground Running Noise Limit has been exceeded as a result of Ground running during the preceding calendar year.	Condition	52 51 AOD para 4.1.2 48 AOD para 6.2.1 49 AOD para 5.1.1 31 AOD Appendix D	Environment	Summary in text and report in Annex	Section 2.5 Annex 2 NOMMS 5.3 Appendix 5
56 Sustainability and Biodiversity Strategy A report as part of the APR on the performance and compliance during the previous calendar year with the targets in the approved Sustainability and Biodiversity Strategy.	Condition	56 56 AOD para 1.8	Environment	Report in Annex	Annex 7 Sustainability and Biodiversity Action Plan Progress Update
57 Air Quality Monitoring Report annually as part of the APR	Condition & Approved Document	57 57 AOD para 2.11	Environment	Summary in text and report in Annex	Section 2.6 Annex 5 2021 Air Quality Annual Monitoring Report
59 Complaints About Environmental Impact Report in the APR all complaints and any action taken in the preceding calendar year.	Condition	59 31 31 AOD A.7	Environment	Summary in text	Section 2.12

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Annex 2

Noise Management and Mitigation Strategy (NOMMS) Report

LONDON CITY AIRPORT

Bickerdike Allen Partners LLP is an integrated practice of Architects, Acousticians, and Construction Technologists, celebrating over 50 years of continuous practice.

Architects: Design and project management services which cover all stages of design, from feasibility and planning through to construction on site and completion.

Acoustic Consultants: Expertise in planning and noise, the control of noise and vibration and the sound insulation and acoustic treatment of buildings.

Construction Technology Consultants: Expertise in building cladding, technical appraisals and defect investigation and provision of construction expert witness services.

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1.0 INTRODUCTION

The City Airport Development Programme (CADP1) planning application (13/01228/FUL) was granted planning permission by the Secretaries of State for Communities and Local Government and Transport in July 2016 following an appeal and public inquiry which was held in March/April 2016.

Condition 31 of this permission states that:

"Prior to the Commencement of Development a Noise Management and Mitigation Strategy (NOMMS) shall be submitted to the Local Planning Authority for approval in writing.

The NOMMS shall be implemented as approved and thereafter the Airport shall only operate in accordance with the approved NOMMS.

Following implementation of the approved NOMMS, a report shall be submitted to the Local Planning Authority annually on 1 June (or the first working day thereafter) as part of the Annual Performance Report on the performance and compliance with the approved NOMMS during the previous 12 month period.

The approved NOMMS shall be reviewed not later than the 5th year after approval and every 5th year thereafter. The reviews shall be submitted to the Local Planning Authority within 3 months of such review dates for approval, and implemented as so approved.

The NOMMS shall include, but not be limited to:

- *Combined Noise and Track Monitoring System*
- *Quiet Operating Procedures*
- *Penalties and Incentives*
- *Control of Ground Noise*
- *Airport Consultative Committee*
- *Annual Noise Contours*
- *Integrity of NOMMS*
- *Auxiliary Power Units*
- *Reverse Thrust and*
- *Sound Insulation Scheme"*

The NOMMS which addresses the above requirements was formally approved by the London Borough of Newham (LBN) on 18 May 2017 and was implemented on 18 August 2017. The latest version of the NOMMS was approved on 23 April 2019 (LBN reference 19/00835/AOD).

This report reviews the performance and compliance with the NOMMS in 2021, as part of the Condition 31 requirements.

Information is also provided on the number of aircraft movements that have taken place at London City Airport (LCA) over the period 1st January 2021 up to and including 31st December 2021, to show compliance with Conditions 21 to 27.

2.0 COMBINED NOISE AND TRACK MONITORING SYSTEM

2.1 Noise Monitoring

A continuous noise monitoring system was first installed and became operational at the airport in 1992, and a system of this type has been in place ever since. Since 1999 it has also included a flight track monitoring system and has been known as the Noise and Track Keeping (NTK) system. The noise monitoring system has since been upgraded and expanded and now comprises six fixed noise monitoring terminals (NMTs) and three mobile NMTs. The fixed NMTs (NMTs 1-6) are used to measure arrivals and departures of aircraft using the airport. One of the mobile NMTs (NMT 7) is used primarily for the monitoring of aircraft related ground noise. The other two mobile NMTs (NMTs 8 & 9) are used as and when required, either as back-up for the other NMTs or for off-site monitoring. The location of NMTs 1-7 is shown in Figure 1.

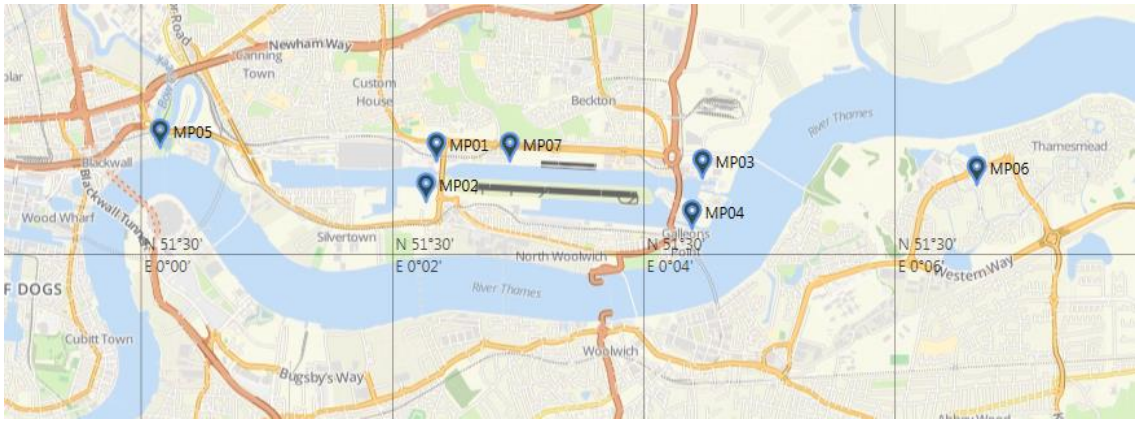

Figure 1: Location of NMTs 1-7

Noise data is collected from the NMTs and processed for the purposes of aircraft monitoring and also noise management. The NTK system is designed to ensure that a minimum correlation rate of 80% of all aircraft departures is achieved over the calendar year. Quarterly NTK status reports are issued to the London Borough of Newham, reporting on the correlation rate achieved over the quarter as discussed in 2.3 below.

The average departure and arrival noise levels measured in 2021, by aircraft type and airline, are reported elsewhere as part of the Aircraft Noise Categorisation Scheme (ANCS) summary.

2.2 Flight Track Monitoring

The flight track monitoring component of the system is permanently linked to the airport's radar feed, which is provided by the Air Traffic Control (ATC). Aircraft flight tracks are correlated with

flight information and noise events. Based on this information, the airport use a web-based system (known as TRAVIS[1]) to share data from the flight track monitoring system with the public.

Flight tracks are capable of real-time inspection and are also stored for later processing and analysis. This allows deviations from the departure and arrival flight paths at the airport both in plan and elevation to be determined. The airport are required to maintain a log of 'off track' departures that do not stay within a certain distance of the agreed routes, with the aim of working towards achieving at least 95% of all departures within agreed swathes.

LCA do not currently operate noise preferential routes such as those that are in place at some other airports. In the absence of an agreed swathe to assess against, analysis has been carried out on the tracks flown in 2021 in order to identify any aircraft which appear to be 'off track'. This analysis is presented in Appendix 1 and summarised in this section.

2.2.1 Runway 27 Departures

Departures using Runway 27 initially go straight before turning right to head east. All Standard Instrument Departures (SIDs) follow the same route initially. To illustrate the spread of aircraft departing from Runway 27 during 2021, track plots are presented by quarter in Appendix 1.

For runway 27 departures, a 2 km wide gate has been set up in the track keeping system at the location of NMT 5.

In 2021 all departures except four passed through the gate. The exceptions are detailed in Table 1 below.

Date	Departure Time	Aircraft Type	Airline	SID
07/08/2021	08:50	E190	CFE	DVR
14/10/2021	16:56	C680	NJE	BPK
18/10/2021	20:02	AT45	LOG	BPK
01/12/2021	15:32	C25B	JNL	CLN

Table 1: Runway 27 Off Track Departures, 2021

2.2.2 Runway 09 Departures

Departures using Runway 09 initially go straight before following departure routes that diverge soon after depending on which SID is being followed. There are two distinct initial routes; the DVR, CLN and LYD SIDs turn towards the north-east whereas the BPK and CPT SIDs turn towards

[1] https://travislcy.topsonic.aero/

the north west soon after departure. For the purpose of this analysis, these have been treated as two routes, a north-east one and a north-west one. Track plots are presented by quarter in Appendix 1.

For the north-east SIDs, a 2 km wide gate has been established at the location of NMT 6 and set up to coincide with the extended centreline of the runway, similar to the corresponding gate for NMT 5. In 2021, all departures except one following the DVR, CLN and LYD SIDs passed through this gate before turning north. The exception is detailed in Table 2 below.

For the north-west SIDs, aircraft commence a turn as they track over NMT 6, so a 2 km wide gate has been established prior to the turn commencing. In 2021, all departures except two following the BPK and CPT SIDs passed through this gate. The exceptions are detailed in Table 2 below.

Date	Departure Time	Aircraft Type	Airline	SID
21/06/2021	09:06	AT5	LOG	BPK
29/10/2021	09:18	AT45	LOG	BPK
15/11/2021	16:56	P180	XGO	LYD

Table 2: Runway 09 Off Track Departures, 2021

2.3 NTK Status

Prior to the implementation of NOMMS, under paragraph A6.0 of the approved Temporary Noise Monitoring Strategy, the airport was required to provide quarterly reports on the status of the NTK system (NMTs 1-4) to the local authority. Each report was required to record the daily operational status of each Noise Monitoring Terminal (NMT) together with the total monthly correlation rate of noise events to aircraft departures over a specified quarter year period.

Although no longer a planning condition, at the request of the London Borough of Newham (LBN), the airport have agreed to continue providing these reports, and also to include the status of NMTs 5 & 6.

Table A2.1 of Appendix 2 of this report details the daily operational status of each of NMTs 1-6 between 1st January 2021 and 31st December 2021. Table A2.2 sets out the monthly correlation rate of noise events to aircraft movements for the same period, and Table A2.3 gives a summary of the NTK operational status for each quarter.

The noise monitoring system remained in continuous operation throughout the whole twelve month period between 1st January 2021 and 31st December 2021. Each noise monitoring

terminal was in operation every day with the exception of NMT 2 on 15th January 2021 and from 15th December 2021 to 19th December 2021. In both cases this was due to a failure of the power supply.

The target correlation rate (80%) for departures measured at NMTs 1-4 was met for 2021. A total of 6,866 aircraft departures were recorded, and an average correlation rate of noise events to aircraft departures of 95% was achieved.

A total of 6,887 (95%) departures and 6,941 (95%) arrivals were correlated at NMTs 5 and 6 in 2021.

3.0 QUIET OPERATING PROCEDURES

The airport requires that every operator of aircraft adopt procedures which will produce the least noise disturbance compatible with safe operation, and where applicable, such procedures should follow any promulgated noise abatement routing for the airport. Where aircraft manufacturers have established special procedures for the purposes of reducing noise, these should be applied to operations at London City Airport, subject always to the safe operation of aircraft.

Quiet operating procedures at London City Airport include the following:-

- Minimum use of reverse thrust (see Section 9.0)
- Use of fixed electrical ground power where possible (see Section 8.0)
- Minimum use of auxiliary power units (see Section 8.0)
- Operation of a steep glide slope (5.5 degrees)
- An EFPS (Electronic Flight Progress Strips) system (see Section 5.0).

4.0 INCENTIVES AND PENALTIES SCHEME

4.1 Scheme Details

The NOMMS includes an Incentives and Penalties Scheme (IPS) which has financial penalties for noisy departures. The IPS was implemented on 18 August 2017 and was intended to introduce a more equitable approach to determining penalties and credits by utilising the fixed noise monitors at either end of the runway (NMTs 5 and 6) to monitor departure noise levels. The IPS focuses on incentivising quieter operation of aircraft on departure and penalising noisy departures.

The scheme works as follows:

- The flyover noise level for a given departure is defined as the $L_{Amax,s}$ noise level measured at the relevant NMT (NMT 5 for runway 27 departures, and NMT 6 for runway 09 departures).
- The measured noise levels are compared with the thresholds given in Table 3.
- If the Fixed Penalty Limit is exceeded, the airline responsible is fined £600[2] per dB(A) of exceedance, and one credit point is removed from the airline's credit account.
- If the Fixed Penalty Limit is not exceeded, but the Credit Removal Threshold is exceeded, one credit point is removed from the airline's credit account.
- If the Credit Award Threshold is not exceeded, one credit point is added to the airline's credit account.
- An airline may avoid a fixed penalty or credit removal for a particular flight, if they are able to provide a reasonable explanation for the noisy departure. Each exceedance event is considered on a case by case basis to establish whether or not a penalty or credit removal is applied.
- An airline's credit account is reset to zero at the beginning of each calendar year.

The fines for exceeding the Fixed Penalty Limit are paid into London City Airport's Community Fund, and are added to the annual contribution of £75,000 provided to the fund by LCA. The most improved airline each year, as determined by this review, partners the airport in delivering the fund.

The current penalty and credit limits (noise levels) are set out in Table 3 below.

[2] Fines were not payable prior to 1st November 2018

Threshold Description	Aircraft Category	Flyover Noise Level, dB L_{ASmax}	
		Runway 09	Runway 27
Fixed Penalty Limit	Turbofans	84	84[1]
	Turboprops	78	78
Credit Removal Threshold	Turbofans	81	82
	Turboprops	75	77
Credit Award Threshold	Turbofans	73	72
	Turboprops	66.5	65.5

[1] If aircraft is between 100m and 300m north of the extended runway centreline, a 0.2 dB reduction is applied to the measured noise level

N.B. All noise limits are expressed as dB L_{ASmax}

Table 3: IPS Fixed Penalty Noise Limits and Credit Thresholds

4.2 Community Fund

The Community Fund grant provides a financial boost to local groups, such as mental health charities, disability groups, community gardens and sports teams as well as those providing family support, mentoring programmes and employability training. The Community Fund awarded over £75k in 2021, to 26 organisations, including NASSA, Carita's Anchor House, Made in Hackney, Learning Revolution Trust, Disability Sports Coach, and more. A full list is available on the airport website[3].

Applications are considered twice a year by a board of Trustees from London City Airport and representatives from the local community, as well as an independent chair. This means that with great local insight and expertise, the Trustees evaluate applications using their knowledge to ensure the greatest possible benefit goes to the community.

To qualify for any of the available Grant, an applicant has to be a charity or not for profit organisation and the project is expected to meet one or more of the following criteria:

- build stronger, safer and healthier communities;
- create more sustainable and greener communities;
- raise aspirations of East Londoners; or

[3] https://www.londoncityairport.com/corporate/responsible-growth/community-fund

- create pathways into employment.

The Community Fund advertises in local newspapers including, Newham & Stratford Recorder, Barking and Dagenham Post, Wharf Life and South London press & Mercury Paper. An example of the advert is reproduced in Figure 2. The fund was also advertised to local MPs and councillors to cascade the information and encourage charities and not-for profit organisations to apply.

Figure 2: Example of Community Fund Advert

4.3 Scheme Review

The NOMMS IPS is subject to an annual review. The review shall consider amongst other matters, the efficacy of the noise limits and threshold values, the suitability of the financial penalty, and the effectiveness of the noise threshold system as a component of the LCA NOMMS scheme. Written agreement shall be received from LBN prior to the introduction of any modifications to the system.

A review of the scheme is due to be carried out in Q2 of 2022.

4.4 Reporting

A summary of the number of fixed penalties, credit awards and credit removals by month is given in Table 4.

Month	Fixed Penalties (# aircraft)	Fixed Penalties (total value)	# Credits Removed	# Credits Awarded
January	0	£0	0	23
February	0	£0	0	8
March	0	£0	0	18
April	0	£0	0	49
May	0	£0	0	35
June	0	£0	0	46
July	0	£0	0	44
August	0	£0	0	43
September	0	£0	0	126
October	0	£0	1	161
November	0	£0	0	139
December	0	£0	2	146
Total	**0**	**£0**	**3**	**838**

Table 4: Monthly Penalties, Credit Removals and Credit Awards, 2021

The number of residual credits is given for the most commonly operating airlines (those with at least one departure per week on average) in Table 5. These are based on the thresholds given in Table 3. Full details of the fixed penalties, credit awards and credit removals for 2021 are given by airline and aircraft type in Appendix 3.

Airline	Residual Credits 2021	Residual Credits 2020	Residual Credits Difference 2021 - 2020
Netjets Europe	232	173	59
Luxair	38	27	11
GlobeAir	51	44	7
Loganair	6	4	2
LOT Polish Airlines	5	8	-3
KLM Royal Dutch Airlines	36	56	-20
Swiss	125	153	-28
Lufthansa	11	47	-36
BA Cityflyer	80	171	-91

Table 5: 2021 Residual Credits Ranking

The most improved airline has been determined by comparing the total residual credits in the two years. Therefore, Netjets Europe will partner LCA in delivering the Community Fund in 2022.

5.0 CONTROL OF GROUND NOISE

5.1 General

The airport seeks to ensure as far as reasonably practicable that every aircraft operator adopts the operating practice which generates the least amount of noise from aircraft taxiing, manoeuvring or holding on stand, at the runway, and prior to take off, subject to the requirement of ensuring the safe operation of the aircraft at all times, all in accordance with the procedures set out in the Ground Engine Running Strategy in compliance with CADP1 Planning Condition 48. This should involve the minimum power settings necessary and, in the case of propeller aircraft, pitch settings should as far as possible be those which produce the least propeller noise.

The introduction of nose-in parking at LCA is currently under consideration. This procedure is expected to have a negligible effect on the future ground noise levels around LCA. This is because in general terms, the ground noise generated by an aircraft parking and departing a stand when nose in manoeuvring will differ little, albeit it will be possibly marginally less at a receptor, as compared to when self-manoeuvring.

An Electronic Flight Progress Strips (EFPS) system is in operation at LCA which provides the ability to monitor the time that aircraft operate engines on the ground, from engine start-up until the time of departure and following the time of landing until engine shut-down. The time of any engine ground running on the apron for maintenance purposes is also monitored. Any excessive or unnecessary operation of aircraft engines is investigated by the airport.

5.2 Ground Engine Running Strategy

Ground engine running relates to the use of aircraft engines from the time of engine start-up prior to departure, during taxiing and during holding, to the time of departure. Similarly, it relates to the time following an aircraft arrival from the time when it has reduced to taxiing speed on the runway, or when the aircraft turns off the runway, whichever occurs first, to the time when an aircraft switches off its engines on a stand.

The Ground Engine Running Strategy requires that ground engine running by aircraft is to be undertaken with the minimum amount of power and for the minimum amount of time as practically possible (except when operational or safety requirements dictate otherwise) to reduce noise emissions from the use of aircraft engines while on a stand, while taxiing or while holding at any point around the airport, all in accordance with procedures and requirements set out in Airside Operating Instruction (AOI) 06 Apron Management.

The following parameters were required to be reported under the strategy in 2021:

5.2.1 Average Engine Running time on Stands (ERS)

This is the time taken for an aircraft to operate its engines, once approval to start has been given, to the time of pushback from the stand, and is required to be reported for each airline and aircraft type, with a target to keep it below 7.5 minutes on average.

Where ERS times are found to exceed 7.5 minutes on average over a quarter on a regular basis for a given aircraft type and airline, the relevant airline will be contacted to seek an explanation and to identify ways of ensuring ERS time is reduced as far as practicable. The average time by aircraft type and airline is given in Appendix 4.

The overall average ERS time for 2021 was 4 minutes and 15 seconds. There were no airline/aircraft combinations with a minimum of one result per week which on average exceeded an ERS time of 7.5 minutes.

5.2.2 Average Taxi Time on Arrival (TTA)

This is the time between an aircraft arriving at LCA and the time it arrives on the stand and is to be reported for each airline and aircraft type, with a target to keep it below 6 minutes on average.

Where the TTA is found to exceed 6 minutes on average over a quarter on a regular basis for a given aircraft type and airline, the relevant airline will be contacted to seek an explanation and to identify ways of ensuring the TTA is reduced as far as practicable. The average time by aircraft type and airline is given in Appendix 4.

The overall average TTA for 2021 across all aircraft was 3 minutes and 24 seconds. There were no airline/aircraft combinations with a minimum of one result per week which on average exceeded a TTA of 6 minutes.

5.2.3 Average Taxi Time on Departure (TTD)

This is the difference between the time of pushback on the stand and the time of departure and is to be reported for each airline and aircraft type, with a target to keep it below 11.5 minutes on average.

Where the TTD is found to exceed 11.5 minutes on average over a quarter on a regular basis for a given aircraft type and airline, the relevant airline will be contacted to seek an explanation and to identify ways of ensuring the TTD is reduced as far as practicable. The average time by aircraft type and airline is given in Appendix 4.

The overall average TTD for 2021 across all aircraft was 5 minutes and 47 seconds. There were no airline/aircraft combinations with a minimum of one result per week which on average exceeded a TTD of 11.5 minutes.

The Ground Engine Running Strategy was reviewed in 2020 and an updated strategy was formally approved by LBN in December 2020. The updated strategy no longer requires the reporting of average hold time and introduced targets for TTA and TTD.

5.3 Ground Running of Engines for Testing and Maintenance Purposes

The ground running of engines is required for testing and maintenance purposes. The airport is required to ensure that the noise level arising from aircraft ground running does not exceed the Ground Running Noise Limit of 60 dB $L_{Aeq,12h}$. This is assessed against the worst-case month of the year.

The running of aircraft engines is permitted only during the approved operating times for the airport. The running of engines at high power settings for the purposes of test and maintenance is carried out in accordance with the Ground Running Testing and Maintenance Strategy in compliance with CADP1 Conditions 49 and 50. Aircraft operators wishing to carry out high power engine runs must obtain prior approval from the Airfield Operations Duty Manager. Approval to start the engine run is given by ATC.

High powered engine runs have historically taken place in the engine ground running locations on stands 23 and 24. A verification report was submitted in January 2020 and approved by LBN to support moving the Ground Running Location(s) to the eastern-most stand in operation at the time, as the CADP1 development is built out. The Ground Running Location(s) in use on a certain date will depend on the progress of the CADP1 development.

It is normally preferable to carry out engine testing on the eastern-most stand for operational reasons. The verification report also retained the option to use stands further to the west if this is more beneficial operationally, as the noise impact at the worst-affected sensitive receptors would be the same or slightly lower. For example, it may be operationally preferable to continue to use Stand 24 for engine testing while construction of stands to the east is ongoing, in order to maintain safe distances between engine testing and the active construction site.

The airport records written details of ground running including details of the number, duration and power settings of ground runs (High and Low) and the types of aircraft involved.

In the event that the Ground Running Noise Limit is approached within 1 dB, proposals for the amelioration of this issue, for example undertaking ground running on alternative stands, will be submitted to LBN for their approval within 3 months of the identification of this risk and, thereafter, reported in the Annual Performance Report. Such measures shall ensure that

Ground Running complies with the Ground Running Noise Limit and, once approved by LBN, these measures shall be implemented within 6 months.

In the event that the Ground Running Noise Limit has been exceeded, proposals will be submitted to the Council for their approval for the carrying out of measures to ensure that Ground Running complies with the Ground Running Noise Limit and such approved measures shall be carried out in accordance with the approved time scale, all in accordance with the Ground Running Noise Limit Strategy.

Appendix 5 of this report sets out the official record of ground running of engines for test and maintenance for 2021 (Table A5.1), the summary of high power running for the same period (Table A5.2), and the prediction of ground running noise for comparison with the Ground Running Noise Limit. In 2021 LCA's ground running noise level was 51.8 dB $L_{Aeq,12h}$ which is 8.2 dB below the Ground Running Noise Limit of 60 dB $L_{Aeq,12h}$. Therefore no further action is required.

6.0 AIRPORT CONSULTATIVE COMMITTEE

The airport holds regular quarterly meetings with the London City Airport Consultative Committee (LCACC). The body of the committee is made up of representatives from the Council, public bodies, the airport and airport users, representatives for residents of local and neighbouring communities and non-voting attendees (present to provide advice to members as required, i.e. Metropolitan Police, Department for Transport).

The meetings are open and the committee's agendas and minutes are widely circulated and available on the LCACC website[4]. The meetings include reports on developments at the airport including changes in routes, flight and passenger numbers. There is a standing item on environmental issues including complaints, enquiries, noise monitoring and management and other requirements of the planning permission and Section 106 Agreement.

[4] http://lcacc.org/meeting-papers-key-documents/recent-minutes-of-meetings/

7.0 ANNUAL NOISE CONTOURS

The following noise contours are required to be produced as part of the APR, in order to assess eligibility under the various sound insulation schemes run by the airport:

- Actual average mode summer daytime for 2021
- Forecast average mode summer daytime for 2022
- Forecast average mode summer daytime for 2022, factored to account for the typical differences between the forecast and actual movements (referred to as "forecast reduced")

These noise contours, presented in Appendix 6, are all produced at values of 57, 63, 66, and 69 dB $L_{Aeq,16h}$. Additionally, the 54 dB $L_{Aeq,16h}$ contour is shown for the 2021 contour for information purposes, at the request of third parties during the CADP1 planning inquiry.

CADP1 Condition 33 requires that the area enclosed by the 57 dB $L_{Aeq,16h}$ actual average mode summer daytime contour shall not exceed 9.1 km^2.

The contours have been calculated by the Aviation Environmental Design Tool (AEDT) version 3d. The areas of each of the contours presented in Appendix 6 are given in Table 6.

Contour Value, dB $L_{Aeq,16h}$	Contour Area, km^2		
	2021 Actual Summer Average Mode	2022 Forecast Summer Average Mode	2022 Forecast Reduced Average Mode
54	3.4	10.9	10.5
57	1.7	6.1	5.8
63	0.9	3.1	2.9
66	0.5	1.6	1.5
69	0.3	0.9	0.8

Table 6: Contour Area Results

This demonstrates that LCA operated within their contour area limit in 2021 and are forecast to continue to do so in 2022.

8.0 AUXILIARY POWER UNITS

A number of aircraft using the airport require from time to time the use of their onboard auxiliary power units (APUs). The needs for usage of these power units as opposed to portable ground power units or the airport's fixed electrical power are varied.

The typical need is to condition the aircraft cabin when temperatures become uncomfortable as fixed electrical power cannot normally be used for that purpose. In this case, the airport policy is that the maximum running time for an APU should not exceed 10 minutes prior to departure. Permitted use of the APU is contained in Airside Operating Instruction (AOI) 07.

The other need arises when there is an incompatibility between aircraft systems and the fixed electrical power supply. The need to maintain the same source of supply to avoid interference with aircraft on board computer systems has been raised by users. There is also the rare occurrence where for technical reasons the airport's fixed electrical supply is not available.

The airport has fixed electrical ground power (FEGP) at Stands 1-10 and 15. Prior to 30th June 2021, all other stands were serviced by mobile diesel ground power units. Following a delay in delivery due to technical faults, all stands that don't have FEGP are now serviced using battery-powered Mobile Ground Power Units, and the diesel units have been removed from the airport.

Appendix 7 sets out details of the aircraft types that may require use of their auxiliary power units (APU) to supplement the fixed ground power that is provided by the airport when an aircraft is on a stand on the apron.

9.0 REVERSE THRUST

The use of reverse thrust on the landing roll should be kept to the minimum required for the necessary deceleration of the aircraft and within the limits of the airline's standard operating procedures.

A new requirement as part of the CADP1 planning consent is that any instance of unusual or excessive use of thrust reversers will be investigated by the airport and a report generated. This will make reference to noise data collected at NMT 7, which has been installed for this purpose.

Noise events at NMT 7 are triggered by arriving aircraft. These are then correlated with the aircraft movement data. Many of these noise events are caused by arrivals which did not use reverse thrust, particularly those using runway 09. The loudest events are investigated to determine whether there were cases of unusual or excessive use of reverse thrust. When this is found to have been the case, the airport contacts the airline and seeks an explanation in order to minimise future occurrences.

BAP carried out a review of the NMT 7 data collected for the 12 month period from July 2017 to June 2018 in order to determine a suitable noise threshold above which events will be investigated. This has been defined as 88 dB L_{ASmax} for runway 09 arrivals and 90 dB L_{ASmax} for runway 27 arrivals.

4 aircraft arrivals exceeded these thresholds at NMT 7 in 2021. Details of these are presented in Table 7.

Date	Arrival Time	Runway	Aircraft Type	Airline	NMT 7 Noise Level, dB L_{ASmax}
19/02/2021	19:37	27	DH8D	LGL	91.2
17/10/2021	19:21	27	F2TH	PHJ	90.1
18/10/2021	17:17	27	GLEX	FYG	90.9
16/11/2021	19:29	27	FA7X	N11	92.0

Table 7: Log of Potentially Unusual or Excessive Reverse Thrust Use, 2021

Luxair (LGL) have been contacted and responded that reverse thrust was used for safety reasons in this case, due to unfavourable weather conditions. They confirmed that their procedure is that reverse thrust should only be used if deemed necessary for safety by the pilot in command of the aircraft.

The airlines which operate the business jet aircraft have responded that reverse thrust is routinely used for safety reasons when operating at LCA, however they are not aware of any unusual circumstances for the specific flights which led to a higher noise level.

Where responses are not received within a month of notification, follow up emails are sent and the issue will be escalated with the airline if necessary.

The distribution of measured noise levels at NMT7 in 2021 are presented in Appendix 8 for reference.

The airlines which operate the business jet aircraft have responded that reverse thrust is routinely used for safety reasons when operating at LCA, however they are not aware of any unusual circumstances for the specific flights which led to a higher noise level.

Where responses are not received within a month of notification, follow up emails are sent and the issue will be escalated with the airline if necessary.

The distribution of measured noise levels at NMT7 in 2021 are presented in Appendix 8 for reference.

10.0 SOUND INSULATION SCHEME

LCA are required to mitigate the impact of environmental noise on residential premises and public buildings as a result of airport operations. The Sound Insulation Scheme (SIS) offers the communities living close to the airport within the Scheme boundaries the opportunity to treat their homes and community buildings against noise.[5]

The airport previously operated a sound insulation scheme comprising a two tier system. Residential and Public Buildings became eligible under the scheme, subject to when they were built, when first exposed to air noise at the First Tier Eligibility Criterion of 57 dB $L_{Aeq,16h}$. Additional mitigation was offered at air noise exposure levels of 66 dB $L_{Aeq,16h}$.

As part of the CADP1 development, the airport improved the first tier of works, introduced an intermediate tier of treatment, and also upgraded the second tier to further protect those Residential and Public Buildings most affected by noise. The enhanced sound insulation scheme under CADP1 for Residential Buildings is summarised in Table 8 and described in more detail later in this section, alongside the other schemes in operation.

Scheme	Threshold ($L_{Aeq,16h}$)	Enhanced Scheme under CADP1
First Tier	57 dB	100% costs of secondary glazing or 100% costs of DG to existing single glazed properties, and acoustic vents
Intermediate Tier	63 dB	Secondary glazing and acoustic vents or £3000 (index linked) towards HPDG and acoustic vents
Second Tier	66 dB	100% costs of secondary glazing or HPDG in place of only a contribution to HPDG, and acoustic vents

DG – Standard thermal double glazing, HPDG – High (Acoustic) Performance double glazing

Table 8: Sound Insulation Schemes – Residential Buildings

No properties have become newly eligible for any of the schemes as shown in Appendix 9. This is because all properties within the actual contours for 2021, or the forecast reduced contours for 2022, were also inside the eligibility contours presented in the 2020 APR and therefore any eligible properties would already have been offered insulation.

[5] The full details of the Scheme (with CADP1) are documented within Annexures 2, 7 and 12 of the Section 106 Agreement dated 27th April 2016.

The first tier of works has been improved under CADP1 by ensuring any existing single glazed properties that are eligible under the scheme will be offered 100% of the cost for replacement standard thermal glazed windows or secondary glazing, whichever is preferred. Previously, only secondary glazing and acoustic vents were available to these single glazed properties. Residential premises in general will continue to be offered sound attenuating ventilators (acoustic ventilation) to provide background ventilation without the need to open windows.

The intermediate tier was a new requirement as part of the CADP1 permission. Under the intermediate tier works, for those residential properties that are already or become exposed to air noise at a level of 63 dB $L_{Aeq,16h}$, an offer of secondary glazing and acoustic ventilation will be made or alternatively, a contribution of £3,000 towards high performance acoustic double glazing and acoustic vents. Under this scheme, residents who prefer the high performance double glazing option may choose to treat only one or two rooms, such as those most affected by aircraft noise, as opposed to all rooms, to remain within the £3,000 budget available or they may use the £3,000 as a contribution towards more extensive works. Furthermore, this additional tier of works will be eligible to all existing dwellings exposed currently to 63 dB or more as well as any existing dwellings that come into the eligibility noise contour in the future.

For those most affected, that is those that become exposed to air noise at the Second Tier Eligibility Criterion of 66 dB $L_{Aeq,16h}$, they were previously offered improved secondary glazing or a monetary contribution of equivalent value towards high acoustic performance thermal double glazing, together with acoustic ventilation. The airport has enhanced the scheme under CADP1 to offer improved secondary glazing or a 100% contribution towards high performance double glazing, together with acoustic ventilation. This ensures that all of those most affected by noise are afforded the maximum noise protection opportunity. The airport will also inspect any previous treatments and rectify any damage caused by reasonable wear and tear.

An assessment of newly eligible properties is carried out every year as part of the Annual Performance Report and the eligibility boundaries are typically presented. In this 2021 APR there have been no newly eligible properties. The eligibility boundaries are presented in Appendix 6.

The scheme is delivered to eligible properties in accordance with a timescale agreed with the local authority and set out in detail in the Section 106 agreement. The timescales for treatment are devised as far as reasonably possible to ensure that the scheme will be delivered and in place by the time that residents become exposed to noise of 57 dB $L_{Aeq,16h}$ based on an average summer day. Second Tier and Intermediate Tier properties that are exposed to higher levels of noise will be treated as a priority in the new scheme.

The noise contours are produced annually (using actual summer-period operational data), compliant with approved European calculation methodology. The noise contours are used, along with information on when the properties were built, to determine eligibility for sound insulation treatment.

The sound insulation requirements of all public buildings in community use within the 57, 63 and 66 dB $L_{Aeq,16h}$ noise contours are assessed individually, based on the use of the building, the current and future levels of aircraft noise and recommended internal noise standards, and works agreed as necessary with the local authority.

Where new properties are granted planning consent within the airport's noise contours, the airport will encourage local planning authorities to incorporate published noise contours into decisions on new residential development, with a view to ensuring that acceptable noise levels will be achieved within new homes and other noise sensitive developments through the use of reasonable, robust and enforceable design standards.

10.1 Purchase Scheme

Any eligible properties that fall within the 69 dB $L_{Aeq,16h}$ noise contour will receive an offer from the airport to purchase the property at the open market value within 6 months of the owner/occupier making an application for the airport to do so[6].

Any properties that are found to lie within the current 69 dB $L_{Aeq,16h}$ noise contour will be identified and contacted in accordance with the Purchase Scheme's requirements. No properties fell within this contour in 2021.

10.2 Re-Inspection Scheme

For those eligible residential properties that were treated under the scheme at least 10 years ago, a free inspection is offered and provided previous treatments are unaltered, rectification works will be undertaken where appropriate to bring the sound insulation up to the standard when the treatment was originally undertaken[7]. 45 properties have been identified for reinspection in 2021. A list of these properties is provided in Appendix 9.

[6] The full details of the Scheme are documented within Annexure 5 of the Section 106 Agreement dated 27 April 2016 (with CADP1) and within Part 12 of the Fourth Schedule and Part 14 of the Ninth Schedule to the Section 106 Agreement dated 9 July 2009 (without CADP1).

[7] The full details of the Scheme are documented within Annexure 6 of the Section 106 Agreement dated 27 April 2016 (with CADP1) and Part 1 of the Fourth Schedule to the Section 106 Agreement dated 9 July 2009 (without CADP1).

10.3 Noise Insulation Payment Scheme (NIPS)

Developments which have received planning permission but have not yet been built may be eligible to receive a payment under the NIPS. The aim of the NIPS is to compensate landowners and developers for the reasonable incremental costs of supplying and fitting additional noise insulation measures at certain proposed developments to mitigate against the noise effects of the increase in aircraft movements permitted by the Airport's Planning Permission. There is a NIPS relating to the 2009 planning permission as well as the CADP1 planning permission (known as NIPS2). No claims were made in 2021 under either scheme.

11.0 AIRCRAFT MOVEMENT NUMBERS

Conditions 21 to 27 of the CADP1 planning permission of July 2016, which are reproduced in Appendix 10, detail the maximum number of actual and noise factored movements that are permitted at the airport.

The CADP1 planning permission allows up to 111,000 total aircraft movements per annum, including both scheduled and general aviation aircraft. The planning permission also contains specific limits on daily and weekly movements, as well as limits on the numbers of noise factored movements.

The airport is also required to record the numbers and types of aircraft that use the airport daily and submit aggregate figures to the Council on a quarterly basis. The daily records for the number of aircraft movements in 2021 are presented in Appendix 11, where they are compared with the relevant daily, weekly and annual limits.

Appendix 11 also presents the number of aircraft movements that took place each day during the restricted early morning periods of 06:30 to 06:44 hours and 06:30 to 06:59 hours, during the last operating period (late evening) of weekdays and Sundays from 22:00 to 22:30 hours and on Saturdays from 12:30 to 13:00 hours.

The data shows that throughout 2021, LCA has operated within its planning consent with regard to the number of daily and annual aircraft movements, including those during early morning and late evening periods, as well as weekly and annual noise factored movements.

Mike Pau	**Nick Williams**	**David Charles**
for Bickerdike Allen Partners LLP	**Associate**	**Partner**

APPENDIX 1
FLIGHT TRACK MONITORING

This appendix presents the flight track monitoring data for 2021, broken down by quarter.

Quarter 1

Figure A1.1 shows a heat map of all departures from LCA during the first quarter of 2021. The colour of each tile represents the number of aircraft that passed through it. The dark blue tiles represent the lowest frequency of departures and the red tiles represent the highest, as per the key in the bottom left of the image.

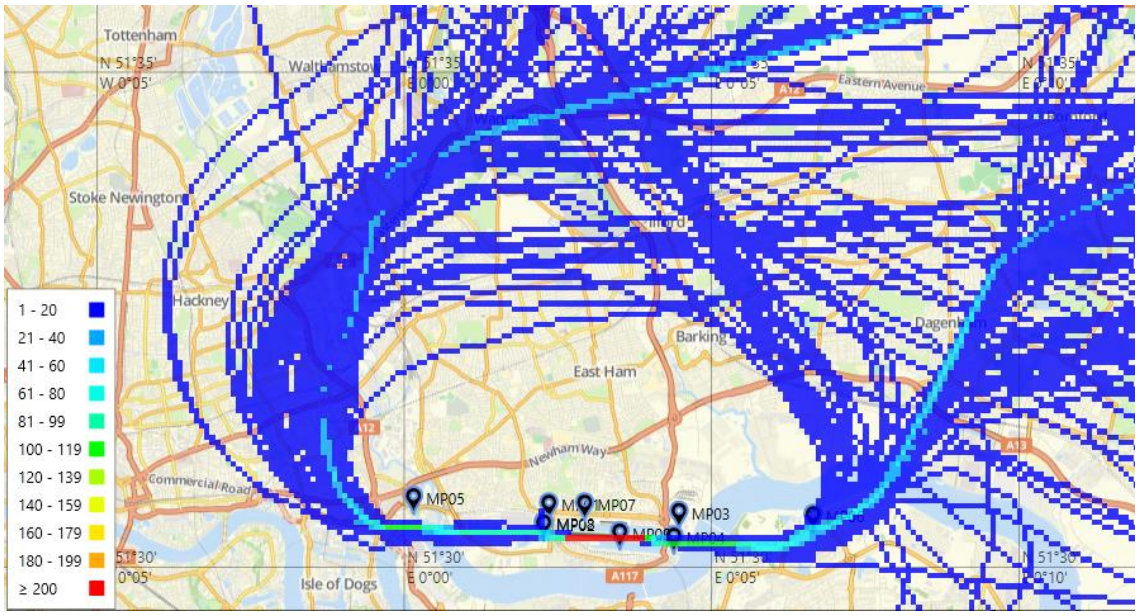

Figure A1.1: Departure Heat Map, 2021 Q1

Runway 27 Departures

Departures using runway 27 initially go straight before turning right (northwards) to head in a northerly or easterly direction. All Standard Instrument Departures (SIDs) follow the same route initially. Figure A1.2 illustrates the spread of aircraft departing from runway 27 during the first quarter of 2021.

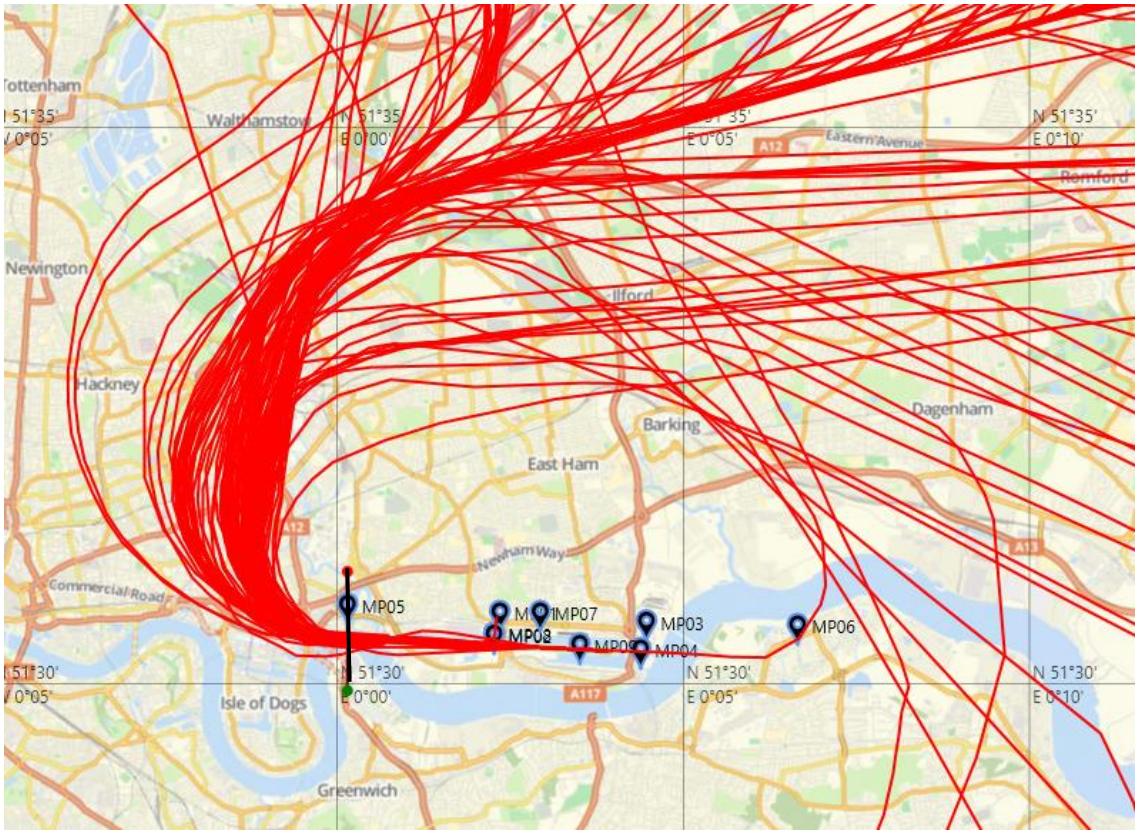

Figure A1.2: Runway 27 Departure Track Plot, 2021 Q1

A gate has been set up in the track keeping system at the location of NMT 5. The gate is 2 km wide and is shown in the above figure as a black line. The middle of the gate has been set up to coincide with the extended centreline of the runway.

All runway 27 departures passed through this gate in the first quarter of 2021.

<u>Runway 09 Departures</u>

Departures using Runway 09 initially go straight before following departure routes that diverge soon after departure depending on which SID is being followed. There are two distinct initial routes; the DVR, CLN and LYD SIDs turn towards the north-east whereas the BPK and CPT SIDs turn towards the north west soon after departure. For the purpose of this analysis, these have been split into two separate groups with track plots in Figure A1.3 and Figure A1.4.

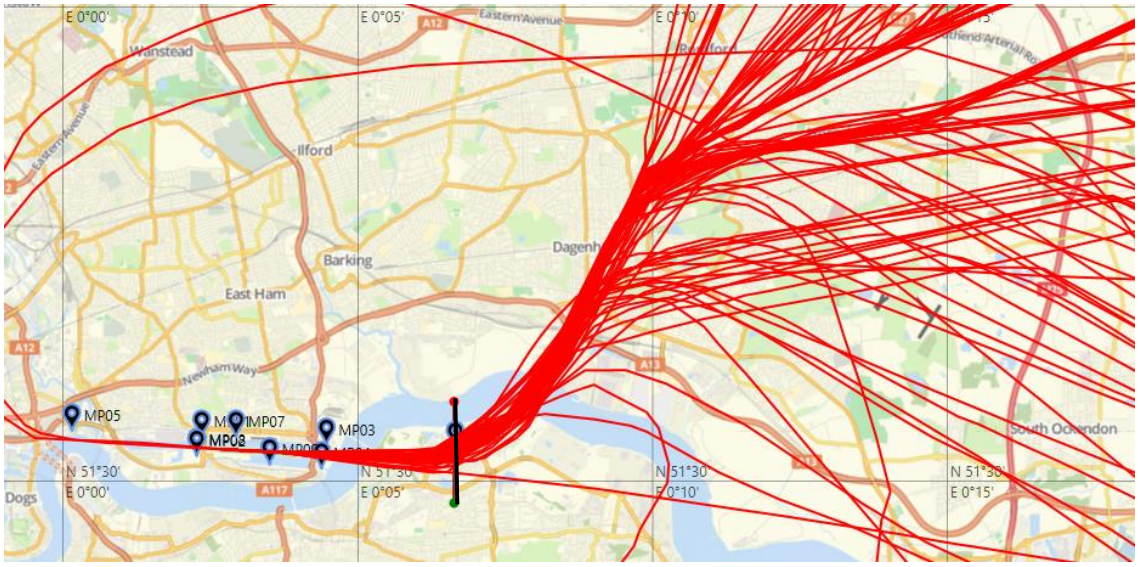

Figure A1.3: Runway 09 Departure Track Plot for 2021 Q1 – DVR, CLN and LYD SIDs

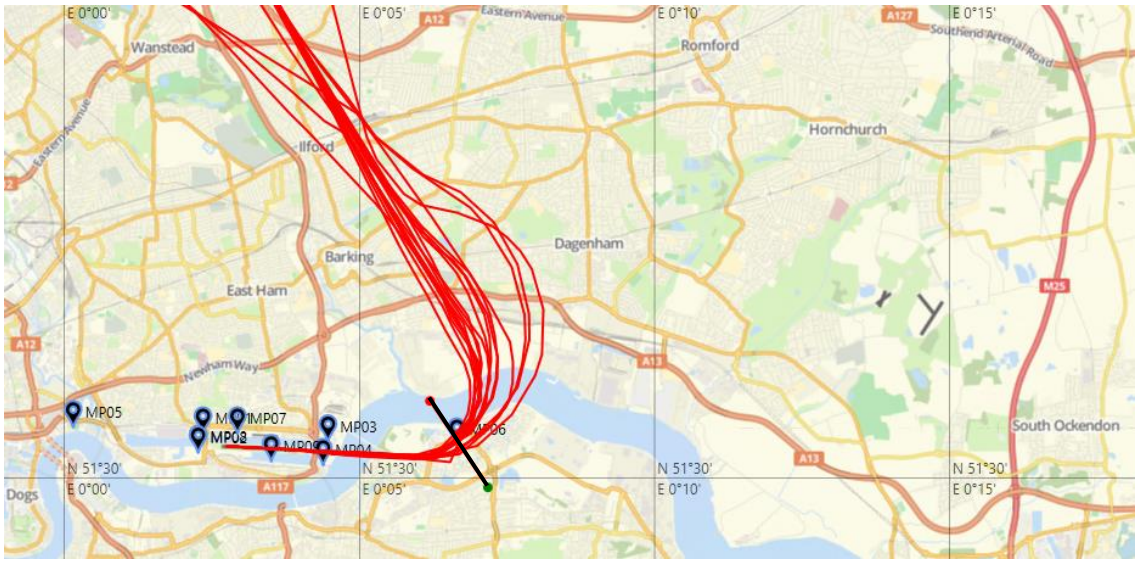

Figure A1.4: Runway 09 Departure Track Plot for 2021 Q1 – BPK and CPT SIDs

For the DVR, CLN and LYD routes, a gate was established at the location of NMT 6. The gate is 2 km wide and set up to coincide with the extended centreline of the runway, similar to the corresponding gate at NMT 5. All aircraft following these SIDs passed through this gate during the first quarter of 2021.

For the BPK and CPT routes, aircraft commence a turn as they track over NMT 6, so a 2 km wide gate was established prior to the turn commencing. All aircraft following these SIDs passed through this gate during the first quarter of 2021.

Quarter 2

Figure A1.5 shows a heat map of all departures from LCA during the second quarter of 2021. The colour of each tile represents the number of aircraft that passed through it. The dark blue tiles represent the lowest frequency of departures and the red tiles represent the highest, as per the key in the bottom left of the image.

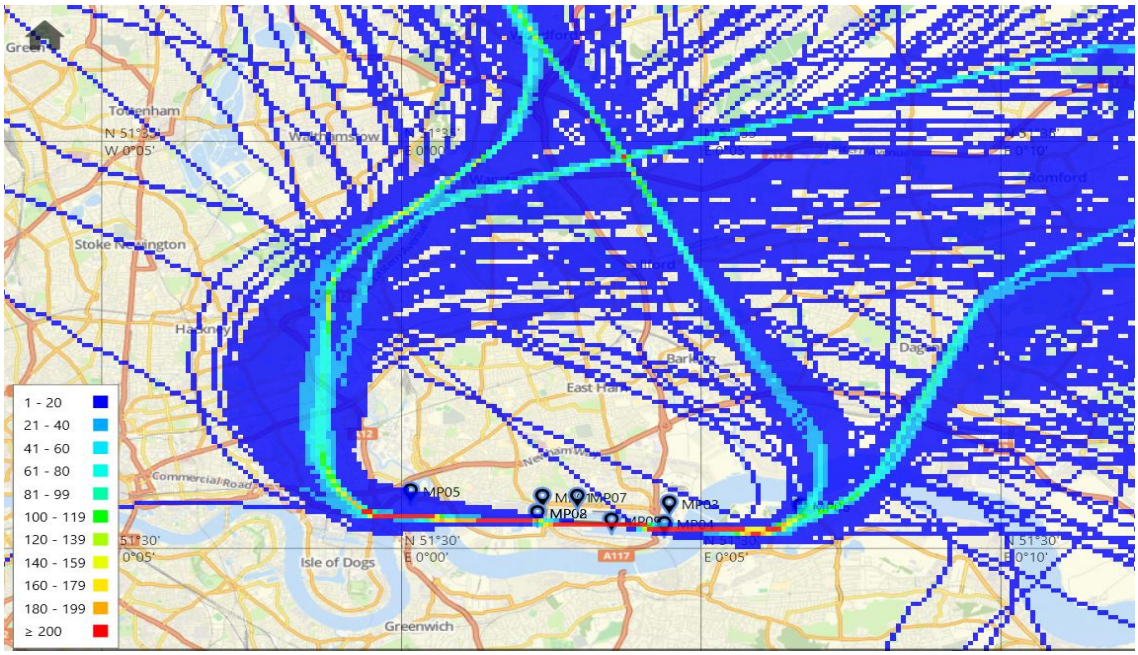

Figure A1.5: Departure Heat Map, 2021 Q2

Runway 27 Departures

Departures using runway 27 initially go straight before turning right (northwards) to head in a northerly or easterly direction. All Standard Instrument Departures (SIDs) follow the same route initially. Figure A1.6 illustrates the spread of aircraft departing from runway 27 during the second quarter of 2021.

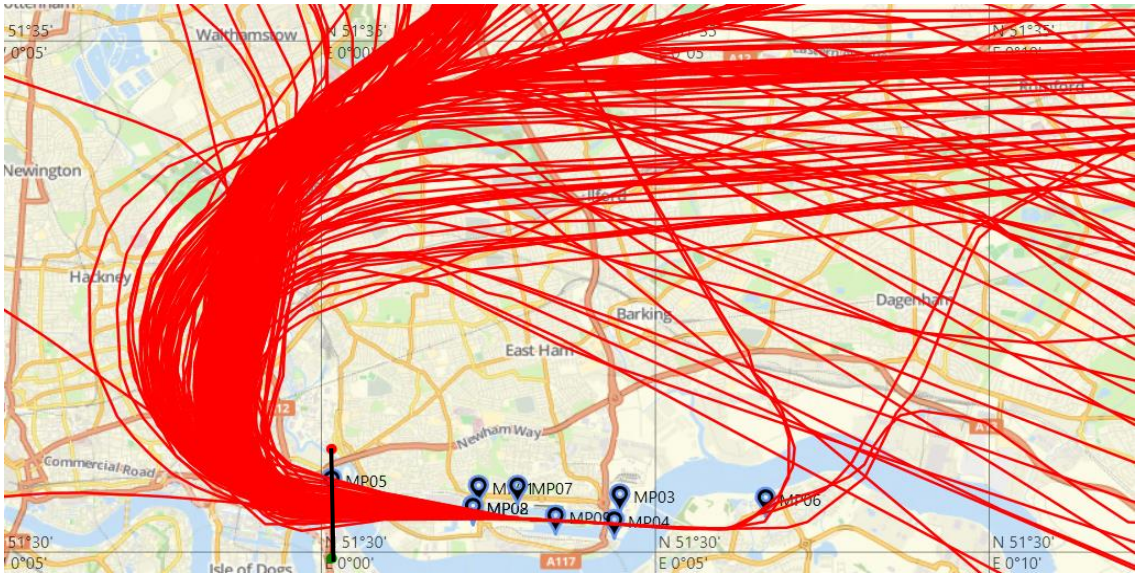

Figure A1.6: Runway 27 Departure Track Plot, 2021 Q2

A gate has been set up in the track keeping system at the location of NMT 5. The gate is 2 km wide and is shown in the above figure as a black line. The middle of the gate has been set up to coincide with the extended centreline of the runway.

All runway 27 departures passed through this gate in the second quarter of 2021.

Runway 09 Departures

Departures using Runway 09 initially go straight before following departure routes that diverge soon after departure depending on which SID is being followed. There are two distinct initial routes; the DVR, CLN and LYD SIDs turn towards the north-east whereas the BPK and CPT SIDs turn towards the north west soon after departure. For the purpose of this analysis, these have been split into two separate groups with track plots in Figure A1.7 and Figure A1.8.

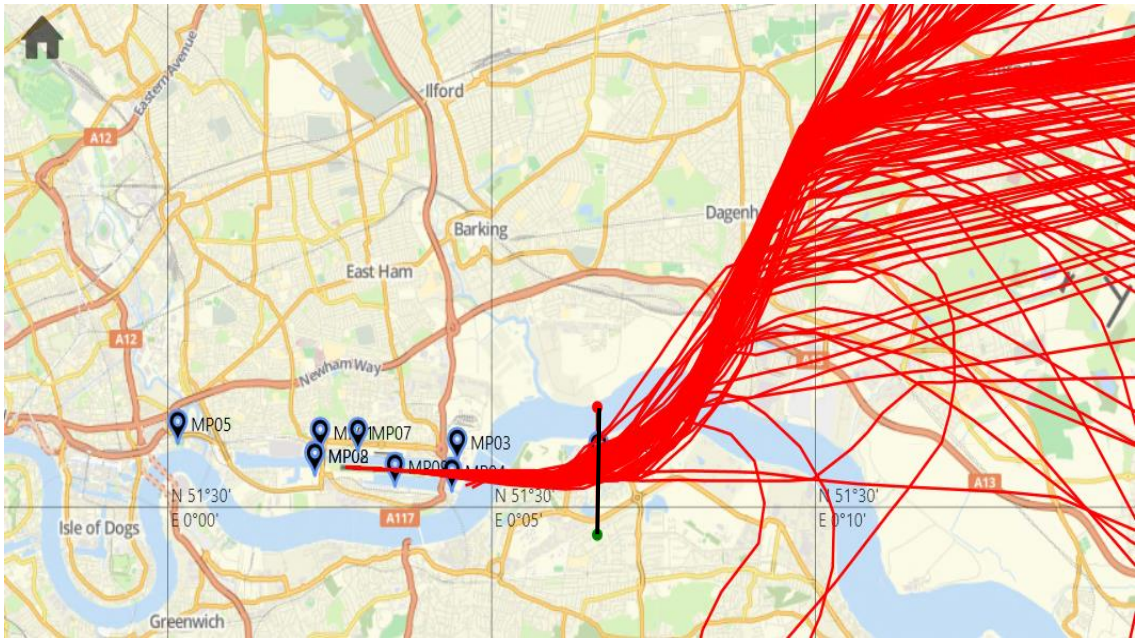

Figure A1.7: Runway 09 Departure Track Plot for 2021 Q2 – DVR, CLN and LYD SIDs

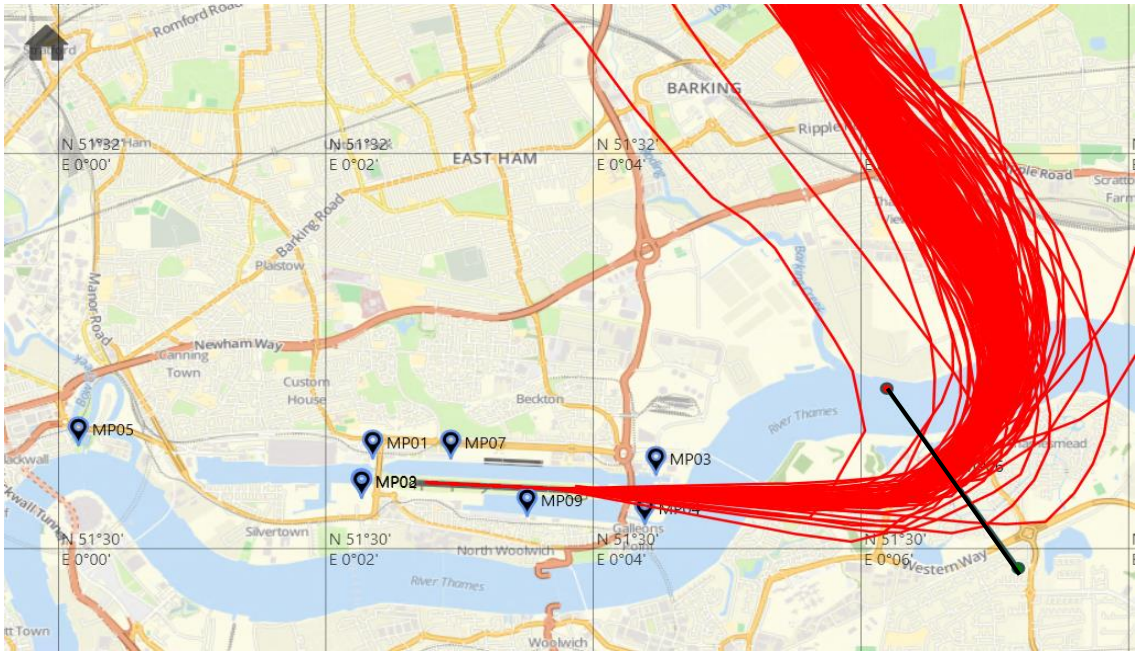

Figure A1.8: Runway 09 Departure Track Plot for 2021 Q2 – BPK and CPT SIDs

For the DVR, CLN and LYD routes, a gate was established at the location of NMT 6. The gate is 2 km wide and set up to coincide with the extended centreline of the runway, similar to the corresponding gate at NMT 5. All aircraft following these SIDs passed through this gate during the second quarter of 2021.

For the BPK and CPT routes, aircraft commence a turn as they track over NMT 6, so a 2 km wide gate was established prior to the turn commencing. All aircraft following these SIDs except one passed through this gate during the second quarter of 2021. The details of the exception are given in

Date	Departure Time	Aircraft Type	Airline	SID
21/06/2021	09:06	AT5	LOG	BPK

Table A1.1.

Date	Departure Time	Aircraft Type	Airline	SID
21/06/2021	09:06	AT5	LOG	BPK

Table A1.1: Runway 09 Off Track Departures, 2021 Q2

Quarter 3

Figure A1.5 shows a heat map of all departures from LCA during the third quarter of 2021. The colour of each tile represents the number of aircraft that passed through it. The dark blue tiles represent the lowest frequency of departures and the red tiles represent the highest, as per the key in the bottom left of the image.

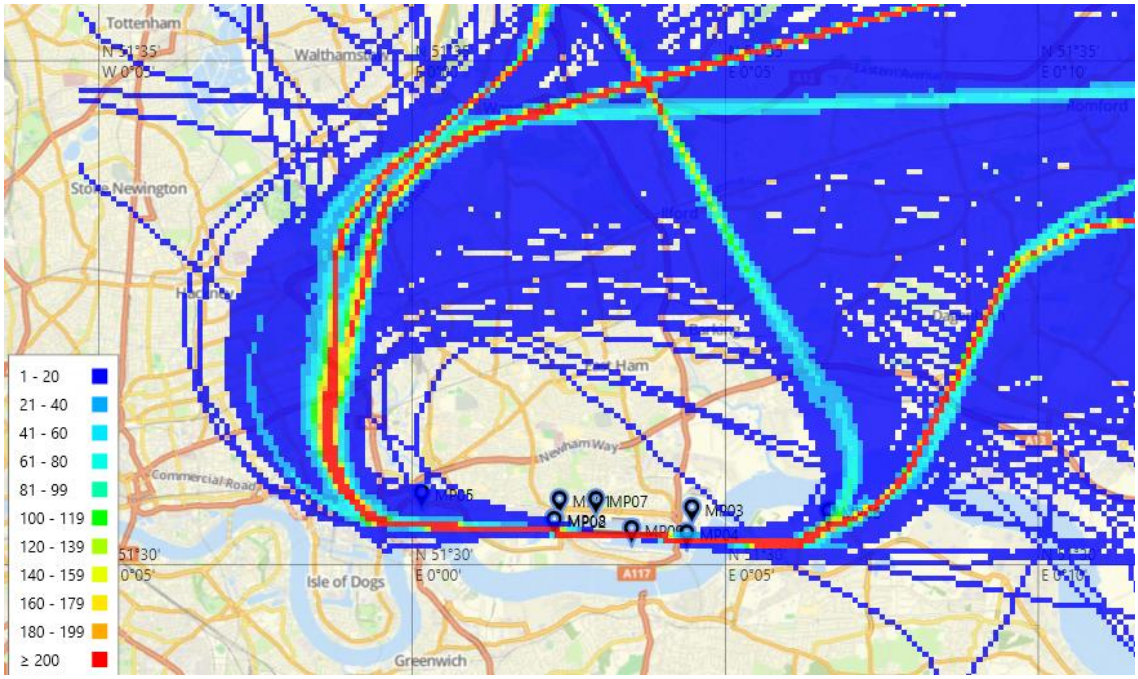

Figure A1.9: Departure Heat Map, 2021 Q3

Runway 27 Departures

Departures using runway 27 initially go straight before turning right (northwards) to head in a northerly or easterly direction. All Standard Instrument Departures (SIDs) follow the same route initially. Figure A1.6 illustrates the spread of aircraft departing from runway 27 during the third quarter of 2021.

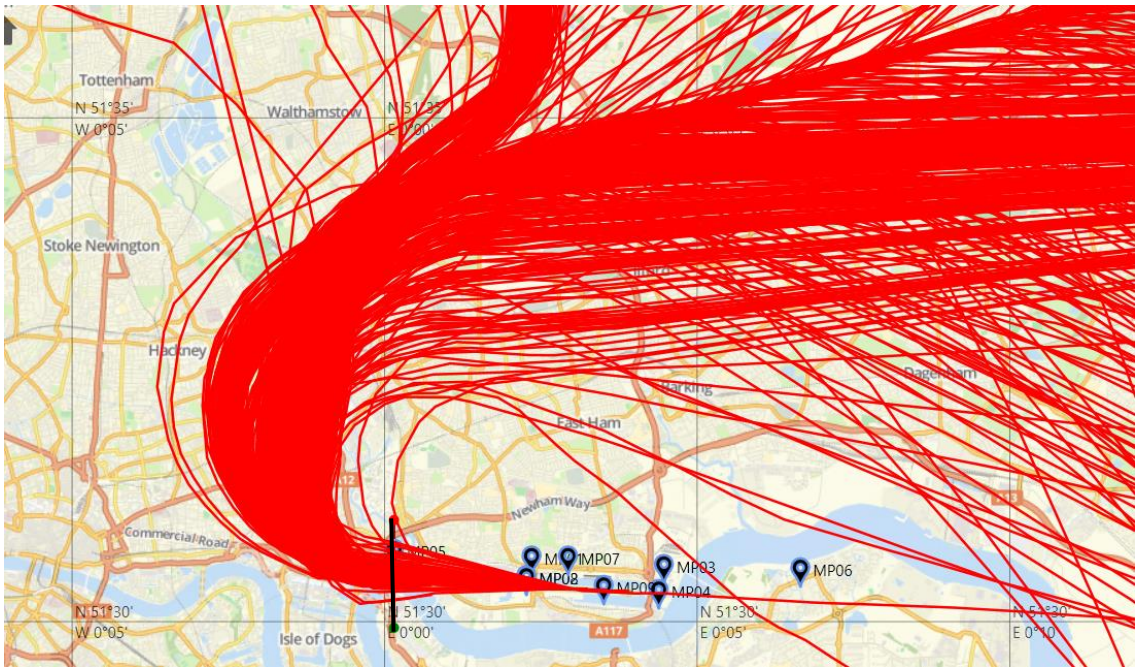

Figure A1.10: Runway 27 Departure Track Plot, 2021 Q3

A gate has been set up in the track keeping system at the location of NMT 5. The gate is 2 km wide and is shown in the above figure as a black line. The middle of the gate has been set up to coincide with the extended centreline of the runway.

All runway 27 departures except one passed through this gate in the **Error! Reference source not found.** quarter of 2021. Details of the exception are given in

Date	Departure Time	Aircraft Type	Airline	SID
07/08/2021	08:50	E190	CFE	DVR

Table A1.2.

Date	Departure Time	Aircraft Type	Airline	SID
07/08/2021	08:50	E190	CFE	DVR

Table A1.2: Runway 27 Off Track Departures, 2021 Q3

Runway 09 Departures

Departures using Runway 09 initially go straight before following departure routes that diverge soon after departure depending on which SID is being followed. There are two distinct initial routes; the DVR, CLN and LYD SIDs turn towards the north-east whereas the BPK and CPT SIDs turn towards the north west soon after departure. For the purpose of this analysis, these have been split into two separate groups with track plots in Figure A1.7 and Figure A1.8.

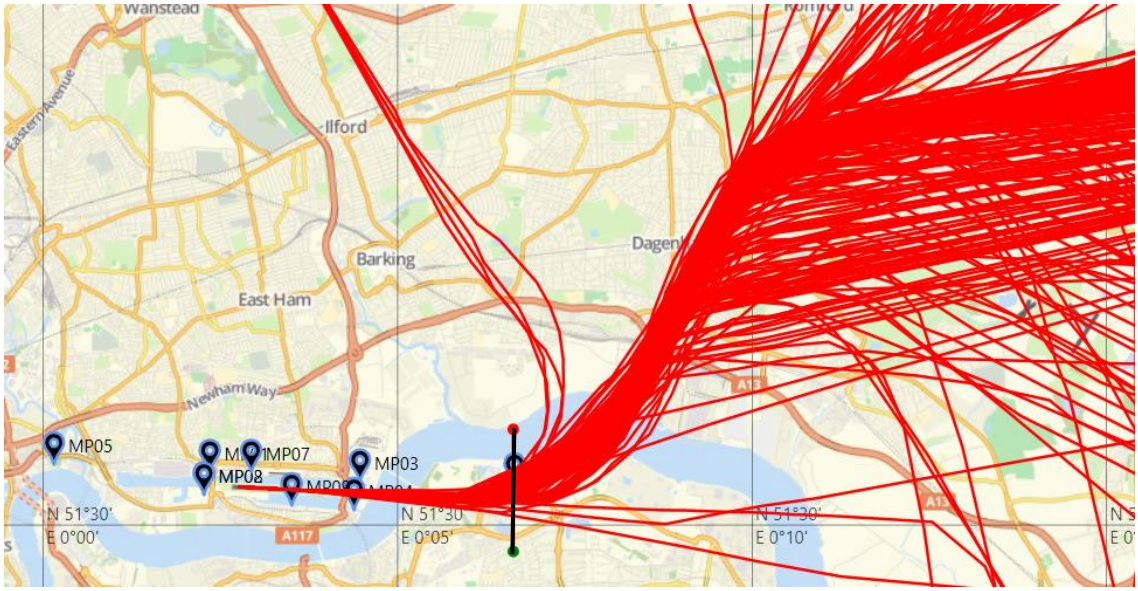

Figure A1.11: Runway 09 Departure Track Plot for 2021 Q3 – DVR, CLN and LYD SIDs

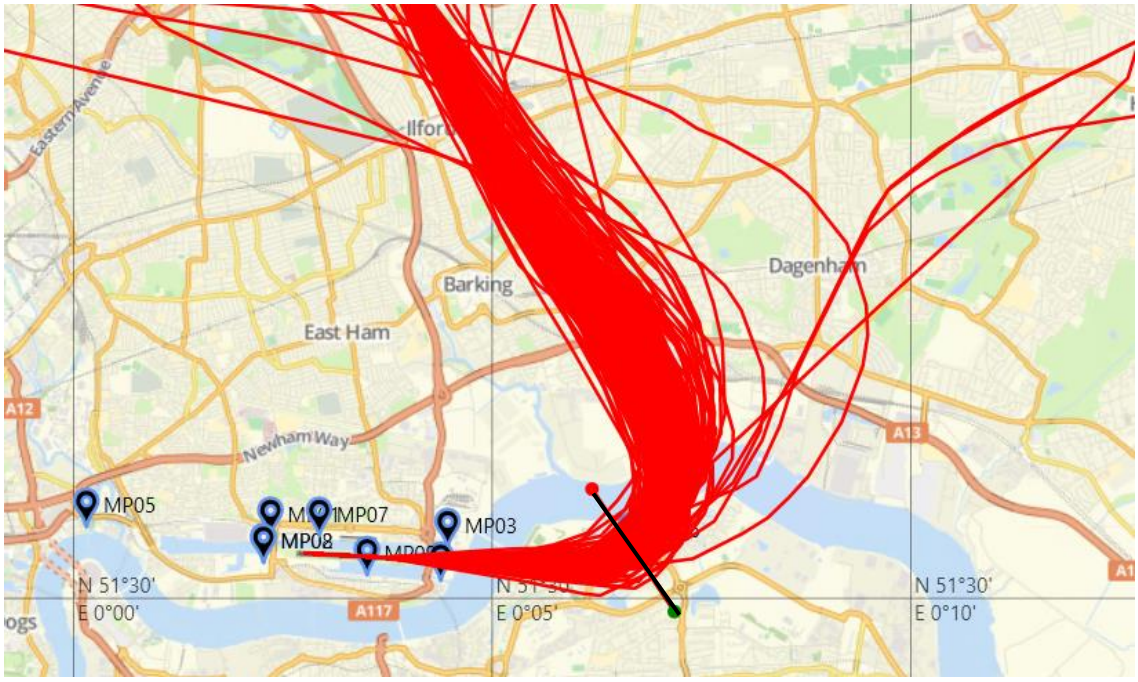

Figure A1.12: Runway 09 Departure Track Plot for 2021 Q3 – BPK and CPT SIDs

For the DVR, CLN and LYD routes, a gate was established at the location of NMT 6. The gate is 2 km wide and set up to coincide with the extended centreline of the runway, similar to the corresponding gate at NMT 5. All aircraft following these SIDs passed through this gate during the third quarter of 2021.

For the BPK and CPT routes, aircraft commence a turn as they track over NMT 6, so a 2 km wide gate was established prior to the turn commencing. All aircraft following these SIDs passed through this gate during the third quarter of 2021.

Quarter 4

Figure A1.13 shows a heat map of all departures from LCA during the fourth quarter of 2021. The colour of each tile represents the number of aircraft that passed through it. The dark blue tiles represent the lowest frequency of departures and the red tiles represent the highest, as per the key in the bottom left of the image.

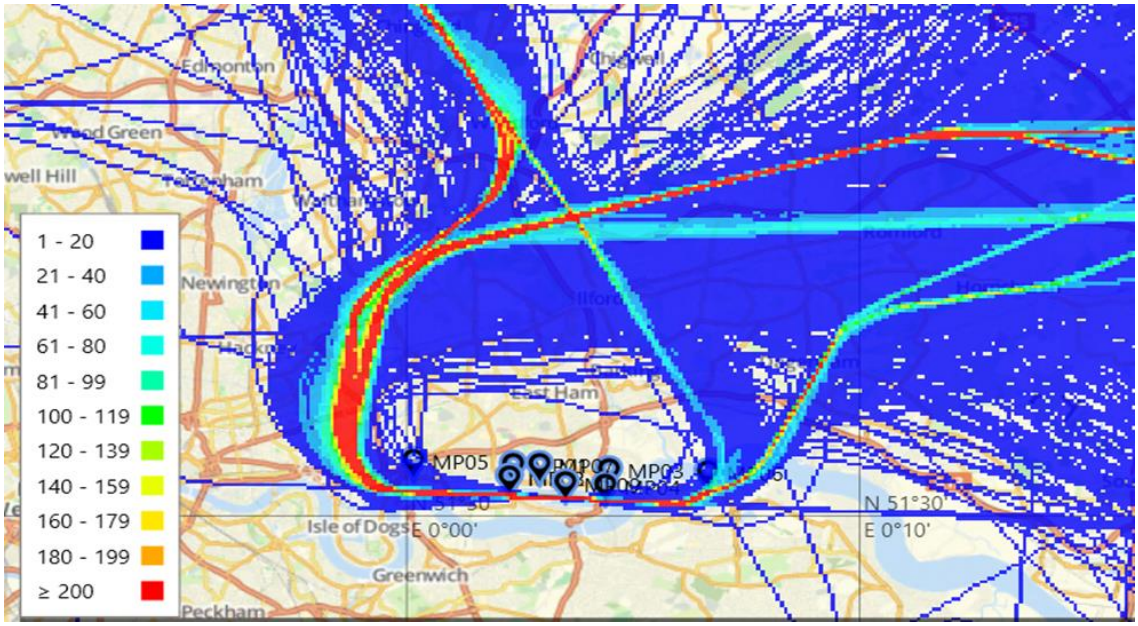

Figure A1.13: Departure Heat Map, 2021 Q4

Runway 27 Departures

Departures using runway 27 initially go straight before turning right (northwards) to head in a northerly or easterly direction. All Standard Instrument Departures (SIDs) follow the same route initially. Figure A1.14 illustrates the spread of aircraft departing from runway 27 during the fourth quarter of 2021.

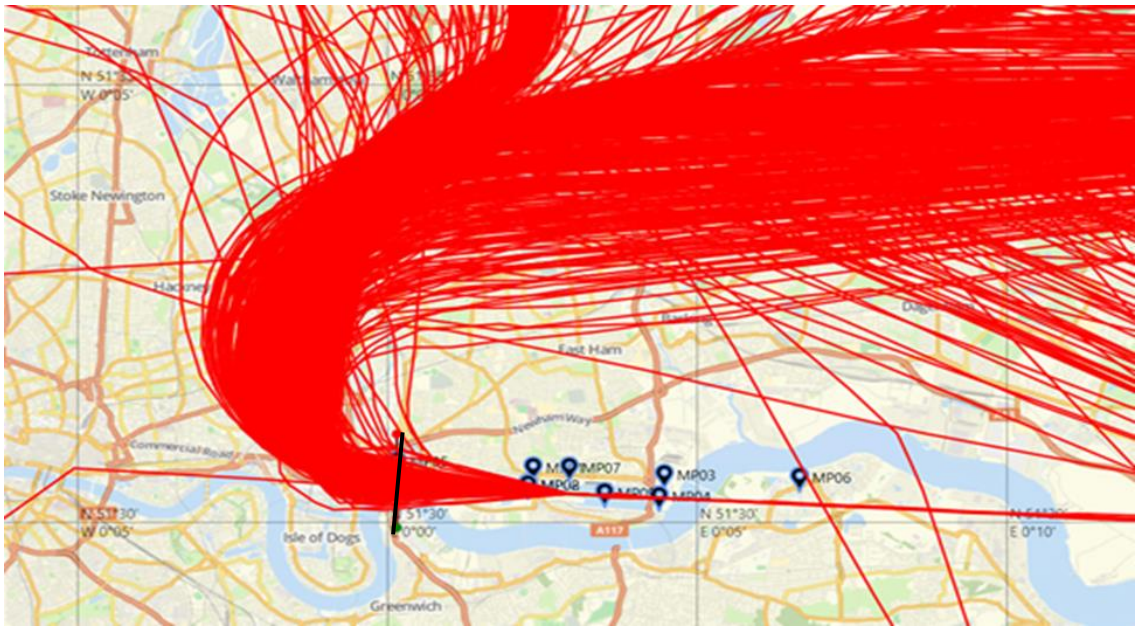

Figure A1.14: Runway 27 Departure Track Plot, 2021 Q4

A gate has been set up in the track keeping system at the location of NMT 5. The gate is 2 km wide and is shown in the above figure as a black line. The middle of the gate has been set up to coincide with the extended centreline of the runway.

All runway 27 departures passed through this gate in the **Error! Reference source not found.** quarter of 2021, except for three. Details of these exceptions are given in Table A1.3.

Date	Departure Time	Aircraft Type	Airline	SID
14/10/2021	16:56	C680	NJE	BPK
18/10/2021	20:02	AT45	LOG	BPK
01/12/2021	15:32	C25B	JNL	CLN

Table A1.3: Runway 27 Off Track Departures, 2021 Q4

Runway 09 Departures

Departures using Runway 09 initially go straight before following departure routes that diverge soon after departure depending on which SID is being followed. There are two distinct initial routes; the DVR, CLN and LYD SIDs turn towards the north-east whereas the BPK and CPT SIDs

turn towards the north west soon after departure. For the purpose of this analysis, these have been split into two separate groups with track plots in Figure A1.15 and Figure A1.16.

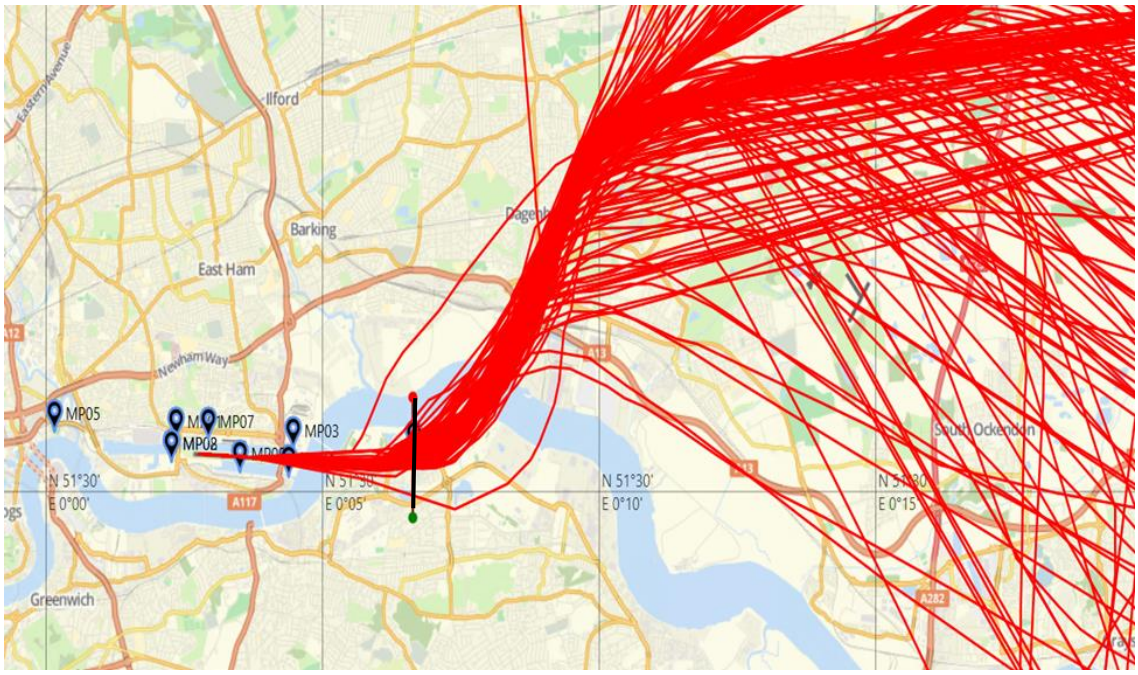

Figure A1.15: Runway 09 Departure Track Plot for 2021 Q4 – DVR, CLN and LYD SIDs

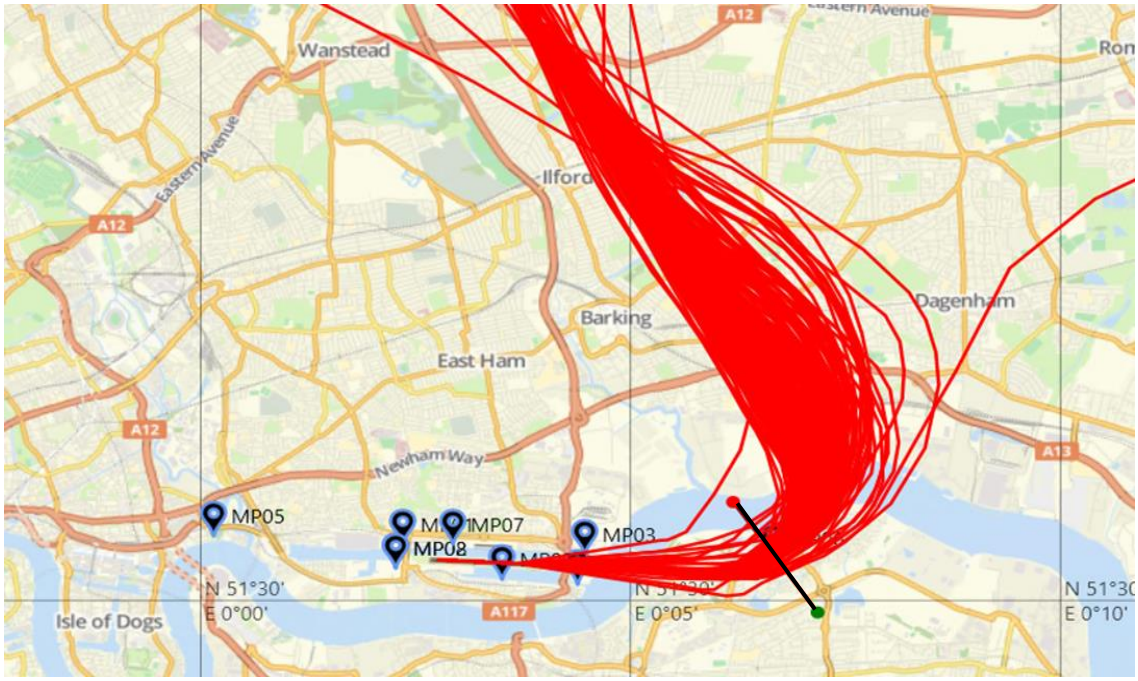

Figure A1.16: Runway 09 Departure Track Plot for 2021 Q4 – BPK and CPT SIDs

For the DVR, CLN and LYD routes, a gate was established at the location of NMT 6. The gate is 2 km wide and set up to coincide with the extended centreline of the runway, similar to the corresponding gate at NMT 5. All aircraft following these SIDs passed through this gate during the **Error! Reference source not found.** quarter of 2021, except for one. Details of this exception are given in **Error! Reference source not found.**.

For the BPK and CPT routes, aircraft commence a turn as they track over NMT 6, so a 2 km wide gate was established prior to the turn commencing. All aircraft following these SIDs passed through this gate during the **Error! Reference source not found.** quarter of 2021, except for one. Details of this exception are given in Table A1.4.

Date	Departure Time	Aircraft Type	Airline	SID
29/10/2021	09:18	AT45	LOG	BPK
15/11/2021	16:56	P180	XGO	LYD

Table A1.4: Runway 27 Off Track Departures, 2021 Q4

APPENDIX 2
NTK STATUS REPORTS

Table A2.1 gives the daily operation status of each NMT for the 2021 calendar year.

Date	NMT Operational?					
	NMT1	NMT2	NMT3	NMT4	NMT5	NMT6
01/01/2021	Yes	Yes	Yes	Yes	Yes	Yes
02/01/2021	Yes	Yes	Yes	Yes	Yes	Yes
03/01/2021	Yes	Yes	Yes	Yes	Yes	Yes
04/01/2021	Yes	Yes	Yes	Yes	Yes	Yes
05/01/2021	Yes	Yes	Yes	Yes	Yes	Yes
06/01/2021	Yes	Yes	Yes	Yes	Yes	Yes
07/01/2021	Yes	Yes	Yes	Yes	Yes	Yes
08/01/2021	Yes	Yes	Yes	Yes	Yes	Yes
09/01/2021	Yes	Yes	Yes	Yes	Yes	Yes
10/01/2021	Yes	Yes	Yes	Yes	Yes	Yes
11/01/2021	Yes	Yes	Yes	Yes	Yes	Yes
12/01/2021	Yes	Yes	Yes	Yes	Yes	Yes
13/01/2021	Yes	Yes	Yes	Yes	Yes	Yes
14/01/2021	Yes	Yes	Yes	Yes	Yes	Yes
15/01/2021	Yes	No	Yes	Yes	Yes	Yes
16/01/2021	Yes	Yes	Yes	Yes	Yes	Yes
17/01/2021	Yes	Yes	Yes	Yes	Yes	Yes
18/01/2021	Yes	Yes	Yes	Yes	Yes	Yes
19/01/2021	Yes	Yes	Yes	Yes	Yes	Yes
20/01/2021	Yes	Yes	Yes	Yes	Yes	Yes
21/01/2021	Yes	Yes	Yes	Yes	Yes	Yes
22/01/2021	Yes	Yes	Yes	Yes	Yes	Yes
23/01/2021	Yes	Yes	Yes	Yes	Yes	Yes
24/01/2021	Yes	Yes	Yes	Yes	Yes	Yes
25/01/2021	Yes	Yes	Yes	Yes	Yes	Yes
26/01/2021	Yes	Yes	Yes	Yes	Yes	Yes
27/01/2021	Yes	Yes	Yes	Yes	Yes	Yes

Date	NMT Operational?					
	NMT1	NMT2	NMT3	NMT4	NMT5	NMT6
28/01/2021	Yes	Yes	Yes	Yes	Yes	Yes
29/01/2021	Yes	Yes	Yes	Yes	Yes	Yes
30/01/2021	Yes	Yes	Yes	Yes	Yes	Yes
31/01/2021	Yes	Yes	Yes	Yes	Yes	Yes
01/02/2021	Yes	Yes	Yes	Yes	Yes	Yes
02/02/2021	Yes	Yes	Yes	Yes	Yes	Yes
03/02/2021	Yes	Yes	Yes	Yes	Yes	Yes
04/02/2021	Yes	Yes	Yes	Yes	Yes	Yes
05/02/2021	Yes	Yes	Yes	Yes	Yes	Yes
06/02/2021	Yes	Yes	Yes	Yes	Yes	Yes
07/02/2021	Yes	Yes	Yes	Yes	Yes	Yes
08/02/2021	Yes	Yes	Yes	Yes	Yes	Yes
09/02/2021	Yes	Yes	Yes	Yes	Yes	Yes
10/02/2021	Yes	Yes	Yes	Yes	Yes	Yes
11/02/2021	Yes	Yes	Yes	Yes	Yes	Yes
12/02/2021	Yes	Yes	Yes	Yes	Yes	Yes
13/02/2021	Yes	Yes	Yes	Yes	Yes	Yes
14/02/2021	Yes	Yes	Yes	Yes	Yes	Yes
15/02/2021	Yes	Yes	Yes	Yes	Yes	Yes
16/02/2021	Yes	Yes	Yes	Yes	Yes	Yes
17/02/2021	Yes	Yes	Yes	Yes	Yes	Yes
18/02/2021	Yes	Yes	Yes	Yes	Yes	Yes
19/02/2021	Yes	Yes	Yes	Yes	Yes	Yes
20/02/2021	Yes	Yes	Yes	Yes	Yes	Yes
21/02/2021	Yes	Yes	Yes	Yes	Yes	Yes
22/02/2021	Yes	Yes	Yes	Yes	Yes	Yes
23/02/2021	Yes	Yes	Yes	Yes	Yes	Yes
24/02/2021	Yes	Yes	Yes	Yes	Yes	Yes

Date	NMT Operational?					
	NMT1	NMT2	NMT3	NMT4	NMT5	NMT6
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26/02/2021	Yes	Yes	Yes	Yes	Yes	Yes
27/02/2021	Yes	Yes	Yes	Yes	Yes	Yes
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01/03/2021	Yes	Yes	Yes	Yes	Yes	Yes
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03/03/2021	Yes	Yes	Yes	Yes	Yes	Yes
04/03/2021	Yes	Yes	Yes	Yes	Yes	Yes
05/03/2021	Yes	Yes	Yes	Yes	Yes	Yes
06/03/2021	Yes	Yes	Yes	Yes	Yes	Yes
07/03/2021	Yes	Yes	Yes	Yes	Yes	Yes
08/03/2021	Yes	Yes	Yes	Yes	Yes	Yes
09/03/2021	Yes	Yes	Yes	Yes	Yes	Yes
10/03/2021	Yes	Yes	Yes	Yes	Yes	Yes
11/03/2021	Yes	Yes	Yes	Yes	Yes	Yes
12/03/2021	Yes	Yes	Yes	Yes	Yes	Yes
13/03/2021	Yes	Yes	Yes	Yes	Yes	Yes
14/03/2021	Yes	Yes	Yes	Yes	Yes	Yes
15/03/2021	Yes	Yes	Yes	Yes	Yes	Yes
16/03/2021	Yes	Yes	Yes	Yes	Yes	Yes
17/03/2021	Yes	Yes	Yes	Yes	Yes	Yes
18/03/2021	Yes	Yes	Yes	Yes	Yes	Yes
19/03/2021	Yes	Yes	Yes	Yes	Yes	Yes
20/03/2021	Yes	Yes	Yes	Yes	Yes	Yes
21/03/2021	Yes	Yes	Yes	Yes	Yes	Yes
22/03/2021	Yes	Yes	Yes	Yes	Yes	Yes
23/03/2021	Yes	Yes	Yes	Yes	Yes	Yes
24/03/2021	Yes	Yes	Yes	Yes	Yes	Yes

Date	NMT Operational?					
	NMT1	NMT2	NMT3	NMT4	NMT5	NMT6
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26/03/2021	Yes	Yes	Yes	Yes	Yes	Yes
27/03/2021	Yes	Yes	Yes	Yes	Yes	Yes
28/03/2021	Yes	Yes	Yes	Yes	Yes	Yes
29/03/2021	Yes	Yes	Yes	Yes	Yes	Yes
30/03/2021	Yes	Yes	Yes	Yes	Yes	Yes
31/03/2021	Yes	Yes	Yes	Yes	Yes	Yes
01/04/2021	Yes	Yes	Yes	Yes	Yes	Yes
02/04/2021	Yes	Yes	Yes	Yes	Yes	Yes
03/04/2021	Yes	Yes	Yes	Yes	Yes	Yes
04/04/2021	Yes	Yes	Yes	Yes	Yes	Yes
05/04/2021	Yes	Yes	Yes	Yes	Yes	Yes
06/04/2021	Yes	Yes	Yes	Yes	Yes	Yes
07/04/2021	Yes	Yes	Yes	Yes	Yes	Yes
08/04/2021	Yes	Yes	Yes	Yes	Yes	Yes
09/04/2021	Yes	Yes	Yes	Yes	Yes	Yes
10/04/2021	Yes	Yes	Yes	Yes	Yes	Yes
11/04/2021	Yes	Yes	Yes	Yes	Yes	Yes
12/04/2021	Yes	Yes	Yes	Yes	Yes	Yes
13/04/2021	Yes	Yes	Yes	Yes	Yes	Yes
14/04/2021	Yes	Yes	Yes	Yes	Yes	Yes
15/04/2021	Yes	Yes	Yes	Yes	Yes	Yes
16/04/2021	Yes	Yes	Yes	Yes	Yes	Yes
17/04/2021	Yes	Yes	Yes	Yes	Yes	Yes
18/04/2021	Yes	Yes	Yes	Yes	Yes	Yes
19/04/2021	Yes	Yes	Yes	Yes	Yes	Yes
20/04/2021	Yes	Yes	Yes	Yes	Yes	Yes
21/04/2021	Yes	Yes	Yes	Yes	Yes	Yes

Date	NMT Operational?					
	NMT1	NMT2	NMT3	NMT4	NMT5	NMT6
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23/04/2021	Yes	Yes	Yes	Yes	Yes	Yes
24/04/2021	Yes	Yes	Yes	Yes	Yes	Yes
25/04/2021	Yes	Yes	Yes	Yes	Yes	Yes
26/04/2021	Yes	Yes	Yes	Yes	Yes	Yes
27/04/2021	Yes	Yes	Yes	Yes	Yes	Yes
28/04/2021	Yes	Yes	Yes	Yes	Yes	Yes
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30/04/2021	Yes	Yes	Yes	Yes	Yes	Yes
01/05/2021	Yes	Yes	Yes	Yes	Yes	Yes
02/05/2021	Yes	Yes	Yes	Yes	Yes	Yes
03/05/2021	Yes	Yes	Yes	Yes	Yes	Yes
04/05/2021	Yes	Yes	Yes	Yes	Yes	Yes
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07/05/2021	Yes	Yes	Yes	Yes	Yes	Yes
08/05/2021	Yes	Yes	Yes	Yes	Yes	Yes
09/05/2021	Yes	Yes	Yes	Yes	Yes	Yes
10/05/2021	Yes	Yes	Yes	Yes	Yes	Yes
11/05/2021	Yes	Yes	Yes	Yes	Yes	Yes
12/05/2021	Yes	Yes	Yes	Yes	Yes	Yes
13/05/2021	Yes	Yes	Yes	Yes	Yes	Yes
14/05/2021	Yes	Yes	Yes	Yes	Yes	Yes
15/05/2021	Yes	Yes	Yes	Yes	Yes	Yes
16/05/2021	Yes	Yes	Yes	Yes	Yes	Yes
17/05/2021	Yes	Yes	Yes	Yes	Yes	Yes
18/05/2021	Yes	Yes	Yes	Yes	Yes	Yes
19/05/2021	Yes	Yes	Yes	Yes	Yes	Yes

Date	NMT Operational?					
	NMT1	NMT2	NMT3	NMT4	NMT5	NMT6
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21/05/2021	Yes	Yes	Yes	Yes	Yes	Yes
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25/05/2021	Yes	Yes	Yes	Yes	Yes	Yes
26/05/2021	Yes	Yes	Yes	Yes	Yes	Yes
27/05/2021	Yes	Yes	Yes	Yes	Yes	Yes
28/05/2021	Yes	Yes	Yes	Yes	Yes	Yes
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08/06/2021	Yes	Yes	Yes	Yes	Yes	Yes
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14/06/2021	Yes	Yes	Yes	Yes	Yes	Yes
15/06/2021	Yes	Yes	Yes	Yes	Yes	Yes
16/06/2021	Yes	Yes	Yes	Yes	Yes	Yes

Date	NMT Operational?					
	NMT1	NMT2	NMT3	NMT4	NMT5	NMT6
17/06/2021	Yes	Yes	Yes	Yes	Yes	Yes
18/06/2021	Yes	Yes	Yes	Yes	Yes	Yes
19/06/2021	Yes	Yes	Yes	Yes	Yes	Yes
20/06/2021	Yes	Yes	Yes	Yes	Yes	Yes
21/06/2021	Yes	Yes	Yes	Yes	Yes	Yes
22/06/2021	Yes	Yes	Yes	Yes	Yes	Yes
23/06/2021	Yes	Yes	Yes	Yes	Yes	Yes
24/06/2021	Yes	Yes	Yes	Yes	Yes	Yes
25/06/2021	Yes	Yes	Yes	Yes	Yes	Yes
26/06/2021	Yes	Yes	Yes	Yes	Yes	Yes
27/06/2021	Yes	Yes	Yes	Yes	Yes	Yes
28/06/2021	Yes	Yes	Yes	Yes	Yes	Yes
29/06/2021	Yes	Yes	Yes	Yes	Yes	Yes
30/06/2021	Yes	Yes	Yes	Yes	Yes	Yes
01/07/2021	Yes	Yes	Yes	Yes	Yes	Yes
02/07/2021	Yes	Yes	Yes	Yes	Yes	Yes
03/07/2021	Yes	Yes	Yes	Yes	Yes	Yes
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05/07/2021	Yes	Yes	Yes	Yes	Yes	Yes
06/07/2021	Yes	Yes	Yes	Yes	Yes	Yes
07/07/2021	Yes	Yes	Yes	Yes	Yes	Yes
08/07/2021	Yes	Yes	Yes	Yes	Yes	Yes
09/07/2021	Yes	Yes	Yes	Yes	Yes	Yes
10/07/2021	Yes	Yes	Yes	Yes	Yes	Yes
11/07/2021	Yes	Yes	Yes	Yes	Yes	Yes
12/07/2021	Yes	Yes	Yes	Yes	Yes	Yes
13/07/2021	Yes	Yes	Yes	Yes	Yes	Yes
14/07/2021	Yes	Yes	Yes	Yes	Yes	Yes

Date	NMT Operational?					
	NMT1	NMT2	NMT3	NMT4	NMT5	NMT6
15/07/2021	Yes	Yes	Yes	Yes	Yes	Yes
16/07/2021	Yes	Yes	Yes	Yes	Yes	Yes
17/07/2021	Yes	Yes	Yes	Yes	Yes	Yes
18/07/2021	Yes	Yes	Yes	Yes	Yes	Yes
19/07/2021	Yes	Yes	Yes	Yes	Yes	Yes
20/07/2021	Yes	Yes	Yes	Yes	Yes	Yes
21/07/2021	Yes	Yes	Yes	Yes	Yes	Yes
22/07/2021	Yes	Yes	Yes	Yes	Yes	Yes
23/07/2021	Yes	Yes	Yes	Yes	Yes	Yes
24/07/2021	Yes	Yes	Yes	Yes	Yes	Yes
25/07/2021	Yes	Yes	Yes	Yes	Yes	Yes
26/07/2021	Yes	Yes	Yes	Yes	Yes	Yes
27/07/2021	Yes	Yes	Yes	Yes	Yes	Yes
28/07/2021	Yes	Yes	Yes	Yes	Yes	Yes
29/07/2021	Yes	Yes	Yes	Yes	Yes	Yes
30/07/2021	Yes	Yes	Yes	Yes	Yes	Yes
31/07/2021	Yes	Yes	Yes	Yes	Yes	Yes
01/08/2021	Yes	Yes	Yes	Yes	Yes	Yes
02/08/2021	Yes	Yes	Yes	Yes	Yes	Yes
03/08/2021	Yes	Yes	Yes	Yes	Yes	Yes
04/08/2021	Yes	Yes	Yes	Yes	Yes	Yes
05/08/2021	Yes	Yes	Yes	Yes	Yes	Yes
06/08/2021	Yes	Yes	Yes	Yes	Yes	Yes
07/08/2021	Yes	Yes	Yes	Yes	Yes	Yes
08/08/2021	Yes	Yes	Yes	Yes	Yes	Yes
09/08/2021	Yes	Yes	Yes	Yes	Yes	Yes
10/08/2021	Yes	Yes	Yes	Yes	Yes	Yes
11/08/2021	Yes	Yes	Yes	Yes	Yes	Yes

Date	NMT Operational?					
	NMT1	NMT2	NMT3	NMT4	NMT5	NMT6
12/08/2021	Yes	Yes	Yes	Yes	Yes	Yes
13/08/2021	Yes	Yes	Yes	Yes	Yes	Yes
14/08/2021	Yes	Yes	Yes	Yes	Yes	Yes
15/08/2021	Yes	Yes	Yes	Yes	Yes	Yes
16/08/2021	Yes	Yes	Yes	Yes	Yes	Yes
17/08/2021	Yes	Yes	Yes	Yes	Yes	Yes
18/08/2021	Yes	Yes	Yes	Yes	Yes	Yes
19/08/2021	Yes	Yes	Yes	Yes	Yes	Yes
20/08/2021	Yes	Yes	Yes	Yes	Yes	Yes
21/08/2021	Yes	Yes	Yes	Yes	Yes	Yes
22/08/2021	Yes	Yes	Yes	Yes	Yes	Yes
23/08/2021	Yes	Yes	Yes	Yes	Yes	Yes
24/08/2021	Yes	Yes	Yes	Yes	Yes	Yes
25/08/2021	Yes	Yes	Yes	Yes	Yes	Yes
26/08/2021	Yes	Yes	Yes	Yes	Yes	Yes
27/08/2021	Yes	Yes	Yes	Yes	Yes	Yes
28/08/2021	Yes	Yes	Yes	Yes	Yes	Yes
29/08/2021	Yes	Yes	Yes	Yes	Yes	Yes
30/08/2021	Yes	Yes	Yes	Yes	Yes	Yes
31/08/2021	Yes	Yes	Yes	Yes	Yes	Yes
01/09/2021	Yes	Yes	Yes	Yes	Yes	Yes
02/09/2021	Yes	Yes	Yes	Yes	Yes	Yes
03/09/2021	Yes	Yes	Yes	Yes	Yes	Yes
04/09/2021	Yes	Yes	Yes	Yes	Yes	Yes
05/09/2021	Yes	Yes	Yes	Yes	Yes	Yes
06/09/2021	Yes	Yes	Yes	Yes	Yes	Yes
07/09/2021	Yes	Yes	Yes	Yes	Yes	Yes
08/09/2021	Yes	Yes	Yes	Yes	Yes	Yes

Date	NMT Operational?					
	NMT1	NMT2	NMT3	NMT4	NMT5	NMT6
09/09/2021	Yes	Yes	Yes	Yes	Yes	Yes
10/09/2021	Yes	Yes	Yes	Yes	Yes	Yes
11/09/2021	Yes	Yes	Yes	Yes	Yes	Yes
12/09/2021	Yes	Yes	Yes	Yes	Yes	Yes
13/09/2021	Yes	Yes	Yes	Yes	Yes	Yes
14/09/2021	Yes	Yes	Yes	Yes	Yes	Yes
15/09/2021	Yes	Yes	Yes	Yes	Yes	Yes
16/09/2021	Yes	Yes	Yes	Yes	Yes	Yes
17/09/2021	Yes	Yes	Yes	Yes	Yes	Yes
18/09/2021	Yes	Yes	Yes	Yes	Yes	Yes
19/09/2021	Yes	Yes	Yes	Yes	Yes	Yes
20/09/2021	Yes	Yes	Yes	Yes	Yes	Yes
21/09/2021	Yes	Yes	Yes	Yes	Yes	Yes
22/09/2021	Yes	Yes	Yes	Yes	Yes	Yes
23/09/2021	Yes	Yes	Yes	Yes	Yes	Yes
24/09/2021	Yes	Yes	Yes	Yes	Yes	Yes
25/09/2021	Yes	Yes	Yes	Yes	Yes	Yes
26/09/2021	Yes	Yes	Yes	Yes	Yes	Yes
27/09/2021	Yes	Yes	Yes	Yes	Yes	Yes
28/09/2021	Yes	Yes	Yes	Yes	Yes	Yes
29/09/2021	Yes	Yes	Yes	Yes	Yes	Yes
30/09/2021	Yes	Yes	Yes	Yes	Yes	Yes
01/10/2021	Yes	Yes	Yes	Yes	Yes	Yes
02/10/2021	Yes	Yes	Yes	Yes	Yes	Yes
03/10/2021	Yes	Yes	Yes	Yes	Yes	Yes
04/10/2021	Yes	Yes	Yes	Yes	Yes	Yes
05/10/2021	Yes	Yes	Yes	Yes	Yes	Yes
06/10/2021	Yes	Yes	Yes	Yes	Yes	Yes

Date	NMT Operational?					
	NMT1	NMT2	NMT3	NMT4	NMT5	NMT6
07/10/2021	Yes	Yes	Yes	Yes	Yes	Yes
08/10/2021	Yes	Yes	Yes	Yes	Yes	Yes
09/10/2021	Yes	Yes	Yes	Yes	Yes	Yes
10/10/2021	Yes	Yes	Yes	Yes	Yes	Yes
11/10/2021	Yes	Yes	Yes	Yes	Yes	Yes
12/10/2021	Yes	Yes	Yes	Yes	Yes	Yes
13/10/2021	Yes	Yes	Yes	Yes	Yes	Yes
14/10/2021	Yes	Yes	Yes	Yes	Yes	Yes
15/10/2021	Yes	Yes	Yes	Yes	Yes	Yes
16/10/2021	Yes	Yes	Yes	Yes	Yes	Yes
17/10/2021	Yes	Yes	Yes	Yes	Yes	Yes
18/10/2021	Yes	Yes	Yes	Yes	Yes	Yes
19/10/2021	Yes	Yes	Yes	Yes	Yes	Yes
20/10/2021	Yes	Yes	Yes	Yes	Yes	Yes
21/10/2021	Yes	Yes	Yes	Yes	Yes	Yes
22/10/2021	Yes	Yes	Yes	Yes	Yes	Yes
23/10/2021	Yes	Yes	Yes	Yes	Yes	Yes
24/10/2021	Yes	Yes	Yes	Yes	Yes	Yes
25/10/2021	Yes	Yes	Yes	Yes	Yes	Yes
26/10/2021	Yes	Yes	Yes	Yes	Yes	Yes
27/10/2021	Yes	Yes	Yes	Yes	Yes	Yes
28/10/2021	Yes	Yes	Yes	Yes	Yes	Yes
29/10/2021	Yes	Yes	Yes	Yes	Yes	Yes
30/10/2021	Yes	Yes	Yes	Yes	Yes	Yes
31/10/2021	Yes	Yes	Yes	Yes	Yes	Yes
01/11/2021	Yes	Yes	Yes	Yes	Yes	Yes
02/11/2021	Yes	Yes	Yes	Yes	Yes	Yes
03/11/2021	Yes	Yes	Yes	Yes	Yes	Yes

Date	NMT Operational?					
	NMT1	NMT2	NMT3	NMT4	NMT5	NMT6
04/11/2021	Yes	Yes	Yes	Yes	Yes	Yes
05/11/2021	Yes	Yes	Yes	Yes	Yes	Yes
06/11/2021	Yes	Yes	Yes	Yes	Yes	Yes
07/11/2021	Yes	Yes	Yes	Yes	Yes	Yes
08/11/2021	Yes	Yes	Yes	Yes	Yes	Yes
09/11/2021	Yes	Yes	Yes	Yes	Yes	Yes
10/11/2021	Yes	Yes	Yes	Yes	Yes	Yes
11/11/2021	Yes	Yes	Yes	Yes	Yes	Yes
12/11/2021	Yes	Yes	Yes	Yes	Yes	Yes
13/11/2021	Yes	Yes	Yes	Yes	Yes	Yes
14/11/2021	Yes	Yes	Yes	Yes	Yes	Yes
15/11/2021	Yes	Yes	Yes	Yes	Yes	Yes
16/11/2021	Yes	Yes	Yes	Yes	Yes	Yes
17/11/2021	Yes	Yes	Yes	Yes	Yes	Yes
18/11/2021	Yes	Yes	Yes	Yes	Yes	Yes
19/11/2021	Yes	Yes	Yes	Yes	Yes	Yes
20/11/2021	Yes	Yes	Yes	Yes	Yes	Yes
21/11/2021	Yes	Yes	Yes	Yes	Yes	Yes
22/11/2021	Yes	Yes	Yes	Yes	Yes	Yes
23/11/2021	Yes	Yes	Yes	Yes	Yes	Yes
24/11/2021	Yes	Yes	Yes	Yes	Yes	Yes
25/11/2021	Yes	Yes	Yes	Yes	Yes	Yes
26/11/2021	Yes	Yes	Yes	Yes	Yes	Yes
27/11/2021	Yes	Yes	Yes	Yes	Yes	Yes
28/11/2021	Yes	Yes	Yes	Yes	Yes	Yes
29/11/2021	Yes	Yes	Yes	Yes	Yes	Yes
30/11/2021	Yes	Yes	Yes	Yes	Yes	Yes
01/12/2021	Yes	Yes	Yes	Yes	Yes	Yes

Date	NMT Operational?					
	NMT1	NMT2	NMT3	NMT4	NMT5	NMT6
02/12/2021	Yes	Yes	Yes	Yes	Yes	Yes
03/12/2021	Yes	Yes	Yes	Yes	Yes	Yes
04/12/2021	Yes	Yes	Yes	Yes	Yes	Yes
05/12/2021	Yes	Yes	Yes	Yes	Yes	Yes
06/12/2021	Yes	Yes	Yes	Yes	Yes	Yes
07/12/2021	Yes	Yes	Yes	Yes	Yes	Yes
08/12/2021	Yes	Yes	Yes	Yes	Yes	Yes
09/12/2021	Yes	Yes	Yes	Yes	Yes	Yes
10/12/2021	Yes	Yes	Yes	Yes	Yes	Yes
11/12/2021	Yes	Yes	Yes	Yes	Yes	Yes
12/12/2021	Yes	Yes	Yes	Yes	Yes	Yes
13/12/2021	Yes	Yes	Yes	Yes	Yes	Yes
14/12/2021	Yes	Yes	Yes	Yes	Yes	Yes
15/12/2021	Yes	No	Yes	Yes	Yes	Yes
16/12/2021	Yes	No	Yes	Yes	Yes	Yes
17/12/2021	Yes	No	Yes	Yes	Yes	Yes
18/12/2021	Yes	No	Yes	Yes	Yes	Yes
19/12/2021	Yes	No	Yes	Yes	Yes	Yes
20/12/2021	Yes	Yes	Yes	Yes	Yes	Yes
21/12/2021	Yes	Yes	Yes	Yes	Yes	Yes
22/12/2021	Yes	Yes	Yes	Yes	Yes	Yes
23/12/2021	Yes	Yes	Yes	Yes	Yes	Yes
24/12/2021	Yes	Yes	Yes	Yes	Yes	Yes
25/12/2021	Yes	Yes	Yes	Yes	Yes	Yes
26/12/2021	Yes	Yes	Yes	Yes	Yes	Yes
27/12/2021	Yes	Yes	Yes	Yes	Yes	Yes
28/12/2021	Yes	Yes	Yes	Yes	Yes	Yes
29/12/2021	Yes	Yes	Yes	Yes	Yes	Yes

Date	NMT Operational?					
	NMT1	NMT2	NMT3	NMT4	NMT5	NMT6
30/12/2021	Yes	Yes	Yes	Yes	Yes	Yes
31/12/2021	Yes	Yes	Yes	Yes	Yes	Yes

Table A2.1: 2021 NTK daily operational status

A summary of the correlation rate for each month of 2021 is given in Table A2.2. In order to calculate the rate of correlation, the number of aircraft movements correlated has been compared against the number of operations at London City Airport during the same period. It has been assumed that the number of arrivals and departures each constitute 50% of the total number of operations.

Month	No. Operations	No. Correlated Departures (Sideline)	No. Correlated Departures (Flyover)	No. Correlated Arrivals
Jan	228	110	111	109
Feb	121	54	54	54
Mar	194	82	75	80
Apr	372	173	167	175
May	535	239	239	240
Jun	751	358	357	360
Jul	1,088	530	532	524
Aug	1,439	704	699	707
Sep	2,180	1,076	1,065	1,052
Oct	2,695	1,280	1,268	1,297
Nov	2,726	1,325	1,328	1,338
Dec	2,105	935	992	1,005

Table A2.2: Summary of Correlated Aircraft Movements, 2021

Table A2.3 gives a summary of the NTK operational status for each quarter.

Quarter	Operational Summary
January – March	All 6 NMTs were operational, and data was received from each NMT for all days with the exception of NMT 2 on the 15 January 2021 which was due to a power failure. The target correlation rate (80%) at NMTs 1-4 for departures was met for the first quarter of 2021. A total of 246 aircraft departures were recorded, and an average correlation rate of noise events to aircraft departures of 91% was achieved. In the first quarter of 2021, a total of 240 (88%) departures and 243 (90%) arrivals were correlated at NMTs 5 and 6.
April – June	All 6 NMTs were operational, and data was received from each NMT for all days. The target correlation rate (80%) at NMTs 1-4 for departures was met for the second quarter of 2021. A total of 770 aircraft departures were recorded, and an average correlation rate of noise events to aircraft departures of 93% was achieved. In the second quarter of 2021, a total of 763 (92%) departures and 775 (93%) arrivals were correlated at NMTs 5 and 6.
July – September	All 6 NMTs were operational, and data was received from each NMT for all days. The target correlation rate (80%) at NMTs 1-4 for departures was met for the third quarter of 2021. A total of 2,310 aircraft departures were recorded, and an average correlation rate of noise events to aircraft departures of 98% was achieved. In the third quarter of 2021, a total of 2,296 (98%) departures and 2,283 (97%) arrivals were correlated at NMTs 5 and 6.
October - December	All 6 NMTs were operational, and data was received from each NMT for all days except for NMT 2 from 15th December through to 19th December due to a power failure. The target correlation rate (80%) at NMTs 1-4 for departures was met for the fourth quarter of 2021. A total of 3,540 aircraft departures were recorded, and an average correlation rate of noise events to aircraft departures of 94% was achieved. In the fourth quarter of 2021, a total of 3,588 (95%) departures and 3,640 (97%) arrivals were correlated at NMTs 5 and 6.

Table A2.3: 2021 Quarterly Operations Summary

APPENDIX 3
INCENTIVES AND PENALTIES

The following table summarises the number of flights that incurred fixed penalties, credit removals and credit awards in the period between 1st January 2021 to 31st December 2021, by airline and aircraft type. Additionally, the total value of fixed penalties accrued and the residual number of credits are presented.

Airline Code	Aircraft Code	Fixed Penalties (# aircraft)	Fixed Penalties (total value)	# Credits Removed	# Credits Awarded	Residual Credits
AAB	C25A	0	£0	0	1	1
AAB	C25C	0	£0	0	3	3
AAB	C56X	0	£0	0	2	2
AAB	F2TH	0	£0	0	7	7
ABP	E135	0	£0	0	1	1
ABP	FA7X	0	£0	0	1	1
AHO	C56X	0	£0	0	16	16
ASJ	C510	0	£0	0	11	11
ASJ	C680	0	£0	0	11	11
ASJ	C68A	0	£0	0	2	2
AWU	C25A	0	£0	0	7	7
AWU	C525	0	£0	0	3	3
BFD	F2TH	0	£0	0	4	4
BOH	C56X	0	£0	0	1	1
CAZ	FA7X	0	£0	0	1	1
CFE	E170	0	£0	0	1	1
CFE	E190	0	£0	1	80	79
CLF	C25A	0	£0	0	3	3
CSD	C56X	0	£0	0	1	1
DCA	C56X	0	£0	0	8	8
DCA	C680	0	£0	0	8	8
DCA	C68A	0	£0	0	1	1
DCS	C56X	0	£0	0	4	4
DCW	C25C	0	£0	0	1	1
DLH	E190	0	£0	0	11	11

Airline Code	Aircraft Code	Fixed Penalties (# aircraft)	Fixed Penalties (total value)	# Credits Removed	# Credits Awarded	Residual Credits
DSO	FA8X	0	£0	0	1	1
EDC	C510	0	£0	0	1	1
EFD	C25B	0	£0	0	3	3
EFD	C25C	0	£0	0	3	3
EFD	C680	0	£0	0	3	3
EJA	GL5T	0	£0	0	1	1
EJA	GLEX	0	£0	0	1	1
ELJ	C680	0	£0	0	1	1
ENZ	E190	0	£0	0	1	1
ENZ	RJ85	0	£0	1	0	-1
EUW	C680	0	£0	0	1	1
FJO	E550	0	£0	0	4	4
FLJ	E135	0	£0	0	1	1
FLJ	E550	0	£0	0	8	8
FLJ	FA7X	0	£0	0	4	4
FYG	GLEX	0	£0	0	2	2
GAC	C25A	0	£0	0	2	2
GAC	C510	0	£0	0	48	48
GAC	E55P	0	£0	0	1	1
GES	C56X	0	£0	0	1	1
GLJ	GLEX	0	£0	0	2	2
GOT	C56X	0	£0	0	2	2
IER	C25B	0	£0	0	1	1
IXR	C68A	0	£0	0	1	1
JDI	C56X	0	£0	0	1	1
JET	C56X	0	£0	0	1	1
JFA	PC24	0	£0	0	10	10
JIV	C56X	0	£0	0	1	1
KFE	FA8X	0	£0	0	1	1

Airline Code	Aircraft Code	Fixed Penalties (# aircraft)	Fixed Penalties (total value)	# Credits Removed	# Credits Awarded	Residual Credits
KLC	E190	0	£0	0	1	1
KLM	E190	0	£0	1	37	36
LGL	DH8D	0	£0	0	38	38
LMJ	C56X	0	£0	0	1	1
LMJ	GLEX	0	£0	0	1	1
LNX	C56X	0	£0	0	3	3
LNX	E135	0	£0	0	1	1
LNX	FA8X	0	£0	0	3	3
LOG	AT42	0	£0	0	6	6
LOT	E190	0	£0	0	5	5
MMD	FA7X	0	£0	0	1	1
N44	GL7T	0	£0	0	1	1
N88	C680	0	£0	0	2	2
NJE	C56X	0	£0	0	38	38
NJE	C680	0	£0	0	38	38
NJE	C68A	0	£0	0	39	39
NJE	CL30	0	£0	0	24	24
NJE	CL35	0	£0	0	10	10
NJE	E55P	0	£0	0	74	74
NJE	GL5T	0	£0	0	2	2
NJE	GLEX	0	£0	0	7	7
NJU	C56X	0	£0	0	2	2
NJU	C650	0	£0	0	5	5
NJU	CL30	0	£0	0	1	1
NJU	E55P	0	£0	0	13	13
NJU	GL7T	0	£0	0	1	1
OOG	C680	0	£0	0	1	1
OOG	F2TH	0	£0	0	4	4
OOS	C56X	0	£0	0	4	4

Airline Code	Aircraft Code	Fixed Penalties (# aircraft)	Fixed Penalties (total value)	# Credits Removed	# Credits Awarded	Residual Credits
PHF	C25B	0	£0	0	1	1
PHJ	E135	0	£0	0	2	2
PHJ	F2TH	0	£0	0	1	1
PHV	B350	0	£0	0	1	1
PJS	F2TH	0	£0	0	1	1
RAF	B462	0	£0	0	1	1
RBB	FA7X	0	£0	0	1	1
RTG	F2TH	0	£0	0	1	1
SHE	FA10	0	£0	0	1	1
SHE	FA7X	0	£0	0	1	1
SHE	FA8X	0	£0	0	22	22
STQ	C25A	0	£0	0	1	1
SWR	A221	0	£0	0	32	32
SWR	E290	0	£0	0	93	93
SYB	GLEX	0	£0	0	2	2
TAY	C560	0	£0	0	1	1
TAY	C680	0	£0	0	1	1
TVS	C680	0	£0	0	1	1
VLJ	C25A	0	£0	0	1	1
XGO	C510	0	£0	0	1	1
XGO	P180	0	£0	0	1	1
XRO	FA7X	0	£0	0	1	1
-	C680	0	£0	0	3	3
-	CL60	0	£0	0	1	1
-	F2TH	0	£0	0	4	4
-	G550	0	£0	0	2	2
-	GLF6	0	£0	0	1	1
Total		**0**	**£0**	**3**	**838**	**835**

Table A3.1: 2021 Penalties and Credits Summary

APPENDIX 4
SUMMARY OF EFPS DATA

The following table summarises the Engine Run on Stand (ERS), Taxi Time on Arrival (TTA), and Taxi Time on Departure (TTD) times for 2021, by airline and aircraft type. Airline and aircraft type combinations that operated less than once per week on average have been grouped in the "Other" category.

Aircraft Code	Airline	Count of TTA	Average of TTA (mm:ss)	Count of ERS	Average of ERS (mm:ss)	Count of TTD	Average of TTD (mm:ss)
A221	Swiss International Air Lines	56	02:52	56	05:34	56	04:56
AT42	Loganair	331	02:44	331	05:44	331	04:53
C510	Globe Air	64	03:05	63	07:13	63	05:26
C68A	NetJets Transportes Aereos	94	03:12	94	05:50	94	05:41
DH8D	Luxair	338	03:25	338	04:39	338	04:40
E190	BA CityFlyer	4334	03:27	4326	03:56	4326	06:08
E190	Lufthansa	149	03:21	149	04:20	149	06:02
E190	KLM Royal Dutch Airlines	554	03:25	554	03:17	554	04:38
E190	LOT Polish Airlines	298	04:02	298	03:48	298	05:10
E290	Swiss International Air Lines	143	03:31	143	06:12	143	05:27
E55P	NetJets Transportes Aereos	90	03:17	91	05:20	91	05:06
Other		547	03:16	549	05:19	549	06:03
Overall		6998	03:24	6992	04:15	6992	05:47

Table A4.1: 2021 Ground Running Summary

APPENDIX 5
GROUND RUNNING OF ENGINES

Table A5.1 sets out the official record of ground running of engines for test and maintenance for 2021.

Date	Location	A/C Orientation	Type of Run / Power Set	A/C Type	Reg.	Start Time	Stop Time	Duration (hh:mm)
03/01/2021	Stand 10	NW	Ground Idle	E190	GLCYL	19:22	19:38	00:16
04/01/2021	Stand 10	NW	Ground Idle	E190	GLCYL	11:25	11:50	00:25
05/01/2021	Stand 10	NW	Ground Idle	E190	GLCYL	16:57	17:08	00:11
17/01/2021	Stand 9	NW	Ground Idle	E190	GLCYM	16:32	16:44	00:12
28/01/2021	Stand 25	NW	Ground Idle	E190	GLCYL	16:18	16:43	00:25
28/01/2021	Stand 25	NW	Ground Idle	E190	GLCYL	17:50	17:57	00:07
31/01/2021	Stand 6	NW	Ground Idle	E190	GLCYL	20:08	20:18	00:10
01/02/2021	Stand 6	NW	Ground Idle	E190	GLCYL	17:32	17:49	00:17
01/02/2021	Stand 6	NW	Ground Idle	E190	GLCYL	18:03	18:07	00:04
02/02/2021	Stand 6	NW	Ground Idle	E190	GLCYL	17:30	17:36	00:06
02/02/2021	Stand 6	NW	Ground Idle	E190	GLCYL	17:37	17:41	00:04
02/02/2021	Stand 25	NW	Ground Idle	E190	GLCYL	17:57	18:18	00:21
04/02/2021	Stand 6	Parked	Ground Idle	E190	GLCYL	16:23	16:36	00:13
05/02/2021	Stand 6	NW	Ground Idle	E190	GLCYL	12:46	13:17	00:31
07/02/2021	Stand 6	NW	Ground Idle	E190	GLCYL	16:33	16:50	00:17
14/02/2021	Stand 22	NW	Ground Idle	E190	GLCYL	16:54	17:29	00:35
14/02/2021	Stand 22	NW	Ground Idle	E190	GLCYL	17:35	17:36	00:01
14/02/2021	Stand 28	NW	Ground Idle	E190	GLCYJ	17:59	18:07	00:08
14/02/2021	Stand 24	NW	Ground Idle	E190	GLCYX	18:20	18:29	00:09
14/02/2021	Stand 22	NW	Ground Idle	E190	GLCYL	18:41	18:53	00:12
16/02/2021	Stand 26	Normal	Ground Idle	E190	GLCYN	17:34	17:52	00:18
16/02/2021	Stand 21	Normal	Ground Idle	E190	GLCYK	18:05	18:18	00:13
18/02/2021	Stand 24	NW	Ground Idle	E190	GLCYX	18:02	18:17	00:15
19/02/2021	Stand 28	NW	Ground Idle	E190	GLCYP	18:27	18:42	00:15
23/02/2021	Stand 27	NW	Ground Idle	E190	GLCYL	17:46	17:57	00:11
28/02/2021	Stand 7	NW	Ground Idle	E190	GLCYJ	14:09	14:45	00:36
28/02/2021	Stand 10	NW	Ground Idle	E190	GLCYN	15:35	15:42	00:07
28/02/2021	Stand 10	NW	Ground Idle	E190	GLCYN	17:07	17:13	00:06
01/03/2021	Stand 7	NW	Low Power	E190	GLCYJ	09:05	09:14	00:09

Date	Location	A/C Orientation	Type of Run / Power Set	A/C Type	Reg.	Start Time	Stop Time	Duration (hh:mm)
01/03/2021	Stand 6	NW	Low Power	E190	GLCYM	17:44	17:50	00:06
09/03/2021	Stand 27	NW	Ground Idle	E190	GLCYL	16:28	16:40	00:12
16/03/2021	Stand 28	NW	Ground Idle	E190	GLCYP	17:30	17:48	00:18
19/03/2021	Stand 22	NW	Ground Idle	E190	GLCYS	15:57	16:02	00:05
31/03/2021	Stand 27	NW	Ground Idle	E190	GLCYL	13:36	13:51	00:15
31/03/2021	Stand 24	NW	Ground Idle	E190	GLCYX	12:53	13:10	00:17
04/04/2021	Stand 21	NW	Ground Idle	E190	GLCYJ	16:52	17:04	00:12
08/04/2021	Stand 28	NW	Ground Idle	E190	GLCYM	16:35	16:41	00:06
09/04/2021	JC	E	Ground Idle	GLEX	OGLML	14:35	14:41	00:06
10/04/2021	Stand 21	NW	Ground Idle	E190	GLCYJ	09:51	09:59	00:08
15/04/2021	Stand 5	NW	Ground Idle	E190	GLCYX	16:23	16:29	00:06
16/04/2021	JC	E	Ground Idle	GL6T	OELML	08:43	08:48	00:05
16/04/2021	Stand 3	NW	Ground Idle	E190	GLCYX	16:44	16:55	00:11
16/04/2021	Stand 26	NW	Ground Idle	E190	GLCYZ	18:31	19:16	00:45
26/04/2021	Stand 26	NW	Ground Idle	E190	GLCYZ	10:28	10:35	00:07
08/05/2021	Stand 28	NW	Ground Idle	E190	GLCYX	16:32	16:47	00:15
10/05/2021	Stand 27	Parked	Ground Idle	E190	GLCYV	15:57	16:06	00:09
11/05/2021	Stand 3	NW	Ground Idle	E190	GLCYV	05:41	05:44	00:03
11/05/2021	Stand 27	NW	Ground Idle	E190	GLCYV	17:12	17:23	00:11
12/05/2021	Stand 27	Parked	Ground Idle	E190	GLCYV	06:55	07:15	00:20
17/05/2021	Stand 26	Parked	Ground Idle	E190	GLCYV	17:29	17:35	00:06
18/05/2021	Stand 26	Parked	Ground Idle	E190	GLCYV	08:22	08:44	00:22
01/06/2021	Stand 12	W	Ground Idle	E190	GLCYV	11:32	11:37	00:05
07/07/2021	Stand 24	W	High Power	E190	GLCAD	14:15	14:37	00:22
08/07/2021	Stand 27	NW	Low Power	E190	GLCAD	17:03	17:08	00:05
10/07/2021	Stand 4	NW	Ground Idle	E190	GLCYM	08:34	08:41	00:07
16/07/2021	Stand 28	NW	Ground Idle	E190	GLCAC	19:39	19:43	00:04
17/07/2021	Stand 13	W	Ground Idle	E190	GLCYP	07:18	07:25	00:07
20/07/2021	Stand 27	NW	Ground Idle	E190	GLCAE	11:25	11:31	00:06
21/07/2021	Stand 26	W	High Power	E190	GLCAC	14:09	14:33	00:24
25/07/2021	Stand 4	NW	Ground Idle	E190	GLCYW	11:42	11:52	00:10
28/07/2021	Stand 21	NW	Ground Idle	E190	GLCYP	08:40	08:47	00:07

Date	Location	A/C Orientation	Type of Run / Power Set	A/C Type	Reg.	Start Time	Stop Time	Duration (hh:mm)
03/08/2021	Stand 26	Parked	Ground Idle	E190	GLCYZ	13:49	13:59	00:10
04/08/2021	Stand 23	NW	Ground Idle	E190	GLCYM	18:16	18:21	00:05
11/08/2021	Stand 28	NW	Ground Idle	E190	GLCYJ	08:44	08:52	00:08
13/08/2021	Stand 29	NW	Ground Idle	E190	GLCYX	05:47	05:54	00:07
13/08/2021	Stand 4	NW	Ground Idle	E190	GLCYK	06:09	06:14	00:05
15/08/2021	Stand 10	Parked	Ground Idle	E190	GLCYR	11:38	11:43	00:05
17/08/2021	Stand 23	NW	Ground Idle	E190	GLCYR	06:17	06:22	00:05
18/08/2021	Abeam 13	W	Ground Idle	E190	GLCYL	18:59	19:07	00:08
23/08/2021	Stand 6	NW	Ground Idle	E190	GLCYJ	07:02	07:19	00:17
25/08/2021	Stand 8	NW	Ground Idle	E190	GLCYR	11:13	11:26	00:13
25/08/2021	Abeam 13	W	Ground Idle	E190	GLCYX	17:43	17:51	00:08
31/08/2021	Stand 13	W	Ground Idle	E190	GLCYJ	18:50	18:56	00:06
01/09/2021	Stand 25	On Stand	Ground Idle	E190	GLCYN	13:11	13:18	00:07
07/09/2021	Stand 26	NW	Ground Idle	E190	GLCAB	08:14	08:20	00:06
07/09/2021	Stand 28	NW	Ground Idle	E190	GLCAC	17:22	17:29	00:07
08/09/2021	Stand 26	W	High Power	E190	GLCYL	13:42	13:58	00:16
08/09/2021	Stand 26	NW	Ground Idle	E190	GLCAB	18:45	19:09	00:24
09/09/2021	Stand 26	NW	Ground Idle	E190	GLCAB	06:20	06:28	00:08
12/09/2021	Stand 25	NW	Ground Idle	E190	GLCAC	11:49	11:58	00:09
16/09/2021	Stand 10	NW	Ground Idle	E190	GLCYK	13:40	13:46	00:06
18/09/2021	Stand 8	NW	Ground Idle	E190	GLCAB	05:40	05:47	00:07
18/09/2021	Stand 9	NW	Ground Idle	E190	GLCAE	09:49	09:57	00:08
19/09/2021	Stand 5	NW	Ground Idle	E190	GLCAB	11:41	11:47	00:06
19/09/2021	Stand 21	NW	Ground Idle	E190	GLCYP	18:22	18:33	00:11
21/09/2021	Stand 5	Parked	Ground Idle	E190	GLCYM	06:56	07:02	00:06
23/09/2021	Stand 10	NW	Ground Idle	E190	GLCYL	06:04	06:11	00:07
23/09/2021	Stand 26	NW	Ground Idle	E190	GLCYT	07:00	07:07	00:07
23/09/2021	Stand 10	NW	Ground Idle	E190	GLCYL	08:05	08:09	00:04
23/09/2021	Stand 26	NW	Ground Idle	E190	GLCYJ	09:28	09:38	00:10
23/09/2021	Abeam 26	W	High Power	E190	GLCYN	18:50	19:23	00:33
26/09/2021	JC	E	Ground Idle	GLEX	OELML	11:58	12:10	00:12
26/09/2021	JC	E	Ground Idle	GLEX	OELML	11:25	11:26	00:01

Date	Location	A/C Orientation	Type of Run / Power Set	A/C Type	Reg.	Start Time	Stop Time	Duration (hh:mm)
26/09/2021	Stand 10	Parked	Ground Idle	E190	GLCAD	12:20	12:31	00:11
26/09/2021	Stand 10	NW	Ground Idle	E190	GLCAB	13:08	13:16	00:08
27/09/2021	Stand 3	NW	Ground Idle	E190	GLCYX	19:08	19:14	00:06
28/09/2021	Stand 23	NW	Ground Idle	E190	GLCYO	18:16	18:23	00:07
30/09/2021	Stand 23	NW	Ground Idle	E190	GLCYM	18:26	18:32	00:06
02/10/2021	Stand 10	NW	Ground Idle	E190	GLCAF	09:21	09:27	00:06
07/10/2021	Stand 6	NW	Ground Idle	E190	GLCYM	05:43	05:53	00:10
08/10/2021	Stand 23	NW	Ground Idle	E190	GLCYM	05:38	05:53	00:15
09/10/2021	Stand 23	NW	Ground Idle	E190	GLCYO	09:25	09:33	00:08
11/10/2021	Stand 25	NW	Ground Idle	E190	GLCYV	08:26	08:39	00:13
11/10/2021	Stand 25	NW	Ground Idle	E190	GLCYV	09:40	09:52	00:12
11/10/2021	Stand 6	Parked	Ground Idle	E190	GLCYJ	10:52	10:59	00:07
12/10/2021	Stand 25	NW		E190	GLCYV			00:00
17/10/2021	Abeam 24	W	High Power	E190	GLCYO	11:54	12:13	00:19
17/10/2021	Stand 10	NW	Ground Idle	E190	GLCYV	13:40	13:49	00:09
19/10/2021	Stand 21	NW	Ground Idle	E190	GLCAF	12:56	13:02	00:06
20/10/2021	Stand 27	NW	Ground Idle	E190	GLCAF	11:55	12:01	00:06
24/10/2021	Stand 9	NW	Ground Idle	E190	GLCYM	11:35	11:45	00:10
24/10/2021	Stand 24	W	High Power	E190	GLCYR	12:12	12:42	00:30
31/10/2021	Stand 22	NW	Ground Idle	E190	GLCYP	12:51	12:56	00:05
02/11/2021	Stand 10	NW	Ground Idle	E190	GLCYW	11:11	11:19	00:08
03/11/2021	Abeam 27	W	High Power	E190	GLCAA	08:19	08:44	00:25
07/11/2021	Stand 26	NW	Ground Idle	G500	N500GA	12:58	13:26	00:28
07/11/2021	Stand 9	NW	Ground Idle	E190	GLCYW	14:29	14:37	00:08
09/11/2021	Stand 10	NW	Ground Idle	E190	GLCYM	11:38	11:42	00:04
11/11/2021	Stand 27	NW	Ground Idle	E190	GLCAC	19:27	19:32	00:05
12/11/2021	Stand 5	NW	Ground Idle	E190	GLCAC	12:35	12:41	00:06
12/11/2021	Stand 5	NW	Ground Idle	E190	GLCAC	13:11	13:15	00:04
12/11/2021	Stand 24	NW	Ground Idle	E190	GLCYZ	13:54	14:03	00:09
17/11/2021	Stand 21	NW	Ground Idle	E190	GLCYX	10:06	10:14	00:08
20/11/2021	Abeam 26	W	High Power	E190	GLCYN	07:37	07:51	00:14
21/11/2021	Stand 3	NW	Ground Idle	E190	GLCYR	12:32	12:42	00:10

Date	Location	A/C Orientation	Type of Run / Power Set	A/C Type	Reg.	Start Time	Stop Time	Duration (hh:mm)
21/11/2021	Abeam 28	W	High Power	E190	GLCYR	14:37	14:50	00:13
24/11/2021	Stand 4	NW	Ground Idle	E190	GLCYK	13:54	14:00	00:06
25/11/2021	Stand 24	NW	Ground Idle	E190	GLCAF	18:48	18:58	00:10
26/11/2021	Stand 3	NW	Ground Idle	E190	GLCYK	07:28	07:39	00:11
27/11/2021	Stand 10	NW	Ground Idle	E190	GLCYK	10:18	10:26	00:08
04/12/2021	Stand 24	NW	Ground Idle	E190	GLCYN	11:10	11:18	00:08
05/12/2021	Abeam 26	W	High Power	E190	GLCYU	19:59	20:15	00:16
06/12/2021	Stand 25	NW	Ground Idle	E190	GLCYZ	16:55	17:02	00:07
10/12/2021	Stand 22	NW	Ground Idle	E190	GLCAH	15:26	15:32	00:06
10/12/2021	Stand 25	NW	Ground Idle	E190	GLCAH	15:50	15:56	00:06
11/12/2021	Abeam 13	W	Ground Idle	E190	GLCAB	11:35	11:47	00:12
12/12/2021	Stand 28	W	High Power	E190	GLCYO	12:39	12:48	00:09
14/12/2021	Stand 25	NW	Ground Idle	E190	GLCYL	15:26	15:40	00:14
17/12/2021	Stand 25	NW	Ground Idle	E190	GLCAA	12:37	12:45	00:08
18/12/2021	Stand 25	NW	Ground Idle	E190	GLCAC	12:22	12:33	00:11
19/12/2021	Stand 25	W	High Power	E190	GLCYO	13:09	13:32	00:23
21/12/2021	Stand 6	NW	Ground Idle	E190	GLCYJ	19:35	19:59	00:24
30/12/2021	Stand 26	NW	Ground Idle	E190	GLCYJ	17:57	18:06	00:09
30/12/2021	Stand 10	NW	Ground Idle	E190	GLCYU	19:29	19:38	00:09

Table A5.1: Official record of ground running of engines for test and maintenance for 2021

Table A5.2 gives a summary of high power running for 2021.

Month	Minutes	A/C Type
January	0	-
February	0	-
March	0	-
April	0	-
May	0	-
June	0	-
July	46	E190
August	0	-
September	49	E190
October	49	E190
November	52	E190
December	48	E190
Total	**244**	-

Table A5.2: Summary of high power ground running, 2021

Prediction of engine ground running as Appendix D2 of NOMMS

Item (A) Determination of largest monthly duration:

As indicated in Table A5.2, that occurred in November 2021, specifically –

52 minutes of E190

52 minutes total ground running

Item (B) Determination of average daily duration during worst case

52 minutes in a month of 30 days

1.7 minutes average daily duration

Item (C) Compute resultant noise level at reference distance (152 m)

Resultant noise level at 152 m

= reference noise level + 10 Log(duration) – 10 Log(12*60)

= 84 + 10 Log(1.7) – 10 log(12*60)

= 84 + 2.4 – 28.6

= 57.8 dB $L_{Aeq,12h}$

Item (D) Compute level at nearest properties in Newland Street

Aircraft at Stand 24

Noise level at Newland Street

= resultant noise level – 26.7 Log(255/152)

= 57.8 – 6.0

= 51.8 dB $L_{Aeq,12h}$

LCA ground running noise limit = 60 dB $L_{Aeq,12h}$

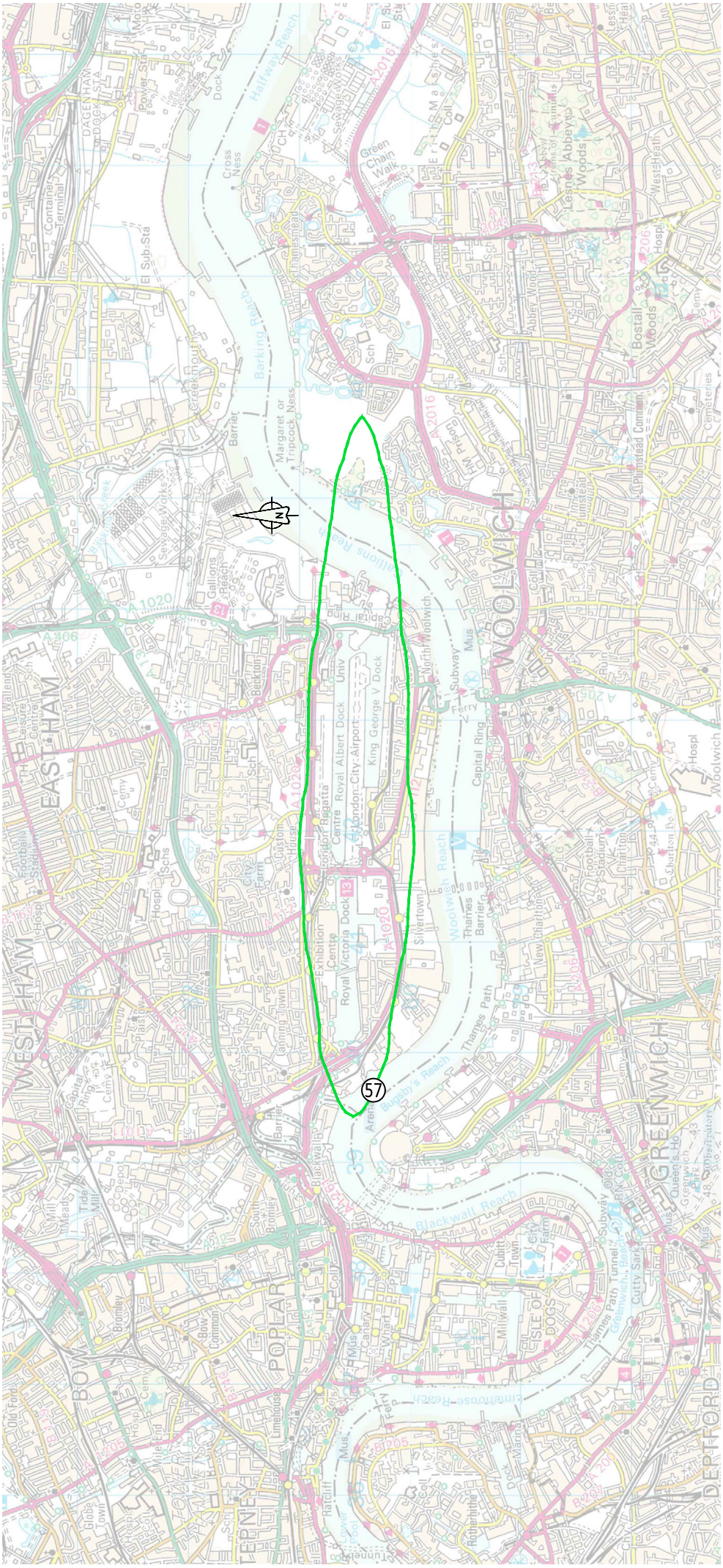
Conclusion

In 2021 LCA's ground running was 8.2 dB below the ground running noise limit.

APPENDIX 6
NOISE CONTOURS

The following noise contours are presented in this appendix:

- 2021 Actual average mode summer daytime
- 2022 Forecast average mode summer daytime
- 2022 Forecast Reduced average mode summer daytime
- 1998 Planning Contour



LEGEND:

Noise Contours

REVISIONS

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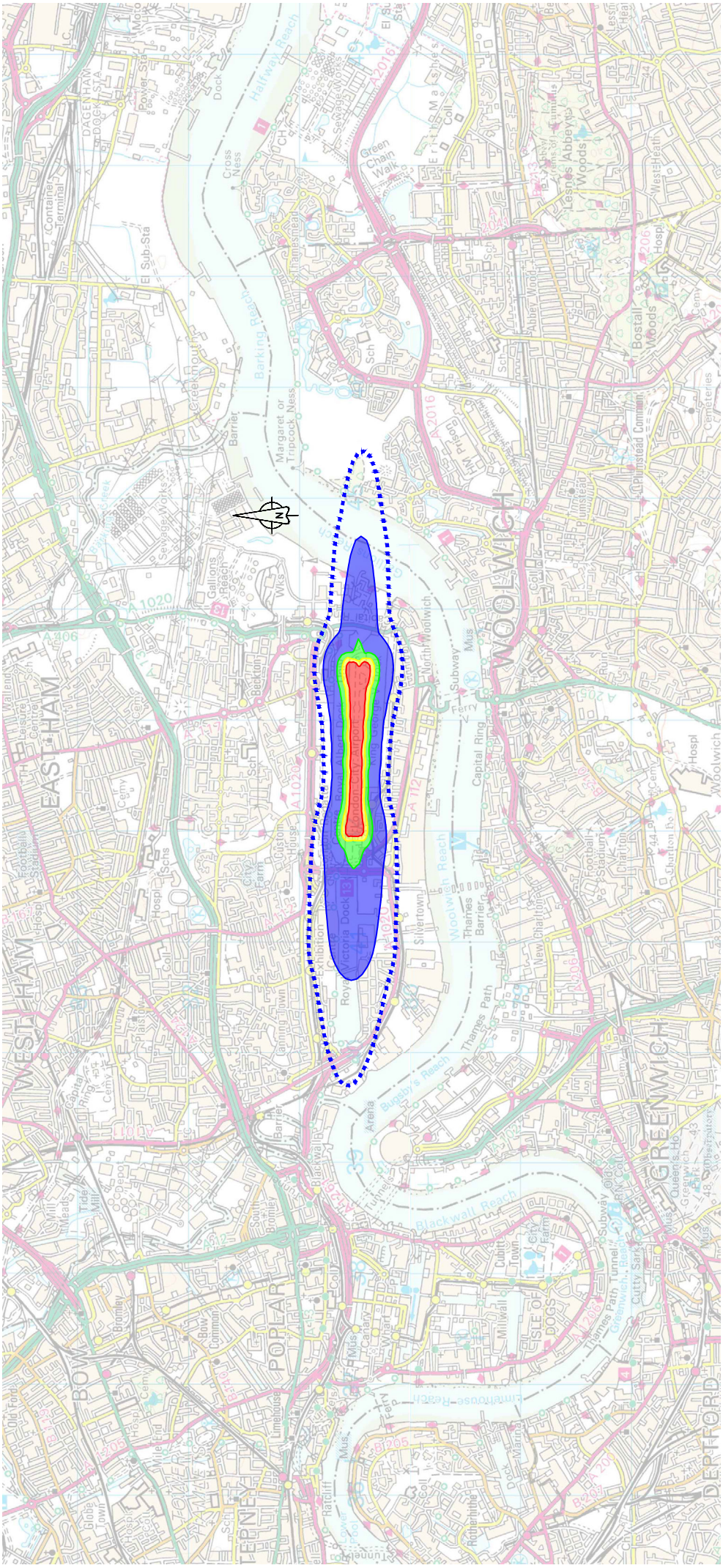
$L_{Aeq,16h}$ Noise Contours
1998 Planning Contour

DRAWN: NW CHECKED: DC

DATE: 28/04/2020 SCALE: 1:50000@A4

FIGURE No:

A11327_10_DR002_1.0



LEGEND:

- 54 dB Noise Contour
- 57 - 63 dB $L_{Aeq,16h}$
- 63 - 66 dB $L_{Aeq,16h}$
- 66 - 69 dB $L_{Aeq,16h}$
- >69 dB $L_{Aeq,16h}$

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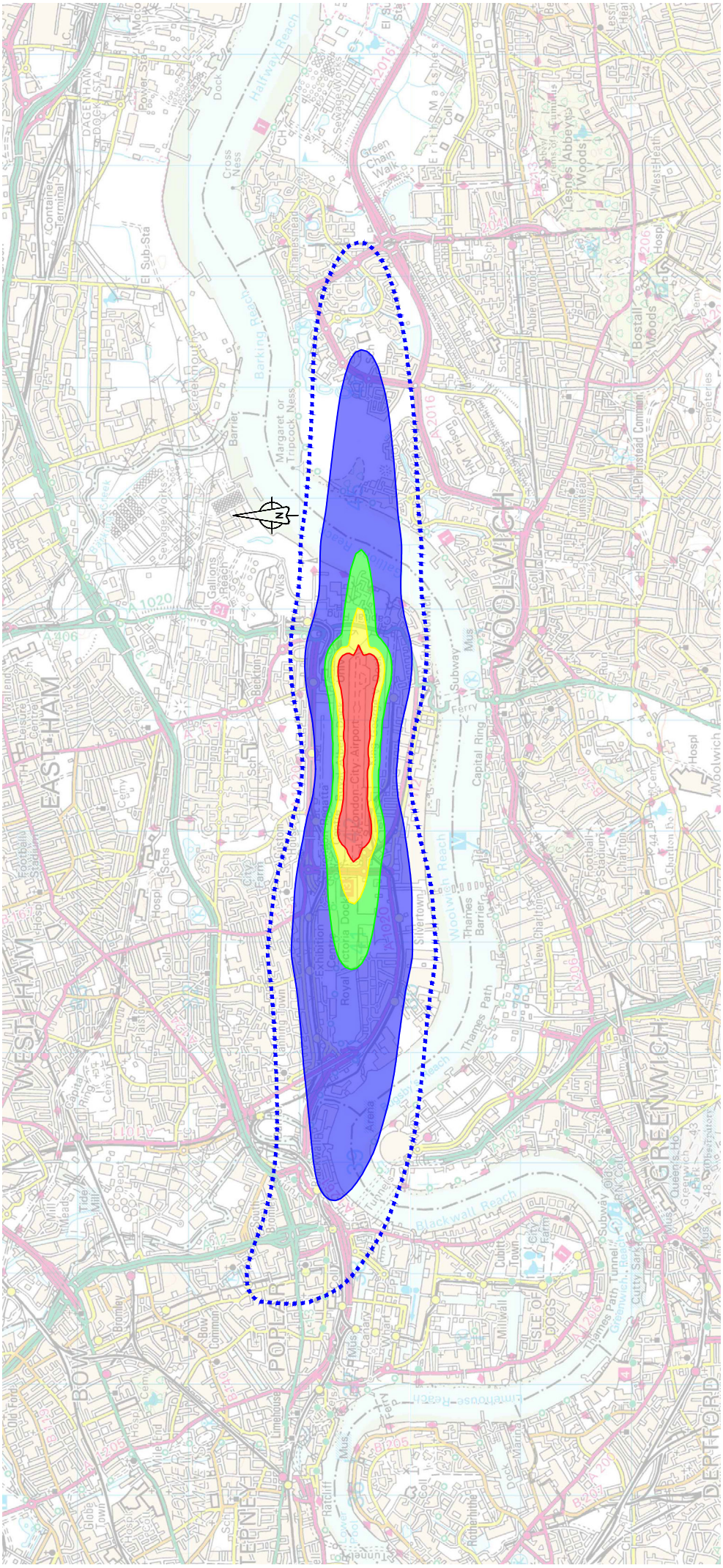
Actual Noise Contours
Summer 2021 Average Mode

DRAWN: NW CHECKED: DC

DATE: 16/05/2022 SCALE: 1:50000@A4

FIGURE No:

A11327_10_DR004_1.0



LEGEND:

- 54 dB Noise Contour
- 57 - 63 dB $L_{Aeq,16h}$
- 63 - 66 dB $L_{Aeq,16h}$
- 66 - 69 dB $L_{Aeq,16h}$
- >69 dB $L_{Aeq,16h}$

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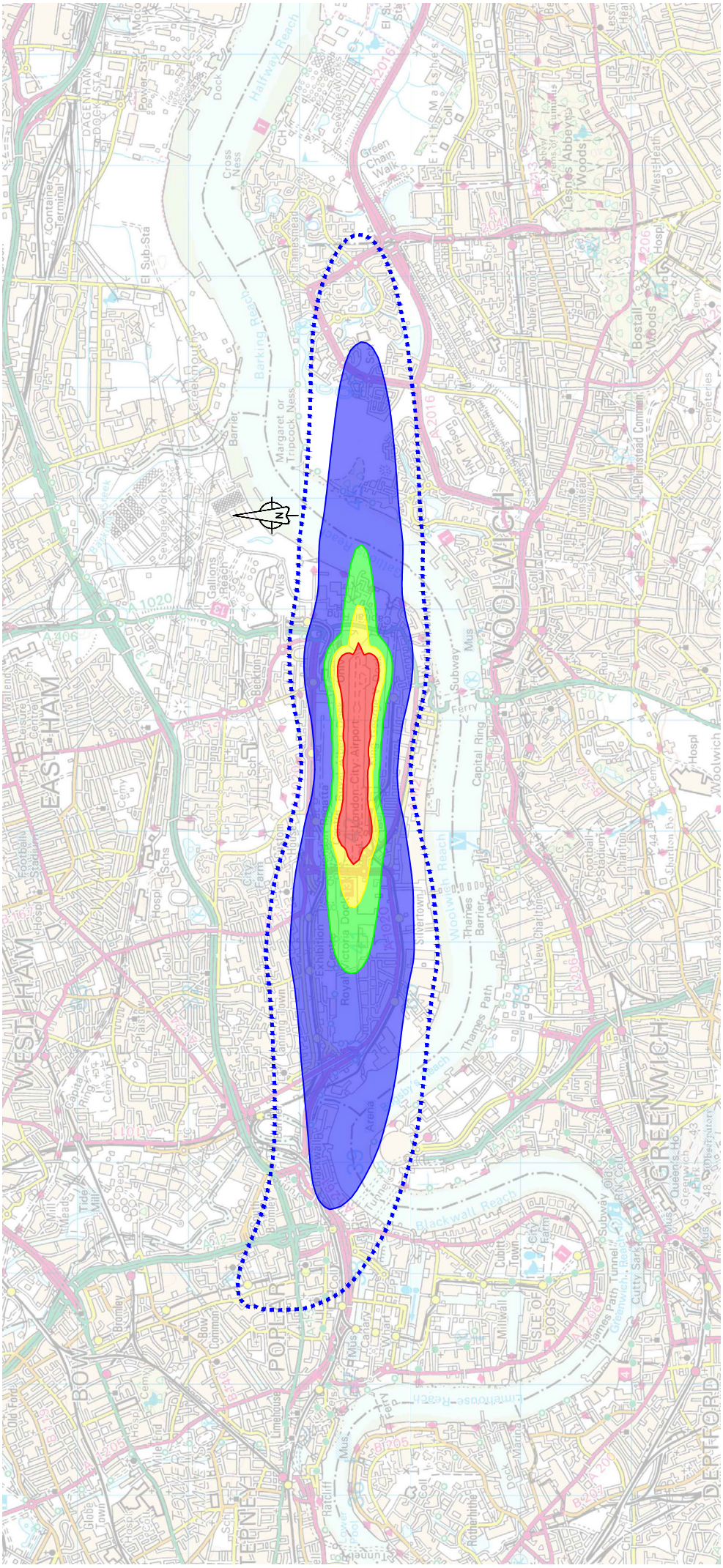
Predicted Reduced Noise Contours
Summer 2022 Average Mode

DRAWN: NW CHECKED: DC

DATE: 16/05/2022 SCALE: 1:50000@A4

FIGURE No:

A11327_10_DR006_1.0



Ordnance Survey map licensed to London City Airport Ltd 100018300

LEGEND:

- 54 dB Noise Contour
- 57 - 63 dB $L_{Aeq,16h}$
- 63 - 66 dB $L_{Aeq,16h}$
- 66 - 69 dB $L_{Aeq,16h}$
- >69 dB $L_{Aeq,16h}$

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London City Airport

Predicted Noise Contours
Summer 2022 Average Mode

DRAWN: NW CHECKED: DC

DATE: 16/05/2022 SCALE: 1:50000@A4

FIGURE No:

A11327_10_DR006_1.0

APPENDIX 7
AUXILIARY POWER UNIT USAGE

SCHEDULED AIRCRAFT

AIRCRAFT	A.P.U. USAGE REQUIRED? (✓)
BAe 146	✓
RJ Series	✓
Airbus A221	✓
Airbus A318	✓
Embraer 135	✓
Embraer 170	✓
Embraer 190	✓
Embraer 290	✓
Embraer 295	✓
ATR 42	✓
ATR 72	✓
DHC 8-100	✓
DHC 8-300	✓
DHC 8-400	✓
Fokker 50	
Dornier 328	✓
Dornier 328 Jet	✓
Saab 2000	✓

Table A7.1: APU Usage Details, Scheduled Aircraft

GENERAL AVIATION AIRCRAFT

AIRCRAFT	A.P.U. USAGE REQUIRED? (✓)
B300 Beechcraft	
BE20 Beechcraft 200	
BE58 PA Beechcraft Baron	
BE9L Beechcraft 900	
Beech 400 A	

AIRCRAFT	A.P.U. USAGE REQUIRED? (✓)
Bombardier Challenger 350	✓
Bombardier Challenger 604/5	✓
Bombardier Global 5000/5500/6000/6500	✓
C510 (Citation Mustang)	
C525 Citation Jet Series (CJ1/2/3/4)	
C550 (Citation Bravo)	
C560 (Citation V)	
C56X (Citation Excel)	✓
C680 (Citation Sovereign)	✓
C680A (Citation Latitude)	✓
E545 Legacy 450	✓
E550 Legacy 500	✓
E55P Phenom 300	
FA900B	✓
FA10 (Falcon 10)	
FA50 (Falcon 50)	✓
F2TH (Falcon 2000EX)	✓
F900EX (Falcon 900EX)	✓
FA7X Falcon 7X	✓
FA8X Falcon 8X	✓
G150 Gulfstream 150	✓
G280 Gulfstream 280	✓
G500 Gulfstream GVII	✓
G600 Gulfstream GVII	✓
G650 Gulfstream GVI	✓
Hawker 800 XP	✓
Learjet 40/45	✓
P180 (Piaggio Avanti)	
P68C (Partenavia 68)	

AIRCRAFT	A.P.U. USAGE REQUIRED? (✓)
PA31 (Navajo)	
PA34 (Seneca)	
Pilatus PC24	✓

Table A7.2: APU Usage Details, General Aviation Aircraft

APPENDIX 8
SUMMARY OF REVERSE THRUST DATA

The following charts show the distribution of measured levels of arriving aircraft at NMT7 in 2020, separately for runway 09 and runway 27. The decibel values on the x-axis in each chart are the maximum values for events in that column, e.g. the column above "83" contains events that recorded a measurement of 82.1 to 83.0 dB L_{ASmax}.

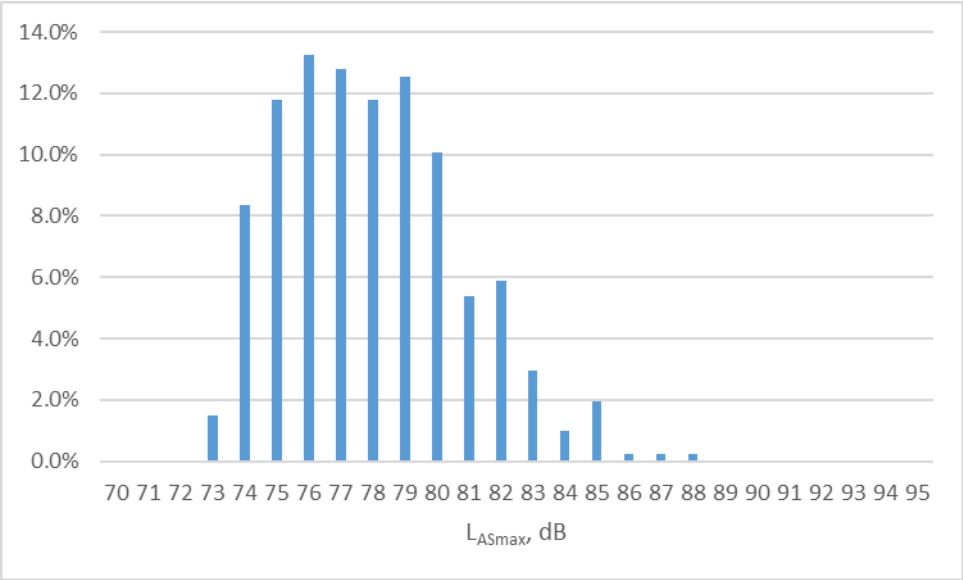

Figure A8.1: Runway 09 Distribution of NMT 7 Noise Levels, 2021 (407 events)

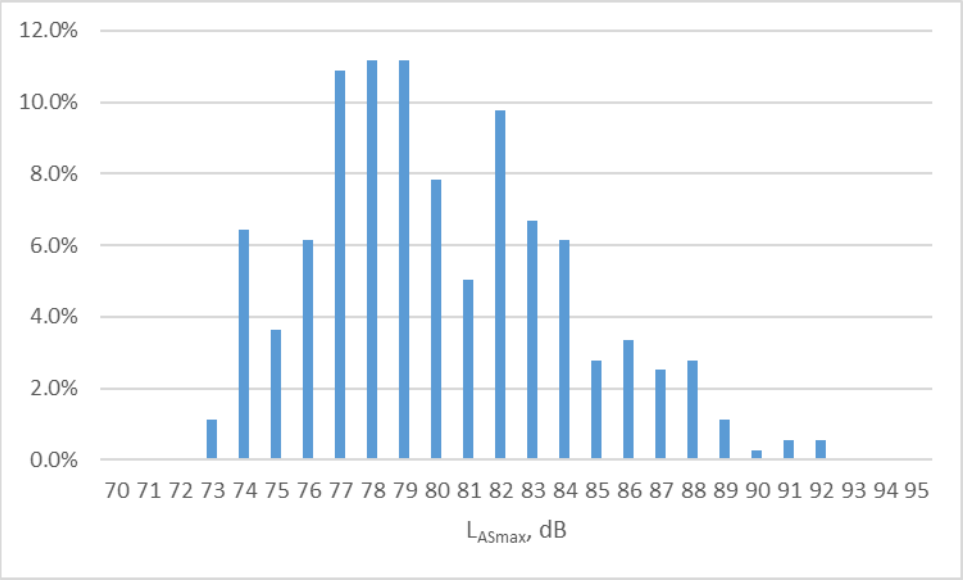

Figure A8.2: Runway 27 Distribution of NMT 7 Noise Levels, 2021 (358 events)

APPENDIX 9
SOUND INSULATION SCHEME PROPERTY LISTS

The tables in this appendix give the lists of properties that have become newly eligible for the following sound insulation schemes:

- First Tier Scheme – Residential Dwellings
- First Tier Scheme – Public Buildings
- Intermediate Tier Scheme – Residential Dwellings
- Intermediate Tier Scheme – Public Buildings
- Second Tier Scheme – Residential Dwellings
- Second Tier Scheme – Public Buildings
- Re-inspection Scheme

First Tier Scheme – Residential Dwellings						
Building Name	**No.**	**Sub Building Name**	**Thorough-fare**	**Post Code**	**uprn**	**Further Info**
n/a						

Table A9.1: Newly Eligible Residential Dwellings, First Tier Scheme

First Tier Scheme – Public Buildings						
Building Name	**No.**	**Sub Building Name**	**Thorough-fare**	**Post Code**	**uprn**	**Further Info**
n/a						

Table A9.2: Newly Eligible Public Buildings, First Tier Scheme

Intermediate Tier Scheme – Residential Dwellings						
Building Name	**No.**	**Sub Building Name**	**Thorough-fare**	**Post Code**	**uprn**	**Further Info**
n/a						

Table A9.3: Newly Eligible Residential Dwellings, Intermediate Tier Scheme

Intermediate Tier Scheme – Public Buildings						
Building Name	**No.**	**Sub Building Name**	**Thorough-fare**	**Post Code**	**uprn**	**Further Info**
n/a						

Table A9.4: Newly Eligible Public Buildings, Intermediate Tier Scheme

Second Tier Scheme – Residential Dwellings						
Building Name	**No.**	**Sub Building Name**	**Thorough-fare**	**Post Code**	**uprn**	**Further Info**
n/a						

Table A9.5: Newly Eligible Residential Dwellings, Second Tier Scheme

Second Tier Scheme – Public Buildings						
Building Name	**No.**	**Sub Building Name**	**Thorough-fare**	**Post Code**	**uprn**	**Further Info**
n/a						

Table A9.6: Newly Eligible Public Buildings, Second Tier Scheme

Re-inspection Scheme						
Building Name	**No.**	**Sub Building Name**	**Thorough-fare**	**Post Code**	**uprn**	**Further Info**
	5		DEAN ROAD	SE28 8SB	100020956380	
	6		DEAN ROAD	SE28 8SB	100020956381	
	9		DEAN ROAD	SE28 8SB	100020956384	
	10		DEAN ROAD	SE28 8SB	100020956385	
	11		DEAN ROAD	SE28 8SB	100020956386	
	12		DEAN ROAD	SE28 8SB	100020956387	
	14		DEAN ROAD	SE28 8SB	100020956389	
	15		DEAN ROAD	SE28 8SB	100020956390	
	16		DEAN ROAD	SE28 8SB	100020956391	
	20		DEAN ROAD	SE28 8SB	100020956395	
	22		DEAN ROAD	SE28 8SB	100020956397	
	25		DEAN ROAD	SE28 8SB	100020956400	
	26		DEAN ROAD	SE28 8SB	100020956401	
	27		DEAN ROAD	SE28 8SB	100020956402	
	28		DEAN ROAD	SE28 8SB	100020956403	
	8		HUTCHINS ROAD	SE28 8SA	100020976828	
	13		HUTCHINS ROAD	SE28 8SD	100020976833	
	18		HUTCHINS ROAD	SE28 8SA	100020976838	
	20		HUTCHINS ROAD	SE28 8SA	100020976840	
	22		HUTCHINS ROAD	SE28 8SA	100020976842	
	24		HUTCHINS ROAD	SE28 8SA	100020976844	
	25		HUTCHINS ROAD	SE28 8SD	100020976845	
	29		HUTCHINS ROAD	SE28 8SD	100020976849	
	31		HUTCHINS ROAD	SE28 8SD	100020976851	
	33		HUTCHINS ROAD	SE28 8SE	100020976853	
	35		HUTCHINS ROAD	SE28 8SE	100020976855	
	36		HUTCHINS ROAD	SE28 8SA	100020976856	
	38		HUTCHINS ROAD	SE28 8SA	100020976858	
	41		HUTCHINS ROAD	SE28 8SE	100020976861	
	44		HUTCHINS ROAD	SE28 8SA	100020976864	
	46		HUTCHINS ROAD	SE28 8SA	100020976866	
	4		WALDSTOCK ROAD	SE28 8SF	100021013654	
	7		WALDSTOCK ROAD	SE28 8SF	100021013657	
	8		WALDSTOCK ROAD	SE28 8SF	100021013658	
	52		WALDSTOCK ROAD	SE28 8SF	100021013702	
	55		WALDSTOCK ROAD	SE28 8SF	100021013705	
	57		WALDSTOCK ROAD	SE28 8SF	100021013707	
	59		WALDSTOCK ROAD	SE28 8SF	100021013709	
	60		WALDSTOCK ROAD	SE28 8SF	100021013710	
	61		WALDSTOCK ROAD	SE28 8SF	100021013711	
	63		WALDSTOCK ROAD	SE28 8SF	100021013713	

Re-inspection Scheme						
Building Name	**No.**	**Sub Building Name**	**Thorough-fare**	**Post Code**	**uprn**	**Further Info**
	67		WALDSTOCK ROAD	SE28 8SF	100021013717	
	68		WALDSTOCK ROAD	SE28 8SF	100021013718	
	69		WALDSTOCK ROAD	SE28 8SF	100021013719	
	76		WALDSTOCK ROAD	SE28 8SF	100021013726	

Table A9.7: Buildings Eligible for Re-Inspection

APPENDIX 10
EXTRACT FROM PLANNING CONDITIONS

LBN/107(b)

17. Aircraft Take-Off and Land Times
Except in cases of immediate emergency to an aircraft and/or the persons on board, the Airport shall not be used for the taking off or landing of aircraft at any time other than between:
Weekdays
0630 and 2200 hours Monday to Friday; and
Bank Holidays and Public Holidays (with the exception of Christmas Day – see condition 27)
0900 and 2200 hours on Bank Holidays and Public Holidays; and
Saturdays
0630 and 1230 hours on Saturdays; and
Sundays
1230 hours and 2200 hours on Sundays.
Provided that these restrictions shall not prevent an aircraft which was scheduled to take off from or land at the Airport but which has suffered unavoidable operational delays, from taking off or landing at the Airport between 2200 and 2230 Sunday to Friday and 1230 to 1300 on Saturday and where that taking off or landing would not result in there being more than 400 Aircraft Movements at the Airport per calendar year outside the above permitted hours of operation comprising no more than 150 such movements in any consecutive three months.
Reason: In the interests of limiting the number of aircraft movements in order to protect the amenity of current and future occupants and neighbours and with regard to saved Policy EQ47 of the London Borough of Newham Unitary Development Plan (adopted June 2001 and saved from 27 September 2007 by direction from the Secretary of State and not deleted on adoption of the Core Strategy on 26 January 2012), Policy 7.15 of the London Plan (consolidated with alterations since 2011 and published March 2015), and Policies SP2 and SP3 of the Newham Core Strategy (adopted 26 January 2012).

the London Plan (consolidated with alterations since 2011 and published March 2015), and Policies SP2 and SP3 of the Newham Core Strategy (adopted 26 January 2012).

21. Maximum Permitted Noise Factored Aircraft Movements

Until such time as the Aircraft Noise Categorisation Scheme has been approved and implemented in accordance with Condition 18 and the review of the Aircraft Noise Categorisation Scheme after its first year of operations has been submitted to and approved in writing pursuant to Condition 19, the number of Noise Factored Movements shall not exceed:

- in any one week the number of permitted Aircraft Movements for that week by more than 25%; and
- 120,000 Noise Factored Movements per calendar year.

Reason: In the interests of limiting the number of Aircraft Movements in order to protect the amenity of current and future occupants and neighbours and with regard to saved Policy EQ47 of the London Borough of Newham Unitary Development Plan (adopted June 2001 and saved from 27 September 2007 by direction from the Secretary of State and not deleted on adoption of the Core Strategy on 26 January 2012), Policy 7.15 of the London Plan (consolidated with alterations since 2011 and published March 2015), and Policies SP2 and SP3 of the Newham Core Strategy (adopted 26 January 2012).

22. Maximum Permitted Actual Aircraft Movements per hour as Timetabled

The scheduled number of Actual Aircraft Movements including business, commercial, charter and private Aircraft Movements shall not exceed 45 in total in any given hour.

Reason: In the interests of limiting the number of aircraft movements in the peak periods in order to protect the amenity of current and future occupants and neighbours and with regard to saved Policy EQ47 of the London Borough of Newham Unitary Development Plan (adopted June 2001 and saved from 27 September 2007 by direction from the Secretary of State and not deleted on adoption of the Core Strategy on 26 January 2012), Policy 7.15 of the London Plan (consolidated with alterations since 2011 and published March 2015), and Policies SP2 and SP3 of the Newham Core Strategy (adopted 26 January 2012).

23. Maximum Permitted Actual Aircraft Movements (days/year)

The number of Actual Aircraft Movements at the Airport shall not exceed:

a) 100 per day on Saturdays; and
b) 200 per day on Sundays but not exceeding 280 on any consecutive Saturday and Sunday; and
c) subject to (d) to (j) below 592 per day on weekdays; and
d) 132 on 1 January; and
e) 164 on Good Friday; and
f) 198 on Easter Monday; and
g) 248 on the May Day Holiday; and
h) 230 on the late May Bank Holiday; and
i) 230 on the late August Bank Holiday; and
j) 100 on 26 December; and
k) 111,000 per calendar year.

Reason: In the interests of limiting the number of Aircraft Movements in order to protect the amenity of current and future occupants and neighbours and with regard to saved Policy EQ47 of the London Borough of Newham Unitary Development Plan (adopted June 2001 and saved from 27 September 2007 by direction from the Secretary of State and not deleted on adoption of the Core Strategy on 26 January 2012), Policy 7.15 of

the London Plan (consolidated with alterations since 2011 and published March 2015), and Policies SP2 and SP3 of the Newham Core Strategy (adopted 26 January 2012).

24. Maximum Permitted Actual Aircraft Movement on Other Bank Holidays
In the event of there being a Bank Holiday or Public Holiday in England which falls upon or is proclaimed or declared upon a date not referred to in sub-paragraph (d) to (j) (inclusive) of Condition 23 above, then the number of Aircraft Movements permissible on that date shall not exceed 330 unless otherwise agreed in writing by the Local Planning Authority but in any event shall not exceed 396.
Reason: In the interests of limiting the number of Aircraft Movements in order to safeguard the quality of life in the local area.

25. Maximum Permitted Actual Aircraft Movement limit between 0630 and 0659 Mondays to Saturdays
The maximum number of Actual Aircraft Movements between 0630 and 0659 hours on Mondays to Saturdays (excluding Bank Holidays and Public Holidays when the Airport shall be closed for the use or operation of aircraft between these times) shall not exceed 6 on any day.
Reason: In the interests of limiting the number of movements in and to protect the amenity of current and future occupants and neighbours and with regard to saved Policy EQ47 of the London Borough of Newham Unitary Development Plan (adopted June 2001 and saved from 27 September 2007 by direction from the Secretary of State and not deleted on adoption of the Core Strategy on 26 January 2012), Policy 7.15 of the London Plan (consolidated with alterations since 2011 and published March 2015), and Policies SP2 and SP3 of the Newham Core Strategy (adopted 26 January 2012).

26. Maximum Permitted Actual Aircraft Movement limit between 0630 and 0645 on Mondays to Saturdays
Notwithstanding the restriction on Actual Aircraft Movements between 0630 and 0659 hours, as set out by Condition 25 above, the total number of Actual Aircraft Movements in the period between 0630 and 0645 on Mondays to Saturdays (excluding Bank Holidays and Public Holidays when the Airport shall be closed for the use or operation of aircraft between these times), shall not exceed 2 on any day.
Reason: In the interests of limiting the number of Aircraft Movements and to protect the amenity of current and future occupants and neighbours and with regard to saved Policy EQ47 of the London Borough of Newham Unitary Development Plan (adopted June 2001 and saved from 27 September 2007 by direction from the Secretary of State and not deleted on adoption of the Core Strategy on 26 January 2012), Policy 7.15 of the London Plan (consolidated with alterations since 2011 and published March 2015), and Policies SP2 and SP3 of the Newham Core Strategy (adopted 26 January 2012).

27. Christmas Day Closure
The Airport shall be closed on Christmas Day each year for the use or operation or maintenance of aircraft or for passengers, with no Aircraft Movements and no Ground Running by aircraft engines.
Reason: In the interests of limiting the number of Aircraft Movements to protect the amenity of current and future occupants and neighbours and with regard to saved Policy EQ47 of the London Borough of Newham Unitary Development Plan (adopted June 2001 and saved from 27 September 2007 by direction from the Secretary of State and not deleted on adoption of the Core Strategy on 26 January 2012), Policy 7.15 of the London Plan (consolidated with alterations since 2011 and published March 2015), and Policies SP2 and SP3 of the Newham Core Strategy (adopted 26 January 2012).

APPENDIX 11
NUMBER OF AIRCRAFT OPERATING AT LCA

Date	Actual Aircraft Movements		Permitted Actual Aircraft Movements		QC Total		Permitted QC Total	Differences (Permitted - Actual)			Early Actual Movements		(Early Permitted - Actual)		Late Actual Movements[2]	
								Actual Movements		QC Total	Early Morning		Early Morning		Late Eve / Sat Afternoon	3 Month Running Total
	Day	Week-end	Day	Week-end	Day	Week	Week	Day	Week-end	Week	06:30-06:44	06:30-06:59	06:30-06:44	06:30-06:59	22:00-22:30 / 12:30-13:00	
28/12/2020	3	-	330	-	0	9.4	742.5	327	-	733.1	0	0	2	6	0	-
29/12/2020	2	-	592	-	0			590	-		0	0	2	6	0	-
30/12/2020	9	-	592	-	2			583	-		0	0	2	6	0	-
31/12/2020	8	-	592	-	1			584	-		0	0	2	6	0	0
01/01/2021	6	-	132	-	1			126	-		0	0	2	6	0	-
02/01/2021	8	24	100	280	1			92	256		0	0	2	6	0	-
03/01/2021	16		200		3			184			-	-	-	-	0	-
04/01/2021	16	-	592	-	3	12.5	742.5	576	-	730.0	0	0	2	6	0	-
05/01/2021	13	-	592	-	2			579	-		0	0	2	6	0	-
06/01/2021	8	-	592	-	1			584	-		0	0	2	6	0	-
07/01/2021	8	-	592	-	1			584	-		0	0	2	6	0	-
08/01/2021	16	-	592	-	3			576	-		0	0	2	6	0	-
09/01/2021	4	14	100	280	1			96	266		0	0	2	6	0	-
10/01/2021	10		200		2			190			-	-	-	-	0	-
11/01/2021	8	-	592	-	1	8.4	742.5	584	-	734.1	0	1	2	5	0	-
12/01/2021	6	-	592	-	1			586	-		0	0	2	6	0	-
13/01/2021	6	-	592	-	1			586	-		0	0	2	6	0	-
14/01/2021	8	-	592	-	1			584	-		0	0	2	6	0	-
15/01/2021	7	-	592	-	1			585	-		0	0	2	6	0	-
16/01/2021	0	10	100	280	0			100	270		0	0	2	6	0	-
17/01/2021	10		200		2			190			-	-	-	-	0	-
18/01/2021	6	-	592	-	1	9.8	742.5	586	-	732.7	0	0	2	6	0	-
19/01/2021	8	-	592	-	2			584	-		0	0	2	6	0	-
20/01/2021	6	-	592	-	1			586	-		0	0	2	6	0	-
21/01/2021	11	-	592	-	2			581	-		0	0	2	6	0	-
22/01/2021	10	-	592	-	2			582	-		0	0	2	6	0	-

Date	Actual Aircraft Movements		Permitted Actual Aircraft Movements		QC Total		Permitted QC Total	Differences (Permitted - Actual)			Early Actual Movements		(Early Permitted - Actual)		Late Actual Movements[2]	
								Actual Movements		QC Total	Early Morning		Early Morning		Late Eve / Sat Afternoon	3 Month Running Total
	Day	Week-end	Day	Week-end	Day	Week	Week	Day	Week-end	Week	06:30-06:44	06:30-06:59	06:30-06:44	06:30-06:59	22:00-22:30 / 12:30-13:00	
23/01/2021	3	11	100	280	1			97	269		0	0	2	6	0	-
24/01/2021	8		200		2			192			-	-	-	-	0	-
25/01/2021	2	-	592	-	0	5.1	742.5	590	-	737.4	0	0	2	6	0	-
26/01/2021	4	-	592	-	1			588	-		0	0	2	6	0	-
27/01/2021	2	-	592	-	0			590	-		0	0	2	6	0	-
28/01/2021	6	-	592	-	1			586	-		0	0	2	6	0	-
29/01/2021	4	-	592	-	1			588	-		0	0	2	6	0	-
30/01/2021	0	8	100	280	0			100	272		0	0	2	6	0	-
31/01/2021	8		200		2			192			-	-	-	-	0	0
01/02/2021	2	-	592	-	0	6.0	742.5	590	-	736.6	0	0	2	6	0	-
02/02/2021	2	-	592	-	0			590	-		0	0	2	6	0	-
03/02/2021	2	-	592	-	0			590	-		0	0	2	6	0	-
04/02/2021	7	-	592	-	2			585	-		0	0	2	6	0	-
05/02/2021	7	-	592	-	1			585	-		0	0	2	6	0	-
06/02/2021	0	9	100	280	0			100	271		0	0	2	6	0	-
07/02/2021	9		200		2			191			-	-	-	-	0	-
08/02/2021	2	-	592	-	0	5.9	742.5	590	-	736.6	0	0	2	6	0	-
09/02/2021	2	-	592	-	0			590	-		0	0	2	6	0	-
10/02/2021	2	-	592	-	0			590	-		0	0	2	6	0	-
11/02/2021	6	-	592	-	1			586	-		0	0	2	6	0	-
12/02/2021	8	-	592	-	2			584	-		0	0	2	6	0	-
13/02/2021	0	9	100	280	0			100	271		0	0	2	6	0	-
14/02/2021	9		200		2			191			-	-	-	-	0	-
15/02/2021	2	-	592	-	0	6.0	742.5	590	-	736.5	0	0	2	6	0	-
16/02/2021	2	-	592	-	0			590	-		0	0	2	6	0	-
17/02/2021	2	-	592	-	0			590	-		0	0	2	6	0	-

Date	Actual Aircraft Movements		Permitted Actual Aircraft Movements		QC Total		Permitted QC Total	Differences (Permitted - Actual)			Early Actual Movements		(Early Permitted - Actual)		Late Actual Movements[2]	
								Actual Movements		QC Total	Early Morning		Early Morning		Late Eve / Sat Afternoon	3 Month Running Total
	Day	Week-end	Day	Week-end	Day	Week	Week	Day	Week-end	Week	06:30-06:44	06:30-06:59	06:30-06:44	06:30-06:59	22:00-22:30 / 12:30-13:00	
18/02/2021	8	-	592	-	2			584	-		0	0	2	6	0	-
19/02/2021	6	-	592	-	1			586	-		0	0	2	6	0	-
20/02/2021	2	10	100	280	0			98	270		0	0	2	6	0	-
21/02/2021	8		200		2			192			-	-	-	-	0	-
22/02/2021	3	-	592	-	1	6.2	742.5	589	-	736.3	0	0	2	6	0	-
23/02/2021	2	-	592	-	0			590	-		0	0	2	6	0	-
24/02/2021	3	-	592	-	1			589	-		0	0	2	6	0	-
25/02/2021	3	-	592	-	1			589	-		0	0	2	6	0	-
26/02/2021	6	-	592	-	1			586	-		0	0	2	6	0	-
27/02/2021	0	16	100	280	0			100	264		0	0	2	6	0	-
28/02/2021	16		200		2			184			-	-	-	-	0	0
01/03/2021	5	-	592	-	1	6.0	742.5	587	-	736.5	0	0	2	6	0	-
02/03/2021	2	-	592	-	0			590	-		0	0	2	6	0	-
03/03/2021	2	-	592	-	0			590	-		0	0	2	6	0	-
04/03/2021	7	-	592	-	1			585	-		0	0	2	6	0	-
05/03/2021	7	-	592	-	1			585	-		0	0	2	6	0	-
06/03/2021	0	11	100	280	0			100	269		0	0	2	6	0	-
07/03/2021	11		200		2			189			-	-	-	-	0	-
08/03/2021	3	-	592	-	1	8.4	742.5	589	-	734.1	0	0	2	6	0	-
09/03/2021	10	-	592	-	2			582	-		0	0	2	6	0	-
10/03/2021	2	-	592	-	0			590	-		0	0	2	6	0	-
11/03/2021	10	-	592	-	2			582	-		0	0	2	6	0	-
12/03/2021	7	-	592	-	1			585	-		0	0	2	6	0	-
13/03/2021	2	13	100	280	0			98	267		0	0	2	6	0	-
14/03/2021	11		200		2			189			-	-	-	-	0	-
15/03/2021	6	-	592	-	1	7.8	742.5	586	-	734.7	1	1	1	5	0	-

Date	Actual Aircraft Movements		Permitted Actual Aircraft Movements		QC Total		Permitted QC Total	Differences (Permitted - Actual)			Early Actual Movements		(Early Permitted - Actual)		Late Actual Movements[2]	
								Actual Movements		QC Total	Early Morning		Early Morning		Late Eve / Sat Afternoon	3 Month Running Total
	Day	Week-end	Day	Week-end	Day	Week	Week	Day	Week-end	Week	06:30-06:44	06:30-06:59	06:30-06:44	06:30-06:59	22:00-22:30 / 12:30-13:00	
16/03/2021	4	-	592	-	1			588	-		0	0	2	6	0	-
17/03/2021	5	-	592	-	1			587	-		0	0	2	6	0	-
18/03/2021	6	-	592	-	1			586	-		0	0	2	6	0	-
19/03/2021	13	-	592	-	2			579	-		0	0	2	6	0	-
20/03/2021	0	10	100	280	0			100	270		0	0	2	6	0	-
21/03/2021	10		200		2			190			-	-	-	-	0	-
22/03/2021	4	-	592	-	1	8.1	742.5	588	-	734.4	0	0	2	6	0	-
23/03/2021	3	-	592	-	1			589	-		0	0	2	6	0	-
24/03/2021	10	-	592	-	1			582	-		0	0	2	6	0	-
25/03/2021	7	-	592	-	1			585	-		0	0	2	6	0	-
26/03/2021	11	-	592	-	2			581	-		0	0	2	6	0	-
27/03/2021	4	17	100	280	0			96	263		0	0	2	6	0	-
28/03/2021	13		200		2			187			-	-	-	-	0	-
29/03/2021	4	-	592	-	1	12.4	742.5	588	-	730.1	0	0	2	6	0	-
30/03/2021	4	-	592	-	1			588	-		0	0	2	6	0	-
31/03/2021	11	-	592	-	1			581	-		0	0	2	6	0	0
01/04/2021	16	-	592	-	3			576	-		0	0	2	6	0	-
02/04/2021	15	-	164	-	3			149	-		0	0	2	6	0	-
03/04/2021	3	19	100	280	1			97	261		0	0	2	6	0	-
04/04/2021	16		200		3			184			-	-	-	-	0	-
05/04/2021	9	-	198	-	2	12.0	742.5	189	-	730.5	0	0	2	6	0	-
06/04/2021	6	-	592	-	1			586	-		0	0	2	6	0	-
07/04/2021	12	-	592	-	1			580	-		0	0	2	6	0	-
08/04/2021	15	-	592	-	3			577	-		0	0	2	6	0	-
09/04/2021	11	-	592	-	2			581	-		0	0	2	6	0	-
10/04/2021	4	18	100	280	1			96	262		0	0	2	6	0	-

Date	Actual Aircraft Movements		Permitted Actual Aircraft Movements		QC Total		Permitted QC Total	Differences (Permitted - Actual)			Early Actual Movements		(Early Permitted - Actual)		Late Actual Movements[2]	
								Actual Movements		QC Total	Early Morning		Early Morning		Late Eve / Sat Afternoon	3 Month Running Total
	Day	Week-end	Day	Week-end	Day	Week	Week	Day	Week-end	Week	06:30-06:44	06:30-06:59	06:30-06:44	06:30-06:59	22:00-22:30 / 12:30-13:00	
11/04/2021	14		200		2			186			-	-	-	-	0	-
12/04/2021	13	-	592	-	2	14.6	742.5	579	-	727.9	0	0	2	6	0	-
13/04/2021	8	-	592	-	1			584	-		0	0	2	6	0	-
14/04/2021	6	-	592	-	1			586	-		0	0	2	6	0	-
15/04/2021	14	-	592	-	3			578	-		0	0	2	6	0	-
16/04/2021	16	-	592	-	3			576	-		0	0	2	6	0	-
17/04/2021	3	23	100	280	0			97	257		0	0	2	6	0	-
18/04/2021	20		200		4			180			-	-	-	-	0	-
19/04/2021	15	-	592	-	3	16.5	742.5	577	-	726.0	0	1	2	5	0	-
20/04/2021	9	-	592	-	2			583	-		0	0	2	6	0	-
21/04/2021	11	-	592	-	1			581	-		0	0	2	6	0	-
22/04/2021	15	-	592	-	3			577	-		0	0	2	6	1	-
23/04/2021	18	-	592	-	3			574	-		0	0	2	6	0	-
24/04/2021	2	26	100	280	0			98	254		0	0	2	6	0	-
25/04/2021	24		200		4			176			-	-	-	-	0	-
26/04/2021	17	-	592	-	3	16.5	742.5	575	-	726.0	0	1	2	5	0	-
27/04/2021	7	-	592	-	1			585	-		0	0	2	6	0	-
28/04/2021	9	-	592	-	1			583	-		0	0	2	6	0	-
29/04/2021	17	-	592	-	3			575	-		0	0	2	6	0	-
30/04/2021	27	-	592	-	4			565	-		0	0	2	6	0	1
01/05/2021	3	19	100	280	0			97	261		0	0	2	6	0	-
02/05/2021	16		200		3			184			-	-	-	-	0	-
03/05/2021	15	-	248	-	2	18.4	742.5	233	-	724.1	0	0	2	6	0	-
04/05/2021	13	-	592	-	2			579	-		0	0	2	6	0	-
05/05/2021	13	-	592	-	2			579	-		0	0	2	6	0	-
06/05/2021	19	-	592	-	4			573	-		0	0	2	6	0	-

Date	Actual Aircraft Movements		Permitted Actual Aircraft Movements		QC Total		Permitted QC Total	Differences (Permitted - Actual)			Early Actual Movements		(Early Permitted - Actual)		Late Actual Movements[2]	
								Actual Movements		QC Total	Early Morning		Early Morning		Late Eve / Sat Afternoon	3 Month Running Total
	Day	Week-end	Day	Week-end	Day	Week	Week	Day	Week-end	Week	06:30-06:44	06:30-06:59	06:30-06:44	06:30-06:59	22:00-22:30 / 12:30-13:00	
07/05/2021	21	-	592	-	4			571	-		0	0	2	6	0	-
08/05/2021	3	22	100	280	1			97	258		0	0	2	6	0	-
09/05/2021	19		200		3			181			-	-	-	-	0	-
10/05/2021	21	-	592	-	4	21.0	742.5	571	-	721.5	1	1	1	5	0	-
11/05/2021	12	-	592	-	2			580	-		0	0	2	6	0	-
12/05/2021	13	-	592	-	2			579	-		0	0	2	6	0	-
13/05/2021	27	-	592	-	5			565	-		0	0	2	6	0	-
14/05/2021	23	-	592	-	4			569	-		0	0	2	6	0	-
15/05/2021	5	24	100	280	1			95	256		0	0	2	6	0	-
16/05/2021	19		200		3			181			-	-	-	-	0	-
17/05/2021	19	-	592	-	3	21.9	742.5	573	-	720.6	0	1	2	5	0	-
18/05/2021	12	-	592	-	2			580	-		0	0	2	6	0	-
19/05/2021	12	-	592	-	2			580	-		0	0	2	6	0	-
20/05/2021	22	-	592	-	4			570	-		0	0	2	6	0	-
21/05/2021	25	-	592	-	5			567	-		0	0	2	6	0	-
22/05/2021	4	31	100	280	1			96	249		0	0	2	6	0	-
23/05/2021	27		200		5			173			-	-	-	-	0	-
24/05/2021	26	-	592	-	5	27.0	742.5	566	-	715.5	0	1	2	5	0	-
25/05/2021	13	-	592	-	2			579	-		0	0	2	6	0	-
26/05/2021	15	-	592	-	3			577	-		0	0	2	6	0	-
27/05/2021	27	-	592	-	5			565	-		0	0	2	6	0	-
28/05/2021	35	-	592	-	6			557	-		0	0	2	6	0	-
29/05/2021	4	33	100	280	1			96	247		0	0	2	6	0	-
30/05/2021	29		200		5			171			-	-	-	-	0	-
31/05/2021	23	-	230	-	4	29.3	742.5	207	-	713.2	0	0	2	6	0	1
01/06/2021	18	-	592	-	4			574	-		0	1	2	5	0	-

Date	Actual Aircraft Movements		Permitted Actual Aircraft Movements		QC Total		Permitted QC Total	Differences (Permitted - Actual)			Early Actual Movements		(Early Permitted - Actual)		Late Actual Movements[2]	
								Actual Movements		QC Total	Early Morning		Early Morning		Late Eve / Sat Afternoon	3 Month Running Total
	Day	Week-end	Day	Week-end	Day	Week	Week	Day	Week-end	Week	06:30-06:44	06:30-06:59	06:30-06:44	06:30-06:59	22:00-22:30 / 12:30-13:00	
02/06/2021	21	-	592	-	3			571	-		0	0	2	6	0	-
03/06/2021	29	-	592	-	6			563	-		0	0	2	6	0	-
04/06/2021	30	-	592	-	6			562	-		0	0	2	6	0	-
05/06/2021	5	36	100	280	1			95	244		0	0	2	6	0	-
06/06/2021	31		200		5			169			-	-	-	-	0	-
07/06/2021	31	-	592	-	6	32.2	742.5	561	-	710.3	0	0	2	6	0	-
08/06/2021	18	-	592	-	3			574	-		0	0	2	6	0	-
09/06/2021	21	-	592	-	3			571	-		0	0	2	6	0	-
10/06/2021	29	-	592	-	6			563	-		0	0	2	6	0	-
11/06/2021	40	-	592	-	8			552	-		0	0	2	6	0	-
12/06/2021	5	29	100	280	1			95	251		0	0	2	6	0	-
13/06/2021	24		200		5			176			-	-	-	-	0	-
14/06/2021	34	-	592	-	7	36.2	742.5	558	-	706.3	0	0	2	6	0	-
15/06/2021	21	-	592	-	4			571	-		0	1	2	5	0	-
16/06/2021	31	-	592	-	5			561	-		0	2	2	4	0	-
17/06/2021	33	-	592	-	7			559	-		0	0	2	6	0	-
18/06/2021	35	-	592	-	8			557	-		0	0	2	6	0	-
19/06/2021	4	31	100	280	1			96	249		0	0	2	6	0	-
20/06/2021	27		200		5			173			-	-	-	-	0	-
21/06/2021	32	-	592	-	6	35.4	742.5	560	-	707.1	0	0	2	6	0	-
22/06/2021	24	-	592	-	5			568	-		0	0	2	6	0	-
23/06/2021	26	-	592	-	5			566	-		0	0	2	6	0	-
24/06/2021	43	-	592	-	7			549	-		0	2	2	4	0	-
25/06/2021	37	-	592	-	7			555	-		0	0	2	6	0	-
26/06/2021	4	27	100	280	1			96	253		0	0	2	6	0	-
27/06/2021	23		200		4			177			-	-	-	-	0	-

Date	Actual Aircraft Movements		Permitted Actual Aircraft Movements		QC Total		Permitted QC Total	Differences (Permitted - Actual)			Early Actual Movements		(Early Permitted - Actual)		Late Actual Movements[2]	
								Actual Movements		QC Total	Early Morning		Early Morning		Late Eve / Sat Afternoon	3 Month Running Total
	Day	Week-end	Day	Week-end	Day	Week	Week	Day	Week-end	Week	06:30-06:44	06:30-06:59	06:30-06:44	06:30-06:59	22:00-22:30 / 12:30-13:00	
28/06/2021	32	-	592	-	6	36.4	742.5	560	-	706.1	0	1	2	5	0	-
29/06/2021	21	-	592	-	5			571	-		0	2	2	4	0	-
30/06/2021	22	-	592	-	4			570	-		0	1	2	5	0	1
01/07/2021	38	-	592	-	7			554	-		0	2	2	4	0	-
02/07/2021	45	-	592	-	9			547	-		0	1	2	5	0	-
03/07/2021	8	28	100	280	2			92	252		1	1	1	5	0	-
04/07/2021	20		200		4			180			-	-	-	-	0	-
05/07/2021	39	-	592	-	7	39.9	742.5	553	-	702.6	0	4	2	2	0	-
06/07/2021	26	-	592	-	5			566	-		0	1	2	5	0	-
07/07/2021	28	-	592	-	5			564	-		0	1	2	5	0	-
08/07/2021	36	-	592	-	7			556	-		0	2	2	4	0	-
09/07/2021	47	-	592	-	10			545	-		0	2	2	4	0	-
10/07/2021	8	34	100	280	1			92	246		0	0	2	6	0	-
11/07/2021	26		200		4			174			-	-	-	-	0	-
12/07/2021	45	-	592	-	9	47.7	742.5	547	-	694.8	0	2	2	4	0	-
13/07/2021	26	-	592	-	5			566	-		1	1	1	5	0	-
14/07/2021	27	-	592	-	5			565	-		0	1	2	5	0	-
15/07/2021	43	-	592	-	8			549	-		0	2	2	4	0	-
16/07/2021	59	-	592	-	13			533	-		0	1	2	5	1	-
17/07/2021	10	47	100	280	2			90	233		0	1	2	5	1	-
18/07/2021	37		200		6			163			-	-	-	-	0	-
19/07/2021	57	-	592	-	12	59.7	742.5	535	-	682.8	0	1	2	5	0	-
20/07/2021	33	-	592	-	7			559	-		0	1	2	5	0	-
21/07/2021	36	-	592	-	7			556	-		0	1	2	5	0	-
22/07/2021	44	-	592	-	9			548	-		0	0	2	6	0	-
23/07/2021	62	-	592	-	13			530	-		0	1	2	5	0	-

Date	Actual Aircraft Movements		Permitted Actual Aircraft Movements		QC Total		Permitted QC Total	Differences (Permitted - Actual)			Early Actual Movements		(Early Permitted - Actual)		Late Actual Movements[2]	
								Actual Movements		QC Total	Early Morning		Early Morning		Late Eve / Sat Afternoon	3 Month Running Total
	Day	Week-end	Day	Week-end	Day	Week	Week	Day	Week-end	Week	06:30-06:44	06:30-06:59	06:30-06:44	06:30-06:59	22:00-22:30 / 12:30-13:00	
24/07/2021	16	58	100	280	4			84	222		0	1	2	5	0	-
25/07/2021	42		200		7			158			-	-	-	-	1	-
26/07/2021	50	-	592	-	11	56.5	742.5	542	-	686.0	0	1	2	5	0	-
27/07/2021	34	-	592	-	7			558	-		0	1	2	5	0	-
28/07/2021	36	-	592	-	8			556	-		0	2	2	4	0	-
29/07/2021	38	-	592	-	8			554	-		0	1	2	5	0	-
30/07/2021	56	-	592	-	13			536	-		0	2	2	4	0	-
31/07/2021	16	53	100	280	4			84	227		1	2	1	4	2	5
01/08/2021	37		200		7			163			-	-	-	-	0	-
02/08/2021	57	-	592	-	11	64.0	742.5	535	-	678.5	0	2	2	4	0	-
03/08/2021	37	-	592	-	7			555	-		0	1	2	5	1	-
04/08/2021	38	-	592	-	7			554	-		0	1	2	5	0	-
05/08/2021	52	-	592	-	11			540	-		0	2	2	4	0	-
06/08/2021	66	-	592	-	15			526	-		0	2	2	4	0	-
07/08/2021	15	62	100	280	4			85	218		0	1	2	5	0	-
08/08/2021	47		200		8			153			-	-	-	-	1	-
09/08/2021	63	-	592	-	13	66.6	742.5	529	-	675.9	0	1	2	5	1	-
10/08/2021	41	-	592	-	8			551	-		0	1	2	5	0	-
11/08/2021	41	-	592	-	8			551	-		0	1	2	5	0	-
12/08/2021	57	-	592	-	12			535	-		0	1	2	5	0	-
13/08/2021	68	-	592	-	15			524	-		0	2	2	4	0	-
14/08/2021	15	57	100	280	4			85	223		0	0	2	6	1	-
15/08/2021	42		200		7			158			-	-	-	-	0	-
16/08/2021	60	-	592	-	12	66.5	742.5	532	-	676.0	0	3	2	3	0	-
17/08/2021	35	-	592	-	7			557	-		0	1	2	5	0	-
18/08/2021	36	-	592	-	7			556	-		0	1	2	5	0	-

Date	Actual Aircraft Movements		Permitted Actual Aircraft Movements		QC Total		Permitted QC Total	Differences (Permitted - Actual)			Early Actual Movements		(Early Permitted - Actual)		Late Actual Movements[2]	
								Actual Movements		QC Total	Early Morning		Early Morning		Late Eve / Sat Afternoon	3 Month Running Total
	Day	Week-end	Day	Week-end	Day	Week	Week	Day	Week-end	Week	06:30-06:44	06:30-06:59	06:30-06:44	06:30-06:59	22:00-22:30 / 12:30-13:00	
19/08/2021	64	-	592	-	13			528	-		0	2	2	4	0	-
20/08/2021	69	-	592	-	15			523	-		0	1	2	5	0	-
21/08/2021	15	60	100	280	4			85	220		1	1	1	5	0	-
22/08/2021	45		200		7			155			-	-	-	-	0	-
23/08/2021	67	-	592	-	13	69.1	742.5	525	-	673.4	1	2	1	4	0	-
24/08/2021	41	-	592	-	8			551	-		0	1	2	5	0	-
25/08/2021	39	-	592	-	8			553	-		0	2	2	4	0	-
26/08/2021	63	-	592	-	12			529	-		0	2	2	4	0	-
27/08/2021	69	-	592	-	16			523	-		0	3	2	3	0	-
28/08/2021	17	61	100	280	4			83	219		0	0	2	6	1	-
29/08/2021	44		200		8			156			-	-	-	-	0	-
30/08/2021	53	-	230	-	11	71.4	742.5	177	-	671.2	0	0	2	6	0	-
31/08/2021	46	-	592	-	9			546	-		0	1	2	5	0	10
01/09/2021	47	-	592	-	9			545	-		0	1	2	5	0	-
02/09/2021	66	-	592	-	13			526	-		0	1	2	5	0	-
03/09/2021	72	-	592	-	15			520	-		0	2	2	4	0	-
04/09/2021	21	78	100	280	5			79	202		0	1	2	5	1	-
05/09/2021	57		200		10			143			-	-	-	-	0	-
06/09/2021	93	-	592	-	18	95.3	742.5	499	-	647.2	0	1	2	5	0	-
07/09/2021	65	-	592	-	13			527	-		0	2	2	4	0	-
08/09/2021	67	-	592	-	14			525	-		0	2	2	4	0	-
09/09/2021	76	-	592	-	16			516	-		0	1	2	5	0	-
10/09/2021	95	-	592	-	19			497	-		1	1	1	5	0	-
11/09/2021	17	73	100	280	4			83	207		0	1	2	5	0	-
12/09/2021	56		200		11			144			-	-	-	-	0	-
13/09/2021	91	-	592	-	18	103.3	742.5	501	-	639.2	1	1	1	5	0	-

Date	Actual Aircraft Movements		Permitted Actual Aircraft Movements		QC Total		Permitted QC Total	Differences (Permitted - Actual)			Early Actual Movements		(Early Permitted - Actual)		Late Actual Movements[2]	
								Actual Movements		QC Total	Early Morning		Early Morning		Late Eve / Sat Afternoon	3 Month Running Total
	Day	Week-end	Day	Week-end	Day	Week	Week	Day	Week-end	Week	06:30-06:44	06:30-06:59	06:30-06:44	06:30-06:59	22:00-22:30 / 12:30-13:00	
14/09/2021	71	-	592	-	14			521	-		0	2	2	4	0	-
15/09/2021	82	-	592	-	15			510	-		0	2	2	4	0	-
16/09/2021	86	-	592	-	17			506	-		0	0	2	6	0	-
17/09/2021	108	-	592	-	21			484	-		0	0	2	6	0	-
18/09/2021	19	88	100	280	4			81	192		0	1	2	5	0	-
19/09/2021	69		200		13			131			-	-	-	-	0	-
20/09/2021	106	-	592	-	20	105.9	742.5	486	-	636.6	1	3	1	3	0	-
21/09/2021	88	-	592	-	16			504	-		0	0	2	6	0	-
22/09/2021	86	-	592	-	16			506	-		0	4	2	2	0	-
23/09/2021	87	-	592	-	17			505	-		0	1	2	5	0	-
24/09/2021	87	-	592	-	18			505	-		0	1	2	5	0	-
25/09/2021	24	86	100	280	5			76	194		0	2	2	4	0	-
26/09/2021	62		200		13			138			-	-	-	-	0	-
27/09/2021	95	-	592	-	19	111.5	742.5	497	-	631.0	0	2	2	4	0	-
28/09/2021	89	-	592	-	18			503	-		0	4	2	2	0	-
29/09/2021	94	-	592	-	18			498	-		0	3	2	3	0	-
30/09/2021	104	-	592	-	20			488	-		0	1	2	5	0	11
01/10/2021	103	-	592	-	20			489	-		0	1	2	5	0	-
02/10/2021	21	80	100	280	5			79	200		0	2	2	4	1	-
03/10/2021	59		200		12			141			-	-	-	-	0	-
04/10/2021	103	-	592	-	21	119.7	742.5	489	-	622.8	1	4	1	2	0	-
05/10/2021	92	-	592	-	19			500	-		0	6	2	0	0	-
06/10/2021	101	-	592	-	19			491	-		0	3	2	3	0	-
07/10/2021	111	-	592	-	21			481	-		0	3	2	3	0	-
08/10/2021	113	-	592	-	21			479	-		1	4	1	2	0	-
09/10/2021	25	95	100	280	5			75	185		0	1	2	5	2	-

Date	Actual Aircraft Movements		Permitted Actual Aircraft Movements		QC Total		Permitted QC Total	Differences (Permitted - Actual)			Early Actual Movements		(Early Permitted - Actual)		Late Actual Movements[2]	
								Actual Movements		QC Total	Early Morning		Early Morning		Late Eve / Sat Afternoon	3 Month Running Total
	Day	Week-end	Day	Week-end	Day	Week	Week	Day	Week-end	Week	06:30-06:44	06:30-06:59	06:30-06:44	06:30-06:59	22:00-22:30 / 12:30-13:00	
10/10/2021	70		200		13			130			-	-	-	-	0	-
11/10/2021	124	-	592	-	22	123.2	742.5	468	-	619.3	2	5	0	1	0	-
12/10/2021	102	-	592	-	19			490	-		0	3	2	3	0	-
13/10/2021	104	-	592	-	20			488	-		0	2	2	4	0	-
14/10/2021	112	-	592	-	22			480	-		0	4	2	2	0	-
15/10/2021	113	-	592	-	22			479	-		0	4	2	2	0	-
16/10/2021	29	97	100	280	6			71	183		0	2	2	4	0	-
17/10/2021	68		200		13			132			-	-	-	-	0	-
18/10/2021	117	-	592	-	22	119.9	742.5	475	-	622.6	1	3	1	3	0	-
19/10/2021	109	-	592	-	20			483	-		0	2	2	4	0	-
20/10/2021	97	-	592	-	19			495	-		0	3	2	3	0	-
21/10/2021	104	-	592	-	21			488	-		0	1	2	5	0	-
22/10/2021	108	-	592	-	21			484	-		0	2	2	4	0	-
23/10/2021	23	85	100	280	5			77	195		0	1	2	5	1	-
24/10/2021	62		200		12			138			-	-	-	-	0	-
25/10/2021	112	-	592	-	22	121.6	742.5	480	-	620.9	1	2	1	4	0	-
26/10/2021	108	-	592	-	21			484	-		0	2	2	4	0	-
27/10/2021	97	-	592	-	19			495	-		0	2	2	4	0	-
28/10/2021	103	-	592	-	21			489	-		0	2	2	4	0	-
29/10/2021	109	-	592	-	21			483	-		0	4	2	2	0	-
30/10/2021	28	96	100	280	6			72	184		0	2	2	4	2	-
31/10/2021	68		200		12			132			-	-	-	-	0	12
01/11/2021	111	-	592	-	21	123.5	742.5	481	-	619.0	1	4	1	2	0	-
02/11/2021	101	-	592	-	20			491	-		0	4	2	2	0	-
03/11/2021	100	-	592	-	20			492	-		0	3	2	3	0	-
04/11/2021	120	-	592	-	23			472	-		0	4	2	2	0	-

Date	Actual Aircraft Movements		Permitted Actual Aircraft Movements		QC Total		Permitted QC Total	Differences (Permitted - Actual)			Early Actual Movements		(Early Permitted - Actual)		Late Actual Movements[2]	
								Actual Movements		QC Total	Early Morning		Early Morning		Late Eve / Sat Afternoon	3 Month Running Total
	Day	Week-end	Day	Week-end	Day	Week	Week	Day	Week-end	Week	06:30-06:44	06:30-06:59	06:30-06:44	06:30-06:59	22:00-22:30 / 12:30-13:00	
05/11/2021	113	-	592	-	22			479	-		0	2	2	4	0	-
06/11/2021	28	97	100	280	5			72	183		1	1	1	5	2	-
07/11/2021	69		200		13			131			-	-	-	-	0	-
08/11/2021	115	-	592	-	21	123.2	742.5	477	-	619.3	1	3	1	3	0	-
09/11/2021	104	-	592	-	20			488	-		2	5	0	1	0	-
10/11/2021	109	-	592	-	21			483	-		0	4	2	2	0	-
11/11/2021	109	-	592	-	22			483	-		0	4	2	2	0	-
12/11/2021	107	-	592	-	21			485	-		0	1	2	5	0	-
13/11/2021	21	85	100	280	4			79	195		0	1	2	5	0	-
14/11/2021	64		200		13			136			-	-	-	-	0	-
15/11/2021	106	-	592	-	21	123.5	742.5	486	-	619.0	1	5	1	1	0	-
16/11/2021	104	-	592	-	20			488	-		0	5	2	1	0	-
17/11/2021	101	-	592	-	20			491	-		1	3	1	3	0	-
18/11/2021	123	-	592	-	24			469	-		0	3	2	3	0	-
19/11/2021	115	-	592	-	22			477	-		0	3	2	3	0	-
20/11/2021	23	87	100	280	4			77	193		0	1	2	5	0	-
21/11/2021	64		200		13			136			-	-	-	-	0	-
22/11/2021	110	-	592	-	21	122.2	742.5	482	-	620.3	1	3	1	3	0	-
23/11/2021	106	-	592	-	21			486	-		1	4	1	2	0	-
24/11/2021	106	-	592	-	21			486	-		1	4	1	2	0	-
25/11/2021	108	-	592	-	22			484	-		0	5	2	1	0	-
26/11/2021	117	-	592	-	22			475	-		0	2	2	4	0	-
27/11/2021	24	86	100	280	4			76	194		1	1	1	5	0	-
28/11/2021	62		200		13			138			-	-	-	-	1	-
29/11/2021	102	-	592	-	20	103.2	742.5	490	-	639.3	0	3	2	3	0	-
30/11/2021	84	-	592	-	17			508	-		1	3	1	3	0	10

Date	Actual Aircraft Movements		Permitted Actual Aircraft Movements		QC Total		Permitted QC Total	Differences (Permitted - Actual)			Early Actual Movements		(Early Permitted - Actual)		Late Actual Movements[2]	
								Actual Movements		QC Total	Early Morning		Early Morning		Late Eve / Sat Afternoon	3 Month Running Total
	Day	Week-end	Day	Week-end	Day	Week	Week	Day	Week-end	Week	06:30-06:44	06:30-06:59	06:30-06:44	06:30-06:59	22:00-22:30 / 12:30-13:00	
01/12/2021	86	-	592	-	17			506	-		0	4	2	2	0	-
02/12/2021	93	-	592	-	18			499	-		0	2	2	4	0	-
03/12/2021	93	-	592	-	18			499	-		1	4	1	2	0	-
04/12/2021	24	76	100	280	4			76	204		1	1	1	5	0	-
05/12/2021	52		200		10			148			-	-	-	-	0	-
06/12/2021	99	-	592	-	18	96.1	742.5	493	-	646.4	0	2	2	4	0	-
07/12/2021	71	-	592	-	14			521	-		0	1	2	5	0	-
08/12/2021	82	-	592	-	15			510	-		1	4	1	2	0	-
09/12/2021	93	-	592	-	17			499	-		0	3	2	3	0	-
10/12/2021	90	-	592	-	17			502	-		0	2	2	4	0	-
11/12/2021	24	77	100	280	4			76	203		0	1	2	5	0	-
12/12/2021	53		200		10			147			-	-	-	-	0	-
13/12/2021	86	-	592	-	17	100.4	742.5	506	-	642.1	2	5	0	1	0	-
14/12/2021	75	-	592	-	15			517	-		1	2	1	4	0	-
15/12/2021	78	-	592	-	15			514	-		1	2	1	4	0	-
16/12/2021	88	-	592	-	18			504	-		0	3	2	3	1	-
17/12/2021	97	-	592	-	20			495	-		0	2	2	4	0	-
18/12/2021	32	79	100	280	6			68	201		0	1	2	5	0	-
19/12/2021	47		200		10			153			-	-	-	-	0	-
20/12/2021	92	-	592	-	18	83.3	742.5	500	-	659.2	1	4	1	2	0	-
21/12/2021	79	-	592	-	15			513	-		0	3	2	3	0	-
22/12/2021	82	-	592	-	16			510	-		0	0	2	6	0	-
23/12/2021	78	-	592	-	16			514	-		0	2	2	4	0	-
24/12/2021	58	-	592	-	12			534	-		0	2	2	4	0	-
25/12/2021	0	35	0	100	0			0	65		-	-	-	-	0	-
26/12/2021	35		100		7			65			-	-	-	-	0	-

Date	Actual Aircraft Movements		Permitted Actual Aircraft Movements		QC Total		Permitted QC Total	Differences (Permitted - Actual)			Early Actual Movements		(Early Permitted - Actual)		Late Actual Movements[2]	
								Actual Movements		QC Total	Early Morning		Early Morning		Late Eve / Sat Afternoon	3 Month Running Total
	Day	Week-end	Day	Week-end	Day	Week	Week	Day	Week-end	Week	06:30-06:44	06:30-06:59	06:30-06:44	06:30-06:59	22:00-22:30 / 12:30-13:00	
27/12/2021	67	-	330	-	13	62.7	742.5	263	-	679.8	0	0	2	6	0	-
28/12/2021	62	-	330	-	12			268	-		0	0	2	6	0	-
29/12/2021	68	-	592	-	14			524	-		0	2	2	4	0	-
30/12/2021	66	-	592	-	13			526	-		0	1	2	5	0	-
31/12/2021	55	-	592	-	11			537	-		0	3	2	3	0	10
01/01/2022	-	-	-	-	-			-	-		-	-	-	-	-	-
02/01/2022	-		-		-			-			-	-	-	-	-	-
Annual Total	**14,396**		**111,000**		**2,798**		**22,000**	**96,604**		**19,202**	**36**	**333**	**-**	**-**	**22**	**-**

Annual
Performance
Report 2021

Annex 3
Aircraft Noise Categorisation Scheme Report

LONDON CITY AIRPORT

Bickerdike Allen Partners
Architecture
Acoustics
Technology

LONDON CITY AIRPORT

AIRCRAFT NOISE CATEGORISATION SCHEME (ANCS) REPORT 2021

Report to

London City Airport
The Royal Docks
London E16 2PB

A11327_05_RP037_3.0
16 May 2022

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Bickerdike Allen Partners LLP is an integrated practice of Architects, Acousticians, and Construction Technologists, celebrating over 50 years of continuous practice.

Architects: Design and project management services which cover all stages of design, from feasibility and planning through to construction on site and completion.

Acoustic Consultants: Expertise in planning and noise, the control of noise and vibration and the sound insulation and acoustic treatment of buildings.

Construction Technology Consultants: Expertise in building cladding, technical appraisals and defect investigation and provision of construction expert witness services.

Contents

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1.0 INTRODUCTION

The City Airport Development Programme (CADP1) planning application (13/01228/FUL) was granted planning permission by the Secretaries of State for Communities and Local Government and Transport in July 2016 following an appeal and public inquiry which was held in March/April 2016.

Condition 18 of the permission required a new Aircraft Noise Categorisation Scheme (ANCS) to be submitted and approved to the Local Planning Authority (LPA) prior to the first beneficial use of the development. The ANCS was approved in December 2017 and implemented in January 2018.

Condition 19 of the permission requires the ANCS to be reviewed periodically. A current review has been submitted to the LPA for approval. This report has assessed the ANCS performance on the basis of the currently approved scheme.

The ANCS comprises a Quota Count system as well as a maximum permitted noise level for aircraft based on their noise certificate.

Condition 19 requires that "*a report shall be submitted to the local planning authority annually on 1 June or the first working day thereafter as part of the Annual Performance Report on the performance and/or compliance with the approved Aircraft Noise Categorisation Scheme during the previous calendar year*".

To satisfy this condition, the ANCS states that "*A report will also be produced as part of the Annual Performance Report that records the results of the assessments undertaken as part of the quota count regime, including but not limited to:-*

- *The quota counts used for each aircraft type during the calendar year in question;*
- *The total annual quota arising from aircraft operations during the calendar year;*
- *The results of noise monitoring undertaken during the calendar year, expressed for each aircraft and airline as averages in relation to sideline, flyover and approach noise levels as determined in accordance with Section 3.1 above;*
- *The quota counts to be used for each aircraft for the forthcoming calendar year; and*
- *The expected total annual quota for the forthcoming year.*"

This report covers the items listed above for 2021.

2.0 QUOTA COUNT CLASSIFICATION SYSTEM

The ANCS uses a Quota Count (QC) classification system which, in the case of departure noise, is based on official noise certification data derived from measurements made on actual aircraft which have been conducted in accordance with the International Civil Aviation Organisation (ICAO) certification process.

A similar noise certification process exists for civil aircraft on approach, but this is normally based on operations at a glide slope of 3 degrees, not 5.5 degrees as used at LCA. To account for this difference, aircraft noise modelling software (AEDT)[1] has been used to compute, at the approach noise certification point, the noise level based on a 5.5 degree glide slope using the AEDT in-built aircraft database. Whereas this method provides a reasonable correlation with measurements of turbofan aircraft at LCA, it does not reflect well the noisiness of turboprop aircraft on approach. As a result, measured data at LCA has been used to validate the turboprop aircraft types within the INM software to achieve a reasonable correlation between prediction of approach noise at the noise certification point and measurement.

The ANCS takes manufacturers' noise certification data to categorise aircraft and allocate a specific 'QC score' to each aircraft permitted to fly into and out of the airport. Each aircraft has a certified 'sideline', 'flyover' and 'approach' noise level. These are described in Appendix 1.

Each aircraft in operation at the airport is allocated a separate QC score (or 'count') for arrival and departure operations, based on its certificated noise levels (adjusted to reflect the approach glide slope used at LCA), and categorised into 1 dB bands (rather than 3 dB bands under the previous Noise Factored Movements system). As an example, the ANCS would allocate 0.5 'counts' to one aircraft departure or arrival in a noise band range of 88.0 dB to 88.9 dB and 0.1 'counts' to a quieter aircraft departure or arrival in a noise band range of 81.0 dB to 81.9 dB.

[1] Aviation Environmental Design Tool, developed by the Federal Aviation Administration (FAA)

The QC classification bands are set out in Table 1 below:

Noise Level Band[2], EPNdB	Quota Count (QC) Classification	Noise Level Band[2], EPNdB	Quota Count (QC) Classification
90 – 90.9	0.8	78 – 78.9	0.05
89 – 89.9	0.63	77 – 77.9	0.04
88 – 88.9	0.5	76 – 76.9	0.0315
87 – 87.9	0.4	75 – 75.9	0.025
86 – 86.9	0.315	74 – 74.9	0.002
85 – 85.9	0.25	73 – 73.9	0.016
84 – 84.9	0.2	72 – 72.9	0.0125
83 – 83.9	0.16	71 – 71.9	0.01
82 – 82.9	0.125	70 – 70.9	0.008
81 – 81.9	0.1	69 – 69.9	0.0063
80 – 80.9	0.08	68 – 68.9	0.005
79 – 79.9	0.063		

Table 1: Aircraft Noise Classifications

(NB. This classification system is a modification and extension of that operated by the designated airports in their Night Noise Quota Count System)

[2] Noise level bands above those presented would not be permitted to operate at LCA as a result of the need to comply with the noise certification level limits within the scheme.

2.1 Derivation of Noise Certification Levels - Departures

Under regulations laid out by the European Commission[3], all aircraft of the types used at LCA are required to hold a certificate that sets out the departure noise certification levels for the aircraft and states the weight at which the aircraft was certified.

Noise certification data for a given aircraft type can exist at a variety of different take-off weights. In addition, some aircraft of a given type are fitted with (potentially quieter) modifications, such as new engines or winglets, and are certificated accordingly. As a result of this, the selection of noise certification levels for an individual aircraft shall be based on:-

i. the sideline and flyover departure noise values set out on the noise certificate for the individual aircraft; or

ii. the values set out in the EASA[4] database for the specific aircraft type[5] accounting for the permitted Maximum Take-Off Weight (MTOW) of that aircraft at LCA. If no entry in the database is available for the specific aircraft at this MTOW, the entry for the next highest MTOW will be used, or, and only under exceptional circumstances,

iii. evidence presented to LBN which demonstrates to their satisfaction, confirmed in writing, that the aircraft is capable of operating at its permitted MTOW at LCA within the noise constraints applicable at the airport.

Appendix 1 sets out how to derive the Departure Noise Level from the sideline and flyover noise certification values to enable a QC classification to be derived from Table 1.

[3] Commission Regulation (EU) 748/2012

[4] European Aviation Safety Agency *Aircraft type certificate data sheets*, [Online], Available: http://www.easa.europa.eu/certification/type-certificates/aircraft.php [15/03/2022].

[5] This relates to the noise certification levels given for the aircraft at a MTOW in the EASA database that equals the average of the maximum take-off weights specified for that aircraft type. If no entry is available, the noise certification levels for the next highest MTOW is to be used.

2.2 Derivation of Noise Certification Levels - Arrivals

The INM software is used to predict the noise generated by an aircraft on arrival at LCA and contains an in-built database of aircraft types, flight, thrust and noise parameters. This database of information has been developed in consultation with aircraft manufacturers.

The approach noise level for a given type of turbofan aircraft is derived by modelling with a glide slope of 5.5 degrees using the INM software, at the approach noise certification point described in ICAO Annex 16[6]. The resulting value is equivalent to the noise certification level for that given turbofan aircraft type for a 5.5 degrees approach.

The approach noise level for a given type of turboprop aircraft is derived by firstly adjusting the noise profile of the most appropriate aircraft type within the INM software to best match the approach noise level measured at LCA during a 5.5 degree approach. This aircraft type is then modelled using the INM to derive the noise value at the approach noise certification point described in ICAO Annex 16[6]. This resulting value is used as the approach noise certification level for that given turboprop aircraft type for the purposes of quota count classification.

Appendix 1 sets out how to derive the Arrival Noise Level from the approach noise level to enable a QC classification to be derived from Table 1.

[6] Annex 16 to the Convention on International Civil Aviation, Environmental Protection, Volume 1, Aircraft Noise

3.0 QUOTA COUNT BUDGET

3.1 Quota Count Period

The quota count period applies throughout the operational hours of the airport as specified in the airport's entry in the UK AIP[7]. For the purposes of an annual assessment of the quota count and quota, the calendar year shall apply.

3.2 Quota Count Budget

LCA are required to operate within an overall noise quota budget as set out in the ANCS, which limits the number of annual flight movements. Each aircraft landing or taking-off counts towards the overall quota budget at the airport. The noisier the aircraft, the higher its QC score and the more it counts towards the total, resulting in fewer permitted flights within the budget. The use of 1 dB bands means that a small reduction in noise levels from a particular aircraft may result in it being assigned a lower QC score, thereby incentivising the use of quieter aircraft.

Performance against the quota budget is calculated by multiplying the number of departures and arrivals by the respective QC scores for an aircraft and then adding together the total QCs for each aircraft using the airport.

All aircraft operating at LCA are included in the quota, other than those engaged in training, aircraft testing and/or evaluation.

The quota count budget is:

i) 22,000 per calendar year; and

ii) 742.5 in any one week

Each year's total quota count is determined based on the schedule of actual aircraft movements for the year and established QC scores. The results are compared against LCA's permitted quota count budget as specified in i) and ii) above.

3.3 2021 QC Assessment

The QC score has been calculated for each aircraft movement during 2021. Totals for each day and week are presented in Appendix 2. These show that the airport has operated within its quota budget of 742.5 per week during this period.

[7] The UK Aeronautical Information Package, NATS Aeronautical Information Service

Table 2 presents the total QC score for 2021, broken down by aircraft type. This shows that the airport has operated within its quota budget of 22,000 for 2021.

Aircraft Type	Average QC Score[1]		2021 Total Mvts		2021 Quota Count[2]		
	Arr	Dep	Arr	Dep	Arr	Dep	Total
Airbus A221	0.050	0.125	56	56	3	7	10
ATR 42	0.315	0.050	353	353	111	18	129
Avro RJ85	0.063	0.315	6	5	0	2	2
BAe 146	0.063	0.315	4	4	0	1	2
Dash 8-400	0.125	0.100	348	348	44	35	78
Embraer E135	0.050	0.124	5	5	0	1	1
Embraer E170	0.063	0.400	3	4	0	2	2
Embraer E190	0.050	0.391	5527	5523	276	2160	2437
Embraer E190-E2	0.050	0.100	146	146	7	15	22
General Aviation: Jet Aircraft	0.050	0.104	752	760	38	79	117
General Aviation: Non-Jet Aircraft	0.311	0.156	15	15	5	2	7
TOTAL			7215	7219	485	2321	2805

[1] Some aircraft types can have different departure QC scores depending on the specific aircraft flown. Therefore the average is given.

[2] QC totals rounded to nearest whole number. Overall totals are sum of unrounded values.

Table 2: 2021 QC Assessment

3.4 2022 QC Forecast

Based on the forecast provided by LCA, a predicted QC total for 2022 has been computed. An assumed QC score has been assigned to each aircraft operating at LCA and used to compute a predicted QC total for 2022.

Aircraft Type	Assumed QC Score		2022 Forecast Movements[1]		2022 Forecast Quota Count[2]		
	Arr	Dep	Arr	Dep	Arr	Dep	Total
Airbus A221	0.05	0.16	928	928	46	148	195
ATR 42	0.315	0.05	552	552	174	28	201
ATR 72	0.25	0.125	576	576	144	72	216
Dash 8-400	0.125	0.1	1696	1696	212	170	382
Dornier 328 Jet	0.125	0.16	76	76	10	12	22
Embraer E190	0.05	0.4	22452	22460	1123	8984	10107
Embraer E290	0.05	0.1	600	600	30	60	90
General Aviation: Jet Aircraft	0.05	0.1	2023	2025	101	203	304
General Aviation: Non-Jet Aircraft	0.315	0.16	35	35	11	6	17
TOTAL			**28938**	**28948**	**1851**	**9682**	**11532**

[1] Forecast annual totals are derived from a peak week forecast provided by LCA. Therefore arrival and departure totals may not match. General Aviation forecast movements are based on 2019 activity.

[2] QC totals are rounded to nearest whole number. Overall totals are sum of unrounded values.

Table 3: 2022 QC Prediction

The above calculation shows that in 2022 the airport is predicted to be under the QC budget of 22,000.

4.0 NOISE MONITORING

4.1 Aircraft Noise Measurement

The airport's noise monitoring system records the noise levels in terms of Effective Perceived Noise Level (EPNL) during aircraft departures and landings at six locations (NMTs 1 to 6) shown in Figure 1.

Figure 1: Location of NMTs 1-6

This data is reviewed on an annual basis to establish for each aircraft type, separately for each airline, the following information:

- the average annual SIDELINE[8] departure noise level (in EPNdB), from NMTs 1,2 3 and 4,
- the average annual FLYOVER departure noise level (in EPNdB), from NMTs 5 and 6,
- the average annual APPROACH noise level (in EPNdB), from NMTs 5 and 6.

4.1.1 Calibration Details

The sound level meter and microphone systems that comprise the NMTs are calibrated by a UKAS accredited institution every two years as a minimum, in accordance with ISO 20906:2009/Amd.1:2013 "*Acoustics – Unattended monitoring of aircraft sound in the vicinity of airports*".

During 2021, independent on-site microphone calibration was carried out in March, June and September. In all cases it was found that the NMTs were operating within normal tolerances no concerns were raised regarding the functioning of the NMTs.

[8] At LCA all aircraft types, both jet and propeller, are measured at the same "sideline" noise monitoring locations. Further explanation of "sideline" in this context is given in Appendix 1.

4.1.2 Monitoring Results

A literal interpretation of the ANCS requirement is to compare the year on year changes for every aircraft type and associated airline. However, it is often not appropriate to assess every combination, as when there are small numbers of results this will likely show large differences due to the natural variation in measurement results, for example due to variation in aircraft weights and weather conditions. Therefore, it was agreed with the London Borough of Newham (LBN) that only aircraft and airline combinations which recorded at least one arrival and departure measurement per day on average would be included in the comparison. As there were a relatively low number of total flights in 2021, this has been extended to include the 4 most common aircraft and airline combinations.

The 2021 noise levels for the 4 most common aircraft and airline combinations are presented in Table 4, alongside their change from 2020. The 2021 noise levels for all aircraft and airline combinations are given in Appendix 1.

Aircraft Code	Airline Code	Sideline (NMTs 1-4)		Flyover (NMTs 5-6)		Approach (NMTs 5-6)	
		Avg Level, EPNdB	Change from 2020[1]	Avg Level, EPNdB	Change from 2020[1]	Avg Level, EPNdB	Change from 2020[1]
AT42	LM	91.1	0.2	82.1	0.4	88.5	0.5
DH8D	LG	91.6	-0.4	81.4	-0.1	84.8	0.4
E190	BA	99.2	0.5	88.2	0.5	85.1	-0.3
E190	KL	98.2	-0.1	87.4	0.4	84.9	-0.6

[1] Averages are rounded to 1 decimal place. Changes are based on the unrounded values.

Table 4: 2021 Noise Monitoring Results and Comparison to 2020

The results in Table 4 show that for all of the most commonly operating aircraft and airline combinations, there has been no significant change in the average measured arrival or departure noise levels when compared to 2020. The Quota Count (QC) classifications used in 2020 are therefore considered to remain appropriate.

Nick Williams
for Bickerdike Allen Partners LLP

David Charles
Partner

APPENDIX 1

DERIVATION OF DEPARTURE AND ARRIVAL LEVEL FOR QUOTA COUNT ASSESSMENT

The basic principles of how to calculate the departure and arrival level as part of the Night Noise Quota Counts that are in place at Heathrow, Gatwick and Stansted Airports are described in a report prepared by the Civil Aviation Authority[9].

These principles are adopted in the LCA Quota Count Scheme with some slight modifications and are as follows:-

i) The noise classification of aircraft into 1 EPNdB wide QC categories or bands is based on certificated (for departure) and calculated (for approach) Effective Perceived Noise Level (EPNL, in units EPNdB).

ii) The Departure Noise Level is determined from the aircraft's noise certification values (EPNLs) for sideline and flyover based on the following equation:

Departure Noise Level = (Sideline EPNL + Flyover EPNL)/2

iii) The Arrival Noise Level is determined from the approach noise level derived as described in Section 2.2 above and the equation:

Arrival Noise Level = Approach Noise Level EPNL – 9

iv) For propeller aircraft with maximum take-off weight (MTOW) not exceeding 5700 kg (i.e. those not subject to such criteria) and older propeller aircraft also not subject to these criteria, aircraft are classified according to assumptions based on available noise data.

v) The Departure Noise Level and (separately) the Arrival Noise Level are matched in Table A1.1 with the relevant noise band to determine the associated quota count (QC) classification for the specific aircraft type.

[9] ERCD Report 0204 Review of the Quota Count (QC) System: Re-Analysis of the Differences Between Arrivals and Departures

Noise Level Band, EPNdB	Quota Count (QC) Classification	Noise Level Band, EPNdB	Quota Count (QC) Classification
90 – 90.9	0.8	78 – 78.9	0.05
89 – 89.9	0.63	77 – 77.9	0.04
88 – 88.9	0.5	76 – 76.9	0.0315
87 – 87.9	0.4	75 – 75.9	0.025
86 – 86.9	0.315	74 – 74.9	0.002
85 – 85.9	0.25	73 – 73.9	0.016
84 – 84.9	0.2	72 – 72.9	0.0125
83 – 83.9	0.16	71 – 71.9	0.01
82 – 82.9	0.125	70 – 70.9	0.008
81 – 81.9	0.1	69 – 69.9	0.0063
80 – 80.9	0.08	68 – 68.9	0.005
79 – 79.9	0.063		

Table A1.1: Aircraft Noise Classifications

(NB. This classification system is a modification and extension of that operated by the designated airports in their Night Noise Quota Count System)

The terms “sideline” and “flyover” appear in this ANCS and also in LCA’s Noise Management and Mitigation Scheme (NOMMS) but carry different meanings in each. The following section provides an explanation of these terms in the context of both the ANCS and the NOMMS.

Explanation of "Sideline" and "Flyover" Points in the NOMMS and ANCS

The *terms* "sideline" and "flyover" are used in the NOMMS[10] and ANCS[11] to describe a point or location where aircraft noise is either measured or assessed. In the NOMMS, the terms are used to describe locations where London City Airport's (LCA's) fixed noise monitors are located. In the ANCS, the terms are used to describe noise certification points prescribed by the International Civil Aviation Organisation (ICAO). Although the terms "sideline" and "flyover" used in the NOMMS and ANCS are identical, they are not in the same position. To avoid confusion, this annex provides a short description of the location of the sideline and flyover points for both the NOMMS and ANCS.

NOMMS uses a number of fixed noise monitors to determine noise levels from departing and arriving aircraft at the airport. For historic reasons the location of these monitors are categorised as either *sideline* or *flyover* locations depending on where they are with respect to the flight path of departing or arriving aircraft. The results are used primarily for noise management purposes through a Penalties and Incentives Scheme.

The ANCS categorises and assesses aircraft by using noise certification data determined in accordance with procedures set out by ICAO. Each aircraft operating in the UK has a noise certificate describing its noise emissions under carefully controlled conditions, at three noise certification points. These certification levels are indicators of aircraft noise performance and are determined at three points in accordance with prescribed international procedures. These procedures also use the terms *sideline* and *flyover* for two of these three points (the third is the *approach* point).

NOMMS - noise monitor locations

A continuous noise monitoring system was first installed and became operational at the airport in 1992. A system of this type has been in place ever since that time and was upgraded in 2000 when a flight track monitoring system was also installed. The noise and flight track monitoring system was further updated in 2013. Historically, this noise and flight track monitoring system (NFTM) comprised four fixed noise monitors. These four monitors known as NMTs 1 to 4 are all located close to the airport.

Under the NOMMS, two new fixed noise monitors (NMTs 5 and 6) and a mobile noise monitor are incorporated within the NFTM.

[10] NOMMS – Noise Management and Mitigation Strategy

[11] ANCS – Aircraft Noise Categorisation Scheme

The six fixed noise monitors shown in Figure A1.1 are used to measure noise levels during an aircraft departure. These measured noise levels are used to determine the Sideline Noise Level and Flyover Noise Level for comparison with limits set in relation to the airport's Penalties and Incentives scheme which forms part of the NOMMS. The Sideline Noise Level and the Flyover Noise Level are compared against the fixed penalty limit and credit thresholds to determine whether a credit or penalty should be applied to the operator of the aircraft.

As NMTs 1 and 2, and 3 and 4 lie on either side of the flight path of a departing or an arriving aircraft these are designated as "sideline" locations.

For aircraft departures on Runway 27, the Sideline Noise Level is determined from the arithmetic average of the maximum noise level ($L_{Amax,S}$) measured at NMT 1 and 2. For aircraft departures on Runway 09, the Sideline Noise Level is determined from the arithmetic average of the maximum noise level ($L_{Amax,S}$) measured at NMT 3 and 4.

As NMTs 5 and 6 lie approximately underneath the flight path of a departing aircraft these are designated as "flyover" locations.

For aircraft departures on Runway 27, the Flyover Noise Level is the maximum noise level ($L_{Amax,S}$) measured at NMT 5. For aircraft departures on Runway 09, the Flyover Noise Level is the maximum noise level ($L_{Amax,S}$) measured at NMT 6.

The locations of NMTs 1 to 6 are shown in Figure A1.1.

Figure A1.1: NOMMS - Location of Noise Monitoring Terminals

ANCS - noise certification level positions

The ANCS uses a Quota Count (QC) system as a means of limiting the noise generated by aircraft movements in a transparent and easily administered manner. It operates in a similar manner to the Night Noise Quota Count scheme used at the designated airports such as Heathrow, Gatwick and Stansted, and used at other UK airports such as Manchester. The QC system at LCA however applies during the daytime, not the night-time. LCA are the first airport to operate a daytime QC system in the UK. As is the case for the Night Noise Quota Count scheme, the LCA QC system is

based on aircraft noise certification data where each aircraft type is allotted a QC value based on the noise generated by the aircraft type on departure and arrival under prescribed certification conditions[12].

Certification levels, determined in accordance with prescribed procedures under ICAO Annex 16[13] and given in terms of the Effective Perceived Noise Level (EPNL), are used within the ANCS for a variety of reasons, including:

- to comply with UK Regulations[14]
- they are reliable and independently verified indicators of aircraft noise performance;
- they are freely available for practically every relevant aircraft type[15].

Certificated noise levels for departing and arriving aircraft are determined under carefully controlled conditions at three positions:

- For jet-powered aeroplanes, 450 metres sideline at noisiest point during an aircraft departure. For propeller aircraft, depending on when the aircraft was certified, the point on the extended centre line of the runway 650 metres vertically below the climb-out flight path at full take-off power (referred to as Sideline or Lateral point);
- 6500 metres from start of roll, directly beneath the departing aircraft (referred to as Flyover point);
- 2000 metres from runway threshold, directly beneath the arriving aircraft (referred to as Approach point).

Figure A1.2, reproduced from ERCD 0205[16], illustrates these three noise certification points below.

[12] Based on the certified operating weight or maximum permitted operating weight at LCA or on evidence presented to LBN which demonstrates to their satisfaction, confirmed in writing, that the aircraft is capable of operating at its permitted MTOW at LCA within the noise constraints applicable at the airport.

[13] Annex 16 to the Convention on International Civil Aviation, Environmental Protection, Volume 1, Aircraft Noise

[14] Aerodrome (Noise Restrictions) (Rules and Procedures) Regulations 2003

[15] European Aviation Safety Agency (2016) *Aircraft type certificate data sheets*, [Online], Available: http://www.easa.europa.eu/certification/type-certificates/aircraft.php [15/03/2022].

[16] ERCD Report 0205 Quota Count Validation Study: Noise Measurements and Analysis, Civil Aviation Authority

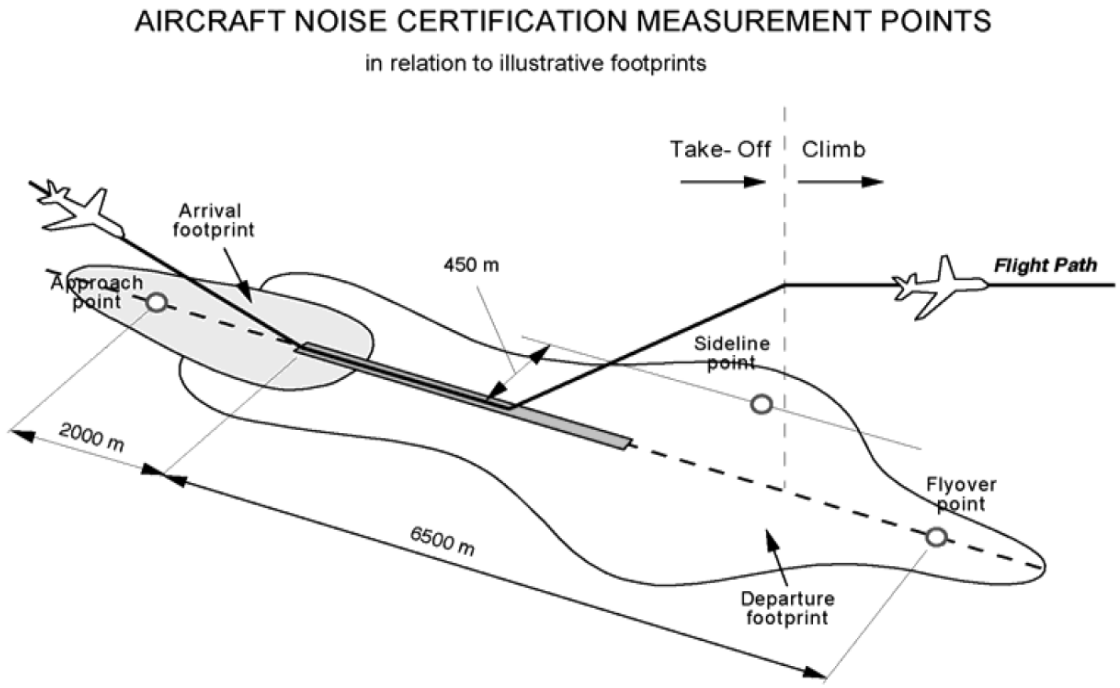

Figure A1.2: Aircraft noise certification measurement points

The Sideline point shown is for jet-powered aircraft. For propeller aircraft, depending on when the aircraft was certified, the sideline position may be the point on the extended centre line of the runway 650 metres vertically below the climb-out flight path at full take-off power. For reasons given in ERCD 0205, the use of a different measurement position for sideline noise from propeller aircraft is because of practical difficulties in measuring sideline noise at the 450 m sideline point required for jet-powered aircraft. ERCD found that the results obtained in the two locations are practically the same.

APPENDIX 2
QUOTA COUNT DAILY AND WEEKLY TOTALS

The following table gives the daily and weekly Quota Count totals for 2021. Values have been rounded to the nearest whole number, therefore in some cases the sum of the daily total may not match the weekly total.

Date	Daily Quota Count	Weekly Total
28/12/2020	0	9
29/12/2020	0	
30/12/2020	2	
31/12/2020	1	
01/01/2021	1	
02/01/2021	1	
03/01/2021	3	
04/01/2021	3	13
05/01/2021	2	
06/01/2021	1	
07/01/2021	1	
08/01/2021	3	
09/01/2021	1	
10/01/2021	2	
11/01/2021	1	8
12/01/2021	1	
13/01/2021	1	
14/01/2021	1	
15/01/2021	1	
16/01/2021	0	
17/01/2021	2	
18/01/2021	1	10
19/01/2021	2	
20/01/2021	1	
21/01/2021	2	

Date	Daily Quota Count	Weekly Total
22/01/2021	2	
23/01/2021	1	
24/01/2021	2	
25/01/2021	0	5
26/01/2021	1	
27/01/2021	0	
28/01/2021	1	
29/01/2021	1	
30/01/2021	0	
31/01/2021	2	
01/02/2021	0	6
02/02/2021	0	
03/02/2021	0	
04/02/2021	2	
05/02/2021	1	
06/02/2021	0	
07/02/2021	2	
08/02/2021	0	6
09/02/2021	0	
10/02/2021	0	
11/02/2021	1	
12/02/2021	2	
13/02/2021	0	
14/02/2021	2	
15/02/2021	0	6
16/02/2021	0	
17/02/2021	0	
18/02/2021	2	

Date	Daily Quota Count	Weekly Total
19/02/2021	1	
20/02/2021	0	
21/02/2021	2	
22/02/2021	1	6
23/02/2021	0	
24/02/2021	1	
25/02/2021	1	
26/02/2021	1	
27/02/2021	0	
28/02/2021	2	
01/03/2021	1	6
02/03/2021	0	
03/03/2021	0	
04/03/2021	1	
05/03/2021	1	
06/03/2021	0	
07/03/2021	2	
08/03/2021	1	8
09/03/2021	2	
10/03/2021	0	
11/03/2021	2	
12/03/2021	1	
13/03/2021	0	
14/03/2021	2	
15/03/2021	1	8
16/03/2021	1	
17/03/2021	1	
18/03/2021	1	

Date	Daily Quota Count	Weekly Total
19/03/2021	2	
20/03/2021	0	
21/03/2021	2	
22/03/2021	1	8
23/03/2021	1	
24/03/2021	1	
25/03/2021	1	
26/03/2021	2	
27/03/2021	0	
28/03/2021	2	
29/03/2021	1	12
30/03/2021	1	
31/03/2021	1	
01/04/2021	3	
02/04/2021	3	
03/04/2021	1	
04/04/2021	3	
05/04/2021	2	12
06/04/2021	1	
07/04/2021	1	
08/04/2021	3	
09/04/2021	2	
10/04/2021	1	
11/04/2021	2	
12/04/2021	2	15
13/04/2021	1	
14/04/2021	1	
15/04/2021	3	

Date	Daily Quota Count	Weekly Total
16/04/2021	3	
17/04/2021	0	
18/04/2021	4	
19/04/2021	3	16
20/04/2021	2	
21/04/2021	1	
22/04/2021	3	
23/04/2021	3	
24/04/2021	0	
25/04/2021	4	
26/04/2021	3	17
27/04/2021	1	
28/04/2021	1	
29/04/2021	3	
30/04/2021	4	
01/05/2021	0	
02/05/2021	3	
03/05/2021	2	18
04/05/2021	2	
05/05/2021	2	
06/05/2021	4	
07/05/2021	4	
08/05/2021	1	
09/05/2021	3	
10/05/2021	4	21
11/05/2021	2	
12/05/2021	2	
13/05/2021	5	

Date	Daily Quota Count	Weekly Total
14/05/2021	4	
15/05/2021	1	
16/05/2021	3	
17/05/2021	3	22
18/05/2021	2	
19/05/2021	2	
20/05/2021	4	
21/05/2021	5	
22/05/2021	1	
23/05/2021	5	
24/05/2021	5	27
25/05/2021	2	
26/05/2021	3	
27/05/2021	5	
28/05/2021	6	
29/05/2021	1	
30/05/2021	5	
31/05/2021	4	29
01/06/2021	4	
02/06/2021	3	
03/06/2021	6	
04/06/2021	6	
05/06/2021	1	
06/06/2021	5	
07/06/2021	6	32
08/06/2021	3	
09/06/2021	3	
10/06/2021	6	

Date	Daily Quota Count	Weekly Total
11/06/2021	8	
12/06/2021	1	
13/06/2021	5	
14/06/2021	7	36
15/06/2021	4	
16/06/2021	5	
17/06/2021	7	
18/06/2021	8	
19/06/2021	1	
20/06/2021	5	
21/06/2021	6	35
22/06/2021	5	
23/06/2021	5	
24/06/2021	7	
25/06/2021	7	
26/06/2021	1	
27/06/2021	4	
28/06/2021	6	36
29/06/2021	5	
30/06/2021	4	
01/07/2021	7	
02/07/2021	9	
03/07/2021	2	
04/07/2021	4	
05/07/2021	7	40
06/07/2021	5	
07/07/2021	5	
08/07/2021	7	

Date	Daily Quota Count	Weekly Total
09/07/2021	10	
10/07/2021	1	
11/07/2021	4	
12/07/2021	9	48
13/07/2021	5	
14/07/2021	5	
15/07/2021	8	
16/07/2021	13	
17/07/2021	2	
18/07/2021	6	
19/07/2021	12	60
20/07/2021	7	
21/07/2021	7	
22/07/2021	9	
23/07/2021	13	
24/07/2021	4	
25/07/2021	7	
26/07/2021	11	57
27/07/2021	7	
28/07/2021	8	
29/07/2021	8	
30/07/2021	13	
31/07/2021	4	
01/08/2021	7	
02/08/2021	11	64
03/08/2021	7	
04/08/2021	7	
05/08/2021	11	

Date	Daily Quota Count	Weekly Total
06/08/2021	15	
07/08/2021	4	
08/08/2021	8	
09/08/2021	13	67
10/08/2021	8	
11/08/2021	8	
12/08/2021	12	
13/08/2021	15	
14/08/2021	4	
15/08/2021	7	
16/08/2021	12	67
17/08/2021	7	
18/08/2021	7	
19/08/2021	13	
20/08/2021	15	
21/08/2021	4	
22/08/2021	7	
23/08/2021	13	69
24/08/2021	8	
25/08/2021	8	
26/08/2021	12	
27/08/2021	16	
28/08/2021	4	
29/08/2021	8	
30/08/2021	11	71
31/08/2021	9	
01/09/2021	9	
02/09/2021	13	

Date	Daily Quota Count	Weekly Total
03/09/2021	15	
04/09/2021	5	
05/09/2021	10	
06/09/2021	18	95
07/09/2021	13	
08/09/2021	14	
09/09/2021	16	
10/09/2021	19	
11/09/2021	4	
12/09/2021	11	
13/09/2021	18	103
14/09/2021	14	
15/09/2021	15	
16/09/2021	17	
17/09/2021	21	
18/09/2021	4	
19/09/2021	13	
20/09/2021	20	106
21/09/2021	16	
22/09/2021	16	
23/09/2021	17	
24/09/2021	18	
25/09/2021	5	
26/09/2021	13	
27/09/2021	19	112
28/09/2021	18	
29/09/2021	18	
30/09/2021	20	

Date	Daily Quota Count	Weekly Total
01/10/2021	20	
02/10/2021	5	
03/10/2021	12	
04/10/2021	21	120
05/10/2021	19	
06/10/2021	19	
07/10/2021	21	
08/10/2021	21	
09/10/2021	5	
10/10/2021	13	
11/10/2021	22	123
12/10/2021	19	
13/10/2021	20	
14/10/2021	22	
15/10/2021	22	
16/10/2021	6	
17/10/2021	13	
18/10/2021	22	120
19/10/2021	20	
20/10/2021	19	
21/10/2021	21	
22/10/2021	21	
23/10/2021	5	
24/10/2021	12	
25/10/2021	22	122
26/10/2021	21	
27/10/2021	19	
28/10/2021	21	

Date	Daily Quota Count	Weekly Total
29/10/2021	21	
30/10/2021	6	
31/10/2021	12	
01/11/2021	21	124
02/11/2021	20	
03/11/2021	20	
04/11/2021	23	
05/11/2021	22	
06/11/2021	5	
07/11/2021	13	
08/11/2021	21	123
09/11/2021	20	
10/11/2021	21	
11/11/2021	22	
12/11/2021	21	
13/11/2021	4	
14/11/2021	13	
15/11/2021	21	124
16/11/2021	20	
17/11/2021	20	
18/11/2021	24	
19/11/2021	22	
20/11/2021	4	
21/11/2021	13	
22/11/2021	21	122
23/11/2021	21	
24/11/2021	21	
25/11/2021	22	

Date	Daily Quota Count	Weekly Total
26/11/2021	22	
27/11/2021	4	
28/11/2021	13	
29/11/2021	20	103
30/11/2021	17	
01/12/2021	17	
02/12/2021	18	
03/12/2021	18	
04/12/2021	4	
05/12/2021	10	
06/12/2021	18	96
07/12/2021	14	
08/12/2021	15	
09/12/2021	17	
10/12/2021	17	
11/12/2021	4	
12/12/2021	10	
13/12/2021	17	100
14/12/2021	15	
15/12/2021	15	
16/12/2021	18	
17/12/2021	20	
18/12/2021	6	
19/12/2021	10	
20/12/2021	18	83
21/12/2021	15	
22/12/2021	16	
23/12/2021	16	

Date	Daily Quota Count	Weekly Total
24/12/2021	12	
25/12/2021	0	
26/12/2021	7	
27/12/2021	13	
28/12/2021	12	
29/12/2021	14	
30/12/2021	13	63
31/12/2021	11	
01/01/2022	-	
02/01/2022	-	

Table A2.1: 2021 Daily and Weekly Quota Count Totals

APPENDIX 3

2021 NOISE MONITORING RESULTS BY AIRLINE AND AIRCRAFT TYPE

Table A3.1 presents the 2021 noise monitoring results for each aircraft and airline combination. Results are given separately for sideline, flyover, and approach. Aircraft and airline combinations with fewer than 10 results have been grouped as "Other". Average noise levels have been rounded to 1 decimal place.

Aircraft Code	Airline Code	Sideline (NMTs 1-4)		Flyover (NMTs 5-6)		Approach (NMTs 5-6)	
		No. Results	2021 Avg Level, EPNdB	No. Results	2021 Avg Level, EPNdB	No. Results	2021 Avg Level, EPNdB
A221	LX	110	93.1	55	83.4	54	83.1
AT42	LM	690	91.1	341	82.1	347	88.5
B350	Other	2	87.2	1	85.7	1	82.8
B461	Other	8	97.8	4	86.3	4	83.2
B462	Other	6	97.4	3	86.8	3	82.0
C25A	AW	30	91.0	9	79.0	11	79.2
C25A	GA	22	89.7	9	78.2	2	79.0
C25A	Other	20	92.9	8	81.0	7	78.8
C25B	Other	20	92.2	9	80.0	5	77.7
C25C	Other	13	90.0	6	80.4	4	78.7
C510	AS	20	91.4	10	79.8	1	75.2
C510	GA	90	90.4	42	80.7	17	78.4
C510	Other	4	91.9	2	80.5	0	-
C510	PV	12	90.9	6	80.8	1	78.2
C525	Other	2	93.7	1	84.7	1	80.1
C560	Other	2	91.9	1	79.7	2	80.8
C56X	AH	26	90.0	12	79.4	14	80.9
C56X	DC	24	90.6	12	79.6	10	81.2
C56X	NJ	149	90.4	60	77.8	70	80.8
C56X	OO	23	90.3	7	77.9	12	81.2
C56X	Other	26	90.6	12	78.8	15	80.5
C56X	PV	10	90.4	4	80.0	5	80.1

Aircraft Code	Airline Code	Sideline (NMTs 1-4)		Flyover (NMTs 5-6)		Approach (NMTs 5-6)	
		No. Results	2021 Avg Level, EPNdB	No. Results	2021 Avg Level, EPNdB	No. Results	2021 Avg Level, EPNdB
C680	DC	14	91.4	6	79.1	7	79.1
C680	N8	29	93.7	15	82.2	12	77.2
C680	Other	26	92.5	11	76.9	13	77.4
C680	PV	10	92.7	4	81.8	4	77.8
C68A	AS	34	92.1	11	78.5	15	77.4
C68A	NJ	189	90.5	75	77.1	87	78.1
C68A	Other	12	92.1	6	79.0	6	76.9
CL30	NJ	77	93.5	36	79.4	39	80.5
CL30	Other	2	94.5	1	84.7	1	81.0
CL60	Other	4	88.8	1	79.2	2	81.2
DH8D	LG	666	91.6	312	81.4	340	84.8
E135	Other	10	92.5	5	80.6	5	80.0
E170	Other	8	94.8	4	84.3	3	82.5
E190	BA	8697	99.2	4366	88.2	4390	85.1
E190	EN	12	97.2	6	86.5	7	83.7
E190	KL	1126	98.2	567	87.4	566	84.9
E190	LH	294	98.9	150	87.6	148	85.4
E190	LO	607	99.3	306	88.4	302	84.3
E290	LX	281	93.6	142	83.5	144	83.8
E545	Other	0	-	0	-	1	79.2
E550	FL	26	93.3	10	79.2	13	80.2
E550	Other	24	92.8	9	78.3	9	79.9
E55P	NJ	175	91.8	77	78.9	85	79.4
F2TH	BF	10	91.2	5	80.2	5	77.5
F2TH	OO	37	91.6	18	81.7	20	79.1
F2TH	Other	12	92.6	6	83.0	6	77.5

Aircraft Code	Airline Code	Sideline (NMTs 1-4)		Flyover (NMTs 5-6)		Approach (NMTs 5-6)	
		No. Results	2021 Avg Level, EPNdB	No. Results	2021 Avg Level, EPNdB	No. Results	2021 Avg Level, EPNdB
F2TH	PH	12	93.2	5	83.0	6	77.9
F900	Other	8	96.6	4	84.8	5	79.6
FA50	Other	2	99.0	1	88.8	1	81.9
FA7X	Other	32	92.1	16	83.6	14	81.5
FA8X	Other	22	89.9	10	82.6	11	81.1
FA8X	SH	46	89.7	23	81.3	20	81.7
G280	Other	0	-	0	-	1	80.1
GA5C	Other	4	92.8	2	80.0	2	80.3
GA6C	Other	4	92.9	1	82.7	1	77.9
GL5T	Other	12	92.0	6	81.4	5	79.7
GL7T	Other	2	100.8	1	79.6	1	80.9
GLEX	NJ	18	91.1	9	82.7	9	80.1
GLEX	Other	20	93.6	10	81.1	12	81.4
GLF6	Other	2	93.7	1	82.8	1	79.6
P180	Other	4	94.9	2	90.4	2	90.9
P180	XG	21	93.6	11	86.4	11	91.5
PC24	JF	32	95.3	16	82.2	15	83.1
PC24	Other	4	96.7	2	84.6	3	84.3
RJ85	Other	8	100.1	4	90.9	5	82.7

Table A3.1: 2021 Noise Monitoring Results

Annual
Performance
Report 2021

Annex 4

Community and Airline Annual Report (IPS Report) and List of Community Project Fund 2021 Awardees

LONDON CITY AIRPORT

Bickerdike Allen Partners
Architecture
Acoustics
Technology

LONDON CITY AIRPORT

ANNUAL COMMUNITY AND AIRLINE REPORT

2021

Report to

London City Airport
The Royal Docks
London E16 2PB

A11327_07_RP038_2.0
04 April 2022

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Bickerdike Allen Partners LLP is an integrated practice of Architects, Acousticians, and Construction Technologists, celebrating over 50 years of continuous practice.

Architects: Design and project management services which cover all stages of design, from feasibility and planning through to construction on site and completion.

Acoustic Consultants: Expertise in planning and noise, the control of noise and vibration and the sound insulation and acoustic treatment of buildings.

Construction Technology Consultants: Expertise in building cladding, technical appraisals and defect investigation and provision of construction expert witness services.

Contents

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1.0 INTRODUCTION

One of the noise control measures at London City Airport (LCA) is the Incentives and Penalties Scheme (IPS), which is part of the wider Noise Management and Mitigation Strategy (NOMMS).

The IPS monitors the noise levels produced by departing aircraft, and if the noise level is above or below certain thresholds then airlines accrue or lose credit points. The noisiest aircraft can also incur a financial penalty.

As part of the IPS, there is a requirement to produce an Annual Community and Airline Report. The relevant text from the IPS is as follows:

"An annual report shall be produced as part of the Annual Performance Report describing aircraft/airline performance with regard to noise monitoring and flight track keeping in terms of good and poor performers and league tables, for the period relating to the immediately preceding calendar year. The most improved airline will be awarded with a partnership delivering the Community Projects Fund with LCA in the following year. The report will be submitted to the airlines, LBN and the LCACC and will also be included in the APR."

This report presents the 2021 information to satisfy the IPS requirements.

2.0 INCENTIVES AND PENALTIES SCHEME (IPS)

2.1 Scheme Details

The IPS makes use of LCA's Noise and Track Keeping (NTK) system, in particular the fixed noise monitors, to monitor departure noise levels. The IPS focuses on incentivising quieter operation of aircraft on departure and penalising noisy departures.

The IPS works as follows:

- The flyover noise level for a given departure is defined as the $L_{Amax,s}$ noise level measured at the relevant NMT (NMT 5 for runway 27 departures, and NMT 6 for runway 09 departures).
- The measured noise levels are compared with the relevant thresholds.
- If the Fixed Penalty Limit is exceeded, the airline responsible is fined £600[1] per dB(A) of exceedance, and one credit point is removed from the airline's credit account.
- If the Fixed Penalty Limit is not exceeded, but the Credit Removal Threshold is exceeded, one credit point is removed from the airline's credit account.
- If the Credit Award Threshold is not exceeded, one credit point is added to the airline's credit account.
- An airline may avoid a fixed penalty or credit removal for a particular flight, if they are able to provide a reasonable explanation for the noisy departure. Each exceedance event is considered on a case by case basis to establish whether or not a penalty or credit removal is applied.
- An airline's credit account is reset to zero at the beginning of each calendar year.

The fines for exceeding the Fixed Penalty Limit are paid into London City Airport's Community Fund, and are added to the annual contribution of £75,000 provided to the fund by LCA. The most improved airline each year, as determined by this review, partners the airport in delivering the fund.

2.2 London City Airport's Community Fund

The Community Fund grant provides a financial boost to local groups, such as mental health charities, disability groups, community gardens and sports teams as well as those providing family support, mentoring programmes and employability training. The Community Fund

[1] Fines were not payable prior to 1st November 2018

awarded over £75k in 2021, to 26 organisations, including NASSA, Carita's Anchor House, Made in Hackney, Learning Revolution Trust, Disability Sports Coach, and more. A full list is available on the airport website[2].

Applications are considered twice a year by a board of Trustees from London City Airport and representatives from the local community, as well as an independent chair. This means that with great local insight and expertise, the Trustees evaluate applications using their knowledge to ensure the greatest possible benefit goes to the community.

To qualify for any of the available Grant, an applicant has to be a charity or not for profit organisation and the project is expected to meet one or more of the following criteria:

- build stronger, safer and healthier communities;
- create more sustainable and greener communities;
- raise aspirations of East Londoners; or
- create pathways into employment.

The Community Fund advertises in local newspapers including, Newham & Stratford Recorder, Barking and Dagenham Post, Wharf Life and South London press & Mercury Paper. An example of the advert is reproduced in Figure 1. The fund was also advertised to local MP's and councillors to cascade the information and encourage charities and not-for profit organisations to apply.

[2] https://www.londoncityairport.com/corporate/responsible-growth/community-fund

Figure 1: Example of Community Fund Advert

2.3 Scheme Operation

The IPS was first implemented on 18 August 2017 on a provisional basis. Credits were awarded or removed but the fixed financial penalties were not payable until the review after 1 year of operation had been carried out.

Following the review of the scheme in 2018, the penalty and credit limits (noise levels) set out in Table 1 were adopted. These have applied from 1st November 2018.

Threshold Description	Aircraft Category	Flyover Noise Level, dB L_{ASmax}	
		Runway 09	Runway 27
Fixed Penalty Limit	Turbofans	84	84[1]
	Turboprops	78	78
Credit Removal Threshold	Turbofans	81	82
	Turboprops	75	77
Credit Award Threshold	Turbofans	73	72
	Turboprops	66.5	65.5

[1] If aircraft is between 100m and 300m north of the extended runway centreline, a 0.2 dB reduction is applied

Table 1: IPS Fixed Penalty Noise Limits and Credit Thresholds

2.4 League Table of Credits

The number of residual credits is given for the most commonly operating airlines (those with at least one departure per week on average) in Table 2. These are based on the thresholds given in Table 1. Full details of the fixed penalties, credit awards and credit removals for 2021 are given by airline in Appendix 1.

Airline	Residual Credits 2021	Residual Credits 2020	Residual Credits Difference 2021 - 2020
Netjets Europe	232	173	59
Luxair	38	27	11
GlobeAir	51	44	7
Loganair	6	4	2
LOT Polish Airlines	5	8	-3
KLM Royal Dutch Airlines	36	56	-20
Swiss	125	153	-28
Lufthansa	11	47	-36
BA Cityflyer	80	171	-91

Table 2: 2021 Residual Credits Ranking

The most improved airline has been determined by comparing the total residual credits in the two years. Therefore, Netjets Europe will partner LCA in delivering the Community Fund in 2022.

2.5 Flight Track Keeping

The NTK system is permanently linked to the airport's radar feed, which is provided by the local Air Traffic Control (ATC) centre. Aircraft flight tracks are correlated with flight information and noise events. Based around this information, the airport use a web-based system (known as TRAVIS[3]) to share data from the flight track monitoring system with the public.

LCA do not currently operate noise preferential routes such as those that are in place at some other airports. Analysis is carried out to identify any aircraft which appear to be obviously 'off track'. This analysis is reported quarterly, and in the Annual Performance Report (APR).

There are only a very small number of aircraft which are found to be 'off track' and therefore it is not possible to meaningfully rank airlines by track-keeping performance.

Nick Williams
for Bickerdike Allen Partners LLP

David Trew
Partner

[3] https://travislcy.topsonic.aero/

APPENDIX 1

2021 IPS RESULTS BY AIRLINE AND AIRCRAFT TYPE

Table 3 summarises the number of flights that incurred fixed penalties, credit removals and credit awards in 2021, by airline and aircraft type. Additionally, the total value of fixed penalties which were accrued and the residual number of credits are presented.

Airline Code	Aircraft Code	Fixed Penalties (# aircraft)	Fixed Penalties (total value)	# Credits Removed	# Credits Awarded	Residual Credits
AAB	C25A	0	£0	0	1	1
AAB	C25C	0	£0	0	3	3
AAB	C56X	0	£0	0	2	2
AAB	F2TH	0	£0	0	7	7
ABP	E135	0	£0	0	1	1
ABP	FA7X	0	£0	0	1	1
AHO	C56X	0	£0	0	16	16
ASJ	C510	0	£0	0	11	11
ASJ	C680	0	£0	0	11	11
ASJ	C68A	0	£0	0	2	2
AWU	C25A	0	£0	0	7	7
AWU	C525	0	£0	0	3	3
BFD	F2TH	0	£0	0	4	4
BOH	C56X	0	£0	0	1	1
CAZ	FA7X	0	£0	0	1	1
CFE	E170	0	£0	0	1	1
CFE	E190	0	£0	1	80	79
CLF	C25A	0	£0	0	3	3
CSD	C56X	0	£0	0	1	1
DCA	C56X	0	£0	0	8	8
DCA	C680	0	£0	0	8	8
DCA	C68A	0	£0	0	1	1
DCS	C56X	0	£0	0	4	4
DCW	C25C	0	£0	0	1	1
DLH	E190	0	£0	0	11	11
DSO	FA8X	0	£0	0	1	1

Airline Code	Aircraft Code	Fixed Penalties (# aircraft)	Fixed Penalties (total value)	# Credits Removed	# Credits Awarded	Residual Credits
EDC	C510	0	£0	0	1	1
EFD	C25B	0	£0	0	3	3
EFD	C25C	0	£0	0	3	3
EFD	C680	0	£0	0	3	3
EJA	GL5T	0	£0	0	1	1
EJA	GLEX	0	£0	0	1	1
ELJ	C680	0	£0	0	1	1
ENZ	E190	0	£0	0	1	1
ENZ	RJ85	0	£0	1	0	-1
EUW	C680	0	£0	0	1	1
FJO	E550	0	£0	0	4	4
FLJ	E135	0	£0	0	1	1
FLJ	E550	0	£0	0	8	8
FLJ	FA7X	0	£0	0	4	4
FYG	GLEX	0	£0	0	2	2
GAC	C25A	0	£0	0	2	2
GAC	C510	0	£0	0	48	48
GAC	E55P	0	£0	0	1	1
GES	C56X	0	£0	0	1	1
GLJ	GLEX	0	£0	0	2	2
GOT	C56X	0	£0	0	2	2
IER	C25B	0	£0	0	1	1
IXR	C68A	0	£0	0	1	1
JDI	C56X	0	£0	0	1	1
JET	C56X	0	£0	0	1	1
JFA	PC24	0	£0	0	10	10
JIV	C56X	0	£0	0	1	1
KFE	FA8X	0	£0	0	1	1
KLC	E190	0	£0	0	1	1

Airline Code	Aircraft Code	Fixed Penalties (# aircraft)	Fixed Penalties (total value)	# Credits Removed	# Credits Awarded	Residual Credits
KLM	E190	0	£0	1	37	36
LGL	DH8D	0	£0	0	38	38
LMJ	C56X	0	£0	0	1	1
LMJ	GLEX	0	£0	0	1	1
LNX	C56X	0	£0	0	3	3
LNX	E135	0	£0	0	1	1
LNX	FA8X	0	£0	0	3	3
LOG	AT42	0	£0	0	6	6
LOT	E190	0	£0	0	5	5
MMD	FA7X	0	£0	0	1	1
N44	GL7T	0	£0	0	1	1
N88	C680	0	£0	0	2	2
NJE	C56X	0	£0	0	38	38
NJE	C680	0	£0	0	38	38
NJE	C68A	0	£0	0	39	39
NJE	CL30	0	£0	0	24	24
NJE	CL35	0	£0	0	10	10
NJE	E55P	0	£0	0	74	74
NJE	GL5T	0	£0	0	2	2
NJE	GLEX	0	£0	0	7	7
NJU	C56X	0	£0	0	2	2
NJU	C650	0	£0	0	5	5
NJU	CL30	0	£0	0	1	1
NJU	E55P	0	£0	0	13	13
NJU	GL7T	0	£0	0	1	1
OOG	C680	0	£0	0	1	1
OOG	F2TH	0	£0	0	4	4
OOS	C56X	0	£0	0	4	4
PHF	C25B	0	£0	0	1	1

Airline Code	Aircraft Code	Fixed Penalties (# aircraft)	Fixed Penalties (total value)	# Credits Removed	# Credits Awarded	Residual Credits
PHJ	E135	0	£0	0	2	2
PHJ	F2TH	0	£0	0	1	1
PHV	B350	0	£0	0	1	1
PJS	F2TH	0	£0	0	1	1
RAF	B462	0	£0	0	1	1
RBB	FA7X	0	£0	0	1	1
RTG	F2TH	0	£0	0	1	1
SHE	FA10	0	£0	0	1	1
SHE	FA7X	0	£0	0	1	1
SHE	FA8X	0	£0	0	22	22
STQ	C25A	0	£0	0	1	1
SWR	A221	0	£0	0	32	32
SWR	E290	0	£0	0	93	93
SYB	GLEX	0	£0	0	2	2
TAY	C560	0	£0	0	1	1
TAY	C680	0	£0	0	1	1
TVS	C680	0	£0	0	1	1
VLJ	C25A	0	£0	0	1	1
XGO	C510	0	£0	0	1	1
XGO	P180	0	£0	0	1	1
XRO	FA7X	0	£0	0	1	1
-	C680	0	£0	0	3	3
-	CL60	0	£0	0	1	1
-	F2TH	0	£0	0	4	4
-	G550	0	£0	0	2	2
-	GLF6	0	£0	0	1	1

Table 3: 2021 IPS results by airline and aircraft type

Community Fund 2021 Awardees
First Tranche – January 2021

Name of the organisation.	£ requested	Boroughs Supporting	Funding Criteria	Category
Ambition, Aspire, Achieve	£ 2,500	Newham	raising aspirations of East Londoners	Training & Employability (MH)
Barking and Dagenham Youth Dance Ltd (BDYD)	£ 2,810	Barking & Dagenham	creating pathways into employment	Youth - Sports and wellbeing
Brick Lane Music Hall	£ 3,000	Newham	building stronger, safer, healthier communities	Arts and Performance
Caritas Anchor House	£ 3,000	Newham	creating pathways into employment	Training & Employability
Inspiring Your Imagination Ltd	£ 2,945	Lewisham	creating pathways into employment	Youth - Training & Development
Made In Hackney	£ 3,000	Hackney	building stronger, safer, healthier communities	Food Poverty
Neighbours in Poplar	£ 3,000	Tower Hamlets	building stronger, safer, healthier communities	OAP - Training and wellbeing
Newham All Star Sports Academy (NASSA)	£ 3,000	B&D, Hackney, Newham, Redbridge, TH, WF	raising aspirations of East Londoners	Youth - Sports and wellbeing
Newham Deanery CIO	£ 2,880	Newham	building stronger, safer, healthier communities	Food Poverty
Quo Vadis Trust	£ 2,980	Bexley, Lewisham	building stronger, safer, healthier communities	Mental health & wellbeing
Re-Instate Ltd	£ 2,922	Bexley	creating pathways into employment	Training & Development
Richard House Trust	£ 3,000	B&D, Greenwich, Hackney, Havering, Newham, Lambeth, Redbridge, Southwark, TH, WF	building stronger, safer, healthier communities	Health and home support
The Bow Foodbank Limited	£ 3,000	Tower Hamlets	building stronger, safer, healthier communities	Food poverty
Triangoals	£ 2,000	Barking & Dagenham	building stronger, safer, healthier communities	Youth - Sports and wellbeing
14 Organisations	**£ 40,037**			

Second Tranche July 2022

Name of the organisation.	£ requested	Boroughs Supporting	Funding Criteria	Category
The Royal Docks Learning & Activity Centre	£ 3,000	Newham	building stronger, safer, healthier communities	Food Poverty
Learning Revolution Trust	£ 3,000	Newham	creating pathways into employment	Youth - Training & Employment
Disability Sports Coach	£ 2,940	Lambeth, Southwark, TH,	building stronger, safer, healthier communities	PRM (People with reduced Mobility)
St. Matthew's Project	£ 3,000	Lambeth	building stronger, safer, healthier communities	Youth - Sports & Training
Social Organisation for Unity & Leisure	£ 3,000	Tower Hamlets	creating pathways into employment	Mums - Training & Employment
The Sapphire Community Group	£ 3,000	Lambeth, Lewisham, TH	creating pathways into employment	Training & Employment
Romford Town Swimming Club	£ 3,000	Barking & Dagenham, Havering, Redbridge	creating pathways into employment	Youth - Training & Development
NEKH WELFARE FOUNDATION	£ 3,000	Barking and Dagenham	creating pathways into employment	Youth - Training & Development
Clapton Common Boys Club	£ 3,000	Hackney	building stronger, safer, healthier communities	Creative Arts Programme for SEND children (special educational needs and disabilities)
South London Cares	£ 3,000	Lambeth, Southwark	building stronger, safer, healthier communities	OAP - Health & Wellbeing
Ocean Youth Connex-ions	£ 3,000	Tower Hamlets	creating more sustainable and greener communities	Environment, Health & Sustainability
The5es Development	£ 3,000	Newham	creating pathways into employment	Youth - Training & Employment (SEND)
12 Organisations	**£ 35,940**			

LONDON CITY AIRPORT COMMUNITY FUND

£75,000

To support local charities and organisations that represent inclusive and diverse communities across East London.

Eligibility

See below the eligible locations:

Barking & Dagenham | Bexley | Epping Forest District Council | Greenwich | Hackney | Havering | Newham | Lambeth | Lewisham | Redbridge | Southwark | Tower Hamlets | Waltham Forest

Funding Criteria

Applications are open to charities and not-for-profit organisations. To qualify your project needs to fit within the following categories:

- Building stronger, safer and healthier communities
- Creating more sustainable and greener communities
- Raising aspirations of East Londoners
- Creating pathways into employment

Apply Now

To apply, please fill out the application form on our website:

www.londoncityairport.com/corporate/responsible-growth/community-fund

The Fund has awarded grants to nearly 70 local charities and not for profit organisations in the local area, distributing more than £200k worth of funding since its launch in May 2019.

Contact us for more information:
Community.Fund@londoncityairport.com

For Terms and Conditions and submission deadlines, please visit our website.

Annual
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Annex 5
Annual Air Quality Monitoring Report

LONDON CITY AIRPORT

London City Airport Air Quality Monitoring Strategy: Annual Report 2021

March 2022

Experts in air quality management & assessment

Document Control

Client	London City Airport	**Principal Contact**	Tessa Simpson

Job Number	J10/12074A/10

Report Prepared By:	Dr Helen Pearce, Dr Joshua Nunn and David Bailey

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Contents

Executive Summary

This document represents the 2021 Annual Report for the Air Quality Monitoring Strategy (AQMS) that is operated by Air Quality Consultants Ltd. on behalf of London City Airport. This programme measures concentrations of nitrogen dioxide (NO_2) and fine particles (the so called PM_{10} and $PM_{2.5}$ fractions, i.e. particles that are less than 10 and 2.5 micrometres in diameter, respectively).

Monitoring is currently carried out at three automatic monitoring stations. One is situated on the roof of City Aviation House (LCA-CAH), one is to the north of Royal Albert Dock adjacent to the Newham Dockside building (LCA-ND), and one is adjacent to King George V House (LCA-KGV). These automatic sites are supplemented by a network of passive monitoring devices (nitrogen dioxide diffusion tubes) located at a further 16 sites in and around the Airport boundary.

In early 2020, activity and travel patterns in the UK were severely disrupted by the COVID-19 pandemic. Aircraft movements throughout the remainder of 2020, and 2021, have remained well below normal levels of activity. Concentrations of nitrogen dioxide across London fell appreciably during the periods of lockdown as a result of a "*reduction in road traffic, rail services and aviation, as well as a reduction in overall energy use*" (Defra, Air Quality Expert Group, 2020), and as such, 2021 is likely to represent an atypically low pollution year.

The Government has set a number of air quality objectives to protect human health. These are based on monitoring carried out over the period of a calendar year.

In some cases, these objectives refer to average concentrations of pollutants measured over the calendar year (the "annual mean"); in other cases, they refer to the number of hours or days on which a specified pollutant concentration should not be exceeded (for example, no more than 35 days in each calendar year on which PM_{10} concentrations exceed 50 µg/m^3, and no more than 18 hours in each calendar year on which nitrogen dioxide concentrations exceed 200 µg/m^3). The World Health Organisation has also set a guideline for $PM_{2.5}$.

In addition to the objectives, the Government has established a set of descriptors for the 1-hour mean concentrations of nitrogen dioxide and 24-hour mean concentrations of PM_{10} and $PM_{2.5}$. Air quality is defined by these descriptors as being 'Low', 'Moderate', 'High' or 'Very High'.

Pollution concentrations measured in and around the Airport are associated with a wide range of sources at the local, regional, national and international scales. On occasions when pollution levels rise, these higher levels are often observed across the whole of London as a "regional pollution episode". To assist with the interpretation of the results, pollution levels measured at other London monitoring sites are included in this report.

Nitrogen Dioxide

The 2021 annual mean nitrogen dioxide concentration measured at the automatic station on the roof of City Aviation House was 23.2 µg/m^3 (microgrammes per cubic metre); a slightly lower concentration, 20.6 µg/m^3, was measured at the Newham Dockside site. The annual mean objective (40 µg/m^3) was not exceeded at either site in 2021.

There were no exceedances of the 1-hour mean objective value (200 µg/m^3) at either site. At both sites, all of the 1-hour mean concentrations fell into the "Low" pollution band.

Annual mean concentrations of nitrogen dioxide at other background and roadside sites elsewhere in London over this period ranged from 14.0 to 26.5 µg/m^3. The 1-hour mean concentrations over the year show similar patterns at all four monitoring sites. There was a good correlation between observed peaks at the Airport sites and other London sites, suggesting that these occurrences were principally due to regional sources and changing weather conditions that affect the dispersion and dilution of pollutant emissions.

The annual mean nitrogen dioxide concentrations measured at the diffusion tube sites ranged from 20 to 28 µg/m^3 compared with the objective value of 40 µg/m^3. There were no measured exceedances of the air quality objective. As measured concentrations are well below 60 µg/m^3, it is highly unlikely that the 1-hour mean objective was exceeded.

Fine Particles (PM_{10})

The annual mean PM_{10} concentration measured at the automatic station situated at King George V House was 14.6 µg/m^3. This is well below the objective value of 40 µg/m^3. There were three recorded exceedances of the 24-hour mean objective (compared with the 35 exceedances allowed in a calendar year). The majority (99%) of the running 24-hour mean concentrations were classified as 'Low', and the remaining 1% were 'Moderate'. There were no running 24-hour mean concentrations within the 'High' or 'Very High' pollution bands.

24-hour mean concentrations of PM_{10} at other background sites in London over this period showed a similar pattern to those seen at the Airport site. There was a good correlation between observed peaks at the Airport site and other London sites, suggesting that these occurrences were principally due to regional sources and changing weather conditions that affect the dispersion and dilution of pollutant emissions.

Fine Particles ($PM_{2.5}$)

The annual mean $PM_{2.5}$ concentration measured at the automatic station at King George V House was 9.4 µg/m^3, well below the objective value of 25 µg/m^3, and below the WHO guideline of 10 µg/m^3. The majority (99%) of the running 24-hour mean concentrations were classified as 'Low', with the remaining 1% of the running 24-hour mean concentrations classified as "Moderate". There were no running 24-hour mean concentrations within the 'High' or 'Very High' pollution bands.

Concentrations of $PM_{2.5}$ at two other background sites in London over this period showed similar patterns and correlation in observed peaks as that at the Airport site. As for PM_{10}, this suggests that these occurrences were principally attributable to regional sources.

1 Introduction

1.1 This document represents the 2021 Annual Report for the Air Quality Monitoring Strategy (AQMS), operated on behalf of London City Airport (LCA).

1.2 In early 2020, activity and travel patterns in the UK were severely disrupted by the COVID-19 pandemic. Aircraft movements throughout the remainder of 2020 and 2021 remained well below normal levels of activity. Concentrations of nitrogen dioxide across London fell appreciably during the periods of lockdown as a result of a "reduction in road traffic, rail services and aviation, as well as a reduction in overall energy use" (Defra, Air Quality Expert Group, 2020), and as such, 2021 may still represent an atypically low pollution year.

1.3 The City Airport Development Programme (CADP) 1 planning application was granted planning permission by the Secretaries of State for Communities and Local Government and Transport in July 2016 following an appeal and public inquiry which was held in March / April 2016. Condition 57 of the CADP 1 planning permission requires that an Air Quality Monitoring Strategy be implemented on commencement of the development.

1.4 The AQMS, as defined within Condition 57, requires the operation of two automatic air quality monitoring stations, situated on the roof of City Aviation House and at Newham Dockside, and a network of nitrogen dioxide diffusion tubes, situated in and around the Airport site.

1.5 The AQMS also included a commitment to commission a new site measuring $PM_{2.5}$ concentrations before 31 December 2018 at KGV House. This new site was fully operational on 1 January 2019, and records concentrations of both PM_{10} and $PM_{2.5}$; both metrics have been included within this report.

1.6 The PM_{10} analyser situated on the rooftop of City Aviation House was decommissioned at the end of September 2020.

1.7 The AQMS is managed by Air Quality Consultants Ltd. (AQC) on behalf of London City Airport. Service support for the automatic monitoring stations is provided by Enviro Technology Services plc and Aecom Ltd, with Ricardo Energy & Environment providing independent audit checks.

1.8 Chapter 2 of this Report sets out the various standards and guidelines against which air pollution concentrations should be compared. Chapter 3 describes the monitoring methodology and provides a summary of the measured concentrations in 2021 with respect to these criteria, and compares the measured concentrations with other local monitoring sites. Chapter 4 then provides an analysis of the monitoring data with respect to trends and source contributions.

2 Assessment Criteria

2.1 The Government has established a set of air quality standards and objectives to protect human health. The 'standards' are set as concentrations below which effects are unlikely even in sensitive population groups, or below which risks to public health would be exceedingly small. They are based purely upon the scientific and medical evidence of the effects of an individual pollutant. The 'objectives' set out the extent to which the Government expects the standards to be achieved by a certain date. They take account of economic efficiency, practicability, technical feasibility and timescale. The objectives for use by local authorities are prescribed within the Air Quality (England) Regulations (2000) and the Air Quality (England) (Amendment) Regulations (2002). The relevant objectives for this report are provided in Table 1.

2.2 EU Directive 2008/50/EC (The European Parliament and the Council of the European Union, 2008) sets limit values for nitrogen dioxide, PM_{10} and $PM_{2.5}$, and is implemented in UK law through the Air Quality Standards Regulations (2010). The limit values for nitrogen dioxide are the same numerical concentrations as the UK objectives, but achievement of these values is a national obligation rather than a local one. In the UK, only monitoring and modelling carried out by UK Central Government meets the specification required to assess compliance with the limit values. Central Government does not normally recognise local authority monitoring or local modelling studies when determining the likelihood of the limit values being exceeded, unless such studies have been audited and approved by Defra and DfT's Joint Air Quality Unit (JAQU).

Table 1: Relevant Air Quality Objectives

Pollutant	Time Period	Objective / Value
Nitrogen Dioxide	1-hour mean	200 μg/m^3 not to be exceeded more than 18 times a year
	Annual mean	40 μg/m^3
Fine Particles (PM_{10})[a]	24-hour mean	50 μg/m^3 not to be exceeded more than 35 times a year [b]
	Annual mean	40 μg/m^3
Fine Particles ($PM_{2.5}$)[c]	Annual mean	25 μg/m^3

[a] Measured by the gravimetric method.

[b] Equivalent to a 90th percentile of 24-hour mean concentrations of 50 μg/m^3.

[c] The $PM_{2.5}$ objective, which is to be met by 2020, is not in Regulations and there is no requirement for local authorities to meet it. The limit value was to be met by 1 January 2015.

2.3 In addition to the objectives, Defra has established a set of descriptors for the 1-hour mean values for nitrogen dioxide and for the 24-hour mean values for PM_{10} and $PM_{2.5}$, classifying the concentrations in an index from 1 to 10 and thus labelling the levels as 'Low', 'Moderate', 'High' or

'Very High' (Defra, 2013). The banding is referred to as the Daily Air Quality Index (DAQI). The DAQI criteria are set out in Table 2.

Table 2: Daily Air Quality Index Bandings (µg/m^3)

Band	Index	Nitrogen Dioxide 1-hour Mean (µg/m^3)	PM_{10} 24-hour mean (µg/m^3) [a]	$PM_{2.5}$ 24-hour mean (µg/m^3) [a]
Very High	10	601 or more	101 or more	71 or more
High	9	535 – 600	92 – 100	65 – 70
	8	468 – 534	84 – 91	59 – 64
	7	401 – 467	76 – 83	54 – 58
Moderate	6	335 – 400	67 – 75	48 – 53
	5	268 – 334	59 – 66	42 – 47
	4	201– 267	51 – 58	36 – 41
Low	3	135 – 200	34 – 50	24 – 35
	2	68 – 134	17 – 33	12 – 23
	1	0 – 67	0 – 16	0 – 11

[a] Reference equivalent. 24-hour values are for the period 00:00 to 23:59.

World Health Organisation Guideline for Annual Mean $PM_{2.5}$

2.4 The WHO has set a guideline for annual mean $PM_{2.5}$ concentrations of 10 µg/m^3. The guideline is not currently in UK regulations and there is no requirement to assess against it at this time. However, achievement of the guideline is a long-term aspiration of the UK Government (Defra, 2019b) and the GLA has set out an intent in the London Environment Strategy to achieve it by 2030[1]. As such, consideration to this guideline has been included within this report.

[1] The WHO Guideline of 10 µg/m^3 was set in 2005. In 2021, WHO revised this guideline down to 5 µg/m^3. The Mayor has made it clear that the aspiration in London is to achieve the 2005 Guideline by 2030. The Environment Act 2021 also places an obligation on the UK Government to set a long-term $PM_{2.5}$ target. A recent consultation document infers this could be to achieve 10 µg/m^3 by 2040, but no firm decision has yet been made.

3 Monitoring Methodology and Results

Automatic Monitoring Stations

3.1 Monitoring was carried out at three automatic stations as follows:

- City Aviation House (LCA-CAH): Nitrogen dioxide.
- Newham Dockside (LCA-ND): Nitrogen dioxide.
- King George V House (LCA-KGV): PM_{10} and $PM_{2.5}$.

The locations of the three automatic sites are shown in Figure 1.

3.2 Both automatic stations measuring nitrogen dioxide (LCA-CAH and LCA-ND) use M200E TAPI chemiluminescence analysers. The LCA-KGV automatic monitoring station measures PM_{10} and $PM_{2.5}$ using a Palas FIDAS 200 Particulate Monitor. The data are stored as 15-minute mean concentrations, with further processing and ratification of the nitrogen dioxide concentrations to adjust to "reference-equivalent" as recommended by Defra (2016). The PM_{10} and $PM_{2.5}$ concentrations measured at LCA-KGV are "reference equivalent" and are unadjusted.

3.3 Independent site audits, conducted by Ricardo-E&E, confirmed that all automatic monitoring stations were operating above the minimum standards set for the national networks operated by Government. Audits were carried out on 5th March 2021, 22nd September 2021 and 15th March 2022, and have been taken into account in producing the fully ratified dataset.

3.4 Ratification of the data has been based on calibration factors determined from the calibration reports, along with visual examination of the data and comparison with monitoring data from nearby national network background sites (Bexley, Bloomsbury and Eltham) (Defra, 2021). Any erroneous data have been flagged and removed from subsequent analysis. 1-hour, 24-hour, and annual mean concentrations have then been calculated.

3.5 Pollution concentrations measured at all three automatic Airport monitoring stations are associated with a wide range of sources at the local, regional, national and international scales. On occasions when pollution levels rise, these higher levels are often observed across the whole of London as a "regional pollution episode". To assist with the interpretation of the results, comparable data have been obtained from the national Air Quality Archive (Defra, 2021) for three background sites, Bexley, Bloomsbury and Eltham, and from the London Air Quality Network (KCL, 2021) for two sites within the London Borough of Newham at Wren Close, Canning Town (background) and Cam Road, Stratford (roadside).

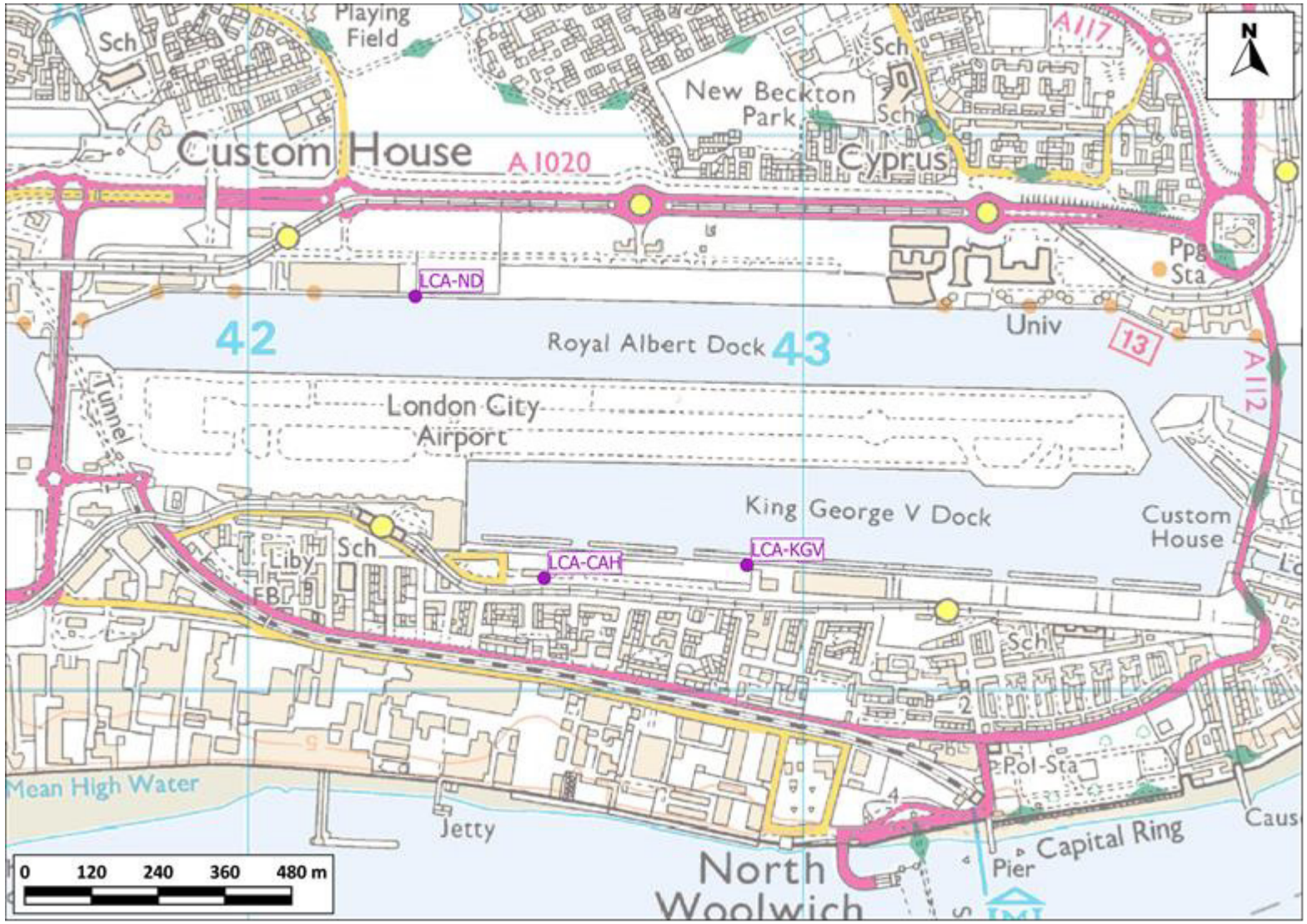

Figure 1: Automatic Monitoring Locations (purple dots).

Nitrogen Dioxide

3.6 The 2021 nitrogen dioxide results for the LCA-CAH and LCA-ND automatic monitoring stations are summarised in Table 3. Data capture[2] for LCA-CAH and LCA-ND was 97.5% and 95.3%, respectively. The annual mean concentration did not exceed the objective of 40 µg/m^3 at either site. The 1-hour mean objective was also not exceeded, and there were no 1-hour mean concentrations above the objective value (200 µg/m^3) recorded at either site.

Table 3: Nitrogen Dioxide (NO_2) Data Summary for LCA-CAH and LCA-ND, 2021[a]

Metric	LCA-CAH	LCA-ND	Objectives
	NO_2	NO_2	
Maximum 1- Hour Mean	113.5 µg/m^3	112.2 µg/m^3	-
No. 1-Hour Mean > 200 µg/m^3	0	0	200 µg/m^3; no more than 18 exceedances
Annual Mean	23.2 µg/m^3	20.6 µg/m^3	40 µg/m^3
Data Capture	97.5%	95.3%	-

[a] Nitrogen oxides concentrations are provided in Appendix 1.

3.7 Table 4 shows the distribution of the 1-hour mean values into the different pollution bands (DAQI). At both sites, all measured 1-hour mean nitrogen dioxide concentrations fell into the 'Low' pollution band during 2021.

Table 4: DAQI Bandings for Nitrogen Dioxide, 2021

Band	Index	LCA-CAH	LCA-ND
Very High [a]	**10**		
High [a]	**9**		
	8		
	7		
Moderate [a]	**6**		
	5		
	4		
Low [a]	**3**		
	2	176	145
	1	8367	8206

[a] Number of 1-hour values

3.8 Nitrogen dioxide concentrations for five monitoring sites across London in 2021 are summarised in Table 5. These sites range from central London (Bloomsbury and Eltham) to outer London

[2] It is inevitable that a small amount of data will be "lost" in each year due to routine downtime for calibrations and site servicing.

(Bexley), with two in east London (Stratford). The measured annual mean concentrations at London City Airport (23.2 µg/m^3 at LCA-CAH and 20.6 µg/m^3 at LCA-ND) were lower than those at London Bloomsbury (26.5 µg/m^3), similar to those at Canning Town and Stratford (20.6 µg/m^3 and 23.3 µg/m^3 respectively), and higher than those measured at Eltham and Bexley (14.0 µg/m^3 and 18.7 µg/m^3, respectively). This is broadly consistent with the location of London City Airport between the areas of high concentrations in central London and lower concentrations towards the outskirts. The maximum 1-hour mean concentrations recorded at both sites at London City Airport were similar as those recorded at all of the monitoring sites, in that there were no exceedances of the 1-hour mean objective.

Table 5: Nitrogen Dioxide (NO_2) Data Summary for London Monitoring Sites, 2021[a]

Metric	Background Site				Roadside Site
	Bexley	Bloomsbury	Eltham	Canning Town	Stratford
Max. 1-hr Mean (µg/m^3)	128.3	111.0	86.4	100.9	97.3
No. 1-hr >200 µg/m^3	0	0	0	0	0
Annual Mean (µg/m^3)	18.7	26.5	14.0	20.6	23.3
Data Capture (%)	96.0	98.1	91.4	95.6	91.4

[a] Includes provisional data. Nitrogen oxides concentrations are provided in Appendix 1.

Particulate Matter PM_{10}

3.9 The PM_{10} results for the LCA-KGV automatic monitoring station are summarised in Table 6. Data capture was good (81.6%[3]) at LCA-KGV during the period. The recorded annual mean concentration at LCA-KGV (14.6 µg/m^3) was well below the objective value of 40 µg/m^3. There were three measured exceedances of the 24-hour mean objective level of 50 µg/m^3, compared with the 35 exceedances allowed in a year. The 90th percentile of daily mean concentrations at LCA-KGV (25.6 µg/m^3) was below 50 µg/m^3.

[3] The monitor was removed from the site on the 2nd November 2020 in order to resolve a firmware issue. The reinstallation of the monitor was delayed until 23rd January 2021, due to national lockdown restrictions. A communications and data access issue, which first occurred on the 19th August 2021, was later diagnosed to a power supply fault. A repair was made on the 4th October 2021.

Table 6: PM_{10} Data Summary for LCA-KGV, 2021

Metric	LCA-KGV FIDAS	PM_{10} Objectives
Maximum 24-hour Mean	57.9 µg/m^3	-
No. 24-Hour Means >50 µg/m^3	3	50 µg/m^3; no more than 35 exceedances
90th Percentile	25.6 µg/m^3	50 µg/m^3
Annual Mean	14.6 µg/m^3	40 µg/m^3
Data Capture	81.6%	-

3.10 Table 7 includes the distribution of the 24-hour mean values into the different pollution bands (DAQI). Most of the 24-hour mean measured PM_{10} concentrations during 2021 fell into the 'Low' pollution band (99%), with three occasions falling into the 'Moderate' band. There were no 'High' or 'Very High' pollution events.

Table 7: DAQI Bandings for PM_{10}, 2021

Band	Index	LCA-KGV
Very High [a]	**10**	
High [a]	**9**	
	8	
	7	
Moderate [a]	**6**	
	5	
	4	3
Low [a]	**3**	8
	2	79
	1	207

[a] Number of 24-hour mean values falling within band.

3.11 PM_{10} concentrations for six sites across London in 2021 are summarised in Table 8. These sites range from central London (Bloomsbury and Eltham) to outer London (Bexley), with two in east London (Stratford and Canning Town). The measured period mean concentration at LCA-KGV (14.6 µg/m^3) was lower than all these sites, with the exception of Eltham. The number of 24-hour mean exceedances of 50 µg/m^3 was similar fell in the middle of the range of Bloomsbury, Canning Town, and Bexley.

Table 8: PM_{10} Data Summary of Background London Monitoring Sites, 2021[a]

	Background Sites					Roadside Site
	Bexley (TEOM)	Bexley (FDMS)	Bloomsbury (FDMS)	Eltham (FDMS)	Canning Town (FDMS)	Stratford (FDMS)
Maximum 24-hr mean (µg/m³)	55.5	59.3	54.8	42.9	53.0	50.0
Annual Mean (µg/m³)	16.8	16.1	18.4	12.4	17.7	17.0
No. 24-hr mean >50 µg/m³	4	4	2	0	2	0
90th Percentile	26.4	26.1	26.5	19.4	26.0	26.0
Data Capture (%)	99.3	88.8	95.9	75.0	94.9	93.0

[a] All values are reference equivalent. All data, except where stated, are reported as VCM-corrected TEOM concentrations.

Particulate Matter $PM_{2.5}$

3.12 The 2021 $PM_{2.5}$ results for the LCA-KGV automatic monitoring station are summarised in Table 9. Data capture was 81.6% during the period. The recorded annual mean concentration was 9.4 µg/m³, and below both the objective and the WHO guideline.

Table 9: $PM_{2.5}$ Data Summary for LCA-KGV, 2021

Pollutant	FIDAS
	$PM_{2.5}$
Period Mean	9.4 µg/m³
Data Capture	81.6%

3.13 Table 10 includes the distribution of the 24-hour mean values into the different pollution bands (DAQI). The majority of 24-hour mean measured $PM_{2.5}$ concentrations fell into the 'Low' pollution band (99%) during 2021; there were also three 24-hour mean values within the 'Moderate' pollution band (1%). There were no 'High' or 'Very High' pollution events.

Table 10: DAQI Bandings for $PM_{2.5}$, 2021

Band	Index	LCA-KGV
Very High [a]	**10**	
High [a]	**9**	
	8	
	7	
Moderate [a]	**6**	
	5	1
	4	2
Low [a]	**3**	7
	2	67
	1	220

[a] Number of 24-hour mean values falling within band.

3.14 $PM_{2.5}$ concentrations for two sites in London in 2021 are summarised in Table 11. The Bloomsbury site is located in central London and the Eltham site is located between central and outer London. The measured annual mean concentration at London City Airport (9.4 µg/m^3) is lower than those measured at Bloomsbury but higher than those measured at Eltham.

Table 11: $PM_{2.5}$ Data Summary of London Monitoring Sites, 2021

	Background Site	
	Bloomsbury (FDMS)	**Eltham (FDMS)**
Period Mean (µg/m^3)	10.4	8.2
Data Capture (%)	95.5	76.2

Nitrogen Dioxide Diffusion Tube Network

3.15 London City Airport also operates a network of passive diffusion tube samplers for nitrogen dioxide. The intent of this network is to establish the wider spatial pattern of nitrogen dioxide concentrations in the area surrounding the Airport. The locations of the monitoring sites are shown in Figure 2, and are described in Table 9; grid references and the monthly mean data are provided in Appendix 3. The diffusion tubes are exposed for approximately 4-week intervals. They are supplied and analysed by Gradko International Ltd., and are prepared using the 20% TEA in water method.

3.16 The diffusion tubes record monthly mean concentrations, which have been averaged to give the annual mean. The results cannot, therefore, be directly compared with the 1-hour mean objective. However, measurements across the UK have shown that the 1-hour mean nitrogen dioxide objective is unlikely to be exceeded where the annual mean concentration is below 60 µg/m^3 (Defra, 2016).

Table 9: Description of Diffusion Tube Monitoring Sites [a]

Location	Site ID
Lamp post at top of Parker Street, adjacent to housing	LCA 01
Lamp post on Camel Road, adjacent to nearest property on Hartmann Street	LCA 02
Lamp post at waterfront to east end of Newham Dockside	LCA 04
Lamp post on Straight Road, at kerbside	LCA 05
Lamp post on pedestrian walkway adjacent to nearest housing at Gallions Way	LCA 06
Landing Lights	LCA 07
City Aviation House (triplicate tubes)	LCA 09
Jet Centre – airside	LCA 10
Lamp post at waterfront, eastern end of the University of East London	LCA 11
ILS, to north of runway and south of Royal Albert Dock	LCA 12
Lamp post at north west corner of Newham Dockside	LCA 13
Lamp post on waterfront at western end of Newham Dockside	LCA 14
Lamp post at kerbside (approx 1 m) of Royal Albert Way	LCA 15
Newham Dockside analyser (duplicate tubes)	LCA 18
Lamp post adjacent to roundabout, near to access road in Silvertown Quay. Approx. 1 metre from kerbside of main road.	LCA 20
Lamp post on Brixham Street	LCA 21

[a] LCA-17 was discontinued from January 2012, as the lamppost on which diffusion tubes were deployed had been removed. LCA-16 and LCA-19 were discontinued from January 2017, as the land on which the sites were located had been vacated for construction works. LCA-03 has been discontinued from April 2018 due to ongoing issues with access. LCA-20 was initiated at the start of April 2018. LCA-08 was discontinued in February 2021 as the lamppost on which diffusion tube was deployed had been removed. The site has been relocated to a nearby lamppost and became operational (LCA-21) in April 2021.

3.17 It is important to note that not all of these monitoring sites represent relevant public exposure for annual mean concentrations of nitrogen dioxide; thus the objectives are not strictly applicable at all of these sites. For instance, the sites at Landing Lights (LCA 07), the Jet Centre (LCA 10) and the ILS (LCA 12) are located on land that is not generally accessible by the public, or is owned by the Airport. The sites at LCA 04 (at the waterfront of Newham Dockside), LCA 11 (at the waterfront of the University of East London) and LCA 13, 14 and 15 (in the vicinity of Newham Dockside and Royal Albert Way) and LCA 20 would also not represent relevant exposure for annual mean concentrations according to the criteria defined in LLAQM.TG(16)[4], but are relevant for the 1-hour mean objective. These sites have been included in the study to better understand the spatial pattern of nitrogen dioxide concentrations around the Airport.

[4] Technical Guidance Note LLAQM.TG(16) suggests that in the case of the annual mean objective, relevant locations should not include kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term.

3.18 Diffusion tubes are known to show systematic bias in relation to automatic (reference) monitors. For this reason, a co-location study has been carried out, with triplicate tubes exposed alongside the inlet to the automatic monitor at LCA-CAH, and duplicate tubes exposed in close proximity to the inlet of the LCA-ND automatic monitor. Comparison of the matched period results shows that the diffusion tubes were over-reading by an average of 18.3%. An adjustment factor of 0.846 has therefore been applied to all diffusion tube results to ensure that they give the best representation of true concentrations (see Appendix 3). The results from the triplicate tubes at LCA-CAH and the duplicate tubes at LCA-ND indicate overall "good" precision (±10.0% at both sites) in 2021 (Defra 2016).

3.19 The bias-adjusted and annualised results are summarised in Table 10, and are also shown in Figure 3. The annual mean objective of 40 µg/m^3 was achieved at all monitoring locations during 2021. All measured annual mean nitrogen dioxide concentrations were well below 60 µg/m^3, and it is thus unlikely that the 1-hour mean objective was exceeded at any location.

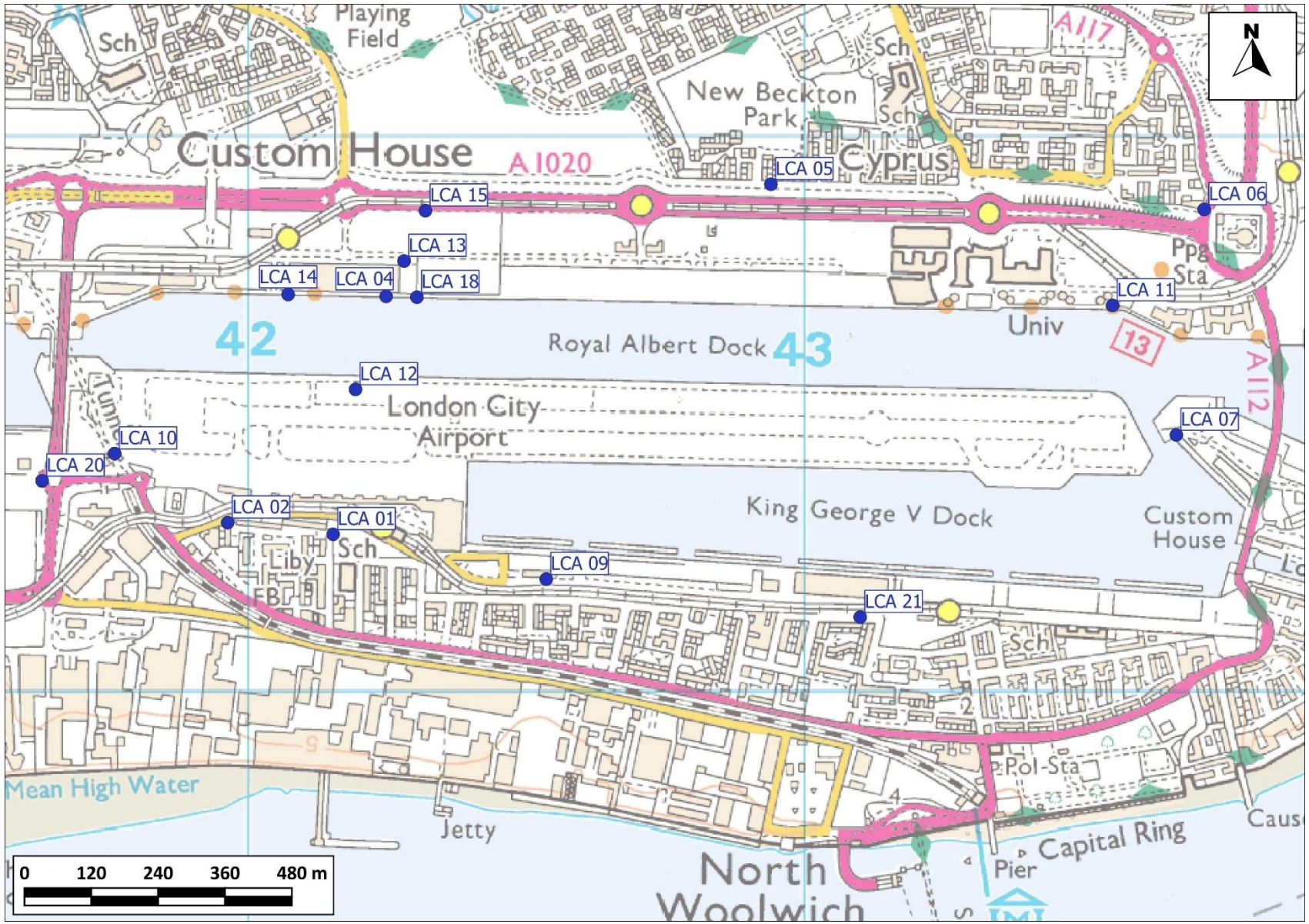

Figure 2: Diffusion Tube Monitoring Locations (blue dots)

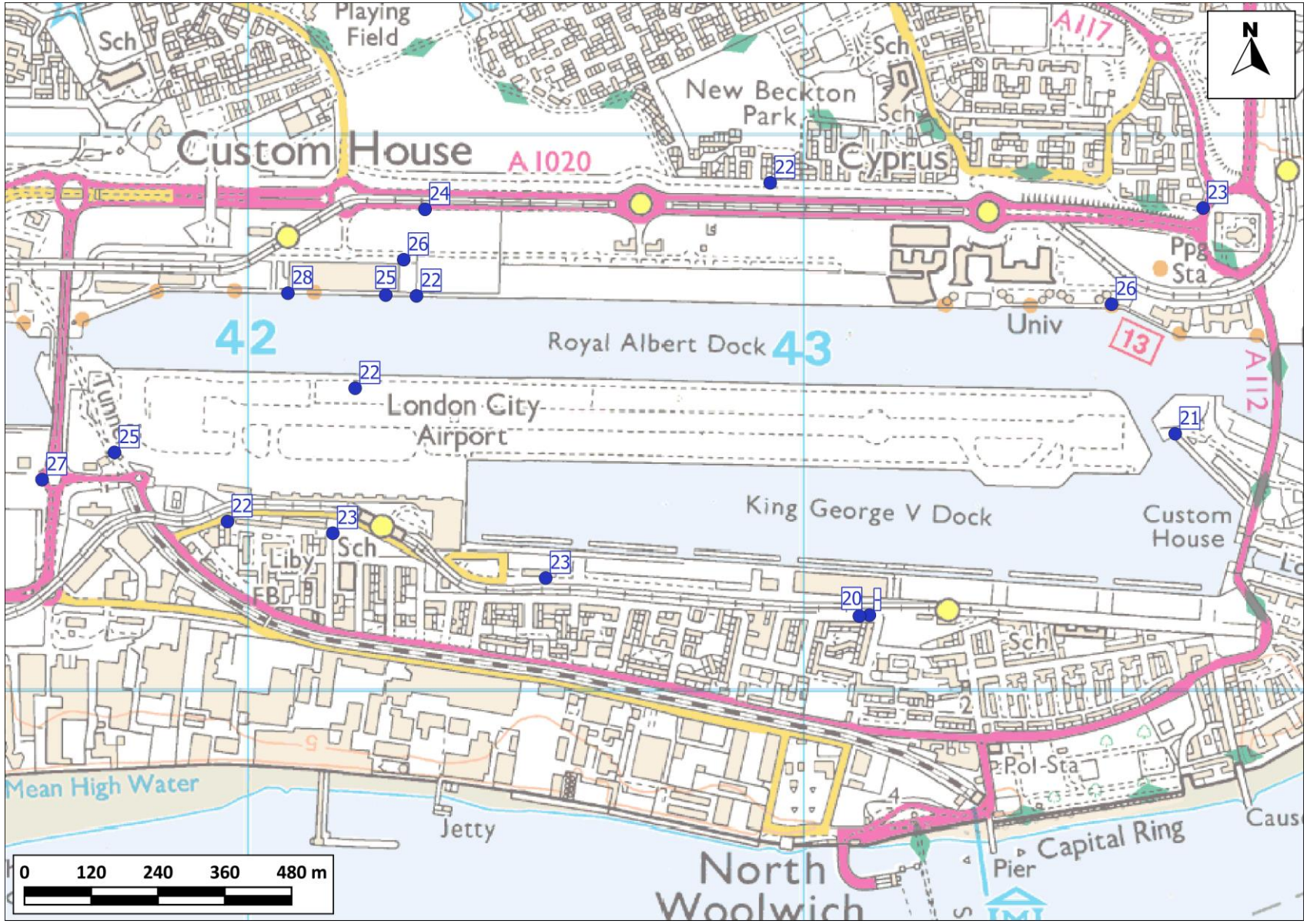

Figure 3: Nitrogen Dioxide Diffusion Tube Results, 2021 (µg/m^3)

Table 10: Diffusion Tube Data Summary for London City Airport, 2021 (Adjusted for Bias)

Site ID	Adjusted Value (µg/m^3) [a]
LCA 01	22.5
LCA 02	21.6
LCA 04	24.9
LCA 05	21.9
LCA 06	23.2
LCA 07	21.2
LCA 09	22.8
LCA 10	25.3
LCA 11	26.0
LCA 12	22.4
LCA 13	25.5
LCA 14	27.9
LCA 15	23.9
LCA 18	21.6
LCA 20	27.3
LCA 21	20.3 [b]

[a] Data have been adjusted using a local bias adjustment factor for 2021 of 0.846. The co-location studies are carried out at LCA-CAH using triplicate tubes and at LCA-ND with a duplicate tube located at the automatic monitors. Diffusion tubes were exposed for the period between 8th January 2021 to 14th January 2022.

[b] The annual mean bias adjusted concentration for LCA 21 has been annualised as described in Appendix A5, using a site specific annualisation factor of 1.083.

4 Data Analyses

4.1 This chapter provides analyses of the data, including time series, trends and source contributions.

Time Series

4.2 The measured 1-hour mean nitrogen dioxide concentrations at LCA-CAH and LCA-ND, and at Bexley, Bloomsbury, Eltham, Canning Town (Wren Close) and Stratford (Cam Road), are shown as a time series in Figures 4 and 5 respectively. The concentrations over the monitoring period show similar patterns at all seven monitoring sites. The concurrence of periods with elevated concentrations at all sites suggests that these episodes were due to regional changes in concentrations.

4.3 The measured daily mean PM_{10} concentrations at LCA-KGV and at the two Bexley monitors, Bloomsbury, Eltham, Canning Town (Wren Close) and Stratford (Cam Road), are shown in Figures 6 and 7 respectively. Once again, the analysis suggests that periods of high pollution were principally due to regional changes in concentrations.

4.4 As with nitrogen dioxide and PM_{10}, the concurrence of many periods of elevated $PM_{2.5}$ concentrations at all sites (see Figures 8 and 9) suggests that these episodes were due to regional rather than local sources and that changing weather conditions across the region affected the dispersion and dilution of pollutants.

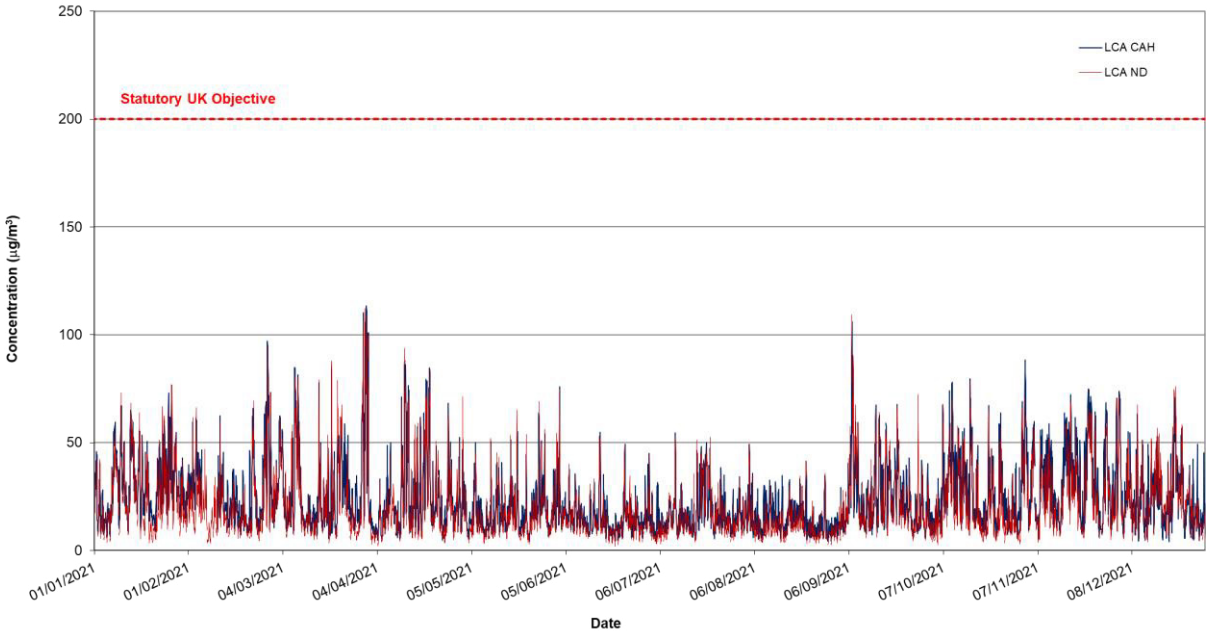

Figure 4: 1-Hour Mean Nitrogen Dioxide Concentrations at London City Airport, 2021

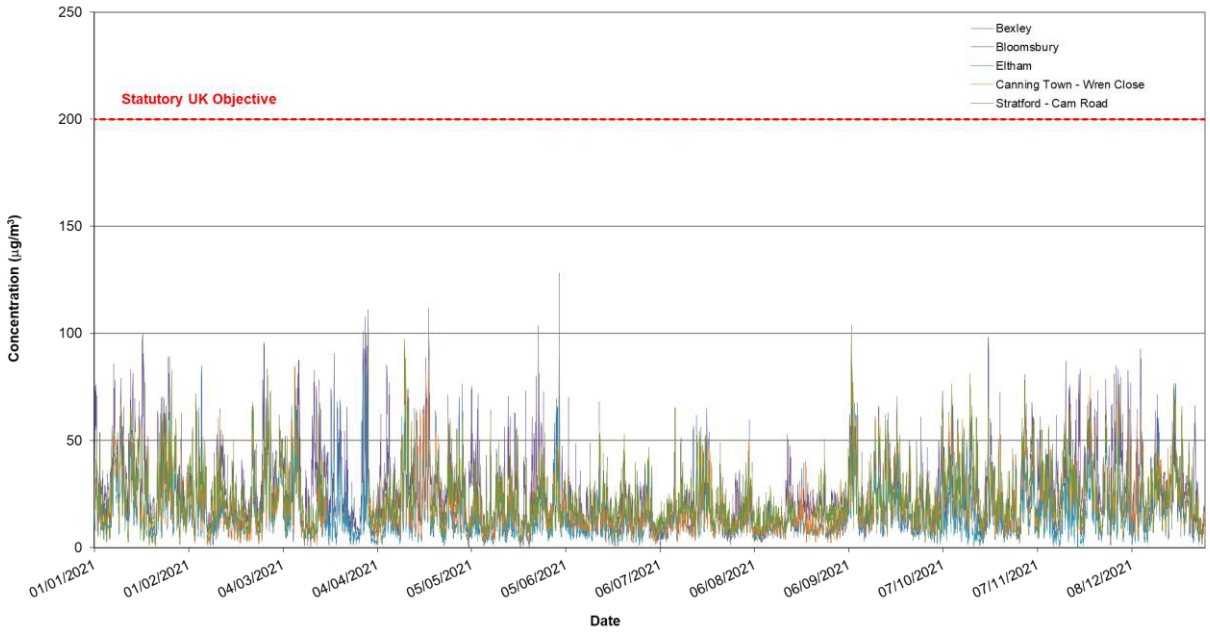

Figure 5: 1-Hour Mean Nitrogen Dioxide Concentrations at London Monitoring Sites, 2021

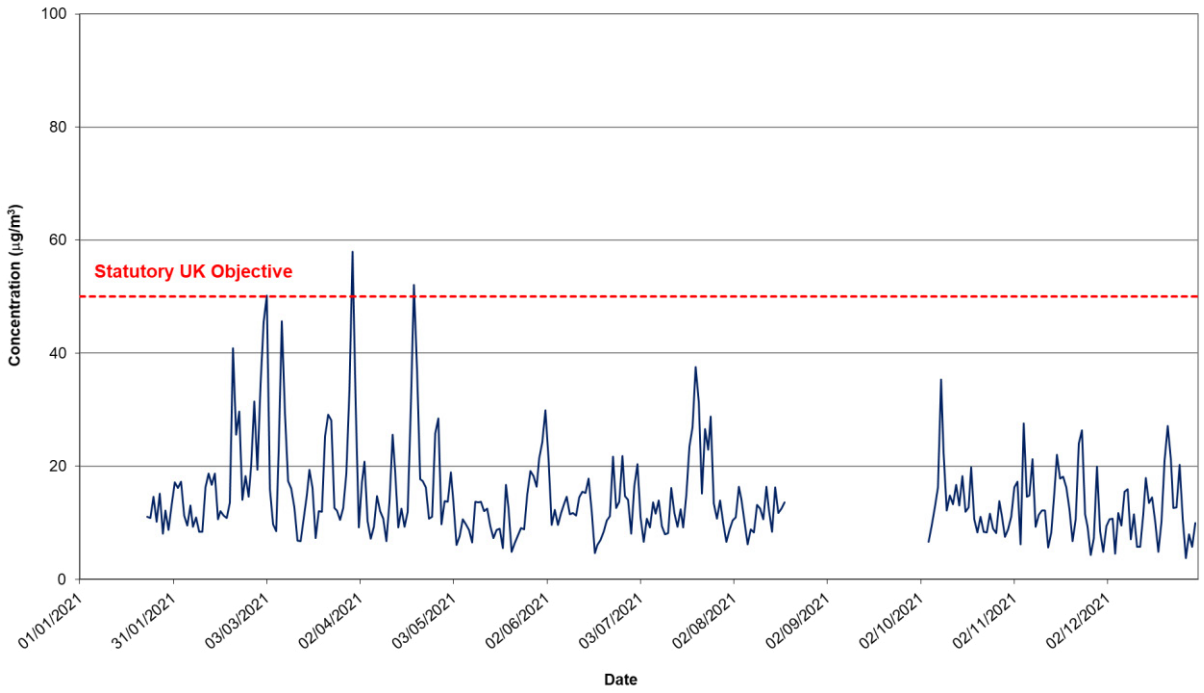

Figure 6: Daily Mean PM_{10} Concentrations at London City Airport (LCA-KGV), 2021

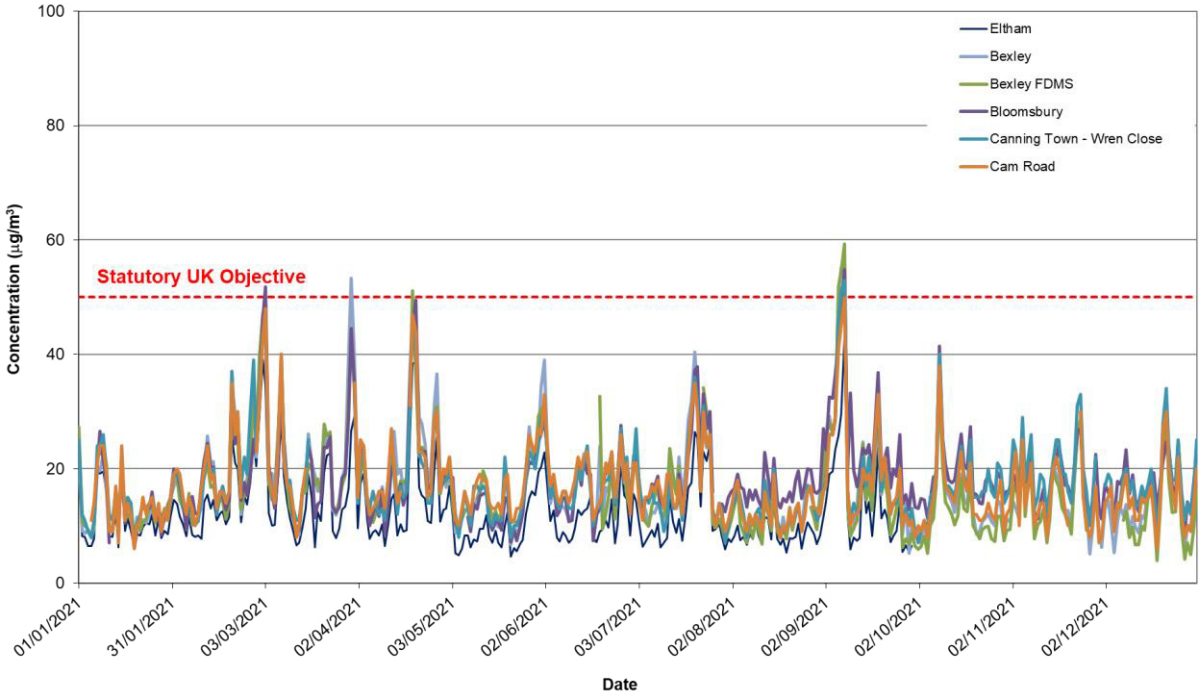

Figure 7: Daily Mean PM_{10} Concentrations at London Monitoring Sites, 2021

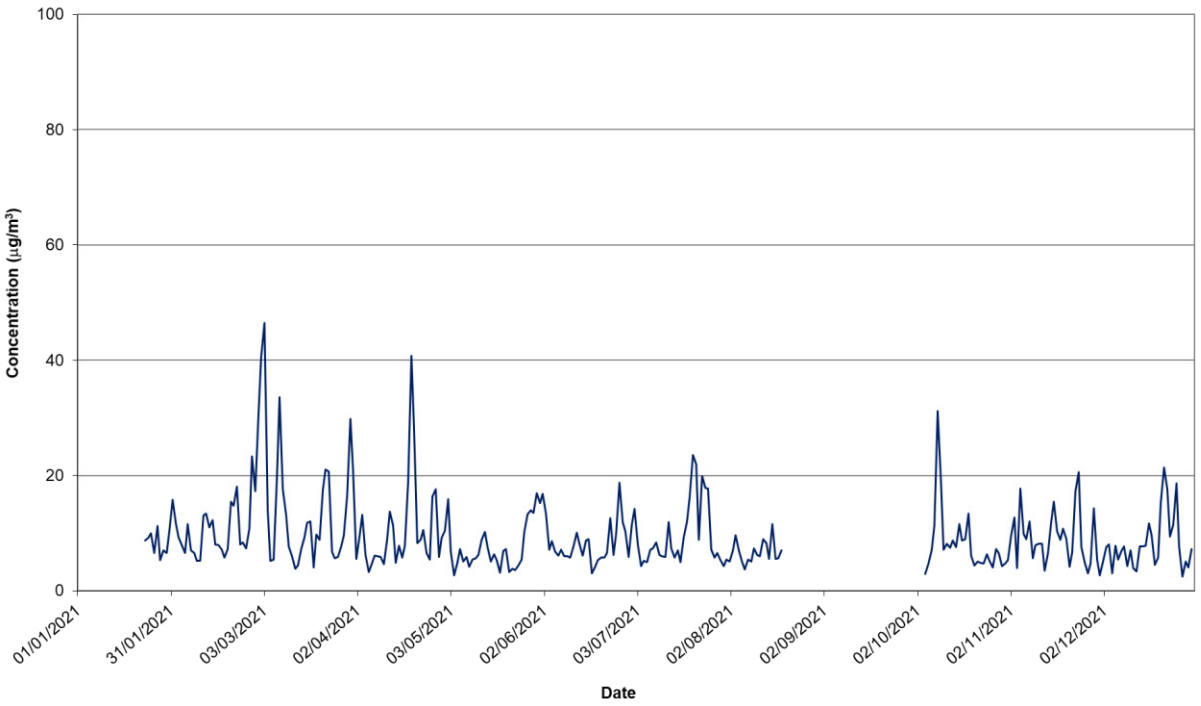

Figure 8: Daily Mean $PM_{2.5}$ Concentrations at London City Airport (LCA-KGV), 2021

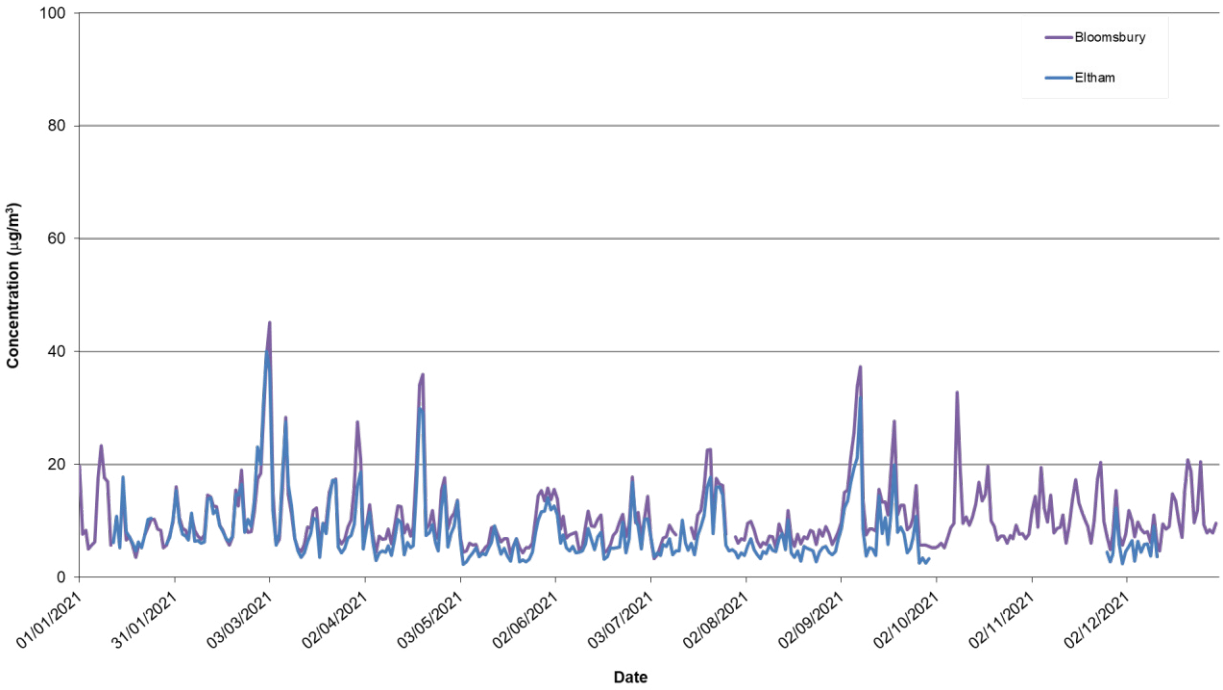

Figure 9: Daily Mean $PM_{2.5}$ Concentrations at London Monitoring Sites, 2021

Trends in Pollutant Concentrations

4.5 The automatic station at the LCA-CAH site has been in operation since September 2006 and that at LCA-ND since September 2008. It is therefore appropriate to examine whether there are any trends in the measured pollutant concentrations over time.

4.6 Figure 10 shows the trends in measured annual mean nitrogen dioxide concentrations at LCA-CAH and LCA-ND (NO_2 only[5]) and at the five other monitoring locations identified for the regional evaluation of pollution episodes (Bexley, Bloomsbury, Eltham, Canning Town and Stratford). From a visual examination of Figure 10, there appears to be a general downward trend at all sites over the last fourteen years.

4.7 However, as described in Paragraph 1.2, pollution concentrations during 2020 and 2021 have been affected by travel restrictions associated with the Covid-19 pandemic, and 2021 is likely to represent an atypically low pollution year.

4.8 Because of the interest in trends, a more detailed analysis has been carried out, focusing on monitoring sites in the east London area. The results of the detailed analysis are provided in Appendix 5. In summary, there is a statistically significant downward trend at all the east-London monitoring sites for both nitrogen dioxide and nitrogen oxides (NOx), including at LCA-CAH and LCA-ND.

4.9 The trends in annual mean PM_{10} concentrations are shown in Figure 11, for the LCA-KGV site (2019 onwards), LCA-CAH site (2007-2020) and three other monitoring locations, for which fourteen years of data are available. There is no clear trend between 2015 and 2021, with concentrations remaining largely unchanged over this period.

[5] For the period 2009 to 2021 only.

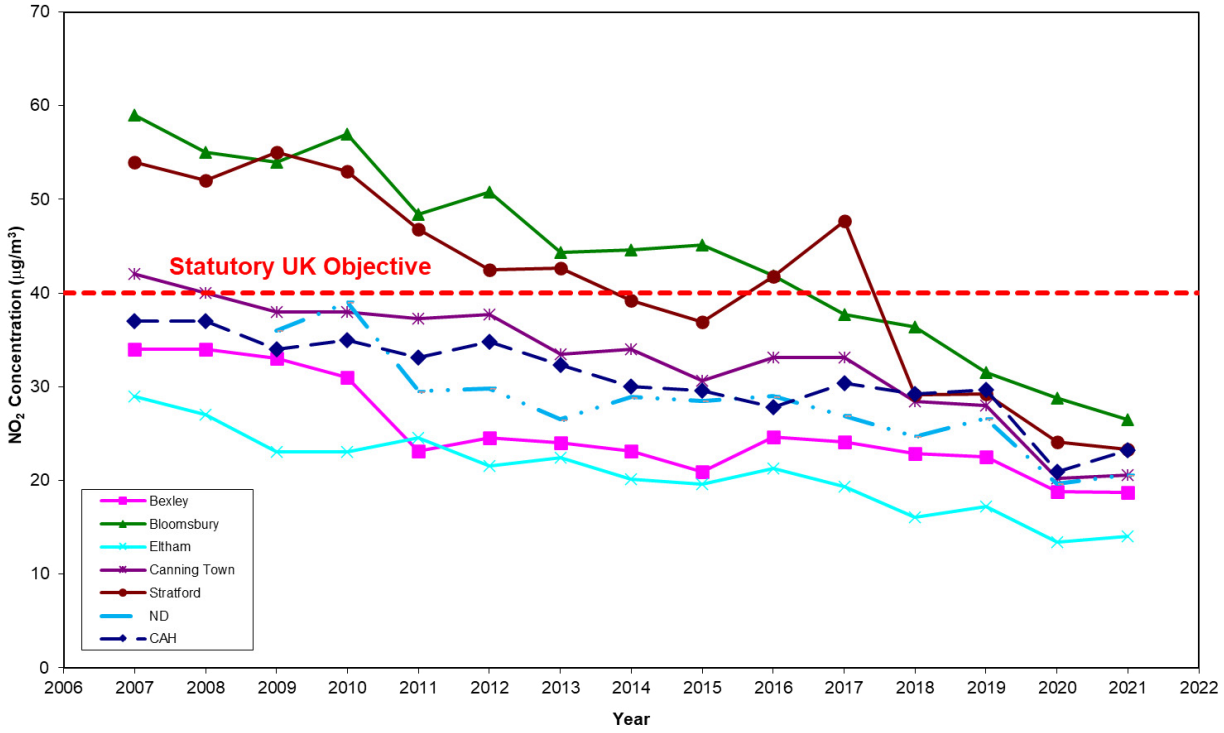

Figure 10: Annual Mean Nitrogen Dioxide Concentrations, 2007 – 2021 (µg/m^3)

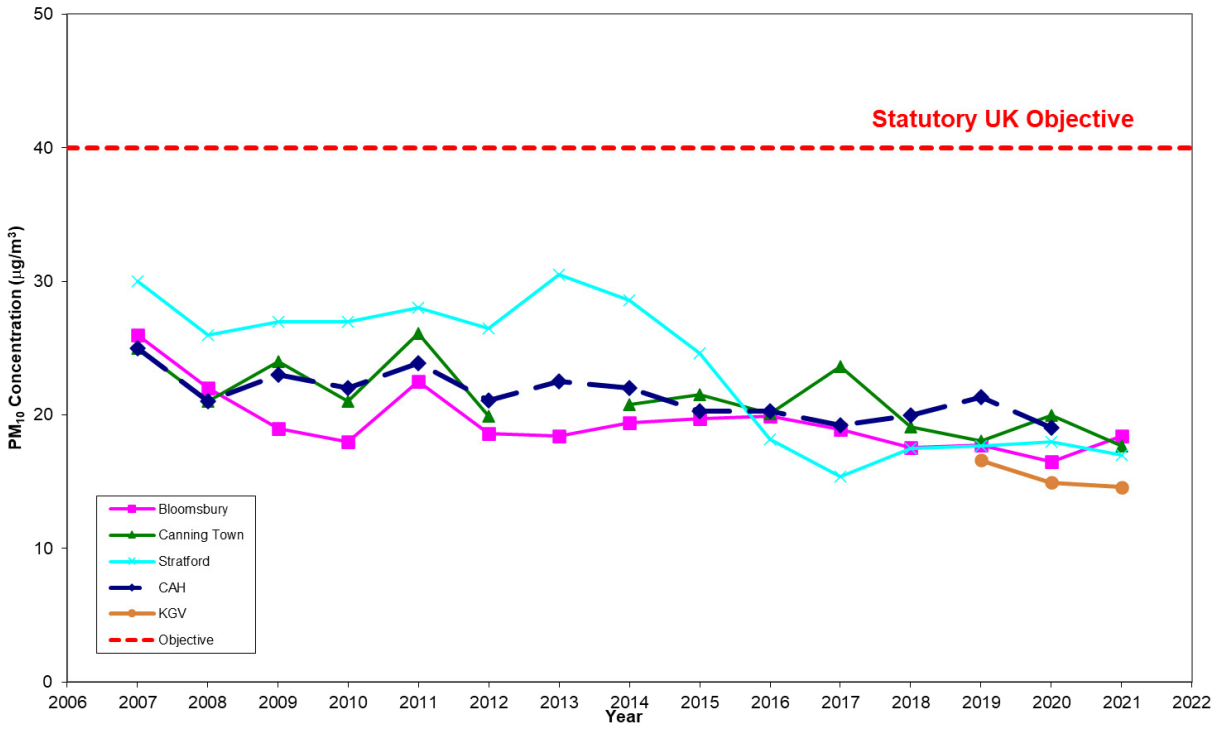

Figure 11: Annual Mean PM_{10} Concentrations, 2007 – 2021 (µg/m^3) [a]

[a] The Canning Town TEOM was decommissioned in 2013 and re-commissioned again in 2014.

Bivariate Pollution Roses

4.10 Pollution roses are a useful technique for exploring the influence of different sources of air pollution at a monitoring site. Bivariate pollution roses have been prepared using the "Openair" software[6]. These bivariate roses process average pollution concentration data by both wind direction and wind speed. They provide a powerful tool in identifying source contributions to measured concentrations at monitoring sites. The concentrations are shown by colour shading, with the distance from the centre point representing increasing wind speed.

4.11 It is known from both modelling studies and the analysis of empirical data that emissions from different source types behave differently in low and high wind speed conditions. For emissions from ground-level sources (such as road traffic), concentrations are highest during low wind speeds, and decrease rapidly with increasing wind speed (due to greater dilution and dispersion). In contrast, emissions released from elevated (e.g. chimney) sources, give rise to higher concentrations at higher wind speeds, as the plume is more likely to come down to ground close to the source. Emissions from the buoyant plumes of jet aircraft engines tend to behave in a similar manner to elevated sources. Carslaw *et al* (2006) showed how these bivariate plots could be used to identify the contribution of aircraft emissions to measured concentrations at Heathrow Airport.

4.12 Figure 12 shows bivariate pollution roses for NOx concentrations in 2021 at the LCA-CAH and LCA-ND sites, using wind data from the meteorological station at London City Airport. During low wind speeds, dispersion is reduced and concentrations from ground-level sources are higher. The pattern at both monitoring sites is that the highest NOx concentrations occur during low wind speeds (i.e. towards the centre of the rose), indicating that the highest concentrations are associated with ground-level source releases (the wind-speed scale runs from 0 to 14 m/s, with the concentration scale running from 0 to around 150 µg/m^3). These higher concentrations are not associated with any particular wind direction. There is also some indication that emissions from the apron area are making a small contribution at both sites, with these contributions being associated with moderate wind speeds. The association with higher wind speeds is suggestive of emissions from an elevated, buoyant source reflecting emissions from aircraft engines.

[6] www.openair-project.org/about_us.php

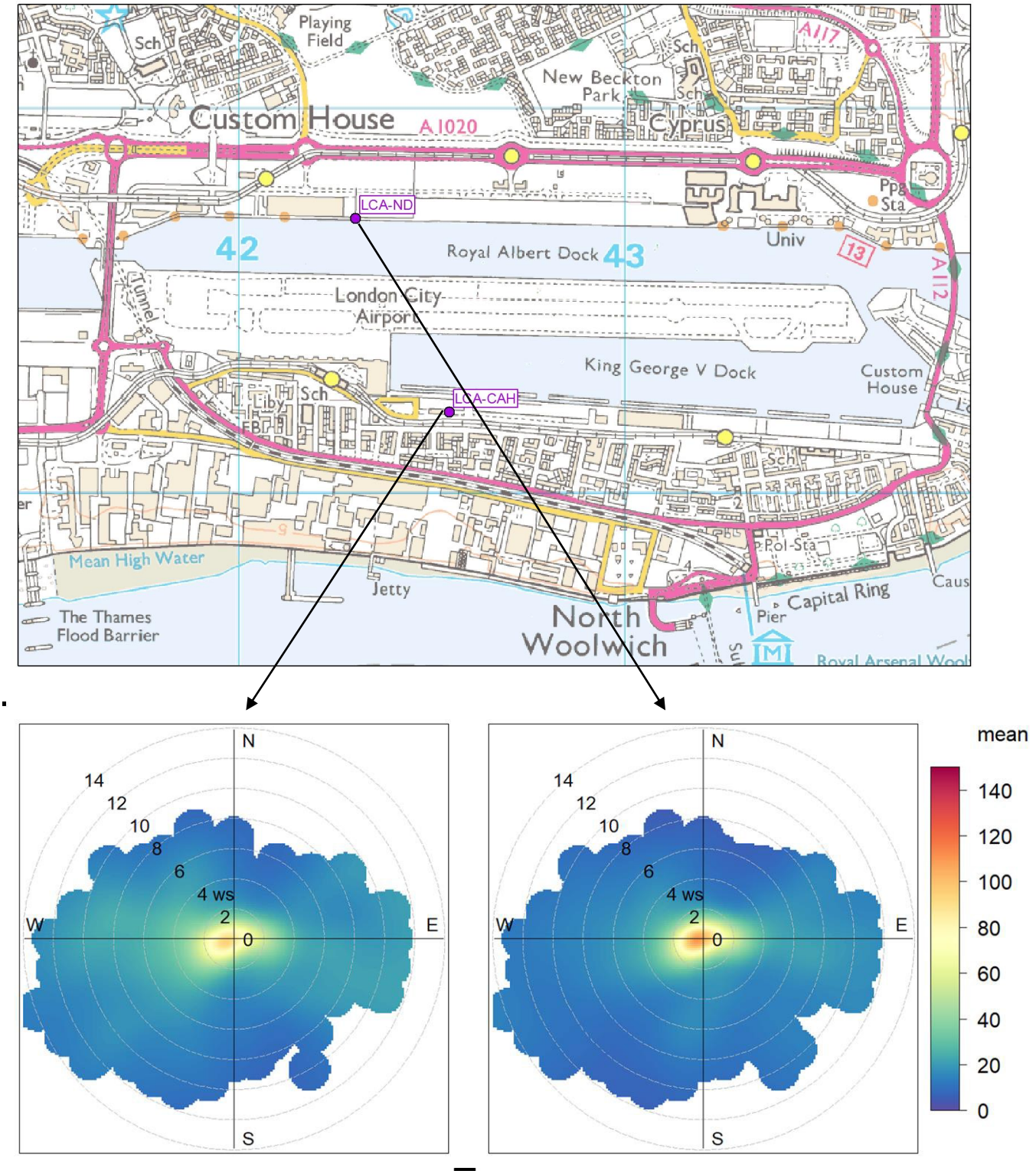

Figure 12: Bivariate Pollution Roses at LCA-CAH and LCA-ND Sites, 2021 (NO_x, µg/m^3)

5 References

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6 Glossary

Exceedance	A period of time where the concentration of a pollutant is greater than the appropriate air quality objective.
FDMS	Filter Dynamics Monitoring System.
LAQN	London Air Quality Network.
LCA-CAH	London City Airport – City Aviation House monitoring site.
LCA-ND	London City Airport – Newham Dockside monitoring site
μg/m^3	Microgrammes per cubic metre.
NO_2	Nitrogen dioxide.
NO_x	Nitrogen oxides (taken to be NO_2 + NO).
NO	Nitric oxide.
Objectives	A nationally defined set of health-based concentrations for nine pollutants, seven of which are incorporated in Regulations, setting out the extent to which the standards should be achieved by a defined date, taking into account costs, benefits, feasibility and practicality. There are also vegetation-based objectives for sulphur dioxide and nitrogen oxides.
PM_{10}	Small airborne particles, more specifically particulate matter less than 10 micrometers in aerodynamic diameter.
$PM_{2.5}$	Small airborne particles, more specifically particulate matter less than 2.5 micrometers in aerodynamic diameter.
Standards	A nationally defined set of concentrations for nine pollutants below which health effects do not occur or are minimal.
TEA	Triethanolamine – absorbent for nitrogen dioxide used in diffusion tubes.
TEOM	Tapered Element Oscillating Microbalance.
VCM	Volatile Correction Model.

A1 Nitrogen Oxides Results

A1.1 Nitrogen oxides (NO_x) concentrations, which are essentially the sum of nitrogen dioxide and nitric oxide, are presented in Table A1.1 for the automatic monitoring stations at London City Airport and for five sites across London in Table A1.2.

Table A1.1: Nitrogen Oxides (NO_x) Data Summary for LCA-CAH and LCA-ND, 2021

Site	LCA-CAH	LCA-ND
Maximum 1-Hour Mean	338.2 µg/m^3	390.7 µg/m^3
Annual Mean	31.4 µg/m^3	27.9 µg/m^3
Data Capture	97.5%	95.3%

Table A1.2: Nitrogen Oxides (NO_x) Data Summary for London Monitoring Sites, 2021

Site	Bexley	Bloomsbury	Eltham	Canning Town	Stratford
Maximum 1-Hour Mean (µg/m^3)	383.8	317.1	238.7	304.3	346.0
Annual Mean (µg/m^3)	25.7	34.7	18.6	26.7	33.8
Data Capture %	95.8	98.1	91.5	95.6	91.4

A2 Diffusion Tube Data

A2.1 Raw monthly average diffusion tube data, along with the location details and monitoring periods, are presented in Table A2.1.

Table A2.1: Raw Monthly Diffusion Tube Data for 2021, Not Bias Adjusted (µg/m^3)

Site ID	Grid ref	08/01/21 to 05/02/21	05/02/21 to 05/03/21	05/03/21 to 09/04/21	09/04/21 to 10/05/21	10/05/21 to 04/06/21	04/06/21 to 30/06/21	30/06/21 to 02/08/21	02/08/21 to 06/09/21	06/09/21 to 29/09/21	29/09/21 to 01/11/21	01/11/21 to 08/12/21	08/12/21 to 14/01/22	Unadjusted Annual Mean	Data Capture (%)
LCA 01	542154, 180288	36.6	27.5	28.0	22.6	23.5	17.8	20.6	18.7	29.8	25.9	33.0	33.7	26.6	100%
LCA 02	541965, 180299	30.8	27.4	26.3	22.9	23.8	17.0	20.8	18.8	30.7	26.5	32.2	29.1	25.6	100%
LCA 04	542271, 180708	35.3	32.6	30.4	24.8	26.8	19.4	-	19.0	35.6	28.4	36.3	34.8	29.5	92%
LCA 05	542847, 180914	31.8	29.3	24.3	24.5	24.0	18.5	22.0	20.3	32.3	39.0	15.9	31.2	25.9	100%
LCA 06	543712, 180868	36.9	32.7	24.7	27.7	25.6	21.5	22.3	20.1	33.0	38.8	20.0	30.0	27.5	100%
LCA 07	543662, 180460	34.2	30.9	25.1	7.0	26.7	19.6	22.2	20.8	30.4	28.7	-	32.0	25.1	92%
LCA 09	542532, 180196	30.3	30.5	25.7	24.3	24.5	14.2	20.9	18.3	29.6	28.9	37.8	34.0	26.8	100%
		26.1	29.2	27.1	23.6	23.4	19.8	20.5	18.5	31.9	27.3	34.4	33.2	26.4	100%
		33.8	32.5	28.0	24.6	22.4	19.0	-	18.7	33.6	27.9	36.7	32.6	28.3	92%
LCA 10	541758, 180428	39.0	32.1	31.8	28.7	28.5	17.3	25.1	21.4	35.9	31.6	35.1	33.0	30.0	100%
LCA 11	543549, 180693	42.4	34.3	-	27.1	28.2	22.9	24.8	19.9	33.3	37.0	-	37.7	30.7	83%
LCA 12	542192, 180561	34.4	29.5	26.2	23.2	23.8	20.7	20.6	16.7	29.1	28.5	34.7	30.6	26.5	100%
LCA 13	542280, 180769	57.9	30.7	29.4	25.4	23.0	19.5	24.1	22.6	31.0	29.5	38.3	-	30.1	92%
LCA 14	542070, 180712	42.2	39.4	31.7	29.1	30.4	20.5	26.6	21.7	38.7	33.6	40.5	40.6	33.0	100%
LCA 15	542316, 180862	32.8	32.6	28.2	26.8	27.5	21.6	22.7	19.7	33.9	28.2	32.6	33.1	28.2	100%
LCA 18	542303, 180707	29.3	29.1	25.7	22.1	26.0	18.0	19.7	15.6	31.3	27.1	30.3	32.7	25.5	100%
		25.5	34.2	26.5	22.5	25.5	17.6	20.4	17.4	30.5	26.4	31.0	29.3	25.5	100%
LCA 20	541632, 180378	36.6	37.3	32.7	32.2	33.0	27.9	30.7	24.9	36.5	30.4	34.6	-	32.2	92%
LCA 21	543100, 180132	-	-	-	21.0	20.9	17.5	19.0	17.1	26.2	24.3	30.8	-	22.2	67%

– not available

A3 Bias Adjustment Factor for Diffusion Tubes

A3.1 Diffusion tubes are known to exhibit bias when compared to results from automatic analysers. Therefore, diffusion tube results need to be adjusted to account for this bias. One of the main factors influencing diffusion tube performance is thought to be the laboratory that supplies and analyses the tubes. The diffusion tubes exposed at London City Airport are supplied and analysed by Gradko International Ltd. (20% TEA in water).

A3.2 In order to determine the bias exhibited by these tubes, studies are carried out using triplicate tubes co-located at LCA-CAH and duplicate tubes at LCA-ND. All diffusion tube data presented in this report have been adjusted using the overall factor calculated from the data presented in Table A3.1, with the optimum relationship defined using orthogonal regression.

A3.3 The accuracy of the bias adjustment factor is limited by the exposure periods of the co-located diffusion tubes and time the corresponding automatic monitors were operating for. At LCA-ND there were no missing diffusion tube data and the automatic monitor had a good level of data capture for 2021 (95.3%). Similarly, the LCA-CAH automatic monitor had good data capture for 2021 (97.5%) and only one month of data for one of the three diffusion tubes was missing across the whole period. A comparison between the 2021 bias adjustment factor calculated at those from previous years (see Table A3.2) shows a close comparison, and as such the factor has been considered appropriate to use.

Table A3.1: Results of Diffusion Tube and Continuous Monitor Co-location Studies in 2021 [a]

	Diffusion Tube	Automatic	Adjustment Factor
LCA-CAH [b]	26.9	23.5	0.872
LCA-ND	25.5	20.9	0.820
Overall Factor [c]			**0.846**

[a] Diffusion tubes were exposed for the period between 8th January 2021 to 14th January 2022.

[b] The automatic period corresponds with the diffusion tube period.

[c] The overall factor has been determined using orthogonal regression.

A3.4 Table A3.2 presents the bias adjustment factors applied to the data for the last fourteen years.

Table A3.2: Previous Bias Adjustment Factors

Year	Factor
2008	0.786
2009	0.717
2010	0.801
2011	0.738
2012	0.744
2013	0.771
2014	0.832
2015	0.858
2016	0.762
2017	0.724
2018	0.784
2019	0.796
2020	0.783
2021	0.846

A4 Diffusion Tube Precision

A4.1 Diffusion tube precision describes the ability of a measurement to be consistently reproduced, i.e. how similar the results of duplicate or triplicate tubes are to each other. It is an indication of how carefully the tubes have been handled in either the laboratory and/or the field. Tube precision is separated into two categories 'Good' or 'Poor' as follows: tubes are considered to have **'Good'** precision where the coefficient of variation (CV) of duplicate or triplicate diffusion tubes for eight or more periods during the year is less than 20%, and the average CV of all monitoring periods is less than 10%. Tubes are considered to have **'Poor'** precision where the CV of four or more periods is greater than 20% and/or the average CV is greater than 10%.

A4.2 Table A4.1 shows that monitoring at LCA-CAH there was 'Good' precision at every month of the year. The precision is consistent with the performance of 20% TEA in water tubes supplied by Gradko International in other co-location studies (Defra, 2021).

Table A4.1: Precision of Triplicate Diffusion Tubes, LCA-CAH

Period	Start Date	End Date	Tube 1	Tube 2	Tube 3	Mean	Standard Deviation	CV	Tube Precision
1	08/01/2021	05/02/2021	30.3	26.1	33.8	30	3.8	12.8	9.6
2	05/02/2021	05/03/2021	30.5	29.2	32.5	31	1.6	5.3	4.1
3	05/03/2021	09/04/2021	25.7	27.1	28.0	27	1.1	4.2	2.8
4	09/04/2021	10/05/2021	24.3	23.6	24.6	24	0.6	2	1.4
5	10/05/2021	04/06/2021	24.5	23.4	22.4	23	1.1	5	2.7
6	04/06/2021	30/06/2021	14.2	19.8	19.0	18	3.0	17	7.5
7	30/06/2021	02/08/2021	20.9	20.5	-	21	0.3	1	2.7
8	02/08/2021	06/09/2021	18.3	18.5	18.7	18	0.2	1	0.5
9	06/09/2021	29/09/2021	29.6	31.9	33.6	32	2.0	6	4.9
10	29/09/2021	01/11/2021	28.9	27.3	27.9	28	0.8	3	1.9
11	01/11/2021	08/12/2021	37.8	34.4	36.7	36	1.8	5	4.4
12	08/12/2021	14/01/2022	34.0	32.2	32.6	33	0.7	2	1.8
Average CV								**5.4**	**-**

A4.3 Table A4.2 shows that monitoring at LCA-ND there was 'Good' precision at every month of the year. The precision is consistent with the performance of 20% TEA in water tubes supplied by Gradko International in other co-location studies (Defra, 2021).

Table A4.2: Precision of Duplicate Diffusion Tubes, LCA-ND

Period	Start Date	End Date	Tube 1	Tube 2	Mean	Standard Deviation	CV	Tube Precision
1	08/01/2021	05/02/2021	29.3	25.5	27	2.7	9.7	24.0
2	05/02/2021	05/03/2021	29.1	34.2	32	3.6	11.4	32.4
3	05/03/2021	09/04/2021	25.7	26.5	26	0.6	2.3	5.3
4	09/04/2021	10/05/2021	22.1	22.5	22	0.3	1	2.8
5	10/05/2021	04/06/2021	26.0	25.5	26	0.3	1	2.8
6	04/06/2021	30/06/2021	18.0	17.6	18	0.3	2	2.5
7	30/06/2021	02/08/2021	19.7	20.4	20	0.5	3	4.5
8	02/08/2021	06/09/2021	15.6	17.4	17	1.2	8	11.2
9	06/09/2021	29/09/2021	31.3	30.5	31	0.6	2	5.2
10	29/09/2021	01/11/2021	27.1	26.4	27	0.5	2	4.1
11	01/11/2021	08/12/2021	30.3	31.0	31	0.5	2	4.3
12	08/12/2021	14/01/2022	32.7	29.3	31	2.4	8	21.7
Average CV							**4.2**	**-**

A5 Adjustment of Short-Term Data to Annual Mean

A5.1 The monitoring sites have been annualised as per Technical Guidance LAQM.TG16 in instances where valid data capture was less than 75% (and at least 25%). The only site which required annualisation was LCA-21, as it was installed in April 2021 and had an additional missing month in December. This site has been annualised against automatic monitoring sites 'London Bexley', 'London Bloomsbury', 'Cam Road', 'Newham Wren Close', 'LCA-CAH' and 'LCA-ND', which fulfil the criteria specified by LAQM.TG16 guidance of being long-term continuous monitoring sites with data capture over 85% for 2021.

A5.2 The annual mean nitrogen dioxide concentrations and the period means for each of the six monitoring sites from which adjustment factors have been calculated are presented in Table A5.1, along with the Overall Factor.

Table A5.1: Data used to Adjust Short-term Monitoring Data

2021 Month	Exposure Days	Raw Diffusion Tube Mean NO_2 Conc. (µg/m^3)	Automatic Mean NO_2 Conc. (µg/m^3) during Diffusion Tube Monitoring Period					
		LCA-21	London Bexley	London Bloomsbury	Newham Cam Road	Newham Wren Close	LCA-CAH	LCA-ND
April	**31.0**	21.0	20.9	29.3	23.8	22.8	23.1	21.7
May	**25.0**	20.9	17.2	24.4	20.1	17.8	19.1	18.0
June	**26.0**	17.5	12.1	18.4	18.2	13.7	14.9	13.5
July	**33.0**	19.0	13.7	18.0	18.6	14.9	16.7	15.1
August	**35.0**	17.1	11.8	16.6	16.7	12.9	14.5	12.4
September	**23.0**	26.2	21.9	24.9	26.9	25.1	25.8	25.1
October	**33.0**	24.3	19.6	24.0	24.3	21.8	24.2	20.1
November	**37.0**	30.8	22.6	36.9	29.6	28.0	32.7	27.3
PERIOD MEAN (Apr-Nov)		*22.2*	*17.5*	*24.3*	*22.3*	*19.7*	*21.6*	*19.2*
ANNUAL MEAN (Jan-Dec):			***19.0***	***26.8***	***23.7***	***20.9***	***23.5***	***21.0***
ANNUALISATION FACTOR:			**1.089**	**1.105**	**1.059**	**1.065**	**1.090**	**1.092**
			1.083					

A6 Detailed Trend Analysis

Nitrogen Dioxide

A6.1 Figure A6.1 shows the smooth-trend analyses of 1-hour mean nitrogen dioxide concentrations for LCA-CAH, LCA-ND and six other, nearby monitoring sites (Greenwich Burrage Grove, Greenwich Eltham, Greenwich Woolwich Flyover, Newham Cam Road, Newham Wren Close and Tower Hamlets Blackwall)[7], over the period 2007 to 2021.

A6.2 A Theil-Sen analysis has been applied to the data to identify statistically significant trends and slopes, and the results are described in Table A6.1. There is a statistically significant downward trend in nitrogen dioxide concentrations at LCA-CAH, LCA-ND and all of the six monitoring sites (Greenwich Burrage Grove, Greenwich Eltham, Greenwich Woolwich Flyover, Newham Cam Road, Newham Wren Close and Tower Hamlets Blackwall).

Table A6.1: Theil-Sen Analysis, Nitrogen Dioxide Concentrations at City Aviation House, Newham Dockside and Other Monitoring Sites, 2007 to 2021

Monitoring Site	Theil-Sen Analysis [a]	Statistically Significant Trend?
City Aviation House (LCA-CAH)	-0.89 [-1.22, -0.6]	**Yes**
Newham Dockside (LCA-ND) [b]	-1.25 [-1.56, -0.87]	**Yes**
Greenwich Burrage Grove	-2.01 [-2.28, -1.73]	**Yes**
Greenwich Eltham	-0.88 [-1.10, -0.66]	**Yes**
Greenwich Woolwich Flyover	-2.39 [-2.77, -1.99]	**Yes**
Newham Cam Road	-2.24 [-2.60, -1.86]	**Yes**
Newham Wren Close	-1.41 [-1.71, -1.09]	**Yes**
Tower Hamlets Blackwall	-2.13 [-2.44, -1.82]	**Yes**

[a] The first value is the slope. The number in brackets is the upper and lower 95th percentile confidence interval.

[b] Analysis carried out for 2009 to 2021.

[7] The Poplar site at Tower Hamlets was decommissioned in July 2013. As the data for the period 2007 to 2013 was statistically not significant, it has been removed from this analysis. The Greenwich Millennium Village monitoring site was decommissioned at the end of 2016. As the data for the period of 2007 to 2016 was statistically not significant, it has also been removed from this analysis.

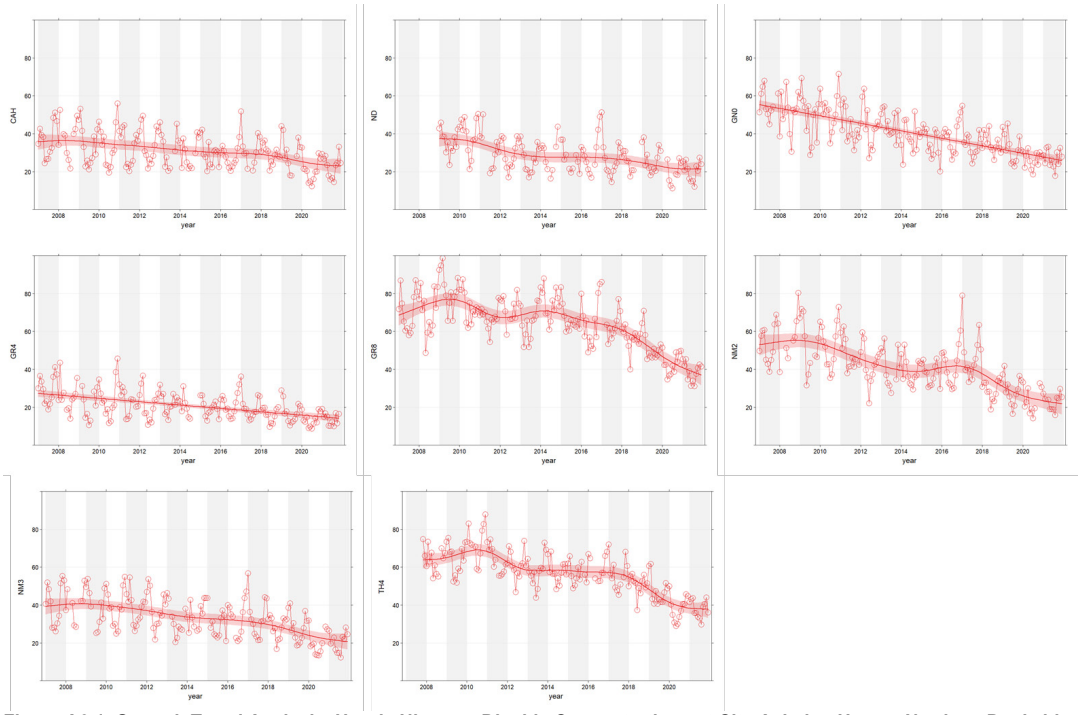

Figure A6.1: Smooth Trend Analysis, Hourly Nitrogen Dioxide Concentrations at City Aviation House, Newham Dockside and Other Monitoring Sites, 2007 – 2021 (Left to Right: City Aviation House, Newham Dockside, Greenwich Burrage Grove, Greenwich Eltham, Greenwich Woolwich Flyover, Newham Cam Road, Newham Wren Close, Tower Hamlets Blackwall)

Nitrogen Oxides (NO_x)

A6.3 Figure A6.2 shows the smooth trend analysis of 1-hour mean NO_x concentrations for LCA-CAH, LCA-ND and other monitoring sites (Greenwich Burrage Grove, Greenwich Eltham, Greenwich Woolwich Flyover, Newham Cam Road, Newham Wren Close, Tower Hamlets Blackwall) for the period 2007 to 2021.

A6.4 The Theil-Sen analysis, shown in Table A6.2, indicates a statistically significant downward trend in NOx concentrations at LCA-CAH, LCA-ND and all six of the monitoring sites (Greenwich Burrage Grove, Greenwich Eltham, Greenwich Woolwich Flyover, Newham Cam Road, Newham Wren Close and Tower Hamlets Blackwall).

Table A6.2: Theil-Sen Analysis, NO_x Concentrations at City Aviation House and Other London Monitoring Sites, 2007 to 2021

Monitoring Site	Theil-Sen Analysis [a]	Statistically Significant Trend?
City Aviation House (LCA-CAH)	-1.76 [-2.45, -1.16]	**Yes**
Newham Dockside (LCA-ND) [b]	-3.81 [-4.69, -2.73]	**Yes**
Greenwich Burrage Grove	-4.78 [-5.51, -4.00]	**Yes**
Greenwich Eltham	-1.25 [-1.75, -0.85]	**Yes**
Greenwich Woolwich Flyover	-8.45 [-10.13, -6.63]	**Yes**
Newham Cam Road	-4.87 [-5.81, -3.96]	**Yes**
Newham Wren Close	-2.34 [-3.01, -1.59]	**Yes**
Tower Hamlets Blackwall	-6.72 [-8.05, -5.69]	**Yes**

[a] The first value is the slope. The value in brackets is the upper and lower 95th percentile confidence interval.

[b] Analysis carried out for 2009 to 2021.

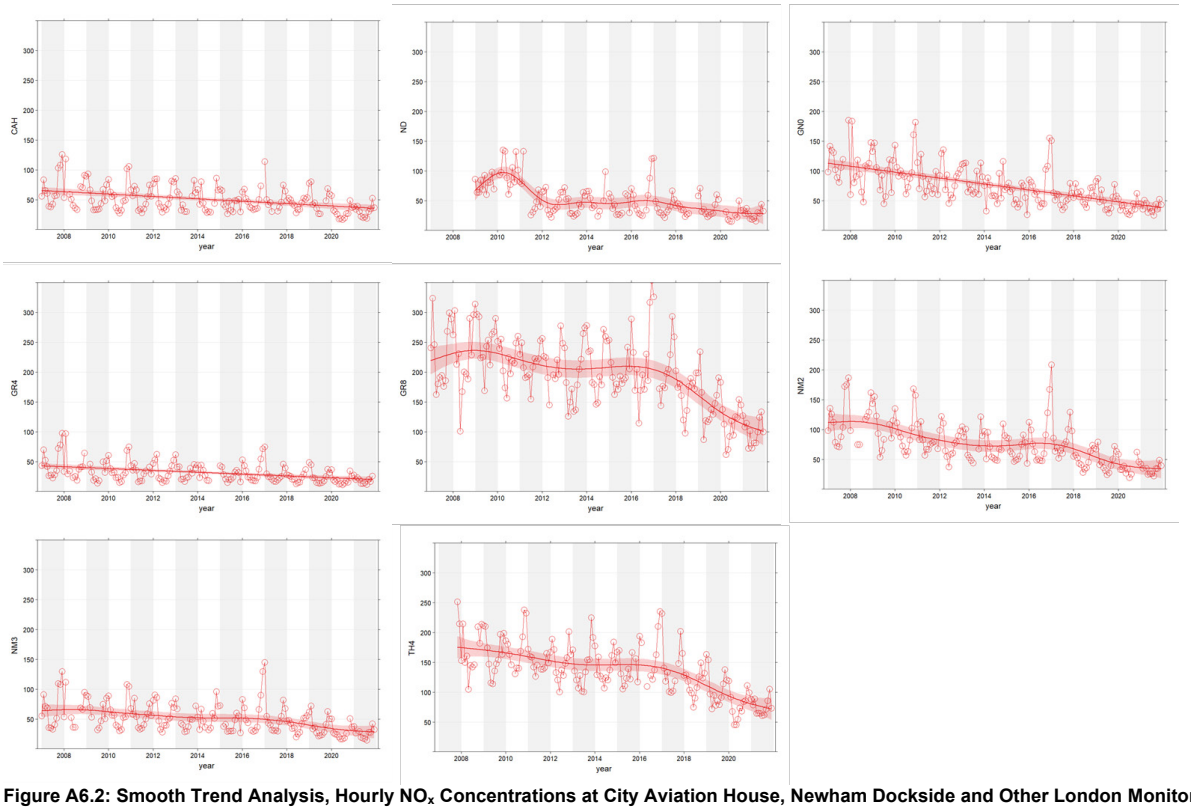

Figure A6.2: Smooth Trend Analysis, Hourly NO_x Concentrations at City Aviation House, Newham Dockside and Other London Monitoring Sites, 2007 – 2021 (Left to Right: Aviation House, Newham Dockside, Greenwich Burrage Grove, Greenwich Eltham, Greenwich Woolwich Flyover, Newham Cam Road, Newham Wren Close, Tower Hamlets Blackwall

Annual
Performance
Report 2021

Annex 6
Air Quality Action Plan Progress Update

LONDON CITY AIRPORT

Measure	Expected emissions / air quality benefit	Outputs / targets / KPIs	Completed by	Status Update Q4 2021
Ground Power				
Measure 1: Maximising availability of Fixed Electrical Ground Power (FEGP).	NOx and PM10 emissions from Auxiliary Power Units (APUs) and Mobile Ground Power Units (MGPUs) were 4.7 and	London City Airport will continue to routinely record the availability of FEGP on all stands where it is has been installed, and the time taken to effect repairs until June 2021 when all diesel MGPUs will be replaced with battery MGPUs. It will also continue to record the use of FEGP within the online portal and document any contraventions of Airfield Operating Instruction AOI 07 until June 2021.	Jun-21	Completed. Diesel MGPU no longer in use. This condition has been superseded by measure 3 below.
Measure 2: Minimising APU Use.	NOx and PM10 emissions from APU use were 4.5 and 1.05 tonnes respectively, in 2017. Airfield Operating Instruction AOI 07 restricts the running of APUs.	London City Airport will continue to monitor the use of APU in accordance with AOI 07, and will continue to record APU use via the Airport's "Qlickview" online reporting tool. Any contraventions of the Airfield Operating Instructions, and any future requirements within the forthcoming APU Strategy, will be documented.	June in each year	Ongoing. This continues to the be recorded on Qlik. 224 instances of extended APU usage were recorded in 2021
Measure 3: Phasing Out Diesel MGPUs.	NOx and PM10 emissions from diesel powered Mobile Ground Power Units (MGPUs) were 0.2 and).1 tonnes respectively, in 2017. Completely restricting their use will eliminate these emissions.	Reliance on diesel MGPUs will be phased out completely by 30 June 2021 in accordance with the requirements of Condition 46 of the CADP1 Conditions. Battery-powered units (B- MGPUs) and FEGP will remain in use	Jun-21	Completed. All diesel units no longer in use as of end August 2021. Battery MGPU being operating after delivery delays and adjustment with self-manoeuvring. FEGPs remain in use.

Measure	Expected emissions / air quality benefit	Outputs / targets / KPIs	Completed by	Status Update Q4 2021
Emissions from Aircraft Taxiing Operations				
Measure 4: Ground Engine Running Strategy – air quality implications	Ground running relates to the use if aircraft engines on stand, during taxiing, and on-hold, and accounted for 15.6 tonnes NOx and 0.35 tonnes PM10 in 2017. The Ground Engine Running Strategy is aimed at ensuring aircraft engines are operated at minimum power necessary and for as short a time as possible.	London City Airport will continue to review the outcomes of the Ground Engine Running Strategy within the quarterly reports and will prepare a report for submission to LBN on the air quality implications where ground running times exceed agreed targets.	Within 2 months of GERS quarterly reports	Ongoing. No exceedances reported.
Measure 5: Reduced thrust during taxiing.	Taxiing accounted for 14.2 tonnes NOx and 0.3 tonnes PM10 in 2017. Emissions can be reduced by "Engine-Out Taxiing" in which one or more engines is switched off. However, while EOT is used, there are current safety concerns. Reduced thrust on taxiing may also be used, but is limited due to the current taxiway infrastructure.	London City Airport will work with the major airlines to explore the potential to introduce reduced thrust during taxiing. A feasibility study will be completed within six months of the new CADP taxiways becoming operational	End of 2021	Engagement with airlines highlighted operational and safety constraints for the use of reduced thrust during taxiing but for some main airlines, including BACF. Report provided to LBN on 21/12/2021.
Measure 6: Electric Taxiing Systems	Emissions from taxiing could be reduced or potentially eliminated by the use of electric tugs or on-board electric systems	London City Airport will review emerging technologies related to Electric Taxiing Systems and will provide an updated report on feasibility.	Dec-21	Electric pushback tugs required as and when new CADP stands become operational. Report provided to LBN on 20/12/2021.

Measure	Expected emissions / air quality benefit	Outputs / targets / KPIs	Completed by	Status Update Q4 2021
Ground Running, Testing and Maintenance				
Measure 7: Ground Engine Running, Testing and Maintenance	Emissions from engine testing accounted for 0.8 tonnes NOx in 2017.	London City Airport will continue to review the outcomes of the Ground Engine Running, Testing and Maintenance (GERT&M) Strategy and will advise on the air quality implications, specifically with regard to proposals for relocation of the engine ground run positions.	Within 2 months of the revised GERT&M Strategy	Review has concluded that distance from engine testing location to closest receptor remains the same, so there will be no air quality impacts implications.
Airside Vehicles and Plant				
Measure 8: ULEZ Compliance – Airport owned vehicles	The ULEZ will require diesel cars and vans to comply with the Euro 6 emission standard which will, on average, reduce NOX emissions by 65% compared to Euro 5.	A strategy to upgrade the LCY- owned fleet to ULEZ requirements has been developed and shared with LBN. Once the ULEZ is extended London City Airport will carry out a feasibility study as to whether LCA-owned airside vehicles can be made ULEZ compliant. If this is feasible, a programme for vehicle upgrades and/or replacement will be submitted to LBN. London City Airport will also review AOI 12 to reflect the expansion of the ULEZ.	October 2021 or on extension of ULEZ	Closed. All airport owned vehicles on the airfield are compliant with the ULEZ requirements as of 31st October 2021.
Measure 9: ULEZ Compliance	The ULEZ will require diesel cars and vans to comply with the Euro 6 emission standard which will, on average, reduce NOX emissions by 65% compared to Euro 5.	London City Airport will work with third-party operators of airside vehicles and undertake a feasibility study for achievement of full ULEZ compliance.	October 2021 or on extension of ULEZ	84% of third party vehicles are currently compliant. All supplier with non-compliant vehicles were contacted for their plans to upgrade their fleet which will be monitored on an annual basis. Updated report provided to LBN on 21/12/2021.
Measure 10: Airside Vehicle Permits (AVP) – Promote Earlier Introduction of Cleaner Vehicles	Emissions from Ground Support Equipment (principally airside vehicles) accounted for 2.7 tonnes NOx in 2017. The AVP system can be used to drive the introduction of cleaner vehicles at an earlier stage, in advance of full ULEZ compliance.	London City Airport will continue to enforce a requirement in AOI 12 that all new vehicles issued with a Airside Vehicle Permit (i.e. not renewal applications for existing AVPs, comply with the latest vehicle emissions standards for road vehicles (Euro Standards) defined as the date by which the Euro Standard comes into force for registration and the sale of new vehicles.	June in each year	Ongoing. This applies to all new vehicle permits. Update from 21/12/2021 following internal discussion, some dispensations may be granted if ULEZ compliant vehicles cannot be deployed on the basis of documented technical, safety, operational and financial constraints. Justification provided will be reviewed by LCY, records retained and updates required annually. No objection was raised to the proposal.

Measure	Expected emissions / air quality benefit	Outputs / targets / KPIs	Completed by	Status Update Q4 2021
Airside Vehicles and Plant				
Measure 11: Vehicle Emissions Testing	Failed abatement systems can lead to substantially high emissions on individual vehicles	London City Airport will continue to undertake routine annual, and periodic, random emissions testing for Airport owned and third-party airside vehicles. Where a vehicle fails, a Vehicle Defect Notice will be used; the operator will have 14 days to rectify the fault or the AVP will be withdrawn. The results of the testing will be reported to LBN on an annual basis.	June in each year	Ongoing. No LCY vehicles failed the testing required.
Measure 12: Introduction of Hybrid and Electric Vehicles	Both hybrid and electric airside vehicles would reduce emissions (above and beyond ULEZ standards), but is dependent on the availability of suitable vehicles	London City Airport will revise the procurement process for the purchase of new vehicles owned by the Airport, with a focus on hybrid or electric alternatives. The outcome of this process will be reported on an annual basis.	June in each year	Ongoing. LCY has been reviewing its vehicle fleet with the aim of maximising the number of hybrid and especially electric vehicles to reach its net zero aspirations.
Emissions from Black Cabs				
Measure 13: Anti-Idling: Black cabs	Idling engines when stationary causes unnecessary pollution emissions. Vehicle Idling Action is a behaviour change campaign supported by LBN.	London City Airport will continue to monitor idling by black cabs and will report any issues to the Airport Transport Forum	Twice a year	The number of black cabs at the airport reduced significantly as a result of the pandemic. No related issues or complaints were raised in the last year.

Measure	Expected emissions / air quality benefit	Outputs / targets / KPIs	Completed by	Status Update Q4 2021
Publicity and Promotion				
Measure 14: Review and Update Website	No direct emissions benefits, but critical in communicating with staff, passengers and members of the public, and disseminating information of air quality	London City Airport will continue to review and update the website to provide clear, concise information to the local and wider community on the performance of the Air Quality Management Strategy.	June in each year	Ongoing
Measure 15: RAMP Sampling.	Although subject to work-place air quality standards, staff on the RAMP are likely to be exposed to higher levels of pollution	London City Airport will continue to undertake, on a two-year basis, a RAMP employee air quality monitoring assessment with direct, individual recording apparatus	April 2021 and Apr-23	Agreed with LBN in December to delay this until aircraft movement numbers picked up. RAMP sampling completed in Q1 2022.
Measure 16: Staff Communications.	No direct emissions benefits, but critical in communicating with staff, and in gaining support to this Strategy	London City Airport will publish an article relating to air quality and airport operations at least once per year in the airport newsletter "Inside E16" or in the staff eBulletin	June in each year	Communication on electric car scheme in e-bulletin in Q1 2021.
Ultra Fine Particles				
Measure 17: Emission Inventories for Ultra Fine Particles (UFPs)	There is increasing evidence related to aircraft operations and UFPs, but there is currently no robust manner in which an emissions inventory can be compiled.	London City Airport will review the emerging evidence on UFPs related to aircraft emission inventories and will provide an update on an annual basis.	June in each year	Ongoing. No change in status in 2021 as confirmed by AQC.
Measure 18: UFP Emissions and Sulphur Content of Aviation Fuel	Recent evidence has identified a unique size distribution of UFPs related to aviation emissions, which may potentially be linked to the high S content of aviation fuel.	London City Airport will review the emerging evidence on the link between the sulphur content of aviation fuel and UFP emissions and will work with industry partners to assess the benefits and feasibility of reducing the sulphur content of the fuel.	Dec-21	AQC advised that there has been no progress on this. There were quite a few studies underway at various airports but due to the pandemic no new data have been reported. There has been no change to the ICAO methodology for estimating emissions of particulate matter (based on the First Order Approximation FAOv3).

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Sustainability and Biodiversity Action Plan Progress Update

LONDON CITY AIRPORT

Target Number	Targets + Actions	Timeframe	Status Update
EMS1	Maintain LCA's current ISO14001:2015 certification	On-going (evidenced yearly)	Ongoing. Recertification audit held in Q3. New certification issued.
EMS2	Continue to develop an integrated management system, grouping together similar practices across the airport to achieve a consistent and coordinated approach.	End of 2023	Ongoing. ISO 9001 Quality Management System accreditation achieved.
WST1	Implement SWMPs and review prior to each phase of CADP.	Prior to each phase of CADP	CADP currently paused.
WST2	Reduce total waste kg per passenger by 10% from 2019 baseline by the end of December 2022.	End of December 2022	Ongoing.
WST3	Recycle 70% of total kg of waste by the end of December 2022.	End of December 2022	Ongoing. 60% in 2021.
WST4	Promote the furniture reuse scheme to third parties across the airport	End of April 2021	Completed.
WST5	Include waste management in the criteria for any new concessions, including how they will reduce waste and promote recycling, and integrate site-specific requirements into new contracts where practicable.	End of December 2021	Only one new contract currently issued. The waste procedure was updated and additional sustainability requirements, including waste added. Copy of the sustainability requirements shared with LBN on 20/12/2021.
WST6	Carry out a feasibility study for the reduction of single-use plastic bags used by passengers during security checks	End of July 2021	Completed. Updated evidence provided to LBN on 17/08/2021.
WST7	Carry out two employee and third-party engagement activities per year to promote reduction, reuse and recycling of waste.	On-going (evidenced yearly)	Office recycling information for employees shared in Q2 2021. Issued waste surveys for third parties/concessionaires on waste generation, including single use plastics Q4 2021.
EC1	Improve employee awareness on energy reduction through two campaigns and training sessions per year. This target is ongoing, with evidence on progress being provided yearly	On-going (evidenced yearly)	Electric car salary sacrifice scheme comms in Q2 2021. Use of printer and reduction in paper use in Q4 2021.
EC2	Include energy minimisation in the criteria for any new concessions	End of December 2021	Sustainability requirements included in new contract. Copy of the sustainability requirements shared with LBN on 20/12/2021.
EC3	50% reduction in kg of carbon per passenger by the end of December 2022 compared to 2019 baseline	End of December 2022	Ongoing.
EC4	Maintain Level 3+ Neutrality of the ACI Europe airport carbon accreditation scheme.	On-going (evidenced yearly)	Achieved re-accreditation of Level 3+ in January 2022.

Target Number	Targets + Actions	Timeframe	Status Update
EC5	Report on LCY's progress in reducing scope 1 and 2 absolute emissions and provide an update annually on how LCA is intending to support the decarbonisation of the aviation industry to achieve net zero by 2050.	Jun-21	Progress shared in LCACC Q1 2021.
WH1	Review the safeguarding guidance for developers available on our website annually, which specifically details safe methods of increasing local biodiversity within developments without compromising aerodrome safety.	On-going (evidenced yearly)	Review provided to LBN on 20/12/2021.
WH2	Provide a report to LBN annually summarising where LCY has requested amendments to local development proposals in order to manage the operational safety risk of birds.	End of December 2021	No objection raised for any planning application with potential safeguarding risks. Report provided to LBN on 20/12/2021.
WH3	Inspect and maintain the artificial substrate mesh for aquatic colonisation and the provision of shelter for fish fry within KGV Dock, and record whether colonisation is progressing.	End of December 2021	Maintenance works undertaken. Colonisation report issued on 20/04/21 concludes that 'The fish refugia have an excellent coverage of algae. The marine growth on these nets will encourage new species to move into the dock.
WH4	Provide £10,000 a year to LBN for educational biodiversity and environmental programmes for the local community from 2023 onwards. Where LBN are unable to use the money within 6 months of it becoming available, transfer the money to the Community Trust Fund for use on projects relating to biodiversity in the next round of grant allocation.	2023	Not yet required.
WH5	Fund other environmental and biodiversity projects with preference given to areas of nature deficiency from 2023 onwards. Subject to interest from schools and community groups, options could include (1) funding allotment boxes in SINCs; (2) enhancing biodiversity by installing bat boxes or hedgehog homes to protect these key species; or (3) funding biodiversity related projects in schools. Such projects would be subject to a combined annual funding of £5,000 from 2023.	2023	Not yet required.

Target Number	Targets + Actions	Timeframe	Status Update
W1	Review of the Building Standards and contractual requirements for any tenants and concessionaires in relation to water usage.	End of December 2021	Sustainability requirements for new contract include water usage and minimisation. They will be included in all new contracts. Copy of the sustainability requirements shared with LBN on 20/12/2021.
W2	Operate within the conditions stipulated in LCA's water discharge permit with regards to BOD (biochemical oxygen demand) and evidence performance by the end of May each year.	On-going (evidenced yearly)	Completed for 2021/2022 winter season. No exceedances to date.
W3	Achieve a reduction in surface water run-off of at least 63% against the 2013 baseline (as assessed in the UES) by completion of the CADP works	By completion of the CADP works	CADP works currently paused.
N1	Continued operation of The Airspace & Environment Sub-Committee as part of the London City Airport Consultative Committee (LCACC) to achieve the agreed objectives established at the inaugural meeting in October 2016.	On-going until end of December 2023	Ongoing.
N2	Implement and maintain a Construction Noise and Vibration Management and Mitigation Strategy (CNVMMS) as required under the CADP planning permission at the commencement of the CADP works.	On-going	CADP works currently paused.

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List of Employers OnSite & Construction Contractors

LONDON CITY AIRPORT

Company - 2021 list
ABM - OMNISERVE
Aelia - Lagadere
AeroSpa
AVIS
BA CITYFLYER
Bagport
Bevtek Vending
Boots
BP Installations
Café Nero
Dnata
ESP
Europcar
GSF
HERTZ
London City Airport
MENZIES
MENZIES (ASIG)
MITIE
MITIE CARE+CUSTODY
NATS
NAT STATISTICS
One Advanced
Pret a Manger
Sky Handling Partner - SHP
SSP - Select Service Providers
Swiss Airlines
SWISSPORT
Trumans
WHSmith

CADP Main 2021
No CADP Contractors were based on site in 2021 due to works being paused temporarily

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Our Newham Work 2021 Statistics

LONDON CITY AIRPORT

Company - 2021 list	Vacancy's	Starts	13 Week Sustained	26 Week Sustained	Still in Employment
LCY Direct	45	17	15	15	15
LCY Website	16	1	1	1	1
Onsite Partners	9	3	3	3	3
Concessions	13	5	4	3	3
Total	83	26	23	22	22

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Annex 10
LCY Employment Policy

LONDON CITY AIRPORT

1. Applications

1.1.

London City Airport advertise all vacancies on their dedicated career's page on www.londoncityairport.com/careers

1.2.

The HR Team manages this careers page and posts all vacancies.

1.3.

It is a core value of London City Airport to ensure that:

- All applicants are dealt with in a courteous, respectful, fair and diplomatic way.
- All applicants are properly informed at all stages of the progress of their application.

1.4.

In some limited specific instances, vacancies of a specialist nature may be advertised on both the LCY website, LinkedIn and via specific aviation or other recruitment agencies and job boards. In this instance, advertising and procedure will remain the same as that for all other vacancies to ensure consistency.

1.5.

Notwithstanding the above, where recruitment for more than one position is initiated simultaneously, London City Airport will advertise such vacancies through a local employment agency (e.g. Newham Workplace and/or others), notify local recruitment centres of such vacancies and advertise through the LCY website.

1.6.

London City Airport works in partnership with the Local Authority (via Newham Workplace) to deliver into-work training for unemployed Newham residents. In some instances, candidates from this training programme may be recruited directly by London City Airport Limited and from Newham Workplace.

1.7.

London City Airport endeavours to employ people living in the vicinity of the airport to share its economic and social benefits. Specifically, the airport has agreed targets with the Local Authority to endeavour to employ:

- At least 70% of new recruits for jobs advertised at the Airport are residents of the Local Area1
- At least 40% of new recruits for jobs advertised at the Airport are residents of the London Borough of Newham
- At least 70% of new recruits for jobs at the Airport advertised by the Operator are residents of the Local Area
- At least 50% of new recruits for jobs at the Airport advertised by the Operator are residents in the London Borough of Newham

1.8.

A standard online application form is used to assist in filling all vacancies as a way of obtaining the same information from each candidate.

1.9.

Applicants will have the opportunity to register their interest in specific areas of the business and upload their CVs to our website. We will hold this information on our data base in line with GDPR and LCY retention policy.

1.10.

All documentation relating to selection of new staff (e.g. completed application forms) that is not retained must be disposed of securely (i.e. shredded).

[1] The "local area" is defined by the London Borough of Newham as the 11 East London Boroughs of Newham, Tower Hamlets, Hackney, Waltham Forest, Redbridge, Barking & Dagenham, Having, Bexley, Greenwich, Lewisham, Southwark, Barking and Dagenham, Greenwich, Bexley, Havering and the area of Epping Forest District Council

2. Selection

2.1.

A candidate will not be appointed without first being interviewed or participating in an assessment process by persons with the authority to select.

2.2.

The purpose of the interview is to:

- Assess the skills and knowledge of the applicant
- Assess the attitude of the applicant
- Identify the strengths and weaknesses not apparent from the application form
- Probe details or inconsistencies submitted by the applicant
- Establish suitability for employment
- Give information about the job and working conditions

2.3.

All interviewers are trained in Recruitment and Selection Skills and Employment Law to be aware of legal requirements and the Company's equal opportunities policy.

2.4.

All interviews are conducted by two or more authorised people.

2.5.

All interviewers are senior to the vacant position.

2.6.

All interviews are conducted in private and in a place without distractions. Where appropriate, the candidate is shown the environment in which he/she will work if successful.

2.7.

Interviews reflect Company philosophy, observe legal requirements, are conducted courteously and give full details of terms and conditions of employment and benefits.

2.8.

Written records are kept of all short-listing decisions in case of query at a later stage.

2.9.

Written records are kept of all interviews conducted using a standard 'Interview Assessment Form'.

2.10.

Successful applicants will receive a standard offer of appointment letter. This is arranged by the HR Team.

3. Equal opportunities policy

3.1.

The recruitment policy will aim to select the most suitable person for the job in respect of experience and qualifications and the Company will comply with its equal opportunities policy in this regard.

3.2.

All recruitment publicity positively encourages applications from suitably qualified, experienced people and avoids any stereotyping of roles.

3.3.

Vacancies are advertised in a variety of ways to ensure that a fair cross section of potential applicants have access to the advertisement, including via:

- Local Authority "one stop shops" including Newham Workplace, WorkPath and Greenwich Local Labour & Business
- All Job Centre Plus outlets, via their electronic system, Newham College (CIPS) and Anchor House Homeless Charity (entry level roles only).

3.4.

All vacancies are advertised on London City Airport's website (www.londoncityairport.com/careers).

3.5.

The application form only includes those questions that are necessary at the initial stages of selection. All questions on the application form are relevant and non-discriminatory

3.6.

At interview, questions or assumptions about a candidate's personal and domestic circumstances or plans will only be asked where required with regard to the role. Where the requirements of the job affect the candidate's personal life (e.g. shift work, unsociable hours or travel) this will be discussed objectively.

4. Selection criteria

4.1.

Only those qualifications and skills that are important to the job are criteria for selection. These include, but are not limited to, education and professional qualifications, experience and physical abilities. However, such formal academic or professional qualification requirements may be waived if candidates can demonstrate their suitability for the job by other means including previous experience and a willingness to undergo further training.

4.2.

All applicants will receive with the application form:

- an outline job description
- a person specification, detailing essential and desirable characteristics

4.3.

All applicants short-listed for interview will receive interview details in writing.

4.4.

All candidates who are not short-listed receive a standard rejection email immediately after the short-listing process has been completed.

4.5.

In the event that two candidates, after interview, equally meet the person specification, the candidate living closer to the airport will normally be given priority.

4.6.

Positions will only be filled with suitable candidates. Unsuitable candidates will not be appointed.

4.7.

All unsuccessful short-listed candidates will receive Notification informing them of the result of their assessment / interview usually within 7 working days.

4.8.

All unsuccessful internal applicants will have a debriefing interview where the reasons for their non appointment will be explained and, where appropriate, general guidance will be given on areas for improvement.

5. Selection tests

5.1.

Selection tests are used to ensure that applicants have the skills and aptitude requirements for the job.

5.2.

All such tests are valid, reliable and free from gender or race bias and are non-discriminatory. Tests are developed in conjunction with education professionals to ensure a level of suitability to the role applied for.

6. Other criteria

6.1.

Any requirements in relation to age, ability, experience and qualifications will be applied for the particular vacancy in a non-discriminatory way.

6.2.

All concessionaires/service partners at London City Airport have a contractual obligation to London City Airport to use all reasonable endeavours to recruit locally.

6.3.

London City Airport has an Employers' Forum in which supports on-site partners with a range of issues, one of which is local recruitment.

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