

London City Airport
2018 Annual Performance Report

(Compliance with Planning Permission)

Annex 1
Summary Of CADP1 APR
Requirements & References

31 May 2019



London City Airport,
City Aviation House
Royal Docks,
London E16 2PB
Tel: 020 7646 0000
LondonCityAirport.com

Audit of Reporting Requirements for Annual Performance Report (APR)

Condition Requirements	Section	Format	Reference/Source
Approved PCCs			
31 NOMMS A.8 – Reporting publish noise monitoring data in APR in June each year	Environment	Report in Appendix	NOMMS Section 2.1
31 NOMMS – C3/2.7 produce and issue a community and airline annual report on 31 march each year	Environment	Report in Appendix	Annex 5 IPS Report
44 Fixed Electric Ground Power (FEGP) – Para 4.3 monitoring of FEGP performance to be reported annually in APR	Environment	Report in Appendix	NOMMS
58 Air Quality Management Strategy – Measure 1 Measure 1: Record availability of FEGP on all Stands	Environment	Report in Appendix	Annex 2 – NOMMS 8.0. Annex 7 Air Quality Action Plan Progress Update
58 Air Quality Management Strategy – Measure 2 Measure 2: Record APU use in line with Airfield Operating Instructions and forthcoming APU Strategy	Environment	Report in Appendix	Annex 7 Air Quality Action Plan Progress Update
58 Air Quality Management Strategy – Measure 9 measure 9: all vehicles with airside vehicle permit comply with latest vehicle emissions standards – by June each year	Environment	Summary of AQMS progress	Annex 7 – Air Quality Action Plan
58 Air Quality Management Strategy – Measure 10 measure 10: undertake routine annual, and periodic emissions testing for airside vehicles report findings to LBN annually (June)	Environment	Summary of AQMS progress	Annex 7 – Air Quality Action Plan
58 Air Quality Management Strategy – Measure 13 Measure 13: Review and update the website to provide clear and concise information on the performance of the Air Quality Management Strategy	Environment	Report in Appendix	Annex 7 – Air Quality Action Plan
58 Air Quality Management Strategy – Measure 15 Measure 15: Publish an article related to air quality and airport operations in “Airport Life”	Environment	Report in Appendix	Annex 7 – Air Quality Action Plan
60 Use Of River Thames For Construction – Para 4.2 LCA to report to LBN number of vehicles taken off the road each year as part of APR	Surface Access	Summary of progress	Section 4.2.2

Condition Requirements	Section	Format	Reference/Source
S106			
<p>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</p>	Environment	Contours in Appendix and summary in text	NOMMS Annex 6 & 9
<p>Schedule 9 purchase offer – Para 8.2 Any residential dwelling with any part of its external elevation which is situated within the actual 69 db 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.</p>	Environment	Summary in text	NOMMS 10.1
<p>Schedule 9 reinspection scheme – Para 5.3 A list of properties which have become eligible for the Reinspection Scheme in the preceding 12 months.</p>	Environment	Report in Appendix	NOMMS 10.2
<p>Schedule 11 – Para 1.3 Provide list of existing employers</p>	Employment	Summary in text and schedule in appendix	Annex 9 Contractor/Supplier Name and Postcode
<p>Schedule 11 – Para 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 numbers of full-time and part-time employees at the Airport and those employed directly by the Operator</p>	Employment	Stats in text	a) Section 3.3.2 b) Section 3.4.2 c) Section 3.4.2 & 3.3.2 d) Section 3.4.2 & 3.3.2
<p>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</p>	Employment	Stats in text	a) Section 3.5.2 b) Section 3.6.1 c) Annex 9 Contractor/Supplier Name and Postcode d) Section 3.6.1

Condition Requirements	Section	Format	Reference/Source
S106			
<p>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 Annual Performance Report</p>	Employment	Stats in text	Annex 11 2019 updated recruitment policy
<p>Schedule 12 Value Compensation Scheme (VCS 1) Which payments have been made under VCS 1 Financial Contributions</p>	Financial Contributions	N/A	N/A for 2018
<p>Schedule 12 VCS 2 - which payments have been made under VCS 2 + The existence of the adopted VCS2 and its closing date will be publicised 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.</p>	Financial Contributions	N/A	N/A for 2018
<p>Schedule 9 NIPS 1 - which payments have been made under NIPS 1</p>	Financial Contributions	N/A	N/A for 2018
<p>Schedule 9 NIPS2 - which payments have been made under NIPS 2</p>	Financial Contributions	N/A	N/A for 2018
<p>Annexure 2 – First Tier Scheme - para 3.1 With effect from the Commencement of Development the Annual Performance Report shall specify the geographic area within which the properties which are eligible for this Scheme are situated.</p>	Compensation	N/A	N/A for 2018
<p>Annexure 4 – NIPS2 – para 3.8 The existence of NIPS2 (once adopted) will be publicised by its inclusion in the Annual Performance Report</p>	Compensation	N/A	N/A for 2018
<p>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.</p>	Compensation	N/A	N/A for 2018
<p>Annexure 9 – 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.</p>	Compensation	N/A	N/A for 2018
<p>Annexure 12 – Intermediate Tier Scheme – para 3 Specify the geographic area within which the properties which are eligible for this Scheme are situated.</p>	Compensation	N/A	N/A for 2018
<p>Schedule of Payments Made</p>	Financial Contributions	Summary of payments in text	Section 6.1

Condition Requirements	Section	Format	Reference/Source
Conditions			
19 Review and Reporting on ANCS A report as part of the APR on the performance and/or compliance with the approved ANCS during the previous calendar year	Environment	Summary in text and report in Appendix	Section 2.3 Annex 4 ANCS Report
47 Auxiliary Power Units (/31 NOMMS - H3) A report containing details of the use of Auxiliary Power Units at the Airport in the previous calendar year & adhere to a prescribed auxiliary power unit strategy, and report in the APR on use of the units each year	Environment	Summary in text and report in Appendix	NOMMS 8.0 NOMMS Appendix 7
48 Ground Engine Running Strategy 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.	Environment	Summary in text and report in Appendix	NOMMS 5.2
49 Ground Running, Testing and Maintenance Strategy A Report as part of the APR on the performance and compliance during the previous calendar year with the targets in the GRTMS.	Environment	Summary in text and report in Appendix	NOMMS 5.3
52 Ground Running Annual Performance Report (inc. 51 Ground Running Noise Limit) (/31 NOMMS – Appendix D2/D5) A Ground Running Annual Performance Report as part of the APR including engine running summary logs to be produced monthly and for publication annually in APR & present annually (in APR) & the measurements and calculations showing whether ground running noise limit has been exceeded in previous year	Environment	Summary in text and report in Appendix	NOMMS 5.3
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/Strategies.	Environment	N/A	Annex 8 Sustainability and Biodiversity Action Plan Progress Update
57 Air Quality Monitoring An annual report for each calendar year published and included in APR (1 June).	Compensation	N/A	Annex 7 2018-AQ Annual Monitoring Report
59 Complaints About Environmental Impact As part of the Annual Performance Report in relation to such complaints and actions in the preceding calendar year.	Compensation	N/A	Section 2.12

**London City Airport
2018 Annual Performance Report**

(Compliance with Planning Permission)

**Annex 2
Noise Annual Performance
(NOMMS) Report**

31 May 2019



London City Airport,
City Aviation House
Royal Docks,
London E16 2PB
Tel: 020 7646 0000
LondonCityAirport.com

ANNEX 2

LONDON CITY AIRPORT

NOISE MANAGEMENT AND MITIGATION STRATEGY (NOMMS) REPORT 2018

Report to

London City Airport
The Royal Docks
London E16 2PB

A1125.119-R01.19-5.0-NW
29 May 2019

121 Salusbury Road
London NW6 6RG
T 020 7625 4411
F 020 7625 0250
mail@bickerdikeallen.com
www.bickerdikeallen.com

Bickerdike Allen Partners LLP is a limited liability partnership registered in England and Wales. Registered number: OC402418. Registered office: New Bridge Street House, 30-34 New Bridge Street, London, EC4V 6BJ

Partners (members)
Philippa Gavey, Giles Greenhalgh, Peter Henson, Roger Jowett



ANC

Contents	Page No.
1.0 Introduction.....	4
2.0 Combined Noise and Track Monitoring System.....	6
3.0 Quiet Operating Procedures.....	10
4.0 Incentives and Penalties Scheme	11
5.0 Control of Ground Noise.....	14
6.0 Airport Consultative Committee.....	18
7.0 Annual Noise Contours	19
8.0 Auxiliary Power Units	20
9.0 Reverse Thrust.....	21
10.0 Sound Insulation Scheme	23
11.0 Aircraft Movement Numbers.....	27

- Appendix 1: Flight Track Monitoring
- Appendix 2: NTK Status Reports
- Appendix 3: Penalties and Incentives
- Appendix 4: Summary of EFPS Data
- Appendix 5: Ground Running of Engines
- Appendix 6: Noise Contours
- Appendix 7: Auxiliary Power Unit Usage
- Appendix 8: Summary of Reverse Thrust Data
- Appendix 9: Sound Insulation Scheme Property Lists
- Appendix 10: Extract From Planning Conditions
- Appendix 11: Number of Aircraft Operating at LCA

This report and all matters referred to herein remain confidential to the Client unless specifically authorised otherwise, when reproduction and/or publication is verbatim and without abridgement. This report may not be reproduced in whole or in part or relied upon in any way by any third party for any purpose whatsoever without the express written authorisation of Bickerdike Allen Partners. If any third party whatsoever comes into possession of this report and/or any underlying data or drawings then they rely on it entirely at their own risk and Bickerdike Allen Partners accepts no duty or responsibility in negligence or otherwise to any such third party.

Bickerdike Allen Partners hereby grant permission for the use of this report by the client body and its agents in the realisation of the subject development, including submission of the report to the design team, contractor and sub-contractors, relevant building control authority, relevant local planning authority and for publication on its website.

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.

This report reviews the performance and compliance with the NOMMS in 2018, as part of the Condition 31 requirements.

Information is also provided on the number of aircraft movements and noise factored movements that have taken place at London City Airport (LCA) over the period 1st January 2018 up to and including 31st December 2018, 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.

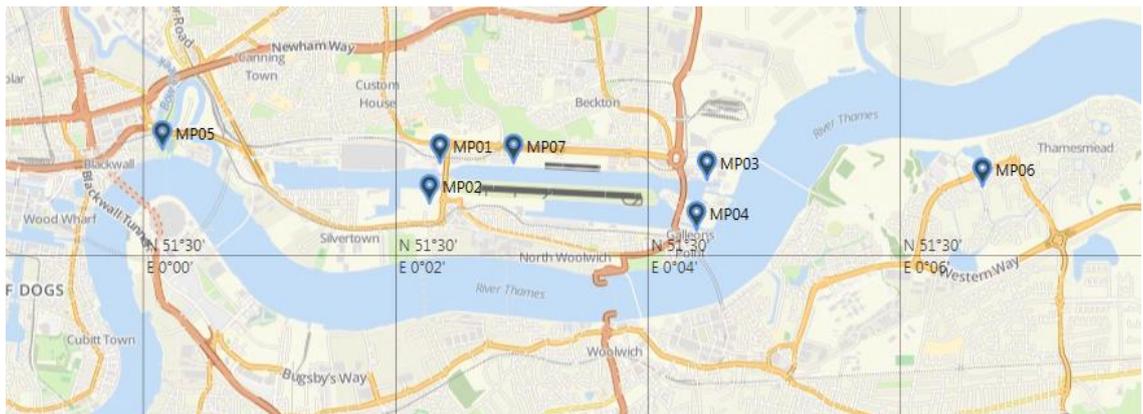


Figure 1: Location of NMTs 1-7

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 2018, 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 have introduced a web-based system (known as TRAVIS¹) 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 2018 (from the second quarter onwards, as the software was being upgraded to facilitate this during first quarter) 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 2018, 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 Q2-Q4 of 2018 only four departures failed to pass through the gate. These passed slightly north of the gate, and are detailed in Table 1.

Date	Departure Time	Aircraft Type	Airline	SID
17/04/2018	09:25	C56X	NJE	BPK
06/07/2018	11:34	C68A	NJE	LYD
20/09/2018	17:37	E190	SWR	DVR
20/10/2018	10:26	RJ85	BCY	BPK

Table 1: Runway 27 Off Track Departures, 2018 Q2-Q4

¹ <https://travislcy.topsonic.aero/>

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 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 Q2-Q4 of 2018, only three departures following the DVR, CLN and LYD SIDs failed to pass through this gate before turning north. These are detailed in Table 2.

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 Q2-Q4 of 2018, only one aircraft following the BPK and CPT SIDs failed to pass through this gate. This is detailed in Table 2.

Date	Departure Time	Aircraft Type	Airline	SID
10/04/2018	19:19	AT42	BCI	LYD
30/04/2018	07:45	F50	WLM	DVR
04/06/2018	19:19	C510	GAC	CLN
04/07/2018	17:38	RJ85	BCY	BPK

Table 2: Runway 09 Off Track Departures, 2018 Q2-Q4

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 2018 and 31st December 2018. 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 majority of the twelve month period between 1st January 2018 and 31st December 2018. Each noise monitoring terminal was in operation every day, with two exceptions:

- On 12th August 2018 the NTK system was being upgraded which unexpectedly caused measurements to be interrupted for a short period. This work affected all NMTs to some extent. For NMTs 2 and 3 this resulted in no measurements being recorded on 12th August. For the other NMTs only part of the day was affected. A similar issue also occurred on the 13th and 17th August, although all NMTs recorded some measurements on those dates. The upgrade work is now complete and therefore this issue is unlikely to cause any further loss of data.
- On 28th November 2018 at NMT 2 there was an empty ethanol canister which meant that only solar power could be used. This caused intermittent issues until it was replaced on 6th December, although after 28th November some measurements were recorded on each day.

The target correlation rate (80%) for departures measured at NMTs 1-4 was met for 2018. A total of 38,226 aircraft departures were recorded, and an average correlation rate of noise events to aircraft departures of 95% was achieved.

A total of 38,031 (94%) departures and 38,029 (94%) arrivals were correlated at NMTs 5 and 6 in 2018.

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 EFPS² system (see Section 5.0).

² Electronic Flight Progress Strips (EFPS) which has replaced the system of writing on paper Flight Plan Strips (FPLs) for Air Traffic Control personnel.

4.0 INCENTIVES AND PENALTIES SCHEME

4.1 NOMMS Scheme

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.

London City Airport's Community Trust Fund is currently being set up as a charity and will be administered by a Board of Trustees with an independent chair. LCA are registering this through the Charity Commission, and once set up will be open to community projects and charities from the local area to apply for funding. Information on how to apply for this will be made available shortly, and the projects supported will be detailed in next year's report.

The most improved airline each year will partner the airport delivering the fund. Following the completion of the review of the IPS after the first year of operation, as of 1st November 2018 the IPS has charged financial penalties of £600 per dB(A) above a fixed upper limit for each movement that exceeds the upper limits. The financial penalties are added to the annual contribution of £75,000 provided to the fund by LCA.

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 £600³ 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.

³ Fines were not payable prior to 1st November 2018

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

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 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.

Following the review after the first year of operation, modifications were made to the original scheme. These have been formally approved by LBN and applied from 1st October 2018.

4.3 Reporting

As reported in the Community and Airline Annual Report, the number of residual credits is given for the most commonly operating airlines in Table 4. These are based on the thresholds that were in operation at the time; i.e. the provisional thresholds for the first three quarters of

2018 and those given in Table 3 for the fourth quarter of 2018. Full details of the fixed penalties, credit awards and credit removals for 2018 are given by airline in Appendix 1.

Airline	Residual Credits
Flybe	793
Luxair	746
NetJets Europe	651
Swiss	494
BA Cityflyer	428
Sun-Air of Scandinavia	221
VLM Airlines	175
Alitalia	171
Xclusive Jet Charter Ltd	167
Eastern Airways	119
KLM Royal Dutch Airlines	117
GlobeAir	99
Lufthansa	96
Shell Aircraft	74
British Airways	72
Blue Islands	71
Air Hamburg Private Jets	57
SkyWork Airlines	47
FlairJet	40
TAP Portugal	28
Aer Lingus	-26
Cityjet	-238

Table 4: 2018 Residual Credits Ranking

As the scheme was only operational for part of 2017, it is not possible to directly compare the data with 2018 in order to assess the most improved airline. Therefore, Flybe will partner LCA in delivering the Community Trust Fund for 2019, as the airline which accrued the most credits in 2018.

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-manoevring. It will be reviewed under the Ground Engine Running Strategy in compliance with CADP1 Condition 48 and assessed in the Ground Noise Study in compliance with CADP1 Condition 55.

An Electronic Flight Progress Strips (EFPS) system has been installed 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 maintenances 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 AOI 06 Apron Management.

The following parameters are required to be reported in this report under the strategy:

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 for 2018 is given in Appendix 4.

Although the overall average ERS time for 2018 was 4 minutes and 37 seconds, there were two airline/aircraft combinations which operated at least one departure per week which on average exceeded an average ERS time of 7.5 minutes. These were the Cessna C510 operated by Globe Air and the Cessna C550 operated by Xclusive Jet Charter Limited. These airline/aircraft combinations both had an ERS time exceeding 7.5 minutes in Q2, Q3, and Q4. Therefore an explanation was sought from the relevant airlines to seek to reduce this time in the future.

Globe Air have responded and sought to reduce their ERS time, this has initially proved successful with an ERS of under 7.5 minutes in December 2018.

Xclusive Jet Charter Limited have responded that they will seek to reduce their ERS time as far as practicable but that operational restrictions mean that it may not be possible to keep it below 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. This information is recorded in the EFPS. The average time by aircraft type and airline is given in Appendix 4.

The overall average TTA for 2018 across all aircraft was 3 minutes and 38 seconds.

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. This information is recorded in the EFPS. The average time by aircraft type and airline is given in Appendix 4.

The overall average TTD for 2018 across all aircraft was 7 minutes and 27 seconds.

5.2.4 Average Hold Time (HT)

This is the time that departing aircraft are held at a remote hold position. Hold time is recorded at other airports where remote holds are available. This is an area used where an aircraft is held off stand during a departure if (for example) the flight plan expires or the flight is delayed for another reason. This frees up the stand to allow other arriving aircraft to disembark. LCA have no such remote hold points so this measure isn't currently relevant.

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 $L_{Aeq,12h}$.

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. Since August 2018, construction activities have been ongoing adjacent to stand 24, and consequently high powered engine runs have not been permitted on stands 23 and 24 due to safety reasons. High powered engine runs have therefore been relocated to stand 22, in accordance with the Ground Running Testing and Maintenance Strategy. The noise impact of engine runs on stand 22 will be very similar to that on stands 23 and 24; the distance to dwellings is similar and all local properties that currently benefit from screening will continue to do so, in addition to a small number of properties which do not currently benefit.. As detailed in the Ground Running Testing and Maintenance Strategy, this location will move east as the new CADP1 stands are built, and prior to this a verification assessment will be completed.

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 measurements and calculations identify that noise generated by running of aircraft engines has or is likely to approach within 1 dB of the Ground Running Noise Limit, LCA shall take such action as necessary, for example undertaking ground running on an alternative stand, instead of or in addition to Stand 24, determined as described in Appendix D2 of NOMMS, to prevent exceedance of the Ground Running Noise Limit.

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 2018 (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 2018 LCA's ground running noise level was 57.8 dB $L_{Aeq,12h}$ which is 2.2 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 website⁴. 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 insulations schemes run by the airport. They are presented in Appendix 6:

- Actual average mode summer daytime for 2018
- Forecast average mode summer daytime for 2019
- Forecast average mode summer daytime for 2019, factored to account for the typical differences between the forecast and actual movements (referred to as “forecast reduced”)

These noise contours 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 2018 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 km².

The contours have been calculated by the Integrated Noise Model (INM) version 7.0d. The areas of each of the contours presented in Appendix 6 are given in Table 5.

Contour Value, dB $L_{Aeq,16h}$	Contour Area, km ²		
	2018 Actual Summer Average Mode	2019 Forecast Summer Average Mode	2019 Forecast Reduced Summer Average Mode
54	13.5	-	-
57	7.6	8.9	8.3
63	2.0	2.4	2.2
66	1.1	1.2	1.2
69	0.6	0.7	0.7

Table 5: Contour Area Results

This demonstrates that LCA operated within their contour area limit in 2018 and are forecast to continue to do so in 2019.

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 aircrafts' 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. As previously advised in the APR and in discussions with London Borough of Newham (LBN), Stands 21-24 will be upgraded as part of the City Airport Development Programme (CADP) and a feasibility study to install FEGP on stands 12-14 has been submitted to LBN as per the airport's Air Quality Action Plan 2016-2018.

London City Airport currently has 9 mobile diesel ground power units (MGPUs) in operation, the oldest of which has had an engine rebuild so that it meets current European standards. These MGPUs service Stands 12-14 and 21-24 and other stands where necessary. Results from noise testing has shown that all units comply with the noise criteria set for mobile ground servicing equipment detailed within the IATA 910 – *Airport Handling Manual*⁵.

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.

⁵ The standard is set that at a distance of 4.6 m, measured from the perimeter for the equipment, noise levels should be less than 85 dB.

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.

This analysis was carried out from the third quarter of 2018. 11 aircraft arrivals exceeded these thresholds at NMT 7 in the third and fourth quarters of 2018. Details of these are presented in Table 6.

Date	Arrival Time	Runway	Aircraft Type	Airline	NMT 7 Noise Level, dB L _{ASmax}
30/07/2018	06:35	27	A318	BAW	90.4
09/10/2018	06:38	27	A318	BAW	91.2
11/10/2018	15:23	27	FA8X	GXI	91.1
11/10/2018	15:48	27	DH8D	LGL	93.1
13/10/2018	06:34	27	A318	BAW	92.3
08/11/2018	06:32	27	A318	BAW	90.4
10/11/2018	06:41	27	A318	BAW	90.7
14/11/2018	06:32	27	A318	BAW	90.2
29/11/2018	06:47	27	A318	BAW	94.1
02/12/2018	13:27	27	E135	ABP	90.1
04/12/2018	06:32	27	A318	BAW	91.7

Table 6: Log of Potentially Unusual or Excessive Reverse Thrust Use, 2018 Q3-Q4

LCA have contacted the airlines involved and received the following responses:

- BAW advised that when there are adverse conditions, such as the runway being wet, then the A318 aircraft requires the use of reverse thrust for safety reasons.
- LGL advised that reverse thrust was required for safety reasons on the flight that triggered the high noise level, but that it is not typically used.
- ABP advised that the use of full reverse thrust is highly recommended by their standard operating procedures for this aircraft at LCA, and that there was nothing unusual about this flight from their perspective.
- A response have not yet been received from GXI.

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 2018 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.⁶

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 has 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 7 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 7: Sound Insulation Schemes – Residential Buildings

Lists of the properties that have become newly eligible for each of the schemes are contained in Appendix 9. These lists are provisional and subject to refinement based on the existing insulation already in place at each individual property.

⁶ 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.

The eligibility contours are currently produced every year as part of the Annual Performance Report and 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.

In addition to the above, all properties that have been treated under the scheme will be inspected on a ten yearly basis after initial installation of any treatment, and provided they have not been altered, rectification works will be carried out as necessary to ensure the sound insulation standard does not decline over time.

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 so⁷.

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 2018.

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 rectification works undertaken where appropriate to

⁷ 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).

ensure that the standard of sound insulation does not decline over time⁸. One property was identified for reinspection in the 2017 APR, 90 Sheldrake Close. A list of properties that have become newly eligible for re-inspection this year is provided in Appendix 9.

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 2018 under either scheme.

⁸ 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).

11.0 AIRCRAFT MOVEMENT NUMBERS

Conditions 21 to 27 of the 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.

Under the Noise Factored Scheme, which was in operation throughout 2018 but has been superseded by the ANCS as of 29th March 2019, all aircraft operating at LCA were required to be categorised by their departure noise levels into one of five noise categories. Only aircraft which had been approved by the Council and had been categorised in this manner, provisionally or otherwise, were permitted to land or depart the airport (excepting emergencies).

The 2016 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 and noise factored movements in 2018 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 2018, 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.

Nick Williams
for Bickerdike Allen Partners

David Charles
Partner

APPENDIX 1

Flight Track Monitoring

This appendix presents the flight track monitoring data for 2018, broken down by quarter.

Quarter 2

Figure A1.1 shows a heat map of all departures from LCA during the second quarter of 2018. The colour of each tile represents the number of aircraft that passed through it, as per the key in the bottom left of the image.

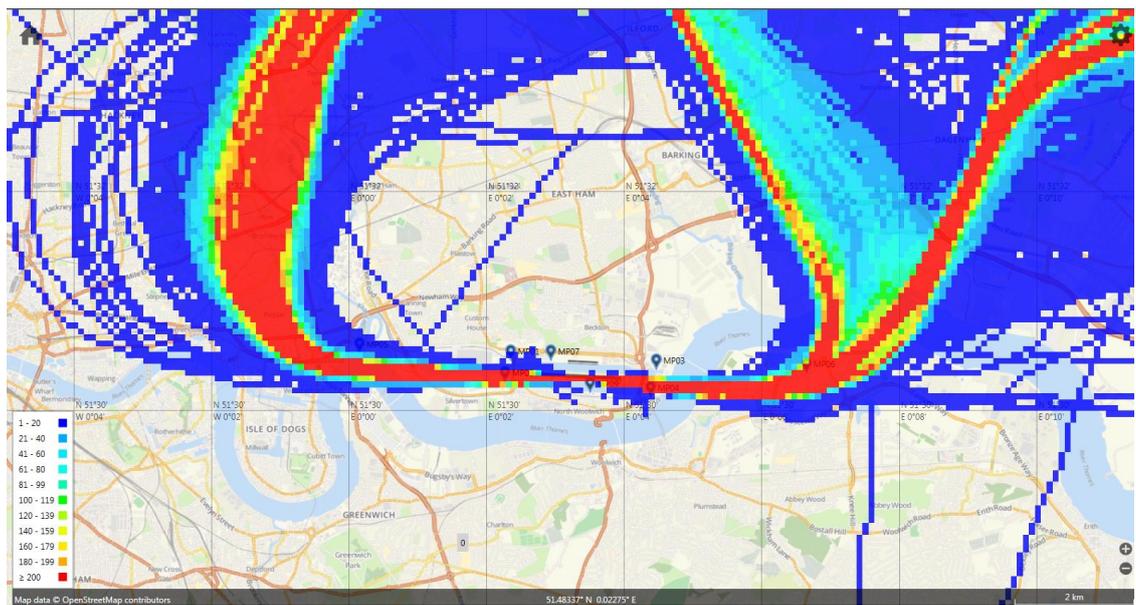


Figure A1.1: Departure Heat Map for Q2 2018

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 Q2, Figure A1.2 illustrates the track plot.

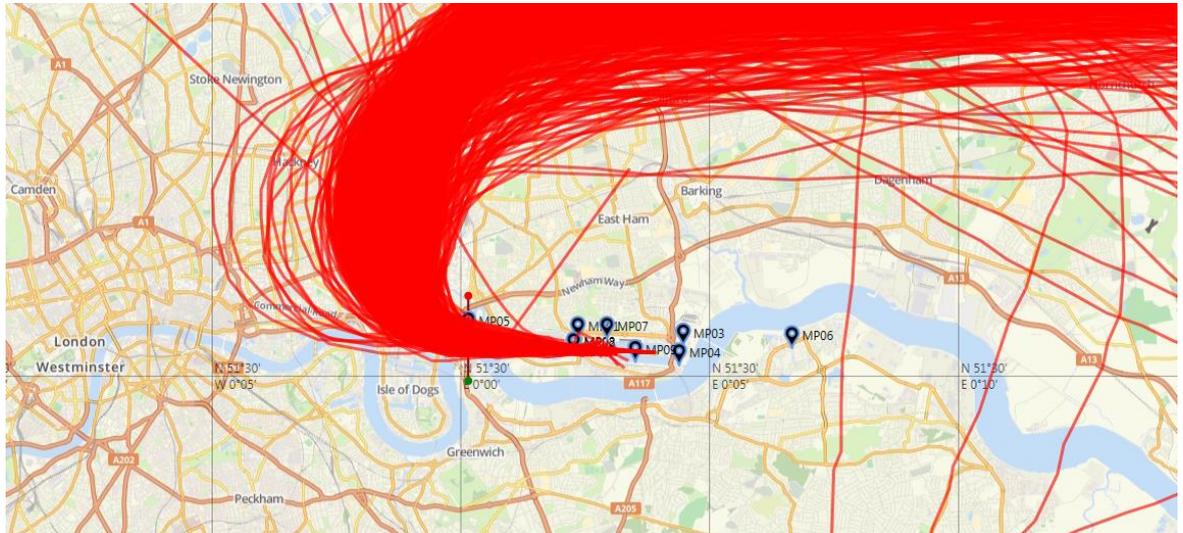


Figure A1.2: Runway 27 Departure Track Plot for 2018 Q2

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

Only one departure failed to pass through the gate, which passed slightly north, and this is detailed in Table A1.1 below.

Date	Departure Time	Aircraft Type	Airline	SID
17/04/2018	09:25	C56X	NJE	BPK

Table A1.1: Runway 27 Off Track Departures, 2018 Q2

A number of aircraft took a wide track when turning right. The two aircraft that did this to the greatest extent were Embraer E190 aircraft operated by KLM.

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 track plots in Figure A1.3 and Figure A1.4.

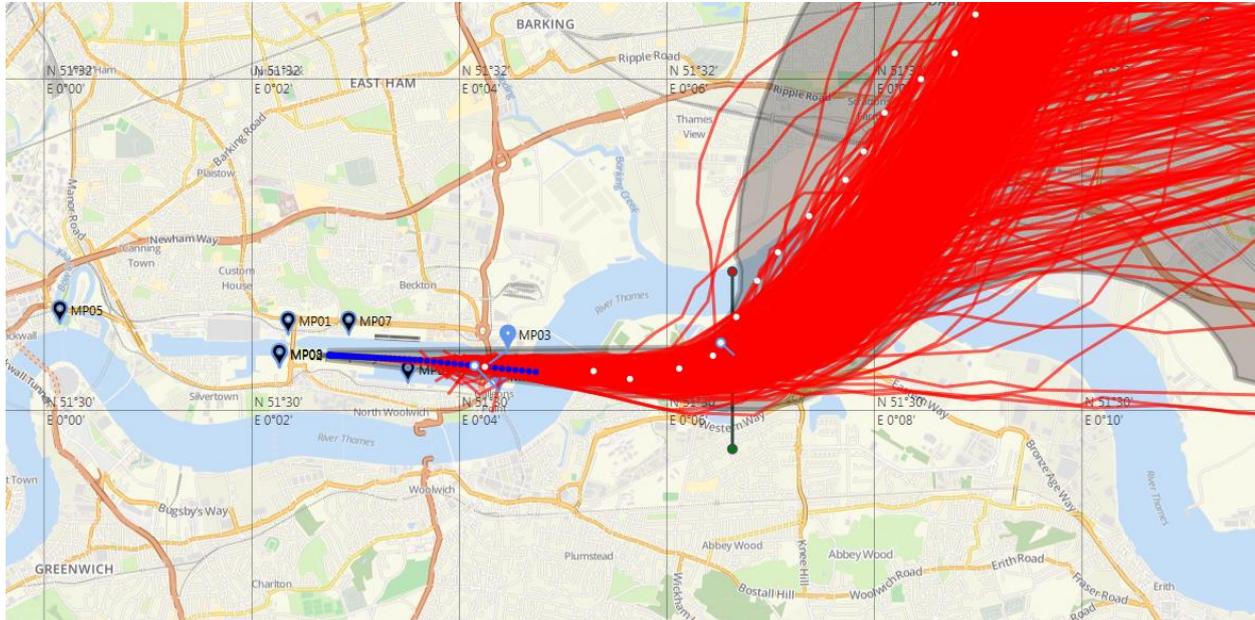


Figure A1.3: Runway 09 Departure Track Plot for 2018 Q2 – DVR, CLN and LYD SIDs

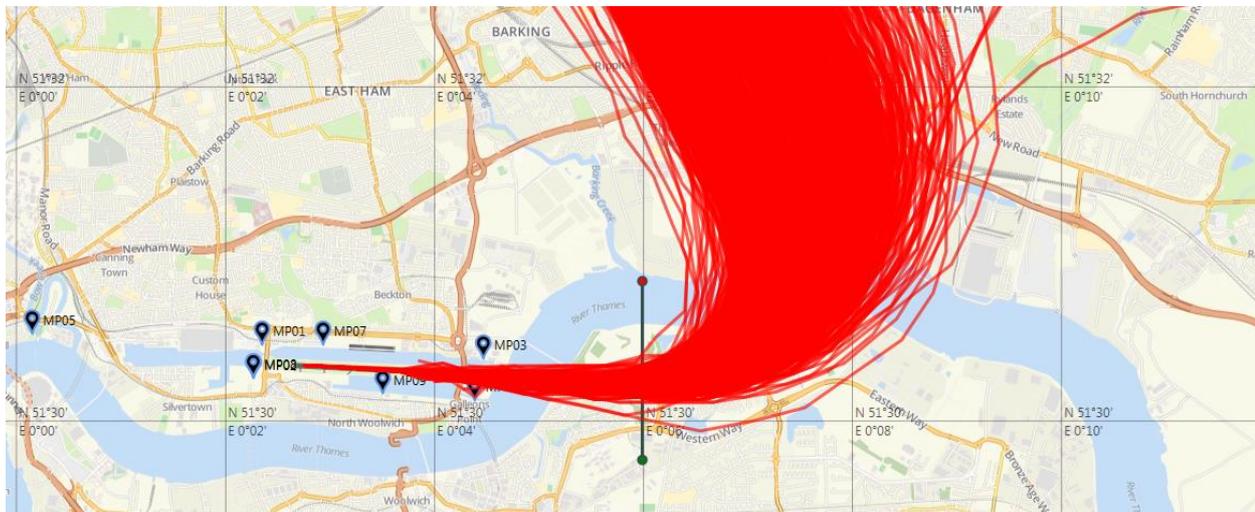


Figure A1.4: Runway 09 Departure Track Plot for 2018 Q2 – BPK and CPT SIDs

For the DVR, CLN and LYD routes, a gate was established at the location of NMT 6, which is 2 km wide and set up to coincide with the extended centreline of the runway, similar to the corresponding gate at NMT 5. Three departures didn't reach the gate before turning north. These are detailed in Table A1.2.

For the BPK and CPT routes, aircraft commence a turn as they track over NMT 6, so a 2 km gate was established prior to the turn commencing. All aircraft passed through this gate.

Date	Departure Time	Aircraft Type	Airline	SID
10/04/2018	19:19	AT42	BCI	LYD
30/04/2018	07:45	F50	WLM	DVR
04/06/2018	19:19	C510	GAC	CLN

Table A1.2: Runway 09 Off Track Departures, 2018 Q2

Quarter 3

Figure A1.5 shows a heat map of all departures from LCA during the third quarter of 2018. The colour of each tile represents the number of aircraft that passed through it. The 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.

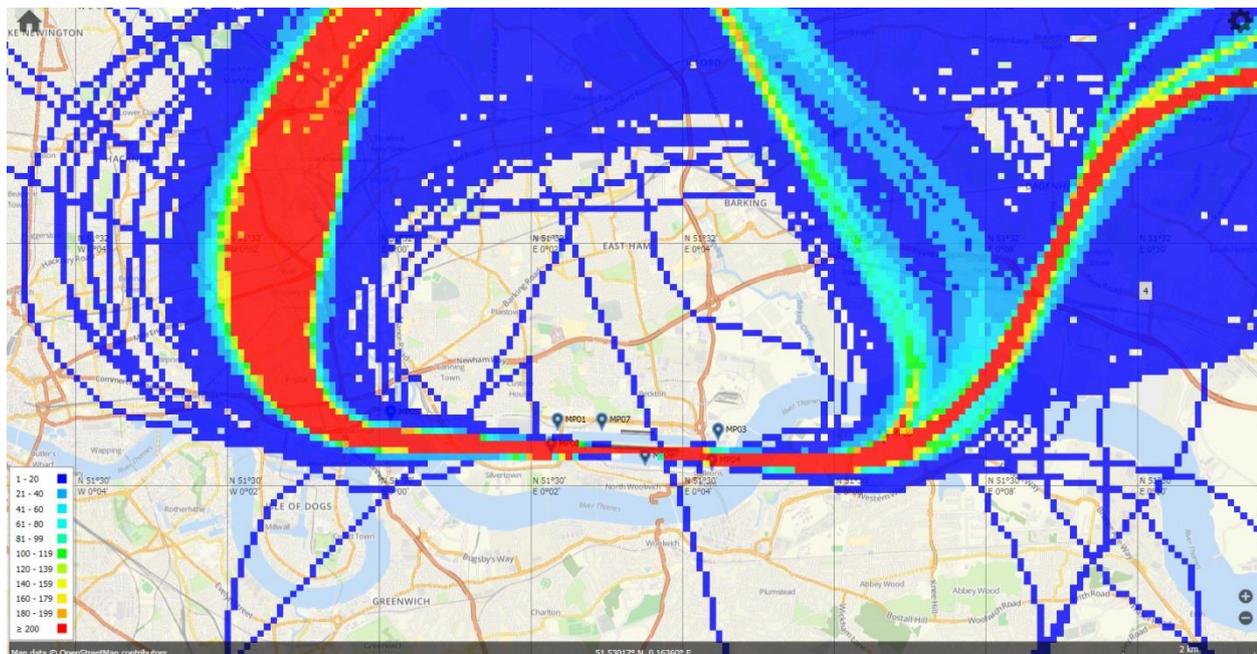


Figure A1.5: Departure Heat Map, 2018 Q3

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 the third quarter of 2018, Figure A1.6 illustrates the track plot.

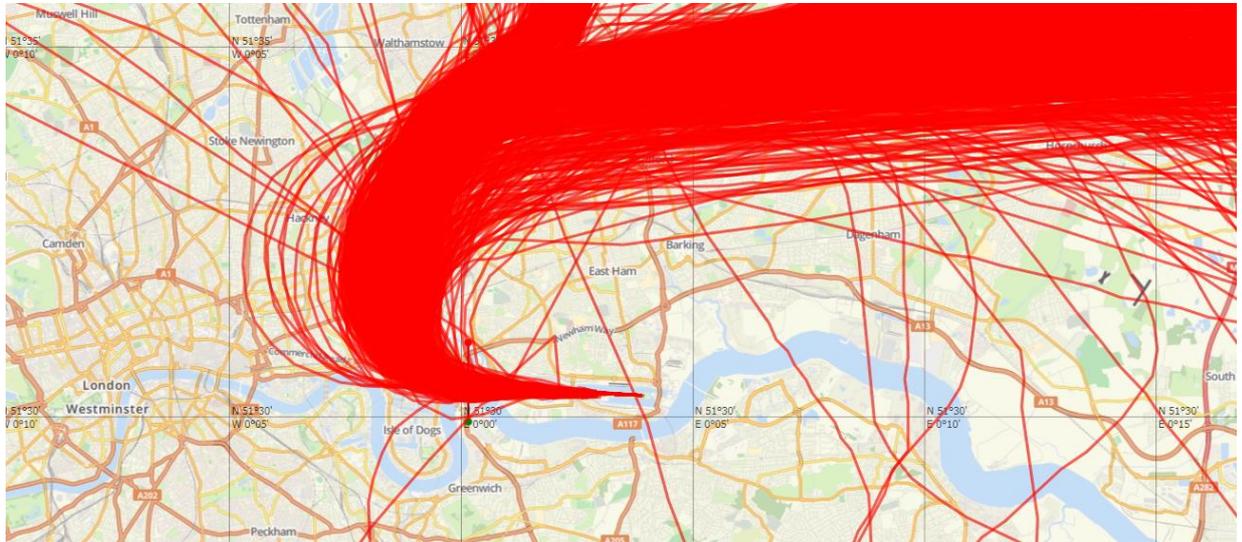


Figure A1.6: Runway 27 Departure Track Plot, 2018 Q3

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. The middle of the gate has been set up to coincide with the extended centreline of the runway.

Only two departures failed to pass through the gate, which are detailed in Table A1.3 below. These aircraft both passed slightly to the north of the gate.

Date	Departure Time	Aircraft Type	Airline	SID
06/07/2018	11:34	C68A	NJE	LYD
20/09/2018	17:37	E190	SWR	DVR

Table A1.3: Runway 09 Off Track Departures, 2018 Q3

A number of KLM aircraft took a wide track when turning right, as was the case in 2018 Q2. KLM are having procedural issues with the implementation of the RNAV procedure, and have currently reverted to the historical procedure which results in a wider spread of aircraft. This issue is due to be fixed by the end of the year.

Two other aircraft were vectored south soon after departure by air traffic control, although they still passed through the gate.

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 track plots in Figure A1.7 and Figure A1.8.

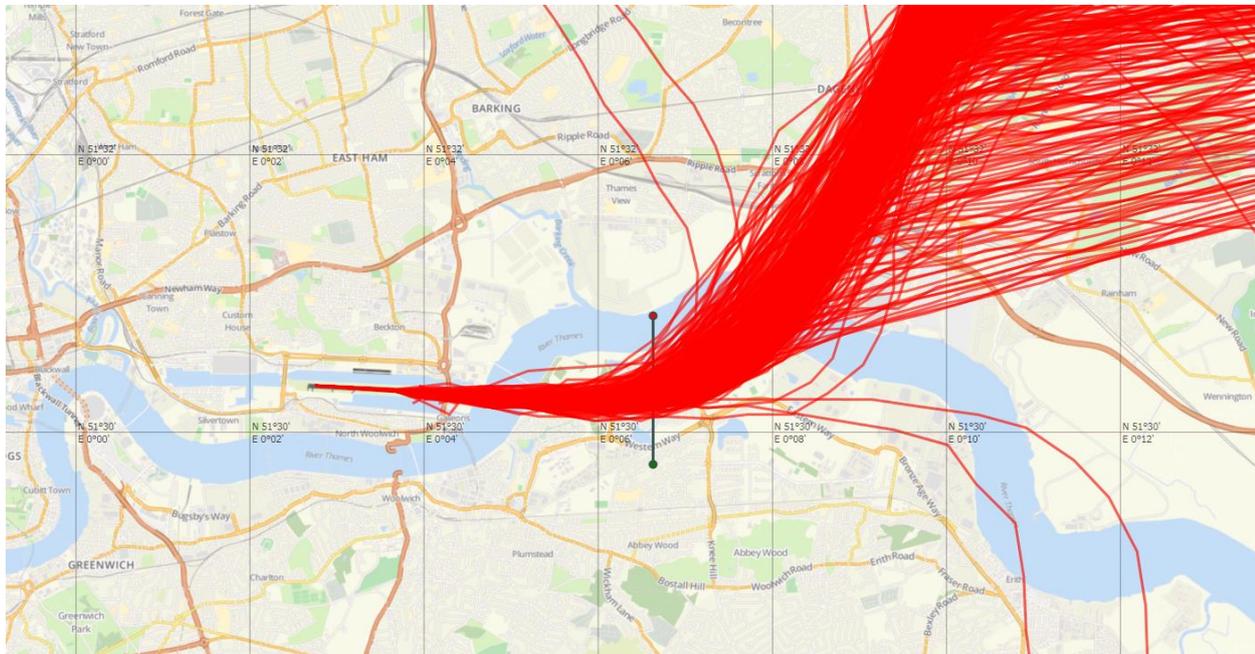


Figure A1.7: Runway 09 Departure Track Plot for 2018 Q3 – DVR, CLN and LYD SIDs

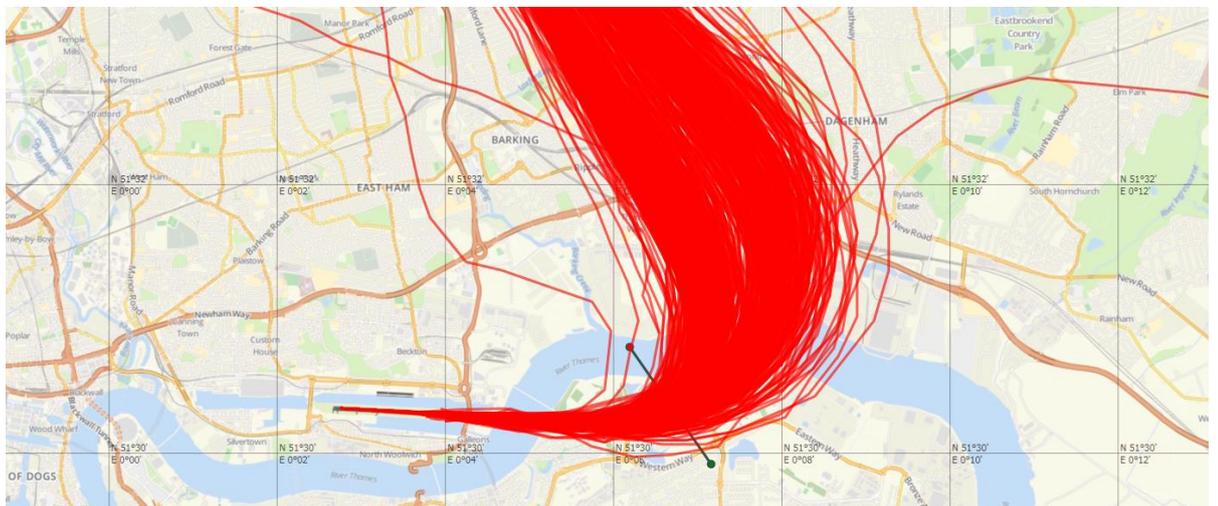


Figure A1.8: Runway 09 Departure Track Plot for 2018 Q3 – BPK and CPT SIDs

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 passed through this gate during the third quarter of 2018.

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. Only one departure failed to pass through the gate, which is detailed in Table A1.4 below. This aircraft turned before the gate.

Date	Departure Time	Aircraft Type	Airline	SID
04/07/2018	17:38	RJ85	BCY	BPK

Table A1.4: Runway 09 Off Track Departures, 2018 Q3

Quarter 4

Figure A1.9 shows a heat map of all departures from LCA during the fourth quarter of 2018. The colour of each tile represents the number of aircraft that passed through it. The 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.

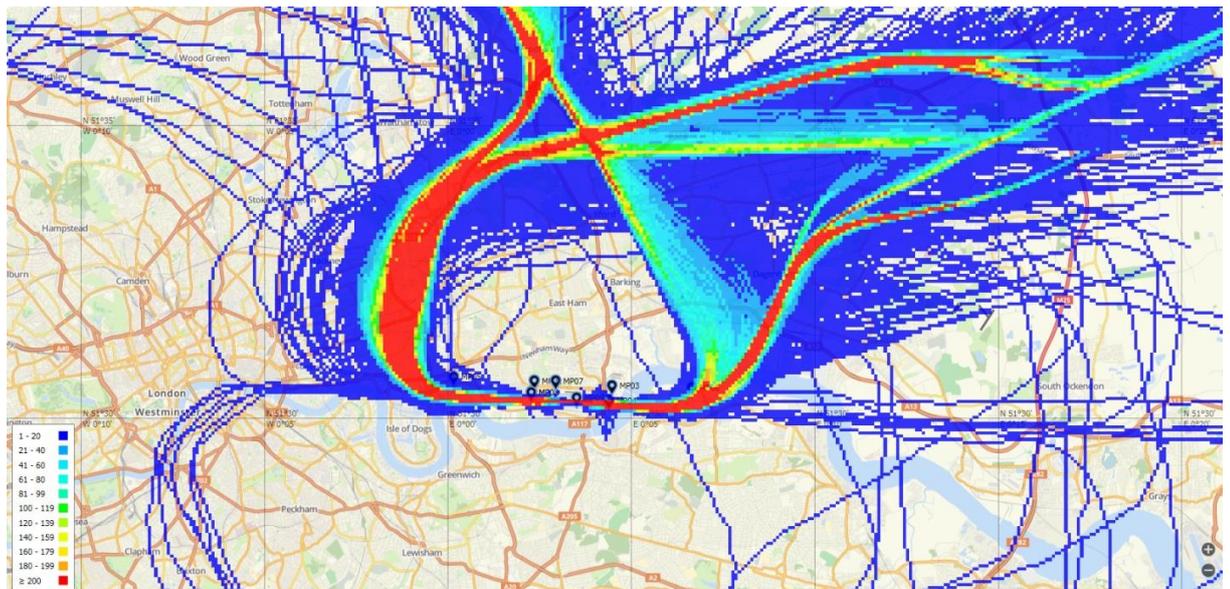


Figure A1.9: Departure Heat Map, 2018 Q4

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. To illustrate the spread of aircraft departing from runway 27 during the fourth quarter of 2018, Figure A1.10 illustrates the track plot.

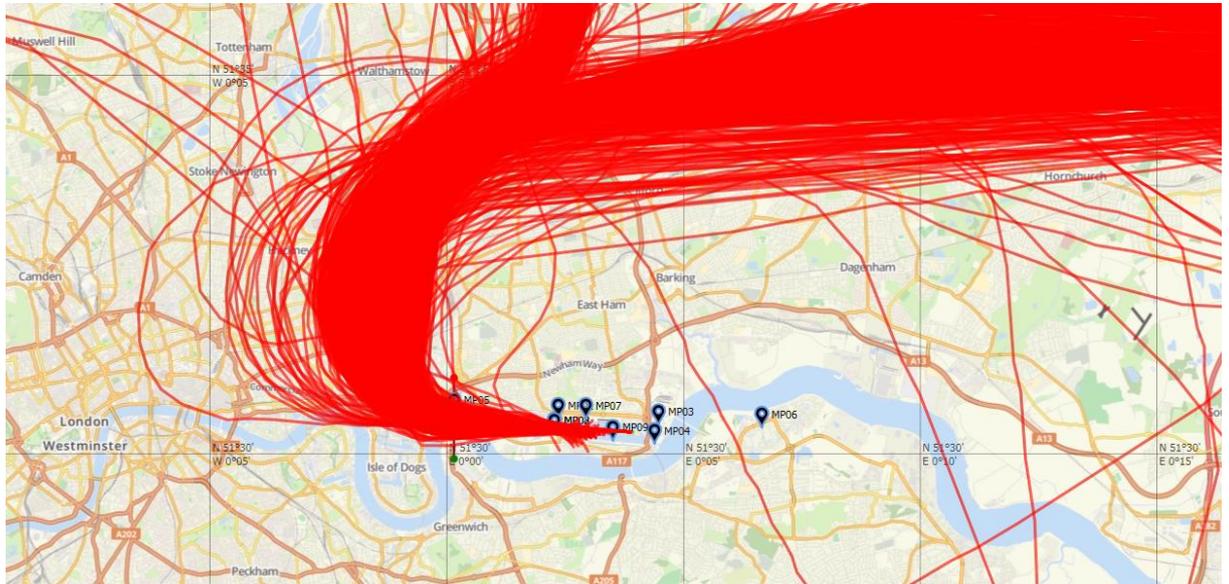


Figure A1.10: Runway 27 Departure Track Plot, 2018 Q4

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. The middle of the gate has been set up to coincide with the extended centreline of the runway.

Only one departure failed to pass through the gate, which is detailed in Table A1.5 below. This aircraft passed slightly to the north of the gate.

Date	Departure Time	Aircraft Type	Airline	SID
20/10/2018	10:26	RJ85	BCY	BPK

Table A1.5: Runway 27 Off Track Departures, 2018 Q4

A number of KLM aircraft continue to take a wide track when turning right, as was the case in 2018 Q2 and Q3. KLM are having procedural issues with the implementation of the RNAV procedure and have currently reverted to the historical procedure which results in a wider spread of aircraft. This issue is due to be fixed shortly.

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 track plots in Figure A1.11 and Figure A1.12.

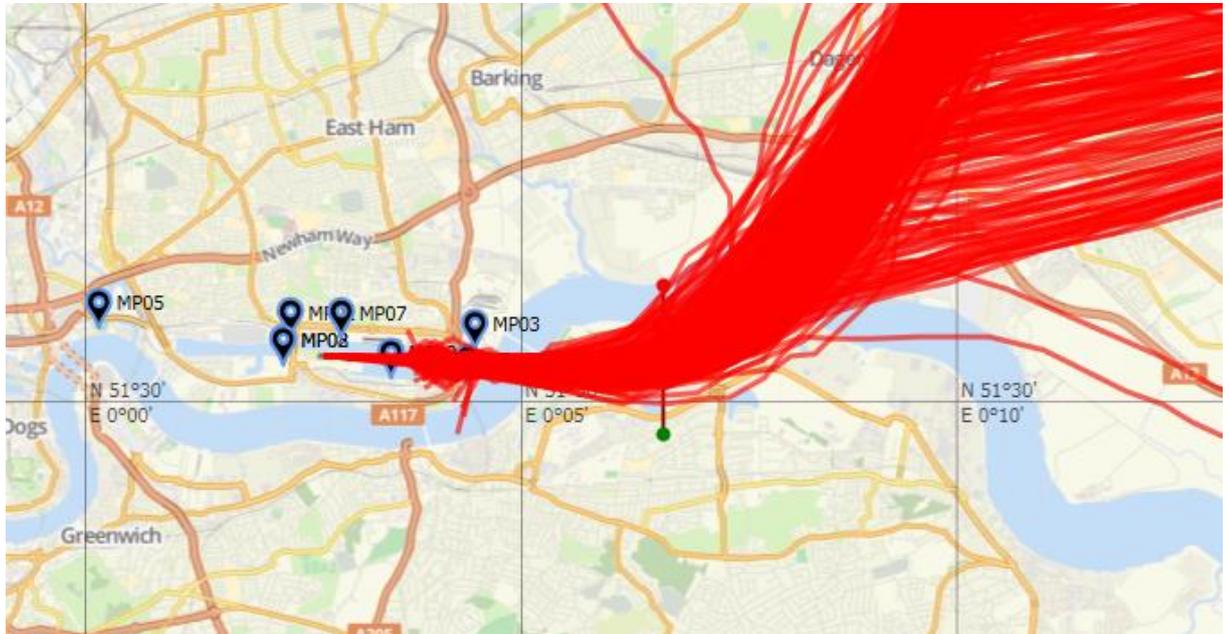


Figure A1.11: Runway 09 Departure Track Plot for 2018 Q4 – DVR, CLN and LYD SIDs

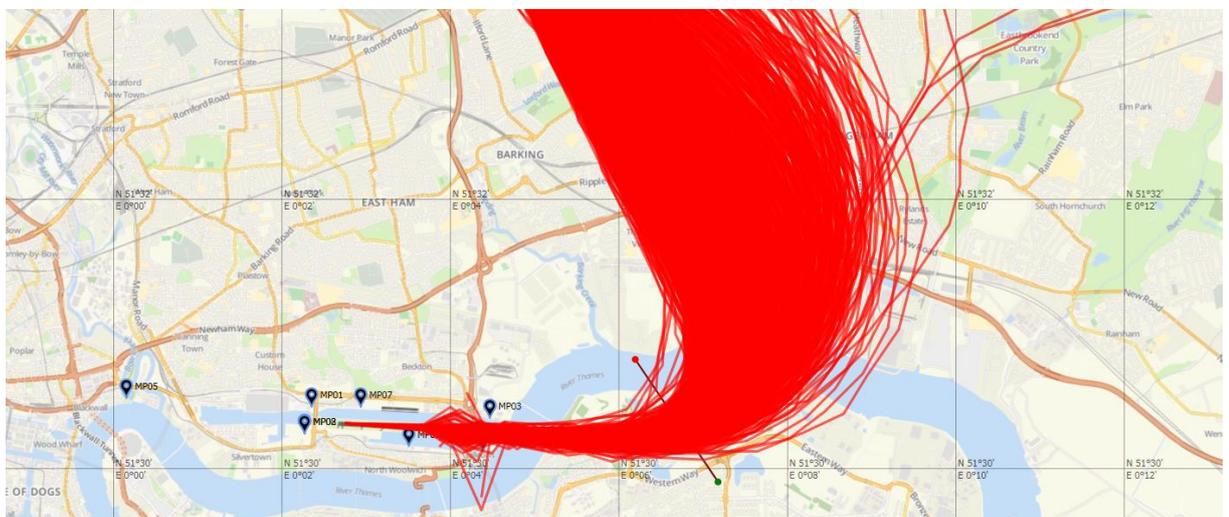


Figure A1.12: Runway 09 Departure Track Plot for 2018 Q4 – BPK and CPT SIDs

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 passed through this gate during the fourth quarter of 2018.

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 passed through this gate during the fourth quarter of 2018.

APPENDIX 2

NTK Status Reports

Table A2.1 gives the daily operation status of each NMT for the 2018 calendar year.

Date	NMT Operational?					
	NMT1	NMT2	NMT3	NMT4	NMT5	NMT6
01/01/2018	Yes	Yes	Yes	Yes	Yes	Yes
02/01/2018	Yes	Yes	Yes	Yes	Yes	Yes
03/01/2018	Yes	Yes	Yes	Yes	Yes	Yes
04/01/2018	Yes	Yes	Yes	Yes	Yes	Yes
05/01/2018	Yes	Yes	Yes	Yes	Yes	Yes
06/01/2018	Yes	Yes	Yes	Yes	Yes	Yes
07/01/2018	Yes	Yes	Yes	Yes	Yes	Yes
08/01/2018	Yes	Yes	Yes	Yes	Yes	Yes
09/01/2018	Yes	Yes	Yes	Yes	Yes	Yes
10/01/2018	Yes	Yes	Yes	Yes	Yes	Yes
11/01/2018	Yes	Yes	Yes	Yes	Yes	Yes
12/01/2018	Yes	Yes	Yes	Yes	Yes	Yes
13/01/2018	Yes	Yes	Yes	Yes	Yes	Yes
14/01/2018	Yes	Yes	Yes	Yes	Yes	Yes
15/01/2018	Yes	Yes	Yes	Yes	Yes	Yes
16/01/2018	Yes	Yes	Yes	Yes	Yes	Yes
17/01/2018	Yes	Yes	Yes	Yes	Yes	Yes
18/01/2018	Yes	Yes	Yes	Yes	Yes	Yes
19/01/2018	Yes	Yes	Yes	Yes	Yes	Yes
20/01/2018	Yes	Yes	Yes	Yes	Yes	Yes
21/01/2018	Yes	Yes	Yes	Yes	Yes	Yes
22/01/2018	Yes	Yes	Yes	Yes	Yes	Yes
23/01/2018	Yes	Yes	Yes	Yes	Yes	Yes
24/01/2018	Yes	Yes	Yes	Yes	Yes	Yes
25/01/2018	Yes	Yes	Yes	Yes	Yes	Yes
26/01/2018	Yes	Yes	Yes	Yes	Yes	Yes

Date	NMT Operational?					
	NMT1	NMT2	NMT3	NMT4	NMT5	NMT6
27/01/2018	Yes	Yes	Yes	Yes	Yes	Yes
28/01/2018	Yes	Yes	Yes	Yes	Yes	Yes
29/01/2018	Yes	Yes	Yes	Yes	Yes	Yes
30/01/2018	Yes	Yes	Yes	Yes	Yes	Yes
31/01/2018	Yes	Yes	Yes	Yes	Yes	Yes
01/02/2018	Yes	Yes	Yes	Yes	Yes	Yes
02/02/2018	Yes	Yes	Yes	Yes	Yes	Yes
03/02/2018	Yes	Yes	Yes	Yes	Yes	Yes
04/02/2018	Yes	Yes	Yes	Yes	Yes	Yes
05/02/2018	Yes	Yes	Yes	Yes	Yes	Yes
06/02/2018	Yes	Yes	Yes	Yes	Yes	Yes
07/02/2018	Yes	Yes	Yes	Yes	Yes	Yes
08/02/2018	Yes	Yes	Yes	Yes	Yes	Yes
09/02/2018	Yes	Yes	Yes	Yes	Yes	Yes
10/02/2018	Yes	Yes	Yes	Yes	Yes	Yes
11/02/2018	Yes	Yes	Yes	Yes	Yes	Yes
12/02/2018	Yes	Yes	Yes	Yes	Yes	Yes
13/02/2018	Yes	Yes	Yes	Yes	Yes	Yes
14/02/2018	Yes	Yes	Yes	Yes	Yes	Yes
15/02/2018	Yes	Yes	Yes	Yes	Yes	Yes
16/02/2018	Yes	Yes	Yes	Yes	Yes	Yes
17/02/2018	Yes	Yes	Yes	Yes	Yes	Yes
18/02/2018	Yes	Yes	Yes	Yes	Yes	Yes
19/02/2018	Yes	Yes	Yes	Yes	Yes	Yes
20/02/2018	Yes	Yes	Yes	Yes	Yes	Yes
21/02/2018	Yes	Yes	Yes	Yes	Yes	Yes
22/02/2018	Yes	Yes	Yes	Yes	Yes	Yes
23/02/2018	Yes	Yes	Yes	Yes	Yes	Yes

Date	NMT Operational?					
	NMT1	NMT2	NMT3	NMT4	NMT5	NMT6
24/02/2018	Yes	Yes	Yes	Yes	Yes	Yes
25/02/2018	Yes	Yes	Yes	Yes	Yes	Yes
26/02/2018	Yes	Yes	Yes	Yes	Yes	Yes
27/02/2018	Yes	Yes	Yes	Yes	Yes	Yes
28/02/2018	Yes	Yes	Yes	Yes	Yes	Yes
01/03/2018	Yes	Yes	Yes	Yes	Yes	Yes
02/03/2018	Yes	Yes	Yes	Yes	Yes	Yes
03/03/2018	Yes	Yes	Yes	Yes	Yes	Yes
04/03/2018	Yes	Yes	Yes	Yes	Yes	Yes
05/03/2018	Yes	Yes	Yes	Yes	Yes	Yes
06/03/2018	Yes	Yes	Yes	Yes	Yes	Yes
07/03/2018	Yes	Yes	Yes	Yes	Yes	Yes
08/03/2018	Yes	Yes	Yes	Yes	Yes	Yes
09/03/2018	Yes	Yes	Yes	Yes	Yes	Yes
10/03/2018	Yes	Yes	Yes	Yes	Yes	Yes
11/03/2018	Yes	Yes	Yes	Yes	Yes	Yes
12/03/2018	Yes	Yes	Yes	Yes	Yes	Yes
13/03/2018	Yes	Yes	Yes	Yes	Yes	Yes
14/03/2018	Yes	Yes	Yes	Yes	Yes	Yes
15/03/2018	Yes	Yes	Yes	Yes	Yes	Yes
16/03/2018	Yes	Yes	Yes	Yes	Yes	Yes
17/03/2018	Yes	Yes	Yes	Yes	Yes	Yes
18/03/2018	Yes	Yes	Yes	Yes	Yes	Yes
19/03/2018	Yes	Yes	Yes	Yes	Yes	Yes
20/03/2018	Yes	Yes	Yes	Yes	Yes	Yes
21/03/2018	Yes	Yes	Yes	Yes	Yes	Yes
22/03/2018	Yes	Yes	Yes	Yes	Yes	Yes
23/03/2018	Yes	Yes	Yes	Yes	Yes	Yes

Date	NMT Operational?					
	NMT1	NMT2	NMT3	NMT4	NMT5	NMT6
24/03/2018	Yes	Yes	Yes	Yes	Yes	Yes
25/03/2018	Yes	Yes	Yes	Yes	Yes	Yes
26/03/2018	Yes	Yes	Yes	Yes	Yes	Yes
27/03/2018	Yes	Yes	Yes	Yes	Yes	Yes
28/03/2018	Yes	Yes	Yes	Yes	Yes	Yes
29/03/2018	Yes	Yes	Yes	Yes	Yes	Yes
30/03/2018	Yes	Yes	Yes	Yes	Yes	Yes
31/03/2018	Yes	Yes	Yes	Yes	Yes	Yes
01/04/2018	Yes	Yes	Yes	Yes	Yes	Yes
02/04/2018	Yes	Yes	Yes	Yes	Yes	Yes
03/04/2018	Yes	Yes	Yes	Yes	Yes	Yes
04/04/2018	Yes	Yes	Yes	Yes	Yes	Yes
05/04/2018	Yes	Yes	Yes	Yes	Yes	Yes
06/04/2018	Yes	Yes	Yes	Yes	Yes	Yes
07/04/2018	Yes	Yes	Yes	Yes	Yes	Yes
08/04/2018	Yes	Yes	Yes	Yes	Yes	Yes
09/04/2018	Yes	Yes	Yes	Yes	Yes	Yes
10/04/2018	Yes	Yes	Yes	Yes	Yes	Yes
11/04/2018	Yes	Yes	Yes	Yes	Yes	Yes
12/04/2018	Yes	Yes	Yes	Yes	Yes	Yes
13/04/2018	Yes	Yes	Yes	Yes	Yes	Yes
14/04/2018	Yes	Yes	Yes	Yes	Yes	Yes
15/04/2018	Yes	Yes	Yes	Yes	Yes	Yes
16/04/2018	Yes	Yes	Yes	Yes	Yes	Yes
17/04/2018	Yes	Yes	Yes	Yes	Yes	Yes
18/04/2018	Yes	Yes	Yes	Yes	Yes	Yes
19/04/2018	Yes	Yes	Yes	Yes	Yes	Yes
20/04/2018	Yes	Yes	Yes	Yes	Yes	Yes

Date	NMT Operational?					
	NMT1	NMT2	NMT3	NMT4	NMT5	NMT6
21/04/2018	Yes	Yes	Yes	Yes	Yes	Yes
22/04/2018	Yes	Yes	Yes	Yes	Yes	Yes
23/04/2018	Yes	Yes	Yes	Yes	Yes	Yes
24/04/2018	Yes	Yes	Yes	Yes	Yes	Yes
25/04/2018	Yes	Yes	Yes	Yes	Yes	Yes
26/04/2018	Yes	Yes	Yes	Yes	Yes	Yes
27/04/2018	Yes	Yes	Yes	Yes	Yes	Yes
28/04/2018	Yes	Yes	Yes	Yes	Yes	Yes
29/04/2018	Yes	Yes	Yes	Yes	Yes	Yes
30/04/2018	Yes	Yes	Yes	Yes	Yes	Yes
01/05/2018	Yes	Yes	Yes	Yes	Yes	Yes
02/05/2018	Yes	Yes	Yes	Yes	Yes	Yes
03/05/2018	Yes	Yes	Yes	Yes	Yes	Yes
04/05/2018	Yes	Yes	Yes	Yes	Yes	Yes
05/05/2018	Yes	Yes	Yes	Yes	Yes	Yes
06/05/2018	Yes	Yes	Yes	Yes	Yes	Yes
07/05/2018	Yes	Yes	Yes	Yes	Yes	Yes
08/05/2018	Yes	Yes	Yes	Yes	Yes	Yes
09/05/2018	Yes	Yes	Yes	Yes	Yes	Yes
10/05/2018	Yes	Yes	Yes	Yes	Yes	Yes
11/05/2018	Yes	Yes	Yes	Yes	Yes	Yes
12/05/2018	Yes	Yes	Yes	Yes	Yes	Yes
13/05/2018	Yes	Yes	Yes	Yes	Yes	Yes
14/05/2018	Yes	Yes	Yes	Yes	Yes	Yes
15/05/2018	Yes	Yes	Yes	Yes	Yes	Yes
16/05/2018	Yes	Yes	Yes	Yes	Yes	Yes
17/05/2018	Yes	Yes	Yes	Yes	Yes	Yes
18/05/2018	Yes	Yes	Yes	Yes	Yes	Yes

Date	NMT Operational?					
	NMT1	NMT2	NMT3	NMT4	NMT5	NMT6
19/05/2018	Yes	Yes	Yes	Yes	Yes	Yes
20/05/2018	Yes	Yes	Yes	Yes	Yes	Yes
21/05/2018	Yes	Yes	Yes	Yes	Yes	Yes
22/05/2018	Yes	Yes	Yes	Yes	Yes	Yes
23/05/2018	Yes	Yes	Yes	Yes	Yes	Yes
24/05/2018	Yes	Yes	Yes	Yes	Yes	Yes
25/05/2018	Yes	Yes	Yes	Yes	Yes	Yes
26/05/2018	Yes	Yes	Yes	Yes	Yes	Yes
27/05/2018	Yes	Yes	Yes	Yes	Yes	Yes
28/05/2018	Yes	Yes	Yes	Yes	Yes	Yes
29/05/2018	Yes	Yes	Yes	Yes	Yes	Yes
30/05/2018	Yes	Yes	Yes	Yes	Yes	Yes
31/05/2018	Yes	Yes	Yes	Yes	Yes	Yes
01/06/2018	Yes	Yes	Yes	Yes	Yes	Yes
02/06/2018	Yes	Yes	Yes	Yes	Yes	Yes
03/06/2018	Yes	Yes	Yes	Yes	Yes	Yes
04/06/2018	Yes	Yes	Yes	Yes	Yes	Yes
05/06/2018	Yes	Yes	Yes	Yes	Yes	Yes
06/06/2018	Yes	Yes	Yes	Yes	Yes	Yes
07/06/2018	Yes	Yes	Yes	Yes	Yes	Yes
08/06/2018	Yes	Yes	Yes	Yes	Yes	Yes
09/06/2018	Yes	Yes	Yes	Yes	Yes	Yes
10/06/2018	Yes	Yes	Yes	Yes	Yes	Yes
11/06/2018	Yes	Yes	Yes	Yes	Yes	Yes
12/06/2018	Yes	Yes	Yes	Yes	Yes	Yes
13/06/2018	Yes	Yes	Yes	Yes	Yes	Yes
14/06/2018	Yes	Yes	Yes	Yes	Yes	Yes
15/06/2018	Yes	Yes	Yes	Yes	Yes	Yes

Date	NMT Operational?					
	NMT1	NMT2	NMT3	NMT4	NMT5	NMT6
16/06/2018	Yes	Yes	Yes	Yes	Yes	Yes
17/06/2018	Yes	Yes	Yes	Yes	Yes	Yes
18/06/2018	Yes	Yes	Yes	Yes	Yes	Yes
19/06/2018	Yes	Yes	Yes	Yes	Yes	Yes
20/06/2018	Yes	Yes	Yes	Yes	Yes	Yes
21/06/2018	Yes	Yes	Yes	Yes	Yes	Yes
22/06/2018	Yes	Yes	Yes	Yes	Yes	Yes
23/06/2018	Yes	Yes	Yes	Yes	Yes	Yes
24/06/2018	Yes	Yes	Yes	Yes	Yes	Yes
25/06/2018	Yes	Yes	Yes	Yes	Yes	Yes
26/06/2018	Yes	Yes	Yes	Yes	Yes	Yes
27/06/2018	Yes	Yes	Yes	Yes	Yes	Yes
28/06/2018	Yes	Yes	Yes	Yes	Yes	Yes
29/06/2018	Yes	Yes	Yes	Yes	Yes	Yes
30/06/2018	Yes	Yes	Yes	Yes	Yes	Yes
01/07/2018	Yes	Yes	Yes	Yes	Yes	Yes
02/07/2018	Yes	Yes	Yes	Yes	Yes	Yes
03/07/2018	Yes	Yes	Yes	Yes	Yes	Yes
04/07/2018	Yes	Yes	Yes	Yes	Yes	Yes
05/07/2018	Yes	Yes	Yes	Yes	Yes	Yes
06/07/2018	Yes	Yes	Yes	Yes	Yes	Yes
07/07/2018	Yes	Yes	Yes	Yes	Yes	Yes
08/07/2018	Yes	Yes	Yes	Yes	Yes	Yes
09/07/2018	Yes	Yes	Yes	Yes	Yes	Yes
10/07/2018	Yes	Yes	Yes	Yes	Yes	Yes
11/07/2018	Yes	Yes	Yes	Yes	Yes	Yes
12/07/2018	Yes	Yes	Yes	Yes	Yes	Yes
13/07/2018	Yes	Yes	Yes	Yes	Yes	Yes

Date	NMT Operational?					
	NMT1	NMT2	NMT3	NMT4	NMT5	NMT6
14/07/2018	Yes	Yes	Yes	Yes	Yes	Yes
15/07/2018	Yes	Yes	Yes	Yes	Yes	Yes
16/07/2018	Yes	Yes	Yes	Yes	Yes	Yes
17/07/2018	Yes	Yes	Yes	Yes	Yes	Yes
18/07/2018	Yes	Yes	Yes	Yes	Yes	Yes
19/07/2018	Yes	Yes	Yes	Yes	Yes	Yes
20/07/2018	Yes	Yes	Yes	Yes	Yes	Yes
21/07/2018	Yes	Yes	Yes	Yes	Yes	Yes
22/07/2018	Yes	Yes	Yes	Yes	Yes	Yes
23/07/2018	Yes	Yes	Yes	Yes	Yes	Yes
24/07/2018	Yes	Yes	Yes	Yes	Yes	Yes
25/07/2018	Yes	Yes	Yes	Yes	Yes	Yes
26/07/2018	Yes	Yes	Yes	Yes	Yes	Yes
27/07/2018	Yes	Yes	Yes	Yes	Yes	Yes
28/07/2018	Yes	Yes	Yes	Yes	Yes	Yes
29/07/2018	Yes	Yes	Yes	Yes	Yes	Yes
30/07/2018	Yes	Yes	Yes	Yes	Yes	Yes
31/07/2018	Yes	Yes	Yes	Yes	Yes	Yes
01/08/2018	Yes	Yes	Yes	Yes	Yes	Yes
02/08/2018	Yes	Yes	Yes	Yes	Yes	Yes
03/08/2018	Yes	Yes	Yes	Yes	Yes	Yes
04/08/2018	Yes	Yes	Yes	Yes	Yes	Yes
05/08/2018	Yes	Yes	Yes	Yes	Yes	Yes
06/08/2018	Yes	Yes	Yes	Yes	Yes	Yes
07/08/2018	Yes	Yes	Yes	Yes	Yes	Yes
08/08/2018	Yes	Yes	Yes	Yes	Yes	Yes
09/08/2018	Yes	Yes	Yes	Yes	Yes	Yes
10/08/2018	Yes	Yes	Yes	Yes	Yes	Yes

Date	NMT Operational?					
	NMT1	NMT2	NMT3	NMT4	NMT5	NMT6
11/08/2018	Yes	Yes	Yes	Yes	Yes	Yes
12/08/2018	Yes	No	No	Yes	Yes	Yes
13/08/2018	Yes	Yes	Yes	Yes	Yes	Yes
14/08/2018	Yes	Yes	Yes	Yes	Yes	Yes
15/08/2018	Yes	Yes	Yes	Yes	Yes	Yes
16/08/2018	Yes	Yes	Yes	Yes	Yes	Yes
17/08/2018	Yes	Yes	Yes	Yes	Yes	Yes
18/08/2018	Yes	Yes	Yes	Yes	Yes	Yes
19/08/2018	Yes	Yes	Yes	Yes	Yes	Yes
20/08/2018	Yes	Yes	Yes	Yes	Yes	Yes
21/08/2018	Yes	Yes	Yes	Yes	Yes	Yes
22/08/2018	Yes	Yes	Yes	Yes	Yes	Yes
23/08/2018	Yes	Yes	Yes	Yes	Yes	Yes
24/08/2018	Yes	Yes	Yes	Yes	Yes	Yes
25/08/2018	Yes	Yes	Yes	Yes	Yes	Yes
26/08/2018	Yes	Yes	Yes	Yes	Yes	Yes
27/08/2018	Yes	Yes	Yes	Yes	Yes	Yes
28/08/2018	Yes	Yes	Yes	Yes	Yes	Yes
29/08/2018	Yes	Yes	Yes	Yes	Yes	Yes
30/08/2018	Yes	Yes	Yes	Yes	Yes	Yes
31/08/2018	Yes	Yes	Yes	Yes	Yes	Yes
01/09/2018	Yes	Yes	Yes	Yes	Yes	Yes
02/09/2018	Yes	Yes	Yes	Yes	Yes	Yes
03/09/2018	Yes	Yes	Yes	Yes	Yes	Yes
04/09/2018	Yes	Yes	Yes	Yes	Yes	Yes
05/09/2018	Yes	Yes	Yes	Yes	Yes	Yes
06/09/2018	Yes	Yes	Yes	Yes	Yes	Yes
07/09/2018	Yes	Yes	Yes	Yes	Yes	Yes

Date	NMT Operational?					
	NMT1	NMT2	NMT3	NMT4	NMT5	NMT6
08/09/2018	Yes	Yes	Yes	Yes	Yes	Yes
09/09/2018	Yes	Yes	Yes	Yes	Yes	Yes
10/09/2018	Yes	Yes	Yes	Yes	Yes	Yes
11/09/2018	Yes	Yes	Yes	Yes	Yes	Yes
12/09/2018	Yes	Yes	Yes	Yes	Yes	Yes
13/09/2018	Yes	Yes	Yes	Yes	Yes	Yes
14/09/2018	Yes	Yes	Yes	Yes	Yes	Yes
15/09/2018	Yes	Yes	Yes	Yes	Yes	Yes
16/09/2018	Yes	Yes	Yes	Yes	Yes	Yes
17/09/2018	Yes	Yes	Yes	Yes	Yes	Yes
18/09/2018	Yes	Yes	Yes	Yes	Yes	Yes
19/09/2018	Yes	Yes	Yes	Yes	Yes	Yes
20/09/2018	Yes	Yes	Yes	Yes	Yes	Yes
21/09/2018	Yes	Yes	Yes	Yes	Yes	Yes
22/09/2018	Yes	Yes	Yes	Yes	Yes	Yes
23/09/2018	Yes	Yes	Yes	Yes	Yes	Yes
24/09/2018	Yes	Yes	Yes	Yes	Yes	Yes
25/09/2018	Yes	Yes	Yes	Yes	Yes	Yes
26/09/2018	Yes	Yes	Yes	Yes	Yes	Yes
27/09/2018	Yes	Yes	Yes	Yes	Yes	Yes
28/09/2018	Yes	Yes	Yes	Yes	Yes	Yes
29/09/2018	Yes	Yes	Yes	Yes	Yes	Yes
30/09/2018	Yes	Yes	Yes	Yes	Yes	Yes
01/10/2018	Yes	Yes	Yes	Yes	Yes	Yes
02/10/2018	Yes	Yes	Yes	Yes	Yes	Yes
03/10/2018	Yes	Yes	Yes	Yes	Yes	Yes
04/10/2018	Yes	Yes	Yes	Yes	Yes	Yes
05/10/2018	Yes	Yes	Yes	Yes	Yes	Yes

Date	NMT Operational?					
	NMT1	NMT2	NMT3	NMT4	NMT5	NMT6
06/10/2018	Yes	Yes	Yes	Yes	Yes	Yes
07/10/2018	Yes	Yes	Yes	Yes	Yes	Yes
08/10/2018	Yes	Yes	Yes	Yes	Yes	Yes
09/10/2018	Yes	Yes	Yes	Yes	Yes	Yes
10/10/2018	Yes	Yes	Yes	Yes	Yes	Yes
11/10/2018	Yes	Yes	Yes	Yes	Yes	Yes
12/10/2018	Yes	Yes	Yes	Yes	Yes	Yes
13/10/2018	Yes	Yes	Yes	Yes	Yes	Yes
14/10/2018	Yes	Yes	Yes	Yes	Yes	Yes
15/10/2018	Yes	Yes	Yes	Yes	Yes	Yes
16/10/2018	Yes	Yes	Yes	Yes	Yes	Yes
17/10/2018	Yes	Yes	Yes	Yes	Yes	Yes
18/10/2018	Yes	Yes	Yes	Yes	Yes	Yes
19/10/2018	Yes	Yes	Yes	Yes	Yes	Yes
20/10/2018	Yes	Yes	Yes	Yes	Yes	Yes
21/10/2018	Yes	Yes	Yes	Yes	Yes	Yes
22/10/2018	Yes	Yes	Yes	Yes	Yes	Yes
23/10/2018	Yes	Yes	Yes	Yes	Yes	Yes
24/10/2018	Yes	Yes	Yes	Yes	Yes	Yes
25/10/2018	Yes	Yes	Yes	Yes	Yes	Yes
26/10/2018	Yes	Yes	Yes	Yes	Yes	Yes
27/10/2018	Yes	Yes	Yes	Yes	Yes	Yes
28/10/2018	Yes	Yes	Yes	Yes	Yes	Yes
29/10/2018	Yes	Yes	Yes	Yes	Yes	Yes
30/10/2018	Yes	Yes	Yes	Yes	Yes	Yes
31/10/2018	Yes	Yes	Yes	Yes	Yes	Yes
01/11/2018	Yes	Yes	Yes	Yes	Yes	Yes
02/11/2018	Yes	Yes	Yes	Yes	Yes	Yes

Date	NMT Operational?					
	NMT1	NMT2	NMT3	NMT4	NMT5	NMT6
03/11/2018	Yes	Yes	Yes	Yes	Yes	Yes
04/11/2018	Yes	Yes	Yes	Yes	Yes	Yes
05/11/2018	Yes	Yes	Yes	Yes	Yes	Yes
06/11/2018	Yes	Yes	Yes	Yes	Yes	Yes
07/11/2018	Yes	Yes	Yes	Yes	Yes	Yes
08/11/2018	Yes	Yes	Yes	Yes	Yes	Yes
09/11/2018	Yes	Yes	Yes	Yes	Yes	Yes
10/11/2018	Yes	Yes	Yes	Yes	Yes	Yes
11/11/2018	Yes	Yes	Yes	Yes	Yes	Yes
12/11/2018	Yes	Yes	Yes	Yes	Yes	Yes
13/11/2018	Yes	Yes	Yes	Yes	Yes	Yes
14/11/2018	Yes	Yes	Yes	Yes	Yes	Yes
15/11/2018	Yes	Yes	Yes	Yes	Yes	Yes
16/11/2018	Yes	Yes	Yes	Yes	Yes	Yes
17/11/2018	Yes	Yes	Yes	Yes	Yes	Yes
18/11/2018	Yes	Yes	Yes	Yes	Yes	Yes
19/11/2018	Yes	Yes	Yes	Yes	Yes	Yes
20/11/2018	Yes	Yes	Yes	Yes	Yes	Yes
21/11/2018	Yes	Yes	Yes	Yes	Yes	Yes
22/11/2018	Yes	Yes	Yes	Yes	Yes	Yes
23/11/2018	Yes	Yes	Yes	Yes	Yes	Yes
24/11/2018	Yes	Yes	Yes	Yes	Yes	Yes
25/11/2018	Yes	Yes	Yes	Yes	Yes	Yes
26/11/2018	Yes	Yes	Yes	Yes	Yes	Yes
27/11/2018	Yes	Yes	Yes	Yes	Yes	Yes
28/11/2018	Yes	No	Yes	Yes	Yes	Yes
29/11/2018	Yes	Yes	Yes	Yes	Yes	Yes
30/11/2018	Yes	Yes	Yes	Yes	Yes	Yes

Date	NMT Operational?					
	NMT1	NMT2	NMT3	NMT4	NMT5	NMT6
01/12/2018	Yes	Yes	Yes	Yes	Yes	Yes
02/12/2018	Yes	Yes	Yes	Yes	Yes	Yes
03/12/2018	Yes	Yes	Yes	Yes	Yes	Yes
04/12/2018	Yes	Yes	Yes	Yes	Yes	Yes
05/12/2018	Yes	Yes	Yes	Yes	Yes	Yes
06/12/2018	Yes	Yes	Yes	Yes	Yes	Yes
07/12/2018	Yes	Yes	Yes	Yes	Yes	Yes
08/12/2018	Yes	Yes	Yes	Yes	Yes	Yes
09/12/2018	Yes	Yes	Yes	Yes	Yes	Yes
10/12/2018	Yes	Yes	Yes	Yes	Yes	Yes
11/12/2018	Yes	Yes	Yes	Yes	Yes	Yes
12/12/2018	Yes	Yes	Yes	Yes	Yes	Yes
13/12/2018	Yes	Yes	Yes	Yes	Yes	Yes
14/12/2018	Yes	Yes	Yes	Yes	Yes	Yes
15/12/2018	Yes	Yes	Yes	Yes	Yes	Yes
16/12/2018	Yes	Yes	Yes	Yes	Yes	Yes
17/12/2018	Yes	Yes	Yes	Yes	Yes	Yes
18/12/2018	Yes	Yes	Yes	Yes	Yes	Yes
19/12/2018	Yes	Yes	Yes	Yes	Yes	Yes
20/12/2018	Yes	Yes	Yes	Yes	Yes	Yes
21/12/2018	Yes	Yes	Yes	Yes	Yes	Yes
22/12/2018	Yes	Yes	Yes	Yes	Yes	Yes
23/12/2018	Yes	Yes	Yes	Yes	Yes	Yes
24/12/2018	Yes	Yes	Yes	Yes	Yes	Yes
25/12/2018	Yes	Yes	Yes	Yes	Yes	Yes
26/12/2018	Yes	Yes	Yes	Yes	Yes	Yes
27/12/2018	Yes	Yes	Yes	Yes	Yes	Yes
28/12/2018	Yes	Yes	Yes	Yes	Yes	Yes

Date	NMT Operational?					
	NMT1	NMT2	NMT3	NMT4	NMT5	NMT6
29/12/2018	Yes	Yes	Yes	Yes	Yes	Yes
30/12/2018	Yes	Yes	Yes	Yes	Yes	Yes
31/12/2018	Yes	Yes	Yes	Yes	Yes	Yes

Table A2.1: 2018 NTK daily operational status

A summary of the correlation rate for each month of 2018 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
January	6,326	2,627	2,587	2,608
February	6,070	2,859	2,816	2,830
March	6,721	3,141	3,120	3,112
April	6,646	3,208	3,178	3,218
May	7,233	3,590	3,572	3,510
June	7,154	3,515	3,499	3,478
July	6,979	3,335	3,313	3,255
August	6,664	3,236	3,223	3,202
September	6,843	3,160	3,092	3,166
October	7,236	3,596	3,537	3,554
November	6,854	3,201	3,253	3,334
December	5,942	2,798	2,841	2,762

Table A2.2: Summary of Correlated Aircraft Movements, 2018

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

Quarter	Operational Summary
January – March	During the quarterly period from 1 st January to 31 st March 2018, NMTs 1-6 were fully operational, and data received for each day. A total of 8,652 aircraft departures were correlated at NMTs 1-4, a correlation rate of 90%. A total of 8,523 (89%) departures and 8,550 (89%) arrivals were correlated at NMTs 5 and 6
April – June	During the quarterly period from 1 st April to 30 th June 2018, NMTs 1-6 were fully operational, and data received for each day. A total of 10,313 aircraft departures were correlated at NMTs 1-4, a correlation rate of 98%. A total of 10,249 (97%) departures and 10,206 (97%) arrivals were correlated at NMTs 5 and 6.
July – September	During the quarterly period from 1 st July to 30 th September 2018, NMTs 1-6 were fully operational, and data received for each day, with the exception of 12 th August. On this date the NTK system was being upgraded which unexpectedly caused measurements to be interrupted for a short period. This work affected all NMTs to some extent. For NMTs 2 and 3 this resulted in no measurements being recorded on 12 th August. For the other NMTs only part of the day was affected. A similar issue also occurred on the 13 th and 17 th August, although all NMTs recorded some measurements on those dates. The upgrade work is now complete and therefore this issue is unlikely to cause any further loss of data. A total of 9,731 aircraft departures were correlated at NMTs 1-4, a correlation rate of 95%. A total of 9,628 (94%) departures and 9,623 (94%) arrivals were correlated at NMTs 5 and 6.
October - November	During the quarterly period from 1 st October to 31 st December 2018, NMTs 1-6 were fully operational, and data received for each day, with the exception of 28 th November. On this date at NMT 2 there was an empty ethanol canister which meant that only solar power could be used. This caused intermittent issues until it was replaced on 6 th December, although after 28 th November some measurements were recorded on each day. A total of 9,595 aircraft departures were correlated at NMTs 1-4, a correlation rate of 96%. A total of 9,631 (96%) departures and 9,650 (96%) arrivals were correlated at NMTs 5 and 6.

Table A2.3: 2018 Quarterly Operations Summary

APPENDIX 3

Penalties and Incentives

The following table summarises the number of flights that incurred fixed penalties, credit removals and credit awards in the period between 1st January 2018 to 31st December 2018, by airline and aircraft type. Additionally, the total value of fixed penalties accrued and the residual number of credits are presented. Fines accrued prior to 1st November 2018 were not payable.

Airline Code	Aircraft Type	Penalty Awards	Fines Payable (£)	Credit Removals	Credit Awards	Total Credits
2L9	E190	0	£0	0	1	1
3AM	FA7X	0	£0	0	1	1
AAB	C25C	0	£0	0	2	2
AAB	C56X	0	£0	0	2	2
AAB	CNJ	0	£0	0	1	1
ABP	E135	0	£0	0	28	28
ADN	LJ45	0	£0	0	7	7
AHO	C25B	0	£0	0	5	5
AHO	C560	0	£0	0	4	4
AHO	C56X	0	£0	0	48	48
AKK	FA7X	0	£0	0	1	1
AOJ	C56X	0	£0	0	2	2
AOJ	CNJ	0	£0	0	1	1
AOJ	C25A	0	£0	0	3	3
AOV	DA50	0	£0	0	0	0
AOV	F900	0	£0	0	1	1
ASJ	C510	0	£0	0	11	11
ASJ	CNJ	0	£0	0	1	1
AWU	C25A	0	£0	0	16	16
AWU	C525	0	£0	0	4	4
AXY	E135	0	£0	0	1	1
AZA	E190	0	£0	0	171	171
BA3	SB20	0	£0	1	2	1

Airline Code	Aircraft Type	Penalty Awards	Fines Payable (£)	Credit Removals	Credit Awards	Total Credits
BA9	E190	0	£0	0	0	0
BA9	E170	0	£0	0	1	1
BA9	B462	0	£0	0	1	1
BAW	A318	0	£0	0	69	69
BAW	E170	0	£0	0	0	0
BAW	E190	0	£0	0	3	3
BCI	AT42	0	£0	0	43	43
BCI	AT72	0	£0	0	8	8
BCI	AT45	0	£0	0	2	2
BCI	AT75	0	£0	1	19	18
BCY	RJ85	7	£4,800	244	10	-239
BCY	B462	0	£0	0	1	1
BEE	DH8D	1	£1,200	49	847	797
BEE	E170	0	£0	4	0	-4
BFD	F2TH	0	£0	0	2	2
BKK	C510	0	£0	0	5	5
BLJ	C56X	0	£0	0	2	2
BZE	C560	0	£0	0	1	1
CAZ	F2TH	0	£0	0	1	1
CAZ	FA7X	0	£0	0	10	10
CAZ	H25	0	£0	0	2	2
CAZ	F2TX	0	£0	0	1	1
CAZ	H25B	0	£0	0	2	2
CBM	BE20	0	£0	0	0	0
CFE	B462	0	£0	1	2	1
CFE	E170	0	£0	12	42	30
CFE	E190	22	£13,800	2	208	189

Airline Code	Aircraft Type	Penalty Awards	Fines Payable (£)	Credit Removals	Credit Awards	Total Credits
CFE	F900	0	£0	0	0	0
CFE	RJ85	0	£0	4	4	0
CFE	SB20	1	£600	4	212	208
CGJ	CL30	0	£0	0	1	1
CLF	C25A	0	£0	0	6	6
CLF	F2TX	0	£0	0	1	1
CSD	GLEX	0	£0	0	1	1
CSD	CL65	0	£0	0	1	1
DAG	FA7X	0	£0	0	1	1
DAG	FA8X	0	£0	0	1	1
DBE	F2TH	0	£0	0	6	6
DBO	F2TH	0	£0	0	9	9
DCA	C56X	0	£0	0	22	22
DCA	C680	0	£0	0	16	16
DCF	C56X	0	£0	0	1	1
DCH	C680	0	£0	0	5	5
DCO	C525	0	£0	0	1	1
DCS	C56X	0	£0	0	6	6
DLH	E190	0	£0	0	96	96
DSO	F900	0	£0	0	2	2
DSO	FA7X	0	£0	0	1	1
EDC	C25B	0	£0	0	0	0
EDG	G280	0	£0	0	1	1
EFD	C25B	0	£0	0	2	2
EFD	C680	0	£0	0	6	6
EFD	C25A	0	£0	0	8	8
EFD	C25C	0	£0	0	1	1

Airline Code	Aircraft Type	Penalty Awards	Fines Payable (£)	Credit Removals	Credit Awards	Total Credits
EIN	E190	0	£0	1	0	-1
EIN	RJ85	0	£0	25	0	-25
ELJ	C56X	0	£0	0	9	9
ELJ	C25A	0	£0	0	1	1
EOA	C560	0	£0	0	10	10
EOA	C56X	0	£0	0	30	30
ETI	C56X	0	£0	0	10	10
EUW	C56X	0	£0	0	1	1
EUW	C680	0	£0	0	3	3
EZE	E170	0	£0	0	2	2
EZE	SB20	0	£0	4	121	117
FGO	DA90	0	£0	0	1	1
FHA	F2TH	0	£0	0	3	3
FHE	FA7X	0	£0	0	1	1
FHF	GLEX	0	£0	0	2	2
FHL	F2TH	0	£0	0	1	1
FHV	FA7X	0	£0	0	1	1
FHV	FA8X	0	£0	0	1	1
FLJ	E55P	0	£0	0	40	40
FPG	FA7X	0	£0	0	3	3
FXR	P180	4	£4,200	4	0	-8
FYG	FA7X	0	£0	0	17	17
FYG	GLEX	0	£0	0	5	5
FYG	F900	0	£0	0	1	1
FYG	CL65	0	£0	0	1	1
FYL	C25B	0	£0	0	2	2
GAC	C510	0	£0	0	99	99

Airline Code	Aircraft Type	Penalty Awards	Fines Payable (£)	Credit Removals	Credit Awards	Total Credits
GDK	C56X	0	£0	0	3	3
GLJ	GLEX	0	£0	0	2	2
GRH	E135	0	£0	0	1	1
GRN	CL60	0	£0	0	1	1
GRN	CL65	0	£0	0	1	1
GXI	FA8X	0	£0	0	23	23
GXJ	C550	0	£0	0	1	1
HBJ	CL60	0	£0	0	11	11
HBJ	FA7X	0	£0	0	13	13
HBJ	CL65	0	£0	0	2	2
HBJ	F2TH	0	£0	0	1	1
HBV	H25	0	£0	0	1	1
HBV	PC24	0	£0	0	5	5
HHN	C680	0	£0	0	3	3
HTM	C56X	0	£0	0	11	11
IJM	GLEX	0	£0	0	4	4
IJM	C56X	0	£0	0	2	2
ITA	C680	0	£0	0	1	1
IXR	C25A	0	£0	0	1	1
JAR	C550	0	£0	0	6	6
JET	C25B	0	£0	0	0	0
JFA	C25B	0	£0	0	4	4
JKH	C25A	0	£0	0	1	1
JLN	GL5T	0	£0	0	2	2
JSY	C25A	0	£0	0	1	1
JTR	C550	0	£0	0	1	1
KBD	E55P	0	£0	0	1	1

Airline Code	Aircraft Type	Penalty Awards	Fines Payable (£)	Credit Removals	Credit Awards	Total Credits
KL9	E190	0	£0	0	1	1
KLM	E190	0	£0	4	122	118
KLM	RJ85	0	£0	1	0	-1
KOC	FA8X	0	£0	0	1	1
LEA	C550	0	£0	0	2	2
LEA	FA7X	0	£0	0	2	2
LEA	H25B	0	£0	0	4	4
LEA	C25B	0	£0	0	4	4
LGL	DH8D	0	£0	6	752	746
LMJ	GLEX	0	£0	0	5	5
LNK	C56X	0	£0	0	9	9
LNK	E135	0	£0	0	5	5
LNK	CNJ	0	£0	0	1	1
LX5	E190	0	£0	0	0	0
LX7	BCS1	0	£0	0	1	1
LXA	C56X	0	£0	0	4	4
LXA	E135	0	£0	0	1	1
LXG	C25B	0	£0	0	6	6
LXG	C56X	0	£0	0	0	0
LXG	C680	0	£0	0	1	1
LXG	E55P	0	£0	0	3	3
MAS	CL60	0	£0	0	1	1
MDT	C680	0	£0	0	2	2
MGS	DA90	0	£0	0	1	1
MIL	F900	0	£0	0	0	0
MIN	G280	0	£0	0	7	7
MIS	G280	0	£0	0	5	5

Airline Code	Aircraft Type	Penalty Awards	Fines Payable (£)	Credit Removals	Credit Awards	Total Credits
MJF	E135	0	£0	0	2	2
MMD	FA8X	0	£0	0	3	3
MMD	F2TH	0	£0	0	6	6
MMD	FA7X	0	£0	0	3	3
N10	F2TH	0	£0	0	1	1
N10	GLEX	0	£0	0	1	1
N14	GLEX	0	£0	0	1	1
N15	GLEX	0	£0	0	1	1
N47	F900	0	£0	0	1	1
N47	DA90	0	£0	0	1	1
N52	E190	0	£0	0	1	1
N54	FA7X	0	£0	0	0	0
N65	GLF6	0	£0	0	1	1
N73	F900	0	£0	0	1	1
N74	C510	0	£0	0	0	0
N78	F2TH	0	£0	0	1	1
N78	F2TX	0	£0	0	1	1
N81	C680	0	£0	0	0	0
N88	C680	0	£0	0	1	1
N90	C25C	0	£0	0	1	1
N94	F900	0	£0	0	0	0
NJE	C56X	0	£0	1	292	291
NJE	C680	0	£0	0	42	42
NJE	C68A	0	£0	0	101	101
NJE	E55P	0	£0	0	114	114
NJE	GLEX	0	£0	0	28	28
NJE	H25B	0	£0	0	75	75

Airline Code	Aircraft Type	Penalty Awards	Fines Payable (£)	Credit Removals	Credit Awards	Total Credits
OEF	C510	0	£0	0	1	1
OEF	C25A	0	£0	0	1	1
OEG	C525	0	£0	0	1	1
OEG	C56X	0	£0	0	2	2
OEG	C550	0	£0	0	1	1
OKJ	E135	0	£0	0	1	1
OKS	E135	0	£0	0	1	1
OOA	C25A	0	£0	0	2	2
OOA	C510	0	£0	0	2	2
OOA	CNJ	0	£0	0	0	0
OOA	C525	0	£0	0	1	1
OOO	C25C	0	£0	0	1	1
OOD	F2TH	0	£0	0	2	2
OOF	F2TH	0	£0	0	4	4
OOF	F2TX	0	£0	0	2	2
OOG	F2TH	0	£0	0	2	2
OOG	F2TX	0	£0	0	10	10
OOK	C25A	0	£0	0	1	1
OON	E545	0	£0	0	3	3
OOP	C510	0	£0	0	1	1
OOX	C56X	0	£0	0	1	1
PHC	C680	0	£0	0	2	2
PHF	C25B	0	£0	0	1	1
PHH	C680	0	£0	0	1	1
PHH	P180	1	£600	1	0	-2
PHH	C56X	0	£0	0	1	1
PHR	C680	0	£0	0	18	18

Airline Code	Aircraft Type	Penalty Awards	Fines Payable (£)	Credit Removals	Credit Awards	Total Credits
PHT	C510	0	£0	0	2	2
PHW	F2TH	0	£0	0	4	4
PJS	E55P	0	£0	0	2	2
PNC	C525	0	£0	0	3	3
PNC	F2TH	0	£0	0	1	1
PRV	F2TH	0	£0	0	1	1
QGA	G150	0	£0	0	2	2
RBB	FA7X	0	£0	0	7	7
REN	C56X	0	£0	0	5	5
RRB	FA7X	0	£0	0	2	2
RRR	B461	0	£0	0	0	0
RRR	C130	0	£0	0	1	1
SCR	C25B	0	£0	0	1	1
SER	C560	0	£0	0	0	0
SER	C56X	0	£0	0	1	1
SHE	FA7X	0	£0	0	74	74
SNM	F900	0	£0	0	1	1
SNM	DA90	0	£0	0	1	1
SPG	C25A	0	£0	0	3	3
SRK	D328	0	£0	0	15	15
SRK	SB20	0	£0	0	32	32
STQ	C25A	0	£0	0	1	1
SUA	C56X	0	£0	0	2	2
SUI	C56X	0	£0	0	2	2
SUI	C680	0	£0	0	1	1
SUS	J328	0	£0	0	221	221
SVW	FA7X	0	£0	0	0	0

Airline Code	Aircraft Type	Penalty Awards	Fines Payable (£)	Credit Removals	Credit Awards	Total Credits
SVW	F900	0	£0	0	1	1
SWR	BCS1	0	£0	0	426	426
SWR	CS1	0	£0	0	1	1
SWR	E190	2	£1,200	0	68	67
SXN	C510	0	£0	0	15	15
SXN	E550	0	£0	0	15	15
SXN	H25B	0	£0	0	7	7
TAP	E190	12	£7,200	2	40	28
TVS	C680	0	£0	0	6	6
VCG	C56X	0	£0	0	1	1
VLM	F50	0	£0	0	0	0
VOR	PA31	0	£0	1	1	0
VPC	FA7X	0	£0	0	0	0
VPC	F900	0	£0	0	1	1
VPC	DA90	0	£0	0	1	1
VQB	FA7X	0	£0	0	1	1
WGT	FA7X	0	£0	0	4	4
WLM	F50	0	£0	2	177	175
XGO	P180	6	£4,200	4	0	-8
XJO	C550	0	£0	0	1	1
XJC	C550	0	£0	0	163	163
XJC	C56X	0	£0	0	1	1
XJC	C510	0	£0	0	1	1
XJC	H25	0	£0	0	1	1
XJC	H25B	0	£0	0	1	1
XRO	C680	0	£0	0	3	3
XRO	F900	0	£0	0	1	1

Airline Code	Aircraft Type	Penalty Awards	Fines Payable (£)	Credit Removals	Credit Awards	Total Credits
XRO	DA90	0	£0	0	2	2

Table A3.1: 2018 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 2018, 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)
A318	British Airways	254	04:10	196	04:24	196	07:17
AT42	Blue Islands	275	04:12	180	05:14	180	07:37
AT72	Blue Islands	267	03:38	242	05:35	242	07:24
BCS1	Swiss International Air Lines	1064	03:23	846	06:10	846	06:43
C510	Globe Air	125	03:07	89	08:25	89	07:33
C550	Xclusive Jet Charter Limited	207	03:07	146	08:14	146	07:54
C56X	NetJets Transportes Aereos	396	03:18	305	05:22	305	07:36
C68A	NetJets Transportes Aereos	158	03:00	158	06:33	158	08:05
DH8D	Flybe	4215	03:16	3394	04:29	3394	07:09
DH8D	Luxair	1800	03:22	1414	05:21	1414	06:34
E170	Flybe	200	03:50	90	04:19	90	07:02
E170	BA CityFlyer	5648	03:35	4482	04:15	4482	07:42
E190	Alitalia	1719	03:49	1341	04:17	1341	06:48
E190	BA CityFlyer	12573	03:48	9974	04:26	9974	07:43
E190	Lufthansa	884	03:51	671	04:46	671	07:51
E190	KLM Royal Dutch Airlines	2200	03:58	1741	03:56	1741	07:36
E190	Swiss International Air Lines	1372	03:47	1017	04:49	1017	07:23
E190	TAP Portugal	801	04:24	669	04:23	669	06:39
E55P	Flairjet	52	12:57	-	-	-	-
E55P	NetJets Transportes Aereos	139	03:02	118	05:19	118	07:52
F50	VLM Airlines	537	03:26	353	06:05	353	06:36

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)
FA7X	Shell Aircraft	84	03:41	64	06:00	64	08:54
H25B	NetJets Transportes Aereos	132	03:05	101	04:06	101	07:45
J328	Sun Air of Scandinavia	450	03:34	340	04:08	340	08:41
RJ85	CityJet	1739	03:08	1313	04:52	1313	07:11
RJ85	BA CityFlyer	120	03:13	56	05:28	56	06:54
RJ85	Aer Lingus	320	03:29	319	05:17	319	07:15
SB20	BA CityFlyer	857	03:10	671	04:01	671	07:19
SB20	Eastern Airways	362	03:53	358	03:45	358	07:15
SB20	Sky Work Airlines	94	02:59	86	05:11	86	05:04
Other		1388	03:32	1001	05:31	1001	07:51
Overall		40432	03:38	31735	04:37	31735	07:27

Table A4.1: 2018 Ground Running Summary

APPENDIX 5

Ground Running of Engines

Date	Location	A/C Orientation	Type of Run / Power Set	A/C Type	Reg.	Start Time	Stop Time	Duration (hh:mm)
02/01/2018	Stand 9	NW	Ground Idle	E190	GLCYY	09:15	09:27	00:12
02/01/2018	Stand 24	W	High Power	E190	GLCYY	11:47	12:00	00:13
05/01/2018	Stand 24	W	High Power	E190	GLCYN	07:35	07:52	00:17
07/01/2018	Stand 8	NW	Ground Idle	E190	GLCYN	21:53	21:58	00:05
12/01/2018	Stand 23/24	W	High Power	E190	GLCYY	20:10	20:29	00:19
13/01/2018	Stand 23/24	W	High Power	E190	GLCYY	11:53	12:21	00:28
14/01/2018	Abeam 24	W	High Power	E190	GLCYS	12:57	13:34	00:37
14/01/2018	Stand 24	W	High Power	E190	GLCYY	14:29	14:50	00:21
16/01/2018	Abeam 24	W	High Power	E190	GLCYY	10:19	10:32	00:13
17/01/2018	Stand 23/24	W	High Power	E190	GLCYY	10:27	10:50	00:23
18/01/2018	Stand 23/24	W	High Power	E170	GLCYF	11:58	12:23	00:25
19/01/2018	Stand 9	NW	Ground Idle	E190	GLCYN	12:17	12:28	00:11
20/01/2018	Stand 10	NW	Ground Idle	E190	GLCYY	09:12	09:30	00:18
20/01/2018	Stand 23	NW	Ground Idle	A318	GEUNA	10:56	11:00	00:04
14/01/2018	Stand 23	NW	Ground Idle	E190	GLCYX	08:07	08:14	00:07
28/01/2018	Stand 23/24	W	High Power	E190	GLCYU	13:09	13:28	00:19
04/02/2018	Stand 5	NW	Ground Idle	E170	GCIXW	14:06	14:12	00:06
04/02/2018	Stand 24	NW	Ground Idle	E190	GLCYO	18:55	19:04	00:09
07/02/2018	Abeam 24	W	High Power	C56X	SERIL	12:24	12:30	00:06
07/02/2018	Abeam 24	W	High Power	C56X	SERIL	12:31	12:37	00:06
07/02/2018	JC	E	Ground Idle	C56X	SERIL	13:16	13:18	00:02
09/02/2018	Stand 13	E	Ground Idle	E170	GLCYE	10:37	10:42	00:05
11/02/2018	Stand 4	NW	Ground Idle	E170	GLCYE	12:39	12:48	00:09
11/02/2018	Stand 9	NW	Ground Idle	E190	GLCYX	13:23	13:41	00:18
11/02/2018	Stand 22	NW	Ground Idle	E170	GLCYG	14:24	-	-
13/02/2018	JC	SE	Ground Idle	C56X	CSDQA	18:15	18:23	00:08
14/02/2018	Stand 14	W	Ground Idle	E170	GCIXW	21:39	21:45	00:06
17/02/2018	Stand 22	NW	Ground Idle	A318	GEUNA	08:18	08:33	00:15
18/02/2018	Stand 1	NW	Ground Idle	E190	GLCYN	12:47	12:55	00:08
20/02/2018	Stand 5	NW	Ground Idle	E170	GLCYE	06:34	06:38	00:04

Date	Location	A/C Orientation	Type of Run / Power Set	A/C Type	Reg.	Start Time	Stop Time	Duration (hh:mm)
21/02/2018	Stand 13	W	-	E170	GCIXW	13:48	13:50	00:02
22/02/2018	Stand 9	NW	-	E190	GLCYY	07:44	07:50	00:06
23/02/2018	Stand 12	NW	-	RJ85	GJOTR	14:47	14:49	00:02
24/02/2018	Stand 3	NW	-	E190	GLCYY	06:54	07:00	00:06
25/02/2018	Stand 10	NW	Ground Idle	E190	GLCYN	12:31	12:36	00:05
27/02/2018	Stand 24	-	Ground Idle	E190	GLCYN	12:40	12:54	00:14
01/03/2018	Stand 8	-	-	E190	GLCYV	19:29	19:34	00:05
04/03/2018	Abeam 24	W	High Power	E190	GLCYP	13:04	13:19	00:15
08/03/2018	Stand 24	NW	Ground Idle	E190	GLCYN	07:00	07:05	00:05
09/03/2018	Stand 23	NW	Ground Idle	DH8D	GPRPA	08:40	08:44	00:04
23/02/3018	JC	-	Ground Idle	C680	DCHDC	07:45	07:49	00:04
25/03/2018	Stand 24	W	High Power	E170	GLCYH	20:02	20:25	00:23
27/03/2018	Stand 23	NW	Ground Idle	E190	GLCYM	20:08	20:16	00:08
29/03/2018	Stand 24	NW	Ground Idle	E190	GLCYU	06:39	06:46	00:07
02/04/2018	Stand 3	NW	Ground Idle	E190	GLCYU	09:48	09:54	00:06
04/04/2018	Stand 24	NW	Ground Idle	AT43	GISLF	19:54	19:55	00:01
04/04/2018	Stand 24	NW	Ground Idle	AT43	GISLF	20:35	20:40	00:05
05/04/2018	Stand 14	NW	Ground Idle	AT43	GISLF	10:51	11:01	00:10
07/04/2018	Stand 3	NW	Ground Idle	E190	GLCYV	07:31	07:34	00:03
08/04/2018	Stand 8	NW	Ground Idle	E190	GLCYV	12:35	12:41	00:06
13/04/2018	Stand 9	NW	Ground Idle	E190	GLCYP	10:03	10:07	00:04
15/04/2018	Stand 14	NW	Ground Idle	RJ85	EIRJH	21:38	21:42	00:04
16/04/2018	Stand 9	NW	Ground Idle	DH8D	GJEDV	15:57	16:07	00:10
16/04/2018	Stand 9	NW	Ground Idle	DH8D	GJEDV	16:13	16:20	00:07
22/04/2018	Stand 3	NW	Ground Idle	E190	EIRNC	17:10	17:13	00:03
24/04/2018	Stand 14	NW	Ground Idle	E190	GLCYV	09:01	09:06	00:05
25/04/2018	Stand 22	NW	Ground Idle	E190	GLCYP	07:43	07:51	00:08
25/04/2018	Abeam 24	NW	High Power	E190	GLCYM	11:58	12:13	00:15
28/04/2018	Stand 21	NW	Ground Idle	A318	GEUNA	11:17	11:26	00:09
30/04/2018	Stand 8	NW	Ground Idle	E190	GLCYU	07:11	07:17	00:06
06/05/2018	Stand 22	NW	Ground Idle	DH8D	GPRPH	20:31	20:54	00:23
08/05/2018	Stand 23	NW	Ground Idle	RJ85	GJOTR	21:55	21:58	00:03

Date	Location	A/C Orientation	Type of Run / Power Set	A/C Type	Reg.	Start Time	Stop Time	Duration (hh:mm)
13/05/2018	Stand 3	NW	Ground Idle	E190	GLCYT	13:26	13:34	00:08
13/05/2018	Stand 23/24	W	High Power	E190	GLCYS	14:19	14:36	00:17
15/05/2018	Stand 24	NW	Ground Idle	E190	GLCYP	06:31	06:45	00:14
15/05/2018	Stand 10	NW	Ground Idle	E190	GLCYO	13:57	14:01	00:04
16/05/2018	Stand 4	NW	Ground Idle	DH8D	LXLGE	08:18	08:23	00:05
16/05/2018	Stand 4	NW	Ground Idle	DH8D	LXLGE	13:12	13:16	00:04
16/05/2018	JC	-	Ground Idle	-	-	15:20	15:20	00:00
16/05/2018	Stand 4	NW	Ground Idle	DH8D	GXLGE	15:17	15:23	00:06
18/05/2018	Stand 24	W	High Power	E190	GLCYX	11:55	12:06	00:11
19/05/2018	Stand 24	NW	Ground Idle	E190	GLCYS	06:38	06:45	00:07
23/05/2018	Stand 2	-	Ground Idle	E190	GLCYT	06:39	06:45	00:06
24/05/2018	Stand 21	NW	Ground Idle	E190	GLCYZ	14:42	14:47	00:05
24/05/2018	JC	S	Ground Idle	H25B	CSDRZ	18:27	18:38	00:11
27/05/2018	Stand 24	W	High Power	E190	GLCYS	12:47	13:29	00:42
30/05/2018	Stand 24	W	High Power	E190	GLCYS	15:14	15:35	00:21
01/06/2018	Stand 22	NW	Ground Idle	E190	GLCYT	10:07	10:12	00:05
01/06/2018	Stand 5	NW	Ground Idle	E170	GLCYF	14:40	14:46	00:06
04/06/2018	Stand 23/24	W	High Power	E190	GLCYO	20:43	20:58	00:15
05/06/2018	Stand 8	NW	Ground Idle	E190	GLCYU	06:44	06:48	00:04
07/06/2018	Stand 10	NW	Ground Idle	E190	CSTPW	13:00	13:02	00:02
07/06/2018	Stand 24	W	High Power	E190	CSTPW	13:40	13:45	00:05
08/06/2018	Stand 21	NW	Ground Idle	A318	GEUNA	08:54	09:08	00:14
09/06/2018	Stand 21	NW	Ground Idle	A318	GEUNA	10:45	10:52	00:07
12/06/2018	Stand 10	NW	Ground Idle	E190	GLCYJ	06:56	07:00	00:04
14/06/2018	Stand 2	NW	Ground Idle	E190	GLCYZ	06:31	06:35	00:04
14/06/2018	Stand 9	NW	Ground Idle	E190	GLCYV	08:20	08:25	00:05
14/06/2018	Stand 23	NW	Ground Idle	E190	GLCYS	09:25	09:28	00:03
21/06/2018	JC	E	Ground Idle	C56X	C5DXX	15:14	15:29	00:15
22/06/2018	Stand 22	NW	Ground Idle	E190	GLCYS	06:34	06:38	00:04
23/06/2018	Stand 4	NW	Ground Idle	RJ85	EIRJO	12:25	12:27	00:02
01/07/2018	Stand 1	NW	Ground Idle	ATR72	GISLK	20:46	20:51	00:05

Date	Location	A/C Orientation	Type of Run / Power Set	A/C Type	Reg.	Start Time	Stop Time	Duration (hh:mm)
02/07/2018	Stand 22	NW	Ground Idle	DH8D	GPRP M	09:57	10:04	00:07
03/07/2018	Stand 12	NW	Ground Idle	DH8D	GPRP M	15:37	15:42	00:05
05/07/2018	Stand 7	NW	Ground Idle	E190	GLCYM	13:34	13:38	00:04
08/07/2018	Stand 6	NW	Ground Idle	E190	GLCYX	12:46	12:50	00:04
10/07/2018	Stand 12	NW	Ground Idle	E190	GLCYO	08:36	08:41	00:05
10/07/2018	Stand 6	NW	Ground Idle	E190	GLCYO	13:23	13:28	00:05
12/07/2018	Stand 3	NW	Ground Idle	E190	GLCYV	13:46	13:54	00:08
17/07/2018	Stand 7	NW	Ground Idle	E190	GLCYS	06:32	06:38	00:06
17/07/2018	Stand 5	NW	Ground Idle	E170	GLCYE	20:40	20:44	00:04
25/07/2018	Stand 10	NW	Ground Idle	DH8D	GPRPD	19:58	-	-
26/07/2018	Stand 23	NW	Ground Idle	E190	GLCYP	07:56	08:10	00:14
26/07/2018	Stand 22	NW	Ground Idle	E170	GLCYG	07:17	07:26	00:09
26/07/2018	Abeam 13/14	W	Ground Idle	E190	-	11:45	11:55	00:10
29/07/2018	-	E	Ground Idle	E190	HBJUM	15:57	16:05	00:08
30/07/2018	Stand 22	NW	Ground Idle	E170	GLCYI	14:34	14:41	00:07
01/08/2018	Stand 3	NW	Ground Idle	E190	GLCYO	16:09	16:14	00:05
04/08/2018	Abeam 22	W	High Power	E190	GLCYP	07:28	07:56	00:28
06/08/2018	Stand 24	NW	Ground Idle	E190	GLCYN	06:39	06:45	00:06
06/08/2018	Stand 24	NW	Ground Idle	E190	GLCYN	09:00	09:07	00:07
06/08/2018	Stand 9	NW	Ground Idle	E190	GLCYP	14:02	14:07	00:05
07/08/2018	Stand 8	NW	Ground Idle	E190	GLCYN	20:46	20:51	00:05
14/08/2018	Stand 14	W	Ground Idle	E170	GLCYF	06:46	06:53	00:07
14/08/2018	Stand 9	NW	Ground Idle	E190	GLCYR	15:08	15:15	00:07
21/08/2018	Stand 8	NW	Ground Idle	E190	GLCYO	06:47	06:54	00:07
22/08/2018	Stand 3	NW	Ground Idle	E170	GLCYG	08:03	08:07	00:04
22/08/2018	Stand 4	NW	Ground Idle	E170	GLCYG	13:55	14:16	00:21
24/08/2018	Stand 9	NW	Ground Idle	E190	GLCYV	21:30	21:34	00:04
25/08/2018	Stand 9	NW	Ground Idle	E190	GLCYV	06:33	06:44	00:11
25/08/2018	Stand 9	NW	Ground Idle	E190	GLCYV	07:04	07:09	00:05
26/08/2018	Stand 6	NW	Ground Idle	E190	GLCYV	12:41	12:45	00:04

Date	Location	A/C Orientation	Type of Run / Power Set	A/C Type	Reg.	Start Time	Stop Time	Duration (hh:mm)
28/08/2018	Stand 21	NW	Ground Idle	A318	GEUNA	08:12	08:22	00:10
31/08/2018	Stand 2	NW	Ground Idle	E190	GLCYN	06:43	06:48	00:05
03/09/2018	Stand 24	NW	Ground Idle	E190	GLCYX	06:35	06:39	00:04
04/09/2018	Stand 3	NW	Ground Idle	RJ85	EIRJH	15:26	15:29	00:03
04/09/2018	Stand 24	NW	Ground Idle	RJ85	GJOTR	21:50	21:53	00:03
05/09/2018	Stand 3	NW	Ground Idle	E170	GLCYF	06:33	06:40	00:07
06/09/2018	Stand 23	NW	Ground Idle	E190	EIRNA	15:41	15:46	00:05
07/09/2018	Stand 24	NW	Ground Idle	E190	EIRNA	14:42	14:52	00:10
09/09/2018	Stand 4	NW	Ground Idle	E170	GLCYG	13:04	13:16	00:12
10/09/2018	Stand 12	NW	Ground Idle	DH8D	GJEDU	08:42	08:44	00:02
12/09/2018	Stand 4	NW	Ground Idle	E170	GLCYG	12:07	12:14	00:07
13/09/2018	Stand 22	NW	Ground Idle	E190	GLCYS	06:34	06:42	00:08
15/09/2018	Stand 22	W	High Power	E190	GLCYZ	06:59	07:05	00:06
15/09/2018	JC	S	Ground Idle	C68A	CSLTB	09:11	09:25	00:14
15/09/2018	JC	S	Ground Idle	C68A	CSLTB	09:37	09:48	00:11
16/09/2018	JC	S	Ground Idle	C68A	CSLTB	14:50	14:59	00:09
18/09/2018	JC	-	Ground Idle	C68A	CSDXU	16:47	16:52	00:05
20/09/2018	Stand 14	NW	Ground Idle	RJ85	EIRJO	09:10	09:16	00:06
21/09/2018	Stand 5	NW	Ground Idle	RJ85	EIRJH	17:10	17:13	00:03
21/09/2018	Stand 12	NW	Ground Idle	RJ85	EIRJX	11:17	11:24	00:07
23/09/2018	Stand 22	W	High Power	E190	GLCYO	13:20	13:32	00:12
28/09/2018	Stand 1	NW	Ground Idle	E190	GLCYD	06:41	06:44	00:03
30/09/2018	Stand 6	NW	Ground Idle	E190	GLCYS	12:37	12:42	00:05
02/10/2018	Stand 2	NW	Ground Idle	E170	GLCYD	06:36	06:41	00:05
03/10/2018	JC	S	Ground Idle	C510	OEFZD	16:46	16:53	00:07
07/10/2018	Abeam 22	W	High Power	E190	GLCYY	13:22	14:10	00:48
07/10/2018	Abeam 22	W	High Power	E190	GLCYY	15:38	15:59	00:21
10/10/2018	Stand 1	NW	Ground Idle	E170	GLCYE	06:46	06:51	00:05
13/10/2018	Stand 6	NW	Ground Idle	E190	GLCYJ	10:15	10:22	00:07
14/10/2018	Stand 22	W	High Power	E190	GLCYP	13:15	13:39	00:24
17/10/2018	Stand 24	NW	Ground Idle	E190	GLCYW	06:45	06:59	00:14
19/10/2018	Stand 7	NW	Ground Idle	E190	GLCYP	08:15	08:28	00:13

Date	Location	A/C Orientation	Type of Run / Power Set	A/C Type	Reg.	Start Time	Stop Time	Duration (hh:mm)
20/10/2018	Stand 13	-	Ground Idle	E190	GLCYW	06:53	07:00	00:07
21/10/2018	Stand 2	NW	Ground Idle	E190	GLCYJ	12:40	12:44	00:04
23/10/2018	Stand 6	NW	Ground Idle	E190	GLCYV	12:40	12:44	00:04
23/10/2018	Stand 7	NW	Ground Idle	DH8D	GBRPG	18:57	19:00	00:03
23/10/2018	Stand 14	NW	Ground Idle	SB20	GCIEC	20:07	20:16	00:09
23/10/2018	Abeam 22	W	High Power	SB20	GCIEC	21:03	21:19	00:16
23/10/2018	Stand 1	NW	Ground Idle	E170	GLCYF	20:55	21:11	00:16
24/10/2018	Stand 24	NW	Ground Idle	E170	GLCYW	06:55	06:59	00:04
24/10/2018	Stand 13	NW	Ground Idle	SB20	GCIEC	18:57	19:00	00:03
25/10/2018	Stand 13	NW	Ground Idle	SB20	GCIEC	15:22	15:27	00:05
26/10/2018	Stand 8	NW	Ground Idle	E190	GLCYV	17:28	17:41	00:13
28/10/2018	Stand 6	NW	Ground Idle	E190	GLCYW	12:43	12:47	00:04
01/11/2018	Abeam 13	W	Ground Idle	E170	GLCYN	07:11	07:15	00:04
02/11/2018	Stand 23	NW	Ground Idle	E190	GLCYW	06:48	06:50	00:02
07/11/2018	Stand 22	W	High Power	E190	GLCYO	14:07	14:13	00:06
09/11/2018	Stand 7	NW	Ground Idle	E190	GLCYM	06:43	06:46	00:03
09/11/2018	Stand 22	NW	Ground Idle	E190	GLCYM	08:01	08:08	00:07
10/11/2018	Stand 24	NW	Ground Idle	E190	GLCYJ	06:32	06:39	00:07
12/11/2018	Stand 12	NW	Ground Idle	BA46	GSMLA	12:01	12:06	00:05
18/11/2018	Abeam 22	W	High Power	E190	GLCYO	12:50	13:00	00:10
18/11/2018	Stand 24	NW	Ground Idle	DH8D	GPRPA	14:06	14:33	00:27
20/11/2018	Stand 2	NW	Ground Idle	E190	GLCYM	06:41	06:49	00:08
25/11/2018	Stand 22	NW	High Power	E190	GLCYT	12:50	13:08	00:18
25/11/2018	Stand 7	NW	Ground Idle	E190	GLCYX	13:38	13:42	00:04
29/11/2018	Stand 5	NW	Ground Idle	E170	GLCYI	12:38	12:45	00:07
02/12/2018	Abeam 22	W	High Power	E190	GLCYR	12:53	13:23	00:30
02/12/2018	Stand 22	NW	Ground Idle	E190	GLCYX	10:10	10:14	00:04
05/12/2018	Stand 10	NW	Ground Idle	E190	EIGHK	07:00	07:08	00:08
05/12/2018	Stand 22	NW	Ground Idle	E190	GLCYX	14:06	14:14	00:08
06/12/2018	Abeam 22	W	High Power	E190	GLCYL	10:14	10:37	00:23
08/12/2018	Abeam 22	W	High Power	E190	GLCYZ	09:27	09:45	00:18
09/12/2018	Abeam 22	W	High Power	E190	GLCYX	12:50	13:05	00:15

Date	Location	A/C Orientation	Type of Run / Power Set	A/C Type	Reg.	Start Time	Stop Time	Duration (hh:mm)
09/12/2018	Abeam 22	W	High Power	E190	GLCYX	15:20	15:47	00:27
14/12/2018	Stand 2	NW	Ground Idle	E190	GLCYO	06:40	06:48	00:08
16/12/2018	Stand 23	NW	Ground Idle	E190	GLCYX	12:38	12:42	00:04
16/12/2018	Stand 21	NW	Ground Idle	E190	GLCYZ	13:00	13:04	00:04
18/12/2018	Stand 2	NW	Ground Idle	E190	EIGHK	15:28	15:56	00:28
19/12/2018	Stand 21	NW	Ground Idle	E190	GLCYU	10:59	11:02	00:03
19/12/2018	Stand 10	NW	Ground Idle	E190	GLCYK	15:31	15:42	00:11
23/12/2018	Stand 8	NW	Ground Idle	E190	GLCYN	12:50	12:59	00:09
27/12/2018	Stand 2	NW	Ground Idle	DH8D	GPRPD	09:43	09:50	00:07
27/12/2018	Stand 7	NW	Ground Idle	E190	GLCYU	12:39	12:43	00:04
30/12/2018	Stand 9	NW	Ground Idle	E190	GLCYX	12:58	13:08	00:10

Table A5.1: Official record of ground running of engines for test and maintenance for 2018

Month	Minutes	A/C Type
January	215	E190/E170
February	12	C56X
March	38	E190/E170
April	15	E190
May	91	E190
June	20	E190
July	0	-
August	28	E190
September	18	E190
October	109	E190/SB20
November	34	E190
December	113	E190
Total	693	-

Table A5.2: Summary of high power ground running, January 2018 – December 2018

Prediction of engine ground running as Appendix D5 of NOMMS

Item (A) Determination of largest monthly duration:

As indicated in Table A5.2, that occurred in January 2018, specifically –

25 minutes of E170

190 minutes of E190

215 minutes total ground running

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

215 minutes in a month of 31 days

6.9 minutes average daily duration

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

Resultant noise level at 152 m

$$= \text{reference noise level} + 10 \text{ Log}(\text{duration}) - 10 \text{ Log}(12*60)$$

$$= 84 + 10 \text{ Log}(6.9) - 10 \text{ log}(12*60)$$

$$= 84 + 8.4 - 28.6$$

$$= 63.8 \text{ dB } L_{Aeq,12h}$$

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

Aircraft at Stand 24

Noise level at Newland Street

$$= \text{resultant noise level} - 26.7 \text{ Log}(255/152)$$

$$= 63.8 - 6.0$$

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

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

Conclusion

In 2018 LCA's ground running was 2.2 dB below the ground running noise limit.

APPENDIX 6

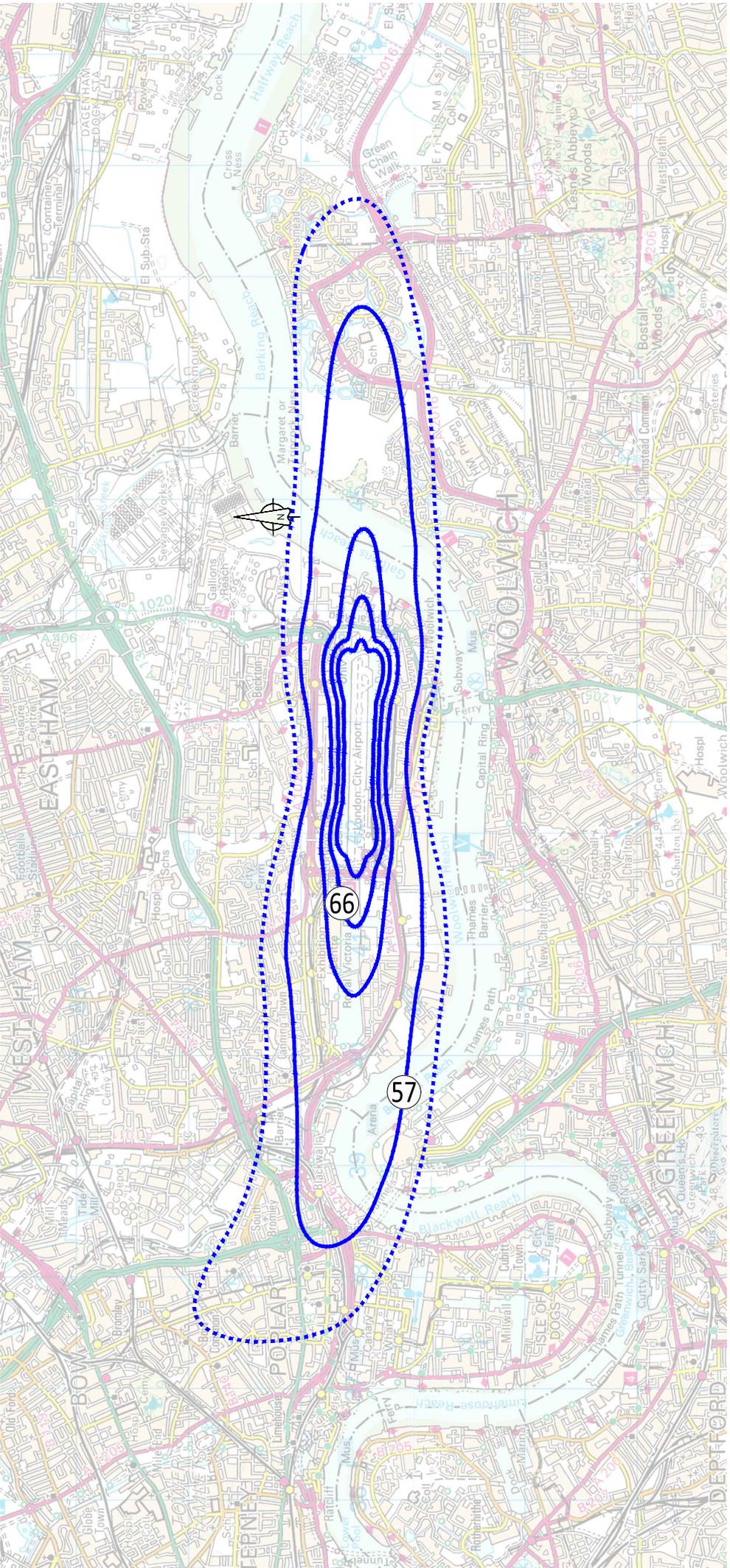
Noise Contours

The following noise contours are presented in this appendix:

- 2018 Actual average mode summer daytime
- 2019 Forecast average mode summer daytime
- 2019 Forecast reduced average mode summer daytime (this is the 2019 forecast , factored to account for the typical differences between the forecast and actual movements)
- 1998 Planning Contour
- SIS First Tier Eligibility Boundary
- SIS Intermediate Tier Eligibility Boundary
- SIS Second Tier Eligibility Boundary

LEGEND:

- ⋯⋯⋯ 54 dB Noise Contour
- 57, 63, 66 and 69 dB Noise Contours



REVISIONS

**Bickerdike
Allen
Partners**
Architecture
Acoustics
Technology

121 Salisbury Road, London, NW6 6RG
 Email: mail@bickerdikeallen.com T: 0207 625 4411
 www.bickerdikeallen.com F: 0207 625 0250

London City Airport

Actual Noise Contours
 Summer 2017 (57, 63, 66 and 69 dB LAeq,16h)
 Average Mode

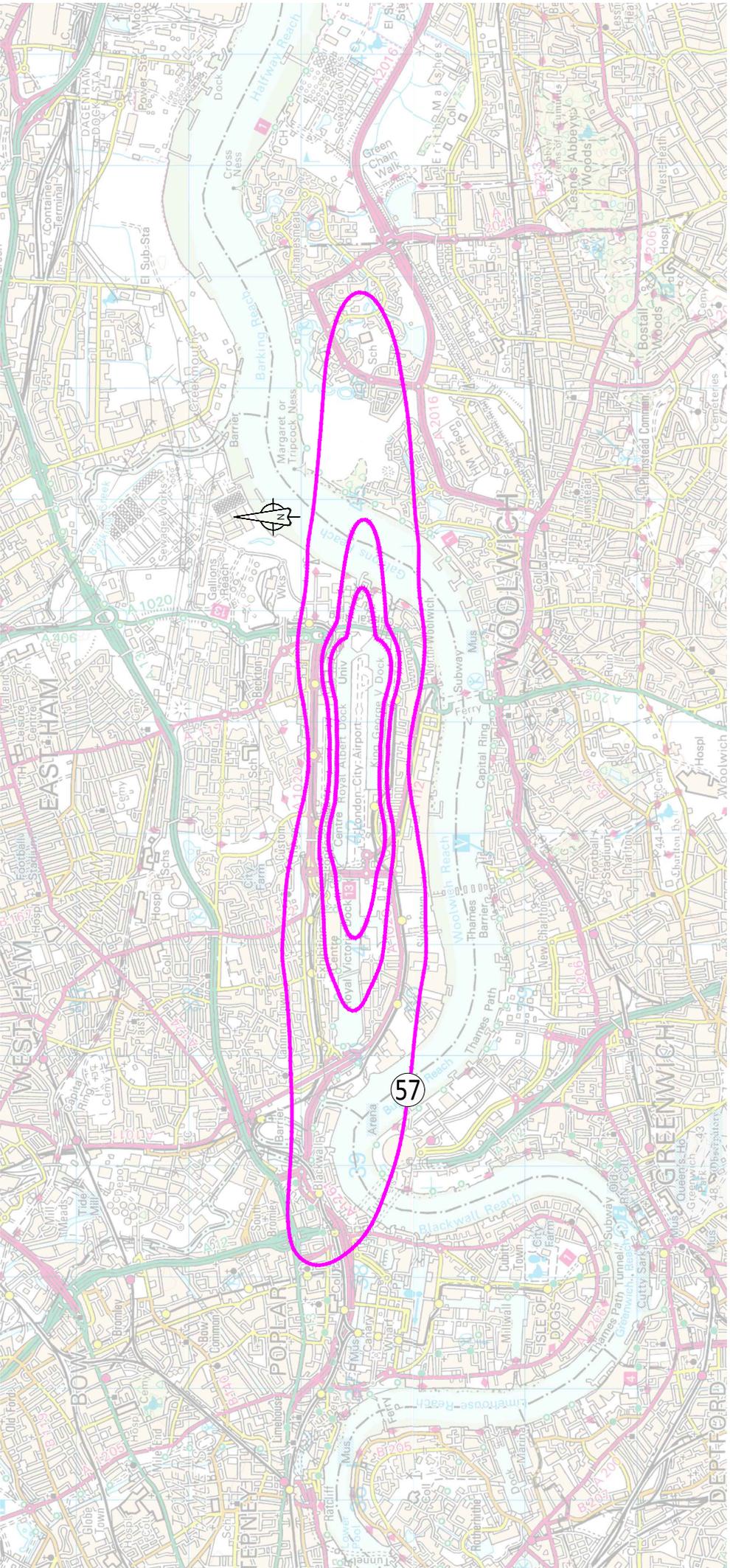
DRAWN: DR CHECKED: NW

DATE: 18/04/2019 SCALE: 1:50000@A4

FIGURE No:
A1125.57-APR18-01_1.0

LEGEND:

— Noise Contours



REVISIONS

**Bickerdike
Allen
Partners**
Architecture
Acoustics
Technology

121 Salisbury Road, London, NW6 6RG
 Email: mail@bickerdikeallen.com T: 0207 625 4411
www.bickerdikeallen.com F: 0207 625 0250

London City Airport

Predicted Reduced Noise Contours
 Summer 2018 (57, 63 and 66 dB LAeq,16h)
 Average Mode

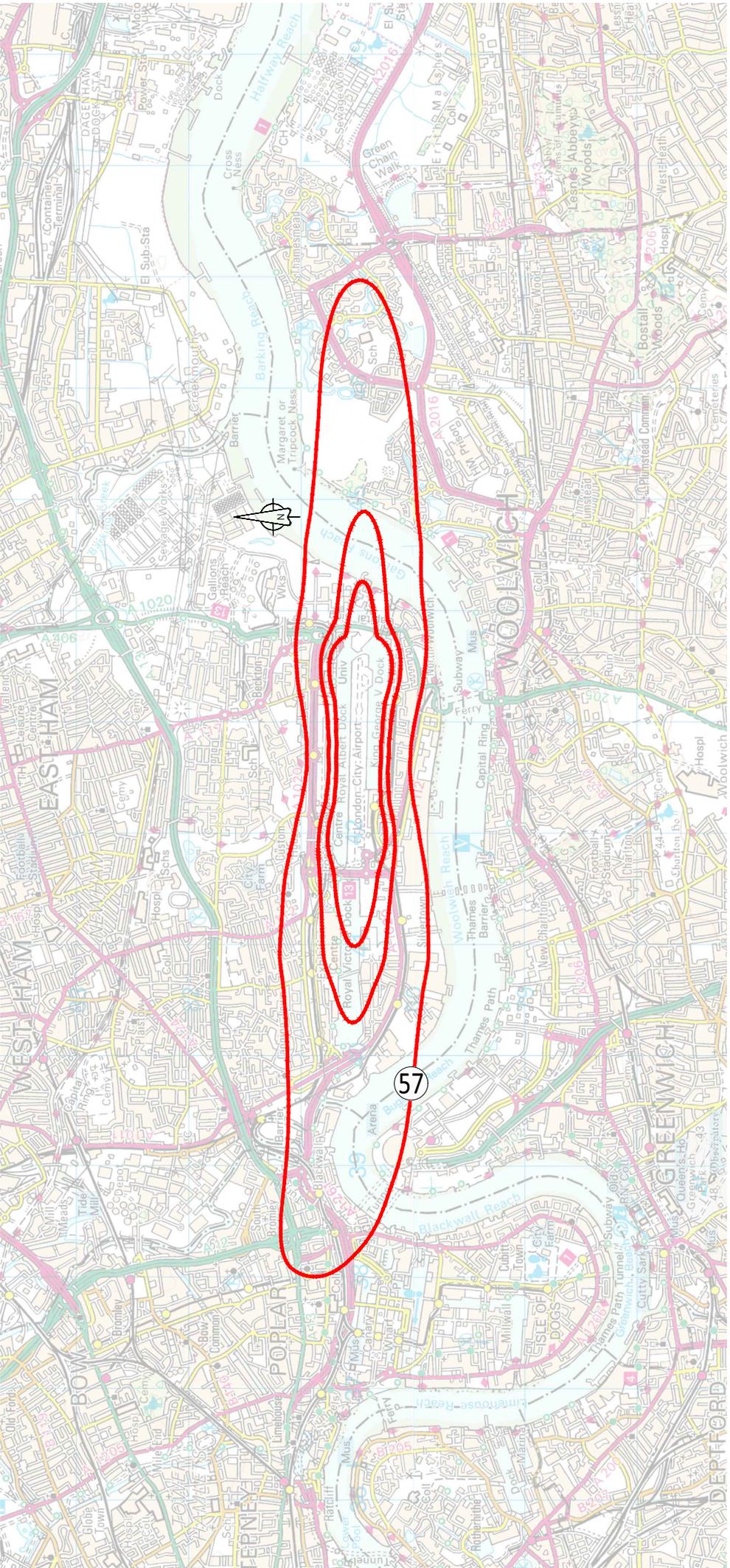
DRAWN: DR CHECKED: NW

DATE: 18/04/2019 SCALE: 1:50000@A4

FIGURE No:
A1125.57-APR18-02_1.0

LEGEND:

 Noise Contours



REVISIONS

**Bickerdike
Allen
Partners**
Architecture
Acoustics
Technology

121 Salisbury Road, London, NW6 6RG
 Email: mail@bickerdikeallen.com T: 0207 625 4411
www.bickerdikeallen.com F: 0207 625 0250

London City Airport

Predicted Noise Contours
 Summer 2018 (57, 63 and 66 dB LAeq,16h)
 Average Mode

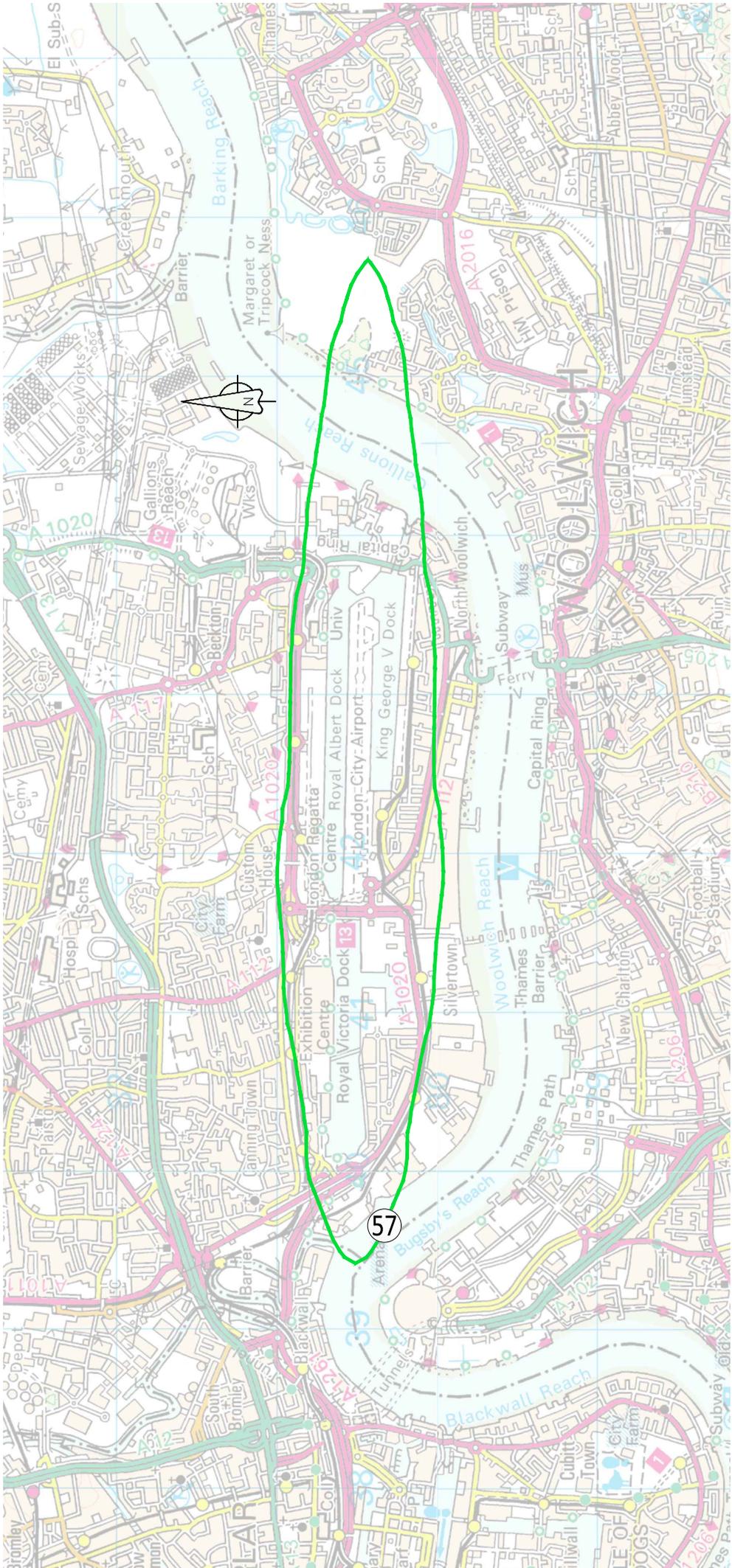
DRAWN: DR CHECKED: NW

DATE: 18/04/2019 SCALE: 1:50000@A4

FIGURE No:
A1125.57-APR18-03_1.0

LEGEND:

— Noise Contours



REVISIONS

**Bickerdike
Allen
Partners**
Architecture
Acoustics
Technology

121 Salusbury Road, London, NW6 6RG
 Email: mail@bickerdikeallen.com
www.bickerdikeallen.com

T: 0207 625 4411
 F: 0207 625 0250

London City Airport

**LAeq,16h Noise Contours
 1998 Planning Contour**

DRAWN: DR

CHECKED: NW

DATE: 18/04/2019

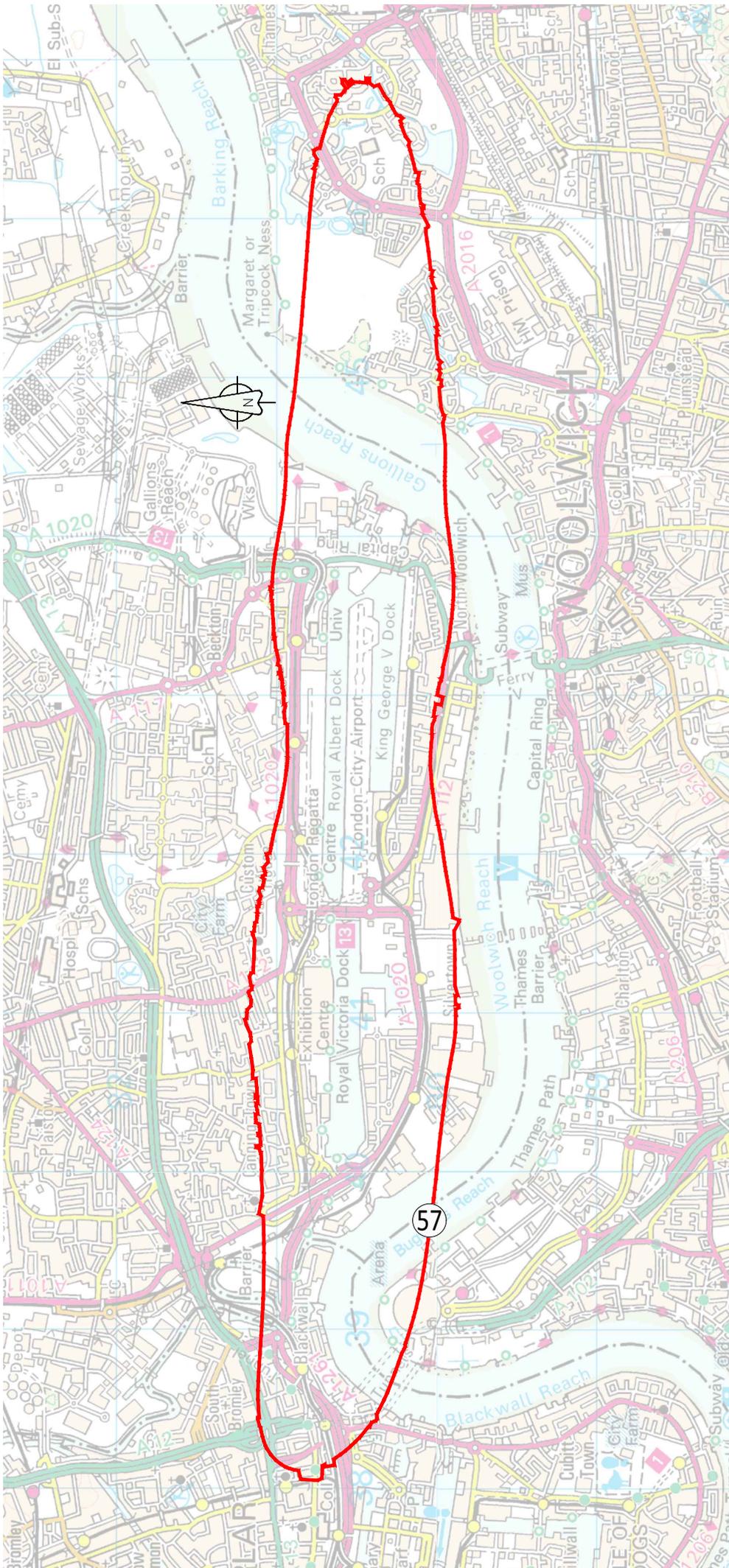
SCALE: 1:35000@A4

FIGURE No:

A1125.57-APR18-04_1.0

LEGEND:

— Noise Contours



REVISIONS

**Bickerdike
Allen
Partners**
Architecture
Acoustics
Technology

121 Salusbury Road, London, NW6 6RG
 Email: mail@bickerdikeallen.com T: 0207 625 4411
 www.bickerdikeallen.com F: 0207 625 0250

London City Airport

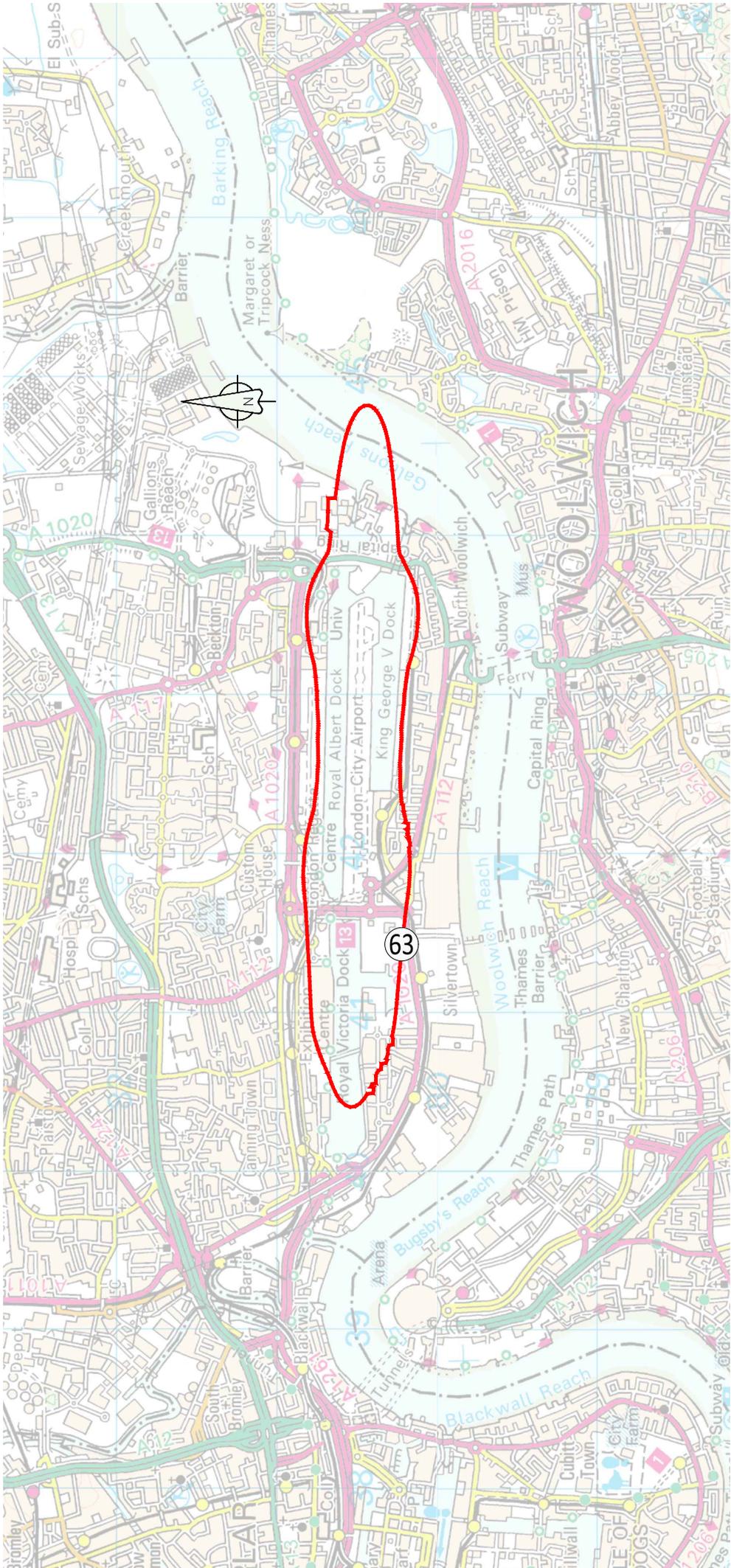
**Residential First Tier Works and
Public Buildings First Tier Works
Eligibility Boundary**

DRAWN: DR CHECKED: NW
 DATE: 03/05/2019 SCALE: 1:35000@A4

FIGURE No:
A1125.57-APR18-05_2.0

LEGEND:

— Noise Contours



REVISIONS

**Bickerdike
Allen
Partners**
Architecture
Acoustics
Technology

121 Salusbury Road, London, NW6 6RG
 Email: mail@bickerdikeallen.com T: 0207 625 4411
 www.bickerdikeallen.com F: 0207 625 0250

London City Airport

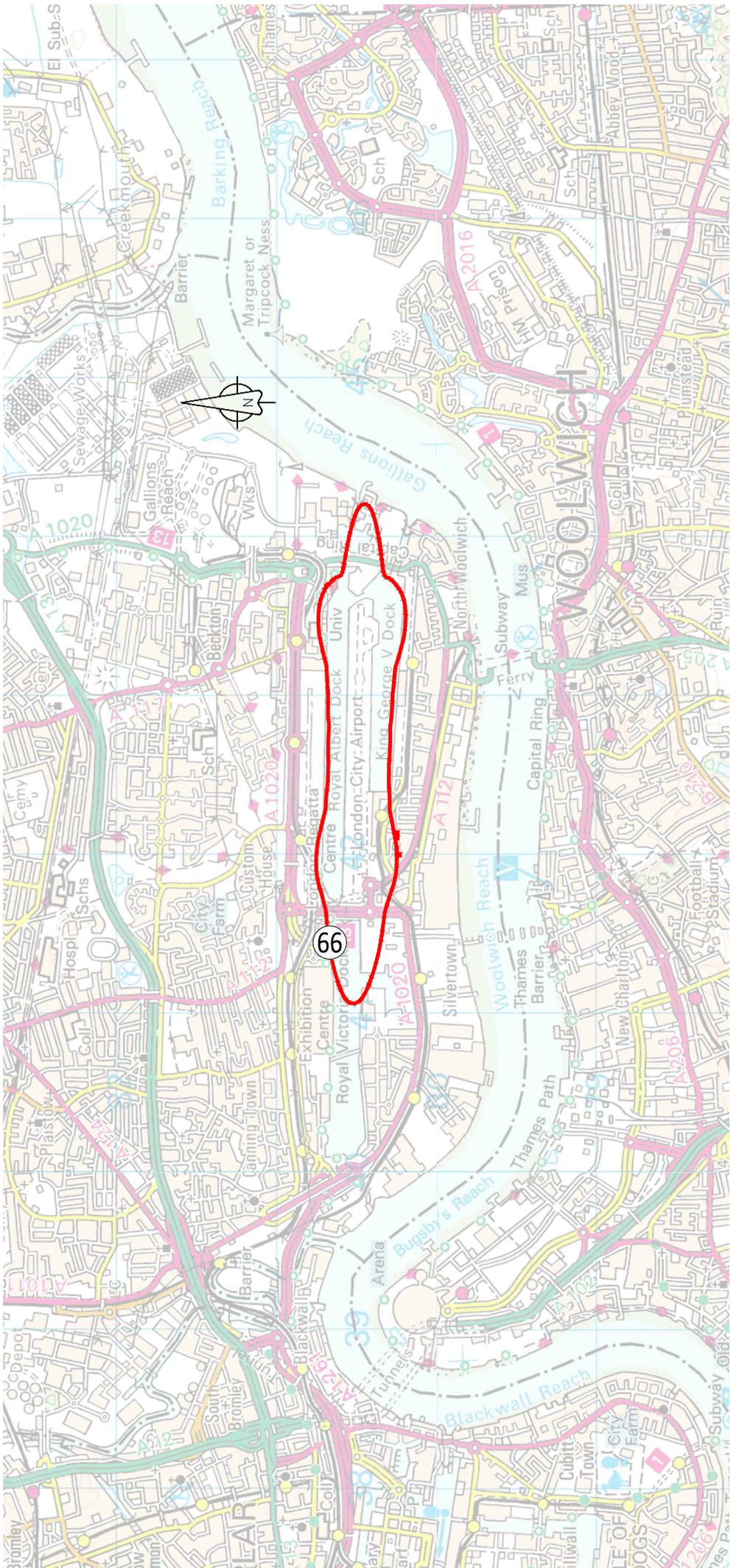
**Residential Intermediate Tier Works and
Public Buildings Intermediate Tier Works
Eligibility Boundary**

DRAWN: DR CHECKED: NW
 DATE: 18/04/2019 SCALE: 1:35000@A4

FIGURE No:
A1125.57-APR18-06_1.0

LEGEND:

— Noise Contours



REVISIONS

**Bickerdike
Allen
Partners**
Architecture
Acoustics
Technology

121 Salusbury Road, London, NW6 6RG
 Email: mail@bickerdikeallen.com T: 0207 625 4411
 www.bickerdikeallen.com F: 0207 625 0250

London City Airport

**Residential Second Tier Works and
Public Buildings Second Tier Works
Eligibility Boundary**

DRAWN: DR CHECKED: NW
 DATE: 18/04/2019 SCALE: 1:35000@A4

FIGURE No:
A1125.57-APR18-07_1.0

APPENDIX 7

Auxiliary Power Unit Usage

SCHEDULED AIRCRAFT

AIRCRAFT	A.P.U. USAGE REQUIRED? (✓)
BAe 146	✓
RJ Series	✓
Airbus A318	✓
Bombardier CS100	✓
Embraer 135	✓
Embraer 170	✓
Embraer 190	✓
ATR 42	✓
ATR 72	✓
DHC 8-100	✓
DHC 8-300	✓
DHC 8-400	✓
Fokker 50	
Dornier 328	✓
Dornier 328 Jet	✓
Saab 2000	✓

GENERAL AVIATION AIRCRAFT

AIRCRAFT	A.P.U. USAGE REQUIRED? (✓)
B300 Beechcraft	
BE20 Beechcraft 200	
BE58 PA Beechcraft Baron	
BE9L Beechcraft 900	
Beech 400 A	
Bombardier Challenger 350	✓
Bombardier Challenger 604/5	✓
Bombardier Global 5000/6000	✓

AIRCRAFT	A.P.U. USAGE REQUIRED? (✓)
C510 (Citation Mustang)	
C525 Citation Jet Series (CJ1/2/3/4)	
C550 (Citation Bravo)	
C560 (Citation V)	
C56X (Citation Excel)	✓
C680 (Citation Sovereign)	✓
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	✓
FA7X Falcon 8X	✓
G150 Gulfstream 150	✓
G280 Gulfstream 280	✓
G650 Gulfstream GVI	✓
Hawker 800 XP	✓
Learjet 40/45	✓
P180 (Piaggio Avanti)	
P68C (Partenavia 68)	
PA31 (Navajo)	
PA34 (Seneca)	
Pilatus PC24	✓

APPENDIX 8

Summary of Reverse Thrust Data

The following charts show the distribution of measured levels of arriving aircraft at NMT7 in 2018, 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} .

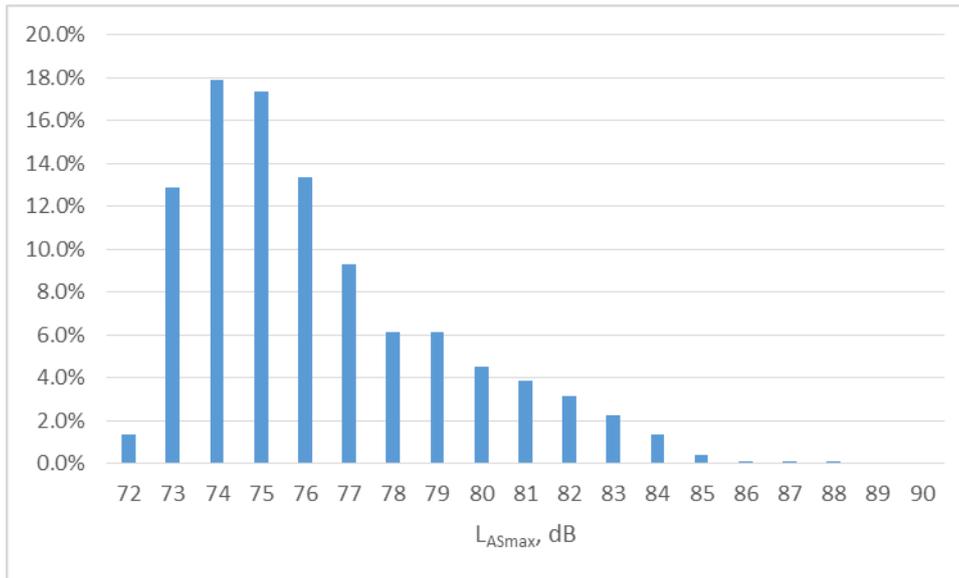


Figure A8.1: Runway 09 Distribution of NMT 7 Noise Levels, 2018 (3850 events)

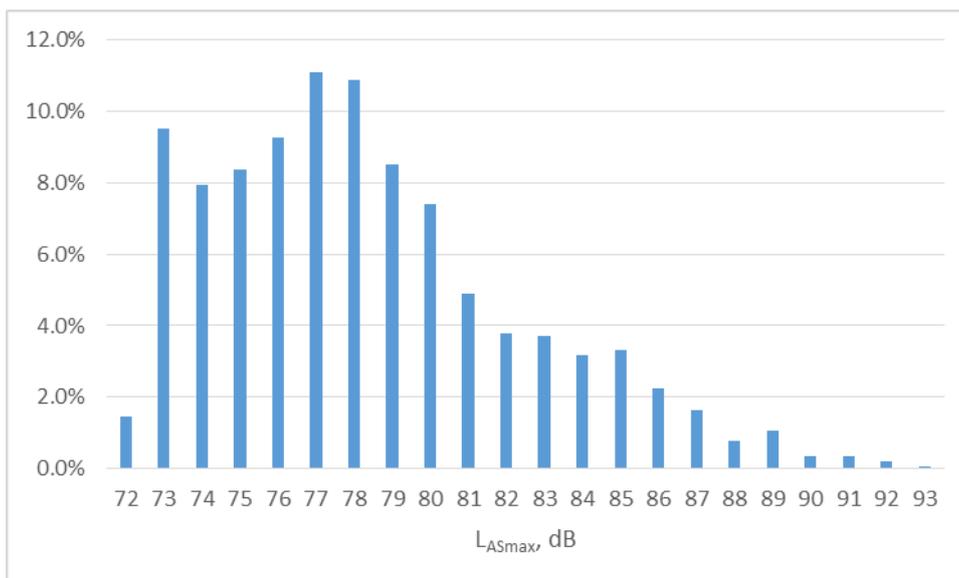


Figure A8.2: Runway 27 Distribution of NMT 7 Noise Levels, 2018 (2914 events)

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
	79		ADAMSON ROAD	E16 3QB	46000516	
	81		ADAMSON ROAD	E16 3QB	46000517	
	83		ADAMSON ROAD	E16 3QB	46000518	
	85		ADAMSON ROAD	E16 3QB	46000519	
	87		ADAMSON ROAD	E16 3QB	46000520	
	97		ADAMSON ROAD	E16 3QB	10008983025	
	99		ADAMSON ROAD	E16 3QB	10008983026	
	101		ADAMSON ROAD	E16 3QB	10008983027	
	103		ADAMSON ROAD	E16 3QB	10008983028	
	105		ADAMSON ROAD	E16 3QB	10008983029	
	115		ADAMSON ROAD	E16 3QB	46000532	
	117		ADAMSON ROAD	E16 3QB	46000533	
	119		ADAMSON ROAD	E16 3QB	46000534	
	121		ADAMSON ROAD	E16 3QB	46000535	
	123		ADAMSON ROAD	E16 3QB	46000536	
	21		AGNES CLOSE	E6 5PH	46000679	
	22		AGNES CLOSE	E6 5PH	46000680	
	13		ALNWICK ROAD	E16 3HN	46001436	
	15		ALNWICK ROAD	E16 3HN	46001437	
	17		ALNWICK ROAD	E16 3HN	46001438	
	19		ALNWICK ROAD	E16 3HN	46001439	
	21		ALNWICK ROAD	E16 3HN	46001440	

First Tier Scheme – Residential Dwellings						
Building Name	No.	Sub Building Name	Thorough-fare	Post Code	uprn	Further Info
	23		ALNWICK ROAD	E16 3HN	46001441	
	15		ATHOL SQUARE	E14 ONP	6084727	
	16		ATHOL SQUARE	E14 ONP	6084728	
	17		ATHOL SQUARE	E14 ONP	6084729	
	18		ATHOL SQUARE	E14 ONP	6084730	
	19		ATHOL SQUARE	E14 ONP	6084731	
	20		ATHOL SQUARE	E14 ONP	6084732	
	21		ATHOL SQUARE	E14 ONP	6084733	
	22		ATHOL SQUARE	E14 ONP	6084734	
	23		ATHOL SQUARE	E14 ONP	6084735	
	24		ATHOL SQUARE	E14 ONP	6084736	
	25		ATHOL SQUARE	E14 ONP	6084737	
	26		ATHOL SQUARE	E14 ONP	6084738	
	27		ATHOL SQUARE	E14 ONP	6084739	
	28		ATHOL SQUARE	E14 ONP	6084740	
	40		AUSTEN CLOSE	SE28 8AZ	100020937312	
	42		AUSTEN CLOSE	SE28 8AZ	100020937314	
	44		AUSTEN CLOSE	SE28 8AZ	100020937316	
	46		AUSTEN CLOSE	SE28 8AZ	100020937318	
	48		AUSTEN CLOSE	SE28 8AZ	100020937320	
	50		AUSTEN CLOSE	SE28 8AZ	100020937322	
	52		AUSTEN CLOSE	SE28 8AZ	100020937324	
	54		AUSTEN CLOSE	SE28 8AZ	100020937326	
	56		AUSTEN CLOSE	SE28 8AZ	100020937328	
	58		AUSTEN CLOSE	SE28 8AZ	100020937330	
	60		AUSTEN CLOSE	SE28 8AZ	100020937332	
	62		AUSTEN CLOSE	SE28 8AZ	100020937334	
	64		AUSTEN CLOSE	SE28 8AZ	100020937336	
	66		AUSTEN CLOSE	SE28 8AZ	100020937338	
	68		AUSTEN CLOSE	SE28 8AZ	100020937340	
	70		AUSTEN CLOSE	SE28 8AZ	100020937342	
	72		AUSTEN CLOSE	SE28 8AZ	100020937344	
	74		AUSTEN CLOSE	SE28 8AZ	100020937346	
	76		AUSTEN CLOSE	SE28 8AZ	100020937348	
	78		AUSTEN CLOSE	SE28 8AZ	100020937350	
	80		AUSTEN CLOSE	SE28 8AZ	100020937352	
	82		AUSTEN CLOSE	SE28 8AZ	100020937354	
	84		AUSTEN CLOSE	SE28 8AZ	100020937356	
	86		AUSTEN CLOSE	SE28 8AZ	100020937358	
	88		AUSTEN CLOSE	SE28 8AZ	100020937360	

First Tier Scheme – Residential Dwellings						
Building Name	No.	Sub Building Name	Thorough-fare	Post Code	uprn	Further Info
	90		AUSTEN CLOSE	SE28 8AZ	100020937362	
	92		AUSTEN CLOSE	SE28 8AZ	100020937363	
	94		AUSTEN CLOSE	SE28 8AZ	100020937364	
	96		AUSTEN CLOSE	SE28 8AZ	100020937365	
	98		AUSTEN CLOSE	SE28 8AZ	100020937366	
	100		AUSTEN CLOSE	SE28 8AZ	100020937367	
	102		AUSTEN CLOSE	SE28 8AZ	100020937368	
	104		AUSTEN CLOSE	SE28 8AZ	100020937369	
	106		AUSTEN CLOSE	SE28 8AZ	100020937370	
	108		AUSTEN CLOSE	SE28 8AZ	100020937371	
	110		AUSTEN CLOSE	SE28 8AZ	100020937372	
	112		AUSTEN CLOSE	SE28 8AZ	100020937373	
	114		AUSTEN CLOSE	SE28 8AZ	100020937374	
	14		BASEING CLOSE	E6 5PJ	46004312	
	15		BASEING CLOSE	E6 5PJ	46004313	
	112		BATTERY ROAD	SE28 0JQ	10010211064	
	114		BATTERY ROAD	SE28 0JQ	10010211059	
	116		BATTERY ROAD	SE28 0JQ	10010211065	
	118		BATTERY ROAD	SE28 0JQ	10010211066	
	120		BATTERY ROAD	SE28 0JQ	10010211067	
	122		BATTERY ROAD	SE28 0JQ	10010211068	
	124		BATTERY ROAD	SE28 0JQ	10010211069	
	126		BATTERY ROAD	SE28 0JQ	10010211070	
	128		BATTERY ROAD	SE28 0JQ	10010211071	
	130		BATTERY ROAD	SE28 0JQ	10010211072	
	22		BAXTER ROAD	E16 3HD	46088595	
	24		BAXTER ROAD	E16 3HD	46088596	
	26		BAXTER ROAD	E16 3HD	46088597	
	24	FLAT 1	BAZELY STREET	E14 0ES	6167935	
	24	FLAT 2	BAZELY STREET	E14 0ES	6167936	
	24	FLAT 3	BAZELY STREET	E14 0ES	6167937	
	26		BAZELY STREET	E14 0ES	6648965	
	26	ROOM A	BAZELY STREET	E14 0ES	6171911	
	26	ROOM B	BAZELY STREET	E14 0ES	6171912	
THE GREENWICH PENSIONER	28	FLAT	BAZELY STREET	E14 0ES	6153304	
	35		BAZELY STREET	E14 0ES	6169758	
	37		BAZELY STREET	E14 0ES	6082564	
	39		BAZELY STREET	E14 0ES	6082565	
	41		BAZELY STREET	E14 0ES	6082566	

First Tier Scheme – Residential Dwellings						
Building Name	No.	Sub Building Name	Thorough-fare	Post Code	uprn	Further Info
	43		BAZELY STREET	E14 0ES	6082567	
	45		BAZELY STREET	E14 0ES	6082568	
	47		BAZELY STREET	E14 0ES	6169759	
	49	BASEMENT AND GROUND FLOOR	BAZELY STREET	E14 0ES	6649398	
	49		BAZELY STREET	E14 0ES	6082570	
	53		BAZELY STREET	E14 0ES	6082572	
	55		BAZELY STREET	E14 0ES	6082573	
	57		BAZELY STREET	E14 0ES	6082574	
	59		BAZELY STREET	E14 0ES	6082575	
	61		BAZELY STREET	E14 0ES	6082576	
	63		BAZELY STREET	E14 0ES	6082577	
LAWLESS HOUSE		FLAT 1	BAZELY STREET	E14 0ET	6082631	
LAWLESS HOUSE		FLAT 10	BAZELY STREET	E14 0ET	6082632	
LAWLESS HOUSE		FLAT 11	BAZELY STREET	E14 0ET	6082633	
LAWLESS HOUSE		FLAT 12	BAZELY STREET	E14 0ET	6082634	
LAWLESS HOUSE		FLAT 13	BAZELY STREET	E14 0ET	6082635	
LAWLESS HOUSE		FLAT 14	BAZELY STREET	E14 0ET	6082636	
LAWLESS HOUSE		FLAT 15	BAZELY STREET	E14 0ET	6082637	
LAWLESS HOUSE		FLAT 16	BAZELY STREET	E14 0ET	6082638	
LAWLESS HOUSE		FLAT 2	BAZELY STREET	E14 0ET	6082639	
LAWLESS HOUSE		FLAT 3	BAZELY STREET	E14 0ET	6082640	
LAWLESS HOUSE		FLAT 4	BAZELY STREET	E14 0ET	6082641	
LAWLESS HOUSE		FLAT 5	BAZELY STREET	E14 0ET	6082642	
LAWLESS HOUSE		FLAT 6	BAZELY STREET	E14 0ET	6082643	
LAWLESS HOUSE		FLAT 7	BAZELY STREET	E14 0ET	6082644	
LAWLESS HOUSE		FLAT 8	BAZELY STREET	E14 0ET	6082645	
LAWLESS HOUSE		FLAT 9	BAZELY STREET	E14 0ET	6082646	
	51A		BAZELY STREET	E14 0ES	6146643	
	51B		BAZELY STREET	E14 0ES	6088592	
	1		BELLARMINE CLOSE	SE28 0JG	10010211025	
	15		BENTHAM ROAD	SE28 8EG	100020940116	
	17		BENTHAM ROAD	SE28 8EG	100020940117	
	19		BENTHAM ROAD	SE28 8EG	100020940118	
	21		BENTHAM ROAD	SE28 8EG	100020940119	
	23		BENTHAM ROAD	SE28 8EG	100020940120	
	25		BENTHAM ROAD	SE28 8EG	100020940121	
	27		BENTHAM ROAD	SE28 8EG	100020940122	

First Tier Scheme – Residential Dwellings						
Building Name	No.	Sub Building Name	Thorough-fare	Post Code	uprn	Further Info
	29		BENTHAM ROAD	SE28 8EG	100020940123	
	31		BENTHAM ROAD	SE28 8EG	100020940124	
POPLAR DOCK MARINA		BERTH 14	BOARDWALK PLACE	E14 5SH	6719522	
POPLAR DOCK MARINA		BERTH 43	BOARDWALK PLACE	E14 5SH	6649260	
	16		BOOTH CLOSE	SE28 8BW	100020942579	
	17		BOOTH CLOSE	SE28 8BW	100020942580	
	18		BOOTH CLOSE	SE28 8BW	100020942581	
	19		BOOTH CLOSE	SE28 8BW	100020942582	
	20		BOOTH CLOSE	SE28 8BW	100020942583	
	21		BOOTH CLOSE	SE28 8BW	100020942584	
	22		BOOTH CLOSE	SE28 8BW	100020942585	
	23		BOOTH CLOSE	SE28 8BW	100020942586	
	24		BOOTH CLOSE	SE28 8BW	100020942587	
	25		BOOTH CLOSE	SE28 8BW	100020942588	
	26		BOOTH CLOSE	SE28 8BW	100020942589	
	27		BOOTH CLOSE	SE28 8BW	100020942590	
	28		BOOTH CLOSE	SE28 8BW	100020942591	
	29		BOOTH CLOSE	SE28 8BW	100020942592	
	30		BOOTH CLOSE	SE28 8BW	100020942593	
	31		BOOTH CLOSE	SE28 8BW	100020942594	
	32		BOOTH CLOSE	SE28 8BW	100020942595	
	33		BOOTH CLOSE	SE28 8BW	100020942596	
	34		BOOTH CLOSE	SE28 8BW	100020942597	
	35		BOOTH CLOSE	SE28 8BW	100020942598	
	36		BOOTH CLOSE	SE28 8BW	100020942599	
	37		BOOTH CLOSE	SE28 8BW	100020942600	
	38		BOOTH CLOSE	SE28 8BW	100020942601	
	39		BOOTH CLOSE	SE28 8BW	100020942602	
	40		BOOTH CLOSE	SE28 8BW	100020942603	
	41	FLAT 1	BOOTH CLOSE	SE28 8BW	10010254198	
	41	FLAT 2	BOOTH CLOSE	SE28 8BW	10010254199	
	41	FLAT 3	BOOTH CLOSE	SE28 8BW	10010254200	
	41	FLAT 4	BOOTH CLOSE	SE28 8BW	10010254201	
	41	FLAT 5	BOOTH CLOSE	SE28 8BW	10010254202	
	42		BOOTH CLOSE	SE28 8BW	100020942605	
	43		BOOTH CLOSE	SE28 8BW	100020942606	
	44		BOOTH CLOSE	SE28 8BW	100020942607	
	45		BOOTH CLOSE	SE28 8BW	100020942608	

First Tier Scheme – Residential Dwellings						
Building Name	No.	Sub Building Name	Thorough-fare	Post Code	uprn	Further Info
	46		BOOTH CLOSE	SE28 8BW	100020942609	
	47	STUDIO FLAT 1	BOOTH CLOSE	SE28 8BW	10010260306	
	47	STUDIO FLAT 2	BOOTH CLOSE	SE28 8BW	10010260307	
	47	STUDIO FLAT 3	BOOTH CLOSE	SE28 8BW	10010260308	
	47	STUDIO FLAT 4	BOOTH CLOSE	SE28 8BW	10010260309	
	47	STUDIO FLAT 5	BOOTH CLOSE	SE28 8BW	10010260310	
	47	STUDIO FLAT 6	BOOTH CLOSE	SE28 8BW	10010260311	
	48		BOOTH CLOSE	SE28 8BW	100020942611	
	49		BOOTH CLOSE	SE28 8BW	100020942612	
	50		BOOTH CLOSE	SE28 8BW	100020942613	
	51		BOOTH CLOSE	SE28 8BW	100020942614	
	52	FLAT 1	BOOTH CLOSE	SE28 8BW	10010257505	
	52	FLAT 2	BOOTH CLOSE	SE28 8BW	10010257506	
	52	FLAT 3	BOOTH CLOSE	SE28 8BW	10010257507	
	52	FLAT 4	BOOTH CLOSE	SE28 8BW	10010257508	
	52	FLAT 5	BOOTH CLOSE	SE28 8BW	10010257509	
	52	FLAT 6	BOOTH CLOSE	SE28 8BW	10010257510	
	53		BOOTH CLOSE	SE28 8BW	100020942616	
	54		BOOTH CLOSE	SE28 8BW	100020942617	
	55		BOOTH CLOSE	SE28 8BW	100020942618	
	56		BOOTH CLOSE	SE28 8BW	100020942619	
	57		BOOTH CLOSE	SE28 8BW	100020942620	
	5		BOREHAM AVENUE	E16 3AG	46006776	
	7		BOREHAM AVENUE	E16 3AG	46006778	
	9		BOREHAM AVENUE	E16 3AG	46006780	
	11		BOREHAM AVENUE	E16 3AG	46006782	
	34		CAMPION CLOSE	E6 5PF	10012838980	
	10		CAMPION PLACE	SE28 8EN	100020947567	
	11		CAMPION PLACE	SE28 8EN	100020947568	
	12		CAMPION PLACE	SE28 8EN	100020947569	
	13		CAMPION PLACE	SE28 8EN	100020947570	
	14		CAMPION PLACE	SE28 8EN	100020947571	
	15		CAMPION PLACE	SE28 8EN	100020947572	
	35		CLOCK TOWER MEWS	SE28 8FA	200001864185	
	36		CLOCK TOWER MEWS	SE28 8FA	200001864186	

First Tier Scheme – Residential Dwellings						
Building Name	No.	Sub Building Name	Thorough-fare	Post Code	uprn	Further Info
	37		CLOCK TOWER MEWS	SE28 8FA	200001864187	
	38		CLOCK TOWER MEWS	SE28 8FA	200001864188	
	78		COOLFIN ROAD	E16 3BE	46017986	
	80		COOLFIN ROAD	E16 3BE	46017988	
	4		COURTAULDS CLOSE	SE28 8RH	10010194787	
	5		COURTAULDS CLOSE	SE28 8RH	10010194788	
	6		COURTAULDS CLOSE	SE28 8RH	10010194789	
	7		COURTAULDS CLOSE	SE28 8RH	10010194790	
	8		DELISLE ROAD	SE28 0JE	10010203557	
	10		DELISLE ROAD	SE28 0JE	10010203558	
	12		DELISLE ROAD	SE28 0JE	10010203559	
	20		DELISLE ROAD	SE28 0JE	10010203563	
	22		DELISLE ROAD	SE28 0JE	10010203564	
	24		DELISLE ROAD	SE28 0JE	10010203565	
	26		DELISLE ROAD	SE28 0JE	10010203566	
	28		DELISLE ROAD	SE28 0JE	10010203567	
	25		EPSTEIN ROAD	SE28 8DQ	100020962084	
	27		EPSTEIN ROAD	SE28 8DQ	100020962086	
	29		EPSTEIN ROAD	SE28 8DQ	100020962088	
	31		EPSTEIN ROAD	SE28 8DQ	100020962090	
	51		EPSTEIN ROAD	SE28 8DQ	100020962110	
	53		EPSTEIN ROAD	SE28 8DQ	100020962112	
	1		FELSTED ROAD	E16 3HL	46088220	
	3		FELSTED ROAD	E16 3HL	46088211	
	5		FELSTED ROAD	E16 3HL	46088212	
	7		FELSTED ROAD	E16 3HL	46088213	
	9		FELSTED ROAD	E16 3HL	46088214	
	11		FELSTED ROAD	E16 3HL	46088215	
	13		FELSTED ROAD	E16 3HL	46088216	
	15		FELSTED ROAD	E16 3HL	46088217	
	17		FELSTED ROAD	E16 3HL	46088218	
	19		FELSTED ROAD	E16 3HL	46088219	
	21		FELSTED ROAD	E16 3HL	46088221	
	23		FELSTED ROAD	E16 3HL	46088222	
	29		GALSWORTHY CLOSE	SE28 8DB	100020966527	
	30		GALSWORTHY CLOSE	SE28 8DB	100020966528	
	31		GALSWORTHY CLOSE	SE28 8DB	100020966529	
	32		GALSWORTHY CLOSE	SE28 8DB	100020966530	
	33		GALSWORTHY CLOSE	SE28 8DB	100020966531	
	34		GALSWORTHY CLOSE	SE28 8DB	100020966532	

First Tier Scheme – Residential Dwellings						
Building Name	No.	Sub Building Name	Thorough-fare	Post Code	uprn	Further Info
	35		GALSWORTHY CLOSE	SE28 8DB	100020966533	
	36		GALSWORTHY CLOSE	SE28 8DB	100020966534	
	37		GALSWORTHY CLOSE	SE28 8DB	100020966535	
	1		GORSE CLOSE	E16 1LT	46086229	
	2		GORSE CLOSE	E16 1LT	46086235	
	3		GORSE CLOSE	E16 1LT	46086236	
	4		GORSE CLOSE	E16 1LT	46086237	
	5		GORSE CLOSE	E16 1LT	46086238	
	6		GORSE CLOSE	E16 1LT	46087399	
	1		GRESHAM ROAD	E16 3DU	46032429	
	3		GRESHAM ROAD	E16 3DU	46032434	
	5		GRESHAM ROAD	E16 3DU	46032438	
	7		GRESHAM ROAD	E16 3DU	46032442	
	9		GRESHAM ROAD	E16 3DU	46032446	
	11		GRESHAM ROAD	E16 3DU	46032450	
	13		GRESHAM ROAD	E16 3DU	46032454	
	15		GRESHAM ROAD	E16 3DU	46032458	
	17		GRESHAM ROAD	E16 3DU	46032462	
	19		GRESHAM ROAD	E16 3DU	46032465	
	21		GRESHAM ROAD	E16 3DU	46032469	
	23		GRESHAM ROAD	E16 3DU	46032473	
	25		GRESHAM ROAD	E16 3DU	46032477	
	27		GRESHAM ROAD	E16 3DU	46032481	
	29		GRESHAM ROAD	E16 3DU	46032486	
	31		GRESHAM ROAD	E16 3DU	46032489	
	33		GRESHAM ROAD	E16 3DU	46032492	
	35		GRESHAM ROAD	E16 3DU	46032495	
	37		GRESHAM ROAD	E16 3DU	46032498	
	38		GRESHAM ROAD	E16 3DU	46032500	
	40		GRESHAM ROAD	E16 3DU	46032503	
	42		GRESHAM ROAD	E16 3DU	46032506	
	44		GRESHAM ROAD	E16 3DU	46032509	
	46		GRESHAM ROAD	E16 3DU	46032512	
	8		JADE CLOSE	E16 3TY	46039909	
	9		JADE CLOSE	E16 3TY	46039910	
	10		JADE CLOSE	E16 3TY	46039911	
	11		JADE CLOSE	E16 3TY	46039912	
	12		JADE CLOSE	E16 3TY	46039913	
	1		JUDE STREET	E16 1HR	46040597	
	3		JUDE STREET	E16 1HR	46040598	

First Tier Scheme – Residential Dwellings						
Building Name	No.	Sub Building Name	Thorough-fare	Post Code	uprn	Further Info
	5		JUDE STREET	E16 1HR	46040599	
	7		JUDE STREET	E16 1HR	46040600	
	9		JUDE STREET	E16 1HR	46040601	
	2		MARATHON WAY	SE28 0JH	10010211035	
	4		MARATHON WAY	SE28 0JH	10010211036	
	6		MARATHON WAY	SE28 0JH	10010211032	
	8		MARATHON WAY	SE28 0JH	10010211037	
	9		MARATHON WAY	SE28 0JJ	10010211039	
	10		MARATHON WAY	SE28 0JH	10010211033	
	11		MARATHON WAY	SE28 0JJ	10010211040	
	13		MARATHON WAY	SE28 0JJ	10010211041	
	15		MARATHON WAY	SE28 0JJ	10010211042	
	25		MARSHALL PATH	SE28 8DX	100020985482	
	26		MARSHALL PATH	SE28 8DX	100020985483	
	27		MARSHALL PATH	SE28 8DX	100020985484	
	28		MARSHALL PATH	SE28 8DX	100020985485	
	29		MARSHALL PATH	SE28 8DX	100020985486	
	30		MARSHALL PATH	SE28 8DX	100020985487	
	31		MARSHALL PATH	SE28 8DX	100020985488	
	32		MARSHALL PATH	SE28 8DX	100020985489	
	33		MARSHALL PATH	SE28 8DX	100020985490	
	34		MARSHALL PATH	SE28 8DX	100020985491	
	9		MERBURY ROAD	SE28 0HS	100020987475	
	11		MERBURY ROAD	SE28 0HS	100020987477	
	13		MERBURY ROAD	SE28 0HS	100020987479	
	15		MERBURY ROAD	SE28 0HS	100020987481	
	5		MOUNTAGUE PLACE	E14 0EX	6082586	
	6	FLAT A	MOUNTAGUE PLACE	E14 0EX	6144381	
	6	FLAT B	MOUNTAGUE PLACE	E14 0EX	6144382	
	7		MOUNTAGUE PLACE	E14 0EX	6082588	
	8		MOUNTAGUE PLACE	E14 0EX	6082589	
	9		MOUNTAGUE PLACE	E14 0EX	6082590	
	10		MOUNTAGUE PLACE	E14 0EX	6082583	
	11	FLAT BASEMENT AND GROUND	MOUNTAGUE PLACE	E14 0EX	6144379	
	11	FLAT FIRST FLOOR	MOUNTAGUE PLACE	E14 0EX	6144378	

First Tier Scheme – Residential Dwellings						
Building Name	No.	Sub Building Name	Thorough-fare	Post Code	uprn	Further Info
	11	FLAT SECOND AND THIRD	MOUNTAGUE PLACE	E14 0EX	6144380	
	30		NEWACRES ROAD	SE28 0LD	10010194406	
	31		NEWACRES ROAD	SE28 0LD	10010194407	
	32		NEWACRES ROAD	SE28 0LD	10010195243	
	33		NEWACRES ROAD	SE28 0LD	10010194408	
	34		NEWACRES ROAD	SE28 0LD	10010194409	
	40		NEWACRES ROAD	SE28 0LB	10010194471	
	41		NEWACRES ROAD	SE28 0LB	10010194472	
	42		NEWACRES ROAD	SE28 0LB	10010194473	
	43		NEWACRES ROAD	SE28 0LB	10010194474	
	44		NEWACRES ROAD	SE28 0LB	10010194475	
	45		NEWACRES ROAD	SE28 0LB	10010194476	
HOPE AND ANCHOR PUBLIC HOUSE	14	FLAT	NEWBY PLACE	E14 0EY	6653862	
COLLINS HOUSE		FLAT 1	NEWBY PLACE	E14 0AX	6082945	
COLLINS HOUSE		FLAT 10	NEWBY PLACE	E14 0AX	6082946	
COLLINS HOUSE		FLAT 11	NEWBY PLACE	E14 0AX	6082947	
COLLINS HOUSE		FLAT 12	NEWBY PLACE	E14 0AX	6082948	
COLLINS HOUSE		FLAT 2	NEWBY PLACE	E14 0AX	6082949	
COLLINS HOUSE		FLAT 3	NEWBY PLACE	E14 0AX	6082950	
COLLINS HOUSE		FLAT 4	NEWBY PLACE	E14 0AX	6082951	
COLLINS HOUSE		FLAT 5	NEWBY PLACE	E14 0AX	6082952	
COLLINS HOUSE		FLAT 6	NEWBY PLACE	E14 0AX	6082953	
COLLINS HOUSE		FLAT 7	NEWBY PLACE	E14 0AX	6082954	
COLLINS HOUSE		FLAT 8	NEWBY PLACE	E14 0AX	6082955	
COLLINS HOUSE		FLAT 9	NEWBY PLACE	E14 0AX	6082956	
NEWBY HOUSE		FLAT 1	NEWBY PLACE	E14 0AY	6082592	
NEWBY HOUSE		FLAT 2	NEWBY PLACE	E14 0AY	6082593	
NEWBY HOUSE		FLAT 3	NEWBY PLACE	E14 0AY	6082594	
NEWBY HOUSE		FLAT 4	NEWBY PLACE	E14 0AY	6082595	
NEWBY HOUSE		FLAT 5	NEWBY PLACE	E14 0AY	6082596	
NEWBY HOUSE		FLAT 6	NEWBY PLACE	E14 0AY	6082597	
NEWBY HOUSE		FLAT 7	NEWBY PLACE	E14 0AY	6082598	
NEWBY HOUSE		FLAT 8	NEWBY PLACE	E14 0AY	6082599	
VIRGINIA HOUSE		FLAT 1	NEWBY PLACE	E14 0EZ	6082667	
VIRGINIA HOUSE		FLAT 10	NEWBY PLACE	E14 0EZ	6082668	
VIRGINIA HOUSE		FLAT 11	NEWBY PLACE	E14 0EZ	6082669	
VIRGINIA HOUSE		FLAT 12	NEWBY PLACE	E14 0EZ	6082670	

First Tier Scheme – Residential Dwellings						
Building Name	No.	Sub Building Name	Thorough-fare	Post Code	uprn	Further Info
VIRGINIA HOUSE		FLAT 13	NEWBY PLACE	E14 0EZ	6082671	
VIRGINIA HOUSE		FLAT 14	NEWBY PLACE	E14 0EZ	6082672	
VIRGINIA HOUSE		FLAT 15	NEWBY PLACE	E14 0EZ	6082673	
VIRGINIA HOUSE		FLAT 16	NEWBY PLACE	E14 0EZ	6082674	
VIRGINIA HOUSE		FLAT 17	NEWBY PLACE	E14 0EZ	6082675	
VIRGINIA HOUSE		FLAT 18	NEWBY PLACE	E14 0EZ	6082676	
VIRGINIA HOUSE		FLAT 19	NEWBY PLACE	E14 0EZ	6082677	
VIRGINIA HOUSE		FLAT 2	NEWBY PLACE	E14 0EZ	6082678	
VIRGINIA HOUSE		FLAT 20	NEWBY PLACE	E14 0EZ	6082679	
VIRGINIA HOUSE		FLAT 21	NEWBY PLACE	E14 0EZ	6082680	
VIRGINIA HOUSE		FLAT 22	NEWBY PLACE	E14 0EZ	6082681	
VIRGINIA HOUSE		FLAT 3	NEWBY PLACE	E14 0EZ	6082682	
VIRGINIA HOUSE		FLAT 4	NEWBY PLACE	E14 0EZ	6082683	
VIRGINIA HOUSE		FLAT 5	NEWBY PLACE	E14 0EZ	6082684	
VIRGINIA HOUSE		FLAT 6	NEWBY PLACE	E14 0EZ	6082685	
VIRGINIA HOUSE		FLAT 7	NEWBY PLACE	E14 0EZ	6082686	
VIRGINIA HOUSE		FLAT 8	NEWBY PLACE	E14 0EZ	6082687	
VIRGINIA HOUSE		FLAT 9	NEWBY PLACE	E14 0EZ	6082688	
	119		NEWMARSH ROAD	SE28 8TP	200002801774	
	121		NEWMARSH ROAD	SE28 8TP	200002801775	
	123		NEWMARSH ROAD	SE28 8TP	200002801776	
	125		NEWMARSH ROAD	SE28 8TP	200002801777	
	127		NEWMARSH ROAD	SE28 8TP	200002801778	
	129		NEWMARSH ROAD	SE28 8TP	200002801779	
	33		PASSFIELD PATH	SE28 8BT	100020992737	
	34		PASSFIELD PATH	SE28 8BT	100020992738	
	35		PASSFIELD PATH	SE28 8BT	100020992739	
	36		PASSFIELD PATH	SE28 8BT	100020992740	
	37		PASSFIELD PATH	SE28 8BT	100020992741	
	38		PASSFIELD PATH	SE28 8BT	100020992742	
	39		PASSFIELD PATH	SE28 8BT	100020992743	
	40		PASSFIELD PATH	SE28 8BT	100020992744	
	41		PASSFIELD PATH	SE28 8BT	100020992745	
	42		PASSFIELD PATH	SE28 8BT	100020992746	
	43		PASSFIELD PATH	SE28 8BT	100020992747	
	44		PASSFIELD PATH	SE28 8BT	100020992748	
	45		PASSFIELD PATH	SE28 8BT	100020992749	
	46		PASSFIELD PATH	SE28 8BT	100020992750	
	47		PASSFIELD PATH	SE28 8BT	100020992751	
	48		PASSFIELD PATH	SE28 8BT	100020992752	

First Tier Scheme – Residential Dwellings						
Building Name	No.	Sub Building Name	Thorough-fare	Post Code	uprn	Further Info
	49		PASSFIELD PATH	SE28 8BT	100020992753	
	50		PASSFIELD PATH	SE28 8BT	100020992754	
	20		PITFIELD CRESCENT	SE28 8RG	100020993951	
	22		PITFIELD CRESCENT	SE28 8RG	100020993953	
	24		PITFIELD CRESCENT	SE28 8RG	100020993955	
	26		PITFIELD CRESCENT	SE28 8RG	100020993957	
	28		PITFIELD CRESCENT	SE28 8RG	100020993959	
	30		PITFIELD CRESCENT	SE28 8RG	100020993961	
	32		PITFIELD CRESCENT	SE28 8RG	100020993963	
CARAWAY HEIGHTS	240	FLAT 1	POPLAR HIGH STREET	E14 0BG	6082060	
CARAWAY HEIGHTS	240	FLAT 10	POPLAR HIGH STREET	E14 0BG	6082069	
CARAWAY HEIGHTS	240	FLAT 11	POPLAR HIGH STREET	E14 0BG	6082070	
CARAWAY HEIGHTS	240	FLAT 12	POPLAR HIGH STREET	E14 0BG	6082071	
CARAWAY HEIGHTS	240	FLAT 13	POPLAR HIGH STREET	E14 0BG	6082072	
CARAWAY HEIGHTS	240	FLAT 14	POPLAR HIGH STREET	E14 0BG	6082073	
CARAWAY HEIGHTS	240	FLAT 15	POPLAR HIGH STREET	E14 0BG	6082074	
CARAWAY HEIGHTS	240	FLAT 16	POPLAR HIGH STREET	E14 0BG	6082075	
CARAWAY HEIGHTS	240	FLAT 17	POPLAR HIGH STREET	E14 0BG	6082076	
CARAWAY HEIGHTS	240	FLAT 18	POPLAR HIGH STREET	E14 0BG	6082077	
CARAWAY HEIGHTS	240	FLAT 19	POPLAR HIGH STREET	E14 0BG	6082078	
CARAWAY HEIGHTS	240	FLAT 2	POPLAR HIGH STREET	E14 0BG	6082061	
CARAWAY HEIGHTS	240	FLAT 20	POPLAR HIGH STREET	E14 0BG	6082079	
CARAWAY HEIGHTS	240	FLAT 21	POPLAR HIGH STREET	E14 0BG	6082080	
CARAWAY HEIGHTS	240	FLAT 22	POPLAR HIGH STREET	E14 0BG	6082081	
CARAWAY HEIGHTS	240	FLAT 23	POPLAR HIGH STREET	E14 0BG	6082082	
CARAWAY HEIGHTS	240	FLAT 24	POPLAR HIGH STREET	E14 0BG	6082083	

First Tier Scheme – Residential Dwellings						
Building Name	No.	Sub Building Name	Thorough-fare	Post Code	uprn	Further Info
CARAWAY HEIGHTS	240	FLAT 25	POPLAR HIGH STREET	E14 0BG	6082084	
CARAWAY HEIGHTS	240	FLAT 26	POPLAR HIGH STREET	E14 0BG	6082085	
CARAWAY HEIGHTS	240	FLAT 27	POPLAR HIGH STREET	E14 0BG	6082086	
CARAWAY HEIGHTS	240	FLAT 28	POPLAR HIGH STREET	E14 0BG	6082087	
CARAWAY HEIGHTS	240	FLAT 29	POPLAR HIGH STREET	E14 0BG	6082088	
CARAWAY HEIGHTS	240	FLAT 3	POPLAR HIGH STREET	E14 0BG	6082062	
CARAWAY HEIGHTS	240	FLAT 30	POPLAR HIGH STREET	E14 0BG	6082089	
CARAWAY HEIGHTS	240	FLAT 31	POPLAR HIGH STREET	E14 0BG	6082090	
CARAWAY HEIGHTS	240	FLAT 32	POPLAR HIGH STREET	E14 0BG	6082091	
CARAWAY HEIGHTS	240	FLAT 33	POPLAR HIGH STREET	E14 0BG	6082092	
CARAWAY HEIGHTS	240	FLAT 34	POPLAR HIGH STREET	E14 0BG	6082093	
CARAWAY HEIGHTS	240	FLAT 35	POPLAR HIGH STREET	E14 0BG	6082094	
CARAWAY HEIGHTS	240	FLAT 36	POPLAR HIGH STREET	E14 0BG	6082095	
CARAWAY HEIGHTS	240	FLAT 37	POPLAR HIGH STREET	E14 0BG	6082096	
CARAWAY HEIGHTS	240	FLAT 38	POPLAR HIGH STREET	E14 0BG	6082097	
CARAWAY HEIGHTS	240	FLAT 39	POPLAR HIGH STREET	E14 0BG	6082098	
CARAWAY HEIGHTS	240	FLAT 4	POPLAR HIGH STREET	E14 0BG	6082063	
CARAWAY HEIGHTS	240	FLAT 40	POPLAR HIGH STREET	E14 0BG	6082099	
CARAWAY HEIGHTS	240	FLAT 41	POPLAR HIGH STREET	E14 0BG	6082100	
CARAWAY HEIGHTS	240	FLAT 42	POPLAR HIGH STREET	E14 0BG	6082101	
CARAWAY HEIGHTS	240	FLAT 43	POPLAR HIGH STREET	E14 0BG	6082102	
CARAWAY HEIGHTS	240	FLAT 44	POPLAR HIGH STREET	E14 0BG	6082103	

First Tier Scheme – Residential Dwellings						
Building Name	No.	Sub Building Name	Thorough-fare	Post Code	uprn	Further Info
CARAWAY HEIGHTS	240	FLAT 45	POPLAR HIGH STREET	E14 0BG	6082104	
CARAWAY HEIGHTS	240	FLAT 46	POPLAR HIGH STREET	E14 0BG	6082105	
CARAWAY HEIGHTS	240	FLAT 47	POPLAR HIGH STREET	E14 0BG	6082106	
CARAWAY HEIGHTS	240	FLAT 48	POPLAR HIGH STREET	E14 0BG	6082107	
CARAWAY HEIGHTS	240	FLAT 49	POPLAR HIGH STREET	E14 0BG	6082108	
CARAWAY HEIGHTS	240	FLAT 5	POPLAR HIGH STREET	E14 0BG	6082064	
CARAWAY HEIGHTS	240	FLAT 50	POPLAR HIGH STREET	E14 0BG	6082109	
CARAWAY HEIGHTS	240	FLAT 51	POPLAR HIGH STREET	E14 0BG	6082110	
CARAWAY HEIGHTS	240	FLAT 52	POPLAR HIGH STREET	E14 0BG	6082111	
CARAWAY HEIGHTS	240	FLAT 53	POPLAR HIGH STREET	E14 0BG	6172001	
CARAWAY HEIGHTS	240	FLAT 54	POPLAR HIGH STREET	E14 0BG	6172002	
CARAWAY HEIGHTS	240	FLAT 55	POPLAR HIGH STREET	E14 0BG	6172003	
CARAWAY HEIGHTS	240	FLAT 56	POPLAR HIGH STREET	E14 0BG	6172004	
CARAWAY HEIGHTS	240	FLAT 6	POPLAR HIGH STREET	E14 0BG	6082065	
CARAWAY HEIGHTS	240	FLAT 7	POPLAR HIGH STREET	E14 0BG	6082066	
CARAWAY HEIGHTS	240	FLAT 8	POPLAR HIGH STREET	E14 0BG	6082067	
CARAWAY HEIGHTS	240	FLAT 9	POPLAR HIGH STREET	E14 0BG	6082068	
	242		POPLAR HIGH STREET	E14 0BB	6352615	
	256		POPLAR HIGH STREET	E14 0BB	6082602	
	258		POPLAR HIGH STREET	E14 0BB	6083012	
CARMICHAEL HOUSE		FLAT 1	POPLAR HIGH STREET	E14 0AZ	6082957	
CARMICHAEL HOUSE		FLAT 10	POPLAR HIGH STREET	E14 0AZ	6082958	
CARMICHAEL HOUSE		FLAT 11	POPLAR HIGH STREET	E14 0AZ	6082959	

First Tier Scheme – Residential Dwellings						
Building Name	No.	Sub Building Name	Thorough-fare	Post Code	uprn	Further Info
CARMICHAEL HOUSE		FLAT 12	POPLAR HIGH STREET	E14 0AZ	6082960	
CARMICHAEL HOUSE		FLAT 2	POPLAR HIGH STREET	E14 0AZ	6082961	
CARMICHAEL HOUSE		FLAT 3	POPLAR HIGH STREET	E14 0AZ	6082962	
CARMICHAEL HOUSE		FLAT 4	POPLAR HIGH STREET	E14 0AZ	6082963	
CARMICHAEL HOUSE		FLAT 5	POPLAR HIGH STREET	E14 0AZ	6082964	
CARMICHAEL HOUSE		FLAT 6	POPLAR HIGH STREET	E14 0AZ	6082965	
CARMICHAEL HOUSE		FLAT 7	POPLAR HIGH STREET	E14 0AZ	6082966	
CARMICHAEL HOUSE		FLAT 8	POPLAR HIGH STREET	E14 0AZ	6082967	
CARMICHAEL HOUSE		FLAT 9	POPLAR HIGH STREET	E14 0AZ	6082968	
COMMODORE HOUSE		FLAT 10	POPLAR HIGH STREET	E14 0BA	6082970	
COMMODORE HOUSE		FLAT 11	POPLAR HIGH STREET	E14 0BA	6082971	
COMMODORE HOUSE		FLAT 12	POPLAR HIGH STREET	E14 0BA	6082972	
COMMODORE HOUSE		FLAT 13	POPLAR HIGH STREET	E14 0BA	6082973	
COMMODORE HOUSE		FLAT 14	POPLAR HIGH STREET	E14 0BA	6082974	
COMMODORE HOUSE		FLAT 15	POPLAR HIGH STREET	E14 0BA	6082975	
COMMODORE HOUSE		FLAT 16	POPLAR HIGH STREET	E14 0BA	6082976	
COMMODORE HOUSE		FLAT 17	POPLAR HIGH STREET	E14 0BA	6082977	
COMMODORE HOUSE		FLAT 18	POPLAR HIGH STREET	E14 0BA	6082978	
COMMODORE HOUSE		FLAT 19	POPLAR HIGH STREET	E14 0BA	6082979	
COMMODORE HOUSE		FLAT 2	POPLAR HIGH STREET	E14 0BA	6082980	
COMMODORE HOUSE		FLAT 20	POPLAR HIGH STREET	E14 0BA	6082981	
COMMODORE HOUSE		FLAT 21	POPLAR HIGH STREET	E14 0BA	6082982	

First Tier Scheme – Residential Dwellings						
Building Name	No.	Sub Building Name	Thorough-fare	Post Code	uprn	Further Info
COMMODORE HOUSE		FLAT 22	POPLAR HIGH STREET	E14 0BA	6082983	
COMMODORE HOUSE		FLAT 23	POPLAR HIGH STREET	E14 0BA	6082984	
COMMODORE HOUSE		FLAT 24	POPLAR HIGH STREET	E14 0BA	6082985	
COMMODORE HOUSE		FLAT 3	POPLAR HIGH STREET	E14 0BA	6082986	
COMMODORE HOUSE		FLAT 4	POPLAR HIGH STREET	E14 0BA	6082987	
COMMODORE HOUSE		FLAT 5	POPLAR HIGH STREET	E14 0BA	6082988	
COMMODORE HOUSE		FLAT 6	POPLAR HIGH STREET	E14 0BA	6082989	
COMMODORE HOUSE		FLAT 7	POPLAR HIGH STREET	E14 0BA	6082990	
COMMODORE HOUSE		FLAT 8	POPLAR HIGH STREET	E14 0BA	6082991	
COMMODORE HOUSE		FLAT 9	POPLAR HIGH STREET	E14 0BA	6082992	
WICKES HOUSE	246-254	FLAT 1	POPLAR HIGH STREET	E14 0BB	6142287	
WICKES HOUSE	246-254	FLAT 10	POPLAR HIGH STREET	E14 0BB	6143050	
WICKES HOUSE	246-254	FLAT 11	POPLAR HIGH STREET	E14 0BB	6143051	
WICKES HOUSE	246-254	FLAT 12	POPLAR HIGH STREET	E14 0BB	6143052	
WICKES HOUSE	246-254	FLAT 2	POPLAR HIGH STREET	E14 0BB	6133382	
WICKES HOUSE	246-254	FLAT 3	POPLAR HIGH STREET	E14 0BB	6143047	
WICKES HOUSE	246-254	FLAT 4	POPLAR HIGH STREET	E14 0BB	6142507	
WICKES HOUSE	246-254	FLAT 5	POPLAR HIGH STREET	E14 0BB	6143048	
WICKES HOUSE	246-254	FLAT 6	POPLAR HIGH STREET	E14 0BB	6133383	
WICKES HOUSE	246-254	FLAT 7	POPLAR HIGH STREET	E14 0BB	6142644	
WICKES HOUSE	246-254	FLAT 8	POPLAR HIGH STREET	E14 0BB	6143049	
WICKES HOUSE	246-254	FLAT 9	POPLAR HIGH STREET	E14 0BB	6133364	

First Tier Scheme – Residential Dwellings						
Building Name	No.	Sub Building Name	Thorough-fare	Post Code	uprn	Further Info
	437		PRINCE REGENT LANE	E16 3HX	46059186	
	439		PRINCE REGENT LANE	E16 3HX	46059187	
	441		PRINCE REGENT LANE	E16 3HX	46059188	
	443		PRINCE REGENT LANE	E16 3HX	46059189	
	445		PRINCE REGENT LANE	E16 3HX	46059190	
	447		PRINCE REGENT LANE	E16 3HX	46059191	
	449		PRINCE REGENT LANE	E16 3HX	46059192	
	451		PRINCE REGENT LANE	E16 3HX	46059193	
	453		PRINCE REGENT LANE	E16 3HX	46059194	
	455		PRINCE REGENT LANE	E16 3HX	46059195	
	40		PRINCESS ALICE WAY	SE28 OHQ	100020996118	
	42		PRINCESS ALICE WAY	SE28 OHQ	100020996119	
	44		PRINCESS ALICE WAY	SE28 OHQ	100020996120	
	46		PRINCESS ALICE WAY	SE28 OHQ	100020996121	
	48		PRINCESS ALICE WAY	SE28 OHQ	100020996122	
	50		PRINCESS ALICE WAY	SE28 OHQ	100020996123	
	52		PRINCESS ALICE WAY	SE28 OHQ	100020996124	
	54		PRINCESS ALICE WAY	SE28 OHQ	100020996125	
	56		PRINCESS ALICE WAY	SE28 OHQ	100020996126	
	58		PRINCESS ALICE WAY	SE28 OHQ	100020996127	
	60		PRINCESS ALICE WAY	SE28 OHQ	100020996128	
	62		PRINCESS ALICE WAY	SE28 OHQ	100020996129	
	13		RADLAND ROAD	E16 1LN	46091365	
	15		RADLAND ROAD	E16 1LN	46084777	
	57		RENFREW CLOSE	E6 5PQ	46060773	
	92		RENFREW CLOSE	E6 5PG	46060808	
	94		RENFREW CLOSE	E6 5PG	46060810	
	95		RENFREW CLOSE	E6 5PQ	46060811	
	96		RENFREW CLOSE	E6 5PG	46060812	
	97		RENFREW CLOSE	E6 5PQ	46060813	
	98		RENFREW CLOSE	E6 5PG	46060814	
	99		RENFREW CLOSE	E6 5PQ	46060815	
	100		RENFREW CLOSE	E6 5PG	46060816	
	101		RENFREW CLOSE	E6 5PQ	46060817	
	102		RENFREW CLOSE	E6 5PG	46060818	
	103		RENFREW CLOSE	E6 5PQ	46060819	
	105		RENFREW CLOSE	E6 5PQ	46060821	
	128		RENFREW CLOSE	E6 5PG	46060833	
	130		RENFREW CLOSE	E6 5PG	46060834	
	132		RENFREW CLOSE	E6 5PG	46060835	

First Tier Scheme – Residential Dwellings						
Building Name	No.	Sub Building Name	Thorough-fare	Post Code	uprn	Further Info
	134		RENFREW CLOSE	E6 5PG	46060836	
	136		RENFREW CLOSE	E6 5PG	46060837	
	138		RENFREW CLOSE	E6 5PG	46060838	
	39		RICHARD HOUSE DRIVE	E16 3RE	46088644	
	41		RICHARD HOUSE DRIVE	E16 3RE	46088645	
	43		RICHARD HOUSE DRIVE	E16 3RE	46088059	
	45		RICHARD HOUSE DRIVE	E16 3RE	46088646	
	47		RICHARD HOUSE DRIVE	E16 3RE	46088577	
	49		RICHARD HOUSE DRIVE	E16 3RE	46088178	
	74		RICHARD HOUSE DRIVE	E16 3RF	46089715	
	76		RICHARD HOUSE DRIVE	E16 3RF	46089716	
	78		RICHARD HOUSE DRIVE	E16 3RF	46088180	
	80		RICHARD HOUSE DRIVE	E16 3RF	46092102	
	82		RICHARD HOUSE DRIVE	E16 3RF	46088181	
	84		RICHARD HOUSE DRIVE	E16 3RF	46088190	
	7		ROEBOURNE WAY	E16 2JH	46061483	
	8		ROEBOURNE WAY	E16 2JH	46061484	
	9		ROEBOURNE WAY	E16 2JH	46087752	
	10		ROEBOURNE WAY	E16 2JH	46091986	
	11		ROEBOURNE WAY	E16 2JH	46087753	
	12		ROEBOURNE WAY	E16 2JH	46087754	
	13		ROEBOURNE WAY	E16 2JH	46091987	
	14		ROEBOURNE WAY	E16 2JH	46087755	
	15		ROEBOURNE WAY	E16 2JH	46087756	
	16		ROEBOURNE WAY	E16 2JH	46087757	
	1		ROWNTREE PATH	SE28 8BS	100021000434	
	2		ROWNTREE PATH	SE28 8BS	100021000435	
	3		ROWNTREE PATH	SE28 8BS	100021000436	
	4		ROWNTREE PATH	SE28 8BS	100021000437	
	5		ROWNTREE PATH	SE28 8BS	100021000438	

First Tier Scheme – Residential Dwellings						
Building Name	No.	Sub Building Name	Thorough-fare	Post Code	uprn	Further Info
	6		ROWNTREE PATH	SE28 8BS	100021000439	
	58		TITMUSS AVENUE	SE28 8DJ	100021009998	
	59		TITMUSS AVENUE	SE28 8DJ	100021009999	
	60		TITMUSS AVENUE	SE28 8DJ	100021010000	
	61		TITMUSS AVENUE	SE28 8DJ	100021010001	
	62		TITMUSS AVENUE	SE28 8DJ	100021010002	
	63		TITMUSS AVENUE	SE28 8DJ	100021010003	
	64		TITMUSS AVENUE	SE28 8DJ	100021010004	
	65		TITMUSS AVENUE	SE28 8DJ	100021010005	
	66		TITMUSS AVENUE	SE28 8DJ	100021010006	
	67		TITMUSS AVENUE	SE28 8DJ	100021010007	
	68		TITMUSS AVENUE	SE28 8DJ	100021010008	
	69		TITMUSS AVENUE	SE28 8DJ	100021010009	
	70		TITMUSS AVENUE	SE28 8DJ	100021010010	
	71		TITMUSS AVENUE	SE28 8DJ	100021010011	
	72		TITMUSS AVENUE	SE28 8DJ	100021010012	
	73		TITMUSS AVENUE	SE28 8DJ	100021010013	
	74		TITMUSS AVENUE	SE28 8DJ	100021010014	
	75		TITMUSS AVENUE	SE28 8DJ	100021010015	
	76		TITMUSS AVENUE	SE28 8DJ	100021010016	
	77		TITMUSS AVENUE	SE28 8DJ	100021010017	
	78		TITMUSS AVENUE	SE28 8DJ	100021010018	
	79		TITMUSS AVENUE	SE28 8DJ	100021010019	
	80		TITMUSS AVENUE	SE28 8DJ	100021010020	
	81		TITMUSS AVENUE	SE28 8DJ	100021010021	
	82		TITMUSS AVENUE	SE28 8DJ	100021010022	
	83		TITMUSS AVENUE	SE28 8DJ	100021010023	
	11		TRADER ROAD	E6 6FR	46085441	
	12		TRADER ROAD	E6 6FR	46085442	
	13		TRADER ROAD	E6 6FR	46091495	
	14		TRADER ROAD	E6 6FR	46085443	
	66		WAREPOINT DRIVE	SE28 0HN	100021014029	
	68		WAREPOINT DRIVE	SE28 0HN	200002411892	
	70		WAREPOINT DRIVE	SE28 0HN	100021014032	
	72		WAREPOINT DRIVE	SE28 0HN	100021014034	
	74		WAREPOINT DRIVE	SE28 0HN	100021014036	
	76		WAREPOINT DRIVE	SE28 0HN	100021014038	
	78		WAREPOINT DRIVE	SE28 0HN	100021014040	
	80		WAREPOINT DRIVE	SE28 0HN	100021014041	
	82		WAREPOINT DRIVE	SE28 0HN	100021014043	

First Tier Scheme – Public Buildings						
Building Name	No.	Sub Building Name	Thorough-fare	Post Code	uprn	Further Info
POPLAR MOSQUE & COMMUNITY CENTRE	6	GROUND	WEBBER PATH	E14 0FZ	6199138	
POPLAR MOSQUE & COMMUNITY CENTRE	6	FIRST FLOOR	WEBBER PATH	E14 0FZ	6199139	
BROOK HOUSE	20		MEADOWFORD CLOSE	SE28 8GA	10010222875	
ST MATTHIAS CENTRE			BULLIVANT STREET	E14 0ER	6090767	
ST JOHNS CHURCH			ALBERT ROAD	E16 2JB	10008984558	

Intermediate Tier Scheme – Residential Dwellings						
Building Name	No.	Sub Building Name	Thorough-fare	Post Code	uprn	Further Info
CAERNARVON HOUSE	8	FLAT 1	AUDLEY DRIVE	E16 1TP	46089086	
CAERNARVON HOUSE	8	FLAT 2	AUDLEY DRIVE	E16 1TP	46089087	
CAERNARVON HOUSE	8	FLAT 3	AUDLEY DRIVE	E16 1TP	46092238	
CAERNARVON HOUSE	8	FLAT 4	AUDLEY DRIVE	E16 1TP	46089088	
CAERNARVON HOUSE	8	FLAT 5	AUDLEY DRIVE	E16 1TP	46089089	
CAERNARVON HOUSE	8	FLAT 6	AUDLEY DRIVE	E16 1TP	46089090	
CAERNARVON HOUSE	8	FLAT 7	AUDLEY DRIVE	E16 1TP	46092239	
CAERNARVON HOUSE	8	FLAT 8	AUDLEY DRIVE	E16 1TP	46089091	
CAERNARVON HOUSE	8	FLAT 9	AUDLEY DRIVE	E16 1TP	46089092	
	15		CONSTANCE STREET	E16 2DQ	46017909	
	17		CONSTANCE STREET	E16 2DQ	46017910	
	39		CONSTANCE STREET	E16 2DQ	46017921	
	41		CONSTANCE STREET	E16 2DQ	46017922	
	32		EVELYN ROAD	E16 2AY	46024940	
	34		EVELYN ROAD	E16 2AY	46024941	
	36		EVELYN ROAD	E16 2AY	46024942	
	38		EVELYN ROAD	E16 2AY	46024943	
	40		EVELYN ROAD	E16 2AY	46024944	
	42		EVELYN ROAD	E16 2AY	46024945	
	44		EVELYN ROAD	E16 2AY	46024946	
	46		EVELYN ROAD	E16 2AY	46024947	
	48		EVELYN ROAD	E16 2AY	46024948	
	50		EVELYN ROAD	E16 2AY	46024949	
	52		EVELYN ROAD	E16 2AY	46024950	
	54		EVELYN ROAD	E16 2AY	46024951	
	1		KEATS AVENUE	E16 1TW	46251628	
	2		KEATS AVENUE	E16 1TW	46251627	
	3		KEATS AVENUE	E16 1TW	46089317	
	4		KEATS AVENUE	E16 1TW	46089318	
	5		KEATS AVENUE	E16 1TW	46089319	

Intermediate Tier Scheme – Residential Dwellings						
Building Name	No.	Sub Building Name	Thorough-fare	Post Code	uprn	Further Info
	6		KEATS AVENUE	E16 1TW	46089320	
	7		KEATS AVENUE	E16 1TW	46089688	
	43		LEONARD STREET	E16 2DT	46045076	
	45		LEONARD STREET	E16 2DT	46045077	
	8		PARKER CLOSE	E16 2DH	46056340	
	22		PARKER CLOSE	E16 2DH	46056347	
	26		PARKER STREET	E16 2DJ	46086378	
	31		SAVILLE ROAD	E16 2DS	46064345	
	33		SAVILLE ROAD	E16 2DS	46064347	
	44		SAVILLE ROAD	E16 2DS	46064356	
	46A		SAVILLE ROAD	E16 2DS	46084981	
	46	GROUND FLOOR FLAT	SAVILLE ROAD	E16 2DS	10008991180	
CLEVES HOUSE	7	FLAT 1	SOUTHEY MEWS	E16 1TN	46250478	
CLEVES HOUSE	7	FLAT 2	SOUTHEY MEWS	E16 1TN	46252418	
CLEVES HOUSE	7	FLAT 3	SOUTHEY MEWS	E16 1TN	46252419	
CLEVES HOUSE	7	FLAT 4	SOUTHEY MEWS	E16 1TN	46252420	
CLEVES HOUSE	7	FLAT 5	SOUTHEY MEWS	E16 1TN	46252421	
CLEVES HOUSE	7	FLAT 6	SOUTHEY MEWS	E16 1TN	46252422	
	8		SOUTHEY MEWS	E16 1TN	46250481	
	9		SOUTHEY MEWS	E16 1TN	46250482	
	10		SOUTHEY MEWS	E16 1TN	46250483	
	11		SOUTHEY MEWS	E16 1TN	46250484	
	12		SOUTHEY MEWS	E16 1TN	46250485	
	13		SOUTHEY MEWS	E16 1TN	46253860	
	24		WYTHES ROAD	E16 2DN	46082553	
	26		WYTHES ROAD	E16 2DN	46082554	

Intermediate Tier Scheme – Public Buildings						
Building Name	No.	Sub Building Name	Thorough-fare	Post Code	uprn	Further Info
THE BRITANNIA VILLAGE HALL	65	COMMUNITY CENTRE	EVELYN ROAD	E16 1TU	10012839976	

Second Tier Scheme – Residential Dwellings						
Building Name	No.	Sub Building Name	Thorough-fare	Post Code	uprn	Further Info
	47		CAMEL ROAD	E16 2DE	46010637	
	49		CAMEL ROAD	E16 2DE	46010639	
	40		PARKER STREET	E16 2DJ	46056353	
	42		PARKER STREET	E16 2DJ	46056354	
	44		PARKER STREET	E16 2DJ	46056355	

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

Re-inspection Scheme – Residential Dwellings						
Building Name	No.	Sub Building Name	Thorough-fare	Post Code	uprn	Further Info
	1		EAST HAM MANOR WAY	E6 5NA	46022940	
	40		MILL ROAD	E16 2BE	46050528	
	2		RENFREW CLOSE	E6 5PG	46060718	

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).

LBN/107(b)

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

LBN/107(b)

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		Factored Aircraft Movements ^[1]		Permitted Factored Movements	Differences (Permitted - Actual)			Early Actual Movements		(Early Permitted - Actual)		Late Actual Movements ^[2]		
	Day	Week-end	Day	Week-end	Day	Week		Week	Actual Movements		Factored Movements	Early Morning		Early Morning		Late Eve / Sat Afternoon	3 Month Running Total
									Day	Week-end		06:30-06:44	06:30-06:59	06:30-06:44	06:30-06:59		
01/01/2018	117	-	132	-	127	1,236	3,475	15	-	2,239	0	0	2	6	0	-	
02/01/2018	206	-	592	-	231			386	-		0	4	2	2	0	-	
03/01/2018	193	-	592	-	214			399	-		0	3	2	3	1	-	
04/01/2018	198	-	592	-	222			394	-		0	2	2	4	0	-	
05/01/2018	214	-	592	-	239			378	-		1	3	1	3	0	-	
06/01/2018	62	182	100	280	71			38	98		2	5	0	1	1	-	
07/01/2018	120		200		132			80			-	-	-	-	-	1	-
08/01/2018	230	-	592	-	260	1,541	4,050	362	-	2,509	2	6	0	0	0	-	
09/01/2018	232	-	592	-	263			360	-		1	6	1	0	0	-	
10/01/2018	232	-	592	-	263			360	-		2	5	0	1	0	-	
11/01/2018	234	-	592	-	265			358	-		2	5	0	1	1	-	
12/01/2018	248	-	592	-	281			344	-		1	6	1	0	0	-	
13/01/2018	64	190	100	280	71			36	90		2	5	0	1	1	-	
14/01/2018	126		200		139			74			-	-	-	-	-	0	-
15/01/2018	254	-	592	-	289	1,641	4,050	338	-	2,409	1	4	1	2	0	-	
16/01/2018	249	-	592	-	281			343	-		2	6	0	0	1	-	
17/01/2018	252	-	592	-	285			340	-		1	4	1	2	1	-	
18/01/2018	244	-	592	-	275			348	-		1	2	1	4	1	-	
19/01/2018	262	-	592	-	296			330	-		1	3	1	3	0	-	
20/01/2018	64	195	100	280	72			36	85		2	5	0	1	1	-	
21/01/2018	131		200		144			69			-	-	-	-	-	2	-
22/01/2018	271	-	592	-	309	1,720	4,050	321	-	2,330	2	5	0	1	0	-	
23/01/2018	252	-	592	-	284			340	-		1	6	1	0	0	-	
24/01/2018	248	-	592	-	278			344	-		1	2	1	4	0	-	
25/01/2018	277	-	592	-	314			315	-		2	5	0	1	0	-	
26/01/2018	269	-	592	-	306			323	-		2	6	0	0	0	-	

Date	Actual Aircraft Movements		Permitted Actual Aircraft Movements		Factored Aircraft Movements ^[1]		Permitted Factored Movements	Differences (Permitted - Actual)			Early Actual Movements		(Early Permitted - Actual)		Late Actual Movements ^[2]	
	Day	Week-end	Day	Week-end	Day	Week		Week	Actual Movements		Factored Movements	Early Morning		Early Morning		Late Eve / Sat Afternoon
							Day		Week-end	06:30-06:44		06:30-06:59	06:30-06:44	06:30-06:59	22:00-22:30 / 12:30-13:00	
27/01/2018	68	206	100	280	77			32	74		1	4	1	2	4	-
28/01/2018	138		200		152			62			-	-	-	0	-	
29/01/2018	293	-	592	-	335	1,871	4,050	299	-	2,179	2	4	0	2	0	-
30/01/2018	288	-	592	-	330			304	-		1	5	1	1	1	-
31/01/2018	290	-	592	-	333			302	-		1	4	1	2	0	60
01/02/2018	299	-	592	-	340			293	-		2	5	0	1	0	-
02/02/2018	275	-	592	-	314			317	-		2	5	0	1	0	-
03/02/2018	66	200	100	280	73			34	80		1	5	1	1	1	-
04/02/2018	134		200		146			66			-	-	-	0	-	
05/02/2018	284	-	592	-	325			1,874	4,050		308	-	2,176	1	5	1
06/02/2018	281	-	592	-	320	311	-			1	5	1		1	1	-
07/02/2018	296	-	592	-	339	296	-			1	6	1		0	1	-
08/02/2018	289	-	592	-	329	303	-			1	4	1		2	0	-
09/02/2018	279	-	592	-	319	313	-			1	3	1		3	1	-
10/02/2018	79	218	100	280	88	21	62			1	5	1		1	4	-
11/02/2018	139		200		154	61				-	-	-		0	-	
12/02/2018	0	-	592	-	0	1,465	4,050			592	-	2,585		0	0	2
13/02/2018	264	-	592	-	302			328	-	1	4		1	2	0	-
14/02/2018	272	-	592	-	311			320	-	0	4		2	2	1	-
15/02/2018	270	-	592	-	306			322	-	1	3		1	3	0	-
16/02/2018	275	-	592	-	311			317	-	1	3		1	3	0	-
17/02/2018	79	210	100	280	88			21	70	2	4		0	2	6	-
18/02/2018	131		200		146			69		-	-		-	0	-	
19/02/2018	279	-	592	-	320			1,898	4,050	313	-		2,152	1	6	1
20/02/2018	276	-	592	-	316	316	-			1	2	1		4	0	-
21/02/2018	297	-	592	-	344	295	-			1	4	1		2	1	-
22/02/2018	298	-	592	-	341	294	-			1	4	1		2	0	-
23/02/2018	290	-	592	-	329	302	-			2	6	0		0	2	-

Date	Actual Aircraft Movements		Permitted Actual Aircraft Movements		Factored Aircraft Movements ^[1]		Permitted Factored Movements	Differences (Permitted - Actual)			Early Actual Movements		(Early Permitted - Actual)		Late Actual Movements ^[2]	
	Day	Week-end	Day	Week-end	Day	Week		Week	Actual Movements		Factored Movements	Early Morning		Early Morning		Late Eve / Sat Afternoon
							Day		Week-end	06:30-06:44		06:30-06:59	06:30-06:44	06:30-06:59	22:00-22:30 / 12:30-13:00	
24/02/2018	75	224	100	280	82			25	56		1	6	1	0	3	-
25/02/2018	149		200		165			51			-	-	-	0	-	
26/02/2018	291	-	592	-	334	1,188	4,050	301	-	2,862	2	6	0	0	2	-
27/02/2018	278	-	592	-	316			314	-		1	3	1	3	2	-
28/02/2018	125	-	592	-	140			467	-		0	0	2	6	0	73
01/03/2018	122	-	592	-	141			470	-		0	0	2	6	0	-
02/03/2018	58	-	592	-	67			534	-		0	0	2	6	0	-
03/03/2018	29	170	100	280	35			71	110		0	0	2	6	2	-
04/03/2018	141		200		155			59			0	0	-	-	3	-
05/03/2018	297	-	592	-	340			1,935	4,050		295	-	2,115	1	4	1
06/03/2018	297	-	592	-	340	295	-			0	4	2		2	0	-
07/03/2018	284	-	592	-	324	308	-			2	5	0		1	1	-
08/03/2018	305	-	592	-	349	287	-			1	4	1		2	0	-
09/03/2018	287	-	592	-	326	305	-			1	5	1		1	1	-
10/03/2018	77	229	100	280	87	23	51			2	5	0		1	2	-
11/03/2018	152		200		169	48				0	0	-		-	0	-
12/03/2018	291	-	592	-	333	1,914	4,050			301	-	2,136		2	5	0
13/03/2018	305	-	592	-	350			287	-	1	5		1	1	0	-
14/03/2018	296	-	592	-	339			296	-	1	6		1	0	1	-
15/03/2018	302	-	592	-	345			290	-	1	6		1	0	1	-
16/03/2018	294	-	592	-	333			298	-	1	5		1	1	1	-
17/03/2018	61	188	100	280	73			39	92	0	4		2	2	2	-
18/03/2018	127		200		141			73		0	0		-	-	1	-
19/03/2018	287	-	592	-	328			1,886	4,050	305	-		2,164	1	4	1
20/03/2018	289	-	592	-	331	303	-			1	4	1		2	1	-
21/03/2018	298	-	592	-	341	294	-			1	5	1		1	0	-
22/03/2018	295	-	592	-	335	297	-			1	5	1		1	0	-
23/03/2018	281	-	592	-	319	311	-			2	4	0		2	0	-

Date	Actual Aircraft Movements		Permitted Actual Aircraft Movements		Factored Aircraft Movements ^[1]		Permitted Factored Movements	Differences (Permitted - Actual)			Early Actual Movements		(Early Permitted - Actual)		Late Actual Movements ^[2]	
	Day	Week-end	Day	Week-end	Day	Week		Week	Actual Movements		Factored Movements	Early Morning		Early Morning		Late Eve / Sat Afternoon
							Day		Week-end	06:30-06:44		06:30-06:59	06:30-06:44	06:30-06:59	22:00-22:30 / 12:30-13:00	
24/03/2018	69	209	100	280	77			31	71		1	6	1	0	2	-
25/03/2018	140		200		155			60			0	0	-	-	0	-
26/03/2018	286	-	592	-	324	1,632	3,515	306	-	1,883	2	5	0	1	1	-
27/03/2018	278	-	592	-	312			314	-		1	2	1	4	0	-
28/03/2018	273	-	592	-	306	319	-	2	5	0	1	0	-			
29/03/2018	278	-	592	-	313	314	-	2	5	0	1	1	-			
30/03/2018	160	-	164	-	180	4	-	0	0	2	6	1	-			
31/03/2018	62	178	100	280	68	38	102	1	3	1	3	2	65			
01/04/2018	116		200		129	84		-	0	-	-	-	0	-		
02/04/2018	168	-	198	-	189	30	-	0	0	2	6	0	-			
03/04/2018	258	-	592	-	294	334	-	2	4	0	2	0	-			
04/04/2018	284	-	592	-	324	308	-	1	4	1	2	0	-			
05/04/2018	285	-	592	-	327	307	-	1	5	1	1	0	-			
06/04/2018	271	-	592	-	309	321	-	2	4	0	2	0	-			
07/04/2018	74	214	100	280	84	26	66	1	5	1	1	5	-			
08/04/2018	140		200		158	60		-	0	-	-	-	0	-		
09/04/2018	197	-	592	-	224	395	-	2	5	0	1	0	-			
10/04/2018	268	-	592	-	304	324	-	1	4	1	2	0	-			
11/04/2018	268	-	592	-	302	324	-	1	4	1	2	0	-			
12/04/2018	229	-	592	-	262	363	-	0	0	2	6	0	-			
13/04/2018	287	-	592	-	326	305	-	1	6	1	0	0	-			
14/04/2018	70	212	100	280	79	30	68	1	6	1	0	4	-			
15/04/2018	142		200		158	58		-	0	-	-	-	0	-		
16/04/2018	294	-	592	-	335	298	-	1	5	1	1	0	-			
17/04/2018	286	-	592	-	324	306	-	1	3	1	3	0	-			
18/04/2018	308	-	592	-	354	284	-	1	5	1	1	0	-			
19/04/2018	282	-	592	-	321	310	-	2	5	0	1	0	-			
20/04/2018	285	-	592	-	325	307	-	2	4	0	2	0	-			

Date	Actual Aircraft Movements		Permitted Actual Aircraft Movements		Factored Aircraft Movements ^[1]		Permitted Factored Movements	Differences (Permitted - Actual)			Early Actual Movements		(Early Permitted - Actual)		Late Actual Movements ^[2]		
	Day	Week-end	Day	Week-end	Day	Week		Week	Actual Movements		Factored Movements	Early Morning		Early Morning		Late Eve / Sat Afternoon	3 Month Running Total
							Day		Week-end	06:30-06:44		06:30-06:59	06:30-06:44	06:30-06:59	22:00-22:30 / 12:30-13:00		
21/04/2018	71	217	100	280	79			29	63		2	4	0	2	2	-	
22/04/2018	146		200		164			54			-	-	-	0	-		
23/04/2018	289	-	592	-	329	1,877	4,050	303	-	2,173	2	4	0	2	0	-	
24/04/2018	288	-	592	-	328			304	-		2	4	0	2	0	-	
25/04/2018	292	-	592	-	334			300	-		0	5	2	1	0	-	
26/04/2018	293	-	592	-	333			299	-		1	3	1	3	0	-	
27/04/2018	276	-	592	-	314			316	-		1	3	1	3	0	-	
28/04/2018	69	213	100	280	78			31	67		0	5	2	1	1	1	-
29/04/2018	144		200		163			56			-	-	-	0	-		
30/04/2018	266	-	592	-	306			326	-		2	4	0	2	0	61	
01/05/2018	276	-	592	-	314	316	-	2	5	0	1	0	-				
02/05/2018	294	-	592	-	336	298	-	1	5	1	1	0	-				
03/05/2018	302	-	592	-	345	290	-	2	5	0	1	0	-				
04/05/2018	282	-	592	-	323	310	-	1	5	1	1	0	-				
05/05/2018	70	196	100	280	78	30	84	1	5	1	1	4	-				
06/05/2018	126		200		142	74		-	-	-	0	-					
07/05/2018	164	-	248	-	184	84	-	0	0	2	6	0	-				
08/05/2018	285	-	592	-	323	307	-	1	4	1	2	0	-				
09/05/2018	295	-	592	-	335	297	-	2	5	0	1	0	-				
10/05/2018	279	-	592	-	311	313	-	2	6	0	0	0	-				
11/05/2018	279	-	592	-	312	313	-	0	5	2	1	0	-				
12/05/2018	70	215	100	280	79	30	65	2	4	0	2	3	-				
13/05/2018	145		200		160	55		-	-	-	0	-					
14/05/2018	295	-	592	-	331	297	-	2	5	0	1	0	-				
15/05/2018	296	-	592	-	334	296	-	2	5	0	1	0	-				
16/05/2018	305	-	592	-	347	287	-	0	2	2	4	0	-				
17/05/2018	309	-	592	-	351	283	-	1	4	1	2	0	-				
18/05/2018	287	-	592	-	325	305	-	2	6	0	0	0	-				

Date	Actual Aircraft Movements		Permitted Actual Aircraft Movements		Factored Aircraft Movements ^[1]		Permitted Factored Movements	Differences (Permitted - Actual)			Early Actual Movements		(Early Permitted - Actual)		Late Actual Movements ^[2]	
	Day	Week-end	Day	Week-end	Day	Week		Week	Actual Movements		Factored Movements	Early Morning		Early Morning		Late Eve / Sat Afternoon
							Day		Week-end	06:30-06:44		06:30-06:59	06:30-06:44	06:30-06:59	22:00-22:30 / 12:30-13:00	
19/05/2018	62	214	100	280	69			38	66		1	2	1	4	1	-
20/05/2018	152		200		169			48			-	-	-	-	0	-
21/05/2018	292	-	592	-	330	1,901	4,050	300	-	2,149	1	5	1	1	0	-
22/05/2018	298	-	592	-	338			294	-		2	6	0	0	0	-
23/05/2018	294	-	592	-	331			298	-		2	5	0	1	0	-
24/05/2018	301	-	592	-	339			291	-		1	4	1	2	0	-
25/05/2018	294	-	592	-	331			298	-		1	4	1	2	0	-
26/05/2018	65	208	100	280	73			35	72		1	6	1	0	4	-
27/05/2018	143		200		159			57			-	-	-	0	-	
28/05/2018	187	-	230	-	212			1,648	3,598		43	-	1,949	0	0	2
29/05/2018	266	-	592	-	302	326	-			1	5	1		1	0	-
30/05/2018	286	-	592	-	325	306	-			1	4	1		2	0	-
31/05/2018	234	-	592	-	260	358	-			1	1	1		5	0	48
01/06/2018	274	-	592	-	306	318	-			1	4	1		2	0	-
02/06/2018	61	221	100	280	66	39	59			2	5	0		1	2	-
03/06/2018	160		200		178	40				-	-	-		0	-	
04/06/2018	291	-	592	-	330	1,910	4,050			301	-	2,140		0	2	2
05/06/2018	299	-	592	-	335			293	-	1	4		1	2	0	-
06/06/2018	302	-	592	-	340			290	-	2	6		0	0	0	-
07/06/2018	302	-	592	-	339			290	-	1	5		1	1	0	-
08/06/2018	292	-	592	-	328			300	-	1	5		1	1	0	-
09/06/2018	71	217	100	280	78			29	63	1	4		1	2	3	-
10/06/2018	146		200		159			54		-	-		-	0	-	
11/06/2018	293	-	592	-	331			1,945	4,050	299	-		2,105	1	4	1
12/06/2018	296	-	592	-	334	296	-			2	5	0		1	0	-
13/06/2018	310	-	592	-	350	282	-			2	6	0		0	0	-
14/06/2018	306	-	592	-	345	286	-			2	4	0		2	0	-
15/06/2018	297	-	592	-	335	295	-			1	5	1		1	0	-

Date	Actual Aircraft Movements		Permitted Actual Aircraft Movements		Factored Aircraft Movements ^[1]		Permitted Factored Movements	Differences (Permitted - Actual)			Early Actual Movements		(Early Permitted - Actual)		Late Actual Movements ^[2]	
	Day	Week-end	Day	Week-end	Day	Week		Week	Actual Movements		Factored Movements	Early Morning		Early Morning		Late Eve / Sat Afternoon
							Day		Week-end	06:30-06:44		06:30-06:59	06:30-06:44	06:30-06:59	22:00-22:30 / 12:30-13:00	
16/06/2018	67	224	100	280	76			33	56		2	6	0	0	2	-
17/06/2018	157		200		174			43			-	-	-	0	-	
18/06/2018	308	-	592	-	345	1,929	4,050	284	-	2,121	1	5	1	1	0	-
19/06/2018	307	-	592	-	347			285	-		0	5	2	1	0	-
20/06/2018	310	-	592	-	352			282	-		0	3	2	3	0	-
21/06/2018	306	-	592	-	345			286	-		1	3	1	3	0	-
22/06/2018	280	-	592	-	311			312	-		0	3	2	3	0	-
23/06/2018	62	209	100	280	68			38	71		1	4	1	2	1	-
24/06/2018	147		200		161			53			-	-	-	-	0	-
25/06/2018	289	-	592	-	321			1,866	4,050		303	-	2,184	1	5	1
26/06/2018	286	-	592	-	320	306	-			1	5	1		1	0	-
27/06/2018	299	-	592	-	336	293	-			1	5	1		1	0	-
28/06/2018	297	-	592	-	333	295	-			1	6	1		0	0	-
29/06/2018	274	-	592	-	306	318	-			1	4	1		2	0	-
30/06/2018	65	223	100	280	72	35	57			1	3	1		3	4	36
01/07/2018	158		200		178	42				-	-	-		-	2	-
02/07/2018	283	-	592	-	319	1,836	4,050			309	-	2,214		1	4	1
03/07/2018	273	-	592	-	307			319	-	1	4		1	2	1	-
04/07/2018	295	-	592	-	333			297	-	2	6		0	0	0	-
05/07/2018	294	-	592	-	333			298	-	2	6		0	0	1	-
06/07/2018	279	-	592	-	314			313	-	2	4		0	2	2	-
07/07/2018	54	209	100	280	58			46	71	1	4		1	2	3	-
08/07/2018	155		200		173			45		-	-		-	-	0	-
09/07/2018	283	-	592	-	318			1,793	4,050	309	-		2,257	1	4	1
10/07/2018	277	-	592	-	311	315	-			2	4	0		2	0	-
11/07/2018	284	-	592	-	321	308	-			1	5	1		1	0	-
12/07/2018	277	-	592	-	310	315	-			1	4	1		2	0	-
13/07/2018	265	-	592	-	297	327	-			1	5	1		1	0	-

Date	Actual Aircraft Movements		Permitted Actual Aircraft Movements		Factored Aircraft Movements ^[1]		Permitted Factored Movements	Differences (Permitted - Actual)			Early Actual Movements		(Early Permitted - Actual)		Late Actual Movements ^[2]				
	Day	Week-end	Day	Week-end	Day	Week		Week	Actual Movements		Factored Movements	Early Morning		Early Morning		Late Eve / Sat Afternoon	3 Month Running Total		
							Day		Week-end	06:30-06:44		06:30-06:59	06:30-06:44	06:30-06:59	22:00-22:30 / 12:30-13:00				
14/07/2018	64	212	100	280	71			36	68		1	6	1	0	6	-			
15/07/2018	148		200		165			52			-	-	-	2	-				
16/07/2018	276	-	592	-	310	1,749	4,050	316	-	2,301	1	4	1	2	2	-			
17/07/2018	272	-	592	-	306			320	-		2	5	0	1	1	-			
18/07/2018	271	-	592	-	305			321	-		1	4	1	2	3	-			
19/07/2018	271	-	592	-	307			321	-		1	4	1	2	4	-			
20/07/2018	263	-	592	-	292			329	-		1	5	1	1	5	-			
21/07/2018	62	207	100	280	68						38	73		1	5	1	1	2	-
22/07/2018	145		200		160						55			-	-	-	1	-	
23/07/2018	267	-	592	-	297			1,681	4,050		325	-	2,369	1	4	1	2	0	-
24/07/2018	267	-	592	-	299	325	-			1	4	1		2	0	-			
25/07/2018	267	-	592	-	300	325	-			2	5	0		1	0	-			
26/07/2018	267	-	592	-	299	325	-			1	5	1		1	0	-			
27/07/2018	228	-	592	-	255	364	-			2	5	0		1	5	-			
28/07/2018	59	208	100	280	66					41	72			2	5	0	1	5	-
29/07/2018	149		200		166					51				-	-	-	1	-	
30/07/2018	268	-	592	-	300	1,734	4,050			324	-	2,316		1	5	1	1	1	-
31/07/2018	258	-	592	-	292			334	-	2	5		0	1	0	71			
01/08/2018	263	-	592	-	294			329	-	2	6		0	0	2	-			
02/08/2018	273	-	592	-	306			319	-	2	5		0	1	1	-			
03/08/2018	275	-	592	-	309			317	-	1	6		1	0	3	-			
04/08/2018	62	209	100	280	68					38	71			2	6	0	0	3	-
05/08/2018	147		200		165					53				-	-	-	2	-	
06/08/2018	260	-	592	-	294			1,625	4,050	332	-		2,425	0	3	2	3	0	-
07/08/2018	251	-	592	-	279	341	-			1	6	1		0	2	-			
08/08/2018	251	-	592	-	281	341	-			0	5	2		1	0	-			
09/08/2018	255	-	592	-	282	337	-			1	5	1		1	1	-			
10/08/2018	243	-	592	-	271	349	-			1	5	1		1	4	-			

Date	Actual Aircraft Movements		Permitted Actual Aircraft Movements		Factored Aircraft Movements ^[1]		Permitted Factored Movements	Differences (Permitted - Actual)			Early Actual Movements		(Early Permitted - Actual)		Late Actual Movements ^[2]	
	Day	Week-end	Day	Week-end	Day	Week		Week	Actual Movements		Factored Movements	Early Morning		Early Morning		Late Eve / Sat Afternoon
							Day		Week-end	06:30-06:44		06:30-06:59	06:30-06:44	06:30-06:59	22:00-22:30 / 12:30-13:00	
11/08/2018	56	198	100	280	60			44	82		1	3	1	3	2	-
12/08/2018	142		200		158			-			-	-	-	1	-	
13/08/2018	263	-	592	-	296	1,632	4,050	329	-	2,418	1	6	1	0	3	-
14/08/2018	249	-	592	-	277			343	-		1	5	1	1	0	-
15/08/2018	251	-	592	-	278			341	-		1	6	1	0	0	-
16/08/2018	255	-	592	-	284			337	-		1	5	1	1	0	-
17/08/2018	244	-	592	-	272			348	-		1	5	1	1	2	-
18/08/2018	56	204	100	280	60			44	76		2	6	0	0	1	-
19/08/2018	148		200		164			-			-	-	-	0	-	
20/08/2018	260	-	592	-	292			1,653	4,050		332	-	2,397	1	6	1
21/08/2018	251	-	592	-	280	341	-			1	5	1		1	0	-
22/08/2018	254	-	592	-	285	338	-			2	6	0		0	0	-
23/08/2018	266	-	592	-	297	326	-			1	6	1		0	0	-
24/08/2018	253	-	592	-	281	339	-			1	5	1		1	3	-
25/08/2018	58	198	100	280	63	42	82			0	4	2		2	3	-
26/08/2018	140		200		154	-				-	-	-		1	-	
27/08/2018	178	-	230	-	199	1,644	3,598			52	-	1,953		0	0	2
28/08/2018	273	-	592	-	309			319	-	2	6		0	0	0	-
29/08/2018	263	-	592	-	295			329	-	1	5		1	1	1	-
30/08/2018	266	-	592	-	301			326	-	1	5		1	1	0	-
31/08/2018	258	-	592	-	290			334	-	1	4		1	2	1	96
01/09/2018	68	223	100	280	76			32	57	2	5		0	1	4	-
02/09/2018	155		200		175			-		-	-		-	0	-	
03/09/2018	295	-	592	-	339			1,859	4,050	297	-		2,191	2	6	0
04/09/2018	289	-	592	-	331	303	-			1	5	1		1	0	-
05/09/2018	279	-	592	-	316	313	-			1	4	1		2	1	-
06/09/2018	283	-	592	-	323	309	-			1	6	1		0	0	-
07/09/2018	272	-	592	-	310	320	-			0	3	2		3	3	-

Date	Actual Aircraft Movements		Permitted Actual Aircraft Movements		Factored Aircraft Movements ^[1]		Permitted Factored Movements	Differences (Permitted - Actual)			Early Actual Movements		(Early Permitted - Actual)		Late Actual Movements ^[2]	
	Day	Week-end	Day	Week-end	Day	Week		Week	Actual Movements		Factored Movements	Early Morning		Early Morning		Late Eve / Sat Afternoon
							Day		Week-end	06:30-06:44		06:30-06:59	06:30-06:44	06:30-06:59	22:00-22:30 / 12:30-13:00	
08/09/2018	72	214	100	280	81			28	66		1	5	1	1	4	-
09/09/2018	142		200		159			58			-	-	-	0	-	
10/09/2018	294	-	592	-	338	1,879	4,050	298	-	2,171	2	5	0	1	0	-
11/09/2018	288	-	592	-	329			304	-		1	6	1	0	0	-
12/09/2018	295	-	592	-	335			297	-		1	4	1	2	0	-
13/09/2018	296	-	592	-	337			296	-		2	6	0	0	0	-
14/09/2018	276	-	592	-	313			316	-		2	6	0	0	0	-
15/09/2018	63	205	100	280	69			37	75		2	4	0	2	0	-
16/09/2018	142		200		158			58			-	-	-	2	0	
17/09/2018	291	-	592	-	333			1,876	4,050		301	-	2,174	1	6	1
18/09/2018	291	-	592	-	330	301	-			2	5	0		1	1	-
19/09/2018	275	-	592	-	311	317	-			2	4	0		2	1	-
20/09/2018	298	-	592	-	340	294	-			1	6	1		0	0	-
21/09/2018	280	-	592	-	317	312	-			1	5	1		1	1	-
22/09/2018	62	219	100	280	68	38	61			1	5	1		1	3	-
23/09/2018	157		200		178	43				-	-	-		0	-	
24/09/2018	291	-	592	-	331	1,910	4,050			301	-	2,140		1	6	1
25/09/2018	282	-	592	-	320			310	-	1	6		1	0	0	-
26/09/2018	302	-	592	-	344			290	-	2	3		0	3	0	-
27/09/2018	304	-	592	-	347			288	-	0	4		2	2	0	-
28/09/2018	282	-	592	-	324			310	-	1	5		1	1	0	-
29/09/2018	63	219	100	280	69			37	61	1	5		1	1	1	-
30/09/2018	156		200		175			44		-	-		-	1	0	
01/10/2018	290	-	592	-	331			1,792	4,050	302	-		2,258	1	5	1
02/10/2018	298	-	592	-	340	294	-			2	4	0		2	0	-
03/10/2018	297	-	592	-	339	295	-			1	5	1		1	0	-
04/10/2018	250	-	592	-	287	342	-			0	2	2		4	1	-
05/10/2018	225	-	592	-	256	367	-			0	2	2		4	1	-

Date	Actual Aircraft Movements		Permitted Actual Aircraft Movements		Factored Aircraft Movements ^[1]		Permitted Factored Movements	Differences (Permitted - Actual)			Early Actual Movements		(Early Permitted - Actual)		Late Actual Movements ^[2]		
	Day	Week-end	Day	Week-end	Day	Week		Week	Actual Movements		Factored Movements	Early Morning		Early Morning		Late Eve / Sat Afternoon	3 Month Running Total
							Day		Week-end	06:30-06:44		06:30-06:59	06:30-06:44	06:30-06:59	22:00-22:30 / 12:30-13:00		
06/10/2018	68	214	100	280	76			32	66		0	1	2	5	2	-	
07/10/2018	146		200		163			54			-	-	-	1	-		
08/10/2018	302	-	592	-	348	1,853	4,050	290	-	2,197	2	6	0	0	0	-	
09/10/2018	287	-	592	-	328			305	-		1	6	1	0	0	0	-
10/10/2018	281	-	592	-	320			311	-		1	4	1	2	0	0	-
11/10/2018	287	-	592	-	328			305	-		2	6	0	0	0	0	-
12/10/2018	258	-	592	-	295			334	-		1	6	1	0	3	0	-
13/10/2018	71	209	100	280	79			29	71		1	4	1	2	1	1	-
14/10/2018	138		200		156			62			-	-	-	-	1	-	
15/10/2018	238	-	592	-	272			1,758	4,050		354	-	2,292	1	5	1	1
16/10/2018	260	-	592	-	295	332	-			1	3	1		3	0	0	-
17/10/2018	284	-	592	-	324	308	-			2	5	0		1	0	0	-
18/10/2018	281	-	592	-	320	311	-			1	5	1		1	0	0	-
19/10/2018	281	-	592	-	320	311	-			2	6	0		0	0	0	-
20/10/2018	68	206	100	280	74	32	74			2	4	0		2	3	0	-
21/10/2018	138		200		152	62				-	-	-		-	1	-	
22/10/2018	286	-	592	-	326	1,864	4,050			306	-	2,186		2	5	0	1
23/10/2018	294	-	592	-	338			298	-	2	5		0	1	0	0	-
24/10/2018	282	-	592	-	323			310	-	2	5		0	1	0	0	-
25/10/2018	281	-	592	-	319			311	-	2	4		0	2	0	0	-
26/10/2018	288	-	592	-	329			304	-	2	5		0	1	1	0	-
27/10/2018	67	206	100	280	74			33	74	1	2		1	4	2	0	-
28/10/2018	139		200		154			61		-	-		-	-	0	-	
29/10/2018	280	-	592	-	322			1,821	4,050	312	-		2,229	1	6	1	0
30/10/2018	299	-	592	-	347	293	-			2	5	0		1	0	0	-
31/10/2018	272	-	592	-	315	320	-			2	5	0		1	0	0	79
01/11/2018	273	-	592	-	316	319	-			1	5	1		1	0	0	-
02/11/2018	265	-	592	-	302	327	-			1	5	1		1	1	0	-

Date	Actual Aircraft Movements		Permitted Actual Aircraft Movements		Factored Aircraft Movements ^[1]		Permitted Factored Movements	Differences (Permitted - Actual)			Early Actual Movements		(Early Permitted - Actual)		Late Actual Movements ^[2]				
	Day	Week-end	Day	Week-end	Day	Week		Week	Actual Movements		Factored Movements	Early Morning		Early Morning		Late Eve / Sat Afternoon	3 Month Running Total		
							Day		Week-end	06:30-06:44		06:30-06:59	06:30-06:44	06:30-06:59	22:00-22:30 / 12:30-13:00				
03/11/2018	62	199	100	280	68			38	81		1	5	1	1	0	-			
04/11/2018	137		200		152			63			-	-	-	0	-				
05/11/2018	286	-	592	-	328	1,842	4,050	306	-	2,208	1	4	1	2	0	-			
06/11/2018	286	-	592	-	328			306	-		1	5	1	1	0	-			
07/11/2018	283	-	592	-	324			309	-		2	6	0	0	0	-			
08/11/2018	292	-	592	-	336			300	-		2	5	0	1	0	-			
09/11/2018	265	-	592	-	301			327	-		1	6	1	0	2	-			
10/11/2018	67	204	100	280	74						33	76		1	4	1	2	4	-
11/11/2018	137		200		151						63			-	-	0	-		
12/11/2018	279	-	592	-	320			1,741	4,050		313	-	2,309	1	6	1	0	0	-
13/11/2018	290	-	592	-	333	302	-			1	4	1		2	0	-			
14/11/2018	297	-	592	-	341	295	-			1	5	1		1	0	-			
15/11/2018	285	-	592	-	330	307	-			1	6	1		0	1	-			
16/11/2018	145	-	592	-	178	447	-			0	3	2		3	0	-			
17/11/2018	73	214	100	280	82					27	66			2	4	0	2	3	-
18/11/2018	141		200		158					59				-	-	0	-		
19/11/2018	283	-	592	-	324	1,841	4,050			309	-	2,209		1	5	1	1	1	-
20/11/2018	279	-	592	-	319			313	-	1	5		1	1	0	-			
21/11/2018	282	-	592	-	324			310	-	0	4		2	2	0	-			
22/11/2018	285	-	592	-	326			307	-	1	5		1	1	0	-			
23/11/2018	283	-	592	-	324			309	-	0	3		2	3	0	-			
24/11/2018	64	202	100	280	71					36	78			1	4	1	2	2	-
25/11/2018	138		200		154					62				-	-	1	-		
26/11/2018	290	-	592	-	333			1,811	4,050	302	-		2,239	2	5	0	1	0	-
27/11/2018	223	-	592	-	257	369	-			1	4	1		2	1	-			
28/11/2018	286	-	592	-	329	306	-			1	3	1		3	1	-			
29/11/2018	290	-	592	-	335	302	-			1	5	1		1	2	-			
30/11/2018	288	-	592	-	329	304	-			1	4	1		2	0	61			

Date	Actual Aircraft Movements		Permitted Actual Aircraft Movements		Factored Aircraft Movements ^[1]		Permitted Factored Movements	Differences (Permitted - Actual)			Early Actual Movements		(Early Permitted - Actual)		Late Actual Movements ^[2]	
	Day	Week-end	Day	Week-end	Day	Week		Week	Actual Movements		Factored Movements	Early Morning		Early Morning		Late Eve / Sat Afternoon
							Day		Week-end	06:30-06:44		06:30-06:59	06:30-06:44	06:30-06:59	22:00-22:30 / 12:30-13:00	
01/12/2018	69	206	100	280	77			31	74		2	5	0	1	1	-
02/12/2018	137		200		151			63			-	-	-	-	0	-
03/12/2018	291	-	592	-	334	1,875	4,050	301	-	2,175	2	4	0	2	0	-
04/12/2018	291	-	592	-	334			301	-		1	6	1	0	0	-
05/12/2018	285	-	592	-	327			307	-		1	6	1	0	0	-
06/12/2018	292	-	592	-	335			300	-		1	5	1	1	0	-
07/12/2018	278	-	592	-	318			314	-		2	5	0	1	0	-
08/12/2018	63	203	100	280	72			37	77		1	3	1	3	1	-
09/12/2018	140		200		156			60			-	-	-	0	-	
10/12/2018	294	-	592	-	338			1,881	4,050		298	-	2,169	1	4	1
11/12/2018	289	-	592	-	331	303	-			1	5	1		1	0	-
12/12/2018	287	-	592	-	329	305	-			2	6	0		0	0	-
13/12/2018	285	-	592	-	326	307	-			2	4	0		2	0	-
14/12/2018	282	-	592	-	323	310	-			2	3	0		3	0	-
15/12/2018	73	208	100	280	82	27	72			1	4	1		2	5	-
16/12/2018	135		200		152	65				-	-	-		0	-	
17/12/2018	262	-	592	-	297	1,666	4,050			330	-	2,384		0	4	2
18/12/2018	252	-	592	-	285			340	-	1	4		1	2	0	-
19/12/2018	247	-	592	-	281			345	-	0	4		2	2	0	-
20/12/2018	261	-	592	-	296			331	-	1	4		1	2	1	-
21/12/2018	245	-	592	-	277			347	-	0	2		2	4	3	-
22/12/2018	73	204	100	280	82			27	76	0	3		2	3	4	-
23/12/2018	131		200		147			69		-	-		-	0	-	
24/12/2018	147	-	592	-	165			1,100	2,695	445	-		1,595	0	2	-
25/12/2018	0	-	0	-	0	0	-			0	0	2		6	0	-
26/12/2018	99	-	100	-	112	1	-			0	0	2		6	0	-
27/12/2018	192	-	592	-	214	400	-			1	3	1		3	0	-
28/12/2018	204	-	592	-	229	388	-			0	4	2		2	0	-

Date	Actual Aircraft Movements		Permitted Actual Aircraft Movements		Factored Aircraft Movements ^[1]		Permitted Factored Movements	Differences (Permitted - Actual)			Early Actual Movements		(Early Permitted - Actual)		Late Actual Movements ^[2]		
	Day	Week-end	Day	Week-end	Day	Week		Week	Actual Movements		Factored Movements	Early Morning		Early Morning		Late Eve / Sat Afternoon	3 Month Running Total
									Day	Week-end		06:30-06:44	06:30-06:59	06:30-06:44	06:30-06:59		
29/12/2018	67	190	100	280	76			33	90		1	6	1	0	4	-	
30/12/2018	123		200		136			77			-	-	-	-	1	-	
31/12/2018	148	-	592	-	168			444	-		0	4	2	2	0	59	
Annual Total	80,668		111,000		91,310		120,000	30,332		28,690	362	1,371	-	-	267	-	

London City Airport
2018 Annual Performance Report
(Compliance with Planning Permission)

Annex 3
Annual Categorisation
Report (ACR)
31 May 2019



London City Airport,
City Aviation House
Royal Docks,
London E16 2PB
Tel: 020 7646 0000
LondonCityAirport.com

ANNEX 3

LONDON CITY AIRPORT ANNUAL CATEGORISATION REPORT 2018 NOISE MONITORING

Report to

London City Airport
The Royal Docks
London E16 2PB

A1125.57-R01.19-2.0-NW
17 April 2019

121 Salusbury Road
London NW6 6RG
T 020 7625 4411
F 020 7625 0250
mail@bickerdikeallen.com
www.bickerdikeallen.com

Bickerdike Allen Partners LLP is a limited liability partnership registered in England and Wales. Registered number: OC402418. Registered office: New Bridge Street House, 30-34 New Bridge Street, London, EC4V 6BJ

Partners (members)
Philippa Gavey, Giles Greenhalgh, Peter Henson, Roger Jowett



ANC

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	Page No.
1.0 Introduction	4
2.0 Planning Requirements	5
3.0 Noise Monitoring	7
4.0 Results	9
5.0 Conclusions	11
Appendix 1: Mean Annual Departure Noise Levels	
Appendix 2: Extract From Planning Conditions	

This report and all matters referred to herein remain confidential to the Client unless specifically authorised otherwise, when reproduction and/or publication is verbatim and without abridgement. This report may not be reproduced in whole or in part or relied upon in any way by any third party for any purpose whatsoever without the express written authorisation of Bickerdike Allen Partners LLP. If any third party whatsoever comes into possession of this report and/or any underlying data or drawings then they rely on it entirely at their own risk and Bickerdike Allen Partners LLP accepts no duty or responsibility in negligence or otherwise to any such third party.

Bickerdike Allen Partners LLP hereby grant permission for the use of this report by the client body and its agents in the realisation of the subject development, including submission of the report to the design team, contractor and sub-contractors, relevant building control authority, relevant local planning authority and for publication on its website.

1.0 INTRODUCTION

In accordance with London City Airport's planning obligations relating to the planning permission dated 9th July 2009, aircraft operating at London City Airport were required to be categorised by their departure noise level into one of five noise categories. This aircraft categorisation process is set out in detail in Condition 7 of the 2009 planning permission. This is known as the Noise Factored Movement (NFM) scheme.

The City Airport Development Programme (CADP) 1 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 this 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 and implemented in December 2017.

Condition 20 of the CADP1 permission required that the airport ran both the ANCS and the previous NFM schemes in parallel for 12 months, until the first review of the ANCS had been completed and approved by the LPA. This review has now been completed and was formally approved by the London Borough of Newham (LBN) on 29th March 2019. Therefore both schemes were in operation for the duration of 2018.

The categorisation procedure required that, before any aircraft was permitted to operate at London City Airport, a provisional noise categorisation for that aircraft type must have been approved in writing by the local planning authority. Annually, a review of the categorisation was undertaken of each approved aircraft type having regard to the departure noise levels recorded using the airport's noise monitoring system. This report records the results of this review for 2018.

The airport's noise monitoring system records the departure events of aircraft over the categorisation year (January to December inclusive), the results of which were used to undertake the annual review of the categorisation of aircraft.

This report records the results of a review of the categorisation of those aircraft using the airport that received categorisation in 2018. The review is based on the results obtained from noise monitoring in the period 1st January 2018 up to and including 31st December 2018.

In Appendix 1, this report includes a list of those aircraft that have already received confirmation of their categorisation to operate at London City Airport, together with their associated mean annual departure noise level (MADNL) recorded over the period 1st January 2018 up to and including 31st December 2018.

Information is also provided in this report on the number of aircraft movements and noise factored movements that have taken place at the airport over the period 1st January 2018 up to and including 31st December 2018.

2.0 PLANNING REQUIREMENTS

The planning requirements concerning the categorisation of aircraft based on noise factored movements at London City Airport are set out in Condition 7(4) of the planning permission dated 9th July 2009 and in the planning conditions for the CADP1 planning application (13/01228/FUL) permitted in July 2016.

It has been previously agreed that general aviation interim categorisation is simplified due to the small numbers of similar GA type aircraft. This places “*General Aviation: Executive Turbo-Fan Aircraft*” in Category A and “*General Aviation: Non-Jet Aircraft*” in Category B, according to the noise exposure categories (NECs) discussed in Section 2.1 below.

2.1 Noise Categories

Condition 7(2) to the planning permission of 9th July 2009 states that:

“Aircraft types using the airport shall be placed in categories and allocated noise factors as set out below:

Category	Noise Reference Level (PNdB)	Noise Factor
A	91.6 – 94.5	1.26
B	88.6 – 91.5	0.63
C	85.6 – 88.5	0.31
D	82.6 – 85.5	0.16
E	less than 82.6	0.08

“where the noise reference level is the departure noise level at the four noise categorisation locations shown on Plan P1 that accompanies this permission, expressed in PNdB...”

Figure 1 shows the noise categorisation points (NCPs) which are defined as being 2000 metres from the start-of-roll and 300 metres sideline from the extended centre line of the runway.

The noise reference level is determined using the mean annual departure noise levels (MADNLs) measured by the noise monitoring system. The noise factors are multiplying factors to the actual number of aircraft movements and are used to obtain the number of factored movements at the airport. The permitted numbers of actual and factored movements at the airport are detailed in Section 2.2 below.

2.2 Number of Aircraft Movements

Conditions 21 to 27 of the CADP1 permission, which are reproduced in Appendix 2, detail the maximum number of actual and noise factored movements that are permitted at the airport which are as follows:

- Noise factored movements not to exceed permitted actual movements by more than 25% in any one week, or 120,000 per calendar year, until the ANCS review has been approved (Condition 21).

Condition 8(5) of the 2009 permission defines a factored movement as stated below:

“(5) For the purpose of condition 8(4) the number of factored movements shall be calculated by multiplying the number of take-offs and landings by each aircraft by the relevant noise factor for an aircraft of this type under condition 7 and adding together the total for each aircraft type using the airport.”

- Scheduled movements not to exceed 45 in any given hour (Condition 22).
- Actual movements not to exceed the following (Condition 23):
 - (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 (i) 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
- Actual movements not to exceed 330 on any other Bank Holiday or Public Holiday, unless otherwise agreed in writing with the LPA, and in any event not to exceed 396 (Condition 24)
- Actual movements before 07:00 not to exceed 6 on any day (Condition 25)

- Actual movements before 06:45 not to exceed 2 on any day (Condition 26)
- No aircraft movements on Christmas Day (Condition 27)

3.0 NOISE MONITORING

3.1 The Noise Monitoring System

A precision Brüel & Kjær (B&K) noise monitoring system was first installed in March 1992 consisting of four permanent noise monitoring terminals arranged in two gateway pairs. The four noise monitoring terminals (NMTs) were located as close as possible to the four noise categorisation points (NCPs), taking account of local site constraints. Correction factors were developed to account for any difference in position between the NMT and NCP.

This system was upgraded by B&K in 2000 and a flight track monitoring system added. In 2013, the B&K noise and flight track monitoring system was replaced by a system provided by Topsonic Systemhaus GmbH. The Topsonic system uses Norsonic noise monitoring equipment. No changes to the masts were made so measurements continue to be made at precisely the same positions as before.

The NMTs send data to a central computer each day for long-term storage and analysis. The analysis determines which noise events should be correlated with aircraft movements by referring to radar data (previously the flight information display system, FIDS, prior to 2000). The system records the aircraft movements for each day.

The categorisation procedure is based around the measurement of noise from departing aircraft at the four noise categorisation points, two at each end of the runway. As an aircraft flies through a gateway pair of noise monitors, the departure noise level is measured in dB(A) at each noise monitoring terminal. Corrections are applied to the measured noise level to take account of the noise monitors not being located exactly at the noise categorisation points and also for converting from the noise units of dB(A) into PNdB¹. Finally, the mean departure noise level is determined from the average of the resulting gateway pair corrected noise measurements.

This noise control regime described above has been in operation for approximately 25 years. During this time, a large amount of data has been obtained concerning the departure noise

¹ dB(A) is the unit of the A-weighted Sound Level. PNdB is the unit of the Perceived Noise Level. The latter is considered to better represent the subjective noise of an aircraft noise event by taking into account the presence of any discrete tones.

characteristics of aircraft in operation at the airport. As a result, it has been possible to categorise each aircraft type operating at the airport.

For the existing noise monitoring system to operate efficiently, it is necessary to maintain the four noise monitors in operation and, as far as possible, to ensure that the landscape around each monitor is relatively clear of any large objects (such as buildings). Significant development has taken place around the airport over the years, particularly in close proximity to some of the noise monitoring terminals. This led to the need to relocate some of the noise monitors from their original positions (e.g. NMT 1 and NMT 3) to ensure more accurate noise monitoring. The current locations of the four noise monitoring terminals are shown in Figures 2 and 3.

During the calendar year of 2018, the noise and flight track monitoring system has been in operation every day. In addition, each noise monitoring terminal has been in operation every day, with two exceptions:

- On 12th August 2018 the NTK system was being upgraded which unexpectedly caused measurements to be interrupted for a short period. This work affected all NMTs to some extent. For NMTs 2 and 3 this resulted in no measurements being recorded on 12th August. For the other NMTs only part of the day was affected. A similar issue also occurred on the 13th and 17th August, although all NMTs recorded some measurements on those dates. The upgrade work is now complete and therefore this issue is unlikely to cause any further loss of data.
- On 28th November 2018 at NMT 2 there was an empty ethanol canister which meant that only solar power could be used. This caused intermittent issues until it was replaced on 6th December, although after 28th November some measurements were recorded on each day.

The measurement of data achieved a correlation of 95% of all aircraft departures from the airport during 2018. This is above the target correlation rate (80%) set out in the Temporary Noise Monitoring Strategy which was required under Condition 28 of the CADP1 planning permission, although strictly this target no longer applies as the Noise Monitoring and Mitigation Strategy (NOMMS) is operational.

4.0 RESULTS

4.1 Noise Levels

The following correction factors have been determined from previous studies² and are applied to account for the NMT to NCP relationship and any associated reflection effects, see below:

NMT	NMT – NCP and reflection effect correction factors
1 (NW)	-6.1
2 (SW)	-4.6
3 (NE)	-6.4
4 (SE)	-1.7

The airport has sought provisional categorisation for the Challenger 350, Gulfstream GVI, and Pilatus PC24 during 2018, however this was not approved before the end of the year.

A full list of categorised aircraft types and their associated mean annual departure noise level recorded over the period 1st January 2018 up to and including 31st December 2018 is included in Appendix 1.

4.2 Aircraft Performance

The noise levels presented in Appendix 1 indicate that all aircraft are operating within or below their categorisation.

Turbo-fan executive aircraft are categorised universally as Category A, and the turbo-prop executive aircraft are categorised universally as Category B. Appendix 1 indicates that most turbo-fan executive aircraft operated below Category A this year.

The Bombardier CS100, Cessna C680A, Falcon FA8X and Gulfstream G280 as Category A aircraft all had their provisional categorisation approved in 2018. These aircraft all operated within or below their provisional category in 2018.

Although previously categorised as Category B and falling in Category B based on the 2018 results, the ATR 72 operated at higher noise levels in previous years such as 2016 when it averaged

² NMT Correction Factor Assessment Report, Bickerdike Allen Partners, Report A1125-111-R01-PH, 9th July 2008.

91.9 PNdB. As a result, the categorisation of the ATR 72 was reviewed upwards and from 2017 it was re-categorised as a Category A aircraft.

4.3 Number of Actual and Factored Aircraft Movements

Table 1 shows the number of actual and factored aircraft movements in the period 1st January 2018 to 31st December 2018 inclusive.

Aircraft Type	Number of Aircraft Movements	Noise Factor	Number of Factored Movements¹
Airbus A318	507	1.26	639
BAe 146	108	1.26	136
Bombardier CS100	2126	1.26	2679
RJ85	4383	1.26	5523
Dornier 328 Jet	900	1.26	1134
Embraer 170	11704	1.26	14747
Embraer 190	39127	1.26	49300
Dash 8-400	12032	0.63	7580
Fokker 50	1076	0.63	678
Dornier 328	72	0.63	45
ATR 42	551	0.63	347
ATR 72	532	1.26	670
Saab 2000	2594	0.63	1634
General Aviation: Turbo-Fan Aircraft	4881	1.26	6150
General Aviation: Non-Jet Aircraft	75	0.63	47
TOTAL:	80668		91310

¹ Computed to the nearest whole number

Table 1: Aircraft Movement Numbers

The analysis indicates that the Airport is currently operating within the annual limits on aircraft movements and factored movements contained in condition 21 of the July 2016 planning permission.

5.0 CONCLUSIONS

This report presents mean annual departure noise levels of categorised aircraft based on data measured by the noise monitoring system during the period 1st January 2018 to 31st December 2018.

The Bombardier CS100, Cessna C680A, Falcon FA8X and Gulfstream G280 as Category A aircraft all had their provisional categorisation confirmed in 2018. All aircraft operated within or below their noise category in 2018.

This report also presents movement numbers for aircraft operating at London City Airport during the period 1st January 2018 up to and including 31st December 2018. During this period, the airport was operating within the annual limits on aircraft movements and factored movements contained in the planning conditions that apply to the Airport.

Nick Williams
for Bickerdike Allen Partners LLP

David Charles
Partner

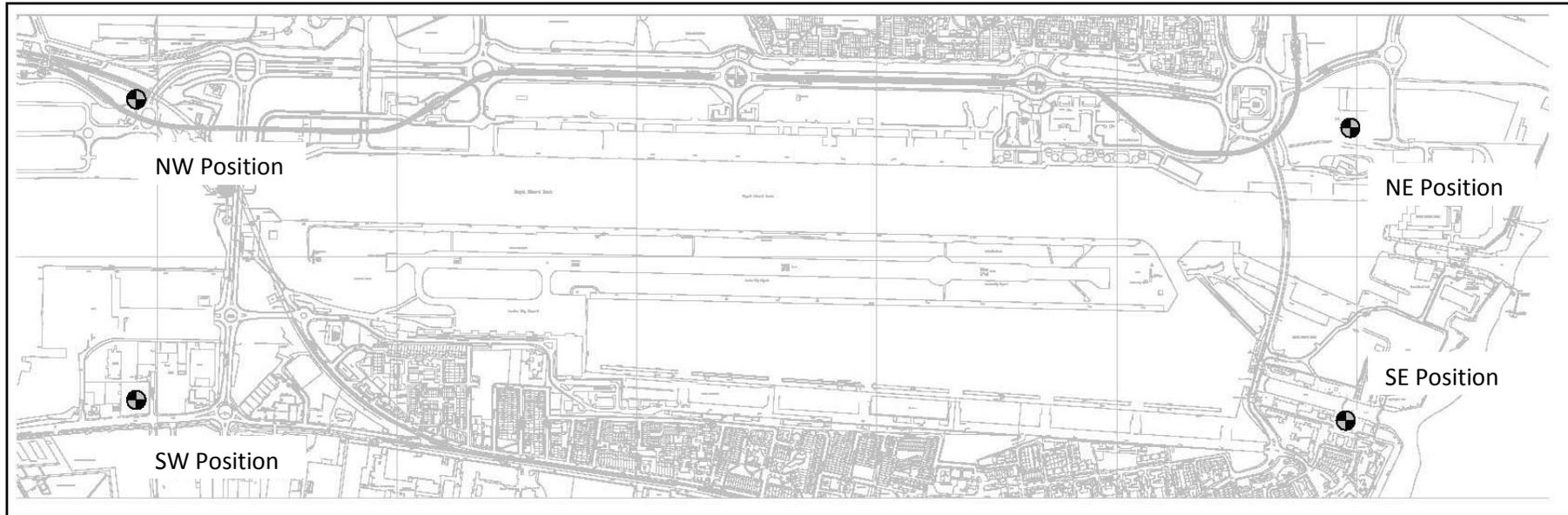


Figure 1 - Noise Categorisation Locations

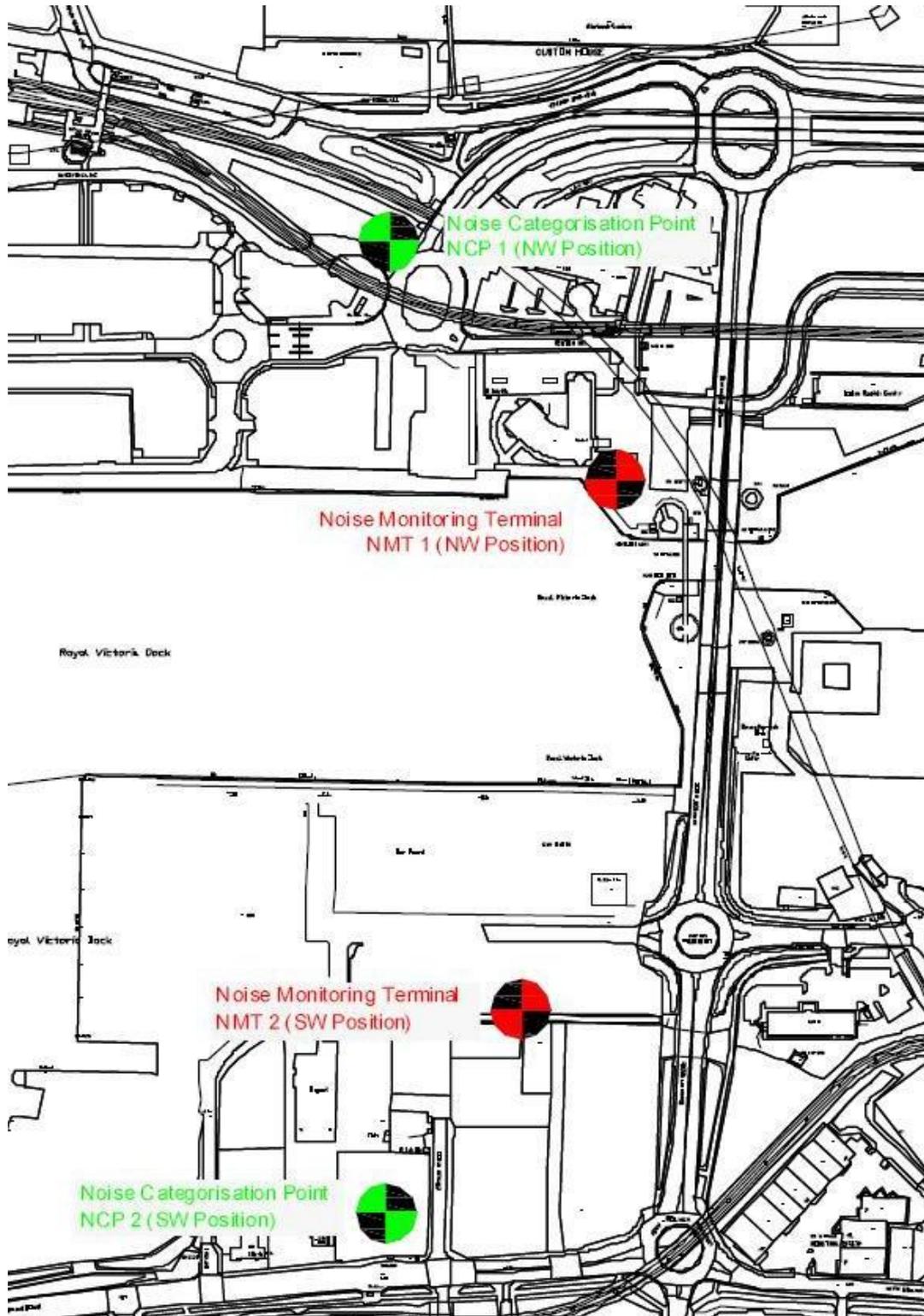


Figure 2 – Noise monitoring locations, west of runway

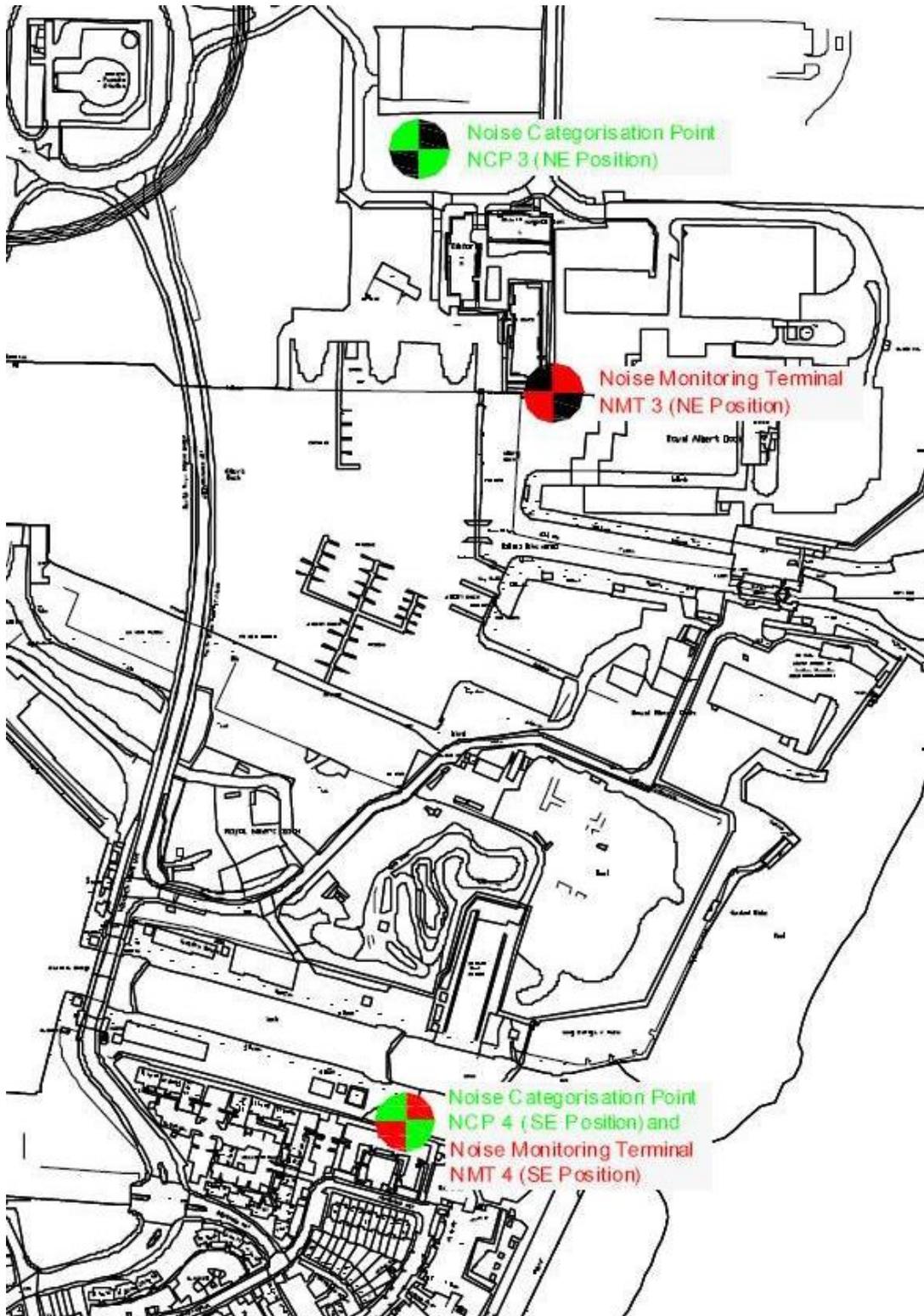


Figure 3 – Noise monitoring locations, east of runway

APPENDIX 1

MEAN ANNUAL DEPARTURE NOISE LEVELS

Aircraft Type	Measured Mean Annual Departure Noise Level (PNdB)	2018 Noise Category
Airbus A318	93.1	A
ATR 42	90.1	B
ATR 72	91.5	A
BAe 146-100	--*	A
BAe 146-200	92.4	A
BAe 146-300	--*	A
Bombardier CS100	90.0	A
Bombardier Global 6000	90.7	A
Canadair CL60	89.0	A
Cessna Citation C25A	88.5	A
Cessna Citation C25B	88.5	A
Cessna Citation C25C	--*	A
Cessna Citation C510	86.9	A
Cessna Citation C525	87.4	A
Cessna Citation C550	88.5	A
Cessna Citation C560	89.1	A
Cessna Citation C56X	86.6	A
Cessna Citation C680	88.3	A
Cessna Citation C680A	87.9	A
Dassault Falcon 2000EX	86.8	A
Dassault Falcon 50	--*	A
Dassault Falcon 7X	85.9	A
Dassault Falcon 8X	84.6	A
Dassault Falcon 900	89.8	A
Dornier 328	87.6	B
Dornier 328 Jet	90.7	A
Dash 8-400	89.7	B
Embraer 135	89.8	A
Embraer 170	93.2	A
Embraer 190	94.3	A
Embraer 300 Phenom	90.0	A
Embraer 450 Legacy	--*	A
Embraer 500 Legacy	90.7	A
Fokker 50	90.1	B
Gulfstream G150	--*	A

Aircraft Type	Measured Mean Annual Departure Noise Level (PNdB)	2018 Noise Category
Gulfstream G280	88.3	A
Learjet 45	--*	A
Piaggio 180	88.5	B
Piper Navajo 31	--*	B
Raytheon Beechcraft 200	--*	B
Raytheon Beechjet 400	--*	A
Raytheon Hawker 800XP	88.8	A
RJ-85	94.2	A
Saab 2000	89.4	B

*Insufficient numbers recorded (i.e. fewer than 10 departures).

Table A1.1 – Mean Annual Departure Noise Levels 2018

APPENDIX 2

EXTRACT FROM PLANNING CONDITIONS

LBN/107(b)

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

LBN/107(b)

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).

London City Airport
2018 Annual Performance Report
(Compliance with Planning Permission)

Annex 4
Aircraft Noise Categorisation
Scheme (ANCS) Report
31 May 2019



London City Airport,
City Aviation House
Royal Docks,
London E16 2PB
Tel: 020 7646 0000
LondonCityAirport.com

ANNEX 4

LONDON CITY AIRPORT

AIRCRAFT NOISE CATEGORISATION SCHEME

REPORT 2018

Report to

London City Airport
The Royal Docks
London E16 2PB

A1125.57-ANCS-R01.19-4.0-NW
22 May 2019

121 Salusbury Road
London NW6 6RG
T 020 7625 4411
F 020 7625 0250
mail@bickerdikeallen.com
www.bickerdikeallen.com

Bickerdike Allen Partners LLP is a limited liability partnership registered in England and Wales. Registered number: OC402418. Registered office: New Bridge Street House, 30-34 New Bridge Street, London, EC4V 6BJ

Partners (members)
Philippa Gavey, Giles Greenhalgh, Peter Henson, Roger Jowett



ANC
ACROUSTIC NOISE CONSULTING

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	Page No.
1.0 Introduction	4
2.0 Quota Count Classification System	5
3.0 Quota Count Budget	9
4.0 Noise Monitoring	12
Appendix 1: Derivation of Departure and Arrival Level for Quota Count Assessment	
Appendix 2: Quota Count Daily Totals	
Appendix 3: 2018 Noise Monitoring Results by Airline and Aircraft Type	

This report and all matters referred to herein remain confidential to the Client unless specifically authorised otherwise, when reproduction and/or publication is verbatim and without abridgement. This report may not be reproduced in whole or in part or relied upon in any way by any third party for any purpose whatsoever without the express written authorisation of Bickerdike Allen Partners LLP. If any third party whatsoever comes into possession of this report and/or any underlying data or drawings then they rely on it entirely at their own risk and Bickerdike Allen Partners LLP accepts no duty or responsibility in negligence or otherwise to any such third party.

Bickerdike Allen Partners LLP hereby grant permission for the use of this report by the client body and its agents in the realisation of the subject development, including submission of the report to the design team, contractor and sub-contractors, relevant building control authority, relevant local planning authority and for publication on its website.

1.0 INTRODUCTION

The City Airport Development Programme (CADP) 1 planning application (13/01228/FUL), relating to works at London City Airport (LCA), 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 this 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. The ANCS was run in parallel with the previous Noise Factored Scheme (NFS) until 29th March 2019, when the London Borough of Newham (LBN) formally approved the review of the ANCS following its first year of operation. Following the approval of the review, the NFS has been superseded by the ANCS.

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 of 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.

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 (INM)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 INM 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 Integrated Noise Model (INM) Version 7.0d, 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 Commission³, 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 EASA⁴ database for the specific aircraft type⁵ 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.

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

³ Commission Regulation (EU) 748/2012

⁴ European Aviation Safety Agency (2016) *Aircraft type certificate data sheets*, [Online], Available: <http://www.easa.europa.eu/certification/type-certificates/aircraft.php> [6/09/2016].

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.

in ICAO Annex 16⁶. 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 16⁶. 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 AIP⁷. 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 2018 QC Assessment

The QC score has been calculated for each aircraft movement during 2018. 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 2018, broken down by aircraft type. This shows that the airport has operated within its quota budget of 22,000 for 2018.

Aircraft Type	Average QC Score ¹		2018 Total Mvts		2018 Quota Count ²		
	Arr	Dep	Arr	Dep	Arr	Dep	Total
Airbus A318	0.080	0.400	253	254	20	102	122
Avro RJ85	0.063	0.260	2191	2192	138	571	709
BAe 146	0.063	0.315	54	54	3	17	20
Bombardier CS100	0.050	0.125	1063	1063	53	133	186
Dornier 328 Jet	0.125	0.160	450	450	56	72	128
Embraer 135	0.050	0.111	49	49	2	5	8
Embraer 170	0.063	0.400	5851	5853	369	2341	2710
Embraer 190	0.050	0.397	19562	19563	978	7775	8754
Embraer 290	0.040	0.100	1	1	0	0	0
ATR 42	0.315	0.050	275	276	87	14	100
ATR 72	0.250	0.102	266	266	67	27	93
Dash 8-400	0.125	0.110	6016	6016	752	661	1413
Dornier 328	0.315	0.160	36	36	11	6	17
Fokker 50	0.400	0.160	538	538	215	86	301
Saab 2000	0.315	0.160	1296	1298	408	208	616
General Aviation: Jet Aircraft	0.050	0.111	2390	2393	119	266	385
General Aviation: Non-Jet Aircraft	0.315	0.160	38	37	12	6	18
TOTAL			40329	40339	3292	12289	15581

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: 2018 QC Assessment

3.4 2019 QC Forecast

Based on the forecast provided by LCA, a predicted QC total for 2019 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 2019.

Aircraft Type	Assumed QC Score		2019 Forecast Movements ¹		2019 Forecast Quota Count ²		
	Arr	Dep	Arr	Dep	Arr	Dep	Total
Airbus A318	0.08	0.4	292	243	23	97	121
Avro RJ85	0.063	0.25	2821	2869	178	717	895
Bombardier CS100	0.05	0.16	1799	1799	90	225	315
Dornier 328 Jet	0.125	0.16	535	535	67	86	152
Embraer 170	0.063	0.4	3988	3939	251	1576	1827
Embraer 190	0.05	0.4	24365	24365	1218	9746	10964
ATR 72	0.25	0.125	1798	1798	449	180	629
Dash 8-400	0.125	0.1	5842	5842	730	584	1315
General Aviation: Turbo-Fan Aircraft	0.05	0.1	2238	2238	112	224	336
General Aviation: Non-Jet Aircraft	0.315	0.16	28	28	9	4	13
TOTAL			43705	43656	3128	13439	16567

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 2018 activity.

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

Table 3: 2019 QC Prediction

The above calculation shows that in 2019 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.

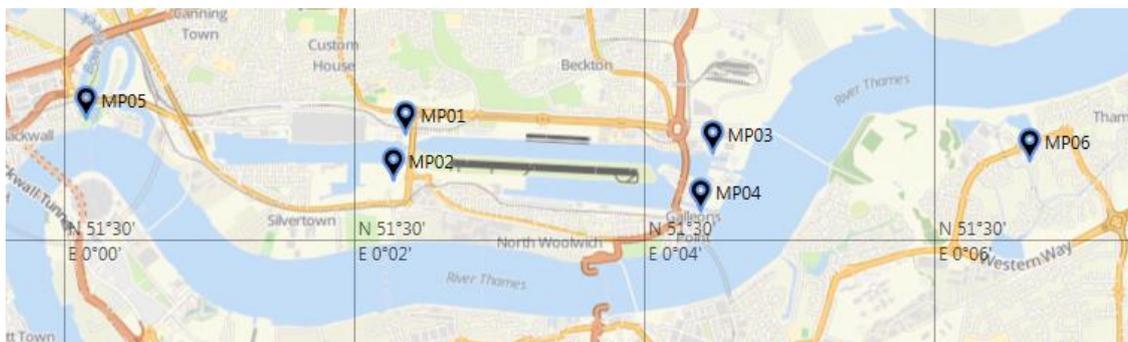


Figure 1: Location of NMTs 1-6

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

- the average annual SIDELINE⁸ 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.

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 4, Annex 1.

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 2018, on-site calibration of the microphones at NMTs 1-4 was carried out on a monthly basis. This higher frequency of calibration was commenced due to a fault occurring with one of the NMTs in 2016, as LCA were keen to ensure that if the issue re-occurred then it was picked up at the earliest opportunity. The range of results from the field calibration checks over the year was less than 0.5 dB for each NMT.

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 only aircraft which recorded at least one arrival and departure measurement per day on average have been included in the comparison. This approach has been agreed with LBN.

The 2018 noise levels for the aircraft type and airline combinations which recorded at least once arrival and departure measurement per day are presented in Table 4, alongside their change from 2017. The 2018 noise levels for all aircraft and airline combinations are given in Appendix 3.

Aircraft Type Code	Airline Code	Sideline (NMTs 1-4)		Flyover (NMTs 5-6)		Approach (NMTs 5-6)	
		Avg Level, EPNdB	Change from 2017 ¹	Avg Level, EPNdB	Change from 2017 ¹	Avg Level, EPNdB	Change from 2017 ¹
BCS1	LX	93.9	-0.4	84.3	0.4	83.3	-0.5
DH8D	BE	92.5	-0.3	83.1	0.6	84.2	-0.1
DH8D	LG	92.2	-0.4	82.7	0.2	84.6	-0.3
E170	BA	98.2	-0.7	88.8	0.1	84.5	0.2
E190	AZ	98.7	-0.7	88.3	-0.4	84.7	0.0
E190	BA	99.3	-0.6	88.0	-0.3	85.2	0.0
E190	KL	99.3	-0.6	88.3	0.1	85.3	-0.2

Aircraft Type Code	Airline Code	Sideline (NMTs 1-4)		Flyover (NMTs 5-6)		Approach (NMTs 5-6)	
		Avg Level, EPNdB	Change from 2017 ¹	Avg Level, EPNdB	Change from 2017 ¹	Avg Level, EPNdB	Change from 2017 ¹
E190	LH	99.0	-0.7	87.5	-0.2	85.7	-0.4
E190	LX	99.2	-0.9	88.1	-0.3	85.8	0.0
E190	TP	100.3	0.1	88.5	0.0	84.8	-0.1
F50	VO	92.1	-0.7	83.9	-0.1	89.2	0.0
J328	BA	92.5	-0.4	84.1	-0.6	85.8	0.1
RJ85	WX	99.1	-0.1	91.5	0.5	84.0	0.7
SB20	BA	92.4	0.1	84.3	0.2	82.2	-0.1

¹ Negative change indicates a reduction in noise level.

Table 4: 2018 Noise Monitoring Results and Comparison to 2017

The results in Table 4 show that for all of the most commonly operating aircraft and airline combinations, there has been no significant change⁹ in the average measured noise levels when compared to 2017. Therefore the Quota Count (QC) classifications used in 2017 are considered to remain appropriate.

Nick Williams
for Bickerdike Allen Partners LLP

David Charles
Partner

⁹ It is noted that the changes are generally of a similar magnitude to changes in calibration, i.e. 0.5 dB(A) or less. However, the variation is not consistent between aircraft types and therefore the calibration changes are not the cause of the change in measured noise levels. For example the changes at NMTs 5-6 range from +0.6 to -0.6 for departures and from +0.7 to -0.5 for arrivals. If these changes were due to a shift in calibration then one would expect that it would affect different aircraft similarly.

APPENDIX 1

DERIVATION OF DEPARTURE AND ARRIVAL LEVEL FOR QUOTA COUNT ASSESSMENT

Derivation of Noise Certification Level - Departures

Under regulations laid out by the European Commission¹⁰, 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 departure 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 EASA¹¹ database for the specific aircraft type¹² 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.

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

¹⁰ Commission Regulation (EU) 748/2012

¹¹ European Aviation Safety Agency (2016) *Aircraft type certificate data sheets*, [Online], Available: <http://www.easa.europa.eu/certification/type-certificates/aircraft.php> [6/09/2016].

¹² 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.

in ICAO Annex 16¹³. 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 16⁶. This resulting value is used as the approach noise certification level for that given turboprop aircraft type for the purposes of quota count classification.

The basic principles of how to calculate the departure and arrival level as part of the Night Noise Quota Count schemes that are in place at Heathrow, Gatwick and Stansted Airports are described in a report prepared by the Civil Aviation Authority¹⁴.

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). How to derive these Noise Certification Levels is described above.
- ii) The Departure Noise Level is determined from the aircraft's noise certification values (EPNLs) for sideline and flyover based on the following equation:
$$\text{Departure Noise Level} = (\text{Sideline EPNL} + \text{Flyover EPNL})/2$$
- iii) The Arrival Noise Level is determined from the approach noise certification level derived as described above and the equation:
$$\text{Arrival Noise Level} = \text{Approach Noise Certification Level EPNL} - 9$$
- iv) For propeller aircraft with maximum take-off weight (MTOW) not exceeding 5700 kg and older propeller aircraft (i.e. those not subject to the same certification noise measurements), aircraft are classified according to assumptions based on available noise data.

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

¹⁴ ERCD Report 0204 Review of the Quota Count (QC) System: Re-Analysis of the Differences Between Arrivals and Departures

- 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.

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 LCA’s Aircraft Noise Categorisation Scheme (ANCS) and Noise Management and Mitigation Scheme (NOMMS) but carry different meanings in each. Annex 1 attached to this appendix provides an explanation of these terms in the context of both the ANCS and the NOMMS.

ANNEX 1

EXPLANATION OF “SIDELINE” AND “FLYOVER” POINTS IN THE NOMMS AND ANCS

The *terms* “sideline” and “flyover” are used in the NOMMS¹⁵ and ANCS¹⁶ 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 do not relate to the same positions. 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 use the terms *sideline* and *flyover* for two of these three points (the third is known as 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.

¹⁵ NOMMS – Noise Management and Mitigation Strategy

¹⁶ ANCS – Aircraft Noise Categorisation Scheme

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

The six fixed noise monitors shown in Figure 1 are used to measure noise levels during aircraft departures. 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 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 NMTs 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 NMTs 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 schemes, the LCA QC system is based on aircraft noise certification data where each aircraft is allotted a QC value based on the noise generated by the aircraft on departure and arrival under prescribed certification conditions¹⁷.

¹⁷ 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.

Certification levels, determined in accordance with prescribed procedures under ICAO Annex 16¹⁸ 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 Regulations¹⁹
- they are reliable and independently verified indicators of aircraft noise performance;
- they are freely available for practically every relevant aircraft type²⁰.

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 0205²¹, illustrates these three noise certification points below, specifically with the sideline point for jet-powered aircraft. As noted above for propeller aircraft the sideline position may be different. The reason for this given in ERCD 0205 is because of practical difficulties in measuring sideline noise from propeller aircraft at the 450 m

¹⁸ Annex 16 to the Convention on International Civil Aviation, Environmental Protection, Volume 1, Aircraft Noise

¹⁹ Aerodrome (Noise Restrictions) (Rules and Procedures) Regulations 2003

²⁰ European Aviation Safety Agency (2016) *Aircraft type certificate data sheets*, [Online], Available: <http://www.easa.europa.eu/certification/type-certificates/aircraft.php> [6/09/2016].

²¹ ERCD Report 0205 Quota Count Validation Study: Noise Measurements and Analysis, Civil Aviation Authority

sideline point required for jet-powered aircraft. ERCD found that the results obtained in the two locations are practically the same.

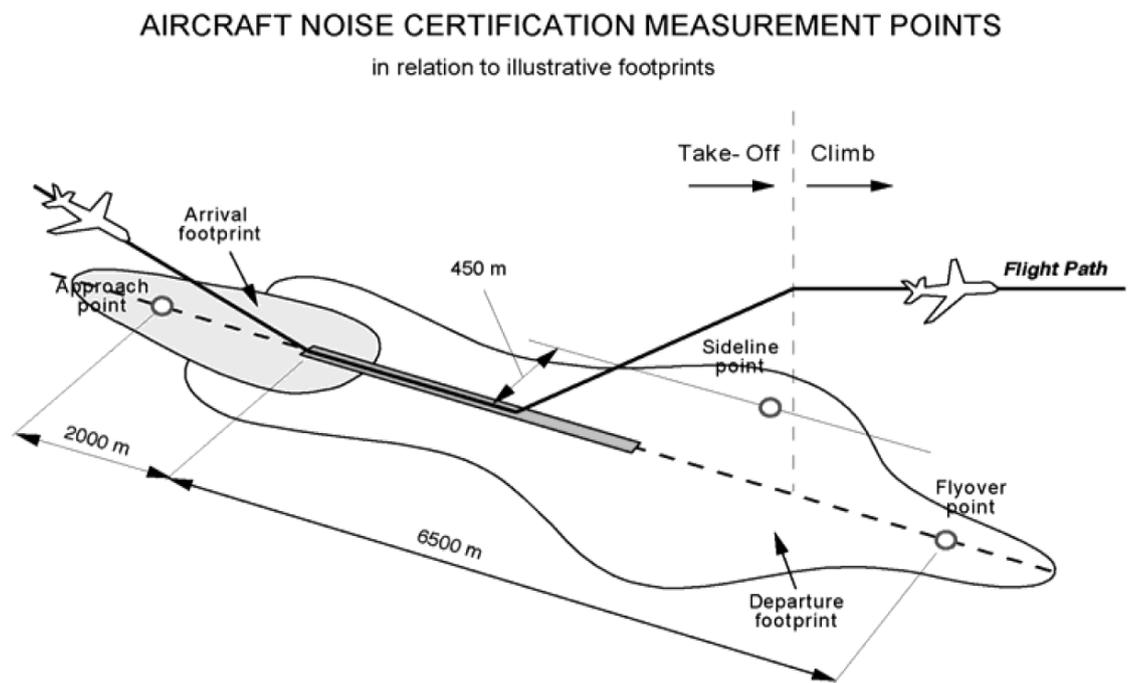


Figure A1.2: Aircraft noise certification measurement points

APPENDIX 2

QUOTA COUNT DAILY TOTALS

The following table gives the daily and weekly Quota Count totals for 2018. 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
01/01/2018	22	215
02/01/2018	40	
03/01/2018	38	
04/01/2018	39	
05/01/2018	41	
06/01/2018	12	
07/01/2018	23	
08/01/2018	45	264
09/01/2018	45	
10/01/2018	46	
11/01/2018	46	
12/01/2018	46	
13/01/2018	12	
14/01/2018	24	
15/01/2018	48	280
16/01/2018	49	
17/01/2018	49	
18/01/2018	47	
19/01/2018	50	
20/01/2018	12	
21/01/2018	26	
22/01/2018	51	292
23/01/2018	49	
24/01/2018	49	
25/01/2018	53	

Date	Daily Quota Count	Weekly Total
26/01/2018	51	
27/01/2018	13	
28/01/2018	26	
29/01/2018	57	315
30/01/2018	55	
31/01/2018	55	
01/02/2018	57	
02/02/2018	53	
03/02/2018	13	
04/02/2018	26	
05/02/2018	56	317
06/02/2018	55	
07/02/2018	56	
08/02/2018	57	
09/02/2018	54	
10/02/2018	14	
11/02/2018	26	
12/02/2018	0	253
13/02/2018	53	
14/02/2018	54	
15/02/2018	54	
16/02/2018	53	
17/02/2018	15	
18/02/2018	25	
19/02/2018	54	319
20/02/2018	54	
21/02/2018	57	
22/02/2018	57	

Date	Daily Quota Count	Weekly Total
23/02/2018	55	
24/02/2018	14	
25/02/2018	27	
26/02/2018	56	205
27/02/2018	55	
28/02/2018	24	
01/03/2018	25	
02/03/2018	13	
03/03/2018	6	
04/03/2018	26	
05/03/2018	57	324
06/03/2018	56	
07/03/2018	56	
08/03/2018	58	
09/03/2018	55	
10/03/2018	14	
11/03/2018	27	
12/03/2018	57	324
13/03/2018	58	
14/03/2018	57	
15/03/2018	59	
16/03/2018	56	
17/03/2018	12	
18/03/2018	24	
19/03/2018	56	320
20/03/2018	56	
21/03/2018	57	
22/03/2018	58	

Date	Daily Quota Count	Weekly Total
23/03/2018	54	
24/03/2018	13	
25/03/2018	26	
26/03/2018	55	283
27/03/2018	54	
28/03/2018	54	
29/03/2018	55	
30/03/2018	31	
31/03/2018	12	
01/04/2018	22	
02/04/2018	32	289
03/04/2018	51	
04/04/2018	56	
05/04/2018	56	
06/04/2018	54	
07/04/2018	14	
08/04/2018	27	
09/04/2018	39	289
10/04/2018	51	
11/04/2018	54	
12/04/2018	46	
13/04/2018	57	
14/04/2018	14	
15/04/2018	28	
16/04/2018	57	322
17/04/2018	55	
18/04/2018	58	
19/04/2018	56	

Date	Daily Quota Count	Weekly Total
20/04/2018	55	
21/04/2018	13	
22/04/2018	28	
23/04/2018	57	321
24/04/2018	56	
25/04/2018	56	
26/04/2018	57	
27/04/2018	54	
28/04/2018	14	
29/04/2018	28	
30/04/2018	53	
01/05/2018	54	313
02/05/2018	56	
03/05/2018	58	
04/05/2018	54	
05/05/2018	13	
06/05/2018	25	
07/05/2018	32	
08/05/2018	55	295
09/05/2018	58	
10/05/2018	55	
11/05/2018	54	
12/05/2018	13	
13/05/2018	28	
14/05/2018	57	
15/05/2018	57	329
16/05/2018	59	
17/05/2018	59	

Date	Daily Quota Count	Weekly Total
18/05/2018	56	
19/05/2018	12	
20/05/2018	29	
21/05/2018	57	329
22/05/2018	58	
23/05/2018	58	
24/05/2018	59	
25/05/2018	57	
26/05/2018	13	
27/05/2018	27	
28/05/2018	35	285
29/05/2018	52	
30/05/2018	56	
31/05/2018	44	
01/06/2018	55	
02/06/2018	12	
03/06/2018	30	
04/06/2018	57	330
05/06/2018	58	
06/06/2018	59	
07/06/2018	59	
08/06/2018	56	
09/06/2018	14	
10/06/2018	28	
11/06/2018	59	337
12/06/2018	59	
13/06/2018	60	
14/06/2018	60	

Date	Daily Quota Count	Weekly Total
15/06/2018	58	
16/06/2018	12	
17/06/2018	30	
18/06/2018	59	330
19/06/2018	59	
20/06/2018	59	
21/06/2018	60	
22/06/2018	55	
23/06/2018	12	
24/06/2018	27	
25/06/2018	56	321
26/06/2018	55	
27/06/2018	57	
28/06/2018	57	
29/06/2018	53	
30/06/2018	12	
01/07/2018	29	
02/07/2018	55	316
03/07/2018	54	
04/07/2018	55	
05/07/2018	57	
06/07/2018	54	
07/07/2018	10	
08/07/2018	29	
09/07/2018	55	308
10/07/2018	53	
11/07/2018	54	
12/07/2018	54	

Date	Daily Quota Count	Weekly Total
13/07/2018	52	
14/07/2018	11	
15/07/2018	28	
16/07/2018	54	303
17/07/2018	53	
18/07/2018	53	
19/07/2018	53	
20/07/2018	53	
21/07/2018	12	
22/07/2018	26	
23/07/2018	53	294
24/07/2018	53	
25/07/2018	52	
26/07/2018	52	
27/07/2018	44	
28/07/2018	12	
29/07/2018	28	
30/07/2018	54	302
31/07/2018	51	
01/08/2018	51	
02/08/2018	53	
03/08/2018	53	
04/08/2018	12	
05/08/2018	28	
06/08/2018	52	285
07/08/2018	49	
08/08/2018	49	
09/08/2018	50	

Date	Daily Quota Count	Weekly Total
10/08/2018	48	
11/08/2018	10	
12/08/2018	27	
13/08/2018	51	289
14/08/2018	50	
15/08/2018	50	
16/08/2018	51	
17/08/2018	49	
18/08/2018	11	
19/08/2018	27	
20/08/2018	51	
21/08/2018	50	
22/08/2018	50	
23/08/2018	53	
24/08/2018	50	
25/08/2018	11	
26/08/2018	27	
27/08/2018	34	285
28/08/2018	54	
29/08/2018	51	
30/08/2018	52	
31/08/2018	52	
01/09/2018	13	
02/09/2018	29	312
03/09/2018	56	
04/09/2018	55	
05/09/2018	54	
06/09/2018	55	

Date	Daily Quota Count	Weekly Total
07/09/2018	52	
08/09/2018	13	
09/09/2018	26	
10/09/2018	57	319
11/09/2018	55	
12/09/2018	57	
13/09/2018	57	
14/09/2018	53	
15/09/2018	12	
16/09/2018	27	
17/09/2018	56	
18/09/2018	56	
19/09/2018	54	
20/09/2018	57	
21/09/2018	54	
22/09/2018	12	
23/09/2018	28	
24/09/2018	57	323
25/09/2018	54	
26/09/2018	58	
27/09/2018	58	
28/09/2018	55	
29/09/2018	12	
30/09/2018	29	
01/10/2018	56	
02/10/2018	57	
03/10/2018	56	
04/10/2018	48	

Date	Daily Quota Count	Weekly Total
05/10/2018	45	
06/10/2018	13	
07/10/2018	28	
08/10/2018	57	312
09/10/2018	56	
10/10/2018	54	
11/10/2018	56	
12/10/2018	52	
13/10/2018	14	
14/10/2018	26	
15/10/2018	48	302
16/10/2018	50	
17/10/2018	55	
18/10/2018	54	
19/10/2018	55	
20/10/2018	14	
21/10/2018	27	
22/10/2018	55	313
23/10/2018	56	
24/10/2018	54	
25/10/2018	55	
26/10/2018	55	
27/10/2018	13	
28/10/2018	26	
29/10/2018	54	305
30/10/2018	56	
31/10/2018	53	
01/11/2018	53	

Date	Daily Quota Count	Weekly Total
02/11/2018	52	
03/11/2018	11	
04/11/2018	26	
05/11/2018	55	309
06/11/2018	55	
07/11/2018	54	
08/11/2018	55	
09/11/2018	52	
10/11/2018	12	
11/11/2018	26	
12/11/2018	55	290
13/11/2018	56	
14/11/2018	56	
15/11/2018	55	
16/11/2018	30	
17/11/2018	13	
18/11/2018	25	
19/11/2018	55	310
20/11/2018	55	
21/11/2018	55	
22/11/2018	55	
23/11/2018	53	
24/11/2018	12	
25/11/2018	26	
26/11/2018	56	301
27/11/2018	43	
28/11/2018	55	
29/11/2018	55	

Date	Daily Quota Count	Weekly Total
30/11/2018	55	
01/12/2018	13	
02/12/2018	25	
03/12/2018	55	311
04/12/2018	55	
05/12/2018	54	
06/12/2018	56	
07/12/2018	54	
08/12/2018	12	
09/12/2018	26	
10/12/2018	56	
11/12/2018	55	
12/12/2018	55	
13/12/2018	55	
14/12/2018	54	
15/12/2018	14	
16/12/2018	25	
17/12/2018	49	277
18/12/2018	48	
19/12/2018	47	
20/12/2018	50	
21/12/2018	47	
22/12/2018	13	
23/12/2018	25	
24/12/2018	29	
25/12/2018	0	
26/12/2018	18	
27/12/2018	36	

Date	Daily Quota Count	Weekly Total
28/12/2018	39	
29/12/2018	12	
30/12/2018	23	
31/12/2018	29	
01/01/2019	-	
02/01/2019	-	
03/01/2019	-	-
04/01/2019	-	
05/01/2019	-	
06/01/2019	-	

Table A2.1: 2018 Daily QC Totals

APPENDIX 3

2018 NOISE MONITORING RESULTS BY AIRLINE AND AIRCRAFT TYPE

Table A3.1 presents the 2018 noise monitoring results for each aircraft and airline combination. Results are given separately for sideline, flyover, and approach. Airlines with fewer than 10 results have been grouped as “Other”.

Aircraft Code	Airline Code	Sideline (NMTs 1-4)		Flyover (NMTs 5-6)		Approach (NMTs 5-6)	
		No. Results	Avg Level, EPNdB	No. Results	Avg Level, EPNdB	No. Results	Avg Level, EPNdB
A318	BA	474	98.4	235	85.7	246	85.6
AT42	BE	522	91.1	255	82.3	262	87.6
AT42	Other	2	89.7	1	80.7	0	-
AT72	BE	516	92.3	254	82.9	254	87.2
B461	Other	2	96.2	1	85.9	1	83.2
B462	BA	58	97.3	28	84.9	27	83.0
B462	WX	42	97.4	22	89.3	22	86.3
B462	Other	2	96.1	1	85.3	1	80.4
BCS1	LX	2035	93.9	1014	84.3	987	83.3
BE20	Other	2	89.4	1	86.5	1	86.5
C130	Other	2	95.0	1	86.6	1	86.7
C25A	AW	61	92.3	26	80.2	25	81.1
C25A	CL	18	93.4	8	82.9	8	80.9
C25A	Other	24	92.9	11	81.0	12	80.9
C25A	OO	11	91.4	5	80.4	3	78.9
C25A	AO	10	92.2	3	78.4	5	81.3
C25B	LX	18	93.8	8	81.1	5	81.3
C25B	AH	10	93.4	5	78.8	2	77.4
C25B	Other	26	91.0	6	79.1	9	81.1
C25B	EF	12	89.8	6	79.2	5	80.0
C25B	FY	14	90.7	2	75.9	5	79.9
C25B	JF	12	92.8	5	78.2	5	79.8
C25C	Other	16	92.3	6	79.1	5	63.2

Aircraft Code	Airline Code	Sideline (NMTs 1-4)		Flyover (NMTs 5-6)		Approach (NMTs 5-6)	
		No. Results	Avg Level, EPNdB	No. Results	Avg Level, EPNdB	No. Results	Avg Level, EPNdB
C510	GA	238	90.5	116	80.8	49	78.4
C510	AS	24	90.8	12	80.0	1	78.7
C510	BK	14	90.0	7	81.3	4	77.6
C510	Other	14	89.6	7	80.8	5	76.7
C510	SX	30	89.8	15	80.4	5	77.6
C525	PN	10	91.5	5	82.8	5	82.3
C525	Other	6	94.0	3	85.7	3	80.6
C525	EF	10	90.8	4	78.9	3	79.6
C550	XJ	381	91.7	180	80.2	127	78.4
C550	JA	17	91.8	9	81.8	4	79.9
C550	Other	8	91.1	5	80.8	3	78.0
C550	LE	18	89.6	7	79.1	6	80.1
C560	EO	86	93.5	38	78.8	45	79.4
C560	AH	26	89.8	13	78.9	14	81.1
C560	Other	14	95.8	6	82.0	2	80.4
C56X	SU	12	91.8	5	80.3	5	81.6
C56X	NJ	743	90.8	300	78.5	358	80.6
C56X	AH	92	89.9	45	79.4	47	81.2
C56X	DC	63	90.5	29	77.7	29	80.6
C56X	ET	26	91.0	10	78.8	12	80.9
C56X	RE	10	90.3	5	78.0	5	80.8
C56X	LN	26	89.4	10	78.8	11	79.8
C56X	HT	24	91.0	11	78.9	11	80.5
C56X	EL	24	90.5	11	80.9	10	81.7
C56X	LX	10	89.4	5	79.5	4	79.8
C56X	Other	50	90.1	21	80.3	25	80.7

Aircraft Code	Airline Code	Sideline (NMTs 1-4)		Flyover (NMTs 5-6)		Approach (NMTs 5-6)	
		No. Results	Avg Level, EPNdB	No. Results	Avg Level, EPNdB	No. Results	Avg Level, EPNdB
C680	Other	32	91.4	14	79.5	15	77.8
C680	EF	16	91.5	7	78.5	8	77.9
C680	PH	62	91.9	22	73.8	28	78.4
C680	DC	50	90.7	23	78.4	26	75.7
C680	TV	22	91.2	6	78.4	11	78.5
C680	EU	12	91.0	3	76.2	5	78.4
C680	NJ	24	91.3	7	78.3	13	79.0
C68A	NJ	371	91.4	141	78.2	172	78.4
C68A	Other	6	92.8	3	80.7	3	77.9
CL30	Other	2	95.2	1	78.9	1	81.5
CL60	Other	12	90.3	5	79.6	7	80.9
CL60	HB	28	89.7	12	77.5	15	81.4
D328	SX	57	89.8	24	82.3	30	85.5
DH8D	LG	3423	92.2	1669	82.7	1702	84.6
DH8D	BE	8098	92.5	4029	83.1	4002	84.2
E135	AB	62	91.9	30	79.4	30	79.9
E135	Other	18	91.0	8	79.0	8	79.2
E135	LN	16	92.9	7	80.1	6	79.6
E170	BA	10864	98.2	5416	88.8	5375	84.5
E170	BE	396	99.7	196	89.6	196	83.7
E170	EZ	20	95.7	10	85.7	13	82.9
E170	Other	0	-	0	-	2	82.5
E190	BA	23938	99.3	11936	88.0	11901	85.2
E190	LX	2622	99.2	1302	88.1	1303	85.8
E190	KL	4203	99.3	2088	88.3	2092	85.3
E190	AZ	3239	98.7	1607	88.3	1619	84.7

Aircraft Code	Airline Code	Sideline (NMTs 1-4)		Flyover (NMTs 5-6)		Approach (NMTs 5-6)	
		No. Results	Avg Level, EPNdB	No. Results	Avg Level, EPNdB	No. Results	Avg Level, EPNdB
E190	LH	1694	99.0	838	87.5	845	85.7
E190	TP	1525	100.3	757	88.5	755	84.8
E190	Other	8	98.0	4	85.7	4	84.0
E190	RE	42	97.1	18	83.1	19	85.2
E290	Other	2	93.4	1	85.7	1	79.9
E545	OO	10	87.7	3	76.0	5	78.6
E550	SX	32	92.7	16	79.2	14	79.1
E55P	FL	96	93.5	46	80.4	48	79.6
E55P	NJ	269	93.6	116	78.7	126	78.4
E55P	PJ	10	94.4	3	76.1	3	79.7
E55P	Other	12	93.6	5	80.3	7	68.2
F2TH	OO	50	91.2	23	80.7	23	78.7
F2TH	FH	18	90.2	7	81.8	7	68.7
F2TH	Other	38	92.5	16	81.6	13	77.8
F2TH	DB	35	91.3	15	79.4	13	78.3
F2TH	MM	14	92.0	7	82.8	6	80.4
F2TH	PH	10	91.8	4	82.4	5	78.3
F50	VO	1017	92.1	510	83.9	505	89.2
F50	Other	2	94.8	1	82.4	0	-
F900	Other	50	92.9	25	82.9	22	79.4
F900	MG	10	90.4	5	85.3	3	77.5
F900	XR	14	96.1	6	84.1	7	79.3
F900	XJ	10	95.1	5	87.1	3	81.1
FA50	Other	8	95.6	4	88.5	4	81.9
FA7X	SH	163	89.0	82	80.7	82	81.7
FA7X	FY	44	90.0	21	81.8	23	81.2

Aircraft Code	Airline Code	Sideline (NMTs 1-4)		Flyover (NMTs 5-6)		Approach (NMTs 5-6)	
		No. Results	Avg Level, EPNdB	No. Results	Avg Level, EPNdB	No. Results	Avg Level, EPNdB
FA7X	HB	66	89.8	33	84.1	34	81.5
FA7X	Other	61	91.3	31	82.1	31	81.0
FA7X	CA	42	88.8	21	82.6	20	77.6
FA7X	FH	12	89.0	6	82.5	7	81.2
FA7X	RB	18	90.2	9	83.6	10	81.9
FA8X	Other	15	89.4	8	81.1	8	80.8
FA8X	GX	58	89.0	29	81.0	28	81.1
G150	Other	4	98.0	2	78.5	2	79.1
G280	MI	26	91.2	11	78.4	12	81.5
G280	Other	4	92.2	2	82.1	2	82.9
GLEX	Other	26	94.2	13	80.5	15	80.4
GLEX	LM	12	95.5	5	77.8	3	79.3
GLEX	NJ	74	92.1	36	82.3	34	78.5
GLEX	IJ	14	96.5	7	83.5	7	80.8
GLEX	FY	10	93.7	5	78.8	5	80.3
GLF6	Other	4	90.7	2	83.8	2	83.8
H25B	NJ	247	92.0	124	81.5	115	80.8
H25B	CA	10	95.6	5	83.0	5	81.0
H25B	SX	20	91.6	8	80.4	8	80.5
H25B	Other	10	90.6	5	80.3	4	80.0
H25B	XJ	12	92.4	6	83.1	5	82.8
J328	BA	852	92.5	423	84.1	421	85.8
LJ45	AD	14	94.1	7	80.1	6	81.7
LJ45	Other	4	93.2	1	80.5	2	79.5
P180	Other	12	94.5	6	89.3	6	93.0
P180	XG	44	92.7	22	86.6	22	90.6

Aircraft Code	Airline Code	Sideline (NMTs 1-4)		Flyover (NMTs 5-6)		Approach (NMTs 5-6)	
		No. Results	Avg Level, EPNdB	No. Results	Avg Level, EPNdB	No. Results	Avg Level, EPNdB
PA31	Other	6	91.5	3	83.7	3	84.9
PC24	HB	14	95.6	7	82.2	6	84.8
RJ85	WX	3336	99.1	1660	91.5	1652	84.0
RJ85	KL	22	96.9	11	88.7	11	83.7
RJ85	BA	226	98.8	110	89.5	114	83.9
RJ85	Other	4	99.0	2	87.8	1	83.3
RJ85	EI	613	99.0	302	91.2	306	82.5
SB20	BA	1639	92.4	813	84.3	807	82.2
SB20	SX	182	92.1	93	84.2	89	81.9
SB20	BE	656	92.0	318	83.9	322	82.0
SB20	EZ	31	90.2	9	80.9	18	81.7
SB20	Other	0	-	0	-	2	84.8

Table A3.1: 2018 Noise Monitoring Results

London City Airport
2018 Annual Performance Report
(Compliance with Planning Permission)

Annex 5
Community and Airline
Annual Report (IPS Report)
31 May 2019



London City Airport,
City Aviation House
Royal Docks,
London E16 2PB
Tel: 020 7646 0000
LondonCityAirport.com

ANNEX 5

LONDON CITY AIRPORT

2018 COMMUNITY AND AIRLINE ANNUAL REPORT

Report to

London City Airport
The Royal Docks
London E16 2PB

A1125.122-R01-3.0-NW
29 March 2019



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	Page No.
1.0 Introduction	4
2.0 Incentives and Penalties Scheme (IPS).....	5
Appendix 1: 2018 IPS Results by Airline and Aircraft Type	

This report and all matters referred to herein remain confidential to the Client unless specifically authorised otherwise, when reproduction and/or publication is verbatim and without abridgement. This report may not be reproduced in whole or in part or relied upon in any way by any third party for any purpose whatsoever without the express written authorisation of Bickerdike Allen Partners LLP. If any third party whatsoever comes into possession of this report and/or any underlying data or drawings then they rely on it entirely at their own risk and Bickerdike Allen Partners LLP accepts no duty or responsibility in negligence or otherwise to any such third party.

Bickerdike Allen Partners LLP hereby grant permission for the use of this report by the client body and its agents in the realisation of the subject development, including submission of the report to the design team, contractor and sub-contractors, relevant building control authority, relevant local planning authority and for publication on its website.

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 a Community and Airline Annual Report. The relevant text from the IPS is as follows:

“An annual report shall be produced on 31 March 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 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.

London City Airport's Community Trust Fund is currently being set up as a charity and will be administered by a Board of Trustees with an independent chair. LCA are registering this through the Charity Commission, and once set up will be open to community projects and charities from the local area to apply for funding. Information on how to apply for this will be made available shortly, and the projects supported will be detailed in next year's report.

The most improved airline each year will partner the airport delivering the fund. Following the completion of the review of the IPS after the first year of operation, as of 1st November 2018 the IPS has charged financial penalties of £600 per dB(A) above a fixed upper limit for each movement that exceeds the upper limits. The financial penalties are added to the annual contribution of £75,000 provided to the fund by LCA.

The IPS works as follows:

- The sideline noise level for a given departure is defined as the arithmetic average of the $L_{Amax,s}$ noise level measured at the relevant pair of NMTs (NMTs 1 and 2 for runway 27 departures, and NMTs 3 and 4 for runway 09 departures).
- 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 £600¹ 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.

¹ Fines were not payable prior to 1st November 2018

- 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 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. The provisional penalty and credit limits that were used are set out in Table 1.

Threshold Description	Aircraft Category	Runway 09		Runway 27	
		Sideline Noise Level	Flyover Noise Level	Sideline Noise Level	Flyover Noise Level
Fixed Penalty Limit	Turbofans	90	84	93	85
	Turboprops	82	78	85	80
Credit Removal Threshold	Turbofans	-	81	-	82
	Turboprops	-	75	-	77
Credit Award Threshold	Turbofans	-	73	-	72
	Turboprops	-	69	-	68

N.B. All noise limits are expressed as dB $L_{Amax,s}$

Table 1: IPS Provisional Fixed Penalty Noise Limits and Credit Thresholds (18 August 2017 to 30 September 2018)

Following the review of the scheme, the fixed penalty limits for the sideline NMTs (1-4) were removed, the fixed penalty limits for both turbofan and turboprop aircraft at NMT 5 were lowered (i.e. made more stringent) and the credit award thresholds for turboprop aircraft at NMTs 5 and 6 were lowered (i.e. made more stringent). The current penalty and credit limits (noise levels) are set out in Table 2. These have applied from 1st October 2018, although fixed penalties were not payable until 1st November as a 1-month notice period was given to airlines.

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 2: IPS Fixed Penalty Noise Limits and Credit Thresholds – (1 October 2018 to Present)

2.2 League Table of Credits

The number of residual credits is given for the most commonly operating airlines in Table 3. These are based on the thresholds that were in operation at the time; i.e. those given in Table 1 for the first three quarters of 2018 and those given in Table 2 for the fourth quarter of 2018. Full details of the fixed penalties, credit awards and credit removals for 2018 are given by airline in Appendix 1.

Airline	Residual Credits
Flybe	793
Luxair	746
NetJets Europe	651
Swiss	494
BA Cityflyer	428
Sun-Air of Scandinavia	221
VLM Airlines	175
Alitalia	171
Xclusive Jet Charter Ltd	167
Eastern Airways	119
KLM Royal Dutch Airlines	117
GlobeAir	99
Lufthansa	96
Shell Aircraft	74
British Airways	72
Blue Islands	71
Air Hamburg Private Jets	57
SkyWork Airlines	47
FlairJet	40
TAP Portugal	28
Aer Lingus	-26
Cityjet	-238

Table 3: 2018 Residual Credits Ranking

As the scheme was only operational for part of 2017, it is not possible to directly compare the data with 2018 in order to assess the most improved airline. Therefore, it is proposed that Flybe will partner LCA in delivering the Community Trust Fund for 2019, as the airline which accrued the most credits in 2018.

2.3 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 have introduced a web-based system (known as TRAVIS²) 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 rank airlines by track-keeping performance.

Nick Williams
for Bickerdike Allen Partners LLP

Peter Henson
Partner

² <https://travislyc.topsonic.aero/>

APPENDIX 1

2018 IPS RESULTS BY AIRLINE AND AIRCRAFT TYPE

Table 4 summarises the number of flights that incurred fixed penalties, credit removals and credit awards in 2018, 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
2L9	E190	0	0	0	1	1
3AM	FA7X	0	0	0	1	1
AAB	C25C	0	0	0	2	2
AAB	C56X	0	0	0	2	2
AAB	CNJ	0	0	0	1	1
ABP	E135	0	0	0	28	28
ADN	LJ45	0	0	0	7	7
AHO	C25B	0	0	0	5	5
AHO	C560	0	0	0	4	4
AHO	C56X	0	0	0	48	48
AKK	FA7X	0	0	0	1	1
AOJ	C56X	0	0	0	2	2
AOJ	CNJ	0	0	0	1	1
AOJ	C25A	0	0	0	3	3
AOV	DA50	0	0	0	0	0
AOV	F900	0	0	0	1	1
ASJ	C510	0	0	0	11	11
ASJ	CNJ	0	0	0	1	1
AWU	C25A	0	0	0	16	16
AWU	C525	0	0	0	4	4
AXY	E135	0	0	0	1	1
AZA	E190	0	0	0	171	171
BA3	SB20	0	0	1	2	1
BA9	E190	0	0	0	0	0
BA9	E170	0	0	0	1	1
BA9	B462	0	0	0	1	1

Airline Code	Aircraft Code	Fixed Penalties (# aircraft)	Fixed Penalties (total value)	# Credits Removed	# Credits Awarded	Residual Credits
BAW	A318	0	0	0	69	69
BAW	E170	0	0	0	0	0
BAW	E190	0	0	0	3	3
BCI	AT42	0	0	0	43	43
BCI	AT72	0	0	0	8	8
BCI	AT45	0	0	0	2	2
BCI	AT75	0	0	1	19	18
BCY	RJ85	7	4800	244	10	-239
BCY	B462	0	0	0	1	1
BEE	DH8D	1	1200	49	847	797
BEE	E170	0	0	4	0	-4
BFD	F2TH	0	0	0	2	2
BKK	C510	0	0	0	5	5
BLJ	C56X	0	0	0	2	2
BZE	C560	0	0	0	1	1
CAZ	F2TH	0	0	0	1	1
CAZ	FA7X	0	0	0	10	10
CAZ	H25	0	0	0	2	2
CAZ	F2TX	0	0	0	1	1
CAZ	H25B	0	0	0	2	2
CBM	BE20	0	0	0	0	0
CFE	B462	0	0	1	2	1
CFE	E170	0	0	12	42	30
CFE	E190	22	13800	2	208	189
CFE	F900	0	0	0	0	0
CFE	RJ85	0	0	4	4	0
CFE	SB20	1	600	4	212	208
CGJ	CL30	0	0	0	1	1
CLF	C25A	0	0	0	6	6

Airline Code	Aircraft Code	Fixed Penalties (# aircraft)	Fixed Penalties (total value)	# Credits Removed	# Credits Awarded	Residual Credits
CLF	F2TX	0	0	0	1	1
CSD	GLEX	0	0	0	1	1
CSD	CL65	0	0	0	1	1
DAG	FA7X	0	0	0	1	1
DAG	FA8X	0	0	0	1	1
DBE	F2TH	0	0	0	6	6
DBO	F2TH	0	0	0	9	9
DCA	C56X	0	0	0	22	22
DCA	C680	0	0	0	16	16
DCF	C56X	0	0	0	1	1
DCH	C680	0	0	0	5	5
DCO	C525	0	0	0	1	1
DCS	C56X	0	0	0	6	6
DLH	E190	0	0	0	96	96
DSO	F900	0	0	0	2	2
DSO	FA7X	0	0	0	1	1
EDC	C25B	0	0	0	0	0
EDG	G280	0	0	0	1	1
EFD	C25B	0	0	0	2	2
EFD	C680	0	0	0	6	6
EFD	C25A	0	0	0	8	8
EFD	C25C	0	0	0	1	1
EIN	E190	0	0	1	0	-1
EIN	RJ85	0	0	25	0	-25
ELJ	C56X	0	0	0	9	9
ELJ	C25A	0	0	0	1	1
EOA	C560	0	0	0	10	10
EOA	C56X	0	0	0	30	30
ETI	C56X	0	0	0	10	10

Airline Code	Aircraft Code	Fixed Penalties (# aircraft)	Fixed Penalties (total value)	# Credits Removed	# Credits Awarded	Residual Credits
EUW	C56X	0	0	0	1	1
EUW	C680	0	0	0	3	3
EZE	E170	0	0	0	2	2
EZE	SB20	0	0	4	121	117
FGO	DA90	0	0	0	1	1
FHA	F2TH	0	0	0	3	3
FHE	FA7X	0	0	0	1	1
FHF	GLEX	0	0	0	2	2
FHL	F2TH	0	0	0	1	1
FHV	FA7X	0	0	0	1	1
FHV	FA8X	0	0	0	1	1
FLJ	E55P	0	0	0	40	40
FPG	FA7X	0	0	0	3	3
FXR	P180	4	4200	4	0	-8
FYG	FA7X	0	0	0	17	17
FYG	GLEX	0	0	0	5	5
FYG	F900	0	0	0	1	1
FYG	CL65	0	0	0	1	1
FYL	C25B	0	0	0	2	2
GAC	C510	0	0	0	99	99
GDK	C56X	0	0	0	3	3
GLJ	GLEX	0	0	0	2	2
GRH	E135	0	0	0	1	1
GRN	CL60	0	0	0	1	1
GRN	CL65	0	0	0	1	1
GXI	FA8X	0	0	0	23	23
GXJ	C550	0	0	0	1	1
HBJ	CL60	0	0	0	11	11
HBJ	FA7X	0	0	0	13	13

Airline Code	Aircraft Code	Fixed Penalties (# aircraft)	Fixed Penalties (total value)	# Credits Removed	# Credits Awarded	Residual Credits
HBJ	CL65	0	0	0	2	2
HBJ	F2TH	0	0	0	1	1
HBV	H25	0	0	0	1	1
HBV	PC24	0	0	0	5	5
HHN	C680	0	0	0	3	3
HTM	C56X	0	0	0	11	11
IJM	GLEX	0	0	0	4	4
IJM	C56X	0	0	0	2	2
ITA	C680	0	0	0	1	1
IXR	C25A	0	0	0	1	1
JAR	C550	0	0	0	6	6
JET	C25B	0	0	0	0	0
JFA	C25B	0	0	0	4	4
JKH	C25A	0	0	0	1	1
JLN	GL5T	0	0	0	2	2
JSY	C25A	0	0	0	1	1
JTR	C550	0	0	0	1	1
KBD	E55P	0	0	0	1	1
KL9	E190	0	0	0	1	1
KLM	E190	0	0	4	122	118
KLM	RJ85	0	0	1	0	-1
KOC	FA8X	0	0	0	1	1
LEA	C550	0	0	0	2	2
LEA	FA7X	0	0	0	2	2
LEA	H25B	0	0	0	4	4
LEA	C25B	0	0	0	4	4
LGL	DH8D	0	0	6	752	746
LMJ	GLEX	0	0	0	5	5
LNK	C56X	0	0	0	9	9

Airline Code	Aircraft Code	Fixed Penalties (# aircraft)	Fixed Penalties (total value)	# Credits Removed	# Credits Awarded	Residual Credits
LNX	E135	0	0	0	5	5
LNX	CNJ	0	0	0	1	1
LX5	E190	0	0	0	0	0
LX7	BCS1	0	0	0	1	1
LXA	C56X	0	0	0	4	4
LXA	E135	0	0	0	1	1
LXG	C25B	0	0	0	6	6
LXG	C56X	0	0	0	0	0
LXG	C680	0	0	0	1	1
LXG	E55P	0	0	0	3	3
MAS	CL60	0	0	0	1	1
MDT	C680	0	0	0	2	2
MGS	DA90	0	0	0	1	1
MIL	F900	0	0	0	0	0
MIN	G280	0	0	0	7	7
MIS	G280	0	0	0	5	5
MJF	E135	0	0	0	2	2
MMD	FA8X	0	0	0	3	3
MMD	F2TH	0	0	0	6	6
MMD	FA7X	0	0	0	3	3
N10	F2TH	0	0	0	1	1
N10	GLEX	0	0	0	1	1
N14	GLEX	0	0	0	1	1
N15	GLEX	0	0	0	1	1
N47	F900	0	0	0	1	1
N47	DA90	0	0	0	1	1
N52	E190	0	0	0	1	1
N54	FA7X	0	0	0	0	0
N65	GLF6	0	0	0	1	1

Airline Code	Aircraft Code	Fixed Penalties (# aircraft)	Fixed Penalties (total value)	# Credits Removed	# Credits Awarded	Residual Credits
N73	F900	0	0	0	1	1
N74	C510	0	0	0	0	0
N78	F2TH	0	0	0	1	1
N78	F2TX	0	0	0	1	1
N81	C680	0	0	0	0	0
N88	C680	0	0	0	1	1
N90	C25C	0	0	0	1	1
N94	F900	0	0	0	0	0
NJE	C56X	0	0	1	292	291
NJE	C680	0	0	0	42	42
NJE	C68A	0	0	0	101	101
NJE	E55P	0	0	0	114	114
NJE	GLEX	0	0	0	28	28
NJE	H25B	0	0	0	75	75
OEF	C510	0	0	0	1	1
OEF	C25A	0	0	0	1	1
OEG	C525	0	0	0	1	1
OEG	C56X	0	0	0	2	2
OEG	C550	0	0	0	1	1
OKJ	E135	0	0	0	1	1
OKS	E135	0	0	0	1	1
OOA	C25A	0	0	0	2	2
OOA	C510	0	0	0	2	2
OOA	CNJ	0	0	0	0	0
OOA	C525	0	0	0	1	1
OOC	C25C	0	0	0	1	1
OOD	F2TH	0	0	0	2	2
OOF	F2TH	0	0	0	4	4
OOF	F2TX	0	0	0	2	2

Airline Code	Aircraft Code	Fixed Penalties (# aircraft)	Fixed Penalties (total value)	# Credits Removed	# Credits Awarded	Residual Credits
OOG	F2TH	0	0	0	2	2
OOG	F2TX	0	0	0	10	10
OOK	C25A	0	0	0	1	1
OON	E545	0	0	0	3	3
OOP	C510	0	0	0	1	1
OOX	C56X	0	0	0	1	1
PHC	C680	0	0	0	2	2
PHF	C25B	0	0	0	1	1
PHH	C680	0	0	0	1	1
PHH	P180	1	600	1	0	-2
PHH	C56X	0	0	0	1	1
PHR	C680	0	0	0	18	18
PHT	C510	0	0	0	2	2
PHW	F2TH	0	0	0	4	4
PJS	E55P	0	0	0	2	2
PNC	C525	0	0	0	3	3
PNC	F2TH	0	0	0	1	1
PRV	F2TH	0	0	0	1	1
QGA	G150	0	0	0	2	2
RBB	FA7X	0	0	0	7	7
REN	C56X	0	0	0	5	5
RRB	FA7X	0	0	0	2	2
RRR	B461	0	0	0	0	0
RRR	C130	0	0	0	1	1
SCR	C25B	0	0	0	1	1
SER	C560	0	0	0	0	0
SER	C56X	0	0	0	1	1
SHE	FA7X	0	0	0	74	74
SNM	F900	0	0	0	1	1

Airline Code	Aircraft Code	Fixed Penalties (# aircraft)	Fixed Penalties (total value)	# Credits Removed	# Credits Awarded	Residual Credits
SNM	DA90	0	0	0	1	1
SPG	C25A	0	0	0	3	3
SRK	D328	0	0	0	15	15
SRK	SB20	0	0	0	32	32
STQ	C25A	0	0	0	1	1
SUA	C56X	0	0	0	2	2
SUI	C56X	0	0	0	2	2
SUI	C680	0	0	0	1	1
SUS	J328	0	0	0	221	221
SVW	FA7X	0	0	0	0	0
SVW	F900	0	0	0	1	1
SWR	BCS1	0	0	0	426	426
SWR	CS1	0	0	0	1	1
SWR	E190	2	1200	0	68	67
SXN	C510	0	0	0	15	15
SXN	E550	0	0	0	15	15
SXN	H25B	0	0	0	7	7
TAP	E190	12	7200	2	40	28
TVS	C680	0	0	0	6	6
VCG	C56X	0	0	0	1	1
VLM	F50	0	0	0	0	0
VOR	PA31	0	0	1	1	0
VPC	FA7X	0	0	0	0	0
VPC	F900	0	0	0	1	1
VPC	DA90	0	0	0	1	1
VQB	FA7X	0	0	0	1	1
WGT	FA7X	0	0	0	4	4
WLM	F50	0	0	2	177	175
XGO	P180	6	4200	4	0	-8

Airline Code	Aircraft Code	Fixed Penalties (# aircraft)	Fixed Penalties (total value)	# Credits Removed	# Credits Awarded	Residual Credits
XJO	C550	0	0	0	1	1
XJC	C550	0	0	0	163	163
XJC	C56X	0	0	0	1	1
XJC	C510	0	0	0	1	1
XJC	H25	0	0	0	1	1
XJC	H25B	0	0	0	1	1
XRO	C680	0	0	0	3	3
XRO	F900	0	0	0	1	1
XRO	DA90	0	0	0	2	2

Table 4: 2018 IPS Results

London City Airport
2018 Annual Performance Report
(Compliance with Planning Permission)

Annex 6
Air Quality Action Plan
Progress Update
31 May 2019



London City Airport,
City Aviation House
Royal Docks,
London E16 2PB
Tel: 020 7646 0000
LondonCityAirport.com

Air Quality Action Plan (2017-2019)	Indicative Timescale	Status update
<p>Measure 1: 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. It will also continue to record the use of FEGP within the online portal and document any contraventions of Airfield Operating Instruction AOI 07. The Standard Terms and Conditions will be amended to require mandatory use of FEGP on any Stand where it is available, as and when FEGP availability is increased.</p>	<p>June each year</p>	<p>Use of FEGP where available is mandatory, and no contraventions to this were recorded in 2018. Six faults were recorded during the year relating to the FEGP supply, all of which were rectified within a day. A further 80 faults were reported with the Powervamp units.</p>
<p>Measure 2: London City Airport will monitor the use of APU in accordance with the relevant Airfield Operating Instruction AOI 07, and will continue to record APU use via the Airport's "Clickview" online reporting tool. Any contraventions of the Airfield Operating Instructions, and any future requirements within the forthcoming APU Strategy, will be documented.</p>	<p>June each year</p>	<p>In place. 1171 aircraft requested use of APUs during 2018. 32 aircraft were recorded as being in breach of the operating instruction, and this was raised with the airlines accordingly.</p>
<p>Measure 3: With the continued procurement of Fixed Electrical Ground Power (FEGP) reliance on MGPUs will be phased out completely by December 2020 in accordance with the requirements of Condition 46 of the CADP1 Conditions. Prior to this date, the early decommissioning of the older MGPUs will minimise emissions; all remaining MGPUs with Stage II emissions will be decommissioned by March 2017.</p>	<p>March 2017</p>	<p>All MGPUs with stage II emissions have been decommissioned. The installation of FEGP on the remaining stands will be completed as part of CADP within the agreed timescales.</p>
<p>Measure 4: London City Airport will 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.</p>	<p>Within 2 months of GERS quarterly reports</p>	<p>There was no exceedance of limits. This will be continually monitored.</p>
<p>Measure 5: London City Airport will work with the major airlines to explore the potential to introduce "Engine Out Taxi" (EOT) procedures i.e. single engine taxiing. A feasibility study will be submitted to LBN for approval. Pending the outcome of the feasibility study, a Code of Practice to encourage EOT will be introduced at a later date.</p>	<p>Sept 2017 (feasibility study) Dec 2017 (COP)</p>	<p>Single Engine Taxi assessment has been complete and may occur 20% of the time however there are safety concerns surrounding the operation of this however hence why it cannot be a fundamental change. Reduced thrust has also been discussed with the airlines but not considered to be possible at LCY due to the short taxiing times. This will be revisited once the new taxiways for CADP have been constructed.</p>

Air Quality Action Plan (2017-2019)	Indicative Timescale	Status update
Measure 6: London City Airport will undertake a feasibility study to understand the potential of using Electric Taxiing Systems at LCA, without affecting time performance. A feasibility study will be submitted to LBN for approval, and will include, if practicable, timescales for implementation.	Dec-18	Completed November 2018. No suitable technology is currently available. This measure will be retained for consideration again in 2020.
Measure 7: London City Airport will 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 during CADP1 construction.	Within 2 months of GERT&M reports	No air quality implications identified as no change to engine running location proposed to date, any future proposal will be subject to a review implication proposal.
Measure 8: London City Airport will continue to work with operators at the Airport (in accordance with AOI 12) to increase the percentage of London Low Emissions Zone (LLEZ) compliant vehicles year on year, with the target of achieving 100% compliance with the LLEZ by December 2017. If the ULEZ is expanded to encompass London City Airport, LCA will review AOI 12 with the intent of achieving ULEZ compliance for all airside vehicles as soon as December 2020.	Dec 17	<p>All vehicles are compliant with LLEZ, with the exception of 2 fire appliances. A plan through which these will be brought into compliance has been agreed with LBN.</p> <p>A strategy for upgrading the fleet to comply with the ULEZ requirements has been developed and shared with LBN.</p>
Measure 9: London City Airport will continue to enforce the 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 each year	In effect and internally audited annually.
Measure 10: London City Airport will continue to undertake routine annual, and periodic, random emissions testing for airside vehicles. The results of the testing will be reported to LBN on an annual basis.	June each year	12 vehicles were tested in 2018 and a further 5 in January and February 2019. All passed the emissions test with no issues identified.
Measure 11: London City Airport will undertake a feasibility study for the procurement of low emission vehicles (hybrid or electric) to replace the existing fleet, together with a timescale for subsequent implementation. The feasibility report will be submitted to LBN for approval.	Dec 2017	Submitted December 2018 following agreement with LBN to postpone submission. The consideration of hybrid or electric alternatives is now being considered through the procurement process.

Air Quality Action Plan (2017-2019)	Indicative Timescale	Status update
<p>Measure 12: London City Airport will investigate and implement provisions to reduce idling black cabs. This will involve liaison through the Airport's Transport Forum with the relevant service providers to understand the causes for such instances and implementation, if necessary, of methods to reduce such impacts occurring.</p>	<p>Dec 2017</p>	<p>A black cab emissions study was submitted to LBN in July 2017 and approved October 2018.</p>
<p>Measure 13: 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.</p>	<p>June each year</p>	<p>The website has been reviewed regularly and updated throughout 2018.</p>
<p>Measure 14: London City Airport will continue to undertake, on a two year basis, a RAMP employee air quality monitoring assessment with direct, individual recording apparatus.</p>	<p>April 2017</p>	<p>Completed in 2017 (next assessment due 2019).</p>
<p>Measure 15: London City Airport will publish an article relating to air quality and airport operations at least once per year in the airport staff newsletter "Airport Life".</p>	<p>June each year</p>	<p>Published in the June 2018 edition (NB this newsletter has now changed its name to 'Inside E16').</p>

**London City Airport
2018 Annual Performance Report**

(Compliance with Planning Permission)

**Annex 7
Air Quality
Monitoring Plan**

31 May 2019



London City Airport,
City Aviation House
Royal Docks,
London E16 2PB
Tel: 020 7646 0000
LondonCityAirport.com

ANNEX 7

London City Airport Air Quality Monitoring Strategy: Annual Report 2018

March 2019



Experts in air quality
management & assessment

Document Control

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

Job Number	J3140A
-------------------	--------

Report Prepared By:	Dr Joshua Nunn and David Bailey
----------------------------	---------------------------------

Document Status and Review Schedule

Report No.	Date	Status	Reviewed by
3140A/4/F1	28 th March 2019	Final Report	Stephen Moorcroft

This report has been prepared by Air Quality Consultants Ltd on behalf of the Client, taking into account the agreed scope of works. Unless otherwise agreed, this document and all other Intellectual Property Rights remain the property of Air Quality Consultants Ltd.

In preparing this report, Air Quality Consultants Ltd has exercised all reasonable skill and care, taking into account the objectives and the agreed scope of works. Air Quality Consultants Ltd does not accept any liability in negligence for any matters arising outside of the agreed scope of works. The Company operates a formal Quality Management System, which is certified to ISO 9001:2008.

When issued in electronic format, Air Quality Consultants Ltd does not accept any responsibility for any unauthorised changes made by others.

When printed by Air Quality Consultants Ltd, this report will be on Evolve Office, 100% Recycled paper.

Air Quality Consultants Ltd
23 Coldharbour Road, Bristol BS6 7JT Tel: 0117 974 1086
12 Airedale Road, London SW12 8SF Tel: 0208 673 4313
aqc@aqconsultants.co.uk

Registered Office: 12 St Oswalds Road, Bristol, BS6 7HT
 Companies House Registration No: 2814570

Contents

Executive Summary	2
1 Introduction	4
2 Assessment Criteria	5
3 Monitoring Methodology and Results	7
4 Data Analyses	17
5 References	24
6 Glossary	25
A1 Appendix 1 – Nitrogen Oxides Results	26
A2 Appendix 2 – Diffusion Tube Data	27
A3 Appendix 3 – Bias Adjustment Factor for Diffusion Tubes	28
A4 Appendix 4 – Diffusion Tube Precision	30
A5 Appendix 5 – Detailed Trend Analysis	32
A6 Adjustment of Short-Term Data to Annual Mean	36

Executive Summary

This document represents the 2018 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 (NO₂) and fine particles (the so called PM₁₀ fraction, i.e. particles that are less than 10 micrometres in diameter).

Monitoring is carried out at two automatic monitoring stations. One is situated on the roof of City Aviation House (LCA-CAH) whilst the other is to the north of Royal Albert Dock, adjacent to the Newham Dockside building (LCA-ND). 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.

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 PM₁₀ concentrations exceed 50 µg/m³, and no more than 18 hours in each calendar year on which nitrogen dioxide concentrations exceed 200 µg/m³).

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 PM₁₀. Air quality is defined by these descriptors as being Low, Moderate, High and 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 2018 annual mean nitrogen dioxide concentration measured at the automatic station on the roof of City Aviation House was 29.2 µg/m³ (microgrammes per cubic metre); a slightly lower concentration, 24.7 µg/m³, was measured at the Newham Dockside site. The annual mean objective (40 µg/m³) was not exceeded at either site in 2018.

There were no exceedances of the 1-hour mean objective value (200 µg/m³) 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 16.1 to 29.1 $\mu\text{g}/\text{m}^3$. The 1-hour mean concentrations over the year show similar patterns at all seven 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 24 to 33 $\mu\text{g}/\text{m}^3$ compared with the objective value of 40 $\mu\text{g}/\text{m}^3$. There were no measured exceedances of the air quality objective. As measured concentrations are well below 60 $\mu\text{g}/\text{m}^3$, it is highly unlikely that the 1-hour mean objective was exceeded.

Fine Particles (PM₁₀)

The annual mean PM₁₀ concentration measured at the automatic station on the roof of City Aviation House was 20.0 $\mu\text{g}/\text{m}^3$. This compares with the objective value of 40 $\mu\text{g}/\text{m}^3$. There were two recorded exceedances of the 24-hour mean objective (compared with the 35 exceedances allowed in a calendar year). The majority of the 24-hour mean concentrations were classified as “Low” (99.4%), with 24-hour mean concentrations classified as “Moderate” for the remaining 0.6% of the time. There were no 24-hour mean concentrations within the ‘High’ or ‘Very High’ pollution bands.

24-hour mean concentrations of PM₁₀ 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.

1 Introduction

- 1.1 This document represents the 2018 Annual Report for the Air Quality Monitoring Strategy (AQMS), operated on behalf of London City Airport (LCA).
- 1.2 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.
- 1.3 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.
- 1.4 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, with Ricardo Energy & Environment providing independent audit checks.
- 1.5 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 2018 with respect to these criteria, and compares the measured concentrations with other local monitoring sites. Chapter 4 then provides some 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 Regulations, 2000 (Stationery Office, 2000) and the Air Quality (England) (Amendment) Regulations 2002 (Stationery Office, 2002). The relevant objectives for this report are provided in Table 1.

Table 1: Relevant Air Quality Objectives

Pollutant	Time Period	Objective / Value
Nitrogen Dioxide	1-hour mean	200 $\mu\text{g}/\text{m}^3$ not to be exceeded more than 18 times a year
	Annual mean	40 $\mu\text{g}/\text{m}^3$
Fine Particles (PM ₁₀) ^a	24-hour mean	50 $\mu\text{g}/\text{m}^3$ not to be exceeded more than 35 times a year ^b
	Annual mean	40 $\mu\text{g}/\text{m}^3$

^a Measured by the gravimetric method.

^b Equivalent to a 90th percentile of 24-hour mean concentrations of 50 $\mu\text{g}/\text{m}^3$.

- 2.2 The objectives for nitrogen dioxide and PM₁₀ were to have been achieved by 2005 and 2004 respectively, and continue to apply in all future years thereafter.
- 2.3 The European Union has also set limit values for both nitrogen dioxide and PM₁₀. Achievement of these values is a national obligation rather than a local one, and compliance can only be determined by the national monitoring network operated by Defra. The limit values for nitrogen dioxide are the same levels as the UK objectives, and were to be achieved by 2010 (Stationery Office, 2007). The limit values for PM₁₀ are also the same level as the UK statutory objectives, and were to be achieved by 2005.
- 2.4 In addition to the objectives, Defra has established a set of descriptors for the 1-hour mean values for nitrogen dioxide, classifying the concentrations in an index from 1 to 10 and thus labelling the levels as Low, Moderate, High and Very High (Defra, 2011). The banding is referred to as the Daily Air Quality Index (DAQI). The DAQI criteria are set out in Table 2.

Table 2: DAQI Bandings ($\mu\text{g}/\text{m}^3$)

Band	Index	Nitrogen Dioxide 1-hour Mean ($\mu\text{g}/\text{m}^3$)	PM ₁₀ 24-hour mean ($\mu\text{g}/\text{m}^3$) ^a
Very High	10	601 or more	101 or more
High	9	535 – 600	92 – 100
	8	468 – 534	84 – 91
	7	401 – 467	76 – 83
Moderate	6	335 – 400	67 – 75
	5	268 – 334	59 – 66
	4	201 – 267	51 – 58
Low	3	135 – 200	34 – 50
	2	68 – 134	17 – 33
	1	0 – 67	0 – 16

^a Reference equivalent. 24-hour values are midnight to midnight.

3 Monitoring Methodology and Results

Automatic Monitoring Stations

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

- City Aviation House (LCA-CAH): nitrogen dioxide and PM₁₀
- Newham Dockside (LCA-ND): nitrogen dioxide

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

3.3 The LCA-CAH automatic monitoring station measures PM₁₀ using a Rupprecht and Patashnick TEOM 1400 Particulate Monitor, whilst both automatic stations measure nitrogen dioxide using M200E TAPI chemiluminescence analysers. The data are stored as 15-minute mean concentrations. Before further processing and ratification the raw PM₁₀ concentrations have been adjusted to a “reference-equivalent” concentration using the Volatile Correction Model (VCM) as recommended by Defra (2009). This adjusts the TEOM data using the “purge” concentration measured by an FDMS analyser, assuming this represents the volatile component that has been lost. A “VCM web portal” has been established that allows this correction to be derived from the mean of up to three nearby FDMS analysers in the national network.

3.4 Independent site audits, conducted by Ricardo Energy & Environment, confirmed that both automatic monitoring stations were operating above the minimum standards set for the national networks operated by Government. Audits were carried out on 27th February 2018, 23rd August 2018 and 21st February 2019, and have been taken into account in producing the fully ratified dataset.

3.5 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, 2018). Any erroneous data have been flagged and removed from subsequent analysis. 1-hour, 24-hour, and annual mean concentrations have then been calculated.

3.6 Pollution concentrations measured at both 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, 2019) for three background sites, Bexley, Bloomsbury and Eltham, and from the Air Quality England website (AQE, 2019) for two sites within the London Borough of Newham at Wren Close, Canning Town (background) and Cam Road, Stratford (roadside).

Nitrogen Dioxide

- 3.7 The 2018 nitrogen dioxide results for the LCA-CAH and LCA-ND automatic monitoring stations are summarised in Table 3. Data capture¹ for LCA-CAH and LCA-ND was 92.4% and 82.4%, respectively. The annual mean concentration did not exceed the objective of 40 µg/m³ 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/m³) recorded at either site.

Table 3: Nitrogen Dioxide (NO₂) Data Summary for LCA-CAH and LCA-ND, 2018^a

Metric	LCA-CAH	LCA-ND	Objectives
	NO ₂	NO ₂	
Maximum 1- Hour Mean	110 µg/m ³	100 µg/m ³	-
No. 1-Hour Mean > 200 µg/m ³	0	0	200 µg/m ³ ; no more than 18 exceedances
Annual Mean	29.2 µg/m ³	24.7 µg/m ³	40 µg/m ³
Data Capture	92.4%	82.4%	-

^a Nitrogen oxides concentrations are provided in Appendix 1.

- 3.8 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 2018.

Table 4: DAQI Bandings for Nitrogen Dioxide, 2018

Band	Index	LCA-CAH	LCA-ND
Very High ^a	10		
High ^a	9		
	8		
	7		
Moderate ^a	6		
	5		
	4		
Low ^a	3		
	2	325	178
	1	7770	7039

^a Number of 1-hour values

- 3.9 Nitrogen dioxide concentrations for five monitoring sites across London in 2018 are summarised in Table 5. These sites range from central London (Bloomsbury) to outer London (Bexley). The

¹ It is inevitable that a small amount of data will be "lost" in each year due to routine downtime for calibrations and site servicing. The lower data capture at LCA-ND was associated with an extended power failure at the site.

measured annual mean concentrations at London City Airport (29.2 $\mu\text{g}/\text{m}^3$ at LCA-CAH and 24.7 $\mu\text{g}/\text{m}^3$ at LCA-ND) were lower than those at London Bloomsbury (36.4 $\mu\text{g}/\text{m}^3$), similar to those at Canning Town and Stratford (28.4 $\mu\text{g}/\text{m}^3$ and 29.1 $\mu\text{g}/\text{m}^3$ respectively), and higher than those measured at Eltham and Bexley (16.1 $\mu\text{g}/\text{m}^3$ and 22.9 $\mu\text{g}/\text{m}^3$, 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 (NO₂) Data Summary for London Monitoring Sites, 2018^a

Metric	Background Site				Roadside Site
	Bexley	Bloomsbury	Eltham	Canning Town	Stratford
Max. 1-hr Mean ($\mu\text{g}/\text{m}^3$)	104.5	133.2	93.3	116.3	110.9
No. 1-hr >200 $\mu\text{g}/\text{m}^3$	0	0	0	0	0
Annual Mean ($\mu\text{g}/\text{m}^3$)	22.9	36.4	16.1	28.4	29.1
Data Capture (%)	99.2	98.7	92.9	97.2	99.1

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

Particulate Matter PM₁₀

- 3.10 The 2018 PM₁₀ results for the LCA-CAH automatic monitoring station are summarised in Table 6. Data capture was 91.6%. The recorded annual mean concentration (20.0 $\mu\text{g}/\text{m}^3$) was well below the objective of 40 $\mu\text{g}/\text{m}^3$. There were two measured exceedances of the 24-hour mean objective value of 50 $\mu\text{g}/\text{m}^3$ compared with the 35 exceedances that are allowed. In addition, the 90th percentile of 24-hour mean concentrations (29.7 $\mu\text{g}/\text{m}^3$) was well below 50 $\mu\text{g}/\text{m}^3$.

Table 6: PM₁₀ Data Summary for LCA-CAH, 2018

Metric	TEOM, VCM-corrected	PM ₁₀ Objectives
	PM ₁₀	
Maximum 24-hour Mean	63.2 $\mu\text{g}/\text{m}^3$	-
No. 24-Hour Means >50 $\mu\text{g}/\text{m}^3$	2	50 $\mu\text{g}/\text{m}^3$; no more than 35 exceedances
90 th Percentile	29.7 $\mu\text{g}/\text{m}^3$	50 $\mu\text{g}/\text{m}^3$
Annual Mean	20.0 $\mu\text{g}/\text{m}^3$	40 $\mu\text{g}/\text{m}^3$
Data Capture	91.6%	-

- 3.11 Table 7 shows the distribution of the 24-hour mean values into the different pollution bands (DAQI). The majority of 24-hour measured PM₁₀ concentrations fell into the 'Low' pollution band (99.4%) during 2018. There were two, 24-hour mean concentrations within the 'Moderate' pollution band (0.6%). There were no 'High' or 'Very High' events.

Table 7: DAQI Bandings for PM₁₀, 2018

Band	Index	LCA-CAH
Very High ^a	10	
High ^a	9	
	8	
	7	
Moderate ^a	6	
	5	1
	4	1
Low ^a	3	18
	2	197
	1	117

^a Number of 24-hour mean values.

- 3.12 PM₁₀ concentrations for six sites across London in 2018 are summarised in Table 8. These sites range from central London (Bloomsbury and Eltham) to outer London (Bexley), with two in east London (Stratford). The measured annual mean concentration at London City Airport (20.0 µg/m³) was higher than all these sites. The number of 24-hour mean exceedances of 50 µg/m³ was the same as that measured at Eltham and Canning Town, but higher than that measured at Bexley (TEOM) and Stratford, and lower than that measured at Bexley (FDMS) and Bloomsbury.

Table 8: PM₁₀ Data Summary of Background London Monitoring Sites, 2018^a

	Background Sites					Roadside Site
	Bexley (TEOM)	Bexley (FDMS)	Bloomsbury (FDMS)	Eltham (FDMS)	Canning Town (FDMS)	Stratford (FDMS)
Maximum 24-hr mean (µg/m ³)	49.4	75.2	72.7	75.0	74.8	72.2
Annual Mean (µg/m ³)	15.7	18.7	17.6	14.7	19.1	17.5
No. 24-hr mean >50 µg/m ³	0	7	3	2	2	1
90 th Percentile	24.7	33.2	28.5	25.6	29.8	28.0
Data Capture (%)	99.3	89.0	94.5	88.0	96.0	80.8

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

Nitrogen Dioxide Diffusion Tube Network

- 3.13 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.

- 3.14 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 $60 \mu\text{g}/\text{m}^3$ (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
Lamp post on Brixham Street	LCA 08
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

^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.

- 3.15 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)², 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.

- 3.16 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 28.1%. An adjustment factor of 0.781 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 ($\pm 6.6\%$ and $\pm 5.8\%$ respectively) in 2018 (Defra 2016).
- 3.17 The bias-adjusted results are summarised in Table 10, and are also shown in Figure 3. The results show that the annual mean objective of $40 \mu\text{g}/\text{m}^3$ was achieved at all diffusion tube monitoring locations during 2018. All measured annual mean nitrogen dioxide concentrations were well below $60 \mu\text{g}/\text{m}^3$, and it is thus unlikely that the 1-hour mean objective was exceeded at any location.

² Defra 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.

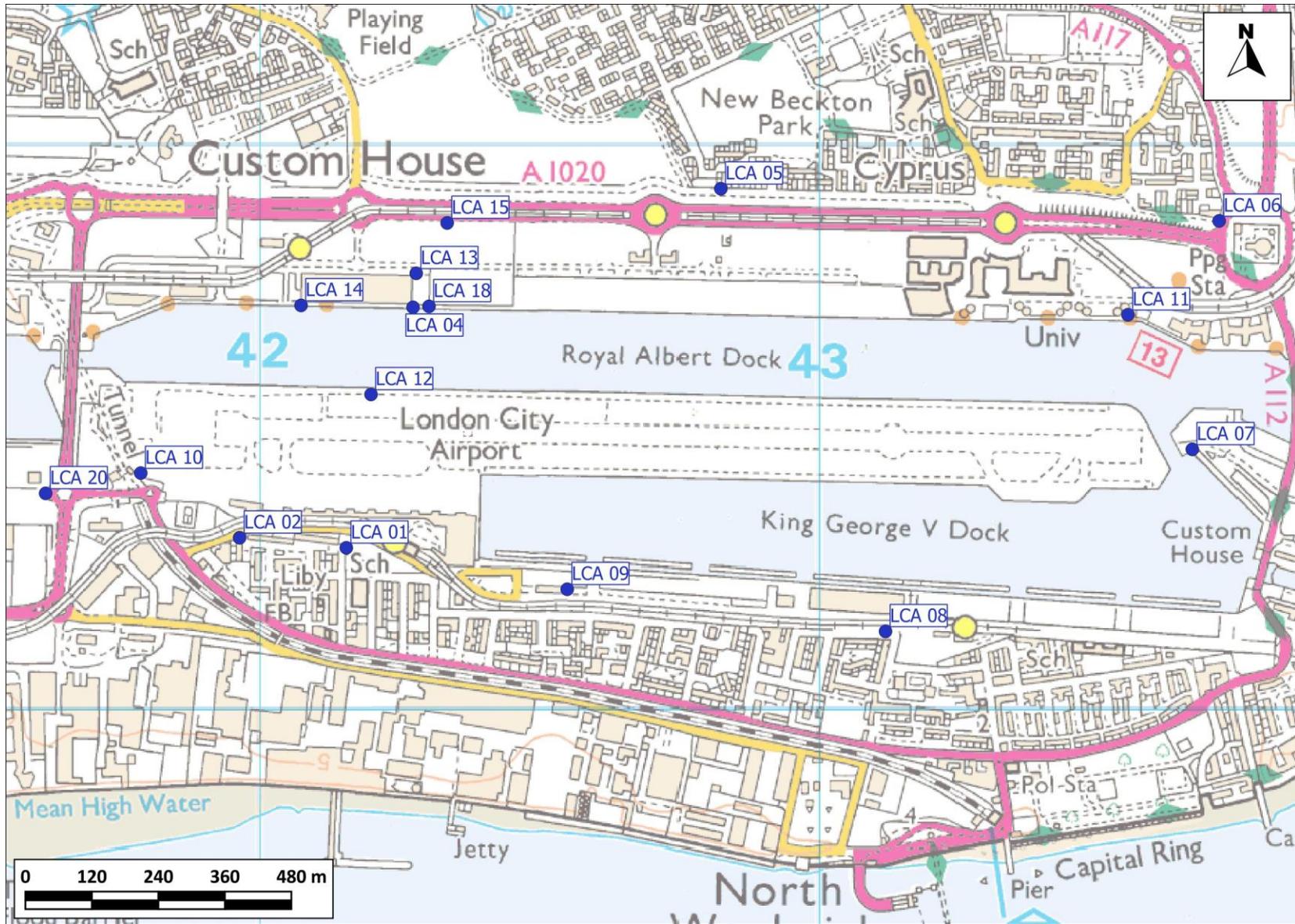


Figure 2: Diffusion Tube Monitoring Locations (blue dots) © Crown Copyright 2019. All rights reserved. Licence number 100020449.

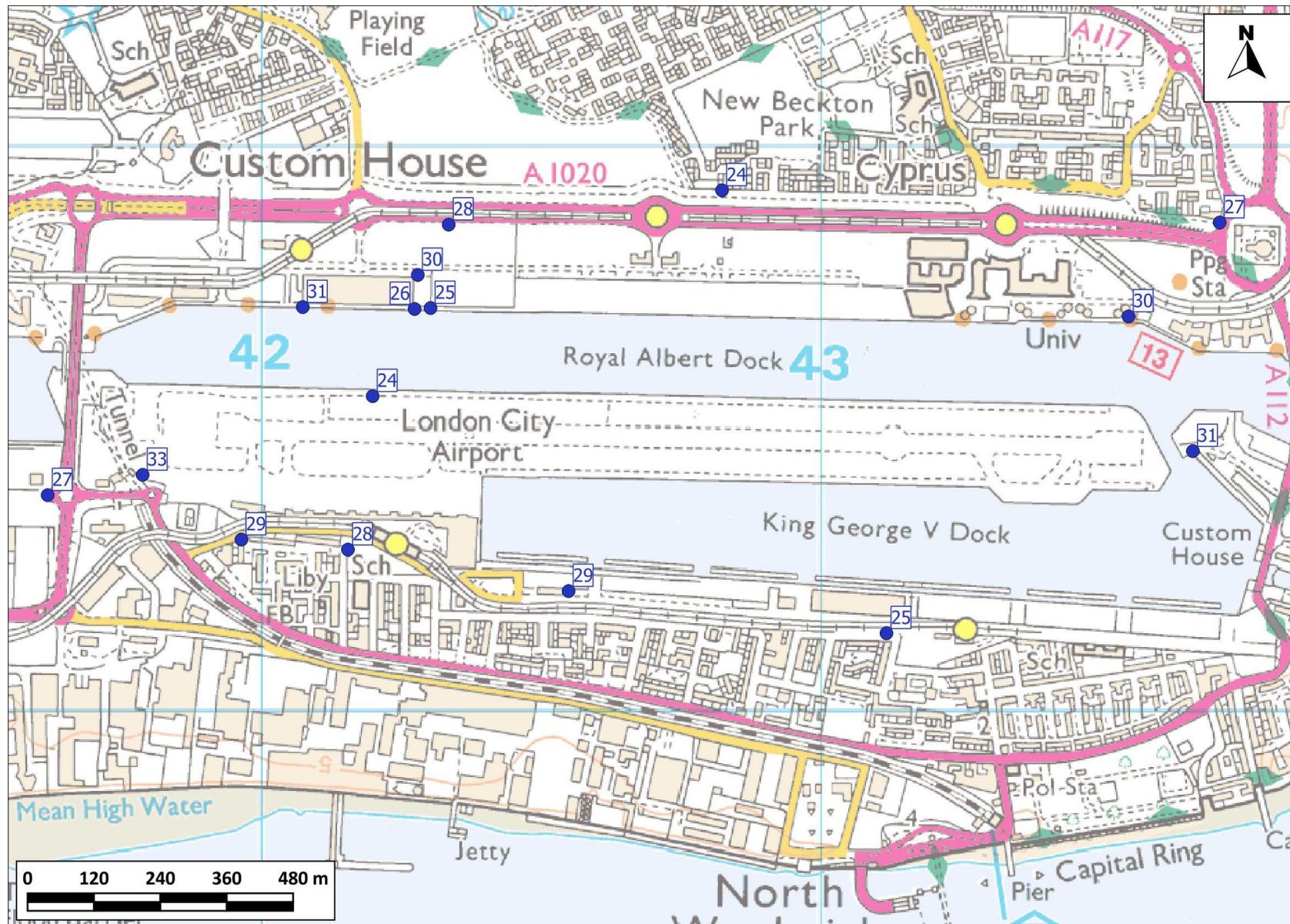


Figure 3: Nitrogen Dioxide Diffusion Tube Results, 2018 ($\mu\text{g}/\text{m}^3$) © Crown Copyright 2019. All rights reserved. Licence number 100020449.

Table 10: Diffusion Tube Data Summary for London City Airport, 2018 (Adjusted for Bias)

Site ID	Adjusted Value ($\mu\text{g}/\text{m}^3$) ^a
LCA 01	27.9
LCA 02	28.8
LCA 04	26.2
LCA 05	24.3
LCA 06	27.2
LCA 07	31.1
LCA 08	24.6
LCA 09	28.8
LCA 10	33.0
LCA 11	29.6
LCA 12	23.8
LCA 13	29.8
LCA 14	30.9
LCA 15	28.1
LCA 18	25.0
LCA 20	26.7 ^b

^a Data have been adjusted using a local bias adjustment factor for 2018 of 0.784. 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 2018 to 11th January 2019.

^b Data capture for LCA20 during 2018 was low at 50%. Data have therefore been annualised in accordance with LAQM.TG16. Further details are provided in Appendix A6.

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 PM₁₀ concentrations at LCA-CAH 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.

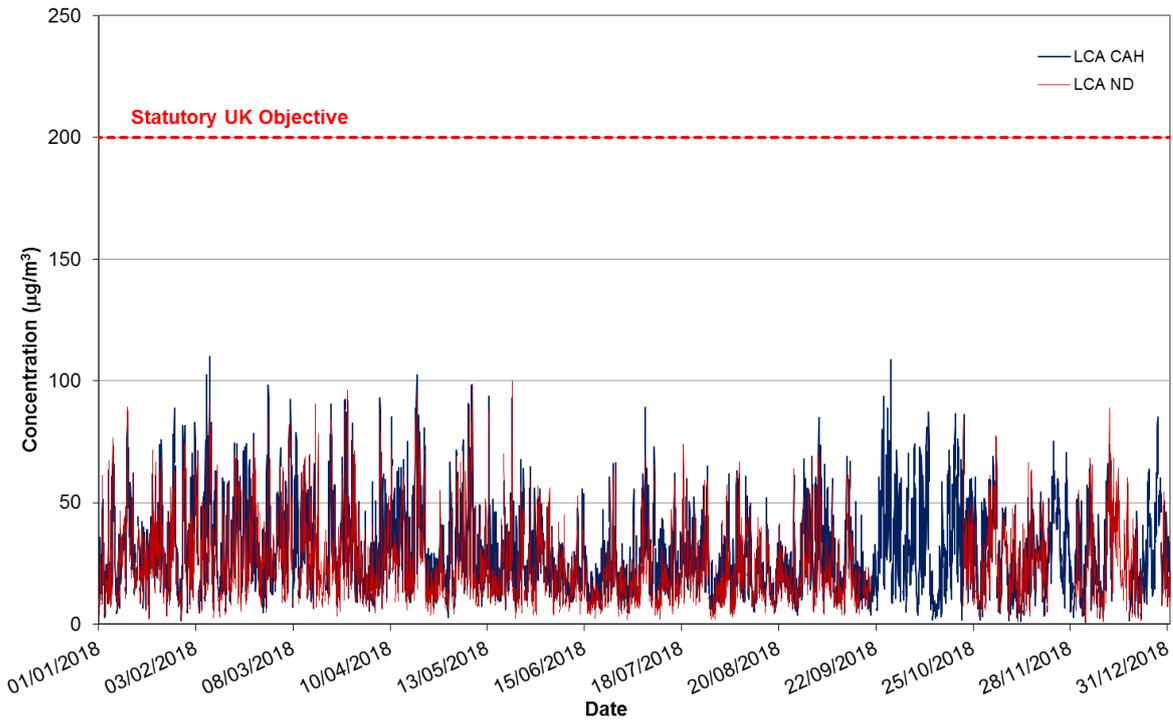


Figure 4: 1-Hour Mean Nitrogen Dioxide Concentrations at London City Airport, 2018

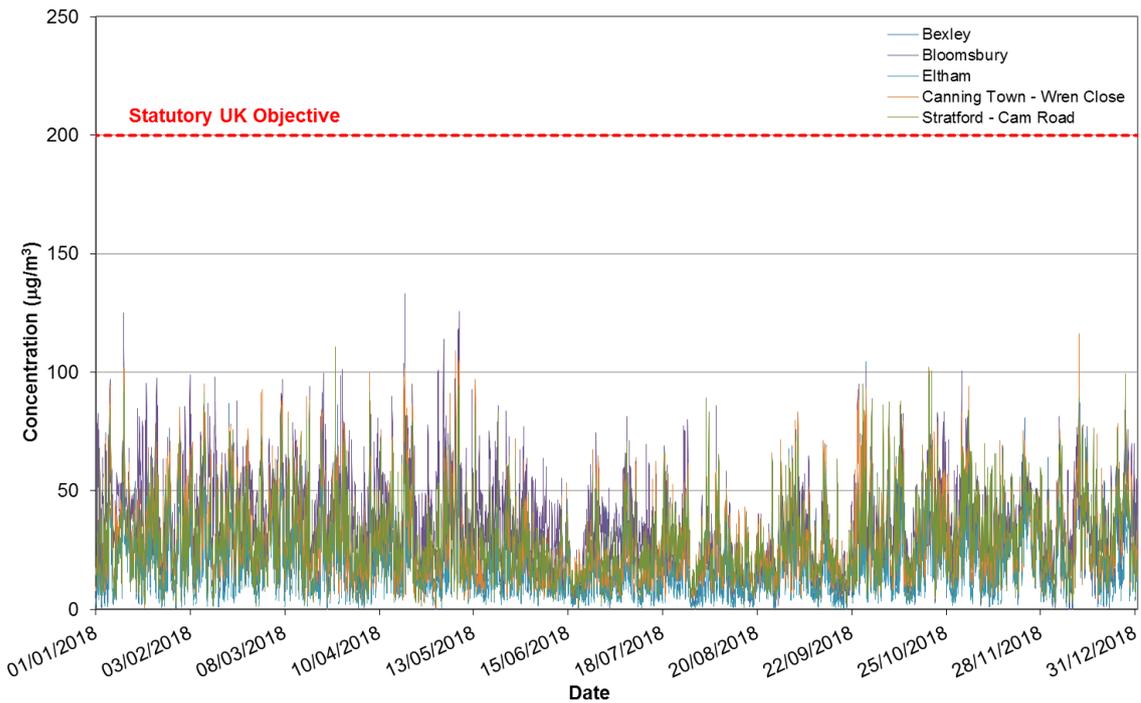


Figure 5: 1-Hour Mean Nitrogen Dioxide Concentrations at London Monitoring Sites, 2018

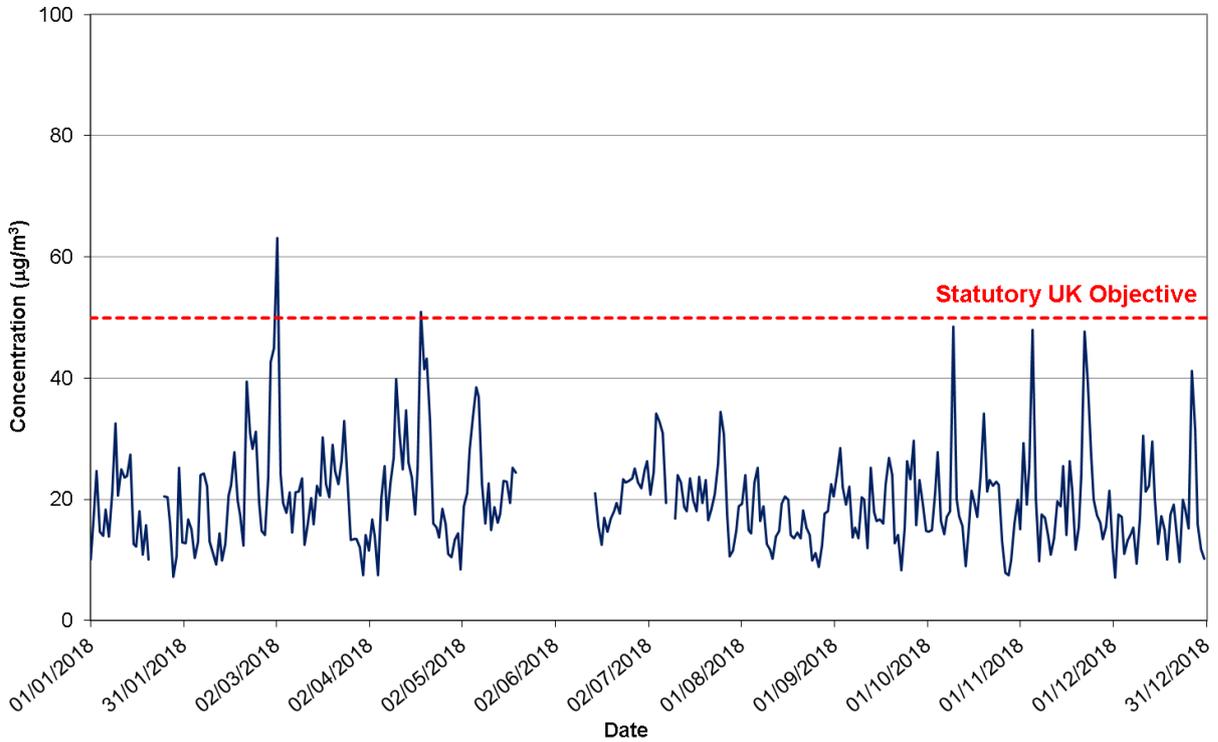


Figure 6: Daily Mean PM₁₀ Concentrations at London City Airport (LCA-CAH), 2018

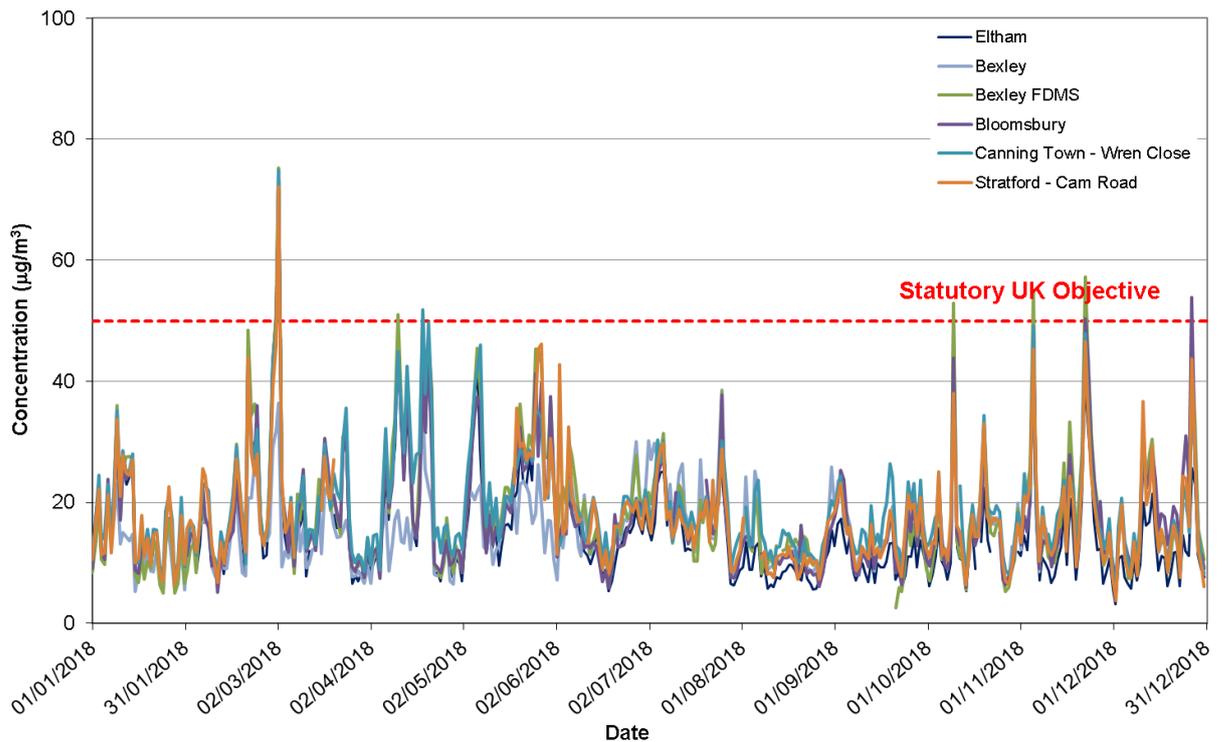


Figure 7: Daily Mean PM₁₀ Concentrations at London Monitoring Sites, 2018

Trends in Pollutant Concentrations

- 4.4 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.
- 4.5 Figure 8 shows the trends in measured annual mean nitrogen dioxide concentrations at LCA-CAH and LCA-ND (NO₂ only³) 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 8, there appears to be a general downward trend at all sites over the last twelve years but, with the exception of Bloomsbury and Stratford, concentrations have remained broadly constant over the last five years.
- 4.6 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 examined east-London monitoring sites for both nitrogen dioxide and nitrogen oxides (NO_x), including at LCA-CAH and LCA-ND.
- 4.7 The trends in annual mean PM₁₀ concentrations are shown in Figure 9, for the LCA-CAH site and two other monitoring locations, for which twelve years of data are available. There is no clear trend between 2007 and 2018, with concentrations remaining largely unchanged over this period, with the exception of the Stratford roadside site, which has shown a general reduction in recent years.

³ For the period 2009 to 2018 only.

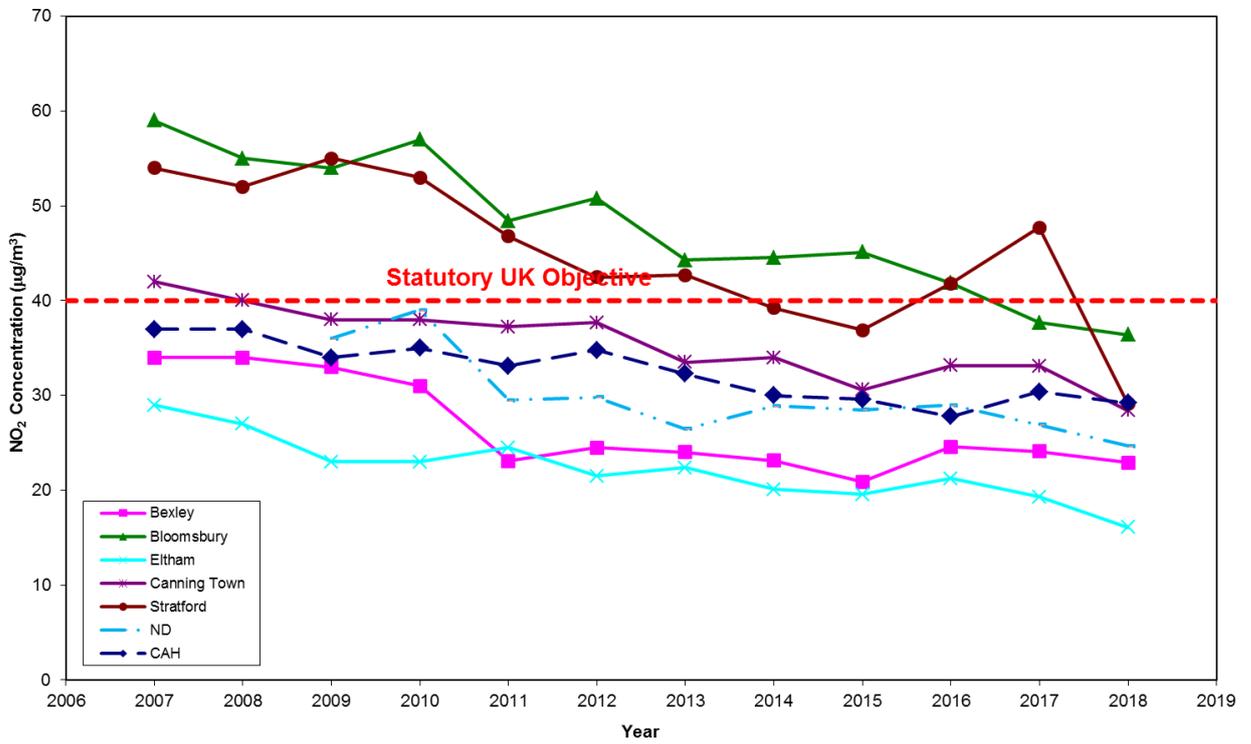


Figure 8: Annual Mean Nitrogen Dioxide Concentrations, 2007 – 2018 (µg/m³)

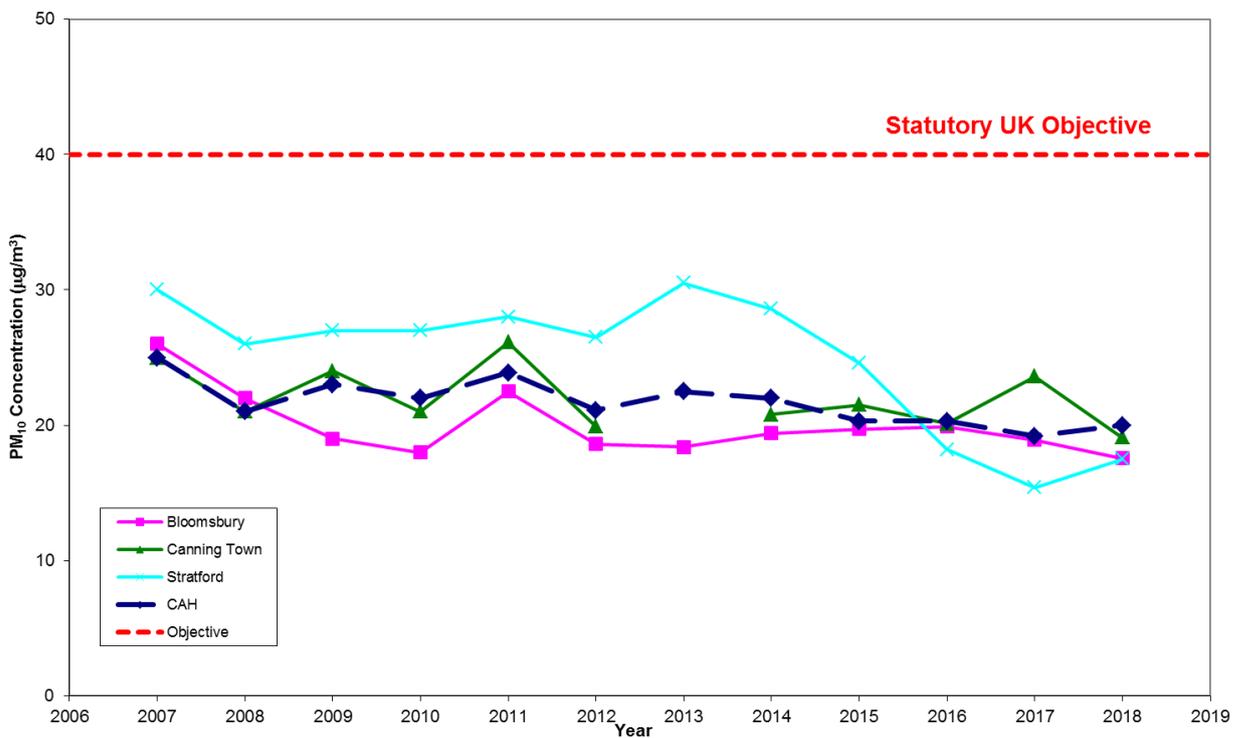


Figure 9: Annual Mean PM₁₀ Concentrations, 2007 – 2018 (µg/m³)^a

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

Bivariate Pollution Roses

- 4.8 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” software⁴. 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.
- 4.9 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.
- 4.10 Figure 10 shows bivariate pollution roses for NO_x concentrations in 2018 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 NO_x 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 20 m/s, with the concentration scale running from 0 to around 100 µg/m³). 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 (especially for winds from the northwest for LCA-CAH). The association with higher wind speeds is suggestive of emissions from an elevated buoyant source reflecting emissions from aircraft engines.

⁴ www.openair-project.org/about_us.php

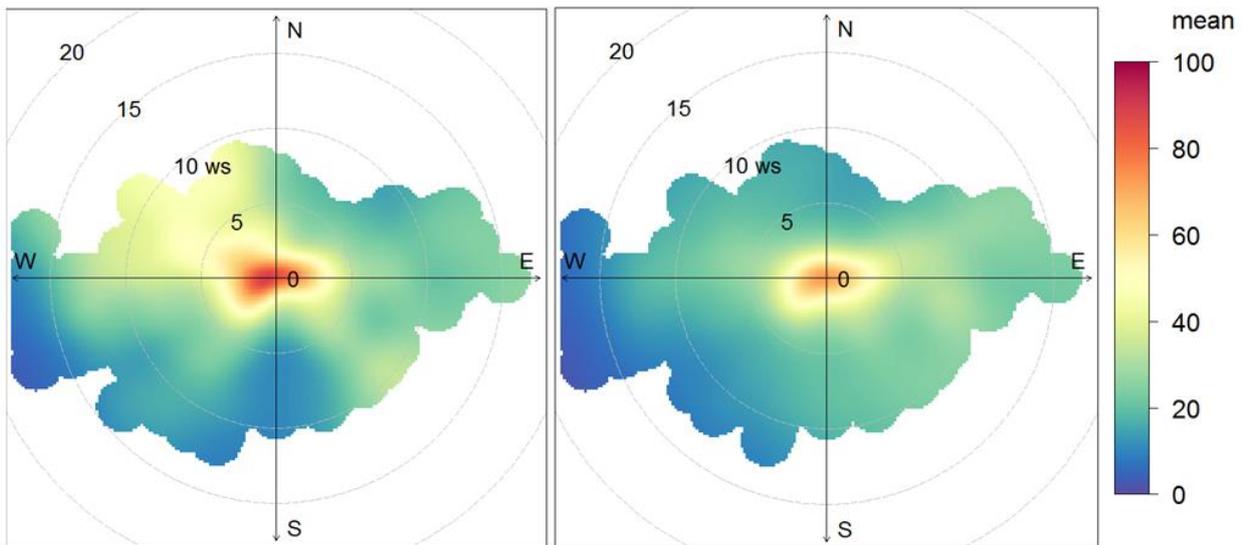
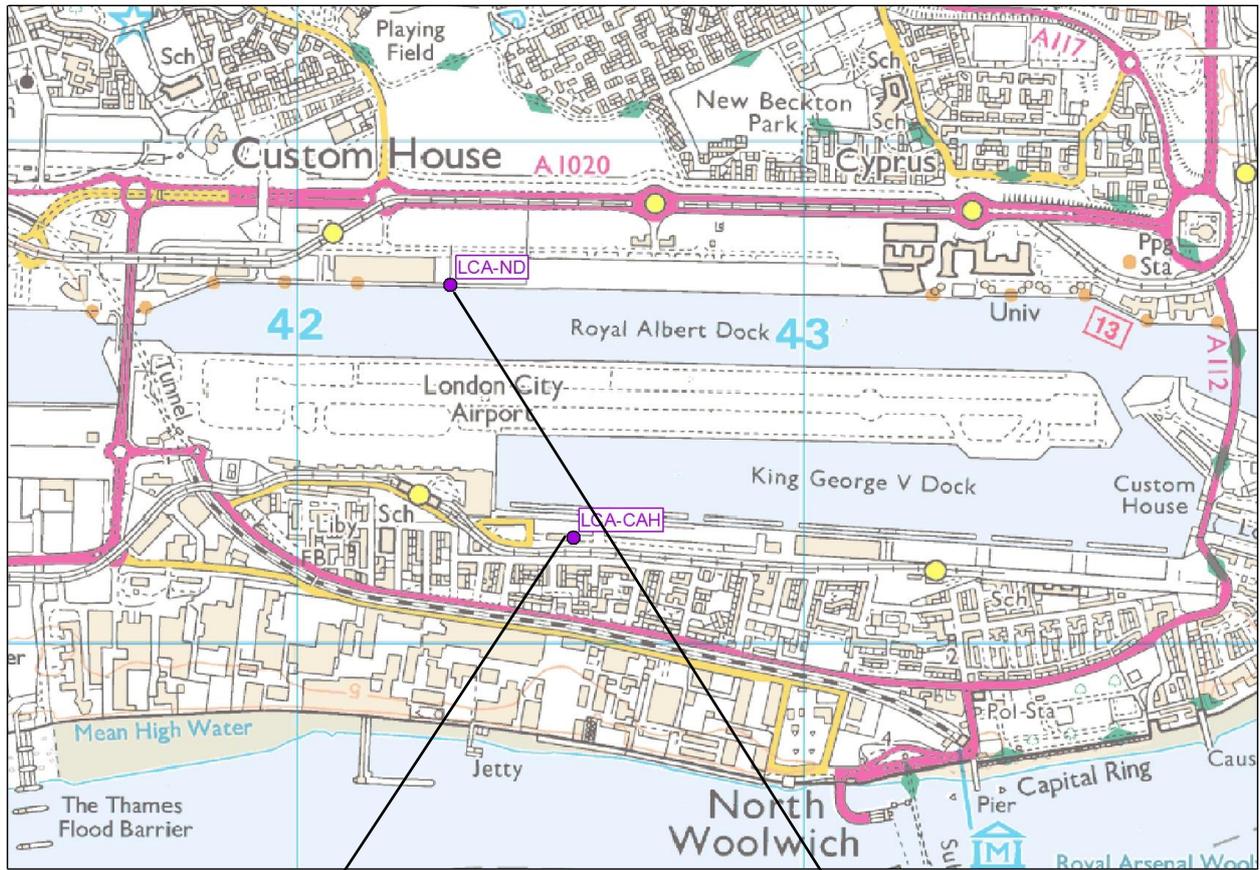


Figure 10: Bivariate Pollution Roses at LCA-CAH and LCA-ND Sites, 2018 (NO_x , $\mu\text{g}/\text{m}^3$)

© Crown Copyright 2019. All rights reserved. Licence number 100020449.

5 References

Carslaw, D.C., Beevers, S.D., Ropkins, K and Bell, M.C. (2006). Detecting and quantifying aircraft and other on-airport contributions to ambient nitrogen oxides in the vicinity of a large international airport. *Atmos Environ*, 40/28 pp 5424-5434.

Carslaw, D., Beevers, S., Westmoreland, E. and Williams, M. (2011) Trends in NO_x and NO₂ emissions and ambient measurements in the UK.

Defra, 2016. Review & Assessment: Technical Guidance LAQM.TG(16).

Defra (2011a) *Notification of changes to the Air Quality Index (Letter 1st December 2011)*, Defra.

Defra, 2011b. Precision and Accuracy Spreadsheet Tool Available at http://http://laqm.defra.gov.uk/bias-adjustment-factors/local-bias/AEA_DifTPAB_v04.xls

Defra, 2019, Defra Air Quality website. Available at: <http://uk-air.defra.gov.uk/>

KCL, 2019. London Air Quality Network. www.londonair.org.uk

Stationery Office, 2000. Air Quality Regulations, 2000, Statutory Instrument 928.

Stationery Office, 2002. The Air Quality (England) (Amendment) Regulations 2002. Statutory Instrument 3043.

Stationery Office, 2007. The Air Quality Standards Regulations, 2007 (No. 64).

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
$\mu\text{g}/\text{m}^3$	Microgrammes per cubic metre.
NO_2	Nitrogen dioxide.
NO_x	Nitrogen oxides (taken to be $\text{NO}_2 + \text{NO}$).
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.
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 Appendix 1 – 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, 2018

Site	LCA-CAH	LCA-ND
Maximum 1-Hour Mean	402.0 µg/m ³	570.9 µg/m ³
Annual Mean	44.2 µg/m ³	34.8 µg/m ³
Data Capture	92.4%	82.4%

Table A1.2: Nitrogen Oxides (NO_x) Data Summary for London Monitoring Sites, 2018

Site	Bexley	Bloomsbury	Eltham	Canning Town	Stratford
Maximum 1-Hour Mean (µg/m³)	536.8	486.5	413.3	643.5	627.7
Annual Mean (µg/m³)	35.8	54.4	23.7	40.0	49.9
Data Capture %	99.3	98.8	93.0	97.3	99.2

A2 Appendix 2 – 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 2018, Not Bias Adjusted ($\mu\text{g}/\text{m}^3$)

Site ID	Grid ref	08/01/18 to 05/02/18	05/02/18 to 12/03/18	12/03/18 to 06/04/18	06/04/18 to 04/05/18	04/05/18 to 12/06/18	12/06/18 to 09/07/18	09/07/18 to 07/08/18	07/08/18 to 04/09/18	04/09/18 to 28/09/18	28/09/18 to 30/10/18	30/10/18 to 04/12/18	04/12/18 to 11/01/19	Unadjusted Annual Mean	Data Capture (%)
LCA 01	542154, 180288	36.5	46.3	31.8	37.3	34.7	32.4	33.6	28.8	33.5	37.4	36.1	38.1	35.5	100%
LCA 02	541965, 180299	27.8	-	32.3	42.5	35.1	-	40.3	35.0	38.8	37.3	40.7	37.7	36.8	83%
LCA 04	542271, 180708	38.7	40.8	31.6	34.9	21.8	24.8	33.3	31.8	37.0	22.1	42.9	41.4	33.4	100%
LCA 05	542847, 180914	31.6	40.7	27.6	38.6	26.4	24.9	29.5	27.5	32.3	26.7	35.8	-	31.0	92%
LCA 06	543712, 180868	-	56.8	32.6	43.9	34.1	27.3	35.2	27.7	34.5	15.2	35.5	38.7	34.7	92%
LCA 07	543662, 180460	43.1	49.1	30.9	38.6	29.6	-	27.6	35.5	47.9	43.6	42.8	47.8	39.7	92%
LCA 08	543120, 180133	39.6	39.9	31.7	34.3	25.0	23.6	24.8	26.7	30.8	30.9	34.2	35.2	31.4	100%
LCA 09	542532, 180196	33.1	49.9	33.1	41.3	32.4	29.3	30.9	32.3	36.6	21.6	44.1	44.3	35.7	100%
		35.7	47.6	34.6	44.1	32.5	29.0	33.6	29.7	37.2	42.0	42.6	39.6	37.3	100%
		37.8	42.0	33.8	44.3	33.3	31.0	31.9	31.0	38.4	40.2	41.2	42.4	37.3	100%
LCA 10	541758, 180428	45.6	57.3	38.4	47.2	36.6	35.9	37.2	37.5	39.6	41.5	47.7	40.9	42.1	100%
LCA 11	543549, 180693	47.3	43.6	35.1	43.5	30.9	27.2	34.4	36.6	45.7	38.3	23.6	46.8	37.7	100%
LCA 12	542192, 180561	38.4	44.2	37.0	19.4	27.5	25.1	29.1	4.7	31.8	20.5	44.8	42.1	30.4	100%
LCA 13	542280, 180769	45.4	45.9	38.5	44.5	27.5	27.0	28.0	35.2	39.1	41.0	41.6	43.4	38.1	100%
LCA 14	542070, 180712	36.8	50.1	35.2	-	35.9	29.3	34.3	36.4	40.7	34.9	49.9	49.8	39.4	92%
LCA 15	542316, 180862	38.0	45.9	34.1	41.8	28.2	27.2	27.6	32.5	35.0	34.8	43.0	42.6	35.9	100%
LCA 18	542303, 180707	31.3	35.7	28.7	38.0	26.5	23.7	28.5	28.1	28.2	29.3	37.6	38.8	31.2	100%
		35.7	44.5	31.1	36.3	29.0	25.5	30.2	26.7	25.4	30.8	39.2	37.5	32.7	100%
LCA 20	541632, 180378	-	-	-	34.9	21.8	24.8	-	-	-	36.3	49.4	45.9	35.5	50%

– not available

A3 Appendix 3 – 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.

Table A3.1: Results of Diffusion Tube and Continuous Monitor Co-location Studies in 2018^a

	Diffusion Tube	Automatic	Adjustment Factor
LCA-CAH	36.8	29.4	0.800
LCA-ND	31.9	24.5	0.768
Overall Factor^b			0.7838

^a Diffusion tubes were exposed for the period between 8th January 2018 to 11th January 2019. The automatic monitoring data correspond to this period.

^b The overall factor has been determined using orthogonal regression.

A3.3 Table A3.2 presents the bias adjustment factors applied to the data for the last ten 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
-------------	-------

A4 Appendix 4 – 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 for eleven of the twelve periods of monitoring at LCA-CAH there was ‘Good’ precision with a single month of ‘Poor’ precision. The average precision is <10% and only a single period has a CV >20%. Overall, therefore, the precision of the diffusion tubes is ‘Good’, which is consistent with the performance of 20% TEA in water tubes supplied by Gradko International in other co-location studies (Defra, 2018).

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	08/01/2018	05/02/2018	33.1	35.7	37.8	35.5	2.4	6.6	Good
2	05/02/2018	12/03/2018	49.9	47.6	42.0	46.5	4.1	8.7	Good
3	12/03/2018	06/04/2018	33.1	34.6	33.8	33.8	0.7	2.2	Good
4	06/04/2018	04/05/2018	41.3	44.1	44.3	43.3	1.7	4	Good
5	04/05/2018	12/06/2018	32.4	32.5	33.3	32.7	0.5	1	Good
6	12/06/2018	09/07/2018	29.3	29.0	31.0	29.8	1.1	4	Good
7	09/07/2018	07/08/2018	30.9	33.6	31.9	32.1	1.4	4	Good
8	07/08/2018	04/09/2018	32.3	29.7	31.0	31.0	1.3	4	Good
9	04/09/2018	28/09/2018	36.6	37.2	38.4	37.4	0.9	2	Good
10	28/09/2018	30/10/2018	21.6	42.0	40.2	34.6	11.3	33	Poor
11	30/10/2018	04/12/2018	44.1	42.6	41.2	42.7	1.5	3	Good
12	04/12/2018	11/01/2019	44.3	39.6	42.4	41.0	2.4	6	Good
Average CV								6.6	-

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, 2018).

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	08/01/2018	05/02/2018	31.3	35.7	33.5	3.1	9.3	Good
2	05/02/2018	12/03/2018	35.7	44.5	40.1	6.2	15.5	Good
3	12/03/2018	06/04/2018	28.7	31.1	29.9	1.7	5.8	Good
4	06/04/2018	04/05/2018	38.0	36.3	37.2	1.2	3	Good
5	04/05/2018	12/06/2018	26.5	29.0	27.8	1.7	6	Good
6	12/06/2018	09/07/2018	23.7	25.5	24.6	1.3	5	Good
7	09/07/2018	07/08/2018	28.5	30.2	29.4	1.1	4	Good
8	07/08/2018	04/09/2018	28.1	26.7	27.4	1.0	4	Good
9	04/09/2018	28/09/2018	28.2	25.4	26.8	2.0	7	Good
10	28/09/2018	30/10/2018	29.3	30.8	30.1	1.1	4	Good
11	30/10/2018	04/12/2018	37.6	39.2	38.4	1.2	3	Good
12	04/12/2018	11/01/2019	38.8	37.5	41.7	1.0	3	Good
Average CV							5.8	-

A5 Appendix 5 – Detailed Trend Analysis

Nitrogen Dioxide

- A5.1 Figure A.5.1 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)⁵, over the period 2007 to 2018.
- A5.2 A Theil-Sen analysis has been applied to the data to identify statistically significant trends and slopes, and the results are described in Table A.5.1. 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 A5.1: Theil-Sen Analysis, Nitrogen Dioxide Concentrations at City Aviation House, Newham Dockside and Other Monitoring Sites, 2007 to 2018

Monitoring Site	Theil-Sen Analysis ^a	Statistically Significant Trend?
City Aviation House (LCA-CAH)	-0.69 [-1.11, -0.28]	Yes
Newham Dockside (LCA-ND) ^b	-1.38 [-1.88, -0.86]	Yes
Greenwich Burrage Grove	-1.98 [-2.4, -1.56]	Yes
Greenwich Eltham	-0.77 [-1.08, -0.44]	Yes
Greenwich Woolwich Flyover	-1.34 [-1.9, -0.81]	Yes
Newham Cam Road	-1.85 [-2.4, -1.28]	Yes
Newham Wren Close	-1.09 [-1.54, -0.65]	Yes
Tower Hamlets Blackwall	-1.38 [-1.82, -0.95]	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 2018.

⁵ 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.

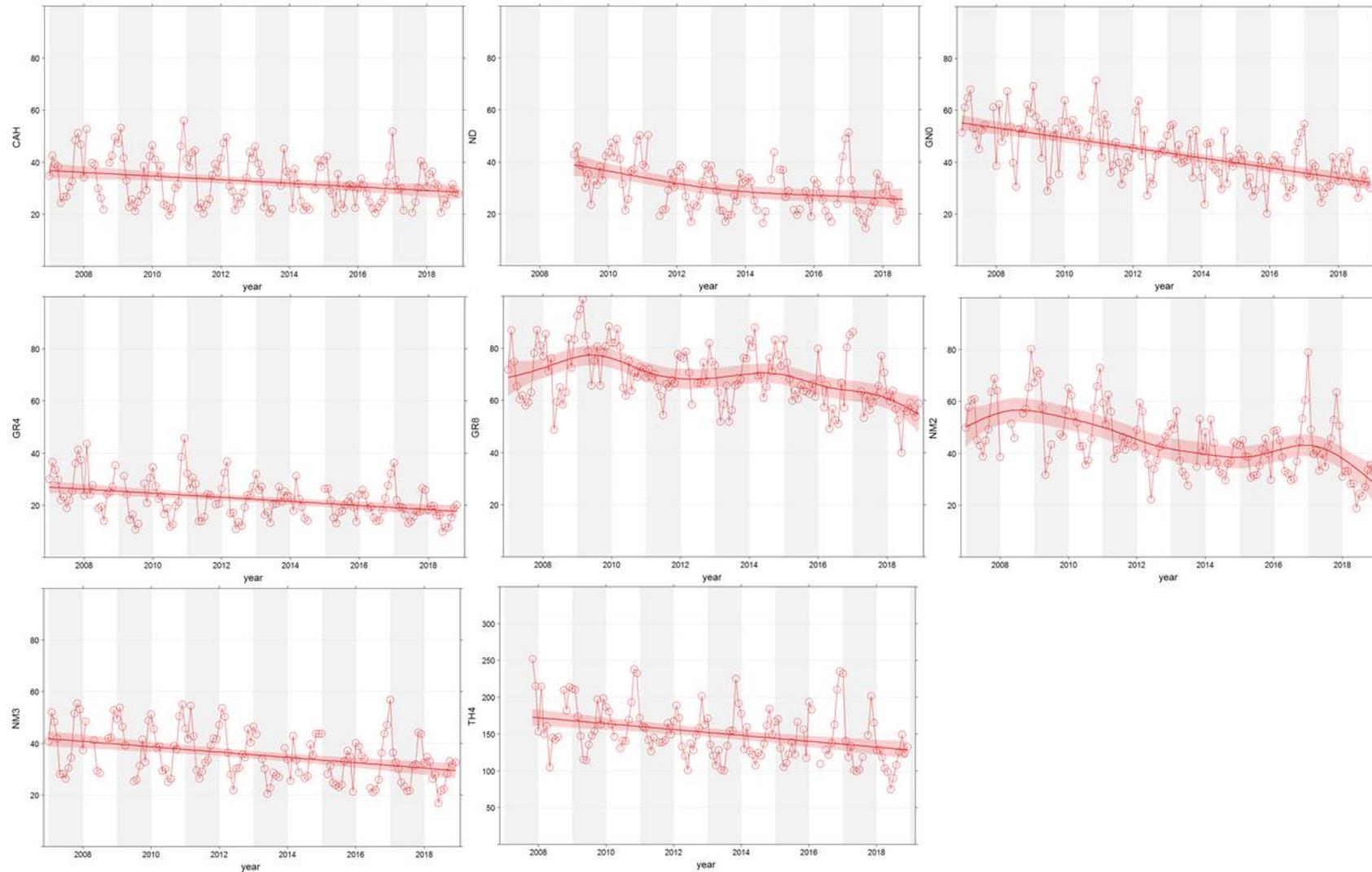


Figure A.5.1: Smooth Trend Analysis, Hourly Nitrogen Dioxide Concentrations at City Aviation House, Newham Dockside and Other Monitoring Sites, 2007 – 2018 (Left to Right: City Aviation House, Newham Dockside, Greenwich Burrage Grove, Greenwich Eltham, Greenwich Woolwich Flyover, Newham Cam Road, Newham Wren Close, Tower Hamlets Blackwall)

Nitrogen Oxides (NO_x)

- A5.3 Figure A.5.2 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 2018.
- A5.4 The Theil-Sen analysis, shown in Table A.5.2, indicates a statistically significant downward trend in NO_x 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 A5.2: Theil-Sen Analysis, NO_x Concentrations at City Aviation House and Other London Monitoring Sites, 2007 to 2018

Monitoring Site	Theil-Sen Analysis ^a	Statistically Significant Trend?
City Aviation House (LCA-CAH)	-1.38 [-2.35, -0.6]	Yes
Newham Dockside (LCA-ND) ^b	-4.91 [-6.33, -3.54]	Yes
Greenwich Burrage Grove	-4.77 [-6, -3.51]	Yes
Greenwich Eltham	-1.08 [-1.67, -0.47]	Yes
Greenwich Woolwich Flyover	-4.36 [-6.93, -2.1]	Yes
Newham Cam Road	-4.3 [-5.79, -2.99]	Yes
Newham Wren Close	-1.73 [-3.04, -0.72]	Yes
Tower Hamlets Blackwall	-4.39 [-6.23, -2.68]	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 2018.

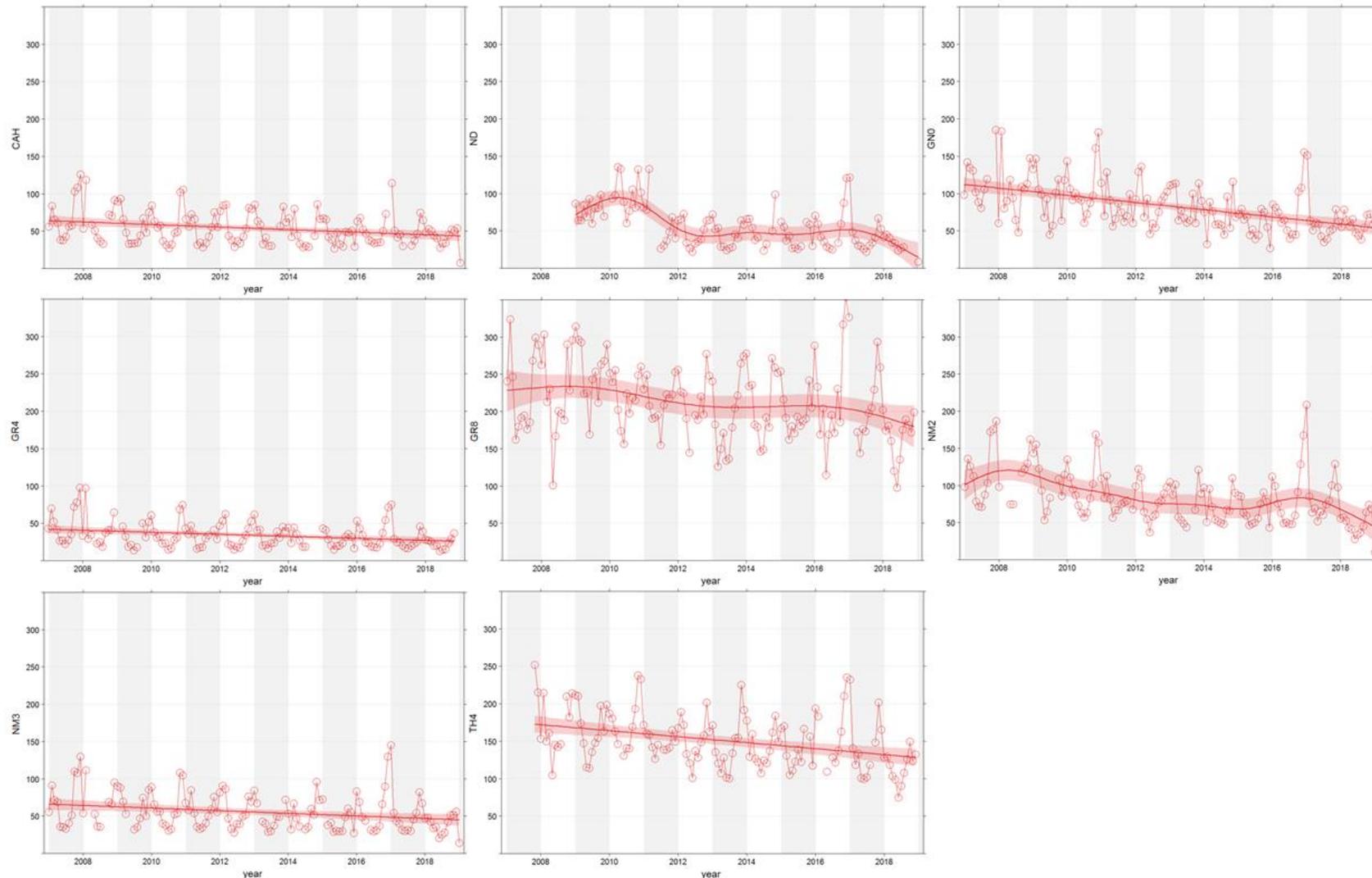


Figure A.5.2: Smooth Trend Analysis, Hourly NO_x Concentrations at City Aviation House, Newham Dockside and Other London Monitoring Sites, 2007 – 2018 (Left to Right: Aviation House, Newham Dockside, Greenwich Burrage Grove, Greenwich Eltham, Greenwich Woolwich Flyover, Newham Cam Road, Newham Wren Close, Tower Hamlets Blackwall)

A6 Adjustment of Short-Term Data to Annual Mean

- A6.1 Data capture at the LCA20 diffusion tube monitoring site was low during 2018 and, as such, does not represent a full calendar year. Therefore, the data have been adjusted to an annual mean equivalent based on the ratio of concentrations during the short-term monitoring period (6 months; April – July 2018 and September 2018- January 2019) to those over the 2018 calendar year at the four background sites detailed in Table 5, where long-term data are available⁶. This follows the guidance set out in Box 7.9 of LAQM.TG16.
- A6.2 The annual mean nitrogen dioxide concentrations and the period means for each of the four monitoring sites from which adjustment factors have been calculated are presented in Table A5.3, along with the Overall Factor.

Table A5.3: Data used to Adjust Short-term Monitoring Data from LCA20 to 2018 Annual Mean Equivalent

Monitoring Site	Period Mean Concentration ($\mu\text{g}/\text{m}^3$)		Adjustment Factor	Overall Factor
	2018 Calendar year	April-July and Sept-Jan ^a		
London Bexley	22.9	24.0	0.95	0.96
London Bloomsbury	36.4	37.5	0.97	
London Eltham	16.1	17.5	0.92	
Wren Close	28.4	28.6	0.99	

^a April 6th to July 9th 2018 and September 28th 2018 to 11th January 2019 to be exact.

⁶ London Bexley, London Bloomsbury and London Eltham are operated as part of the Automatic Urban and Rural Network (AURN) and Wren Close is managed by Air Quality England.

**London City Airport
2018 Annual Performance Report**

(Compliance with Planning Permission)

**Annex 8
Sustainability and Biodiversity
Action Plan Progress Update**

31 May 2019



London City Airport,
City Aviation House
Royal Docks,
London E16 2PB
Tel: 020 7646 0000
LondonCityAirport.com

Sustainability and Biodiversity Objective		Indicative Timescale	Status update
EMS2	Update the Airport's current ISO14001 certification to be one of the first UK airports to hold ISO14001:2015 by the end of 2018.	End of 2018	Complete - audit undertaken in July 18 and certificate received Sep 18.
WST1	Implement a site waste management plan and review prior to each phase of CADP.	Prior to each phase of CADP	In place with each contractor prior to works commencing.
WST2	Reduce total waste kg per passenger by 10% (0.05 kg per passenger) from 2013 baseline by the end of December 2018.	End of December 2018	Complete - 0.36 kg per pax in 2013, 0.26kg per pax in 2018 (27% reduction).
WST3	Recycle 70% of total kg of waste by the end of December 2018.	End of December 2018	62% in December 2018. This is not in LCY's direct control, however further measures are in place to increase this rate during 2019.
WST4	Conduct a feasibility study into using sustainable methods for disposing of food waste including biofuel conversion and anaerobic digestion	End of April 2017	Complete and implemented in 2018.
WST5	To create and implement a furnishing recycling programme to help local charities and reduce office waste	End of July 2017	This has been set up with Reyooz, and has been communicated internally.
EC1	Improve employee awareness on energy reduction through two campaigns and training sessions per year.	Ongoing (evidenced yearly)	An Energy Awareness Quiz was distributed to all employees in November 2018. All-staff briefings also included a section on energy minimisation in December 2018.
EC3	Implementation of a concession energy efficiency and low carbon fit out guide including policy by the end of December 2018.	End of December 2018	Shared with LBN Dec 2018
EC4	Installation of low energy LED runway lighting	End of January 2017	Completed
WH1	Implement a state of the art bird deterrent scheme, a quiet and less intrusive method of bird management at the airport	End of December 2017	A laser deterrent scheme has been installed, with pyrotechnics used only in exceptional circumstances.

Sustainability and Biodiversity Objective		Indicative Timescale	Status update
WH2	Investigate, produce and make publicly available safeguarding guidance for developers, which specifically details safe methods of increasing local biodiversity within developments without compromising aerodrome safety	End of December 2017	Complete and visible on the website.
WH3	Provision of artificial substrate mesh for aquatic colonization and the provision of shelter for fish fry within KGV Dock	Mid 2017	An artificial fish refuge has been installed.
WH4	Continue providing £10,000 per year until 2018 to East Ham Nature Reserve to deliver an educational biodiversity and environmental programme for the local community.	Until 2018	Available and offered throughout 2018, however due to a change of management for the nature reserve the programme could not be delivered. Discussions are ongoing to ensure this fund is spend appropriately and the 2018 fund remains available.
WH5	Fund other environmental and biodiversity projects with preference given to areas of nature deficiency. 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 pro-rata from the commencement of CADP until January 2020, or a sum to be agreed between Newham and LCA.	Annually until end of January 2020	Funds were distributed to sponsor biodiversity events in the Royal Docks, including Royal Docks Learning and Activity Centre - Biodiversity Event and Asta Centre - Sow & Grow Event and Earth Day Biodiversity Celebration.
W2	Upgrade and increase the number of meters (from the existing 12) to effectively monitor areas of high water usage	End for December 2017	Survey completed to identify the high areas of use. Additional meters installed at CADP sites and will be installed as new concession spaces open.

Sustainability and Biodiversity Objective		Indicative Timescale	Status update
W3	Operate within the conditions stipulated in LCA's water discharge permit with regards to BOD (biochemical oxygen demand) and evidence performance.	End of May each year	One breach of the BOD level was recorded during an extreme cold weather event in February 2018 due to the use of de-icers to maintain aircraft safety. All other levels were within limits. Monitoring is ongoing.
W5	Create and implement a Flood Management Plan for the Airport in accordance with Environment Agency guidance	End of December 2017	Completed, and a copy shared with LBN.
N1	Continued operation of The Airspace & Environment Sub-Committee as part of the LCACC to achieve the agreed objectives established at the inaugural meeting in October 2016 until end of December 2020.	On-going until end of December 2020	In place and ongoing
N2	Continue installation of sound insulation measures to high density tower blocks located in Tower Hamlets as part of the airport Sound Insulation Scheme (SIS)	End of August 2017	Completed August 2018 (although additional properties that came forward late have been treated since)
N3	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.	Ongoing, beginning at the commencement of the CADP works	Implementation of the construction Noise and Vibration Management and Mitigation Strategy (CNVMMS) has begun following the commencement of CADP. Noise and vibration monitoring also is being undertaken independently by noise consultants.
SC1	Distribution of a Community leaflet detailing construction activity at least four times a year to the immediate local area for the duration of the CADP works.	On-going throughout the CADP works	Ongoing and issued quarterly throughout 2018.

**London City Airport
2018 Annual Performance Report**

(Compliance with Planning Permission)

**Annex 9
List Of Employers On Site
& Construction Contractors**

31 May 2019



London City Airport,
City Aviation House
Royal Docks,
London E16 2PB
Tel: 020 7646 0000
LondonCityAirport.com

List of Onsite Employers 2018

Advance 365
AELIA
Aerospa Beauty salon
Alitalia
Arriva
ASIG
ASPINAL
ATEC
Avis
BA Cityflyer
Boots
BP Installations
British Airways
Café Nero
City Jet
Company 85
Dixons
Empark
ESP
Eurest
Europcar
FlyBe
GSF
Hertz
KLM
London City Airport
Lufthansa
Luxair
Menzies
Mitie
NATS
Netjets
Newrest
Omniserve
Pret a Manger
Sky Handling Partners
SSP UK
Swiss
Swissports
TAP
Travelex
Trumans
Tumi
WH Smith

List of CADP Main Contractors 2018

Balfour Beatty Kilpatrick	E14 5HU
Bam Nuttal	GU15 3XW
Bechtel	
CCE South	HA9 0HR
Dyer & Butler	SG1 2ST
Kier	RH10 9NH
Safelane Global	ME8 0NZ
Topbond	ME10 3EU

CADP Contractors 2018

Ambigraph Signs	E15 2SP
Atkins Ltd	NW1 3AT
Buckingham	MK18 5LJ
Colin Glen	BT29 4DJ
Fibre Solution Ltd	EN9 1JH
Lobster Picture	BS1 4ND
Markides Associate Limited	SE1 7NX
Pascall & Watson Ltd	EC4V 6ER
Pell Frischmann	W1U 3PD
Portakabin (Site Accommodation) Limited	YO32 9PT
Rapiscan Systems Limited	RH1 5GG
Regional Waste Recycling (Commercial) Ltd	E15 2PH
RSK Environment LTD	HP3 9RT

London City Airport
2018 Annual Performance Report
(Compliance with Planning Permission)

Annex 10
Take Off Into Work 2018
Statistics
31 May 2019



London City Airport,
City Aviation House
Royal Docks,
London E16 2PB
Tel: 020 7646 0000
LondonCityAirport.com

Take Off Into Work Statistics 2018

Company	Total into work in 2017
GSF	2
London City Airport	38
Menzies	2
Sky Handling Partners	26
SSP	1
WH Smith	7
Total	76

In addition, roles below were offered but candidates did not start for various reasons (employer end and candidate). It shows LCY had activity and Workplace met requirements and completed full recruitment process.

Travelex	Sales consultant
Diamond Air	Customer service agent
LCY	RAMP
Lawmens Ltd	Labourer
Avis	Trainee customer service manager
LCY	RAMP service agent
LCY	Security officer
SHP	PHA
Avis Group	Sales rental agent
SHP	PHA
SHP	PHA

London City Airport
2018 Annual Performance Report
(Compliance with Planning Permission)

Annex 11
LCA Recruitment Policy
31 May 2019



London City Airport,
City Aviation House
Royal Docks,
London E16 2PB
Tel: 020 7646 0000
LondonCityAirport.com

1. Applications

- 1.1. London City Airport advertise all vacancies on their dedicated career's page on www.londoncityairport.com/careers
- 1.2. Jill Pearman, Recruitment Manager (Tel 020 7646 0011) 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 Area ;
 - 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 Area¹;
- 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 for future consideration and will notify applicants directly when relevant roles are available.
- 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).

2. Selection

- 2.1. A candidate will not be appointed without first being interviewed 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.

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, Havering, Bexley, Greenwich, Lewisham, Southwark, Barking and Dagenham, Greenwich, Bexley, Havering and the area of Epping Forest District Council

- 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 Jill Pearman.

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 necessary 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.

London City Airport
2018 Annual Performance Report

(Compliance with Planning Permission)

Annex 12
LBN Correspondence

31 May 2019



London City Airport,
City Aviation House
Royal Docks,
London E16 2PB
Tel: 020 7646 0000
LondonCityAirport.com

From: Dave.Whittaker@newham.gov.uk
To: [Oscar Wong](#)
Cc: [Tim Halley](#); [Rachel Ness](#); [Gavin Wicks](#); [Tessa Simpson](#); [Anna Boss](#); [Peter Adams](#)
Subject: RE: LCY Annual Performance Report 2018 submission
Date: 31 May 2019 16:39:53
Attachments: [image002.png](#)

Dear Oscar

Thank you – receipt hereby acknowledged and I confirm that I can access all the Annexes via the Huddle link.

I can also confirm that this has been submitted in compliance with the S106 Agreement attached to planning permission 13/01228/FUL, Schedule 14 (Monitoring and Reporting), Part 1 (Annual Performance Report).

I understand that this response will comprise Annex 12 in the published version of the 2018 APR, due by 30th June 2019.

Kind regards

Dave

Dave Whittaker | Airport Monitoring Officer | Investment Team
Regeneration and Planning
London Borough of Newham
Newham Dockside | 1000 Dockside Road | London E16 2QU
DDI: 0203 373 7759 | Int: 37759 Follow us on Twitter [@newhamlondon](#)

Please note that the above opinion represents informal officer observation only, offered without prejudice to all future formal Council decisions and accompanying procedures.

People at the Heart of Everything We Do
