LONDON CITY AIRPORT

2016 ANNUAL PERFORMANCE REPORT
(COMPLIANCE WITH PLANNING PERMISSION 07/01510/VAR)

APPENDIX 1
LBN CORRESPONDENCE

01 July 2017

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

London City Airport
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Newham London

Deirdra Armsby
Director of Regeneration and Planning

Development Control
1st Floor, West Wing
Newham Dockside
1000 Dockside Road
London
E16 2QU

Ask for: Dave Whittaker
Airport Monitoring Officer
Tel No.: 020 3373 7759
Email: dave.whittaker@newham.gov.uk
Our ref: APR 2016 Response (2)

3rd August 2017

Tim Halley
London City Airport Ltd
City Aviation House
Hartmann Road
Silvertown
London
E16 2PX

By email: tim.halley@londoncityairport.com

Dear Mr. Halley

Town and Country Planning Act 1990 (as amended)

London City Airport:

Planning Permission 07/01510/VAR, which varied conditions 13 and 15 of outline planning permission N/82/104 dated 23rd May 1985 (as previously varied) to allow up to 120,000 total aircraft movements per annum (where the number of total movements in 2006 was 79,616) with related modifications to the daily and other limits including noise-factored movements, dated 9th July 2009 ('The 2009 Permission').

London City Airport 2016 Annual Performance Report - Appendices

The purpose of this letter is:

- to formally acknowledge the Local Planning Authority's receipt of Appendices 2 - 19 to the London City Airport 2016 Annual Performance Report (APR) on 26th July 2017. The Council was not able to take these appendices into consideration in its response to the APR dated 21st July 2017 due to their late submission. However, please be assured that all parts of the APR will be taken into account in the Planning Obligations Annual Monitoring Report that is due to be considered by the Council's Strategic Development Committee in October this year; and,

- to clarify a matter in the Council's response to the APR dated 21st July 2017, that is, the number of breaches of planning control recorded by the Council for the calendar year 2016 is four, namely:

  1) AVRO RJ100 aircraft – noise levels in excess of Category A designation (Planning Condition 7; S106 Agreement: Ninth Schedule, Part 1);

  2) Noise Management Scheme (NMS): Incentives and Penalties: non-inclusion of financial penalties (S106 Agreement: Definitions and Fourth Schedule, Part 7, Paragraph 4);

3) Embraer E190 aircraft – noise levels in excess of Category A designation (Planning Condition 7; S106 Agreement: Ninth Schedule, Part 1); and

4) Sound Insulation Scheme vent design – change to technical specification (S106 Agreement: Ninth Schedule – Part 5 – Paragraph 7).

In respect of the Sound Insulation Scheme vent design, acting in a proportionate way, the Local Planning Authority has taken the view that the breach does not presently unacceptably affect public amenity. As such, it is exercising its discretion not to take enforcement at this time.

For the avoidance of doubt, the breach relating to the Dornier 328 aircraft matter was recorded by the Council as occurring in 2015 only.

Please let me know if I can assist further.

Yours sincerely

Dave Whittaker for
Deirdra Armsby
Director of Regeneration and Planning

LONDON CITY AIRPORT

2016 ANNUAL PERFORMANCE REPORT
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APPENDIX 2
SUMMARY OF PLANNING AGREEMENT REQUIREMENTS & REFERENCES WITHIN 2016 APR

01 July 2017

London City Airport
City Aviation House
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London E16 2PB
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LondonCityAirport.com

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Planning Agreement Reference/ Comments from LBN	Planning Agreement Requirement	Location of Information within 2016 APR, para ref.
Section 1 Introduction		
Definitions	"An annual report to be submitted to the Council by 1 July in each calendar year which shall (to the extent required by the obligations in this Deed) report on the performance of and compliance with the terms of this Deed in the preceding calendar year and shall include all the annual reporting requirements contained in this Deed or as agreed with the Council from time to time"	1.2 Annual Performance Report, para 1.2.1
6th Schedule / Part 5 / 1 – Page 58	"In pursuance of any obligation under this Deed to report to the Council on the performance or compliance with the terms of this Deed, the Airport Companies shall provide the Council with the Annual Performance report by 1 July in each calendar year in respect of performance and compliance in the preceding calendar year (January to December) and shall publish the Annual Performance Report on the website for the Airport Consultative Committee by 31 July in each calendar year Provided That for the avoidance of doubt the Airport Companies shall submit the first Annual Performance Report by 1 July 2010 for performance and compliance during the year 2009 and publish such Report on the Airport Consultative Committee website by 31 July 2010."	
6th Schedule / Part 5 / 2 – Page 58	"For the avoidance of doubt any obligation to report to the Council contained in this Deed shall be read and construed as if that obligation was to include such report in the Annual Performance Report regardless of any indication to the contrary as to form or timing of such report."	
Section 2 Aircraft Movements		
4th Schedule / Part 7 / 6 – Page 45	"Report aggregate figures of the numbers and types of aircraft using LCY."	2.1 Numbers and Types of Aircraft using the Airport, paras 2.1.1-2.2.2
LBN letter dated 26 February 2010	"There will be a need to ensure that noise data is sufficiently detailed so that compliance can be checked. Therefore there would be a need to include daily numbers of movements including class, numbers of late flights etc. (Please continue to liaise with my colleague Robin Whitehouse in this regard)."	2.2 Daily Numbers of Movements including Noise Category, paras 2.2.1-2.2.3
LBN comments received 5 May 2011	Daily flight numbers and associated noise category of aircraft should demonstrate compliance with Condition 8(1)(a) to (j) and Condition 8(4)(a) and (b) of planning permission 07/01510/VAR	
LBN letter dated 26 February 2010	"It would be useful to include whether or not all flights and maintenance fell within or outside of the allowed times in the Agreement."	2.3 Times of Flights and Maintenance, para 2.3.1-2.3.6
LBN comments received 5 May 2011	Times of flights of should demonstrate compliance with Conditions 6(a), 6(b), 6(c), 9 and 10 of planning permission 07/01510/VAR. The times of ground running for maintenance should demonstrate compliance with Condition 5 of planning permission 07/01510/VAR.	
3rd Schedule / Part 2 – Page 30	Confirmation should also be provided that noise generated by maintenance outside of the permitted hours was not discernible at the boundaries of the Airport site.	

Planning Agreement Reference/ Comments from LBN	Planning Agreement Requirement	Location of Information within 2016 APR, para ref.
Section 3 Noise		
Definitions	"The 57 dB Contour based on actual aircraft movements for the summer period (16 June to 15 September) in the calendar year immediately preceding the due date for submission of the Annual Performance Report."	3.6 SIS: Noise Contours, para 3.6.1
Definitions	"The 66 dB Contour based on actual aircraft movements for the summer period (16 June to 15 September) in the calendar year immediately preceding the due date for submission of the Annual Performance Report."	
Definitions	"The 69 dB Contour based on actual aircraft movements for the summer period (16 June to 15 September) in the calendar year immediately preceding the due date for submission of the Annual Performance Report."	
Definitions	"The 57 dB Contour based on forecast Aircraft Movements at the Airport for the summer period (16 June to 15 September) in the calendar year of the due date for submission of the Annual Performance Report."	
Definitions	"The 66 dB Contour based on forecast Aircraft Movements at the Airport for the summer period (16 June to 15 September) in the calendar year of the due date for submission of the Annual Performance Report."	
Definitions	"The 57 dB Contour based on forecast Aircraft Movements at the Airport for the summer period (16 June to 15 September) in the calendar year of the due date for submission of the Annual Performance Report but reduced to take into account likely cancellation of flights and other matters affecting numbers of Aircraft Movements by reference to historical data from the preceding five calendar years."	
Definitions	"The 66 dB Contour based on forecast Aircraft Movements at the Airport for the summer period (16 June to 15 September) in the calendar year of the due date for submission of the Annual Performance Report but reduced to take into account likely cancellation of flights and other matters affecting numbers of Aircraft Movements by reference to historical data from the preceding five calendar years."	
9th Schedule / Part 1 / 5 – Page 65	"As part of the Annual Performance Report on 1 July each year the Actual 57 dB Contour, the Actual 66 dB Contour and the Actual 69 dB Contour is produced by the Airport Companies in accordance with the INM and submitted to the Council."	
LBN comments received 1 May 2012	Include a very simple table which notes the number of properties that were eligible in the previous year, and how LCY have notified/inspected/treated those properties.	3.6 SIS: Noise Contours, Table 3.1
4th Schedule / Part 1 / 1 - Page 36	"On 1 July each year following the date of this Deed the Airport Companies shall include as part of the Annual Performance Report a list of all residential premises and Public Buildings where a period of 10 years or more has expired since the date on which the glazing elements, mechanical ventilation and modifications to external doors which form part of either the First Tier Works or the Public Buildings First Tier Works or the Second Tier Works or the Public Buildings Second Tier Works were carried out and completed…"	3.7 SIS: Further Inspection of Treated Premises, paras 3.7.1-3.7.2

Planning Agreement Reference/ Comments from LBN	Planning Agreement Requirement	Location of Information within 2016 APR, para ref.
4th Schedule / Part 2 / 1 – Page 39	"In the preparation of each Annual Performance Report the Airport Companies shall determine First Tier Works Eligibility and Public Buildings First Tier Works Eligibility by applying the Eligibility Methodology and shall publish in each Annual Performance Report the boundary within which premises having First Tier Works Eligibility and Public Buildings First Tier Works Eligibility are situated together with the 1998 57 dB Contour, the Actual 57 dB Contour, the Predicted 57 dB Contour and the Predicted Reduced 57 dB Contour."	3.8 SIS: First Tier Works, para 3.8.1
4th Schedule / Part 3 / 1 – Page 41	"In the preparation of each Annual Performance Report the Airport Companies shall determine Second Tier Works Eligibility and Public Buildings Second Tier Works Eligibility by applying the Eligibility Methodology and shall publish in each Annual Performance Report the boundary within which premises having Second Tier Works Eligibility and Public Buildings Second Tier Works Eligibility are situated together with the Actual 66 dB Contour, the Predicted 66 dB Contour and the Predicted Reduced 66 dB Contour."	3.9 SIS: Second Tier Works, para 3.9.1
4th Schedule / Part 4 – Page 43	"The Airport Companies shall advertise at least twice a year starting three months from the date of the first Annual Performance Report in local newspapers which are in circulation within the vicinity of the Site and publish on the Airport Website the availability of the First Tier Works the Public Buildings First Tier Works the Second Tier Works and the Public Buildings Second Tier Works."	3.10 Publicity for SIS, paras 3.10.1-3.10.7
4th Schedule / Part 5 / 1 – Page 44	"The Airport Companies shall use reasonable endeavours to enter into the Neighbouring Authority Agreements within six months of the date of this Deed or such other longer timescale as agreed with the Council and for the avoidance of doubt upon completion of a Neighbouring Authority Agreement the Council shall cease to have any responsibility for the matters contained in that Neighbouring Authority Agreement so far as they relate to properties within the London Borough of Greenwich or the London Borough of Tower Hamlets (as the case may be)."	3.12 Neighbouring Authority Agreements, paras 3.12.1-3.12.2
4th Schedule / Part 7 / 5 – Page 45	"To hold regular meetings and/or discussions with the Council the Airport Consultative Committee and such other statutory bodies as may be reasonably nominated by the Council in order to review the operation of the noise Management Scheme and submit reports of the operation of the Noise Management Scheme to not fewer than two meetings per year of the Airport Consultative Committee."	3.1 Noise Management Scheme, para 3.1.1 – 3.1.3
Para A6.0 in Temporary Noise Strategy	"A record of the daily operational status of each monitor together with the total monthly correlation rate of noise events to aircraft departures for the immediately preceding quarter shall be submitted to LBN."	3.2 Temporary Noise Monitoring Strategy Reporting Requirements, paras 3.2.1-3.2.2
4th Schedule / Part 12 / 3 - Page 47	"The Airport Companies shall identify in the Annual Performance Report on 1 July each year any dwelling with any part of its external elevation which is situated within the Actual 69 dB Contour for the purposes of the Purchase Scheme."	3.11 Purchase Scheme, paras 3.11.1-3.11.2

Planning Agreement Reference/ Comments from LBN	Planning Agreement Requirement	Location of Information within 2016 APR, para ref.
9th Schedule / Part 1 / 4 – Page 65	"Annually on 31 December the provisional categorisation of each approved aircraft type is reviewed (provided that if the provisional categorisation for an aircraft type has been approved in the period between 1 October and 31 December of the year in question then the provisional categorisation of that aircraft type is reviewed on 31 December in the following year) having regard to the departure noise levels recorded at the four monitoring points used for the purposes of the Noise Monitoring System and the Airport companies by 1 July in the following year submit details in writing to the Council of the results of the review whereupon the provisional categorisation of each approved aircraft type is confirmed or amended by the Council with the agreement of the Airport Companies having regard to the monitored values and any such amendment may with the agreement of the Council include the introduction of sub-categorisation into narrower bands provided that noise factors appropriate to any such bands are calculated and applied."	3.5 Annual Aircraft Categorisation, paras 3.5.1-3.5.2
LBN comments received 5 May 2011	Include details of progress on the Noise Insulation Payments Scheme	3.13 Noise Insulation Payments Scheme, para 3.13.1
Section 4 Ground Noise		
5th Schedule / Part 1 / 2 – Page 49	"Annually on 1 July every year as part of the Annual Performance Report to submit to the Council: (a) written details (in accordance with the format set out in Part 6 of this Schedule) of Ground Running that has taken place during the preceding calendar year (the year to run from 1 January to 31 December each year for this purpose) including details of the number duration and power settings of ground runs and the types of aircraft involved; and (b) written measurements and calculations to show whether the ground Running Noise Limit has been exceeded during the preceding calendar year." [5th Schedule / Part 1 / 2 – Page 49]	4.1 Ground Running of Aircraft Engines, para 4.1.1
5th Schedule / Part 1 / 3 – Page 49	"In the event that the Ground running Noise Limit has been exceeded contrary to paragraph 1 of this Part to submit annually on 1 July as part of the Annual Performance Report written proposals to the Council for their approval for the carrying out of measures and the time scale for the carrying out of those measures in order 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."	4.2 Exceedences of Ground Running Noise Limit, para 4.2.1
LBN comments received 5 May 2011	Include details of the submission of the Ground Noise Study.	n/a for 2014 APR
Section 5 Air Quality		
3rd Schedule / Part 3 / 1(c) - Page 31	"With effect from the date of this Deed the Airport Companies shall make the data from the Air Quality Measurement Programme available to the Council the Airport Consultative Committee and members of the general public through the Annual Performance Report and at each meeting of the Airport Consultative Committee by reporting on such data for the most recent quarter of the year preceding such meeting for which there is data available."	5.1 Data from Air Quality Measurement Programme, paras 5.1.1-5.1.2

Planning Agreement Reference/ Comments from LBN	Planning Agreement Requirement	Location of Information within 2016 APR, para ref.
LBN comments received 5 May 2011	Include a statement confirming whether monitored levels are in line with government standards.	
3rd Schedule / Part 3 / 1(d) (iii) - Page 31	"Through the Annual Performance Report insofar as this shall include a summary of the results available from any Deposits Study in the preceding calendar year and the number and nature of such complaints in the preceding calendar year." [3rd Schedule / Part 3 / 1(d) (iii), Page 31]	5.2 Results from any Deposits Study in the Preceding Calendar Year, paras 5.2.1-5.2.3
3rd Schedule / Part 3 / 2(a) - Page 31	"The Airport Companies shall submit for the written approval of the Council the Air Quality Action Plan within 12 months of the date of this Deed…"	5.3 Air Quality Action Plan, para 5.3.1 and Table 5.1
Section 6 Sustainability and Biodiversity Strategies		
3rd Schedule / Part 6 / 4 - Page 34	"During the operation of the approved Airport Sustainability Action Plan, the Airport Companies shall report to the Council annually on 1 July as part of the Annual Performance Report on the performance of the Airport Companies during the previous calendar year against the targets in the Airport Sustainability Action Plan."	6.1 Airport Sustainability Strategy and Airport Biodiversity Strategy, paras 6.1.1-6.1.3 and Table 6.1
3rd Schedule / Part 6 / 8 - Page 34	"Report to the Council every two years on 1 July (on those occasions, as part of the Annual Performance Report for that year) on the performance of the Airport Companies against the objectives and measures specified in the Airport Biodiversity Strategy in the preceding two calendar years, the first such report to be made on 1 July following the second anniversary of the receipt of written approval from the Council pursuant to paragraphs 5 and 6 of this Part; and..."	6.2 Airport Biodiversity Strategy, paras 6.2.1-6.2.2 and Table 6.2
3rd Schedule / Part 6 / 8 - Page 34	"Every five years on 1 July (on those occasions, as part of the Annual Performance Report for that year) submit to the Council a review of the performance of the Airport Biodiversity Strategy and the first such review shall be submitted on 1 July following the fifth anniversary of the receipt of written approval from the Council pursuant to paragraphs 5 and 6 of this Part; and…"	
Section 7 Education, Employment and Training		
6th Schedule / Part 2 / 1(a) – Page 55	"Use reasonable endeavours to ensure that (i) at least 70% of the full time equivalent jobs at the Airport are filled by residents of the Local Area including at least 35% filled by residents of the London Borough of Newham; (ii) at least 70% of direct employees of LCA are resident in Local Area; (iii) at least 35% of direct employees of LCA are resident in the London Borough of Newham. (iv) Where LCA initiates recruitment simultaneously for more than 1 job vacancy to advertise through local employment agency (e.g. Reed, Docklands Office), to notify vacancies to relevant Recruitment Centre and to advertise such vacancies on the Airport Website." "To provide the Council and the Airport Consultative Committee with an annual return on 1 July each year with details of the percentage of people living in the Local Area who are employed on the site including the percentage of residents of the London Borough of Newham." [6th Schedule / Part 2 / 1(f) – Page 55]	7.2 Employment Statistics Reporting, para 7.2.1-7.2.8

Planning Agreement Reference/ Comments from LBN	Planning Agreement Requirement	Location of Information within 2016 APR, para ref.
6th Schedule / Part 2 / 1(b) – Page 55	"To use reasonable endeavours to encourage employers at the Site to fill their job vacancies with residents of the London Borough of Newham and in so doing: (i) within six months of the date of this Deed establish a forum for all employers at the Airport which have at least 20 individual members of staff based at the Airport and to hold meetings of that forum at least twice in each calendar year; (ii) so far as practicable ensure all employers at the Airport which have at least 20 individual members of staff recruit locally as far as possible an advertise job vacancies through the Airport Website and the relevant Recruitment Centre."	7.3 Employers' Forum, para 7.3.1
6th Schedule / Part 2 / 1(c) – Page 55	"To continue to provide a list of the existing employers at the Site to the Council annually on 1 July each year in order to enable the Council to encourage such employers to fill their job vacancies with residents of the London Borough of Newham."	7.2 Employment Statistics Reporting, para 7.2.4
6th Schedule / Part 2 / 1(d) – Page 55	"To continue to provide the Council annually with details in writing of the policy adopted by LCA to fill any airport job vacancy and LCA shall consult the council about such policy on not fewer than one occasion each year in conjunction with the submission of the annual return pursuant to paragraph 1)f) of this Part"	7.6 Airport Job Policy, para 7.6.1
6th Schedule / Part 2 / "1(e) – Page 55	"To provide the Council with details of programmes initiated by LCA for the training of their own employees as part of the annual return pursuant to paragraph 1(f)."	7.7 Training Programmes, para 7.7.1-7.7.2
6th Schedule / Part 2 / 1(f) – Page 55	"To provide the Council and the Airport Consultative Committee with an annual return on 1 July each year with details of the percentage of people living in the Local Area who are employed on the Site including the percentage of residents of the London Borough of Newham;"	7.2 Employment Statistics Reporting, para 7.2.1-7.2.8
6th Schedule / Part 2 / 1(g) – Page 56	"To use reasonable endeavours to participate in and encourage staff of LCA, other employers at the Airport and their staff to participate in local community projects and initiatives." [6th Schedule / Part 2 / 1(g) – Page 56]	7.4 Staff Participation, para 7.4.1-7.4.3
6th Schedule / Part 2 / 1(h) – Page 56	"Within 12 months of the date of this Deed to implement a work experience programme at the Airport which shall have the objective of providing one week work experience for a minimum of 40 residents of the London borough of Newham and a minimum total of eight residents of the London Boroughs of Bexley, Barking & Dagenham, Greenwich and Tower Hamlets and further…"	7.10 Work Experience, para 7.11.14-7.11.16
Section 8 Surface Access		
LBN letter dated 26 February 2010	Although there is a separate requirement to under the Travel Plan requirements, it may also be useful to include this with the annual submission on the 1st July 2010. This would ensure all the compliance reports are submitted together.	8.1 Surface Access Performance; 8.2 Surface Access Strategy and 8.3 2013 Travel Plan Progress

Planning Agreement Reference/ Comments from LBN	Planning Agreement Requirement	Location of Information within 2016 APR, para ref.
Section 9 Environmental Complaints		
3rd Schedule / Part 7 / 2 (c) - Page 35	"The Airport Companies shall submit a report of any such complaint and any such action: (c) in summary as part of the Annual Performance Report in relation to such complaints and actions in the preceding calendar year."	9.1 Report of any Compliant or Action in Summary in Preceding Calendar Year, paras 9.1.1-9.1.9
Section 11 Other Matters		
Clause 8.12 (b) and (c) – Page 21	"8.12 In the event of any claim being made for judicial review of the Planning Permission to Part 54 Civil Procedures Rules, the following provisions shall have effect: (b) where any investigation study report scheme or strategy is required to be undertaken submitted approved implemented or operated under this Deed: (i) any time period within which it is required to be undertaken submitted approved implemented or operated (as the case may be) shall be suspended from the date of the claim for judicial review and the unexpired part of such period shall not resume until the date on which the claim has been finally determined Provided That if the unexpired period is less than six months that period shall when it resumes be extended to six months; and (ii) any due date by which it is required to have been undertaken submitted approved implemented or operated (as the case may be) shall be postponed until six months after the date on which the claim has been finally determined." "(c) if the Annual Performance Report is required under this Deed to be published during the currency of the claim for judicial review or within six months of the claim being finally determined the content of the Annual Performance Report shall be agreed between the Airport Companies and the Council having regard to the provisions of this clause 8.12;"	EXISTING N/A for 2015 APR since the JR claim was finally in June 2011 with the airport's 2009 planning permission being upheld. NEW N/A for 2013 APR since the JR claim was finally in June 2011 with the airport's 2009 planning permission being upheld.
7th Schedule / Part 1 / 1 - Page 60	"Within 18 months of the date of this Deed the Airport Companies shall undertake and submit to the Council for its approval the Wake Turbulence Study and in any event the Airport Companies shall begin investigation into the extent and frequency (if any) of damage by Wake Turbulence associated with aircraft landing and taking off at the Airport within six months of the date of this Deed."	11.1 Wake Turbulence Study, para 11.1.1-11.1.2
LBN comments received 5 May 2011	Include details of the submission of the Value Compensation Scheme.	11.2 Value Compensation Scheme, para 11.2.1

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APPENDIX 3
DAILY MOVEMENT LIMITS, TIMES OF FLIGHTS AND MAINTENANCE – RELEVANT PLANNING CONDITIONS

01 July 2017

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Extract of relevant planning conditions attached to planning permission 07/01510/VAR for daily movement limits and restricting times of flights and maintenance:

(5)

The ground running of aeroplane engines for testing or maintenance purposes shall take place only between the hours of 0630 and 2200 hours from Monday to Friday inclusive and between the hours of 0630 and 1230 hours on Saturdays, 1230 and 2200 hours on Sundays and 0900 and 2200 hours on Bank Holidays and public Holidays (but not at all on Christmas Day) and;

i) In such locations and with such orientations of the aircraft as may be agreed in writing with the local planning authority and
ii) Employing such noise protection measures as may be agreed in writing with the local planning authority.

Reason

In the interests of protecting amenity from noise impacts at sensitive parts of the day, in accordance with Policies 4A.20 (Reducing Noise and Enhancing Soundscapes) of the London Plan (Consolidated February 2008) and EQ45 (Pollution) and T29 (London City Airport) of the Unitary Development Plan (adopted June 2001, saved from the 27th of September 2007 in accordance with the direction from the Secretary of State).

(6a)

The Airport shall not be used for the taking off or landing or aircraft at any time other than between 0630 and 2200 hours from Monday to Friday inclusive and between 0900 and 2200 hours on Bank Holidays and Public Holidays except:

a) In the event of an emergency
b) For the taking off or landing between 2200 and 2230 hours of an aircraft which was scheduled to take off from or land at the Airport before 2200 hours but which has suffered unavoidable operational delays and where that taking off or landing would not result in there being more than 400 aircraft movements at the Airport per calendar year between 2200 and 2330 hours or more than 150 such movements in any consecutive three months.

(6B)

The Airport shall not be used for the taking off or landing of aircraft on Saturdays at any time other than between 0630 and 1230 hours except:

i) In the event of an emergency
ii) For the taking off or landing between 1230 and 1300 hours on Saturdays of an aircraft that was scheduled to take off or land before 1230 hours but has suffered unavoidable operational delays and where that taking off or landing would not result in there being more than 400 aircraft movements at the airport per calendar year between 1230 and 1300 hours or more than 150 such movements in any consecutive three months.
iii) The taking off or landing or aircraft between 1230 hours and 1800 hours on one Saturday per calendar year for the Airport's charity open day.

(6C)

The Airport shall not be used for the taking off or landing of aircraft on Sundays at any time other than between 1230 and 2200 hours except:

a) In the event of an emergency
b) For the taking off or landing between 2200 and 2230 hours of an aircraft which was scheduled to take off from or land at the Airport before 2200 hours but which has suffered unavoidable operational early, and where that taking off or landing would not result in there being more than 400 aircraft movements at the Airport per calendar year between 2200 and 2330 hours or more than 150 such movements in any consecutive three months.

(6D)

For the purposes of sub-paragraph (b) of each condition (6a), (6b), and (6c) the figures of 400 aircraft movements and 150 aircraft movements shall in each case include all aircraft movements by aircraft which have suffered operational delays between the hours specified in each sub-paragraph on Mondays to Fridays, on Saturdays, on Sundays and on Bank and Public Holidays and the expression 'aircraft movements' shall mean the take-off or landing of an aircraft at the Airport, other than those engaged in training or aircraft testing.

Reason

In the interests of protecting environmental amenity from noise impacts at sensitive parts of the day and week, in accordance with Policies 4A.20 (Reducing Noise an enhancing Soundscape) of the London Plan (Consolidated February 2008) and EQ45 (Pollution) and T29 (London City Airport) of the Unitary Development Plan (adopted June 2001, saved from the 27th of September 2007 in accordance with the direction from the Secretary of State).

(8)

(1) The number of aircraft movements at the Airport shall not exceed:

a) 100 per day on Saturdays and 200 per day on Sundays but not exceeding 280 on any consecutive Saturday and Sunday
b) 592 per day on weekdays except 1 January, Good Friday, Easter Monday, the May Day holiday, the late May bank holiday, the late August bank holiday, 25 December and 26 December
c) 132 on 1 January
d) 164 on Good Friday
e) 198 on Easter Monday
f) 48 on the May Day Holiday
g) 230 on the late May Bank Holiday
h) 230 on the late August Bank Holiday

i) 100 on 26 December
j) 120,000 per calendar year

(2) In the event of there being a bank Holiday or Public Holiday in England which falls upon or proclaimed or declared upon a date or dates not referred to in sub-paragraph (c) to (i) (inclusive) of condition 8(1) then the number of aircraft movements permissible on that date shall not exceed 330 unless the local planning authority agrees in writing but in any event the limit for any particular dates shall not exceed 396 per day.

(3) For the purposes of conditions 8(1), 8(2), and 8(4) the expression 'aircraft movements' shall mean the take-off or landing of an aircraft at the Airport, other than those engaged in training or aircraft testing.

(4) The number of factored movements shall not exceed:
a) In any one week the number of permitted aircraft movements for that week by more than 25%
b) 120,000 per calendar year.

(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 totals for each aircraft type using the Airport.

(6) If agreed expressly by the local planning authority in writing, the references to factored movements in this condition will be superseded by any relevant new methodology, noise categories, noise reference levels, noise factors and procedures for categorisation agreed with the local planning authority, following completion of the Aircraft Categorisation Review as required by the Section 106 Agreement that accompanies this permission.

(9)

Between 0630 and 0659 hours on Mondays to Saturdays (excluding Bank Holidays and Public Holidays when the airport will be closed between these times) the number of aircraft movements shall not exceed 6 on any day.

Reason

In the interests of protecting environmental amenity from noise impacts at a sensitive part of the day, in accordance with Policies 4A.20 (Reducing Noise an enhancing Soundscape) of the London Plan (Consolidated February 2008) and EQ45 (Pollution) and T29 (London City Airport) of the Unitary Development Plan (adopted June 2001, saved from the 27th of September 2007 in accordance with the direction from the Secretary of State).

(10)

Notwithstanding the restriction on aircraft movements between 0630 and 0659 hours, as set out by Condition 9, the total movements in the period between 0630 and 0645 on Mondays to Saturdays (excluding Bank Holidays and Public Holidays when the airport will be closed between these times), shall not exceed 2 on any day.

Reason

In the interests of protecting environmental amenity from noise impacts at a sensitive part of the day, in accordance with Policies 4A.20 (Reducing Noise an enhancing Soundscape) of the London Plan (Consolidated February 2008) and EQ45 (Pollution) and T29 (London City Airport) of the Unitary Development Plan (adopted June 2001, saved from the 27th of September 2007 in accordance with the direction from the Secretary of State).

LONDON CITY AIRPORT

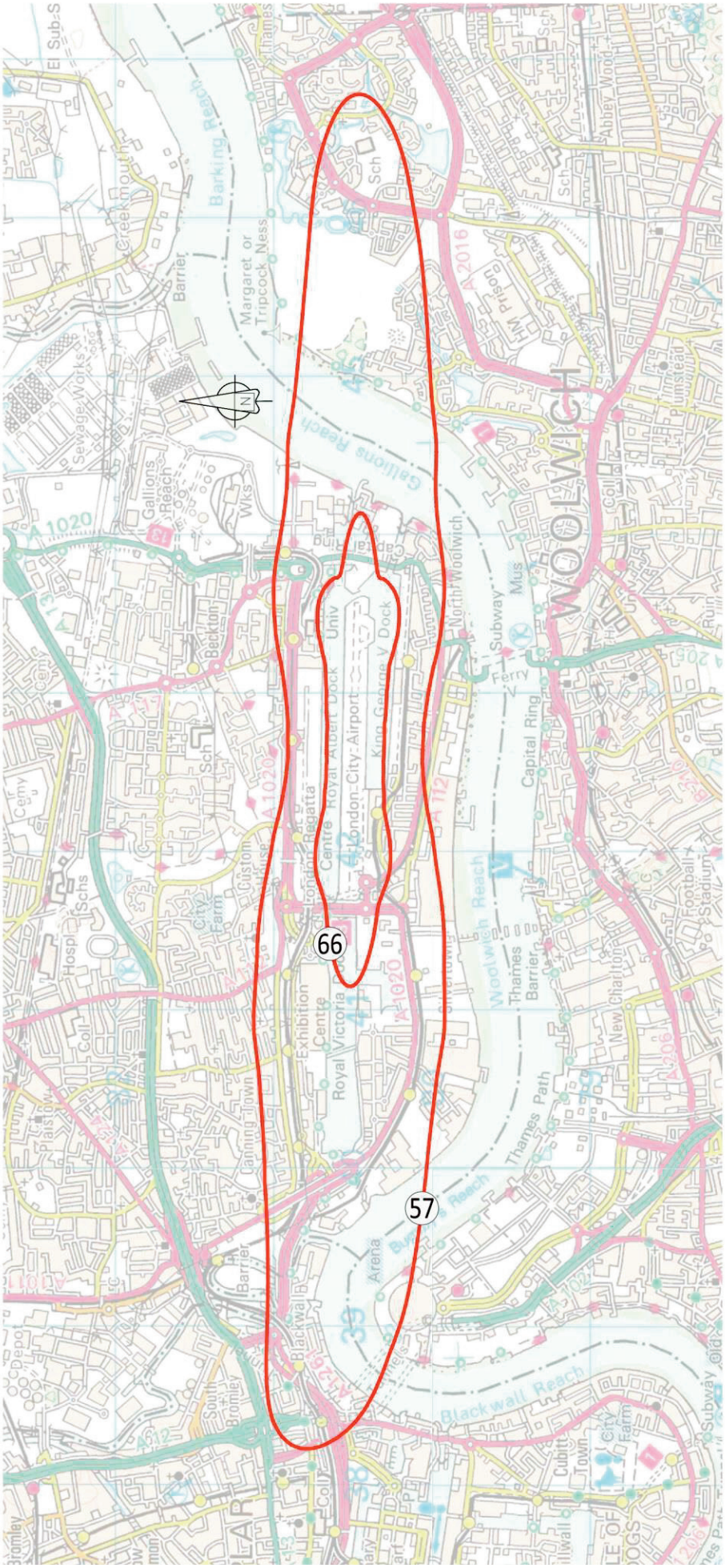
2016 ANNUAL PERFORMANCE REPORT
(COMPLIANCE WITH PLANNING PERMISSION 07/01510/VAR)

APPENDIX 4
NOISE CONTOURS

01 July 2017

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

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Noise Contours

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Email: mail@bickerdikeallen.com
www.bickerdikeallen.com
T: 0207 625 4411
F: 0207 625 0250

London City Airport

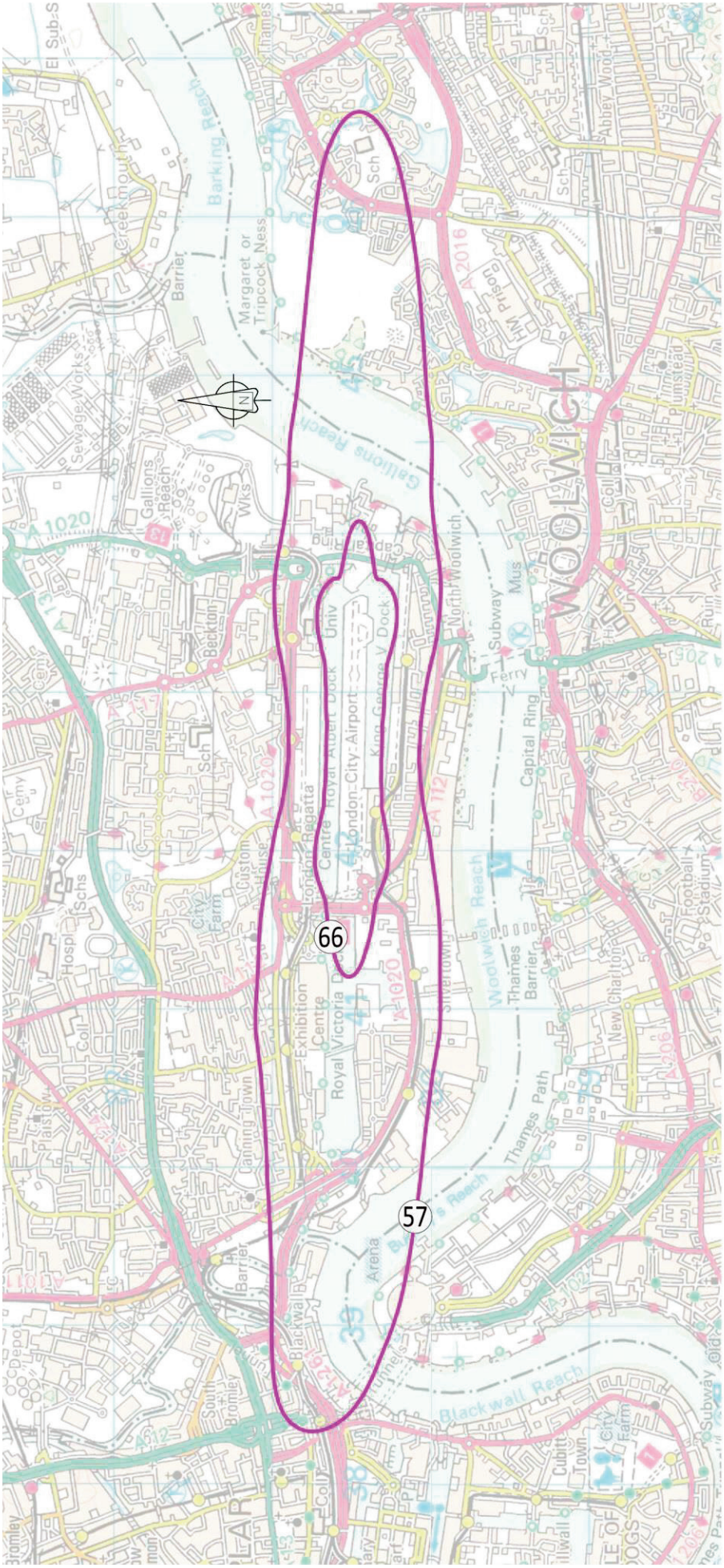
Predicted Noise Contours
Summer 2017 (57 and 66 dB $L_{Aeq,16h}$)
Average Mode

DRAWN: NW CHECKED: PH

DATE: 09/06/2017 SCALE: 1:35000@A4

FIGURE No:

A1125.57-APR16-03



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London City Airport

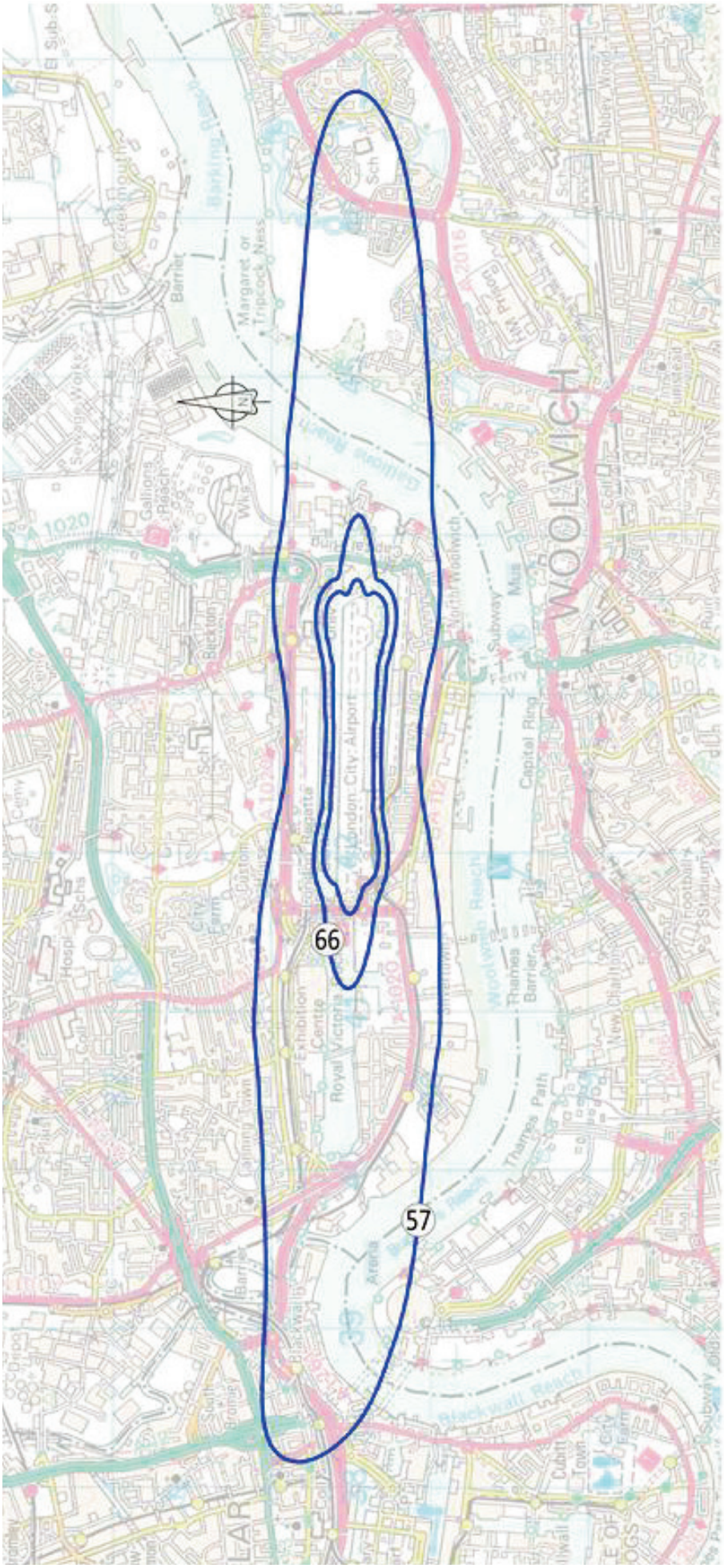
Predicted Reduced Noise Contours
Summer 2017 (57 and 66 dB $L_{Aeq,16h}$)
Average Mode

DRAWN: NW CHECKED: PH

DATE: 09/06/2017 SCALE: 1:35000@A4

FIGURE No:

A1125.57-APR16-02



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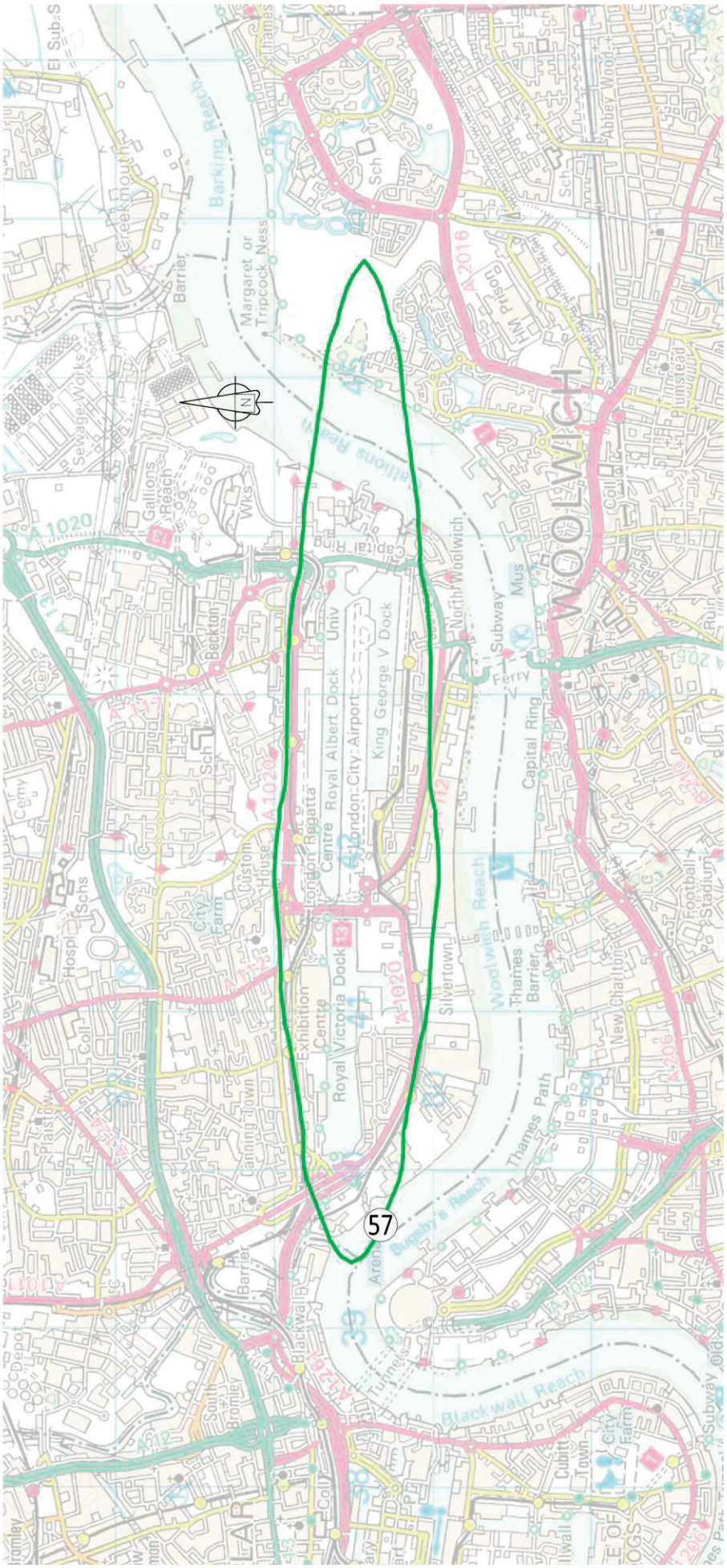
Actual Noise Contours
Summer 2016 (57, 66 and 69 dB $L_{Aeq,16h}$)
Average Mode

DRAWN: NW CHECKED: -

DATE: 02/02/2016 SCALE: 1:35000@A4

FIGURE No:

A1125.57-APR16-01



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London City Airport

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

DRAWN: NW CHECKED: PH

DATE: 09/06/2017 SCALE: 1:35000@A4

FIGURE No:

A1125.57-APR16-04

LONDON CITY AIRPORT

2016 ANNUAL PERFORMANCE REPORT
(COMPLIANCE WITH PLANNING PERMISSION 07/01510/VAR)

APPENDIX 5
PROPERTIES ELIGIBLE FOR REINSPECTION

01 July 2017

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

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PROPERTIES ELIGIBLE FOR REINSPECTION

House no	Road	Postcode	Year Treated
15	Rawsthorne Close	E16 2JR	2007
16	Rawsthorne Close	E16 2JR	2007
17	Rawsthorne Close	E16 2JR	2007
21	Rawsthorne Close	E16 2JR	2007
9a	Dockland Street	E16 2JE	2007
11a	Dockland Street	E16 2JE	2007
19a	Dockland Street	E16 2JE	2007
32	Strait Road (MV)	E6 5PE	2005
2	Renfrew Close (MV)	E6 5PQ	2008
1	East Ham Manor Way	E6 5NA	2008
4	Beaulieu Avenue	E16 1TS	2007
40	Mill Road	E16 2BE	2008

LONDON CITY AIRPORT

2016 ANNUAL PERFORMANCE REPORT
(COMPLIANCE WITH PLANNING PERMISSION 07/01510/VAR)

APPENDIX 6
FIRST TIER WORKS ELIGIBILITY

01 July 2017

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

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This appendix provides a list of residential premises and public buildings that are eligible for First Tier Works as described under Part 5 of the Ninth Schedule of the Section 106 Agreement dated 9 July 2009.

There are a total of 323 newly eligible residential premises. 164 are within the London Borough of Newham, 53 are within the Royal Borough of Greenwich and 106 are within the London Borough of Tower Hamlets.

Subject to the provisions of the Section 106 Agreement, the general scope of works for residential buildings will comprise:-

- for single glazed properties – secondary glazing and sound attenuating vents
- for double glazed properties – sound attenuating vents only

The works will relate to habitable rooms that have windows on elevations most affected by aircraft noise as described in the Section 106 agreement. The method of determining eligibility for First Tier Works is described below.

S106 requirement, Fourth Schedule, Part 2, Para 1 states that,

"In the preparation of each Annual Performance Report the Airport Companies shall determine First Tier Works Eligibility and Public Buildings First Tier Works Eligibility by applying the Eligibility Methodology and shall publish in each Annual Performance Report the boundary within which premises having First Tier Works Eligibility and Public Buildings First Tier Works Eligibility are situated together with the 1998 57 dB contour, the Actual 57 dB contour, the Predicted 57 dB contour and the Predicted Reduced 57 dB contour."

This schedule of premises has been created using the following noise contours:

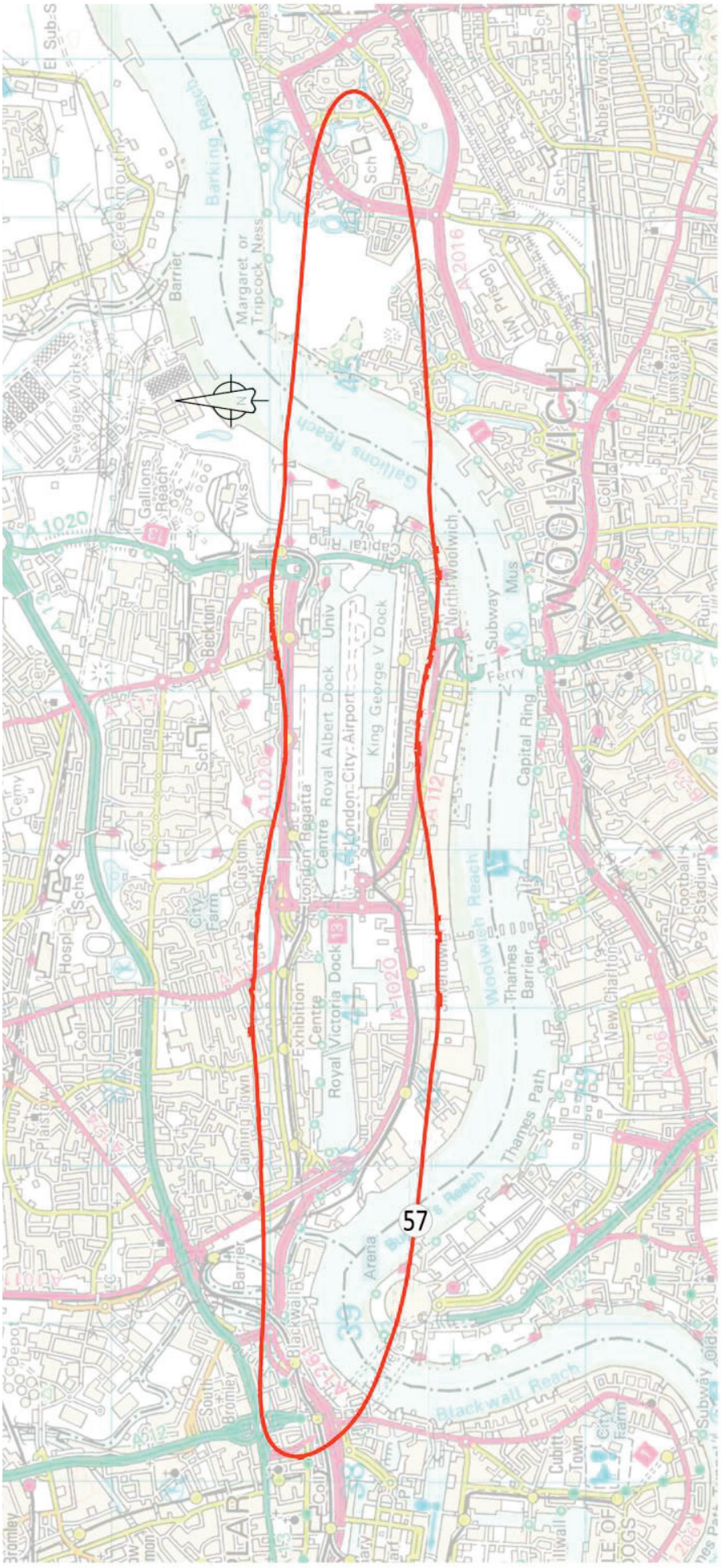
- Actual 2016 57 dB contour
- Predicted 2017 57 dB contour
- Predicted reduced 2017 57 dB contour

The full Eligibility Methodology for First Tier Works is defined in the Ninth Schedule, Part 4, Para 2.

The detailed procedures for informing, obtaining permission and for carrying out the works to those properties that are eligible for First Tier Works are set out in the Section 106 Agreement (Ninth Schedule, Parts 5 and 6).

All owners and occupiers of residential properties and public buildings identified as eligible for First Tier Works in this report are to be informed within 30 days that they are eligible under the scheme. Within 6 months of establishing eligibility, permission to undertake a survey to determine what treatment is required is sought from the owner and occupier (if different). Once permission is granted (and subject to rectification of any defects in existing windows, etc.), the works are carried out within a further 6 months.

A flow diagram indicating the order and time periods in which these procedures are undertaken is provided below. There were 4 Public Buildings newly eligible for First Tier Works.



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Noise Contours

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F: 0207 625 0250

London City Airport

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

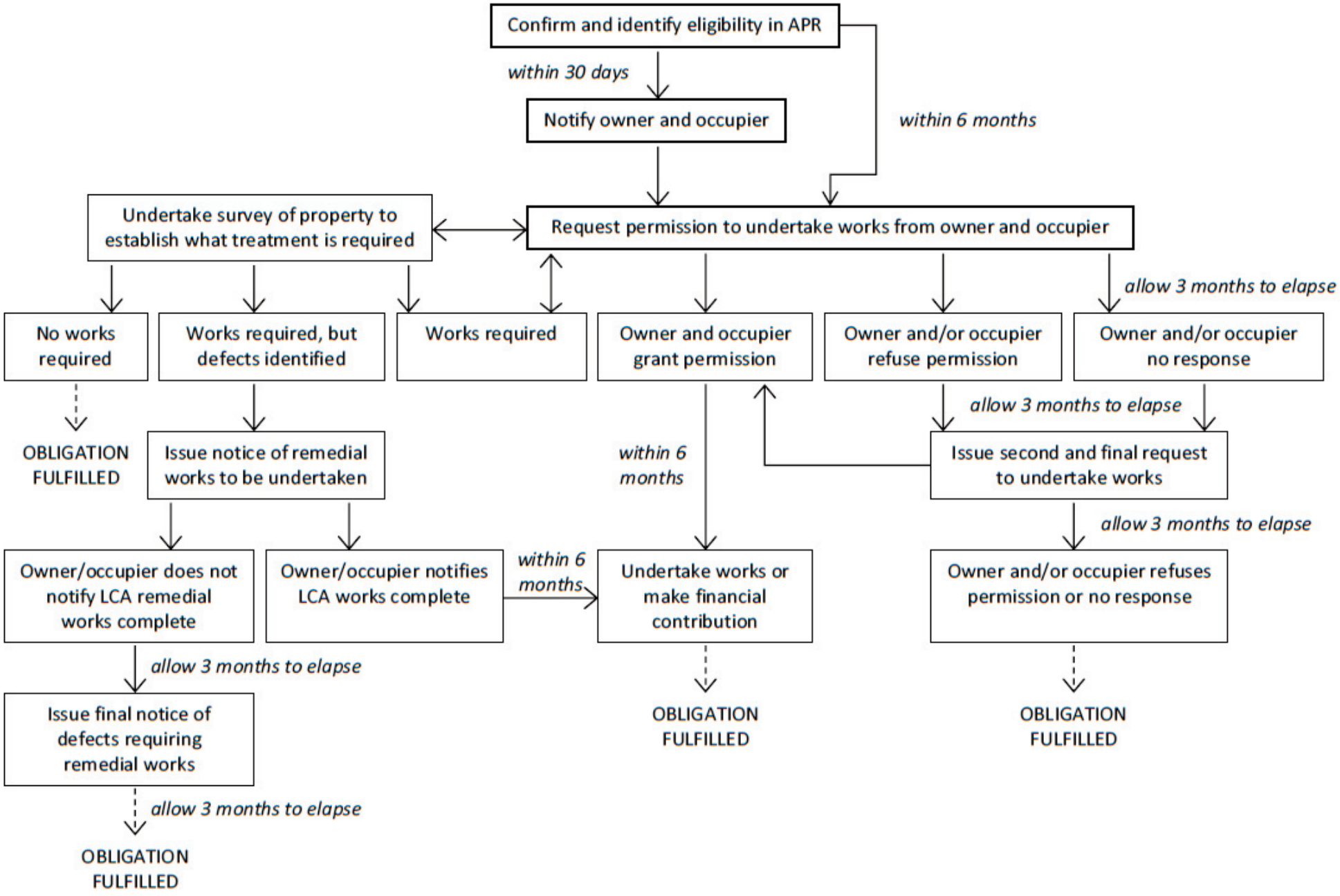
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DATE: 09/06/2017 SCALE: 1:35000@A4

FIGURE No:

A1125.57-APR16-05

Ninth Schedule, Parts 5&6 First Tier Works Procedure



Building Name	No.	Sub Building	Thoroughfare Name	PostCode
	28		AGNES CLOSE	E6 5PH
	29		AGNES CLOSE	E6 5PH
	22		ALBERT WALK	E16 2NL
	23		ALBERT WALK	E16 2NL
	24		ALBERT WALK	E16 2NL
	25		ALBERT WALK	E16 2NL
	26		ALBERT WALK	E16 2NL
	27		ALBERT WALK	E16 2NL
	34		APPLEBY ROAD	E16 1LQ
	36		APPLEBY ROAD	E16 1LQ
	38		APPLEBY ROAD	E16 1LQ
	40		APPLEBY ROAD	E16 1LQ
	1		ARTISAN CLOSE	E6 5NH
	2		ARTISAN CLOSE	E6 5NH
	3		ARTISAN CLOSE	E6 5NH
	4		ARTISAN CLOSE	E6 5NH
	5		ARTISAN CLOSE	E6 5NH
	6		ARTISAN CLOSE	E6 5NH
	7		ARTISAN CLOSE	E6 5NH
	8		ARTISAN CLOSE	E6 5NH
	9		ARTISAN CLOSE	E6 5NH
	10		ARTISAN CLOSE	E6 5NH
	11		ARTISAN CLOSE	E6 5NH
	12		ARTISAN CLOSE	E6 5NH
	13		ARTISAN CLOSE	E6 5NH
	14		ARTISAN CLOSE	E6 5NH
	15		ARTISAN CLOSE	E6 5NH
	16		ARTISAN CLOSE	E6 5NH
	17		ARTISAN CLOSE	E6 5NH
	18		ARTISAN CLOSE	E6 5NH
	19		ARTISAN CLOSE	E6 5NH
	20		ARTISAN CLOSE	E6 5NH
	21		ARTISAN CLOSE	E6 5NH
	1		ASHTON STREET	E14 9PN
	2		ASHTON STREET	E14 9PN
	3		ASHTON STREET	E14 9PN
	11		ASHTON STREET	E14 9PN
	12		ASHTON STREET	E14 9PN
	13		ASHTON STREET	E14 9PN
	14		ASHTON STREET	E14 9PN
DELTA BUILDING	35	FLAT 1	ASHTON STREET	E14 9PP
DELTA BUILDING	35	FLAT 10	ASHTON STREET	E14 9PP
DELTA BUILDING	35	FLAT 11	ASHTON STREET	E14 9PP
DELTA BUILDING	35	FLAT 12	ASHTON STREET	E14 9PP
DELTA BUILDING	35	FLAT 13	ASHTON STREET	E14 9PP
DELTA BUILDING	35	FLAT 14	ASHTON STREET	E14 9PP
DELTA BUILDING	35	FLAT 15	ASHTON STREET	E14 9PP
DELTA BUILDING	35	FLAT 16	ASHTON STREET	E14 9PP
DELTA BUILDING	35	FLAT 17	ASHTON STREET	E14 9PP
DELTA BUILDING	35	FLAT 18	ASHTON STREET	E14 9PP
DELTA BUILDING	35	FLAT 2	ASHTON STREET	E14 9PP
DELTA BUILDING	35	FLAT 3	ASHTON STREET	E14 9PP
DELTA BUILDING	35	FLAT 4	ASHTON STREET	E14 9PP
DELTA BUILDING	35	FLAT 5	ASHTON STREET	E14 9PP
DELTA BUILDING	35	FLAT 6	ASHTON STREET	E14 9PP
DELTA BUILDING	35	FLAT 7	ASHTON STREET	E14 9PP
DELTA BUILDING	35	FLAT 8	ASHTON STREET	E14 9PP
DELTA BUILDING	35	FLAT 9	ASHTON STREET	E14 9PP
	36		BARGE HOUSE ROAD	E16 2NH
	38		BARGE HOUSE ROAD	E16 2NH
	40		BARGE HOUSE ROAD	E16 2NH
	42		BARGE HOUSE ROAD	E16 2NH
	44		BARGE HOUSE ROAD	E16 2NH
	7		BASEING CLOSE	E6 5PJ
	8		BASEING CLOSE	E6 5PJ
	9		BASEING CLOSE	E6 5PJ
	10		BASEING CLOSE	E6 5PJ
MERMAID HOUSE		FLAT 1	BAZELY STREET	E14 0EU
MERMAID HOUSE		FLAT 10	BAZELY STREET	E14 0EU
MERMAID HOUSE		FLAT 11	BAZELY STREET	E14 0EU
MERMAID HOUSE		FLAT 12	BAZELY STREET	E14 0EU
MERMAID HOUSE		FLAT 13	BAZELY STREET	E14 0EU
MERMAID HOUSE		FLAT 14	BAZELY STREET	E14 0EU
MERMAID HOUSE		FLAT 15	BAZELY STREET	E14 0EU
MERMAID HOUSE		FLAT 16	BAZELY STREET	E14 0EU
MERMAID HOUSE		FLAT 17	BAZELY STREET	E14 0EU
MERMAID HOUSE		FLAT 18	BAZELY STREET	E14 0EU
MERMAID HOUSE		FLAT 19	BAZELY STREET	E14 0EU
MERMAID HOUSE		FLAT 2	BAZELY STREET	E14 0EU
MERMAID HOUSE		FLAT 20	BAZELY STREET	E14 0EU
MERMAID HOUSE		FLAT 3	BAZELY STREET	E14 0EU
MERMAID HOUSE		FLAT 4	BAZELY STREET	E14 0EU
MERMAID HOUSE		FLAT 5	BAZELY STREET	E14 0EU
MERMAID HOUSE		FLAT 6	BAZELY STREET	E14 0EU
MERMAID HOUSE		FLAT 7	BAZELY STREET	E14 0EU
MERMAID HOUSE		FLAT 8	BAZELY STREET	E14 0EU
MERMAID HOUSE		FLAT 9	BAZELY STREET	E14 0EU
	70		BERWICK ROAD	E16 3DS
	72		BERWICK ROAD	E16 3DS
	74		BERWICK ROAD	E16 3DS
	76		BERWICK ROAD	E16 3DS
	78		BERWICK ROAD	E16 3DS
	80	GROUND FLOOR	BERWICK ROAD	E16 3DS
	80		BERWICK ROAD	E16 3DS
	82		BERWICK ROAD	E16 3DS
	84		BERWICK ROAD	E16 3DS
	38		BIRCHDENE DRIVE	SE28 8RL
	150		BLACKWALL WAY	E14 9EH
	154		BLACKWALL WAY	E14 9EH
	2		BOREHAM AVENUE	E16 3AG
	4		BOREHAM AVENUE	E16 3AG
	6		BOREHAM AVENUE	E16 3AG
	8		BOREHAM AVENUE	E16 3AG
	10		BOREHAM AVENUE	E16 3AG
	12		BOREHAM AVENUE	E16 3AG
	14		BOREHAM AVENUE	E16 3AG
	16		BOREHAM AVENUE	E16 3AG
	18		BOREHAM AVENUE	E16 3AG
	20		BOREHAM AVENUE	E16 3AG
	22		BOREHAM AVENUE	E16 3AG
	24		BOREHAM AVENUE	E16 3AG
	3		COOLFIN ROAD	E16 3AQ
	5		COOLFIN ROAD	E16 3AQ
	7		COOLFIN ROAD	E16 3AQ

Building Name	No.	Sub Building	Thoroughfare Name	PostCode	Building Name	No.	Sub Building	Thoroughfare Name	PostCode
	9		COOLFIN ROAD	E16 3AQ		55		NEWACRES ROAD	SE28 0LA
	11		COOLFIN ROAD	E16 3AQ		62		NEWACRES ROAD	SE28 0LA
	13		COOLFIN ROAD	E16 3AQ		63		NEWACRES ROAD	SE28 0LA
	15		COOLFIN ROAD	E16 3AQ		2		PITFIELD CRESCENT	SE28 8RG
	17		COOLFIN ROAD	E16 3AQ		4		PITFIELD CRESCENT	SE28 8RG
	19		COOLFIN ROAD	E16 3AQ		6		PITFIELD CRESCENT	SE28 8RG
	21		COOLFIN ROAD	E16 3AQ		8		PITFIELD CRESCENT	SE28 8RG
	71		COOLFIN ROAD	E16 3AP	MIKARDO COURT	260	1	POPLAR HIGH STREET	E14 0BQ
	73		COOLFIN ROAD	E16 3AP	MIKARDO COURT	260	10	POPLAR HIGH STREET	E14 0BQ
	75		COOLFIN ROAD	E16 3AP	MIKARDO COURT	260	11	POPLAR HIGH STREET	E14 0BQ
	77		COOLFIN ROAD	E16 3AP	MIKARDO COURT	260	12	POPLAR HIGH STREET	E14 0BQ
	79		COOLFIN ROAD	E16 3AP	MIKARDO COURT	260	13	POPLAR HIGH STREET	E14 0BQ
	1		COURTAULD CLOSE	SE28 8RH	MIKARDO COURT	260	14	POPLAR HIGH STREET	E14 0BQ
	17		CUNDY ROAD	E16 3DJ	MIKARDO COURT	260	15	POPLAR HIGH STREET	E14 0BQ
	19		CUNDY ROAD	E16 3DJ	MIKARDO COURT	260	16	POPLAR HIGH STREET	E14 0BQ
	21		CUNDY ROAD	E16 3DJ	MIKARDO COURT	260	17	POPLAR HIGH STREET	E14 0BQ
	23		CUNDY ROAD	E16 3DJ	MIKARDO COURT	260	18	POPLAR HIGH STREET	E14 0BQ
	25		CUNDY ROAD	E16 3DJ	MIKARDO COURT	260	19	POPLAR HIGH STREET	E14 0BQ
	27		CUNDY ROAD	E16 3DJ	MIKARDO COURT	260	2	POPLAR HIGH STREET	E14 0BQ
	29		CUNDY ROAD	E16 3DJ	MIKARDO COURT	260	20	POPLAR HIGH STREET	E14 0BQ
	31		CUNDY ROAD	E16 3DJ	MIKARDO COURT	260	21	POPLAR HIGH STREET	E14 0BQ
	33		CUNDY ROAD	E16 3DJ	MIKARDO COURT	260	22	POPLAR HIGH STREET	E14 0BQ
	2		DELISLE ROAD	SE28 0JE	MIKARDO COURT	260	23	POPLAR HIGH STREET	E14 0BQ
	4		DELISLE ROAD	SE28 0JE	MIKARDO COURT	260	24	POPLAR HIGH STREET	E14 0BQ
	26		DEVALLS CLOSE	E6 5PL	MIKARDO COURT	260	25	POPLAR HIGH STREET	E14 0BQ
	27		DEVALLS CLOSE	E6 5PL	MIKARDO COURT	260	26	POPLAR HIGH STREET	E14 0BQ
	1		GALSWORTHY CLOSE	SE28 8DB	MIKARDO COURT	260	27	POPLAR HIGH STREET	E14 0BQ
	2		GALSWORTHY CLOSE	SE28 8DB	MIKARDO COURT	260	28	POPLAR HIGH STREET	E14 0BQ
	3		GALSWORTHY CLOSE	SE28 8DB	MIKARDO COURT	260	29	POPLAR HIGH STREET	E14 0BQ
	4		GALSWORTHY CLOSE	SE28 8DB	MIKARDO COURT	260	3	POPLAR HIGH STREET	E14 0BQ
	2		GASELEE STREET	E14 9QZ	MIKARDO COURT	260	30	POPLAR HIGH STREET	E14 0BQ
	3		GASELEE STREET	E14 9QZ	MIKARDO COURT	260	31	POPLAR HIGH STREET	E14 0BQ
	4		GASELEE STREET	E14 9QZ	MIKARDO COURT	260	32	POPLAR HIGH STREET	E14 0BQ
	5		GASELEE STREET	E14 9QZ	MIKARDO COURT	260	33	POPLAR HIGH STREET	E14 0BQ
	6		GASELEE STREET	E14 9QZ	MIKARDO COURT	260	34	POPLAR HIGH STREET	E14 0BQ
	7		GASELEE STREET	E14 9QZ	MIKARDO COURT	260	35	POPLAR HIGH STREET	E14 0BQ
	8		GASELEE STREET	E14 9QZ	MIKARDO COURT	260	4	POPLAR HIGH STREET	E14 0BQ
	9		GASELEE STREET	E14 9QZ	MIKARDO COURT	260	5	POPLAR HIGH STREET	E14 0BQ
	10		GASELEE STREET	E14 9QZ	MIKARDO COURT	260	6	POPLAR HIGH STREET	E14 0BQ
	11		GASELEE STREET	E14 9QZ	MIKARDO COURT	260	7	POPLAR HIGH STREET	E14 0BQ
	12		GASELEE STREET	E14 9QZ	MIKARDO COURT	260	8	POPLAR HIGH STREET	E14 0BQ
	1		LESLIE ROAD	E16 3AZ	MIKARDO COURT	260	9	POPLAR HIGH STREET	E14 0BQ
	3		LESLIE ROAD	E16 3AZ		245A		POPLAR HIGH STREET	E14 0BE
	5		LESLIE ROAD	E16 3AZ		247A		POPLAR HIGH STREET	E14 0BE
	7		LESLIE ROAD	E16 3AZ		249A		POPLAR HIGH STREET	E14 0BE
	9		LESLIE ROAD	E16 3AZ		251A		POPLAR HIGH STREET	E14 0BE
	142		LESLIE ROAD	E16 3AZ		253A		POPLAR HIGH STREET	E14 0BE
	144		LESLIE ROAD	E16 3AZ		255A		POPLAR HIGH STREET	E14 0BE
	146		LESLIE ROAD	E16 3AZ		257A		POPLAR HIGH STREET	E14 0BE
	148		LESLIE ROAD	E16 3AZ		259A		POPLAR HIGH STREET	E14 0BE
	150		LESLIE ROAD	E16 3AZ		261A		POPLAR HIGH STREET	E14 0BE
	158		LESLIE ROAD	E16 3AZ		263A		POPLAR HIGH STREET	E14 0BE
	160		LESLIE ROAD	E16 3AZ		64		PRINCESS ALICE WAY	SE28 0HQ
	162		LESLIE ROAD	E16 3AZ		66		PRINCESS ALICE WAY	SE28 0HQ
	164		LESLIE ROAD	E16 3AZ		68		PRINCESS ALICE WAY	SE28 0HQ
	166		LESLIE ROAD	E16 3AZ		70		PRINCESS ALICE WAY	SE28 0HQ
	53		NEWACRES ROAD	SE28 0LB		72		PRINCESS ALICE WAY	SE28 0HQ
	54		NEWACRES ROAD	SE28 0LA		74		PRINCESS ALICE WAY	SE28 0HQ

Building Name	No.	Sub Building	Thoroughfare Name	PostCode
	64-74	BLOCK AT	PRINCESS ALICE WAY	SE28 0HQ
	16		RENFREW CLOSE	E6 5PG
	18		RENFREW CLOSE	E6 5PG
	20		RENFREW CLOSE	E6 5PG
	27		ROEBOURNE WAY	E16 2JH
	15		ROMAN SQUARE	SE28 8RQ
	17		ROMAN SQUARE	SE28 8RQ
	19		ROMAN SQUARE	SE28 8RQ
	21		ROMAN SQUARE	SE28 8RQ
	23		ROMAN SQUARE	SE28 8RQ
	25		ROMAN SQUARE	SE28 8RQ
	27		ROMAN SQUARE	SE28 8RQ
	29		ROMAN SQUARE	SE28 8RQ
	1		ROYAL ROAD	E16 3HE
	3		ROYAL ROAD	E16 3HE
	5		ROYAL ROAD	E16 3HE
	7		ROYAL ROAD	E16 3HE
	9		ROYAL ROAD	E16 3HE
	11		ROYAL ROAD	E16 3HE
	13		ROYAL ROAD	E16 3HE
	15		ROYAL ROAD	E16 3HE
	17		ROYAL ROAD	E16 3HE
	1		SHEERNESS MEWS	E16 2SR
	3		SHEERNESS MEWS	E16 2SR
	5		SHEERNESS MEWS	E16 2SR
	7		SHEERNESS MEWS	E16 2SR
	9		SHEERNESS MEWS	E16 2SR
	11		SHEERNESS MEWS	E16 2SR
	13		SHEERNESS MEWS	E16 2SR
	15		SHEERNESS MEWS	E16 2SR
	17		SHEERNESS MEWS	E16 2SR
	19		SHEERNESS MEWS	E16 2SR
	21		SHEERNESS MEWS	E16 2SR
	23		SHEERNESS MEWS	E16 2SR
	25		SHEERNESS MEWS	E16 2SR
	27		SHEERNESS MEWS	E16 2SR
	29		SHEERNESS MEWS	E16 2SR
	31		SHEERNESS MEWS	E16 2SR
	33		SHEERNESS MEWS	E16 2SR
	35		SHEERNESS MEWS	E16 2SR
	37		SHEERNESS MEWS	E16 2SR
	39		SHEERNESS MEWS	E16 2SR
	41		SHEERNESS MEWS	E16 2SR
	43		SHEERNESS MEWS	E16 2SR
	45		SHEERNESS MEWS	E16 2SR
	47		SHEERNESS MEWS	E16 2SR
	49		SHEERNESS MEWS	E16 2SR
	51		SHEERNESS MEWS	E16 2SR
	53		SHEERNESS MEWS	E16 2SR
	55		SHEERNESS MEWS	E16 2SR
	57		SHEERNESS MEWS	E16 2SR
	59		SHEERNESS MEWS	E16 2SR
	61		SHEERNESS MEWS	E16 2SR
	63		SHEERNESS MEWS	E16 2SR
	65		SHEERNESS MEWS	E16 2SR
	17		SILVER BIRCH CLOSE	SE28 8RW
	18		SILVER BIRCH CLOSE	SE28 8RW
	19		SILVER BIRCH CLOSE	SE28 8RW
	20		SILVER BIRCH CLOSE	SE28 8RW
	21		SILVER BIRCH CLOSE	SE28 8RW
	22		SILVER BIRCH CLOSE	SE28 8RW
1 ST. LAWRENCE COTTAGES			ST. LAWRENCE STREET	E14 9QR
2 ST. LAWRENCE COTTAGES			ST. LAWRENCE STREET	E14 9QR
	14		STARBOARD WAY	E16 2PF
	20		STARBOARD WAY	E16 2PF
	1		TALLIS CLOSE	E16 3AY
	2		TALLIS CLOSE	E16 3AY
	13		TALLIS CLOSE	E16 3AY
	14		TALLIS CLOSE	E16 3AY
	15		TALLIS CLOSE	E16 3AY
	71		TARLING ROAD	E16 1HN
	73		TARLING ROAD	E16 1HN
	75		TARLING ROAD	E16 1HN
	37		THROCKMORTON ROAD	E16 3DN
	39		THROCKMORTON ROAD	E16 3DN
	41		THROCKMORTON ROAD	E16 3DN
	43		THROCKMORTON ROAD	E16 3DN
	55		WARE POINT DRIVE	SE28 0HG
	57		WARE POINT DRIVE	SE28 0HG
	59		WARE POINT DRIVE	SE28 0HG
	61		WARE POINT DRIVE	SE28 0HG
	63		WARE POINT DRIVE	SE28 0HG
	65		WARE POINT DRIVE	SE28 0HG
	67		WARE POINT DRIVE	SE28 0HG
	69		WARE POINT DRIVE	SE28 0HG
	71		WARE POINT DRIVE	SE28 0HG
	73		WARE POINT DRIVE	SE28 0HG
	75		WARE POINT DRIVE	SE28 0HG
	77		WARE POINT DRIVE	SE28 0HG
	79		WARE POINT DRIVE	SE28 0HG
	81		WARE POINT DRIVE	SE28 0HG
	83		WARE POINT DRIVE	SE28 0HG
	3		WOOLMORE STREET	E14 0EW

Public Buildings

HAWKSMOOR YOUTH CLUB		BENTHAM ROAD	SE28 8AS
	53	WARE POINT DRIVE	SE28 0HG
NORTH WOOLWICH EARLY LEARNING ZONE			
	78	ALBERT ROAD	E16 2DY
CUSTOM HOUSE SURGERY	16	FREEMASONS ROAD	E16 3NA

LONDON CITY AIRPORT

2016 ANNUAL PERFORMANCE REPORT
(COMPLIANCE WITH PLANNING PERMISSION 07/01510/VAR)

APPENDIX 7
SECOND TIER WORKS ELIGIBILITY

01 July 2017

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

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This appendix provides a list of residential premises and public buildings that are eligible for Second Tier Works as described under Part 5 of the Ninth Schedule of the Section 106 Agreement dated 9 July 2009. There is 1 newly eligible residential property in Newham.

Subject to the provisions of the Section 106 Agreement, the general scope of works will comprise:-

- for single and double glazed properties – secondary glazing and sound attenuating vents or;
- a contribution towards high acoustic performance replacement double glazed windows and sound attenuating vents, up to a limit of 25% above the cost of installing secondary glazing and sound attenuating vents

The works will relate to eligible habitable rooms as described in the Section 106 agreement. The method of determining eligibility for Second Tier Works is described below.

S106 requirement, Fourth Schedule, Part 3, Para 1 states that,

"In the preparation of each Annual Performance Report the Airport Companies shall determine Second Tier Works Eligibility and Public Buildings Second Tier Works Eligibility by applying the Eligibility Methodology and shall publish in each Annual Performance Report the boundary within which premises having Second Tier Works Eligibility and Public Buildings Second Tier Works Eligibility are situated together with the Actual 66 dB contour, the Predicted 66 dB contour and the Predicted Reduced 66 dB contour."

This schedule of premises has been created using the following noise contours:

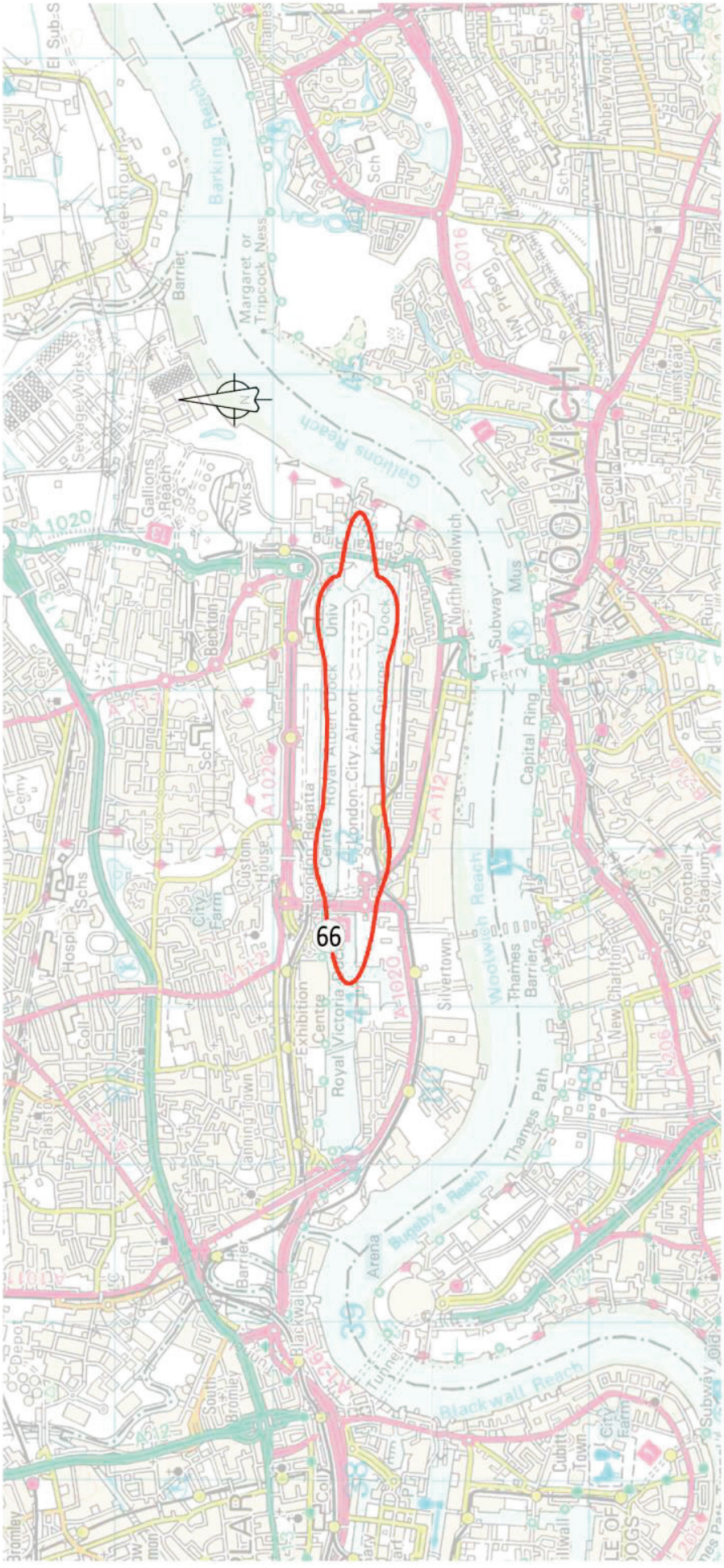
- Actual 2016 66 dB contour
- Predicted 2017 66 dB contour
- Predicted reduced 2017 66 dB contour

The full Eligibility Methodology for Second Tier Works is defined in the Ninth Schedule, Part 4, Para 3.

The detailed procedures for informing, obtaining permission and for carrying out the works to those properties that are eligible for Second Tier Works are set out in the Section 106 Agreement (Ninth Schedule, Parts 15 and 16).

All owners and occupiers of properties identified as eligible for Second Tier Works in this report are to be informed within 30 days that they are eligible under the scheme. Within 6 months of establishing eligibility, permission to undertake a survey to determine what treatment is required is sought from the owner and occupier (if different). Once permission is granted (and subject to rectification of any defects in existing windows, etc.), the works are carried out within a further 6 months.

There were no new Public Buildings eligible for Second Tier Works.



Ordnance Survey map licensed to London City Airport Ltd
100018300

LEGEND:

Noise Contours

REVISIONS

Bickerdike
Allen
Partners
Architecture
Acoustics
Technology

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Email: mail@bickerdikeallen.com
www.bickerdikeallen.com
T: 0207 625 4411
F: 0207 625 0250

London City Airport

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

DRAWN: NW CHECKED: PH

DATE: 09/06/2017 SCALE: 1:35000@A4

FIGURE No:

A1125.57-APR16-06

Building Name	No.	Sub Building Name	Thoroughfare	PostCode
	41		CAMEL ROAD	E16 2DE

LONDON CITY AIRPORT

2016 ANNUAL PERFORMANCE REPORT
(COMPLIANCE WITH PLANNING PERMISSION 07/01510/VAR)

APPENDIX 8
SOUND INSULATION SCHEME 2016 ADVERTISEMENTS

01 July 2017

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

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Sound Insulation Scheme Advertisements November/December 2016

Greenwich Mercury - 30/11/2016



Activist Harry was 'warm and funny'

London City Airport

Sound Insulation Scheme

BAYLEAF contemporary indian cuisine

CHRISTMAS BANQUET NIGHTS

13 Wickham Lane, Abbey Wood SE2 0EJ

020 8310 3534

020 8310 3574

www.bayleafonline.co.uk

The Wharf - 01/12/2016



REGENERATION

New berth for fledgling ideas

New designs reveal £250m East India campus full of open spaces, greenery - and a memorable water feature | Laura Enfield

London City Airport

Sound Insulation Scheme

Docklands and East London Advertiser - 30/11/2016



NEWS

Charity urges action from all drivers

Make the pledge

slow sober secure silent sharp sustainable

ASPERS CASINO

INCREASE YOUR ODDS ON A GREAT NIGHT OUT!

London City Airport

Sound Insulation Scheme

Newham Recorder - 30/11/2016



London City Airport

Sound Insulation Scheme

EDUCATION with Mike Brooke

HOLOCAUST

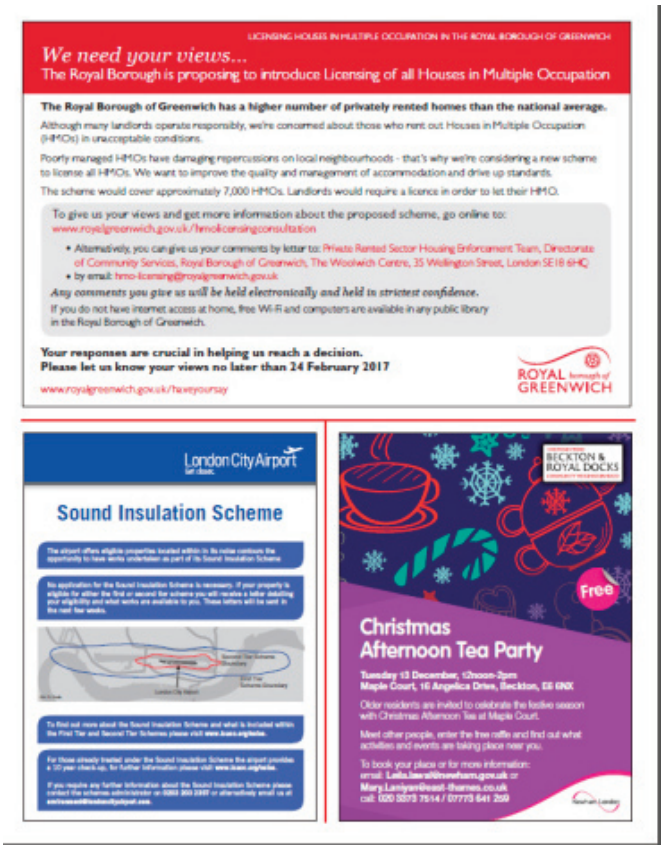
MP urges NHS 'spend more to help children'

Work experience offered at hospitals

Love France... you'll love the French BOX

Sound Insulation Scheme Advertisements November/December 2016

Greenwich Times - 29/11/2016



LICENSING HOUSES IN MULTIPLE OCCUPATION IN THE ROYAL BOROUGH OF GREENWICH

We need your views...

The Royal Borough is proposing to introduce Licensing of all Houses in Multiple Occupation

The Royal Borough of Greenwich has a higher number of privately rented homes than the national average.

Although many landlords operate responsibly, we're concerned about those who rent out Houses in Multiple Occupation (HMOs) in unacceptable conditions.

Poorly managed HMOs have damaging repercussions on local neighbourhoods - that's why we're considering a new scheme to license all HMOs. We want to improve the quality and management of accommodation and drive up standards.

The scheme would cover approximately 7,000 HMOs. Landlords would require a licence in order to let their HMO.

To give us your views and get more information about the proposed scheme, go online to:
www.royalgreenwich.gov.uk/hmolicensingconsultation

- Alternatively, you can give us your comments by letter to: Private Rented Sector Housing Enforcement Team, Directorate of Community Services, Royal Borough of Greenwich, The Woolwich Centre, 35 Wellington Street, London SE18 6HQ
- by email: hmo-licensing@royalgreenwich.gov.uk

Any comments you give us will be held electronically and held in strictest confidence.

If you do not have internet access at home, free Wi-Fi and computers are available in any public library in the Royal Borough of Greenwich.

Your responses are crucial in helping us reach a decision.
Please let us know your views no later than 24 February 2017

www.royalgreenwich.gov.uk/haveyoursay

ROYAL borough of GREENWICH

London City Airport

Sound Insulation Scheme

BECKTON & ROYAL DOCKS

Free

Christmas Afternoon Tea Party

Tuesday 13 December, 12noon-2pm
Maple Court, 16 Angelica Drive, Beckton, E6 6NX

Older residents are invited to celebrate the festive season with Christmas Afternoon Tea at Maple Court.

Meet other people, enter the free raffle and find out what activities and events are taking place near you.

To book your place or for more information:
email: Lois.lawal@newham.gov.uk or
Mary.Laniyan@east-thames.co.uk
call: 020 8373 7514 / 07775 641 259

LONDON CITY AIRPORT

2016 ANNUAL PERFORMANCE REPORT
(COMPLIANCE WITH PLANNING PERMISSION 07/01510/VAR)

APPENDIX 9
REPORT ON OPERATION OF NOISE MANAGEMENT SCHEME

01 July 2017

London City Airport
City Aviation House
Royal Docks
London E16 2PB
Tel: 020 7646 0000
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4.0 Penalties and Incentives 8

5.0 Meetings with Council/Airport Consultative Committee 9

6.0 Numbers and Types of Aircraft Operating at LCY 11

7.0 NTK Status Reports 12

Appendix A: Auxiliary Power Unit Usage

Appendix B: Ground Running of Engines

Appendix C: Penalties and Incentives

Appendix D: Meetings with Airport Consultative Committee

Appendix E: Numbers of Aircraft Operating at LCY

Appendix F: NTK Status Reports

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1.0 INTRODUCTION

In Part 7(1) of the Fourth Schedule of the Section 106 Agreement dated 9th July 2009, it states that the Airport and the London Borough of Newham (LBN) are:

"to continue to operate the Noise Management Scheme until the NOMMS has been fully implemented and ensure that the equipment for the combined noise monitoring and track keeping system is properly maintained at all times;"

In accordance with this requirement, the Noise Management Scheme remains in operation currently and this document reports the progress of the relevant requirements as set out in the Section 106 Agreement which require the airport to:-

- ensure that fixed electrical ground power supplies are used at the airport for conditioning the aircraft prior to engine start-up and for the starting of aircraft engines and that auxiliary power units are not used at the Airport unless their use is demonstrated to the Council to be operationally necessary and unless the Council have given their prior approval in writing to such use;
- continue to operate a ground engine running scheme in respect of routine daily aircraft operations (separate from ground running) as part of the Noise Management Scheme including the measures to be taken to persuade the operators of aircraft at the Airport to comply with such ground engine running scheme in order to mitigate as far as practicable the emissions from aircraft engines;
- operate a system of incentives and/or penalties for airlines as part of the Noise Management Scheme at their own expense;
- hold regular meetings and/or discussions with the Council, the Airport Consultative Committee and such other statutory bodies as may be reasonably nominated by the Council in order to review the operation of the Noise Management Scheme and submit reports of the operation of the Noise Management Scheme to not fewer than two meetings per year of the Airport Consultative Committee;
- maintain good and sufficient records at all times of the numbers and types of aircraft that in any one day either take off or land at the airport and the following shall apply:
    (a) the aggregate figures from such records relating to the immediately preceding quarter year shall be submitted to the Council within 30 days of the following dates: 1 January, 1 April, 1 July and 1 October;

(b) a summary of the aggregate figures for the immediately preceding quarter year shall be published on the Airport Website or the website of the Airport Consultative Committee within 30 days of the following dates: 1 January, 1 April, 1 July and 1 October; and

(c) all such records shall be available for inspection at all reasonable hours by persons authorised by the Council who have been notified to and approved by LCA in writing.

The airport is also required under the terms of the Temporary Noise Monitoring Strategy, which has been approved by LBN, to provide on a quarterly basis the daily operations status of each noise monitor and the monthly correlation rate of noise events to aircraft departures.

2.0 AUXILLARY POWER UNIT USAGE

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 obvious 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 Information Notice (AIN) 26/16.

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*[1].

Appendix A sets out details of the aircraft that 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.

3.0 GROUND RUNNING OF ENGINES

3.1 General

The Airport will seek 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. 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.

An EFPS[2] system is installed at London City Airport 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 will be investigated by the airport. Information will be required from both ATC[3] and the airline responsible in order that a report can be generated.

[1] 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.

[2] EFPS – Electronic Flight Process Strips

[3] ATC – Air Traffic Control

3.2 Ground Running

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 $L_{Aeq,12h}$[4].

Under the 2009 planning permission, ground running is permitted only between the hours of 06.30 and 22.00 hours Monday to Friday, and between the hours of 06.30 and 12.30 on Saturdays, 12.30 and 22.00 hours on Sundays and between 09.00 hours and 22.00 hours on Bank Holidays and Public Holidays (excepting Christmas Day) in locations and orientations agreed with the local planning authority, and employing such noise protection measures as may be agreed with the local planning authority.

Written details of the ground running over the preceding calendar year (1 January to 31 December) are submitted to the Council on an annual basis (in this Annual Performance Report), and include details of the number, duration and power settings of ground runs and the aircraft involved as well as measurements and calculations to demonstrate compliance with the Ground Running Noise Limit[5].

Appendix B of this report sets out the official record of ground running of engines for test and maintenance for the year 2016 (Table 1), the summary of high power running for the same period (Table 2), and the prediction of ground running noise for comparison with the Ground Running Noise Limit (Table 3). In 2016 LCY's ground running noise level was 59.6 dB $L_{Aeq,12h}$ which is 0.4 dB below the Ground Running Noise Limit of 60 dB $L_{Aeq,12h}$.

[4] Section 106 Agreement dated 9 July 2009 Fifth Schedule/Part 1/1

[5] Section 106 Agreement dated 9 July 2009 Fifth Schedule/Part 2/2

4.0 PENALTIES AND INCENTIVES

The airport operates a system of penalties and/or incentives to control noise from departing aircraft at the airport. The system the airport operates uses measured noise data from the airport's Noise and Track Keeping (NTK) system to identify "noisy" and "quiet" aircraft departures to which penalty and credit points are assigned respectively where appropriate. The incidence of 'noisy' or 'quiet' events are then reported to the relevant airline accordingly.

The system works as follows:

The Mean Individual Departure Noise Level (MIDNL)[6] for each event is compared with the Mean Standard Annual Departure Noise Level (MSADNL)[7] for the relevant aircraft type established in the previous year of operations to determine a "noisy" departure and a "quiet" departure. Where an individual departure by an aircraft produces an MIDNL at least 4 dB greater than the MSADNL for the aircraft type, a noisy departure classification is given. Where an individual departure by an aircraft type produces an MIDNL at least 5 dB less than the MSADNL for the aircraft type, a quiet departure classification is given. The limits stated above are based on studies carried out by Bickerdike Allen Partners (BAP) and implemented following consultation with the Council.

The current system of Penalties and Incentives as reported quarterly to LBN takes a proactive approach in liaising with all airlines operating at the airport with regard to their performance. For example, where penalties have been triggered, the airport writes to the airline responsible to advise them of the particularly noisy departure and seek an explanation. Penalties and credits are also discussed at the twice yearly Pilots Forum, with performance reviewed with each airline. Each year the airport publishes a table of aircraft performance in the APR. Financial penalties are not currently raised due to the effectiveness of the dialogue with airlines to improve performance; and the existing NTK system only accounts for sideline departure noise and needs to be improved to ensure a more equitable scheme should financial penalties or incentives be introduced.

---

[6] MIDNL – The average of the corrected measured noise levels obtained at a pair of microphones at the end of the runway over which a particular aircraft departs. Corrections are applied to account for the fact that three out of four microphones cannot be located at the required position of 300m sideline and 2000m from start of roll, and for local reflection effects.

[7] MSADNL –The arithmetic average of all the MIDNL's for a given aircraft type obtained at both gateway pairs of monitors during the 12 months of the annual categorisation year excluding those departures for which a noisy or quiet classification was given during that year.

On a quarterly basis, the airport is required to report to the local authority the number of penalty and credit points established with respect to each airline's operations. Appendix C of this report sets out the number of penalties and credits identified per month during the year of 2016.

In 2016, the best performing aircraft in terms of the most net credits was the Dornier 328 jet which showed a significant improvement in performance over the previous year. The worst performer, with the most penalties, was the E170 aircraft. In 2016, the E170 commenced the first three months of the year with very few penalties but then the number per month climbed rapidly before reducing significantly in the latter part of the year. This "spike" of penalties occurred as a result of a technical issue with the E170 bleed system which was remedied during the latter part of 2016.

London Borough of Newham approved a new Noise Management and Mitigation Strategy (NOMMS) on 18 May 2017 which includes a new Incentives and Penalties Scheme (IPS) to include financial penalties which will operate under the 2009 permission. The new IPS will be implemented in August 2017 and will introduce a more equitable approach to determining penalties and credits including the use of two new fixed noise monitors at either end of the runway to monitor departure noise levels. The IPS will focus on incentivising quieter operation of aircraft on departure and penalising noisy departures. The airport will set up an annual Community Trust Fund of £75,000 and the most improved airline each year will partner the airport delivering the fund. Following a year of operation, the IPS will charge financial penalties of £600 per dB(A) above a fixed upper limit for each movement that exceeds the upper limits. The financial penalties will top up the annual funds.

5.0 MEETINGS WITH COUNCIL/AIRPORT CONSULTATIVE COMMITTEE

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

The meetings are open and the committee's agendas and minutes are widely circulated and available on the LCACC website[8]. The meetings include reports on developments at the airport including changes in routes, flight and passenger numbers. There is a standing item on

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

environmental issues including complaints, enquiries, noise monitoring and management and other requirements of the planning permission and Section 106 Agreement.

Appendix D of this report provides the sections of the meeting minutes from 2016 relevant to the noise management scheme, namely a summary of the operation of the NTK system over each quarterly period and any developments or changes to the scheme.

6.0 NUMBERS AND TYPES OF AIRCRAFT OPERATING AT LCY

The number and types of aircraft which operate at LCY are restricted under the current planning conditions and Section 106 Agreement with the Council.

All aircraft operating at LCY are required to be categorised by their departure noise levels into one of five noise categories. Only aircraft which have been approved by the Council and have been categorised in this manner, provisionally or otherwise, are permitted to land or depart the airport (excepting emergencies).

The 2009 planning permission allows up to 120,000 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.

Details of annual aircraft movements and noise factored movements by aircraft type are presented in the airport's annual categorisation report along with details of noise measurements over the preceding year. These can be found in Appendix 12 of the APR.

Under the Section 106 Agreement, 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 2016 are presented in Appendix E, where they are compared with the relevant daily, weekly and annual limits.

Appendix E 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 2016, 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.

7.0 NTK STATUS REPORTS

Under paragraph A6.0 of the approved Temporary Noise Monitoring Strategy, London City Airport is required to provide quarterly reports of the NTK system to the local authority. Each report is 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.

Table 1 of Appendix F of this report details the daily operational status of each monitor between 1st January 2015 and the 31st December 2016. Table 2 sets out the monthly correlation rate of noise events to aircraft departures for the same twelve month period, and Table 3 gives a summary of the NTK operational status for each quarter.

The noise monitoring system remained in continuous operation throughout the twelve month period between 1st January 2016 and 31st December 2016. Each noise monitoring terminal was in operation every day with the following exceptions:

- NMT1 was not operational on 22nd – 23rd August due to calibration taking place.
- NMT2 was not operational for parts of 14th – 18th January due to a failure of the power supply, and on 22nd – 23rd August due to calibration taking place.
- NMT3 was not operational on 1st – 6th September due to calibration taking place.
- NMT4 was not operational on 1st – 6th September due to calibration taking place.

The correlation rates in January and February were also affected by a significant amount of recorded noise events being marked as invalid due to high winds.

The target correlation rate (80%) was met for 2016. A total of 39,225 aircraft departures were recorded, and an average correlation rate of noise events to aircraft departures of 92% was achieved. This is 7% higher than in 2015, when some issues with NMT2 were experienced.

Nick Williams
for Bickerdike Allen Partners

Peter Henson
Partner

Bickerdike
Allen
Partners
Architecture
Acoustics
Technology

APPENDIX A

Auxiliary Power Unit Usage

LONDON CITY AIRPORT: A.P.U. USAGE REQUEST LIST

SCHEDULED AIRCRAFT

AIRCRAFT	A.P.U. USAGE REQUIRED? (✓)
BAe 146	✓
RJ Series	✓
Airbus A318	✓
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 604/5	✓
Bombardier Global 5000/6000	✓
C510 (Citation Mustang)	
C525 CJ1 (Citation Jet 1)	

AIRCRAFT	A.P.U. USAGE REQUIRED? (✓)
C525 CJ2 (Citation Jet 2)	
C525 CJ3 (Citation Jet 3)	
C525 CJ4 (Citation Jet 4)	
C550 (Citation Bravo)	
C560 (Citation V)	
C56X (Citation Excel)	✓
C680 (Citation Sovereign)	✓
E550 Legacy 500	✓
E55P Phenom 300	
FA900B	✓
FA10 (Falcon 10)	
FA50 (Falcon 50)	✓
F2TH (Falcon 2000EX)	✓
F900EX (Falcon 900EX)	✓
FA7X Falcon 7X	✓
G150 Gulfstream 150	✓
G280 Gulfstream 280	✓
Hawker 800 XP	✓
Learjet 40/45	✓
P180 (Piaggio Avanti)	
P68C (Partenavia 68)	
PA31 (Navajo)	
PA34 (Seneca)	

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APPENDIX B

Ground Running of Engines

TABLE 1: OFFICIAL RECORD OF GROUND RUNNING OF ENGINES FOR TEST AND MAINTENANCE FOR THE YEAR 2016

MONTH	DATE	LOCATION	A/C ORIENTATION	TYPE OF RUN / POWER SET	A/C TYPE	REG	START TIME	STOP TIME	DURATION (hh:mm)
JANUARY	03/01/2016	Stand 10	NW	Ground Idle	E190	GLCYN	12:57	13:05	00:08
JANUARY	04/01/2016	Stand 24	W	High Power	RJ1H	HBIYZ	07:17	07:23	00:06
JANUARY	04/01/2016	Stand 13	NW	Ground Idle	RJ85	EIRJI	17:32	17:35	00:03
JANUARY	05/01/2016	Stand 9	NW	Ground Idle	RJ85	EIRJB	12:59	13:04	00:05
JANUARY	12/01/2016	Abeam Stand 24	W	High Power	RJ85	EIRJD	10:17	10:29	00:12
JANUARY	14/01/2016	Abeam Stand 24	W	High Power	E170	GLCYD	07:12	07:21	00:09
JANUARY	14/01/2016	Stand 12	NW	Ground Idle	AT42	GISLF	19:46	19:55	00:09
JANUARY	18/01/2016	Stand 14	W	Low Power	E170	GLCYF	13:06	13:13	00:07
JANUARY	19/01/2016	Stand 22	NW	Low Power	DH8D	GJECG	07:32	07:42	00:10
JANUARY	19/01/2016	Stand 24	W	High Power	E170	GLCYD	12:57	13:29	00:32
JANUARY	19/01/2016	Stand 24	W	High Power	E170	GLCYD	20:22	20:32	00:10
JANUARY	23/01/2016	Stand 2	NW	Low Power	DH8D	GPRPL	08:02	08:07	00:05
JANUARY	28/01/2016	Stand 24	W	High Power	RJ85	EIRJD	16:09	16:21	00:12
JANUARY	29/01/2016	Stand 24	W	High Power	RJ85	EIRJD	07:12	07:33	00:21
FEBRUARY	08/02/2016	JC	?	Ground Idle	C56X	CSDXG	15:39	15:42	00:03
FEBRUARY	08/02/2016	JC	?	Ground Idle	C56X	CSDXG	16:37	16:40	00:03
FEBRUARY	09/02/2016	Stand 7	NW	Ground Idle	RJ85	EIWXA	14:53	14:59	00:06
FEBRUARY	11/02/2016	Abeam Stand 24	W	High Power	E190	GLCYM	15:15	15:30	00:15
FEBRUARY	11/02/2016	JC	?	Ground Idle	H25B	CSDRX	18:42	18:48	00:06
FEBRUARY	12/02/2016	Stand 10	NW	Ground Idle	E190	GLCYM	15:37	15:45	00:08
FEBRUARY	14/02/2016	Abeam Stand 24	W	High Power	E190	GLCYR	12:42	13:06	00:24
FEBRUARY	14/02/2016	JC	E	Ground Idle	H25B	CSDRX	13:22	13:29	00:07
FEBRUARY	14/02/2016	Abeam Stand 24	W	High Power	E190	GLCYP	14:20	14:40	00:20
FEBRUARY	14/02/2016	Abeam Stand 24	W	High Power	E190	GLCYP	15:10	15:19	00:09
FEBRUARY	14/02/2016	Stand 13	NW	Ground Idle	RJ85	EIRJF	21:45	21:48	00:03
FEBRUARY	15/02/2016	Stand 13	NW	Ground Idle	RJ85	EIRJF	11:26	11:30	00:04
FEBRUARY	15/02/2016	Abeam Stand 24	W	High Power	RJ85	EIRJF	12:06	12:21	00:15
FEBRUARY	22/02/2016	Stand 2	NW	Ground Idle	E190	GLCYV	10:34	10:44	00:10
FEBRUARY	23/02/2016	Stand 7	NW	Ground Idle	E190	GLCYV	09:07	09:17	00:10
FEBRUARY	24/02/2016	Stand 1	NW	Ground Idle	RJ85	EIRJT	21:33	21:35	00:02
FEBRUARY	25/02/2016	Stand 21	NW	Ground Idle	E190	GLCYV	17:06	17:12	00:06
FEBRUARY	28/02/2016	Stand 10	NW	Ground Idle	E190	GLCYT	12:34	12:43	00:09
MARCH	02/03/2016	JC	E	Ground Idle	C56X	CSDXF	17:38	17:42	00:04
MARCH	02/03/2016	Stand 13	NW	Ground Idle	DH8D	LXLGE	21:04	21:10	00:06
MARCH	03/03/2016	Stand 13	NW	Ground Idle	RJ85	EIRJE	18:09	18:12	00:03
MARCH	04/03/2016	Stand 3	NW	Ground Idle	E190	GLCYV	14:58	15:07	00:09
MARCH	07/03/2016	Stand 9	NW	Ground Idle	E190	GLCYV	06:57	07:06	00:09
MARCH	09/03/2016	Stand 21	NW	Ground Idle	E190	GLCYV	09:14	09:24	00:10
MARCH	10/03/2016	Stand 8	NW	Ground Idle	RJ85	EIRJC	13:45	13:48	00:03
MARCH	11/03/2016	Stand 24	W	High Power	E190	GLCYN	20:36	20:42	00:06
MARCH	14/03/2016	Stand 13	NW	Ground Idle	DH8D	GPRPC	08:29	08:41	00:12
MARCH	14/03/2016	JC	?	Ground Idle	C56X	CSDXX	12:20	12:26	00:06
MARCH	14/03/2016	Stand 21	NW	Ground Idle	E170	GLCYF	14:23	14:27	00:04
MARCH	21/03/2016	Stand 14	NW	Ground Idle	SB20	GCDKB	16:01	16:07	00:06
MARCH	21/03/2016	Stand 13	NW	Ground Idle	RJ85	EIRJI	19:27	19:29	00:02
MARCH	22/03/2016	Stand 14	NW	Ground Idle	SB20	GCDKB	14:39	14:41	00:02
MARCH	27/03/2016	Stand 24	W	High Power	E170	GLCYG	12:42	13:09	00:27
MARCH	27/03/2016	Stand 14	NW	Ground Idle	RJ85	EIRJZ	21:22	21:26	00:04

TABLE 1: OFFICIAL RECORD OF GROUND RUNNING OF ENGINES FOR TEST AND MAINTENANCE FOR THE YEAR 2016

MONTH	DATE	LOCATION	A/C ORIENTATION	TYPE OF RUN / POWER SET	A/C TYPE	REG	START TIME	STOP TIME	DURATION (hh:mm)
APRIL	02/04/2016	Stand 2	NW	Ground Idle	E170	GLCYI	06:47	06:53	00:06
APRIL	03/04/2016	Stand 13	NW	Ground Idle	SB20	GCDEB	12:42	12:53	00:11
APRIL	06/04/2016	Stand 10	NW	Ground Idle	DH8D	GJEDP	12:38	12:51	00:13
APRIL	06/04/2016	Stand 10	NW	Ground Idle	DH8D	GJEDP	18:29	18:33	00:04
APRIL	06/04/2016	Stand 9	NW	Ground Idle	E190	GLCYT	20:33	?	?
APRIL	07/04/2016	Stand 4	Parked	Ground Idle	RJ85	EIRJE	18:48	18:51	00:03
APRIL	07/04/2016	Stand 4	NW	Ground Idle	RJ85	EIRJE	19:59	20:04	00:05
APRIL	07/04/2016	Stand 4	NW	Ground Idle	RJ85	EIRJE	20:29	20:30	00:01
APRIL	07/04/2016	Stand 4	NW	Ground Idle	RJ85	EIRJE	20:36	20:39	00:03
APRIL	08/04/2016	Stand 9	NW	Ground Idle	E190	GLCYT	14:57	15:07	00:10
APRIL	08/04/2016	Stand 24	W	High Power	E190	GLCYT	16:09	16:25	00:16
APRIL	09/04/2016	Abeam Stand 23	W	High Power	P180	LXJFP	11:12	11:14	00:02
APRIL	12/04/2016	Stand 13	NW	Ground Idle	DH8D	GJEDP	09:48	09:57	00:09
APRIL	12/04/2016	Stand 23	NW	Ground Idle	DH8D	GJEDR	13:07	13:30	00:23
APRIL	16/04/2016	Stand 5	NW	Ground Idle	RJ85	EIRJE	11:57	12:02	00:05
APRIL	27/04/2016	Stand 24	W	High Power	H25B	CSDRY	21:28	21:37	00:09
MAY	04/05/2016	Stand 1	NW	Ground Idle	DH8D	GPRPA	09:22	09:24	00:02
MAY	04/05/2016	Stand 13	NW	Ground Idle	DH8D	GPRPA	15:00	15:06	00:06
MAY	05/05/2016	Stand 7	NW	Ground Idle	E190	GLCYV	06:57	07:03	00:06
MAY	06/05/2016	JC	?	Ground Idle	H25B	CSDUH	15:25	?	?
MAY	08/05/2016	Stand 23	NW	Ground Idle	E190	GLCYT	12:30	12:38	00:08
MAY	11/05/2016	JC	E	Ground Idle	FA7X	VQBSP	20:41	20:44	00:03
MAY	12/05/2016	Stand 22	NW	Ground Idle	E190	GLCYV	06:30	06:34	00:04
MAY	18/05/2016	Stand 21	NW	Ground Idle	E170	GLCYI	17:42	17:50	00:08
MAY	19/05/2016	Stand 24	W	High Power	E170	GLCYI	12:44	12:54	00:10
MAY	30/05/2016	Stand 6	NW	Ground Idle	E190	GLCYK	09:09	09:22	00:13
JUNE	05/06/2016	Stand 8	NW	Ground Idle	RJ85	EIRJC	12:47	12:48	00:01
JUNE	07/06/2016	Stand 24	NW	Ground Idle	E190	GLCYK	10:10	10:14	00:04
JUNE	11/06/2016	Stand 24	NW	Ground Idle	A318	GEUNB	08:59	09:05	00:06
JUNE	11/06/2016	Stand 24	NW	Ground Idle	A318	GEUNB	10:55	11:02	00:07
JUNE	11/06/2016	Stand 24	NW	Ground Idle	A318	GEUNB	12:12	12:20	00:08
JUNE	12/06/2016	Stand 4	NW	Ground Idle	E170	GLCYG	13:22	13:30	00:08
JUNE	13/06/2016	Stand 24	W	High Power	A318	GEUNA	11:16	11:43	00:27
JUNE	15/06/2016	Stand 10	NW	Low Power	E190	GLCYW	07:03	07:10	00:07
JUNE	16/06/2016	Stand 13	NW	Ground Idle	RJ85	EIRJX	06:41	06:45	00:04
JUNE	16/06/2016	Stand 24	W	High Power	A318	GEUNA	10:16	10:43	00:27
JUNE	16/06/2016	Stand 9	NW	Ground Idle	RJ85	EIRJY	12:04	12:08	00:04
JUNE	16/06/2016	Stand 24	W	High Power	A318	GEUNA	15:07	15:20	00:13
JUNE	16/06/2016	Stand 9	NW	Ground Idle	E190	GLCYJ	18:25	18:30	00:05
JUNE	16/06/2016	Stand 24	W	High Power	A318	GEUNA	16:44	17:05	00:21
JUNE	18/06/2016	Stand 24	W	High Power	A318	GEUNA	11:47	12:12	00:25
JUNE	19/06/2016	Stand 22	NW	Ground Idle	A318	GEUNB	12:47	12:51	00:04
JUNE	19/06/2016	Stand 23	NW	Ground Idle	E170	GLCYH	13:02	13:07	00:05
JUNE	19/06/2016	Stand 24	W	High Power	A318	GEUNA	16:27	16:46	00:19
JUNE	21/06/2016	Stand 23-24	W	High Power	E190	GLCYU	10:06	10:32	00:26
JUNE	22/06/2016	Stand 24	W	High Power	E190	GLCYM	13:21	15:54	02:33
JUNE	22/06/2016	Stand 22	NW	Ground Idle	A318	GEUNB	14:00	14:11	00:11
JUNE	28/06/2016	Stand 1	NW	Ground Idle	E190	GLCYR	06:34	06:40	00:06
JUNE	28/06/2016	Stand 23	NW	Ground Idle	E190	GLCYN	13:39	13:42	00:03

TABLE 1: OFFICIAL RECORD OF GROUND RUNNING OF ENGINES FOR TEST AND MAINTENANCE FOR THE YEAR 2016

MONTH	DATE	LOCATION	A/C ORIENTATION	TYPE OF RUN / POWER SET	A/C TYPE	REG	START TIME	STOP TIME	DURATION (hh:mm)
JULY	03/07/2016	Stand 24	Parked	Ground Idle	A318	GEUNB	12:53	12:59	00:06
JULY	03/07/2016	Stand 23/24	W	High Power	E190	GLCYN	14:01	14:24	00:23
JULY	03/07/2016	Stand 23/24	W	High Power	E190	GLCYN	14:43	15:08	00:25
JULY	03/07/2016	Stand 23/24	W	High Power	E190	GLCYN	15:50	16:12	00:22
JULY	03/07/2016	Stand 24	W	High Power	E190	GLCYN	20:25	20:36	00:11
JULY	17/07/2016	Stand 10	NW	Ground Idle	E190	GLCYM	13:00	13:09	00:09
JULY	17/07/2016	Stand 7	NW	Ground Idle	RJ85	EIRJN	14:55	14:58	00:03
JULY	20/07/2016	Stand 9	NW	Engine Rotation	RJ85	EIRJZ	21:45	21:47	00:02
JULY	21/07/2016	Stand 13	NW	Ground Idle	RJ85	EIRJZ	08:17	08:20	00:03
JULY	21/07/2016	Stand 8	NW	Ground Idle	RJ85	EIRJN	16:09	16:20	00:11
JULY	21/07/2016	JC	SE	Ground Idle	C56X	CSDXK	09:37	09:43	00:06
AUGUST	02/08/2016	Stand 10	NW	Ground Idle	E190	GLCYU	18:58	19:06	00:08
AUGUST	04/08/2016	Stand 2	NW	Ground Idle	RJ85	EIRJT	10:26	10:30	00:04
AUGUST	04/08/2016	Stand 14	NW	Ground Idle	RJ85	GJOTR	19:10	19:13	00:03
AUGUST	04/08/2016	Stand 24	NW	Ground Idle	SB20	GCDEA	21:16	21:25	00:09
AUGUST	07/08/2016	Stand 21	NW	Ground Idle	E170	GLCYF	12:35	12:37	00:02
AUGUST	07/08/2016	Stand 21	NW	Ground Idle	E170	GLCYF	19:59	20:05	00:06
AUGUST	09/08/2016	Stand 24	NW	Ground Idle	DH8D	GJEDT	16:53	16:58	00:05
AUGUST	12/08/2016	Stand 12	NW	Ground Idle	DH8D	?	19:52	19:54	00:02
AUGUST	14/08/2016	Stand 12	NW	Ground Idle	DH8D	GPRPA	12:30	12:41	00:11
AUGUST	16/08/2016	Stand 24	W	High Power	E190	GLCYU	20:08	20:31	00:23
AUGUST	17/08/2016	Stand 22	NW	Ground Idle	E190	GLCYX	10:15	10:18	00:03
AUGUST	18/08/2016	Abeam Stand 24	W	High Power	E170	GLCYF	14:55	15:11	00:16
AUGUST	20/08/2016	Stand 3	NW	Low Power	E190	GLCYW	08:00	08:04	00:04
AUGUST	20/08/2016	Stand 3	NW	Low Power	E190	GLCYW	09:43	09:47	00:04
AUGUST	21/08/2016	Abeam Stand 24	W	High Power	E190	GLCYL	13:09	13:34	00:25
AUGUST	21/08/2016	Stand 10	NW	Ground Idle	E190	GLCYX	19:11	19:16	00:05
AUGUST	25/08/2016	Stand 21	Parked	Ground Idle	E190	GLCYO	17:21	17:38	00:17
AUGUST	26/08/2016	Stand 10	NW	Ground Idle	E190	GLCYO	10:07	10:13	00:06
AUGUST	30/08/2016	Stand 1	NW	Ground Idle	RJ85	EIRJY	06:41	06:46	00:05
SEPTEMBER	01/09/2016	Abeam Stand 24	W	High Power	E190	GLCYJ	14:47	15:17	00:30
SEPTEMBER	02/09/2016	Stand 24	NW	Low Power	A318	GEUNB	10:32	10:39	00:07
SEPTEMBER	03/09/2016	Stand 24	NW	Ground Idle	A318	GEUNB	10:19	10:24	00:05
SEPTEMBER	04/09/2016	Abeam Stand 24	W	High Power	E190	GLCYW	14:12	14:40	00:28
SEPTEMBER	05/09/2016	Stand 24	NW	Ground Idle	A318	GEUNA	08:31	08:38	00:07
SEPTEMBER	05/09/2016	Stand 7	NW	Ground Idle	RJ85	EIRJX	14:34	14:37	00:03
SEPTEMBER	06/09/2016	Stand 24	NW	Ground Idle	A318	GEUNA	15:40	15:48	00:08
SEPTEMBER	13/09/2016	Stand 22	NW	Ground Idle	E190	GLCYX	06:54	07:02	00:08
SEPTEMBER	14/09/2016	Stand 6	NW	Ground Idle	RJ1H	HBIYU	13:13	13:15	00:02
SEPTEMBER	14/09/2016	Stand 4	NW	Ground Idle	RJ85	EIRJC	13:44	13:49	00:05
SEPTEMBER	19/09/2016	Stand 10	NW	Ground Idle	E190	GLCYU	06:33	06:40	00:07
SEPTEMBER	19/09/2016	Stand 14	NW	Ground Idle	AT42	GISLF	13:05	13:07	00:02
SEPTEMBER	19/09/2016	Stand 14	NW	Ground Idle	AT42	GISLF	13:42	13:48	00:06
SEPTEMBER	19/09/2016	Abeam Stand 24	W	High Power	AT42	GISLF	14:32	14:51	00:19
SEPTEMBER	21/09/2016	Stand 2	NW	Ground Idle	E190	GLCYJ	07:13	07:20	00:07
SEPTEMBER	21/09/2016	Stand 4	NW	Low Power	RJ85	EIRJN	14:36	14:41	00:05
SEPTEMBER	22/09/2016	Stand 24	W	High Power	E190	GLCYW	10:30	11:10	00:40
SEPTEMBER	22/09/2016	Stand 24	W	High Power	E190	GLCYR	13:24	13:52	00:28
SEPTEMBER	25/09/2016	Stand 24	W	High Power	E190	GLCYU	13:02	13:35	00:33
SEPTEMBER	26/09/2016	Stand 3	NW	Ground Idle	E190	GLCYS	11:55	12:02	00:07
SEPTEMBER	26/09/2016	Stand 24	NW	Ground Idle	SB20	HBIZB	16:52	17:02	00:10
SEPTEMBER	29/09/2016	Abeam Stand 24	W	High Power	E190	GLCYO	14:33	14:53	00:20
SEPTEMBER	30/09/2016	Stand 24	W	High Power	E190	GLCYO	16:47	17:14	00:27

TABLE 1: OFFICIAL RECORD OF GROUND RUNNING OF ENGINES FOR TEST AND MAINTENANCE FOR THE YEAR 2016

MONTH	DATE	LOCATION	A/C ORIENTATION	TYPE OF RUN / POWER SET	A/C TYPE	REG	START TIME	STOP TIME	DURATION (hh:mm)
OCTOBER	05/10/2016	Stand 24	NW	Ground Idle	A318	GEUNA	07:49	07:55	00:06
OCTOBER	07/10/2016	Stand 24	NW	Ground Idle	A318	GEUNA	11:07	11:14	00:07
OCTOBER	10/10/2016	Stand 13	NW	Ground Idle	RJ85	?	09:41	09:47	00:06
OCTOBER	10/10/2016	JC	?	Ground Idle	C56X	CSDXT	17:02	17:09	00:07
OCTOBER	14/10/2016	Stand 13	NW	Ground Idle	E190	GLCYJ	07:04	07:09	00:05
OCTOBER	14/10/2016	Stand 13	NW	Ground Idle	RJ1H	HBIYR	14:36	14:40	00:04
OCTOBER	18/10/2016	Stand 23/24	W	High Power	E190	GLCYK	20:46	21:13	00:27
OCTOBER	24/10/2016	Abeam Stand 24	W	High Power	E190	GLCYK	13:14	13:52	00:38
OCTOBER	26/10/2016	Stand 10	NW	Ground Idle	E190	GLCYK	20:31	20:47	00:16
OCTOBER	26/10/2016	Stand 10	NW	Ground Idle	E190	GLCYK	21:12	21:28	00:16
OCTOBER	28/10/2016	Stand 3	NW	Ground Idle	E190	GLCYW	06:38	06:43	00:05
OCTOBER	30/10/2016	Stand 6	NW	Ground Idle	E190	GLCYX	12:38	12:43	00:05
OCTOBER	30/10/2016	Stand 10	NW	Ground Idle	RJ85	EIRJI	15:22	15:30	00:08
OCTOBER	30/10/2016	Stand 10	NW	Ground Idle	RJ85	EIRJI	16:26	16:35	00:09
NOVEMBER	01/11/2016	Stand 2	NW	Ground Idle	DH8D	GJECF	18:30	18:56	00:26
NOVEMBER	02/11/2016	Abeam Stand 24	W	High Power	E190	GLCYK	14:38	15:03	00:25
NOVEMBER	18/11/2016	Stand 12	N	Ground Idle	DH8D	GFLBD	10:57	11:03	00:06
NOVEMBER	18/11/2016	Stand 24	W	High Power	DH8D	GFLBD	12:39	13:09	00:30
NOVEMBER	22/11/2016	Abeam Stand 13	W	Ground Idle	E170	GLCYF	15:25	15:41	00:16
NOVEMBER	23/11/2016	Stand 12	N	Ground Idle	RJ85	EIRJN	12:15	12:19	00:04
NOVEMBER	25/11/2016	Stand 5	NW	Ground Idle	RJ85	EIRJD	15:20	15:24	00:04
DECEMBER	01/12/2016	JC	S	Ground Idle	FA7X	MMNCC	14:05	14:14	00:09
DECEMBER	02/12/2016	Stand 13	NW	Ground Idle	AT42	GZEBS	19:36	19:40	00:04
DECEMBER	02/12/2016	Stand 13	NW	Ground Idle	AT42	GZEBS	20:02	20:06	00:04
DECEMBER	11/12/2016	Stand 22	NW	Ground Idle	E170	GLCYD	13:11	13:19	00:08
DECEMBER	11/12/2016	Stand 8	NW	Ground Idle	E190	GLCYK	13:50	13:56	00:06
DECEMBER	14/12/2016	Stand 5	NW	Ground Idle	RJ1H	HBIYY	07:47	07:50	00:03
DECEMBER	16/12/2016	Stand 1	NW	Ground Idle	E190	GLCYX	14:26	14:31	00:05
DECEMBER	16/12/2016	Stand 1	NW	Ground Idle	E190	GLCYX	14:59	15:02	00:03
DECEMBER	16/12/2016	Stand 1	NW	Ground Idle	E190	GLCYX	16:03	16:07	00:04
DECEMBER	18/12/2016	Stand 9	NW	Ground Idle	RJ85	EIRJN	14:11	14:16	00:05
DECEMBER	21/12/2016	JC	S	Ground Idle	FA7X	HBJFN	08:10	08:20	00:10
DECEMBER	21/12/2016	Stand 23	NW	Ground Idle	E190	GLCYP	08:38	08:42	00:04

LONDON CITY AIRPORT

TABLE 2:
SUMMARY OF HIGH POWER GROUND RUNNING
JANUARY 2016 - DECEMBER 2016

	MINUTES/MONTH	AIRCRAFT TYPE
JANUARY	102	E170/RJ1H/RJ85
FEBRUARY	83	E190/RJ85
MARCH	33	E170/E190
APRIL	27	E190/H25B/P180
MAY	10	E170
JUNE	311	A318/E190
JULY	81	E190
AUGUST	64	E170/E190
SEPTEMBER	225	AT42/E190
OCTOBER	65	E190
NOVEMBER	55	DH8D/E190
DECEMBER	0	n/a
TOTAL	**1056**	-

LONDON CITY AIRPORT

Bickerdike Allen Partners
Architecture Acoustics Technology

ENGINE GROUND RUN NOISE 2016
(w.r.t. Ground Running Noise Limit)

TABLE 3
Prediction of Engine Ground Running
as Appendix E of Approved Noise Control Scheme

Item (A) Determination of Largest Monthly Duration:

As indicated in Table 2, that occurred in June 2016, specifically -

132 minutes A318
179 minutes E190
311 minutes total Ground Running

Item (B) Determination of Average Daily Duration During Worst Case

311 minutes in a month of 30 days
10.4 minutes Average Daily Duration

Item (C) Compute Resultant Noise Level at Reference Distance (152 metres)

Resultant Noise Level at 152m

= Reference Noise Level + 10 Log (duration) - 10 Log (12x60)
= 84 + 10 Log (10.4) - 10 Log (12x60)
= 84 + 10.2 - 28.6
= 65.6 dB $L_{Aeq,12h}$

Item (D) Compute Level at Nearest Properties in Newland Street
Aircraft at Stand 24.
Noise Level at Newland Street

= Resultant Noise Level - 26.7 Log (255/152)
= 61.6 - 6.0
= 59.6 dB $L_{Aeq,12h}$

LCY Ground Running Noise Limit = 60 dB $L_{Aeq,12h}$

CONCLUSION

In 2016 LCY's Ground Running was 0.4 dB below
the Ground Running Noise Limit.

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APPENDIX C

Penalties and Incentives

JANUARY 2016

Aircraft Type	Noisy Events	Quiet Events
C25A	1	0
C550	1	0
C56X	1	5
D328	1	0
DH8D	0	1
E170	0	1
E190	1	1
F900	2	0
FA7X	1	0
H25B	4	1
RJ85	2	0

FEBRUARY 2016

Aircraft Type	Noisy Events	Quiet Events
B462	0	1
BE40	1	0
C25B	0	1
C550	0	1
C56X	1	0
D328	1	0
DH8D	1	0
E170	2	1
E190	0	2
FA7X	1	0
H25B	3	0
RJ85	2	0

MARCH 2016

Aircraft Type	Noisy Events	Quiet Events
C56X	0	3
E170	1	0
E190	3	0
FA7X	1	0
H25B	4	0
RJ85	1	0

APRIL 2016

Aircraft Type	Noisy Events	Quiet Events
C25A	1	0
C56X	2	4
E170	16	0
E190	1	0
F2TH	1	0
FA7X	3	0
GLEX	0	1
H25B	5	0
J328	2	0

MAY 2016

Aircraft Type	Noisy Events	Quiet Events
C25B	1	0
C56X	0	2
D328	0	1
E170	76	0
E190	4	2
F900	1	0
FA7X	2	0
H25B	2	0
J328	10	7
RJ85	0	1

JUNE 2016

Aircraft Type	Noisy Events	Quiet Events
C56X	1	1
E170	132	0
E190	7	0
FA7X	1	0
H25B	8	0
J328	0	33

JULY 2016

Aircraft Type	Noisy Events	Quiet Events
C25B	1	0
C56X	2	0
E170	164	1
E190	6	0
F2TH	1	0
GLEX	1	0
H25B	10	0
J328	0	14
SB20	1	0

AUGUST 2016

Aircraft Type	Noisy Events	Quiet Events
C56X	0	1
E170	59	0
E190	6	3
GLEX	1	0
H25B	6	0
J328	0	18

SEPTEMBER 2016

Aircraft Type	Noisy Events	Quiet Events
BE40	1	0
C25B	2	0
C56X	2	1
DH8D	1	0
E170	11	0
E190	22	2
GLEX	2	0
H25B	10	0
J328	1	22
RJ85	6	0
SB20	0	1

OCTOBER 2016

Aircraft Type	Noisy Events	Quiet Events
C25A	2	0
C56X	1	1
E170	6	0
E190	19	2
H25B	14	0
J328	0	1
RJ85	10	0

NOVEMBER 2016

Aircraft Type	Noisy Events	Quiet Events
AT42	1	0
AT72	2	0
C25C	1	0
C56X	3	3
D328	1	0
DH8D	1	1
E170	2	1
E190	9	5
F2TH	1	0
GLEX	1	1
H25B	5	0
J328	13	8
RJ85	6	0

DECEMBER 2016

Aircraft Type	Noisy Events	Quiet Events
C25A	1	0
C25B	1	0
C56X	1	1
D328	0	1
E170	2	0
E190	7	1
FA7X	3	0
H25B	2	0
J328	0	17
RJ85	3	0

The following table shows the number of residual penalties incurred in 2016, ranked by airline and aircraft type.

Airline	Aircraft Type	# Residual Penalties
BA CityFlyer	E170	467
NetJets Transportes Aereos	H25B	68
BA CityFlyer	E190	63
CityJet	RJ85	29
Sun Air of Scandinavia	D328	12
Swiss International Air Lines	E190	7
TAG UK	FA7X	5
Bristol Flying Centre	C25A	4
Saxon Air	H25B	3
Air Hamburg	C25B	2
British Airways	E170	2
CityJet	AT72	2
Lufthansa	E190	2
Gestair	H25B	2
NetJets Transportes Aereos	GLEX	2
Veteran Air	FA7X	2
A.G. Aviation	FA7X	1
BASF	F2TH	1
CityJet	AT45	1
Bertelsmann	F2TH	1
BA CityFlyer	RJ85	1
BA CityFlyer	SB20	1
Delta Airlines	FA7X	1
Air Charter Scotland	C25B	1
EXXAERO	F900	1
Dassault Falcon Service	FA7X	1
Flying Service	FA7X	1

Airline	Aircraft Type	# Residual Penalties
IJM International Jet Management	C56X	1
Blue Jet	C25A	1
Unijet	C25B	1
Unijet	H25B	1
Luxair	DH8D	1
Air Luxor GB	C25B	1
Provincial Express	F2TH	1
Sedona Air Center	C550	1
Shell Aircraft	FA7X	1
Sirio	FA7X	1
Springdale Air Service	C56X	1
Jet Aviation Business Jets	FA7X	1
EXXAERO	F2TH	1
Flybe	DH8D	0
BA CityFlyer	B462	-1
EFD Eisele Flugdienst	C25B	-1
Eastern Airways	E170	-1
Elitellina	C25B	-1
Catreus	CNJ	-1
London Executive Aviation	C56X	-1
CTC AVIATION	H25B	-1
KNG Transavia Cargo	CNJ	-1
Alitalia	E190	-4
NetJets Transportes Aereos	C56X	-7
Sun Air of Scandinavia	J328	-110
Total		**567**

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APPENDIX D

Meetings with Airport Consultative Committee

LONDON CITY AIRPORT LCACC ENVIRONMENT REPORT

For the period 1st January 2016 – 31st March 2016 inclusive.

Noise:

Total Complaints – 31

- 12 related to aircraft noise;
- 12 related to flight paths;
- 3 were non LCY traffic;
- 4 related to other items such as AC perceived near miss, AQ in the terminal due to West Pier works; bright lights in taxi feeder park.
- One particular individual logged 21% of the total complaints in this quarter.

Enquiries – 2

- Query concerning experimental runway usage not based on weather;
- Have flight paths been changed causing concentration of flights in area?;

Total Correspondence: 33

Noise and Track Keeping System Performance:

During this quarterly period, NMTs 1, 3 and 4 were fully operational, and data received for each day. Due to a failure of the power supply, NMT2 was not operational for parts of 14th – 18th January.

NMT	Calibration	Data
1	OK	Data received for all days
2	OK	Data received for all days except parts of 14th – 18th January
3	OK	Data received for all days
4	OK	Data received for all days

Table 1: Summary of NMT status

Month	No. Operations	No. Correlated Departures	Correlation Rate
January	6274	2381	76%
February	7003	2962	85%
March	7331	3426	93%

Table 2: Summary of correlation rate

The correlation rates in January and February were affected by a significant amount of recorded noise events being marked as invalid due to high winds.

LONDON CITY AIRPORT LCACC ENVIRONMENT REPORT

For the period 1st April 2016 – 30th June 2016 inclusive.

Noise:

Total Complaints – 68

- 26 related to aircraft noise;
- 21 related to flight paths;
- 15 related to aircraft frequency;
- 1 related to early/late operations;
- 2 non LCY due to helicopter movements and disturbance at 04:30 hours.
- 3 related to other items such as TV reception issues and air quality.
- Two individual logged 19% of the total complaints in this quarter.

Enquiries – 2

- Query concerning how the airport manages its environmental impacts;
- Aircraft alitudes;

Total Correspondence: 70

Noise and Track Keeping System Performance:

During this quarterly period, NMTs 1, 3 and 4 were fully operational, and data received for each day.

NMT	Calibration	Data
1	OK	Data received for all days
2	OK	Data received for all days
3	OK	Data received for all days
4	OK	Data received for all days

Table 1: Summary of NMT status

Month	No. Operations	No. Correlated Departures	Correlation Rate
April	7003	3201	91%
May	7380	3472	94%
June	7584	3693	97%

Table 2: Summary of correlation rate

LONDON CITY AIRPORT LCACC ENVIRONMENT REPORT

For the period 1st July 2016 – 30th September 2016 inclusive.

Noise:

Total Complaints – 151

- 66 related to aircraft noise;
- 40 related to flight paths;
- 18 related to aircraft frequency;
- 10 related to early/late operations;
- 9 non LCY due to helicopter movements, outside operational hours.
- 2 related to air quality in areas where they live.
- Two individuals logged 17% of the total complaints in this quarter.

Enquiries – 11

- Queries concerning opening hours since looking to buy a property in the area;
- Further information on how noise contours are created;
- When RNAV Post Implementation Review will take place
- Questions regarding Airport development;
- Query as to flights in local area.

Total Correspondence: 162

Noise and Track Keeping System Performance:

During this quarterly period, NMTs 1, 3 and 4 were fully operational, and data received for each day.

NMT	Calibration	Data
1	OK	Data received for all days except 22-23 August
2	OK	Data received for all days except 22-23 August
3	OK	Data received for all days except 1-6 September
4	OK	Data received for all days except 1-6 September

Table 1: Summary of NMT status

The dates in August and September were due to annual lab calibration of microphones.

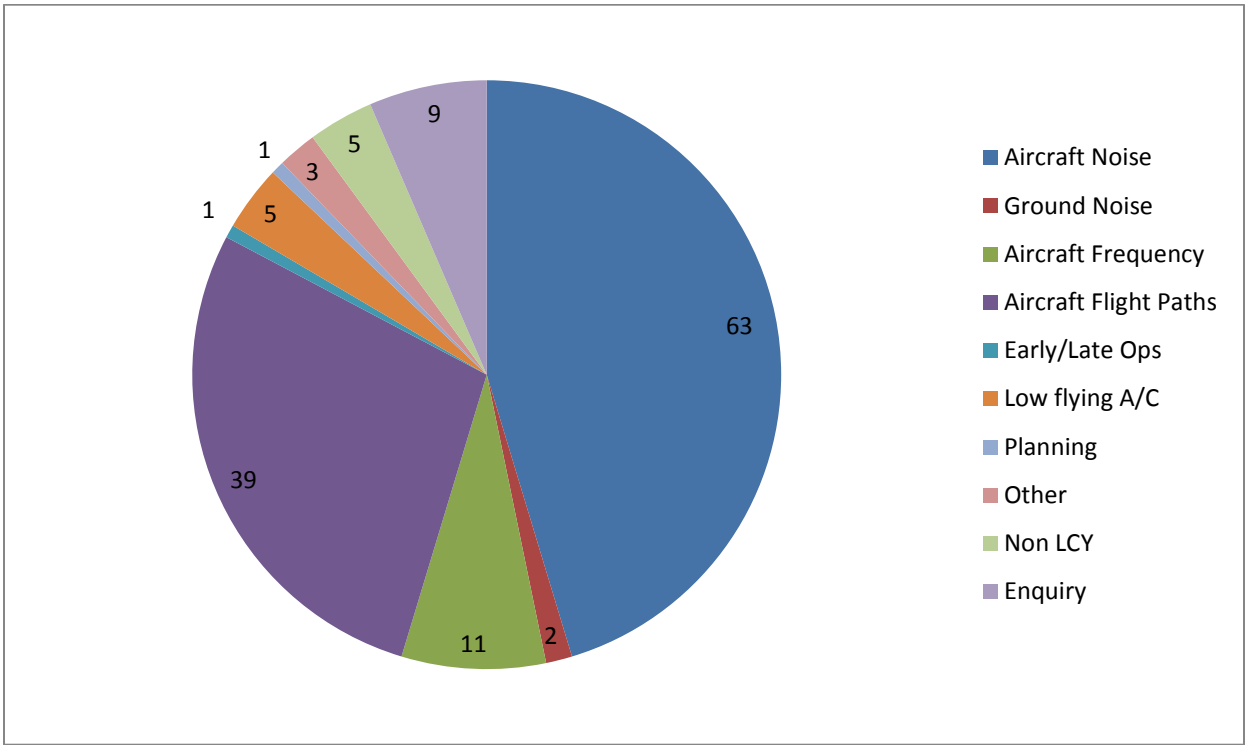
Month	No. Operations	No. Correlated Departures	Correlation Rate
July	7229	3466	96%
August	7187	3255	91%
September	7475	3528	94%

Table 2: Summary of correlation rate

LONDON CITY AIRPORT LCACC ENVIRONMENT REPORT

For the period 1st October 2016 – 31st December 2016 inclusive.

Noise: Total Correspondance 139, Pie chart shows number of complaints and enquiries by type.



Total Complaints – 130

- 63 related to aircraft noise;
- 39 related to flight paths;
- 11 related to aircraft frequency;
- 1 related to early/late operations;
- 5 related to low flying aircraft;
- 5 non LCY due to disturbance outside of operational hours i.e. 4:30 am and Sunday morning.
- 3 Other relating to odour and non-operational activity;
- 25% of complaints were generated by two individuals for this quarter.

Enquiries – 9

- Opening hours since looking to buy a property in the area;
- Airport Expansion plans – further information and compensation on offer;
- Asking about late operations;
- Student request;

Total Correspondence: 139

LONDON CITY AIRPORT LCACC ENVIRONMENT REPORT

By London Borough:

London Borough	Total Correspondence	No of Individuals
Waltham Forest	31	23
Lambeth	29	4
Greenwich	18	12
Havering	13	12
Newham	9	9
Redbridge	8	8
Tower Hamlets	7	7
Kent	6	2
Not provided	5	5
Lewisham	4	4
Bexley	3	3
Essex	3	3
Bromley	1	1
Hackney	1	1
Hertfordshire	1	1
Total	139	95

Noise and Track Keeping System Performance:

During this quarterly period all Noise Monitors (NMT's) were fully operational and data received for each day.

NMT	Calibration	Data
1	OK	Data received for all days
2	OK	Data received for all days
3	OK	Data received for all days
4	OK	Data received for all days

The correlation rate of flights versus noise events was very high for the quarter at 96%.

Month	No. Operations	No. Correlated Departures	Correlation Rate
October	7177	3357	94%
November	7393	3584	97%
December	5919	2900	98%

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APPENDIX E

Numbers of Aircraft Operating at LCY

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London City Airport: Record of Daily and Noise Factored Aircraft Movements 2016

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]	
								Actual Movements		Factored Movements	Early Morning		Early Morning		Late Evening	Saturday Afternoon
	Day	Weekend	Day	Weekend	Day	Week	Week	Day	Weekend	Week	06:30-06:44	06:30-06:59	06:30-06:44	06:30-06:59	22:00-22:30	12:30-13:00
01/01/2016	102	-	132	-	123	328	515	30	-	187	0	0	2	6	0	-
02/01/2016	65	190	100	280	71			35	90		0	3	2	3	-	3
03/01/2016	125		200		134			75			-	-	-	-	1	-
04/01/2016	223	-	592	-	238	1,404	4,050	369	-	2,646	0	4	2	2	0	-
05/01/2016	222	-	592	-	234			370	-		2	3	0	3	0	-
06/01/2016	227	-	592	-	237			365	-		0	5	2	1	0	-
07/01/2016	233	-	592	-	248			359	-		0	5	2	1	0	-
08/01/2016	231	-	592	-	243			361	-		0	4	2	2	0	-
09/01/2016	70	195	100	280	73			30	85		2	6	0	0	-	2
10/01/2016	125		200		131			75			-	-	-	-	1	-
11/01/2016	257	-	592	-	273	1,585	4,050	335	-	2,465	1	1	1	5	0	-
12/01/2016	247	-	592	-	263			345	-		0	4	2	2	0	-
13/01/2016	259	-	592	-	277			333	-		2	5	0	1	0	-
14/01/2016	264	-	592	-	282			328	-		0	4	2	2	0	-
15/01/2016	259	-	592	-	273			333	-		1	4	1	2	0	-
16/01/2016	66	202	100	280	71			34	78		2	5	0	1	-	4
17/01/2016	136		200		146			64			-	-	-	-	0	-
18/01/2016	269	-	592	-	290	1,620	4,050	323	-	2,430	1	2	1	4	0	-
19/01/2016	253	-	592	-	268			339	-		0	2	2	4	0	-
20/01/2016	268	-	592	-	286			324	-		0	5	2	1	0	-
21/01/2016	267	-	592	-	284			325	-		1	4	1	2	0	-
22/01/2016	265	-	592	-	280			327	-		0	2	2	4	0	-
23/01/2016	63	198	100	280	67			37	82		1	3	1	3	-	1
24/01/2016	135		200		146			65			-	-	-	-	0	-

[1] Factored Movements have been rounded to the nearest whole number

[2] Permitted Late Movements comprise 400 per year and not more than 150 in any consecutive 3 months for each time period

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London City Airport: Record of Daily and Noise Factored Aircraft Movements 2016

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]	
								Actual Movements		Factored Movements	Early Morning		Early Morning		Late Evening	Saturday Afternoon
	Day	Weekend	Day	Weekend	Day	Week	Week	Day	Weekend	Week	06:30-06:44	06:30-06:59	06:30-06:44	06:30-06:59	22:00-22:30	12:30-13:00
25/01/2016	289	-	592	-	311	1,768	4,050	303	-	2,282	1	5	1	1	0	-
26/01/2016	271	-	592	-	292			321	-		2	6	0	0	0	-
27/01/2016	280	-	592	-	302			312	-		2	5	0	1	0	-
28/01/2016	311	-	592	-	338			281	-		0	2	2	4	2	-
29/01/2016	295	-	592	-	316			297	-		1	3	1	3	0	-
30/01/2016	66	197	100	280	71			34	83		1	2	1	4	-	2
31/01/2016	131		200		139			69			-	-	-	-	1	-
01/02/2016	286	-	592	-	304	1,770	4,050	306	-	2,280	2	5	0	1	0	-
02/02/2016	289	-	592	-	312			303	-		2	6	0	0	0	-
03/02/2016	299	-	592	-	325			293	-		1	6	1	0	0	-
04/02/2016	302	-	592	-	325			290	-		1	2	1	4	0	-
05/02/2016	291	-	592	-	309			301	-		1	5	1	1	0	-
06/02/2016	57	184	100	280	61			43	96		1	3	1	3	-	2
07/02/2016	127		200		134			73			-	-	-	-	2	-
08/02/2016	233	-	592	-	243	1,796	4,050	359	-	2,255	1	3	1	3	3	-
09/02/2016	295	-	592	-	323			297	-		1	4	1	2	0	-
10/02/2016	303	-	592	-	329			289	-		1	5	1	1	1	-
11/02/2016	316	-	592	-	345			276	-		2	5	0	1	0	-
12/02/2016	303	-	592	-	324			289	-		1	4	1	2	2	-
13/02/2016	79	213	100	280	87			21	67		1	5	1	1	-	5
14/02/2016	134		200		144			66			-	-	-	-	0	-
15/02/2016	294	-	592	-	318	1,848	4,050	298	-	2,202	1	5	1	1	1	-
16/02/2016	303	-	592	-	329			289	-		0	1	2	5	0	-
17/02/2016	295	-	592	-	321			297	-		0	2	2	4	0	-
18/02/2016	308	-	592	-	336			284	-		1	5	1	1	0	-
19/02/2016	293	-	592	-	312			299	-		0	3	2	3	0	-
20/02/2016	78	216	100	280	86			22	64		2	3	0	3	-	7
21/02/2016	138		200		147			62			-	-	-	-	1	-

[1] Factored Movements have been rounded to the nearest whole number

[2] Permitted Late Movements comprise 400 per year and not more than 150 in any consecutive 3 months for each time period

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London City Airport: Record of Daily and Noise Factored Aircraft Movements 2016

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]	
								Actual Movements		Factored Movements	Early Morning		Early Morning		Late Evening	Saturday Afternoon
	Day	Weekend	Day	Weekend	Day	Week	Week	Day	Weekend	Week	06:30-06:44	06:30-06:59	06:30-06:44	06:30-06:59	22:00-22:30	12:30-13:00
22/02/2016	291	-	592	-	312	1,826	4,050	301	-	2,224	1	4	1	2	0	-
23/02/2016	296	-	592	-	324			296	-		2	5	0	1	0	-
24/02/2016	294	-	592	-	323			298	-		1	4	1	2	1	-
25/02/2016	311	-	592	-	336			281	-		0	4	2	2	2	-
26/02/2016	295	-	592	-	313			297	-		1	3	1	3	0	-
27/02/2016	70	202	100	280	76			30	78		1	4	1	2	-	1
28/02/2016	132		200		142			68			-	-	-	-	0	-
29/02/2016	291	-	592	-	315	1,851	4,050	301	-	2,199	1	5	1	1	0	-
01/03/2016	297	-	592	-	325			295	-		1	4	1	2	0	-
02/03/2016	306	-	592	-	336			286	-		0	0	2	6	0	-
03/03/2016	317	-	592	-	347			275	-		1	6	1	0	0	-
04/03/2016	289	-	592	-	307			303	-		0	3	2	3	1	-
05/03/2016	73	204	100	280	79			27	76		1	5	1	1	-	1
06/03/2016	131		200		142			69			-	-	-	-	0	-
07/03/2016	297	-	592	-	320	1,813	4,050	295	-	2,237	1	4	1	2	0	-
08/03/2016	292	-	592	-	319			300	-		1	4	1	2	0	-
09/03/2016	295	-	592	-	324			297	-		1	4	1	2	0	-
10/03/2016	311	-	592	-	336			281	-		2	6	0	0	1	-
11/03/2016	267	-	592	-	292			325	-		2	2	0	4	1	-
12/03/2016	71	206	100	280	77			29	74		0	3	2	3	-	1
13/03/2016	135		200		146			65			-	-	-	-	0	-
14/03/2016	311	-	592	-	338	1,872	4,050	281	-	2,178	1	5	1	1	0	-
15/03/2016	307	-	592	-	338			285	-		1	6	1	0	1	-
16/03/2016	303	-	592	-	330			289	-		1	5	1	1	0	-
17/03/2016	301	-	592	-	326			291	-		0	3	2	3	0	-
18/03/2016	301	-	592	-	321			291	-		0	3	2	3	1	-
19/03/2016	76	205	100	280	83			24	75		0	2	2	4	-	4
20/03/2016	129		200		137			71			-	-	-	-	1	-

[1] Factored Movements have been rounded to the nearest whole number

[2] Permitted Late Movements comprise 400 per year and not more than 150 in any consecutive 3 months for each time period

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London City Airport: Record of Daily and Noise Factored Aircraft Movements 2016

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]	
								Actual Movements		Factored Movements	Early Morning		Early Morning		Late Evening	Saturday Afternoon
	Day	Weekend	Day	Weekend	Day	Week	Week	Day	Weekend	Week	06:30-06:44	06:30-06:59	06:30-06:44	06:30-06:59	22:00-22:30	12:30-13:00
21/03/2016	277	-	592	-	301	1,649	3,515	315	-	1,866	0	3	2	3	0	-
22/03/2016	300	-	592	-	327			292	-		2	6	0	0	0	-
23/03/2016	298	-	592	-	325			294	-		2	4	0	2	0	-
24/03/2016	311	-	592	-	343			281	-		2	4	0	2	0	-
25/03/2016	161	-	164	-	180			3	-		0	0	2	6	0	-
26/03/2016	64	160	100	280	71			36	120		1	4	1	2	-	2
27/03/2016	96		200		103			104			-	-	-	-	0	-
28/03/2016	179	-	198	-	194	1,603	3,558	19	-	1,955	0	0	2	6	0	-
29/03/2016	282	-	592	-	307			310	-		1	5	1	1	0	-
30/03/2016	283	-	592	-	307			309	-		1	5	1	1	0	-
31/03/2016	271	-	592	-	292			321	-		0	5	2	1	0	-
01/04/2016	263	-	592	-	284			329	-		0	4	2	2	0	-
02/04/2016	77	203	100	280	81			23	77		2	4	0	2	-	4
03/04/2016	126		200		137			74			-	-	-	-	2	-
04/04/2016	286	-	592	-	310	1,781	4,050	306	-	2,269	1	5	1	1	0	-
05/04/2016	290	-	592	-	314			302	-		1	5	1	1	0	-
06/04/2016	299	-	592	-	329			293	-		2	6	0	0	0	-
07/04/2016	291	-	592	-	313			301	-		2	5	0	1	0	-
08/04/2016	287	-	592	-	309			305	-		2	5	0	1	0	-
09/04/2016	72	197	100	280	72			28	83		2	5	0	1	-	1
10/04/2016	125		200		134			75			-	-	-	-	0	-
11/04/2016	292	-	592	-	318	1,822	4,050	300	-	2,228	0	6	2	0	2	-
12/04/2016	299	-	592	-	328			293	-		1	6	1	0	0	-
13/04/2016	294	-	592	-	321			298	-		1	5	1	1	0	-
14/04/2016	300	-	592	-	326			292	-		1	6	1	0	1	-
15/04/2016	288	-	592	-	312			304	-		1	6	1	0	0	-
16/04/2016	74	200	100	280	79			26	80		1	3	1	3	-	2
17/04/2016	126		200		137			74			-	-	-	-	0	-

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								Actual Movements		Factored Movements	Early Morning		Early Morning		Late Evening	Saturday Afternoon
	Day	Weekend	Day	Weekend	Day	Week	Week	Day	Weekend	Week	06:30-06:44	06:30-06:59	06:30-06:44	06:30-06:59	22:00-22:30	12:30-13:00
18/04/2016	305	-	592	-	334	1,830	4,050	287	-	2,220	0	4	2	2	0	-
19/04/2016	293	-	592	-	318			299	-		2	4	0	2	0	-
20/04/2016	307	-	592	-	338			285	-		1	5	1	1	0	-
21/04/2016	301	-	592	-	328			291	-		0	5	2	1	0	-
22/04/2016	277	-	592	-	301			315	-		1	5	1	1	0	-
23/04/2016	72	196	100	280	77			28	84		2	3	0	3	-	1
24/04/2016	124		200		135			76			-	-	-	-	1	-
25/04/2016	291	-	592	-	316	1,785	4,050	301	-	2,265	0	4	2	2	0	-
26/04/2016	304	-	592	-	333			288	-		2	5	0	1	2	-
27/04/2016	279	-	592	-	304			313	-		0	5	2	1	0	-
28/04/2016	301	-	592	-	328			291	-		2	6	0	0	0	-
29/04/2016	288	-	592	-	311			304	-		2	4	0	2	0	-
30/04/2016	72	183	100	280	76			28	97		2	4	0	2	-	1
01/05/2016	111		200		118			89			-	-	-	-	0	-
02/05/2016	212	-	248	-	230	1,744	3,620	36	-	1,876	0	0	2	6	1	-
03/05/2016	306	-	592	-	335			286	-		2	5	0	1	0	-
04/05/2016	311	-	592	-	341			281	-		2	6	0	0	1	-
05/05/2016	295	-	592	-	321			297	-		2	5	0	1	0	-
06/05/2016	270	-	592	-	290			322	-		2	6	0	0	1	-
07/05/2016	76	212	100	280	81			24	68		2	6	0	0	-	2
08/05/2016	136		200		146			64			-	-	-	-	0	-
09/05/2016	302	-	592	-	328	1,841	4,050	290	-	2,209	1	5	1	1	1	-
10/05/2016	308	-	592	-	335			284	-		2	6	0	0	1	-
11/05/2016	253	-	592	-	278			339	-		1	3	1	3	6	-
12/05/2016	313	-	592	-	344			279	-		2	6	0	0	0	-
13/05/2016	300	-	592	-	324			292	-		1	5	1	1	1	-
14/05/2016	79	216	100	280	83			21	64		2	5	0	1	-	3
15/05/2016	137		200		148			63			-	-	-	-	0	-

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								Actual Movements		Factored Movements	Early Morning		Early Morning		Late Evening	Saturday Afternoon
	Day	Weekend	Day	Weekend	Day	Week	Week	Day	Weekend	Week	06:30-06:44	06:30-06:59	06:30-06:44	06:30-06:59	22:00-22:30	12:30-13:00
16/05/2016	304	-	592	-	330	1,882	4,050	288	-	2,168	1	6	1	0	0	-
17/05/2016	307	-	592	-	334			285	-		1	6	1	0	0	-
18/05/2016	311	-	592	-	339			281	-		2	6	0	0	1	-
19/05/2016	303	-	592	-	330			289	-		2	4	0	2	1	-
20/05/2016	285	-	592	-	306			307	-		1	3	1	3	2	-
21/05/2016	81	227	100	280	84			19	53		1	5	1	1	-	3
22/05/2016	146		200		159			54			-	-	-	-	0	-
23/05/2016	304	-	592	-	331	1,910	4,050	288	-	2,140	2	5	0	1	1	-
24/05/2016	305	-	592	-	335			287	-		2	4	0	2	1	-
25/05/2016	307	-	592	-	335			285	-		2	6	0	0	1	-
26/05/2016	309	-	592	-	339			283	-		2	3	0	3	1	-
27/05/2016	316	-	592	-	342			276	-		1	5	1	1	0	-
28/05/2016	81	213	100	280	84			19	67		1	5	1	1	-	4
29/05/2016	132		200		144			68			-	-	-	-	0	-
30/05/2016	200	-	230	-	216	1,748	3,598	30	-	1,849	0	0	2	6	0	-
31/05/2016	280	-	592	-	305			312	-		1	2	1	4	3	-
01/06/2016	310	-	592	-	338			282	-		1	6	1	0	0	-
02/06/2016	318	-	592	-	347			274	-		1	5	1	1	1	-
03/06/2016	288	-	592	-	308			304	-		2	5	0	1	0	-
04/06/2016	74	218	100	280	77			26	62		1	3	1	3	-	2
05/06/2016	144		200		157			56			-	-	-	-	1	-
06/06/2016	313	-	592	-	343	1,934	4,050	279	-	2,116	1	5	1	1	1	-
07/06/2016	301	-	592	-	329			291	-		2	5	0	1	5	-
08/06/2016	315	-	592	-	348			277	-		2	6	0	0	0	-
09/06/2016	315	-	592	-	345			277	-		1	5	1	1	0	-
10/06/2016	294	-	592	-	317			298	-		2	5	0	1	0	-
11/06/2016	77	232	100	280	81			23	48		1	4	1	2	-	3
12/06/2016	155		200		171			45			-	-	-	-	2	-

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								Actual Movements		Factored Movements	Early Morning		Early Morning		Late Evening	Saturday Afternoon
	Day	Weekend	Day	Weekend	Day	Week	Week	Day	Weekend	Week	06:30-06:44	06:30-06:59	06:30-06:44	06:30-06:59	22:00-22:30	12:30-13:00
13/06/2016	308	-	592	-	338	1,891	4,050	284	-	2,159	1	6	1	0	0	-
14/06/2016	310	-	592	-	340			282	-		1	5	1	1	1	-
15/06/2016	299	-	592	-	328			293	-		1	4	1	2	2	-
16/06/2016	307	-	592	-	335			285	-		1	5	1	1	1	-
17/06/2016	281	-	592	-	301			311	-		2	6	0	0	1	-
18/06/2016	77	231	100	280	81			23	49		1	3	1	3	-	3
19/06/2016	154		200		169			46			-	-	-	-	1	-
20/06/2016	299	-	592	-	326	1,916	4,050	293	-	2,134	1	4	1	2	1	-
21/06/2016	322	-	592	-	355			270	-		2	6	0	0	0	-
22/06/2016	306	-	592	-	338			286	-		1	6	1	0	1	-
23/06/2016	301	-	592	-	334			291	-		0	3	2	3	3	-
24/06/2016	286	-	592	-	312			306	-		1	5	1	1	2	-
25/06/2016	77	231	100	280	81			23	49		2	5	0	1	-	5
26/06/2016	154		200		171			46			-	-	-	-	3	-
27/06/2016	297	-	592	-	324	1,846	4,050	295	-	2,204	1	4	1	2	2	-
28/06/2016	289	-	592	-	316			303	-		0	4	2	2	0	-
29/06/2016	301	-	592	-	330			291	-		1	4	1	2	0	-
30/06/2016	312	-	592	-	344			280	-		1	6	1	0	3	-
01/07/2016	282	-	592	-	304			310	-		2	5	0	1	1	-
02/07/2016	70	214	100	280	72			30	66		1	3	1	3	-	2
03/07/2016	144		200		156			56			-	-	-	-	1	-
04/07/2016	297	-	592	-	320	1,847	4,050	295	-	2,203	2	5	0	1	0	-
05/07/2016	297	-	592	-	319			295	-		2	6	0	0	1	-
06/07/2016	306	-	592	-	333			286	-		1	6	1	0	0	-
07/07/2016	314	-	592	-	342			278	-		0	6	2	0	0	-
08/07/2016	284	-	592	-	306			308	-		1	4	1	2	1	-
09/07/2016	71	216	100	280	72			29	64		1	4	1	2	-	4
10/07/2016	145		200		155			55			-	-	-	-	0	-

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								Actual Movements		Factored Movements	Early Morning		Early Morning		Late Evening	Saturday Afternoon
	Day	Weekend	Day	Weekend	Day	Week	Week	Day	Weekend	Week	06:30-06:44	06:30-06:59	06:30-06:44	06:30-06:59	22:00-22:30	12:30-13:00
11/07/2016	316	-	592	-	341	1,847	4,050	276	-	2,203	2	5	0	1	3	-
12/07/2016	297	-	592	-	320			295	-		0	6	2	0	0	-
13/07/2016	296	-	592	-	321			296	-		2	6	0	0	2	-
14/07/2016	327	-	592	-	356			265	-		0	5	2	1	1	-
15/07/2016	270	-	592	-	288			322	-		2	4	0	2	3	-
16/07/2016	65	211	100	280	66			35	69		0	4	2	2	-	3
17/07/2016	146		200		155			54			-	-	-	-	3	-
18/07/2016	294	-	592	-	316	1,774	4,050	298	-	2,276	1	4	1	2	2	-
19/07/2016	286	-	592	-	307			306	-		1	4	1	2	0	-
20/07/2016	294	-	592	-	319			298	-		1	5	1	1	2	-
21/07/2016	296	-	592	-	320			296	-		2	4	0	2	0	-
22/07/2016	270	-	592	-	288			322	-		0	2	2	4	2	-
23/07/2016	64	213	100	280	64			36	67		0	2	2	4	-	3
24/07/2016	149		200		160			51			-	-	-	-	1	-
25/07/2016	289	-	592	-	310	1,767	4,050	303	-	2,283	1	6	1	0	1	-
26/07/2016	296	-	592	-	320			296	-		1	5	1	1	0	-
27/07/2016	300	-	592	-	324			292	-		0	5	2	1	0	-
28/07/2016	294	-	592	-	316			298	-		1	5	1	1	0	-
29/07/2016	264	-	592	-	280			328	-		2	6	0	0	2	-
30/07/2016	67	206	100	280	67			33	74		1	5	1	1	-	4
31/07/2016	139		200		149			61			-	-	-	-	2	-
01/08/2016	273	-	592	-	292	1,709	4,050	319	-	2,341	2	6	0	0	2	-
02/08/2016	277	-	592	-	299			315	-		0	4	2	2	0	-
03/08/2016	277	-	592	-	299			315	-		2	6	0	0	0	-
04/08/2016	285	-	592	-	309			307	-		2	5	0	1	3	-
05/08/2016	266	-	592	-	284			326	-		1	4	1	2	0	-
06/08/2016	72	214	100	280	72			28	66		1	3	1	3	-	5
07/08/2016	142		200		154			58			-	-	-	-	0	-

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								Actual Movements		Factored Movements	Early Morning		Early Morning		Late Evening	Saturday Afternoon
	Day	Weekend	Day	Weekend	Day	Week	Week	Day	Weekend	Week	06:30-06:44	06:30-06:59	06:30-06:44	06:30-06:59	22:00-22:30	12:30-13:00
08/08/2016	276	-	592	-	300	1,747	4,050	316	-	2,303	2	6	0	0	0	-
09/08/2016	276	-	592	-	300			316	-		1	5	1	1	0	-
10/08/2016	290	-	592	-	319			302	-		2	6	0	0	0	-
11/08/2016	289	-	592	-	315			303	-		2	5	0	1	1	-
12/08/2016	269	-	592	-	289			323	-		2	5	0	1	1	-
13/08/2016	70	211	100	280	72			30	69		1	4	1	2	-	1
14/08/2016	141		200		152			59			-	-	-	-	0	-
15/08/2016	273	-	592	-	295	1,739	4,050	319	-	2,311	1	4	1	2	1	-
16/08/2016	272	-	592	-	294			320	-		1	5	1	1	0	-
17/08/2016	286	-	592	-	312			306	-		2	6	0	0	0	-
18/08/2016	297	-	592	-	325			295	-		2	6	0	0	0	-
19/08/2016	259	-	592	-	284			333	-		2	5	0	1	0	-
20/08/2016	72	214	100	280	75			28	66		1	3	1	3	-	5
21/08/2016	142		200		154			58			-	-	-	-	0	-
22/08/2016	280	-	592	-	304	1,718	4,050	312	-	2,332	2	4	0	2	1	-
23/08/2016	275	-	592	-	300			317	-		1	6	1	0	1	-
24/08/2016	267	-	592	-	290			325	-		0	6	2	0	0	-
25/08/2016	294	-	592	-	323			298	-		2	5	0	1	0	-
26/08/2016	268	-	592	-	289			324	-		2	6	0	0	2	-
27/08/2016	74	198	100	280	78			26	82		1	4	1	2	-	3
28/08/2016	124		200		135			76			-	-	-	-	0	-
29/08/2016	204	-	230	-	221	1,776	3,598	26	-	1,822	0	0	2	6	0	-
30/08/2016	292	-	592	-	319			300	-		1	5	1	1	0	-
31/08/2016	305	-	592	-	336			287	-		2	6	0	0	0	-
01/09/2016	310	-	592	-	341			282	-		2	4	0	2	0	-
02/09/2016	287	-	592	-	312			305	-		1	5	1	1	0	-
03/09/2016	71	226	100	280	76			29	54		0	5	2	1	-	2
04/09/2016	155		200		170			45			-	-	-	-	2	-

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								Actual Movements		Factored Movements	Early Morning		Early Morning		Late Evening	Saturday Afternoon
	Day	Weekend	Day	Weekend	Day	Week	Week	Day	Weekend	Week	06:30-06:44	06:30-06:59	06:30-06:44	06:30-06:59	22:00-22:30	12:30-13:00
05/09/2016	293	-	592	-	324	1,747	4,050	299	-	2,303	2	5	0	1	1	-
06/09/2016	176	-	592	-	191			416	-		0	0	2	6	0	-
07/09/2016	291	-	592	-	316			301	-		0	5	2	1	0	-
08/09/2016	308	-	592	-	338			284	-		2	6	0	0	0	-
09/09/2016	298	-	592	-	328			294	-		2	5	0	1	0	-
10/09/2016	73	229	100	280	77			27	51		1	5	1	1	-	1
11/09/2016	156		200		173			44			-	-	-	-	0	-
12/09/2016	306	-	592	-	335	1,915	4,050	286	-	2,135	2	5	0	1	0	-
13/09/2016	305	-	592	-	334			287	-		2	6	0	0	0	-
14/09/2016	309	-	592	-	343			283	-		2	6	0	0	1	-
15/09/2016	318	-	592	-	349			274	-		2	6	0	0	1	-
16/09/2016	299	-	592	-	323			293	-		1	6	1	0	0	-
17/09/2016	72	218	100	280	74			28	62		1	5	1	1	-	2
18/09/2016	146		200		157			54			-	-	-	-	0	-
19/09/2016	299	-	592	-	326	1,920	4,050	293	-	2,130	2	5	0	1	0	-
20/09/2016	310	-	592	-	340			282	-		2	6	0	0	0	-
21/09/2016	318	-	592	-	350			274	-		2	6	0	0	0	-
22/09/2016	309	-	592	-	336			283	-		2	5	0	1	0	-
23/09/2016	296	-	592	-	321			296	-		2	6	0	0	0	-
24/09/2016	78	229	100	280	82			22	51		2	6	0	0	-	2
25/09/2016	151		200		165			49			-	-	-	-	2	-
26/09/2016	302	-	592	-	329	1,923	4,050	290	-	2,127	2	5	0	1	0	-
27/09/2016	306	-	592	-	338			286	-		2	5	0	1	0	-
28/09/2016	317	-	592	-	352			275	-		2	6	0	0	0	-
29/09/2016	309	-	592	-	338			283	-		2	6	0	0	1	-
30/09/2016	307	-	592	-	335			285	-		1	5	1	1	0	-
01/10/2016	73	215	100	280	77			27	65		2	4	0	2	-	3
02/10/2016	142		200		155			58			-	-	-	-	0	-

[1] Factored Movements have been rounded to the nearest whole number

[2] Permitted Late Movements comprise 400 per year and not more than 150 in any consecutive 3 months for each time period

Bickerdike Allen Partners
Architecture Acoustics Technology

London City Airport: Record of Daily and Noise Factored Aircraft Movements 2016

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]	
								Actual Movements		Factored Movements	Early Morning		Early Morning		Late Evening	Saturday Afternoon
	Day	Weekend	Day	Weekend	Day	Week	Week	Day	Weekend	Week	06:30-06:44	06:30-06:59	06:30-06:44	06:30-06:59	22:00-22:30	12:30-13:00
03/10/2016	291	-	592	-	320	1,906	4,050	301	-	2,144	1	5	1	1	0	-
04/10/2016	300	-	592	-	333			292	-		2	6	0	0	0	-
05/10/2016	309	-	592	-	343			283	-		1	4	1	2	0	-
06/10/2016	311	-	592	-	343			281	-		2	6	0	0	0	-
07/10/2016	311	-	592	-	343			281	-		2	5	0	1	0	-
08/10/2016	77	210	100	280	82			23	70		2	6	0	0	-	1
09/10/2016	133		200		144			67			-	-	-	-	2	-
10/10/2016	292	-	592	-	321	1,888	4,050	300	-	2,162	2	6	0	0	1	-
11/10/2016	299	-	592	-	327			293	-		2	6	0	0	0	-
12/10/2016	305	-	592	-	333			287	-		1	6	1	0	0	-
13/10/2016	314	-	592	-	347			278	-		2	5	0	1	0	-
14/10/2016	296	-	592	-	324			296	-		2	6	0	0	0	-
15/10/2016	78	218	100	280	83			22	62		0	5	2	1	-	6
16/10/2016	140		200		154			60			-	-	-	-	0	-
17/10/2016	305	-	592	-	338	1,788	4,050	287	-	2,262	1	6	1	0	2	-
18/10/2016	299	-	592	-	333			293	-		0	6	2	0	0	-
19/10/2016	300	-	592	-	333			292	-		0	6	2	0	0	-
20/10/2016	307	-	592	-	341			285	-		0	6	2	0	0	-
21/10/2016	207	-	592	-	229			385	-		2	5	0	1	7	-
22/10/2016	70	198	100	280	74			30	82		1	5	1	1	-	6
23/10/2016	128		200		141			72			-	-	-	-	1	-
24/10/2016	297	-	592	-	331	1,870	4,050	295	-	2,180	0	4	2	2	2	-
25/10/2016	298	-	592	-	333			294	-		2	5	0	1	0	-
26/10/2016	297	-	592	-	333			295	-		2	6	0	0	0	-
27/10/2016	286	-	592	-	316			306	-		1	5	1	1	1	-
28/10/2016	299	-	592	-	330			293	-		1	5	1	1	0	-
29/10/2016	73	209	100	280	81			27	71		2	5	0	1	-	3
30/10/2016	136		200		146			64			-	-	-	-	0	-

[1] Factored Movements have been rounded to the nearest whole number

[2] Permitted Late Movements comprise 400 per year and not more than 150 in any consecutive 3 months for each time period

Bickerdike Allen Partners
Architecture Acoustics Technology

London City Airport: Record of Daily and Noise Factored Aircraft Movements 2016

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]	
								Actual Movements		Factored Movements	Early Morning		Early Morning		Late Evening	Saturday Afternoon
	Day	Weekend	Day	Weekend	Day	Week	Week	Day	Weekend	Week	06:30-06:44	06:30-06:59	06:30-06:44	06:30-06:59	22:00-22:30	12:30-13:00
31/10/2016	204	-	592	-	229	1,731	4,050	388	-	2,319	0	1	2	5	1	-
01/11/2016	236	-	592	-	260			356	-		1	2	1	4	2	-
02/11/2016	303	-	592	-	336			289	-		2	5	0	1	0	-
03/11/2016	304	-	592	-	336			288	-		2	6	0	0	0	-
04/11/2016	298	-	592	-	329			294	-		1	5	1	1	1	-
05/11/2016	74	221	100	280	80			26	59		2	6	0	0	-	0
06/11/2016	147		200		160			53			-	-	-	-	0	-
07/11/2016	301	-	592	-	333	1,875	4,050	291	-	2,175	2	6	0	0	0	-
08/11/2016	295	-	592	-	326			297	-		1	6	1	0	0	-
09/11/2016	298	-	592	-	333			294	-		1	6	1	0	0	-
10/11/2016	299	-	592	-	331			293	-		0	6	2	0	0	-
11/11/2016	299	-	592	-	330			293	-		1	6	1	0	1	-
12/11/2016	71	205	100	280	77			29	75		0	6	2	0	-	2
13/11/2016	134		200		145			66			-	-	-	-	0	-
14/11/2016	292	-	592	-	321	1,876	4,050	300	-	2,174	1	4	1	2	0	-
15/11/2016	289	-	592	-	318			303	-		2	5	0	1	0	-
16/11/2016	305	-	592	-	336			287	-		2	6	0	0	0	-
17/11/2016	314	-	592	-	348			278	-		2	5	0	1	1	-
18/11/2016	295	-	592	-	321			297	-		1	5	1	1	1	-
19/11/2016	77	216	100	280	83			23	64		2	6	0	0	-	4
20/11/2016	139		200		149			61			-	-	-	-	1	-
21/11/2016	279	-	592	-	306	1,851	4,050	313	-	2,199	1	5	1	1	2	-
22/11/2016	306	-	592	-	338			286	-		1	4	1	2	0	-
23/11/2016	296	-	592	-	325			296	-		1	6	1	0	0	-
24/11/2016	300	-	592	-	329			292	-		2	4	0	2	0	-
25/11/2016	295	-	592	-	324			297	-		2	5	0	1	2	-
26/11/2016	78	219	100	280	82			22	61		2	4	0	2	-	0
27/11/2016	141		200		147			59			-	-	-	-	0	-

[1] Factored Movements have been rounded to the nearest whole number

[2] Permitted Late Movements comprise 400 per year and not more than 150 in any consecutive 3 months for each time period

Bickerdike Allen Partners
Architecture Acoustics Technology

London City Airport: Record of Daily and Noise Factored Aircraft Movements 2016

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]	
								Actual Movements		Factored Movements	Early Morning		Early Morning		Late Evening	Saturday Afternoon
	Day	Weekend	Day	Weekend	Day	Week	Week	Day	Weekend	Week	06:30-06:44	06:30-06:59	06:30-06:44	06:30-06:59	22:00-22:30	12:30-13:00
28/11/2016	308	-	592	-	339	1,910	4,050	284	-	2,140	1	5	1	1	0	-
29/11/2016	302	-	592	-	331			290	-		1	5	1	1	0	-
30/11/2016	318	-	592	-	354			274	-		1	5	1	1	1	-
01/12/2016	308	-	592	-	341			284	-		1	5	1	1	0	-
02/12/2016	288	-	592	-	315			304	-		1	4	1	2	0	-
03/12/2016	75	216	100	280	80			25	64		2	6	0	0	-	1
04/12/2016	141		200		150			59			-	-	-	-	0	-
05/12/2016	272	-	592	-	297	1,749	4,050	320	-	2,301	0	1	2	5	0	-
06/12/2016	220	-	592	-	247			372	-		1	4	1	2	1	-
07/12/2016	313	-	592	-	348			279	-		2	6	0	0	0	-
08/12/2016	306	-	592	-	336			286	-		2	5	0	1	0	-
09/12/2016	276	-	592	-	299			316	-		2	5	0	1	1	-
10/12/2016	70	208	100	280	74			30	72		2	6	0	0	-	2
11/12/2016	138		200		147			62			-	-	-	-	1	-
12/12/2016	290	-	592	-	319	1,785	4,050	302	-	2,265	1	4	1	2	2	-
13/12/2016	300	-	592	-	331			292	-		2	5	0	1	0	-
14/12/2016	298	-	592	-	329			294	-		1	6	1	0	1	-
15/12/2016	272	-	592	-	302			320	-		0	2	2	4	2	-
16/12/2016	301	-	592	-	327			291	-		1	6	1	0	0	-
17/12/2016	9	161	100	280	11			91	119		0	2	2	4	-	0
18/12/2016	152		200		166			48			-	-	-	-	0	-
19/12/2016	262	-	592	-	289	1,407	3,825	330	-	2,418	1	6	1	0	0	-
20/12/2016	252	-	592	-	273			340	-		1	4	1	2	0	-
21/12/2016	251	-	592	-	275			341	-		2	6	0	0	0	-
22/12/2016	226	-	592	-	252			366	-		1	6	1	0	3	-
23/12/2016	229	-	592	-	247			363	-		1	4	1	2	0	-
24/12/2016	66	66	100	100	72			34	34		0	3	2	3	-	3
25/12/2016	0		0		0			0			-	-	-	-	0	-

[1] Factored Movements have been rounded to the nearest whole number

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Bickerdike Allen Partners
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London City Airport: Record of Daily and Noise Factored Aircraft Movements 2016

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]	
								Actual Movements		Factored Movements	Early Morning		Early Morning		Late Evening	Saturday Afternoon
	Day	Weekend	Day	Weekend	Day	Week	Week	Day	Weekend	Week	06:30-06:44	06:30-06:59	06:30-06:44	06:30-06:59	22:00-22:30	12:30-13:00
26/12/2016	100	-	100	-	118	670	2,883	0	-	2,212	0	0	2	6	0	-
27/12/2016	164	-	330	-	180			166	-		0	0	2	6	1	-
28/12/2016	110	-	592	-	120			482	-		0	1	2	5	0	-
29/12/2016	196	-	592	-	215			396	-		0	2	2	4	0	-
30/12/2016	10	-	592	-	13			582	-		1	2	1	4	0	-
31/12/2016	24	24	100	100	24			76	76		0	0	2	6	-	5
Annual Total	84,955	0	120,000		92,401	-	120,000	35,045	-	27,599	367	1421	-	-	175	142

[1] Factored Movements have been rounded to the nearest whole number

[2] Permitted Late Movements comprise 400 per year and not more than 150 in any consecutive 3 months for each time period

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APPENDIX F

NTK Status Reports

NOISE EVENTS

DATE	NMT1 Events	NMT2 Events	NMT3 Events	NMT4 Events	FIDS
01/01/2016	Yes	Yes	Yes	Yes	Yes
02/01/2016	Yes	Yes	Yes	Yes	Yes
03/01/2016	Yes	Yes	Yes	Yes	Yes
04/01/2016	Yes	Yes	Yes	Yes	Yes
05/01/2016	Yes	Yes	Yes	Yes	Yes
06/01/2016	Yes	Yes	Yes	Yes	Yes
07/01/2016	Yes	Yes	Yes	Yes	Yes
08/01/2016	Yes	Yes	Yes	Yes	Yes
09/01/2016	Yes	Yes	Yes	Yes	Yes
10/01/2016	Yes	Yes	Yes	Yes	Yes
11/01/2016	Yes	Yes	Yes	Yes	Yes
12/01/2016	Yes	Yes	Yes	Yes	Yes
13/01/2016	Yes	Yes	Yes	Yes	Yes
14/01/2016	Yes	Part	Yes	Yes	Yes
15/01/2016	Yes	Part	Yes	Yes	Yes
16/01/2016	Yes	Part	Yes	Yes	Yes
17/01/2016	Yes	Part	Yes	Yes	Yes
18/01/2016	Yes	Part	Yes	Yes	Yes
19/01/2016	Yes	Yes	Yes	Yes	Yes
20/01/2016	Yes	Yes	Yes	Yes	Yes
21/01/2016	Yes	Yes	Yes	Yes	Yes
22/01/2016	Yes	Yes	Yes	Yes	Yes
23/01/2016	Yes	Yes	Yes	Yes	Yes
24/01/2016	Yes	Yes	Yes	Yes	Yes
25/01/2016	Yes	Yes	Yes	Yes	Yes
26/01/2016	Yes	Yes	Yes	Yes	Yes
27/01/2016	Yes	Yes	Yes	Yes	Yes
28/01/2016	Yes	Yes	Yes	Yes	Yes
29/01/2016	Yes	Yes	Yes	Yes	Yes
30/01/2016	Yes	Yes	Yes	Yes	Yes
31/01/2016	Yes	Yes	Yes	Yes	Yes
01/02/2016	Yes	Yes	Yes	Yes	Yes
02/02/2016	Yes	Yes	Yes	Yes	Yes
03/02/2016	Yes	Yes	Yes	Yes	Yes
04/02/2016	Yes	Yes	Yes	Yes	Yes
05/02/2016	Yes	Yes	Yes	Yes	Yes
06/02/2016	Yes	Yes	Yes	Yes	Yes
07/02/2016	Yes	Yes	Yes	Yes	Yes
08/02/2016	Yes	Yes	Yes	Yes	Yes
09/02/2016	Yes	Yes	Yes	Yes	Yes
10/02/2016	Yes	Yes	Yes	Yes	Yes
11/02/2016	Yes	Yes	Yes	Yes	Yes
12/02/2016	Yes	Yes	Yes	Yes	Yes
13/02/2016	Yes	Yes	Yes	Yes	Yes
14/02/2016	Yes	Yes	Yes	Yes	Yes
15/02/2016	Yes	Yes	Yes	Yes	Yes

NOISE EVENTS

DATE	NMT1 Events	NMT2 Events	NMT3 Events	NMT4 Events	FIDS
16/02/2016	Yes	Yes	Yes	Yes	Yes
17/02/2016	Yes	Yes	Yes	Yes	Yes
18/02/2016	Yes	Yes	Yes	Yes	Yes
19/02/2016	Yes	Yes	Yes	Yes	Yes
20/02/2016	Yes	Yes	Yes	Yes	Yes
21/02/2016	Yes	Yes	Yes	Yes	Yes
22/02/2016	Yes	Yes	Yes	Yes	Yes
23/02/2016	Yes	Yes	Yes	Yes	Yes
24/02/2016	Yes	Yes	Yes	Yes	Yes
25/02/2016	Yes	Yes	Yes	Yes	Yes
26/02/2016	Yes	Yes	Yes	Yes	Yes
27/02/2016	Yes	Yes	Yes	Yes	Yes
28/02/2016	Yes	Yes	Yes	Yes	Yes
29/02/2016	Yes	Yes	Yes	Yes	Yes
01/03/2016	Yes	Yes	Yes	Yes	Yes
02/03/2016	Yes	Yes	Yes	Yes	Yes
03/03/2016	Yes	Yes	Yes	Yes	Yes
04/03/2016	Yes	Yes	Yes	Yes	Yes
05/03/2016	Yes	Yes	Yes	Yes	Yes
06/03/2016	Yes	Yes	Yes	Yes	Yes
07/03/2016	Yes	Yes	Yes	Yes	Yes
08/03/2016	Yes	Yes	Yes	Yes	Yes
09/03/2016	Yes	Yes	Yes	Yes	Yes
10/03/2016	Yes	Yes	Yes	Yes	Yes
11/03/2016	Yes	Yes	Yes	Yes	Yes
12/03/2016	Yes	Yes	Yes	Yes	Yes
13/03/2016	Yes	Yes	Yes	Yes	Yes
14/03/2016	Yes	Yes	Yes	Yes	Yes
15/03/2016	Yes	Yes	Yes	Yes	Yes
16/03/2016	Yes	Yes	Yes	Yes	Yes
17/03/2016	Yes	Yes	Yes	Yes	Yes
18/03/2016	Yes	Yes	Yes	Yes	Yes
19/03/2016	Yes	Yes	Yes	Yes	Yes
20/03/2016	Yes	Yes	Yes	Yes	Yes
21/03/2016	Yes	Yes	Yes	Yes	Yes
22/03/2016	Yes	Yes	Yes	Yes	Yes
23/03/2016	Yes	Yes	Yes	Yes	Yes
24/03/2016	Yes	Yes	Yes	Yes	Yes
25/03/2016	Yes	Yes	Yes	Yes	Yes
26/03/2016	Yes	Yes	Yes	Yes	Yes
27/03/2016	Yes	Yes	Yes	Yes	Yes
28/03/2016	Yes	Yes	Yes	Yes	Yes
29/03/2016	Yes	Yes	Yes	Yes	Yes
30/03/2016	Yes	Yes	Yes	Yes	Yes
31/03/2016	Yes	Yes	Yes	Yes	Yes
01/04/2016	Yes	Yes	Yes	Yes	Yes

NOISE EVENTS

DATE	NMT1 Events	NMT2 Events	NMT3 Events	NMT4 Events	FIDS
02/04/2016	Yes	Yes	Yes	Yes	Yes
03/04/2016	Yes	Yes	Yes	Yes	Yes
04/04/2016	Yes	Yes	Yes	Yes	Yes
05/04/2016	Yes	Yes	Yes	Yes	Yes
06/04/2016	Yes	Yes	Yes	Yes	Yes
07/04/2016	Yes	Yes	Yes	Yes	Yes
08/04/2016	Yes	Yes	Yes	Yes	Yes
09/04/2016	Yes	Yes	Yes	Yes	Yes
10/04/2016	Yes	Yes	Yes	Yes	Yes
11/04/2016	Yes	Yes	Yes	Yes	Yes
12/04/2016	Yes	Yes	Yes	Yes	Yes
13/04/2016	Yes	Yes	Yes	Yes	Yes
14/04/2016	Yes	Yes	Yes	Yes	Yes
15/04/2016	Yes	Yes	Yes	Yes	Yes
16/04/2016	Yes	Yes	Yes	Yes	Yes
17/04/2016	Yes	Yes	Yes	Yes	Yes
18/04/2016	Yes	Yes	Yes	Yes	Yes
19/04/2016	Yes	Yes	Yes	Yes	Yes
20/04/2016	Yes	Yes	Yes	Yes	Yes
21/04/2016	Yes	Yes	Yes	Yes	Yes
22/04/2016	Yes	Yes	Yes	Yes	Yes
23/04/2016	Yes	Yes	Yes	Yes	Yes
24/04/2016	Yes	Yes	Yes	Yes	Yes
25/04/2016	Yes	Yes	Yes	Yes	Yes
26/04/2016	Yes	Yes	Yes	Yes	Yes
27/04/2016	Yes	Yes	Yes	Yes	Yes
28/04/2016	Yes	Yes	Yes	Yes	Yes
29/04/2016	Yes	Yes	Yes	Yes	Yes
30/04/2016	Yes	Yes	Yes	Yes	Yes
01/05/2016	Yes	Yes	Yes	Yes	Yes
02/05/2016	Yes	Yes	Yes	Yes	Yes
03/05/2016	Yes	Yes	Yes	Yes	Yes
04/05/2016	Yes	Yes	Yes	Yes	Yes
05/05/2016	Yes	Yes	Yes	Yes	Yes
06/05/2016	Yes	Yes	Yes	Yes	Yes
07/05/2016	Yes	Yes	Yes	Yes	Yes
08/05/2016	Yes	Yes	Yes	Yes	Yes
09/05/2016	Yes	Yes	Yes	Yes	Yes
10/05/2016	Yes	Yes	Yes	Yes	Yes
11/05/2016	Yes	Yes	Yes	Yes	Yes
12/05/2016	Yes	Yes	Yes	Yes	Yes
13/05/2016	Yes	Yes	Yes	Yes	Yes
14/05/2016	Yes	Yes	Yes	Yes	Yes
15/05/2016	Yes	Yes	Yes	Yes	Yes
16/05/2016	Yes	Yes	Yes	Yes	Yes
17/05/2016	Yes	Yes	Yes	Yes	Yes

NOISE EVENTS

DATE	NMT1 Events	NMT2 Events	NMT3 Events	NMT4 Events	FIDS
18/05/2016	Yes	Yes	Yes	Yes	Yes
19/05/2016	Yes	Yes	Yes	Yes	Yes
20/05/2016	Yes	Yes	Yes	Yes	Yes
21/05/2016	Yes	Yes	Yes	Yes	Yes
22/05/2016	Yes	Yes	Yes	Yes	Yes
23/05/2016	Yes	Yes	Yes	Yes	Yes
24/05/2016	Yes	Yes	Yes	Yes	Yes
25/05/2016	Yes	Yes	Yes	Yes	Yes
26/05/2016	Yes	Yes	Yes	Yes	Yes
27/05/2016	Yes	Yes	Yes	Yes	Yes
28/05/2016	Yes	Yes	Yes	Yes	Yes
29/05/2016	Yes	Yes	Yes	Yes	Yes
30/05/2016	Yes	Yes	Yes	Yes	Yes
31/05/2016	Yes	Yes	Yes	Yes	Yes
01/06/2016	Yes	Yes	Yes	Yes	Yes
02/06/2016	Yes	Yes	Yes	Yes	Yes
03/06/2016	Yes	Yes	Yes	Yes	Yes
04/06/2016	Yes	Yes	Yes	Yes	Yes
05/06/2016	Yes	Yes	Yes	Yes	Yes
06/06/2016	Yes	Yes	Yes	Yes	Yes
07/06/2016	Yes	Yes	Yes	Yes	Yes
08/06/2016	Yes	Yes	Yes	Yes	Yes
09/06/2016	Yes	Yes	Yes	Yes	Yes
10/06/2016	Yes	Yes	Yes	Yes	Yes
11/06/2016	Yes	Yes	Yes	Yes	Yes
12/06/2016	Yes	Yes	Yes	Yes	Yes
13/06/2016	Yes	Yes	Yes	Yes	Yes
14/06/2016	Yes	Yes	Yes	Yes	Yes
15/06/2016	Yes	Yes	Yes	Yes	Yes
16/06/2016	Yes	Yes	Yes	Yes	Yes
17/06/2016	Yes	Yes	Yes	Yes	Yes
18/06/2016	Yes	Yes	Yes	Yes	Yes
19/06/2016	Yes	Yes	Yes	Yes	Yes
20/06/2016	Yes	Yes	Yes	Yes	Yes
21/06/2016	Yes	Yes	Yes	Yes	Yes
22/06/2016	Yes	Yes	Yes	Yes	Yes
23/06/2016	Yes	Yes	Yes	Yes	Yes
24/06/2016	Yes	Yes	Yes	Yes	Yes
25/06/2016	Yes	Yes	Yes	Yes	Yes
26/06/2016	Yes	Yes	Yes	Yes	Yes
27/06/2016	Yes	Yes	Yes	Yes	Yes
28/06/2016	Yes	Yes	Yes	Yes	Yes
29/06/2016	Yes	Yes	Yes	Yes	Yes
30/06/2016	Yes	Yes	Yes	Yes	Yes
01/07/2016	Yes	Yes	Yes	Yes	Yes
02/07/2016	Yes	Yes	Yes	Yes	Yes

NOISE EVENTS

DATE	NMT1 Events	NMT2 Events	NMT3 Events	NMT4 Events	FIDS
03/07/2016	Yes	Yes	Yes	Yes	Yes
04/07/2016	Yes	Yes	Yes	Yes	Yes
05/07/2016	Yes	Yes	Yes	Yes	Yes
06/07/2016	Yes	Yes	Yes	Yes	Yes
07/07/2016	Yes	Yes	Yes	Yes	Yes
08/07/2016	Yes	Yes	Yes	Yes	Yes
09/07/2016	Yes	Yes	Yes	Yes	Yes
10/07/2016	Yes	Yes	Yes	Yes	Yes
11/07/2016	Yes	Yes	Yes	Yes	Yes
12/07/2016	Yes	Yes	Yes	Yes	Yes
13/07/2016	Yes	Yes	Yes	Yes	Yes
14/07/2016	Yes	Yes	Yes	Yes	Yes
15/07/2016	Yes	Yes	Yes	Yes	Yes
16/07/2016	Yes	Yes	Yes	Yes	Yes
17/07/2016	Yes	Yes	Yes	Yes	Yes
18/07/2016	Yes	Yes	Yes	Yes	Yes
19/07/2016	Yes	Yes	Yes	Yes	Yes
20/07/2016	Yes	Yes	Yes	Yes	Yes
21/07/2016	Yes	Yes	Yes	Yes	Yes
22/07/2016	Yes	Yes	Yes	Yes	Yes
23/07/2016	Yes	Yes	Yes	Yes	Yes
24/07/2016	Yes	Yes	Yes	Yes	Yes
25/07/2016	Yes	Yes	Yes	Yes	Yes
26/07/2016	Yes	Yes	Yes	Yes	Yes
27/07/2016	Yes	Yes	Yes	Yes	Yes
28/07/2016	Yes	Yes	Yes	Yes	Yes
29/07/2016	Yes	Yes	Yes	Yes	Yes
30/07/2016	Yes	Yes	Yes	Yes	Yes
31/07/2016	Yes	Yes	Yes	Yes	Yes
01/08/2016	Yes	Yes	Yes	Yes	Yes
02/08/2016	Yes	Yes	Yes	Yes	Yes
03/08/2016	Yes	Yes	Yes	Yes	Yes
04/08/2016	Yes	Yes	Yes	Yes	Yes
05/08/2016	Yes	Yes	Yes	Yes	Yes
06/08/2016	Yes	Yes	Yes	Yes	Yes
07/08/2016	Yes	Yes	Yes	Yes	Yes
08/08/2016	Yes	Yes	Yes	Yes	Yes
09/08/2016	Yes	Yes	Yes	Yes	Yes
10/08/2016	Yes	Yes	Yes	Yes	Yes
11/08/2016	Yes	Yes	Yes	Yes	Yes
12/08/2016	Yes	Yes	Yes	Yes	Yes
13/08/2016	Yes	Yes	Yes	Yes	Yes
14/08/2016	Yes	Yes	Yes	Yes	Yes
15/08/2016	Yes	Yes	Yes	Yes	Yes
16/08/2016	Yes	Yes	Yes	Yes	Yes
17/08/2016	Yes	Yes	Yes	Yes	Yes

NOISE EVENTS

DATE	NMT1 Events	NMT2 Events	NMT3 Events	NMT4 Events	FIDS
18/08/2016	Yes	Yes	Yes	Yes	Yes
19/08/2016	Yes	Yes	Yes	Yes	Yes
20/08/2016	Yes	Yes	Yes	Yes	Yes
21/08/2016	Yes	Yes	Yes	Yes	Yes
22/08/2016	No	No	Yes	Yes	Yes
23/08/2016	No	No	Yes	Yes	Yes
24/08/2016	Yes	Yes	Yes	Yes	Yes
25/08/2016	Yes	Yes	Yes	Yes	Yes
26/08/2016	Yes	Yes	Yes	Yes	Yes
27/08/2016	Yes	Yes	Yes	Yes	Yes
28/08/2016	Yes	Yes	Yes	Yes	Yes
29/08/2016	Yes	Yes	Yes	Yes	Yes
30/08/2016	Yes	Yes	Yes	Yes	Yes
31/08/2016	Yes	Yes	Yes	Yes	Yes
01/09/2016	Yes	Yes	No	No	Yes
02/09/2016	Yes	Yes	No	No	Yes
03/09/2016	Yes	Yes	No	No	Yes
04/09/2016	Yes	Yes	No	No	Yes
05/09/2016	Yes	Yes	No	No	Yes
06/09/2016	Yes	Yes	No	No	Yes
07/09/2016	Yes	Yes	Yes	Yes	Yes
08/09/2016	Yes	Yes	Yes	Yes	Yes
09/09/2016	Yes	Yes	Yes	Yes	Yes
10/09/2016	Yes	Yes	Yes	Yes	Yes
11/09/2016	Yes	Yes	Yes	Yes	Yes
12/09/2016	Yes	Yes	Yes	Yes	Yes
13/09/2016	Yes	Yes	Yes	Yes	Yes
14/09/2016	Yes	Yes	Yes	Yes	Yes
15/09/2016	Yes	Yes	Yes	Yes	Yes
16/09/2016	Yes	Yes	Yes	Yes	Yes
17/09/2016	Yes	Yes	Yes	Yes	Yes
18/09/2016	Yes	Yes	Yes	Yes	Yes
19/09/2016	Yes	Yes	Yes	Yes	Yes
20/09/2016	Yes	Yes	Yes	Yes	Yes
21/09/2016	Yes	Yes	Yes	Yes	Yes
22/09/2016	Yes	Yes	Yes	Yes	Yes
23/09/2016	Yes	Yes	Yes	Yes	Yes
24/09/2016	Yes	Yes	Yes	Yes	Yes
25/09/2016	Yes	Yes	Yes	Yes	Yes
26/09/2016	Yes	Yes	Yes	Yes	Yes
27/09/2016	Yes	Yes	Yes	Yes	Yes
28/09/2016	Yes	Yes	Yes	Yes	Yes
29/09/2016	Yes	Yes	Yes	Yes	Yes
30/09/2016	Yes	Yes	Yes	Yes	Yes
01/10/2016	Yes	Yes	Yes	Yes	Yes
02/10/2016	Yes	Yes	Yes	Yes	Yes

NOISE EVENTS

DATE	NMT1 Events	NMT2 Events	NMT3 Events	NMT4 Events	FIDS
03/10/2016	Yes	Yes	Yes	Yes	Yes
04/10/2016	Yes	Yes	Yes	Yes	Yes
05/10/2016	Yes	Yes	Yes	Yes	Yes
06/10/2016	Yes	Yes	Yes	Yes	Yes
07/10/2016	Yes	Yes	Yes	Yes	Yes
08/10/2016	Yes	Yes	Yes	Yes	Yes
09/10/2016	Yes	Yes	Yes	Yes	Yes
10/10/2016	Yes	Yes	Yes	Yes	Yes
11/10/2016	Yes	Yes	Yes	Yes	Yes
12/10/2016	Yes	Yes	Yes	Yes	Yes
13/10/2016	Yes	Yes	Yes	Yes	Yes
14/10/2016	Yes	Yes	Yes	Yes	Yes
15/10/2016	Yes	Yes	Yes	Yes	Yes
16/10/2016	Yes	Yes	Yes	Yes	Yes
17/10/2016	Yes	Yes	Yes	Yes	Yes
18/10/2016	Yes	Yes	Yes	Yes	Yes
19/10/2016	Yes	Yes	Yes	Yes	Yes
20/10/2016	Yes	Yes	Yes	Yes	Yes
21/10/2016	Yes	Yes	Yes	Yes	Yes
22/10/2016	Yes	Yes	Yes	Yes	Yes
23/10/2016	Yes	Yes	Yes	Yes	Yes
24/10/2016	Yes	Yes	Yes	Yes	Yes
25/10/2016	Yes	Yes	Yes	Yes	Yes
26/10/2016	Yes	Yes	Yes	Yes	Yes
27/10/2016	Yes	Yes	Yes	Yes	Yes
28/10/2016	Yes	Yes	Yes	Yes	Yes
29/10/2016	Yes	Yes	Yes	Yes	Yes
30/10/2016	Yes	Yes	Yes	Yes	Yes
31/10/2016	Yes	Yes	Yes	Yes	Yes
01/11/2016	Yes	Yes	Yes	Yes	Yes
02/11/2016	Yes	Yes	Yes	Yes	Yes
03/11/2016	Yes	Yes	Yes	Yes	Yes
04/11/2016	Yes	Yes	Yes	Yes	Yes
05/11/2016	Yes	Yes	Yes	Yes	Yes
06/11/2016	Yes	Yes	Yes	Yes	Yes
07/11/2016	Yes	Yes	Yes	Yes	Yes
08/11/2016	Yes	Yes	Yes	Yes	Yes
09/11/2016	Yes	Yes	Yes	Yes	Yes
10/11/2016	Yes	Yes	Yes	Yes	Yes
11/11/2016	Yes	Yes	Yes	Yes	Yes
12/11/2016	Yes	Yes	Yes	Yes	Yes
13/11/2016	Yes	Yes	Yes	Yes	Yes
14/11/2016	Yes	Yes	Yes	Yes	Yes
15/11/2016	Yes	Yes	Yes	Yes	Yes
16/11/2016	Yes	Yes	Yes	Yes	Yes
17/11/2016	Yes	Yes	Yes	Yes	Yes

NOISE EVENTS

DATE	NMT1 Events	NMT2 Events	NMT3 Events	NMT4 Events	FIDS
18/11/2016	Yes	Yes	Yes	Yes	Yes
19/11/2016	Yes	Yes	Yes	Yes	Yes
20/11/2016	Yes	Yes	Yes	Yes	Yes
21/11/2016	Yes	Yes	Yes	Yes	Yes
22/11/2016	Yes	Yes	Yes	Yes	Yes
23/11/2016	Yes	Yes	Yes	Yes	Yes
24/11/2016	Yes	Yes	Yes	Yes	Yes
25/11/2016	Yes	Yes	Yes	Yes	Yes
26/11/2016	Yes	Yes	Yes	Yes	Yes
27/11/2016	Yes	Yes	Yes	Yes	Yes
28/11/2016	Yes	Yes	Yes	Yes	Yes
29/11/2016	Yes	Yes	Yes	Yes	Yes
30/11/2016	Yes	Yes	Yes	Yes	Yes
01/12/2016	Yes	Yes	Yes	Yes	Yes
02/12/2016	Yes	Yes	Yes	Yes	Yes
03/12/2016	Yes	Yes	Yes	Yes	Yes
04/12/2016	Yes	Yes	Yes	Yes	Yes
05/12/2016	Yes	Yes	Yes	Yes	Yes
06/12/2016	Yes	Yes	Yes	Yes	Yes
07/12/2016	Yes	Yes	Yes	Yes	Yes
08/12/2016	Yes	Yes	Yes	Yes	Yes
09/12/2016	Yes	Yes	Yes	Yes	Yes
10/12/2016	Yes	Yes	Yes	Yes	Yes
11/12/2016	Yes	Yes	Yes	Yes	Yes
12/12/2016	Yes	Yes	Yes	Yes	Yes
13/12/2016	Yes	Yes	Yes	Yes	Yes
14/12/2016	Yes	Yes	Yes	Yes	Yes
15/12/2016	Yes	Yes	Yes	Yes	Yes
16/12/2016	Yes	Yes	Yes	Yes	Yes
17/12/2016	Yes	Yes	Yes	Yes	Yes
18/12/2016	Yes	Yes	Yes	Yes	Yes
19/12/2016	Yes	Yes	Yes	Yes	Yes
20/12/2016	Yes	Yes	Yes	Yes	Yes
21/12/2016	Yes	Yes	Yes	Yes	Yes
22/12/2016	Yes	Yes	Yes	Yes	Yes
23/12/2016	Yes	Yes	Yes	Yes	Yes
24/12/2016	Yes	Yes	Yes	Yes	Yes
25/12/2016	Yes	Yes	Yes	Yes	Yes
26/12/2016	Yes	Yes	Yes	Yes	Yes
27/12/2016	Yes	Yes	Yes	Yes	Yes
28/12/2016	Yes	Yes	Yes	Yes	Yes
29/12/2016	Yes	Yes	Yes	Yes	Yes
30/12/2016	Yes	Yes	Yes	Yes	Yes
31/12/2016	Yes	Yes	Yes	Yes	Yes

A summary of the correlation rate for each month from 1st January 2016 up to and including the 31st December 2016 is given in Table 2 below. In order to calculate the rate of correlation, the number of departures 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 departures constitute 50% of the total number of operations.

Month	No. Operations	No. Correlated (dep)	Correlation Rate
January	6274	2381	76%
February	7003	2962	85%
March	7331	3426	93%
April	7003	3201	91%
May	7380	3472	94%
June	7584	3693	97%
July	7229	3466	96%
August	7187	3255	91%
September	7475	3528	94%
October	7177	3357	94%
November	7393	3584	97%
December	5919	2900	98%
Total	**84955**	**39225**	**92%**

Table 2 – 2016 Monthly summary of correlation rate

Quarter	Operational Summary
January – March	During the quarterly period from 1st January 2016 to 31st March 2016, FIDS was received for all days and the NMTs were fully operational, with the exception of an issue with NMT 2 for parts of 14th – 18th February due to a failure of the power supply. A total of 8,769 departure events were successfully recorded and a correlation rate of 85% was achieved.
April – June	During the quarterly period from 1st April 2016 to 30th June 2016, FIDS was received for all days and the NMTs were fully operational. A total of 10,366 departure events were successfully recorded and a correlation rate of 94% was achieved.
July – September	During the quarterly period from 1st July 2016 to 30th September 2016, FIDS was received for all days and the NMTs were fully operational other than when calibration took place. This occurred on 22nd-23rd August for NMTs 1 and 2, and on 1st-6th September for NMTs 3 and 4. A total of 10,249 departure events were successfully recorded and a correlation rate of 94% was achieved.
October – November	During the quarterly period from 1st October 2016 to 31st December 2016, FIDS was received for all days and the NMTs were fully operational. A total of 9,841 departure events were successfully recorded and a correlation rate of 96% was achieved.

Table 3 – 2016 Quarterly operations summary

LONDON CITY AIRPORT

2016 ANNUAL PERFORMANCE REPORT
(COMPLIANCE WITH PLANNING PERMISSION 07/01510/VAR)

APPENDIX 10
GROUND NOISE STUDY 2016

01 July 2017

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London City Airport
Get closer.

Bickerdike Allen Partners
Architecture
Acoustics
Technology

London City Airport

Ground Noise Study 2016

Report to

James Shearman
City Aviation House
London City Airport
London
E16 2PB

A11004-R01-LBA-V06
26 August 2016

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Appendix 1: Glossary of acoustic terminology

Appendix 2: Ground noise modelling methodology

Appendix 3: Detailed survey results

Appendix 4: Schedule of flight information on ground noise survey days

Appendix 5: Ground noise contours

Appendix 6: Record of aircraft stand usage

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1.0 EXECUTIVE SUMMARY

In accordance with London City Airport's Section 106 Planning Agreement dated 9th July 2009 under Schedule 5: Ground Running, Part 4, Bickerdike Allen Partners (BAP) have carried out a Ground Noise Study. This study must be undertaken every three years, the last one having been taken by BAP in 2013.

The 2013 Ground Noise Study was approved by the London Borough of Newham (LBN) with no additional noise mitigation measures required.

Ground noise levels arising from aircraft operations on the ground in the immediate vicinity of the airport have been measured in 2016 to determine whether the magnitude of ground noise exposure levels exceed reasonable levels outside any nearby residential premises and public buildings. Noise measurements made in 2016 are not significantly different to those measured in 2013.

The survey found a reasonably close correlation between noise exposure levels determined from measured results and those determined from the predictive noise model at locations in the immediate vicinity of the airport clearly affected by ground noise.

The study indicates that the ground noise exposure levels determined as part of the Updated Environmental Statement submitted in support of the CADP planning application in September 2015 are still valid and no additional mitigation measures are required at this time.

The next Ground Noise Study will be undertaken within three years of the date of this report, in accordance with the requirements of the 2009 Section 106 Agreement.

2.0 INTRODUCTION AND BACKGROUND

Bickerdike Allen Partners (BAP) have been retained by London City Airport (LCY) to carry out a Ground Noise Study in accordance with the Airport's Section 106 Planning Agreement dated 9th July 2009. The Section 106 Agreement defines the Ground Noise Study as:

"a study to measure the noise exposure levels arising from aircraft operations on the ground in the immediate vicinity of the site for comparison with the results of previous, similar studies and for the purpose of ensuring that the magnitude of such noise exposure levels do not exceed reasonable levels outside any nearby residential premises and Public Buildings, including (where appropriate) advice on noise mitigation measures."

The timeframe for the preparation and submission of the Ground Noise Study to the London Borough of Newham (LBN) together with the implementation of any noise mitigation measures that might arise from the study is set out in the Section 106 Agreement which requires that:

- within 12 months of the date of the Section 106 Agreement, the Ground Noise Study is to be carried out and completed,
- LCY are to undertake the Ground Noise Study at intervals of no longer than every three years from the date of submission of the results of this first Ground Noise Study to LBN,
- within 30 days of receiving the results of any Ground Noise Study (or any other period agreed in writing with LBN), LCY are to submit the results to the Council,
- within six months of submitting the results of any Ground Noise Study to the Council (or any longer period as the Council may agree), LCY are to undertake any noise mitigation measures identified as being necessary by the Ground Noise Study (subject to receipt of planning permission where relevant).

A Ground Noise Study was carried out in 2013. This was issued in BAP report reference A9655-R01-CFC_PH_V04 dated 22nd August 2013.

For this 2016 Ground Noise Study, the procedure has involved both the measurement and prediction of the ground noise exposure levels arising from aircraft operations on the ground in the immediate vicinity of the airport. This is to determine whether the magnitude of such noise exposure levels exceed reasonable levels.

London City Airport have recently been granted planning consent for infrastructure development known as CADP which will restrict the airport from its previous capacity allowance of 120,000 movements per annum to 110,000 movements per annum. An Updated Environmental Statement (UES) was submitted to LBN in September 2015. The UES included

an objective assessment of the ground noise impact. Ground noise levels were predicted at key receptors around the airport using a proprietary software package, CadnaA. The noise impact was tested by reference to both the absolute level of ground noise and the change in ground noise.

The ground noise impact was assessed by LBN and their technical advisers. The modelling and the range of ground noise impacts were found to be reasonable and robust by LBN and their advisers. Chapter 8 of the UES identifies the ground noise levels predicted both under current conditions (2015) and also future conditions with additional infrastructure in place including a new eastern terminal and eastern noise barrier. The predicted results at the assessment locations used in this report are set out below in Table 1.

Assessment location	Daytime noise levels ($L_{Aeq,16h}$)		
	2014 Baseline	2025 without CADP development	2025 with CADP development
Drew Road	51	52	53
Camel Road flats	52	53	54
Storey Road School	49	49	51
UEL – University of East London	57	58	59
RDBP – Royal Docks Business Park	59	60	61

Table 1 - 120,000 Ground noise predictions

The impacts associated with these levels were deemed acceptable subject to mitigation measures to regularly monitor and assess ground noise levels. BAP have adopted the above levels as a test of the reasonableness of the current levels of ground noise.

Section 3 of this report describes the survey methodology used. Survey results are presented in Section 4. The results are analysed in Sections 5, 6, and 7. Section 8 discusses the mitigation measures. Section 9 contains the summary and conclusion. A glossary of acoustic terminology used is included in Appendix 1, Appendix 2 describes the ground noise modelling methodology and Appendix 3 shows the detailed survey results. Appendix 4 shows the schedule of flight information on ground noise survey days. Appendix 5 provides predicted ground noise contours for 2015.

3.0 GROUND NOISE MEASUREMENT METHODOLOGY

3.1 Ground noise activities

Sources of aircraft related ground noise include engine running on the apron/stand, taxiing, manoeuvring as well as holding on the apron and runway. Noise produced by specific aircraft engine ground running for engine maintenance purposes is assessed separately from these ordinary, everyday types of aircraft ground noise sources.

The measurement of these types of aircraft ground noise sources at locations around the airport is complicated by the presence of other ambient noise sources. These include road traffic (local and distant), airborne aircraft, Docklands Light Railway (DLR) passbys, construction, industrial and general street activity.

Short duration and high magnitude noise events such as airborne aircraft departures and nearby DLR or road traffic movements can reasonably be identified and excluded from the measured results and subsequent assessment. However continuous lower magnitude noise sources such as road traffic noise from the A1020 Royal Albert Way and, to a lesser extent, the A13 cannot be excluded from the results and will contribute to the overall noise level measured.

Measurement locations with a direct line of sight to the runway and apron, such as Building 1000, will provide a more reliable indicator of ground noise levels. Aircraft ground noise will be one of the dominant noise sources and airborne activity can be clearly identified and excluded in the assessment.

Measurement locations with no direct line of sight to the airport, such as Camel Road, will provide a much less reliable indicator of ground noise levels. For locations such as this, road traffic noise is usually the dominant noise source and airborne activity is less likely to be clearly identified. Noise sources associated with airborne aircraft noise assessment such as start of roll noise on departure and reverse thrust noise on arrival are difficult to clearly identify where there is no direct line of sight. As a result these can be included within the overall noise assessment resulting in an artificially high level of ground noise.

Although the aircraft is on the ground, both start of roll engine acceleration noise and reverse thrust noise are already included in the assessment of air noise and represented within air noise contours. They should therefore not be included in this ground noise assessment.

As a result of the above constraints, a flexible approach is needed to the measurement and subsequent assessment of ground noise in order to obtain meaningful and realistic results.

3.2 Methodology

In keeping with the methodology adopted for 2013 Ground Noise Study and the assessment of ground noise presented in the Environmental Statement submitted in support of the planning application for CADP, the $L_{Aeq,16h}$ noise index has been used as the overall noise exposure level descriptor. This descriptor is commonly used for rating aircraft ground noise impacts in the UK.

For each measurement location, continuous measurements of ambient noise are made over specified time periods. These measurements include noise from all noise sources. Notes are taken on site to clearly identify non-ground noise sources, such as aircraft departures or DLR passbys so they can be excluded. This approach has the advantage of permitting graphical representation of the overall noise environment by showing ground noise in the context of other noise sources.

For some locations, measurements have been made continuously during the key operational hours of the day to investigate the variation of ground noise throughout the day and to identify the periods of noise maxima and minima associated with aircraft ground operations. From these results, measurements at other locations have been carried out over shorter periods, targeting where possible a period of high aircraft activity on the ground and also a period of relatively low activity. The measurement procedure adopted follows the general principles set out in BS 7445:Part 1:2003[1]

3.3 Survey locations

In 2013 the measurement locations were selected following a review of potential sites to identify those best suited for the reliable measurement of ground noise from aircraft activities with minimal noise contributions from other activities such as car pass-bys, the DLR and significant street noise events.

Generally all measurements performed for this study were made at the same locations used in the 2013 study, in order to enable a comparison of noise levels, between studies.

The measurement locations are shown in Figure 1 and described in Table 2.

[1] Description and measurement of environmental noise – Part 1: Guide to quantities and procedures

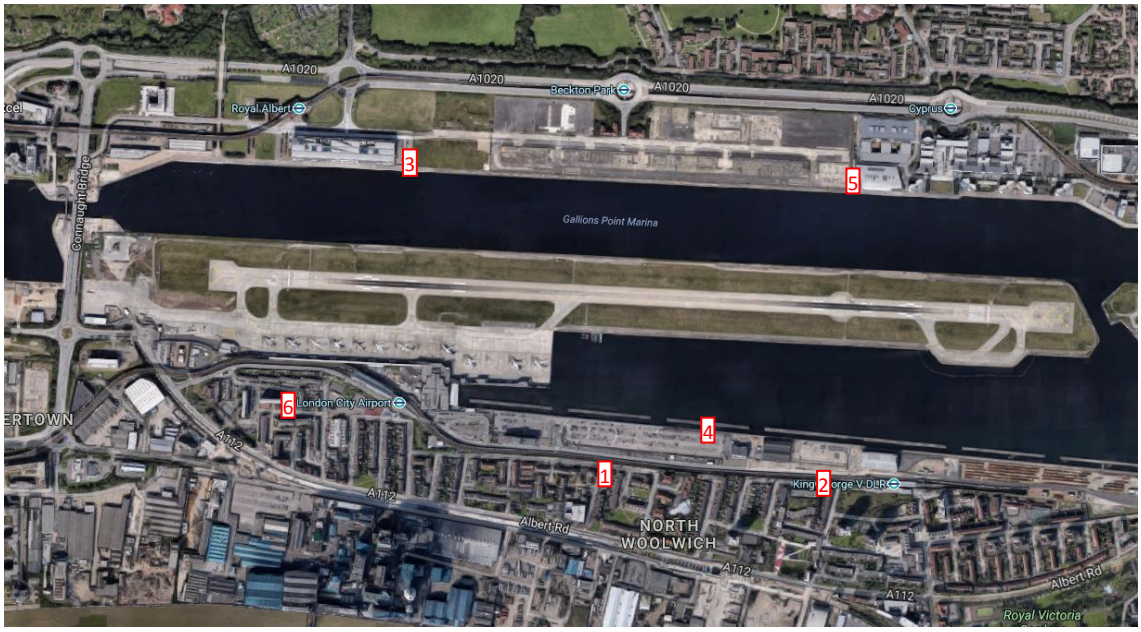


Figure 1: Measurement locations, G1 to G6

Position	Description	Measurement Date	Measurement Time	Departures Direction
G1	Corner of Kennard Street/Newland Street	01/08/2016	08:25 – 10:45 13:05 – 14:40	Westerly
G2	At Brixham Street	01/08/2016	08:15 – 11:15 13:10 – 15:25	Westerly
G3	To the east of Building 1000 on dock edge	09/08/2013	08:10 – 21:00	Westerly
G4	In airport car park on southern dock edge	14/07/2016	08:15 – 20:40	Westerly
G5	On northern dock edge near the University of East London	15/07/2016	08:20 - 21:00	Westerly
G6	At Camel Road	22/08/2016	08:20 – 11:15 15:00 – 18:00	Westerly

Note 1: All measurements were taken between Monday and Friday.

Note 2: All measurements are free field (i.e. not materially affected by reflections from nearby buildings).

Table 2 – Measurement locations and dates

3.4 Equipment

Measurements were taken using either Norsonic 118, Norsonic 140 or B&K 2260 sound level meters, all of which are Type 1 instruments and suitable for the measurement of aircraft noise. These were calibrated using either Norsonic 1251 calibrators or B&K 4231 calibrator. Calibration was carried out before and after each survey and no significant drift was observed. Measurements were made under free field conditions and at a height of 1.5 m above local ground level. The weather conditions during the surveys were generally clear or partly cloudy with variable wind speeds. The meteorological conditions are shown in Table 3.

Pos.	Date	Measurement Time	Prevailing Wind Dir. (degrees)[2]	Avg. Wind speed (m/s)	Conditions
G1	01/08/2016	08:25 – 10:45	W – SW (270 – 225)	2 – 4	Temperature 16° C - 18° C, relative humidity 56% - 68 %
		13:05 – 14:40	W – SW (270 – 225)	4 - 5	Temperature 18° C - 19° C, relative humidity 52% - 64%
G2	01/08/2016	08:15 – 11:15	W – SW (270 – 225)	2 – 4	Temperature 16° C - 18° C, relative humidity 56% - 68 %
		13:10 – 15:25	W – SW (270 – 225)	4 - 5	Temperature 18° C - 19° C, relative humidity 52% - 64%
G3	09/08/2016	08:10 – 21:00	NNW – W (340 - 270)	3 - 7	Temperature 23° C - 30° C, relative humidity 36% - 71%
G4	14/07/2016	08:15 – 20:40	NNW – WNW (340 – 290)	4 – 5	Temperature 14° C - 20° C, relative humidity 52% - 68%
G5	15/07/2016	08:20 - 21:00	W – SW (270 – 225)	3 - 6	Temperature 14° C - 19° C, relative humidity 52% - 83%

[2] 0 degrees is due north.

G6	22/08/2016	08:20 – 11:15	WSW – SW (250 – 225)	6 - 8	Temperature 18° C - 21° C, relative humidity 64% - 83%
		15:00 – 18:00	WSW – SW (250 – 225)	6 - 7	Temperature 24° C - 26° C, relative humidity 47% - 53%

Note 1: All measurements were taken between Monday and Friday.

Note 2: All measurements are free field (i.e. not materially affected by reflections from nearby buildings).

Table 3 – Meteorological conditions

Measurement positions G3 (Building 1000), G4 (Airport Car Park) and G5 (UEL) are preferable locations to measure aircraft ground noise due to the direct line of sight and limited influence of other non-airport related ambient noise sources. Measurements to cover most of the daytime period were made at these positions. The other locations were less reliable for measuring aircraft ground noise. At these locations measurements were made over at least half a day to include both peak periods (AM or PM) as well as less busy times so as to be representative of the 16 hour average.

4.0 RESULTS

4.1 Location G1 – Kennard Street

Location G1 is at the corner of Kennard Street with Newland Street, close to the DLR line. Noise at this location was dominated by DLR and airborne aircraft noise. Distant road traffic was also significant. Intermittent noise from local road traffic and pedestrians was also observed at this location. Aircraft ground noise was audible at this position at times when noise from other sources was low.

The runway and apron is not visible at this measurement location. This compromises the ability to identify all non-ground noise sources.

On the 1st of August 2016 a survey was taken at this position at two different periods of the day, from 08:25 to 10:45 and from 13:05 to 14:40 hours. Table 4 shows the measurement results.

Measurement Period (hh:mm)		Noise Level[1] $L_{Aeq,T}$ dB
From	To	
08:25	10:45	52
13:05	14:40	51
Average		52

Table 4 - Measurement results, G1

[1] Total ambient noise level with clearly identifiable non-ground noise sources (airborne aircraft/local traffic/DLR) excluded.

An average of 52 $L_{Aeq,T}$ dB was measured at this position, and this is assumed to be a representative value of the total ambient daytime noise level, dB $L_{Aeq,16h}$, excluding identifiable non-ground noise sources.

4.2 Location G2 – Brixham Street

Position G2 is situated on Brixham Street, near King George V DLR station. Noise at this location was dominated by DLR and airborne aircraft noise. Distant road traffic was also significant with intermittent noise from local road traffic and pedestrians being observed at this location. Aircraft ground noise was audible at this position at times when noise from other sources was low.

On the 1st of August 2016 a survey was carried out at this location from 08:15 until 11:15 and from 13:05 to 15:25 hours. Table 5 shows the measurement results.

Measurement Period (hh:mm)		Noise Level[1] $L_{Aeq,T}$ dB
From	To	
08:15	11:15	49
13:10	15:25	48
Average		49

Table 5 - Measurement results, G2

[1] Total ambient noise level with clearly identifiable non-ground noise sources (airborne aircraft/local traffic/DLR) excluded.

An average of 49 $L_{Aeq,T}$ dB was measured at this position, and this value is assumed to be representative of the ambient noise level, $L_{Aeq,16h}$, excluding identifiable non-ground noise sources.

4.3 Location G3 – Building 1000

Location G3 is on the dock edge, by Building 1000. There is a clear view of the runway and apron. Noise from aircraft both airborne and on the ground dominate at this position. Road traffic noise from the A1020, as well as from occasional local traffic, also contributes to the overall noise level.

On the 9th of August a survey was performed at this position from 08:10 until 21:00 hours. Table 6 shows the measurement results obtained, including the hourly wind speed and direction.

Measurement Period (hh:mm)		Noise Level [1] $L_{Aeq,T}$ dB	Wind direction Wind speed (m/s)
From	To		
08:10	09:00	62	NW – NNW 4.6 – 4.1
09:00	10:00	57	NW – WNW 4.1 – 3.6
10:00	10:55	55	WNW – W 4.6 – 3.6
11:40	12:00	59	WNW 4.1
12:00	13:00	56	WNW – NW 3.6 – 4.6
13:00	14:00	55	WNW 4.6 – 6.7

14:00	15:00	59	NW 4.6 – 5.1
15:00	16:00	58	WNW – W 3.6 – 4.1
16:00	17:00	59	W 5.7 – 6.2
17:00	18:00	59	W – WNW 5.7 – 5.1
18:00	19:00	62	WNW – NW 5.1 – 4.6
19:00	20:00	61	WNW – NW 5.1 – 5.7
20:00	21:00	58	NW 5.7 – 6.2
Average		59	

Table 6 - Measurement results, G3

[1] Total ambient noise level with clearly identifiable non-ground noise sources (airborne aircraft/local traffic/DLR) excluded.

The ground/ambient noise levels measured at this location are higher from 08:10 until 09:00 and from 18:00 until 19:00 with a level of 62 $L_{Aeq,T}$ dB. Ground/ambient noise drops to its lowest level of 55 $L_{Aeq,T}$ dB between 10:00 and 10:55 and between 13:00 and 14:00. An average level of 59 $L_{Aeq,T}$ dB was measured at this position, and this value is assumed to be representative of the ambient noise level, $L_{Aeq,16h}$, at this location excluding identifiable non-ground noise sources.

4.4 Location G4 – Airport car park

Location G4 is at the airport car park on the southern dock edge. There is a clear view over the runway which enhances the ability to record noise from aircraft departing and landing. The airport apron is partially screened from this point. Noise from aircraft both airborne and on the ground dominate at this position. Road traffic noise from the A1020 as well as occasional local traffic from cars parking also contribute to the overall noise level.

On the 14th of July a survey was taken at this position from 08:15 until 20:40 hours. Table 7 shows the results obtained at this position, including the hourly wind speed and direction.

Measurement Period (hh:mm)		**Noise Level [1] $L_{Aeq,T}$ dB**	**Wind direction Wind speed (m/s)**
From	**To**		
08:15	09:00	66	NNW – NW 4.6

09:00	10:00	64	NW 3.6 – 4.1
10:00	11:00	60	WNW 4.6
11:00	11:55	59	NW 4.6
12:35	13:00	56	NNW 4.1
13:00	14:00	60	WNW 4.1 – 4.6
14:00	15:00	59	WNW – NW 4.1
15:00	16:00	63	WNW 4.1 – 4.6
16:00	17:00	62	NW – WNW 4.1 – 5.1
17:00	17:50	61	WNW – NW 4.6 – 3.6
18:25	19:30	67	WNW – NNW 3.6 – 3.1
19:30	20:40	65	WNW 3.6 – 4.1
Average		63	

Table 7 - Measurement results, G4

[1] Total ambient noise level with clearly identifiable non-ground noise sources (airborne aircraft/local traffic/DLR) excluded.

The ground/ambient noise levels measured at this location are higher from 18:25 until 19:30 with a level of 67 $L_{Aeq,T}$ dB. Ground/ambient noise drops to its lowest level of 56 $L_{Aeq,T}$ dB between 12:35 and 13:00. An average level of 63 $L_{Aeq,T}$ dB was measured at this position, and this value is assumed to be representative of the ambient noise level, $L_{Aeq,16h}$, at this location excluding identifiable non-ground noise sources.

4.5 Location G5 - UEL

Position G5 is by the University of East London campus on the dock edge. There is a clear view towards the airport runway and apron. Noise from aircraft both airborne and on the ground dominate at this position. Road traffic noise from the A1020 as well as occasional local traffic from cars parking also contribute to the overall noise level.

On the 15th of July a survey was undertaken at this location from 08:20 to 21:00. Table 8 shows the measurement results, including the hourly wind speed and direction.

Measurement Period (hh:mm)		Noise Level[1] $L_{Aeq,T}$ dB	Wind direction Wind speed (m/s)
From	To		
08:20	09:00	64	WSW 3.1 – 3.6
09:00	10:00	64	SW – WSW 3.6 – 4.1
10:00	11:00	58	W – WSW 4.1 – 4.6
11:00	12:00	58	WSW – W 5.1 – 5.7
12:00	13:00	58	WSW – W 4.6 – 5.7
13:00	14:00	60	WSW 6.2
14:05	15:00	60	WSW 5.1 – 6.2
15:00	16:00	64	WSW – W 5.7
16:00	17:00	61	WSW – W 6.2 – 7.2
17:00	17:15	64	WSW 5.7
18:00	19:00	65	W – WSW 6.2
19:00	20:00	65	WSW 5.7 – 6.2
20:00	21:00	61	WSW 4.6 – 5.7
Average		62	

Table 8 - Measurement results, G5

[1] Total ambient noise level with clearly identifiable non-ground noise sources (airborne aircraft/local traffic/DLR) excluded.

The highest ground/ambient noise levels obtained at this location were of 65 $L_{Aeq,T}$ dB between 18:00 and 20:00. A low level was measured between 10:00 and 13:00 of 58 $L_{Aeq,T}$ dB. An average of 62 $L_{Aeq,T}$ dB was measured at this position, and this value is assumed to be representative of the ambient noise level, $L_{Aeq,16h}$, at this location excluding identifiable non-ground noise sources.

4.6 Location G6 – Camel Road

Location G6 is at ground floor level next to the Camel and Drew Road flats. It is situated behind the terminal pier so aircraft operating on the ground are not visible. Aircraft on departure rise above the terminal pier barrier and dominate noise levels at this position. Other sources of noise include arriving aircraft, road vehicles passing nearby and pedestrian activity. Aircraft ground noise was only audible at this position during brief periods times when noise from other sources was low.

On the 22nd of August a survey was undertaken at this location over two different periods of the day, from 08:20 until 11:15 hours and from 15:00 to 18:00 hours (to catch busy periods at the airport and periods during relative low aircraft activity). **Error! Reference source not found.** shows the results obtained.

Measurement Period (hh:mm)		**Noise Level[1] $L_{Aeq,T}$ dB**
From	**To**	
08:20	09:00	60
09:00	09:40	57
10:20	11:15	55
15:00	16:00	54
16:00	17:00	54
17:00	18:00	55
Average		56

Table 9 - Measurement results, G6

[1] Total ambient noise level with clearly identifiable non-ground noise sources (airborne aircraft/local traffic/DLR) excluded.

The highest ambient noise levels obtained at this location were of 60 $L_{Aeq,T}$ dB between 08:20 and 09:00. A low level was measured between 15:00 and 17:00 of 54 $L_{Aeq,T}$ dB. An average of 56 $L_{Aeq,T}$ dB was measured at this position, and this value is assumed to be representative of the ambient noise level, $L_{Aeq,16h}$, at this location excluding identifiable non-ground noise sources.

4.7 Overview

The following noise levels in Table 10 were measured at the different locations around the London City Airport.

Position	Description	Noise Level 2016[1] $L_{Aeq,16h}$ dB
G1	Corner of Kennard Street/Newland Street	52
G2	At Brixham Street	49
G3	To the east of Building 1000 on dock edge	59
G4	In airport car park on southern dock edge	63
G5	On northern dock edge near the University of East London	62
G6	Camel Road	56

Table 10 - Measurement results, summary

[1] Total ambient noise level with clearly identifiable non-ground noise sources (airborne aircraft/local traffic/DLR) excluded.

The highest levels of ground/ambient noise were measured at the closest locations to the airport apron and runway where there was also a clear view of aircraft activity at the airport, i.e. positions G3, G4 and G5. The highest average level of 63 $L_{Aeq,16h}$ dB was measured at position G4, at the airport car park on the southern dock edge. There is a clear view over the runway and the airport apron is partially screened from this point.

At locations G1, G2 and G6, which are among nearby residential properties, there is no direct line of sight to the airport. This is blocked by the surrounding built infrastructure and topography of the land. Ground noise was only audible at times above other ambient noises and was not generally a dominant noise source. At these positions, a lower level of noise was measured, with levels in the range of 49 to 56 dB $L_{Aeq,16h}$ dB.

5.0 COMPARISON WITH GROUND NOISE STUDY 2013

Table 11 shows a comparison between the measurements obtained in 2013 and 2016.

Position	Description	Noise Level 2013 $L_{Aeq,16h}$ dB	Noise Level 2016 $L_{Aeq,16h}$ dB	Noise Level Difference $L_{Aeq,16h}$ dB
G1	Corner of Kennard Street/Newland Street	53	52	-1
G2	Claremont Close (2010) Brixham Street (2013)	49	49	0
G3	To the east of Building 1000 on dock edge	65	59	-6
G4	In airport car park on southern dock edge	58	63	+5
G5	On northern dock edge near the University of East London	57	62	+5
G6	Camel Road	56	56	0

Table 11 - Comparison between measurements in 2013 and 2016

The noise levels measured in 2016 at locations G1, G2 and G6 are little different to those measured in 2013. The dominant source at these positions was not the ground noise, but road traffic noise, pedestrian activity and aircraft departures.

At locations G3, G4 and G5, the dominant source is the ground noise, where there is a clear view over the runway and the airport apron. All the measurements in 2013, were made during easterly operations, and, in 2016 during westerly operations. The levels measured are significantly different (5 to 6 dB) due to the mode of operation. While the mode of operation has little influence on ground noise levels for most receptors it does have a significant influence on ground noise levels at the closest locations to the airport apron and runway where there is a direct line of sight of aircraft activity. This modal relationship is explored further in Section 7.0 below.

6.0 COMPARISON WITH CADP UES PREDICTIONS

The environmental noise software Cadna A, a recognised and commonly used noise modelling package in the UK, was used to predict ground noise levels around the airport for the CADP application.

Table 12 shows a comparison between the measured results obtained in 2016 and the predicted noise levels for the CADP Without Development scenario in 2025. This scenario is chosen as it most closely resembles the current infrastructure at the airport, that is, without the inclusion of the proposed eastern terminal and pier that form part of CADP and that will offer significant protection to receptors located behind the new terminal constructions that form a barrier to ground noise. To provide an indication of current activity levels, there were around 84,500 annual movements in 2015.

Position	Description	Measured Noise Level 2016[1] $L_{Aeq,16h}$ dB	Predicted in 2025 Without CADP
G1	Corner of Kennard Street/Newland Street	52	48
G2	Brixham Street (2013)	49	50
G3	To the east of Building 1000 on dock edge	59	64
G4	In airport car park on southern dock edge	63	60
G5	On northern dock edge near the University of East London	62	62
G6	Camel Road	56	49

Table 12 - Comparison of 2016 measurements with CADP Without Development

[1] Total ambient noise level with clearly identifiable non-ground noise sources (airborne aircraft/local traffic/DLR) excluded.

The above table, whilst of interest, does not provide a precise like for like comparison. The 2016 measurements are single mode (westerly) and will include contributions from other environmental noise sources such as distant road traffic which cannot be excluded from the results. The 2025 Without CADP levels are average mode predictions of aircraft ground noise only. For the key positions, G3, G4 and G5, where ground is more dominant than at the other receptors, measured single mode values range from being slightly higher than predicted

average mode values to being significantly lower. A more relevant comparison is presented in Section 7.0 below.

7.0 COMPARISON WITH THE CURRENT PREDICTION MODEL

The environmental noise software Cadna A, a recognised and commonly used noise modelling package in the UK, has been used to predict ground noise levels around the airport. The prediction model has been developed to assist in the prediction of ground noise associated with the current and future operations at the airport. Details of the methodology and modelling assumptions are given in Appendix 2.

Since the 2013 ground noise assessment, the LCY CadnaA ground noise model has been updated for the City Airport Development Programme (CADP) planning application. The proposed CADP development will comprise seven aircraft parking stands, an extended terminal building, a new eastern passenger pier and associated works on a platform over the King George V Dock. The prediction model has been modified to reflect current (2015) aircraft movements (approx. 84,500) and the model has been developed further to add additional topographical information that was not present in the 2013 assessment. Data is available for aircraft movements for 2015. This is the latest full year data and has been used to present current ground noise levels.

The ground noise levels generated by the model for 2015 are given in Table 13 based on a receptor height of 1.5 m. The associated westerly operations mode ground noise contours for 2015 are shown in Appendix 5.

Position	Description	Ground Noise Level Westerly Departures $L_{Aeq,16h}$ dB
G1	Corner of Kennard Street/Newland Street	50
G2	At Brixham Street	50
G3	To the east of Building 1000 on dock edge	64
G4	In airport car park on southern dock edge	61
G5	On northern dock edge near the University of East London	63
G6	Camel Road	55

Table 13 - CadnaA ground noise predictions, 2015 scenario

A comparison between the predicted and measured results is given in Table 14 .

Position	Description	2016 Noise Level Measured[1] $L_{Aeq,16h}$ dB	2015 Ground Noise Level Predicted $L_{Aeq,16h}$ dB	Noise Level Difference[2] $L_{Aeq,16h}$ dB
G1	Corner of Kennard Street/Newland Street	52	50	+2
G2	At Brixham Street	49	50	-1
G3	To the east of Building 1000 on dock edge	59	64	-5
G4	In airport car park on southern dock edge	63	61	+2
G5	On northern dock edge near the University of East London	62	63	-1
G6	Camel Road	56	55	+1

Table 14 - Comparison between 2016 measurements and 2015 predictions

[1] Total ambient noise level with clearly identifiable non-ground noise sources (airborne aircraft/local traffic/DLR) excluded

[2]. The measured noise levels will include some contribution from non-ground noise sources which could not be identified and/or excluded.. Measurements and predictions relate to single mode activity.

The predicted ground noise levels are generally within +/- 2dB of the measured ambient noise level indicating a good correlation between the predicted and measured values. The measurement positions which provide a direct line of sight should provide the most accurate measurement of ground noise. These are measurement positions G3, G4 and G5. The measured values at G4 and G5 are close to the predicted values. The measured noise level at G3 is 5 dB lower than the predicted value, a significant difference.

It is not surprising that the measured noise values are slightly higher than those predicted since the measured results include the effects of other noise sources, such as road traffic, in addition to aircraft ground noise. The reason for such a low noise level at G3 compared to prediction however is not immediately evident although it is possible that the level of activity on that day was less than included in the prediction model.

Mitigation

The local residential communities are currently well protected from any significant effects of ground noise by the noise barrier provided by the airport terminal, associated pier structures and purpose built sound screens. The aircraft engine blast screen that is located between the western end of the fire station and the Jet Centre, as well as the DLR viaduct and retaining walls, also assist in reducing the effects of ground noise on housing locally. Dwellings in this location are also protected by the airport's sound insulation scheme.

The Camel Road Sound Screen, investigated in detail in previous studies, continues to offer protection to residents in Camel Road and no further study of the screen is considered warranted at this time in view of no significant change to any infrastructure in this area and the fact that previous survey work proved non-conclusive in view of the dominant effect of road traffic along Hartmann Road in that area.

The ground noise levels along the northern edge of the Royal Albert Dock remain relatively high in view of its close proximity to the airport and the lack of any noise barriers. There are, however, no residential properties in this area and Building 1000 and The University of East London, which lie on the northern edge of the dock were designed and insulated to take account of aircraft operations at LCY.

The impact of ground noise in 2016 therefore remains similar to that determined previously where it has been judged to be acceptable with respect to residential premises and Public Buildings. No additional mitigation measures are therefore considered necessary at this time.

8.0 SUMMARY

This report details a ground noise survey and assessment undertaken by Bickerdike Allen Partners (BAP) in accordance with the Airport's Section 106 Planning Agreement obligations.

Ground noise levels arising from aircraft operations on the ground in the immediate vicinity of the airport have been measured and compared to the measurement results of 2013. In addition, the 2016 results have been compared against a predictive ground noise model developed to determine whether the magnitude of ground noise exposure levels exceed reasonable levels outside any nearby residential premises and Public Buildings.

The survey found a close correlation between noise exposure levels determined from measured results and those determined from the predictive noise model at two of the three dock edge locations in the immediate vicinity of the airport. These locations are clearly affected by ground noise as it is the dominant source of noise at those positions. At the third location, measurements of ground noise were significantly less than predicted values.

This indicates that the ground noise exposure levels determined as part of the Environmental Statement submitted in support of the CADP planning application in September 2015 are still valid and no additional mitigation measures are required at this time.

The next Ground Noise Study will be undertaken within three years of the date of this report, in accordance with the requirements of the Section 106 Agreement.

Luis Brito e Abreu	**David Trew**	**Peter Henson**
Bickerdike Allen Partners	**Associate**	**Partner**

APPENDIX 1

GLOSSARY OF ACOUSTIC TERMINOLOGY

The Decibel, dB

The unit used to describe the magnitude of sound is the decibel (dB) and the quantity measured is the sound pressure level. The decibel scale is logarithmic and it describes equal values to proportional changes in sound pressure, which is a characteristic of the ear. Use of a logarithmic scale has the added advantage that it compresses the very wide range of sound pressures to which the ear may typically be exposed to a more manageable range of numbers. The threshold of hearing occurs at approximately 0 dB (which corresponds to a reference sound pressure of 2×10^{-5} Pascals) and the threshold of pain is around 120 dB.

The sound energy radiated by a source can also be expressed in decibels. The sound power is a measure of the total sound energy radiated by a source per second, in watts. The sound power level, L_w is expressed in decibels, referenced to 10^{-12} watts.

Frequency, Hz

Frequency is analogous to musical pitch. It depends upon the rate of vibration of the air molecules that transmit the sound and is measure as the number of cycles per second or Hertz (Hz). The human ear is sensitive to sound in the range 20 Hz to 20,000 Hz (20 kHz). For acoustic engineering purposes, the frequency range is normally divided up into discrete bands. The most commonly used bands are octave bands, in which the upper limiting frequency for any band is twice the lower limiting frequency, and one-third octave bands, in which each octave band is divided into three. The bands are described by their centre frequency value and the ranges which are typically used for building acoustics purposes are 63 Hz to 4 kHz (octave bands) and 100 Hz to 3150 Hz (one-third octave bands).

Noise Rating

The Noise Rating (NR) system is a set of octave band sound pressure level curves used for specifying limiting values for building services noise. The Noise Criteria (NC) and Preferred Noise Criteria (PNC) systems are similar.

A-weighting

The sensitivity of the ear is frequency dependent. Sound level meters are fitted with a weighting network which approximates to this response and allows sound levels to be expressed as an overall single figure value, in dB(A).

Environmental Noise Descriptors

Where noise levels vary with time, it is necessary to express the results of a measurement over a period of time in statistical terms. Some commonly used descriptors follow.

Statistical Term	Description
$L_{Aeq,\,T}$	The most widely applicable unit is the equivalent continuous A-weighted sound pressure level ($L_{Aeq,\,T}$). It is an energy average and is defined as the level of a notional sound which (over a defined period of time, *T*) would deliver the same A-weighted sound energy as the actual fluctuating sound.
L_{AE}	Where the overall noise level over a given period is made up of individual noise events, the $L_{Aeq,\,T}$ can be predicted by measuring the noise of the individual noise events using the sound exposure level, LAE (or SEL or LAX). It is defined as the level that, if maintained constant for a period of one second, would deliver the same A-weighted sound energy as the actual noise event.
L_{A01}	The level exceeded for 1% of the time is sometimes used to represent typical noise maxima.
L_{A10}	The level exceeded for 10% of the time is often used to describe road traffic noise.
L_{A90}	The level exceeded for 90% of the time is normally used to describe background noise.

Table 1: Commonly Used Environmental Noise Descriptors

Perceived Noise Level, PNL

The perceived noise level is the sound pressure level corrected such that a given sound is numerically equal to the sound pressure level of a reference sound that is judged by listeners to have the same perceived noisiness as the given sound. The calculation procedure gives an approximation to the perceived noise level which is measured in dB and given the unit PNdB.

Sound Transmission in the Open Air

Most sources of sound can be characterised as a single point in space. The sound energy radiated is proportional to the surface area of a sphere centred on the point. The area of a sphere is proportional to the square of the radius, so the sound energy is inversely proportional to the square of the radius. This is the inverse square law. In decibel terms, every time the distance from a point source is doubled, the sound pressure level is reduced by 6 dB.

Road traffic noise is a notable exception to this rule, as it approximates to a line source, which is represented by the line of the road. The sound energy radiated is inversely proportional to the area of a cylinder centred on the line. In decibel terms, every time the distance from a line source is doubled, the sound pressure level is reduced by 3 dB.

Factors Affecting Sound Transmission in the Open Air

Reflection

When sound waves encounter a hard surface, such as concrete, brickwork, glass, timber or plasterboard, it is reflected from it. As a result, the sound pressure level measured immediately in front of a building façade is approximately 3 dB higher than it would be in the absence of the façade.

Screening and Diffraction

If a solid screen is introduced between a source and receiver, interrupting the sound path, a reduction in sound level is experienced. This reduction is limited, however, by diffraction of the sound energy at the edges of the screen. Screens can provide valuable noise attenuation, however. For example, a timber boarded fence built next to a motorway can reduce noise levels on the land beyond, typically by around 10 dB(A). The best results are obtained when a screen is situated close to the source or close to the receiver.

Meteorological Effects

Temperature and wind gradients affect noise transmission, especially over large distances. The wind effects range from increasing the level by typically 2 dB downwind, to reducing it by typically 10 dB upwind – or even more in extreme conditions. Temperature and wind gradients are variable and difficult to predict.

APPENDIX 2

GROUND NOISE MODELLING METHODOLOGY

MODELLING METHODOLOGY

This section of the report gives an overview of the Cadna A ground noise model developed for the CADP application. This section supplements the information presented in the report.

Input Data

The input data for the model is based on the annual movement and aircraft mix data provided to BAP. Reference noise levels and information on the duration of activities were determined by reference to previous studies at LCY and from survey measurements. The modelling assumptions section below sets out the durations of activities observed at LCY, and also the reference noise levels used.

Software

A computer model of the airfield and surroundings has been prepared using the environmental noise calculation software Cadna A. Incorporating buildings and barriers, the software calculates the propagation of noise from noise sources to receptors using the methodology set out in ISO 9613-2 "Attenuation of sound during propagation outdoors – General method of calculation". As a worst case, the ground, and buildings and barriers are modelled to be reflective.

Methodology

The airfield is simplified into a number of noise source locations. These locations represent segments of an aircraft's taxi route. By assigning a noise level to each source representing the ground activity at that location (i.e. taxiing, manoeuvring, APU, engine start-up, hold), the noise at a given receiver is calculated from the contribution of all these sources taking into account propagation and any noise barriers and reflectors. Sources representing Stands 12 to 14 have been included in all ground noise calculations.

Specifically, for each source at a given location, a sound power level is determined based on the associated sound level, L_{Aeq}, at the reference distance of 152 m. Each source has an associated duration of activity applicable to the source location under consideration. The source sound power level is weighted according to this duration, and also according to the overall assessment period, for example 16 hours. A further weighting is applied to account for the times the source event will occur in the period of interest, based on the number of aircraft movements. This weighting takes account of the number of westerly and easterly operations whose taxi routes pass through the source location. This information is then fed into the

Cadna A model to derive by receiver location the overall $L_{Aeq,T}$ ground noise levels, based on the duration of interest (e.g. 16 hours or peak hour).

MODELLING ASSUMPTIONS

The following general assumptions have been used to apply to an overall generic type of aircraft. These assumptions have been used in Environmental Statements examined at Public Inquiries on Airport Developments elsewhere, without serious challenge. On-site observations at LCY, whilst indicating considerable variation between individual aircraft operations have shown that assumptions regarding the duration of different airport operations are generally appropriate.

Aircraft movement numbers and aircraft mix are given in the tables below.

Type	Number of Movements 2012
Total	70502
Scheduled	64849
Corporate	5653

Number of aircraft movements

Type	%
Turbo-fan	58
Turbo-prop	34
Corporate jets	8

Aircraft mix (%)

Details of departure and arrival activities are given in the tables below.

Activity		Details
Auxiliary Power Unit (APU)		10 min for all rotations
Engine start-up (idle)		60 s
Manoeuvres	90 degrees 180 degrees	10 s 20 s
Hold at edge of runway (prior to getting onto runway)		60 s
Taxiing speed (used in conjunction with model sector length to determine sector duration)	on apron on runway	10 m/s 10 m/s
Hold at start of roll		60 s

Durations of departure activities

Activity		Details
Manoeuvres	90 degrees 180 degrees	10 s 20 s
Taxiing speed (used in conjunction with model sector length to determine sector duration)	on apron on runway	10 m/s 10 m/s
Engine running on stand		60 s

Durations of arrival activities

Modal split

The modal split of different operations at LCY are 66 % movements on Runway 27 and 34 % movements on Runway 09.

Reference noise levels

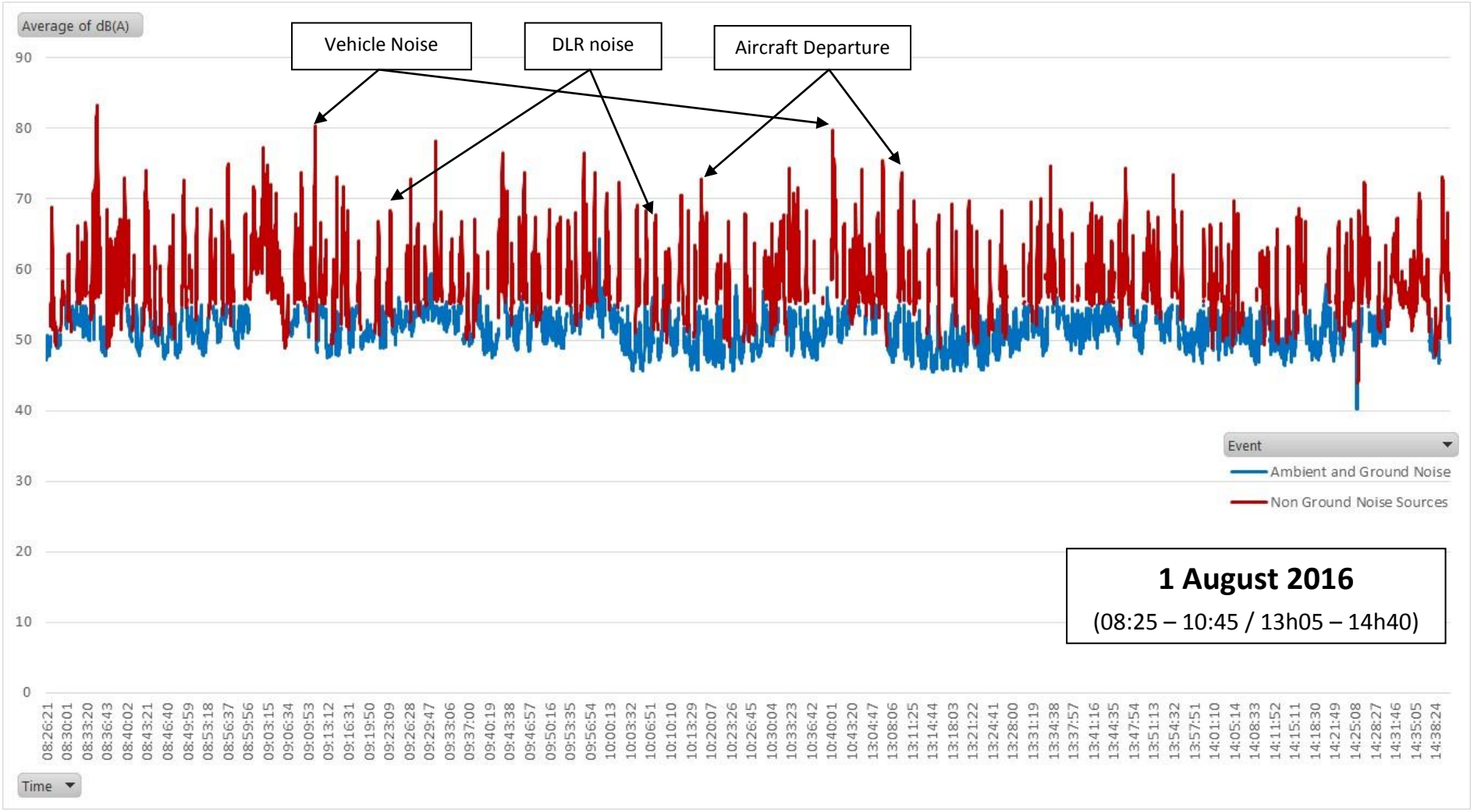
Activity	Level , dB(A)		
	Turbo-fans	Turbo-props	Corporate Jets
Taxi	71	74	69
Manoeuvre	71	74	69
Start-up	65	71	65
APU	67	67	67

Sound Levels (L_{Aeq}) at 152 m

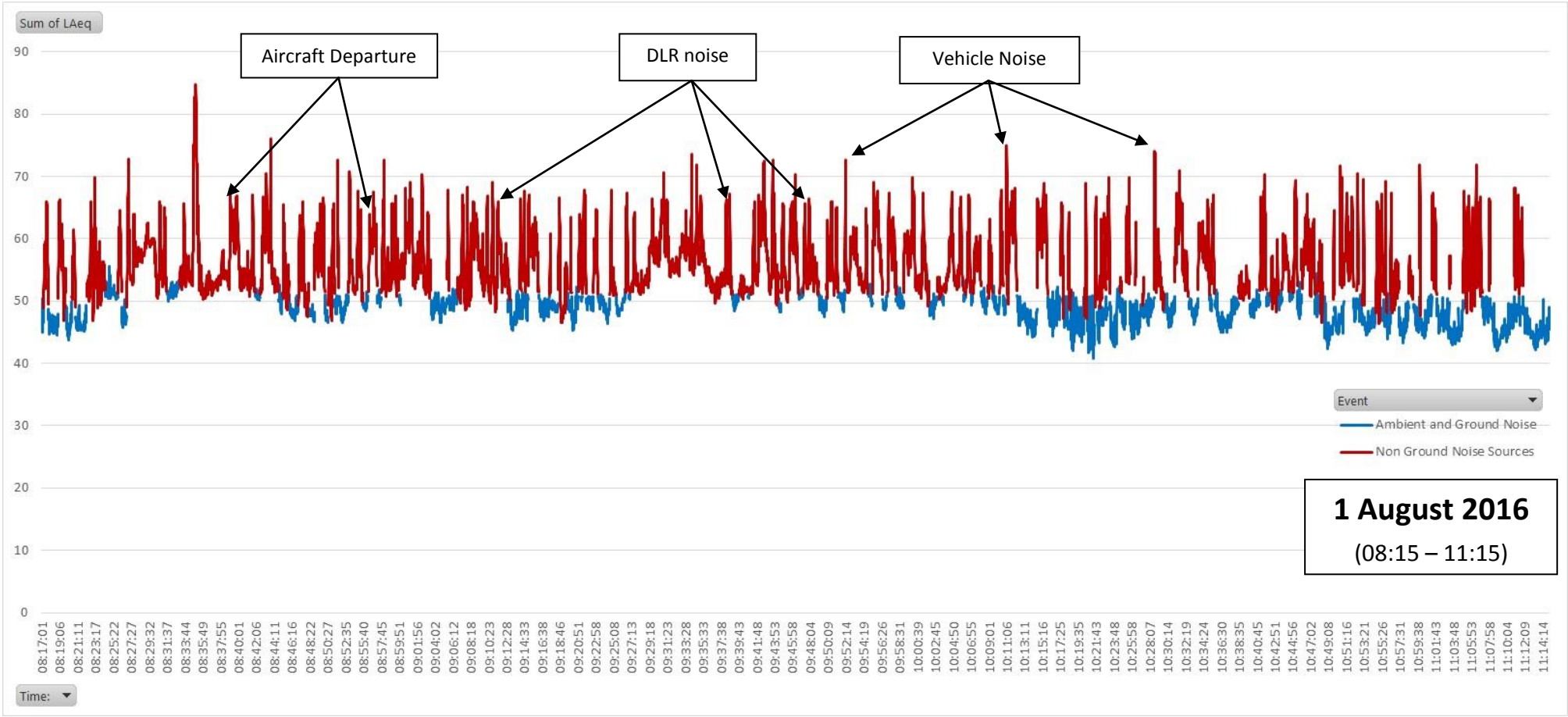
APPENDIX 3

DETAILED SURVEY RESULTS

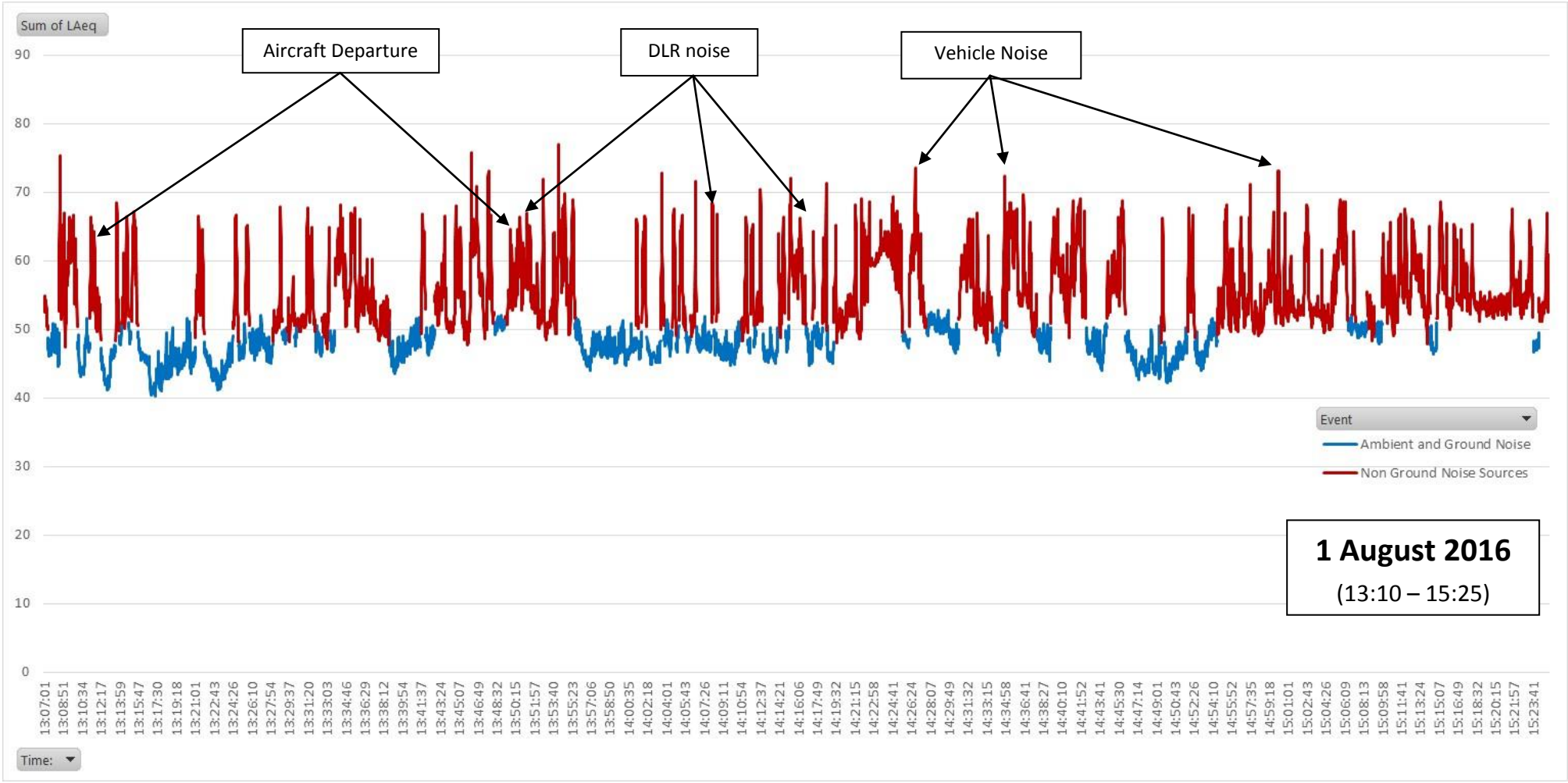
Location G1


Average of dB(A)
Vehicle Noise
DLR noise
Aircraft Departure
90
80
70
60
50
40
30
20
10
0
Event
Ambient and Ground Noise
Non Ground Noise Sources
1 August 2016
(08:25 – 10:45 / 13h05 – 14h40)
08:26:21
08:30:01
08:33:20
08:36:43
08:40:02
08:43:21
08:46:40
08:49:59
08:53:18
08:56:37
08:59:56
09:03:15
09:06:34
09:09:53
09:13:12
09:16:31
09:19:50
09:23:09
09:26:28
09:29:47
09:33:06
09:37:00
09:40:19
09:43:38
09:46:57
09:50:16
09:53:35
09:56:54
10:00:13
10:03:32
10:06:51
10:10:10
10:13:29
10:20:07
10:23:26
10:26:45
10:30:04
10:33:23
10:36:42
10:40:01
10:43:20
13:04:47
13:08:06
13:11:25
13:14:44
13:18:03
13:21:22
13:24:41
13:28:00
13:31:19
13:34:38
13:37:57
13:41:16
13:44:35
13:47:54
13:51:13
13:54:32
13:57:51
14:01:10
14:05:14
14:08:33
14:11:52
14:15:11
14:18:30
14:21:49
14:25:08
14:28:27
14:31:46
14:35:05
14:38:24
Time

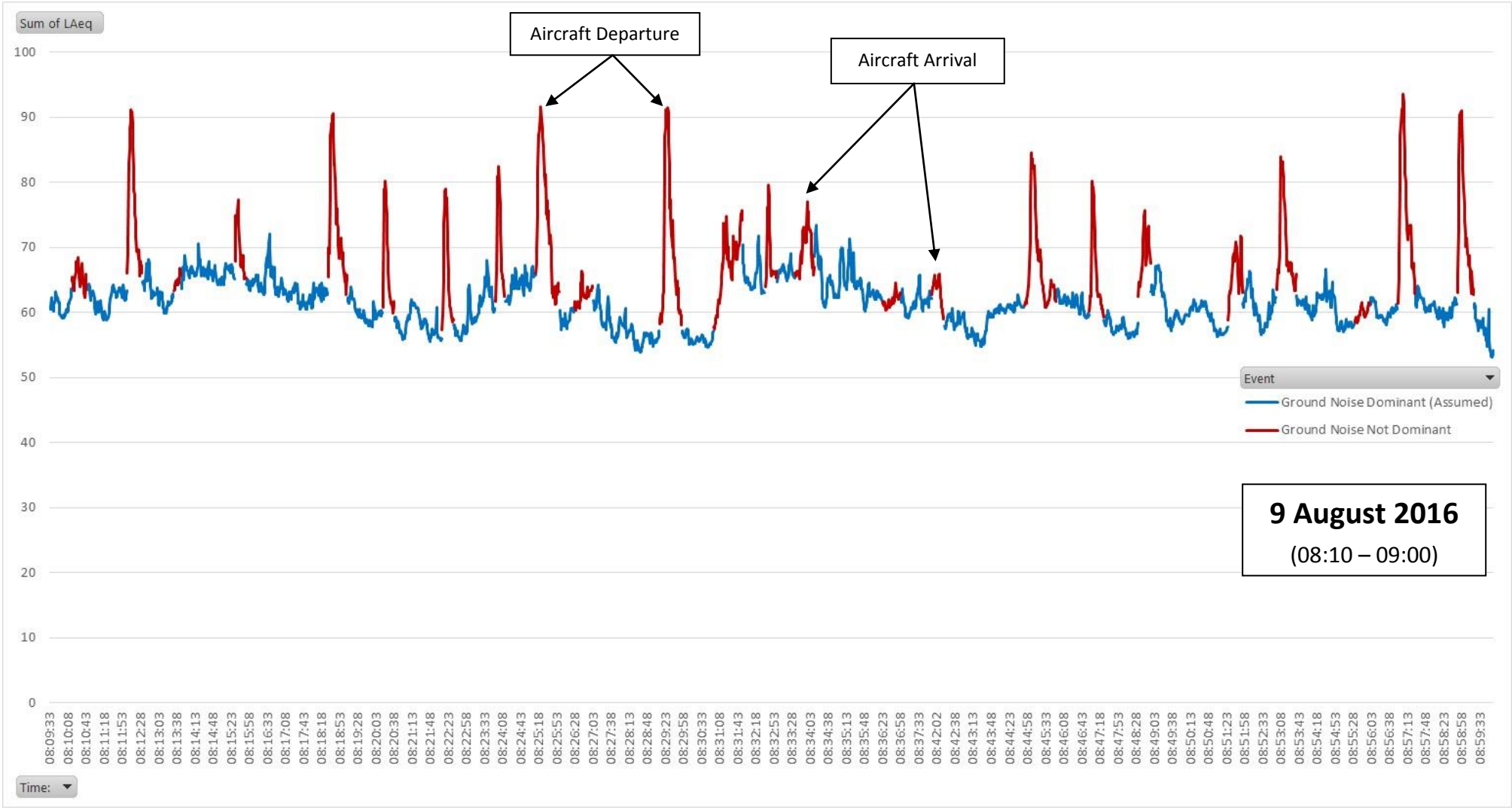
Location G2


Sum of LAeq
Aircraft Departure
DLR noise
Vehicle Noise
90
80
70
60
50
40
30
20
10
0
Event
Ambient and Ground Noise
Non Ground Noise Sources
1 August 2016
(08:15 – 11:15)
Time:

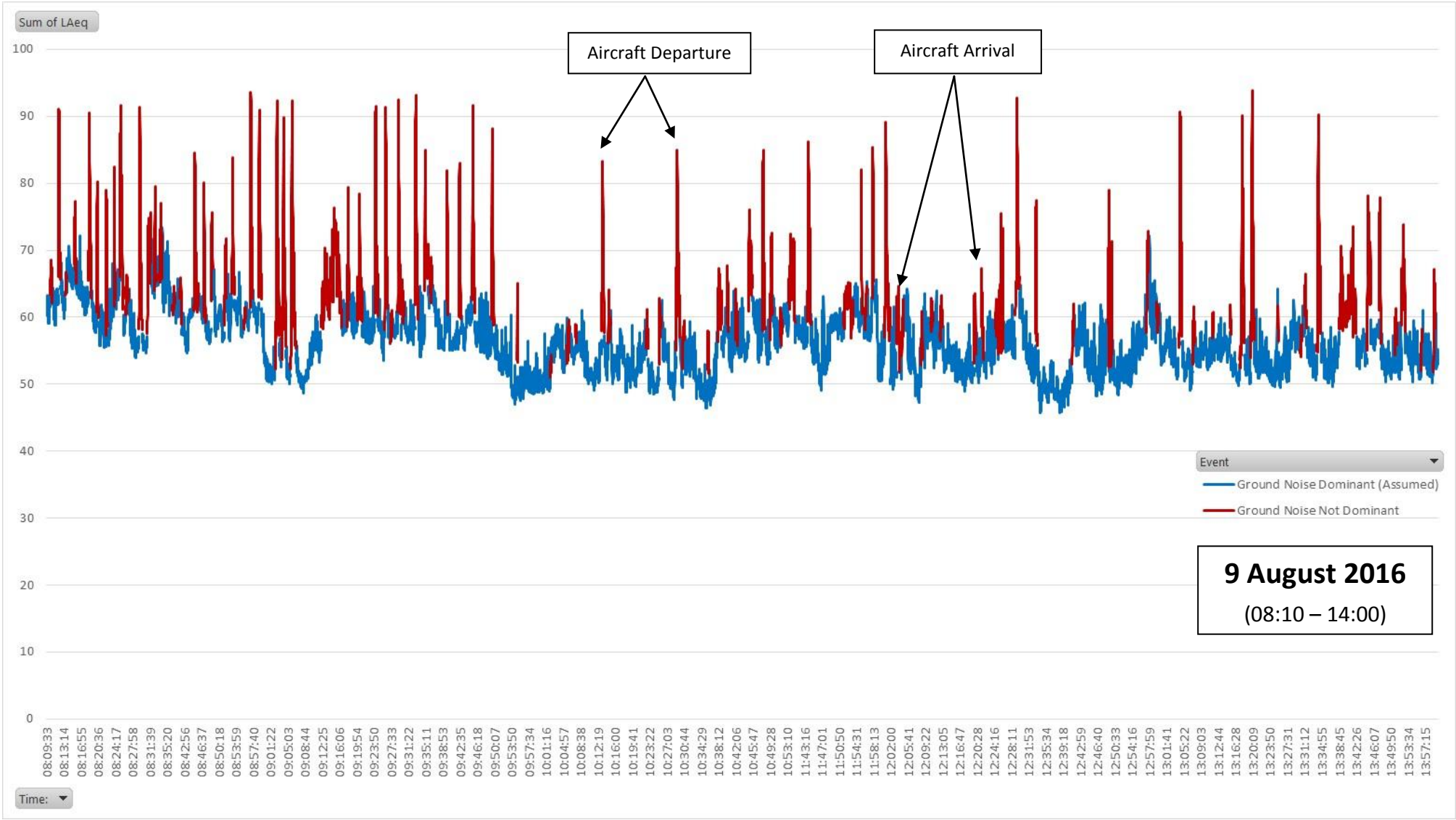
Location G2


Sum of LAeq
Aircraft Departure
DLR noise
Vehicle Noise
90
80
70
60
50
40
30
20
10
0
Event
Ambient and Ground Noise
Non Ground Noise Sources
1 August 2016
(13:10 – 15:25)
Time:

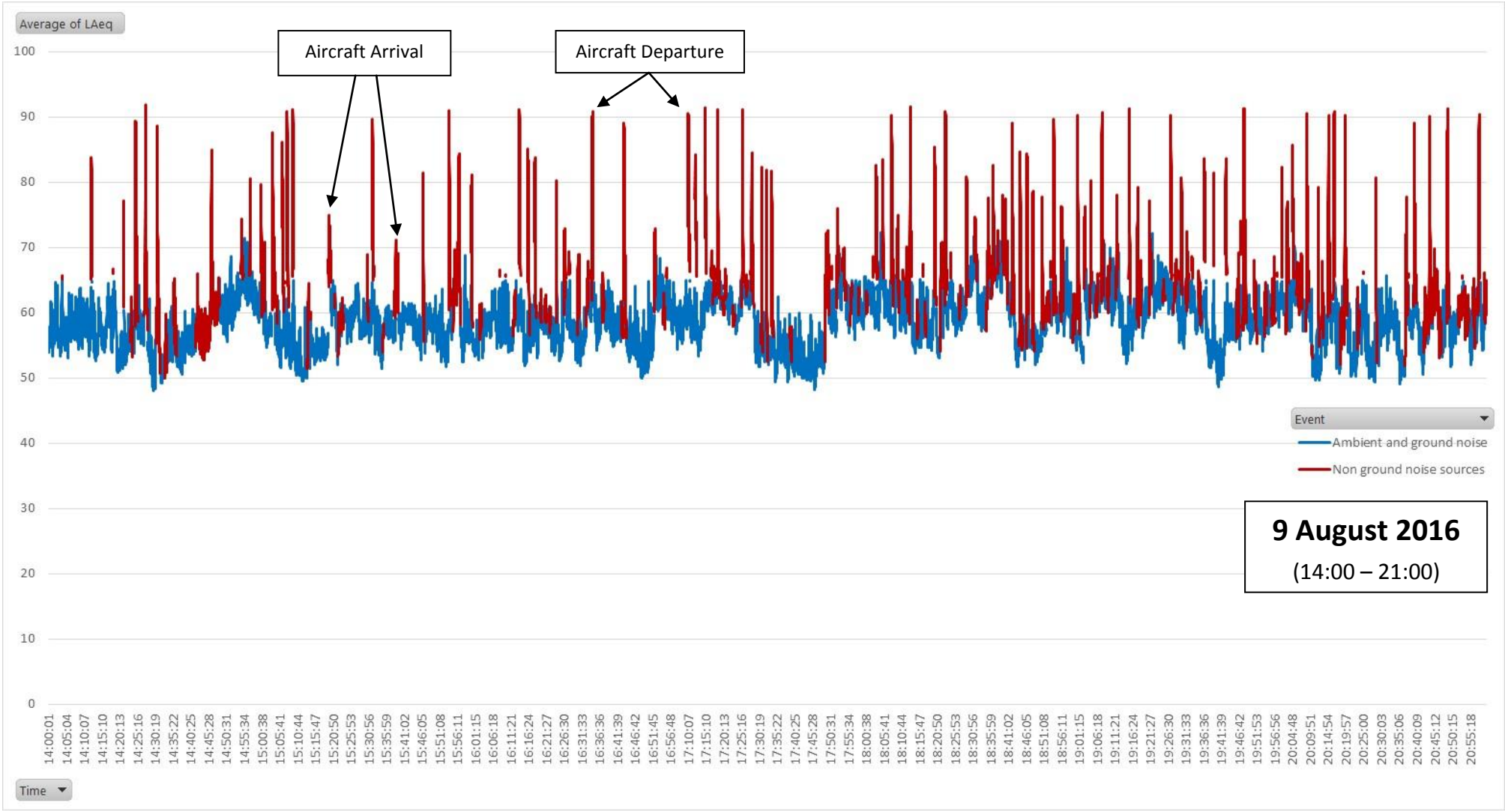
Location G3


Sum of LAeq
Aircraft Departure
Aircraft Arrival
100
90
80
70
60
50
40
30
20
10
0
Event
Ground Noise Dominant (Assumed)
Ground Noise Not Dominant
9 August 2016
(08:10 – 09:00)
Time:

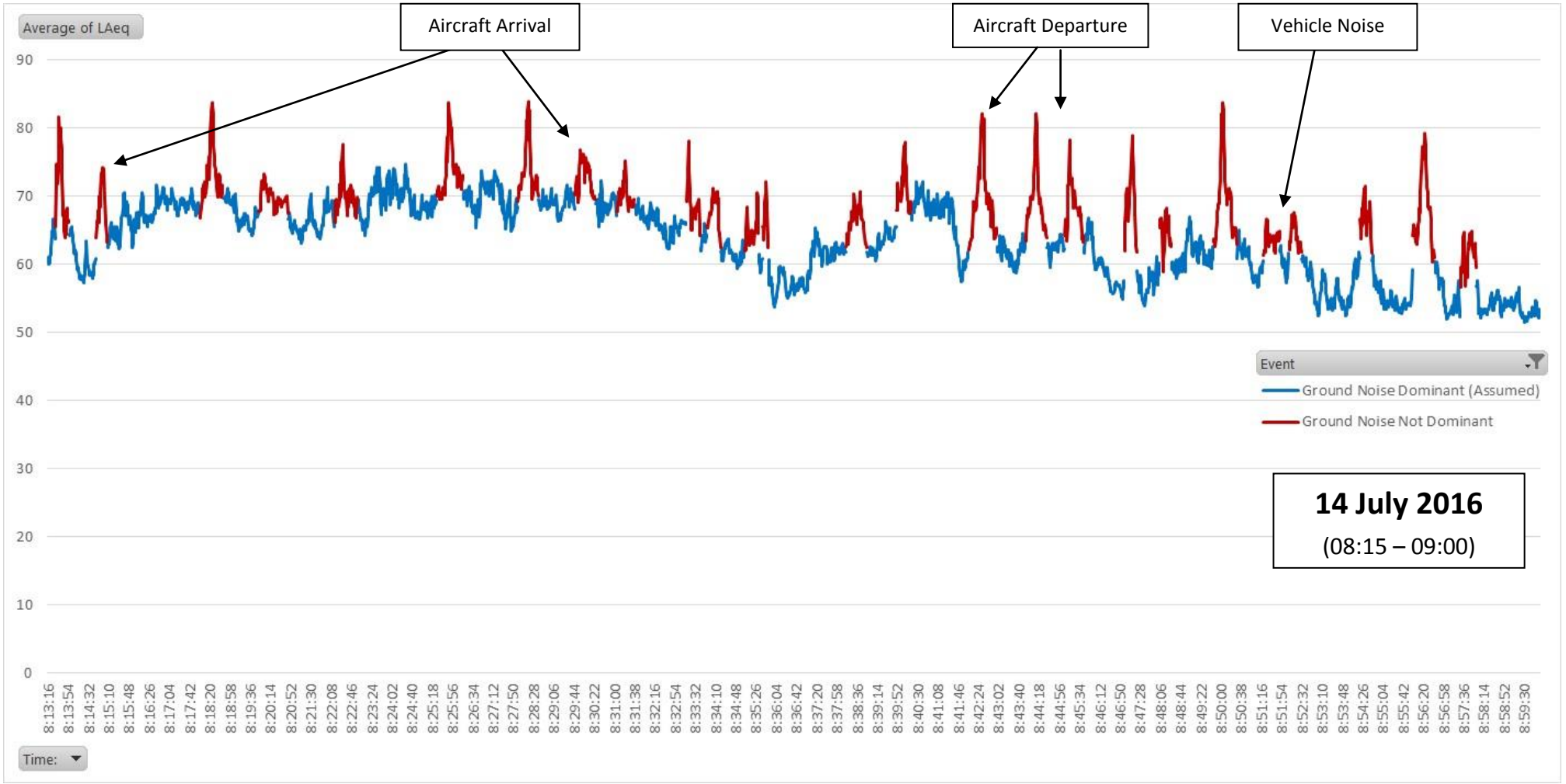
Location G3


Sum of LAeq
Aircraft Departure
Aircraft Arrival
100
90
80
70
60
50
40
30
20
10
0
Event
Ground Noise Dominant (Assumed)
Ground Noise Not Dominant
9 August 2016
(08:10 – 14:00)
Time:

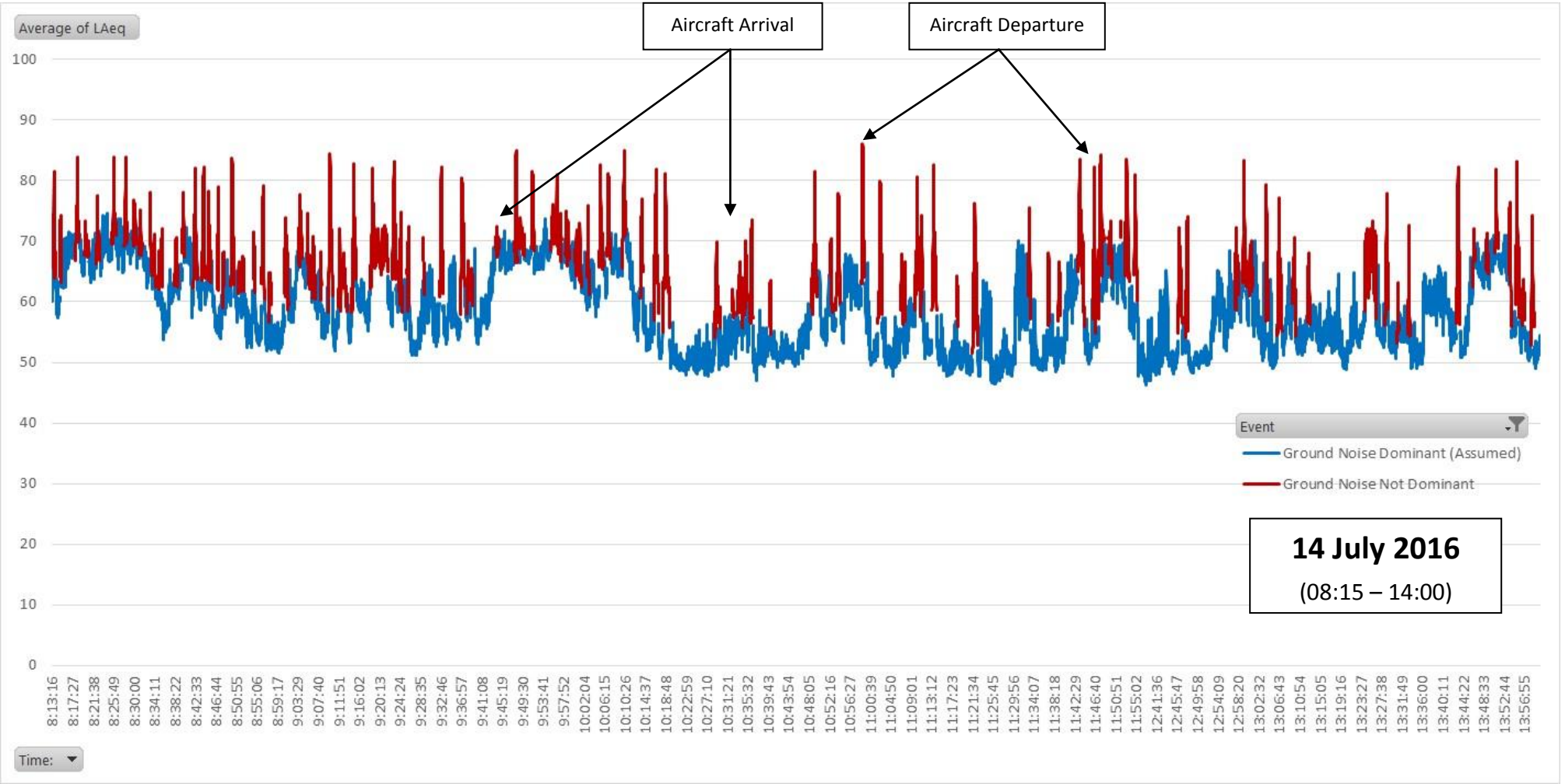
Location G3


Average of LAeq
Aircraft Arrival
Aircraft Departure
100
90
80
70
60
50
40
30
20
10
0
Event
Ambient and ground noise
Non ground noise sources
9 August 2016
(14:00 – 21:00)
Time

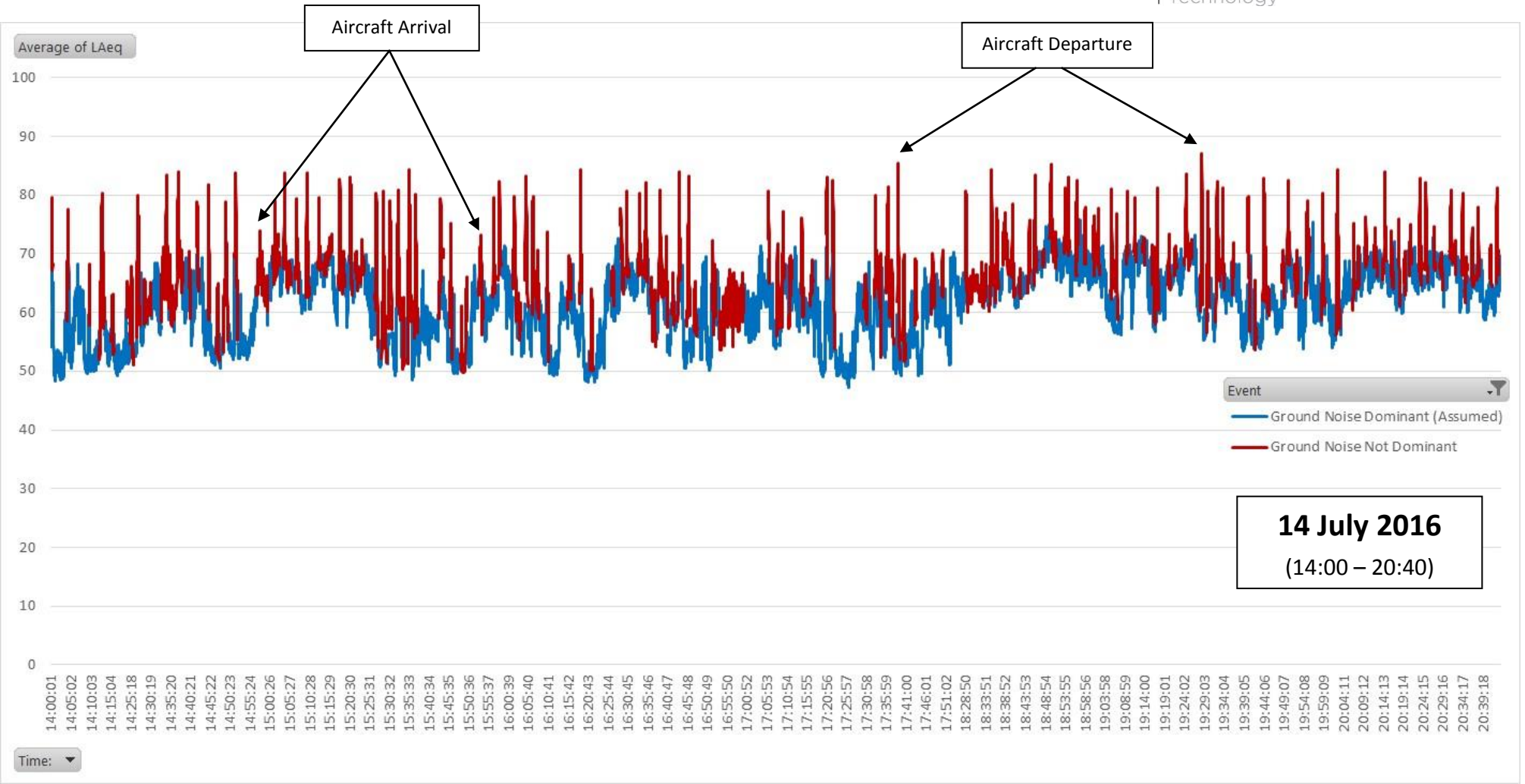
Location G4


Average of LAeq
Aircraft Arrival
Aircraft Departure
Vehicle Noise
90
80
70
60
50
40
30
20
10
0
Event
Ground Noise Dominant (Assumed)
Ground Noise Not Dominant
14 July 2016
(08:15 – 09:00)
8:13:16
8:13:54
8:14:32
8:15:10
8:15:48
8:16:26
8:17:04
8:17:42
8:18:20
8:18:58
8:19:36
8:20:14
8:20:52
8:21:30
8:22:08
8:22:46
8:23:24
8:24:02
8:24:40
8:25:18
8:25:56
8:26:34
8:27:12
8:27:50
8:28:28
8:29:06
8:29:44
8:30:22
8:31:00
8:31:38
8:32:16
8:32:54
8:33:32
8:34:10
8:34:48
8:35:26
8:36:04
8:36:42
8:37:20
8:37:58
8:38:36
8:39:14
8:39:52
8:40:30
8:41:08
8:41:46
8:42:24
8:43:02
8:43:40
8:44:18
8:44:56
8:45:34
8:46:12
8:46:50
8:47:28
8:48:06
8:48:44
8:49:22
8:50:00
8:50:38
8:51:16
8:51:54
8:52:32
8:53:10
8:53:48
8:54:26
8:55:04
8:55:42
8:56:20
8:56:58
8:57:36
8:58:14
8:58:52
8:59:30
Time:

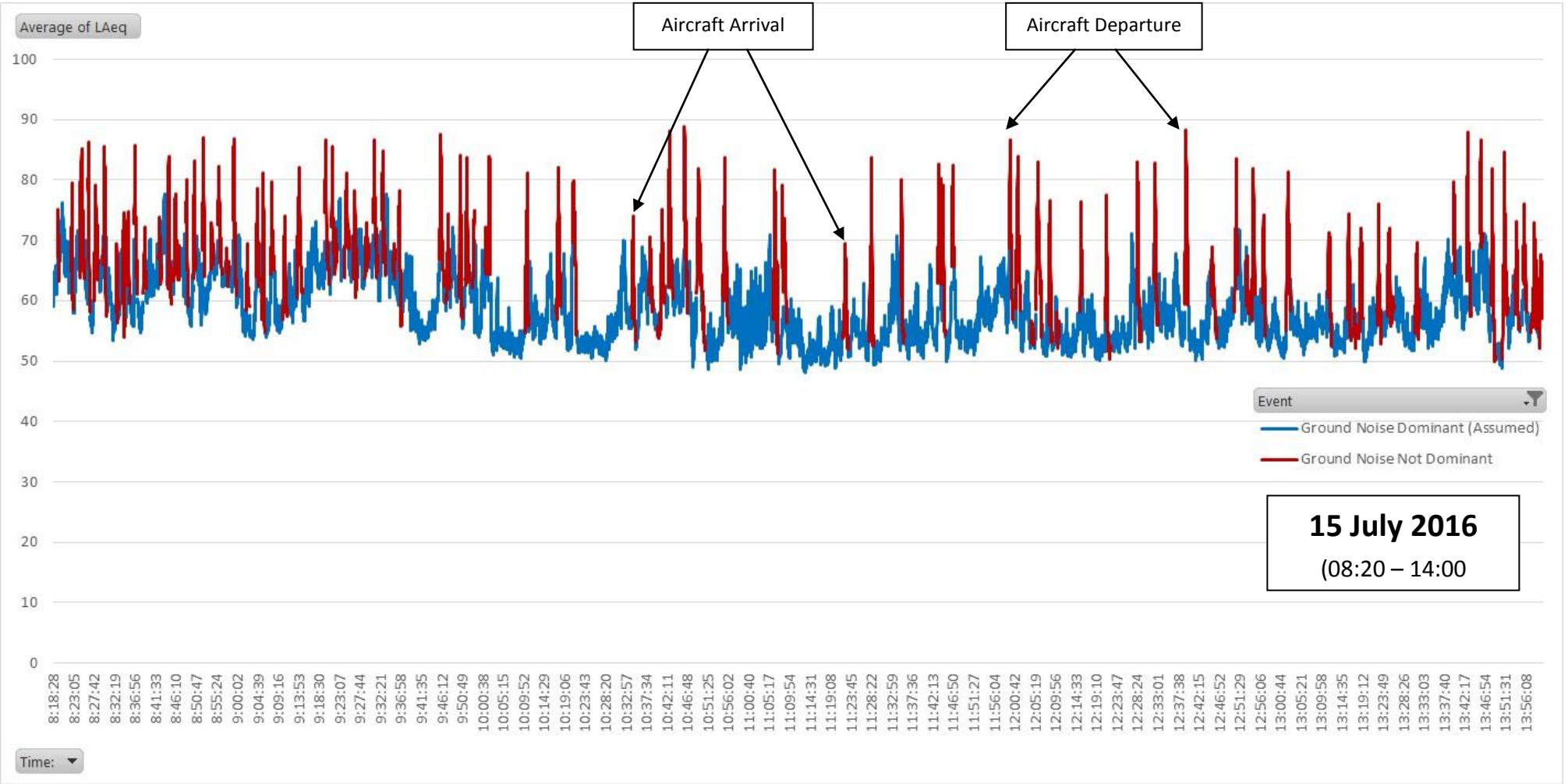
Location G4


Average of LAeq
Aircraft Arrival
Aircraft Departure
100
90
80
70
60
50
40
30
20
10
0
Event
Ground Noise Dominant (Assumed)
Ground Noise Not Dominant
14 July 2016
(08:15 – 14:00)
Time:

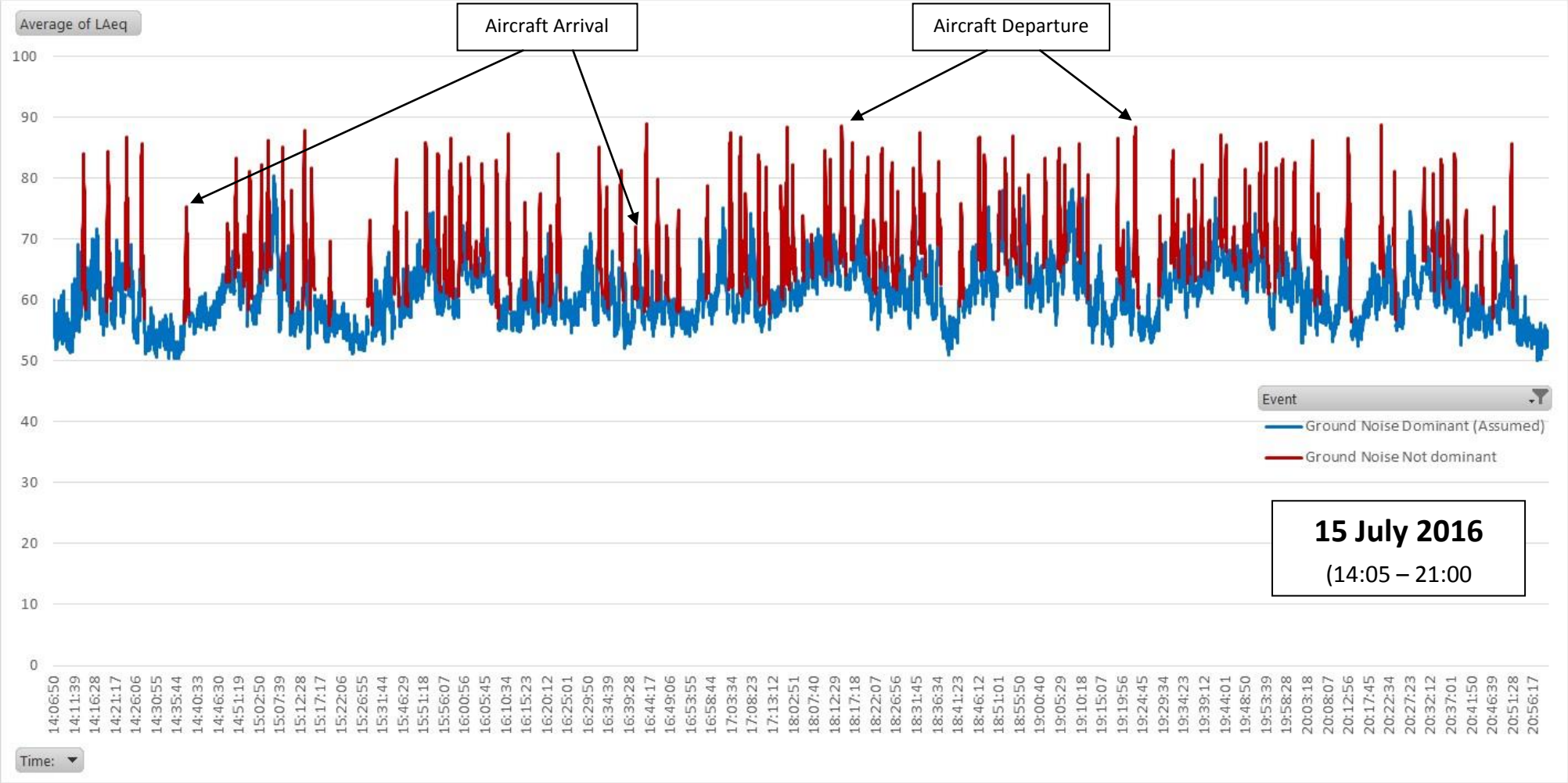
Location G4


Aircraft Arrival
Aircraft Departure
Average of LAeq
100
90
80
70
60
50
40
30
20
10
0
Event
Ground Noise Dominant (Assumed)
Ground Noise Not Dominant
14 July 2016
(14:00 – 20:40)
14:00:01
14:05:02
14:10:03
14:15:04
14:25:18
14:30:19
14:35:20
14:40:21
14:45:22
14:50:23
14:55:24
15:00:26
15:05:27
15:10:28
15:15:29
15:20:30
15:25:31
15:30:32
15:35:33
15:40:34
15:45:35
15:50:36
15:55:37
16:00:39
16:05:40
16:10:41
16:15:42
16:20:43
16:25:44
16:30:45
16:35:46
16:40:47
16:45:48
16:50:49
16:55:50
17:00:52
17:05:53
17:10:54
17:15:55
17:20:56
17:25:57
17:30:58
17:35:59
17:41:00
17:46:01
17:51:02
18:28:50
18:33:51
18:38:52
18:43:53
18:48:54
18:53:55
18:58:56
19:03:58
19:08:59
19:14:00
19:19:01
19:24:02
19:29:03
19:34:04
19:39:05
19:44:06
19:49:07
19:54:08
19:59:09
20:04:11
20:09:12
20:14:13
20:19:14
20:24:15
20:29:16
20:34:17
20:39:18
Time:

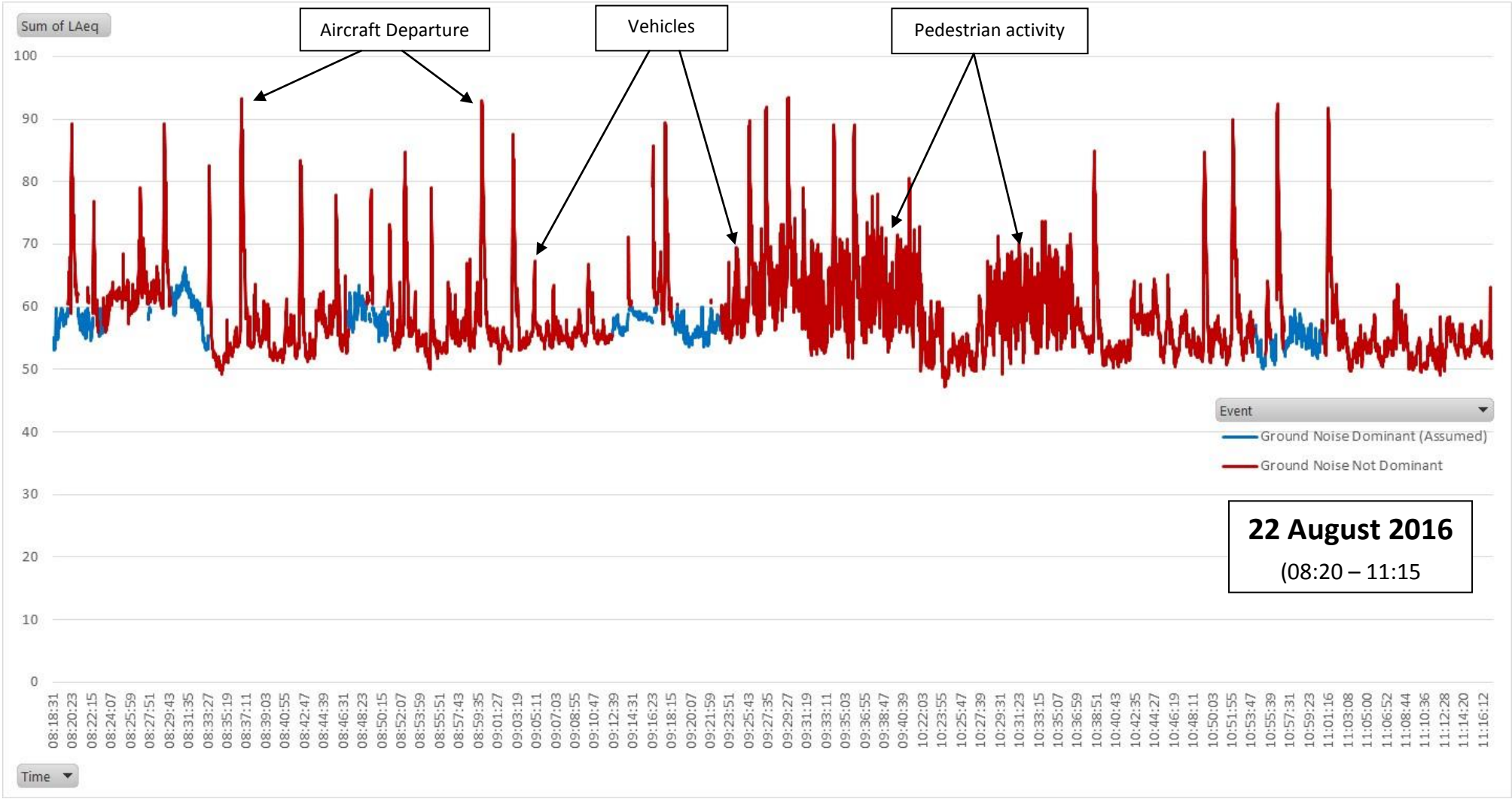
Location G5


Average of LAeq
Aircraft Arrival
Aircraft Departure
100
90
80
70
60
50
40
30
20
10
0
Event
Ground Noise Dominant (Assumed)
Ground Noise Not Dominant
15 July 2016
(08:20 – 14:00
Time:

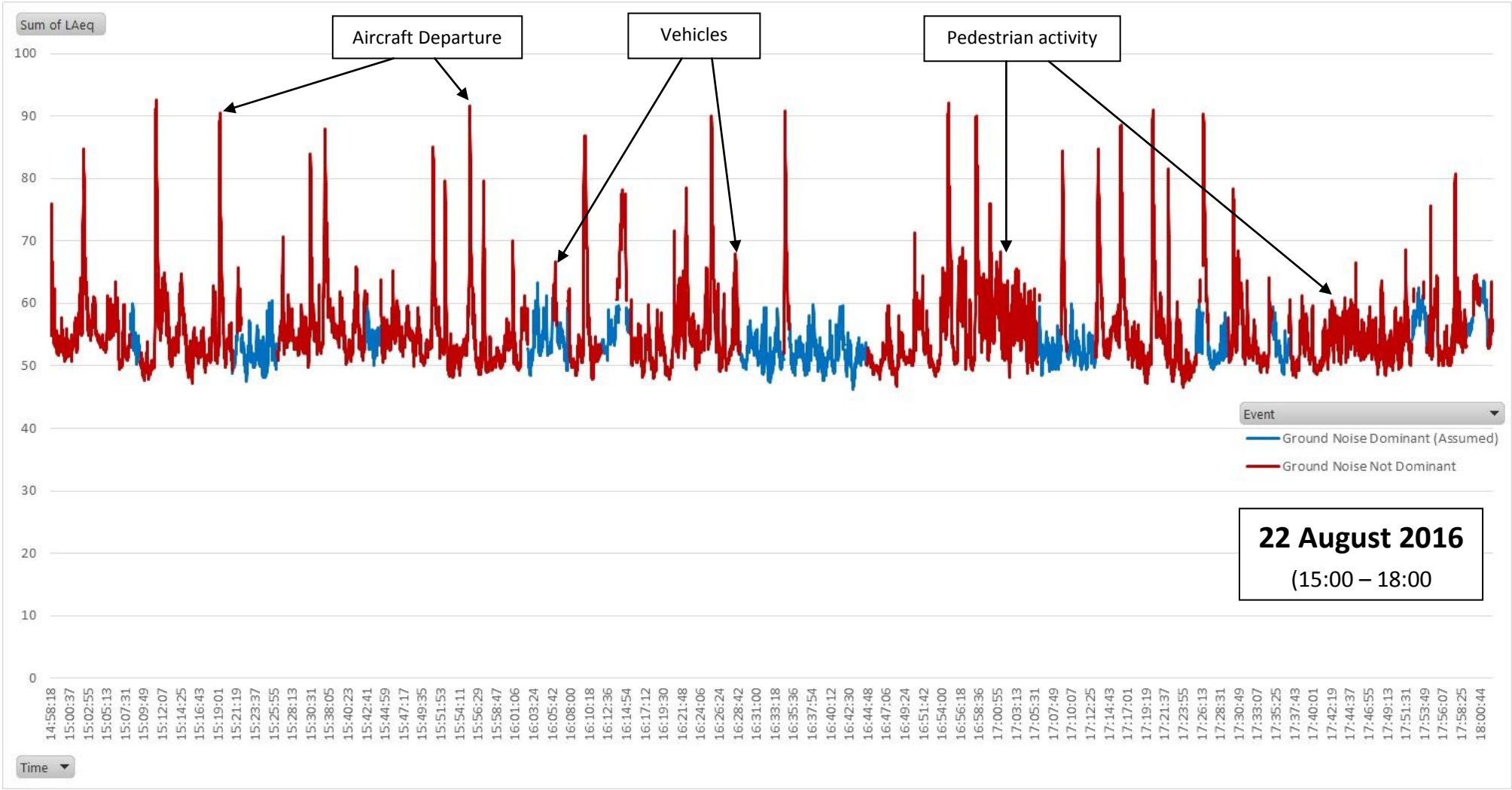
Location G5


Average of LAeq
Aircraft Arrival
Aircraft Departure
100
90
80
70
60
50
40
30
20
10
0
Event
Ground Noise Dominant (Assumed)
Ground Noise Not dominant
15 July 2016
(14:05 – 21:00
Time:

Location G6


Sum of LAeq
Aircraft Departure
Vehicles
Pedestrian activity
100
90
80
70
60
50
40
30
20
10
0
Event
Ground Noise Dominant (Assumed)
Ground Noise Not Dominant
22 August 2016
(08:20 – 11:15
Time

Location G6


Sum of LAeq
Aircraft Departure
Vehicles
Pedestrian activity
100
90
80
70
60
50
40
30
20
10
0
Event
Ground Noise Dominant (Assumed)
Ground Noise Not Dominant
22 August 2016
(15:00 – 18:00
14:58:18
15:00:37
15:02:55
15:05:13
15:07:31
15:09:49
15:12:07
15:14:25
15:16:43
15:19:01
15:21:19
15:23:37
15:25:55
15:28:13
15:30:31
15:38:05
15:40:23
15:42:41
15:44:59
15:47:17
15:49:35
15:51:53
15:54:11
15:56:29
15:58:47
16:01:06
16:03:24
16:05:42
16:08:00
16:10:18
16:12:36
16:14:54
16:17:12
16:19:30
16:21:48
16:24:06
16:26:24
16:28:42
16:31:00
16:33:18
16:35:36
16:37:54
16:40:12
16:42:30
16:44:48
16:47:06
16:49:24
16:51:42
16:54:00
16:56:18
16:58:36
17:00:55
17:03:13
17:05:31
17:07:49
17:10:07
17:12:25
17:14:43
17:17:01
17:19:19
17:21:37
17:23:55
17:26:13
17:28:31
17:30:49
17:33:07
17:35:25
17:37:43
17:40:01
17:42:19
17:44:37
17:46:55
17:49:13
17:51:31
17:53:49
17:56:07
17:58:25
18:00:44
Time

Bickerdike Allen Partners
Architecture
Acoustics
Technology

APPENDIX 4

SCHEDULE OF FLIGHT INFORMATION ON GROUND NOISE SURVEY DAYS

LOCATION G1 and G2

01/08/2016

08:15 – 11:15

Time	Flight No.	A/C Type	Dep / Arr	Runway
08:14	BE1351	DH8D	A	27
08:17	BA3281	SB20	A	27
08:21	BA8760	E170	A	27
08:22	AZ218	E190	A	27
08:25	BA4461	RJ85	A	27
08:28	BE3302	DH8D	D	27
08:29	GR650	AT45	A	27
08:32	WX018	RJ85	A	27
08:38	BE6454	AT42	A	27
08:39	BA3279	E190	D	27
08:41	BA8711	E190	A	27
08:43	BA8491	E190	D	27
08:44	LH928	E190	A	27
08:45	BE1332	DH8D	D	27
08:47	WX174	RJ85	A	27
08:49	BA2281	E170	D	27
08:50	BA8752	E170	A	27
08:54	WX071	RJ85	D	27
08:56	BA8451	E190	D	27
08:58	BE1361	DH8D	A	27
09:01	BA8704	E190	D	27
09:02	BE1333	DH8D	A	27
09:03	BA3291	D328	D	27
09:04	BA8705	E190	A	27
09:07	BA8723	E190	A	27
09:09	LX451	E190	D	27
09:12	LX443	RJ1H	D	27
09:13	WX112	RJ85	A	27
09:15	BA8722	E170	D	27
09:19	BA9750P	E190	A	27
09:23	BA3282	SB20	D	27
09:24	LX460	RJ1H	A	27
09:30	PRVEN	F2TH	D	27
09:33	WX019	RJ85	D	27
09:35	GR651	AT45	D	27
09:37	NJE458B	C56X	A	27
09:38	BE6455	AT42	D	27
09:42	LH929	E190	D	27

09:44	BE1352	DH8D	D	27
09:46	BA3289	E190	D	27
09:48	BE1334	DH8D	D	27
09:50	BA4452	SB20	A	27
09:53	WX175	RJ85	D	27
09:55	BA8732	E170	D	27
09:57	AZ217	E190	D	27
09:59	BA4462	RJ85	D	27
10:01	WX114	RJ85	A	27
10:04	NJE209E	C56X	D	27
10:07	BA001	A318	D	27
10:09	BE1362	DH8D	D	27
10:11	BA8487	E190	D	27
10:15	BA8479	E190	D	27
10:27	BA8496	E170	A	27
10:30	BA8764	E170	A	27
10:31	LX461	RJ1H	D	27
10:34	WX281	RJ85	D	27
10:39	AZ216	E190	A	27
10:42	AZ212	E190	A	27
10:44	BA4453	SB20	D	27
10:46	NJE210W	C56X	D	27
10:49	WX180	RJ85	A	27
10:51	WX209	RJ85	D	27
10:53	WX074	RJ85	A	27
10:58	LG4593	DH8D	A	27
11:05	BA8703	E170	A	27
11:22	BA8753	E170	D	27

13:05 – 15:25

Time	Flight No.	A/C Type	Dep / Arr	Runway
13:02	LG4607	DH8D	A	27
13:06	BA8493	E170	D	27
13:09	BA8749	E170	D	27
13:20	BA4465	RJ85	A	27
13:27	BA2284	E170	A	27
13:29	BA2224	E190	A	27
13:32	WX182	RJ85	A	27
13:34	BA8461	E190	D	27
13:35	BA8492	E190	A	27
13:38	BA3293	D328	D	27
13:43	BA3280	E190	A	27
13:46	LX457	E190	D	27
13:49	BA3274	SB20	A	27
13:51	LG4608	DH8D	D	27
13:52	BA8733	E170	A	27
13:54	BA8475	E190	D	27
13:56	WX208	RJ85	A	27
14:05	BA8468	E190	A	27
14:16	BA4464	RJ85	D	27
14:23	WX173	RJ85	D	27
14:26	BA8765	E190	D	27
14:29	LX434	RJ1H	A	27
14:31	WX181	RJ85	D	27
14:32	BA8482	E190	A	27
14:35	BA8453	E190	D	27
14:39	BA8463	E190	D	27
14:41	BA8471	E170	D	27
14:45	WX025	RJ85	D	27
14:55	BA8480	E190	A	27
14:59	WX075	RJ85	D	27
15:01	BE1355	DH8D	A	27
15:04	BA8746	E170	A	27
15:05	BA8734	E190	D	27
15:15	LX435	RJ1H	D	27
15:17	LG4595	DH8D	A	27
15:19	NJE701R	E55P	A	27
15:27	BA3275	SB20	D	27

LOCATION G3

05/07/2013

8:10 – 21:00

Time	Flight No.	A/C Type	Dep / Arr	Runway
08:10	BA8760	E190	A	27
08:12	BA8732	E190	D	27
08:13	BA4461	E170	A	27
08:15	SX521	SB20	D	27
08:18	BA2281	E170	D	27
08:20	BA3271	SB20	D	27
08:22	BE3302	DH8D	D	27
08:24	BE1332	DH8D	D	27
08:25	BA4451	E170	D	27
08:26	BA8723	E190	A	27
08:29	BA8491	E190	D	27
08:31	GR650	AT72	A	27
08:32	BA3291	D328	D	27
08:33	BE6454	AT42	A	27
08:36	BA8752	E170	A	27
08:39	BA8711	E190	A	27
08:41	BE1352	DH8D	D	27
08:42	WX174	RJ85	A	27
08:45	LX443	RJ1H	D	27
08:45	LH928	E190	A	27
08:47	BA3282	SB20	D	27
08:48	BE1333	DH8D	A	27
08:51	BE1361	DH8D	A	27
08:53	WX105	RJ85	D	27
08:56	BA8705	E190	A	27
08:57	BA8704	E190	D	27
08:59	BA8747	E190	D	27
09:02	BA8722	E190	D	27
09:04	AZ217	E190	D	27
09:06	BA4462	E170	D	27
09:18	GR651	AT72	D	27
09:20	BE6455	AT42	D	27
09:24	BA8475	E190	D	27
09:26	BA8753	E170	D	27

09:27	LX460	RJ1H	A	27
09:29	BA8485	E190	D	27
09:29	BA3273	E190	A	27
09:33	LH929	E190	D	27
09:35	WX175	RJ85	D	27
09:39	BE1362	DH8D	D	27
09:42	BE1334	DH8D	D	27
09:43	WX112	RJ85	A	27
09:45	BA8487	E190	D	27
09:46	WX074	RJ85	A	27
09:49	BA001	A318	D	27
10:02	WX114	RJ85	A	27
10:06	BA4463	E190	A	27
10:13	LX461	RJ1H	D	27
10:14	BA8703	E190	A	27
10:25	AZ212	E190	A	27
10:29	WX281	RJ85	D	27
10:31	BA8764	E170	A	27
10:38	AZ216	E190	A	27
10:42	BA4452	E170	A	27
10:45	LG4593	DH8D	A	27
10:48	WX209	RJ85	D	27
10:49	BE1335	DH8D	A	27
10:51	BA8496	E170	A	27
11:00	WX180	RJ85	A	27
11:02	BA2225	E190	D	27
11:04	NJE827G	E55P	A	27
11:06	BA8461	E190	D	27
11:09	BA8479	E170	D	27
11:19	AZ211	E190	D	27
11:24	LG4594	DH8D	D	27
11:26	AZ215	E190	D	27
11:36	BA2223	E190	D	27
11:38	WX232	AT45	A	27
11:40	LX456	E190	A	27
11:44	WX151	RJ85	D	27
11:53	BA8472	E190	A	27
11:55	BE1336	DH8D	D	27
11:56	BA4465	E170	A	27

11:58	WX023	RJ85	D	27
12:01	BA8743	E170	D	27
12:04	BA8725	E190	A	27
12:08	BA8748	E190	A	27
12:10	BA8733	E190	A	27
12:12	BA8715	E190	A	27
12:29	LX457	E190	D	27
12:33	WX233	AT45	D	27
12:41	BA8492	E190	A	27
12:57	LG4607	DH8D	A	27
13:00	BA8484	E190	A	27
13:04	BA8765	E190	D	27
13:07	BA2284	E170	A	27
13:18	BA8493	E190	D	27
13:20	BA8481	E190	D	27
13:30	WX182	RJ85	A	27
13:34	BA4464	E170	D	27
13:45	BA3294	D328	A	27
13:47	LG4608	DH8D	D	27
13:52	BA3274	SB20	A	27
13:56	WX208	RJ85	A	27
13:59	BA8474	E190	A	27
14:01	BA8476	E190	A	27
14:08	LX434	RJ1H	A	27
14:12	WX181	RJ85	D	27
14:21	BA3293	D328	D	27
14:23	BKK26Z	C25A	A	27
14:24	BA2285	E170	D	27
14:27	BA8465	E190	D	27
14:31	BA8716	E170	D	27
14:33	BA8744	E170	A	27
14:46	WX025	RJ85	D	27
14:48	BA8486	E190	A	27
14:54	BE1355	DH8D	A	27
14:57	BA3275	SB20	D	27
15:00	BKK26Z	C25A	D	27
15:03	LX435	RJ1H	D	27
15:06	NJE345P	E55P	D	27
15:07	BA3279	E190	D	27

15:09	BA8734	E190	D	27
15:13	WX022	RJ85	A	27
15:19	LG4595	DH8D	A	27
15:22	WX280	RJ85	A	27
15:25	WX024	RJ85	A	27
15:30	AZ222	E190	A	27
15:32	BA8455	E170	D	27
15:35	BA8480	E170	A	27
15:38	BA3285	SB20	A	27
15:46	BE1316	DH8D	D	27
15:54	BA8767	E190	D	27
15:56	WX075	RJ85	D	27
16:00	LG4596	DH8D	D	27
16:02	BA8488	E190	A	27
16:12	LH934	E190	A	27
16:14	BA8726	E190	D	27
16:16	WX121	RJ85	D	27
16:18	WX183	RJ85	D	27
16:19	BA8462	E190	A	27
16:22	WX150	RJ85	A	27
16:24	BA3286	SB20	D	27
16:26	BE1339	DH8D	A	27
16:30	BE1357	DH8D	A	27
16:33	BA2224	E190	A	27
16:34	AZ221	E190	D	27
16:37	LX464	RJ1H	A	27
16:43	BA4457	E170	D	27
16:52	BE3307	DH8D	A	27
16:54	WX192	RJ85	A	27
17:03	BA8724	E190	D	27
17:06	LH935	E190	D	27
17:10	BA8459	E170	D	27
17:12	WX123	RJ85	D	27
17:15	BA8712	E190	D	27
17:17	BA8494	E190	A	27
17:18	BA8706	E190	D	27
17:20	BA4467	E170	A	27
17:22	WX122	RJ85	A	27
17:25	BA8477	E190	D	27

17:26	BA8766	E190	A	27
17:28	LX465	RJ1H	D	27
17:31	BE1358	DH8D	D	27
17:32	BE1340	DH8D	D	27
17:34	BE1308	DH8D	D	27
17:49	BE1341	DH8D	A	27
17:52	GR656	AT72	A	27
17:54	WX026	RJ85	A	27
17:56	BA8707	E170	A	27
17:58	LX466	RJ1H	A	27
18:00	WX082	RJ85	A	27
18:03	BA3296	D328	A	27
18:05	WX193	RJ85	D	27
18:06	BA2286	E170	A	27
18:08	BA4468	E170	D	27
18:09	LG4601	DH8D	A	27
18:12	BA3276	SB20	A	27
18:13	BA8495	E190	D	27
18:15	BA8754	E170	A	27
18:17	BA8456	E170	A	27
18:20	WX083	RJ85	D	27
18:22	BE1365	DH8D	A	27
18:23	BA8728	E190	D	27
18:27	BA8735	E190	A	27
18:29	BE1342	DH8D	D	27
18:31	BE6462	AT42	A	27
18:35	WX238	AT45	A	27
18:36	WX027	RJ85	D	27
18:38	LH936	E190	A	27
18:39	BA3295	D328	D	27
18:42	BA8769	E170	D	27
18:44	LX467	RJ1H	D	27
18:46	WX127	RJ85	D	27
18:48	LG4602	DH8D	D	27
18:50	GR657	AT72	D	27
18:52	LX446	RJ1H	A	27
18:54	BA2287	E170	D	27
18:56	BE1317	DH8D	A	27
18:59	WX126	RJ85	A	27

19:01	BA8457	E170	D	27
19:02	LG4597	DH8D	A	27
19:04	BA3277	SB20	D	27
19:06	BA4458	E170	A	27
19:07	BA8755	E170	D	27
19:09	AZ220	E190	A	27
19:12	BE6463	AT42	D	27
19:15	BA8736	E190	D	27
19:16	WX198	RJ85	A	27
19:18	WX239	AT45	D	27
19:21	BA3287	SB20	A	27
19:25	BA8727	E190	A	27
19:27	LH937	E190	D	27
19:28	LX454	E190	A	27
19:30	BE1366	DH8D	D	27
19:31	BA2222	E190	A	27
19:35	BA8768	E190	A	27
19:37	LX447	RJ1H	D	27
19:39	LG4598	DH8D	D	27
19:43	WX129	RJ85	D	27
19:48	BA4459	E170	D	27
19:50	BA8482	E190	A	27
19:54	BA8729	E190	A	27
19:56	BA3280	E190	A	27
19:59	BE1360	DH8D	D	27
20:00	BE1343	DH8D	A	27
20:03	BA8458	E170	A	27
20:05	WX199	RJ85	D	27
20:06	BA8466	E190	A	27
20:09	AZ219	E190	D	27
20:12	BA3288	SB20	D	27
20:13	BA8717	E190	A	27
20:15	BA2214	E190	D	27
20:16	BA8708	E190	D	27
20:18	BA8709	E190	A	27
20:19	LX455	E190	D	27
20:28	BE1344	DH8D	D	27
20:37	BE1345	DH8D	A	27
20:39	BA4470	E170	D	27

20:42	WX128	RJ85	A	27
20:44	BA8730	E190	D	27
20:49	BA8718	E190	D	27
20:52	BA4471	E170	A	27
20:56	AZ224	E190	A	27
20:58	BA8714	E190	D	27
20:59	BA2215	E190	A	27

LOCATION G4

14/07/2013

8:15 – 20:40

Time	Flight No.	A/C Type	Dep / Arr	Runway
08:14	LG4606	DH8D	D	27
08:16	BA8760	E170	A	27
08:18	BA8497	E170	D	27
08:20	BA4461	E170	A	27
08:22	BE1330	DH8D	D	27
08:25	WX171	RJ85	D	27
08:28	BA2281	E170	D	27
08:29	GR650	AT45	A	27
08:31	SX521	D328	D	27
08:33	BE3302	DH8D	D	27
08:35	BA3291	D328	D	27
08:38	BA8711	E190	A	27
08:40	BE1332	DH8D	D	27
08:42	BA8491	E190	D	27
08:44	BA8451	E190	D	27
08:45	BE1361	DH8D	A	27
08:47	BE1352	DH8D	D	27
08:48	BA8723	E190	A	27
08:50	BA8704	E190	D	27
08:51	WX112	RJ85	A	27
08:54	LH928	E190	A	27
08:56	LX443	RJ1H	D	27
08:57	BA8752	E170	A	27
09:01	BE1333	DH8D	A	27
09:03	BE6454	AT42	A	27
09:05	BA3271	SB20	D	27
09:06	BA8705	E190	A	27
09:10	BA4462	E170	D	27
09:14	AZ217	E190	D	27
09:18	BA8722	E170	D	27
09:19	LX460	RJ1H	A	27
09:23	BA8461	E190	D	27
09:24	BA3282	SB20	D	27
09:26	GR651	AT45	D	27
09:32	WX173	RJ85	D	27
09:37	LH929	E190	D	27
09:44	WX074	RJ85	A	27
09:47	BA004	A318	A	27

09:51	WX281	RJ85	D	27
09:55	BE1362	DH8D	D	27
09:56	BA4452	SB20	A	27
09:58	BE6455	AT42	D	27
09:59	BA8703	E190	A	27
10:02	BE1334	DH8D	D	27
10:03	WX018	RJ85	A	27
10:05	BA8487	E190	D	27
10:07	BA001	A318	D	27
10:08	WX114	RJ85	A	27
10:10	BA8753	E170	D	27
10:13	WX9072	RJ85	D	27
10:16	BA8475	E190	D	27
10:18	LX461	RJ1H	D	27
10:29	AZ212	E190	A	27
10:36	BA4453	SB20	D	27
10:40	NJE706C	EP3	A	27
10:49	LG4593	DH8D	A	27
10:52	AZ216	E190	A	27
10:54	WX019	RJ85	D	27
10:55	BA8764	E170	A	27
10:59	BA8463	E190	D	27
11:02	WX209	RJ85	D	27
11:06	BA8496	E170	A	27
11:10	NJE190A	C56X	A	27
11:13	AZ211	E190	D	27
11:18	WX180	RJ85	A	27
11:21	BE1335	DH8D	A	27
11:33	LG4594	DH8D	D	27
11:36	NJE117G	C56X	A	27
11:39	WX174	RJ85	A	27
11:43	WX151	RJ85	D	27
11:46	LX456	E190	A	27
11:47	AZ215	E190	D	27
11:50	BA8715	E190	A	27
11:53	BA8745	E170	D	27
11:54	BA3272	E170	D	27
11:58	WX023	RJ85	D	27
12:01	BA8452	E190	A	27
12:04	BE1336	DH8D	D	27
12:07	BA3270	SB20	A	27
12:09	BA8472	E190	A	27
12:13	NJE067W	C56X	A	27
12:15	BA8725	E170	A	27

12:18	WX175	RJ85	D	27
12:21	NJE887Y	EP3	D	27
12:22	BA4465	E170	A	27
12:30	BA8492	E190	A	27
12:33	BA3294	D328	A	27
12:36	LX457	E190	D	27
12:47	BA9750P	SB20	D	27
12:57	GCGEI	C550	A	27
12:59	BA2221	E190	D	27
13:00	BA4463	E190	A	27
13:04	NJE746L	C56X	D	27
13:06	LG4607	DH8D	A	27
13:09	BA8480	E190	A	27
13:12	BA8484	E190	A	27
13:24	AOJ50G	C56X	A	27
13:28	NJE699P	C56X	D	27
13:29	XJC2	C550	D	27
13:31	EDC482	C25A	A	27
13:33	BA3293	D328	D	27
13:39	BA2284	E170	A	27
13:43	BA8493	E190	D	27
13:46	NJE620F	C56X	A	27
13:49	BA8468	E190	A	27
13:51	BA8765	E190	D	27
13:52	WX118	RJ85	A	27
13:55	BA4464	E190	D	27
13:56	WX022	RJ85	A	27
13:58	LG4608	DH8D	D	27
14:00	GCGEI	C550	D	27
14:04	BA8482	E190	A	27
14:08	NJE996T	H25B	A	27
14:12	WX236	AT45	A	27
14:15	WX208	RJ85	A	27
14:22	BA8473	E190	D	27
14:25	BA8476	E190	A	27
14:27	BA2285	E170	D	27
14:28	LX434	RJ1H	A	27
14:34	BA8747	E190	D	27
14:36	WX024	RJ85	A	27
14:37	BA3273	E170	A	27
14:37	BA8726	E190	D	27
14:42	NJE833G	C56X	D	27
14:44	EDC482	C25A	D	27
14:47	NJE062Q	E55P	A	27

14:49	WX025	RJ85	D	27
14:51	BA8465	E190	D	27
15:01	BE1355	DH8D	A	27
15:04	BA8485	E170	D	27
15:05	NJE701B	C56X	A	27
15:07	NJE199D	C56X	D	27
15:09	BA8716	E170	D	27
15:12	WX075	RJ85	D	27
15:14	WX280	RJ85	A	27
15:18	WX119	RJ85	D	27
15:18	BA8462	E190	A	27
15:20	BA3279	E190	D	27
15:22	BA8746	E170	A	27
15:23	WX237	AT45	D	27
15:27	AOJ50G	C56X	D	27
15:29	LG4595	DH8D	A	27
15:30	WX183	RJ85	D	27
15:32	LX435	RJ1H	D	27
15:35	BA8734	E170	D	27
15:37	BA3285	SB20	A	27
15:43	BA3274	SB20	A	27
15:46	BE1356	DH8D	D	27
15:49	WX188	RJ85	A	27
15:53	AZ222	E190	A	27
15:56	BA4456	SB20	A	27
15:58	BA8767	E190	D	27
16:02	WX121	RJ85	D	27
16:03	RRR1914	B461	A	27
16:04	BA8455	E170	D	27
16:06	BA003	A318	D	27
16:10	LG4596	DH8D	D	27
16:15	BA8488	E190	A	27
16:18	BA8706	E190	D	27
16:21	NJE511P	H25B	A	27
16:27	NJE326W	H25B	A	27
16:29	BA3275	SB20	D	27
16:30	BE1339	DH8D	A	27
16:33	BE1357	DH8D	A	27
16:35	NJE400A	E55P	D	27
16:37	NJE928U	H25B	A	27
16:38	WX189	RJ85	D	27
16:40	BA3286	SB20	D	27
16:41	WX150	RJ85	A	27
16:43	AZ221	E190	D	27

16:46	ZE701	B461	D	27
16:47	LX464	RJ1H	A	27
16:52	BA4457	SB20	D	27
17:06	NJE673K	C56X	D	27
17:08	LH934	E190	A	27
17:10	BE1340	DH8D	D	27
17:11	BA8464	E190	A	27
17:14	BE1358	DH8D	D	27
17:17	WX192	RJ85	A	27
17:20	BA3296	D328	A	27
17:22	BA8724	E190	D	27
17:30	WX082	RJ85	A	27
17:33	WX123	RJ85	D	27
17:34	BA4467	E190	A	27
17:36	LX465	RJ1H	D	27
17:37	BA8766	E190	A	27
17:38	NJE524N	H25B	D	27
17:40	BA8494	E190	A	27
17:43	BA8748	E190	A	27
17:47	BA8727	E190	A	27
17:50	WX026	RJ85	A	27
17:52	LH935	E190	D	27
17:57	GR656	AT45	A	27
18:00	BA8712	E190	D	27
18:01	WX238	AT45	A	27
18:04	BE3307	DH8D	A	27
18:07	BE1341	DH8D	A	27
18:08	NJE432C	H25B	D	27
18:09	LX466	RJ1H	A	27
18:12	BA8211	J328	A	27
18:15	LG4601	DH8D	A	27
18:18	WX193	RJ85	D	27
18:19	WX196	RJ85	A	27
18:22	BA8707	E170	A	27
18:24	BA8459	E190	D	27
18:28	WX083	RJ85	D	27
18:30	WX122	RJ85	A	27
18:33	BA8456	E170	A	27
18:35	BA8495	E190	D	27
18:36	BE6462	AT42	A	27
18:38	LH936	E190	A	27
18:40	WX027	RJ85	D	27
18:42	BA2286	E170	A	27
18:44	BE1365	DH8D	A	27

18:46	BA4468	E190	D	27
18:48	BA8754	E170	A	27
18:50	BA8728	E190	D	27
18:51	BA8735	E170	A	27
18:53	BA8708	E190	D	27
18:54	SX522	SB20	A	27
18:57	BE1342	DH8D	D	27
18:58	BE1359	DH8D	A	27
19:01	BE1308	DH8D	D	27
19:02	LG4597	DH8D	A	27
19:05	BA4458	SB20	A	27
19:07	LG4602	DH8D	D	27
19:09	BA3287	SB20	A	27
19:11	LX467	RJ1H	D	27
19:13	LX446	RJ1H	A	27
19:15	GR657	AT45	D	27
19:17	AZ220	E190	A	27
19:20	WX239	AT45	D	27
19:21	BA8709	E190	A	27
19:24	BA8769	E170	D	27
19:25	WX126	RJ85	A	27
19:28	NJE947U	H25B	D	27
19:29	BE1343	DH8D	A	27
19:32	BA2287	E170	D	27
19:33	BA3276	SB20	A	27
19:36	BE6463	AT42	D	27
19:40	WX197	RJ85	D	27
19:44	LH937	E190	D	27
19:45	WX198	RJ85	A	27
19:48	BA8768	E190	A	27
19:50	BA8457	E170	D	27
19:52	LX454	E190	A	27
19:54	WX127	RJ85	D	27
19:58	BA8212	J328	D	27
20:02	BA8755	E170	D	27
20:06	BA3295	D328	D	27
20:07	BA3280	E190	A	27
20:09	BE1366	DH8D	D	27
20:12	LG4598	DH8D	D	27
20:14	BA8736	E170	D	27
20:16	SX523	SB20	D	27
20:18	BE1360	DH8D	D	27
20:19	BA8466	E190	A	27
20:21	BA4459	SB20	D	27

20:23	AZ219	E190	D	27
20:24	BA8714	E190	D	27
20:27	BA3288	SB20	D	27
20:28	BA8729	E190	A	27
20:31	LX447	RJ1H	D	27
20:32	BA8486	E170	A	27
20:34	WX129	RJ85	D	27
20:35	BA8474	E190	A	27
20:36	BA3277	SB20	D	27
20:38	BE1344	DH8D	D	27
20:41	BA8717	E190	A	27

LOCATION G5

15/07/2016

08:20 – 21:00

Time	Flight No.	A/C Type	Dep / Arr	Runway
08:19	BA8760	E170	A	27
08:22	SX521	D328	D	27
08:24	BA2281	E170	D	27
08:26	BE3302	DH8D	D	27
08:27	GR650	AT45	A	27
08:30	BE1332	DH8D	D	27
08:32	WX018	RJ85	A	27
08:35	LH928	E190	A	27
08:37	BA8479	E190	D	27
08:39	WX174	RJ85	A	27
08:42	BA8711	E190	A	27
08:44	BE1352	DH8D	D	27
08:45	BE6454	AT42	A	27
08:48	BA3291	D328	D	27
08:50	BA3270	SB20	A	27
08:52	NJE655P	H25B	D	27
08:54	BA8752	E170	A	27
08:55	LX443	RJ1H	D	27
08:57	WX112	RJ85	A	27
08:59	BA8487	E190	D	27
09:02	NJE838B	C56X	A	27
09:04	BE1333	DH8D	A	27
09:05	BA8743	SB20	D	27
09:07	BE1361	DH8D	A	27
09:10	BA8723	E190	A	27
09:14	WX173	RJ85	D	27
09:20	AZ217	E190	D	27
09:21	BA8704	E170	D	27
09:24	WX019	RJ85	D	27
09:26	GR651	AT45	D	27
09:29	LX460	RJ1H	A	27
09:30	LH929	E190	D	27
09:32	BA3289	E190	D	27
09:36	BE6455	AT42	D	27
09:46	BA8753	E170	D	27
09:47	BA4463	E190	A	27
09:50	BA8745	SB20	D	27
09:51	BA4452	SB20	A	27

09:53	WX281	RJ85	D	27
09:56	BE1334	DH8D	D	27
10:00	WX074	RJ85	A	27
10:02	BE1362	DH8D	D	27
10:10	BA004	A318	A	27
10:17	LX461	RJ1H	D	27
10:21	WX175	RJ85	D	27
10:34	BA4453	SB20	D	27
10:38	WX180	RJ85	A	27
10:41	AZ212	E190	A	27
10:42	BA3279	E190	D	27
10:46	BA2223	E190	D	27
10:49	WX113	RJ85	D	27
10:55	LG4593	DH8D	A	27
11:06	NJE122K	C56X	D	27
11:08	AZ216	E190	A	27
11:22	WX114	RJ85	A	27
11:28	LNX43EG	E135	A	27
11:35	LG4594	DH8D	D	27
11:43	WX023	RJ85	D	27
11:44	LX456	E190	A	27
11:46	BA8744	SB20	A	27
11:58	AZ215	E190	D	27
12:01	AZ211	E190	D	27
12:06	WX209	RJ85	D	27
12:08	BA8733	E170	A	27
12:15	BA8715	E170	A	27
12:21	WX022	RJ85	A	27
12:28	BA3284	SB20	D	27
12:32	LNX43EG	E135	D	27
12:39	LX457	E190	D	27
12:50	BA4454	SB20	A	27
12:52	BA8476	E170	A	27
12:54	BA001	A318	D	27
12:56	BA8464	E190	A	27
13:02	LG4607	DH8D	A	27
13:11	LNX54RS	C56X	A	27
13:16	BA8750	E170	A	27
13:18	BA8462	E190	A	27
13:22	BA2284	E170	A	27
13:26	BA8484	E190	A	27
13:40	BA4455	SB20	D	27
13:43	BA8493	E190	D	27
13:45	WX119	RJ85	D	27

13:48	LG4608	DH8D	D	27
13:50	BA8746	SB20	A	27
13:53	BA8480	E190	A	27
13:55	BA8482	E190	A	27
13:58	BA2224	E190	A	27
14:01	WX118	RJ85	A	27
14:14	WX236	AT45	A	27
14:19	BA2285	E170	D	27
14:24	BA4464	E170	D	27
14:27	BA8453	E190	D	27
14:37	BA8474	E190	A	27
14:48	WX024	RJ85	A	27
14:50	BA8726	E190	D	27
14:53	WX208	RJ85	A	27
14:55	LNX54RS	C56X	D	27
14:57	BA3275	SB20	D	27
14:58	LX434	RJ1H	A	27
15:00	WX025	RJ85	D	27
15:03	BE1355	DH8D	A	27
15:05	BA8734	E170	D	27
15:08	HBJFN	FA7X	D	27
15:10	WX237	AT45	D	27
15:13	BA8716	E170	D	27
15:15	LG4595	DH8D	A	27
15:19	NJE940T	H25B	A	27
15:28	BA3290	E190	A	27
15:32	WX280	RJ85	A	27
15:36	BA3285	SB20	A	27
15:38	WX183	RJ85	D	27
15:41	BA8488	E190	A	27
15:45	WX075	RJ85	D	27
15:51	BA8765	E170	D	27
15:55	BE1356	DH8D	D	27
15:56	WX188	RJ85	A	27
15:57	BA8465	E190	D	27
16:00	BA4456	SB20	A	27
16:02	LX435	RJ1H	D	27
16:03	OOGHE	F2TX	A	27
16:05	BA003	A318	D	27
16:08	LG4596	DH8D	D	27
16:11	BA8467	E190	D	27
16:15	AZ222	E190	A	27
16:18	BE1357	DH8D	A	27
16:21	WX120	RJ85	A	27

16:23	WX121	RJ85	D	27
16:32	BA8767	E190	D	27
16:34	BA3286	SB20	D	27
16:37	WX189	RJ85	D	27
16:41	LX464	RJ1H	A	27
16:43	NJE250Y	H25B	D	27
16:46	BE3307	DH8D	A	27
16:48	LH934	E190	A	27
16:51	BA3280	E190	A	27
16:58	BA4457	SB20	D	27
17:00	WX192	RJ85	A	27
17:03	AZ221	E190	D	27
17:05	BA8485	E190	D	27
17:06	BA8454	E190	A	27
17:10	BE1358	DH8D	D	27
17:11	BE1339	DH8D	A	27
17:19	WX123	RJ85	D	27
17:25	LX465	RJ1H	D	27
17:27	WX122	RJ85	A	27
17:30	BA4467	E170	A	27
17:39	BA8494	E190	A	27
17:41	BA8706	E190	D	27
17:44	LH935	E190	D	27
17:52	WX026	RJ85	A	27
17:55	BA8727	E190	A	27
17:59	GR656	AT72	A	27
18:01	BA8477	E190	D	27
18:02	LG4601	DH8D	A	27
18:05	BA8754	E170	A	27
18:08	WX082	RJ85	A	27
18:10	BE1308	DH8D	D	27
18:11	WX238	AT45	A	27
18:14	BA8459	E190	D	27
18:14	BA2286	E170	A	27
18:16	BA4468	E170	D	27
18:20	WX193	RJ85	D	27
18:21	WX196	RJ85	A	27
18:23	WX083	RJ85	D	27
18:24	BA8735	E170	A	27
18:26	BE1340	DH8D	D	27
18:27	BA8707	E170	A	27
18:30	BE6462	AT42	A	27
18:32	BA8495	E190	D	27
18:33	LH936	E190	A	27

18:37	WX027	RJ85	D	27
18:42	BA2222	E190	A	27
18:46	BA8755	E170	D	27
18:47	BA3276	SB20	A	27
18:50	BE1341	DH8D	A	27
18:52	LG4602	DH8D	D	27
18:54	SX522	SB20	A	27
18:56	WX239	AT45	D	27
18:58	GR657	AT72	D	27
19:02	WX127	RJ85	D	27
19:05	BA2287	E170	D	27
19:06	BE1365	DH8D	A	27
19:09	BA8769	E170	D	27
19:11	BE6463	AT42	D	27
19:19	BA8708	E190	D	27
19:20	WX198	RJ85	A	27
19:23	LH937	E190	D	27
19:28	AZ220	E190	A	27
19:31	WX129	RJ85	D	27
19:32	LX454	E190	A	27
19:35	LX446	RJ1H	A	27
19:37	SX523	SB20	D	27
19:38	LG4597	DH8D	A	27
19:40	BA8766	E170	A	27
19:43	BA4458	SB20	A	27
19:44	BE1342	DH8D	D	27
19:46	WX126	RJ85	A	27
19:48	BA3277	SB20	D	27
19:49	BE1359	DH8D	A	27
19:52	BA3287	SB20	A	27
19:53	BA8457	E170	D	27
19:55	BE1343	DH8D	A	27
19:57	BE1366	DH8D	D	27
20:00	WX199	RJ85	D	27
20:04	BA2214	E190	D	27
20:06	BA8768	E190	A	27
20:13	AZ219	E190	D	27
20:20	LX455	E190	D	27
20:23	LG4598	DH8D	D	27
20:30	WX197	RJ85	D	27
20:33	BA4459	SB20	D	27
20:34	LX447	RJ1H	D	27
20:36	BA8717	E190	A	27
20:38	BE1360	DH8D	D	27

20:40	BA8709	E190	A	27
20:44	WX128	RJ85	A	27
20:47	BA8458	E190	A	27
20:51	BE1344	DH8D	D	27
21:01	BA4471	E170	A	27

LOCATION G6

22/08/2016

08:20 – 11:15

Time	Flight No.	A/C Type	Dep / Arr	Runway
08:19	GR650	AT45	A	27
08:20	BA2281	E170	D	27
08:22	BE1330	DH8D	D	27
08:25	AZ218	E190	A	27
08:28	BA4461	E170	A	27
08:31	LH928	E190	A	27
08:34	BE3302	DH8D	D	27
08:35	BA8760	E170	A	27
08:37	BA8704	E190	D	27
08:38	BE6454	AT42	A	27
08:41	WX174	RJ85	A	27
08:42	NJE139U	C56X	D	27
08:44	BA8752	E170	A	27
08:46	SX521	D328	D	27
08:47	BA3292	D328	A	27
08:49	BE1352	DH8D	D	27
08:50	BA8723	E190	A	27
08:52	LX443	RJ1H	D	27
08:54	BE1361	DH8D	A	27
08:55	BA3282	SB20	D	27
08:57	WX112	RJ85	A	27
09:00	BA8467	E190	D	27
09:00	BA8491	E190	D	27
09:01	BA8209	J328	A	27
09:03	WX105	RJ85	D	27
09:04	BA8711	E190	A	27
09:11	BE1333	DH8D	A	27
09:14	BA8705	E190	A	27
09:18	BA8722	E170	D	27
09:21	LX460	RJ1H	A	27
09:26	BA4462	E170	D	27
09:27	AZ217	E190	D	27
09:29	LH929	E190	D	27
09:31	GR651	AT45	D	27
09:34	NJE776P	H25B	D	27
09:36	BA8451	E170	D	27
09:38	BA3291	D328	D	27
09:40	WX074	RJ85	A	27

09:44	WX019	RJ85	D	27
09:47	BA8479	E190	D	27
09:48	BE6455	AT42	D	27
09:51	BA4452	E170	A	27
09:53	BA8210	J328	D	27
09:55	BA001	A318	D	27
09:57	BE1362	DH8D	D	27
09:59	WX175	RJ85	D	27
10:02	BE1334	DH8D	D	27
10:04	WX114	RJ85	A	27
10:05	BE1332	DH8D	D	27
10:06	BA8703	E190	A	27
10:08	WX281	RJ85	D	27
10:11	BA3289	E190	D	27
10:12	BA4463	E190	A	27
10:14	LX461	RJ1H	D	27
10:19	BA8487	E190	D	27
10:26	BA9750P	E170	A	27
10:35	AZ212	E190	A	27
10:39	WX113	RJ85	D	27
10:43	LG4593	DH8D	A	27
10:46	AZ216	E190	A	27
10:49	WX209	RJ85	D	27
10:50	BA8496	E170	A	27
10:52	BA3299	E170	D	27
10:53	WX180	RJ85	A	27
10:56	BA2221	E190	D	27
10:58	BA8764	RJ85	A	27
11:01	BA8483	E190	D	27

15:00 – 18:00

Time	Flight No.	A/C Type	Dep / Arr	Runway
15:01	BA3278	E170	A	27
15:02	LX435	RJ1H	D	27
15:07	WX280	RJ85	A	27
15:11	BA8485	E190	D	27
15:17	LG4595	DH8D	A	27
15:19	BA8734	E190	D	27
15:20	BA8746	RJ85	A	27
15:27	WX188	RJ85	A	27
15:30	WX183	RJ85	D	27

15:33	NJE216D	H25B	A	27
15:36	BA3290	E190	A	27
15:37	BA8455	E170	D	27
15:46	AZ222	E190	A	27
15:51	WX121	RJ85	D	27
15:52	BE1316	DH8D	D	27
15:55	BA8767	E190	D	27
15:57	LG4596	DH8D	D	27
16:02	LH934	E190	A	27
16:07	BA3285	SB20	A	27
16:10	BA9765P	RJ85	D	27
16:11	BA8454	E190	A	27
16:18	WX120	RJ85	A	27
16:22	WX189	RJ85	D	27
16:24	BA8484	E190	A	27
16:25	BA8706	E190	D	27
16:29	LX464	RJ1H	A	27
16:33	BE1357	DH8D	A	27
16:35	AZ221	E190	D	27
16:41	BE3307	DH8D	A	27
16:44	BA8488	E190	A	27
16:55	LH935	E190	D	27
16:58	BA8477	E190	D	27
17:00	BA8743	SB20	D	27
17:05	WX122	RJ85	A	27
17:09	WX123	RJ85	D	27
17:13	LX465	RJ1H	D	27
17:15	BE1339	DH8D	A	27
17:16	BA4457	E170	D	27
17:20	BA8712	E190	D	27
17:22	BE1358	DH8D	D	27
17:25	BA8766	E190	A	27
17:26	BA8724	E190	D	27
17:28	BA4467	E190	A	27
17:30	BE1308	DH8D	D	27
17:34	WX026	RJ85	A	27
17:42	WX082	RJ85	A	27
17:43	BA8494	E170	A	27
17:46	BA8476	E170	A	27
17:52	WX238	AT45	A	27
17:54	BA8754	E170	A	27
17:58	BE1340	DH8D	D	27
17:59	BA3296	D328	A	27

APPENDIX 5

GROUND NOISE CONTOURS

2015 Ground Noise Contours (Westerly)



LONDON CITY AIRPORT

2016 ANNUAL PERFORMANCE REPORT
(COMPLIANCE WITH PLANNING PERMISSION 07/01510/VAR)

APPENDIX 11
TEMPORARY NOISE MONITORING STRATEGY REPORTS

01 July 2016

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

London City Airport
Get closer.

Bickerdike Allen Partners
Architecture
Acoustics
Technology

LONDON CITY AIRPORT

NOISE & TRACK KEEPING STATUS REPORT

JANUARY 2016 – MARCH 2016

Report to

Mr Gary Hodgetts
Director Operations Policy & Planning
London City Airport
City Aviation House
The Royal Docks
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A1125.121-R27-NW
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Partners (members)
Philippa Gavey, Giles Greenhalgh, Peter Henson, Roger Jowett

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1.0 INTRODUCTION

Under paragraph A6.0 of the approved Temporary Noise Monitoring Strategy, London City Airport is required to provide quarterly reports of the Noise and Track Keeping system to the London Borough of Newham.

This report details the operational status of each monitor and the monthly correlation rate of noise events to aircraft departures for the quarterly period 1st January 2016 to 31st March 2016.

2.0 NMT STATUS

A summary of the status of each Noise Monitoring Terminal (NMT) is given in Table 1 below. A detailed summary is given in Appendix A showing whether both noise events and Flight Information and Display System (FIDS) have been obtained on a daily basis.

During this quarterly period, NMTs 1, 3 and 4 were fully operational, and data received for each day. Due to a failure of the power supply, NMT2 was not operational for parts of 14th – 18th January.

NMT	Calibration	Data
1	OK	Data received for all days
2	OK	Data received for all days except parts of 14th – 18th January
3	OK	Data received for all days
4	OK	Data received for all days

Table 1: Summary of NMT status

3.0 CORRELATION RATE

A summary of the correlation rate for each month is given in Table 2 below. In order to calculate the rate of correlation, the number of departures correlated has been compared against the number of operations at London City Airport[1] during the same period. It has been assumed that the number of departures constitute fifty percent of the total number of operations.

[1] Number of monthly operations supplied by Airport2020 Client Flight Information Database

Month	No. Operations	No. Correlated Departures	Correlation Rate
January	6274	2381	76%
February	7003	2962	85%
March	7331	3426	93%

Table 2: Summary of correlation rate

The correlation rates in January and February were affected by a significant amount of recorded noise events being marked as invalid due to high winds.

4.0 SUMMARY

During the quarterly period from 1st January 2016 to 31st March 2016, FIDS was received for all days and NMTs 1, 3 and 4 were fully operational. Due to a failure of the power supply, NMT 2 was not fully operational for part of 5 days during January. Despite this issue, a total of 8,769 departure events were successfully recorded. The average correlation rate across the quarterly period was 85%. This is above the 80% annual target set out in the Temporary Noise Monitoring Strategy.

Nick Williams
for Bickerdike Allen Partners

Peter Henson
Partner

Bickerdike Allen Partners
Architecture
Acoustics
Technology

APPENDIX A

NMT STATUS BY DATE

NOISE EVENTS

DATE	NMT1 Events	NMT2 Events	NMT3 Events	NMT4 Events	FIDS
01/01/2016	Yes	Yes	Yes	Yes	Yes
02/01/2016	Yes	Yes	Yes	Yes	Yes
03/01/2016	Yes	Yes	Yes	Yes	Yes
04/01/2016	Yes	Yes	Yes	Yes	Yes
05/01/2016	Yes	Yes	Yes	Yes	Yes
06/01/2016	Yes	Yes	Yes	Yes	Yes
07/01/2016	Yes	Yes	Yes	Yes	Yes
08/01/2016	Yes	Yes	Yes	Yes	Yes
09/01/2016	Yes	Yes	Yes	Yes	Yes
10/01/2016	Yes	Yes	Yes	Yes	Yes
11/01/2016	Yes	Yes	Yes	Yes	Yes
12/01/2016	Yes	Yes	Yes	Yes	Yes
13/01/2016	Yes	Yes	Yes	Yes	Yes
14/01/2016	Yes	Part	Yes	Yes	Yes
15/01/2016	Yes	Part	Yes	Yes	Yes
16/01/2016	Yes	Part	Yes	Yes	Yes
17/01/2016	Yes	Part	Yes	Yes	Yes
18/01/2016	Yes	Part	Yes	Yes	Yes
19/01/2016	Yes	Yes	Yes	Yes	Yes
20/01/2016	Yes	Yes	Yes	Yes	Yes
21/01/2016	Yes	Yes	Yes	Yes	Yes
22/01/2016	Yes	Yes	Yes	Yes	Yes
23/01/2016	Yes	Yes	Yes	Yes	Yes
24/01/2016	Yes	Yes	Yes	Yes	Yes
25/01/2016	Yes	Yes	Yes	Yes	Yes
26/01/2016	Yes	Yes	Yes	Yes	Yes
27/01/2016	Yes	Yes	Yes	Yes	Yes
28/01/2016	Yes	Yes	Yes	Yes	Yes
29/01/2016	Yes	Yes	Yes	Yes	Yes
30/01/2016	Yes	Yes	Yes	Yes	Yes
31/01/2016	Yes	Yes	Yes	Yes	Yes
01/02/2016	Yes	Yes	Yes	Yes	Yes
02/02/2016	Yes	Yes	Yes	Yes	Yes
03/02/2016	Yes	Yes	Yes	Yes	Yes
04/02/2016	Yes	Yes	Yes	Yes	Yes
05/02/2016	Yes	Yes	Yes	Yes	Yes
06/02/2016	Yes	Yes	Yes	Yes	Yes
07/02/2016	Yes	Yes	Yes	Yes	Yes
08/02/2016	Yes	Yes	Yes	Yes	Yes
09/02/2016	Yes	Yes	Yes	Yes	Yes
10/02/2016	Yes	Yes	Yes	Yes	Yes
11/02/2016	Yes	Yes	Yes	Yes	Yes
12/02/2016	Yes	Yes	Yes	Yes	Yes
13/02/2016	Yes	Yes	Yes	Yes	Yes
14/02/2016	Yes	Yes	Yes	Yes	Yes
15/02/2016	Yes	Yes	Yes	Yes	Yes

NOISE EVENTS

DATE	NMT1 Events	NMT2 Events	NMT3 Events	NMT4 Events	FIDS
16/02/2016	Yes	Yes	Yes	Yes	Yes
17/02/2016	Yes	Yes	Yes	Yes	Yes
18/02/2016	Yes	Yes	Yes	Yes	Yes
19/02/2016	Yes	Yes	Yes	Yes	Yes
20/02/2016	Yes	Yes	Yes	Yes	Yes
21/02/2016	Yes	Yes	Yes	Yes	Yes
22/02/2016	Yes	Yes	Yes	Yes	Yes
23/02/2016	Yes	Yes	Yes	Yes	Yes
24/02/2016	Yes	Yes	Yes	Yes	Yes
25/02/2016	Yes	Yes	Yes	Yes	Yes
26/02/2016	Yes	Yes	Yes	Yes	Yes
27/02/2016	Yes	Yes	Yes	Yes	Yes
28/02/2016	Yes	Yes	Yes	Yes	Yes
29/02/2016	Yes	Yes	Yes	Yes	Yes
01/03/2016	Yes	Yes	Yes	Yes	Yes
02/03/2016	Yes	Yes	Yes	Yes	Yes
03/03/2016	Yes	Yes	Yes	Yes	Yes
04/03/2016	Yes	Yes	Yes	Yes	Yes
05/03/2016	Yes	Yes	Yes	Yes	Yes
06/03/2016	Yes	Yes	Yes	Yes	Yes
07/03/2016	Yes	Yes	Yes	Yes	Yes
08/03/2016	Yes	Yes	Yes	Yes	Yes
09/03/2016	Yes	Yes	Yes	Yes	Yes
10/03/2016	Yes	Yes	Yes	Yes	Yes
11/03/2016	Yes	Yes	Yes	Yes	Yes
12/03/2016	Yes	Yes	Yes	Yes	Yes
13/03/2016	Yes	Yes	Yes	Yes	Yes
14/03/2016	Yes	Yes	Yes	Yes	Yes
15/03/2016	Yes	Yes	Yes	Yes	Yes
16/03/2016	Yes	Yes	Yes	Yes	Yes
17/03/2016	Yes	Yes	Yes	Yes	Yes
18/03/2016	Yes	Yes	Yes	Yes	Yes
19/03/2016	Yes	Yes	Yes	Yes	Yes
20/03/2016	Yes	Yes	Yes	Yes	Yes
21/03/2016	Yes	Yes	Yes	Yes	Yes
22/03/2016	Yes	Yes	Yes	Yes	Yes
23/03/2016	Yes	Yes	Yes	Yes	Yes
24/03/2016	Yes	Yes	Yes	Yes	Yes
25/03/2016	Yes	Yes	Yes	Yes	Yes
26/03/2016	Yes	Yes	Yes	Yes	Yes
27/03/2016	Yes	Yes	Yes	Yes	Yes
28/03/2016	Yes	Yes	Yes	Yes	Yes
29/03/2016	Yes	Yes	Yes	Yes	Yes
30/03/2016	Yes	Yes	Yes	Yes	Yes
31/03/2016	Yes	Yes	Yes	Yes	Yes

Bickerdike Allen Partners
Architecture
Acoustics
Technology

LONDON CITY AIRPORT

NOISE & TRACK KEEPING STATUS REPORT

APRIL 2016 – JUNE 2016

Report to

Mr Gary Hodgetts
Director Operations Policy & Planning
London City Airport
City Aviation House
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Partners (members)
Philippa Gavey, Giles Greenhalgh, Peter Henson, Roger Jowett

ANC ACOUSTICS & NOISE CONSULTANTS

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1.0 INTRODUCTION

Under paragraph A6.0 of the approved Temporary Noise Monitoring Strategy, London City Airport is required to provide quarterly reports of the Noise and Track Keeping system to the London Borough of Newham.

This report details the operational status of each monitor and the monthly correlation rate of noise events to aircraft departures for the quarterly period 1st April 2016 to 30th June 2016.

2.0 NMT STATUS

A summary of the status of each Noise Monitoring Terminal (NMT) is given in Table 1 below. A detailed summary is given in Appendix A showing whether both noise events and Flight Information and Display System (FIDS) have been obtained on a daily basis.

During this quarterly period, all 4 NMTs were fully operational, and data received for each day.

NMT	Calibration	Data
1	OK	Data received for all days
2	OK	Data received for all days
3	OK	Data received for all days
4	OK	Data received for all days

Table 1: Summary of NMT status

3.0 CORRELATION RATE

A summary of the correlation rate for each month is given in Table 2 below. In order to calculate the rate of correlation, the number of departures correlated has been compared against the number of operations at London City Airport[1] during the same period. It has been assumed that the number of departures constitute fifty percent of the total number of operations.

[1] Number of monthly operations supplied by Airport2020 Client Flight Information Database

Month	No. Operations	No. Correlated Departures	Correlation Rate
April	7003	3201	91%
May	7380	3472	94%
June	7584	3693	97%

Table 2: Summary of correlation rate

4.0 SUMMARY

During the quarterly period from 1st April 2016 to 30th June 2016, FIDS was received for all days and all 4 NMTs were fully operational. A total of 10,366 departure events were successfully recorded. The average correlation rate across the quarterly period was 94%. This is above the 80% annual target set out in the Temporary Noise Monitoring Strategy.

Nick Williams
for Bickerdike Allen Partners

Peter Henson
Partner

Bickerdike Allen Partners
Architecture
Acoustics
Technology

APPENDIX A

NMT STATUS BY DATE

NOISE EVENTS

DATE	NMT1 Events	NMT2 Events	NMT3 Events	NMT4 Events	FIDS
01/04/2016	Yes	Yes	Yes	Yes	Yes
02/04/2016	Yes	Yes	Yes	Yes	Yes
03/04/2016	Yes	Yes	Yes	Yes	Yes
04/04/2016	Yes	Yes	Yes	Yes	Yes
05/04/2016	Yes	Yes	Yes	Yes	Yes
06/04/2016	Yes	Yes	Yes	Yes	Yes
07/04/2016	Yes	Yes	Yes	Yes	Yes
08/04/2016	Yes	Yes	Yes	Yes	Yes
09/04/2016	Yes	Yes	Yes	Yes	Yes
10/04/2016	Yes	Yes	Yes	Yes	Yes
11/04/2016	Yes	Yes	Yes	Yes	Yes
12/04/2016	Yes	Yes	Yes	Yes	Yes
13/04/2016	Yes	Yes	Yes	Yes	Yes
14/04/2016	Yes	Yes	Yes	Yes	Yes
15/04/2016	Yes	Yes	Yes	Yes	Yes
16/04/2016	Yes	Yes	Yes	Yes	Yes
17/04/2016	Yes	Yes	Yes	Yes	Yes
18/04/2016	Yes	Yes	Yes	Yes	Yes
19/04/2016	Yes	Yes	Yes	Yes	Yes
20/04/2016	Yes	Yes	Yes	Yes	Yes
21/04/2016	Yes	Yes	Yes	Yes	Yes
22/04/2016	Yes	Yes	Yes	Yes	Yes
23/04/2016	Yes	Yes	Yes	Yes	Yes
24/04/2016	Yes	Yes	Yes	Yes	Yes
25/04/2016	Yes	Yes	Yes	Yes	Yes
26/04/2016	Yes	Yes	Yes	Yes	Yes
27/04/2016	Yes	Yes	Yes	Yes	Yes
28/04/2016	Yes	Yes	Yes	Yes	Yes
29/04/2016	Yes	Yes	Yes	Yes	Yes
30/04/2016	Yes	Yes	Yes	Yes	Yes
01/05/2016	Yes	Yes	Yes	Yes	Yes
02/05/2016	Yes	Yes	Yes	Yes	Yes
03/05/2016	Yes	Yes	Yes	Yes	Yes
04/05/2016	Yes	Yes	Yes	Yes	Yes
05/05/2016	Yes	Yes	Yes	Yes	Yes
06/05/2016	Yes	Yes	Yes	Yes	Yes
07/05/2016	Yes	Yes	Yes	Yes	Yes
08/05/2016	Yes	Yes	Yes	Yes	Yes
09/05/2016	Yes	Yes	Yes	Yes	Yes
10/05/2016	Yes	Yes	Yes	Yes	Yes
11/05/2016	Yes	Yes	Yes	Yes	Yes
12/05/2016	Yes	Yes	Yes	Yes	Yes
13/05/2016	Yes	Yes	Yes	Yes	Yes
14/05/2016	Yes	Yes	Yes	Yes	Yes
15/05/2016	Yes	Yes	Yes	Yes	Yes
16/05/2016	Yes	Yes	Yes	Yes	Yes

NOISE EVENTS

DATE	NMT1 Events	NMT2 Events	NMT3 Events	NMT4 Events	FIDS
17/05/2016	Yes	Yes	Yes	Yes	Yes
18/05/2016	Yes	Yes	Yes	Yes	Yes
19/05/2016	Yes	Yes	Yes	Yes	Yes
20/05/2016	Yes	Yes	Yes	Yes	Yes
21/05/2016	Yes	Yes	Yes	Yes	Yes
22/05/2016	Yes	Yes	Yes	Yes	Yes
23/05/2016	Yes	Yes	Yes	Yes	Yes
24/05/2016	Yes	Yes	Yes	Yes	Yes
25/05/2016	Yes	Yes	Yes	Yes	Yes
26/05/2016	Yes	Yes	Yes	Yes	Yes
27/05/2016	Yes	Yes	Yes	Yes	Yes
28/05/2016	Yes	Yes	Yes	Yes	Yes
29/05/2016	Yes	Yes	Yes	Yes	Yes
30/05/2016	Yes	Yes	Yes	Yes	Yes
31/05/2016	Yes	Yes	Yes	Yes	Yes
01/06/2016	Yes	Yes	Yes	Yes	Yes
02/06/2016	Yes	Yes	Yes	Yes	Yes
03/06/2016	Yes	Yes	Yes	Yes	Yes
04/06/2016	Yes	Yes	Yes	Yes	Yes
05/06/2016	Yes	Yes	Yes	Yes	Yes
06/06/2016	Yes	Yes	Yes	Yes	Yes
07/06/2016	Yes	Yes	Yes	Yes	Yes
08/06/2016	Yes	Yes	Yes	Yes	Yes
09/06/2016	Yes	Yes	Yes	Yes	Yes
10/06/2016	Yes	Yes	Yes	Yes	Yes
11/06/2016	Yes	Yes	Yes	Yes	Yes
12/06/2016	Yes	Yes	Yes	Yes	Yes
13/06/2016	Yes	Yes	Yes	Yes	Yes
14/06/2016	Yes	Yes	Yes	Yes	Yes
15/06/2016	Yes	Yes	Yes	Yes	Yes
16/06/2016	Yes	Yes	Yes	Yes	Yes
17/06/2016	Yes	Yes	Yes	Yes	Yes
18/06/2016	Yes	Yes	Yes	Yes	Yes
19/06/2016	Yes	Yes	Yes	Yes	Yes
20/06/2016	Yes	Yes	Yes	Yes	Yes
21/06/2016	Yes	Yes	Yes	Yes	Yes
22/06/2016	Yes	Yes	Yes	Yes	Yes
23/06/2016	Yes	Yes	Yes	Yes	Yes
24/06/2016	Yes	Yes	Yes	Yes	Yes
25/06/2016	Yes	Yes	Yes	Yes	Yes
26/06/2016	Yes	Yes	Yes	Yes	Yes
27/06/2016	Yes	Yes	Yes	Yes	Yes
28/06/2016	Yes	Yes	Yes	Yes	Yes
29/06/2016	Yes	Yes	Yes	Yes	Yes
30/06/2016	Yes	Yes	Yes	Yes	Yes

Bickerdike Allen Partners
Architecture
Acoustics
Technology

LONDON CITY AIRPORT

NOISE & TRACK KEEPING STATUS REPORT

JULY 2016 – SEPTEMBER 2016

Report to

Mr Gary Hodgetts
Director Operations Policy & Planning
London City Airport
City Aviation House
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A1125.121-R29-NW
24 October 2016

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

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Appendix A: NMT status by date

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1.0 INTRODUCTION

Under paragraph A6.0 of the approved Temporary Noise Monitoring Strategy, London City Airport is required to provide quarterly reports of the Noise and Track Keeping system to the London Borough of Newham.

This report details the operational status of each monitor and the monthly correlation rate of noise events to aircraft departures for the quarterly period 1st July 2016 to 30th September 2016.

2.0 NMT STATUS

A summary of the status of each Noise Monitoring Terminal (NMT) is given in Table 1 below. A detailed summary is given in Appendix A showing whether both noise events and Flight Information and Display System (FIDS) have been obtained on a daily basis.

During this quarterly period, all 4 NMTs were fully operational, and data received for each day, with the exception of 22-23 August for NMTs 1 & 2, and 1-6 September for NMTs 3 & 4. On these dates the NMTs were being calibrated.

NMT	Calibration	Data
1	OK	Data received for all days except 22-23 August
2	OK	Data received for all days except 22-23 August
3	OK	Data received for all days except 1-6 September
4	OK	Data received for all days except 1-6 September

Table 1: Summary of NMT status

3.0 CORRELATION RATE

A summary of the correlation rate for each month is given in Table 2 below. In order to calculate the rate of correlation, the number of departures correlated has been compared against the number of operations at London City Airport[1] during the same period. It has been assumed that the number of departures constitute fifty percent of the total number of operations.

[1] Number of monthly operations supplied by Airport2020 Client Flight Information Database

Month	No. Operations	No. Correlated Departures	Correlation Rate
July	7229	3466	96%
August	7187	3255	91%
September	7475	3528	94%

Table 2: Summary of correlation rate

4.0 SUMMARY

During the quarterly period from 1st July 2016 to 30th September 2016, FIDS was received for all days and all 4 NMTs were fully operational, with the exception of 22-23 August for NMTs 1 & 2, and 1-6 September for NMTs 3 & 4, when the NMTs were being calibrated. A total of 10,249 departure events were successfully recorded. The average correlation rate across the quarterly period was 94%. This is above the 80% annual target set out in the Temporary Noise Monitoring Strategy.

Nick Williams
for Bickerdike Allen Partners

Peter Henson
Partner

Bickerdike Allen Partners
Architecture
Acoustics
Technology

APPENDIX A

NMT STATUS BY DATE

NOISE EVENTS

DATE	NMT1 Events	NMT2 Events	NMT3 Events	NMT4 Events	FIDS
01/07/2016	Yes	Yes	Yes	Yes	Yes
02/07/2016	Yes	Yes	Yes	Yes	Yes
03/07/2016	Yes	Yes	Yes	Yes	Yes
04/07/2016	Yes	Yes	Yes	Yes	Yes
05/07/2016	Yes	Yes	Yes	Yes	Yes
06/07/2016	Yes	Yes	Yes	Yes	Yes
07/07/2016	Yes	Yes	Yes	Yes	Yes
08/07/2016	Yes	Yes	Yes	Yes	Yes
09/07/2016	Yes	Yes	Yes	Yes	Yes
10/07/2016	Yes	Yes	Yes	Yes	Yes
11/07/2016	Yes	Yes	Yes	Yes	Yes
12/07/2016	Yes	Yes	Yes	Yes	Yes
13/07/2016	Yes	Yes	Yes	Yes	Yes
14/07/2016	Yes	Yes	Yes	Yes	Yes
15/07/2016	Yes	Yes	Yes	Yes	Yes
16/07/2016	Yes	Yes	Yes	Yes	Yes
17/07/2016	Yes	Yes	Yes	Yes	Yes
18/07/2016	Yes	Yes	Yes	Yes	Yes
19/07/2016	Yes	Yes	Yes	Yes	Yes
20/07/2016	Yes	Yes	Yes	Yes	Yes
21/07/2016	Yes	Yes	Yes	Yes	Yes
22/07/2016	Yes	Yes	Yes	Yes	Yes
23/07/2016	Yes	Yes	Yes	Yes	Yes
24/07/2016	Yes	Yes	Yes	Yes	Yes
25/07/2016	Yes	Yes	Yes	Yes	Yes
26/07/2016	Yes	Yes	Yes	Yes	Yes
27/07/2016	Yes	Yes	Yes	Yes	Yes
28/07/2016	Yes	Yes	Yes	Yes	Yes
29/07/2016	Yes	Yes	Yes	Yes	Yes
30/07/2016	Yes	Yes	Yes	Yes	Yes
31/07/2016	Yes	Yes	Yes	Yes	Yes
01/08/2016	Yes	Yes	Yes	Yes	Yes
02/08/2016	Yes	Yes	Yes	Yes	Yes
03/08/2016	Yes	Yes	Yes	Yes	Yes
04/08/2016	Yes	Yes	Yes	Yes	Yes
05/08/2016	Yes	Yes	Yes	Yes	Yes
06/08/2016	Yes	Yes	Yes	Yes	Yes
07/08/2016	Yes	Yes	Yes	Yes	Yes
08/08/2016	Yes	Yes	Yes	Yes	Yes
09/08/2016	Yes	Yes	Yes	Yes	Yes
10/08/2016	Yes	Yes	Yes	Yes	Yes
11/08/2016	Yes	Yes	Yes	Yes	Yes
12/08/2016	Yes	Yes	Yes	Yes	Yes
13/08/2016	Yes	Yes	Yes	Yes	Yes
14/08/2016	Yes	Yes	Yes	Yes	Yes
15/08/2016	Yes	Yes	Yes	Yes	Yes

NOISE EVENTS

DATE	NMT1 Events	NMT2 Events	NMT3 Events	NMT4 Events	FIDS
16/08/2016	Yes	Yes	Yes	Yes	Yes
17/08/2016	Yes	Yes	Yes	Yes	Yes
18/08/2016	Yes	Yes	Yes	Yes	Yes
19/08/2016	Yes	Yes	Yes	Yes	Yes
20/08/2016	Yes	Yes	Yes	Yes	Yes
21/08/2016	Yes	Yes	Yes	Yes	Yes
22/08/2016	No	No	Yes	Yes	Yes
23/08/2016	No	No	Yes	Yes	Yes
24/08/2016	Yes	Yes	Yes	Yes	Yes
25/08/2016	Yes	Yes	Yes	Yes	Yes
26/08/2016	Yes	Yes	Yes	Yes	Yes
27/08/2016	Yes	Yes	Yes	Yes	Yes
28/08/2016	Yes	Yes	Yes	Yes	Yes
29/08/2016	Yes	Yes	Yes	Yes	Yes
30/08/2016	Yes	Yes	Yes	Yes	Yes
31/08/2016	Yes	Yes	Yes	Yes	Yes
01/09/2016	Yes	Yes	No	No	Yes
02/09/2016	Yes	Yes	No	No	Yes
03/09/2016	Yes	Yes	No	No	Yes
04/09/2016	Yes	Yes	No	No	Yes
05/09/2016	Yes	Yes	No	No	Yes
06/09/2016	Yes	Yes	No	No	Yes
07/09/2016	Yes	Yes	Yes	Yes	Yes
08/09/2016	Yes	Yes	Yes	Yes	Yes
09/09/2016	Yes	Yes	Yes	Yes	Yes
10/09/2016	Yes	Yes	Yes	Yes	Yes
11/09/2016	Yes	Yes	Yes	Yes	Yes
12/09/2016	Yes	Yes	Yes	Yes	Yes
13/09/2016	Yes	Yes	Yes	Yes	Yes
14/09/2016	Yes	Yes	Yes	Yes	Yes
15/09/2016	Yes	Yes	Yes	Yes	Yes
16/09/2016	Yes	Yes	Yes	Yes	Yes
17/09/2016	Yes	Yes	Yes	Yes	Yes
18/09/2016	Yes	Yes	Yes	Yes	Yes
19/09/2016	Yes	Yes	Yes	Yes	Yes
20/09/2016	Yes	Yes	Yes	Yes	Yes
21/09/2016	Yes	Yes	Yes	Yes	Yes
22/09/2016	Yes	Yes	Yes	Yes	Yes
23/09/2016	Yes	Yes	Yes	Yes	Yes
24/09/2016	Yes	Yes	Yes	Yes	Yes
25/09/2016	Yes	Yes	Yes	Yes	Yes
26/09/2016	Yes	Yes	Yes	Yes	Yes
27/09/2016	Yes	Yes	Yes	Yes	Yes
28/09/2016	Yes	Yes	Yes	Yes	Yes
29/09/2016	Yes	Yes	Yes	Yes	Yes
30/09/2016	Yes	Yes	Yes	Yes	Yes

Bickerdike Allen Partners
Architecture
Acoustics
Technology

LONDON CITY AIRPORT

NOISE & TRACK KEEPING STATUS REPORT

OCTOBER 2016 – DECEMBER 2016

Report to

Mr Gary Hodgetts
Director Operations Policy & Planning
London City Airport
City Aviation House
The Royal Docks
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A1125.121-R30-NW
30 January 2017

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

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A summary of the status of each Noise Monitoring Terminal (NMT) is given in Table 1 below. A detailed summary is given in Appendix A showing whether both noise events and Flight Information and Display System (FIDS) have been obtained on a daily basis.

During this quarterly period, all 4 NMTs were fully operational, and data received for each day.

NMT	Calibration	Data
1	OK	Data received for all days
2	OK	Data received for all days
3	OK	Data received for all days
4	OK	Data received for all days

Table 1: Summary of NMT status

3.0 CORRELATION RATE

A summary of the correlation rate for each month is given in Table 2 below. In order to calculate the rate of correlation, the number of departures correlated has been compared against the number of operations at London City Airport[1] during the same period. It has been assumed that the number of departures constitute fifty percent of the total number of operations.

[1] Number of monthly operations supplied by Airport2020 Client Flight Information Database

Month	No. Operations	No. Correlated Departures	Correlation Rate
October	7177	3357	94%
November	7393	3584	97%
December	5919	2900	98%

Table 2: Summary of correlation rate

4.0 SUMMARY

During the quarterly period from 1st October 2016 to 31st December 2016, FIDS was received for all days and all 4 NMTs were fully operational. A total of 9,841 departure events were successfully recorded. The average correlation rate across the quarterly period was 96%. This is above the 80% annual target set out in the Temporary Noise Monitoring Strategy.

Nick Williams
for Bickerdike Allen Partners

Peter Henson
Partner

Bickerdike Allen Partners
Architecture
Acoustics
Technology

APPENDIX A

NMT STATUS BY DATE

NOISE EVENTS

DATE	NMT1 Events	NMT2 Events	NMT3 Events	NMT4 Events	FIDS
01/10/2016	Yes	Yes	Yes	Yes	Yes
02/10/2016	Yes	Yes	Yes	Yes	Yes
03/10/2016	Yes	Yes	Yes	Yes	Yes
04/10/2016	Yes	Yes	Yes	Yes	Yes
05/10/2016	Yes	Yes	Yes	Yes	Yes
06/10/2016	Yes	Yes	Yes	Yes	Yes
07/10/2016	Yes	Yes	Yes	Yes	Yes
08/10/2016	Yes	Yes	Yes	Yes	Yes
09/10/2016	Yes	Yes	Yes	Yes	Yes
10/10/2016	Yes	Yes	Yes	Yes	Yes
11/10/2016	Yes	Yes	Yes	Yes	Yes
12/10/2016	Yes	Yes	Yes	Yes	Yes
13/10/2016	Yes	Yes	Yes	Yes	Yes
14/10/2016	Yes	Yes	Yes	Yes	Yes
15/10/2016	Yes	Yes	Yes	Yes	Yes
16/10/2016	Yes	Yes	Yes	Yes	Yes
17/10/2016	Yes	Yes	Yes	Yes	Yes
18/10/2016	Yes	Yes	Yes	Yes	Yes
19/10/2016	Yes	Yes	Yes	Yes	Yes
20/10/2016	Yes	Yes	Yes	Yes	Yes
21/10/2016	Yes	Yes	Yes	Yes	Yes
22/10/2016	Yes	Yes	Yes	Yes	Yes
23/10/2016	Yes	Yes	Yes	Yes	Yes
24/10/2016	Yes	Yes	Yes	Yes	Yes
25/10/2016	Yes	Yes	Yes	Yes	Yes
26/10/2016	Yes	Yes	Yes	Yes	Yes
27/10/2016	Yes	Yes	Yes	Yes	Yes
28/10/2016	Yes	Yes	Yes	Yes	Yes
29/10/2016	Yes	Yes	Yes	Yes	Yes
30/10/2016	Yes	Yes	Yes	Yes	Yes
31/10/2016	Yes	Yes	Yes	Yes	Yes
01/11/2016	Yes	Yes	Yes	Yes	Yes
02/11/2016	Yes	Yes	Yes	Yes	Yes
03/11/2016	Yes	Yes	Yes	Yes	Yes
04/11/2016	Yes	Yes	Yes	Yes	Yes
05/11/2016	Yes	Yes	Yes	Yes	Yes
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09/11/2016	Yes	Yes	Yes	Yes	Yes
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11/11/2016	Yes	Yes	Yes	Yes	Yes
12/11/2016	Yes	Yes	Yes	Yes	Yes
13/11/2016	Yes	Yes	Yes	Yes	Yes
14/11/2016	Yes	Yes	Yes	Yes	Yes
15/11/2016	Yes	Yes	Yes	Yes	Yes

NOISE EVENTS

DATE	NMT1 Events	NMT2 Events	NMT3 Events	NMT4 Events	FIDS
16/11/2016	Yes	Yes	Yes	Yes	Yes
17/11/2016	Yes	Yes	Yes	Yes	Yes
18/11/2016	Yes	Yes	Yes	Yes	Yes
19/11/2016	Yes	Yes	Yes	Yes	Yes
20/11/2016	Yes	Yes	Yes	Yes	Yes
21/11/2016	Yes	Yes	Yes	Yes	Yes
22/11/2016	Yes	Yes	Yes	Yes	Yes
23/11/2016	Yes	Yes	Yes	Yes	Yes
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26/11/2016	Yes	Yes	Yes	Yes	Yes
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20/12/2016	Yes	Yes	Yes	Yes	Yes
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25/12/2016	Yes	Yes	Yes	Yes	Yes
26/12/2016	Yes	Yes	Yes	Yes	Yes
27/12/2016	Yes	Yes	Yes	Yes	Yes
28/12/2016	Yes	Yes	Yes	Yes	Yes
29/12/2016	Yes	Yes	Yes	Yes	Yes
30/12/2016	Yes	Yes	Yes	Yes	Yes
31/12/2016	Yes	Yes	Yes	Yes	Yes

LONDON CITY AIRPORT

2016 ANNUAL PERFORMANCE REPORT
(COMPLIANCE WITH PLANNING PERMISSION 07/01510/VAR)

APPENDIX 12
ANNUAL NOISE CATEGORISATION REPORT

01 July 2017

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

London City Airport
Get closer.

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APPENDIX 12

LONDON CITY AIRPORT

ANNUAL CATEGORISATION REPORT

2016 NOISE MONITORING

Report to

Gary Hodgetts
Director Technical Operations
City Aviation House
London City Airport
The Royal Docks
London E16 2PB

A1125.57-R01.17-PH/NW
28 June 2017

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

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

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

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

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

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Appendix 1: Mean Annual Departure Noise Levels

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1.0 INTRODUCTION

In accordance with London City Airport's planning obligations, aircraft operating at London City Airport are 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 planning permission dated 9th July 2009.

The categorisation procedure requires that, before any aircraft is permitted to operate at London City Airport, a provisional noise categorisation for that aircraft type must be approved in writing by the local planning authority. Annually, a review of the categorisation is 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.

The airport's noise monitoring system records the departure events of aircraft over the categorisation year (January to December inclusive), the results of which are 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 over the period 1st January 2016 up to and including 31st December 2016. The review is based on the results obtained from noise monitoring in the period 1st January 2016 up to and including 31st December 2016.

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 2016 up to and including 31st December 2016.

Information is also provided on the number of aircraft movements and noise factored movements that have taken place at the airport over the period 1st January 2016 up to and including 31st December 2016.

2.0 PLANNING REQUIREMENTS

The planning requirements concerning the categorisation of aircraft at London City Airport are set out in Condition 7(4) of the planning permission dated 9th July 2009.

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 below.

2.2 Number of Aircraft Movements

Condition 8 of the planning permission of 9th July 2009 details the number of movements that are permitted at the airport:

"*(1) The number of aircraft movements at the airport shall not exceed:*

(a) 100 per day on Saturdays and 200 per day on Sundays but not exceeding 280 on any consecutive Saturday and Sunday

(b) 592 per day on weekdays except 1 January, Good Friday, Easter Monday, the May Day holiday, the late May bank holiday, the late August bank holiday, 25 December and 26 December

(c) 132 on 1 January

(d) 164 on Good Friday

(e) 198 on Easter Monday

(f) 248 on the May Day Holiday

(g) 230 on the late May Bank Holiday

(h) 230 on the late August Bank Holiday

(i) 100 on 26 December

(j) 120,000 per calendar year

(2) 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 or dates not referred to in sub-paragraph (c) to (i) (inclusive) of condition 8(1) then the number of aircraft movements permissible on that date shall not exceed 330 unless the local planning authority otherwise agrees in writing but in any event the limit for any particular date or dates shall not exceed 396 per day."

In addition, condition 8(4) adds a requirement concerning the number of factored movements as stated below:

"*(4) The number of factored movements shall not exceed:*

(a) In any one week the number of permitted aircraft movements for that week by more than 25%

(b) 120,000 per calendar year."

Condition 8(5) 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.*"

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 PNdB[1]. 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 characteristics of aircraft in operation at the airport. As a result, it has been possible to categorise each aircraft type operating at the airport.

[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.

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 2016, the noise and flight track monitoring system has been in operation every day. Each noise monitoring terminal was in operation every day with the following exceptions:

- The NMTs were not operational while they were being calibrated. This affected NMTs 1 and 2 on 22nd-23rd August, and NMTs 3 and 4 on 1st-6th September.
- NMT2 was not operational for parts of 14th-18th February due to a failure of the power supply.

The measurement of data achieved a correlation of 92% of all aircraft departures from the airport during 2016. This is above the target correlation rate (80%) set out in the Temporary Noise Monitoring Strategy.

4.0 RESULTS

4.1 Noise Levels

The following correction factors have been determined from previous studies[2] 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

Confirmation of categorisation has been sought for the Embraer Legacy 500 (28 June 2017), for which provisional categorisation was approved by London Borough of Newham in January 2016. Table 4.1 below sets out the approved provisional categorisation together with the measured departure noise level during 2016.

Aircraft Type	Date of Provisional Categorisation on Approval	Measured Noise Level (PNdB)	2016 Approved Provisional Noise Category
Embraer Legacy 500	21/01/2016	88.0	A

Table 4.1: 2016 Provisional Categorisation

Table 4.1 indicates that for 2016 (2 recorded departures) this aircraft's mean annual noise level was below the lower noise limit of Noise Exposure Category A of 91.6 PNdB. Turbo-fan aircraft are categorised universally as Category A, therefore the Airport has sought confirmation of Category A for the Embraer Legacy 500.

A full list of aircraft types and their associated mean annual departure noise level recorded over the period 1st January 2016 up to and including 31st December 2016 is included in Appendix A.

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

4.2 Aircraft Performance

The noise levels presented in Appendix A indicate that whilst some aircraft are operating below their categorisation, such as the Embraer 135 and various turbo-fan executive aircraft, two are operating above Category A; the RJ-100 and the Embraer.

As reported in previous APRs, despite continuous efforts made by the airport and SWISS to bring the aircraft back into category, the RJ100 has been operating fractionally above Category A since 2009. The level of harm to the public resulting from the fractionally elevated noise levels is zero. The difference (0.3 dB above Category A in 2016) is imperceptible to the human ear.

The RJ100 was previously operated by a number of airlines. It has since been phased out with only one remaining route (Geneva) operated by SWISS using the aircraft.

The Airport understands that SWISS plan to replace the RJ100 on this last remaining route in August 2017 with the C-Series (CS100) commencing operations in Q3 2017 subject to pilot training being carried out. Extensive flight trials for the CS100 were undertaken at LCY in March 2017 and with LBN approving its provisional noise categorisation as category 'A' on 19 June 2017.

In February 2017 following a review of annual categorisation for 2016, it was found that the average noise levels for the E190 aircraft were also fractionally above Category A in 2016. The key reasons are summarised below.

The annual average of the E190 for 2016 was measured by the NTK system at 94.7 PNdB, 0.2 dB above the upper limit of Category A (94.5 PNdB). However, it was subsequently found that the noise level was less (just 0.1dB (0.08dB) above the upper limit) when the following unique circumstances were properly taken into account:

1. a temporary change in runway safety distances which occurred in Summer 2016 due to construction works to relay the runway surface (a maintenance safety activity that occurs once every 30 years);
2. noise monitor settings incorrectly capturing elevated noise levels from September to November 2016[3].

To avoid these levels re-occurring in 2017 the noise monitor settings have been realigned and will be checked every two months to ensure that readings are accurately recorded.

[3] This could potentially reduce fractionally the mean annual noise levels reported in Appendix 1 for some aircraft. A detailed analysis however of its effect has only been undertaken for the E190 and RJ100 and reported in Position Statements issued to LBN indicating a reduction for each aircraft of 0.1 dB.

Additionally, the runway resurfacing works were a one in thirty year event and will not affect noise levels in 2017.

Whilst, the upper limits are based on an annual average, the performance of the E190 year to date in 2017 is currently at 94.0 PNdB compared to 94.4 PNdB for the same period in 2016.

Position Statements on both the E190 and RJ100 have been provided to LBN detailing the reasons for each aircraft being fractionally above Category A as well as the steps being taken to address this.

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

Although currently categorised as Category B, the ATR 72 operated higher than previous years in 2016 at 91.9 PNdB. As a result, the categorisation of the ATR 72 needs to be reviewed upwards and it is proposed to re-categorise it as a Category A aircraft. Confirmation has been sought from London Borough of Newham (dated 28 June 2017) that the ATR 72 will move up in category to Category A for 2017.

As previously reported in the 2016 APR, the Dornier 328 Jet (D328J) performed above Category A in 2015 during 2015. Changes to flight departures procedures in May 2016 were successful in improving the noise performance of the D328J and brought it back into Category A in 2016.

4.3 Number of Actual and Factored Aircraft Movements

Table 4.2 shows the number of actual and factored aircraft movements in the period 1st January 2016 to 31st December 2016 inclusive.

Aircraft Type	Number of Aircraft Movements	Noise Factor	Number of Factored Movements *
Airbus A318	956	1.26	1205
BAe 146	540	1.26	680
RJ85	14860	1.26	18724
RJ1H	3760	1.26	4738
Dornier 328 Jet	532	1.26	670
Embraer 135	117	1.26	147
Embraer 170	10821	1.26	13634
Embraer 190	26429	1.26	33301
Dash 8-400	12860	0.63	8102
Fokker 50	1076	0.63	678
Dornier 328	2026	0.63	1276
ATR 42	2502	0.63	1576
ATR 72	704	0.63	444
Saab 2000	3996	0.63	2517
General Aviation: Turbo-Fan Aircraft	4230	1.26	5330
General Aviation: Non-Jet Aircraft	78	0.63	49
TOTAL:	**84955**		**92401**

* Computed to the nearest whole number

Table 4.2: 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 8 of the planning permission dated 9th July 2009.

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 2016 to 31st December 2016. Confirmation of the categorisation of the Embraer Legacy 500 as a Category A aircraft has been sought.

Two aircraft have operated out of category in 2016; the RJ-100, and the Embraer E190. The airport is working closely with the airlines involved to bring these aircraft back into category.

The ATR 72 operated above its current Category B and within Category A. It is therefore proposed to change the category of this aircraft to Category A for 2017. All other aircraft operated within or below their noise category in 2016.

This report also presents movement numbers for aircraft operating at London City Airport during the period 1st January 2016 up to and including 31st December 2016. 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

Peter Henson
Partner

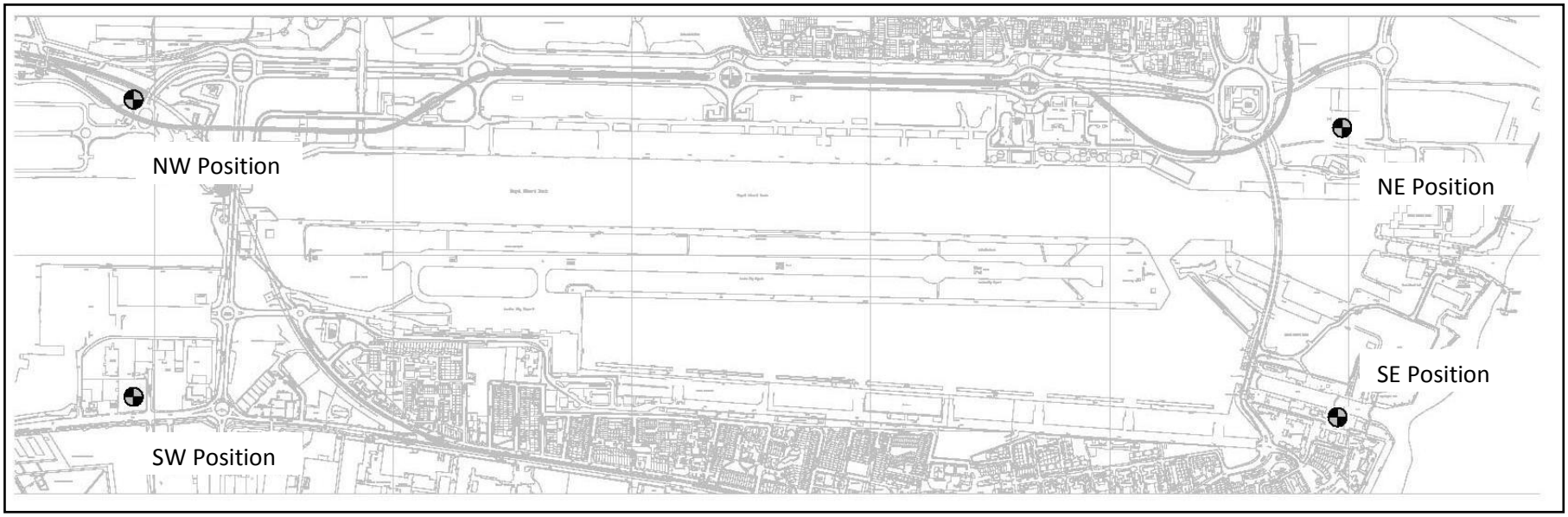


Figure 1 - Noise Categorisation Locations

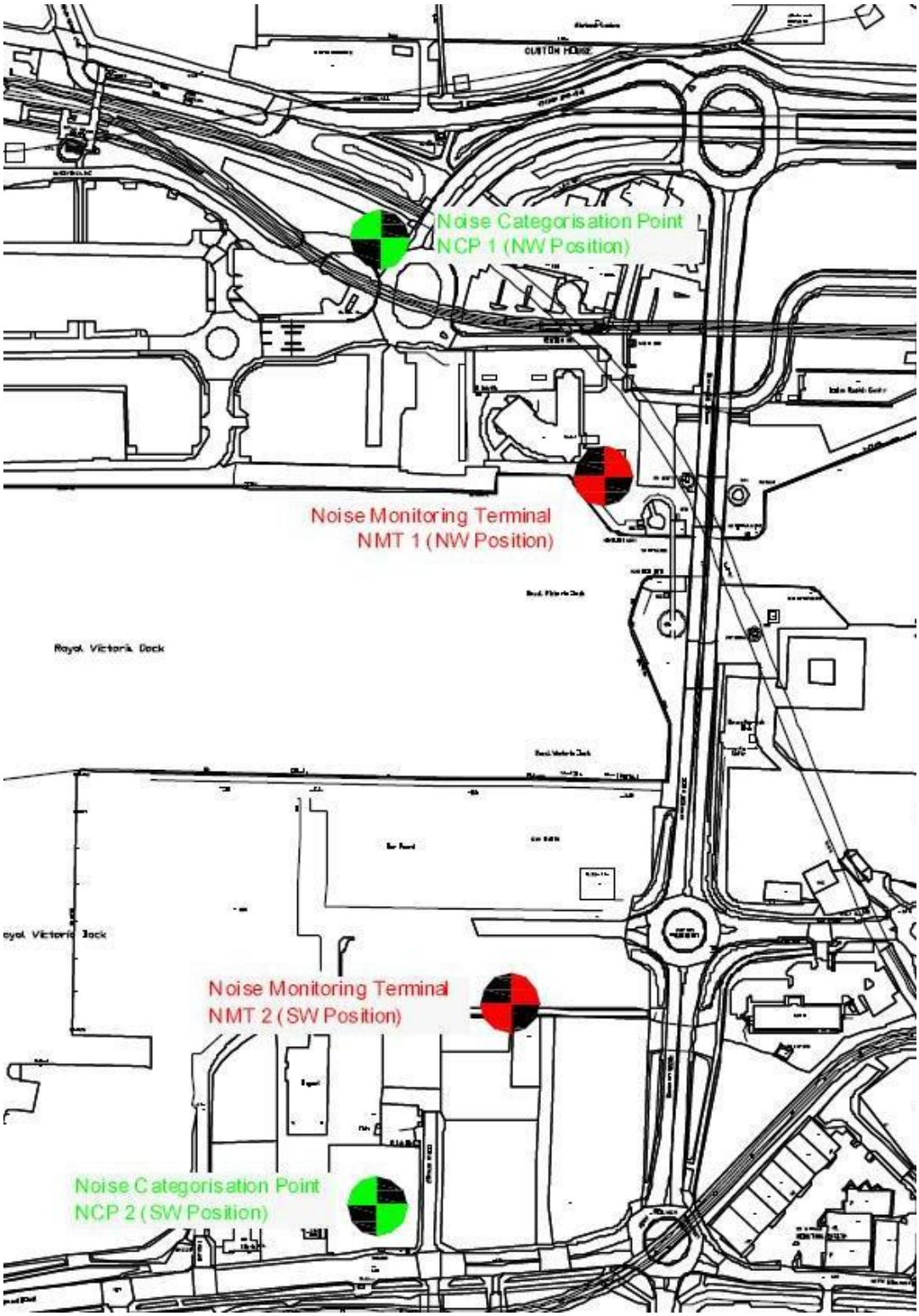


Figure 2 – Noise monitoring locations, west of runway

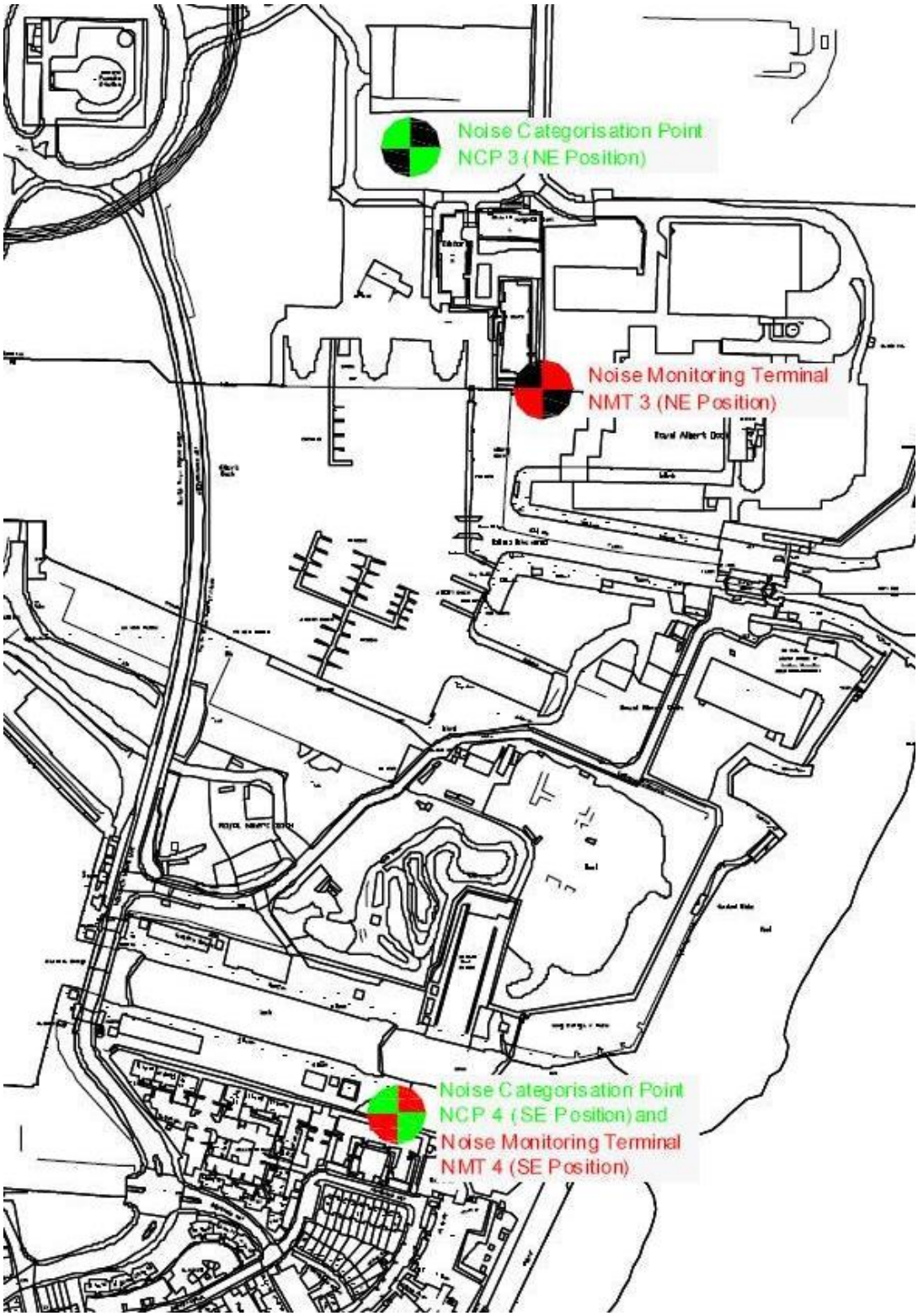


Figure 3 – Noise monitoring locations, east of runway

APPENDIX 1

MEAN ANNUAL DEPARTURE NOISE LEVELS

Aircraft Type	Measured Noise Level (PNdB)	2016 Noise Category
Airbus A318	93.1	A
ATR 42	90.2	B
ATR 72	91.9	B (proposed A for 2017)
BAe 146-100	--*	A
BAe 146-200	92.7	A
BAe 146-300	94.2	A
Bombardier Global 6000	90.9	A[1]
Canadair CL60	90.0	A
Cessna Citation C25A	89.3	A
Cessna Citation C25B	88.5	A
Cessna Citation C25C	90.1	A
Cessna Citation C510	87.5	A
Cessna Citation C525	--*	A
Cessna Citation C550	87.3	A
Cessna Citation C560	--*	A
Cessna Citation C56X	87.1	A
Cessna Citation C680	89.4	A
Dassault Falcon 2000EX	87.0	A
Dassault Falcon 50	92.3	A
Dassault Falcon 7X	86.4	A
Dassault Falcon 900	88.7	A
Dornier 328	88.0	B
Dornier 328 Jet	91.5	A
Dash 8-400	89.8	B
Embraer 135	90.2	A
Embraer 170	94.0	A
Embraer 190	94.7	A
Embraer 300 Phenom	90.0	A
Embraer 500 Legacy	--*	A[1]
Fokker 50	90.7	B
Gulfstream G150	--*	A
Gulfstream G280	--*	A[1]

Aircraft Type	Measured Noise Level (PNdB)	2016 Noise Category
Learjet 45	87.7	A
Piaggio 180	90.7	B
Piper Navajo 31	--*	B
Raytheon Beechcraft 200	--*	B
Raytheon Beechjet 400	--*	A
Raytheon Hawker 800XP	89.8	A
RJ-85	93.8	A
RJ-100	94.9	A
Saab 2000	89.4	B

[1] Provisional Categorisation approved.

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

Table A1 – Mean Annual Departure Noise Levels 2016

LONDON CITY AIRPORT

2016 ANNUAL PERFORMANCE REPORT
(COMPLIANCE WITH PLANNING PERMISSION 07/01510/VAR)

APPENDIX 13
AIRCRAFT POSITION STATEMENTS

01 July 2017

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

London City Airport
Get closer.

Embraer 190 Positioning Statement

28th June 2017

London City Airport
City Aviation House
Royal Docks
London E16 2PB

Tel: 0207 646 0000
LondonCityAirport.com

1. Overview

1.1. The Embraer 190 (E190) Aircraft carried out 13,217 aircraft departures from London City Airport (LCA) during the calendar year of 2016. Of these, the vast majority (92.9%) were correlated to departure noise levels monitored and recorded by the Airport's Noise and Track Keeping (NTK) System.

1.2. The annual average of this aircraft for 2016 was measured by the NTK system at 94.7 PNdB, 0.2 dB above[1] the upper limit of Category A (94.5 PNdB). This was provisionally identified by LCA to the Local Planning Authority on the 6th February 2017.

1.3. Whilst fractionally above the upper limit, a difference of 0.2dB is imperceptible to the human ear. The level of harm that resulted from the recorded average compared to the upper limit is zero.

1.4. The Airport became aware of the possibility of the E190 becoming fractionally out of category by the end of the year in early summer 2016 and sought to proactively address the issue from then. The proactive steps undertaken by LCA, with airline operators and the aircraft manufacturer, are stated in chronological order in Section 4. These steps assisted in identifying the issues and minimising the extent of the increased noise levels.

1.5. This Positioning Statement identifies: how the situation arose; what actions were taken to address it; and sets out the performance of the E190 to date in 2017.

1.6. In summary, the two main reasons for the E190 operating above the upper limit in 2016 were:

1. a temporary change in runway safety distances which occurred in Summer 2016 due to construction works to relay the runway surface (a maintenance activity that occurs once every 30 years);
2. incorrect noise monitor settings capturing elevated noise levels from September to November 2016.

1.7. Taking full account of these exceptional circumstances, the corrected average (as opposed to recorded) for 2016 reduces the fractionally elevated levels to 94.6 PNdB, just 0.1dB (.08 PNdB) above the upper limit of 94.5 PNdB. The standard recording tolerances for any NTK system is +/- 1 dB therefore a .08 PNdB difference should be assessed with this in mind.

1.8. To mitigate against these levels re-occurring in 2017 the noise monitor settings have been realigned and will be checked every two months to ensure that readings are accurately recorded. Additionally, the runway resurfacing works were a one in thirty year event and will not affect take levels in 2017.

[1] For clarity, the noise level to two decimal places was 0.14 PNdB above the limit when taking into consideration rounding against the upper limit of Category A (94.54 PNdB).

1.9. Whilst, the upper limits are based on an annual average, the performance of the E190 year to date in 2017 is currently at 94.1 PNdB[2] compared to 94.5 PNdB for the same period in 2016[3].

[2] From 1st January 2017 – 7th May 2017
[3] It is noted the 94.5 PNdB is an annual noise level threshold and aircraft noise levels fluctuate during the year.

2. E190 Performance to 2015

2.1. The E190 has a passenger carrying capacity of 110[4] and was categorised at the airport in 2009 as a Category A aircraft. This followed demonstration flights in 2009 which provided evidence that the aircraft was capable of operating at LCA within Category A. The number of departures and the MIDNL performance of the E190 aircraft can be seen in Table 1 below, spanning 2009 - 2016:

Year	Aircraft Mvts per year	E190 Mvts only	E190 % of Total Aircraft Mvts	Total Departures per year	E190 Departures per year	E190 Dep % of Total Departures	MIDNL (PNdB) for E190 each year
2009	75,678	83	0.1%	37,832	41	0.1%	94.2
2010	67,871	4,991	0.7%	33,928	4,991	7.4%	94.9
2011	68,100	11,317	16.6%	34,037	5,659	16.6%	94.6
2012	70,502	13,745	19.5%	35,244	6,873	19.5%	94.2
2013	73,640	16,036	21.8%	36,820	8,018	21.8%	94.3
2014	75,637	19,351	25.6%	37,821	9,676	25.6%	94.4
2015	84,502	22,736	26.9%	42,250	11,367	26.9%	94.3
2016	84,955	26,429	31.1%	42,484	13,217	31.1%	94.7[5]

Table 1: Number of Aircraft movements per year, number of departures per year, E190 specific values and the associated MIDNL (PNdB) values.

2.2. As shown in Table 1 above, the E190 for the past 4 years (2012 – 2015) has operated in category. Two years prior to that (2010-2011), the E190 operated slightly above Category A. Work with the airlines at that time succeeded in bringing it back into category and, for the past four years, it has operated within a steady range of 94.2 to 94.4 PNdB each year. This was achieved by reviewing and changing take off procedures with the airlines and aircraft manufacturer. This illustrates that LCA, working with the airlines and aircraft manufacturer, has a track recorded of being able to bring the E190 back into category successfully.

3. E190 Performance in 2016

3.1. With 31% of total aircraft movements associated to the E190 in 2016, it is the main aircraft type to operate from the Airport. LCA continuously engages with the airlines which operate this aircraft (Alitalia, British Airways Cityflyer, Lufthansa, Helvetic (on behalf of SWISS) and more recently KLM) as to its noise performance in order to monitor and mitigate accordingly.

3.2. In 2016 the E190 made 13,217 departures. Table 2 below, states these departures over the course of 2016 by month, the number of noise correlated

[4] BACityflyer operates at maximum capacity 98 passengers others airlines vary due to season and demand.
[5] The analysis this statement provides for indicates, when mitigating factors are considered, the annual average was 94.58 PNdB, 0.08 PNdB outside the upper threshold.

departures and the Mean Individual Departure Noise Level (MIDNL) for each month[6] and the accumulative MIDNL value.

Month	# Departures	# Correlated Departures	% of Correlated Departures	% of Runway 09 departures	% of Runway 27 departures	MIDNL	Accumulative MIDNL
January	898	694	77.3%	25.5%	74.5%	94.4	94.4
February	1,045	880	84.2%	28.4%	71.6%	94.4	94.4
March	1,094	1,021	93.3%	39.2%	60.8%	94.5	94.4
April	1,014	934	92.1%	28.6%	71.4%	94.5	94.5
May	1,106	1,053	95.2%	52.8%	47.2%	94.3	94.4
June	1,150	1,132	98.4%	36.0%	64.0%	95.0	94.5
July	1,118	1,080	96.6%	8.7%	91.3%	95.5	94.7
August	1,177	1,064	90.4%	27.0%	73.0%	94.7	94.7
September	1,122	1,054	93.9%	18.4%	81.6%	95.1	94.7
October	1,238	1,165	94.1%	55.3%	44.7%	94.4	94.7
November	1,244	1,208	97.1%	34.8%	65.2%	94.5	94.7
December	1,011	989	97.8%	42.7%	57.3%	94.8	94.7
2016 Total	**13217**	**12274**	**92.9%**	**33.6%**	**66.4%**	**94.7**[7]	

Table 2: E190 Departures, correlated noise events, MIDNL per month and accumulative plus runway utilisation for year and per month.

3.3. As can be seen in Table 2, the E190 for the first 6 months performed in category[8] until July. For the remainder of 2016 (despite efforts from the Airport, airlines and aircraft manufacturer – see Appendix C) the recorded levels were fractionally higher. During the summer months, aircraft noise tends to rise due to increases in temperature however, what is unusual in 2016, is the winter months did not show a reduction as expected for this time of year. The cause of this is explained in Section 4.

3.4. The overall performance of the E190 was identified as being fractionally above Category A (94.5 PNdB) by 0.2 PNdB at the end of 2016. This level above Category A is an erroneous record due to the exceptional circumstances explained in Section 4. Taking full account of those exceptional circumstances, the corrected average for 2016 reduces the noise level to 94.6 PNdB, just 0.1dB (.08 PNdB) above the upper limit.

[6] As per the 2009 Section 106 under Second Schedule; (8), (3) the stats in Table 1 does not include training or aircraft testing flights.
[7] The analysis this statement provides for indicates, when mitigating factors are considered, the annual average was 94.58 PNdB, 0.08 PNdB outside the upper threshold.
[8] Note however the benchmark of 94.5 PNdB applies to the annual average.

4. **Explanation of E190 2016 Performance**

4.1. There are two principal causes of the E190 aircraft's annual average noise levels.

Runway Resurfacing Works

4.2. The first relates to the Airports runway resurfacing project which occurs once every 30 years. To enable this, the runway safety distances were altered for a temporary period to accommodate these works. This was required to ensure safety requirements were met. In turn, this made the departure noise higher due to the lower positioning of the aircraft during take-off compared to standard departures, as the noise monitors are in fixed locations.

4.3. As a result, the runway safety distances were altered from the 7th July 2016 to 19th October 2016. In order to understand this effect, Table 3 details the MIDNL for the E190 before, during and after these works for 2016, based on the correlated noise levels from the NTK system:

Period in 2016	MIDNL
Pre Runway Safety Distance increase: 1st Jan - 6th July	94.6
During Runway Safety Distance increase: 7th July - 18th Oct	94.9
Post Runway Safety Distance increase: 19th Oct - 31st December	94.6
Annual Average	**94.7**

Table 3: MIDNL for periods pre, during and post runway safety distances were increased due to the runway resurfacing project.

4.4. As shown in Table 3, the MIDNL level increased by 0.1 dB by the 6th July 2016 after June 2016 finishing at 94.5 PNdB (both for month and year to date respectively, Table 2).

4.5. The 1st – 6th July increased the overall year to date MIDNL by 0.03 PNdB and this slight difference is shown in Table 3 with the pre runway safety distance being at 94.6 PNdB.

4.6. During the period when the Runway Safety Distances were changed the MIDNL was 0.4 PNdB above 94.5 PNdB. This may seem small however it has an effect overall, especially during the summer period where noise levels in general are higher therefore exacerbating this effect.

4.7. To help explain this impact further, Embraer, the manufacturer of the E190, produced a notification report indicating that such changes to the Runway Safety Distances, can influence an increase of 0.48 dB (runway 09) and 0.05 dB (runway 27) in departure noise due to the lower positioning of the aircraft during take-off compared to standard departures relative to the noise monitors. This is provided in Appendix A.

4.8. Taking these values into account over the period when the runway resurfacing works occurred, Table 4 shows the outcome if these levels were to be deducted from the recorded noise levels. Post the runway resurfacing works, the noise level was at 94.6 for the remainder of the year, fractionally above the upper limit by 0.1 PNdB:

Period in 2016	**MIDNL**
Pre Runway Safety Distance increase: 1st Jan - 6th July	94.6
During Runway Safety Distance increase: 7th July - 18th Oct	94.8
Post Runway Safety Distance increase: 19th Oct - 31st December	94.6
Annual Average	**94.6**

Table 4: MIDNL for periods pre, during and post runway safety distances were increased due to runway resurfacing project taking into account Embraer analysis of incremental noise increase.

4.9. It is clear in Table 4, that even with the noise levels adjusted during the period when the runway resurfacing works occurred the months after these works were still fractionally above 94.5 PNdB by 0.1 PNdB. This level did not reduce further over the remainder of the year as would normally be expected due to exceptional weather conditions experienced in December 2016.

4.10. In December 2016, the Airport had a total of 218 cancelled departures due to poor weather i.e. fog; 19% of these cancellations occurred two weeks prior to Christmas and a 57% occurred between Christmas and New Year. This meant additional passengers were placed onto flights where possible due to it being in the middle of the holiday season. This unpredictable circumstance meant an increase in noise for those remaining departures.

4.11. If cancellations for December 2016 are compared with the previous two years (December 2014 and December 2015) the number of cancelled flights reduces dramatically (2015 only 18 and 2014 only 5) and so does the MIDNL for the month i.e. 94.7 in 2015 and 94.2 in 2014.

Incorrect settings on Noise Monitors

4.12. The second factor affecting the noise performance is the calibration tolerances of the Airports Noise and Track Keeping (NTK) system i.e. the recognised acoustic standards of accurate noise readings for such a system as employed at LCA. The NTK system was upgraded in October 2013 and automatically has calibration checks remotely every night in order to ensure the noise readings are accurate compared to recognised criteria tolerances.

4.13. Independent calibration occurs annually, in accordance with recognised guidelines[9], the microphones associated to the four noise monitoring locations of which the MIDNL values are derived, are laboratory tested and subsequently field tested. This is required due to possible drift to the microphone and its associated recordings. As the NMTs are permanently fixed in public spaces they are susceptible to changing temperatures, wildlife interaction (birds) and possible vandalism. They are also subject to ambient noise given their location in an urban area.

4.14. As is the case with any noise monitoring chain, there will always be some slight drift in calibration level as a result of various factors. In addition, each element of the measuring chain has its own degree of tolerance, as described in BS ISO 20906:2009 (amended 2013). A tolerance therefore applies to any results produced by a measuring chain if it is necessary to understand to what extent the results are reasonable and accurate. This standard describes a procedure for determining this tolerance and indicates it could lie in the region of 0.7 dB.

4.15. Appendix B sets out information based on an investigation by the Airport into the annual calibration records of the four noise monitors, undertaken with its specialist noise advisors (Topsonic and Bickerdike Allen Partners), to seek to understand the level of fluctuation that can arise on a day to day and month to month basis comparing the automatic and independent calibration of the system. This assessment found fluctuations that appear to have clearly affected recent monthly data in between the time lab calibration occurred for these monitors and subsequent field calibration later in the year. This difference was because of incorrect elevated settings being programmed on the monitors after the first visit. Although it is also clear that the noise monitoring system has remained within correct calibration tolerances throughout the year it signifies how such a small change can have such a negative effect since the thresholds set as part of this scheme are finer than internationally recognised calibration thresholds of an Airports NTK system.

4.16. Therefore, when considering a measurement of 0.2 PndB clearly the standardised tolerances of drift as per any airport NTK system was a factor and must be considered when determining the actual performance of the E190 in 2016 which has been corrected to 94.6 PNdB.

[9] BS ISO 20906:2009 Acoustics – Unattended monitoring of aircraft sound in the vicinity of airports, BSI

Outcomes of factors

4.17. In summary, as referenced in Table 4, the overall MIDNL for the year was 94.6 PndB, 0.1 PndB lower, by the end of the year when considering the runway resurfacing works. In addition, the incorrect noise settings when corrected indicate a further 0.1 PNdB difference if these two factors are considered independently of each other.

4.18. Taking both factors into consideration the overall noise performance of the E190 was 94.58 PNdB, 0.08 PNdB outside the upper threshold. This difference doesn't take into account the unusually high MIDNL noise levels in December 2016, with poor weather conditions being a contributing factor.

4.19. In conclusion, the Airport is disappointed with the average noise level for the E190 in 2016 of 94.6 PNdB. This level is fractionally above the upper limit of 94.5 PNdB and the difference is imperceptible to the human ear. Therefore the level of harm to the public resulting from the 2016 average for the E190 is zero. This can be illustrated with the Airport receiving no complaints citing this specific issue and indeed with only 7% of total noise complaints in 2016 arising from the London Borough of Newham in 2016 compared to 13% in 2015.

4.20. The Airport expected the E190 to be within the noise threshold by the end of the year because all parties involved sought to reduce the noise levels however it wasn't achieved due to poor weather resulting in a high level of cancellations in December 2016. This element is something the Airport could not mitigate against.

5. Mitigation and Control during 2016

5.1. The Airport has been in constant dialogue with both Embraer (the aircraft manufacturer) and the airline operators of the E190 throughout the course of 2016 to seek to reduce noise levels or maintain low noise levels where applicable. This includes procedural changes to how the aircraft is flown with Take – Off settings being altered by all airlines, specific analysis on performance undertaken by the manufacturer, weekly updates to airlines as to the overall performance of the aircraft, dedicated workshops to reduce and mitigate associated departure noise with pilots, additional training to crews and providing updates to Council officers during the later stages of 2016. A full chronological list of actions can be found in Appendix C.

5.2. Taking this approach with airlines and aircraft manufacturer did limit noise levels as no further increases on the annual average occurred in 2016.

5.3. The runway resurfacing works were completed in 2016 and this occurs every 30 years. To ensure the noise monitoring settings are correct, on a bi monthly basis

physical on site noise calibration is in place which will reduce the likelihood of incorrect settings having an effect on noise levels. In this way, the Airport believes adequate mitigation is in place to stop this from reoccurring.

5.4. These efforts have already had the expected positive effect with the E190 so far in 2017[10] performing at 94.1 PNdB year to date compared to 94.5 PNdB for the same period in 2016[11].

[10] From 1st January 2017 – 7th May 2017
[11] It is noted the 94.5 PNdB is an annual noise level threshold and aircraft noise levels fluctuate during the year.

6. Next Steps

6.1. The Airport will continue to work with the airlines, the Local Planning Authority and the aircraft manufacturer in 2017. Specifically the Airport has introduced on site noise calibration to occur every two months from February 2016 and of course, the runway resurfacing work has been complete.

6.2. The Airport will provide weekly updates on performance to the Local Planning Authority, addressing not only the overall performance of the E190 but also by airline and destination.

APPENDIX A – EMBRAER ANALYSIS

Please see document entitled: Appendix A - FOL170-2016-076_rev1 Effect of Runway length on perceived noise.pdf

APPENDIX B – Annual calibration records of the four noise monitors

1.1. The Noise Monitoring Terminals (NMT's) have two key pieces of equipment, the microphone (GRAS-41AM type) and the sound level meter (Norsonic – 140). These were removed from NMTs 1, 2, 3 and 4 in two stages to ensure noise recordings, as far as possible, were not missed. This equipment was removed from NMTs 1 & 2 on Monday 22nd August 2016 and NMTs 3 & 4 removed on Wednesday 31st August 2016[12]. The lab testing and reinstall of this equipment took 3 days post each date. The Airport received the calibration certificates in the 8th September 2016.

1.2. The laboratory calibration was tested to a UKAS accredited standard BS EN 7580 (The periodic testing standard for IEC 60804 and 60651). This verified that the equipment is measuring correctly and provides a certificate accredited by legal metrology to prove as such.

1.3. The NTK system itself is designed in accordance to ISO 20906 Acoustics — Unattended monitoring of aircraft sound in the vicinity of airports and as such requires Class 1 sound analysers as defined in IEC 61672-1. The equipment the Airport utilises meets this criteria and therefore is also tested to IEC 61672-1 on a daily basis which defines a limiting deviation for Class 1 monitors to + or - 1.1 dB.

1.4. This is an important factor because it highlights how stringent the current Temporary Noise Management scheme is compared to such international standards. In other words, the deviation of 1 dB can be accurate for monitoring purposes however such a deviation can mean an aircraft will unwittingly be above the upper threshold of 94.5 PNdB since the Temporary Noise Management schemes thresholds are to a 0.1dB.

1.5. Post this laboratory testing, the Airport monitored closely the noise levels subsequently from all monitors and noted that NMT 1 was recording significantly higher levels post the laboratory tests. To investigate further, Campbell Associates, acoustic specialists in the field of noise monitoring equipment for Airports, undertook on site field testing and calibration to a 0.1 dB level rather than accepting a 1dB level of tolerance. It should be noted such testing could either increase the recorded noise levels or decrease them due to the fine level of testing being undertaken.

1.6. This field testing occurred on the 18th November 2016 and involved lowering the NMT mast to gain access to the microphone, sending reference tones to each microphone at known levels and comparing them to the baseline results taking in May 2014 and those results captured in September 2016. Table 4 illustrates the results of this testing:

[12] NMTs 3 & 4 were delayed due to the August bank holiday.

	On site sensitivity calibration of NMTs (dB)					
	May-14	**Sep-16**	**Nov-16**	**Difference May 14 – Sept 16**	**Difference May 14 – Nov 16**	**Difference Sept 16 – Nov 16**
NMT1	-25.8	-26.3	-25.7	0.5	-0.1	-0.6
NMT2	-25.8	-26	-26	0.2	0.2	0
NMT3	-25.8	-26	-25.8	0.2	0	-0.2
NMT4	-25.7	-26	-25.9	0.3	0.2	-0.1

Table 5: NMT sensitivity calibration testing in May 2014, September 2016 and November 2016 with the difference in noise levels for each one.

1.7. The results for September 2016 are higher than those undertaken on site in May 2013 & November 2016. To keep consistency, the noise sensitivity readings should be the same level as per May 2014. The changes of this sensitivity analysis are linear to the noise measurements being recorded to monitor performance i.e. a 0.6 dB increase on NMT 1 will mean noise levels recorded would be higher by 0.6 dB.

1.8. This difference, especially for NMT 1 where noise levels were elevated by 0.6 dB after the September 2016 calibration had a significant effect on the noise levels being recorded from the 8th September 2016 – 18th November 2016.

1.9. Furthermore, as detailed in BS ISO 20906:2009+A1:2013:

1.9.1. *If the acoustic check reveals deviations greater than 0,5 dB from the sensitivity determined according to 4.8.1, then the sound monitor is identified as defective and shall be repaired and calibrated. In this case, all data measured by that sound monitor since its last acoustic check shall be treated with caution as they are potentially erroneous and not in accordance with this International Standard*.

1.10. Therefore, it is reasonable to show the impact of this with adjusting the noise values accordingly by the factors in the blue column in Table 4 for the departures during this period. This is provided in Table 5 below.

Values from 8th September to 18th November 2016	**MIDNL for the year for E190**
IDNL noise values changed due to noise sensitivity from site calibration (Nov 2016)	94.6 PNdB

Table 6: IDNL values adjusted for difference in on site noise calibration between 8th September 2016 and November 18th 2016.

1.11. This change has reduced the MIDNL value for the E190 to 94.6 MIDNL for the year. It should be acknowledged, as per ISO 20906, that this assessment does not suggest the data should be adjusted but is being undertaken to demonstrate its effect.

APPENDIX C: Chronological List of Actions and Measured undertaken by London City Airport, E190 operators and manufacturer in 2016.

- Noise performance statistics were provided at the Pilots Forum in April 2016 – E190 was in category;
- 4th May 2016 – correspondence with SWISS/Helvetic concerning E190 noise levels began.
- E190 performance statistics were provided to BACityflyer on 15th May 2016 and continued to be provided for the rest of 2016.
- 27th May request with BACF discuss E190 noise performance.
- 3rd June 2016 Meeting with BACF to review E190 noise performance, BACF indicated pilots are being trained.
- 11th July 2016 – notification of E190 being at 94.6 PNdB to all airlines and Embraer and to arrange a workshop called the Embraer Forum.
- 14th July 2016 – Notification of Helvetica begin discussing mitigation methods internally.
- 15th July 2016 – LCY and Embraer initial meeting concerning runway resurfacing impact analysis.
- 21st July 2016, conference call with all airlines and Embraer highlighting the issue of the E190 performance and to discuss ways to improve performance; the outcome of this was the following:
    - Embraer noise abatement procedures redistributed by the manufacturer to all airlines;
    - Embraer indicated to change take-off thrust settings to T1 from T2 to lower thrust required for take-off where safely possible.
    - An Embraer workshop at the Airport to the Airlines.
- LCY provided data by aircraft departure, destination and airline sent weekly to airlines from the 21st July 2016 onwards (previously it was on a monthly basis);
- 21st July 2016 – Embraer redistribute noise abatement procedure.
- 26th July 2016 –BACF changed the take-off thrust setting procedure to follow Embraer's recommendation. The change came into effect on the 26th July 2016.
- 1st August 2016 – notification from Lufthansa that the airline published a crew information remainder to follow strictly the Embraer Procedure and redistributed the procedure to crews.
- 26th July 2016 – LCA inform Local Planning Authority of current status of E190 and actions.
- 8th August 2016 – Alitalia reissued noise abatement procedure.
- 17th August 2016 – Embraer contacted airlines for confirmation of attendance to a Embraer workshop at LCA to cover:
    - Noise abatement procedure;
    - Performance calculations;
    - Q&A regarding effects on noise.
- 22nd August 2016 – site calibration began on NMTs 1&2.

- 23rd August 2016 – Letter from Chief Operations Officer to BACF concerning E190 aircraft performance requesting notification of further measures to reduce noise impacts.
- 30th August 2016 Embraer workshop main actions, attended by LCA, all E190 operators and Embraer:
    - LCA to continue to provide weekly noise updates for E190 performance via online file service provider.
    - Lufthansa, Helvetic and Alitalia agreed to use Take-off 1 setting for all departures for the noise benefit it will provide and confirmation when in place.
    - Embraer to provide noise analysis and forecast for E190 for 2016.
    - Embraer to confirm if the ECS 'off' setting should be incorporated into the E190 performance procedure and reissue if change is made.
    - Embraer to provide actions based on discussion with VR and how this relates to rotation as a significant noise factor.
    - LCA to issue next schedule meeting (conference call) and reoccur monthly.
- 31st August 2016 - Lufthansa chief base Captain undertook settings (as per workshop on 30th August) on departure from LCA to check for difference in noise.
- 31st August 2016 – NMTs 3 & 4 calibration occurred.
- 1st September 2016 – LCA provided Lufthansa noise values for departure as noted above and indicate improved performance (92.1 PNdB for flight).
- 1st September 2016 – Lufthansa confirmed this will email findings to Embraer Forum.
- 2nd September 2016 – Lufthansa provided information to Embraer Forum indicating performing a max available Power T/O in addition with prompt and maximum rotation rate led to a reading of 92.1 PNdB for the flight. This example will be provided to Lufthansa crews as example of improved performance when the procedure is followed as closely as possible (dependant on weather conditions at time).
- 7th September 2016 – Lufthansa confirmed the airline published the new procedure including ECS OFF since 7th September 2016.
- 8th September 2016 – Helvetic confirmed implemented the Take-off -1 procedure method by September 8th 2016. Additionally, a reminder notification went to pilots to strictly rotate at VR without delay to improve noise.
- 13th September 2016 – Alitalia reinforced again the concept [of noise reduction] through the pilots with a specific communication and stressed the trainers to spread the info.
- 18th September 2016 – LCY weekly stats includes temperature data for the year to track against noise performance per destination and airline (September 2016 was exceptionality warm for the time of year).
- 22nd September 2016 – Local planning authority informed of the current noise status of the E190.
- 27th September 2016 - E190 Embraer Forum conference call
    - BACF indicated that minor fuel management changes could occur to help reduce noise;

    - LCA will continue to check the NTK system and provided updated information to airlines per week;
    - Embraer almost completed runway resurfacing works analysis.
    - Airlines noted that Embraer procedure is being utilised.
- 29th September 2016– BA Executive meeting with LCA to discuss E190 noise.
- 30th September 2016 – BACF indicate possibility of utilising the E190 flight Madrid from 16 movements a week to 12 movements. LCA requested to model noise impact if done.
- 3rd October 2016 – for the remaining 12 weeks of 2016 LCA sent out, with current noise performance forecasted noise levels based on the confirmed slots for aircraft movements over the remainder of the year to airlines. This included benchmark noise levels by destination.
- 10th November 2016 – Lufthansa noted unusually high noise levels for NMTs 1 & 2, direct liaison LCA with Lufthansa. Noted on site calibration of noise monitors to occur.
- 10th November 2016 – BACF indicated noise values for the Bergerac flight had increased however take-off weight has reduced and noise abatement procedures are being strictly adhered to. . Noted on site calibration of noise monitors to occur.
- 14th November 2016 – LCA requested NTK system provider to check noise levels for sample flights to due pilot feedback and instigate on site noise calibration as soon as possible.
- 21st November 2016 – Results on calibration from on-site system provided from NTK system provider indicate elevated levels from September to November 2016 further amendments based on results made.
- 24th November 2016 – Second Pilot Forum of the year where noise issues was also covered.
- 24th November 2016 – BACF Executive meeting where noise levels and subsequent actions were discussed, this included the option of alternative short haul routes for E190, large change.
- 24th November 2016 – Current performance on E190 provided to the local planning authority, including analysis to date.
- 19th December 2016 – Final statistics before Christmas and New Year provided by LCA to airlines.
- January 2017 – final analysis and external ratification of noise results for 2016.
- 6th February 2017 – The local planning authority provisionally notified in writing of the E190 performance and possible breach.
- 7th February 2017 – The local planning response to letter at officer level indicating provisionally level of harm of this breach is low and no immediate action is required by the Council.

RJ100 Positioning Statement

9th May 2017

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Background

1.1. Condition 7 of the 2009 Planning Permission requires all aircraft operating at LCY to demonstrate their ability to operate within five departure Noise Categories, ranging from Category E (Noise reference level less than 82.6PNdB) to Category A (Noise reference level 91.6 to 94.5 PNdB).

1.2 As previously reported to the London Borough of Newham (LBN) in the Airport's Annual Performance Reports (APR) (2009-2015) the RJ100, has measured fractionally above the Category A limit since 2009.In the previous APR (2015 performance), the RJ100 measured just 0.1dB above Category A, down from 0.4dB in 2014 and 0.6dB in 2013. This performance has previously been reported by the Airport as a technical breach that is imperceptible to the human ear.

1.3 Efforts to bring the RJ100 back into category have been documented in previous updates to LBN and in the APR. These have included the replacement of the RJ100 on certain routes (Basel and Zurich in 2015); changes in flight profile; take off distances, use of on-board monitoring systems and trial reductions in take-off weights.

1.4 Whilst these efforts have succeeded in reducing the annual levels, they have not brought the aircraft back into category to date.

2016 Performance

1.5 In 2016, the RJ100 operated 1,880 departures from LCY; this represents just under 4% of the total number (42,478) of departures from LCY in 2016 and a reduction of 29% since 2015.

1.6 Despite the reduced number of RJ100 movements in 2016, it was recorded to operate fractionally above the upper limit at 94.9 PNdB, 0.4 dB above Category A (94.5 PNdB), a difference which is not audible to the human ear. The level of harm to public amenity that resulted from the 2016 levels compared to the upper limit is zero.

1.7 Additionally, when accounting for measurement tolerances of the noise monitoring system (as per BS ISO 20906:2009) a margin of error of up to1dB for noise readings should be allowed. The recorded levels for the RJ100 in 2016, 0.4 dB above Category A (94.5 PNdB), fall well within these measurement tolerances.

1.8 The RJ100 average noise levels in 2016 were also impacted by two exceptional circumstances:

1. a temporary change in runway safety distances which occurred in Summer 2016 due to construction works to relay the runway surface (a maintenance activity that occurs once every 30 years); and

2. noise monitor settings incorrectly capturing elevated noise levels from September to November 2016.

1.9 Taking full account of these exceptional circumstances, the corrected average (actual as opposed to recorded) for 2016 reduces the fractionally elevated levels to 94.8 PNdB, 0.3dB above the upper limit of 94.5 PNdB.

1.10 To ensure that all noise levels are captured correctly in future, all noise monitor settings have been realigned and will be checked every two months.

Action taken in 2017

1.11 The RJ100 was previously operated by a number of airlines at LCY but has since been replaced by all airlines apart from SWISS who have replaced it on all but one route - Geneva.

1.12 The Airport understands that SWISS plan to replace the RJ100 on this last remaining route in August 2017 with the C-Series (CS100) commencing operations in Q3 2017 subject to receiving provisional categorisation from LBN and pilot training being carried out. The CS100 is quieter and more fuel efficient than the current fleet of aircraft operating at LCY, representing the achievement of a significant milestone for next generation aircraft using LCY.

1.13 Extensive flight trials for the CS100 were undertaken at LCY in March 2017. Once the noise results of the trials have been compiled, the requisite application for aircraft categorisation will be submitted to LBN for approval in August 2017. The CS100, through work undertaken by the Airport and Bombardier, has already secured regulatory approvals from the European Aviation Safety Agency and the Civil Aviation Authority to operate at LCY.

1.14 The Airport has its own established processes and procedures for a new aircraft to be accepted to operate at LCY and part of these is the requirement for specific pilot training. Currently SWISS are undertaking this training which is essential in order for the Aircraft to safely perform the steep departure and approach procedure unique to LCY which, of itself, contributes to noise abatement. Subject to completion of the above procedures, the Airport expects SWISS to begin operating the CS100 at LCY in Q3 2017 with the consequential immediate discontinuation of the RJ100.

1.15 Additionally, once construction of the permitted City Airport Development Programme (CADP) (permission reference 13/01228/FUL) begins later in 2017, the Airport will comply with planning condition 15. This condition requires that no RJ100 aircraft can operate at LCY unless it is demonstrated that the aircraft does not exceed the maximum noise levels specified (see below):

"Condition 15: AVRO RJ100

From 31 March 2017, no AVRO RJ100 type aircraft (or any variant thereof) shall operate from the Airport at any time unless it has been demonstrated to and approved in writing by the local planning authority that noise from such Aircraft does not exceed the maximum noise levels specified in any approved scheme under Condition 18.

Reason: *To protect the amenity of current and future occupants and neighbours with regard to saved policies EQ45, EQ47 and EQ48 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), policies 7.15 and 7.26 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)."*

Summary

1.16 The RJ100 (representing just 4% of flights from LCY in 2016) operated fractionally above its allowed upper noise limit by 0.3 dB. Whilst this is disappointing it is noted that this level is not audible to the human ear, and zero harm to residential amenity was caused.

1.17 The Airport and SWISS have a clear course of action to address this issue in 2017 by replacing the last remaining RJ100 in August and introducing the CS100 in Q3. Significant milestone progress has been achieved towards meeting this objective through the CS100 test flights at LCY in March 2017 and the ongoing pilot training.

1.18 In addition, once constructions starts later in 2017 of the CADP, requirements of condition 15 which will be triggered preventing the operation of the RJ100 aircraft unless it is satisfactorily demonstrated to LBN that it will operate within its allowed noise levels.

1.19 These measures will ensure that the current fractional exceedance of the RJ100 will be satisfactorily addressed by the end of 2017.

1.20 LBN will continue to receive updates on the performance of the RJ100 every two weeks from the Airport's Environment Manager and will also be kept fully informed of progress to replace the last remaining RJ100 with the new quieter and more fuel efficient CS100 aircraft.

LONDON CITY AIRPORT

2016 ANNUAL PERFORMANCE REPORT
(COMPLIANCE WITH PLANNING PERMISSION 07/01510/VAR)

APPENDIX 14
DATA FROM AIR QUALITY MEASUREMENT PROGRAMME

01 July 2017

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London City Airport
Get closer.

London City Airport Air Quality Measurement Programme:

Annual Report 2016

April 2017



Experts in air quality management & assessment

Document Control

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Executive Summary

This document represents the 2016 Annual Report for the Air Quality Measurement Programme (AQMP) that is operated by Air Quality Consultants Ltd. on behalf of London City Airport. This programme measures concentrations of nitrogen dioxide (NO_2) and fine particles (the so called PM_{10} 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 18 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 PM_{10} concentrations exceed 50 µg/m^3, and no more than 18 hours in each calendar year on which nitrogen dioxide concentrations exceed 200 µg/m^3).

In addition to the objectives, the Government has established a set of descriptors for the 1-hour mean concentrations of nitrogen dioxide and 24-hour mean concentrations of PM_{10}. 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 2016 annual mean nitrogen dioxide concentration measured at the automatic station on the roof of City Aviation House was 27.8 µg/m^3 (microgrammes per cubic metre); a slightly higher concentration, 29.0 µg/m^3, was measured at the Newham Dockside site. The annual mean objective (40 µg/m^3) was not exceeded at either site in 2016.

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

Annual mean concentrations of nitrogen dioxide at other background and roadside sites elsewhere in London over this period ranged from 21.2 to 41.9 µg/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 23 to 35 µg/m^3 compared with the objective value of 40 µg/m^3. There were no measured exceedences of the air quality objective. As measured concentrations are well below 60 µg/m^3, it is highly unlikely that the 1-hour mean objective was exceeded.

Fine Particles (PM_{10})

The annual mean PM_{10} concentration measured at the automatic station on the roof of City Aviation House was 20.3 µg/m^3. This compares with the objective value of 40 µg/m^3. There were seven recorded exceedences of the 24-hour mean objective (compared with the 35 exceedences allowed in a calendar year). The majority of the 24-hour mean concentrations were classified as “Low” (98.1%), with 24-hour mean concentrations classified as “Moderate” and ‘High’ for the remaining 1.4% and 0.5% of the time respectively. There were no 24-hour mean concentrations within the ‘Very High’ pollution band.

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

1 Introduction

1.1 This document represents the 2016 Annual Report for the Air Quality Measurement Programme, operated on behalf of London City Airport (LCA).

1.2 Approval to expand Airport operations to 120,000 noise-factored aircraft movements per annum was granted in July 2009. A legal agreement between London City Airport and the London Borough of Newham associated with this planning approval sets out a number of obligations, one of which relates to an Air Quality Measurement Programme (AQMP).

1.3 The AQMP, as defined within the legal agreement, comprises an automatic air quality monitoring station situated on the roof of City Aviation House, and a network of nitrogen dioxide diffusion tubes, situated in and around the Airport site. In addition, London City Airport commissioned a second automatic air quality monitoring station at a site adjacent to the Newham Dockside building in September 2008. The operation of this additional site falls outside the AQMP, but the data are included in this Annual Report for the sake of completeness.

1.4 The monitoring programme 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 2016 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 μg/m^3 not to be exceeded more than 18 times a year
	Annual mean	40 μg/m^3
Fine Particles (PM_{10})[a]	24-hour mean	50 μg/m^3 not to be exceeded more than 35 times a year [b]
	Annual mean	40 μg/m^3

[a] Measured by the gravimetric method.

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

2.2 The objectives for nitrogen dioxide and PM_{10} 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 PM_{10}. 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 PM_{10} 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 (µg/m^3)

Band	Index	Nitrogen Dioxide 1-hour Mean (µg/m^3)	PM_{10} 24-hour mean (µg/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 PM_{10}
- 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 PM_{10} 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 PM_{10} 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 29th February 2016, 30th August 2016 and 27th February 2017 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, 2017). 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, 2015) for three background sites, Bexley, Bloomsbury and Eltham, and from the Air Quality England website (AQE, 2017) for two sites within the London Borough of Newham at Wren Close, Canning Town (background) and Cam Road, Stratford (roadside).

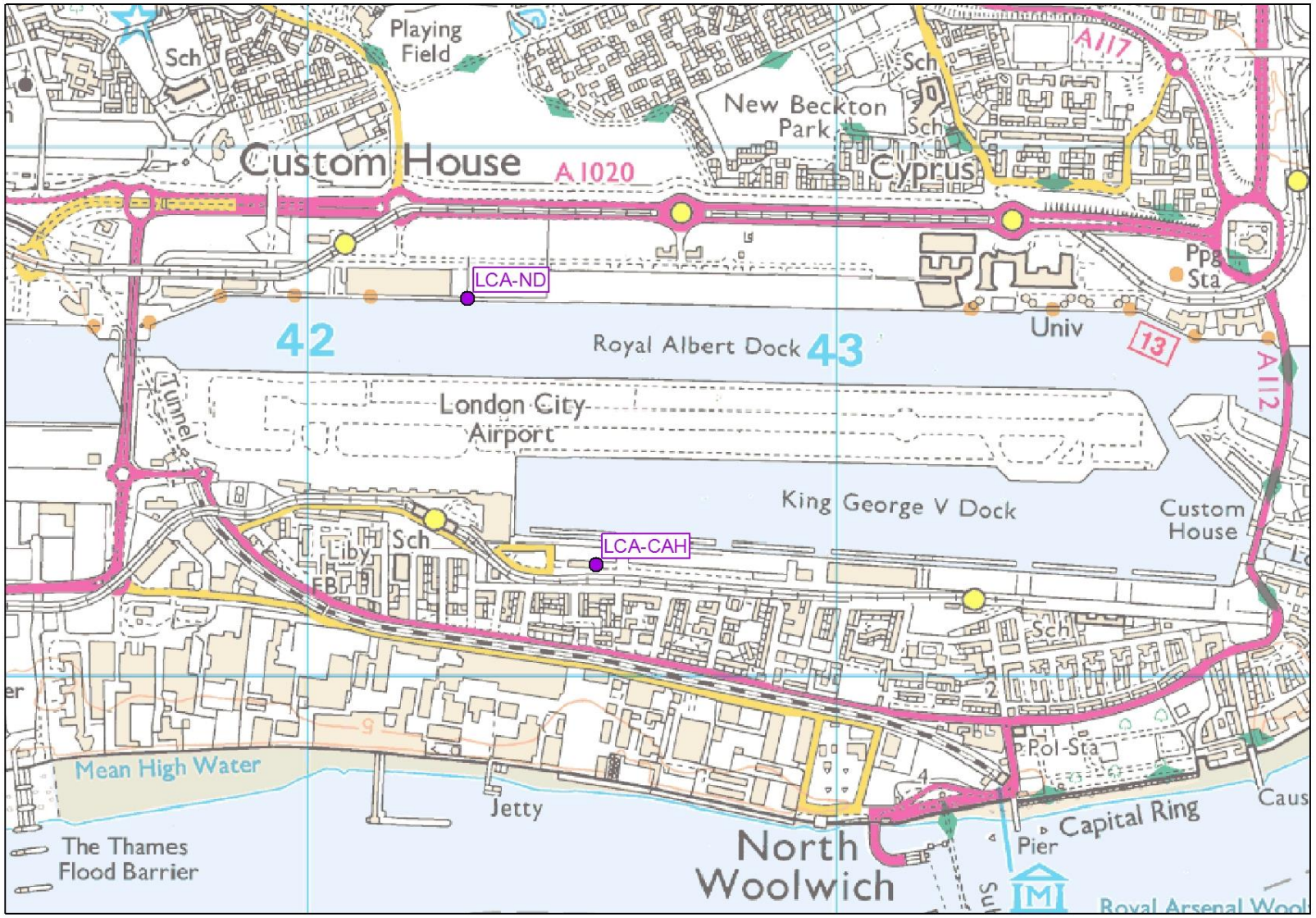


Figure 1: Automatic Monitoring Locations (red dots). © Crown Copyright 2016. All rights reserved. Licence number 100020449

Nitrogen Dioxide

3.7 The 2016 nitrogen dioxide results for the LCA-CAH and LCA-ND automatic monitoring stations are summarised in Table 3. Data capture[1] for LCA-CAH and LCA-ND was 91.5% and 84.4%, respectively. The annual mean concentration did not exceed the objective of 40 µg/m^3 at either site. The 1-hour mean objective was also not exceeded, and there were no 1-hour mean concentrations above the objective value (200 µg/m^3) recorded at either site.

Table 3: Nitrogen Dioxide (NO_2) Data Summary for LCA-CAH and LCA-ND, 2016[a]

Metric	LCA-CAH	LCA-ND	Objectives
	NO_2	NO_2	
Maximum 1- Hour Mean	162 µg/m^3	197 µg/m^3	-
No. 1-Hour Mean > 200 µg/m^3	0	0	200 µg/m^3; no more than 18 exceedences
Annual Mean	27.8 µg/m^3	29.0 µg/m^3	40 µg/m^3
Data Capture	91.5%	84.4%	-

[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 2016.

Table 4: DAQI Bandings for Nitrogen Dioxide, 2016

Band	Index	LCA-CAH	LCA-ND
Very High [a]	**10**		
High [a]	**9**		
	8		
	7		
Moderate [a]	**6**		
	5		
	4		
Low [a]	**3**	3	15
	2	397	499
	1	7617	6876

[a] Number of 1-hour values

3.9 Nitrogen dioxide concentrations for five monitoring sites across London in 2016 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.

measured annual mean concentrations at London City Airport (27.8 µg/m^3 at LCA-CAH and 29.0 µg/m^3 at LCA-ND) were lower than those at Canning Town, Bloomsbury and Stratford (33.2 µg/m^3, 41.9 µg/m^3 and 41.8 µg/m^3 respectively), and higher than those measured at Eltham and Bexley (21.2 µg/m^3 and 24.6 µg/m^3, respectively). This is broadly consistent with the location of London City Airport between the areas of high concentrations in central London and lower concentrations towards the outskirts. The maximum 1-hour mean concentrations recorded at both sites at London City Airport were the same as those recorded at all of the monitoring sites, in that there were no exceedences of the 1-hour mean objective.

Table 5: Nitrogen Dioxide (NO_2) Data Summary for London Monitoring Sites, 2016[a]

Metric	Background Site				Roadside Site
	Bexley	Bloomsbury	Eltham	Canning Town	Stratford
Max. 1-hr Mean (µg/m^3)	144.4	157.7	113.4	198.9	197.0
No. 1-hr >200 µg/m^3	0	0	0	0	0
Annual Mean (µg/m^3)	24.6	41.9	21.2	33.2	41.8
Data Capture (%)	97.9	97.8	98.3	94.2	99.4

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

Particulate Matter PM_{10}

3.10 The 2016 PM_{10} results for the LCA-CAH automatic monitoring station are summarised in Table 6. Data capture was 99.3%. The recorded annual mean concentration (20.3 µg/m^3) was well below the objective of 40 µg/m^3. There were seven measured exceedences of the 24-hour mean objective value of 50 µg/m^3 compared with the 35 exceedences that are allowed. In addition, the 90th percentile of 24-hour mean concentrations (34.3 µg/m^3) was well below 50 µg/m^3.

Table 6: PM_{10} Data Summary for LCA-CAH, 2016

Metric	TEOM, VCM-corrected	PM_{10} Objectives
	PM_{10}	
Maximum 24-hour Mean	79.1 µg/m^3	-
No. 24-Hour Means >50 µg/m^3	7	50 µg/m^3; no more than 35 exceedences
90th Percentile	34.3 µg/m^3	50 µg/m^3
Annual Mean	20.3 µg/m^3	40 µg/m^3
Data Capture	99.3%	-

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 PM_{10} concentrations fell into the 'Low' pollution band (98.1%) during 2016. In addition, there were five 24-hour mean concentrations within the 'Moderate' pollution band (1.4%) and two 24-hour mean concentrations within the 'High' band. There were no 'Very High' events.

Table 7: DAQI Bandings for PM_{10}, 2016

Band	Index	LCA-CAH
Very High [a]	10	
High [a]	9	
	8	
	7	2
Moderate [a]	6	1
	5	
	4	4
Low [a]	3	34
	2	178
	1	147

[a] Number of 24-hour mean values.

3.12 PM_{10} concentrations for six sites across London in 2016 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 (20.3 µg/m^3) was higher than all of the six reported sites (Stratford 18.2 µg/m^3, Canning Town 20.1 µg/m^3, Bexley (17.5 µg/m^3 using VCM-corrected TEOM, 17.7 µg/m^3 using FDMS), Bloomsbury 19.9 µg/m^3 and Eltham 18.2 µg/m^3). The number of 24-hour mean exceedences of 50 µg/m^3 was higher than that measured at Eltham, Bexley (TEOM and FDMS) and Canning Town, but lower than that measured at Stratford and Bloomsbury.

Table 8: PM_{10} Data Summary of Background London Monitoring Sites, 2016[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)	63.8	77.5	79.5	73.6	83.9	89.1
Annual Mean (µg/m^3)	17.5	17.7	19.9	18.2	20.1	18.2
No. 24-hr mean >50 µg/m^3	3	5	9	6	4	9
90th Percentile	31.1	33.9	32.9	30.5	32.7	33.8
Data Capture (%)	97.8	78.8	96.5	81.8	63.5	82.7

[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 $\mu g/m^3$ (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 on access road in Silvertown Quay. Approx. 36 metres from kerbside of main road	LCA 03
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
Waterfront, approx 180 m east of Newham Dockside	LCA 16
Newham Dockside analyser (duplicate)	LCA 18
Waterfront, approximately 460m east of Newham Dockside	LCA 19

[a] LCA-17 was discontinued in January 2012 as the lamppost on which diffusion tubes were deployed was removed.

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, 15 and 16 (in the vicinity of Newham Dockside and Royal Albert Way) would also not represent relevant exposure for annual mean concentrations according to the criteria defined in LAQM.TG(16)[2], but are relevant for the 1-hour mean objective. Site LCA 03 is located within an area of land allocated for redevelopment at Silvertown Quay, but public access is currently prohibited. 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 31.2%. An adjustment factor of 0.762 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 (±5.2% and ±6.4%) in 2016 (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 µg/m^3 was achieved at all diffusion tube monitoring locations during 2016. All measured annual mean nitrogen dioxide concentrations were well below 60 µg/m^3, and it is thus unlikely that the 1-hour mean objective was exceeded at any location.

[2] Defra Technical Guidance Note LAQM.TG(16) suggests that in the case of the annual mean objective, a relevant location might be where a member of the public would be exposed for a cumulative period of 6 months in a year.

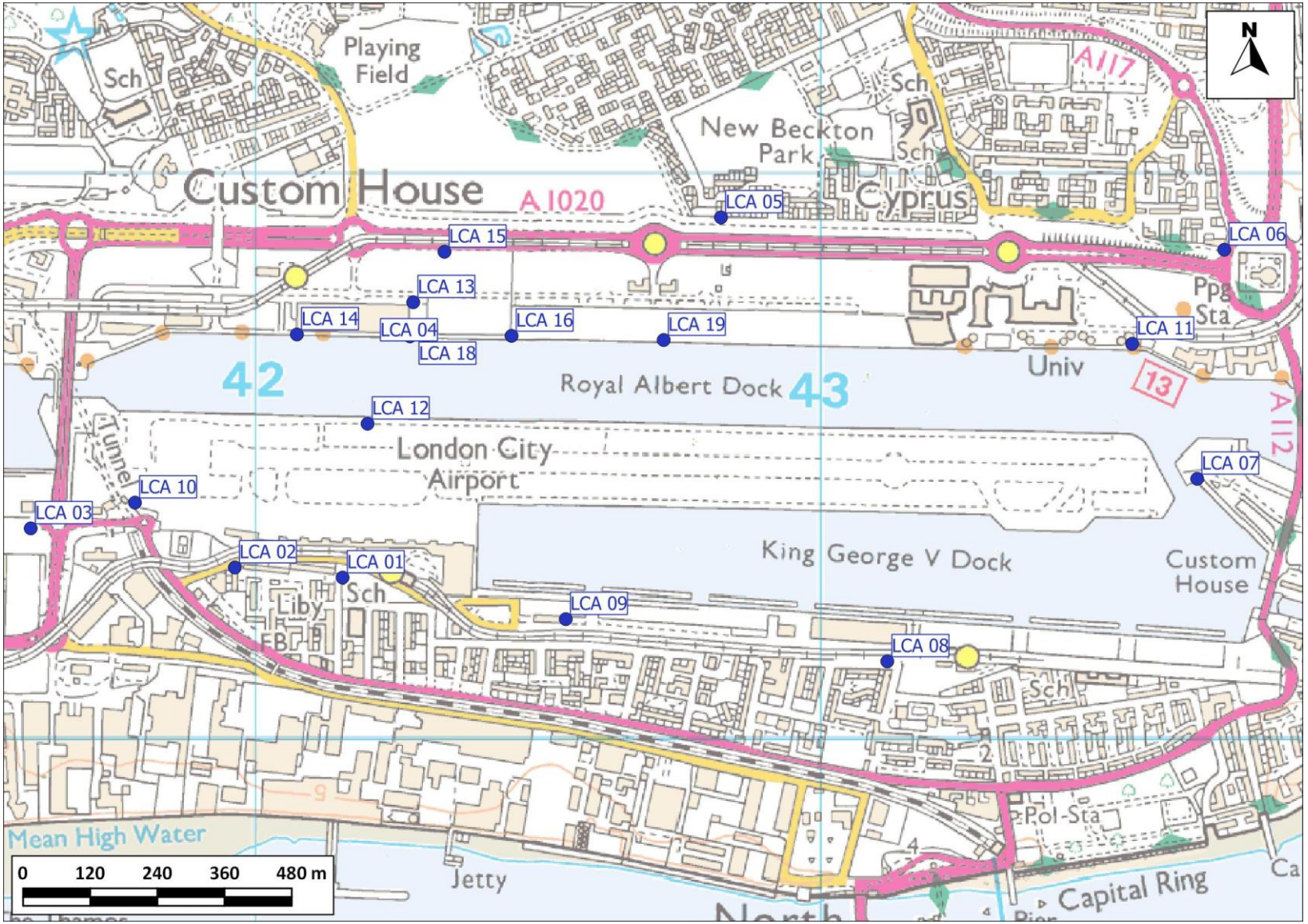


Figure 2: Diffusion Tube Monitoring Locations (blue dots) © Crown Copyright 2016. All rights reserved. Licence number 100020449.

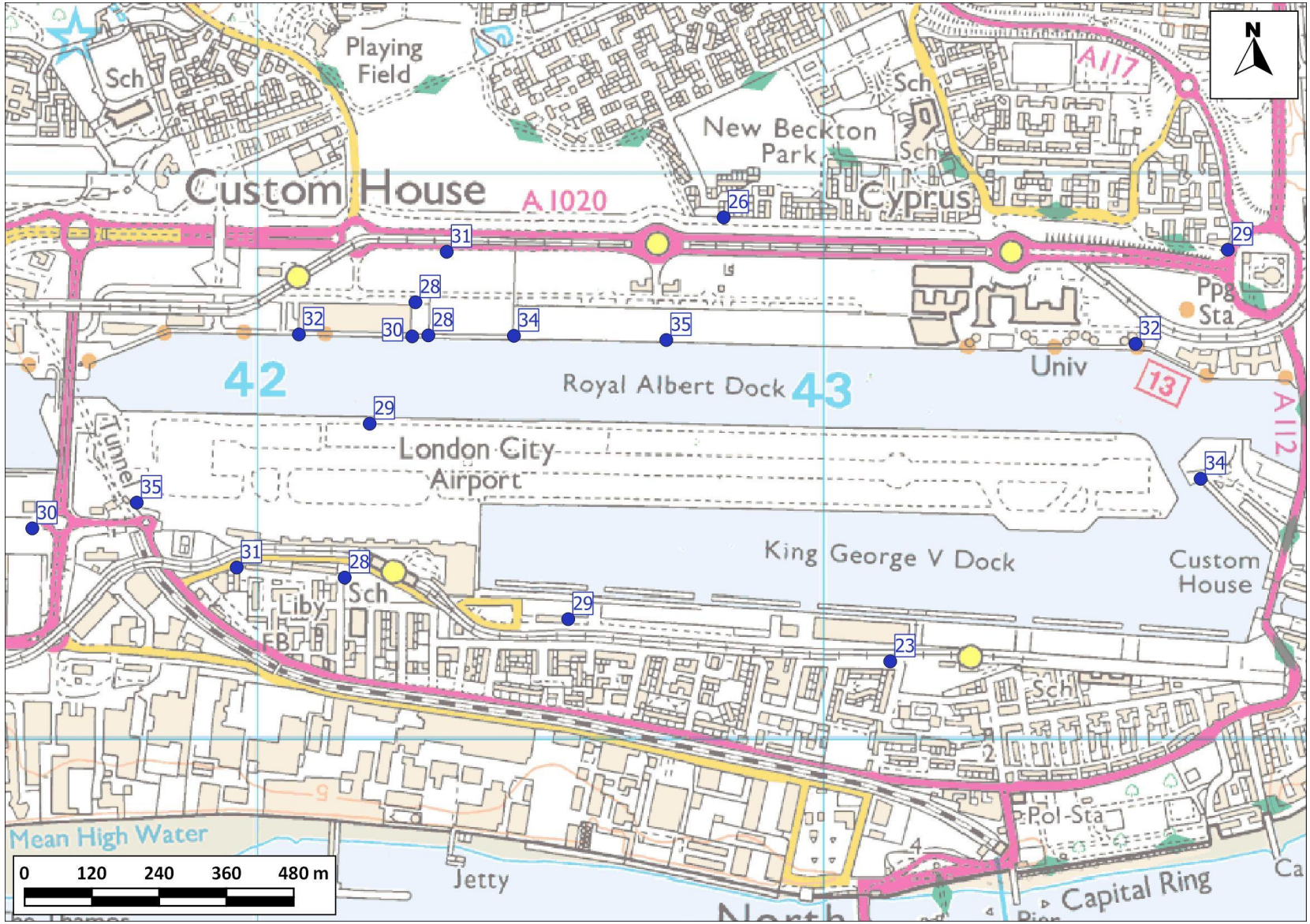


Figure 3: Nitrogen Dioxide Diffusion Tube Results, 2016 (µg/m^3) © Crown Copyright 2016. All rights reserved. Licence number 100020449.

Table 10: Diffusion Tube Data Summary for London City Airport, 2016 (Adjusted for Bias)

Site ID	Adjusted Value (µg/m^3) [a]
LCA 01	28.3
LCA 02	31.2
LCA 03	29.5
LCA 04	30.4
LCA 05	26.2
LCA 06	28.8
LCA 07	33.9
LCA 08	23.4
LCA 09	29.3
LCA 10	34.7
LCA 11	31.7
LCA 12	28.9
LCA 13	27.8
LCA 14	31.9
LCA 15	30.8
LCA 16	33.7
LCA 18	28.3
LCA 19	34.9

[a] Data have been adjusted using a local bias adjustment factor for 2016 of 0.762. The co-location studies are carried out at LCA-CAH using triplicate tubes and at LCA-ND with a single tube located at the automatic monitors. Diffusion tubes were exposed for the period between 13th January 2016 to 6th January 2017.

4 Data Analyses

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

Time Series

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

4.3 The measured daily mean PM_{10} concentrations at LCA-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. Only the Canning Town (Wren Close) monitor appears to have experienced significant periods of higher concentrations than those seen at the other sites. This was during the summer months, and may reflect local sources.

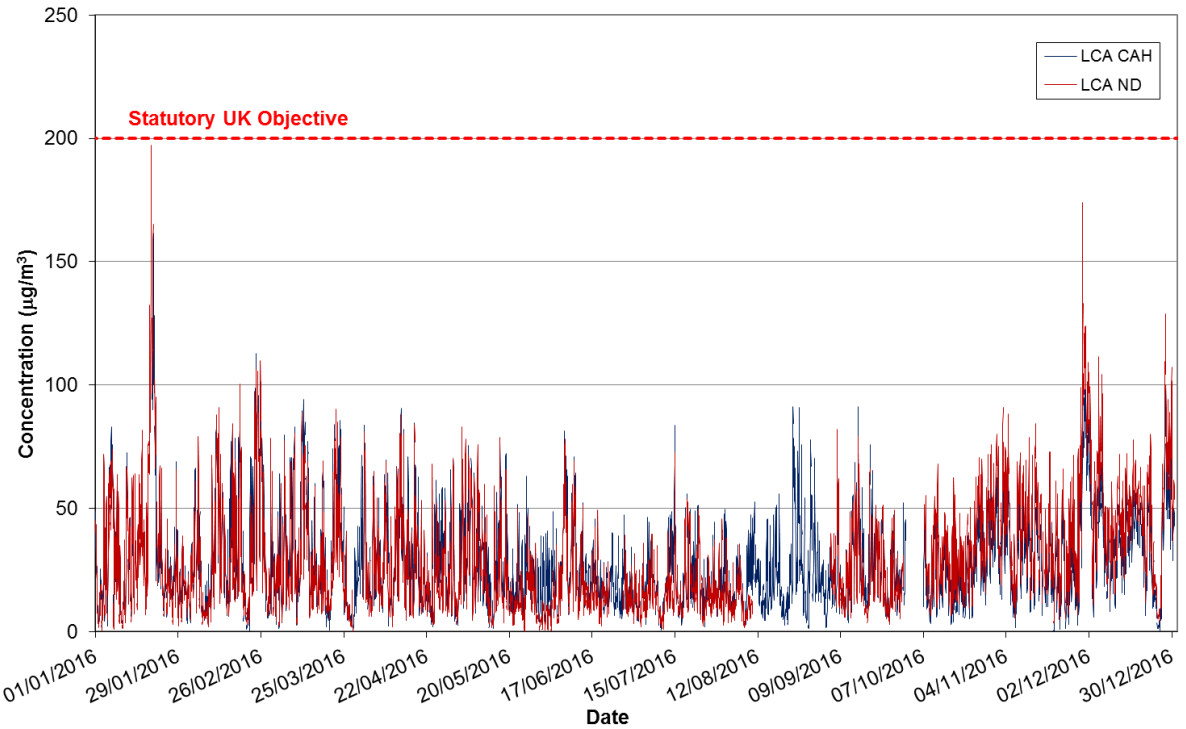


Figure 4: 1-Hour Mean Nitrogen Dioxide Concentrations at London City Airport, 2016

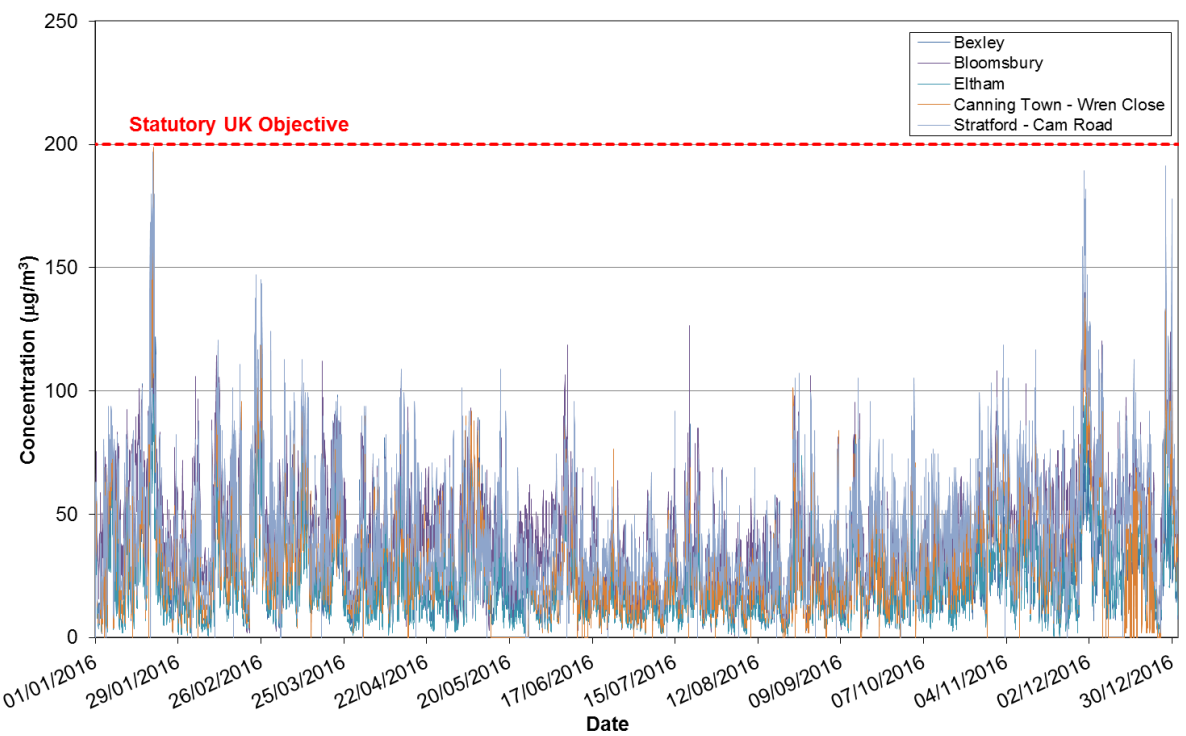


Figure 5: 1-Hour Mean Nitrogen Dioxide Concentrations at London Monitoring Sites, 2016

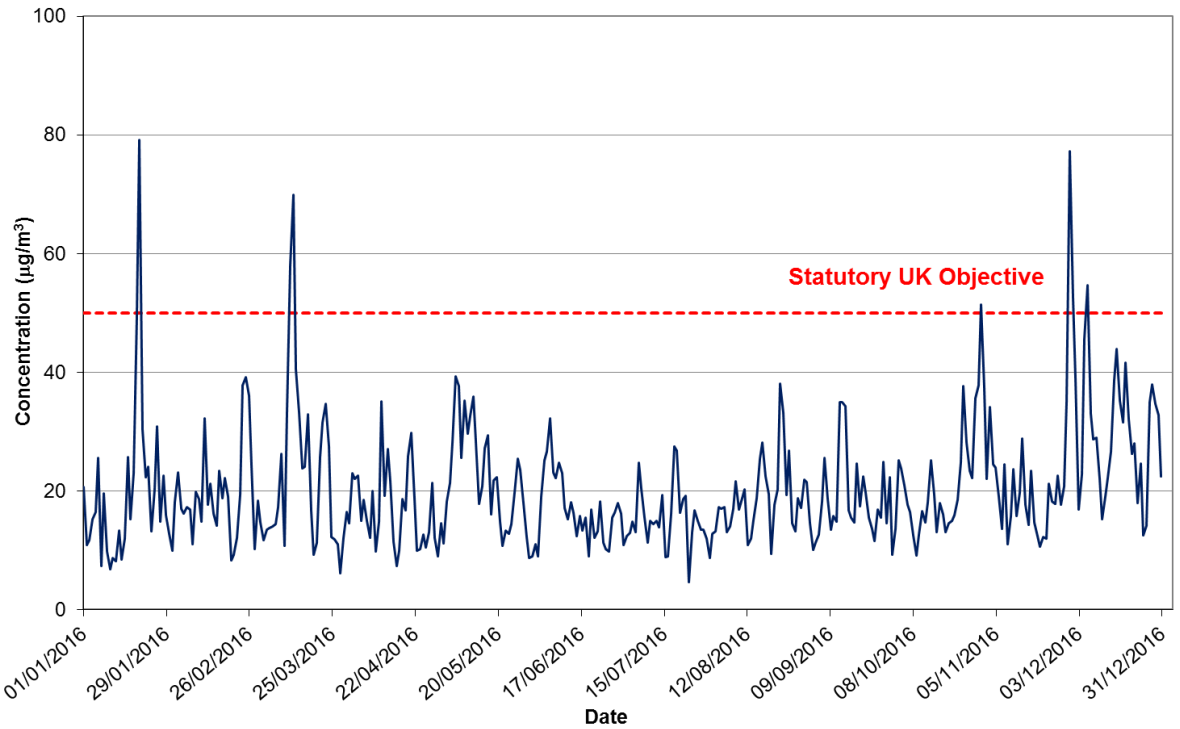


Figure 6: Daily Mean PM_{10} Concentrations at London City Airport (LCA-CAH), 2016

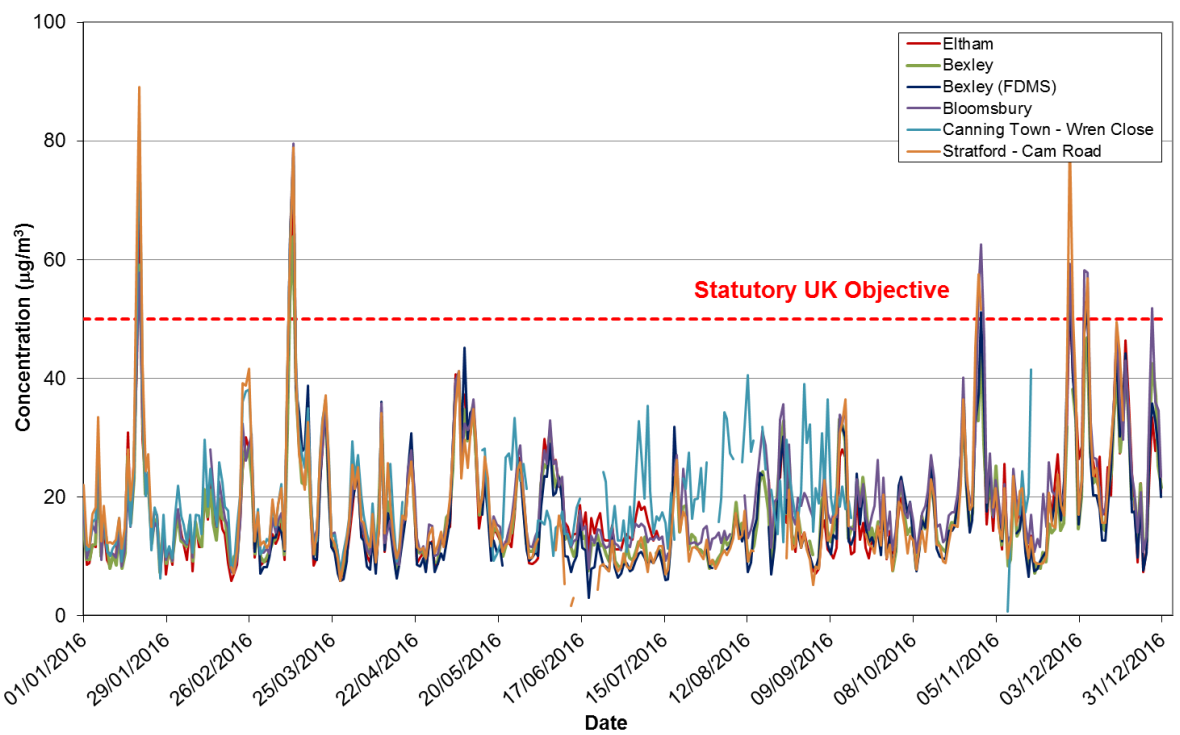


Figure 7: Daily Mean PM_{10} Concentrations at London Monitoring Sites, 2016

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 (NO_2 only[3]) 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 ten years, but concentrations have remained broadly constant over the last four 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 most east-London monitoring sites for both nitrogen dioxide and nitrogen oxides (NOx), including at LCA-CAH and LCA-ND.

4.7 The trends in annual mean PM_{10} concentrations are shown in Figure 9, for the LCA-CAH site and two other monitoring locations, for which ten years data are available. There is no clear trend between 2007 and 2016, with concentrations remaining largely unchanged over this period, with the exception of the Stratford roadside site, which has shown a reduction in recent years.

[3] For the period 2009 to 2016 only.

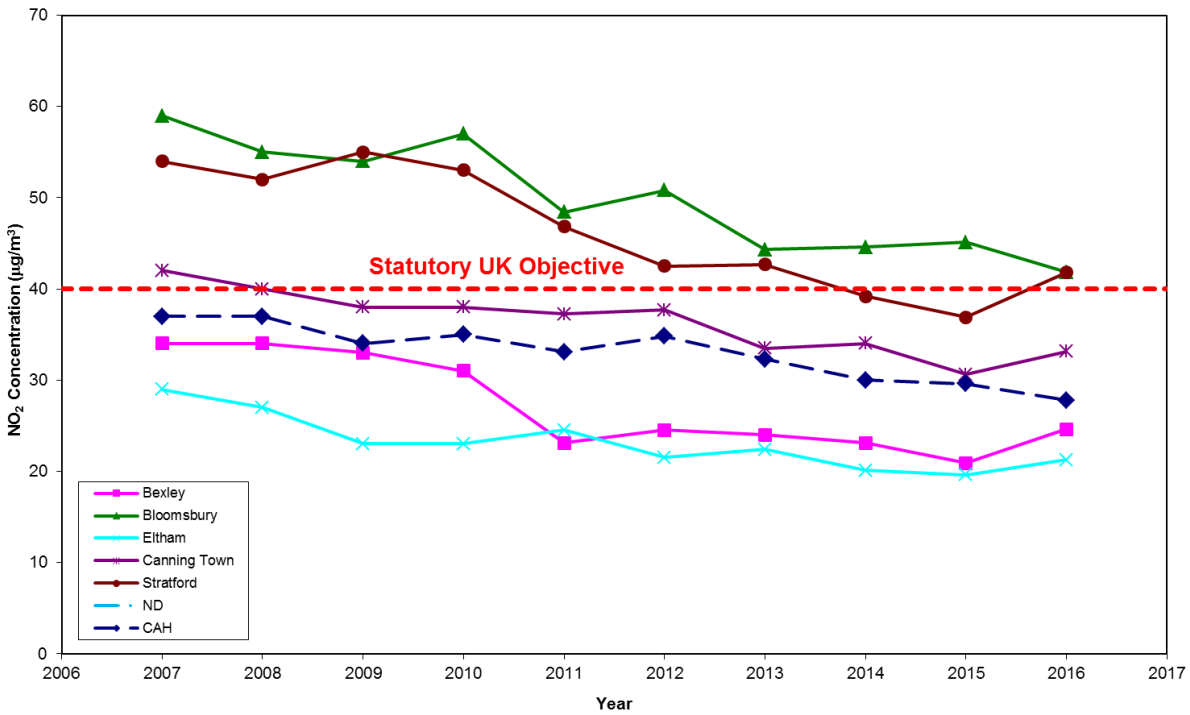


Figure 8: Annual Mean Nitrogen Dioxide Concentrations, 2007 – 2016 (µg/m^3)

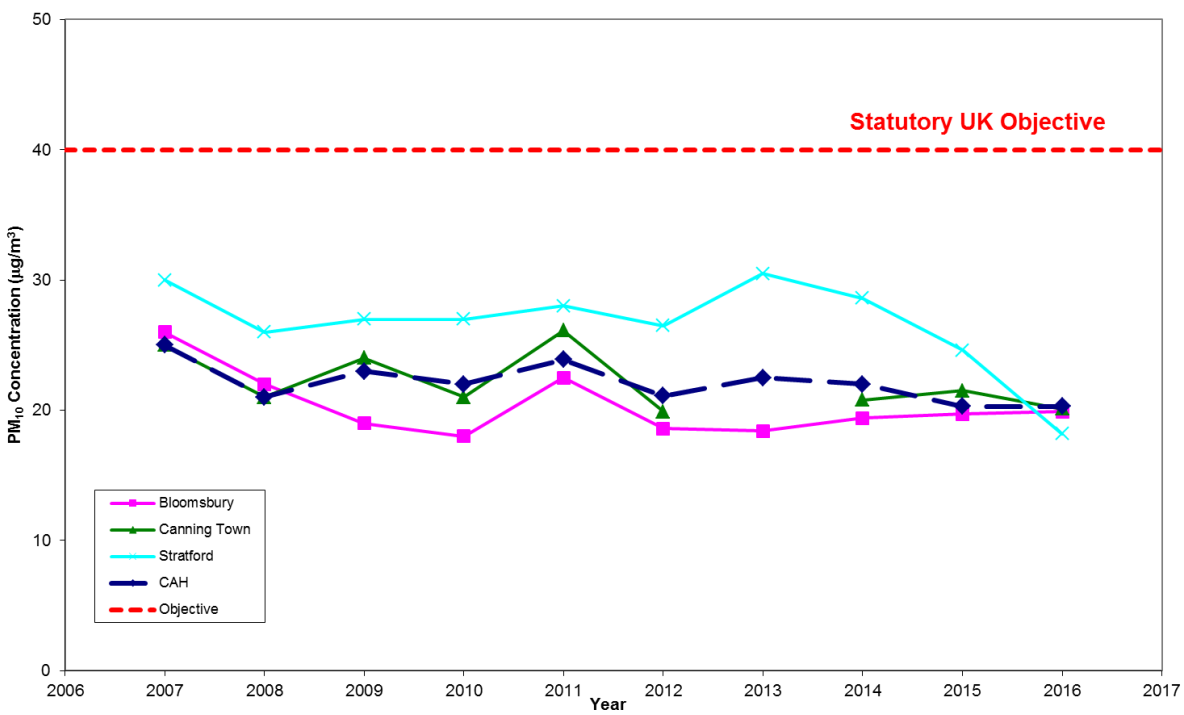


Figure 9: Annual Mean PM_{10} Concentrations, 2007 – 2016 (µg/m^3) [a]

[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" software[4]. 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 NOx concentrations in 2016 at the LCA-CAH and LCA-ND sites, using wind data from the meteorological station at London City Airport. During low wind speeds, dispersion is reduced and concentrations from ground-level sources are higher. The pattern at both monitoring sites is that the highest NOx concentrations occur during low wind speeds (i.e. towards the centre of the rose), indicating that the highest concentrations are associated with ground-level source releases (the wind-speed scale runs from 0 to 20 m/s, with the concentration scale running from 0 to around 100 µg/m^3). These higher concentrations are not associated with any particular wind direction. There is also some indication that emissions from the apron area are making a small contribution at both sites, with these contributions being associated with moderate wind speeds (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

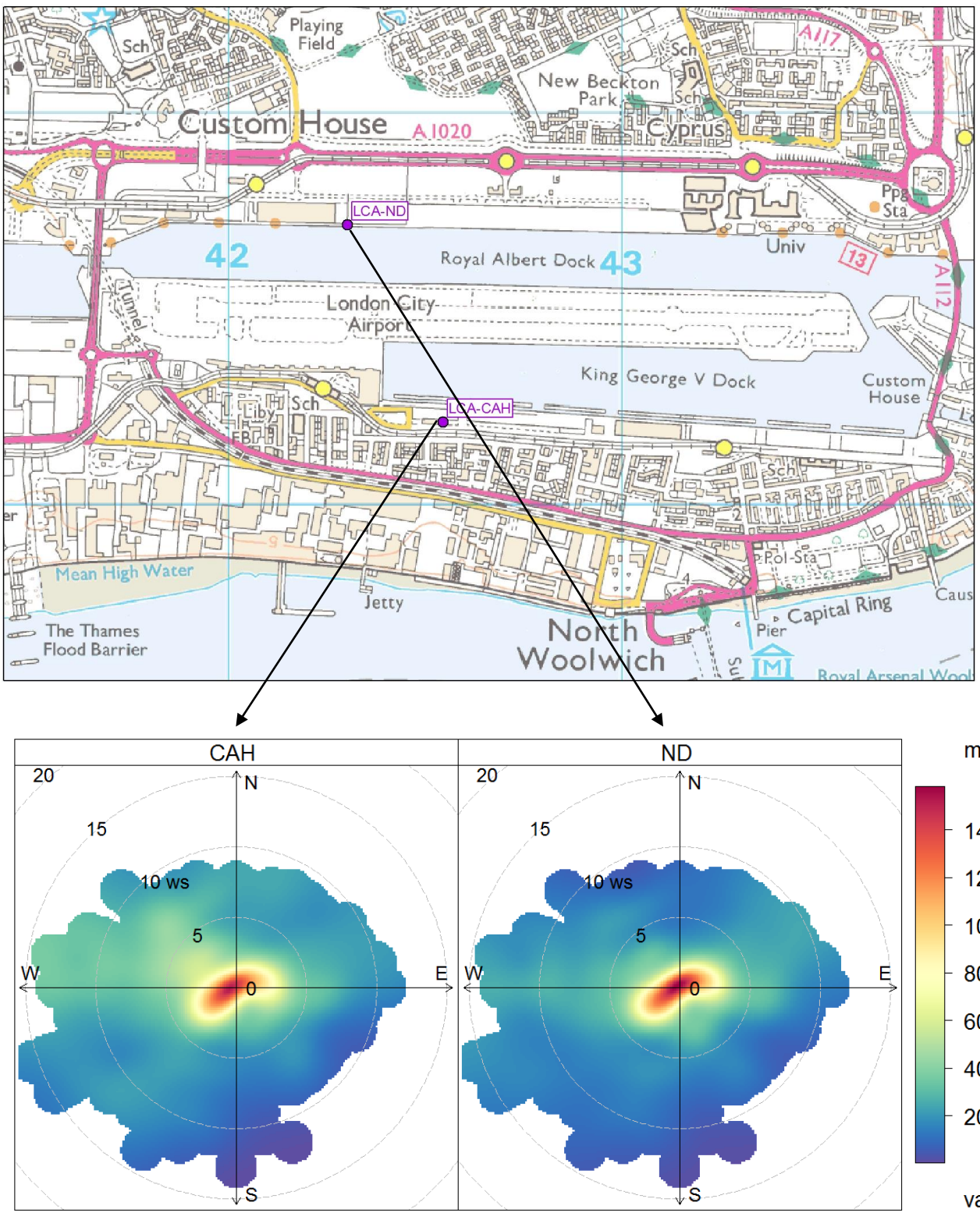


Figure 10: Bivariate Pollution Roses at LCA-CAH and LCA-ND Sites, 2016 (NO_x, µg/m^3)

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6 Glossary

Exceedence	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
$\mu g/m^3$	Microgrammes per cubic metre.
NO_2	Nitrogen dioxide.
NO_x	Nitrogen oxides (taken to be NO_2 + NO).
NO	Nitric oxide.
Objectives	A nationally defined set of health-based concentrations for nine pollutants, seven of which are incorporated in Regulations, setting out the extent to which the standards should be achieved by a defined date, taking into account costs, benefits, feasibility and practicality. There are also vegetation-based objectives for sulphur dioxide and nitrogen oxides.
PM_{10}	Small airborne particles, more specifically particulate matter less than 10 micrometers in aerodynamic diameter.
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, 2016

Site	LCA-CAH	LCA-ND
Maximum 1-Hour Mean	845 µg/m^3	1102 µg/m^3
Annual Mean	52.7 µg/m^3	53.2 µg/m^3
Data Capture	91.5%	84.5%

Table A1.2: Nitrogen Oxides (NO_x) Data Summary for London Monitoring Sites, 2016

Site	Bexley	Bloomsbury	Eltham	Canning Town	Stratford
Maximum 1-Hour Mean (µg/m^3)	843.9	710.1	696.3	942.9	1055.7
Annual Mean (µg/m^3)	43.9	75.0	34.9	58.0	82.8
Data Capture %	97.9	97.8	98.3	94.2	99.4

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 2016, Not Bias Adjusted (µg/m^3)

Site ID	Grid ref	13/01/16 to 05/02/16	05/02/16 to 04/03/16	04/03/16 to 04/04/16	04/04/16 to 09/05/16	09/05/16 to 03/06/16	03/06/16 to 04/07/16	04/07/16 to 01/08/16	01/08/16 to 05/09/16	05/09/16 to 21/10/16	21/10/16 to 16/11/16	16/11/16 to 13/12/16	13/12/16 to 06/01/17	Unadjusted Annual Mean	Data Capture (%)
LCA 01	542154, 180288	42.8	39.6	25.0	33.2	34.8	27.9	31.5	-	-	47.6	-	51.3	37.1	75%
LCA 02	541965, 180299	45.5	40.3	33.0	35.8	36.3	36.6	44.3	36.3	34.0	49.4	49.9	50.5	41.0	100%
LCA 03	541589, 180373	45.1	43.9	33.4	32.0	37.5	32.3	25.3	31.3	34.7	50.5	48.9	49.9	38.7	100%
LCA 04	542271, 180708	46.5	43.9	33.5	33.3	27.0	30.9	27.9	35.2	34.2	53.7	56.1	56.4	39.9	100%
LCA 05	542847, 180914	42.5	40.2	31.0	28.8	24.2	29.3	-	21.5	27.1	42.5	43.9	47.6	34.4	92%
LCA 06	543712, 180868	45.0	44.2	33.2	33.0	30.8	30.2	31.3	30.9	31.5	45.3	49.4	48.9	37.8	100%
LCA 07	543662, 180460	53.7	47.7	32.1	31.1	29.6	31.0	32.7	34.5	15.5	52.0	51.2	122.0	44.4	100%
LCA 08	543120, 180133	41.5	37.9	31.4	27.5	25.1	22.4	22.8	24.5	13.0	39.4	37.1	45.8	30.7	100%
LCA 09	542532, 180196	44.4	43.0	33.7	31.0	34.4	29.4	31.1	29.9	-	49.1	50.6	60.8	39.7	92%
		44.6	37.3	31.4	32.7	34.6	24.0	28.2	30.7	27.8	53.3	53.4	52.7	37.6	100%
		38.7	42.8	31.5	33.1	34.0	28.3	30.0	28.6	29.9	52.5	51.7	54.6	38.0	100%
LCA 10	541758, 180428	48.9	47.3	37.2	36.5	-	37.6	42.1	38.5	39.3	55.3	57.8	59.8	45.5	92%
LCA 11	543549, 180693	53.5	39.0	33.5	34.4	30.4	25.4	36.8	32.0	33.5	57.1	59.9	63.0	41.5	100%
LCA 12	542192, 180561	51.8	35.2	28.9	31.1	22.4	31.5	31.0	33.4	31.0	50.6	51.9	56.9	38.0	100%
LCA 13	542280, 180769	48.5	38.1	26.8	29.5	28.7	31.6	32.8	32.8	30.3	43.8	43.5	51.3	36.5	100%
LCA 14	542070, 180712	49.5	46.9	33.9	33.4	29.6	33.5	31.5	32.5	33.3	54.5	66.5	57.7	41.9	100%
LCA 15	542316, 180862	52.2	42.3	33.2	32.4	33.5	30.5	33.0	32.3	32.2	50.9	58.0	54.7	40.5	100%
LCA 16	542451, 180712	57.2	46.8	35.1	32.1	-	32.3	36.2	36.4	30.3	53.0	60.4	66.3	44.2	92%
LCA 18	542303, 180707	41.3	42.6	31.8	28.4	25.8	26.7	29.5	30.3	33.4	50.9	56.4	57.5	37.9	100%
		45.1	38.5	27.3	30.6	23.9	29.0	31.1	31.0	27.9	45.8	53.8	51.9	36.3	100%
LCA 19	542728, 180705	66.1	51.3	35.2	35.9	33.8	32.8	39.2	35.9	-	47.9	60.5	64.8	45.8	92%

– 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 2016 [a]

	Diffusion Tube	Automatic	Adjustment Factor
LCA-CAH	38.1	28.4	0.746
LCA-ND	37.1	28.9	0.779
Overall Factor [b]			**0.762**

[a] Diffusion tubes were exposed for the period between 13th January 2016 to 6th January 2017. 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
2007	0.764
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

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 each of the twelve periods of monitoring at LCA-CAH there was 'Good' precision, with the average precision of <10% and none of the periods having 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, 2017).

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	13/01/16	05/02/16	44.4	44.6	38.7	43	3.4	8	Good
2	05/02/16	04/03/16	43.0	37.3	42.8	41	3.2	8	Good
3	04/03/16	04/04/16	33.7	31.4	31.5	32	1.3	4	Good
4	04/04/16	09/05/16	31.0	32.7	33.1	32	1.1	4	Good
5	09/05/16	03/06/16	34.4	34.6	34.0	34	0.3	1	Good
6	03/06/16	04/07/16	29.4	24.0	28.3	27	2.8	10	Good
7	04/07/16	01/08/16	31.1	28.2	30.0	30	1.5	5	Good
8	01/08/16	05/09/16	29.9	30.7	28.6	30	1.1	4	Good
9	05/09/16	21/10/16	-	27.8	29.9	29	1.4	5	Good
10	21/10/16	16/11/16	49.1	53.3	52.5	52	2.2	4	Good
11	16/11/16	13/12/16	50.6	53.4	51.7	52	1.4	3	Good
12	13/12/16	06/01/17	60.8	52.7	54.6	56	4.2	8	Good
Average CV								**5**	**-**

A4.3 Table A4.2 shows that for each of the twelve periods of monitoring at LCA-CAH there was 'Good' precision, with the average precision of <10% and none of the periods having 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, 2017).

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	13/01/16	05/02/16	41.3	45.1	43	2.6	6	Good
2	05/02/16	04/03/16	42.6	38.5	41	2.9	7	Good
3	04/03/16	04/04/16	31.8	27.3	30	3.2	11	Good
4	04/04/16	09/05/16	28.4	30.6	30	1.5	5	Good
5	09/05/16	03/06/16	25.8	23.9	25	1.3	5	Good
6	03/06/16	04/07/16	26.7	29.0	28	1.6	6	Good
7	04/07/16	01/08/16	29.5	31.1	30	1.1	4	Good
8	01/08/16	05/09/16	30.3	31.0	31	0.5	2	Good
9	05/09/16	21/10/16	33.4	27.9	31	4.0	13	Good
10	21/10/16	16/11/16	50.9	45.8	48	3.6	8	Good
11	16/11/16	13/12/16	56.4	53.8	55	1.8	3	Good
12	13/12/16	06/01/17	57.5	51.9	55	3.9	7	Good
Average CV							**6**	**-**

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 seven other, nearby monitoring sites (Greenwich Burrage Grove, Greenwich Millennium Village, Greenwich Eltham, Greenwich Woolwich Flyover, Newham Cam Road, Newham Wren Close and Tower Hamlets Blackwall) [5], over the period 2007 to 2016.

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 six of the seven monitoring sites (Greenwich Burrage Grove, Greenwich Eltham, Greenwich Woolwich Flyover, Newham Cam Road, Newham Wren Close and Tower Hamlets Blackwall). There is no statistically significant trend at the Greenwich Millennium Village monitoring site.

Table A5.1: Theil-Sen Analysis, Nitrogen Dioxide Concentrations at City Aviation House, Newham Dockside and Other Monitoring Sites, 2007 to 2016

Monitoring Site	Theil-Sen Analysis [a]	Statistically Significant Trend?
City Aviation House (LCA-CAH)	-0.95 [-1.62, -0.43]	**Yes**
Newham Dockside (LCA-ND) [b]	-1.68 [-2.45, -0.9]	**Yes**
Greenwich Burrage Grove	-2.16 [-2.75, -1.54]	**Yes**
Greenwich Millennium Village	-0.53 [-1.18, 0.13]	No
Greenwich Eltham	-0.73 [-1.19, -0.28]	**Yes**
Greenwich Woolwich Flyover	-1.02 [-1.78, -0.16]	**Yes**
Newham Cam Road	-2.01 [-2.65, -1.4]	**Yes**
Newham Wren Close	-1.15 [-1.78, -0.53]	**Yes**
Tower Hamlets Blackwall	-1.2 [-1.88, -0.67]	**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 2016.

[5] The Poplar site at Tower Hamlets was decommissioned in July 2013 data. As the data for the period 2007 to 2013 was statistically not significant, it has been removed from this analysis.

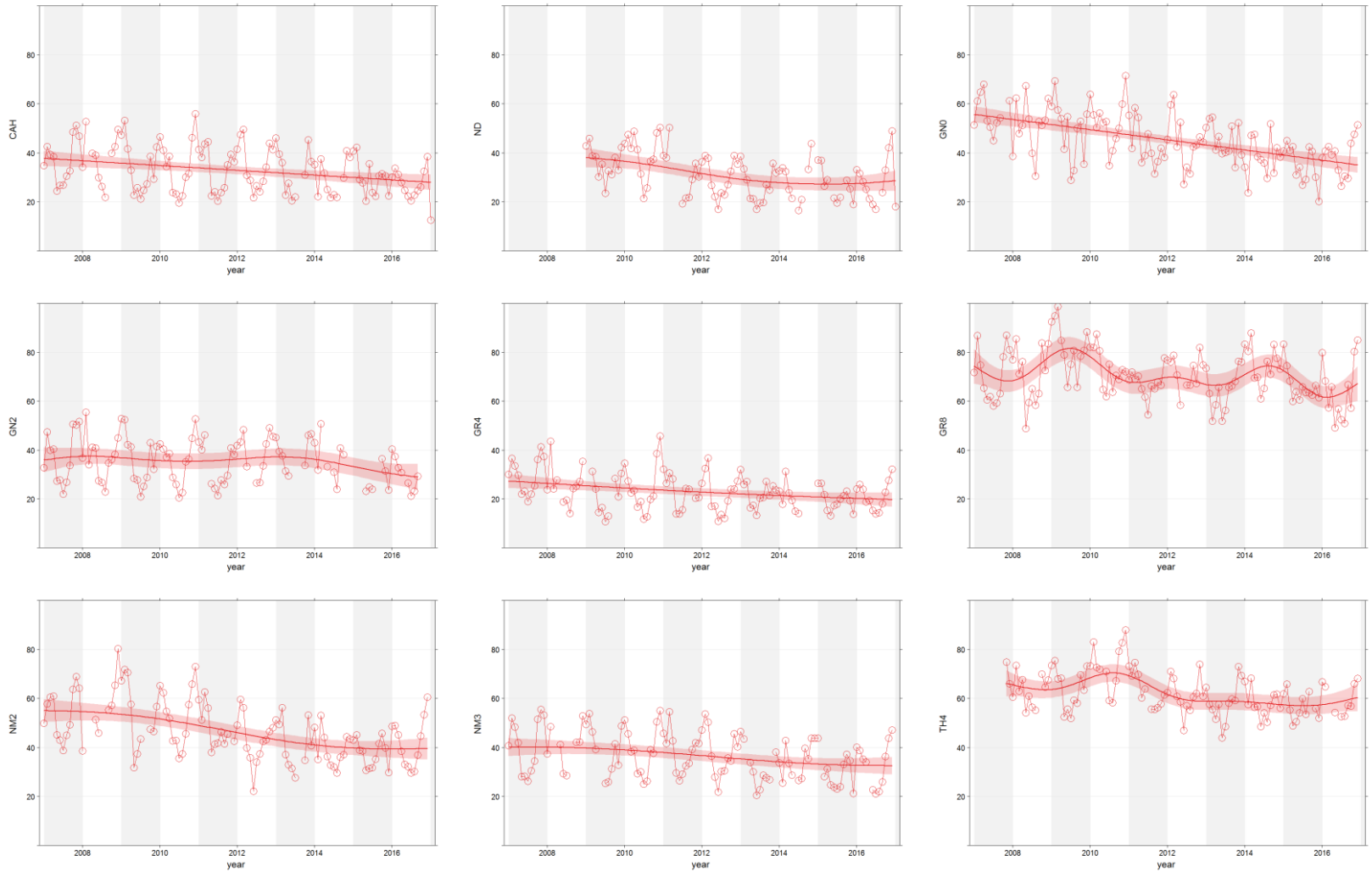


Figure A.5.1: Smooth Trend Analysis, Hourly Nitrogen Dioxide Concentrations at City Aviation House, Newham Dockside and Other Monitoring Sites, 2007 – 2016 (Left to Right: City Aviation House, Newham Dockside, Greenwich Burrage Grove, Greenwich Millennium Village, Greenwich Eltham, Greenwich Woolwich 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 Millennium Village, Greenwich Eltham, Greenwich Woolwich Flyover, Newham Cam Road, Newham Wren Close, Tower Hamlets Blackwall) for the period 2007 to 2016.

A5.4 The Theil-Sen analysis, shown in Table A.5.2, indicates a statistically significant downward trend in NOx concentrations at six of the seven 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 2016.

Monitoring Site	Theil-Sen Analysis [a]	Statistically Significant Trend?
City Aviation House (LCA-CAH)	-1.79 [-3.17, -0.73]	**Yes**
Newham Dockside (LCA-ND) [b]	-5.82 [-8.32, -3.58]	**Yes**
Greenwich Burrage Grove	-5.25 [-6.91, -3.29]	**Yes**
Greenwich Millennium Village	-1.72 [-3.9, 0.13]	No
Greenwich Eltham	-0.99 [-2.04, -0.03]	**Yes**
Greenwich Woolwich Flyover	-3.96 [-7.43, -0.5]	**Yes**
Newham Cam Road	-4.74 [-6.49, -2.92]	**Yes**
Newham Wren Close	-1.62 [-3.2, -0.31]	**Yes**
Tower Hamlets Blackwall	-3.76 [-6.46, -0.61]	**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 2016.

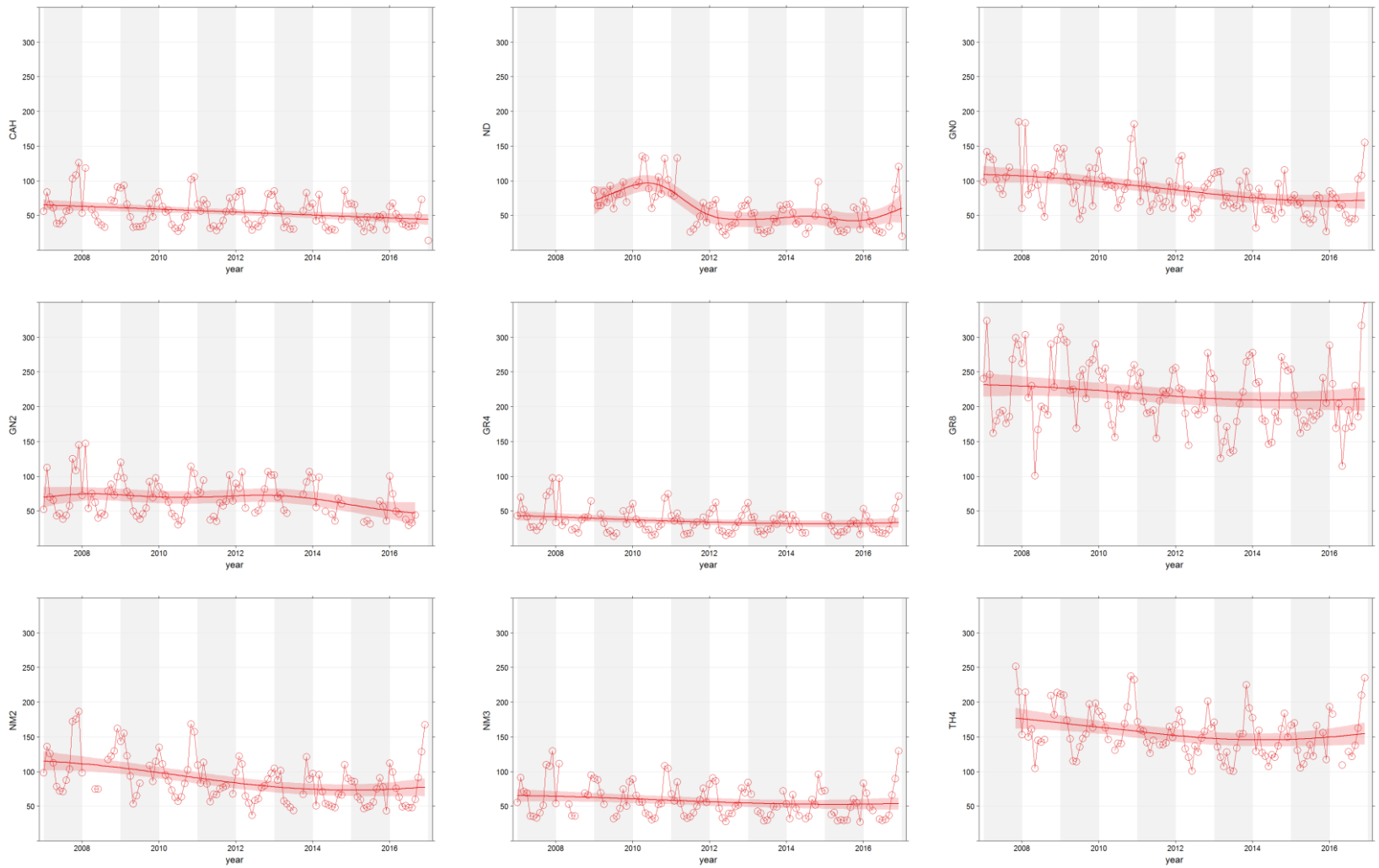


Figure A.5.2 Smooth Trend Analysis, Hourly NO_x Concentrations at City Aviation House, Newham Dockside and Other London Monitoring Sites, 2007 – 2016 (Left to Right: Aviation House, Newham Dockside, Greenwich Burrage Grove, Greenwich Millennium Village, Greenwich Eltham, Greenwich Woolwich Flyover, Newham Cam Road, Newham Wren Close, Tower Hamlets Blackwall)

LONDON CITY AIRPORT

2016 ANNUAL PERFORMANCE REPORT
(COMPLIANCE WITH PLANNING PERMISSION 07/01510/VAR)

APPENDIX 15
LIST OF ON-SITE EMPLOYERS DEC 2016

01 July 2017

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

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List of Onsite Employers December 2016

COMPANY NAME
AA Lovegrove
Lagadere
Alitalia
ASIG / ASIG BBA / ASIG Ltd
Avis
BA Cityflyer
Blackjack
BP Installations
Caffé Nero
City Jet
ESP
Europcar
Execair
Hertz
London City Airport
NATS
PJ August Decorator
Pret a Manager
Mitie
Sky Handling
SSP / SSP UK
Swiss
Travelex UK / Travelex Worldwide
WH Smiths
Doco
Eurest
Airportr
Airport Chauffeurs London
Boots
Flight Care
FlyBe
GSF
Menzies
Tumi
OFJ Connections
Dixons

LONDON CITY AIRPORT

2016 ANNUAL PERFORMANCE REPORT
(COMPLIANCE WITH PLANNING PERMISSION 07/01510/VAR)

APPENDIX 16
TAKE OFF INTO WORK STATISTICS 2016

01 July 2017

London City Airport
City Aviation House
Royal Docks
London E16 2PB
Tel: 020 7646 0000
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Take Off Into Work Statistics

Company	Total into work in 2016 (1st Jan – 31st Dec)
LCY	9
SSP	5
Dixons	1
Sky Handling Partner	36
Lagadere	4
Travelex	4
Lawmens	2
WhSmith	4
GSF	1
Glam Confidential	2
Diamond Air	2
Airport Chauffeurs London	1
BA	1
Total:	**70**

LONDON CITY AIRPORT

2016 ANNUAL PERFORMANCE REPORT
(COMPLIANCE WITH PLANNING PERMISSION 07/01510/VAR)

APPENDIX 17
LONDON CITY AIRPORT LIMITED
2016-17 RECRUITMENT POLICY

01 July 2017

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

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1. Applications

1.1. London City Airport advertise all vacancies on their dedicated careers 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 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 (Jill Pearman /Anthony Angol[1]) 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 use 'reasonable endeavours' to employ:

- 70% of its employees from the "local area"[2]
- including 35% from 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.

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:

1 Anthony Angol – Senior Community Relations Executive, London City Airport Limited

2 The "local area" is defined in the 2009 S106 Agreement as the 11 East London Boroughs of Newham, Tower Hamlets, Hackney, Waltham Forest, Redbridge, Barking & Dagenham, Havering, Bexley, Greenwich, Lewisham and Southwark.& Epping Forest DC.

- 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

2016 ANNUAL PERFORMANCE REPORT
(COMPLIANCE WITH PLANNING PERMISSION 07/01510/VAR)

APPENDIX 18

TRANSPORT OBJECTIVES 2016 (PROGRESS UPDATE)

01 July 2017

London City Airport
City Aviation House
Royal Docks
London E16 2PB
Tel: 020 7646 0000
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Offering the Right Services

	Objective	Actions completed in 2016	Status 2016
1	Engage with TfL, DLR Ltd & Keolis Amey Docklands to share relevant data (data to be agreed at initial meeting) and consider any future service enhancements	• While KeolisAmey Docklands attended the ATF we have not met them independently in 2016. • Meetings to be set up in 2017 to ensure continuity of messaging through station and airport.	Ongoing
2	With Forum partners explore the opportunity to trial additional transport interventions from key staff residency locations or at key shift start times, and consider ongoing revenue implications	• Issues around early morning connections continue to be an issue. • 2016: Staff travel survey highlighted a staff desire to use public transport if it was available or to car share. • Public transport trial saw three staff use public transport for a week to test staff take up. • 2017: Further engagement with TfL to review gaps in local bus provision in line with the delayed bus review process.	Ongoing
3	Monitor and manage car parking provision to reflect the Travel Action Plan aspirations, and changing passenger and staff travel requirements	• Black Cab and car sharing options for staff being explored, as identified by the ATF 2016 working group	Ongoing
4	Consider the value of including transport specific questions within the quarterly Passenger Survey, and if considered beneficial, develop a suitable implementation plan	• Additional questions included within the September 2016 passenger survey. • Gauged feedback on reason for last mode of travel and likelihood of changing mode.	Complete
5	Review the proposed Taxi Management Plan and current programme of activity to ensure that impacts on the local community (including nuisance) are minimised where practicable	• LBN implemented in May 2017 a resident parking zone that will mitigate the issues of driver nuisance. • 2017: Ongoing monitoring, via ATF, will provide updates on how the RPZ is managing nuisance parking.	Complete

Improving integrated journeys

	Objective	Actions completed in 2016	Status 2016
6	Review the travel information provided on the LCY website and identify any enhancements	• Strategy pages updated with working groups. • 2017: to maintain and update information as per working group output	Ongoing
7	Maintain dialogue with airlines about relevant transport issues from both a strategic and operational perspective	• Quarterly email system introduced to inform airport companies, including airlines. • Operational updates are provided by LCY Terminal and Communications teams regarding issues such as service disruption.	Ongoing
8	With TfL and relevant transport operators look at potential ticketing, information and interchange improvements that could benefit passengers and staff	• Baggage screens to be installed and made operational. Continuing dialogue with LUL and DLR regarding passenger wayfinding at key interchanges.	Ongoing
9	Work with transport operators to offer airport staff trial journeys on public transport and gather feedback on their experience through travel diaries	• The outputs of the staff public transport trials reviewed and used to inform future delivery items such as the staff taxi trial and car sharing scheme	Complete
10	Monitor on-airport cycle provision and if required consider providing additional cycle storage facilities	• Project due to deliver the additional 48 spaces by Summer 2017 with the remaining 24 spaces by end of 2017.	Ongoing
11	Work with local stakeholders to map planned local cycling and walking schemes and identify aspects relevant to airport users	• Maintained dialogue with LBN and TfL to ensure future cycling plans of LBN and TfL are shared with LCY via the ATF so that airport infrastructure can be provided as required.	Ongoing
12	With local bus operators and TfL share relevant data, discuss route planning and look for any opportunities for improvement	• ATF Bus Working Group has been established to respond to any consultation that takes place in 2017.	Ongoing

Offering low cost alternatives

Offering low carbon - last year

	Objective	Actions completed in 2016	Status 2016
13	Gauge the low-carbon aspirations of partners such as London Borough of Newham, TfL and the GLA and identify areas of alignment with the airport's sustainability action plan	• LCY investigating charging infrastructure providers and implementation of rapid charging facilities for taxis and fast charging facilities for passengers / staff. charging facilities for passengers / staff.	Ongoing
14	In line with the airport's approach to carbon management calculate the carbon impacts of staff, passenger and company travel	• Carbon foot-printing assessment included scope 3 emissions, and as such calculated the impact of journeys to and from the airport.	Ongoing
15	Review the leading car-share packages that are publicly available and gauge their suitability for an airport environment	• Investigating with provider as to how scheme can work and be delivered effectively	Ongoing
16	Consider ways to reduce reliance on the car among airport staff	• Staff travel survey and follow-on engagement with airport employers and employees will look to identify possible initiatives.	Ongoing

A collaborative approach

	Objective	Actions completed in 2016	Status 2016
17	Engage airport companies and staff to encourage sustainable travel behaviours	• Quarterly travel plan with airport companies, • Airport staff are engaged directly through the Staff Committee sessions.	Ongoing
18	Through the airport's Staff Committee engage airport staff on key transport issues	• Staff travel is an agenda item at the monthly Staff Committee sessions, giving staff an opportunity to raise any travel issues that are then fed back to the Travel coordinator. • The Travel Coordinator also attends sessions to proactively engage staff on certain issues.	Ongoing
19	Organise at least two meetings of the Airport Transport Forum prior to the determination of CADP	• The ATF met in February, June and November. • 2017: The ATF is scheduled to meet again February, July and November 2017.	Complete
20	Engage with local transport groups as required, this could include the London Chamber of Commerce and the Canary Wharf Transport Forum	• The London Chamber of Commerce and local community representatives are invited to attend the ATF. • LCY attended the Canary Wharf Transport Forum.	Complete
21	With the London Borough of Newham consider the creation of an 'Easit' style commuter network scheme that brings businesses together to collaboratively address local travel issues	• Developing the ATF Working Group that will look at best practice across ASAS and Travel Plan provision.	Ongoing

Monitoring and Reporting

	Objective	Actions completed in 2016	Status 2016
22	Through the passenger survey monitor passenger travel habits	• A passenger survey is undertaken quarterly, • Specific questions regarding travel choices of passengers are asked, • Additional questions were included within the Autumn survey to gain feedback on available transport information, and ticketing & wayfinding during their journey to, from and through the airport, • Stats are reviewed annually and presented at the ATF and in the APR.	Complete
23	Consider the development of informal KPI's to monitor staff travel habits	• Initial discussions were had with TfL regarding innovative KPI's, • 2017: to be investigated alongside the staff car sharing / black cab schemes to assess the effectiveness of them.	Ongoing
24	Monitor staff and passenger parking requirements	• Employee survey undertaken in 2016, with questions included in the passenger survey to identify what encourages use of public transport. These have been taken forward to trial and are identified in 2017..	Complete
25	Through the Airport Transport Forum share relevant transport data with key stakeholders, including progress against the action plan	• Data showing trends in passenger and staff mode share performance was discussed at the ATF meetings. • This provided a breakdown by mode for both passengers and staff, and compares performance over a number of years.	Ongoing
26	Report progress within the airport's Annual Performance Report	• The APR includes summary details of activity undertaken within the year alongside current passenger and staff mode share values.	Complete