

London City Airport 2011 Section 106 Annual Performance Report

Appendices 10-17

Glossary

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July 2012

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Appendix 10: Temporary Noise Monitoring Strategy Reports

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**LONDON CITY AIRPORT
NOISE & TRACK KEEPING STATUS REPORT
JANUARY 2011 – MARCH 2011**

Report to

**Mr Gary Hodgetts
Director Operations Policy & Planning
London City Airport
The Royal Docks
London
E16 2PB**

**A1125.121-R07-VC
27th April 2011**

Bickerdike Allen Partners

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 daily operational status of each monitor and the monthly correlation rate of noise events to aircraft departures for the quarterly period 1st January 2011 to 31st March 2011.

NMT STATUS

A summary of the status of each NMT is given in Table 1 below. A detailed summary is given in Appendix A showing whether both noise events and flight information data (FIDS) have been obtained on a daily basis. During the quarterly period all NMTs were operational, and noise event data successfully measured and recorded for each day. FIDS data was not available from the computerised system for the 5th February 2011 and the 4th and 10th of March 2011. The data was obtained from an alternative source in order to facilitate the data correlation process and the airport's IT department notified of the situation in order to ensure the provision of FIDS data.

Analysis of the data and calibration checks indicate that the data is reliable, and consistent with noise levels measured during previous months.

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

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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 Airport¹ 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	5312	2536	95%
February	5340	2539	95%
March	5993	2758	92%

Table 2 – Summary of correlation rate

SUMMARY

During the quarterly period from 1st January 2011 to 31st March 2011, there were no operational issues with any of the four monitors of the Noise and Track Keeping system belonging to London City Airport. Reliable noise event data was successfully recorded for a total of 7833 departures and a correlation rate of 92% or above achieved.

Valerie Collingwood
for Bickerdike Allen Partners

Peter Henson
Partner

¹ Number of monthly operations supplied by LCY accounts department.

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DATE	NOISE EVENTS				FIDS
	NMT 1 Events	NMT 2 Events	NMT 3 Events	NMT 4 Events	
01/01/2011	Yes	Yes	Yes	Yes	Yes
02/01/2011	Yes	Yes	Yes	Yes	Yes
03/01/2011	Yes	Yes	Yes	Yes	Yes
04/01/2011	Yes	Yes	Yes	Yes	Yes
05/01/2011	Yes	Yes	Yes	Yes	Yes
06/01/2011	Yes	Yes	Yes	Yes	Yes
07/01/2011	Yes	Yes	Yes	Yes	Yes
08/01/2011	Yes	Yes	Yes	Yes	Yes
09/01/2011	Yes	Yes	Yes	Yes	Yes
10/01/2011	Yes	Yes	Yes	Yes	Yes
11/01/2011	Yes	Yes	Yes	Yes	Yes
12/01/2011	Yes	Yes	Yes	Yes	Yes
13/01/2011	Yes	Yes	Yes	Yes	Yes
14/01/2011	Yes	Yes	Yes	Yes	Yes
15/01/2011	Yes	Yes	Yes	Yes	Yes
16/01/2011	Yes	Yes	Yes	Yes	Yes
17/01/2011	Yes	Yes	Yes	Yes	Yes
18/01/2011	Yes	Yes	Yes	Yes	Yes
19/01/2011	Yes	Yes	Yes	Yes	Yes
20/01/2011	Yes	Yes	Yes	Yes	Yes
21/01/2011	Yes	Yes	Yes	Yes	Yes
22/01/2011	Yes	Yes	Yes	Yes	Yes
23/01/2011	Yes	Yes	Yes	Yes	Yes
24/01/2011	Yes	Yes	Yes	Yes	Yes
25/01/2011	Yes	Yes	Yes	Yes	Yes
26/01/2011	Yes	Yes	Yes	Yes	Yes
27/01/2011	Yes	Yes	Yes	Yes	Yes
28/01/2011	Yes	Yes	Yes	Yes	Yes
29/01/2011	Yes	Yes	Yes	Yes	Yes
30/01/2011	Yes	Yes	Yes	Yes	Yes
31/01/2011	Yes	Yes	Yes	Yes	Yes
01/02/2011	Yes	Yes	Yes	Yes	Yes
02/02/2011	Yes	Yes	Yes	Yes	Yes
03/02/2011	Yes	Yes	Yes	Yes	Yes
04/02/2011	Yes	Yes	Yes	Yes	Yes
05/02/2011	Yes	Yes	Yes	Yes	No
06/02/2011	Yes	Yes	Yes	Yes	Yes
07/02/2011	Yes	Yes	Yes	Yes	Yes
08/02/2011	Yes	Yes	Yes	Yes	Yes
09/02/2011	Yes	Yes	Yes	Yes	Yes
10/02/2011	Yes	Yes	Yes	Yes	Yes

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DATE	NOISE EVENTS				FIDS
	NMT 1 Events	NMT 2 Events	NMT 3 Events	NMT 4 Events	
11/02/2011	Yes	Yes	Yes	Yes	Yes
12/02/2011	Yes	Yes	Yes	Yes	Yes
13/02/2011	Yes	Yes	Yes	Yes	Yes
14/02/2011	Yes	Yes	Yes	Yes	Yes
15/02/2011	Yes	Yes	Yes	Yes	Yes
16/02/2011	Yes	Yes	Yes	Yes	Yes
17/02/2011	Yes	Yes	Yes	Yes	Yes
18/02/2011	Yes	Yes	Yes	Yes	Yes
19/02/2011	Yes	Yes	Yes	Yes	Yes
20/02/2011	Yes	Yes	Yes	Yes	Yes
21/02/2011	Yes	Yes	Yes	Yes	Yes
22/02/2011	Yes	Yes	Yes	Yes	Yes
23/02/2011	Yes	Yes	Yes	Yes	Yes
24/02/2011	Yes	Yes	Yes	Yes	Yes
25/02/2011	Yes	Yes	Yes	Yes	Yes
26/02/2011	Yes	Yes	Yes	Yes	Yes
27/02/2011	Yes	Yes	Yes	Yes	Yes
28/02/2011	Yes	Yes	Yes	Yes	Yes
01/03/2011	Yes	Yes	Yes	Yes	Yes
02/03/2011	Yes	Yes	Yes	Yes	Yes
03/03/2011	Yes	Yes	Yes	Yes	Yes
04/03/2011	Yes	Yes	Yes	Yes	No
05/03/2011	Yes	Yes	Yes	Yes	Yes
06/03/2011	Yes	Yes	Yes	Yes	Yes
07/03/2011	Yes	Yes	Yes	Yes	Yes
08/03/2011	Yes	Yes	Yes	Yes	Yes
09/03/2011	Yes	Yes	Yes	Yes	Yes
10/03/2011	Yes	Yes	Yes	Yes	No
11/03/2011	Yes	Yes	Yes	Yes	Yes
12/03/2011	Yes	Yes	Yes	Yes	Yes
13/03/2011	Yes	Yes	Yes	Yes	Yes
14/03/2011	Yes	Yes	Yes	Yes	Yes
15/03/2011	Yes	Yes	Yes	Yes	Yes
16/03/2011	Yes	Yes	Yes	Yes	Yes
17/03/2011	Yes	Yes	Yes	Yes	Yes
18/03/2011	Yes	Yes	Yes	Yes	Yes
19/03/2011	Yes	Yes	Yes	Yes	Yes
20/03/2011	Yes	Yes	Yes	Yes	Yes
21/03/2011	Yes	Yes	Yes	Yes	Yes
22/03/2011	Yes	Yes	Yes	Yes	Yes
23/03/2011	Yes	Yes	Yes	Yes	Yes

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DATE	NOISE EVENTS				FIDS
	NMT 1 Events	NMT 2 Events	NMT 3 Events	NMT 4 Events	
24/03/2011	Yes	Yes	Yes	Yes	Yes
25/03/2011	Yes	Yes	Yes	Yes	Yes
26/03/2011	Yes	Yes	Yes	Yes	Yes
27/03/2011	Yes	Yes	Yes	Yes	Yes
28/03/2011	Yes	Yes	Yes	Yes	Yes
29/03/2011	Yes	Yes	Yes	Yes	Yes
30/03/2011	Yes	Yes	Yes	Yes	Yes
31/03/2011	Yes	Yes	Yes	Yes	Yes

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**LONDON CITY AIRPORT
NOISE & TRACK KEEPING STATUS REPORT
APRIL 2011 – JUNE 2011**

Report to

**Mr Gary Hodgetts
Director Operations Policy & Planning
London City Airport
The Royal Docks
London
E16 2PB**

**A1125.121-R08-VC
8th July 2011**

Bickerdike Allen Partners

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 daily operational status of each monitor and the monthly correlation rate of noise events to aircraft departures for the quarterly period 1st April 2011 to 30th June 2011.

NMT STATUS

A summary of the status of each NMT is given in Table 1 below. A detailed summary is given in Appendix A showing whether both noise events and flight information data (FIDS) have been obtained on a daily basis. During the quarterly period all NMTs were operational, and noise event data successfully measured and recorded for each day.

Analysis of the data and calibration checks indicate that the data is reliable, and consistent with noise levels measured during previous months.

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

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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 Airport¹ 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
April	5165	2513	97%
May	6044	2966	98%
June	6089	2980	98%

Table 2 – Summary of correlation rate

SUMMARY

During the quarterly period from 1st April 2011 to 30th June 2011, there were no operational issues with any of the four monitors of the Noise and Track Keeping system belonging to London City Airport. Reliable noise event data was successfully recorded for a total of 8459 departures and a correlation rate of 97% or above achieved.

Valerie Collingwood
for Bickerdike Allen Partners

Peter Henson
Partner

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

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DATE	NOISE EVENTS				FIDS
	NMT 1 Events	NMT 2 Events	NMT 3 Events	NMT 4 Events	
01/04/2011	Yes	Yes	Yes	Yes	Yes
02/04/2011	Yes	Yes	Yes	Yes	Yes
03/04/2011	Yes	Yes	Yes	Yes	Yes
04/04/2011	Yes	Yes	Yes	Yes	Yes
05/04/2011	Yes	Yes	Yes	Yes	Yes
06/04/2011	Yes	Yes	Yes	Yes	Yes
07/04/2011	Yes	Yes	Yes	Yes	Yes
08/04/2011	Yes	Yes	Yes	Yes	Yes
09/04/2011	Yes	Yes	Yes	Yes	Yes
10/04/2011	Yes	Yes	Yes	Yes	Yes
11/04/2011	Yes	Yes	Yes	Yes	Yes
12/04/2011	Yes	Yes	Yes	Yes	Yes
13/04/2011	Yes	Yes	Yes	Yes	Yes
14/04/2011	Yes	Yes	Yes	Yes	Yes
15/04/2011	Yes	Yes	Yes	Yes	Yes
16/04/2011	Yes	Yes	Yes	Yes	Yes
17/04/2011	Yes	Yes	Yes	Yes	Yes
18/04/2011	Yes	Yes	Yes	Yes	Yes
19/04/2011	Yes	Yes	Yes	Yes	Yes
20/04/2011	Yes	Yes	Yes	Yes	Yes
21/04/2011	Yes	Yes	Yes	Yes	Yes
22/04/2011	Yes	Yes	Yes	Yes	Yes
23/04/2011	Yes	Yes	Yes	Yes	Yes
24/04/2011	Yes	Yes	Yes	Yes	Yes
25/04/2011	Yes	Yes	Yes	Yes	Yes
26/04/2011	Yes	Yes	Yes	Yes	Yes
27/04/2011	Yes	Yes	Yes	Yes	Yes
28/04/2011	Yes	Yes	Yes	Yes	Yes
29/04/2011	Yes	Yes	Yes	Yes	Yes
30/04/2011	Yes	Yes	Yes	Yes	Yes
01/05/2011	Yes	Yes	Yes	Yes	Yes
02/05/2011	Yes	Yes	Yes	Yes	Yes
03/05/2011	Yes	Yes	Yes	Yes	Yes
04/05/2011	Yes	Yes	Yes	Yes	Yes
05/05/2011	Yes	Yes	Yes	Yes	Yes
06/05/2011	Yes	Yes	Yes	Yes	Yes
07/05/2011	Yes	Yes	Yes	Yes	Yes
08/05/2011	Yes	Yes	Yes	Yes	Yes
09/05/2011	Yes	Yes	Yes	Yes	Yes
10/05/2011	Yes	Yes	Yes	Yes	Yes
11/05/2011	Yes	Yes	Yes	Yes	Yes

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DATE	NOISE EVENTS				FIDS
	NMT 1 Events	NMT 2 Events	NMT 3 Events	NMT 4 Events	
12/05/2011	Yes	Yes	Yes	Yes	Yes
13/05/2011	Yes	Yes	Yes	Yes	Yes
14/05/2011	Yes	Yes	Yes	Yes	Yes
15/05/2011	Yes	Yes	Yes	Yes	Yes
16/05/2011	Yes	Yes	Yes	Yes	Yes
17/05/2011	Yes	Yes	Yes	Yes	Yes
18/05/2011	Yes	Yes	Yes	Yes	Yes
19/05/2011	Yes	Yes	Yes	Yes	Yes
20/05/2011	Yes	Yes	Yes	Yes	Yes
21/05/2011	Yes	Yes	Yes	Yes	Yes
22/05/2011	Yes	Yes	Yes	Yes	Yes
23/05/2011	Yes	Yes	Yes	Yes	Yes
24/05/2011	Yes	Yes	Yes	Yes	Yes
25/05/2011	Yes	Yes	Yes	Yes	Yes
26/05/2011	Yes	Yes	Yes	Yes	Yes
27/05/2011	Yes	Yes	Yes	Yes	Yes
28/05/2011	Yes	Yes	Yes	Yes	Yes
29/05/2011	Yes	Yes	Yes	Yes	Yes
30/05/2011	Yes	Yes	Yes	Yes	Yes
31/05/2011	Yes	Yes	Yes	Yes	Yes
01/06/2011	Yes	Yes	Yes	Yes	Yes
02/06/2011	Yes	Yes	Yes	Yes	Yes
03/06/2011	Yes	Yes	Yes	Yes	Yes
04/06/2011	Yes	Yes	Yes	Yes	Yes
05/06/2011	Yes	Yes	Yes	Yes	Yes
06/06/2011	Yes	Yes	Yes	Yes	Yes
07/06/2011	Yes	Yes	Yes	Yes	Yes
08/06/2011	Yes	Yes	Yes	Yes	Yes
09/06/2011	Yes	Yes	Yes	Yes	Yes
10/06/2011	Yes	Yes	Yes	Yes	Yes
11/06/2011	Yes	Yes	Yes	Yes	Yes
12/06/2011	Yes	Yes	Yes	Yes	Yes
13/06/2011	Yes	Yes	Yes	Yes	Yes
14/06/2011	Yes	Yes	Yes	Yes	Yes
15/06/2011	Yes	Yes	Yes	Yes	Yes
16/06/2011	Yes	Yes	Yes	Yes	Yes
17/06/2011	Yes	Yes	Yes	Yes	Yes
18/06/2011	Yes	Yes	Yes	Yes	Yes
19/06/2011	Yes	Yes	Yes	Yes	Yes
20/06/2011	Yes	Yes	Yes	Yes	Yes
21/06/2011	Yes	Yes	Yes	Yes	Yes

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DATE	NOISE EVENTS				FIDS
	NMT 1 Events	NMT 2 Events	NMT 3 Events	NMT 4 Events	
22/06/2011	Yes	Yes	Yes	Yes	Yes
23/06/2011	Yes	Yes	Yes	Yes	Yes
24/06/2011	Yes	Yes	Yes	Yes	Yes
25/06/2011	Yes	Yes	Yes	Yes	Yes
26/06/2011	Yes	Yes	Yes	Yes	Yes
27/06/2011	Yes	Yes	Yes	Yes	Yes
28/06/2011	Yes	Yes	Yes	Yes	Yes
29/06/2011	Yes	Yes	Yes	Yes	Yes
30/06/2011	Yes	Yes	Yes	Yes	Yes

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**LONDON CITY AIRPORT
NOISE & TRACK KEEPING STATUS REPORT
JULY 2011 – SEPTEMBER 2011**

Report to

**Mr Gary Hodgetts
Director Operations Policy & Planning
London City Airport
The Royal Docks
London
E16 2PB**

**A1125.121-R09-VC
7th October 2011**

Bickerdike Allen Partners

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 daily operational status of each monitor and the monthly correlation rate of noise events to aircraft departures for the quarterly period 1st July 2011 to 30th September 2011.

NMT STATUS

A summary of the status of each NMT is given in Table 1 below. A detailed summary is given in Appendix A showing whether both noise events and flight information data (FIDS) have been obtained on a daily basis. During the quarterly period all NMTs were operational, and noise event data successfully measured and recorded for each day. Analysis of the data and calibration checks indicate that the data is reliable, and consistent with noise levels measured during previous months.

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

FIDS data was not directly available from the computerised system for the following dates:

July 2011	August 2011	September 2011
13/07/2011	08/08/2011	01/09/2011
14/07/2011	09/08/2011	07/09/2011
15/07/2011	31/08/2011	12/09/2011
17/07/2011		15/09/2011
23/07/2011		21/09/2011
26/07/2011		23/09/2011

The data was instead obtained from the primary source (Airport2020 Client) in order to facilitate the normal data correlation process, and the airport's IT department notified of the situation.

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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 Airport¹ 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
July	5796	2849	98%
August	5401	2658	98%
September	6192	3067	99%

Table 2 – Summary of correlation rate

SUMMARY

During the quarterly period from 1st July 2011 to 30th September 2011, there were no significant operational issues with any of the four monitors of the Noise and Track Keeping system belonging to London City Airport. The NTK system's automatic FIDs collection did not receive data for a number of days during this period, however it was possible to obtain this information directly from the primary data source, and this did not interfere with the normal correlation process. Reliable noise event data was successfully recorded for a total of 8,574 departures and a correlation rate of 98% or above achieved.

Valerie Collingwood
for Bickerdike Allen Partners

Peter Henson
Partner

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

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DATE	NOISE EVENTS				FIDS
	NMT 1 Events	NMT 2 Events	NMT 3 Events	NMT 4 Events	
01/07/2011	Yes	Yes	Yes	Yes	Yes
02/07/2011	Yes	Yes	Yes	Yes	Yes
03/07/2011	Yes	Yes	Yes	Yes	Yes
04/07/2011	Yes	Yes	Yes	Yes	Yes
05/07/2011	Yes	Yes	Yes	Yes	Yes
06/07/2011	Yes	Yes	Yes	Yes	Yes
07/07/2011	Yes	Yes	Yes	Yes	Yes
08/07/2011	Yes	Yes	Yes	Yes	Yes
09/07/2011	Yes	Yes	Yes	Yes	Yes
10/07/2011	Yes	Yes	Yes	Yes	Yes
11/07/2011	Yes	Yes	Yes	Yes	Yes
12/07/2011	Yes	Yes	Yes	Yes	Yes
13/07/2011	Yes	Yes	Yes	Yes	No
14/07/2011	Yes	Yes	Yes	Yes	No
15/07/2011	Yes	Yes	Yes	Yes	No
16/07/2011	Yes	Yes	Yes	Yes	Yes
17/07/2011	Yes	Yes	Yes	Yes	No
18/07/2011	Yes	Yes	Yes	Yes	Yes
19/07/2011	Yes	Yes	Yes	Yes	Yes
20/07/2011	Yes	Yes	Yes	Yes	Yes
21/07/2011	Yes	Yes	Yes	Yes	Yes
22/07/2011	Yes	Yes	Yes	Yes	Yes
23/07/2011	Yes	Yes	Yes	Yes	No
24/07/2011	Yes	Yes	Yes	Yes	Yes
25/07/2011	Yes	Yes	Yes	Yes	Yes
26/07/2011	Yes	Yes	Yes	Yes	No
27/07/2011	Yes	Yes	Yes	Yes	Yes
28/07/2011	Yes	Yes	Yes	Yes	Yes
29/07/2011	Yes	Yes	Yes	Yes	Yes
30/07/2011	Yes	Yes	Yes	Yes	Yes
31/07/2011	Yes	Yes	Yes	Yes	Yes
01/08/2011	Yes	Yes	Yes	Yes	Yes
02/08/2011	Yes	Yes	Yes	Yes	Yes
03/08/2011	Yes	Yes	Yes	Yes	Yes
04/08/2011	Yes	Yes	Yes	Yes	Yes
05/08/2011	Yes	Yes	Yes	Yes	Yes
06/08/2011	Yes	Yes	Yes	Yes	Yes
07/08/2011	Yes	Yes	Yes	Yes	Yes
08/08/2011	Yes	Yes	Yes	Yes	No
09/08/2011	Yes	Yes	Yes	Yes	No
10/08/2011	Yes	Yes	Yes	Yes	Yes

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DATE	NOISE EVENTS				FIDS
	NMT 1 Events	NMT 2 Events	NMT 3 Events	NMT 4 Events	
11/08/2011	Yes	Yes	Yes	Yes	Yes
12/08/2011	Yes	Yes	Yes	Yes	Yes
13/08/2011	Yes	Yes	Yes	Yes	Yes
14/08/2011	Yes	Yes	Yes	Yes	Yes
15/08/2011	Yes	Yes	Yes	Yes	Yes
16/08/2011	Yes	Yes	Yes	Yes	Yes
17/08/2011	Yes	Yes	Yes	Yes	Yes
18/08/2011	Yes	Yes	Yes	Yes	Yes
19/08/2011	Yes	Yes	Yes	Yes	Yes
20/08/2011	Yes	Yes	Yes	Yes	Yes
21/08/2011	Yes	Yes	Yes	Yes	Yes
22/08/2011	Yes	Yes	Yes	Yes	Yes
23/08/2011	Yes	Yes	Yes	Yes	Yes
24/08/2011	Yes	Yes	Yes	Yes	Yes
25/08/2011	Yes	Yes	Yes	Yes	Yes
26/08/2011	Yes	Yes	Yes	Yes	Yes
27/08/2011	Yes	Yes	Yes	Yes	Yes
28/08/2011	Yes	Yes	Yes	Yes	Yes
29/08/2011	Yes	Yes	Yes	Yes	Yes
30/08/2011	Yes	Yes	Yes	Yes	Yes
31/08/2011	Yes	Yes	Yes	Yes	No
01/09/2011	Yes	Yes	Yes	Yes	No
02/09/2011	Yes	Yes	Yes	Yes	Yes
03/09/2011	Yes	Yes	Yes	Yes	Yes
04/09/2011	Yes	Yes	Yes	Yes	Yes
05/09/2011	Yes	Yes	Yes	Yes	Yes
06/09/2011	Yes	Yes	Yes	Yes	Yes
07/09/2011	Yes	Yes	Yes	Yes	No
08/09/2011	Yes	Yes	Yes	Yes	Yes
09/09/2011	Yes	Yes	Yes	Yes	Yes
10/09/2011	Yes	Yes	Yes	Yes	Yes
11/09/2011	Yes	Yes	Yes	Yes	Yes
12/09/2011	Yes	Yes	Yes	Yes	No
13/09/2011	Yes	Yes	Yes	Yes	Yes
14/09/2011	Yes	Yes	Yes	Yes	Yes
15/09/2011	Yes	Yes	Yes	Yes	No
16/09/2011	Yes	Yes	Yes	Yes	Yes
17/09/2011	Yes	Yes	Yes	Yes	Yes
18/09/2011	Yes	Yes	Yes	Yes	Yes
19/09/2011	Yes	Yes	Yes	Yes	Yes
20/09/2011	Yes	Yes	Yes	Yes	Yes

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DATE	NOISE EVENTS				FIDS
	NMT 1 Events	NMT 2 Events	NMT 3 Events	NMT 4 Events	
21/09/2011	Yes	Yes	Yes	Yes	No
22/09/2011	Yes	Yes	Yes	Yes	Yes
23/09/2011	Yes	Yes	Yes	Yes	No
24/09/2011	Yes	Yes	Yes	Yes	Yes
25/09/2011	Yes	Yes	Yes	Yes	Yes
26/09/2011	Yes	Yes	Yes	Yes	Yes
27/09/2011	Yes	Yes	Yes	Yes	Yes
28/09/2011	Yes	Yes	Yes	Yes	Yes
29/09/2011	Yes	Yes	Yes	Yes	Yes
30/09/2011	Yes	Yes	Yes	Yes	Yes

Bickerdike Allen Partners

**LONDON CITY AIRPORT
NOISE & TRACK KEEPING STATUS REPORT
OCTOBER 2011 – DECEMBER 2011**

Report to

**Mr Gary Hodgetts
Director Operations Policy & Planning
London City Airport
The Royal Docks
London
E16 2PB**

**A1125.121-R10 VC
11th January 2012**

Bickerdike Allen Partners

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 daily operational status of each monitor and the monthly correlation rate of noise events to aircraft departures for the quarterly period 1st October 2011 to 31st December 2011.

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 data (FIDs) have been obtained on a daily basis. During this quarterly period FIDs was received for all days, and the NMTs were fully operational with the exception of brief incidents affecting NMTs 1 & 2.

NMT	Calibration	Data
1	OK	Data received on all days except the 9 th to 10 th October 2011
2	OK	Data received on all days except the 22 nd to 24 th November 2011
3	OK	Data received on all days
4	OK	Data received on all days

Table 1 – Summary of NMT status

NMT 1 suffered a failure of the analysers' hard drive which resulted in no data being obtained from this monitor for the 9th and 10th October 2011. This hard drive was replaced on the 11th October 2011.

Communication was lost with NMT 2 late evening of the 21st November 2011 as a result of actions taken by the GSM data service provider. A temporary noise monitor was deployed during this incident to minimise data loss from the NMT location to two days, and communication was re-established with NMT 2 on the 25th November 2011. Despite the NMT 2 not having problems with the measurement and recording of noise events during this period, necessary steps taken to identify the problem resulted in a small quantity of data being wiped from the analyser's hard drive during a reset procedure.

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The airport have since changed their GSM data service provider, and appointed a specialist communications company to ensure changes made by the service provider do not prevent data collection from NMT 2 in the future.

Analysis of the data and calibration checks indicate that the data is reliable, and consistent with noise levels measured during previous months.

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 Airport¹ 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
October	6031	2671	89%
November	5509	2505	91%
December	5228	2422	93%

Table 2 – Summary of correlation rate

SUMMARY

During the quarterly period from 1st October 2011 to 31st December 2011, FIDs was received for all days, and the NMT's were fully functional with the exception of brief incidents affecting two monitors of the Noise and Track Keeping system belonging to London City Airport. These incidents resulted in data not being available for correlation from the locations of NMTs 1 and 2 on two days in October 2011 and two days in November 2011 respectively. Reliable noise event data was however successfully recorded for a total of 7,598 departures and a correlation rate of 89% or above achieved, and reasonable steps have been taken to minimise the event of similar causes of data loss in the future.

Valerie Collingwood
for Bickerdike Allen Partners

Peter Henson
Partner

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

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DATE	NOISE EVENTS				FIDS
	NMT 1 Events	NMT 2 Events	NMT 3 Events	NMT 4 Events	
01/10/2011	Yes	Yes	Yes	Yes	Yes
02/10/2011	Yes	Yes	Yes	Yes	Yes
03/10/2011	Yes	Yes	Yes	Yes	Yes
04/10/2011	Yes	Yes	Yes	Yes	Yes
05/10/2011	Yes	Yes	Yes	Yes	Yes
06/10/2011	Yes	Yes	Yes	Yes	Yes
07/10/2011	Yes	Yes	Yes	Yes	Yes
08/10/2011	Yes	Yes	Yes	Yes	Yes
09/10/2011	No	Yes	Yes	Yes	Yes
10/10/2011	No	Yes	Yes	Yes	Yes
11/10/2011	Yes	Yes	Yes	Yes	Yes
12/10/2011	Yes	Yes	Yes	Yes	Yes
13/10/2011	Yes	Yes	Yes	Yes	Yes
14/10/2011	Yes	Yes	Yes	Yes	Yes
15/10/2011	Yes	Yes	Yes	Yes	Yes
16/10/2011	Yes	Yes	Yes	Yes	Yes
17/10/2011	Yes	Yes	Yes	Yes	Yes
18/10/2011	Yes	Yes	Yes	Yes	Yes
19/10/2011	Yes	Yes	Yes	Yes	Yes
20/10/2011	Yes	Yes	Yes	Yes	Yes
21/10/2011	Yes	Yes	Yes	Yes	Yes
22/10/2011	Yes	Yes	Yes	Yes	Yes
23/10/2011	Yes	Yes	Yes	Yes	Yes
24/10/2011	Yes	Yes	Yes	Yes	Yes
25/10/2011	Yes	Yes	Yes	Yes	Yes
26/10/2011	Yes	Yes	Yes	Yes	Yes
27/10/2011	Yes	Yes	Yes	Yes	Yes
28/10/2011	Yes	Yes	Yes	Yes	Yes
29/10/2011	Yes	Yes	Yes	Yes	Yes
30/10/2011	Yes	Yes	Yes	Yes	Yes
31/10/2011	Yes	Yes	Yes	Yes	Yes
01/11/2011	Yes	Yes	Yes	Yes	Yes
02/11/2011	Yes	Yes	Yes	Yes	Yes
03/11/2011	Yes	Yes	Yes	Yes	Yes
04/11/2011	Yes	Yes	Yes	Yes	Yes
05/11/2011	Yes	Yes	Yes	Yes	Yes
06/11/2011	Yes	Yes	Yes	Yes	Yes
07/11/2011	Yes	Yes	Yes	Yes	Yes
08/11/2011	Yes	Yes	Yes	Yes	Yes
09/11/2011	Yes	Yes	Yes	Yes	Yes
10/11/2011	Yes	Yes	Yes	Yes	Yes

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DATE	NOISE EVENTS				FIDS
	NMT 1 Events	NMT 2 Events	NMT 3 Events	NMT 4 Events	
11/11/2011	Yes	Yes	Yes	Yes	Yes
12/11/2011	Yes	Yes	Yes	Yes	Yes
13/11/2011	Yes	Yes	Yes	Yes	Yes
14/11/2011	Yes	Yes	Yes	Yes	Yes
15/11/2011	Yes	Yes	Yes	Yes	Yes
16/11/2011	Yes	Yes	Yes	Yes	Yes
17/11/2011	Yes	Yes	Yes	Yes	Yes
18/11/2011	Yes	Yes	Yes	Yes	Yes
19/11/2011	Yes	Yes	Yes	Yes	Yes
20/11/2011	Yes	Yes	Yes	Yes	Yes
21/11/2011	Yes	Yes	Yes	Yes	Yes
22/11/2011	Yes	No	Yes	Yes	Yes
23/11/2011	Yes	No	Yes	Yes	Yes
24/11/2011	Yes	No	Yes	Yes	Yes
25/11/2011	Yes	Yes	Yes	Yes	Yes
26/11/2011	Yes	Yes	Yes	Yes	Yes
27/11/2011	Yes	Yes	Yes	Yes	Yes
28/11/2011	Yes	Yes	Yes	Yes	Yes
29/11/2011	Yes	Yes	Yes	Yes	Yes
30/11/2011	Yes	Yes	Yes	Yes	Yes
01/12/2011	Yes	Yes	Yes	Yes	Yes
02/12/2011	Yes	Yes	Yes	Yes	Yes
03/12/2011	Yes	Yes	Yes	Yes	Yes
04/12/2011	Yes	Yes	Yes	Yes	Yes
05/12/2011	Yes	Yes	Yes	Yes	Yes
06/12/2011	Yes	Yes	Yes	Yes	Yes
07/12/2011	Yes	Yes	Yes	Yes	Yes
08/12/2011	Yes	Yes	Yes	Yes	Yes
09/12/2011	Yes	Yes	Yes	Yes	Yes
10/12/2011	Yes	Yes	Yes	Yes	Yes
11/12/2011	Yes	Yes	Yes	Yes	Yes
12/12/2011	Yes	Yes	Yes	Yes	Yes
13/12/2011	Yes	Yes	Yes	Yes	Yes
14/12/2011	Yes	Yes	Yes	Yes	Yes
15/12/2011	Yes	Yes	Yes	Yes	Yes
16/12/2011	Yes	Yes	Yes	Yes	Yes
17/12/2011	Yes	Yes	Yes	Yes	Yes
18/12/2011	Yes	Yes	Yes	Yes	Yes
19/12/2011	Yes	Yes	Yes	Yes	Yes
20/12/2011	Yes	Yes	Yes	Yes	Yes
21/12/2011	Yes	Yes	Yes	Yes	Yes

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DATE	NOISE EVENTS				FIDS
	NMT 1 Events	NMT 2 Events	NMT 3 Events	NMT 4 Events	
22/12/2011	Yes	Yes	Yes	Yes	Yes
23/12/2011	Yes	Yes	Yes	Yes	Yes
24/12/2011	Yes	Yes	Yes	Yes	Yes
25/12/2011	Yes	Yes	Yes	Yes	Yes
26/12/2011	Yes	Yes	Yes	Yes	Yes
27/12/2011	Yes	Yes	Yes	Yes	Yes
28/12/2011	Yes	Yes	Yes	Yes	Yes
29/12/2011	Yes	Yes	Yes	Yes	Yes
30/12/2011	Yes	Yes	Yes	Yes	Yes
31/12/2011	Yes	Yes	Yes	Yes	Yes

Appendix 11: Annual Noise Categorisation Report

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**LONDON CITY AIRPORT
ANNUAL CATEGORISATION REPORT
2011 NOISE MONITORING**

Report to

**Mr Gary Hodgetts
Director of Operations Policy & Planning
City Aviation House
London City Airport
The Royal Docks
London E16 2PB**

A1125.57-R01.12-PH/VC
26 June 2012

Bickerdike Allen Partners

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FIGURES

Figure 1 – Noise Categorisation Locations

Figure 2 – Noise Monitoring Locations – West of Runway

Figure 3 – Noise Monitoring Locations – East of Runway

APPENDICES

Appendix A – 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 levels 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 provisional 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 noise levels of aircraft over the categorisation year (January to December inclusive), the results of which are used to undertake the annual review of the provisional categorisation of aircraft.

This report records the results of a review of the provisional categorisation of those aircraft using the Airport that received provisional categorisation approval over the period 1st October 2010 up to and including 31st December 2011. The review is based on the results obtained from noise monitoring in the period 1st January 2011 up to and including 31st December 2011.

In Appendix A, this report includes a list of those aircraft that have already received confirmation of their provisional categorisation to operate at London City Airport together with their associated mean annual departure noise level recorded over the period 1st January 2011 up to and including 31st December 2011.

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 2011 up to and including 31st December 2011.

2.0 PLANNING REQUIREMENTS

The planning requirements concerning the provisional 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 was formally approved on the 19th November 1998 as planning application number P/98/0998, and places "General Aviation: Executive Turbo-Fan Aircraft" in Category A and "General Aviation: Non-Jet Aircraft" in Category B, according to the Noise Categories discussed in Section 2.1 below.

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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 as measured by the noise monitoring system. The noise factors are multiplying factors to the actual number of air transport 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*

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(2) In the event of there being at 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 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 (NMT) were located as close as possible to the four noise categorisation points (NCP), 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 Bruel and Kjaer in 2000 and a flight track monitoring system added.

The noise monitoring system microphones 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 data in London City Airport's Flight Information Display Systems (FIDS) and from radar data. 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 points, two at each end of the runway. These points are known as Noise Categorisation Points and are located at 2000 metres from start of roll and 300 metres each side of the extended runway centreline.

As the aircraft flies through a gateway pair of noise monitors, the departure noise level is measured, in dB(A), at each monitor. Corrections are applied to the measured noise level to take account of the fact that a noise monitor is not located exactly at the Noise Categorisation Point and also for converting from the noise units of dB(A) to PNdB¹. Finally, the mean departure noise level is determined from the average of the resulting gateway pair corrected noise measurements.

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 noisiness of an aircraft than the former.

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The noise control regime described above has been in operation for approximately 20 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.

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 the landscape around each monitor is relatively clear of any large objects, such as buildings.

Significant development has taken place around the Airport in recent years and, in particular, in close proximity to some noise monitoring terminals. This has led to the need to re-locate some 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.

New correction factors have been determined from a study² to account for the above changes, based on a combination of acoustic modelling and consideration of historical noise data. In determining these new factors, a greater weight was given to historical data which was based on significant samples of aircraft departure noise measurements taken before and after changes at or around the relevant NMT's. The acoustic modelling provided a useful means of validating the findings to a first approximation.

During the calendar year of 2011, the noise and flight track monitoring system has been in operation every day, enabling the measurement of data to achieve a correlation of 95% of all aircraft departures from the Airport during this period.

4.0 RESULTS

4.1 Noise Levels

As discussed in Section 3.1 of this report, the following correction factors 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 provisional categorisation is sought for the Dassault Falcon 2000EX. For this aircraft type, Table 4.1 below sets out the provisional categorisation approved in November 2010 together with the measured departure noise level during 2011 and the provisional categorisation for which confirmation is sought.

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

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Aircraft Type	Date of Provisional Categorisation on Approval	Measured Noise Level (PNdB)	2011 Approved Noise Category	Noise Category – Confirmation Sought
Dassault Falcon 2000 EX	17/11/2010	87.9	A	A

Table 4.1 indicates that for 2011 this aircraft's mean annual departure noise level was significantly below the lower noise limit of Noise Category A of 91.6 PNdB. Turbo-fan executive aircraft are categorised universally as Category A, therefore the Airport seeks confirmation of Category A for the Dassault Falcon 2000EX.

A full list of aircraft types and their associated mean annual departure noise level recorded over the period 1st January 2011 up to and including 31st December 2011 is included at Appendix A.

4.2 Number of Actual and Factored Aircraft Movements

Table 4.2 shows the number of actual and factored aircraft movements in the period 1st January 2011 to 31st December 2011 inclusive, as advised to BAP by London City Airport.

Aircraft Type	Number of Aircraft Movements	Noise Factor	Number of Factored Movements*
Airbus A318	1058	1.26	1333
BAe 146	439	1.26	553
RJ85	11329	1.26	14275
RJ100	7187	1.26	9056
Embraer 135	203	1.26	256
Embraer 170	8423	1.26	10613
Embraer 190	11317	1.26	14259
Dash 8-400	2597	0.63	1636
Fokker 50	14970	0.63	9431
Dornier 328	2074	0.63	1307
ATR 42	2104	0.63	1325
ATR 72	10	0.63	6
General Aviation: Turbo-Fan Aircraft	6178	1.26	7784
General Aviation: Non-Jet Aircraft	211	0.63	133
TOTAL:	68100		71967

* Computed to the nearest whole number

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 9 July 2009.

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5.0 CONCLUSIONS

This report presents mean annual departure noise levels of provisionally categorised aircraft based on data measured by the noise monitoring system during the period 1st January 2011 to 31st December 2011. Confirmation of the provisional categorisation of the Dassault Falcon 2000EX as a Category A aircraft is sought.

This report also presents aircraft movement numbers for passenger transport aircraft and general aviation aircraft operating at London City Airport during the period 1st January 2011 to 31st December 2011. 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.

Valerie Collingwood
for Bickerdike Allen Partners

Peter Henson
Partner

Bickerdike Allen Partners



Figure 1 - Noise Categorisation Locations

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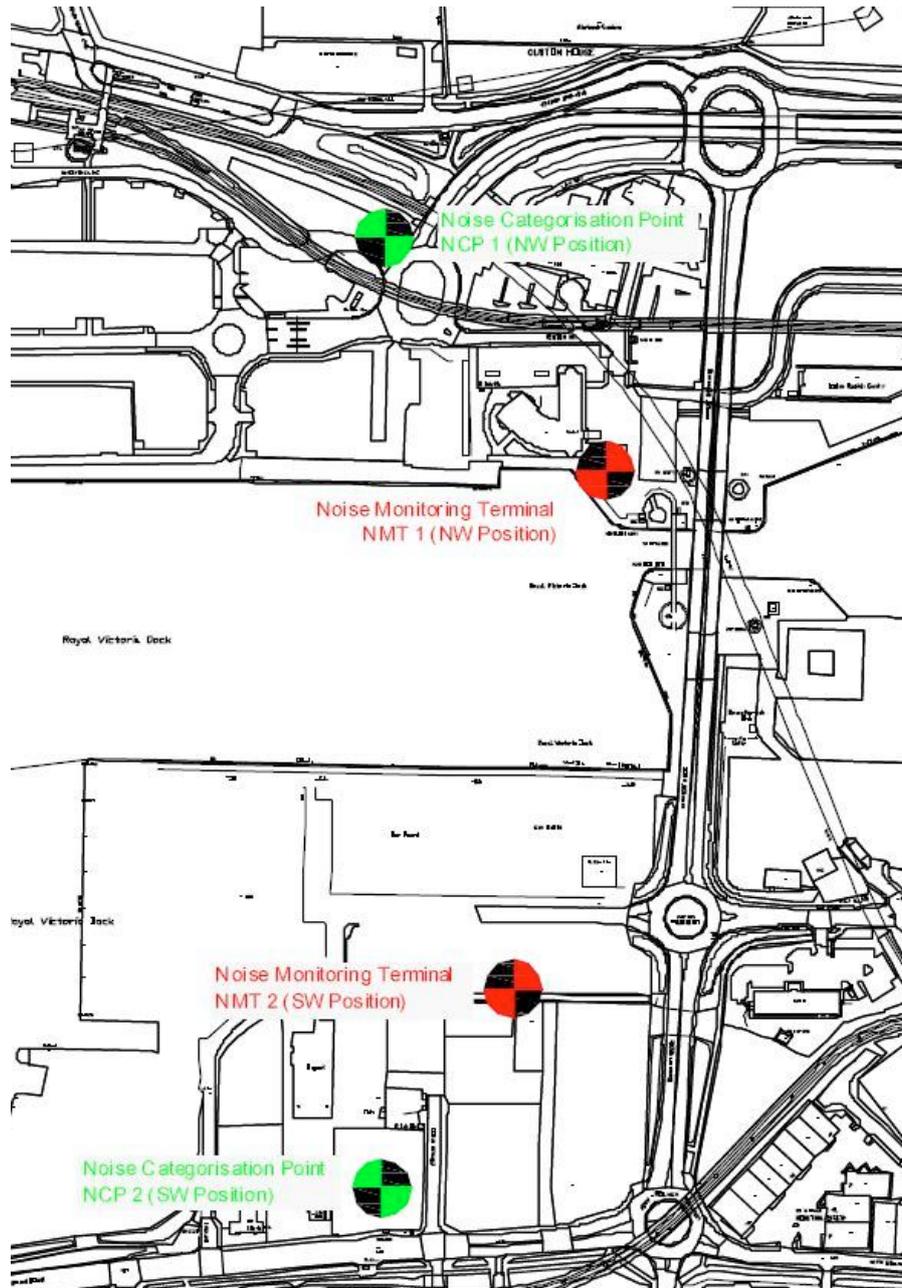


Figure 2 – Noise monitoring locations, west of runway

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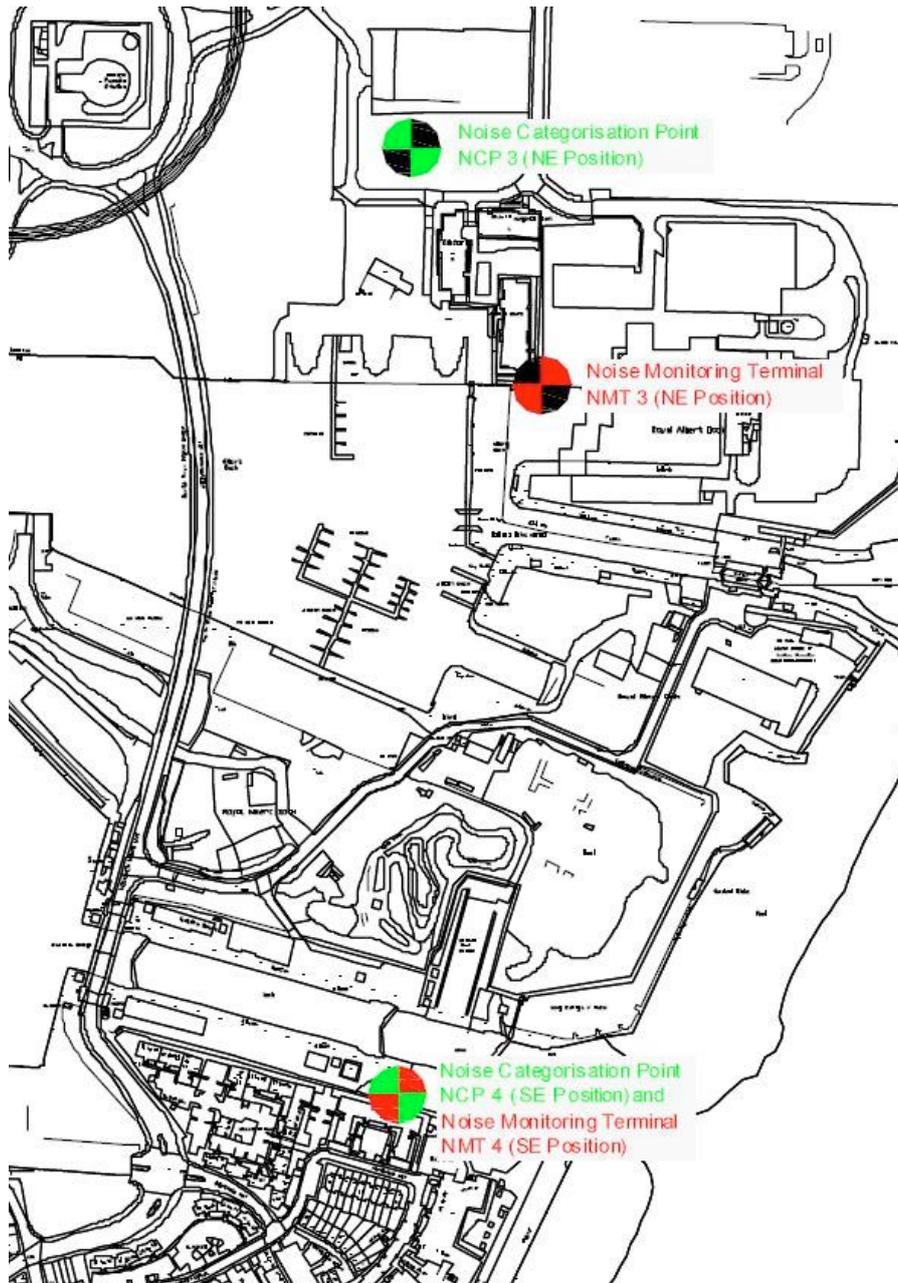


Figure 3 – Noise monitoring locations, east of runway

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APPENDIX A

Mean Annual Departure Noise Levels 2011

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Table A1 – Mean Annual Departure Noise Levels 2011

Aircraft Type	Measured Noise Level (PNdB)	Provisional Noise Category ¹
Airbus A318	93.2	A
ATR 42	90.1	B
ATR 72	--*	B
BAe 146-200	93.5	A
BAe 146-300	--*	A
Canadair CL60	89.9	A
Cessna Citation C25A	90.3	A
Cessna Citation C25B	89.7	A
Cessna Citation C510	87.1	A
Cessna Citation C525	89.3	A
Cessna Citation C550	88.0	A
Cessna Citation C560	90.6	A
Cessna Citation C56X	87.1	A
Cessna Citation C680	89.0	A
Dassault Falcon 10	90.5	A
Dassault Falcon 2000EX	87.9	A
Dassault Falcon 50	93.7	A
Dassault Falcon 900	89.4	A
Dassault Falcon 7X	86.5	A
Dornier 328	88.5	B
Dornier 328 Jet	--*	A
Dash 8-400	89.3	B
Embraer 135	89.9	A
Embraer 170	93.4	A
Embraer 190	94.6	A
Fokker 50	91.0	B
Gulfstream G150	--*	A
Learjet 40	87.2	A
Learjet 45	88.0	A
Piaggio 180	91.2	B
Piper Navajo 31	--*	B
Raytheon Beechcraft 350	84.4	B
Raytheon Beechcraft 200	86.2	B
Raytheon Beechjet 400	89.3	A
Raytheon Beechcraft 58	--*	B
Raytheon Hawker 800XP	89.7	A
RJ-85	93.3	A
RJ-100	95.2	A

¹ Previously confirmed Provisional Categorisation unless otherwise stated.

*Insufficient numbers recorded (ie. less than 10 departures).

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Table A1 above indicates that some scheduled aircraft are operating below their provisional categorisation, such as the Embraer 135, whilst others are operating above their category, for example, the Embraer 190 and RJ 100.

LCY are working closely with the operators and manufacturers of the Embraer 190. Since 2010, departure noise levels for 2011 as a whole have reduced to only 0.1 dB above Category A, and the aircraft operated within category for a total of eight months during 2011. LCY have been notified that a further technical modification to the aircraft will be introduced by the manufacturer early in 2012, and for the period January to April this year (2012), the Embraer 190 has operated with a mean departure noise level of 94.1 PNdB.

The Beechjet 400, which operated out of category in 2010, has responded considerably well to a revised departure procedure implemented by the operator, NetJets Transportes Aeroes. The annual average departure noise level for 2011 showed a reduction of 5.4 dB, meaning that this aircraft is now operating below Category A.

LCA has also written to the operator of the RJ 100 and are currently working with the airline, Swiss International, to bring the aircraft back within category. The RJ 100 has successfully operated within Category A in the past, and efforts to reduce the departure noise level, such as by revising departure operating procedures are currently under trial.

The 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.

Appendix 12: Data From Air Quality Measurement Programme



London City Airport Air Quality Measurement Programme: Annual Report 2011

July 2012



Experts in air quality
management & assessment



Document Control

Client	London City Airport	Principal Contact	Gary Hodgetts
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Job Number	J1188
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Report Prepared By:	Suzanne Hodgson, Kieran Laxen and Stephen Moorcroft
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Document Status and Review Schedule

Report No.	Date	Status	Reviewed by
1188/4A/F2	24 th July 2012	Final Report	Prof. Duncan Laxen

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Executive Summary

This document represents the 2011 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 (NO₂) and fine particles (the so called PM₁₀ fraction, i.e. particles that are less than 10 micrometres in diameter).

Monitoring is carried out at two automatic monitoring stations. One is situated on the roof of City Aviation House (LCA-CAH) whilst the other is to the north of Royal Albert Dock, adjacent to the Newham Dockside building (LCA-ND). These automatic sites are supplemented by a network of passive monitoring devices (nitrogen dioxide diffusion tubes) located at a further 19 sites in and around the Airport boundary.

The Government has set a number of air quality objectives to protect human health. These are equivalent to, or are more stringent than the limit values set by the European Union. Both the objectives and the limit values are based on monitoring carried out over the period of a calendar year.

In some cases, these objectives and limit values refer to average concentrations of pollutants measured over the calendar year (the “annual mean”); in other cases they refer to the number of hours or days on which a specified pollutant concentration should not be exceeded (for example, no more than 35 days in each calendar year on which PM₁₀ concentrations exceed 50 µg/m³, and no more than 18 hours in each calendar year on which nitrogen dioxide concentrations exceed 200 µg/m³).

In addition to the objectives and limit values, the Government has established a set of descriptors for the 1-hour mean concentrations of nitrogen dioxide and 24-hour mean concentrations of PM₁₀. Air quality is defined by these descriptors as being Low, Moderate, High and Very High (these descriptors have recently been modified and therefore differ from those reported previously).

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 2011 annual mean nitrogen dioxide concentration measured at the automatic station on the roof of City Aviation House was 33.1 µg/m³ (microgrammes per cubic metre); a slightly lower concentration (29.5 µg/m³ annual mean equivalent) was measured at the Newham Dockside site. The annual mean objective (40 µg/m³) was not exceeded at either site in 2011. There were no recorded exceedences of the 1-hour mean objective, and all 1-hour mean concentrations were classified as “Low”.

Annual mean concentrations of nitrogen dioxide at other background sites in London over this period ranged from 23.1 to 48.4 $\mu\text{g}/\text{m}^3$, with similar patterns in levels as seen at the two London City Airport 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 28.7 to 41.1 $\mu\text{g}/\text{m}^3$ compared with the objective value of 40 $\mu\text{g}/\text{m}^3$. There were no measured exceedences of the annual mean objective where there is relevant exposure. As measured concentrations are well below 60 $\mu\text{g}/\text{m}^3$, it is highly unlikely that the 1-hour mean objective will be exceeded.

Fine Particles (PM₁₀)

The annual mean PM₁₀ concentration measured at the automatic station on the roof of City Aviation House was 24 $\mu\text{g}/\text{m}^3$ (microgrammes per cubic metre). This compares with the objective value of 40 $\mu\text{g}/\text{m}^3$. There were 16 recorded exceedences of the 24-hour mean objective (compared with the 35 exceedences allowed in a calendar year). The majority of the running 24-hour mean concentrations were classified as “Low” (95.4%); running 24-hour mean concentrations were classified as “Moderate” and “High” for 4.2% and 0.4% of the time respectively. There were no running 24-hour mean concentrations within the ‘Very High’ pollution band.

Concentrations of PM₁₀ at other background sites in London over this period showed similar patterns as 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 2011 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 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 AEA providing independent audit checks.
- 1.5 Chapter 3 of this Report sets out the various standards and guidelines against which air pollution concentrations should be compared. Chapter 4 describes the monitoring methodology and provides a summary of the measured concentrations in 2011 with respect to these criteria, and compares the measured concentrations with other local monitoring sites. Chapter 5 then provides some analysis of the monitoring data with respect to trends and source contributions.



2 Assessment Criteria

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

Table 1: Relevant Air Quality Objectives

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

^a Measured by the gravimetric method.

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

- 2.2 The objectives for nitrogen dioxide and PM₁₀ were to have been achieved by 2005 and 2004 respectively, and continue to apply in all future years thereafter.
- 2.3 The European Union has also set limit values for both nitrogen dioxide and PM₁₀. Achievement of these values is a national obligation rather than a local one. The limit values for nitrogen dioxide are the same levels as the UK objectives, and are to be achieved by 2010 (Stationery Office, 2007). The limit values for PM₁₀ are also the same level as the UK statutory objectives, and were to be achieved by 2005. The objectives are the same as, or more stringent than, the limit values, thus it is appropriate to focus the assessment on the objectives.
- 2.4 In addition to the objectives and limit values, Defra (2011a) has established a set of descriptors, for the 1-hour mean concentrations of nitrogen dioxide and 24-hour mean concentrations of PM₁₀, classifying the levels as Low, Moderate, High and Very High. This air quality banding has recently been revised by Defra to be more stringent, in response to a request by the Committee on the Medical Effects of Air Pollutants (COMEAP), and takes into account the latest research into the health effects of air pollution. The banding is referred to as the Daily Air Quality Index (DAQI). The new DAQI criteria are set out in Table 2 and are referred to in this report.



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

Band	Index	Nitrogen Dioxide 1-Hour Mean	PM ₁₀ Running 24-Hour Mean ^a
Low	1	0 – 66	0 – 16
	2	67 – 133	17 – 33
	3	134 – 199	34 – 49
Moderate	4	200 – 267	50 – 58
	5	268 – 334	59 – 66
	6	335 – 399	67 – 74
High	7	400 – 467	75 – 83
	8	468 – 534	84 – 91
	9	535 – 599	92 – 99
Very High	10	600 or more	100 or more

^a Reference Equivalent

3 Monitoring Methodology and Results

Automatic Monitoring Stations

- 3.1 Monitoring was carried out at two automatic stations as follows:
- City Aviation House (LCA-CAH): Nitrogen dioxide and PM₁₀
 - Newham Dockside (LCA-ND): Nitrogen dioxide
- 3.2 The location of the two automatic sites is shown in Figure 1.
- 3.3 The LCA-CAH automatic monitoring station measures PM₁₀ using a Rupprecht and Patashnick TEOM 1400 Particulate Monitor, whilst both automatic stations measure nitrogen dioxide using M200E TAPI chemiluminescence analysers. The data are stored as 15-minute mean concentrations. Before further processing and ratification the raw PM₁₀ concentrations have been adjusted to a “reference-equivalent” concentration using the Volatile Correction Model (VCM) as recommended by Defra (2009). This adjusts the TEOM data using the “purge” concentration measured by an FDMS analyser, assuming this represents the volatile component that has been lost. A “VCM web portal” has been established that allows this correction to be derived from the mean of up to three nearby FDMS analysers in the national network.
- 3.4 Independent site audits, conducted by AEA, confirmed that both automatic monitoring stations were operating above the minimum standards set for the national networks operated by Government. Audits were carried out 20th October 2010, 9th March 2011, 15th September 2011 and 5th March 2012 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, 2011a). Any erroneous data have been flagged and removed from subsequent analysis. One-hour, daily, and annual means 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, 2011a) for three background sites, Bexley, Bloomsbury and Eltham, and from the London Air Quality Network (KCL, 2011) for two sites within the London Borough of Newham at Wren Close, Canning Town (background) and Cam Road, Stratford (roadside).



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Figure 1: Automatic Monitoring Locations (red dots). © Crown Copyright 2012. All rights reserved. Licence number 100020449

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Nitrogen Dioxide

3.7 The 2011 nitrogen dioxide results for the LCA-CAH and LCA-ND automatic monitoring stations are summarised in Table 3. Data capture at for the LCA-CAH site was high (96%¹); at LCA-ND, data capture was lower (66%) due to analyser problems between April and June 2011². The annual mean concentrations did not exceed the objective of 40 µg/m³ at either site. The 1-hour mean objective was also not exceeded, with no 1-hour mean concentrations above 200 µg/m³, compared with the 18 exceedences allowed.

Table 3: Nitrogen Dioxide (NO₂) Data Summary for LCA-CAH and LCA-ND, 2011^a

Pollutant	LCA-CAH	LCA-ND	Objectives
	NO ₂	NO ₂	
Maximum 1-Hour Mean	150 µg/m ³	148 µg/m ³	
No. 1-Hour Mean > 200 µg/m ³	0	0	200 µg/m ³ ; no more than 18 exceedences
Annual Mean	33.1 µg/m ³	31.2 µg/m ³ ^b	40 µg/m ³
Data Capture	96.3%	66.1%	-

^a Nitrogen oxides concentrations are provided in Appendix 1.

^b The value presented is the measured value. Due to the low data capture at this site, a 2011 “annualised mean” of 29.5 µg/m³ has been calculated, based on an approach recommended by Defra. This calculation is shown in Appendix 2.

3.8 Table 4 includes the distribution of the 1-hour mean values into the different pollution bands (DAQI).

Table 4: DAQI Bandings, 2011

	Index	LCA-CAH	LCA-ND
Number Very High ^a	10	0	0
Number High ^a	9	0	0
	8	0	0
Number Moderate ^a	7	0	0
	6	0	0
	5	0	0
Number Low ^a	4	0	0
	3	1	1
	2	763	425
	1	7202	2834

^a Number of 1-hour values

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.

² There was a problem with the LCA-ND monitor between April to June 2011, which required the removal of these data from the final ratified dataset.

- 3.9 All measured 1-hour mean nitrogen dioxide concentrations fell into the 'Low' pollution band during 2011, at both monitoring sites.
- 3.10 Nitrogen dioxide concentrations for five monitoring sites across London in 2011 are summarised in Table 5. These sites range from central London (Bloomsbury) to outer London (Bexley). The measured annual mean concentrations at London City Airport (33.1 $\mu\text{g}/\text{m}^3$ at LCA-CAH and 31.5 $\mu\text{g}/\text{m}^3$ at LCA-ND) were similar to that measured at Canning Town (37.2 $\mu\text{g}/\text{m}^3$), lower than those at Bloomsbury and Stratford (48.4 $\mu\text{g}/\text{m}^3$ and 46.8 $\mu\text{g}/\text{m}^3$ respectively), and higher than those measured at Eltham and Bexley (24.5 $\mu\text{g}/\text{m}^3$ and 23.1 $\mu\text{g}/\text{m}^3$, respectively). This is broadly consistent with the location of London City Airport between the areas of high concentrations in central London and lower concentrations towards the outskirts. The maximum 1-hour mean concentrations recorded at LCA-CAH and LCA-ND were lower than those at Bloomsbury, Canning Town and Stratford, and higher than those at Eltham and Bexley.

Table 5: Nitrogen Dioxide (NO₂) Data Summary for London Monitoring Sites, 2011^a

	Background Site				Roadside Site
	Bexley	Bloomsbury	Eltham	Canning Town	Stratford
Max. 1-hr Mean ($\mu\text{g}/\text{m}^3$)	139	164	124	167	186
No. 1-hr >200 $\mu\text{g}/\text{m}^3$	0	0	0	0	0
Annual Mean ($\mu\text{g}/\text{m}^3$)	23.1	48.4	24.5	37.2	46.8
Data Capture (%)	97.6	97.1	97.3	84.4	95.0

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

Particulate Matter PM₁₀

- 3.11 The 2011 PM₁₀ results for the LCA-CAH automatic monitoring station are summarised in Table 6. Data capture was 98% for the full year. The recorded annual mean concentration (24 $\mu\text{g}/\text{m}^3$) was well below the objective of 40 $\mu\text{g}/\text{m}^3$. There were 16 measured exceedences of the 24-hour mean objective level of 50 $\mu\text{g}/\text{m}^3$, compared with the 35 exceedences allowed. In addition, the 90th percentile of daily mean concentrations (39 $\mu\text{g}/\text{m}^3$)³ was below 50 $\mu\text{g}/\text{m}^3$.

³ When data capture is below 90%, Defra Technical Guidance (LAQM.TG(09)) recommends that a comparison should be made with the relevant percentile value of the objective.



Table 6: PM₁₀ Data Summary for LCA-CAH, 2011

Pollutant	TEOM, VCM-corrected	PM ₁₀ Objectives
	PM ₁₀	
Maximum 24-hour Mean	82.8 µg/m ³	-
No. 24-Hour Means >50 µg/m ³	16	50 µg/m ³ ; no more than 35 exceedences
90 th Percentile	39.3 µg/m ³	50 µg/m ³
Annual Mean	23.9 µg/m ³	40 µg/m ³
Data Capture	98 %	-

3.12 Table 7 includes the distribution of the running 24-hour mean values into the different pollution bands (DAQI).

Table 7: DAQI Bandings for PM₁₀, 2011

	Index	PM ₁₀
Number Very High ^a	10	0
Number High ^a	9	0
	8	22
	7	14
Number Moderate ^a	6	25
	5	106
	4	218
Number Low ^a	3	880
	2	5218
	1	1863

^a Number of running 24-hour mean values, updated every hour.

3.13 The majority of running 24-hour measured PM₁₀ concentrations fell into the 'Low' pollution band (95.4%) during 2011; there were 349 running 24-hour concentrations within the 'Moderate' pollution band (4.2%) and 36 running 24-hour concentrations within the 'High' pollution band (0.4%). There were no 'Very High' events.

3.14 PM₁₀ concentrations for five sites across London in 2011 are summarised in Table 8. These sites range from central London (Bloomsbury and Eltham) to outer London (Bexley), with two in east London (Canning Town and Stratford). The measured annual mean concentration at London City Airport (24 µg/m³) was lower than that at Stratford (28 µg/m³) and Canning Town (26 µg/m³), and higher than that measured at Bexley (22 µg/m³ using VCM-corrected TEOM, 19 µg/m³ using FDMS), Bloomsbury (22 µg/m³) and Eltham (22 µg/m³). The number of 24-hour mean exceedences of 50 µg/m³ were the same as at Stratford, lower than at Bloomsbury and Eltham and higher than at Bexley and Canning Town, whilst the 90th percentile at LCA-CAH was higher than those at Bexley and Bloomsbury, the same as at Eltham and lower than that at Canning Town and Stratford.

Table 8: PM₁₀ Data Summary of Background London Monitoring Sites, 2011^a

	Background Site					Roadside Site
	Bexley (TEOM)	Bexley (FDMS)	Bloomsbury	Eltham	Canning Town	Stratford
Maximum 24-hr mean ($\mu\text{g}/\text{m}^3$)	79	98	89	109	77	76
Annual Mean ($\mu\text{g}/\text{m}^3$)	22	19	22	22	26	28
No. 24-hr mean >50 $\mu\text{g}/\text{m}^3$	13	12	19	18	15	16
90 th Percentile	36	34	37	39	42	44
Data Capture (%)	98	92	97	93	68	71

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

Nitrogen Dioxide Diffusion Tube Network

- 3.15 London City Airport also operates a network of passive diffusion tube samplers for nitrogen dioxide. The intent of this network is to establish the wider spatial pattern of nitrogen dioxide concentrations in the area surrounding the Airport. The locations of the monitoring sites are shown in Figure 2, and are described in Table 9; grid references and the monthly mean data are provided in Appendix 3. The diffusion tubes are exposed for approximately 4-week intervals. They are supplied and analysed by Gradko International Ltd., and are prepared using the 20% TEA in water method.
- 3.16 The diffusion tubes record monthly mean concentrations, which have been averaged to give the annual mean. The results cannot therefore be directly compared with the 1-hour mean objective. However, measurements across the UK have shown that the 1-hour mean nitrogen dioxide objective is unlikely to be exceeded where the annual mean concentration is below 60 $\mu\text{g}/\text{m}^3$ (Defra, 2009).



Table 9: Description of Diffusion Tube Monitoring Sites

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
North west of site 16, approx 85 m back from Waterfront	LCA 17
Newham Dockside analyser	LCA 18
Waterfront, approximately 460m east of Newham Dockside	LCA 19

3.17 It is important to note that not all of these monitoring sites represent relevant public exposure for annual mean concentrations of nitrogen dioxide; thus the objectives are not strictly applicable at all of these sites. For instance, the sites at Landing Lights (LCA 07), the Jet Centre (LCA 10) and the ILS (LCA 12) are located on land that is not generally accessible by the public, or is owned by the Airport. The sites at LCA 04 (at the waterfront of Newham Dockside), LCA 11 (at the waterfront of the University of East London) and LCA 13, 14, 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(09)⁴, but are relevant for 1-hour concentrations. 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.

3.18 Diffusion tubes are known to show systematic bias in relation to automatic (reference) monitors. For this reason, a co-location study has been carried out, with triplicate tubes exposed alongside

⁴ Defra Technical Guidance Note LAQM.TG(09) 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.

the inlet to the automatic monitor at LCA-CAH, and a single tube 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 40%. An adjustment factor of 0.738 has therefore been applied to all diffusion tube results to ensure that they give the best representation of true concentrations (see Appendix 4). The results from the triplicate tubes indicate “good” precision ($\pm 6.1\%$) for the study in 2011, see Appendix 5 (Defra, 2009).

- 3.19 The bias-adjusted results are summarised in Table 10, and also shown in Figure 3. The results show that the annual mean objective of $40 \mu\text{g}/\text{m}^3$ was exceeded at one location (LCA 04) during 2011. All measured annual mean nitrogen dioxide concentrations were well below $60 \mu\text{g}/\text{m}^3$, and it is thus unlikely that the 1-hour mean objective will have been exceeded at any location.
- 3.20 It is important to note that there is no relevant exposure to the annual mean objective at LCA04. The site is close to the edge of Royal Albert Dock, with no local pollution sources within 100 m. This site has been identified in previous years as the location with the highest concentration. It is also of note that monitoring site LCA 12, which lies just to the north of the main runway, recorded a much lower concentration ($32.3 \mu\text{g}/\text{m}^3$) in 2011, suggesting that the Airport is not significantly contributing to the elevated levels at LCA 04.

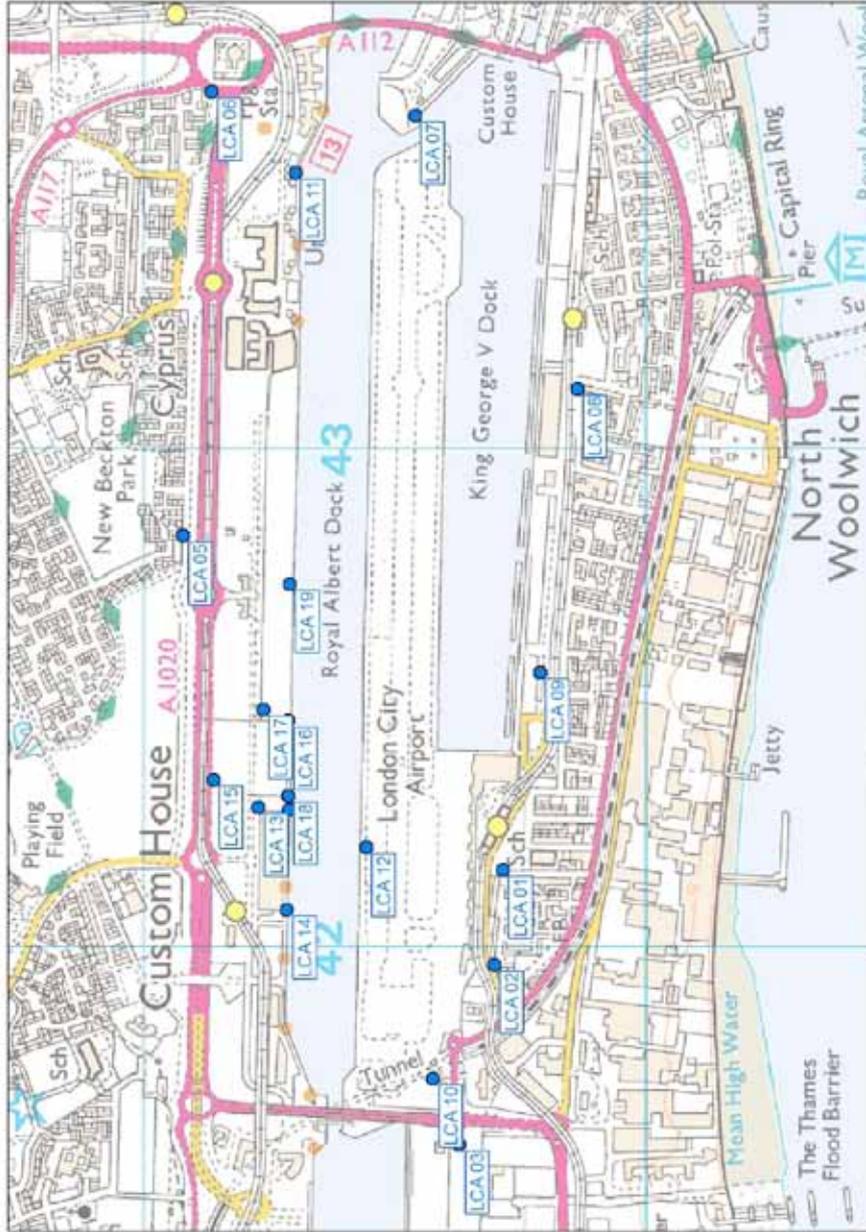


Figure 2: Diffusion Tube Monitoring Locations (green dots). © Crown Copyright 2012. All rights reserved. Licence number 100020449.



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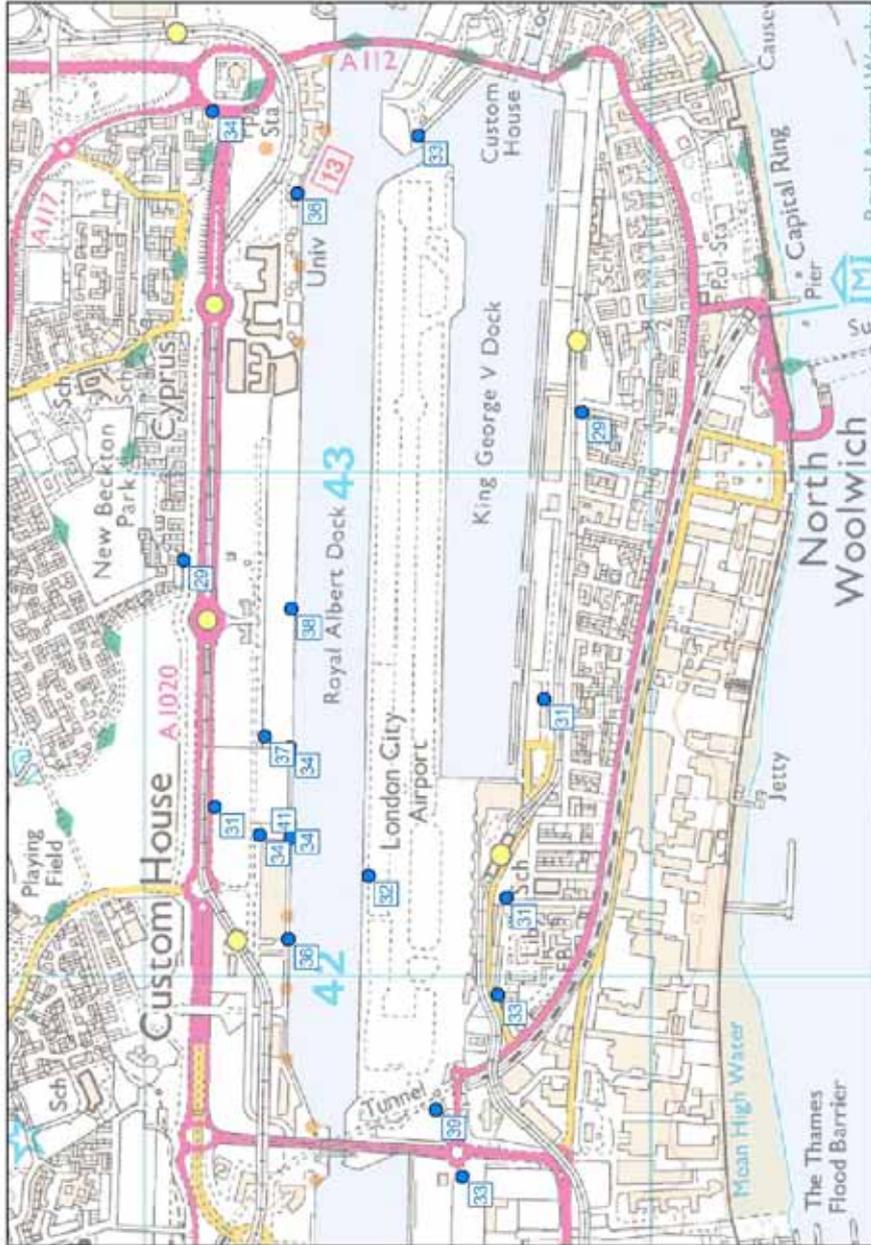


Figure 3: Nitrogen Dioxide Diffusion Tube Results, 2011 ($\mu\text{g}/\text{m}^3$). © Crown Copyright 2012. All rights reserved. Licence number 100020449.

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Table 10: Diffusion Tube Data Summary for London City Airport, 2011 (Adjusted for Bias)

Site ID	Adjusted Value ($\mu\text{g}/\text{m}^3$) ^a
LCA 01	31.5
LCA 02	33.3
LCA 03	32.6
LCA 04	41.1
LCA 05	28.9
LCA 06	33.5
LCA 07	32.8
LCA 08	28.7
LCA 09	31.1
LCA 10	39.4
LCA 11	36.4
LCA 12	32.3
LCA 13	33.7
LCA 14	36.1
LCA 15	31.3
LCA 16	33.6
LCA 17	36.6
LCA 18	34.0
LCA 19	37.7

^a Data have been adjusted using a local bias adjustment factor for 2011 of 0.738. 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 8th January 2011 and 6th January 2012.

4 Data Analyses

4.1 This chapter provides analyses of the data covering 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 and Stratford, are shown as a time series in Figures 4 and 5 respectively.

4.3 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.

4.4 The measured daily mean PM₁₀ concentrations at LCA-CAH and LCA-ND, and at the two Bexley monitors, Bloomsbury, Eltham, Canning Town and Stratford, 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.

Trends in Pollutant Concentrations

4.5 The automatic station at the LCA-CAH site has been in operation since September 2006, and it is useful to identify whether there are any trends in the measured pollutant concentrations over time.

4.6 Figure 8 shows the trends in measured annual mean nitrogen dioxide concentrations at LCA-CAH and five other monitoring locations. Between 2007 and 2011, there appears to have been a slight downward trend in annual mean nitrogen dioxide concentrations measured at all sites.

4.7 The trends in annual mean PM₁₀ concentrations are shown in Figure 9, for the LCA-CAH site and three other monitoring locations, for which five years data were available. The pattern is similar at all sites, with a decrease from 2007 to 2008 then an increase from 2010 to 2011, but no real trend over the five years.

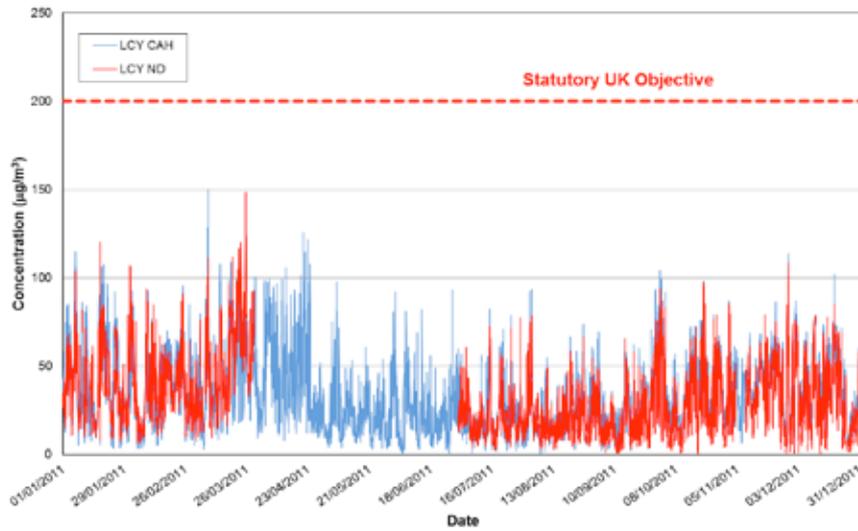


Figure 4: 1-Hour Mean Nitrogen Dioxide Concentrations at London City Airport, 2011

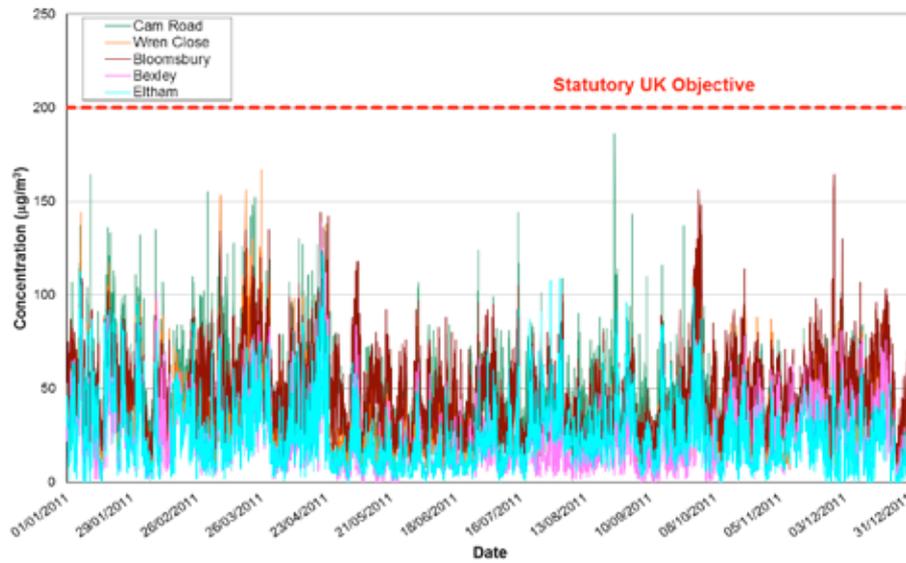


Figure 5: 1-Hour Mean Nitrogen Dioxide Concentrations at London Monitoring Sites, 2011

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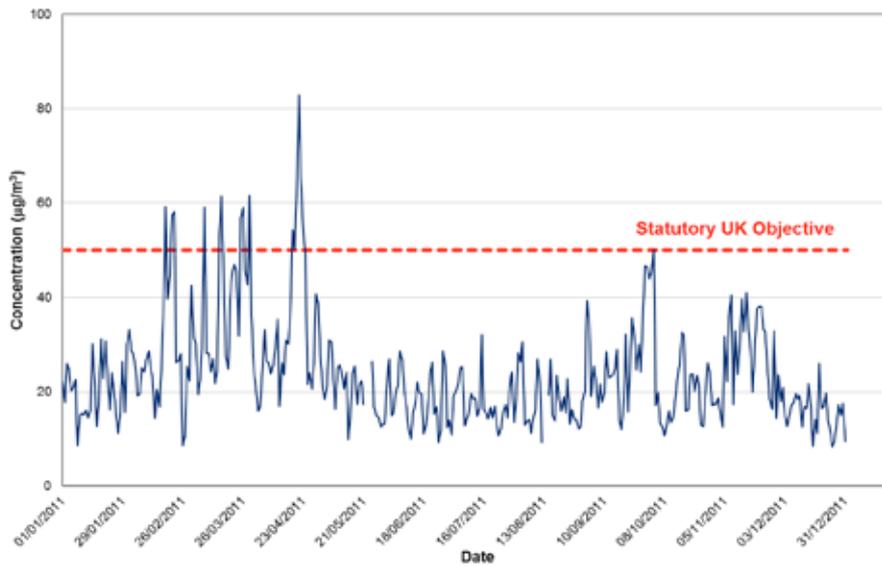


Figure 6: Daily Mean PM₁₀ Concentrations at London City Airport (LCA-CAH), 2011

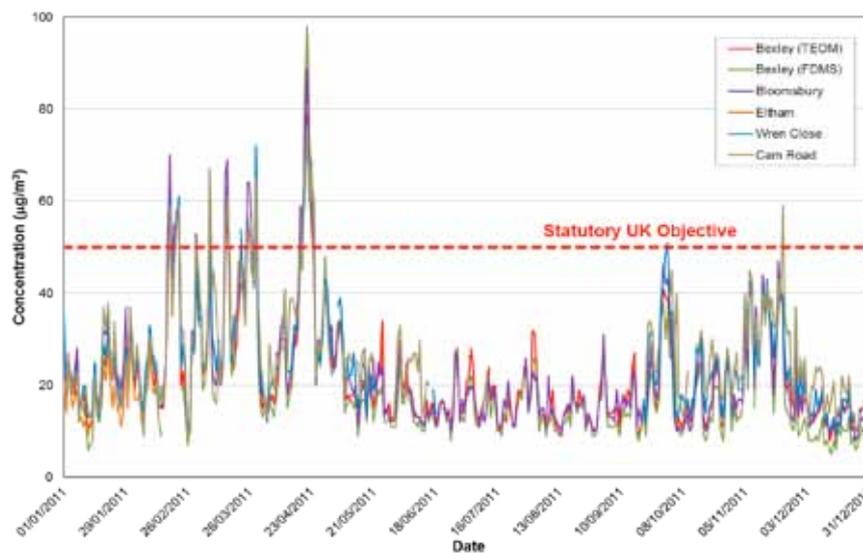


Figure 7: Daily Mean PM₁₀ Concentrations at London Monitoring Sites, 2011

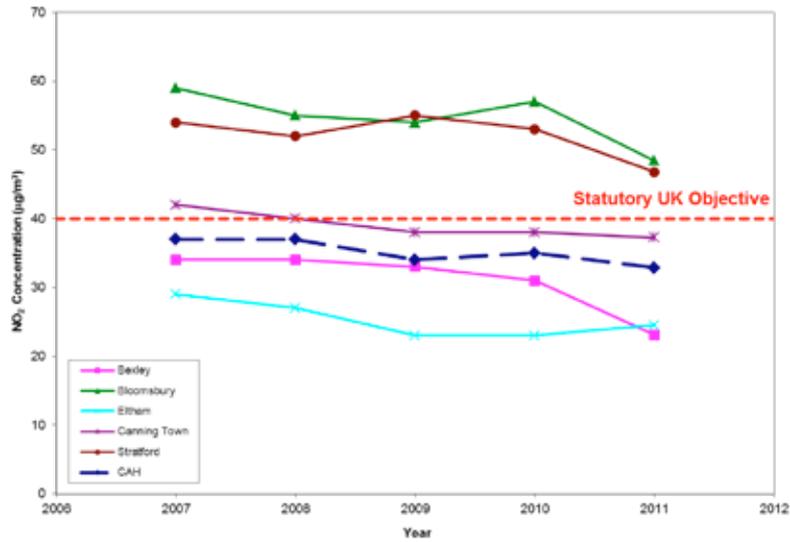


Figure 8: Annual Mean Nitrogen Dioxide Concentrations, 2007 – 2011 (µg/m³)

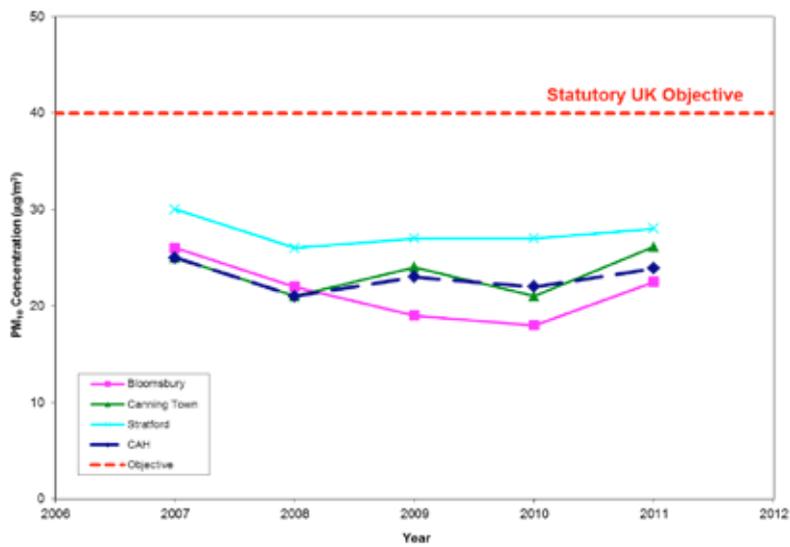


Figure 9: Annual Mean PM₁₀ Concentrations, 2007 – 2011 (µg/m³)

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. Usually, the data are processed into average concentrations by wind direction, such that it is possible to identify whether elevated pollution concentrations are associated with different wind directions.
- 4.9 Data analysis tools available via the “Openair” website⁵ include the preparation of “bivariate pollution roses”. 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.
- 4.10 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.
- 4.11 Figure 10 shows bivariate pollution roses for NO_x concentrations in 2011 at the LCA-CAH and LCA-ND sites. It can be seen for both bivariate pollution roses that the highest NO_x concentrations occur during low wind speeds (i.e. towards the centre of the rose) indicating that the highest concentrations are associated with ground-level source releases (the wind speed scale runs from 0 m/s to 20 m/s, with the concentration scale running from 0 to just over 100 µg/m³). There is some indication of a contribution to NO_x concentrations at LCA-ND with winds from the east at moderate wind speeds; this may be associated with boiler emissions from the University. There is no evidence of a significant contribution from Airport operations to measured NO_x concentrations at either monitoring site.

⁵ www.openair-project.org/about_us.php

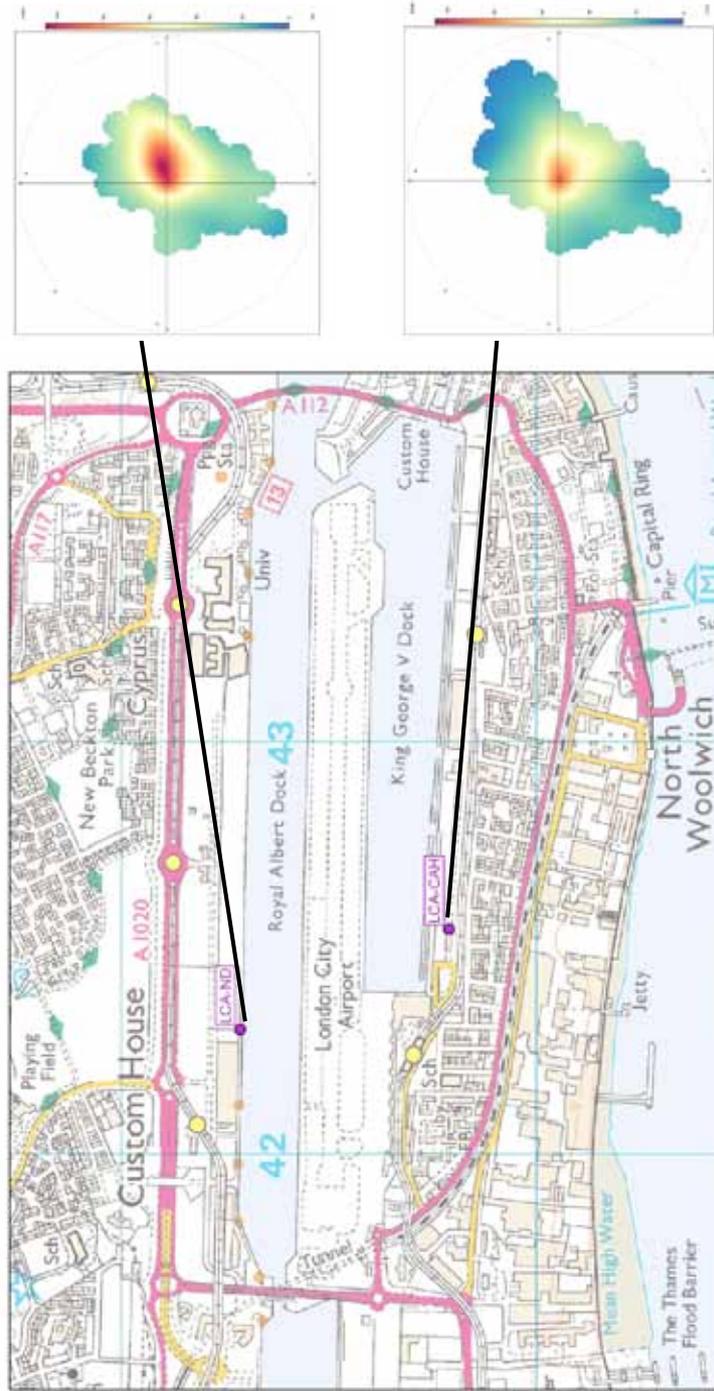


Figure 10: Bivariate Pollution Roses at LCA-CAH and LCA-ND Sites, 2011 (NO_x , $\mu\text{g}/\text{m}^3$) © Crown Copyright 2012. All rights reserved. Licence number 100020449.

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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
µg/m³	Microgrammes per cubic metre.
NO₂	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.
PM₁₀	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 east London in Table A1.2. The trends over the last five years are shown in Figure A1.1 and are downward at all sites over the period 2007 to 2011. There are no relevant air quality criteria for nitrogen oxides in an urban area. Nitrogen oxides concentrations are included here for completeness, and because they are relevant for air quality modelling.

Table A1.1: Nitrogen Oxides (NO_x) Data Summary for LCA-CAH and LCA-ND, 2011

Site	LCA-CAH	LCA-ND
Maximum 1-Hour Mean	636 µg/m ³	684 µg/m ³
Annual Mean	52 µg/m ³	54 µg/m ³
Data Capture	96.3%	68.6 %

Table A1.2: Nitrogen Oxides (NO_x) Data Summary for London Monitoring Sites, 2011

Site	Bexley	Bloomsbury	Eltham	Canning Town	Stratford
Maximum 1-Hour Mean (µg/m³)	650	555	369	740	621
Annual Mean (µg/m³)	34	81	34	55	79
Data Capture %	97.6	49.1	97.3	84.4	95.0

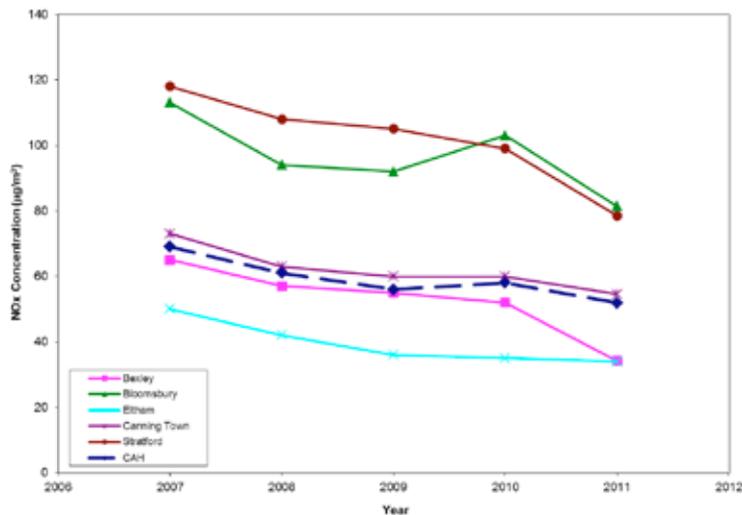


Figure A1.1: Annual Mean NO_x Concentrations, 2007- 2011

A2 Appendix 2 – Annualised LCA-ND Result

- A2.1 As data capture for LCA-ND was low (66%), the data do not represent a full calendar year. Therefore, in accordance with the guidance set out in Box 3.2 of LAQM.TG(09), the data have been adjusted to provide an annual mean equivalent, based on the ratio of concentrations during the short-term monitoring period (9 months; January to March, and June to December 2011) to those over the 2011 calendar year at three of background sites operated as part of the LAQN and at LCA-CAH, where long-term data are available.
- A2.2 The annual mean nitrogen dioxide concentrations and the period means for each of the four monitoring sites from which adjustment factors have been calculated are presented in Table 2.1, along with the Overall Factor.

Table A2.1: Data used to Adjust Short-term Monitoring Data at LCA-ND to 2011 Annual Mean

Period Mean Concentration ($\mu\text{g}/\text{m}^3$)	Bexley	Eltham	Wren Close, Canning Town	LCA-CAH	Overall Factor
2011	23.1	24.5	37.2	33.1	-
Jan to Apr, Jul to Dec 2011	24.5	26.6	39.2	34.0	-
Adjustment Factor	0.94	0.92	0.95	0.97	0.95

- A2.3 The annualised nitrogen dioxide annual mean for LCA-ND is $29.5 \mu\text{g}/\text{m}^3$.



A3 Appendix 2 – Diffusion Tube Data

A3.1 Raw monthly average diffusion tube data, along with the location details and monitoring periods, are presented in Table A3.1.

Table A3.1: Raw Monthly Diffusion Tube Data for 2011, Not Bias Adjusted ($\mu\text{g}/\text{m}^3$)

Site ID	Grid ref	08/01/11 to 08/02/11	08/02/11 to 04/03/11	04/03/11 to 01/04/11	01/04/11 to 06/05/11	06/05/11 to 03/06/11	03/06/11 to 01/07/11	01/07/11 to 05/08/11	05/08/11 to 02/09/11	02/09/11 to 10/10/11	10/10/11 to 04/11/11	04/11/11 to 01/12/11	01/12/11 to 06/01/12	Period Mean	Data Capture (%)
LCA 01	542142,180295	60.2	46.6	55.1	34.8	31.4	32.1	33.9	38.1	n/a	35.9	57.7	43.8	42.7	92%
LCA 02	541946,180296	64.1	43.2	59.0	17.7	n/a	n/a	40.4	38.0	44.2	44.4	54.4	46.3	45.2	83%
LCA 03	541587,180372	59.4	40.8	70.5	26.8	33.8	33.7	32.1	38.9	41.5	42.0	63.0	48.4	44.2	100%
LCA 04	542257,180710	82.3	52.0	61.2	25.6	57.3	27.2	41.9	55.2	50.8	61.0	72.2	81.3	55.7	100%
LCA 05	542838,180920	45.6	39.7	50.9	15.3	34.6	n/a	n/a	31.6	43.7	39.9	45.8	44.6	39.2	83%
LCA 06	543713,180869	65.5	49.5	66.2	20.4	36.0	35.1	37.8	40.8	42.1	49.2	58.9	43.8	45.4	100%
LCA 07	543640,180474	42.2	45.0	54.9	32.1	42.0	33.4	31.6	36.2	48.6	52.9	54.6	60.2	44.5	100%
LCA 08	543122,180136	46.7	39.9	47.7	35.8	32.2	28.6	27.8	30.2	36.9	43.7	48.4	48.5	38.9	100%
LCA 09	542527,180199	61.4	45.7	51.3	32.2	34.0	29.2	32.1	36.1	39.5	39.3	51.8	48.3	41.7	100%
		64.7	42.6	56.7	25.1	33.9	34.2	33.7	33.7	35.9	36.4	37.6	59.4	44.6	100%
LCA 10	541731,180419	57.4	46.0	52.8	24.1	33.6	33.3	32.6	37.3	43.6	41.9	61.5	46.9	42.6	100%
		75.4	58.9	65.8	46.4	46.2	46.8	46.2	38.1	46.2	49.7	54.0	62.7	51.4	53.5
LCA 11	543560,180687	60.3	44.9	55.5	24.8	44.4	39.6	n/a	42.1	50.5	48.9	66.0	66.5	49.4	92%
LCA 12	542181,180561	59.9	39.6	41.5	38.5	33.1	33.5	29.6	35.2	40.2	62.5	62.9	49.3	43.8	100%
LCA 13	542291,180770	72.1	49.5	47.7	42.7	37.4	36.3	34.7	38.7	37.9	40.4	57.1	54.1	45.7	100%
LCA 14	542075,180714	59.9	50.7	58.5	40.3	n/a	36.2	35.0	40.2	40.3	55.4	67.0	54.7	48.9	92%
LCA 15	542430,180857	63.0	43.8	51.9	20.7	34.2	30.5	n/a	36.2	38.7	41.5	59.4	46.2	42.4	92%
LCA 16	542452,180710	58.7	50.7	59.1	25.0	34.7	37.0	34.0	36.5	39.5	57.0	66.9	47.2	45.5	100%
LCA 17	542483,180784	65.4	52.7	n/a	32.1	42.9	36.9	35.7	43.9	52.9	51.6	62.7	69.6	49.7	92%
LCA 18	542298,180684	69.0	50.6	52.5	37.8	30.4	n/a	31.5	34.6	36.3	34.3	60.2	45.4	43.9	92%
LCA 19	542757,180688	62.5	49.7	56.4	28.9	36.0	31.6	31.3	60.6	55.5	n/a ⁸	69.5	80.1	51.1	92%

n/a – not available * Data removed, due to very high measured concentration, as tube likely to be contaminated.



A4 Appendix 3 – Bias Adjustment Factor for Diffusion Tubes

A4.1 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).

A4.2 In order to determine the bias exhibited by these tubes, studies are carried out using triplicate tubes co-located at LCA-CAH and a single tube 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 A4.1, with the optimum relationship defined using orthogonal regression.

Table A4.1: Results of Diffusion Tube and Continuous Monitor Co-location Studies in 2011 ^a

	Diffusion Tube	Automatic	Adjustment Factor
LCA-CAH	42.1	32.4	0.770
LCA-ND	46.0	30.9	0.671
Overall Factor ^b			0.738

^a Diffusion tubes were exposed for the period between 8th January 2011 and 6th January 2012. The automatic monitoring data correspond to this period.

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

A4.3 Table A4.2 presents the bias adjustment factors applied to the data for the last three years. The factors have remained fairly consistent over this period.

Table A4.2: Previous Bias Adjustment Factors

Year	Factor
2007	0.764
2008	0.786
2009	0.717
2010	0.801
2011	0.738

A5 Appendix 4 – Diffusion Tube Precision

- A5.1 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%.
- A5.2 Table A5.1 shows that for each of the twelve periods of monitoring 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, 2011b).

Table A5.1: Precision of Triplicate Diffusion Tubes

Period	Start Date	End Date	Tube 1	Tube 2	Tube 3	Mean	Standard Deviation	CV	Tube Precision
1	08/01/2011	08/02/2011	61.4	64.7	57.4	61	3.7	6	Good
2	08/02/2011	04/03/2011	45.7	42.6	46.0	45	1.9	4	Good
3	04/03/2011	01/04/2011	51.3	56.7	52.8	54	2.8	5	Good
4	01/04/2011	06/05/2011	32.2	25.1	24.1	27	4.5	16	Good
5	06/05/2011	03/06/2011	34.0	33.9	33.6	34	0.2	1	Good
6	03/06/2011	01/07/2011	29.2	34.2	33.3	32	2.7	8	Good
7	01/07/2011	05/08/2011	32.1	33.7	32.6	33	0.8	2	Good
8	05/08/2011	02/09/2011	36.1	35.9	37.3	36	0.8	2	Good
9	02/09/2011	10/10/2011	39.5	36.4	43.6	40	3.6	9	Good
10	10/10/2011	04/11/2011	39.3	37.6	41.9	40	2.1	5	Good
11	04/11/2011	01/12/2011	51.8	59.4	61.5	58	5.1	9	Good
12	01/12/2011	06/01/2012	48.3	44.6	46.9	47	1.9	4	Good
Average CV								6.1	Good

Appendix 13: University Prize Scheme 2011 Advertisement Publication

University Prize Scheme (UPS) Advertisements 2011 Intake		
	Publication	Date
Clipping not available	Docklands	01/06/2011
Clipping not available	East London Advertiser	02/06/2011
	Greenwich Mercury	08/06/2011
	Newham Recorder	01/06/2011

<p><i>The Wharf</i> <i>27th June 2011</i></p>  <p><i>Page 5</i></p>	<p>The Wharf</p>	<p>09/06/2011</p>
<p><i>East London Life</i> <i>6th June 2011</i> <i>Page A</i></p> 	<p>East London Life</p>	<p>06/06/2011</p>

Appendix 14: List of On-Site Employers

COMPANIES ON-SITE AT LONDON CITY AIRPORT	
COMPANY NAME	BUSINESS
AA LOVEGROVE	BUILDING CONTRACTOR
AELIA	RETAIL
AIR BP	AIRCRAFT FUELLING
ALITALIA	AIRLINE
ARIA LOGISTICS	PASSENGER HANDLING AGENT
ASIG BBA AVIATION	AIRCRAFT FUELLING
ATKINS	ENGINEERING & DESIGN CONSULTANT
AVIS RENT A CAR	CAR RENTAL
BLACKJACK PROMOTIONS	RETAIL
BP INSTALLATIONS	ELECTRICAL ENGINEER
BRITISH AIRWAYS CITYFLYER	AIRLINE
BRITISH AIRWAYS MAINLINE	AIRLINE
CAFFE NERO	FOOD & BEVERAGE
CARLISLE CLEANING	CLEANING
CITYJET	AIRLINE
MET POLICE	CONTROL AUTHORITY
UKBA	CONTROL AUTHORITY
DERICHEBOURG	CLEANING
ESP	IT SERVICES
EUROPCAR	CAR RENTAL
EXECAIR	CARGO AGENT
EXECUJET	AIRLINE
GASSAN DIAMONDS	RETAIL
GILSTENING JETS	CLEANING
HERTZ RENT A CAR	CAR RENTAL
LONDON CITY AIRPORT LTD	AIRPORT OPERATOR
LSG UK	FOOD & BEVERAGE
LUFTHANSA	AIRLINE
LUXAIR	AIRLINE
METEOR	TRANSPORT SERVICES
NATS	AIR NAVIGATION SERVICE PROVIDER
NETJETS	AIRLINE
NEWREST	FOOD & BEVERAGE
NORTH AIR	AIRCRAFT FUELLING
PJ AUGUST DECORATOR	DECORATOR
PRET A MANGER	FOOD & BEVERAGE
QUAY VENNARDS	TRANSPORT SERVICES
RELIANCE HIGH TECHNOLOGY	IT SERVICES
RELIANCE SECURE TASK MANAGEMENT	SECURITY
SCANDINAVIAN AIRLINES	AIRLINE
SCC TECHNOLOGY SOLUTIONS	IT SERVICES
SCOTAIRWAYS	AIRLINE
SECURITAS	SECURITY
SERCO HOME AFFAIRS	SECURITY
SHINE CORP	RETAIL
SSP UK	FOOD & BEVERAGE
SWISS	AIRLINE
TRAVELEX WORLDWIDE	RETAIL
UK POWER NETWORKS	ELECTRICAL ENGINEER
VLM AIRLINES	AIRLINE
WH SMITH	RETAIL

Appendix 15: Take Off Into Work 2011 Statistics



Take Off Into Work – London City Airport/Workplace

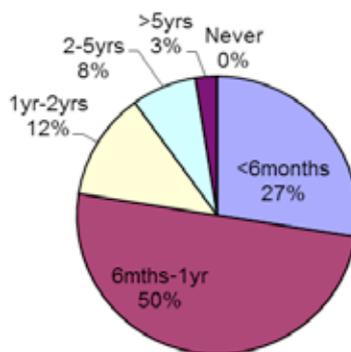
Statistics Jan -Dec 2011

Take off into Work (TOIW) supported 40 candidates into jobs during 2011, 16 of which with a company operating at London City Airport.

82% of candidates that participated in the programme during 2011 gained employment or returned to full-time education after their engagement with TOIW. Four training courses took place in 2011.

The tables below demonstrate that 23% of those employed through TOIW had been unemployed for over a year and 50% were unemployed between 6months -1 year prior to entering employment with the support of the TOIW programme.

Length of Unemployment of Candidates Placed Through Take Off Into Work



Company Engagement

Company	Number of Placements	Number of Jobs
LCA – Ramp	5	4
LCA – CSC	12	2
LCA – Security	0	0
Aelia	12	5
WH Smith	5	2
SSP	0	0
Caffe Nero	0	0
Pret	0	0
Travelex	0	1
Arial Logistics	3	1
Quay Cars	0	0
Avis	0	0
Hertz	2	0
Europcar	1	1
Total	40	16

Anupma Majhu, Project Manager, ELBA

Appendix 16: Airport Job Policy



LONDON CITY AIRPORT LIMITED RECRUITMENT POLICY

2011

London City Airport
City Aviation House
Royal Docks
London
E16 2PB
020 7646 0000

1. Applications

- 1.1. Recruitment for London City Airport (LCA) is handled by Reed Specialist (22 Harbour Exchange Square, London E14 9EG, Tel: 020 7517 3594). All enquiries should be directed to the LCA Account Manager, Amy Holland.
- 1.2. Jill Pearman, PA to the Chief Executive (Tel 020 7646 0011) oversees and co-ordinates the relationship between LCA and Reed.
- 1.3. Reed has been employed by LCA 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 by both Reed Specialist and via specific aviation or other recruitment agency. In this instance, advertising and procedure will remain the same as that for all other vacancies to ensure consistency.
- 1.5. 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 / Elizabeth Hegarty¹) from Newham Workplace.
- 1.6. London City Airport endeavours to employ people living in the vicinity of the airport to share its economic and social benefits. Specifically, the airport has agreed targets with the Local Authority to endeavour to employ:
 - 70% of its employees from the “local area”²
 - including 35% from the London Borough of Newham.
- 1.7. A standard application form is used to assist in filling all vacancies as a way of obtaining the same information from each candidate.
- 1.8. Speculative applications e.g. CVs are not acceptable.

¹ Elizabeth Hegarty – Community Relations Manager, London City Airport Limited

² The “local area” is defined by the London Borough of Newham as the 11 East London Boroughs of Newham, Tower Hamlets, Hackney, Waltham Forest, Redbridge, Barking & Dagenham, Havering, Bexley, Greenwich, Lewisham and Southwark.

- 1.9. Speculative applications are not to be kept on file by the airport and all enquiries should be directed to Reed.
- 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:
- Local Authority “one stop shops” including Newham Workplace, Skillsmatch and Greenwich Local Labour & Business
 - Window displays at the Docklands and Stratford branches of Reed
 - Reed website which is the second largest recruitment site in the UK
 - 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 also 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 from Reed 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 together with a fact sheet about London City Airport (from Reed).
- 4.4. All candidates who are not short-listed receive a standard rejection letter immediately after the short-listing process has been completed with details of employability skills programmes available locally (from Reed).
- 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 a letter (from Reed) informing them of the result of their assessment / interview 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 and are administered by Reed.
- 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.

Appendix 17: 2011 Staff Travel Survey



London City Airport Staff Travel Survey

London City Airport is committed to improving access to our site by all modes of transport. We are also required by law to work with Newham Council, to control our impact on the environment and the local transport network. In order to plan and improve services and facilities, it's very important that we find out about how staff travel to work at the Airport.

Please help us by answering this questionnaire. The questionnaire is anonymous and answers will not be linked to individuals. It should take about 15 minutes, and by completing the questionnaire you can also be entered into a prize draw for a chance to win one of **three sets of £100 Lakeside Shopping vouchers!**

When you have finished the questionnaire, please post it in one of the survey post boxes, which are located at City Aviation House Reception, the Terminal Information Desk and the Fire Station.

If you have a staff email address you can fill the questionnaire online if you prefer; you will have been sent a link to the survey by email, from Kellie Heath.

PLEASE DO NOT FILL IN THIS PAPER QUESTIONNAIRE IF YOU HAVE ALSO COMPLETED THE SURVEY ONLINE!

To answer the questions please tick the box next to the answers that apply or write your answer in the space provided. Unless the question asks you to tick several answers, please just tick one box per question.

SECTION A: YOUR JOURNEY TO WORK AT THE AIRPORT

Please think about a typical journey to work at the Airport and think about the whole journey, from when you first set out, until you reach the Airport. If you walk for only a few minutes e.g. to or between bus stops/tube stations etc., you do not need to count this. However, please do count walking whenever you walk for 15 minutes or longer.

A1a Which mode of transport do you use when you first set out for work at the Airport?
(Please tick one box in column 1 for your first mode of transport)

A1b What is the next mode of transport (if any)?
(Please tick one box in column 2 to indicate your second mode of transport)

A1c Do you use any other modes of transport during your journey to work at the Airport?
(If yes, please tick one box in column 3 for your third mode of transport and one box in column 4 if you have a fourth mode of transport)

	1st mode of transport	2nd mode of transport	3rd mode of transport	4th mode of transport
Car – drive alone	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Car – get a lift	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Car share with colleague	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
London Underground/Tube	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DLR (Docklands Light Railway)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
London Bus	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Motorbike/Moped	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bicycle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Minicab	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Black cab	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Walk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Overground train	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

A2 Now please tell us how long each part of your journey takes on a typical day. *(Please write the time you spend on each mode of transport)*

1 st mode of transport	2 nd mode of transport	3 rd mode of transport	4 th mode of transport
Hours	Hours	Hours	Hours
<input style="width: 40px; height: 25px;" type="text"/>			
Mins	Mins	Mins	Mins
<input style="width: 40px; height: 25px;" type="text"/>			

A3 Please add up the times you have written at A2 and write the total journey time here:
(Please check that this matches the total time it takes you to get to work on a typical day)

Hours	Mins
<input style="width: 40px; height: 25px;" type="text"/>	<input style="width: 40px; height: 25px;" type="text"/>

A4 If you have ticked 'other' for any of the columns for A1, please write in the mode(s) of transport you were thinking of:

Please write in:

A5 Please tell us the postcode of where you start your journey to work on a typical day?
(If you prefer, you only need to include the first part of the postcode. This information will be used to analyse the results from the survey; it will not be used to identify you personally)

e.g. AB01 2CD

A6 Now think about the mode of transport that you spend the most amount of time on at A2.
Why do you travel to work using this mode of transport? *(Please tick up to three options)*

- Drop off/collect someone else on the way (including children)
- Health reasons
- Work needs/commitments
- Environmental reasons
- No other option from where I start my journey
- Cheaper than other options
- Too early/late for public transport
- Due to the weather
- It's reliable
- Comfort
- Quicker than other options
- Less hassle than other options

Other (please write in)



SECTION B: TRAVELLING TO WORK BY CAR



Please only answer this section if you drive your own car to work at the Airport, or car share with a colleague. Otherwise please jump to section C (including if you get a lift in a car and get dropped off)

- B1 Do you, or your car share partner, have an airport car park permit?**
- Yes
- No

- B2 Where do you usually park?**
- Jet Centre
- Western Car Park
- Triangle (behind the DLR)
- Short stay (including eastside of City Aviation House)
- Main stay (staff area E & F)
- Blue shed/KGV House
- Other (please write in)

- B3 If you didn't go to work at the Airport by car, what other mode of transport would you be most likely to use?**
- DLR (Docklands Light Railway)
- London Bus
(Please write the bus number)
- Motorbike/Moped
- Bicycle
- Black cab
- Minicab
- Walk
- Aeroplane
- Other (please write in)
- None of these

IF NONE OF THESE AT B3 PLEASE GO TO QUESTION B5

- B4 What would most encourage you to use this alternative form of transport to get to work at the Airport? (Please tick only one)**
- If it was quicker
- If I had more time
- If it was cheaper
- If it was easier (i.e. nearer to my home or the airport)
- If I didn't have baggage/bulky items with me
- If I didn't have other people with me
- If I didn't need to stop off on the way/after work
- If the time were more convenient for me
- Health considerations
- Concern for the environment
- If peers/colleagues/friends put more pressure on me
- Lack of free airport car parking spaces
- None of these

PLEASE ANSWER B5 AND B6 IF YOU DRIVE TO WORK AT THE AIRPORT BUT DO NOT CAR SHARE. OTHERWISE PLEASE GO TO SECTION C

- B5 How strongly would you consider car sharing with a colleague?**
- Definitely consider
- Probably consider
- Would not consider

- B6 What might encourage you to car share? (Please tick all that apply)**
- Help in finding car share partners with similar work hours
- Free ride home or to work if let down by car share partner
- Preferential parking spaces for car sharers
- Other (please write in)
- Nothing would encourage me to car share



SECTION C: TRAVELLING TO WORK BY PUBLIC TRANSPORT, BY BICYCLE OR ON FOOT

Section C is to be completed by everyone.



C1 What improvements would most encourage you to use PUBLIC TRANSPORT for your journey to work at the Airport? (Please tick up to three)

(If you already use public transport please tick the improvements you would like to see)

- Less crowding
- More direct service
- More frequent service
- Earlier operating times
- Later operating times
- More reliable services
- Cleaner/smarter trains/buses and stations
- Increased security on trains/buses and at stations
- Cheaper or subsidised fares
- Annual season ticket loan from the airport
- Easier access to timetable information
- Up to date travel information at work about routes, times and fares
- Having my journey planned for me

Other (please write in)

- Nothing would encourage me to use public transport
- Nothing needs improving

C2 What improvements would most encourage you to WALK to work at the Airport? (Please tick up to three)

(If you already walk please tick the improvements you would like to see)

- Better quality and safer footpaths
- Improved street lighting
- Improved road crossing facilities
- Somebody to walk with
- Changing facilities, showers and lockers at work
- Provision of a personal alarm/other safety equipment
- If my health was better

Other (please write in)

- Nothing would encourage me to walk (even though I live close enough)
- Nothing would encourage me to walk (I live too far away)
- Nothing needs improving

C3 What improvements would most encourage you to CYCLE to work at the Airport? (Please tick up to three)

(If you already cycle please tick the improvements you would like to see)

- Improved cycle paths/lanes
- Improved and secure cycle parking at the airport
- Changing facilities, showers and lockers at work
- Interest free loan to purchase a bike and equipment such as helmets
- Discounts at local bike shops
- Information on cycle routes and location of facilities
- Bicycle repair service at the airport
- Somebody to cycle with
- Lessons/help with learning to cycle at the airport
- If my health was better
- Nothing would encourage me to cycle (even though I live close enough)
- Nothing would encourage me to cycle (I live too far away)
- Nothing needs improving

C4 Are you aware that cycle parking is available to staff at London City Airport?

- Yes
- No

C5 Are you aware of showers available to staff who walk or cycle to work, at...?

- City Aviation House
- Fire Station
- Jet Centre

Another place (please write in)

- No, not aware of any showers

C6 How strongly would you consider taking part in walking activities/club organised by the Airport?

- Definitely consider
- Probably consider
- Would not consider

C7 And how strongly would you consider taking part in cycling activities/club organised by the Airport?

- Definitely consider
- Probably consider
- Would not consider



SECTION D: ABOUT YOU



Finally please tell us a few details about yourself. This information will be used to help analyse the survey results; it will not be used to identify you personally.

D1 Are you...?

Male

Female

D2 Are you...?

Under 25

25-34

35-44

45-55

Over 55

D3 Where onsite do you usually access your place of work?

City Aviation House

Terminal Building

Vehicle Control Point (VCP)/Jet Centre

Blue shed/KGV House

Other (please write in)

D4 Do you have a health problem or disability that affects your choice of travel to work?

Yes – and have a blue badge

Yes – but don't have a blue badge

No

D5 Who do you work for at London City Airport?

London City Airport department

CAH (Corporate Staff)

Facilities Management

Fire Service

Airside Operations and Safety Unit

Ramp Services/Ramp Control

Terminal Services (Customer Services & Security)

Jet Centre

Another company at the Airport (please write in)

D6 And what is your role?

Staff (e.g. agent, operative, officer, cabin crew)

Supervisory (e.g. team leader, duty officer)

Management (e.g. manager, director, pilot)

D7 Do you normally work...?

Full time

Part time

D8 Do you normally work shifts (i.e. different times on different days), or fixed office hours?

Shifts

Fixed office hours

D9 Which days of the week do you work?

Weekdays during the day only

Evenings only (weekdays and/or weekends)

Weekends only (daytime and/or evenings)

A mix of different days and times

D10 What is your earliest start time?
Please write in, using the 24 hour clock, e.g. 17:30

:

D11 What is your latest finish time?
Please write in, using the 24 hour clock, e.g. 17:30

:

D12 If you have any other questions, comments or suggestions about travelling to work at London City Airport, please write these below.

Please write in:

Thank you for your help in completing the questionnaire. Please return it by posting it in one of the post boxes at City Aviation House Reception, the Terminal Information Desk and the Fire Station.

If you would like to be entered into the prize draw for a chance to win one of **three sets of £100 Lakeside Shopping Vouchers**, please write your name below.

This survey is being undertaken for London City Airport by BDRC Continental, an independent market research agency. The results from this survey will be used by London City Airport to help with planning transport and travel links to the site.

The answers you provide are confidential and will be combined with answers from other members of staff from all departments and external companies who operate at the airport. If you have any questions about this survey, please contact Rebecca Hunt at BDRC Continental on 020 7490 9148. If you have any concerns about the bona fides of the survey itself, you can contact the Market Research Society on 0500 369 999, who will verify our status as a legitimate market research organisation.

Glossary⁷

57 dB Contour	The 57 dB LAeq, 16h Average Mode summer day contour
66 dB Contour	The 66 dB LAeq, 16h Average Mode summer day contour
69 dB Contour	The 69 dB LAeq, 16 Average Mode summer day contour
Actual 57 dB Contour	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
Actual 66 dB Contour	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
Actual 69 dB Contour	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
Air Quality Action Plan	An action plan for the management and mitigation of any air quality impacts affecting the local community within the vicinity of the Airport due to the operation of the Airport (including surface access by transport to and from the Airport) including: (a) Volatile Organic Compounds concentrations odours (known locally as "Airport smell"); and (b) fallout (known locally as "black smuts, deposits and oily films/patches on ponds"); and (c) ambient concentrations of fine particulates (PM10) and nitrogen oxides (NOx)
Air Quality Measurement Programme	A programme to assess the potential air quality impacts of the Airport and to investigate anomalies in any resulting data and in comparison with any other measurements taken by LBN in the vicinity of the Site including: (a) the continued operation of the monitoring equipment for the purposes of a programme of monitoring of air quality in the vicinity of the Site in a manner which enables comparison of results with other monitoring stations run by the Council for PM10 and NO2 pollutants; (b) a network of passive diffusion tube samplers for NO2 at locations in and around the Site including locations at Camel Road/Hartmann Road and Camel Road/Parker Street; (c) a monitoring initiative to investigate the effects of individual aircraft types; (d) a three month study to measure Volatile Organic Compounds concentrations and odours in and around the Site
Aircraft Categorisation	The categorisation of aircraft using the Airport according to airborne noise emitted by such aircraft
Aircraft Categorisation Review	A review of Aircraft Categorisation to reassess the methodology, categories, noise reference levels, noise factors and procedures for categorisation with the objective of providing further incentives for aircraft using the Airport to emit less noise
Aircraft Movement	The take-off or landing of an aircraft at the Airport other than for training positioning and/or evaluation
London City Airport Consultative Committee (LCACC)	The facility for users of the Airport, local authorities and persons concerned with the locality of the Site for consultation with respect to matters that relate to the management or administration of the Airport and affect those parties' interests
Annual Performance Report (APR)	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 S106 Planning Agreement) report on the performance of and compliance with the terms of the S106 Planning Agreement in the preceding calendar year and shall include all the annual reporting requirements contained in the S106 Planning Agreement or as agreed with the Council from time to time
CO ₂	Carbon Dioxide
dB (Decibel)	A measure of sound pressure level
Deposits Study	Technical investigation into the incidence and origins of black smuts deposits and oily deposits in the vicinity of the Site
First Tier Works	The First-Tier Scheme will bring eligible dwellings within the 57 dB L _{Aeq,16h} noise contour up to an agreed specified level of sound insulation. Residential premises with existing single-glazing will be offered secondary glazing or a contribution towards the cost of installing double-glazed windows which meet the Airport's sound insulation standards. Residential premises in general will also be offered sound attenuating ventilators to provide background ventilation without the need to open windows.
Further Inspection of Treated Premises	All properties that have been treated under the Sound Insulation Scheme will be inspected on a ten yearly basis after initial installation of glazing elements, mechanical ventilation and/or modifications to external doors. Provided they have not been altered, rectification works will be carried out as necessary to ensure the sound insulation standard does not decline over time.
Ground Running	The ground running at any power setting of aircraft engines for testing or maintenance purposes
Ground Running Noise Limit	The noise level arising from Ground Running which shall not exceed the equivalent of 60dB LAeqT (where T shall be any period of 12 hours) free field as measured outside and at 1 metre from any existing residential premises in the vicinity of the Airport
Judicial Review	A procedure by which the High Court may review the reasonableness of decisions made by local authorities, the first Secretary of State or lower courts, for example a planning decision.
LBN	London Borough of Newham

⁷For guidance only – please see the Section 106 Planning Agreement for the precise legal meaning for some of these terms.

LCY	London City Airport
Local Area	The local labour catchment area for the Airport comprising the London Boroughs of Newham, Tower Hamlets, Hackney, Waltham Forest, Redbridge, Lewisham, Southwark, Barking and Dagenham, Greenwich, Bexley, Havering and the area of Epping Forest District Council
L_{Aeq}	The A-weighted equivalent continuous sound pressure level which is a notional continuous level that, at a given position and over the defined time period, contains the same sound energy as the actual fluctuating sound that occurred at the given position over the same time period.
London Public Transport	Docklands Light Railway, buses, and Transport for London licensed Black Taxis.
Neighbouring Authority Agreements	Two individual binding agreements to be entered into by the Airport Companies - one with the London Borough of Greenwich and the other with the London Borough of Tower Hamlets - which shall include a commitment by the Airport Companies to comply with the obligations in the S106 Planning Agreement
Noise Contour	Noise contours connect points that have the same average noise exposure. The contours are generated using computer models, based on the known characteristics of aircraft noise generation and attenuation, and calibrated from noise measurement monitors on the ground.
Noise Factor	A numerical factor applied to a noise source, dependent on the time, type or level of noise produced.
Noise Insulation Payments Scheme	A scheme which is intended to accelerate eligibility for the First Tier Works, the Public Buildings First Tier Works, Second Tier Works or the Public Buildings School Second Tier Works as the case may be by compensating landowners and developers for actual construction costs arising from the need for increased insulation against aircraft noise at residential premises and Public Buildings which as a consequence of the Development are situated on land within the Full Use Contours but outside the 1998 57dB Contour and which form part of a development that at the date of this Deed had been granted planning permission but had not been built and that at the time of application for payment under the Noise Insulation Payments Scheme remains capable of being built pursuant to such planning permission or any minor variation or modification to such planning permission resulting in substantially the same development in all material respects.
Noise Management Scheme	<p>The noise management scheme formulated by the Airport and approved by the Council under the 1998 S106 Planning Agreement in consultation with the LCACC and which is operated continuously by the Airport in order to minimise noise disturbance from aircraft using the Airport including:</p> <ul style="list-style-type: none"> (a) the combined monitoring of noise and track-keeping in order to identify any deviations from the standard routes that should be followed by aircraft using the Airport and to verify the noise contours; (b) a system of incentives and penalties which shall include financial penalties (but not in the case of track-keeping infringements) as well as operational penalties in order to: <ul style="list-style-type: none"> (i) minimise noise disturbance from aircraft using the Airport including any aircraft overhaul facility; (ii) ensure that track-keeping is maintained by aircraft using the Airport; (iii) control maximum noise levels of aircraft using the Airport; (c) a scheme to encourage airline operators to use quiet operating procedures when conducting aircraft operations and to observe air and ground noise abatement procedures; (d) the minimising of noise disturbance arising from the operation of any aircraft overhaul facility or from aircraft at the Approved Ground Running Location or generally from any aircraft ground noise source subject to the requirement to ensure the safe operation of aircraft at all times; (e) regular meetings and consultation with the LCACC and such other statutory body or bodies as may be reasonably nominated by the Council
Noise Monitoring System	The continuous permanent system for monitoring noise at the Airport
NOMMS	A noise monitoring and mitigation strategy which is intended to improve and replace both the Noise Management Scheme and the Noise Monitoring System to provide a more robust system of noise monitoring and mitigation including the measurement and monitoring of ground based sources of noise as well as airborne noise and/or other measures agreed between LCY and the Council from time to time
Planning Permission	Formal approval sought from a council, often granted with conditions, authorising a proposed development to proceed.
PNdB	Perceived Noise Level; its measurement involves the analyses of the frequency spectra of noise events as well as the maximum level.
Predicted 57 dB Contour	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
Predicted 66 dB Contour	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
Predicted Reduced 57 dB Contour	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
Predicted Reduced 66 dB Contour	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

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Public Buildings	The following types of public buildings in noise sensitive community use and any other types of public building as agreed between the Airport Companies and the Council: schools (including but not limited to Britannia Village School) colleges doctors' surgeries health centres hospitals nursing homes (including old people's homes) community centres (but not those used only as social clubs) meeting halls village halls churches and other places of religious worship libraries children's and other day centres crèches and nurseries and including any parts of buildings authorised and used for such purposes
Public Safety Zones	The public safety zones at either end of the runway at the Airport designated as such by the Department for Transport.
Purchase Scheme	A scheme pursuant to which the Airport Companies shall make a Purchase Offer for residential premises the external façade of which is situated within the Actual 69 dB Contour the terms of which shall (unless the prior written approval of the Council is obtained by the Airport Companies) be substantially in accordance with Part 14 of the Ninth Schedule
Section 106 (S106) Planning Agreement	A legal agreement under section 106 of the 1990 Town & Country Planning Act.
Sound Insulation Scheme	The Sound Insulation Scheme offers the communities living close to the Airport within the Scheme boundaries the opportunity to treat their homes and community buildings against noise. The scheme is split into two tiers depending on the level of aircraft noise. The scheme also includes an obligation to inspect previously treated premises and rectify any damage caused by reasonable wear and tear.
Second Tier Works	The Second-Tier Scheme will offer eligible properties within the 66 dB $L_{Aeq,16h}$ noise contour further treatment to bring the dwellings up to a higher standard of sound insulation. Most residential properties within the Second-Tier Scheme will have already been treated under the First-Tier scheme, and should already have secondary or double glazing as a minimum – the scheme will therefore offer secondary glazing to existing double glazed properties and/or contributions towards replacement high performance acoustic laminated glass, and sound attenuating ventilators.
Temporary Noise Monitoring Strategy	A temporary strategy to prevent the loss of noise monitoring data collection either through the failure of the Noise Monitoring System or due to external influences such as construction locally of new development or other noise-reflective surfaces and to ensure maintenance of the existing noise and track-keeping system until an alternative system is included in the NOMMS and approved by LBN
Travel Plan	A travel plan aims to promote sustainable travel choices (for example, cycling) as an alternative to single occupancy car journeys that may impact negatively on the environment, congestion and road safety.
Value Compensation Scheme	A scheme which is designed to compensate for loss of value in sites which are yet to be developed caused by any extension of the Public Safety Zones for the Airport, solely as a result of the Development.
Volatile Organic Compounds	A wide range of individual organic compounds of carbon which are of sufficient volatility to exist as vapour in ambient air.



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