



**Farnborough
Airport**

Town and Country Planning Act Section 106/299A

**Environment Report 1
January – June 2012**

TAG Farnborough Airport Ltd
Farnborough
Hampshire
GU14 6XA

1. INTRODUCTION

1.1 In compliance with the requirements of the agreement in place under Sections 106 and 299A of the Town and Country Planning Act 1990 between TAG Farnborough Airport (TFA) and Rushmoor Borough Council (RBC), TFA hereby submits a report for January to June 2012 detailing results of environmental monitoring as required by clauses 1.3, 2.8a, 2.8b and 3.4.

2. NOISE MONITORING

2.1 The two permanent noise monitoring terminals (NMTs) have remained in continuous operation for the reporting period with the exception of the Farnborough College located NMT at the beginning of January. The technical fault suffered with this NMT was rectified on the 17th January, after which normal operation was resumed; the period of inactivity can be seen on Figure 1.

The portable noise monitor has remained available on request to any member of the community that has a requirement for noise monitoring within their residential area. An initial request was received from Tweseldown Infants School, Church Crookham at the beginning of the year and a response to TFA's request for clarification of their noise monitoring requirements is awaited.

2.2 Figures 1 to 6 overleaf display dB(A) L_{eq16} data for correlated total noise levels (Total), aircraft events (Event) and background noise (Background), calculated as comparable A-weighted (dBA) values, by day of month and NMT for Jan to Jun 2012.

2.3 The peak in daily noise levels on the 4th and the 8th to the 11th of March, the 7th, 14th and 15th April and on the 18th to the 21st May, all relate to horse racing events that took place at Tweseldown Racecourse. The sharp peaks on the 23rd March 2012 for both NMTs correspond to the annual NMT calibration.

Figure 1: *Noise as dB(A) L_{eq16} Total, Event and Background, by Day of Month and Noise Monitoring Terminal, January 2012.*

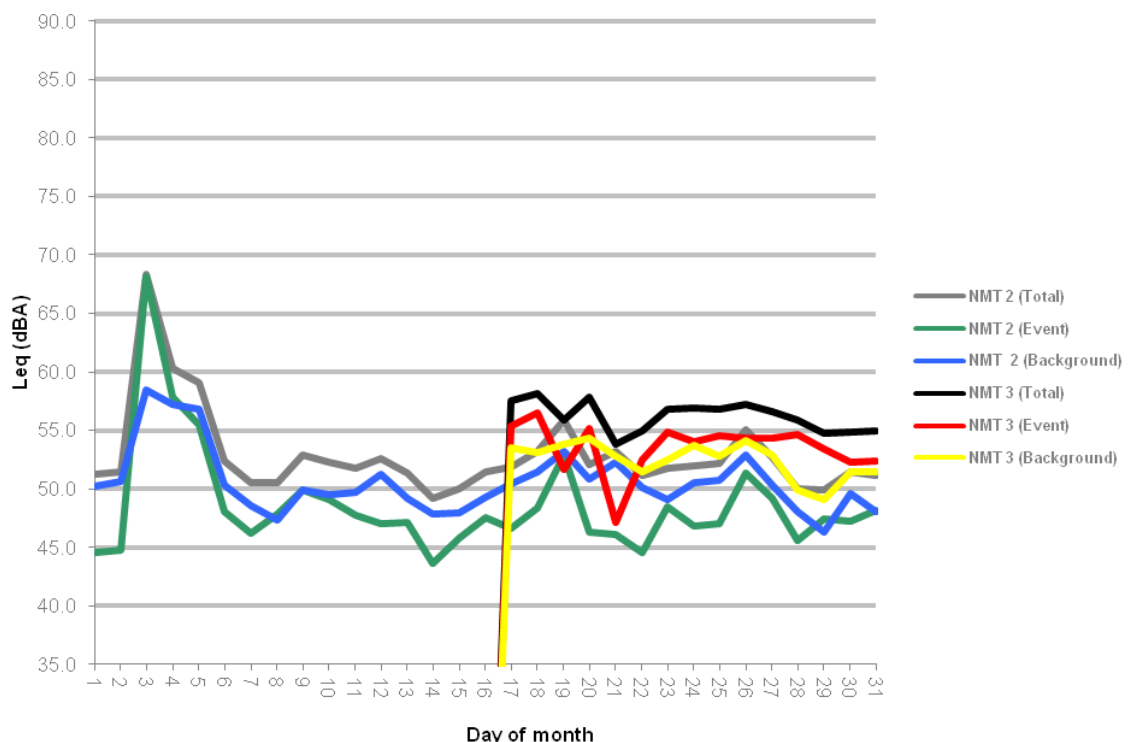


Figure 2: Noise as dB(A) L_{eq16} Total, Event and Background by day of month and Noise Monitoring Terminal, February 2012.

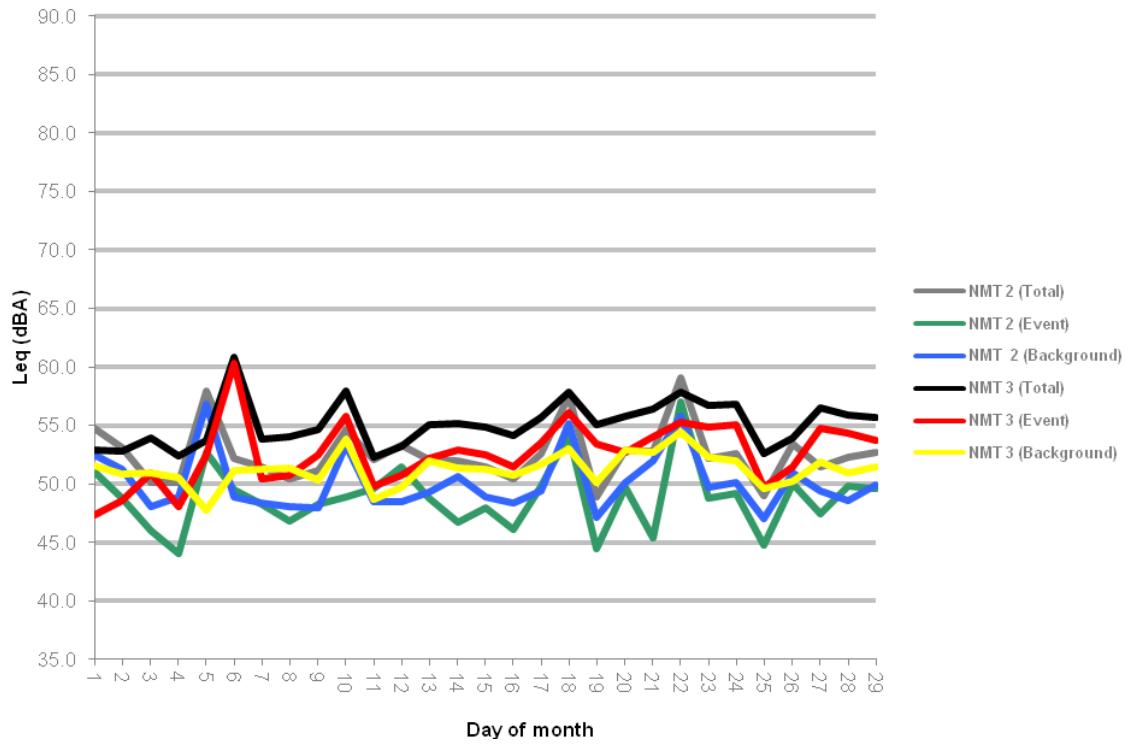


Figure 3: Noise as dB(A) L_{eq16} Total, Event and Background by day of month and Noise Monitoring Terminal, March 2012.

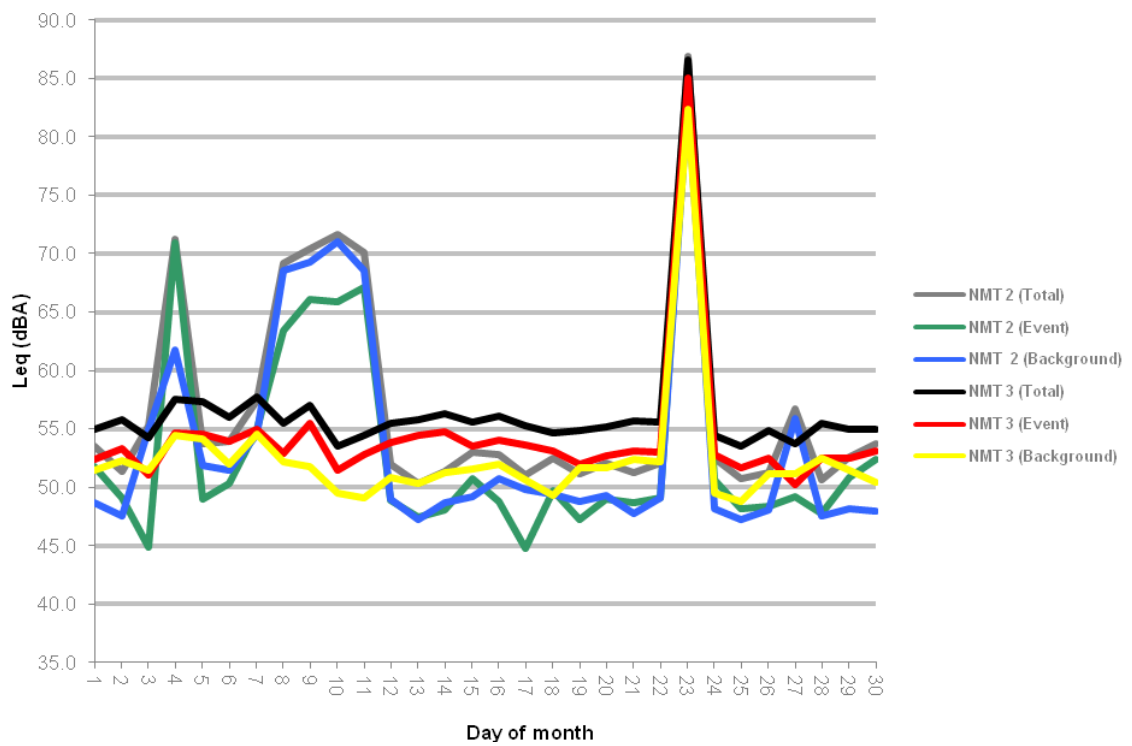


Figure 4: Noise as dB(A) L_{eq16} Total, Event and Background by day of month and Noise Monitoring Terminal, April 2012.

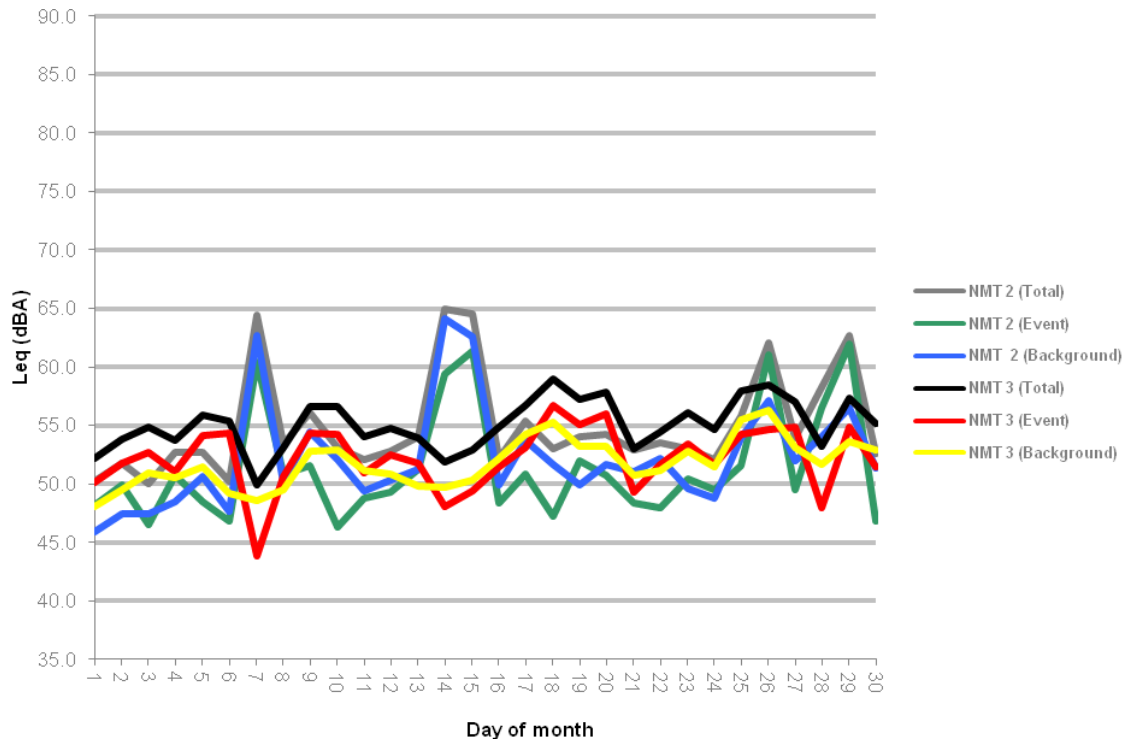


Figure 5: Noise as dB(A) L_{eq16} Total, Event and Background by day of month and Noise Monitoring Terminal, May 2012.

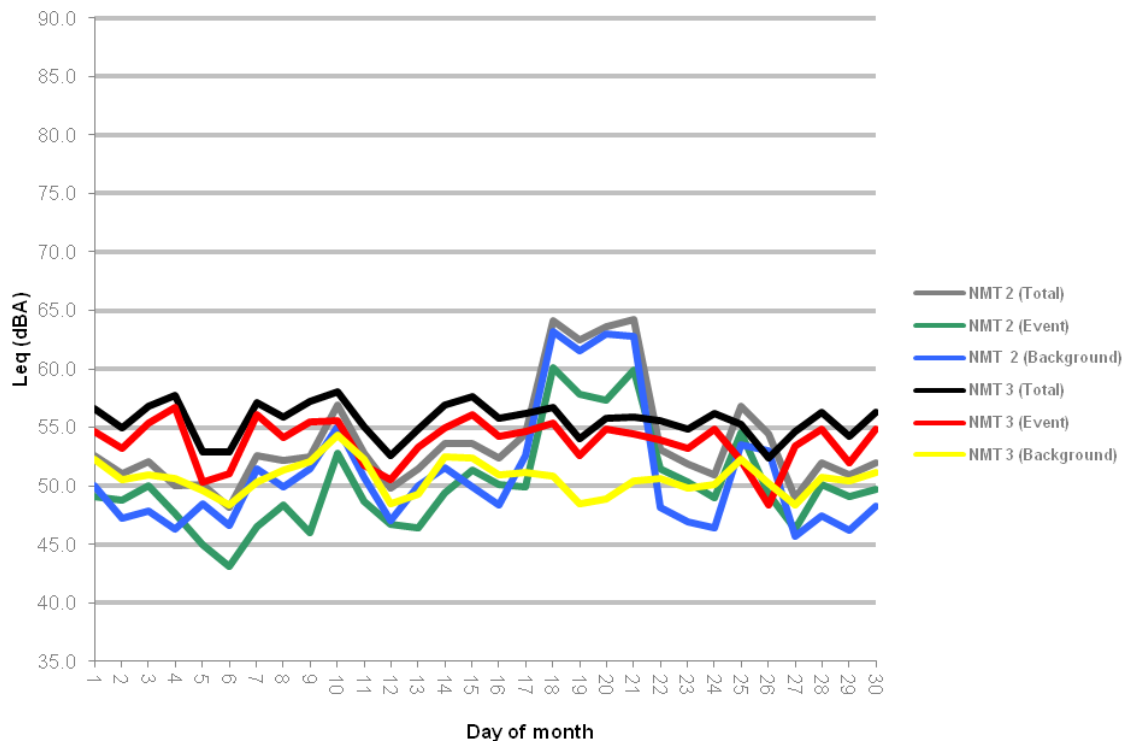
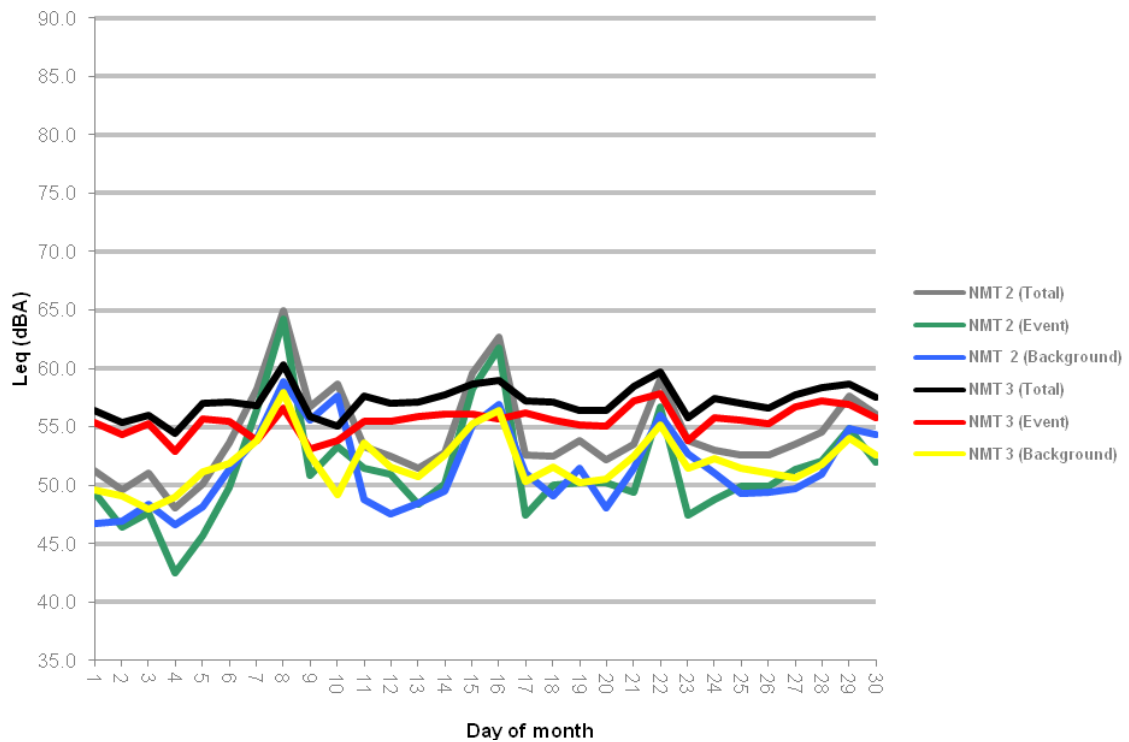


Figure 6: Noise as dB(A) L_{eq16} Total, Event and Background by day of month and Noise Monitoring Terminal, June 2012.



2.4 Noise contours produced using the FAA’s Integrated Noise Model (INM 7.0b) for operations covering 2011 together with predicted contours for 2012, were submitted to RBC in mid February 2012 in accordance with the requirements of the agreement between TFA and RBC. The results of the modelling exercise undertaken are given below in Table 1, along with those included with the planning agreement. The predicted noise contours for 2012 were generated using 2011 movement data (flight tracks) with the assumption that over the duration of 2012 there would be a total of 24,386 movements (including predicted helicopter movements).

2.5 Contours relating to actual movements for January to June 2012 and predicted contours for July to December 2012 will be supplied to RBC in mid August 2012.

Table 1: Results of INM Modelling exercise

dB $L_{Aeq,16h}$	Control Contours Predicted 20,000 (km ²) movements (1997 mix)	Amended Control Contour Areas (km ²) as per clause 12.1a of the S106 (29/10/2010)	Actual Contours Areas Jan-Dec 2011(km ²) (22,977 actual 2011 movements)	Predicted Contour Areas Jan-Dec 2012 (km ²) (24,386 predicted movements 2011 fleet mix)
55	9.07	6.58	1.75	1.83
60	4.03	2.42	0.81	0.83
65	1.70	n/a	0.40	0.41

- 2.6 Use of the dB(A) L_{eq16} contour is internationally recognised as a means of noise measurement. A 66 dB(A) L_{eq16} indicates that the average level of noise during a 16 hour day is 66 dB(A).
- 2.7 The 55 dB(A) L_{eq16} contour, used in agreement with Rushmoor, is below that deemed to be the trigger of "low annoyance" in the Wilson Committee Report (1963), a report traditionally used as a method of assessing the probability of annoyance due to aircraft noise.
- 2.8 The FAA's INM has been produced to comply with the requirements of ECAC -CEAC Document 29 as specified in the proposed European Noise Directive.
- 2.9 In accordance with the requirements of the Section 106 Agreement TFA has used INM 7.0b to produce the noise contours. This version of the software allows previously excluded helicopter movements to be integrated in to the modelling process together with consideration of surrounding terrain.
- 2.10 Daily dB(A) L_{eq16} Figures are given in Appendix A.

3. AIRCRAFT MOVEMENTS

- 3.1 Table 2 displays a summary of aircraft movements for January to June 2012 by movement category.

Table 2: Movements summary by type

Category	Jan	Feb	Mar	Apr	May	Jun	Report 1 Total
Business	1484	1709	1836	1515	2005	2300	10849
Helicopter	36	60	82	54	92	132	456
Subtotal (Planning Agreement Movements)	1520	1769	1918	1569	2097	2432	11305
Flying Club	42	22	20	24	79	50	237
Military	9	11	14	8	11	22	75
Other	73	86	101	86	106	100	552
SBAC	2	0	2	2	4	1	11
Total	1646	1888	2055	1689	2297	2605	12180

3.2 Figure 7 displays a summary of movements by category for weekdays. Figure 8 display a summary of movements by category for weekends.

Figure 7: Percentage of Weekday Movements by Type, January - June 2012

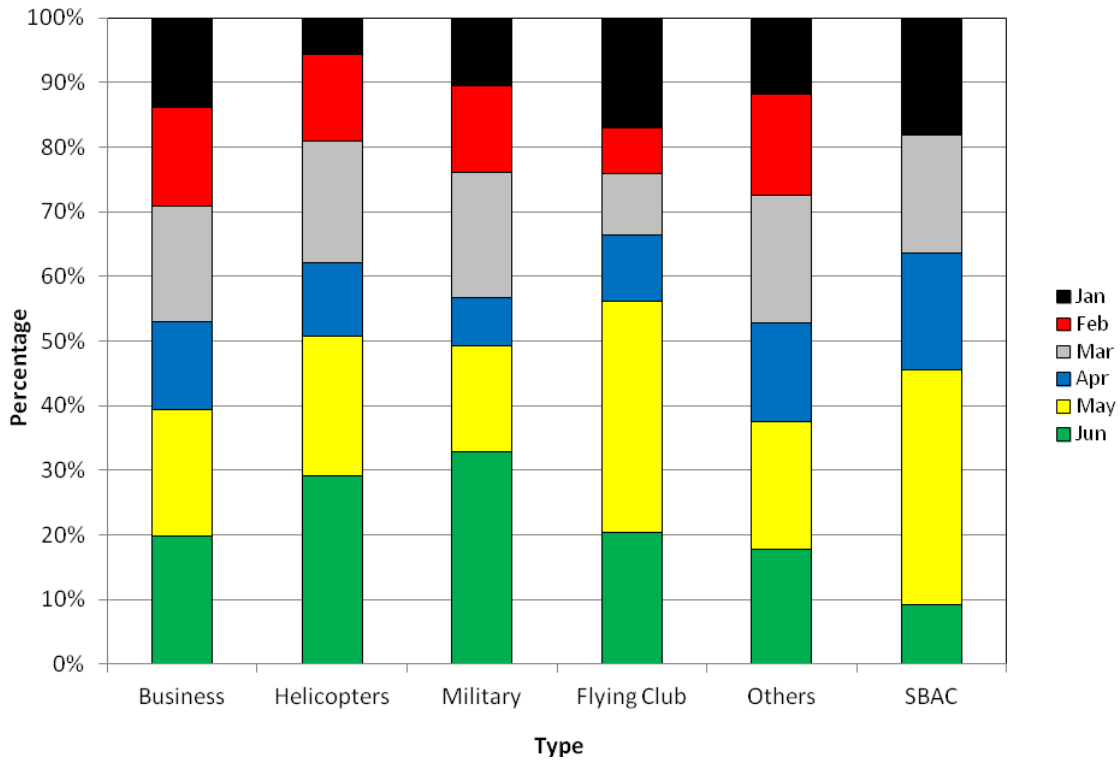
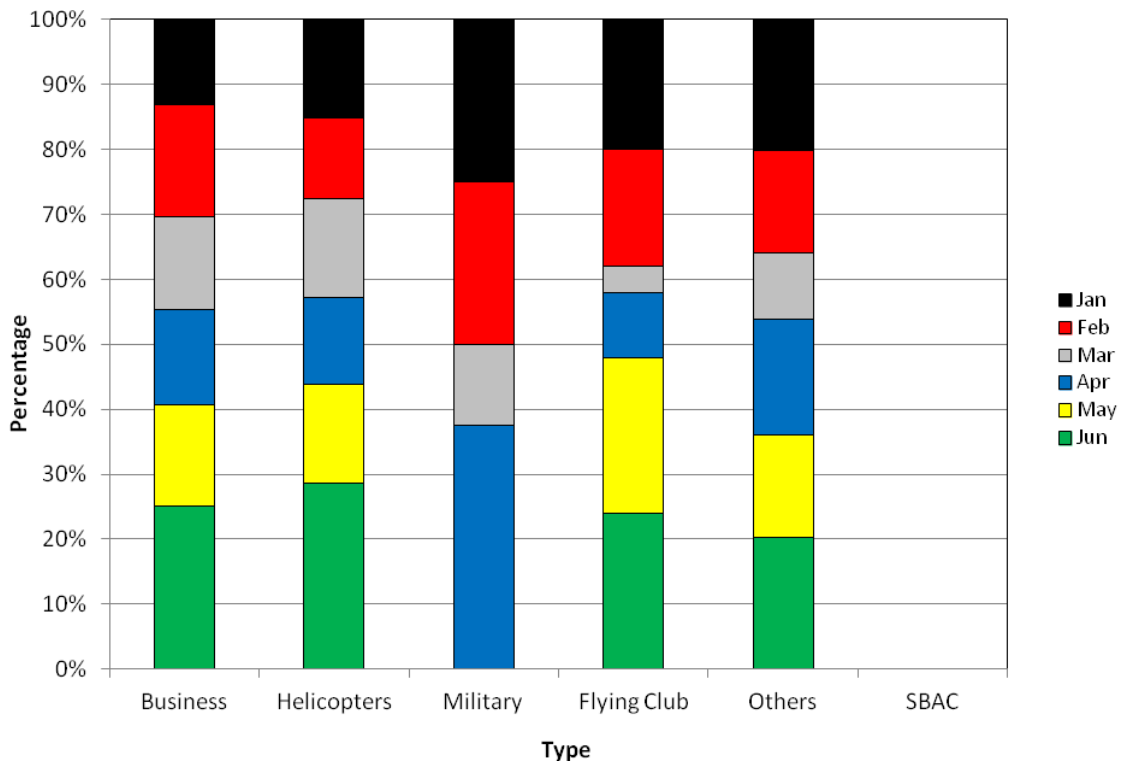


Figure 8: Percentage of Weekend and Bank Holiday Movements by Type, January - June 2012.



3.3 Figures 9 to 15 display information regarding runway use and operation. Operation refers to whether the movement was a departure or an arrival.

Figure 9: Monthly Movements by Runway Used and Operation January 2012
 Key: A-Arrival, D-Departure, Other- Non runway traffic (helicopters)

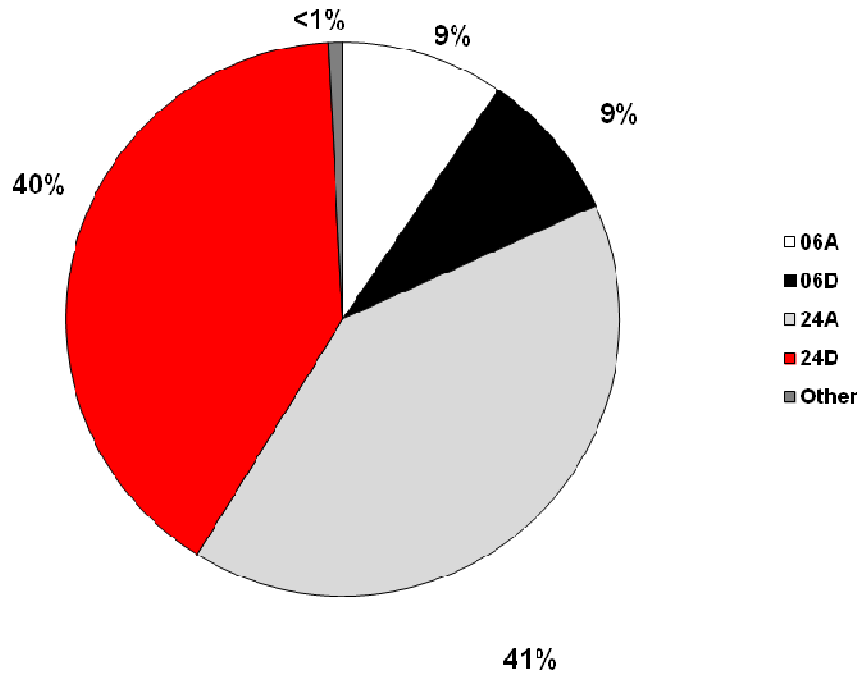


Figure 10: Monthly Movements by Runway Used and Operation February 2012
 Key: A-Arrival, D-Departure, Other- Non runway traffic (helicopters)

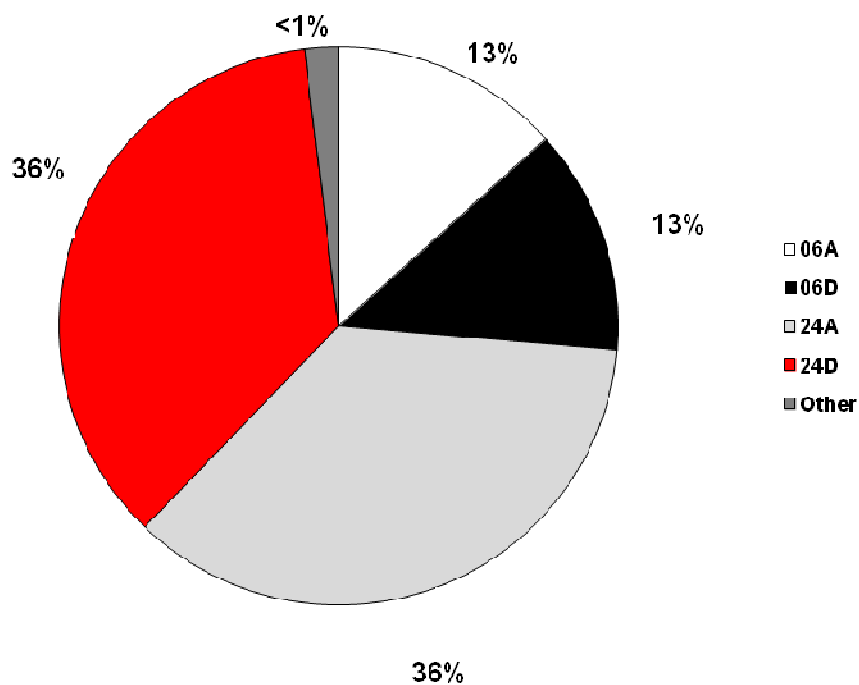


Figure 11: Monthly Movements by Runway Used and Operation March 2012
 Key: A-Arrival, D-Departure, Other- Non runway traffic (helicopters)

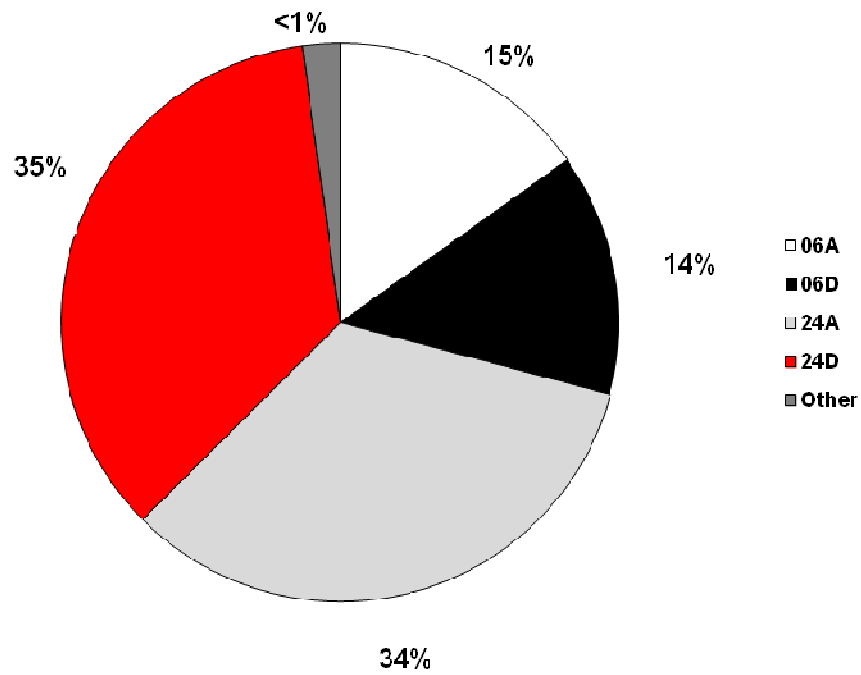


Figure 12: Monthly Movements by Runway Used and Operation April 2012
 Key: A-Arrival, D-Departure, Other- Non runway traffic (helicopters)

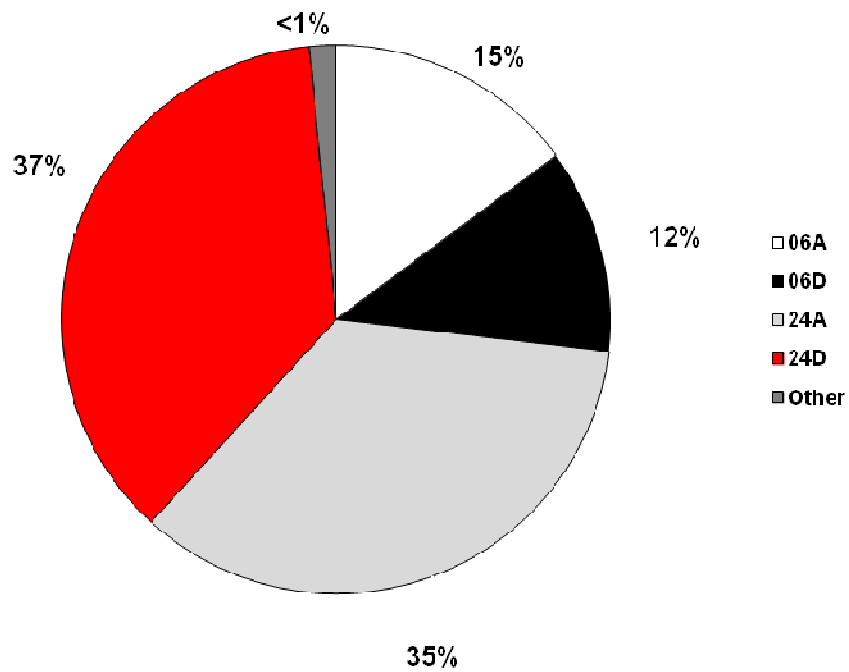


Figure 13: Monthly Movements by Runway Used and Operation May 2012
 Key: A-Arrival, D-Departure, Other- Non runway traffic (helicopters)

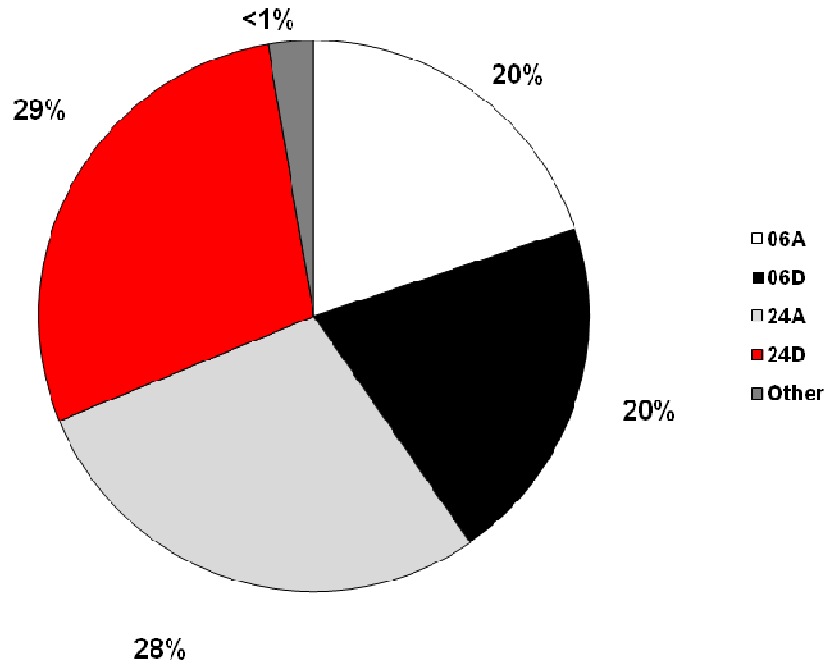


Figure 14: Monthly Movements by Runway Used and Operation June 2012
 Key: A-Arrival, D-Departure, Other- Non runway traffic (helicopters)

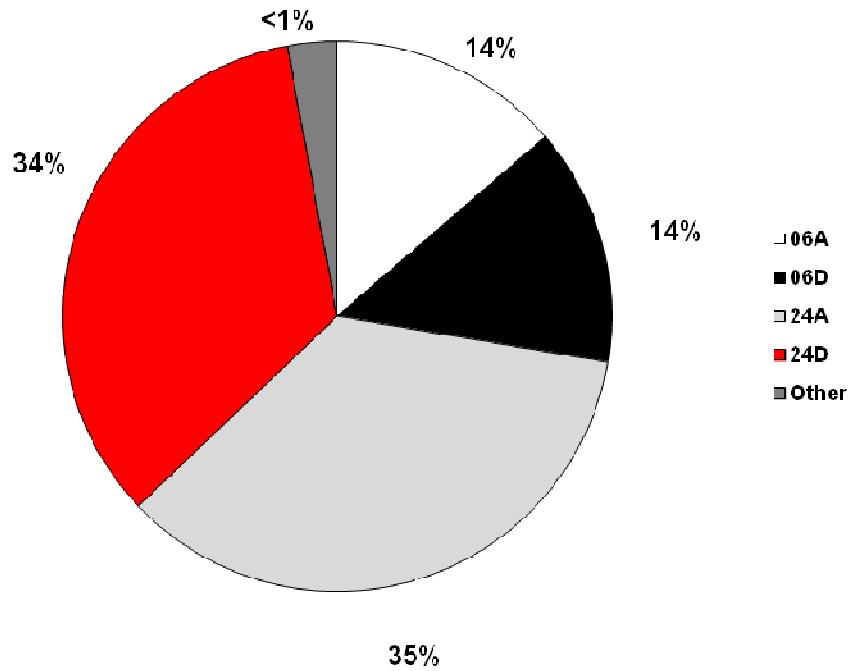
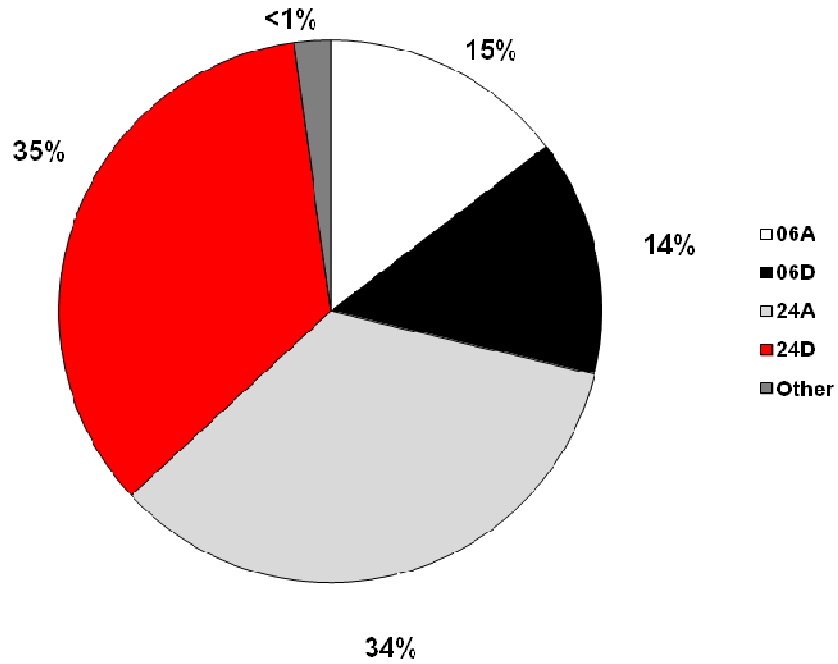
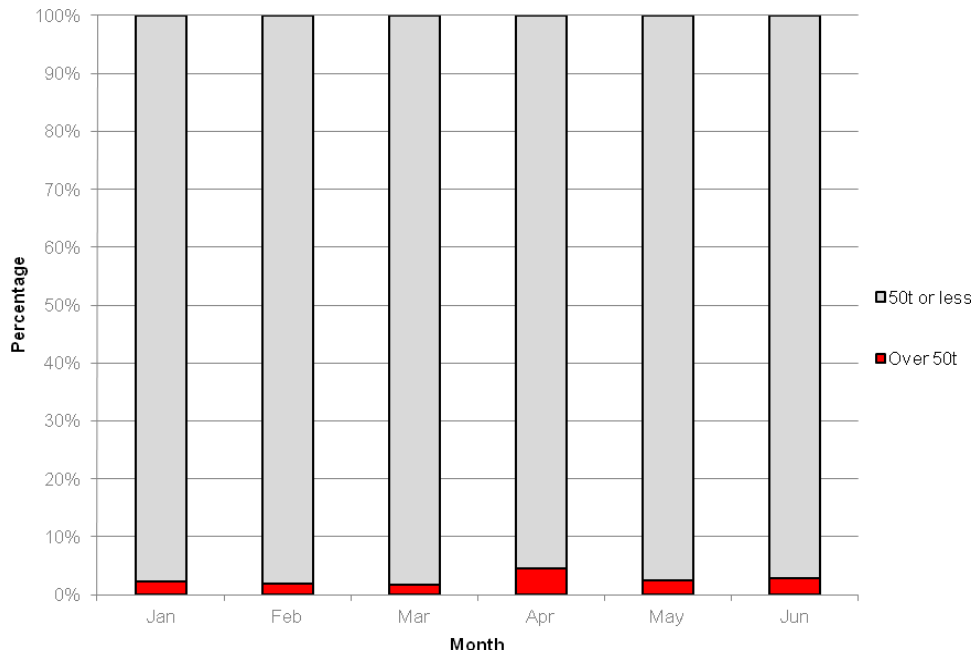


Figure 15: Overall runway usage split for January - June 2012
 Key: A-Arrival, D-Departure, Other- Non runway traffic (helicopters)



3.4 Maximum Take-Off Weight (MTOW) is recorded for all operating aircraft. Figure 16 displays a summary of the MTOW of aircraft operated during January to June 2012.

Figure 16: Percentage of movements by Maximum Take-Off Weight (MTOW), January - June 2012.



- 3.5 All civil aircraft using Farnborough between January and June 2012 were compliant with the International Civil Aviation Organisation (ICAO) Chapter 3 classification as a minimum with the significant majority compliant with Chapter 4. Chapter classifications are calculated from aircraft noise measurements made during take-off and landing. The results of monitoring exercises are expressed as a function of aircraft mass and number of engines. All measurements are required to be below the certified noise levels in order to comply with that certification standard. Aircraft not compliant with an ICAO standard may be fitted with “hushkits” (have their original engines adjusted or replaced to comply with the required standard).
- 3.6 ICAO Chapter 4 requires aircraft noise performance, as measured by manufacturers, to fall by 10dB (A) below that required by Chapter 3. Helicopters, light aircraft and military aircraft are not subject to the requirements of the ICAO noise certification scheme.

4. AIR QUALITY MONITORING

- 4.1 The locations of the thirteen nitrogen oxide diffusion tubes and the two Learian Streetbox monitors remain as previously reported, to see details of the locations of the monitors please refer to previous reports prior to the first quarter of 2005.
- 4.2 Table 3 displays the standards accepted by the Government and recommended by the expert panel on air quality standards.

Table 3: Objectives to be included in regulations for the purposes of local Air Quality Management

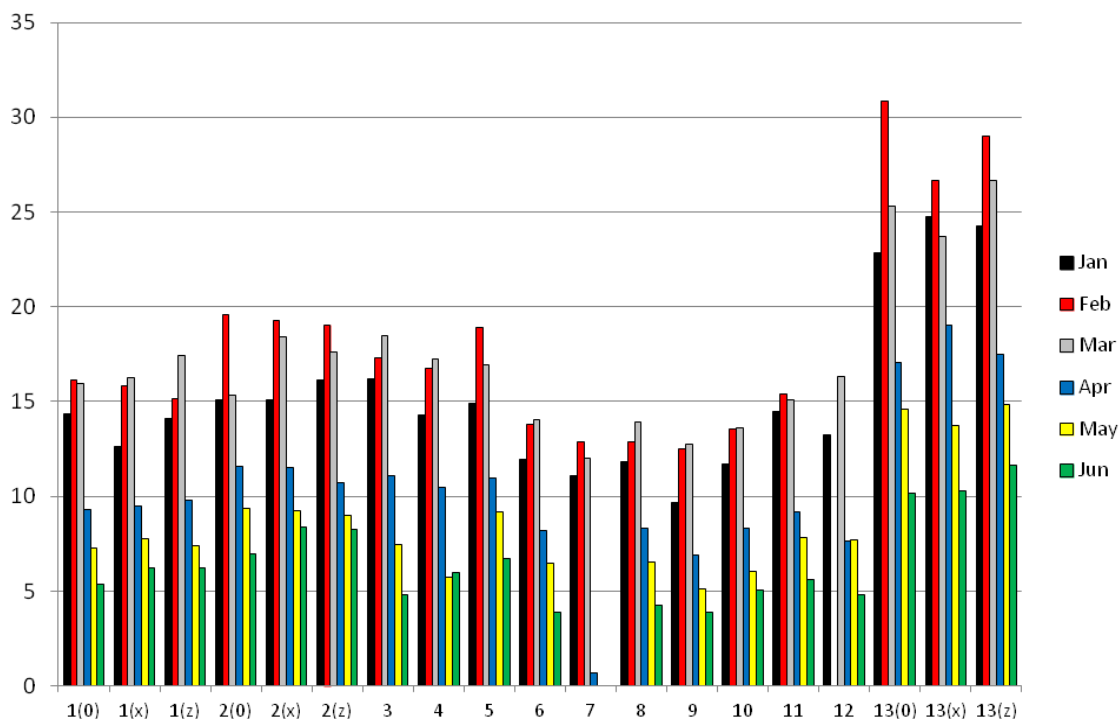
Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
NO ₂	200µg/m ³ (105ppb) not to be exceeded more than 18 times a year	1 hour mean	31 st Dec 2005
NO ₂	40µg/m ³ (21ppb)	annual mean	31 st Dec 2005

^a Conversions of ppb and ppm to µg/m³ and mg/m³ at 20°C and 1013mb.
 ppb = parts per billion µg/m³ = micrograms per cubic metre.
 Source: <http://aqma.defra.gov.uk/objectives.php>

- 4.3 The results of the air quality survey consist of both raw and manipulated data taken from the diffusion tube laboratory analysis. The raw data taken from the Learian Streetbox Monitors consists of hourly mean concentrations of NO₂. As this data is extensive when covering a six-month period, it has been displayed as monthly means for the purpose of this report.

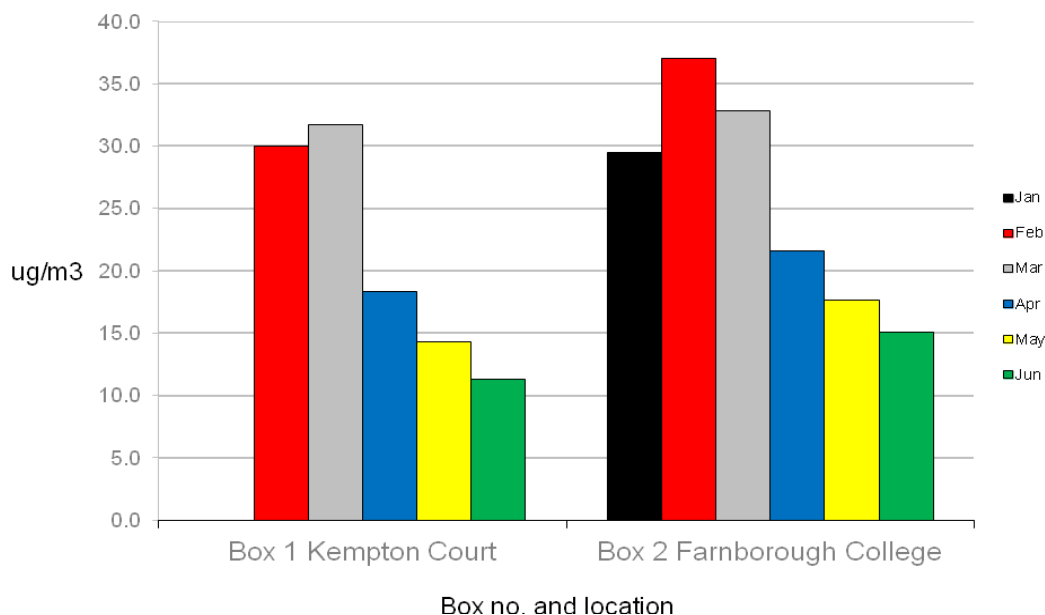
4.4 The passive and active NO₂ monitoring results are detailed in Figures 17 and 18.

Figure 17: NO₂ Diffusion Tube Results, January - June, 2012



N.B. ppb - parts per billion expressed as a monthly mean. This data has not had a bias adjustment applied

Figure 18: NO₂ concentrations as recorded by Learian Streetbox Monitors, January – June 2012



N.B. ug/m3 expressed as a monthly mean

- 4.5 Results are absent from Learian Box 1 during January 2012 due to a technical fault which prevented successful download of data from the box. This issue was addressed during the routine six-monthly maintenance that took place in January.
- 4.6 The results taken from the diffusion tubes indicate that NO₂ levels around the airfield during January to June 2012 have achieved the objectives to be included in the regulations for the purpose of Air Quality Management.
- 4.7 Continuing trends in the results obtained indicate terrestrial sources of NO₂ as the predominate source. The elevated levels consistently recorded for location 13 adjacent to the M3 motorway illustrate this.

5. CONCLUSION

- 5.1 Routine monitoring of compliance with noise abatement routes, air quality targets, and aircraft movements continues at the Airport. To date, all environmental monitoring undertaken has been implemented in accordance with the regulatory requirements and those of the Town and Country Planning Act Section 106 Agreement.
- 5.2 All movements operated at the airport are restricted to those permitted by the terms of the planning consent and the accompanying agreement.
- 5.3 Nitrogen dioxide levels recorded by monitoring stations remain consistent with previously noted trends. Nitrogen dioxide levels are naturally elevated over the colder winter months compared with results obtained during the summer; this is as a result of the release of nitrates from the soils and decomposition processes.
- 5.4 The activities at the airport remain within the specifications of the Section 106/299A agreement.

Miles H Thomas and Helena May
Environment Manager / Environment Assistant
TAG Farnborough Airport
www.tagfarnborough.com
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Appendix A

Noise Data Report 1

dB(A) Leq16 (Event) by Day of Month and NMT



	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Jan-12	NMT 2	44.5	44.7	68.1	57.8	55.5	48.1	46.2	47.8	49.9	49.1	47.7	47.0	47.1	43.6	45.8	47.5	46.6	48.4	52.9	46.3	46.1	44.5	48.5	46.8	47.0	51.3	49.2	45.6	47.4	47.2	48.2
	NMT 3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	55.4	56.5	51.7	55.2	47.1	52.5	54.8	54.0	54.5	54.3	54.3	54.6	53.4	52.3	52.4	

	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	
Feb-12	NMT 2	51.0	48.8	46.0	44.0	52.7	49.5	48.3	46.8	48.3	48.9	49.6	51.5	48.8	46.7	47.9	46.1	49.8	54.2	44.4	49.7	45.4	57.0	48.8	49.2	44.7	50.0	47.4	49.8	49.6
	NMT 3	47.3	48.6	50.9	48.0	52.5	60.3	50.4	50.7	52.5	55.8	49.8	50.7	52.2	52.9	52.5	51.5	53.5	56.1	53.4	52.7	54.0	55.3	54.8	55.1	49.7	51.5	54.7	54.3	53.7

	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Mar-12	NMT 2	51.8	49.1	44.9	70.9	49.0	50.3	55.0	63.4	66.1	65.9	67.1	48.9	47.4	48.0	50.7	48.8	44.7	49.7	47.2	49.0	48.7	49.1	84.7	50.6	48.2	48.4	49.2	47.7	50.8	52.4	48.4
	NMT 3	52.4	53.3	51.0	54.6	54.5	53.9	55.0	52.9	55.5	51.4	52.8	53.8	54.4	54.7	53.5	54.0	53.6	53.1	52.0	52.7	53.1	53.0	85.0	52.8	51.7	52.5	50.2	52.5	52.5	53.1	53.4

	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
Apr-12	NMT 2	48.2	49.9	46.5	50.7	48.5	46.8	60.4	50.8	51.6	46.3	48.8	49.3	51.2	59.4	61.3	48.4	50.8	47.2	52.0	50.7	48.4	47.9	50.4	49.5	51.6	61.0	49.5	56.5	62.0	46.8
	NMT 3	50.1	51.8	52.7	51.0	54.1	54.3	43.8	50.6	54.3	54.2	50.9	52.5	51.8	48.0	49.4	51.4	53.1	56.7	55.1	56.0	49.3	51.7	53.4	51.7	54.2	54.6	54.8	47.9	54.9	51.5

	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
May-12	NMT 2	49.1	48.8	50.0	47.6	45.0	43.1	46.5	48.4	46.0	52.8	48.7	46.7	46.4	49.4	51.3	50.1	49.9	60.1	57.8	57.3	59.9	51.5	50.3	49.0	54.5	49.3	46.3	50.1	49.1	49.7	48.3
	NMT 3	54.6	53.2	55.4	56.7	50.3	51.0	56.1	54.1	55.5	55.6	51.8	50.5	53.3	55.0	56.1	54.2	54.6	55.4	52.6	54.8	54.4	53.9	53.2	54.9	52.2	48.4	53.4	54.9	52	54.8	54.7

	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
Jun-12	NMT 2	49.4	46.4	47.6	42.5	45.7	49.8	56.5	64.2	50.8	53.3	51.5	50.9	48.4	50.1	58.2	61.8	47.4	50.0	50.2	50.2	49.4	56.7	47.4	48.8	49.9	49.9	51.3	52.1	54.8	52.0
	NMT 3	55.4	54.3	55.3	52.9	55.7	55.5	53.8	56.6	53.1	53.8	55.5	55.5	55.9	56.1	56.1	55.7	56.2	55.6	55.2	55.1	57.2	57.8	53.8	55.8	55.6	55.3	56.7	57.2	56.9	55.8

