

*Farnborough Airport*

*Environment Report April – June 2007*



Farnborough Airport  
Environment Report  
April – June 2007

TAG Farnborough Airport Ltd  
Farnborough  
Hampshire  
GU14 6XA

## **1. INTRODUCTION**

1.1 In continued 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 and Rushmoor Borough Council, TAG hereby submits a report for the second quarter of 2007, (April to June 2007) detailing results of environmental monitoring as required by that agreement. In line with the paragraph 2 (t), the content of this report was revised in consultation with Rushmoor Borough Council prior to the publication of the first quarter's report in 2007.

## **2. NOISE MONITORING**

2.1 The two permanent noise monitoring terminals situated at Farnborough College and Tweseldown Racecourse remain in operation. The portable noise monitor has been situated in a number of locations along the airport boundary, in order to monitor noise levels from airport ground movements.

2.3 Figures 1, 2 and 3 below show  $L_{eq}$  data for correlated aircraft Events, (Event), Total  $L_{eq}$  levels (Total) and Background (Background) noise, calculated as comparable  $L_{eq(A)}$  values, by day of month and NMT for April, May and June respectively.

Farnborough Airport

Environment Report April – June 2007

Figure 1: Noise as  $L_{eq}$  Total, Event and Background, by Day of Month and NMT for April 2007.

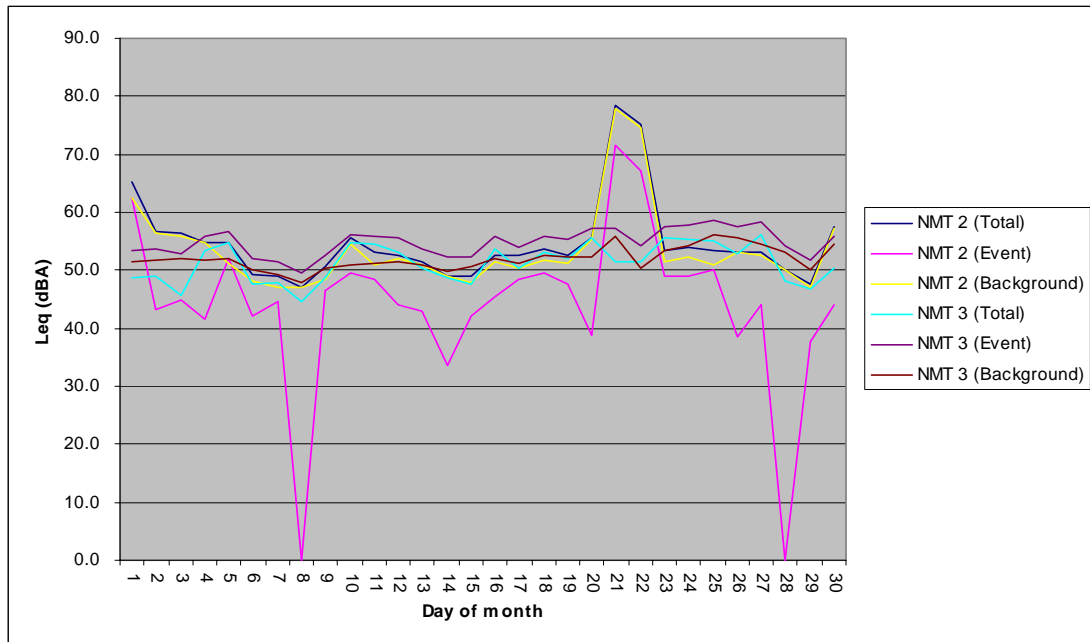
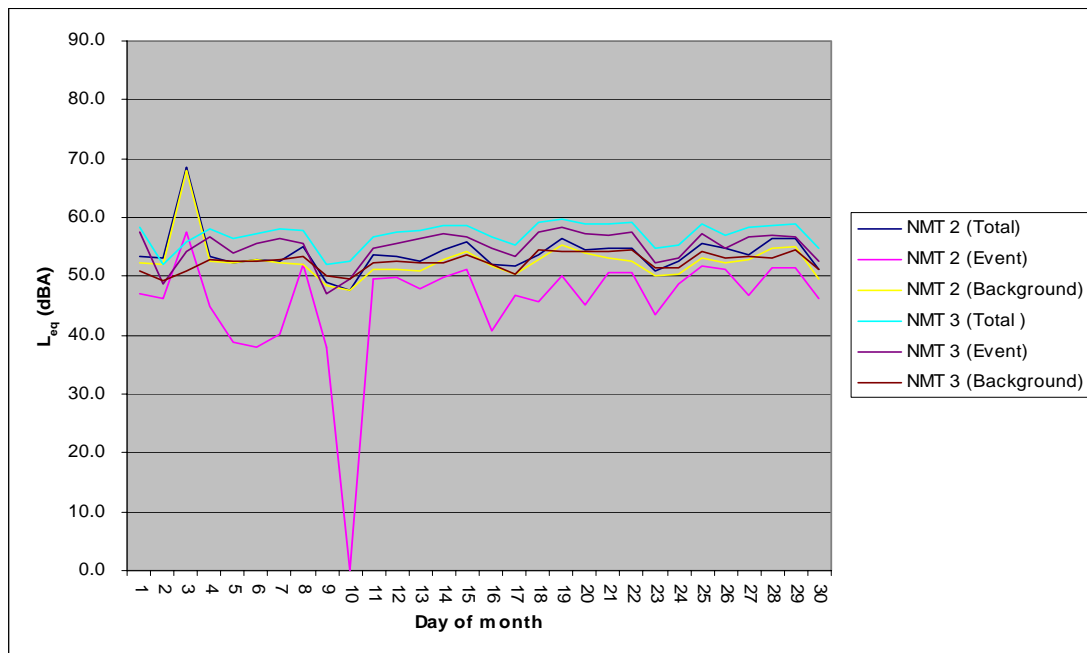


Figure 2: Noise as  $L_{eq}$  Total, Event and Background by day of month and NMT for May 2007.



Figure 3: Noise as  $L_{eq}$  Total, Event and Background by day of month and NMT for June 2007.



2.4 Noise contours produced using the FAA’s Integrated Noise Model (INM) for operations covering the entire duration of 2006 were submitted to Rushmoor in mid February in accordance with the requirements of the agreement between TAG and Rushmoor. The results of the modelling exercise undertaken are given below in Table 1, along with those included with the planning agreement. A contour covering the period January 2007 to June 2007 is currently under preparation and will be supplied to Rushmoor Borough Council in mid August.

Table 1: Results of INM Modelling exercise

LEq dB (A)	Control Contours Predicted 20,000 movements (1997 mix)	Actual January to December Contours 2006	Predicted January to December Contours 2007
55	9.07	4.87	5.04
60	4.03	1.98	2.05
65	1.70	1.02	1.04

- 2.5 Use of the  $L_{eq}$  contour is internationally recognized as a means of noise measurement. A 66 decibel  $L_{eq}$  indicates that the average level of noise during a 16 hour day is 66 decibels. 66 decibels is quieter than the noise of a car traveling at 38mph, heard from about 21 feet away, or from a washing machine and is slightly noisier than a busy general office.
- 2.6 The 55 dBA 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. According to research by Schultz on reaction to noise 55dB(A) calculated as a DNL (Day Night Level) is likely to cause less than 5% of the community becoming highly annoyed.
- 2.7 The FAA's INM along with ANCONII have been produced to comply with the requirements of ECAC/CEAC Document 29 as specified in the proposed European Noise Directive. This Directive is still to be transposed fully into UK legislation. It is anticipated that INM will be selected as the European Standard tool for assessing noise impact from aircraft. In its latest assessment TAG has used version INM 6.2 to examine aircraft derived noise data. TAG has now ordered the latest version of INM (INM 7.0), which was

released at the end of April 2007; this will in due course replace the current INM software package. This allows modelling to be carried out using actual flight tracks, (recorded by the airport’s Noise and Track Monitoring System, (NTMS), ensuring continuity and allowing for direct comparison with the requirements of the 106 agreement and other controls.

2.8 Daily  $L_{eq}$  Figures are given in Appendix 1.

### 3. AIRCRAFT MOVEMENTS

3.1 Table 2 shows all aircraft movements over the three-month period by movement category. Figure 4 gives a summary of movements by category, for weekdays and Figure 5 for weekends.

Table 2: Movements summary by type.

Category	April	May	June	Quarter 2, 2007	Total 2007
<b>Business</b>	1801	2291	2683	6775	12062
<b>Helicopter</b>	141	179	187	507	824
<b>Subtotal (Planning Agreement Movements)</b>	1942	2470	2870	7282	12886
<b>Flying club</b>	81	38	46	165	281
<b>Military</b>	5	12	22	39	52
<b>Diversion</b>	3	9	16	28	88
<b>Other</b>	165	200	255	620	1056
<b>SBAC</b>	0	0	0	0	0
<b>Total</b>	2196	2729	3209	8134	14363

Figure 4: Weekday Movements\* by Type for Quarter 2, April – June 2007

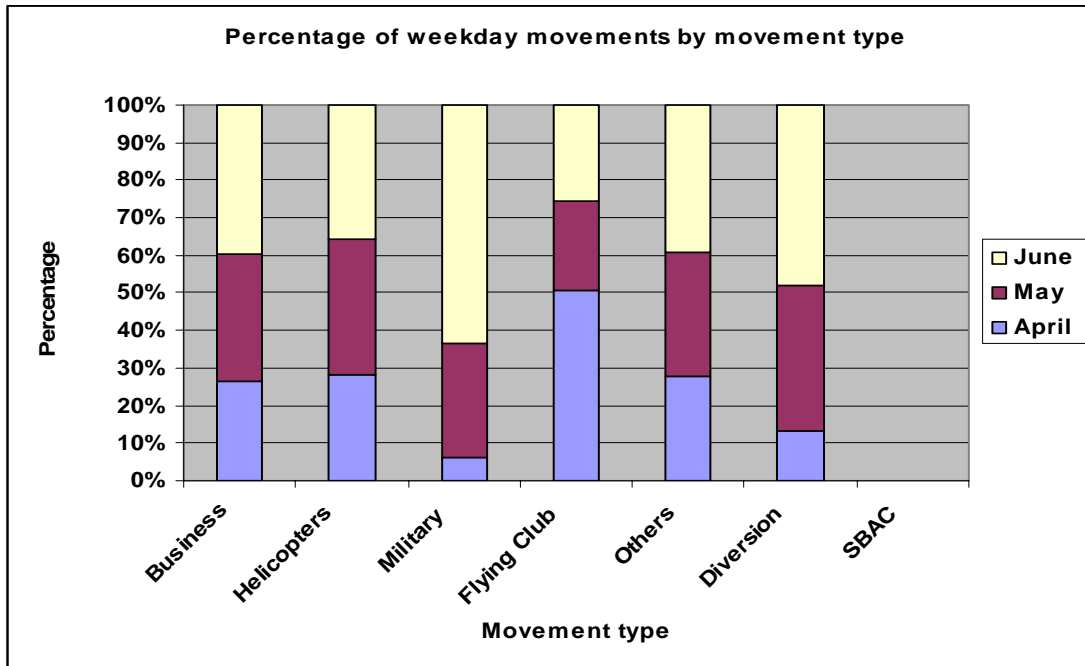
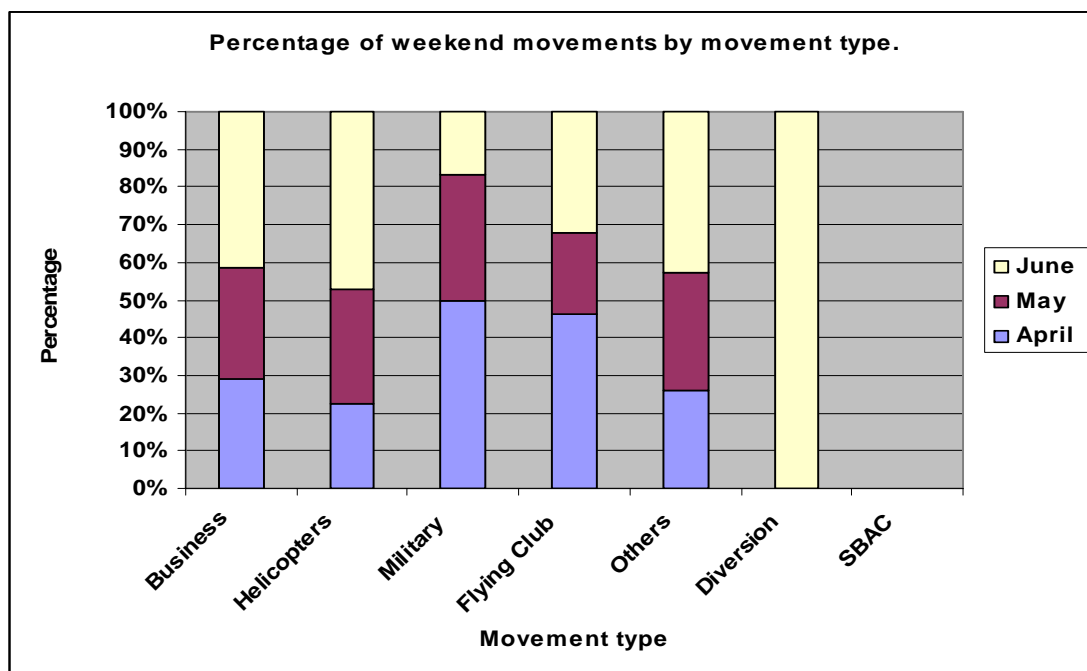


Figure 5: Weekend Movements\* by Type for Quarter 2, April - June 2007  
\*Includes Bank Holidays



Farnborough Airport

Environment Report April – June 2007

3.2 Figures 6 – 9 give information on runway use, including operation.  
 Operation refers to whether the movement was a Departure or Arrival.

Figure 6: Monthly Movements by Runway Used and Operation April 2007  
 Key: A – Arrival, D – Departure

Movement by runway used and operation for April 2007

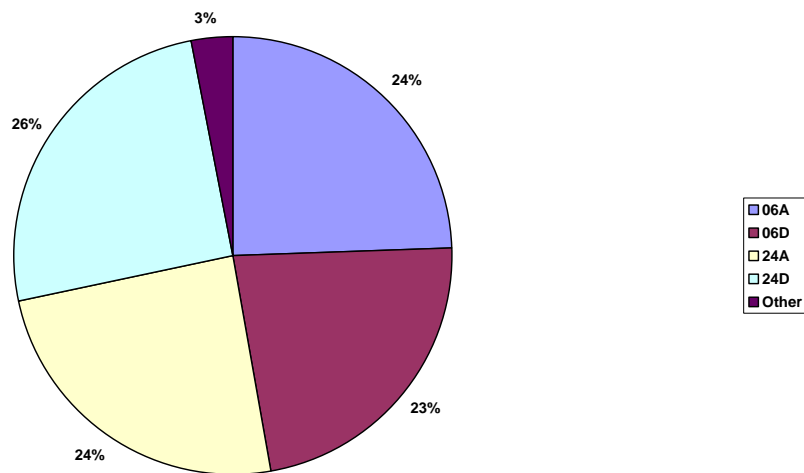
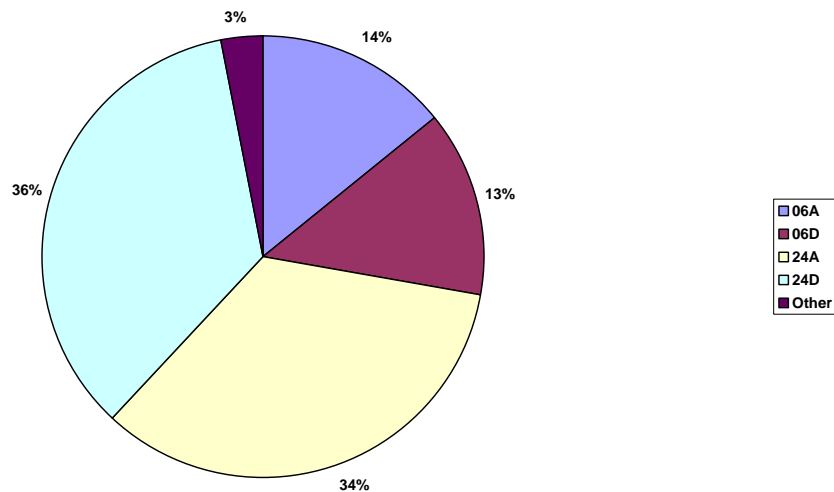


Figure 7: Monthly Movements by Runway Used and Operation May 2007  
 Key: A – Arrival, D – Departure, Other – Includes non runway traffic e.g. helicopters

Movements by runway used and operation for May 2007





Farnborough Airport

Environment Report April – June 2007

Figure 8: Monthly Movements by Runway Used and Operation June 2007  
 Key: A – Arrival, D – Departure, Other – Includes non runway traffic e.g. helicopters.

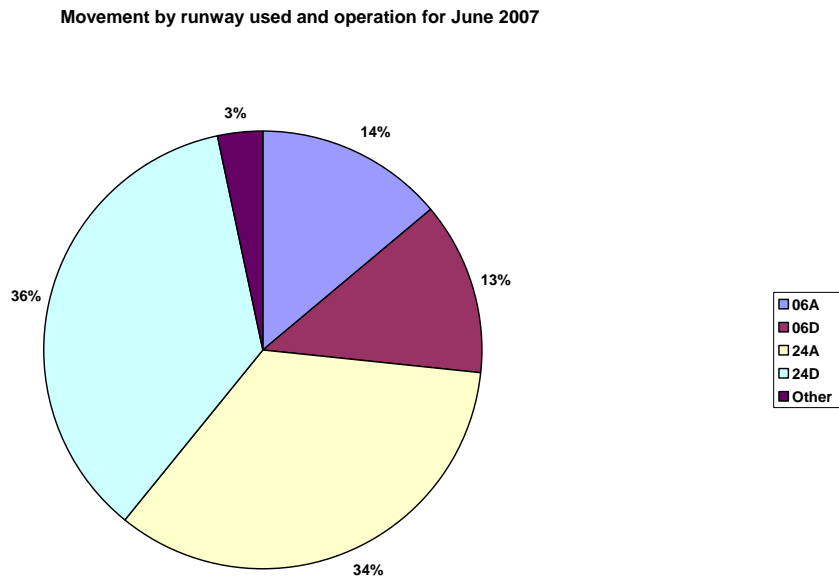
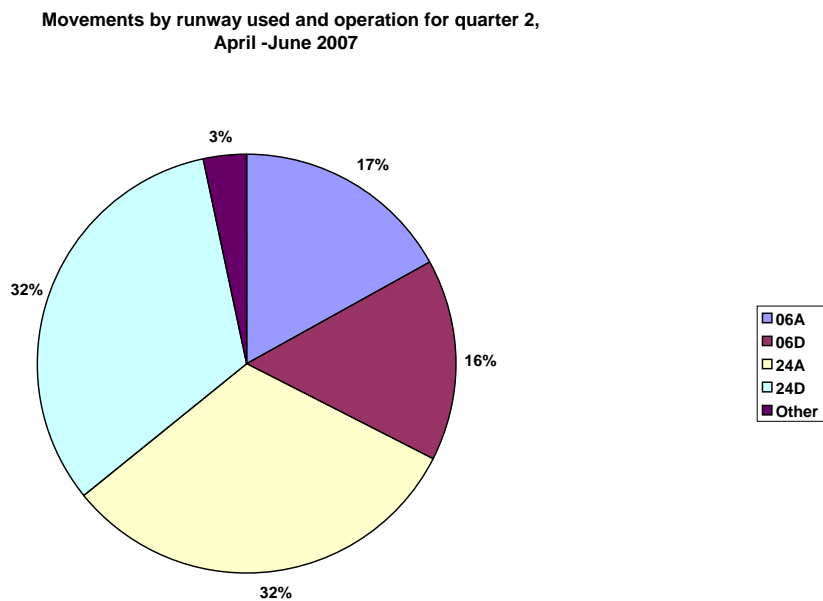
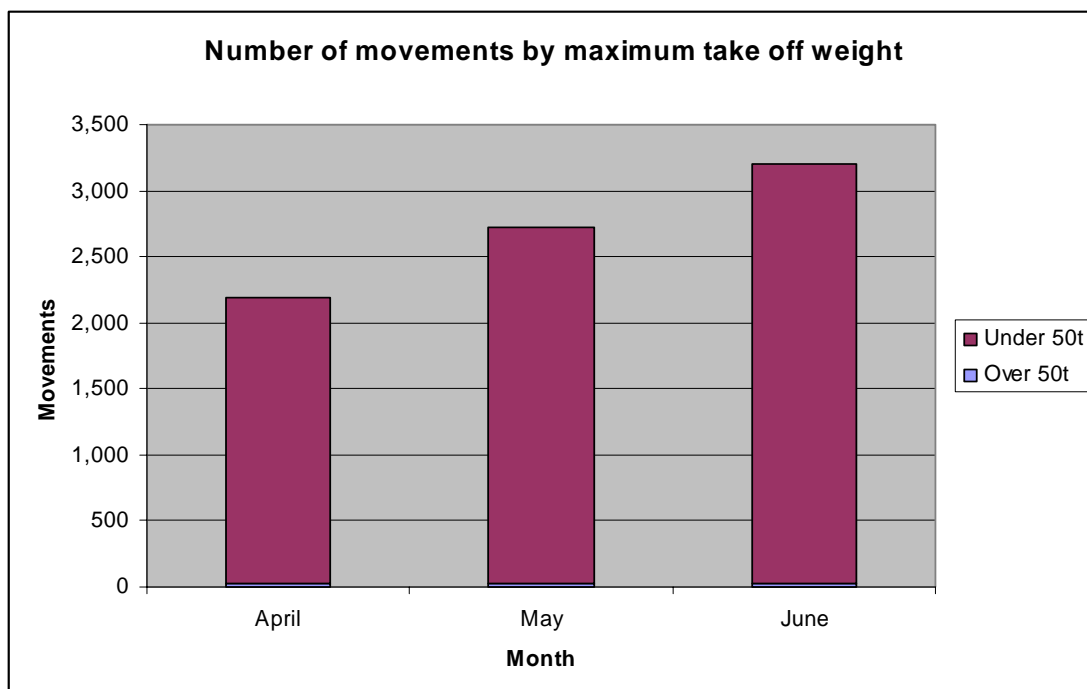


Figure 9. Overall runway usage split for Quarter 2, April – June 2007  
 Key: A – Arrival, D – Departure, Other – Includes non runway traffic e.g. helicopters



3.3 The Maximum Take Off Weight (MTOW) is recorded within the NTMS for all fixed wing aircraft. Figure 10 gives a summary of aircraft MTOW for the second quarter 2007.

Figure 10: Movements by Maximum Take Off Weight (MTOW) Quarter 2, April June 2007.



3.4 All civil aircraft using Farnborough during the first quarter were compliant with the International Civil Aviation Organisation (ICAO) Chapter 3 classification. 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). No “hushkitted” aircraft used the airport during the second quarter of 2007.

3.5 A new more stringent ICAO standard, ICAO Chapter 4 has been finalised with all aircraft manufactured from the beginning of 2006. The new classification requires aircraft noise performance as measured by manufacturers to fall by 10dB(A) below that required by Chapter 3.

3.6 Helicopters, light aircraft and military aircraft are not subject to the requirements of the ICAO noise certification scheme.

**4.0 AIR QUALITY MONITORING**

4.1 The locations of the thirteen nitrogen oxide diffusion tubes remain as previously reported. The two Learian Street box monitors have been temporarily removed for maintenance and will be returned to their original locations on completion. To see details of the locations of the monitors please refer to previous reports before the first quarter of 2005. Table 3 gives details of the National Air Quality Objectives applicable to NOx.

Table3: The Air Quality (England) (Amendment) Regulations 2002

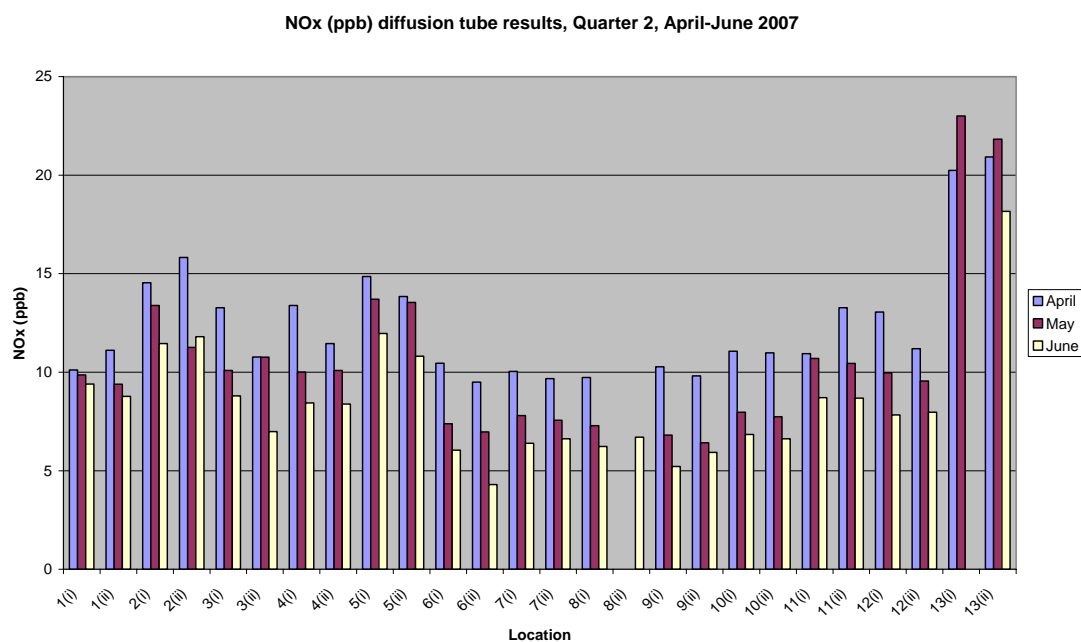
Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Nitrogen Dioxide*	200µg/m <sup>3</sup> when expressed as an hourly mean not to be exceeded more than 18 times a year.	Hourly mean	31/12/2005
4.1 It should be noted that the Nitrogen Dioxide objectives are provisional.			

4.2 The results of the air quality survey consist of both raw and manipulated data taken from the diffusion tube laboratory analysis and downloaded computer data from the Learian automatic samplers (Learian data is not available, refer to 4.4).

4.3 Nitrogen oxide results taken from the diffusion tubes and Learian Streetbox samplers indicate that NO<sub>x</sub> levels around the airfield have achieved the objective as set out by the Air Quality Regulations Amendment Regulations 2002. Levels recorded by the monitoring network continue to remain at or below urban background levels. Continuing trends in the results obtained appear to indicate terrestrial sources of NO<sub>x</sub> as the predominate source of NO<sub>x</sub>. This is illustrated by the elevated levels consistently recorded for location 13 adjacent to the M3 motorway. Location 13 lies within Rushmoor’s Air Quality Management Area (AQMA), declared for nitrogen dioxide.

Figure 11: Nitrogen Oxides Diffusion Tube Results Quarter 2, April – June 2007

Key: ppb – parts per billion



4.4 Due to essential service and maintenance the two Learian Streetbox monitors have been removed and sent away, as a result there is on data available for the 2<sup>nd</sup> quarter. As soon as the work is complete the monitors will be reinstalled in their original locations at Kempton Curt and Farnborough College of Technology and monitoring will resume.

## **5. CONCLUSION**

- 5.1 Routine monitoring of compliance with noise abatement routes, air quality, noise and aircraft movements continues at the airport. To date all monitoring undertaken has demonstrated compliance with regulatory requirements and those of the planning Consent and agreement granted with Rushmoor.
  
- 5.2 All movements allowed at the airport are restricted to those permitted by the terms of the planning consent and accompanying agreement.
  
- 5.4 Nitrogen oxide levels recorded by monitoring 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.
  
- 5.5 The activities at the airport remain within those required by the Section 106/299A agreement.

Created by Miles H Thomas and Helena May, 23/07/2007

Environment Manager / Assistant

TAG Farnborough Airport

[mthomas@tagfarnborough.com](mailto:mthomas@tagfarnborough.com).



*Farnborough Airport*

*Environment Report April – June 2007*

## **Appendix 1.**

Periodic noise reports:  
Monthly

April 2007

Leq (Total) by Day of Month (by NMT)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
2	65,1	56,6	56,3	54,9	54,7	49,3	49,1	47,0	50,6	55,7	53,0	52,6	51,6	49,1	49,0	52,5	52,6	53,8	52,7	55,5	78,5	75,1	53,4	53,9	53,5	53,1	53,2	50,1	47,5	57,4
3	53,4	53,7	52,9	55,8	56,6	51,9	51,5	49,6	52,7	56,2	56,0	55,5	53,6	52,3	52,4	55,9	53,9	55,8	55,2	57,2	57,3	54,1	57,5	57,7	58,6	57,5	58,4	54,3	51,8	55,9

May 2007

Leq (Total) by Day of Month (by NMT)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	57,3	59,1	52,4	52,5	50,3	54,0	60,6	61,3	60,8	58,4	57,3	60,1	51,7	55,1	54,5	53,6	53,2	57,0	53,3	51,7	52,8	53,3	53,9	54,0	55,5	49,2	54,5	56,4	54,3	53,2	52,4
3	55,6	56,1	56,9	56,2	53,2	53,3	57,3	59,0	58,8	58,8	57,9	55,7	56,9	59,0	57,5	56,8	57,1	58,5	54,9	53,1	56,3	56,0	57,5	57,6	58,3	55,6	53,9	57,7	56,3	59,4	57,1

June 2007

Leq (Total) by Day of Month (by NMT)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
2	53,5	53,0	68,4	53,4	52,4	52,9	52,5	55,0	48,9	47,7	53,6	53,5	52,6	54,5	55,9	52,1	51,8	53,6	56,4	54,5	54,9	54,8	51,0	52,7	55,5	54,8	53,8	56,4	56,5	51,3
3	58,3	52,0	55,8	58,2	56,3	57,3	58,1	57,7	51,9	52,5	56,8	57,4	57,7	58,5	58,5	56,7	55,2	59,3	59,7	58,9	58,8	59,2	54,9	55,4	59,0	57,0	58,4	58,6	58,8	54,9

From 01 April 2007 to 30 June 2007

Selection criteria: NMT\_NUMBER in ( 2 , 3 )

Company:

User: mthomas

Actual Time 23/07/2007

Periodic noise reports:  
Monthly

April 2007

Leq (Event) by Day of Month (by NMT)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
2	62,4	43,2	45,0	41,6	52,1	42,1	44,6	0,0	46,4	49,6	48,5	44,1	43,0	33,6	42,1	45,3	48,5	49,6	47,6	38,9	71,5	67,2	49,1	49,0	50,0	38,4	43,9	0,0	37,8	44,1
3	48,6	49,1	45,6	53,5	54,7	47,5	47,8	44,5	48,7	54,7	54,4	53,2	50,4	48,7	47,7	53,7	50,5	53,1	52,1	55,6	51,6	51,6	55,5	55,2	55,1	52,9	56,2	48,2	46,9	50,4

May 2007

Leq (Event) by Day of Month (by NMT)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	46,8	49,6	40,1	35,2	0,0	45,2	53,0	56,4	54,2	51,1	48,7	51,2	38,5	51,5	50,1	49,6	48,1	48,1	44,0	46,7	41,1	49,9	50,5	51,2	52,9	40,5	43,1	41,5	50,6	46,9	45,3
3	52,4	52,6	55,2	53,8	50,9	49,9	53,8	55,0	56,8	56,5	55,1	51,1	54,8	55,6	55,0	53,7	53,8	56,5	50,8	47,9	53,0	53,6	54,4	55,9	56,6	54,1	50,4	54,8	53,4	58,1	55,2

June 2007

Leq (Event) by Day of Month (by NMT)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
2	47,2	46,3	57,5	45,0	38,8	38,1	40,3	52,1	38,1	0,0	49,6	49,7	47,9	49,7	51,2	40,7	46,8	45,7	50,2	45,2	50,6	50,7	43,4	48,8	51,7	51,3	46,8	51,4	51,5	46,3
3	57,4	48,7	54,2	56,8	53,9	55,5	56,5	55,6	47,1	49,6	54,8	55,7	56,3	57,3	56,8	54,8	53,5	57,5	58,3	57,2	57,0	57,5	52,2	53,1	57,2	54,7	56,8	57,1	56,8	52,6

From 01 April 2007 to 30 June 2007

Selection criteria: NMT\_NUMBER in ( 2 , 3 )

Company:

User: mthomas

Actual Time 23/07/2007



Periodic noise reports:  
Monthly

April 2007

Leq (Background) by Day of Month (by NMT)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
2	62,4	56,4	56,0	54,7	51,2	48,3	47,2	47,0	48,4	54,5	51,0	52,0	51,0	49,0	48,0	51,6	50,5	51,7	51,2	55,4	78,0	74,7	51,4	52,2	51,0	53,0	52,7	50,1	47,0	57,2
3	51,6	51,8	52,0	51,8	52,0	50,0	49,2	48,0	50,5	51,0	51,1	51,6	50,9	49,8	50,6	52,0	51,2	52,5	52,4	52,2	56,0	50,5	53,3	54,2	56,1	55,7	54,5	53,1	50,2	54,5

May 2007

Leq (Background) by Day of Month (by NMT)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	57,0	58,6	52,2	52,4	50,3	53,4	59,8	59,7	59,8	57,6	56,6	59,5	51,5	52,6	52,5	51,3	51,6	56,4	52,7	50,0	52,5	50,6	51,2	50,7	52,2	48,6	54,1	56,2	51,8	52,1	51,5
3	52,8	53,6	52,0	52,6	49,3	50,8	54,7	56,8	54,3	54,9	54,7	53,8	52,7	56,3	54,1	53,9	54,5	54,2	52,7	51,6	53,6	52,1	54,8	52,7	53,3	50,3	51,3	54,6	53,1	53,6	52,6

June 2007

Leq (Background) by Day of Month (by NMT)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
2	52,3	52,0	68,1	52,7	52,3	52,8	52,2	51,9	48,5	47,7	51,3	51,2	50,9	52,8	54,1	51,8	50,3	52,9	55,3	54,0	53,0	52,7	50,1	50,4	53,2	52,2	52,9	54,8	55,0	49,6
3	51,0	49,3	50,8	52,8	52,6	52,7	52,8	53,5	50,2	49,5	52,4	52,6	52,2	52,2	53,7	52,1	50,4	54,6	54,1	54,2	54,1	54,4	51,5	51,6	54,2	53,2	53,3	53,1	54,4	51,1

From 01 April 2007 to 30 June 2007

Selection criteria: NMT\_NUMBER in ( 2 , 3 )

Company:

User: mthomas

Actual Time 23/07/2007