

*Farnborough Airport*

*Environment Report July – September 2006*



**Aviation**

Farnborough Airport  
Environment Report

July – September 2006

TAG Farnborough Airport Ltd  
Farnborough  
Hampshire  
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## **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 third quarter of 2006, (July to September, 2006) 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 2005. The Revised report focuses on the results of environmental monitoring, for background information please refer to Environment Reports published prior to the first Quarter of 2005.

## **2. NOISE MONITORING**

2.1 The two permanent noise monitoring terminals (at Farnborough College and Twezeldown racecourse) remain in operation. The portable noise monitor began the third quarter on location at the Fire Station at the airport for the purpose of occupational noise monitoring. It was subsequently moved to the Robert's Road area of Mychett on the 18<sup>th</sup> September, data is provided from this date onwards.

2.2 Figures 1, 2 and 3 below show  $L_{eq}$  data for correlated aircraft Events, (E), Total  $L_{eq}$  levels and Background (Back) noise, calculated as comparable  $L_{eq(A)}$  values, by day of month and NMT for July, August and September respectively. (Zero readings for noise Events indicate no aircraft noise events detected during that period.)

2.3 As can be seen in figure 1 noise levels increased for the duration of both the airshow and validation weeks. This increase is shown by elevated  $L_{eq}$  values

for aircraft noise events and background noise. All airshow activities (including noise) are excluded from the requirements of the S106 Agreement.

2.4 Readings from the portable noise monitor (NMT 1) have not been provided for August. As previously stated, this was due to the monitor being utilised for occupational health noise monitoring.

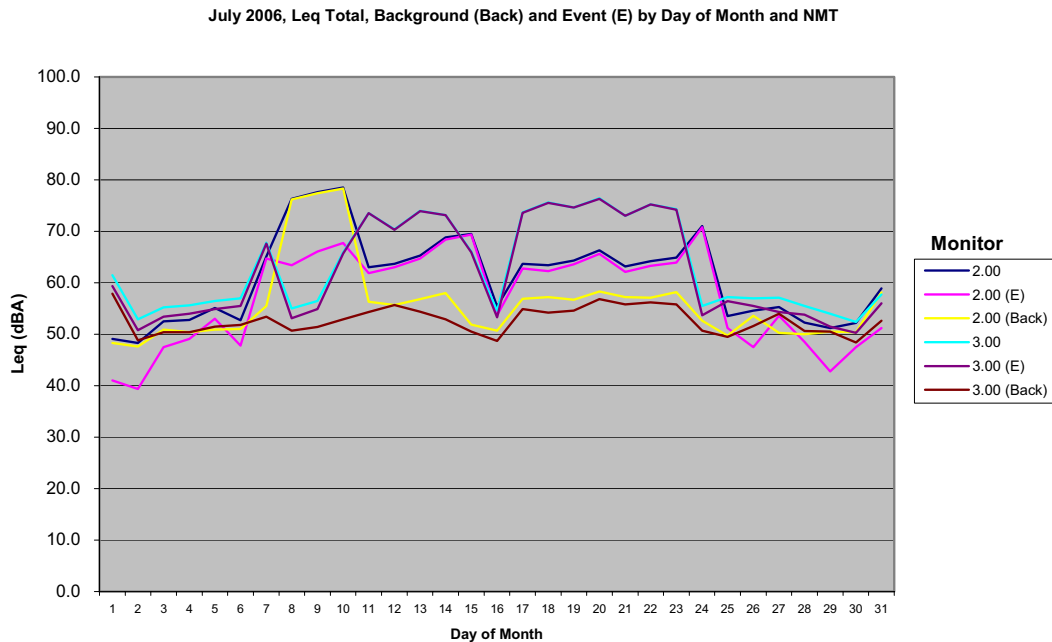


Figure 1: Noise as  $L_{eq}$  Total, Event (E) and Background (Back), by Day of Month and NMT for July 2006.

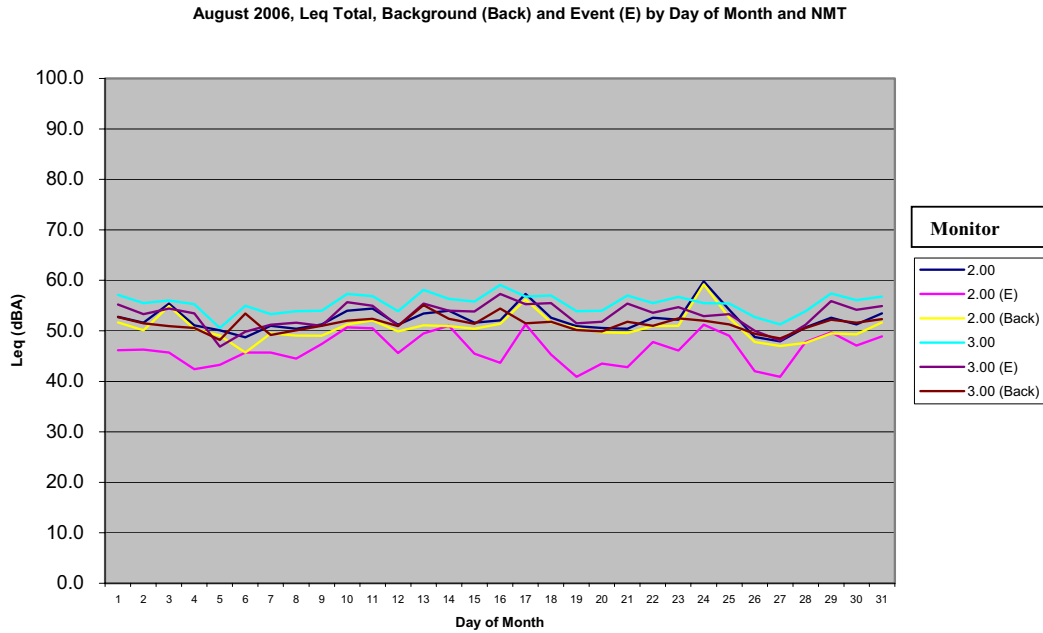


Figure 2: Noise as  $L_{eq}$  Total, Event (E) and Background (Back) by day of month and NMT for August 2006.

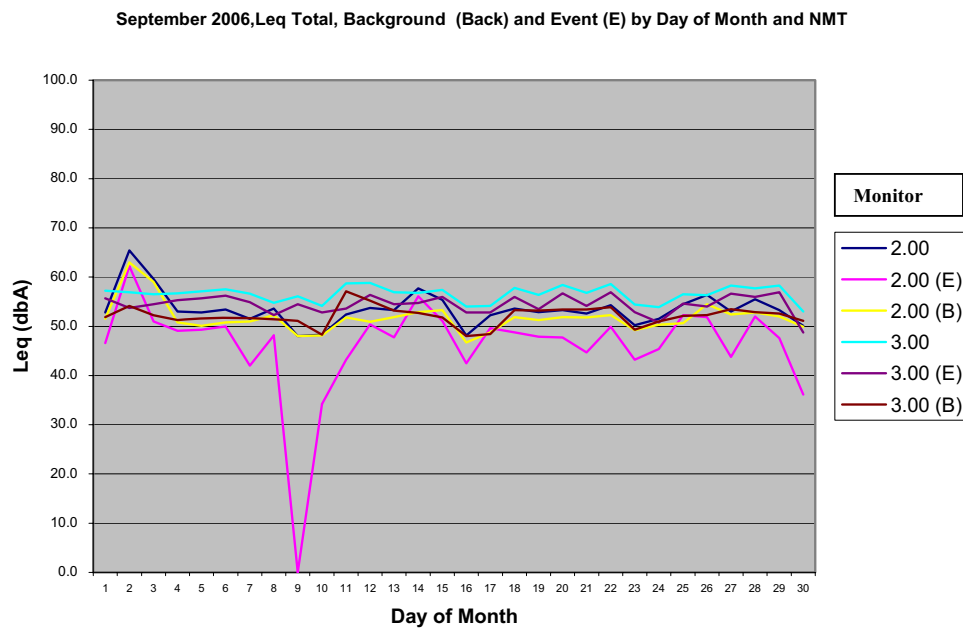


Figure 3: Noise as  $L_{eq}$  Total, Event (E) and Background (Back) by day of month and NMT for September 2006.

2.5 Noise contours produced using the FAA’s Integrated Noise Model (INM) for operations in the first two quarters of 2006 were submitted to Rushmoor in mid September (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.

LEq dB (A)	1997 (Control) Contours (Km <sup>2</sup> )	Actual January – June 2006 (based on 11472 actual movements)	Predicted June – December movements (11898 movements at 2006 mix)
55	6.43	4.10	4.40
60	2.77	1.71	1.81
65	1.24	0.94	0.98

Table 1: Results of INM Modelling exercise

2.6 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.

2.7 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.

2.8 The FAA’s INM along with ANCONII comply with the requirements of ECAC/CEAC Document 29 for noise modelling 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. TAG uses the INM

6.1 model to examine aircraft derived noise data. This allows modelling to be carried out using actual flight tracks, (recorded by the airport’s Noise Track Monitoring System, (NTMS)) ensures continuity and allows for direct comparison with the requirements of the 106 agreement and other controls.

2.9 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 weekends.

Category	July	August	September	Quarter 3, 2006	Total 2006
<b>Business</b>	1853	1704	2229	<b>5786</b>	<b>15372</b>
<b>Helicopter</b>	102	56	143	<b>301</b>	<b>898</b>
<b>Subtotal (Planning Agreement Movements)</b>	<b>1955</b>	<b>1760</b>	<b>2372</b>	<b>6087</b>	<b>16270</b>
<b>Flying club</b>	25	28	46	<b>99</b>	<b>378</b>
<b>Military</b>	15	6	22	<b>43</b>	<b>135</b>
<b>Diversion</b>	0	22	15	<b>37</b>	<b>149</b>
<b>Other</b>	116	206	153	<b>475</b>	<b>1281</b>
<b>SBAC</b>	1126	0	0	<b>1126</b>	<b>1126</b>
<b>Total</b>	<b>3237</b>	<b>2022</b>	<b>2608</b>	<b>7867</b>	<b>19339</b>

Table 2: Movements summary by type.

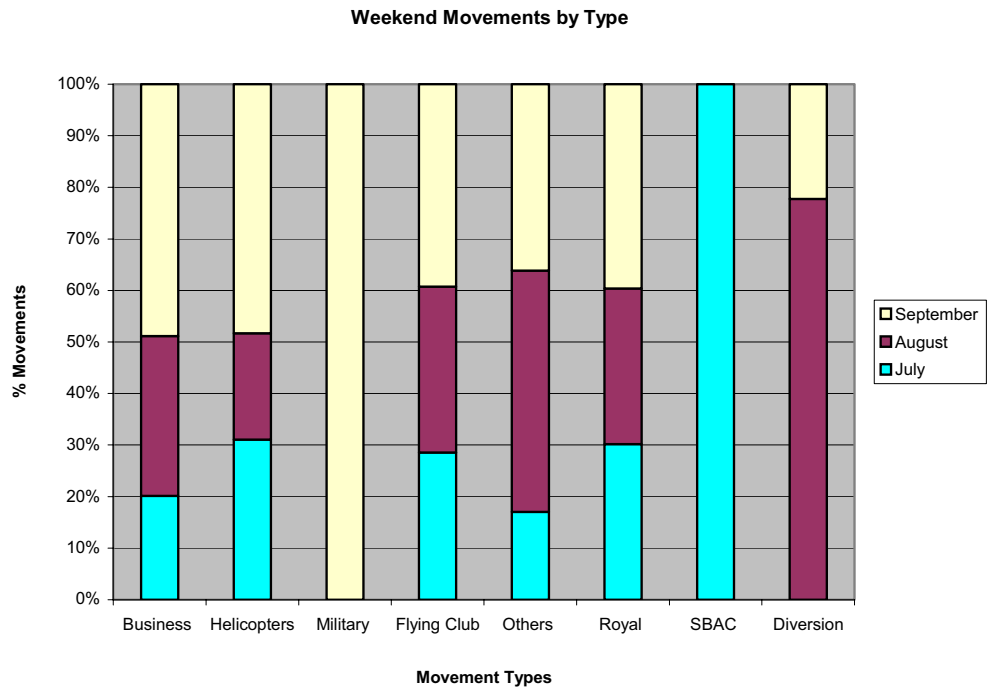


Figure 4: *Weekend Movements\* by Type for Quarter 3, 2006*  
Includes Bank Holidays

3.2 Figures 5 - 8 below give information on runway use, including operation. Operation refers to whether the movement was a Departure or Arrival.

Movements by runway use and operation July 2006

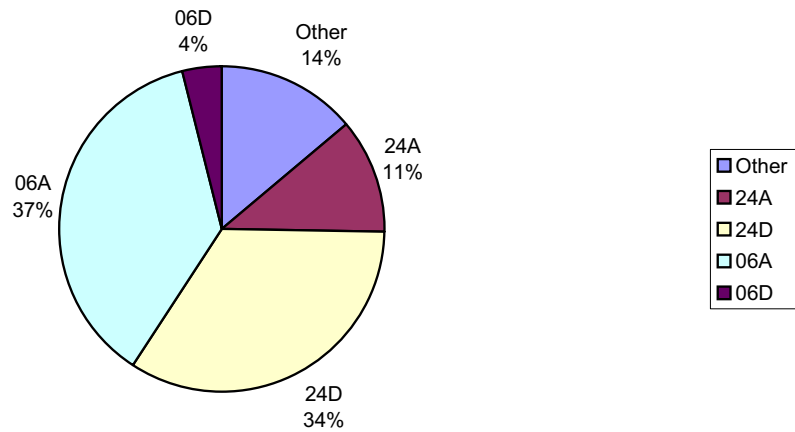


Figure 5: Monthly Movements by Runway Used and Operation July 2006

Movements by runway use and operation August 2006

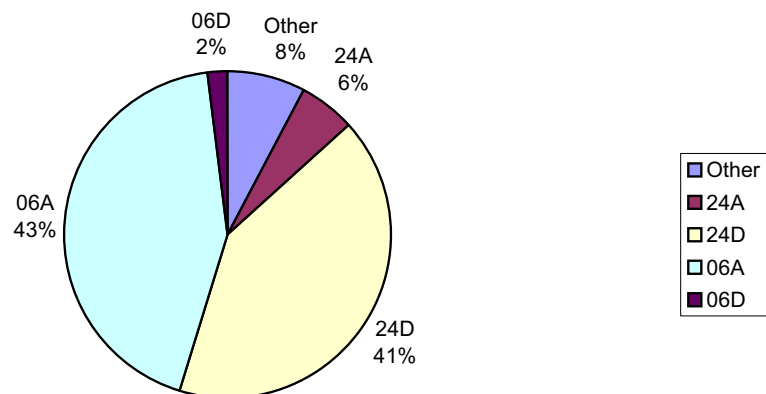


Figure 6: Monthly Movements by Runway Used and Operation August 2006  
Key: A – Arrival, D – Departure



**Movements by Runway use and operation September**

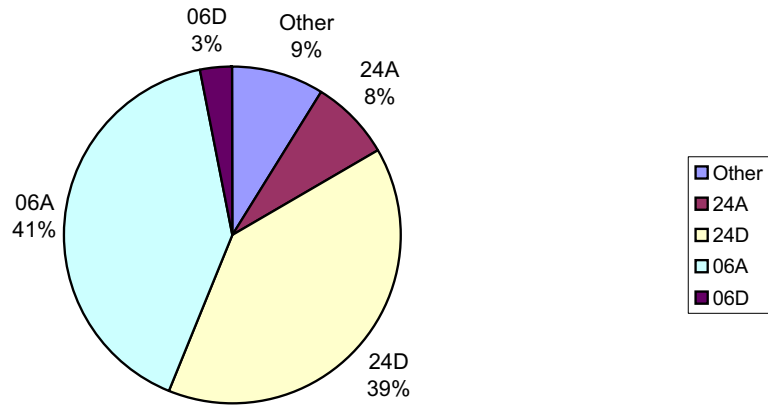


Figure 7: Monthly Movements by Runway Used and Operation September 2006  
Key: A – Arrival, D – Departure

**Movements by Runway use and operation Quarter 3 2006.**

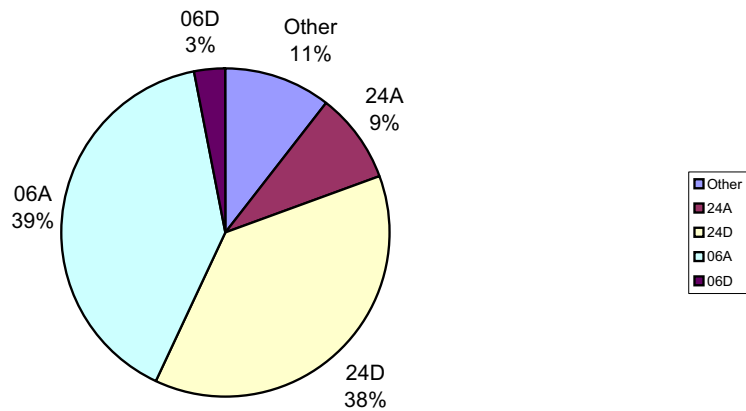


Figure 8. Overall runway usage split for Quarter 3  
Key: A – Arrival, D – Departure.

3.3 The Maximum Take Off Weight (MTOW) is recorded within the NTMS for all fixed wing aircraft. Figure 9 gives a summary of aircraft MTOW for the third quarter.

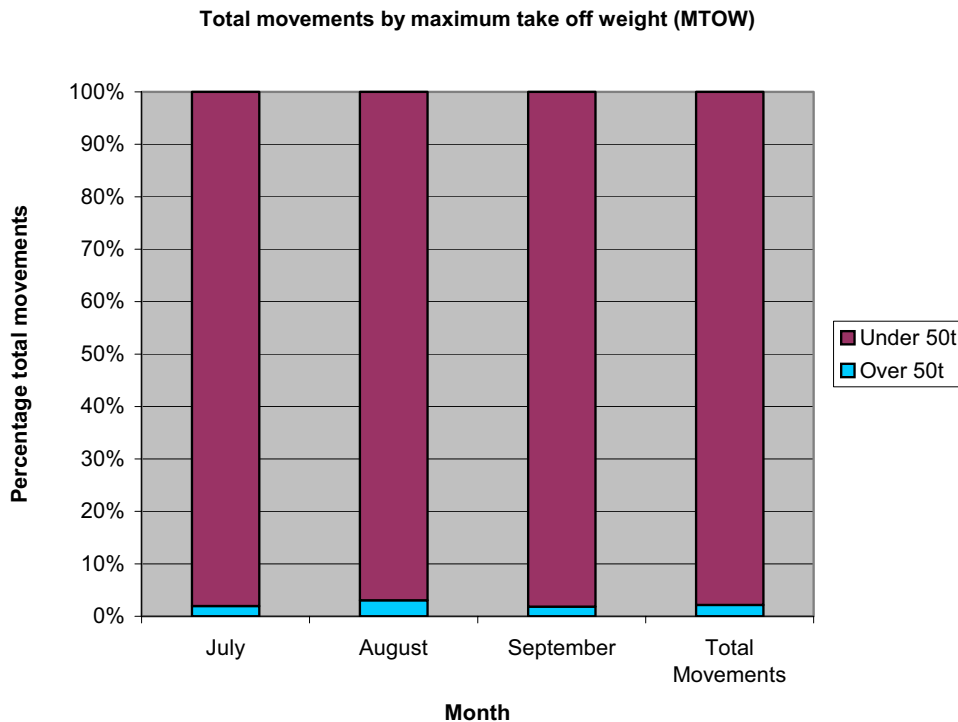


Figure 9: *Movements by Maximum Take Off Weight (MTOW) Quarter 3, July –September 2006.*

3.4 All civil aircraft using Farnborough during quarter 3 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 “hushkitted” (have their original engines adjusted or replaced to comply with the required standard). No hushkitted aircraft used the airport in quarter 3.

- 3.5 A new more stringent ICAO standard, ICAO Chapter 4 has been finalised and with which all aircraft manufactured from the start of the year will comply. The new classification requires aircraft noise performance as measured by manufacturers to fall 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.
- 3.7 The bi-ennial Farnborough International airshow organised by SBAC took place between 17<sup>th</sup> and 23<sup>rd</sup> July 2006, with the week prior to this being validation week. Airshow traffic movements are not regulated under Sections 106 and 299A of the Town and Country Planning Act 1990, by the agreement between TAG Farnborough Airport and Rushmoor Borough Council

**4. AIR QUALITY MONITORING**

- 4.1 The locations of all of the nitrogen oxide diffusion tubes and Streetbox monitors remain as previously reported. To see details of the locations of the monitors please refer to previous reports. Table 3 gives details of the National Air Quality Objectives applicable to NOx.
- 4.2

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

\* It should be noted that the Nitrogen Dioxide objectives are provisional.

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

- 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.

4.3 Nitrogen oxide results taken from the diffusion tubes and Learian Streetbox samplers indicate that NOx 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 NOx as the predominate sources of the NOx; 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.

Nox (ppb) Diffusion Tubes, July-September 2006

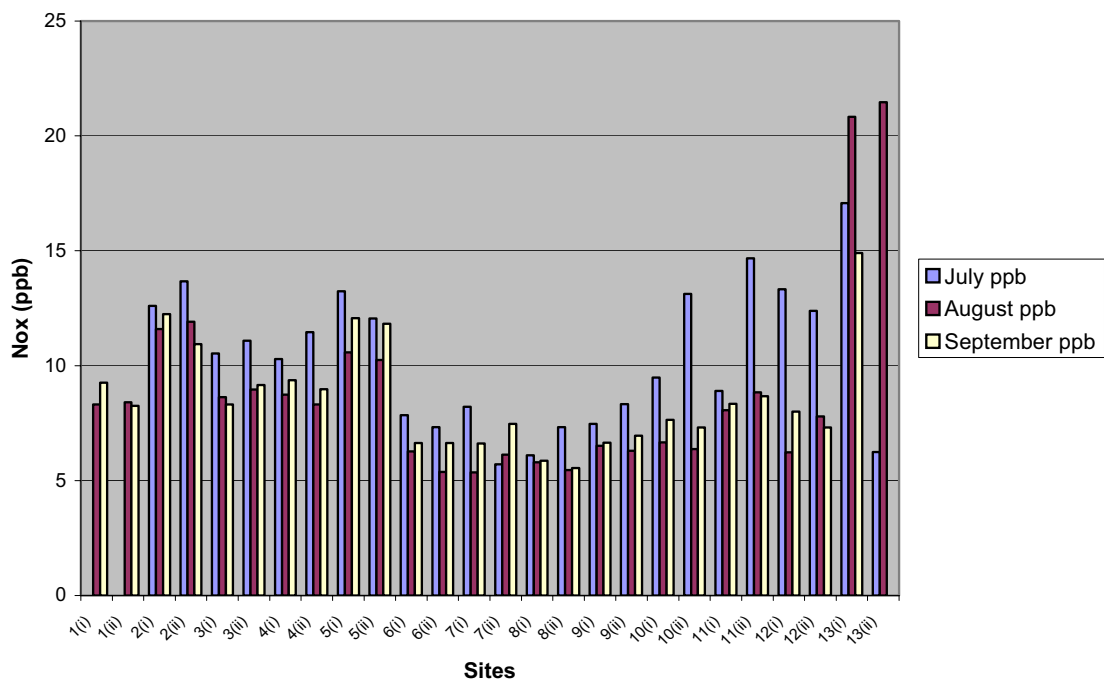


Figure 10: Nitrogen Oxides Diffusion Tube Results Quarter 3, 2006

Key: **ppb** - parts per billion.

4.4 Figure 11 below gives the air quality monitoring results obtained from the two Learian Street Box automatic samplers. The Streetboxes are collocated with diffusion tubes, references as given.

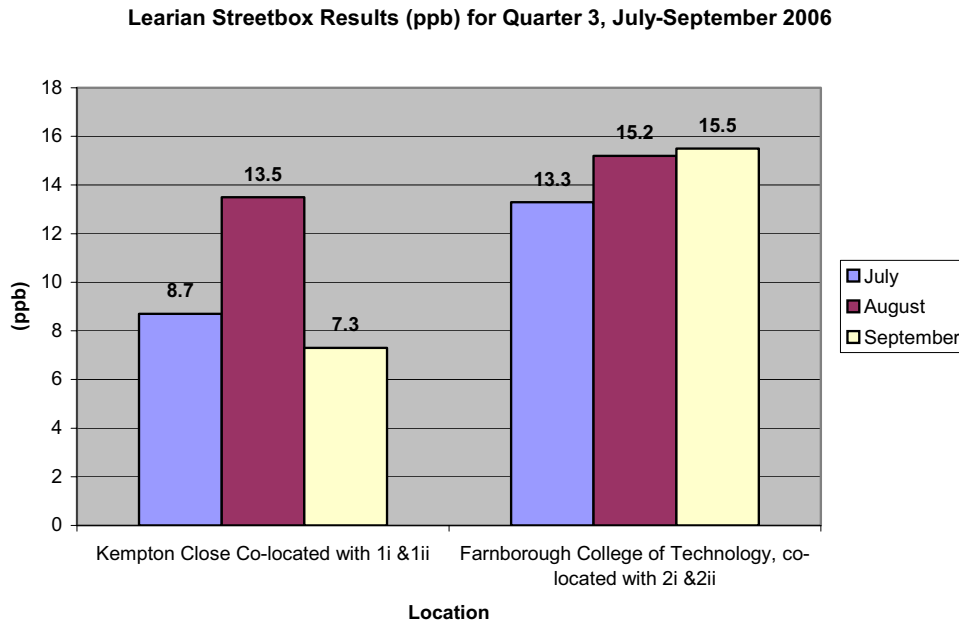


Figure 11: *Learian Streetbox results for Quarter 3, July- September 2006.*

Key: **ppb** - parts per billion

## 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.
- 5.3  $L_{eq}$  (dBA) results for July 2006 showed elevated levels for the duration of the both airshow week and the validation week.
- 5.4 Nitrogen oxide levels recorded by monitoring remain consistent. Temperature inversions have been noted to affect these levels over the winter months.

Therefore compared with the first quarter of 2006 the NO<sub>x</sub> results are



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significantly lower. All monitoring results continue to be analysed for operational trends.

5.5 The activities at the airport remain within those required by the Section 106/299A agreement.

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## **Appendix 1**

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## **Appendix 2**