

Farnborough Airport

Environment Report January – March 2007



Farnborough Airport
Environment Report
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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 first quarter of 2007, (January to March 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 Twezeldown Racecourse remain in operation. The portable noise monitor is currently situated on the airport boundary along Elles Road, it will be monitoring the noise levels from airport ground movements.

2.2 Bruel & Kjaer undertook the annual calibration of the two permanent noise monitors on 27th March 2007.

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

Figure 1: Noise as L_{eq} Total, Event (E) and Background (Back), by Day of Month and NMT for January 2007.

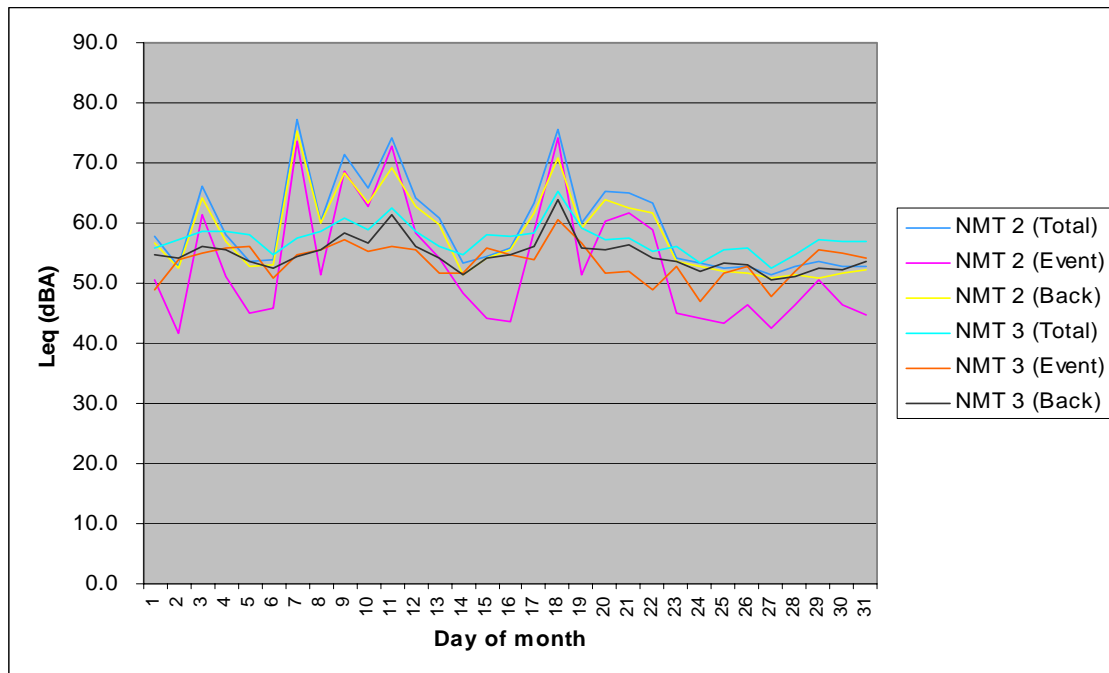


Figure 2: Noise as L_{eq} Total, Event (E) and Background (Back) by day of month and NMT for February 2007.

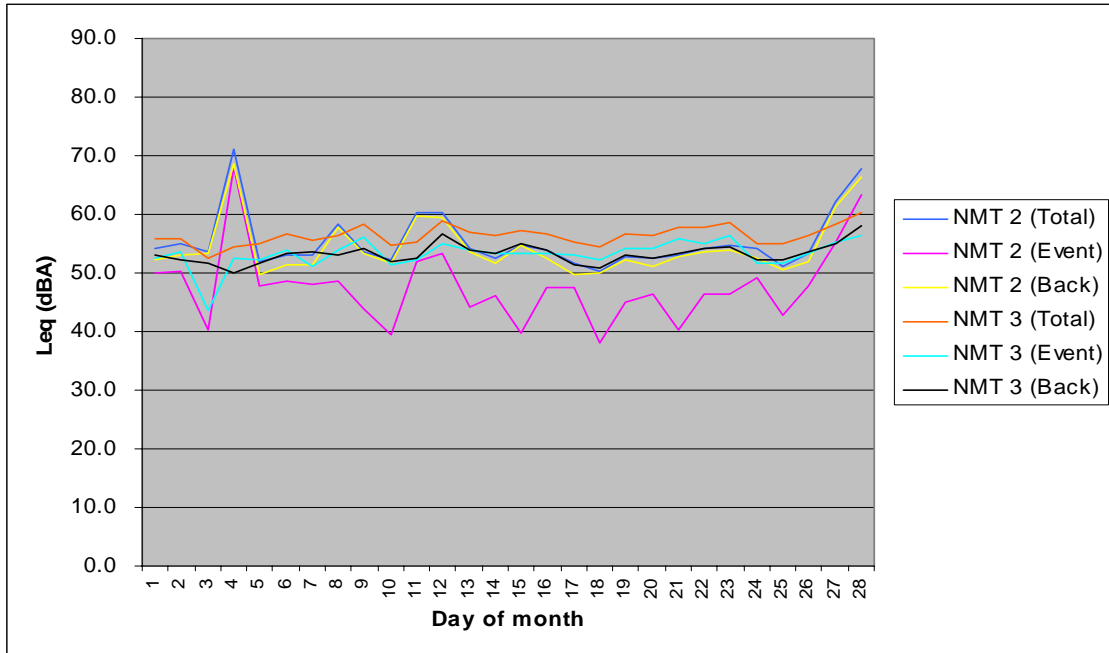
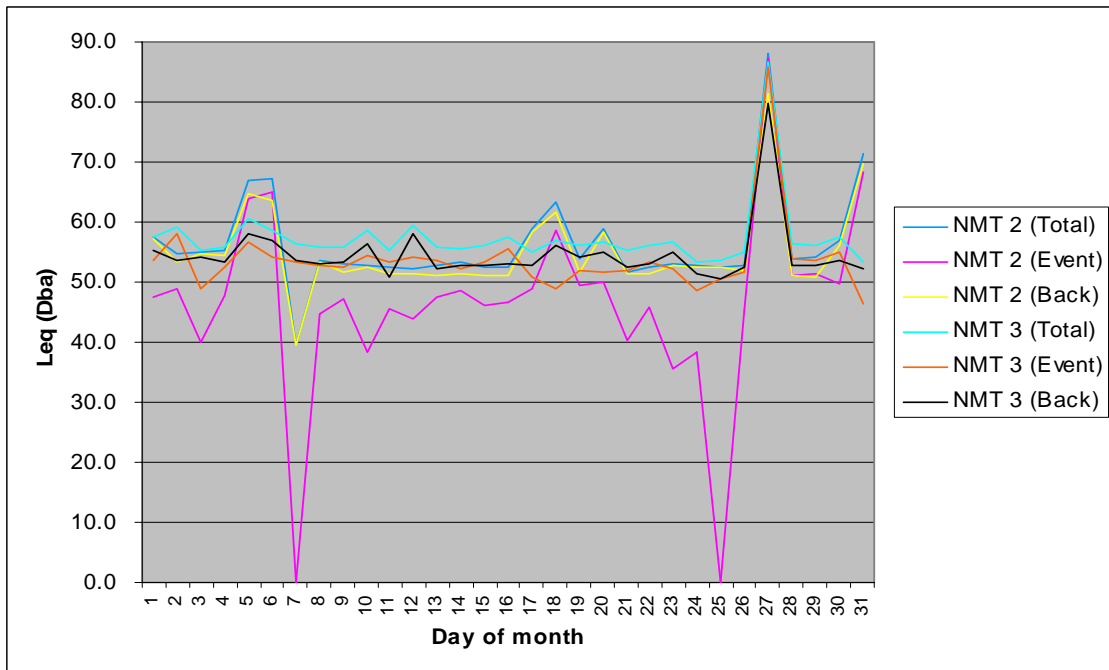


Figure 3: Noise as L_{eq} Total, Event (E) and Background (Back) by day of month and NMT for March 2007.



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.

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 the latest version of INM, (INM 6.2) 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.

2.8 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	January	February	March	Quarter 1, 2007	Total 2007
Business	1687	1680	1920	5287	5287
Helicopter	83	117	117	317	317
Subtotal (Planning Agreement Movements)	1770	1797	2037	5604	5604
Flying club	20	35	61	116	116
Military	2	7	4	13	13
Diversion	16	26	18	60	60
Other	103	184	149	436	436
SBAC	0	0	0	0	0
Total	1911	2049	2269	6229	6229

Figure 4: *Weekday Movements* by Type for Quarter 1, 2007*
 Quarter 1 2007

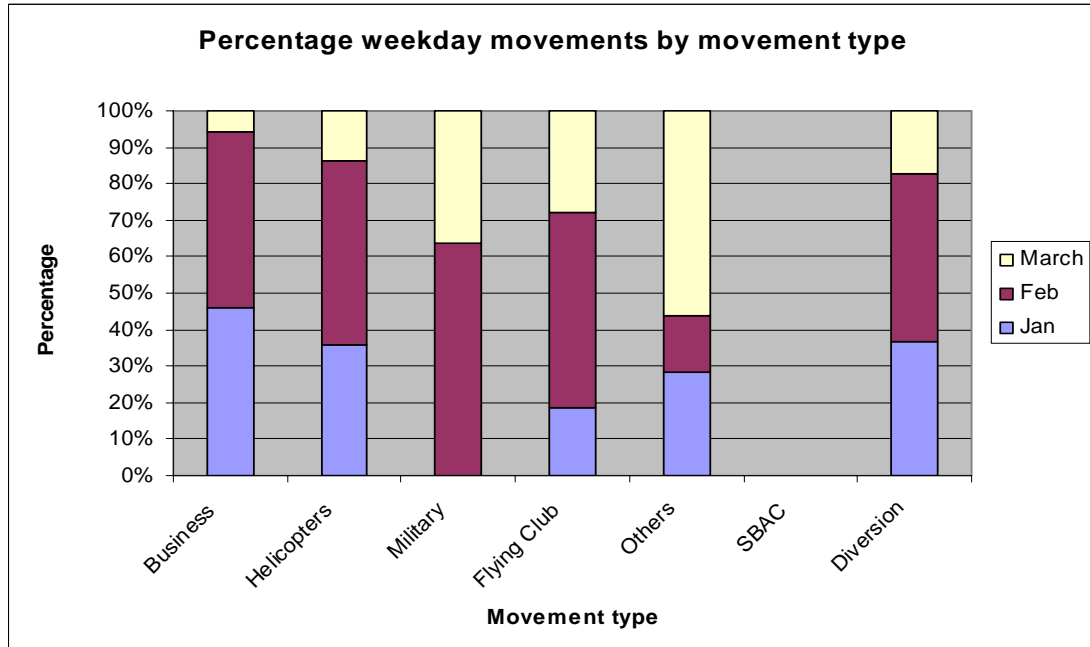
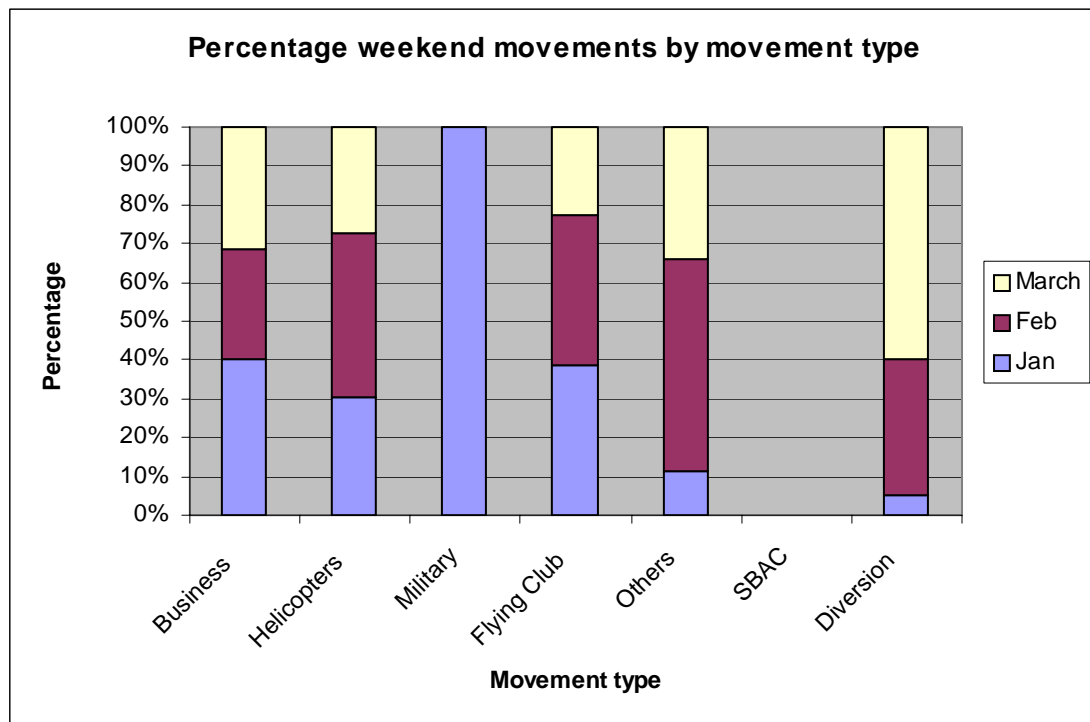


Figure 5: Weekend Movements* by Type for Quarter 1, 2007
*Includes Bank Holidays



3.2 Figures 6 – 9 over leaf 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 January 2007
Key: A – Arrival, D – Departure

Movements by runway used and operation, January 2007

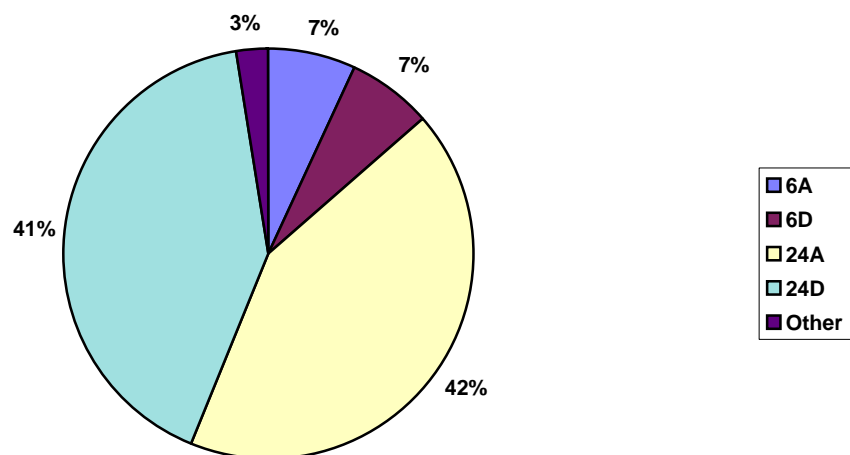


Figure 7: Monthly Movements by Runway Used and Operation February 2007
Key: A – Arrival, D – Departure, Other – Includes non runway traffic e.g. helicopters

Movements by runway used and operation for February 2007

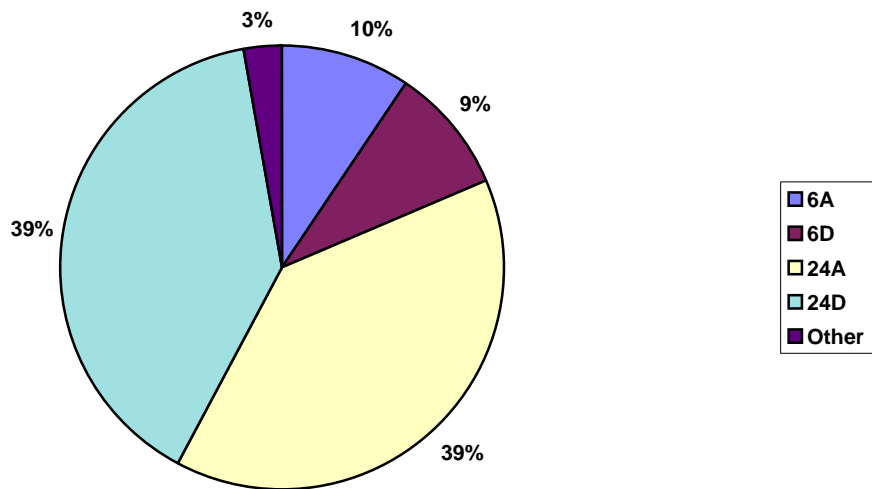


Figure 8: Monthly Movements by Runway Used and Operation March 2007
 Key: A – Arrival, D – Departure, Other – Includes non runway traffic e.g. helicopters.

Monthly movements by runway used and operation for March 2007

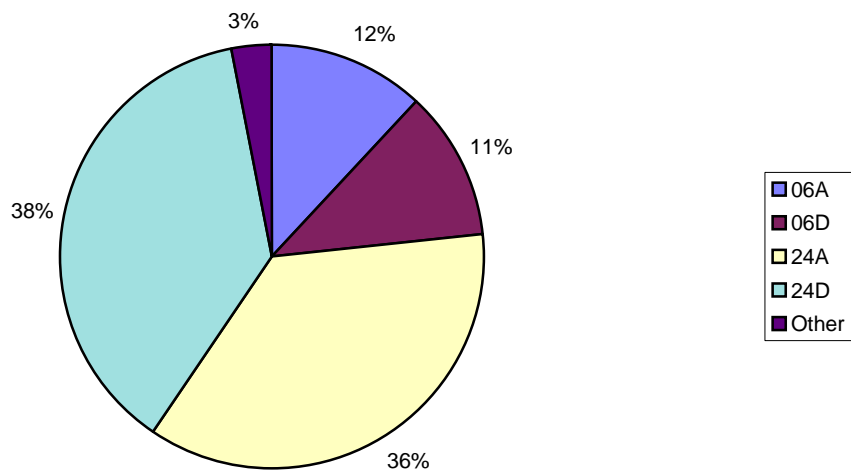
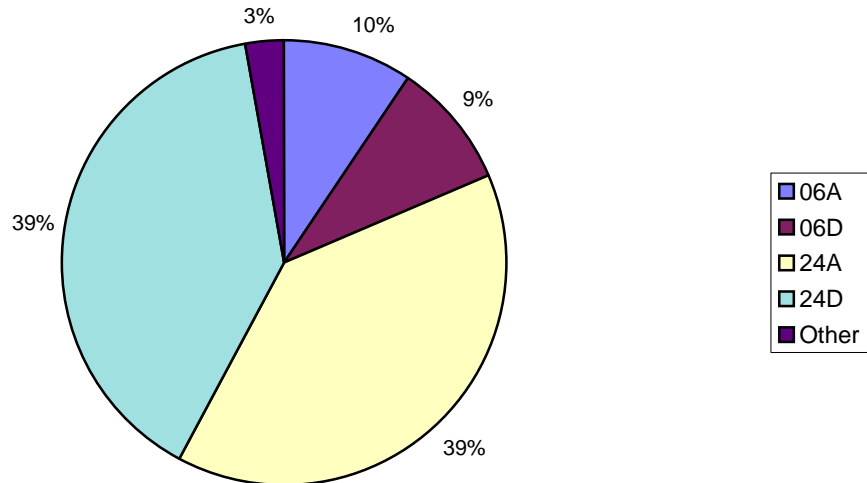


Figure 9. Overall runway usage split for Quarter 1, 2007
 Quarter 1 2007

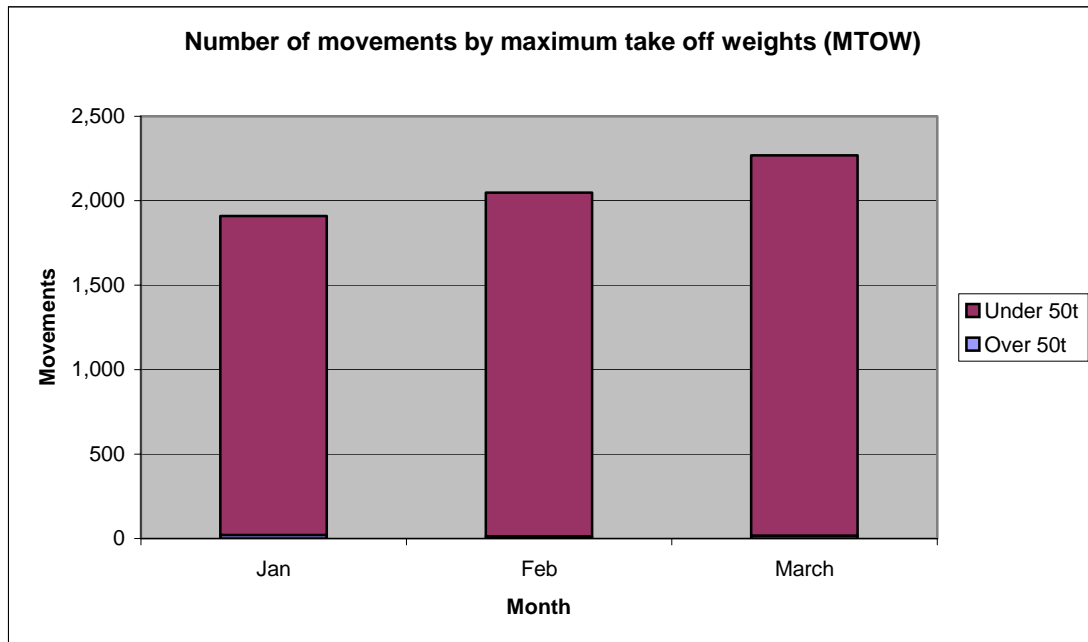
Key: A – Arrival, D – Departure, Other – Includes non runway traffic e.g. helicopters

Monthly movements by runway used and operation for Quarter 1, 2007



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 first quarter 2007.

Figure 10: Movements by Maximum Take Off Weight (MTOW) Quarter 1, January-March 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 first 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 now complying with ICAO Chapter 4. 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 all of the nitrogen oxide diffusion tubes and Learian Streetbox monitors remain as previously reported. 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

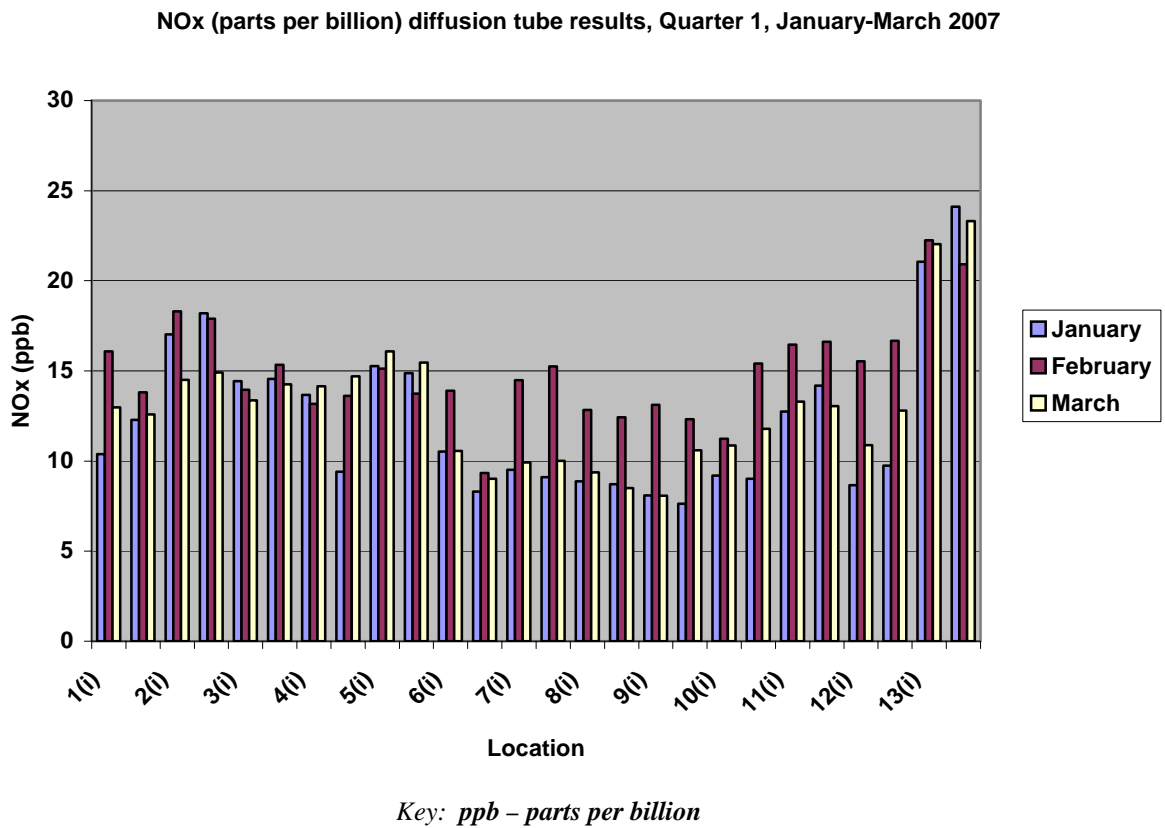
Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Nitrogen Dioxide*	200µg/m ³ when expressed as an hourly mean not to be exceeded more than 18 times a year.	Hourly mean	31/12/2005
4.1 It should be noted that the Nitrogen Dioxide objectives are provisional.			

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.

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

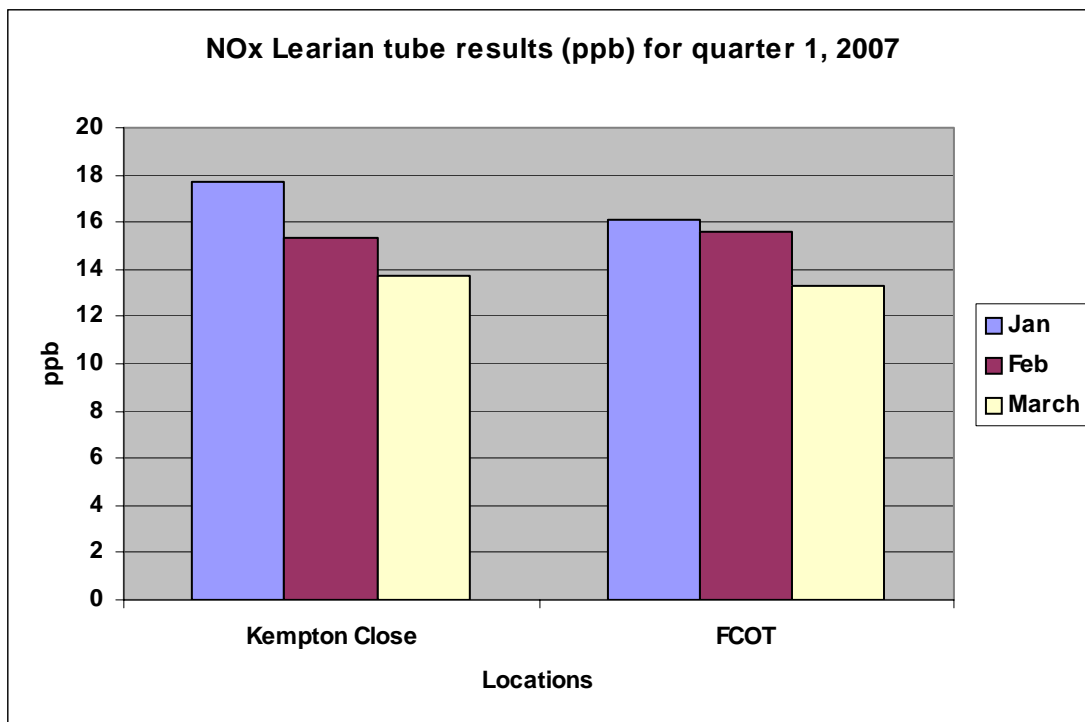
appear to indicate terrestrial sources of NO_x as the predominate source of NO_x. This is illustrated by the elevated levels consistently recorded for location 13 adjacent to the M3 motorway. Location 13 lies within Rushmoor’s Air Quality Management Area (AQMA), declared for nitrogen dioxide.

Figure 11: Nitrogen Oxides Diffusion Tube Results Quarter 1, 2007



4.4 Figure 12 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 12: Learian Streetbox results for Quarter 1, January- March 2007.
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.

5.4 Nitrogen oxide levels recorded by monitoring remain consistent with previously noted trends. Nitrogen Dioxide levels are naturally elevated over Quarter 1 2007



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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, 23/04/2007

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Appendix 1.

January 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	57,7	52,8	66,0	58,0	53,5	53,9	77,1	60,4	71,3	65,9	74,2	64,1	60,8	53,2	54,5	55,8	63,2	75,6	59,9	65,4	65,0	63,4	54,2	53,4	52,4	52,9	51,3	52,7	53,6	52,8	52,8
3	55,7	57,1	58,6	58,6	58,0	54,7	57,5	58,6	60,8	59,0	62,6	58,7	56,0	54,6	58,1	57,8	58,2	65,3	59,2	57,1	57,6	55,3	56,2	53,2	55,5	55,9	52,4	54,6	57,2	56,9	57,0

February 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
2	54,3	54,9	53,6	71,0	51,9	53,1	53,0	58,4	53,7	52,1	60,4	60,4	54,2	52,6	54,8	53,8	51,8	50,3	52,9	52,4	53,0	54,2	54,6	54,3	51,2	53,4	62,3	67,9
3	55,8	55,9	52,4	54,5	55,0	56,6	55,5	56,5	58,2	54,7	55,3	58,9	56,9	56,3	57,2	56,6	55,2	54,5	56,7	56,5	57,7	57,7	58,5	54,9	55,0	56,3	58,2	60,3

March 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	57,5	54,7	54,9	55,3	67,0	67,1	39,5	53,7	53,0	52,8	52,4	52,1	52,7	53,2	52,4	52,5	58,8	63,4	53,8	59,0	51,8	52,5	53,0	52,7	52,4	52,8	88,0	54,0	54,1	57,0	71,4
3	57,5	59,3	55,3	55,9	60,5	58,7	56,4	55,9	55,9	58,5	55,3	59,5	55,9	55,5	56,0	57,4	55,0	57,0	56,2	56,7	55,2	56,2	56,8	53,2	53,5	55,0	86,7	56,4	56,2	57,4	53,3

From 01 January 2007 to 31 March 2007

Selection criteria: NMT_NUMBER in (2 , 3)

Company: TAG Farnborough Airport

User: sgreener

Actual Time 26/04/2007

January 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	50,6	41,7	61,4	51,1	44,9	45,8	73,6	51,3	68,7	62,7	72,9	58,3	54,2	48,2	44,3	43,6	58,5	74,3	51,3	60,3	61,8	58,8	45,0	44,3	43,2	46,5	42,4	46,3	50,5	46,4	44,7
3	48,8	54,0	55,1	55,7	56,1	50,8	54,6	55,6	57,2	55,4	56,2	55,5	51,6	51,7	55,9	54,7	54,0	60,5	56,6	51,8	51,9	48,9	52,7	47,0	51,8	52,7	47,9	51,9	55,5	55,1	54,3

February 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
2	50,1	50,3	40,2	68,0	47,7	48,7	48,1	48,5	43,8	39,5	52,0	53,4	44,3	46,0	39,8	47,5	47,4	38,1	44,9	46,3	40,3	46,4	46,3	49,3	42,9	47,9	55,2	63,3
3	52,4	53,6	43,5	52,5	52,3	53,9	51,0	54,0	56,2	51,3	52,1	55,1	53,8	53,2	53,3	53,4	53,0	52,2	54,3	54,3	55,8	55,1	56,3	51,6	51,6	53,2	55,3	56,5

March 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	47,6	48,9	40,0	47,8	63,8	65,0	0,0	44,7	47,3	38,3	45,6	43,8	47,4	48,5	46,2	46,7	48,8	58,6	49,5	50,0	40,4	45,8	35,5	38,3	0,0	45,2	87,1	51,0	51,3	49,7	68,3
3	53,7	58,0	49,0	52,4	56,7	54,1	53,2	52,7	52,6	54,4	53,4	54,2	53,5	52,2	53,2	55,5	50,7	48,9	52,0	51,7	51,9	53,4	52,1	48,5	50,5	51,6	85,9	53,8	53,5	55,1	46,3

From 01 January 2007 to 31 March 2007

Selection criteria: NMT_NUMBER in (2 , 3)

Company: TAG Farnborough Airport

User: sgreener

Actual Time 26/04/2007

January 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	56,8	52,5	64,3	57,0	52,8	53,1	75,2	59,9	68,2	63,4	69,3	62,9	59,8	51,5	54,1	55,5	61,6	70,8	59,3	64,0	62,5	61,7	53,7	52,9	51,9	51,8	50,7	51,5	50,7	51,7	52,1
3	54,6	54,2	56,1	55,5	53,5	52,4	54,5	55,6	58,4	56,6	61,5	56,0	54,2	51,5	54,1	54,8	56,1	63,8	55,7	55,5	56,3	54,2	53,6	52,0	53,2	53,1	50,5	51,2	52,4	52,2	53,5

February 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
2	52,3	53,0	53,4	68,5	49,8	51,3	51,3	57,9	53,2	51,8	59,7	59,5	53,7	51,6	54,6	52,6	49,8	50,1	52,1	51,2	52,8	53,5	53,8	52,6	50,5	52,0	61,4	66,3
3	53,1	52,2	51,8	50,1	51,6	53,3	53,6	53,1	54,1	52,0	52,4	56,6	54,0	53,4	54,9	53,9	51,4	50,7	53,0	52,5	53,2	54,2	54,5	52,2	52,2	53,5	55,1	58,0

March 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	57,1	53,4	54,8	54,4	64,6	63,5	39,5	53,2	51,6	52,6	51,4	51,4	51,2	51,4	51,2	51,2	58,3	61,8	51,7	58,4	51,4	51,5	52,9	52,5	52,4	52,0	81,4	51,0	50,8	56,2	69,6
3	55,2	53,7	54,1	53,3	58,1	56,9	53,5	53,1	53,3	56,5	50,8	58,0	52,3	52,9	52,8	53,0	52,9	56,2	54,1	55,0	52,4	53,0	55,0	51,5	50,5	52,4	79,6	52,9	52,9	53,5	52,3

From 01 January 2007 to 31 March 2007

Selection criteria: NMT_NUMBER in (2 , 3)

Company: TAG Farnborough Airport

User: sgreener

Actual Time 26/04/2007