# Farnborough Airport Environment Report

# April – June 2006

TAG Farnborough Airport Ltd
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## 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 2006, (April to June, 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 prior to the publication of the first quarter's report in 2005, in consultation with Rushmoor Borough Council Planning department, to focus on monitoring results data only. For background information please refer to Environment Reports published prior to this date.

## 2 NOISE MONITORING

2.1 The two permanent noise monitoring terminals (at Farnborough College and Twezeldown racecourse) remain in operation. The portable noise monitor has been on location on the proposed hotel development site within the airfield boundary, following its return from repair by the system manufacturers. Plant noise levels recorded in this area caused the unit to overload therefore where necessary the data has been excluded. Having stabilised once more, the monitor has been used to undertake occupational noise measurement (again this information has not been included in this report) within the airfield for a short time, and has recently been moved to a location in the Manor Road area of Farnborough to continue recording ambient noise levels.

2.1 Figures 1, 2 and 3 below show LEq data for correlated aircraft Events, (E), Total Leq levels and Background (Back) noise, calculated as comparable $Leq_{(A)}$ values, by day of month and NMT for April, May and June respectively.

(Zero readings for noise Events indicates no aircraft noise events detected during that period.)

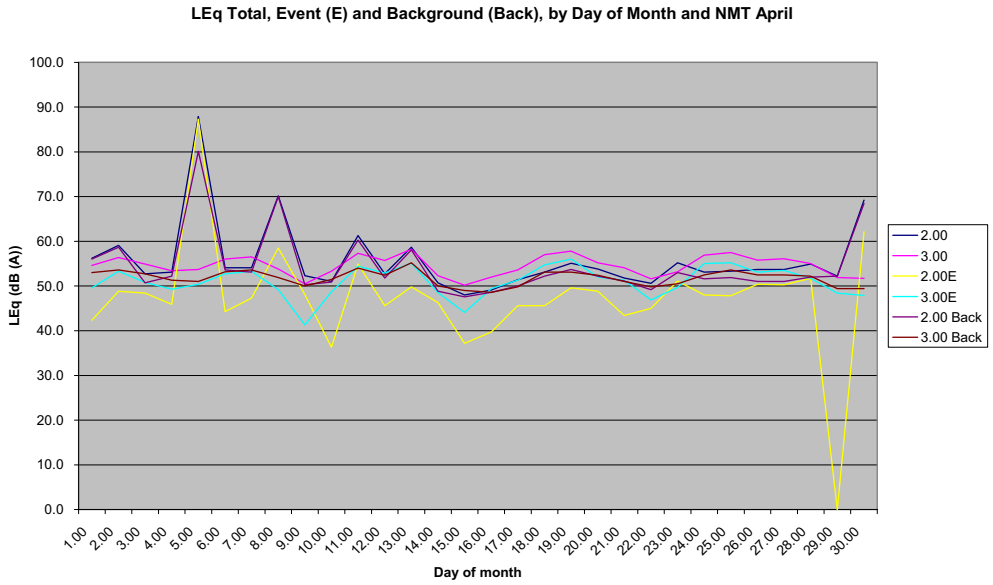


*Figure 1: Noise as Leq Total, Event (E) and Background (Back), by Day of Month and NMT for April 2006*

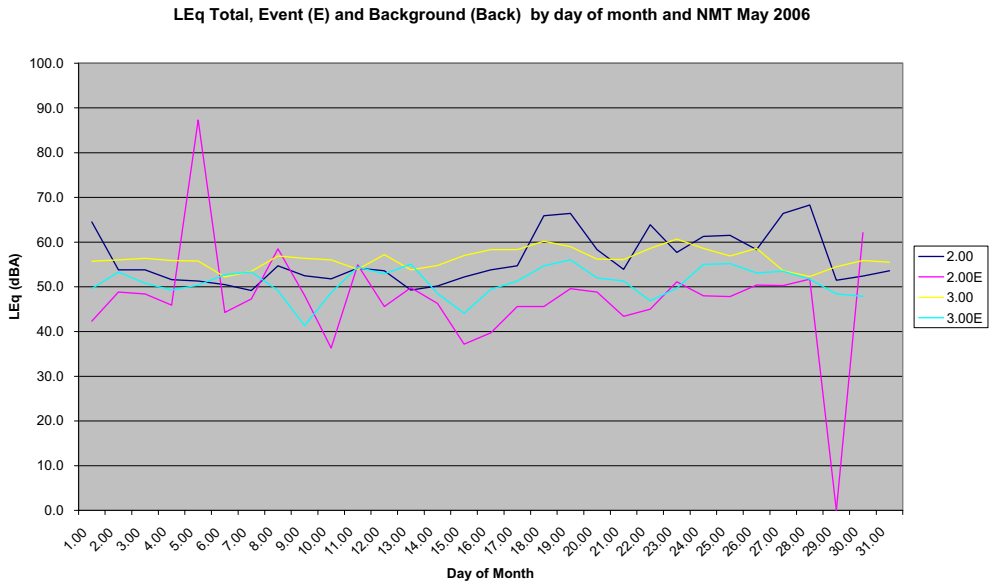

*Figure 2: Noise as Leq Total, Event (E) and Background (Back) by day of month and NMT for May 2006*

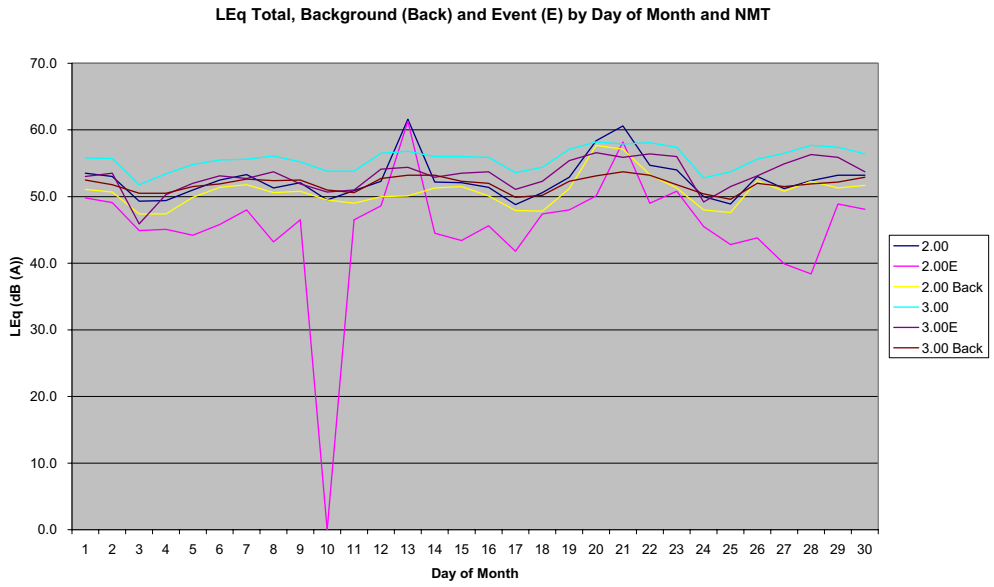


*Figure 3: Noise as Leq Total, Event (E) and Background (Back) by day of month and NMT for June*

2.2 Noise contours produced using the FAA's Integrated Noise Model (INM) for operations in 2005 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 of previous exercises and those included with the planning agreement. A contour covering the period January to June 2006 is now under preparation. The results of this modelling exercise will be supplied to Rushmoor in August.

| LEq dB (A) | Actual January – December 2005 movements (19586 actual movements) | Previous predicted area January – December 2005 movements (19479 movements at 2004 mix) | Predicted January – December movements for 2006 (20723 movements at 2005 fleet mix) |
|---|---|---|---|

| | | | |
|---|---|---|---|
| 55 | 3.62 | 3.79 | 3.79 |
| 60 | 1.57 | 1.57 | 1.63 |
| 65 | 0.88 | 0.84 | 0.90 |

Table 1: *Results of INM Modelling exercise*

2.3 Use of the Leq contour is internationally recognized as a means of noise measurement. A 66 decibel Leq 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 slightly noisier than a busy general office.

2.4 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) traditionally used as a method of assessing the probability of annoyance due to aircraft noise.

2.5 The FAA's INM along with ANCONII 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. TAG uses 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.

2.6 Daily Leq Figures are given in Appendix 1. A breakdown of aircraft movement numbers by type is given in Table 2 below.

## 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.

*Table 2: Movements summary by type.*

| Category | April | May | June | Quarter 2, 2006 | Total 2006 |
|---|---|---|---|---|---|
| **Business** | 1313 | 1893 | 2163 | **5369** | **9586** |
| **Helicopter** | 94 | 119 | 174 | **387** | **597** |
| **Subtotal (Planning Agreement Movements)** | **1407** | **2012** | **2337** | **5756** | **10183** |
| **Flying club** | 83 | 57 | 100 | **240** | **279** |
| **Military** | 6 | 15 | 28 | **49** | **92** |
| **Diversion** | 11 | 7 | 4 | **22** | **112** |
| **Other** | 150 | 141 | 192 | **483** | **806** |
| **SBAC** | 0 | 0 | 0 | **0** | **0** |
| **Total** | **1657** | **2232** | **2661** | **6550** | **11472** |

*Movements by Category for Quarter 2, 2006*

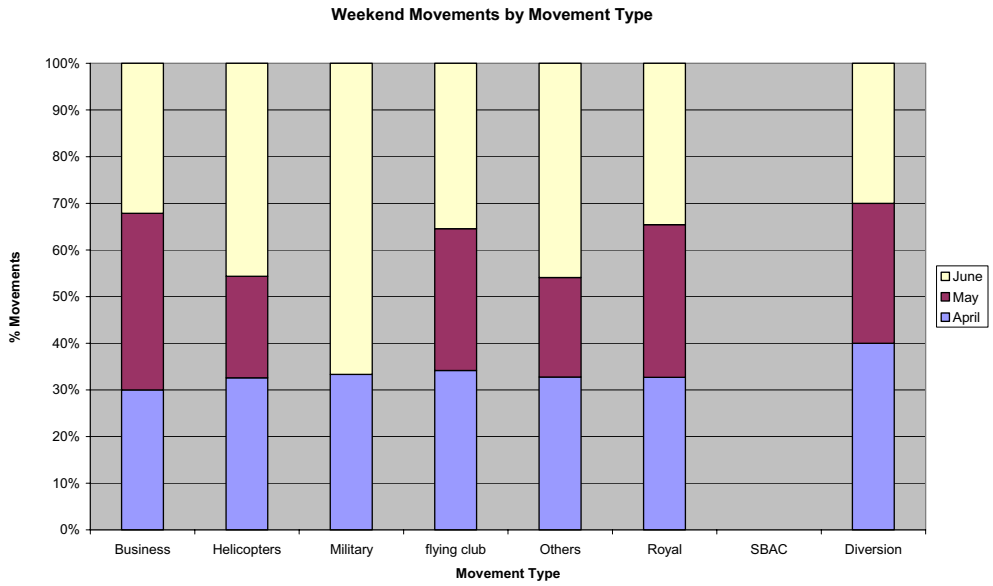


*Figure 4: Weekend Movements* by Type for Quarter 2, 2006*

** Includes Bank Holidays*

3.2 Figures 5 - 7 below give information on runway use, including operation. Operation refers to whether the movement was a Departure or Arrival. The overall runway usage split for arrivals and departures was 13% Arrivals Runway 06, 12% Departures Runway 06, 35% Arrivals Runway 24, 37% Departures Runway 24 and 3% for Other Movements (including helicopter movements) for the quarter.

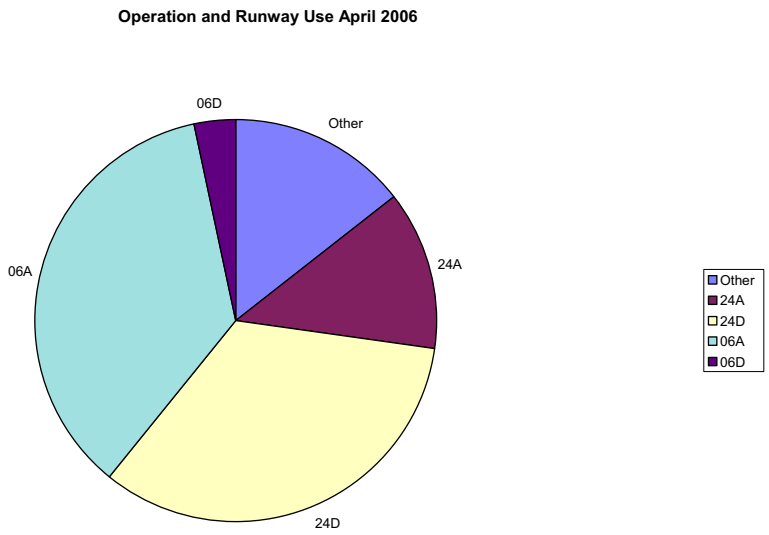


*Figure 5: Monthly Movements by Runway Used and Operation April, 2006*
*Key: A – Arrival, D – Departure*

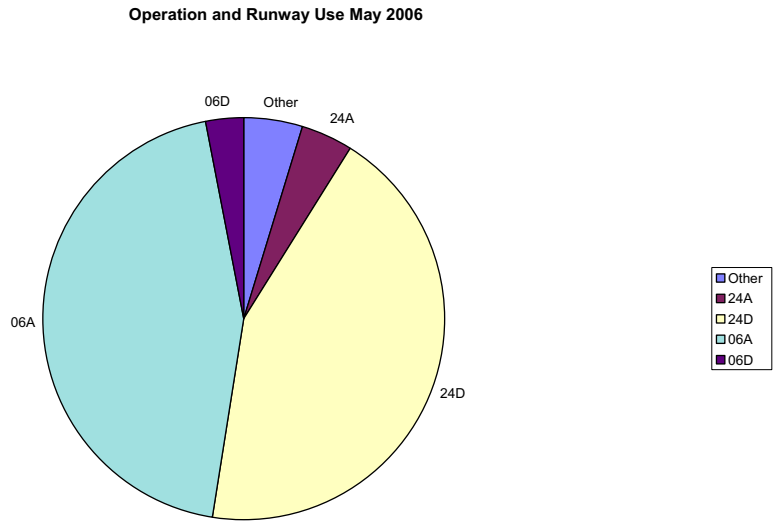


*Figure 6:* *Monthly Movements by Runway Used and Operation May 2006*
*Key: A – Arrival, D – Departure*

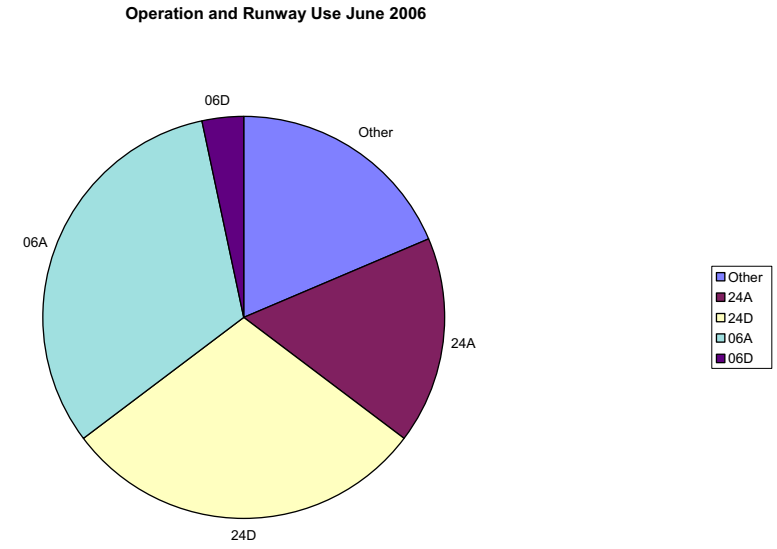


*Figure 7:* *Monthly Movements by Runway Used and Operation June 2006*
*Key: A – Arrival, D – Departure,*

3.3 The Maximum Take Off Weight (MTOW) is recorded within the NTMS for all fixed wing aircraft. Figure 8 gives a summary of aircraft MTOW for the quarter

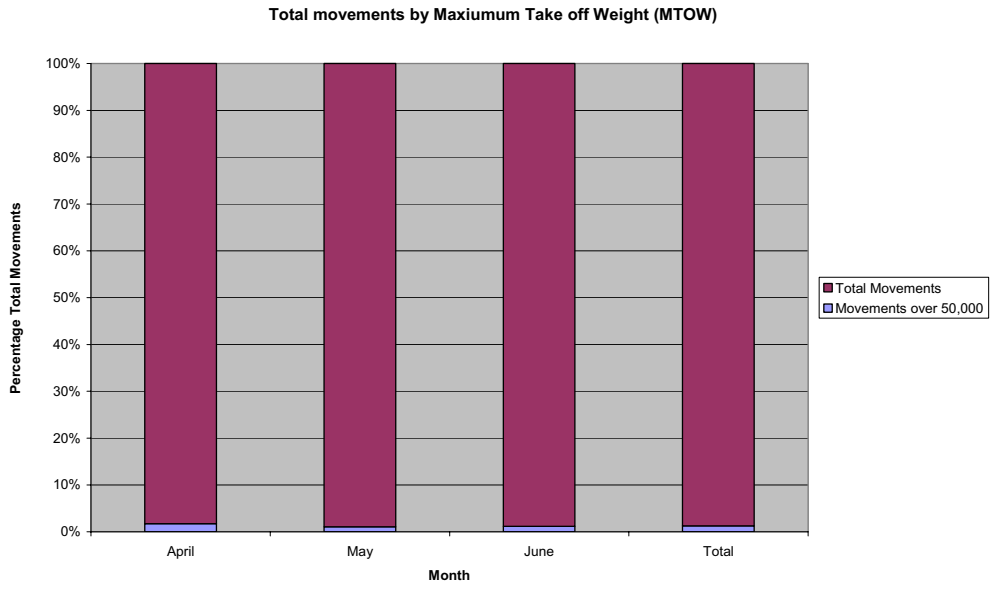


*Figure 8: Movements by Maximum Take Off Weight (MTOW) Quarter 2, 2006*

3.5 All civil aircraft using Farnborough during quarter 2, were compliant with the International Civil Aviation Organisation (ICAO) Chapter 3 classification. Chapter classifications are calculated from 2 aircraft noise measurements made during take-off operation and 1 from a landing. The results of these 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). Permission was granted, subject to receipt of a satisfactory certificate of conformance for use of the airport by a hushkitted Gulfstream over the 16th and 17th May 2006.

3.6 A new more stringent ICAO standard ICAO Chapter 4, is being finalised and is due for release this year. Aircraft are already being manufactured to comply with this standard. The likely scenario of future aircraft operating noise levels of Chapter 3 – 10dB, has been assumed for aircraft movements of the type handled at Farnborough, by the major London airports for planning purposes (source BAA, 2006). This is anticipated to be the noise level requirements of the new Chapter 4 standard once introduced.

3.7 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 all of the nitrogen oxide diffusion tubes and Streetbox monitors have remained as reported previously. 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.

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

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

4.4 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.

4.5 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.

4.6

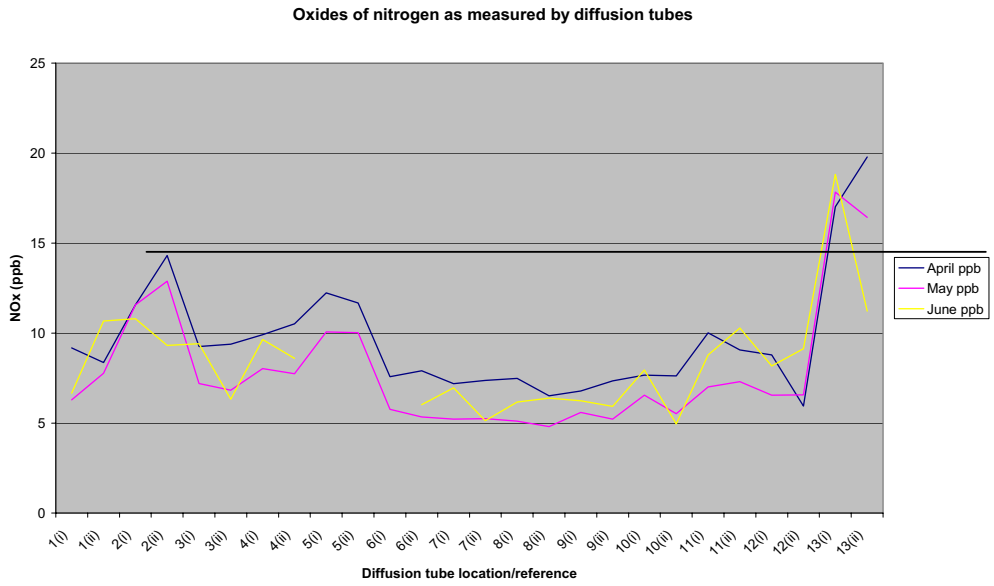


Figure 9: Nitrogen Oxides Diffusion Tube Results Quarter 2, 2006,

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

4.7 Table 4 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.

| Location | April (ppb) | May (ppb) | June (ppb) |
|---|---|---|---|
| Kempton Close (co-located with diffusion tubes 1i and 1ii) | 9.2 | 8.4 | 8.6 |
| Farnborough College of Technology (collocated with diffusion tubes 2i and 2ii) | 14.4 | 14.3 | 12.1 |

Key: **ppb** - parts per billion

*Table 4: Learian Streetbox results for Quarter 2, April – June 2006.*

## 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. Consent was granted by the airport for a single Gulfstream hush-kitted aircraft to use the airport during this quarter.

5.4 Nitrogen oxide levels recorded by monitoring remain consistent. Temperature inversions have been noted to affect these levels over the winter months. Compared with the previous quarter their influence has been less readily identifiable. 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.

# Appendix 1

# Appendix 2