



*LONDON BOROUGH OF
RICHMOND UPON THAMES*

Aircraft Noise Report

2003

With data up to 2002

**Prepared by the Special Projects Team of
Environment Planning and Review**

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Aircraft Noise Report

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Summary

The monitoring of aircraft noise has been undertaken in the Borough, to try and identify any trends. It is known that aircraft have been getting quieter with modern technology, but more of them are flying. It is therefore difficult to tell whether the noise climate is getting noisier or quieter and it is not known how much this changes people's feelings of annoyance. The noise contours produced by the Government are of some use for determining year on year trends, but they only analyse for daytime noise and do not include e.g. night-time noise, evening noise, each of which are also important.

This report presents the noise monitoring carried out in Barnes and Whitton between 1990 and 2001 (the 2002 results for April, July and October are due any day, when they have been checked against the Met office weather data).

The results show that noise has reduced over the years at Whitton but not at Barnes. If anything there is a slight increase in noise in Barnes. Once Terminal 5 opens, we can expect an increase in noise. And again, if a 3rd runway is permitted, there will again be an increase.

2. Introduction

The residents of the Borough have continuing concerns about the noise from aircraft, as they fly over the Borough. Appendix 1 shows that the number of flights over London continues to increase. As a result, both the Borough and Heathrow receive many complaints due to the aircraft noise. The Government has plotted noise contours to show where to expect noise complaints (an example of the 2001 contours at Appendix 2). The Government take the view that the outermost contour of 57 LAeq represents the level at which complaints seem to start. These contours extend from Heathrow over the northern part of the Borough for landings (Barnes, Kew, Richmond, St Margaret's) and over the west of the Borough for take offs (Whitton). Many of the residents who complain live well outside the contour area. The Government is now reviewing the validity of the significance they attach to the 57 LAeq contour. In addition to the noise contours, the Local Authorities around Heathrow have examined other factors that affect the noise climate.

The Borough of Richmond undertakes aircraft noise monitoring so as to have an independent check on the noise climate. Whilst the contours only cover the daytime period (0700-2300), the independent monitoring also focuses on the sensitive 8 hour nighttime period (2300-0700) and 4 hour evening period (1900-2300). If further periods were thought to be of concern, the data could be processed further.

The Borough of Richmond monitors aircraft noise at two fixed sites, one in Barnes and one in Whitton. Appendix 3a shows how aircraft line up to land over Barnes. Appendix 3b shows the routes for aircraft which take off over Twickenham and Whitton. The noise from each aircraft is monitored and the data stored automatically, both individually and as averages. The results are

then combined to produce data averaged over a month. This can then be compared against standards, where appropriate. One of the measures is the LAeq, which is a type of noise average. Appendix 5 gives a brief overview on Shortcomings of the LAeq, 16h parameter to assess noise impact.

The aircraft noise complaints to the Borough are mainly received via the dedicated Answerphone (020 8891 7979), although some complaints are made to the Special Projects team by personal phone calls. The complaints are recorded in a database. Each quarter the complaints are analysed and the summary is submitted to the Heathrow Airport Consultative Committee (HACC). The most recent report is attached to this report as Appendix 6.

Heathrow Airport Limited also present the complaints they have received, and present them to the HACC. A sample of their results is attached at Appendix 7. It can be seen that many of the complaints come from residents of the Borough.

3. Overview of Aircraft Noise Issues

In terms of the passenger throughput there has been about a 53% increase in the last ten years, with the 2000/01 figure being just over 64 mppa. In the same period there has been a 23% increase in Air transport Movements to about 460,000. Passenger loading, i.e. the number of people carried per movement has increased similarly, by 24%, to about 141 passengers per passenger aircraft.

Cargo data for the past five years has shown a steady increase up until the year 2000, but a decrease in 2001.

With regard to the aircraft noise contours, there has been a reduction in the area covered of around 8 – 10 % in the LAeq,16h contours. The results for 2000, however, are slightly complex, because Concorde did not fly during all of the summer period that year because of the accident in France in mid-July. The stated area reduction is based on the assumption that Concorde flew in 2000 as it did in 2001. The 2001 actual figures show a reduction of about 18% in the 57 LAeq,16h area since 1996.

There has been little change in the population exposed since 1996, partly as a result of an updating of the demographic data used to estimate the population numbers in 1997 and 1998. Assuming Concorde flew in 2000 as it did in 1999, the number of people within the 57 LAeq,16h contour was 307,000, relating to an area of 149 km².

Over the 5 year period since 1996, there has been a steady increase in the number of 'Chapter 3' short haul jets using the airport, but a reduction of the 'Chapter 2' aircraft. EU regulations have resulted in the 'Chapter 2' aircraft being banned from UK airports from 1st April 2002.

Data for the Departure Noise infringements show no particular trend over the last 5 years, mainly because of an improvement in the monitoring efficiency in 1997 and 1998, and then a reduction in the infringement limits in early 2001.

Monitoring results are presented for seven sites around the airport. The trend is mixed, with those sites dominated by departures showing a decrease in noise over the last 5 years, but those affected by arrivals showing if anything an increase, particular at night. The absence of Concorde from the fleet has had an effect at several of the sites and this needs to be borne in mind when reviewing the data.

4. Aircraft Noise Monitoring Results for the years 1990 –2002

This report presents the aircraft noise monitoring results from the sites in Barnes and Whitton.

4.1. Barnes monitor

Location:

The Barnes monitor is located in Stillingfleet Road, near the 'northern' flight path for aircraft landing 'westerly' at Heathrow airport. 'Westerly' landings occur for about 75% of the year, depending on the strength and direction of the wind, although the contour map at Appendix 2 shows that in 2001 there were 81% westerlies. The aircraft mostly fly along a route about half a kilometre to the south of the site, and some fly directly overhead. The location benefits from 'alternation' as aircraft fly down the further 'southern' flight path for half the day. The benefit of 'Alternation' is that the aircraft are only overhead for half of the day.

Table 1 shows the monitoring results for the 16 hour day from 7 a.m. to 11 p.m. for the months of April, July and October 1990 through to 2001(2). The $L_{Aeq,16h}$ unit is a type of noise average. The Government currently consider 57 $L_{Aeq,16h}$ as the 'threshold' for judging annoyance from aircraft noise. This value is currently being reviewed.

Table 1
Stillingfleet Road, Barnes
Daytime 0700-2300, $L_{Aeq,16h}$ monitoring results

Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
April	-	55	-	52	53	-	50	53	57	56	55	57	49	
July	64	54	54	54	59	58	55	56	58	56	56	56	54	65
Oct	54	55	54	50	52	56	60	55	56	56	56	56	-	56
Nov														56

Note: L_{Aeq} , is the average $L_{Aeq,16h}$ for the month

Table 2 show the results for the $L_{Aeq,4h}$, evening period (7 p.m. to 11 p.m.)

Table 2
Stillingfleet Road, Barnes
Evening 1900-2300, $L_{Aeq,4h}$ monitoring results

Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2002	2002	2003
April	-	54	-	54	55	55	51	52	56	58	52	49	50	
July	53	53	53	51	51	54	54	56	57	57	56	54	54	63
Oct	57	57	55	51	55	56	52	55	56	56	57	57	-	56
Nov														57

Note: L_{Aeq} , is the average $L_{Aeq,4h}$ for the month

Table 3 show the results for the $L_{Aeq,8h}$, night period (11p.m. to 7 a.m.)

Table 3
Stillingfleet Road, Barnes
Nighttime 2300-0700, $L_{Aeq,8h}$ monitoring results

Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2002	2002	2003
April	-	46	-	48	46	51	41	43	48	47	48	49	44	
July	48	50	45	49	55	48	47	50	50	48	49	54	48	61
Oct	48	48	45	46	49	52	48	46	51	48	49	57	-	48
Nov														49

Note: L_{Aeq} , is the average $L_{Aeq,8h}$ for the month

Figure 1
Noise Monitoring
Stillingfleet Road, Barnes
Daytime 0700-2300, LAeq,16h

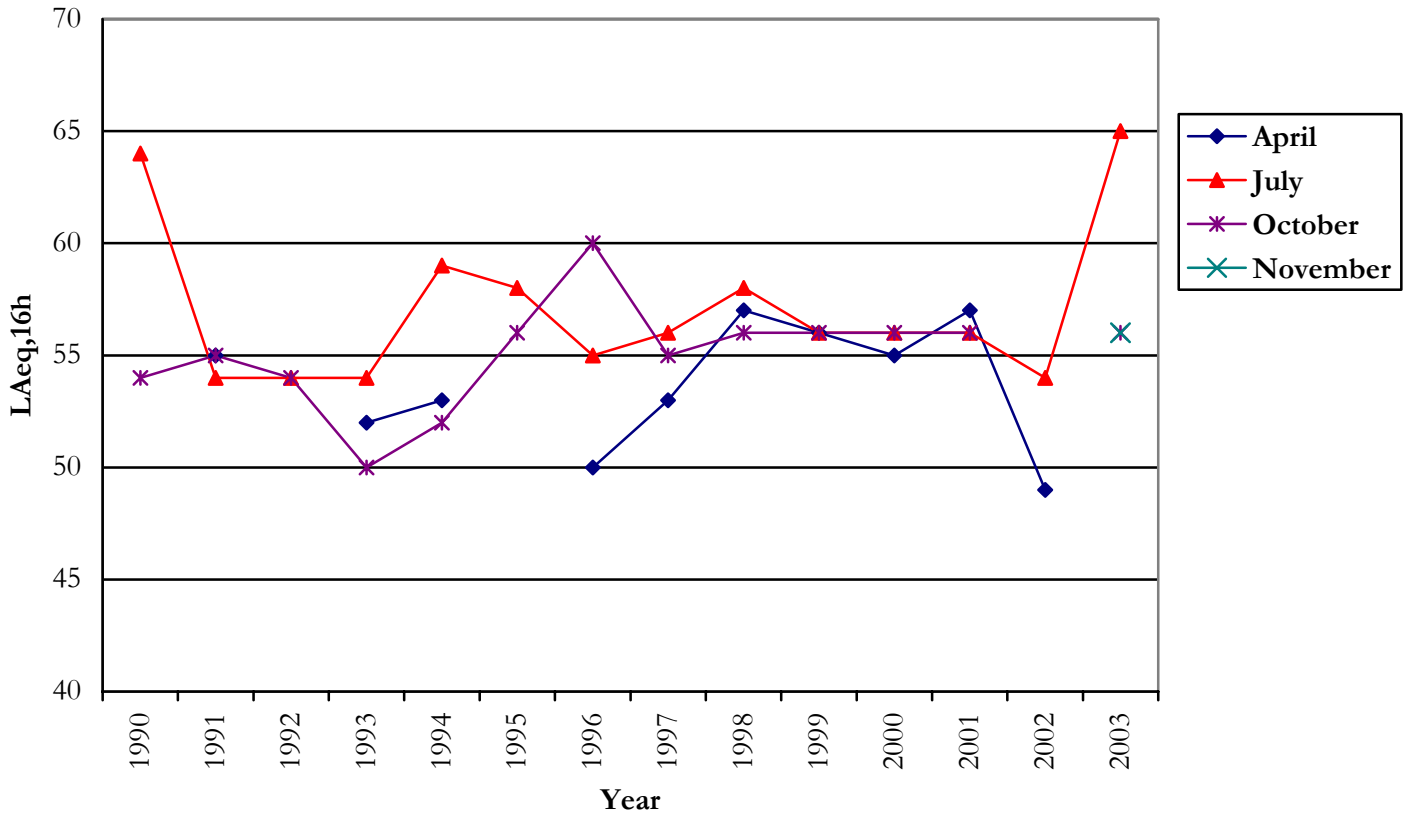


Figure 2
Noise Monitoring
Stillingfleet Road, Barnes
Evening 1900-2300, LAeq,4h

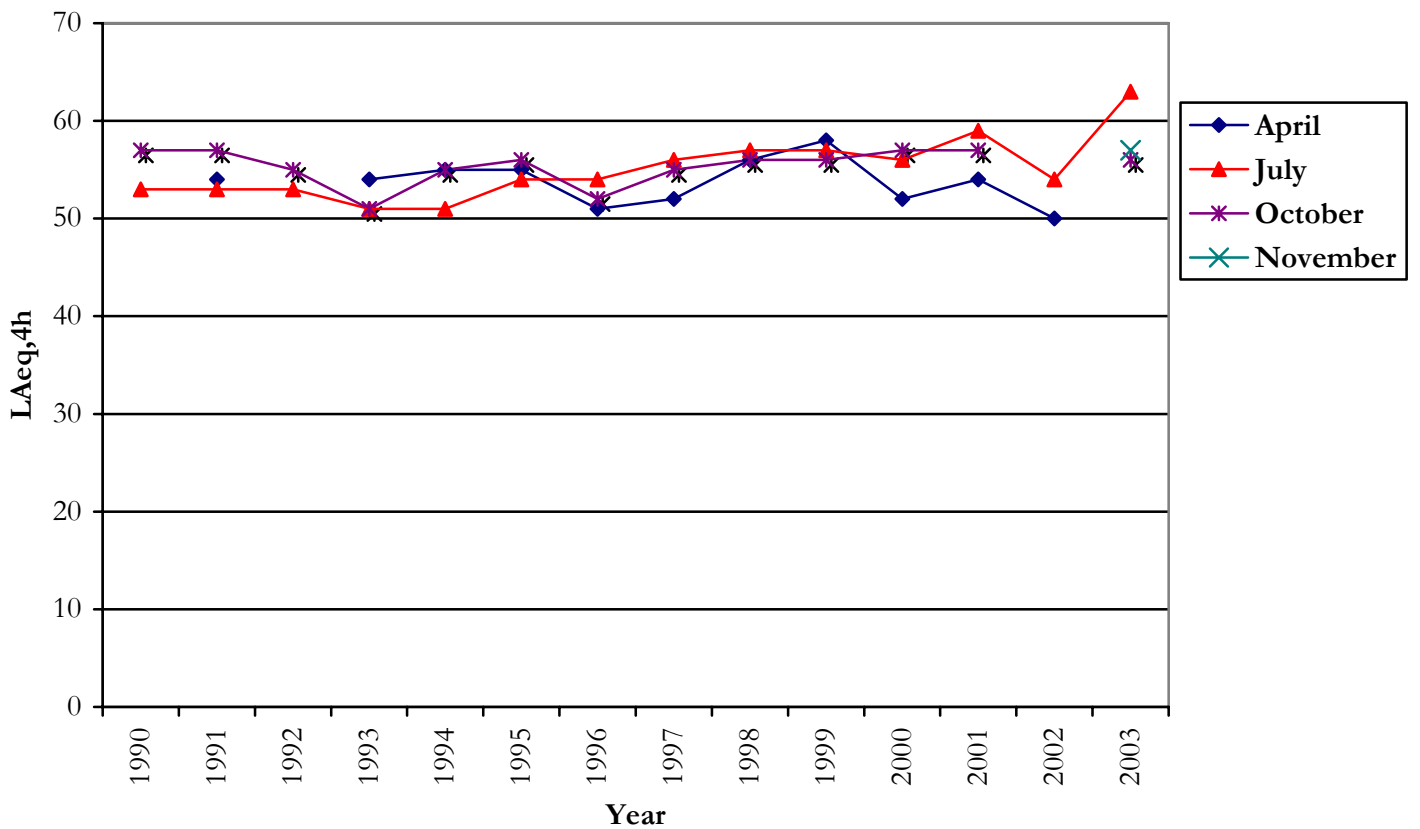
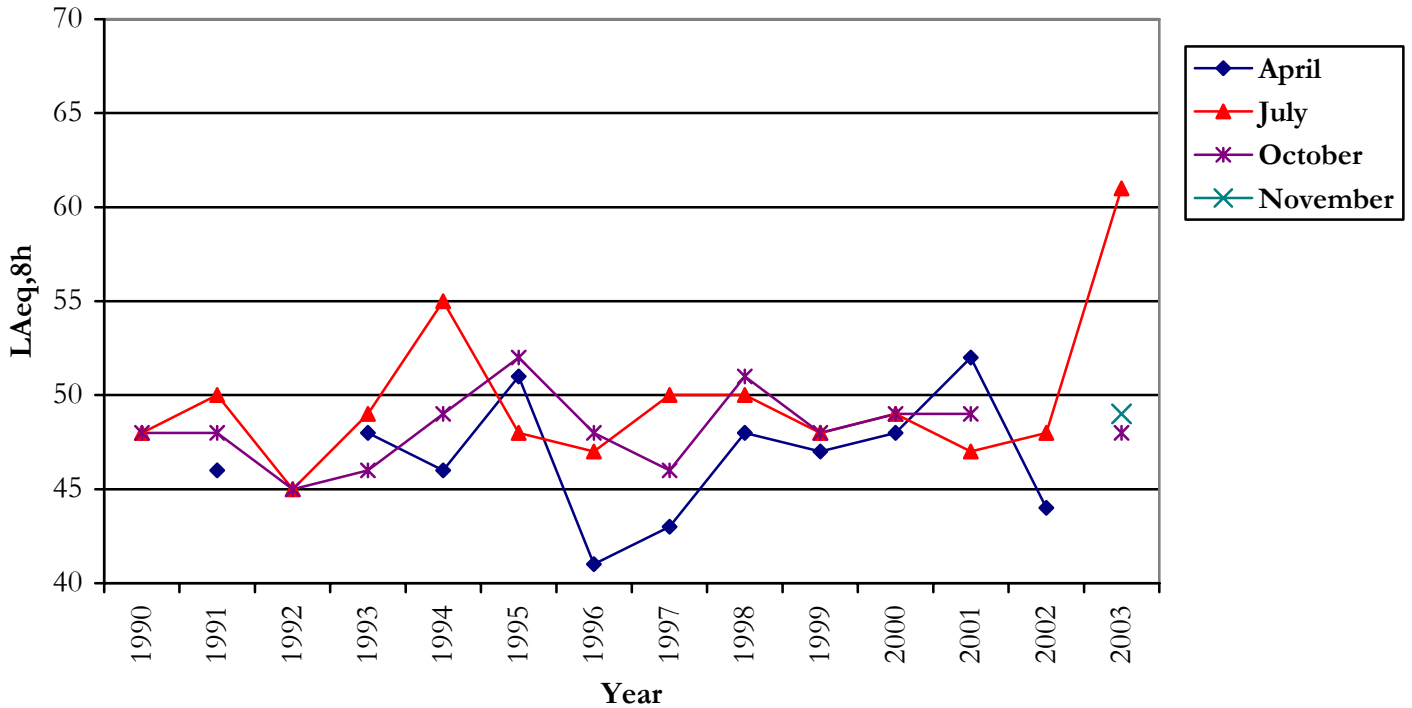


Figure 3
Noise Monitoring
Stillingfleet Road, Barnes
Nighttime 2300-0700, LAeq,8h



4.2 Over view of the results for Barnes:

There is no consistent pattern to the noise results from this site. If anything, there appears to be a slight increase overall, but none of the three months examined exhibit the same trend for any of the time periods.

Whilst the monitoring and modelling data indicates that the noise in Barnes is roughly on the threshold of what the Government consider would be annoying, in practice the Borough receives complaints from well outside the 57 LAeq,16h contour.

Due to the location of the monitor being slightly to one side of the landing path, many parts of the Borough will have noise levels much higher than are presented for Barnes. For example, residents of Kew and St Margaret's are closer to the airport and the aircraft are lower, so noise levels will be greater.

4.3. Whitton monitor

Location: The Whitton monitor is located just off Powder Mill Lane, under some of the flight paths of aircraft taking off from Heathrow. When aircraft take off 'easterly' from Heathrow, they pass over the site along the routes know as 'Dover', 'Midhurst' or 'Southampton'. These easterly takeoffs occur for roughly 25% of the year (19% in 2001), depending on the strength and direction of the wind. When the aircraft are on 'easterlies', the aircraft may fly over continuously, with no benefit of relief for a period of the day. If the weather holds, this pattern can go on for many days. However, there is some benefit for Whitton, Hampton Twickenham etc. in that the aircraft divide to go down different routes. The result is that there are fewer aircraft going over exactly the same place when compared with premises under the landing paths.

Table 4 shows the $L_{Aeq,16h}$ results for the months of April, July and October 1990 through to 2001. The monitoring results are for the 16 hour day from 7 a.m. to 11 p.m.

Table 4
Powder Mill Lane, Whitton
Daytime 0700-2300, $L_{Aeq,16h}$ monitoring results

Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
April	-	67	-	67	66	66	65	65	62	63	65	58	62	68
July	69	66	65	59	67	66	65	62	56	64	57	58	62	65
Oct	66	67	66	69	66	66	63	64	64	64	57	56	64	66

Note: L_{Aeq} is the average $L_{Aeq,16h}$ for the month

Table 5 show the results for the $L_{Aeq,4h}$, evening period (7 p.m. to 11 p.m.)

Table 5
Powder Mill Lane, Whitton
Evening 1900-2300, $L_{Aeq,4h}$ monitoring results

Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
April	-	67	-	69	67	68	66	67	64	65	68	59	60	70
July	70	69	66	62	69	68	67	63	59	67	46	59	61	70
Oct	66	67	67	70	68	-	66	66	66	67	55	58	62	70

Note: L_{Aeq} is the average $L_{Aeq,4h}$ for the month

Table 6 show the results for the $L_{Aeq,8h}$, night period (11p.m. to 7 a.m.)

Table 6
Powder Mill Lane, Whitton
Nighttime 2300-0700, $L_{Aeq,8h}$ monitoring results

Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
April	-	47	-	51	48	50	50	48	46	44	48	46	46	54
July	56	52	53	44	53	51	-	45	39	49	40	45	51	49
Oct	49	52	51	55	51	-	49	51	46	52	44	44	48	55

Note: L_{Aeq} is the average $L_{Aeq,8h}$ for the month

Figures 4 - 6 present the same results graphically:

Figure 4
Noise Monitoring
Powder Mill Lane, Whitton
Daytime 0700-2300, LAeq,16h

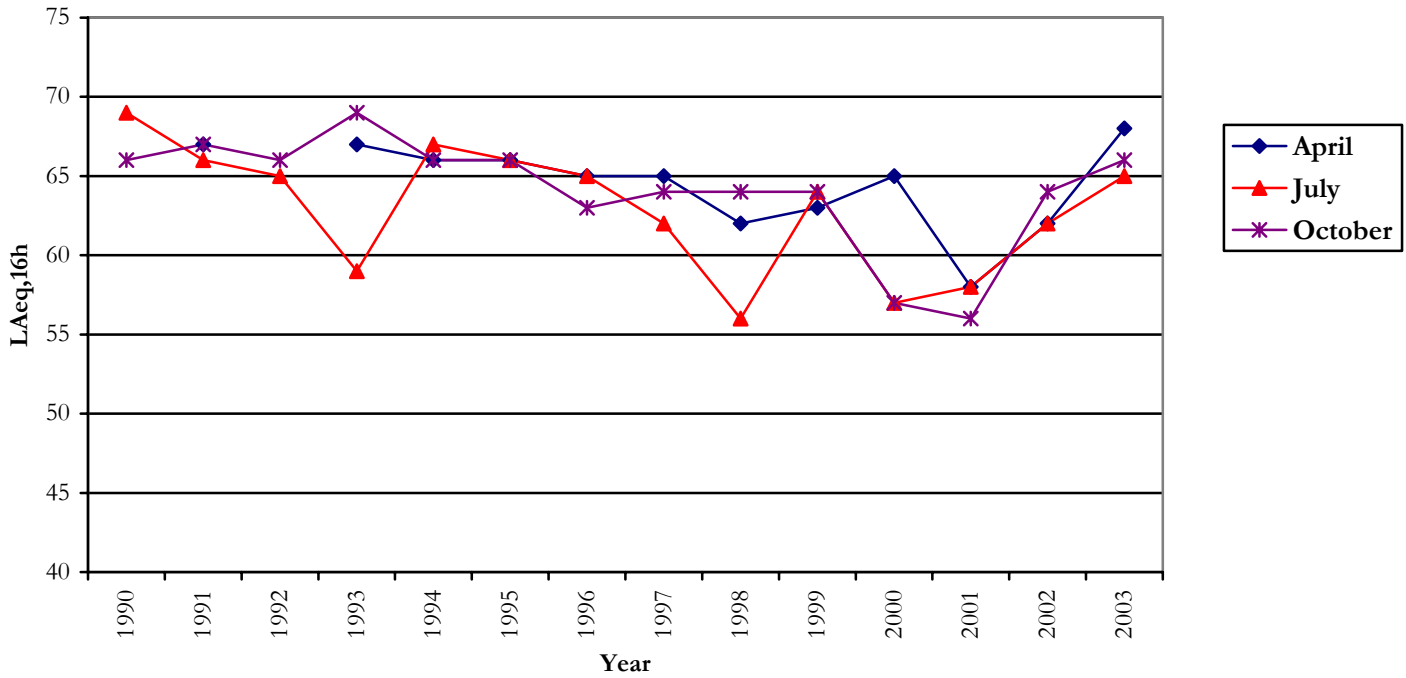


Figure 5
Noise Monitoring
Powder Mill Lane, Whitton
Evening 1900-2300, LAeq,4h

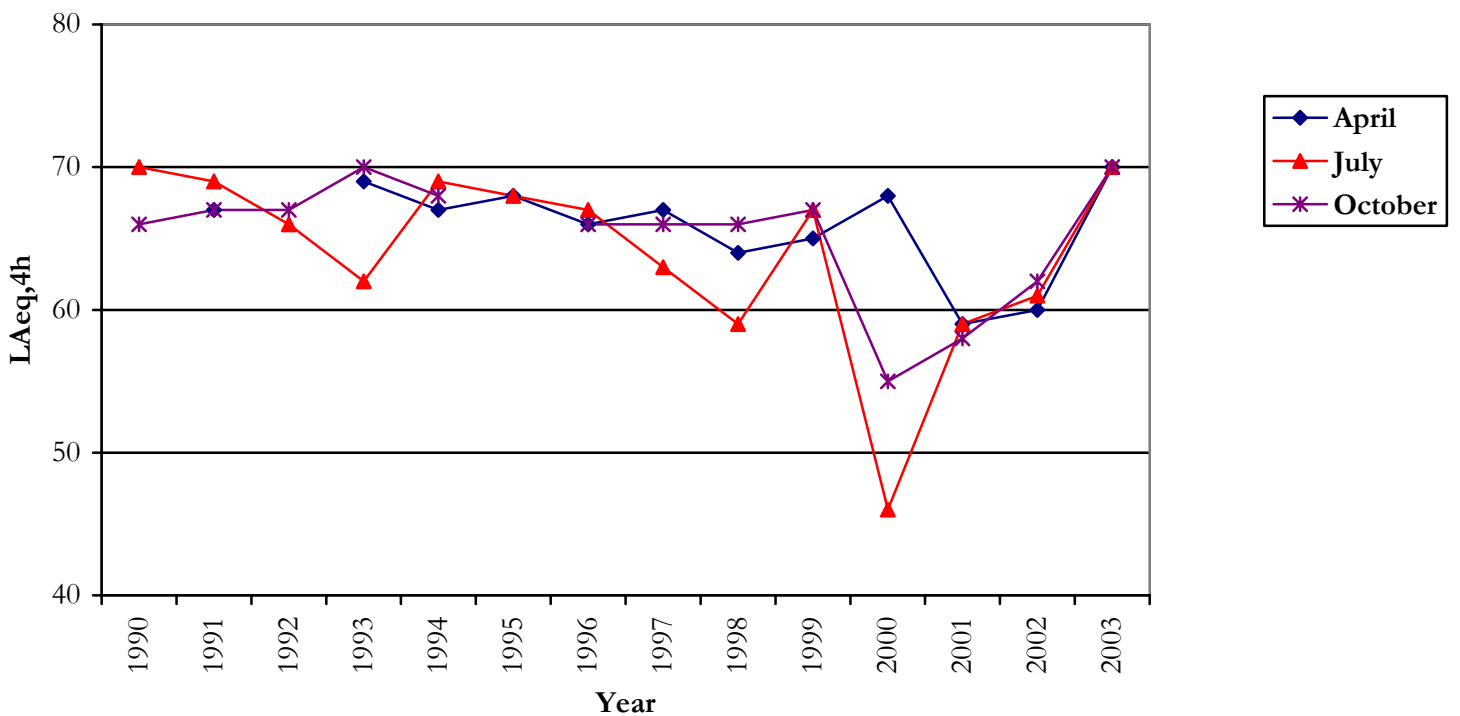
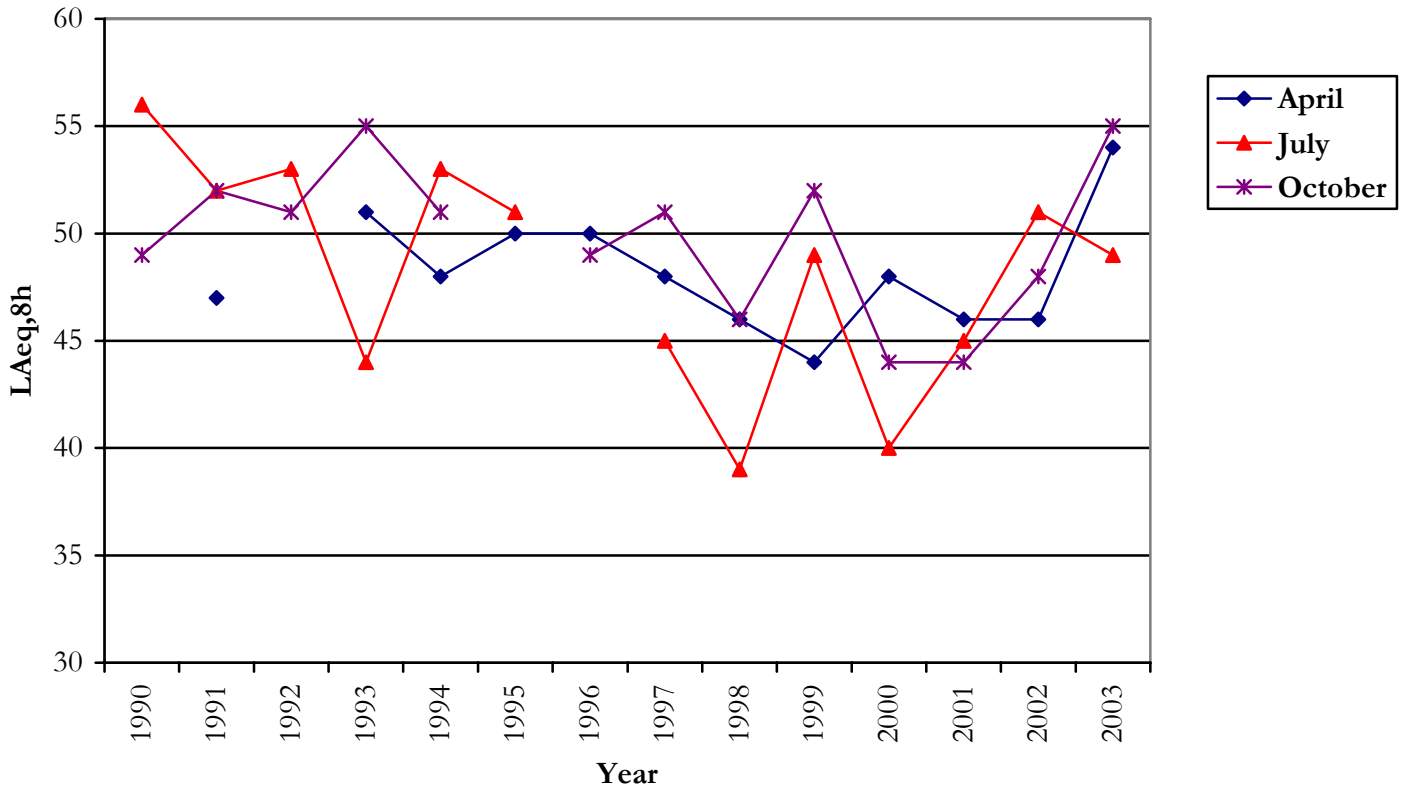


Figure 6
Noise Monitoring
Powder Mill Lane, Whitton
Nighttime 2300-0700, LAeq,8h



At the site in Whitton, there is clearly a downward trend in all the time periods with reductions of about 6 dB(A) in the daytime and evening periods over the 12 years. The night reductions are of at least a similar order. Given that this location is mainly affected by aircraft departing Heathrow, this trend is not surprising, given the reductions that have been achieved in departure noise.

5. Conclusion to the noise monitoring results

In terms of noise monitoring, the results appear to show that conditions have improved over the years in Whitton, whilst it is difficult to discern a clear trend for Barnes. What the results cannot show is the annoyance caused the increased frequency of flights. Residents tell us that the reducing separation distance between flights adds considerably to the stress. The increase in flights is demonstrated in the chart at Appendix 1.

The noise monitoring results are useful for showing past trends and as a base line for judging new developments as the airport operations expand. The Government are currently reviewing their studies on annoyance. When they publish their findings, we will be able to judge the air noise climate in the Borough against any revisions in the standard.

6. Aircraft Noise Complaints

Attached at Appendix 6 are examples of complaints logged by the London Borough of Richmond's aircraft noiseline; and at Appendix 7, some of those reported to Heathrow Airport Consultative Committee (HACC) during 2001 and 2002.

6.1 Quarterly Complaint overview.

The Borough received a total of 322 calls for the July to September 2002 quarter. This compares to 320 calls respectively for the same quarter in 2001. The number of complaints has increased for the first time since the T5 inquiry. This is probably partly due to a larger than average number of Easterly takeoffs over Whitton (dictated by wind strength), and partly due to repairs to the southern runway at Heathrow. The runway repairs have effectively meant the southern runway has been closed from 10pm to 6am Sunday night to Friday morning. All landings and departures during this period were from the northern runway. Although this has not meant new flight paths it has resulted in more noise over Twickenham, Teddington and the Hamptons and several weeks of continuous noise over Barnes, East Sheen and Richmond when alternation was abandoned. (Alternation only affects landing aircraft, when they switch between runways to give people a period of relief). Generally we have had more people seeking out advice from officers rather than leaving messages on the noiseline answerphone. Some residents of the Borough choose to ring Heathrow rather than the Council.

6.2 Times of complaints

As you can see from Appendix 6, the only hour when nobody complained was between 3.00a.m and 4.00a.m. There was a particularly high number of complaints between 11.00 p.m. and 3.00.a.m - a total of 46 different calls with 14 between 1.00a.m and 3.00 a.m. as against 25 for the same time in 2001 with 4 between 1.00a.m and 3.00a.m. This is a substantial increase in complaints for night flights and many from people who had never complained before.

6.3 Type of complaint

Most complaints were about the craft being particularly noisy, followed by the frequency and about them flying low. We also received many complaints about being woken up and then unable to get back to sleep or being unable to get to sleep in the first place. This varies somewhat from quarter to quarter.

6.4 Conclusion to aircraft noise complaints

Although more residents from Richmond contact Heathrow than from any other Borough, a significant number still prefer to contact officers of the Borough to lodge their complaints or to seek an explanation as to what is going on. We know that more people would complain if they felt that it would achieve something. We also know (from research studies) that there are many people who do not complain but who are just as aggrieved by the aircraft noise as those who do complain.

7. Aircraft noise and T5

At the T5 Inquiry, the base year was taken as 1994 for noise modeling. Predictions were then made for the year 2016, by which time T5 would be fully functioning. The contours presented by BAA showed that without T5, the contours could be expected to shrink, i.e. the noise climate would improve, due to new technology. However, if T5 was built the noise would be worse than without T5, but would not be as bad as it was in 1994. The exception in the whole Heathrow area would be at Barnes, where (according to BAA) the noise climate was predicted to become worse than in 1994.

8. Aircraft noise and a new 3rd runway at Heathrow

If a 3rd runway were built at Heathrow, the increase in the number of passengers would be similar to the increase from opening T5. We might therefore expect a similar increase in impact in terms of noise. The modeling of the future noise assumes that Concorde will not be flying, so an improvement can be expected for that reason. However, it is anticipated that smaller aircraft would use the new runway, leaving a concentration of larger aircraft on the existing flightpaths over Barnes. To date it has not been possible to obtain from CAA the assumptions used in their modeling for the years 2015 and 2030 to know what impacts to expect other than the 16 hour day contour. Continued monitoring will help to determine the noise trend as a check on the 16hr contour and in other time periods and will be useful to feed into the noise map for the Borough.

9. Conclusion

There are uncertainties about the way that aircraft noise will develop or increase in the future. We await the outcome of the court case at the European Court of Human Rights, on the topic of night flights. We now have a consultation paper on night flights. When the White Paper is produced in 2003 we will know whether to expect a 3rd runway at Heathrow. Also due in 2003 are the expected consultations on 'westerly preference' and the 'Cranford Agreement'. Both of these topics are airport management issues which determine the way the aircraft land or takeoff from Heathrow. Further noise monitoring data may well be needed in order to respond to these consultations. The aim is to protect the residents of the Borough from excessive aircraft noise.

10. Contact Details

If further information is needed on any of the aspects covered by the aircraft noise report, please contact the Special Projects Team, London Borough of Richmond upon Thames,

Noiseline Answerphone: 020 8891 7979;

Telephone: 020 8891 7729;

Fax: 020 8891 7448;

Email: specialprojects@richmond.gov.uk