Air Quality Monitoring: Joint Report by RBBC and BAAG for 2009.

1. The following report presents the results from the 2009 air pollution monitoring program undertaken on, and in the vicinity of, Gatwick Airport.

2. Committee members are reminded that details of:
   - the legislation,
   - the rationale for the monitoring of certain pollutants,
   - and factors to bear in mind when examining the data e.g. the impact of the weather, and / or changes in the source of a pollutant, were covered in a separate report to the GP sub committee on 11th January 2007.

Off Airport Monitoring at Relevant Receptors on the Horley Gardens Estate.
Annual Compliance Monitoring – Nitrogen Dioxide.

3. The annual average concentration of nitrogen dioxide across the Horley Gardens Estate in 2009 is shown in Figure 1.

4. Concentrations were below the UK annual average objective of 40 µg m^{-3} (micrograms per cubic metre), and so the UK air quality standards were met within the Horley air quality management area (AQMA) in 2009.

5. The highest concentrations measured on the estate were 32.2 µg m^{-3} and 34.5 µg m^{-3} at two sites towards the southern end of The Crescent, including the 'worst case' receptor at RB59.

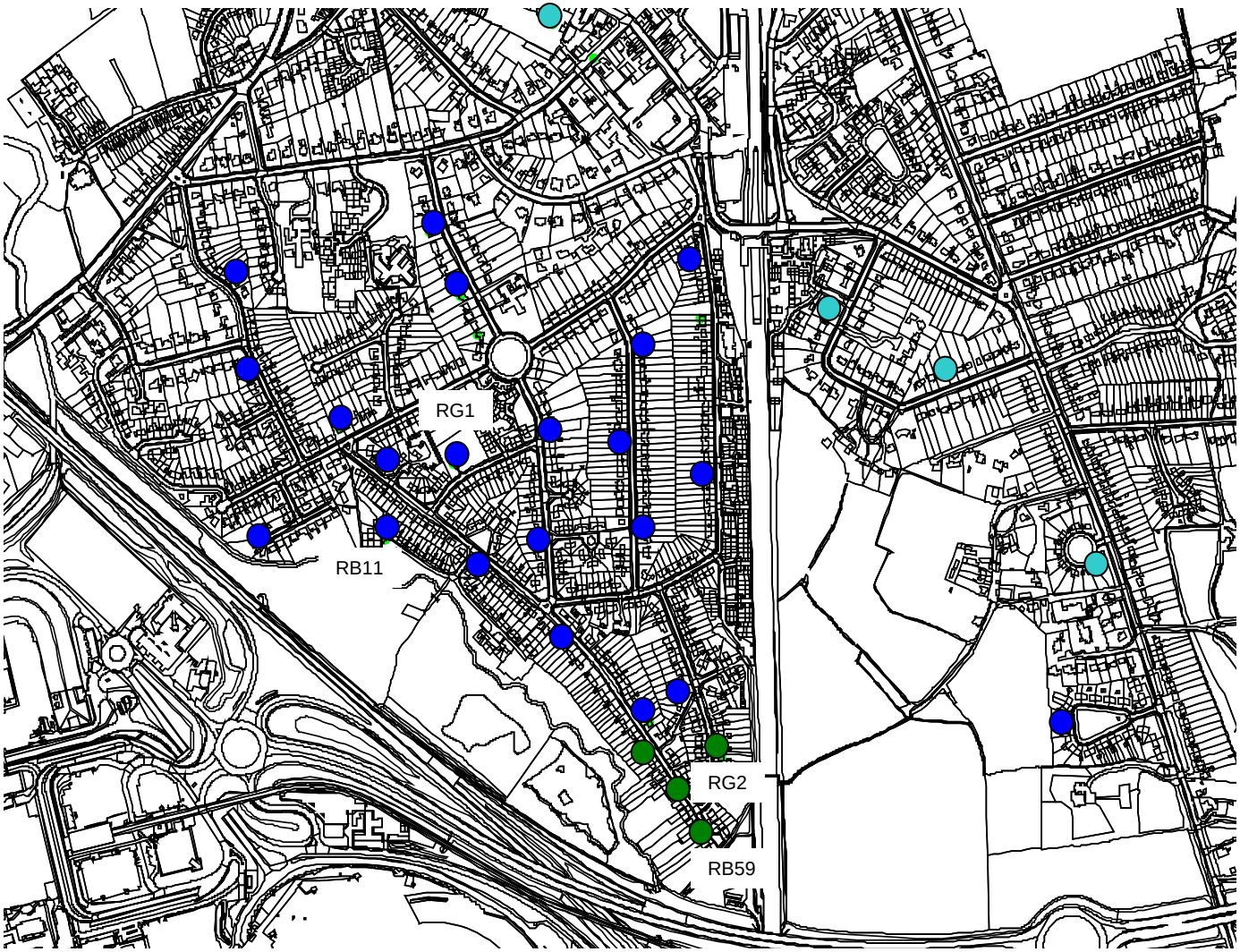
6. Local sources of pollution on the estate remained unchanged throughout 2009, and so the results are comparable to previous years monitoring work.

7. Data capture from the real time monitoring site RG1 was 100 %, and from site RG2 95 %, and so the data from these sites, along with the diffusion tube data is valid for compliance monitoring purposes.

8. The results from 2009, as in previous years, are in line with the predicted distribution of nitrogen dioxide concentrations for the Horley Gardens Estate with elevated concentrations towards the south east corner of the estate. However, concentrations in 2009 were among the lowest recorded to date, with concentrations around 1.5 - 3 µg m^{-3} lower than in 2008. The prevailing weather conditions in 2009 meant that concentrations in general were at the lower end of their 'typical' range, and the lower concentrations seen in the vicinity of the airport were also seen in comparable suburban areas in Reigate, Banstead, Redhill, and Merstham, where concentrations on average were 2 µg m^{-3} lower than in 2008.

9. Passenger numbers and aircraft movements at Gatwick declined by 5.3 % and 4.4 % respectively in 2009, compared to 2008 (Appendix A). Since 2007, when passenger numbers and aircraft movements peaked, passenger numbers have fallen by 8 % and aircraft movements by 5.5 %, and based on computer modelling[1] a 5 % reduction in aircraft movements would result in a 2.4 µg m^{-3} reduction in annual mean concentrations at the RB59 (worst case) monitoring site. Therefore the low concentrations recorded in the vicinity of the airport in 2009 reflect a combination of low background concentrations that are seen borough wide, and also the reduction in passengers (and thus aircraft) using the airport.

[1] Netcen FAST modelling for GAL (2006). Modelling approach has since changed but the original model is still appropriate for indicative values.



Key:

- 20.1 to 25 µg m^{-3}
- 25.1 to 30 µg m^{-3}
- 30.1 to 35 µg m^{-3}
- 35.1 to 40 µg m^{-3}
- 40.1 to 44 µg m^{-3}

North

0 250 m

Other sites in the vicinity of the Of the Airport:

Charlwood: (Russ Hill)	14 µg m^{-3}
Hookwood: (Withey Meadows)	22 µg m^{-3}
Smallfield: (Ontario Close)	25 µg m^{-3}

Comparable sites elsewhere within the Borough:

Reigate:	21 µg m^{-3}
Banstead:	19 µg m^{-3}
Redhill:	21 µg m^{-3}
Merstham:	28 µg m^{-3}

Figure 1: Monitoring Results for Nitrogen Dioxide Concentrations across the Horley Gardens Estate in 2009.

Tube Correction Factor = 1.014 (n=12).

Annual Compliance Monitoring – PM_{10}.

10. The PM_{10} air quality standard was met on the Horley Gardens Estate in 2009, with an annual average concentration at RG1 of 18 µg m^{-3}, which was within the expected range of 18 to 23 µg m^{-3}. The air quality standard permits an annual average PM_{10} concentration of 40 µg m^{-3}, and also allows for 35 days where concentrations may exceed 50 µg m^{-3}, and during 2009 only 2 days at RG1 had concentrations over 50 µg m^{-3}.

11. Concentrations in 2009 were around 1.7 µg m^{-3} lower than in 2008, and given the limited contribution by the airport to PM_{10} concentrations the majority of this 'improvement' is likely to be the result of the prevailing weather conditions in 2009 rather than a significant reduction in local sources of PM_{10} pollution.

Trends in Pollutant Concentrations.

Nitrogen dioxide.

12. A three year rolling average concentration is used in the trend analysis work, to help remove the year to year fluctuations in concentrations caused by the prevailing weather conditions, and the data to date (Figure 2) shows a clear downward trend in annual average nitrogen dioxide concentrations at the RG1 site.

13. At the 'worst case' receptors closer to the airport (RG2, RB59) the trend is perhaps less clear cut, but both sites suggest that the concentrations of nitrogen dioxide are now falling.

14. As non airport sources of nitrogen dioxide make a significant contribution to RG1 (65 %[2]), and a smaller but still significant contribution to RB59 and RG2 (50 % and 53 %, respectively), this downward trend at RG1 and RG2 / RB59 is as expected, given that computer modelling indicates that non airport sources of nitrogen dioxide are predicted to fall until around 2015 driven mainly by improvements in road vehicle engine technology. In addition the reduction in passengers using the airport over the past two years will also contribute to the results seen at the RG2 and RB59 sites.

15. The reductions in nitrogen dioxide concentrations at Gatwick (notably RG1) are not unique, as a similar pattern is seen at background sites across the south east.

[2] Figures are from Gatwick Air Quality Assessment for 2010 (AEAT/ENV/R/2795/Issue 1 – June 2009). Originally the background was 75 % of the pollution at RG1 (Air Quality Modelling for Gatwick Airport 2002/3 (netcen/AEAT/ENV/R/1625/Issue 3 October 2004)). The decrease in the contribution made by the background at this site reflects falling background concentrations.

Figure 2: Three year Rolling Annual Average Nitrogen Dioxide Concentration at RG1, Michael Crescent Horley (Blue diamond), RG2, The Crescent Horley (Purple square), and RB59 (Red triangle).

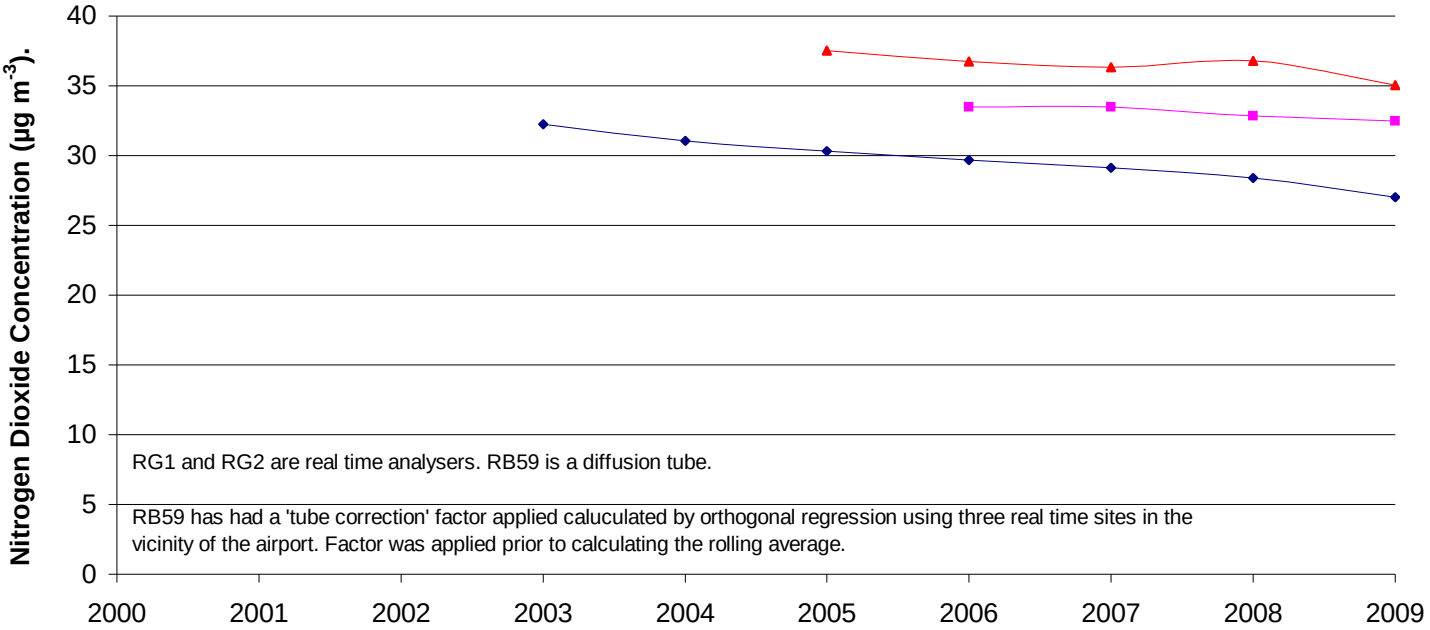
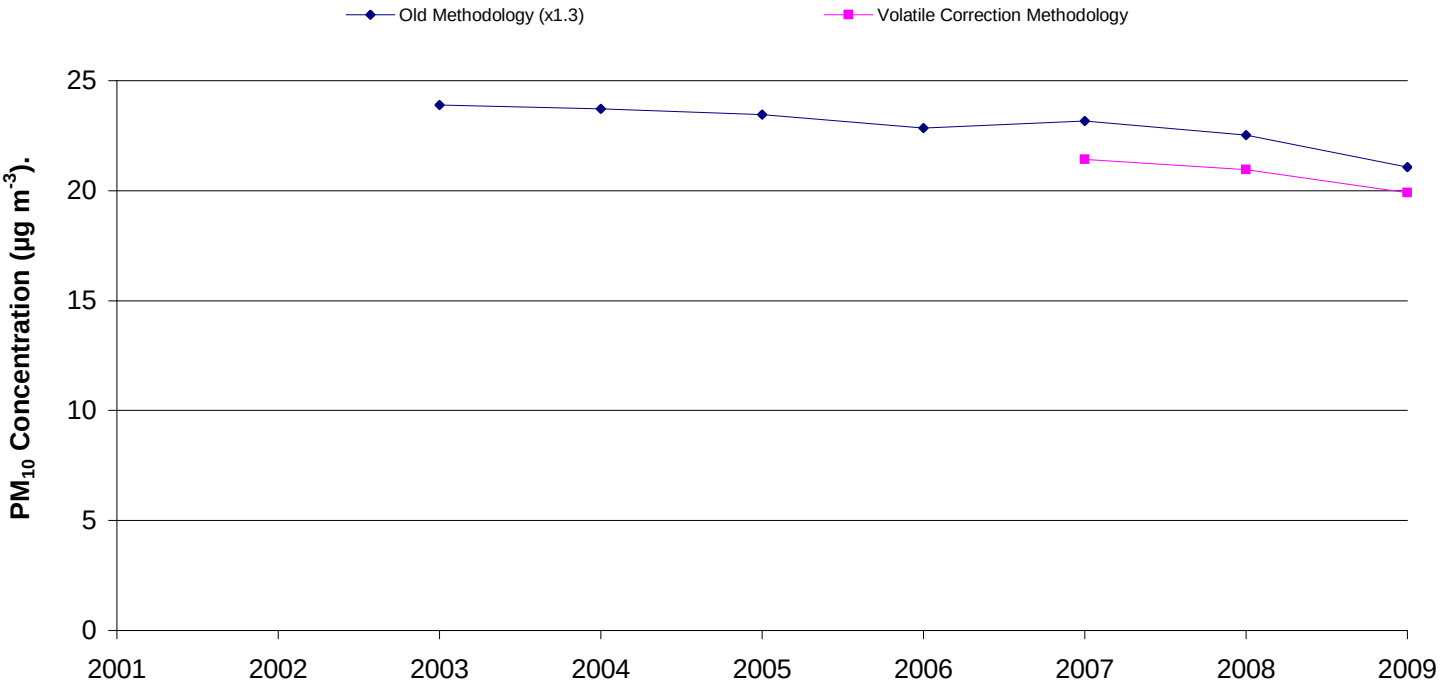


Figure 3: Three Year Rolling Annual Average PM_{10} Concentration at RG1, Michael Crescent, Horley.



PM_{10}.

16. It is important to note that the airport is not a significant source of PM_{10}, and computer modelling[3] consistently indicates that the airport is responsible for no more than 1 – 2 µg m^{-3} of the total PM_{10} concentration at the worst affected properties on the Horley Gardens Estate.

17. The main purpose of monitoring PM_{10} on the Horley Gardens Estate is to examine trends in the PM_{10} concentration, as the UK Government is aiming to reduce people's exposure to particulate matter in the longer term even where the air quality standards are met.

18. Using a three year rolling average to examine the trends in the data, there is evidence of a downward trend from 2003 to 2009, with concentrations of 23.9 µg m^{-3} in 2003 and 21.0 µg m^{-3} in 2009 (Figure 3), reflecting an improvement in non airport sources of PM_{10} pollution over this period although much of this improvement has occurred in the last 2 years.

On Airport Monitoring.

19. In the absence of relevant receptors[4] at the airport monitoring sites, it is largely academic whether or not the air quality standards are breached. However the monitoring results from 2009 (Table 1) indicate that the standards were met at the LGW3 monitoring station for PM_{10}, carbon monoxide, and nitrogen dioxide.

	On Airport (LGW3)	Standard	Standard Met?
Annual Average nitrogen dioxide Concentration	34.3	40	Yes
Nitrogen Dioxide: No. of hours over 200 µg m^{-3}	0	18	Yes
Annual Average PM_{10} Concentration (Volatile Correction Method)	22.3 (20.9)	40	Yes
PM_{10}: No. of days over 50 µg m^{-3} (Volatile Correction Method)	0* (2*)	35	Yes
Carbon Monoxide (Maximum daily running 8 hour mean)	1.7	10	Yes
All concentrations are in µg m^{-3}, except Carbon Monoxide mg m^{-3}. Data Capture: Nitrogen Dioxide 93.7 %, PM_{10} 85.7 %, CO 93 %. *As data capture is less than 90 % these values cannot be compared to the AQ standards.			

Table 1: Nitrogen Dioxide, PM_{10}, and Carbon Monoxide Concentrations on Airport in 2009.

20. It should be pointed out that while the LGW3 monitor is of limited use for compliance monitoring, it is of particular use for verifying the computer modelling work used to make forward predictions about air quality at the airport.

21. During 2009 there were no changes of note in on airport sources of air pollution, aside from the decrease in passenger numbers and aircraft movements, and thus the results are comparable to 2008.

On Airport Pollutant Trends.

22. Figure 4 shows the 3 year rolling average nitrogen dioxide concentration at the on airport monitor LGW3, and the data from the residential monitor RG1 for comparison. The graph shows a steady improvement in nitrogen dioxide concentrations at the LGW3 monitor, and then a rapid drop from 2003 onwards, followed by a smaller improvement in 2006, a subsequent rise in 2007 and 2008, and a fall in 2009 reflecting the lower annual concentrations in 2008 and 2009.

[3] Gatwick Air Quality Assessment for 2010 (AEAT/ENV/R/2795/Issue 1 – June 2009)

[4] 'Relevant receptors' were discussed in the outline air quality paper presented to the GP sub committee in January 2007. However, for the purposes of this of this report relevant exposure can be taken as residential housing, or in the case of the 1 hour nitrogen dioxide objective where a member of the public might be present for 1 hour or more.

23. The sudden fall in the annual average nitrogen dioxide concentrations in 2004 and 2005 (Table 2), which is reflected in the 3 year rolling average data (Figure 4), was noted but unexplained in the 2005 monitoring report (GP sub committee January 2007). Subsequent work indicated that the falls in 2004 and 2005 were more likely to have been due to the change in contractor servicing the equipment in 2003, than 'real' improvements in air quality on airport (GP sub committee June 2007), and this appeared to be confirmed by a rise in concentrations in 2006 when the original servicing agent was reappointed.

24. Annual mean nitrogen dioxide concentrations remained static in 2009 following a significant fall in 2008 compared to 2006 and 2007. While it is difficult to compare annual average nitrogen dioxide concentrations given the impact of the weather, it is surprising that concentrations in 2009 at LGW3 were only slightly lower than in 2008 given the fall in aircraft movements between 2008 and 2009 (Appendix A).

25. Figure 5 shows the three year rolling annual average PM_{10} concentrations at the airport monitor, and PM_{10} data from the residential monitor for comparison. The graph shows a steady improvement in PM_{10} concentrations on airport until 2006, at which point concentrations have remained largely static.

26. The overall trend shown in Figure 5 for the airport PM_{10} between 2003 and 2006 is different to that reported previously, which showed a spike in concentrations between 2003 and 2005. The spike in concentrations over this period was unexplained, but as the residential site failed to show such dramatic changes the spike was attributed to a local site specific factor rather than any significant change in emissions from the airport.

27. Nevertheless the 'spike' remained a cause for concern not least because of the unusually low nitrogen dioxide concentrations during the same period. As a consequence the raw data for this period was obtained and reanalysed and this indicates that the PM_{10} concentrations during this period (2003 – 2005) were lower than previously reported. The revised annual mean PM_{10} concentrations from the airport monitor are shown in Table 3.

	Standard	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Annual Average PM_{10} Conc. at LGW3	40	34.9	31.0	28.7	27.2	27.8	27.8[A]	23.8[A]	24.2[A]	23.4 (21.1)	25.3 (23.7)	23.4 (21.8)	22.3 (20.9)
[A] Previously these concentrations were reported as 36.1, 31.0, and 31.5. These have since been revised downwards due to an error in the data set. Figures in brackets are concentrations calculated using the volatile correction methodology.													

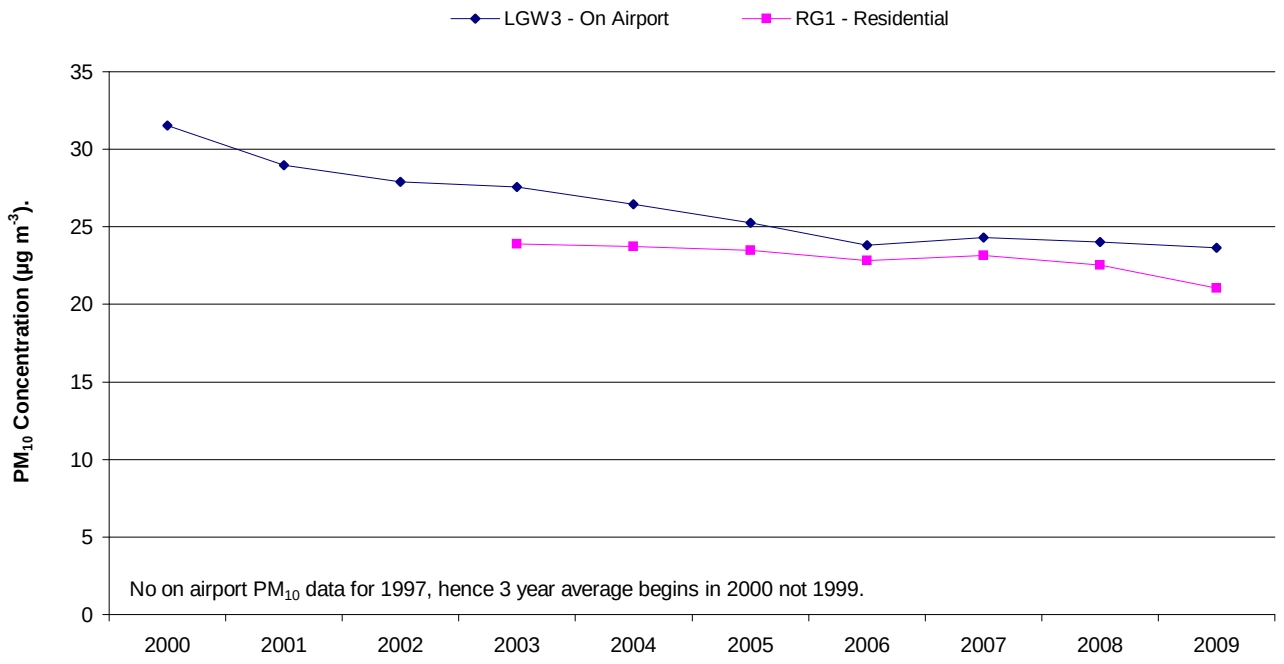
Table 3: Annual Average PM_{10} Concentrations at on airport monitor LGW 3 (µg m^{-3}).

Figure 4: Three Year Rolling Annual Average Nitrogen Dioxide Concentration at LGW3, Gatwick Airport

Table 2: Annual and Three Year Annual Average Nitrogen Dioxide Concentrations (µg m^{-3}).

LGW3	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Annual Average	53.8	52.6	52.3	49.2	49.1	47.0	46.0	35.5	34.2	40.3	40.0	34.8	34.3
Data Capture	94.9	89.2	93.3	93.4	93.5	96.1	94.0	95.4	96.7	96.3	94.2	96.8	93.7
Hours Over 200 µg m^{-3}	2	0	1	1	0	0	2	0	0	0	1	0	0
3 Year Rolling Average	LGW3		52.9	51.4	50.2	48.5	47.4	42.9	38.6	36.7	38.2	38.4	36.4
3 Year Rolling Average	RG1						32.3	31.1	30.3	29.6	29.1	28.4	27.0

Figure 5: Three Year Rolling Annual Average PM_{10} Concentration at LGW3, Gatwick Airport.



Benzene Monitoring Data.

28. The concentration of Benzene is measured at one site (RB11) on the Horley Gardens Estate, and at one site on airport (LGW3). As expected measurements at both the residential site and on airport site (Table 4) met the air quality standard in 2009.

	Concentration (µg m^{-3})	Standard	Standard Met?
Annual Average Benzene Concentration: Residential	2.3	5	Yes
Annual Average Benzene Concentration: Airport Monitor	0.95	5	Yes

Table 4: Annual Average Benzene Concentrations on the Horley Gardens Estate at RB11, and on Airport at LGW3 (Non pumped BTEX Tubes).

Additional Monitoring Data.

Ozone.

29. Ozone monitoring began to the SW of the airport in 2005 at the RG3 site in Poles Lane Crawley. The aim of this site is to monitor long term trends in ozone concentrations in the vicinity of the airport.

30. Although the airport is not responsible for local ozone pollution, ozone plays an important role in the formation of nitrogen dioxide, which is the main pollutant of concern in the vicinity of the airport. Therefore examining the long term ozone trend is important for understanding nitrogen dioxide concentrations in both the short and longer term.

31. At this stage there is only three and a half years of data from the ozone monitor, and so any trend analysis using a three year rolling average will simply have a single point at this stage. However, ozone concentrations failed to meet the UK ozone objective for the 4th consecutive year, and if the EU ozone standard were in force (it applies from 31/12/10) this would also have been breached in 2009 (Table 5).

	Number of exceedences.	Standard Met?	
		UK[a]	EU[b]
RG3: Poles Lane Crawley.	31[a] / 48[b]	No	N/A
Standards:			
UK: Daily Max. of running 8 hour mean of 100 µg m^{-3}.	10 max.	-	-
EU: Daily Max. of running 8 hour mean of 120 µg m^{-3} (averaged over 3 years).	25 max.	-	-

[a] in 2009
[b] The EU standard applies from 31/12/10, and is averaged over 3 years.

Table 5: Number of exceedences of the Ozone standard in 2009.

Airborne Organic Compounds.

32. BAA Gatwick have undertaken a series of 'grab' samples in previous years to look at a range of organic pollutants. As samples were only taken on four days per year the results were of limited use in examining pollutant trends at the airport, and could not be used for compliance monitoring purposes. Therefore the airport ceased to collect such samples at the end of 2006.

Impact of the Airport Closure on Air Quality.

33. Although this report deals with air quality in the vicinity of the airport in 2009, the recent closure of Gatwick (15th to 20th April 2010) provided a unique opportunity to examine the impact of the airport on air quality in practice.

34. As one might expect the closure of the airport lead to a significant fall in the concentration of nitrogen dioxide and other oxides of nitrogen (NO_x) in the vicinity of the airport (Figure 6).

35. Figure 6 shows the result of subtracting the nitrogen dioxide concentrations at the monitoring station to the NE of the airport (RG2) from the concentrations recorded to the SW of the airport (RG3). As can be seen during the airport closure the difference between the two sites was around zero (red line), compared to the additional contribution made to the nitrogen dioxide pollution when the airport is open.

36. However it is worth noting that while the airport was closed the wind was predominantly from the NE (yellow shaded area – Figure 6), rather than the more typical SW. As a consequence the closure of the airport had no air quality benefit for the Horley Gardens Estate (where the highest nitrogen dioxide concentrations occur), although residential properties to the SW of the airport will have seen a reduction in nitrogen dioxide concentrations.

37. Nevertheless any air quality benefits from the airport closure for residents to the SW of the airport would have been more than off set by some exceptionally high particle concentrations on 18th April 2010, when the hourly PM_{10} concentrations exceeded 100 µg m^{-3} around midday, due to material blown in from Europe (not volcanic ash), and the daily concentration exceeded 50 µg m^{-3}. In addition ozone concentrations also breached the 100 µg m^{-3} standard for several hours on the 17th, 18th and 19th April 2010.

Summary.

38. In summary:

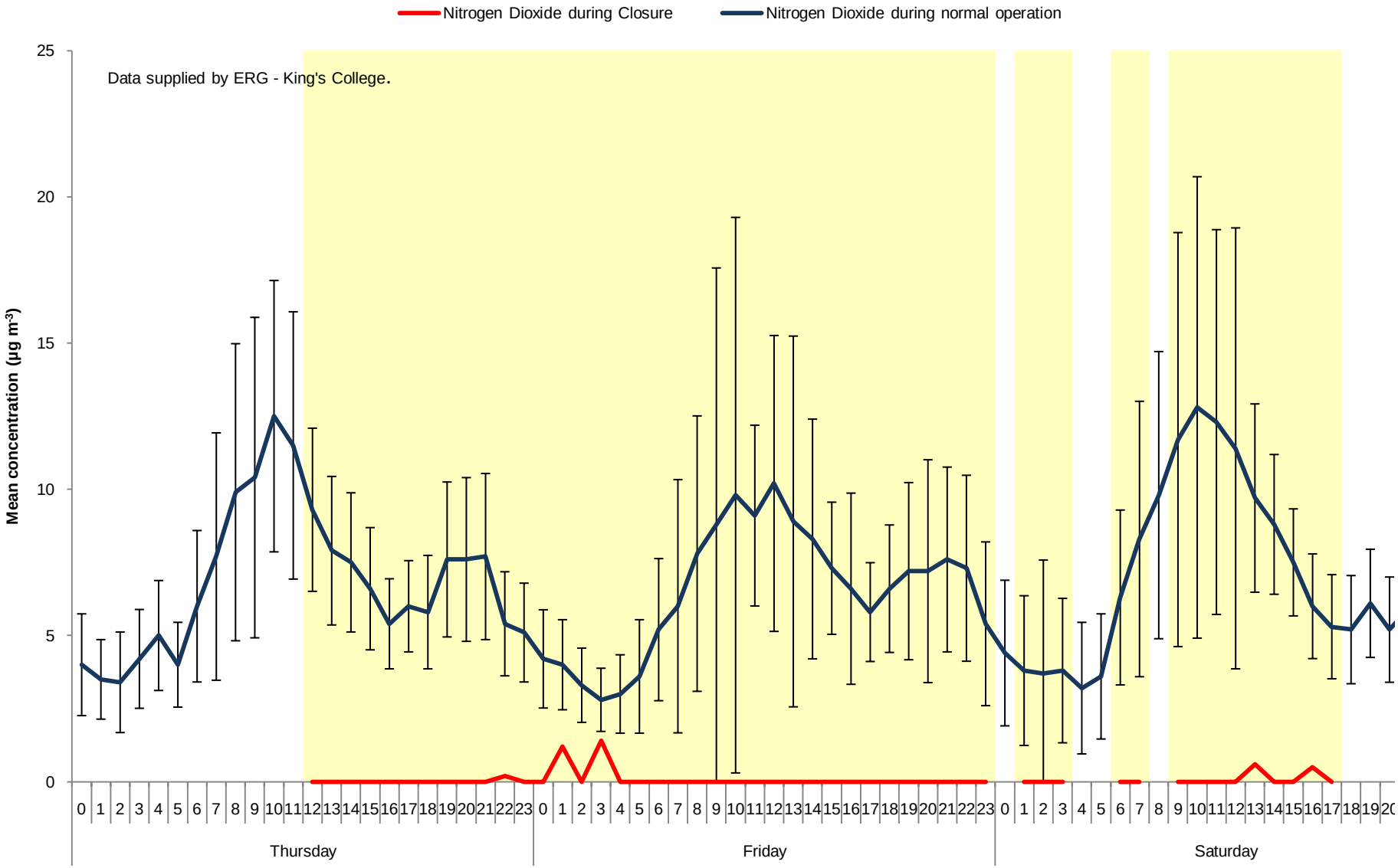
    i) The annual average air quality standard for nitrogen dioxide was met at relevant receptors in the vicinity of the airport during 2009 (Table 6), as were the air quality standards for other pollutants under the local authority air quality management regime (Table 6).

    ii) Ozone concentrations in the vicinity of the airport did not meet the UK air quality standard for the 4th consecutive year, although the airport is not responsible for local ozone pollution.

    iii) Trend analysis of the nitrogen dioxide concentrations at properties most at risk of breaching the air quality objective (RB59) show evidence of a downward trend in the last two years, although a much longer term downward trend is seen at the 'background' site (RG1). This decrease in pollution is most likely due to improvements in road vehicle emissions, with the more recent falls at the worst case receptor(s) reflecting the significant falls in aircraft movements and passenger numbers in the last two years. The long term downward trend at the RG1 site is in line with predictions for non airport nitrogen dioxide pollution at Gatwick and across the south east.

    iv) The concentration of nitrogen dioxide measured on airport in 2009 at LGW3 meets the UK air quality objective of 40 µg m^{-3}. The concentrations of the other pollutants measured at LGW3 also met the relevant air quality standards.

Figure 6: Nitrogen Dioxide Concentrations with and without Airport Operation.



v) The three year rolling annual average trend analysis of the on airport nitrogen dioxide concentrations shows a decrease in concentrations between 2008 and 2009, with concentrations similar to those in 2004/5.

vi) The average PM_{10} concentration measured on airport in 2009 showed a slight decrease compared to 2008, which may well reflect the decreased airport activity given the concentrations are the lowest recorded to date.

	Measured value	Standard	Standard Met?
Nitrogen Dioxide:			
Highest measured annual average residential concentration.	34.5	40	Yes
Annual Average nitrogen dioxide concentration Airport monitor.	34.3	40	Yes
PM_{10}:			
Annual Average PM_{10} Concentration: Residential Monitor. (VCM value)	19.4 (18)	40	Yes
PM_{10}: No. of days over 50 µg m^{-3}: Residential Monitor. (VCM value)	0 (2)	35	Yes
Annual Average PM_{10} Concentration: Airport Monitor. (VCM value)	22.3 (20.9)	40	Yes
PM_{10}: No. of days over 50 µg m^{-3}: Airport Monitor. (VCM value)	0* (2*)	35	?*
Benzene:			
Residential Benzene Monitor (Site RB 11).	2.3	5	Yes
On Airport Monitor Benzene Monitor (Site LGW3).	0.95	5	Yes
Ozone:			
RG3 Monitor to SW of Airport (Number of exccedences).	31	10	No

All concentrations are in µg m^{-3}.
* LGW3 PM_{10} data capture was 85 % in 2009. Data capture must be over 90 % for comparison to the air quality objective

Table 6: Summary of Air Quality in the Vicinity of Gatwick Airport in 2009.

Appendix A.

Figure A.1: Passenger and Aircraft Movement Trends at Gatwick Airport.

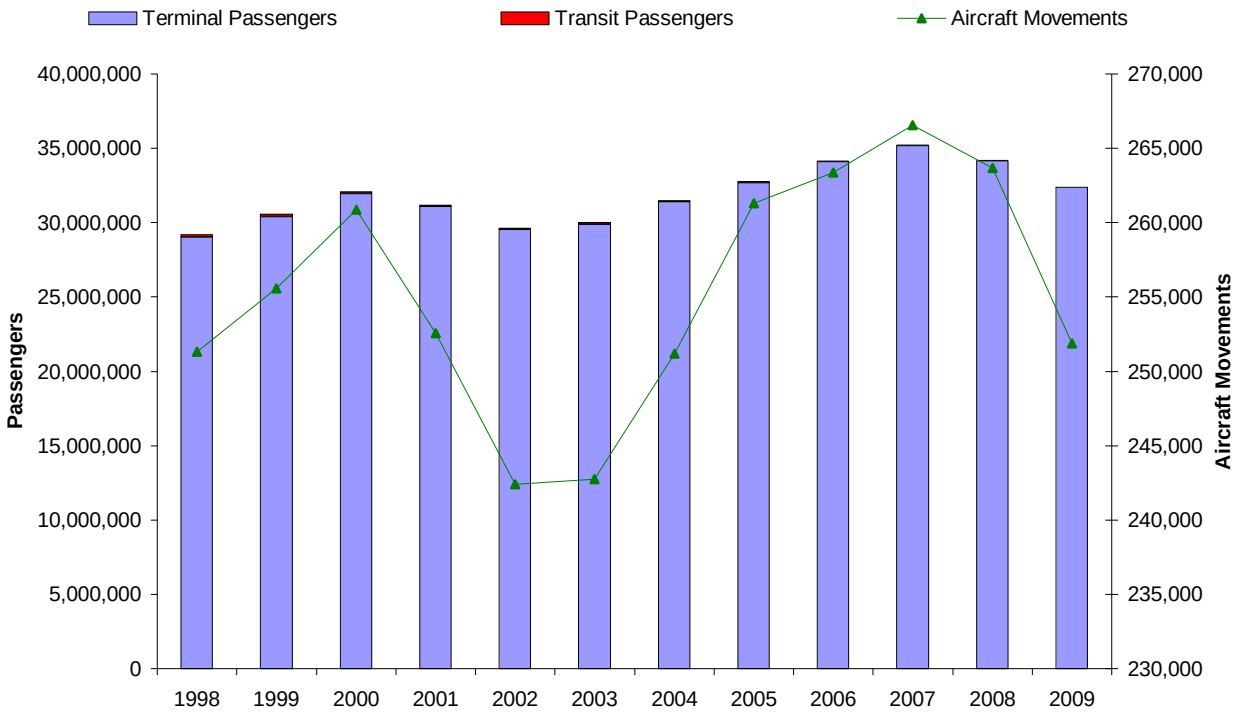


Table A.1: Annual Passenger Numbers and Aircraft Movements at Gatwick Airport.

	Number of Passengers			No. of Aircraft Movements
	Terminal	Transit	Total	
1998	29,032,838	140,292	29,173,130	251,321
1999	30,409,860	153,761	30,563,621	255,570
2000	31,947,524	119,601	32,067,125	260,859
2001	31,096,563	85,207	31,181,770	252,543
2002	29,517,894	109,515	29,627,409	242,379
2003	29,893,288	111,974	30,005,262	242,731
2004	31,391,352	75,418	31,466,770	251,195
2005	32,693,005	82,690	32,775,695	261,292
2006	34,080,345	83,234	34,163,579	263,363
2007	35,165,404	50,709	35,216,113	266,550
2008	34,162,014	43,873	34,205,887	263,653
2009	32,360,773	31,747	32,392,520	251,879

Data from Civil Aviation Authority. www.caa.co.uk/default.aspx?catid=80&pagetype=90

Appendix B: Summary of Annual Monitoring Results 1999 to 2009.

Nitrogen Dioxide

Site	Parameter	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
RG1	Ann. Average (µg m^{-3})	-	-	34.1	31.3	31.4	30.5	29.1	29.4	28.9	26.9	25.3
RG2	Ann. Average (µg m^{-3})	-	-	-	-	-	33.8	34.3	32.4	33.8	32.4	31.3
RG3	Ann. Average (µg m^{-3})	-	-	-	-	-	-	-	19.4	20.9	18.9	18.2
LGW3	Ann. Average (µg m^{-3})	52.3	49.2	49.1	47.0	46.0	35.5	34.2	40.3	40	34.8	34.3
RB59	Ann. Average (µg m^{-3})	-	-	-	-	40	39	34	37	38	35	32.0
RG1	Data Capture (%)	-	-	99.0	100.0	99.7	99.6	98.0	98.5	99.1	99.4	100.0
RG2	Data Capture (%)	-	-	-	-	-	89.0	97.0	96.0	96.3	92.8	95.0
RG3	Data Capture (%)	-	-	-	-	-	-	-	97.8	98.8	99.2	99.0
LGW3	Data Capture (%)	93.3	93.4	93.5	96.1	94.0	95.4	96.7	96.3	94.3	96.8	93.7
RB59	Data Capture (%)	-	-	-	-	91.6	100	91.6	100	100	100	100.0
RG1	Hours Over 200 µg m^{-3}	-	-	0	0	0	0	0	0	0	0	0
RG2	Hours Over 200 µg m^{-3}	-	-	-	-	-	0	0	0	0	0	0
RG3	Hours Over 200 µg m^{-3}	-	-	-	-	-	-	-	0	0	0	0
LGW3	Hours Over 200 µg m^{-3}	1	1	0	0	2	0	0	0	1	0	0
RB59	Hours Over 200 µg m^{-3}	-	-	-	-	-	N/A	N/A	N/A	N/A	N/A	N/A

Particulate Matter (PM_{10})												
RG1	Ann. Average (µg m^{-3})	-	-	22.8	23.2	25.7	22.3	22.4	23.8	23.3	20.5	19.4
	Ann. Average VCM* (µg m^{-3})								21.2	22.0	19.7	18.0
LGW3	Ann. Average (µg m^{-3})	31.0	28.7	27.2	27.8	27.8***	23.8***	24.2***	23.3	25.3	23.4	22.3
	Ann. Average VCM* (µg m^{-3})								21.1	23.7	21.8	20.9
RG1	Data Capture (%)	-	-	99.7	100	99.5	100	100	99.4	99.3	99.0	100
	Data Capture VCM** (%)								96.4	98.1	99.0	99.1
LGW3	Data Capture (%)	91.5	92.9	97.3	99.2	97.3	97.3	97.3	96.2	95.1	93.4	85.7
	Data Capture VCM** (%)								93.6	93.6	93.4	85.7
RG1	No. days over 50 µg m^{-3}	-	-	6	6	16	0	3	5	9	4	0
	No. days over 50 µg m^{-3} (VCM)								6	18	5	2
LGW3	No. days over 50 µg m^{-3}	35	28	20	17	31***	10***	9***	7	18	13	0****
	No. days over 50 µg m^{-3} (VCM)								10	23	16	2****

Locations:

RG1 is located on the Horley Gardens Estate in Michael Crescent (NE of the Airport).

RG2 is located on the Horley Gardens Estate in The Crescent (NE of the Airport).

RG3 is located to the SW of the airport in Poles Lane, Crawley.

RB59 is a diffusion tube (not a real time site) located at the southern most end of the Horley Gardens Estate to the NE of the Airport.

*for details on volatile correction methodology see www.volatile-correction-model.info. Spreadsheets downloaded 05/05/09 for values to 2009. From 2009 data direct from London Air Website www.londonair.org.uk.

** as the VCM requires data from three other sites VCM data capture can be lower than from the site of interest.

*** figures have been revised down as data originally supplied for these 3 years was incorrect. Correction made in July 2010 report.

**** note this is the minimum number of days. As data capture is below 90 % these values cannot be compared to the relevant air quality standard.

Abbreviations and Definitions

AQMA	Air Quality Management Area.
CO	Carbon Monoxide.
GAL	Gatwick Airport Limited.
m^3	cubic metre.
mg	milligram (1 thousandth of a gram).
NETCEN	National Environmental Technology Centre, UK.
ng	nanogram (1 billionth of a gram).
NO_2	Nitrogen Dioxide.
NO_x	Oxides of Nitrogen (mainly NO and NO_2 expressed as NO_2 equivalent).
O_3	Ozone.
PM	Particulate Matter.
PM_{10}	Essentially particles under 10 µm in diameter. Officially defined as the size fraction below 10µm in aerodynamic diameter, which has a cut off point at 50% of the particles which are 10µm in aerodynamic diameter.
ppb	part(s) per billion.
ppm	part(s) per million.
TEOM	Tapered Element Oscillating Microbalance. (Device for measuring PM_{10} concentrations in real time).
µg	microgram (1 millionth of a gram).
$\mu g/m^3$	microgram(s) per cubic metre
$\mu g\ m^{-3}$	microgram(s) per cubic metre, This scientifically is the correct form to use rather than $\mu g/m^3$, though either can be used.
VCM	Volatile Correction Method. (used to correct PM_{10} measurements made using a TEOM. This results in data equivalent to measurements made using the European Union's 'preferred' PM_{10} monitoring technique.