

## Supplementary data for the internet Environmental data 2004

### Waste impact of British Airways operations

Waste – Figures are for Heathrow and Gatwick airports only

	2001/02	2002/03	2003/04
<b>Landfill</b>	21,029 tonnes	17,551 tonnes*	16,019 tonnes
<b>Treated Liquid waste</b>	5,469 tonnes	6,931 tonnes	6,274 tonnes
<b>Incineration</b>	168 tonnes	427 tonnes	1,952 tonnes
<b>Recycling</b>	1,296 tonnes	985 tonnes	3,800 tonnes

\* Does not include Gatwick catering waste

NB: Figures do not include catering companies' waste liquid sludge, or aircraft cabin waste

### Waste - Management methods

	Heathrow	Gatwick	Totals
Recycling at source (segregated)	824 tonnes	10 tonnes	
Recycling via Materials Re-cycling Facility	1,093 tonnes	246 tonnes	
Heathrow catering recycling	1,285 tonnes		
Gatwick catering recycling		n/a	
<b>Total recycling</b>	<b>3,202 tonnes</b>	<b>256 tonnes</b>	
Oil fuel recovery	269 tonnes	63 tonnes	
Solvent recovery	8 tonnes	1 tonne	

<b>Total Recycling/recovery</b>	<b>3,479 tonnes</b>	<b>321 tonnes</b>	<b>3,800 tonnes</b>
Incineration	70 tonnes	18 tonnes	
Gatwick DEFRA waste		1,864 tonnes	
<b>Total incineration</b>	<b>70 tonnes</b>	<b>1,882 tonnes</b>	<b>1,952 tonnes</b>
Landfill (via Materials Re-cycling Facility /pre-treatment)	3,693 tonnes	831 tonnes	
Landfill direct	526 tonnes	104 tonnes	
Heathrow catering	10,865 tonnes		
<b>Total Landfill</b>	<b>15,084 tonnes</b>	<b>935 tonnes</b>	<b>16,019 tonnes</b>
Sewage Treatment	5,596 tonnes	649 tonnes	
Specialist Treatment	25 tonnes	4 tonnes	
<b>Total specialist treatment</b>	<b>5,621 tonnes</b>	<b>653 tonnes</b>	<b>6,274 tonnes</b>

n/a = information not available

### Noise impact of British Airways operations

#### Noise – British Airways Fleet Composition (at 31 March 2004)

Classification	1998	1999	2000	2001	2002	2003	2004
Chapter 3, but also Chapter 4 compliant*	169 (61%)	186 (66%)	207 (73%)	221 (72%)	259 (72%)	256 (78%)	242 (83%)
Chapter 3 and 5**	226	244	263	301	354	320	291
Chapter 2	45 (16%)	30 (11%)	13 (5%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Concorde	7	7	7	7	7	7	0
<b>Total</b>	<b>278</b>	<b>281</b>	<b>283</b>	<b>308</b>	<b>361</b>	<b>327</b>	<b>291</b>

Source: British Airways

Notes:

\* Chapter 4 refers to a new standard with a cumulative 10 EPNdB margin to the Chapter 3 standards plus some additional criteria. This was agreed at the CAEP/5 meeting in January 2001 for new aircraft designs after 01/01/06.

\*\* Chapter 5 refers to older propeller driven aeroplanes over 5,700 kg maximum certificated take-off weight and is broadly equivalent to Chapter 3.

## Noise – Total Noise Energy Indicator

Year	Total Noise energy (QC equivalents) with Concorde	Total Noise energy (QC equivalents) without Concorde
1996-97	1,139,740	1,084,280
1997-98	1,116,430	1,062,450
1998-99	1,046,080	991,230
1999-00	892,750	837,970
2000-01	696,550	677,860
2001-02	566,530	556,800
2002-03	533,530	509,890
2003-04	532,660	518,800

Source: British Airways Environmental Affairs

QC groupings for individual aircraft have been based on the definitions contained in the London Airport Night Restriction Scheme.

## Noise – Percentage of British Airways Global (total) Noise by Airport

Rank (2003-04)	Airport	2001/02	2002/03	2003/04
1	Heathrow	33.2%	35.1%	35.7%
2	Gatwick	12.9%	9.9%	9.4%
3	New York (JFK)	2.3%	2.7%	2.8%
4	Manchester	3.6%	2.5%	2.5%
5	Edinburgh	2.0%	1.8%	2.0%
6	Glasgow	1.8%	1.8%	1.8%
7	Paris (CDG)	1.8%	1.9%	1.7%
8	Singapore	1.7%	1.5%	1.5%
9	Aberdeen	0.9%	0.9%	1.0%
10	Amsterdam	1.1%	1.0%	1.0%

Source: BA Environmental Affairs

Based on "Total Noise Energy" indicator above.

## Noise – Percentage of departures "On Track" for British Airways operations

## Heathrow Airport

Runway	2000/01		2001/02		2002/03		2003/04	
	BA	All	BA	All	BA	All	BA	All
09R (Easterly)	92.1%	85.8%	92.7%	88.5%	92.4%	89.0%	92.2%	90.1%
27L (Westerly)	95.4%	95.9%	95.5%	95.6%	96.7%	96.6%	96.4%	97.1%
27R (Westerly)	96.1%	96.1	96.4%	96.5%	97.0%	97.1%	96.3%	97.3%
All	94.7%	93.0%	95.1%	94.2%	95.2%	93.9%	95.0%	94.9%

Source: BAA Heathrow

**Gatwick Airport**

Runway	2000/01		2001/02		2002/03		2003/04	
	BA	All	BA	All	BA	All	BA	All
<b>08 (Easterly)</b>	98.8%	n/a	99.4%	98.3%	n/a	n/a	99.7%	98.8%
<b>26 (Westerly)</b>	99.6%	n/a	99.7%	99.7%	n/a	n/a	98.1%	97.9%
<b>All</b>	99.3%	99.1%	99.7%	99.5%	n/a	n/a	98.7%	98.2%

Source: BAA Gatwick

n/a = information not available

On track means: within 1.5 km of the Noise Preferential Route centreline, as defined by DFT.

**Noise – Percentage of Arrivals performing Continuous Descent Approaches (CDA) for British Airways operations****Heathrow Airport**

Runway	2001/02		2002/03		2003/04	
	BA	All	BA	All	BA	All
<b>Day period (0700-2300)</b>	86%	70%	87%	n/a	91%	80%
<b>Night period (2300-0700)</b>	82%	70%	86%	n/a	90%	78%

Source: BAA Heathrow

**Gatwick Airport**

Runway	2001/02		2002/03		2003/04	
	BA	All	BA	All	BA	All
<b>Day period (0700-2300)</b>	n/a	68%	80%	72%	87%	77%
<b>Night period (2300-0700)</b>	84%	72%	84%	81%	87%	83%

Source: BAA Gatwick

n/a = information not available

The definition of CDA recommended by the "Arrivals Code of Practice Working Group" is an arrival that contains at, or below an altitude of 6000ft:

- no level flight; or
- one phase of level flight not longer than 2.5nm.

## Noise – Population affected by aircraft noise

## Heathrow Airport

Year	Population in noise sensitive area* (thousands)	Percentage population relative to 1988
1988	538	100%
1989	562	104%
1990	488	91%
1991	429	80%
1992	372	69%
1993	341	63%
1994	319	59%
1995	324	60%
1996	299	56%
1997	300	56%
1998	311.5	58%
1999	331.6	62%
2000	275.2	51%
2001	240.4	45%
2002	258.3	48%
2003**	263.7	49%

Source: Civil Aviation Authority/DfT

## Gatwick Airport

Year	Population in noise sensitive area* (thousands)	Percentage population relative to 1988
1988	50.0	100%
1989	30.0	60%
1990	30.1	60%
1991	23.9	48%
1992	23.0	46%
1993	14.6	29%
1994	14.6	29%
1995	15.5	31%
1996	14.9	30%
1997	12.6	25%
1998	9.4	19%
1999	7.8	16%
2000	8.7	17%
2001	5.2	10%
2002	3.5	7%
2003**	4.2	8%

Source: Civil Aviation Authority/DfT

This information is calculated and compiled by the Environmental Research and Consultancy Department of the CAA using their ANCON2 model, and relates to total operations at the respective airports of all carriers including British Airways.

\*Based on 57 dB LAeq. 1988 -1990 population based on 1981 census.

1991-1998 population based on 1991 census.

1999 - 2003 population based on 1991 and 2001 census updated by

CACI Ltd.

\*\*2003 data has also been adjusted for the effects of terrain.

**Noise – British Airways Noise Infringements****Heathrow Airport**

	1999	2000	2001	2002	2003	2004
<b>Day (0600 – 2300)</b>	157	41	12	36	1	7
<b>Shoulder (2300 – 2330)</b>	-	-	0	12	7	5
<b>Night (2330 – 0700)</b>	48	39	44	18	11	26
<b>Total</b>	205	80	58	66	19	38

Source: BAA Heathrow

**Gatwick Airport**

	1999	2000	2001	2002	2003	2004
<b>Day (0600 – 2300)</b>	0	0	0	0	0	0
<b>Shoulder (2300 – 2330)</b>	-	-	0	0	0	0
<b>Night (2330 – 0700)</b>	17	2	12	3	0	0
<b>Total</b>	17	2	12	3	0	0

Source: BAA Gatwick

Note: the "Shoulder" period, was introduced with the new noise monitoring scheme in 2001.

**New York (JFK) Airport**

	1999	2000	2001	2002	2003	2004
<b>Boeing 747</b>	30	45	9*	n/a	n/a	1
<b>Concorde</b>	26	30	14*	n/a	n/a	34
<b>Total</b>	56	75	23*	n/a	n/a	35

Source: The Port Authority of NY &amp; NJ

Notes:

\* Data available up to September 2001, only.

n/a = information not available from Port Authority of NY &amp; NJ.

### Noise – British Airways Quota Count grouping for British Airways aircraft for the London Airports Night Restrictions

Aircraft Type	QC group Departure	QC group Arrival
A319-131	0.5	0.5
A320-111	1	0.5
A320-211	1	0.5
A320-232	0.5	0.5
B737-300	0.5	1
B737-400	0.5	1
B737-500	0.5	1
B757-200	0.5	0.5
B767-300 (short haul)	1	1
B767-300 (long haul)	2	1
B777-200	1	0.5
B777-200 IGW	1	0.5
B777-200 ER	2	1
B747-400	4	2
BAe 146/RJ100	0.5	0.5
EMB 145	0.5	0.5

### Noise – British Airways Airport Night Quota usage at Heathrow and Gatwick airports

#### Heathrow Airport

	Summer 2001	Winter 2001/02	Summer 2001	Winter 2002/03	Summer 2003	Winter 2003/04
<b>Movements</b>						
BA Quota	1,436	1,367	1,440	1,367	1,440	1,367
Used	1,425 (99.2%)	1,371* (100.3%)	1,423 (98.8%)	1,348 (98.6%)	1,375 (95.5%)	1,361 (99.6%)
<b>Noise (QC)</b>						
BA Quota	2,585	2,474	2,880	2,475	2,880	2,475
Used	2,454.5 (95.0%)	2,325 (94.0%)	2,778 (96.5%)	2,496* (100.8%)	2,764 (96.0%)	2,490* (100.6%)

Source: BAA Heathrow

Note: \* a maximum of 10% of the total noise and movement quota, may be carried over from one season to the next.

#### Gatwick Airport

Information for Gatwick airport, not currently available

### Local Air Quality impact of British Airways operations

#### Air Quality – fleet composition (at 31 March 2004)

Classification	1998	1999	2000	2001'	2002''	2003'''	2004
CAEP/2 but also CAEP/6 compliant*	n/a	n/a	n/a	n/a	n/a	n/a	147 (52%)+
CAEP/2, but also CAEP/4 compliant**	69 (28%)+	80 (31%)+	107 (41%)+	166 (59%)+	235 (76%)+	222 (79%)+	221 (79%)+
CAEP/2	49	43	34	30	7	0	0
Initial Annex 16 vol II	131	132	121	84	67	58	60
Non-certificated***	29	26	21	28	52	47	10
Total	278	281	283	308	361	327	291

Source: British Airways

#### Notes:

\* CAEP/6 standards come in for new engine types from 01/01/2008.

\*\* CAEP/4 standards came in for new engine types from 31/12/2003.

\*\*\* There is no emissions certification scheme for Turboprop aircraft.

+ Does not include aircraft not required to be certificated for NOx emissions.

''includes Brymon and Cityflyer.

' includes Brymon, Cityflyer and BRAL.

#### Air Quality – Percentage of British Airways Global (total) NOx emissions below 1,000ft by Airport

Rank (2003/04)	Airport	2001/02	2002/03	2003/04
1	Heathrow	35.3%	38.2%	39.7%
2	Gatwick	10.1%	6.9%	6.1%
3	New York (JFK)	2.5%	2.8%	2.8%
4	Manchester	2.1%	1.7%	1.8%
5	Edinburgh	1.6%	1.3%	1.5%
6	Singapore	1.7%	1.4%	1.5%
7	Paris (CDG)	1.8%	1.6%	1.4%
8	Glasgow	1.5%	1.2%	1.3%
9	Chicago (ORD)	0.7%	0.7%	1.0%
10	Boston	0.8%	1.0%	0.9%

Source: BA Environmental Affairs

**Air Quality – 12 month mean, bias-corrected NO<sub>2</sub> diffusion tube results, in  $\mu\text{g m}^{-3}$  at Heathrow airport from October 2002 to October 2003**

Location identifier	Approx. dist. from Northern runway (m) <sup>***</sup>	Grid Reference		Annual mean NO <sub>2</sub> ( $\mu\text{g m}^{-3}$ )	Approximate definitions with DEFRA Site Classes.
		Easting	Northing		
Shepiston Lane	1,770	508582	178453	56	Roadside
Imperial college 1	1,180	508270	177831	36	Kerbside
Cranford Lane*	n/a	508030	177670	27	Roadside
Harlington f/p	1,060	509534	177449	39	Urban background
West End Lane	750	508455	177383	40	Roadside
Boltons Lane	550	508014	177147	35	Suburban
Cheviot Close	490	508728	177124	36	Suburban
Neptune Road	290	508496	176869	59	Kerbside
LHR 2** +	170	508382	176749	57	Special/Roadside
Windsock/GA9+	-150	508467	176363	50	Special/Background?
C 32+	-350	508210	176198	55	Special/Roadside
CP 11+	-490	508312	176048	58	Special/Kerbside
E 40+	-740	508017	175736	67	Special/Kerbside
E 9+	-920	507920	175548	63	Special/Kerbside
F 15+	-1,040	507767	175456	52	Special/Roadside
GA 26+	-1,240	507517	175268	48	Special/Background?
GA 16+	-1,440	507571	175025	45	Special/Background?
Royal Suite+	-1,570	507239	174891	50	Special/Roadside
CP 17+	-2,000	506662	174508	46	Kerbside
BA Waterside	n/a	505127	177559	33	Urban background

Notes:

\* Cranford Lane, 6 months monitoring data only.

\*\* Tubes located with continuous chemiluminescent monitor.

\*\*\* Sign convention, positive = North, negative = South.

+ Sites within the airport perimeter fence.

**Air Quality – 10 month mean, hydrocarbon diffusion tube results, in  $\mu\text{g m}^{-3}$  at Heathrow airport from December 2002 to October 2003**

Location identifier	Benzene	Toluene	Ethylbenzene	m.p-Xylene	o-Xylene
Shepiston Lane	1.3	6.0	1.4	3.8	1.4
Harlington f/p	0.7	2.9	0.9	1.8	0.7
West End Lane	0.8	4.0	1.6	3.1	1.3
Cheviot Close	0.9	4.2	1.0	2.4	0.9
Neptune Road	0.9	4.5	1.3	3.1	1.3
Windsock/GA9	0.7	4.1	0.7	1.8	0.7

The full report can be found on the "Heathrowairwatch" website, at: [www.heathrowairwatch.org.uk](http://www.heathrowairwatch.org.uk)

# Supplementary data for the internet

## Social data

### 2004

#### Update on the Aircraft Cabin Environment

British Airways was a lead partner in the European Union CabinAir project which ran from January 2001 until December 2003. Objectives achieved include

- Establishment of existing cabin air quality in all generic commercial aircraft types by direct measurement and analysis
- Exploration of the relationship between air quality and environmental control systems
- Development of innovative designs in environmental control systems, air filtration and distribution
- Development of performance specification and pre-normative European Standard.

To ensure the quality of the draft Standard, this aspect of the project has been extended to July 2004. British Airways continues to play a major part in this work.

We also remain corresponding members of the American Society of Heating Refrigeration and Air-conditioning Engineers (ASHRAE) SPC161P committee, which is developing standards for aircraft cabin air quality in the USA.

#### Malaria Risk Assessment

British Airways Health Services completed a malaria risk assessment and audit of crew activities in 2003 that quantified the crew risk for the first time. Analysis of crew night stop data demonstrated that crew on duty have a malaria risk at least 1,000 times lower than rates for UK travellers to sub-Saharan Africa. Air-conditioned crew hotels prevent exposure to night-time biting mosquitoes and the new policy emphasises the protection from both air-conditioning and use of DEET insect repellent when outdoors at night. Anti-malarials are only advocated for crew who elect to sleep overnight in rural areas. As a further safeguard, the crew Automated Briefing System now incorporates a malaria reminder for all affected African routes. BAHS continues to issue a Crew Malaria Card to encourage early diagnosis in the unlikely event of illness.