

Bristol International Airport

2007

Operations Monitoring Report



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1. INTRODUCTION

In the last five years, Bristol International has been one of the fastest growing UK airports with passenger numbers reaching 5.9 million in 2007, compared with 5.7 million in the previous year.

Bristol International is committed to developing in a sustainable manner and controlling the adverse effects of its operations by minimising their impact on the environment and the local community. This report provides statistical information on the operational activities of the Airport, and their impacts, during 2007. It is the second comprehensive monitoring report prepared by the Airport.

2. AIRCRAFT MOVEMENTS¹

There were a total of 76,428 aircraft movements in 2007 (compared with 84,583 in 2006). The breakdown of aircraft movements is provided below.

	2007	2006	Change 2006 to 2007
Air transport movements:			
Cargo	604	586	+3.1%
Air taxi	57	114	-50%
Scheduled EU passenger aircraft	28,620	29,586	-3.3%
Scheduled other international passenger aircraft	1,989	2,362	-15.8%
Scheduled domestic passenger aircraft	20,176	25,493	-20.9%
Charter EU passenger aircraft	5,766	6,071	-5.0%
Charter other international passenger aircraft	1,481	1,577	-6.1%
Charter domestic passenger aircraft	105	150	-30%
Total air transport movements (1)	58,798	65,939	-10.8%
Positioning flights (2)	949	1,986	-52.2%
Local movements (3)	31	2	+1450%
Non-commercial movements:			
Test and training	8	26	-69.2%
Other	12	7	+71.4%
Flying club	7,650	8,100	-5.6%
Private	8,594	8,207	+4.7%
Official	0	0	0
Military	384	316	+21.5%
Business aviation	2	0	-
Total non-commercial movements (4)	16,650	16,656	-0.04%
Total aircraft movements (1+2+3+4)	76,428	84,583	-9.6%

¹Data is as reported by the CAA at www.caa.co.uk/airportstatistics

3. AIRCRAFT TYPES

The following table provides a breakdown of commercial aircraft that used Bristol International during 2007 by type:

Aircraft	No. of Movements	Aircraft	No. of Movements
Jet			
Airbus A300-600 Beluga	2	Boeing 757-300	440
Airbus A319	20393	Boeing 767-200	8
Airbus A320	2501	Boeing 767-300	177
Airbus A321	213	Bombardier (Canadair) CRJ	34
BAe Avro RJ-100	430	Dassault Mystere 50	10
BAe Avro RJ-85	506	McDonnell Douglas DC-9	2
BAe146-200	806	Embraer ERJ-135	7
Boeing 737-200	130	Embraer ERJ-145	2433
Boeing 737-300	596	Fokker 70	1321
Boeing 737-400	25	Fokker 100	1258
Boeing 737-600	2	Boeing (McDonnell Douglas) MD80	34
Boeing 737-700	4624	Boeing (McDonnell Douglas) MD83	40
Boeing 737-800	4555	Boeing (McDonnell Douglas) MD90	46
Boeing 757-200	3589		
Turboprop			
Avions de Transport Régional ATR 42	1059	Dornier 328	10
Avions de Transport Régional ATR 72	1336	Fairchild Metro	2
BAe Jetstream 31	2	Fokker 50	52
BAe Jetstream 41	2359	Fokker F-27	316
Beech Super King Air 200	4	Lockheed L188 Electra	28
BN Islander	34	Raytheon Beechcraft 1900	3
BN Trislander	12	Saab 340	41
De Havilland Canada Dash 8	6361	Saab 2000	838
De Havilland Canada DHC-6 Twin Otter	463		

4. PASSENGER STATISTICS²

Statistics related to passenger numbers are tabulated below.

	2007	2006	Change
Terminal passengers			
Scheduled flights	4,529,227	4,335,941	4.5%
Charter flights	1,354,629	1,374,281	-1.4%
Total terminal passengers	5,883,856	5,710,222	3.0%
Transit passengers ³	42,918	47,731	-10.1%
Total terminal and transit passengers	5,926,774	5,757,953	2.9%
Terminal passengers by type:			
EU international services	4,074,297	3,785,827	7.6%
Other international services	533,993	511,869	4.3%
Total international	4,608,290	4,297,696	7.2%
Domestic passengers	1,275,566	1,412,526	-9.7%

The average number of terminal passengers load per commercial passenger carrying aircraft is shown below.

Average passengers on scheduled and charter flights			
Year	Charter	Schedule	Total
2002	182.06	58.26	78.59
2003	179.66	64.97	82.86
2004	182.06	72.74	87.38
2005	181.63	74.94	88.03
2006	179.18	76.75	88.99
2007	184.23	89.18	101.21

² Data is as reported by the CAA at www.caa.co.uk/airportstatistics

³ i.e. passengers who arrived and departed on the same aircraft whilst transiting at Bristol International Airport

5. PASSENGER ROUTES

The ten most popular routes in 2007 were:

Destination	Passenger numbers	Destination	Passenger numbers
Dublin	349,056	Belfast	231,209
Amsterdam	280,789	Palma	210,886
Edinburgh	258,696	Malaga	207,765
Newcastle	243,944	Alicante	201,534
Glasgow	241,364	Paris	182,162

Thirty one new scheduled destinations were announced or introduced in 2007:

- Biarritz
- Bergerac
- Beziers
- Bratislava
- Budapest
- Derry
- Dinard
- Frankfurt
- Funchal
- Galway
- Gdansk
- Gerona
- Ibiza
- Innsbruck
- Katowice
- Knock
- Lisbon
- Nantes
- Olbia
- Oslo
- Pau
- Porto
- Poznan
- Riga
- Rzeszow
- Salzburg
- Split
- Stockholm
- Turin
- Wroclaw
- Warsaw

A total of 77 scheduled and 59 charter destinations were served by Bristol International by the end of 2007.

6. RUNWAY USAGE

The runway at Bristol International Airport is aligned east/west. The runway designation is derived from the compass bearing of each direction. The westerly runway is known as runway 27 and the easterly runway as 09. Runway use is generally dictated by wind direction. The percentage of movements by runway direction over the last five years is given in the chart below. The average usage over the past five years has been 69% Runway 27 and 31% Runway 09.

Year	Westerly (27)	Easterly (09)
2003	60%	40%
2004	75%	25%
2005	70%	30%
2006	70%	30%
2007	69%	31%
Average	69%	31%

Runway usage by month for 2007 is set out below:

Month	Easterly	Westerly
Jan	14%	86%
Feb	38%	62%
Mar	24%	76%
Apr	64%	36%
May	29%	71%
Jun	38%	62%
Jul	11%	89%
Aug	28%	72%
Sep	25%	75%
Oct	44%	56%
Nov	23%	77%
Dec	37%	63%

7. FLIGHT ROUTINGS

Figures 1 and 2 at Appendix A show indicative flight routes for easterly and westerly operations. Flight routes are shown as typical 3km swathes for departing aircraft on Noise Preferential Routings (NPRs) and arrivals which are established on final approach and are valid up to an altitude of 4,000 ft.

8. NOISE MONITORING

Bristol International Airport continually monitors aircraft noise using monitors at each end of the runway, near Felton and Congresbury. The monitors are positioned in accordance with ICAO standards for noise monitoring of aircraft movements on runway 27. The Congresbury monitor is 6,500m from the start of roll. The Felton monitor is located 2,289m from the touchdown point, which corresponds with a point on the ground, on the extended centreline of the runway 120m vertically below the 3° approach path originating from a point 300m beyond the threshold.

The following table provides details of noise levels recorded by aircraft at the Congresbury monitor in 2006 and 2007.

Month	2007			2006		
	Leq ⁴	Lmax ⁵	No of events >85 dB(A)	Leq	Lmax	No of events >85 dB(A)
January	61.4	102.7	1	59.8	89.0	14
February	60.7	91.4	10	60.3	92.0	07
March	60.3	86.9	12	60.3	99.5	06
April	59.4	91.1	3	60.2	89.7	04
May	59.4	89.1	20	60.4	107.3	05
June	59.4	104.3	7	59.5	96.8	08
July	59.2	85.7	3	58.4	86.8	05
August	57.9	87.7	2	58.3	88.0	01
September	58.0	86.8	5	58.5	90.9	10
October	58.2	84.6	0	59.7	91.5	12
November	58.5	87.3	1	60.2	87.8	03
December	59.4	87.1	1	60.5	87.8	03
Overall	59.5	104.3	65	59.7	107.3	85

Noise levels for the same period from all aircraft recorded at the Felton monitor are tabulated below.

Month	2007			2006		
	Leq	Lmax	No of events > 85dB(A)	Leq	Lmax	No of events > 85dB(A)
January	62.4	92.7	159	65.8	91.2	54
February	60.9	90.4	129	59.8	95.4	97
March	61.3	91.1	107	61.3	93.8	102
April	58.8	92.0	37	60.2	94.8	103
May	60.4	97.0	89	61.1	96.8	164
June	60.1	95.2	90	59.7	89.4	51
July	61.7	93.2	155	60.0	89.4	75
August	60.6	93.7	98	60.0	93.5	75
September	60.4	94.2	96	60.3	91.4	126
October	59.9	88.6	89	60.2	90.4	97
November	60.3	95.1	111	60.1	90.7	95
December	61.5	94.8	251	60.4	90.2	125
Overall	60.9	97.3	1411	62.9	96.8	1155

⁴ Leq is the equivalent continuous sound level, the sound level of a steady sound having the same energy as a fluctuating sound over the same period i.e. the calendar month.

⁵ Lmax is the maximum recorded noise level during the calendar month.

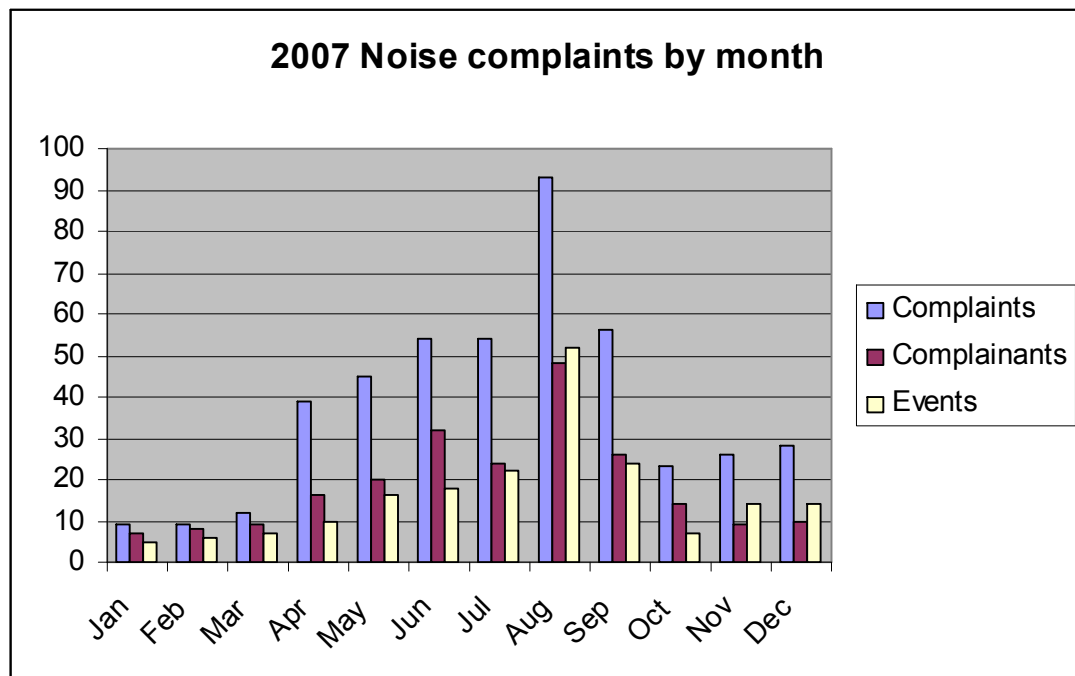
9. NOISE COMPLAINTS

Bristol International Airport operates a dedicated noise complaint telephone number and email address. Noise complaints can also be received by post. During 2007 a total of 448 complaints relating to aircraft operations from BIA were received through these communication channels. This compares with a total of 338 in 2005. Complaint statistics are tabulated below.

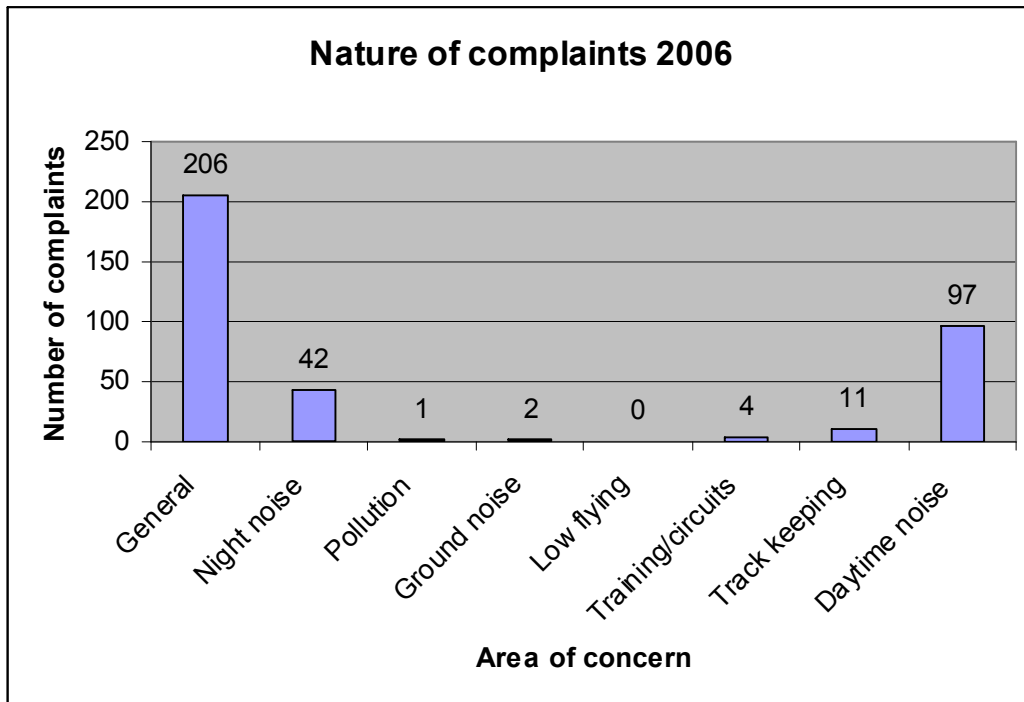
	2007	2006
Total number of complaints	448	338
Number of complainants	223	223
Average number of complaints per complainant	2.01	1.50
Number of aircraft movements per complaint	171	252

It should be noted that 38% of complaints in 2007 were received from one individual in Pensford.

Monthly complaint figures are shown below.



The following chart provides details of the nature of complaints for 2007.



The table below identifies the areas from which complaints were received. This information is also illustrated on the map at Appendix B.

Location	Number	Location	Number
Backwell	7	Kewstoke	1
Bath	22	Kingston Seymour	2
Bishop Sutton	1	Kingswood	4
Blagdon	3	Langford	3
Bristol	8	Nailsea	1
Burnham-on-Sea	1	Norton Malreward	1
Charterhouse	2	Pensford	174
Chelvey	2	Shipham	2
Chew Magna	17	Stanton Drew	10
Chew Stoke	17	Temple Cloud	2
Chippenham	3	Weston-super-Mare	11
Clandown	1	Whitchurch village	1
Claverham	4	Winford	3
Cleeve	44	Winscombe	1
Congresbury	23	Wraxall	6
Downside Road	0	Wrington	15
Dundry	2	Yatton	39
East Dundry	4		
Farrington Gurney	1		
Felton	10		

10. NIGHT NOISE QUOTA USAGE

Night time operations at Bristol International Airport are controlled by a noise quota system. The restrictions specify a night period (23.00-07.00) during which time the noisiest types of aircraft may not be scheduled to land or take off. In addition, between 23.30 and 06.00, the night quota period, aircraft movements are restricted by a noise quota limit. Aircraft count against the noise quota according to their quota count (QC) classification.

The quota count itself is related to the noise classification of aircraft as set out in a formal notice published by the CAA on a regular basis. The restrictions allow for dispensations to be given in certain circumstances and there are provisions for dealing with delayed departures and early arrivals. The quota limits are set on a seasonal basis, defined by the period of British Summer Time. The summer season is therefore about seven months long for which a current quota count limit of 1,260 applies. The winter season is about five months long for which a current quota count limit of 900 applies. Up to 10% of the noise quota, if not used in the current season, is carried over to the following season. Similarly up to 10% of the next season's quota may be anticipated in the event of an overrun. Any excess overrun is penalised in the following season at double the amount of the excess.

The following table records the night movements and quota usage since the system came into use.

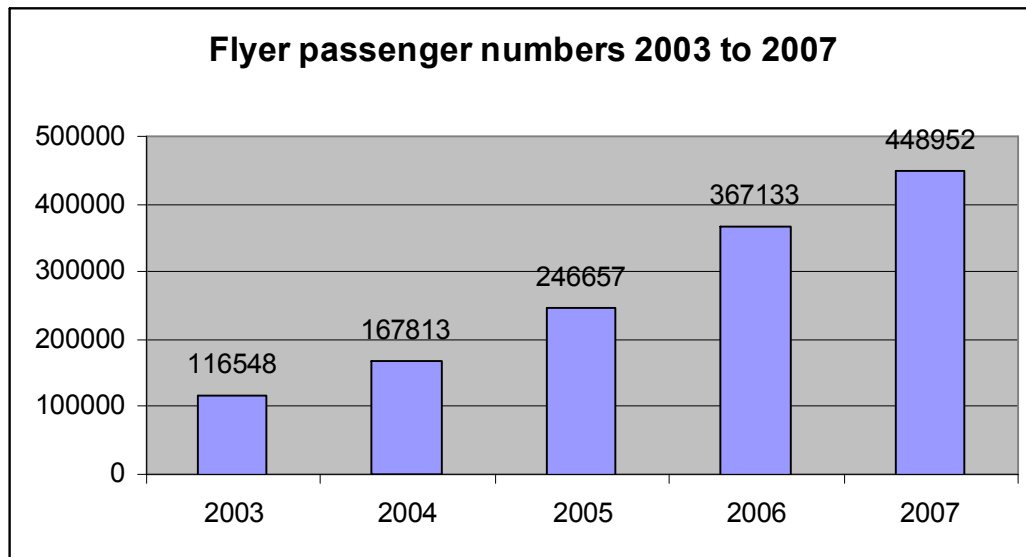
Season		Night movements	Quota usage
Winter	1996/97	1,251	447.5
Summer	1997	2,334	1,124
Winter	1997/98	1,238	675
Summer	1998	2,492	1,351
Winter	1998/99	1,361	765
Summer	1999	2,940	1,294
Winter	1999/00	1,254	632.5
Summer	2000	2,564	1,239
Winter	2000/01	1,371	435.5
Summer	2001	2,999	1,230
Winter	2001/02	1,536	614
Summer	2002	2,655	1,150
Winter	2002/03	1,386	444.5
Summer	2003	2,960	1,378
Winter	2003/04	1,033	413.5
Summer	2004	2,082	1,288
Winter	2004/05	786	426
Summer	2005	2,183	1,225.5
Winter	2005/06	891	472.5
Summer	2006	2,181	1,138
Winter	2006/07	163	88
Summer	2007	2057	974.5

It should be noted that the runway was closed for resurfacing during most of the winter 2006/2007 season which accounts for the low number of night movements and quota use.

11. PUBLIC TRANSPORT

The Bristol International Flyer is the mainstay of the airport public transport offer. The 330 and 331 Flyer services carried 448,952 passengers in 2007, an increase of 22% compared with the previous year. The First Avon and Somerset 121 bus between Weston-super-Mare and Bristol via Bristol International Airport and the National Express 404 and 406 coach services also carry passengers to the Airport. Taking into account patronage of these other services it is estimated that about 6.6% of air passengers used public transport for their journey to or from the Airport in 2007. The Flyer coach service is free to airport staff and plays a valuable role in getting employees to work.

Passenger numbers on the Bristol International Flyer over the past five years are shown below.



12. TRAFFIC

A traffic counter, managed by North Somerset Council, is installed on the main airport entrance road recording traffic movements into and out of the airport. Data from the past five years shows that September generally sees the highest airport traffic flows. This is also the period when background traffic flows on the surrounding road system are not influenced by holidays and the two flows combined will be at their highest.

The morning peak on the main airport entrance is generally at 05:00 for inbound traffic and 10:00 for outbound traffic, reflecting the morning peaks for departures and arrivals. The afternoon/evening peak for inbound traffic is in the early afternoon (12:00 in 2006) and between 16:00 and 17:00 for outbound traffic. The highest flows are seen in the

morning inbound peak and the evening outbound peak. Data for September from 2005 to 2007 are tabulated below.

		2007 vehicles	2006 vehicles	2005 vehicles
12 hour, 07:00 to 19:00 average daily traffic flow	Inbound	4,755	4,993	4,909
12 hour, 07:00 to 19:00 average daily traffic flow	Outbound	4,646	4,914	4,818
24 hour daily traffic flow	Inbound	7,670	7,913	7,672
24 hour daily traffic flow	Outbound	7,593	7,971	7,687
Morning peak hour flow	Inbound	587	608	580
Evening peak hour flow	Outbound	556	560	568

13. AIR QUALITY

Nitrogen dioxide (NO₂) concentrations at BIA are measured using passive diffusion tubes. A diffusion tube is a passive sampler comprising a small perspex tube that contains a metal gauze coated with a reactive agent. Diffusion tubes measure the mean NO₂ concentration over the period for which it is exposed. At the Airport the monitoring is done on a fortnightly basis at five sample sites, three of which are airside and two of which are landside. NO₂ concentrations recorded over the past eight years are recorded below, together with data from Bristol City Centre and North Somerset at three locations close to the Airport.

Sampler location	Annual average NO ₂ (µg/m ³)							
	2000	2001	2002	2003	2004	2005	2006	2007
Airport								
Air Quality (England) Regulation 2000 objective	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0
Airside – behind step park	26.4	31.7	25.1	32.8	34.3	29.1	34.8	39.0
Airside – on fuel farm fence	23.1	28.4	34.0	36.0	31.6	32.0	39.6	43.1
Airside – 09 approach light	15.6	19.6	14.7	16.6	15.3	13.1	15.6	17.9
Landside – new terminal central light	27.1	33.1	25.6	37.4	34.8	32.1	37.6	38.1
Landside – m.p.h. sign access road	31.6	35.0	33.2	40.4	41.4	38.6	51.6	51.2
Bristol (continuous monitoring)								
City Centre	38.0	38.0	36.0	36.0	35.0	n/a	n/a	n/a
Old Market	55.0	57.0	65.0	n/a	54.0	60.0	67.0	61.2 ⁶
St Pauls								31.0
North Somerset (diffusion tube monitoring)								
Felton School	25.3	22.9	21.7	19.7	22.3	26.7	25.3	29.3
Downside Road	-	28.7	24.4	26.2	25.5	23.3	26.5	30.5
A38 (new road)	-	-	17.5	20.6	20.3	23.0	22.6	22.7

The average NO₂ concentrations for all eight years at all five sample locations are below the Air Quality Strategy (AQS) objective except for five values. The AQS objective is only applicable to areas where people may be expected to be exposed for the averaging period, in this case a year. The AQS objective is therefore not applicable at the Airport because no one lives there but a comparison has been made to put the Airport's NO₂ concentrations into context. The AQS objective for the NO₂ annual average is widely exceeded in large urban areas of England and in many kerbside locations adjacent to busy roads and motorways. Nevertheless additional monitoring will added to the programme for 2008 so that the current trends and effects of mitigation can be better understood.

⁶ Provisional figure pending detailed data analysis.

14. WASTE MANAGEMENT

Until August 2007 the majority of waste recycled at the airport was glass and cardboard. Since then the airport has increased its recycling initiatives to include paper, plastic bottles, polythene and aluminium with a target of 20% recycled waste by the end of 2007 and 40% by 2010. Since the introduction of the new recycling bins across the business, recycled waste for the last three months of the year stood at just over 20% with an annual average of 14.8%.

The waste figures for 2007 and 2006 are provided below.

Waste stream	2007		2006	
	Total (tonnes)	Waste per passenger (kg)	Total (tonnes)	Waste per passenger
Recycled waste				
• Cardboard	98.1	0.02	81.64	0.01
• Glass	52.98	0.01	34.43	0.01
• Paper/plastic/cans	37.77	0.01	5.96	
Total recycled waste	188.61	0.03	122.03	0.02
Waste to landfill	1084.28	0.18	985.03	0.17
Total waste removed from BIA	1272.89	0.22	1,107.33	0.19
% waste recycled	14.8		11.0	

15. UTILITIES & ENERGY MANAGEMENT

Benchmarking comparisons with other airports show that Bristol International Airport has one of the most energy efficient terminal buildings in the UK when measured on an energy per passenger basis. Details of energy and water use in 2007 and 2006 are provided below.

	2007	2006
Electricity, in kWh	15,350,854	15,172,812
Gas, in kWh	3,178,105	4,140,545
Heating oil, in litres	142,032	103,916
CO ₂ per passenger from energy use, in kg	1.29	1.33
Water use, in m ³	77,408	83,278
Water use per passenger, in litres	13.2	14.6
kWh per passenger from energy use	3.41	3.57
UK airports range (source: BIA research)	3.1 kWh - 13 kWh / pax	

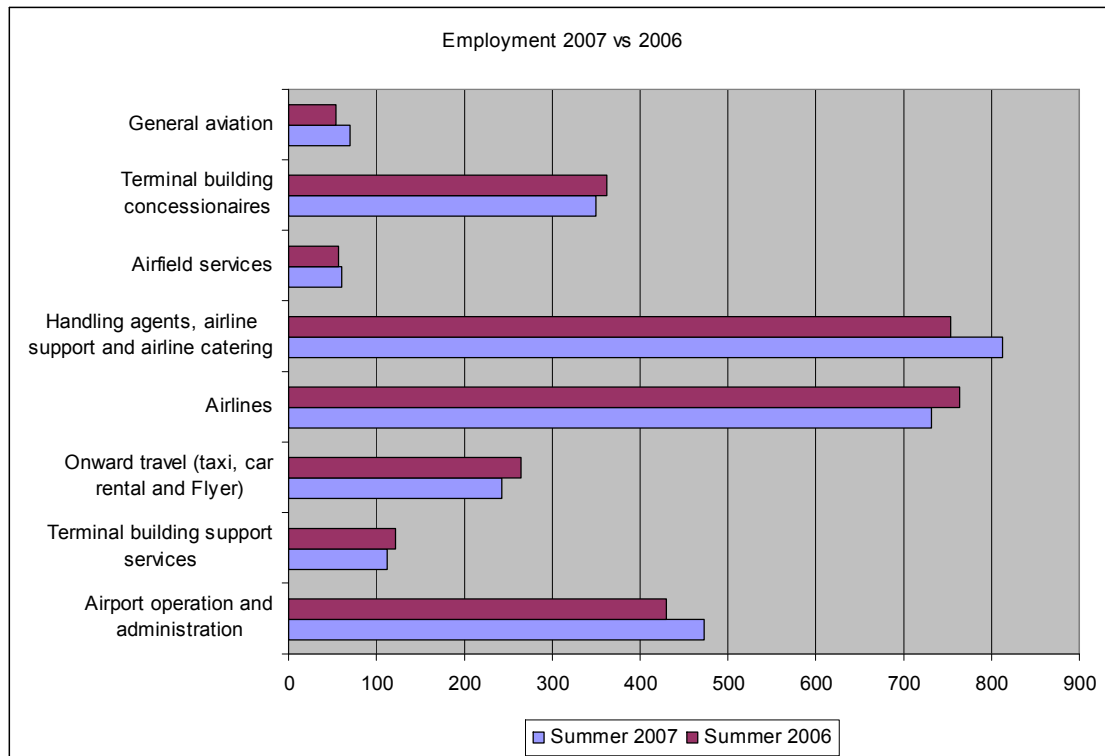
Energy use in 2007 was equivalent to a carbon dioxide impact of 7,474 tonnes (7474 tonnes in 2006). Emissions from on site operational vehicles have been estimated from fuel supply data and amount to 1,933 tonnes of carbon dioxide equivalent in 2007 (1,986 tonnes in 2006). 31% of vehicle fuel used on site is bio-diesel but no account has been taken of any emissions savings from this fuel in the carbon dioxide calculation.

16. EMPLOYMENT

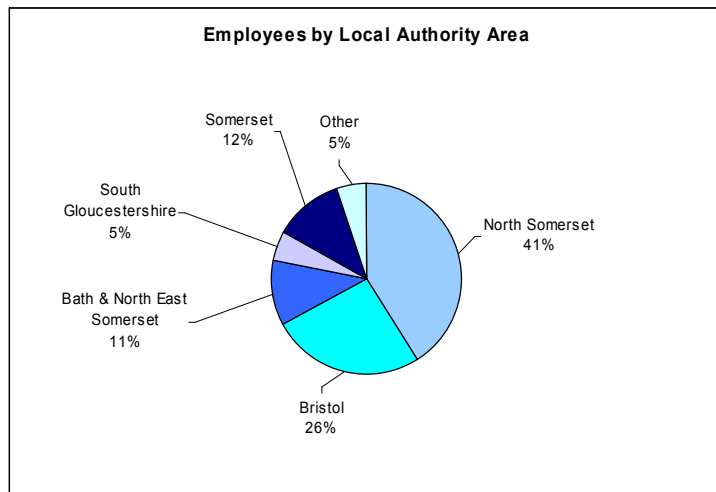
BIA is a major employment site within North Somerset. Regular surveys are undertaken by BIA to determine the extent and nature of employment available. The number of staff working at the Airport in 2006 and 2007 is reported in the table below.

	2007	2006
Full time staff	2,383	2,400
Part time staff	471	409
Full time equivalents	2,619	2,605
Number of companies	48	50

A breakdown of airport staff by area of employment is provided below.



Home postcode surveys of staff are undertaken on a regular basis. The 2007 survey involved 1,400 staff working in 25 companies, representing around 50% of the total workforce. This showed that 82% of staff lived in the four unitary authority areas of the West of England (North Somerset, Bristol, Bath and North East Somerset and South Gloucestershire) and 12% in Somerset (predominantly Sedgemoor) as shown in the diagram that follows.



17. COMMUNITY RELATIONS

Bristol International continued to support its local community during 2007 by providing funding to local projects through the Community Investment Fund, and through volunteering and 'donations in kind' where appropriate. Support is targeted at community, educational, social or environmentally focused projects.

In 2007 £25,000 was distributed to various organisations within the region. Funding consisted of grants for projects of various scope, raffle prizes and sponsorship, ranging from £3,500 to £20. BIA has also recently started working with the Quartet Foundation to provide support to some of the regeneration areas of Weston-super-Mare.

Some of the projects that have been supported include:

- Handheld bat detectors, Wrington wildlife wardens
- Mini V Music Festival, Chew Valley
- Pensford School, playground project
- St Katharine's Pre-School
- Backwell Playing Fields
- Bristol Bordeaux Exchange
- Backwell School Summer Activity Week
- Harptree Pavilion Appeal
- Congresbury PC, Play Equipment
- Bristol Panathlon

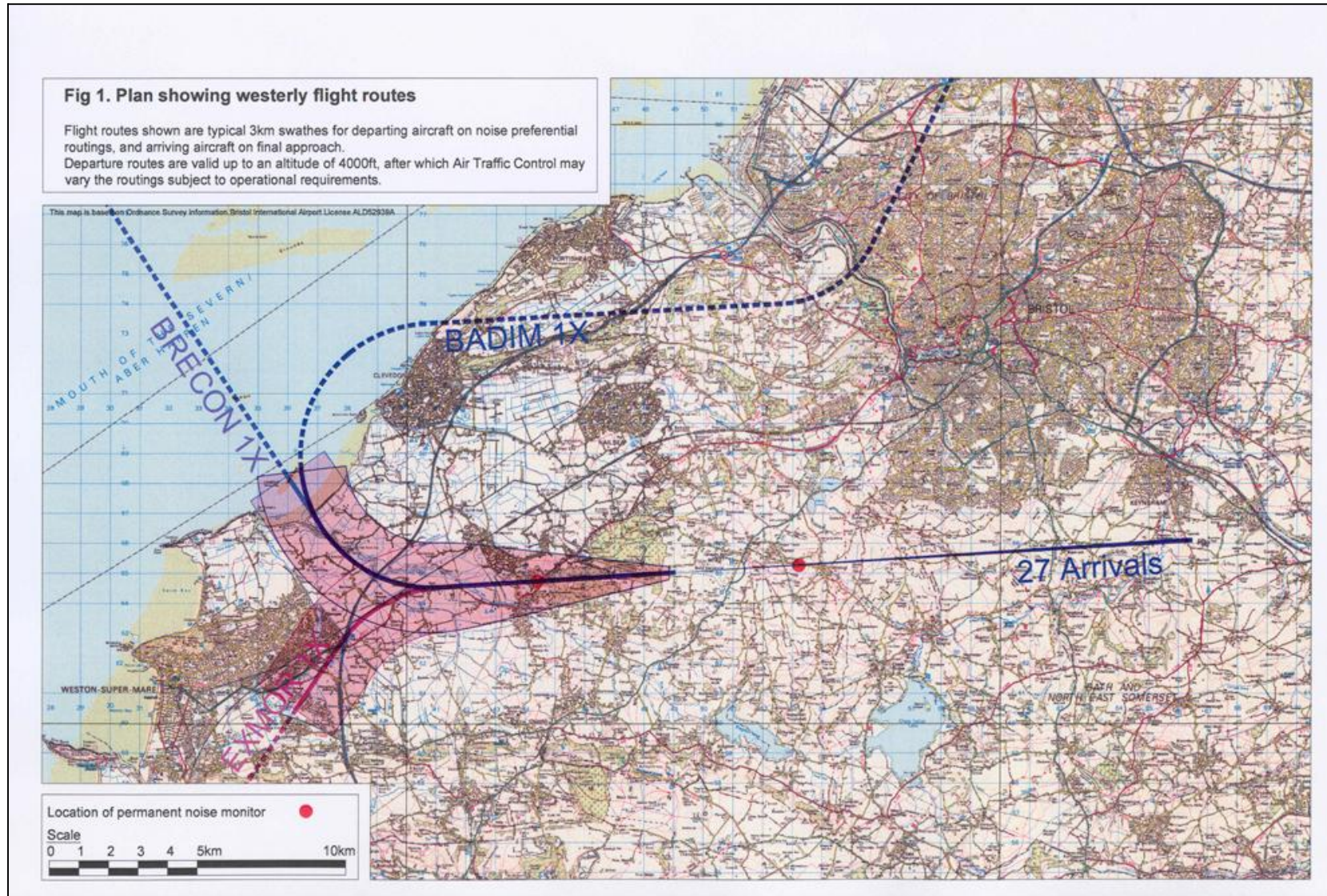
Staff time and airport facilities have also been made available for community benefit, with an estimated equivalent commercial value of £39,000. Key activities during 2007 included:

- Staff time giving tours, presentations and briefings to community groups;
- Staff volunteering time, including School Governors at St Katharines School and Hartcliffe Engineering College and chairing the Committee for the Concorde Museum;

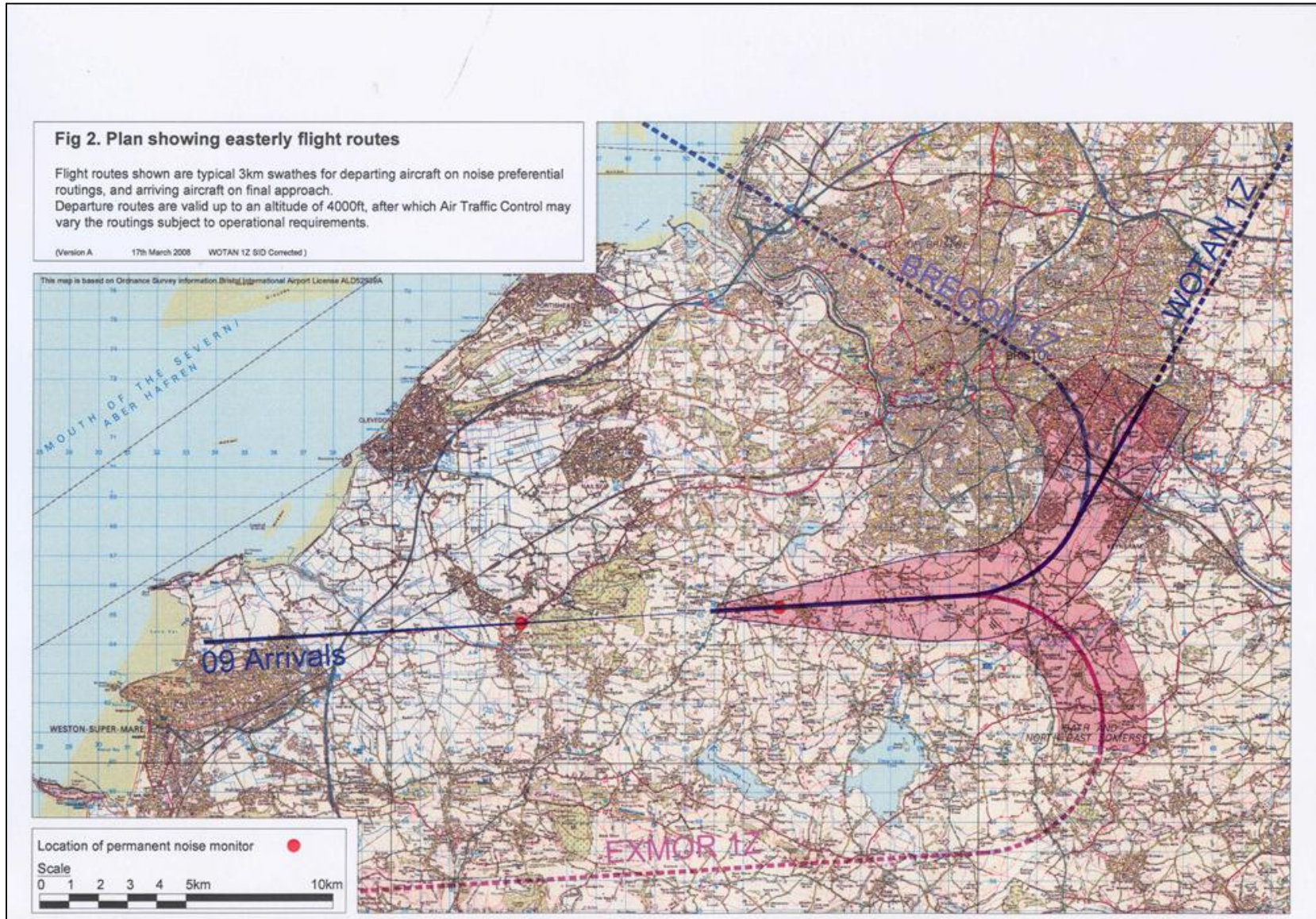
- Free use of meeting rooms
- Free use of several advertising sites in the Terminal building to support regional advertising to encourage a 'Sense of Place'
- Catering support
- Donation of materials & equipment

Airport staff raise money for a staff nominated charity of the year. In 2006 & 2007 the airport charity was the Children's Hospice South West Babe Appeal for which £77,400 was raised to equip the teenager's kitchen and barbecue area for the Charlton Farm Children's Hospice.

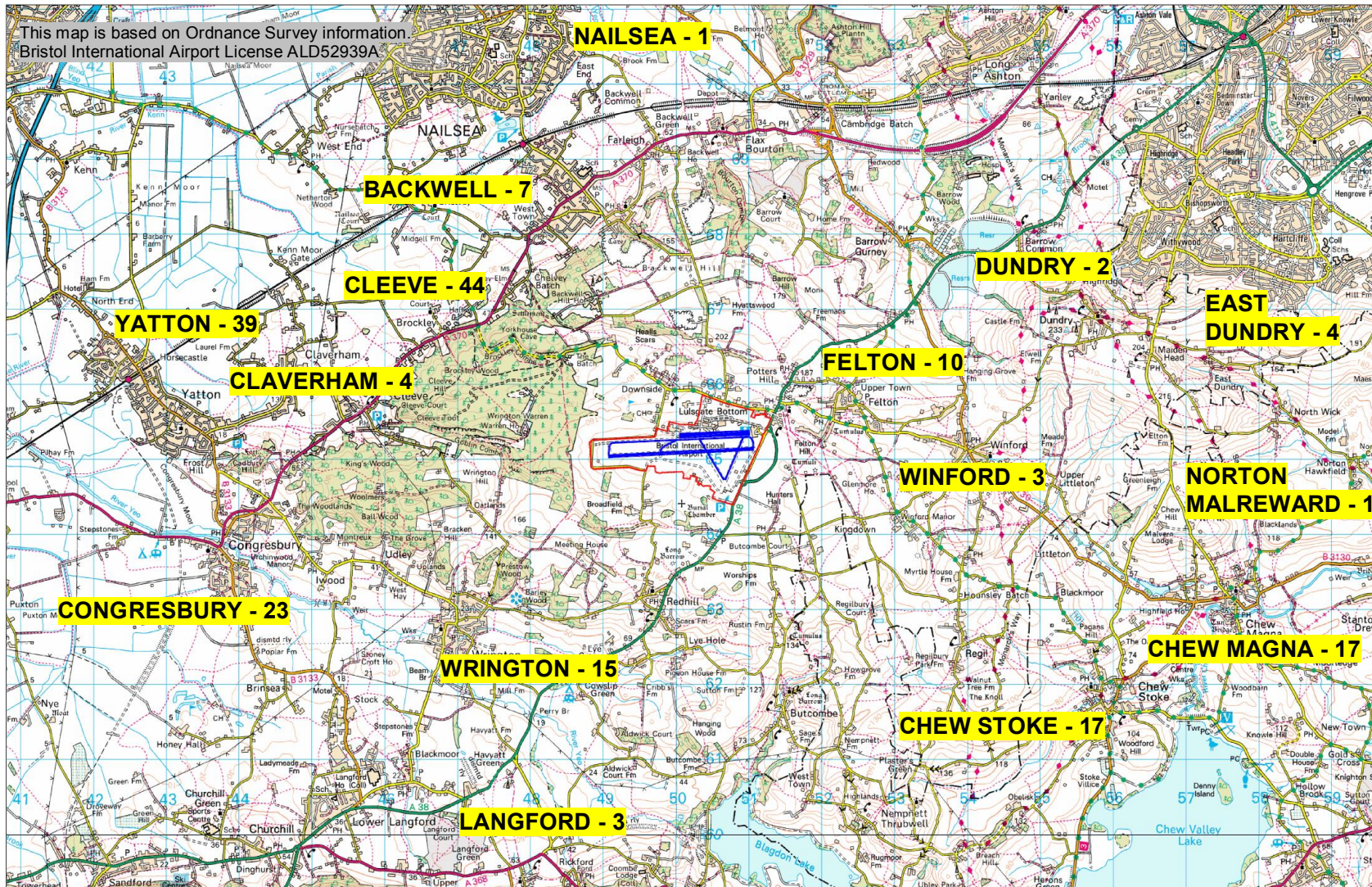
Appendix A – Flight routing maps



Appendix A – Flight routing maps



APPENDIX B – Location of noise complaint origins 2007



Others areas:
 Bath: 22
 Bristol: 8
 Weston-super-Mare: 11
 Other: 217 (of which 174 Pensford)