

# 2016 Operations Monitoring Report



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Bristol Airport 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 2016. It is the tenth comprehensive annual monitoring report prepared by the Airport.

This report is presented to the Bristol Airport Consultative Committee to enable key stakeholders to monitor our performance and to demonstrate progress against the requirements of the 2011 planning permission for development and the Noise Action Plan.

## **2. SUMMARY AND KEY YEAR HIGHLIGHTS**

- Total<sup>1</sup> passenger numbers increased by 11% to 7,622,619.
- Aircraft movements increased by 8% to 73,754.
- Amsterdam remains the most popular destination from Bristol.
- Noise monitoring indicates that the noise climate at the noise monitors remains stable. The peak departure noise levels recorded were below the noise infringement limits and broadly similar to 2015 and 2014 levels.
- The area of the 57 dB(A) Leq 16hr noise contour for summer 2017 is predicted to be 10.5 sq km, remaining within the permitted noise envelope.
- 167 complaints about aircraft noise were recorded, a decrease from 173 in the previous year.
- During the summer season there were 2,704 aircraft movements using 1,354 quota count points, during the night quota period of 23:30 to 06:00. A further 3,513 aircraft movements took place during the 'shoulder periods' of 06:00 to 07:00 and 23:00 to 23:30.
- Over 939,300 journeys were undertaken on the Bristol Flyer Airport Express bus service to Bristol, an increase of 5.3% on the previous year. An estimated 13% of air passengers used public transport for their journey to or from the airport.
- The air quality monitoring programme shows air quality levels at the Airport remain within Government Air Quality Objectives.
- Over 99% of general waste generated at the Airport was recycled or reprocessed and diverted from landfill, an increase from 98% in 2015.
- The number of people working at the airport in summer 2016 was 3,070 full time equivalents, up from 2,818 in 2015.
- The Bristol Airport Community Fund provided grants totalling over £161,000 to 46 local projects during the year. £24,000 was raised for charity by staff and passengers.

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<sup>1</sup> Includes all terminal, transit and infant passengers.

### 3. AIRCRAFT MOVEMENTS

There were a total of 73,754 aircraft movements in 2016 (compared with 68,325 in 2015). The breakdown of aircraft movements is provided in Table 1 below. This data is provisional Bristol Airport data as the CAA data was not finalised at the time of writing.

	2016	2015	Change 2015 to 2016
<b>Air transport movements:</b>			
Cargo	0	0	0%
Scheduled domestic passenger aircraft	11,294	11,035	2.35%
Scheduled international passenger aircraft	42,937	37,882	13.34%
Charter domestic passenger aircraft	1,942	1,686	15.18%
Charter international passenger aircraft	5,854	5,493	6.57%
Positioning flights	1,120	802	39.65%
Other (incl. flying club, private charter)	10,607	11,427	-7.18 %
<b>Total aircraft movements</b>	<b>73,754</b>	<b>68,325</b>	<b>7.95%</b>

**Table 1: Aircraft movements**

The numbers of aircraft movements for the past twelve years is shown in Figure 1.



**Figure 1: Aircraft movements 2005 to 2016**

A breakdown of commercial aircraft by type that used Bristol Airport during 2016 is set out in Table 2.

Aircraft	No. of Movements	Aircraft	No. of Movements
<b>Jet</b>		<b>Turboprop</b>	
Airbus A310	2	ATR-42	1147
Airbus A319	15882	ATR-72	3184
Airbus A320	15107	BE-200 Super King Air	1517
Airbus A321	76	Beechcraft	16
Airbus A330	24	Dash 8-400 series	14
Airbus A340	6	Fokker F-50	4
Airbus A350	16		
Airbus A400	8	<b>Helicopters (all types)</b>	2589
BAe-146	94		
Boeing 737	10940		
Boeing 757	2142		
Boeing 787	2		
Dassault Falcon	171		
Embraer Phenom	128		
Embraer ERJ 135	1290		
Embraer ERJ 145	8791		
Embraer ERJ E170	182		
Embraer ERJ E190	2663		
Embraer ERJ E195	2		
Fokker F-70	80		
Gulfstream	220		
LearJet	76		

**Table 2: Commercial aircraft by type and helicopter movements**

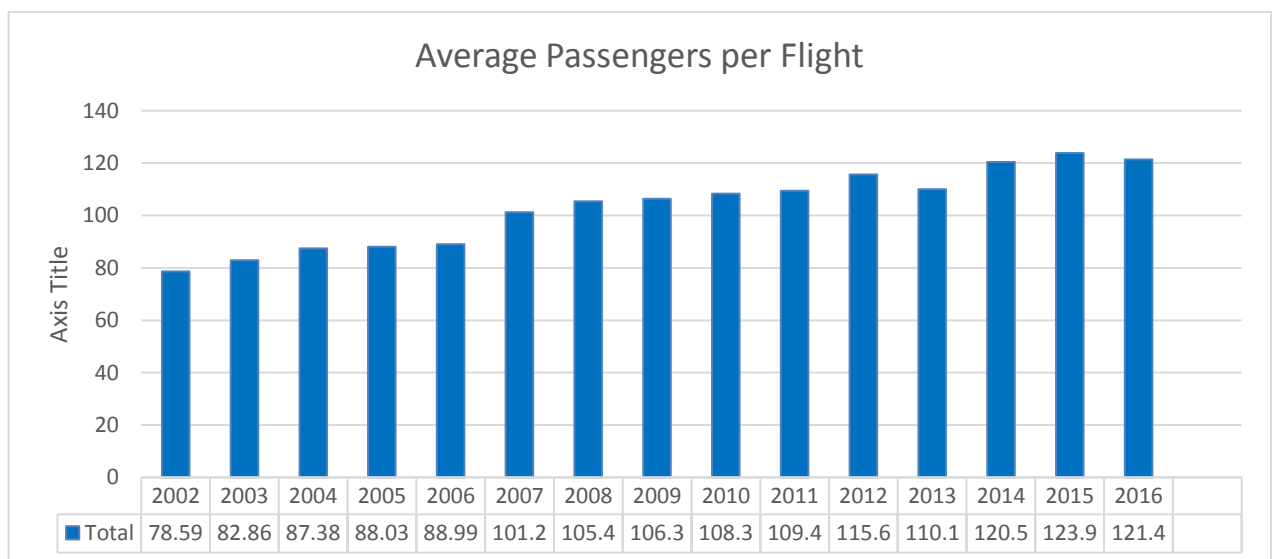
## 5. PASSENGER STATISTICS

The number of passengers using Bristol Airport increased by 11% in 2016. Statistics related to passenger numbers are provided in Table 3. This data is provisional Bristol Airport data as the CAA data was not finalised at the time of writing.

	2016	2015	Change
Scheduled Domestic	1,277,643	1,218,209	4.88%
Scheduled International	5,274,402	4,609,265	14.43%
Charter Domestic	10,742	13,517	-20.53%
Charter International	964,903	921,568	4.70%
Other	4,153	4,295	-3.31%
Infants	76,862	66,822	15.02%
Transit	13,914	11,839	17.53%
<b>Total</b>	<b>7,622,619</b>	<b>6,845,515</b>	<b>11.35%</b>

**Table 3: Passenger statistics**

The average number of terminal passengers per commercial passenger carrying aircraft is shown in Figure 2.



**Figure 2: Average Passengers per Flight**

Due to differences in the way some flights are recorded, passenger and aircraft movement figures reported by Bristol Airport may contain small variances when compared to those reported by the UK Civil Aviation Authority (CAA).



## 6. PASSENGER ROUTES

Below are the top ten most popular routes in 2016.

Destination	2016 Passengers	2015 Passengers
Amsterdam	407,680	384,902
Dublin	391,121	377,725
Edinburgh	380,285	351,600
Palma	336,019	285,088
Malaga	334,330	299,522
Alicante	310,782	270,751
Faro	287,808	270,104
Glasgow	296,254	266,729
Belfast	247,336	245,583
Geneva	220,119	207,726

**Table 4: Top ten most popular routes 2016**

## 7. RUNWAY USAGE

The runway at Bristol 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 dictated by wind direction. The percentage of movements by runway direction since 2001 is provided in Table 5 below. The average usage over this period has been 78% Runway 27 and 22% Runway 09.

Year	Westerly (27)	Easterly (09)
2001	79%	21%
2002	77%	23%
2003	65%	35%
2004	82%	18%
2005	71%	29%
2006	75%	25%
2007	79%	21%
2008	84%	16%
2009	80%	20%
2010	82%	18%
2011	83%	17%
2012	86%	14%
2013	75%	25%
2014	67%	33%
2015	76%	24%
2016	86%	14%
Average	78%	22%

**Table 5: Runway usage 2001 to 2016**

Indicative flight routes for easterly and westerly operations are provided in Appendix A. Flight routes are shown as 3km swathes for departing aircraft on Noise Preferential Routings (NPRs) and arrivals which are established on final approach. The NPRs are to be flown by all departing aircraft of more than 5700 kg maximum certified weight, unless otherwise instructed by Air Traffic Control (ATC) or unless deviations are required in the interests of safety and/or weather. The NPR requires aircraft to climb straight ahead for 4.5 nautical miles when departing on runway 27 and 4.7 nautical miles on runway 09 and to be no lower than 3,000ft above sea level before commencing the turn. The obligations of the NPR cease when an altitude of 4,000ft above sea level has been reached.

Bristol Airport's noise and track keeping system, ANOMS (previously Tracker), is used to monitor adherence to the NPRs and to record continuous descent approaches. Aircraft tracks can be downloaded from [www.bristolairport.co.uk/about-us/environment/tracker-online.aspx](http://www.bristolairport.co.uk/about-us/environment/tracker-online.aspx) and viewed using Google Earth.

Bristol Airport works with the airlines and the air traffic services provider, NATS, to promote the use of continuous descent approaches (CDAs). In contrast to conventional airport approaches, aircraft following CDAs descend continuously from as high as possible. A continuous descent requires less engine thrust than level flights and also provides additional noise attenuation by keeping the aircraft higher for longer. In 2016 85.1% of arrivals were undertaken using the CDA operating technique, a slight decrease on 86.5% recorded in the previous year. An arrival is classified as a CDA if it contains, below an altitude of 6000ft, no level flight, or one phase of level flight not longer than 2.5 nautical miles. CDA performance is regularly reviewed with the airlines at the Flight Operations and Safety Committee in order to improve performance. In 2016, 99.79% of monitored departures conformed to the NPRs.

Bristol Airport reserves the right to levy a surcharge against any operator who, on a persistent basis, fails to operate along the prescribed NPRs as recorded by ANOMS. No such surcharges were levied in 2016.



Bristol Airport continually monitors aircraft noise using three monitors located near Felton, Winford and Congresbury. The Congresbury and Winford (known as Littleton Hill) monitors are positioned in accordance with ICAO standards for monitoring noise from departing aircraft, being positioned 6,500m, from the start of roll from Runway 09 (Littleton Hill) and Runway 27 (Congresbury).

Aircraft using Bristol Airport are required to be operated in the quietest possible manner. Departing aircraft exceeding 90 dB(A) by day (0600 to 2330 local time) and 85 dB(A) by night (2331 to 0559 local time) at the Congresbury and Littleton Hill noise monitoring points will be subject to a penalty as set out in the Airport Fees and Charges. A summary of data relating to departing aircraft from the noise monitoring undertaken in 2016 is provided in Table 6. All departing aircraft complied with the noise infringement limits and no penalties were levied in 2016.

Month	Peak departures noise level Lmax dB(A)		Average departures noise level
	Runway 27	Runway 09	Runways 09 and 27
January	84.6 (82.9)	80.4 (80.1)	73.4 (73.1)
February	81.2 (79.4)	80.9 (80.1)	73.7 (73.7)
March	81.2 (78.9)	85.2 (81.5)	73.7 (73.0)
April	82.2 (82.3)	80.4 (80.4)	73.6 (72.0)
May	83.3 (78.7)	84.0 (82.4)	74.0 (73.7)
June	84.6 (78.7)	79.6 (85.0)	73.5 (73.2)
July	83.2 (84.0)	78.3 (80.9)	73.1 (73.3)
August	82.1 (81.3)	81.9 (79.6)	73.3 (73.5)
September	80.2 (86.3)	82.1 (82.2)	73.5 (73.7)
October	81.7 (80.8)	83.2 (82.0)	73.6 (73.6)
November	80.6 (83.8)	78.5 (77.8)	72.9 (72.4)
December	79.0 (83.3)	80.1 (83.9)	73.0 (73.3)

**Table 6: Noise monitoring - departing aircraft (2015 data in brackets)**

The noise climate recorded at the three noise monitors is provided in Table 7 below.

	<b>Congresbury</b>		<b>Littleton Hill</b>		<b>Felton</b>	
<b>Month</b>	<b>2016</b>	<b>2015</b>	<b>2016</b>	<b>2015</b>	<b>2016</b>	<b>2015</b>
	<b>Leq dB(A)</b>	<b>Leq dB(A)</b>	<b>Leq dB(A)</b>	<b>Leq dB(A)</b>	<b>Leq dB(A)</b>	<b>Leq dB(A)</b>
January	60.3	60.3	57.6	58.8	60.2	60.1
February	61.1	60.6	61.0	56.1	61.5	59.1
March	60.3	60.4	56.8	59.4	59.9	60.7
April	60.2	59.9	56.8	55.9	60.3	59.5
May	59.8	60.0	55.8	57.6	60.6	60.4
June	59.7	59.3	56.3	56.4	61.1	60.2
July	59.3	59.2	56.3	56.3	60.9	60.5
August	58.7	59.4	56.6	56.0	61.1	60.2
September	57.5	59.7	56.3	55.9	61.0	60.4
October	58.0	59.5	55.1	55.1	60.4	60.2
November	58.2	60.3	54.2	59.4	59.2	60.7
December	58.0	60.7	54.8	58.7	59.7	59.7

**Table 7: Noise climate**

## 10. NOISE CONTOURS

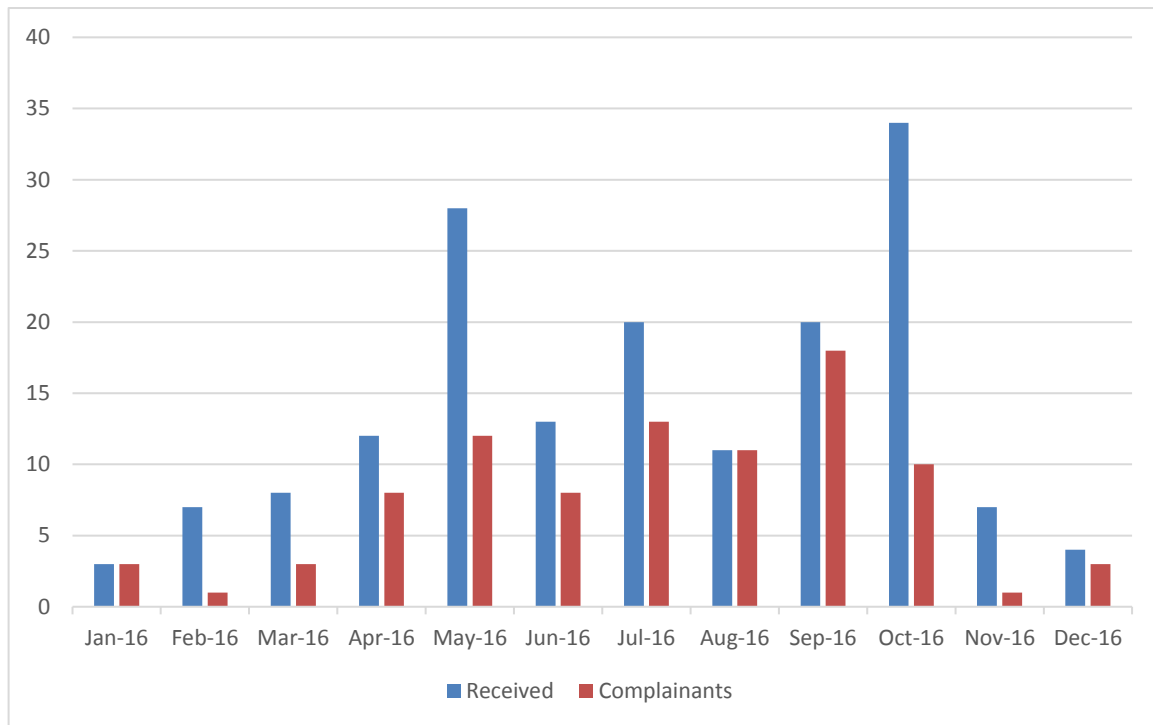
Conditions 30 and 31 attached to the planning permission for the development of the Airport dated 16 February 2011 require forecast aircraft movements and consequential noise contours over a 92 day period between mid-June and mid-September to be reported to the local planning authority on 31 January each year. Condition 30 refers to the 57dB(A) Leq16hr (0700-2300) contour and condition 31 refers to the 63dB(A) Leq 16hr (0700-2300) contour. Noise predictions have been undertaken using the latest version of the Federal Aviation Authority noise contour modelling software (AEDT 2c SP1), which has replaced the Integrated Noise Model 7.0 used previously. Forecast commercial aircraft movements for summer 2017 have been derived from the airline scheduling system operated and co-ordinated for Bristol Airport by Airport Coordination Limited. General aviation movements have been overlaid onto the commercial aircraft movements based on the assumption that the movements will be as recorded in the summer period of 2016. Movements have been allocated to the 09 and 27 runway directions in accordance with the 16-year average modal split between the two runways for the summer period of 22%/78%. The area of the 57dB contour for summer 2017 has been calculated at 10.5 sq km, compared with a limit of 12.42 sq km set out in planning condition 30. The resulting noise contours are included at Appendix B.

Bristol Airport operates a dedicated noise complaint telephone number, an email address and a web based system for logging and tracking complaints at [www.bristolairport.co.uk](http://www.bristolairport.co.uk). Noise complaints can also be received by post. During 2016 a total of 167 complaints relating to aircraft operations from Bristol were received through these communication channels. Complaint statistics are provided in Table 8 below.

	2016	2015	2014
Total number of complaints	167	173	191
Number of individual complainants	71	77	89
Average number of complaints per complainant	2.4	2.1	2.1
Number of aircraft movements per complaint	442	393	336

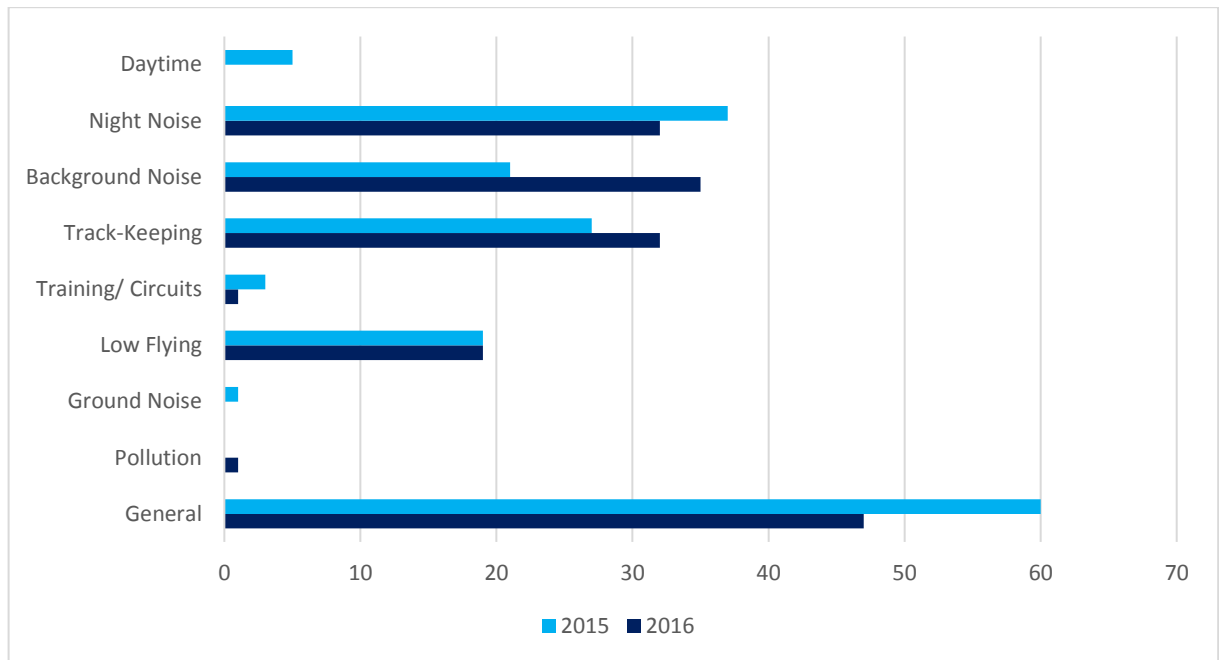
**Table 8: Noise complaints**

The distribution of noise complaints by month throughout 2016 is shown in Figure 2.



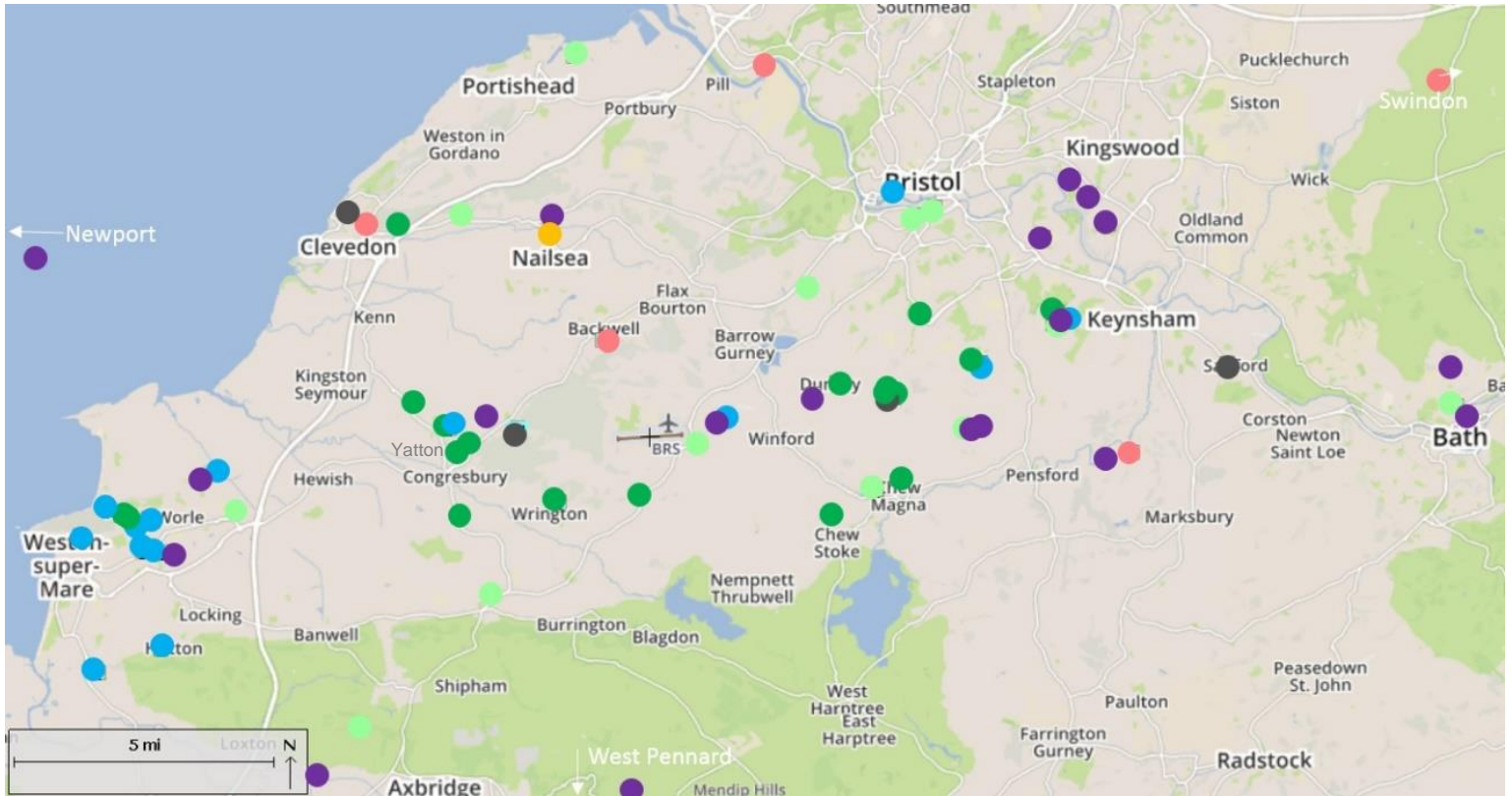
**Figure 2 Complaints by month**

The nature of complaints in 2016 is shown in Figure 3.



**Figure 3: Nature of complaints**

The source of noise complaints is indicated by the circles shown on the map at [Figure 4](#).



**Figure 4: location of noise complaints**

**Key**

- |  |  |
|--|--|
| <span style="color: blue;">●</span> Night          | <span style="color: red;">●</span> Background            |
| <span style="color: green;">●</span> Track-keeping | <span style="color: yellow;">●</span> Training/ circuits |
| <span style="color: orange;">●</span> Pollution    | <span style="color: lightgreen;">●</span> Low flying     |
| <span style="color: purple;">●</span> General      | <span style="color: black;">●</span> Multiple            |

Table 9 identifies the areas from which three or more complaints were received in 2016, compared with 2015.

Location	Number of complaints	
	2016	2015
Bath	4	4
Bristol (City)	9	7
Clevedon	4	1
Cleeve	86	74
Dundry/ East Dundry	6	6
Felton	4	5
Stockwood	7	3
Weston-super-Mare	11	7
Whitchurch	7	10
Yatton	3	4

**Table 9: Areas with three or more noise complaints during 2016**



## 12. NIGHT NOISE QUOTA USAGE

Night time operations at Bristol 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 over 10% is penalised in the following season at double the amount of the excess.

The total number of take-offs and landings between the hours of 23:30 and 06:00 shall not exceed 3000 in the summer season and 1000 in the winter season. The total number of take-offs and landings between the hours of 06:00 and 07:00 and between 23:00 and 23:30 shall not exceed 10,500 in any calendar year.

Table 10 records the night movements and quota usage since the system came into use.

Year	Night movements		Quota use	
	Summer	Winter	Summer	Winter
1996/97		1251		447.5
1997/98	2334	1238	1124	675
1998/99	2492	1361	1351	765
1999/00	2940	1254	1294	632.5
2000/01	2564	1371	1239	435.5
2001/02	2999	1536	1230	614
2002/03	2655	1386	1150	444.5
2003/04	2960	1033	1378	413.5
2004/05	2082	786	1288	426
2005/06	2183	891	1225.5	472.5
2006/07	2181	163	1138	88
2007/08	2057	939	974.5	451
2008/09	2322	831	1118.5	326
2009/10	2146	816	940	346
2010/11	2984	559	1375.5	216
2011/12	2216	257	1112.5	120
2012/13	1861	253	938	117
2013/14	1888	233	975.5	100
2014/15	2210	232	1145	106
2015/16	2378	244	1180	96.5
2016/17	2704	current	1354*	current

**Table 10: Night movements and quota use**

\*Summer 2016 noise quota was 1354. The allowance is 1260, however as described above the night flying restrictions allow for overrun from the season before and after. In this case 10% of the previous season (90) has been borrowed and a further 4 borrowed from the season to come (winter 2016/17).

The breakdown of movements in each quota count level in summer 2016 is shown in Table 11 separated in to arrivals and departures.

	Movements	Quota count use			
		Exempt	0.5	1	2
<b>Arrivals</b>	2530	62	2468	0	0
<b>Departures</b>	174	19	70	85	0

**Table 11: Quota use by aircraft quota count, summer 2016**

There were 5,182 movements between the hours of 06:00 and 07:00 and between 23:00 and 23:30 in 2016 compared with 4,656 in 2015.

### 13. GROUND NOISE MANAGEMENT

Measures adopted by Bristol Airport to minimise the effects of ground noise are set out in a Ground Noise Management Strategy prepared in accordance with the Section 106 Agreement dated 16 February 2011. Progress and key performance indicators against the areas of action are set out below.

#### Fixed electrical ground power

- Fixed electrical ground power (FEGP) is provided as a primary substitute for the use of aircraft auxiliary power units (APUs) or mobile ground power units. Its use is mandatory where provided and is subject to strict operational rules. Three new aircraft stands on the Western Apron have been equipped with FEGP and the equipment was used by 441 aircraft turnarounds in 2016.

#### Ground running of aircraft engines

- Ground running of aircraft engines is necessary as part of the scheduled maintenance undertaken to ensure that aircraft are airworthy and fit for flight. All such activities are subject to strict operational procedures.

	2016	2015	2014	2013
<b>Idle</b>	360	300	291	302
<b>Above Idle</b>	36	27	22	21

#### Aircraft auxiliary power units

- Strict operational procedures are in place to control the use of APUs. APU runs between 23:00 and 07:00 are subject to prior approval and there were 41 such runs in 2016 (47 in 2015, 43 in 2014 and 93 in 2013).

#### Complaints about ground noise

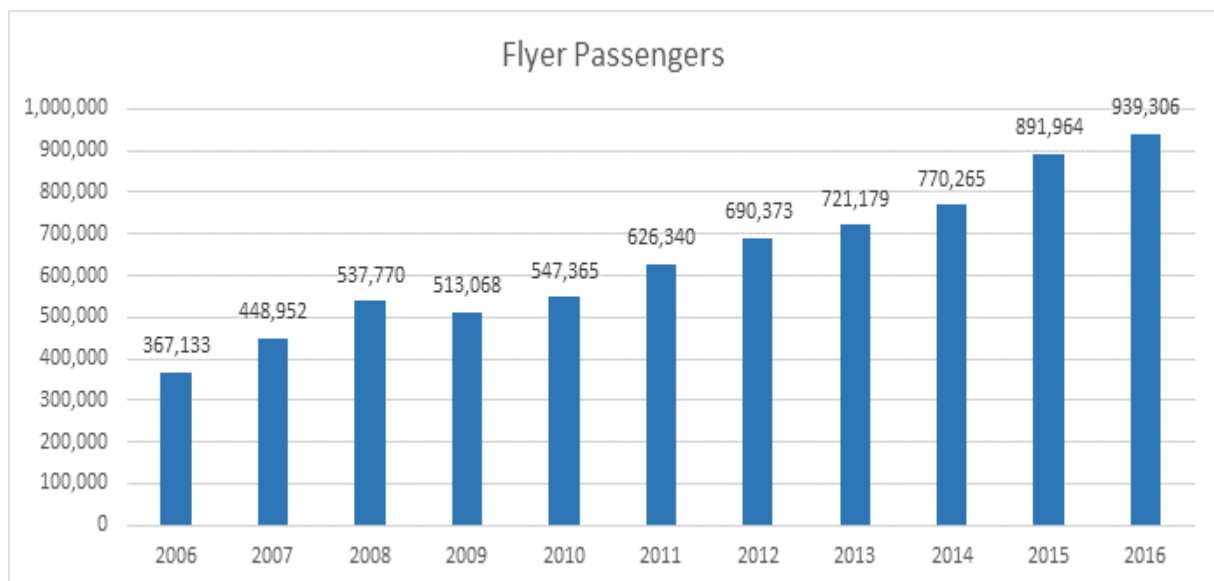
- As noted in section 11 there was no specific complaint about ground noise in 2016.

## 14. PUBLIC TRANSPORT

The Bristol Flyer Airport Express is the mainstay of the Airport public transport offer. The A1 service links the Airport with Bristol Temple Meads Railway Station, Bristol Bus and Coach Station and the city centre. The service carried 939,306 passengers in 2016, an increase of 5.3% compared with the previous year. The Flyer service is available to Airport staff for a nominal charge and plays a valuable role in getting employees to work, accounting for 56,358 staff journeys in 2016.

It is estimated that around 13% of air passengers used public transport in 2016.

Passenger numbers on the Bristol Flyer over the past ten years are shown in Figure 5.



**Figure 5: Flyer passenger numbers 2006 to 2016**

Other public transport services operating during 2016 included the Bristol Airport Express coach from Cardiff operated by National Express, the Bath Bus Company Air Decker service from Bath, the Stagecoach Falcon from Plymouth and the A2 Link connecting Weston-super-Mare with the Airport.

Air quality can be affected by a number of pollutants that in high concentrations may pose harm to human health. Combustion processes produce Nitrogen Dioxide (NO<sub>2</sub>) and Particulate Matter (PM<sub>10</sub>) with the main potential airport sources coming from vehicle traffic (staff and passenger journeys and airport operational vehicles), aircraft engines (during taxiing, take-off and landing), energy generation (diesel generators and gas boilers), fugitive emissions (evaporation - during fuelling of aircraft and vehicles) and other activities such as fire training.

This section considers air quality at Bristol Airport during 2016, comparing recorded concentrations with the UK's Air Quality Strategy and against the commitments contained within Bristol Airport's S106 Agreement with North Somerset Council.

The National Air Quality Strategy (NAQS) forms the legislative basis for air quality in the UK, stipulating long and short term objectives to ensure air quality does not result in health issues.

<b>National Air Quality Strategy Objectives</b>		
<b>Pollutant</b>	<b>Annual objective (mean limit)</b>	<b>Short term objective. (max events per annum)</b>
NO <sub>2</sub>	40 µg/m <sup>3</sup>	18 hourly means > 200 µg/m <sup>3</sup>
PM <sub>10</sub>	40 µg/m <sup>3</sup>	35 daily means > 50 µg/m <sup>3</sup>

<b>Section 106 Agreement</b>		
<ul style="list-style-type: none"> <li>Highlight air quality monitoring locations where monitored levels exceed 90% of the National Air Quality Strategy limit</li> <li>Report significant deterioration in air quality, defined as an increase in average annual concentration of more than 15% compared to the average levels recorded between 2007 – 2011 (NO<sub>2</sub>) or particulate levels exceeding 50 µg/m<sup>3</sup> in more than 15 days in a calendar year (PM<sub>10</sub>)</li> </ul>		

Monitoring of air quality is undertaken continuously, with real time monitors recording levels of both NO<sub>2</sub> and PM<sub>10</sub> at the Airport site. Additionally, passive diffusion tubes are deployed to monitor average monthly NO<sub>2</sub> concentrations at nine locations across the Airport site, including the location of the continuous air quality monitor. The locations of the monitors are shown in Figure 5.



**Figure 5: Location of air quality monitors**

Ambient concentrations of NO<sub>2</sub> and PM<sub>10</sub> recorded by real time monitoring in 2016 are shown in

	Recorded Annual Mean (µg/m <sup>3</sup> )	NO <sub>2</sub> - Hourly Means > 200µg/m <sup>3</sup> PM <sub>10</sub> - Daily Means > 50µg/m <sup>3</sup>	NAQS Compliant	Annual Mean <90% NAQS Objective
NO <sub>2</sub>	20	0	Yes	Yes
PM <sub>10</sub>	19	1	Yes	Yes

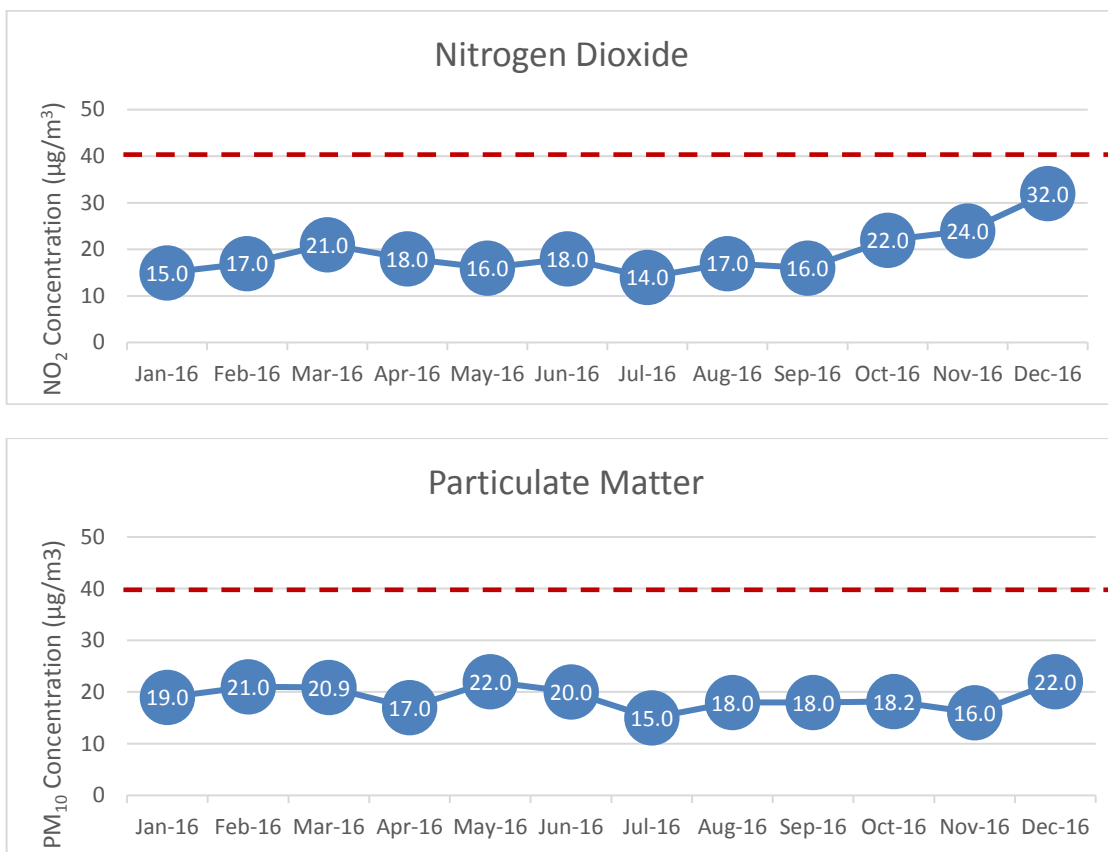
Table 12 with analysis against NAQS and S106 objectives.

	Recorded Annual Mean (µg/m <sup>3</sup> )	NO <sub>2</sub> - Hourly Means > 200µg/m <sup>3</sup> PM <sub>10</sub> - Daily Means > 50µg/m <sup>3</sup>	NAQS Compliant	Annual Mean <90% NAQS Objective
NO <sub>2</sub>	20	0	Yes	Yes
PM <sub>10</sub>	19	1	Yes	Yes

**Table 12: Air quality real time monitoring results**

Five year baseline data is derived from historic monitoring prior to 2012. The current air quality monitoring programme includes a number of sites which were not monitored prior to 2012 and therefore a five year baseline is not available at all locations.

Monthly ambient concentrations recorded by real time monitoring are detailed in Figure 5.



**Figure 6: Monthly concentrations NO<sub>2</sub> and PM<sub>10</sub> recorded by real time monitoring**

NO<sub>2</sub> levels recorded by diffusion tube monitoring are shown in Table 14 with analysis against NAQS and S106 objectives.

Monitoring Location	5yr Baseline (µg/m <sup>3</sup> )	Recorded Annual Mean (µg/m <sup>3</sup> )	NAQS Compliant	Annual Mean <90% NAQS Objective	Significant Deterioration
1	34	26	Yes	Yes	No
2	39	29	Yes	Yes	No
3	16	10	Yes	Yes	No
4	N/A	12	Yes	Yes	N/A
5	38	28	Yes	Yes	No
6	N/A	17	Yes	Yes	N/A
7	N/A	20	Yes	Yes	N/A
8	50	31	Yes	Yes	No
9	N/A	18	Yes	Yes	N/A

**Table 13: Diffusion tube monitoring results<sup>2</sup>**

<sup>2</sup>Diffusion tube monitoring results are reported following the removal of anomalous data and bias adjustment in line with Defra Guidance. The baseline data is based on data collected between 2007 and 2011.



## 16. WASTE MANAGEMENT

Bristol Airport Limited manages all the waste streams from property under its control (including terminal and administration waste). The waste figures for 2016 and 2015 are shown in Table 14. A new plastic bottle category has been added as these are now being crushed by a new piece of equipment and sent for recycling separately to the other recyclable waste streams.

Waste stream	2016		2015	
	Total (tonnes)	Waste per passenger (kg)	Total (tonnes)	Waste per passenger (kg)
<b>Recycled waste</b>				
• Cardboard	77.22	0.01	55.35	0.01
• Glass	158.99	0.02	122.8	0.02
• Plastic bottles	6.62	<0.01		
• Mixed (incl. paper/plastic/cans)	173.01	0.02	74.89	0.01
<b>Total recycled waste</b>	415.85	0.05	320.56	0.04
Food waste to Anaerobic Digestion	85.47	0.01	62.79	0.01
Waste treated and sent to Energy from Waste	842.62	0.11	1259.98	0.15
Waste to landfill	11.97	<0.01	16.38	0.01
<b>Total waste removed from BIA</b>	1355.91	0.18	1596.92	0.21
<b>% waste recycled or recovered</b>	99.12%		98.97%	

**Table 14: Waste management**

## 17. UTILITIES & ENERGY MANAGEMENT

Bristol Airport is committed to continuing to measure energy use across the site and seeking to limit emissions. A range of actions are taking place to reduce the carbon intensity of the airport infrastructure, with the long term goal of reducing per passenger carbon emissions.

Bristol Airport calculate the company footprint in accordance with the Airports Council International's (ACI's) Airport Carbon Accreditation (ACA) Scheme. ACI's ACA is endorsed by the European Civil Aviation Conference (ECAC), the European Organisation for the Safety of Air Navigation (EUROCONTROL) and the United Nations Framework Convention on Climate Change (UNFCCC). Over 120 airports across the world are also accredited.



Bristol Airport has achieved the first level of certification in the ACA scheme during 2015 and 2016.

Below is a breakdown of our 2016 Carbon Footprint.

#### Scope 1

Activity	Component	CO2eq (kg)
Gas use	Natural Gas	655,301
Fleet vehicles	Biodiesel	4,898
Heating/ red diesel	Gas Oil	160,897
Fire Training	LPG	14,799
Company cars	Petrol	3,343
Refrigerants	F-Gas	144,233
	Total Scope 1 tonnes CO2eq	<b>983</b>

#### Scope 2

Activity	Component	CO2eq (kg)
Grid electricity	Electricity	5,085,145
	Total Scope 2 tonnes CO2eq	<b>5,085</b>
	TOTAL ALL SCOPES tonnes CO2eq	<b>6,068</b>

Compared to 2015:

- There has been a 11% decrease in absolute carbon emissions
- There has been a 22% decrease in per passenger carbon emissions

Bristol Airport's carbon footprint includes all Scope 1 (directly generated) and Scope 2 (indirectly generated) emissions. This includes all directly run infrastructure and vehicles; including:

- Terminal common areas
- Offices and workshops (Administration Building, Northside House, Fire Station, Motor Transport)
- Fleet vehicles (car park buses, airside operations vehicles, fire vehicles, other pool vehicles)
- Air Traffic Control Tower- electricity use (gas for heating is paid for by the tenant).

It includes tenanted common areas but not tenant's units, as operators are accountable for their own energy use in those areas using metered rates.

Key achievements in carbon and energy management in 2016 include:

- Solar panels have been installed on the Western Walkway Terminal Extension which are predicted to provide approximately 101,500 kilowatt hours of electricity per year
- The western apron floodlights have been upgraded to LED

- Installation of new terminal chiller units, replacing older air conditioning units
- Purchase of second electric vehicle and installation of additional charging point for electric fleet vehicles.
- Site-wide energy efficiency campaigns

During 2017 there are plans to upgrade more terminal lighting to LED, increase electric charging point availability and assess where further airfield lighting can be swapped for LED.

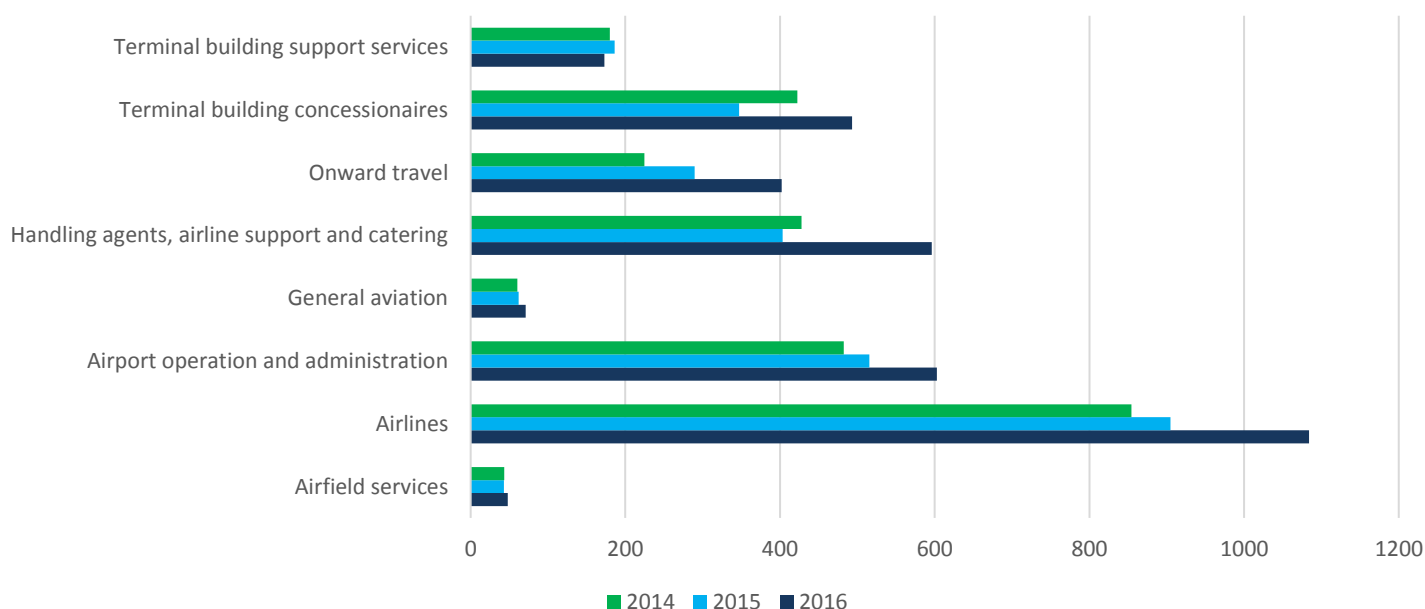
## 18. EMPLOYMENT

Bristol Airport is a major employment site within North Somerset. Regular surveys are undertaken by Bristol Airport to determine the extent and nature of employment available. The number of staff working at the Airport between 2011 and 2016 is reported in Table 15.

	2016	2015	2014	2013	2012	2011
Full time staff	2,669	2,243	2,396	2,241	2,193	2,206
Part time staff	801	1,149	600	754	783	715
Total number of staff	3,470	3,392	2,996	2,995	2,976	2,921
Full time equivalents	3,070	2,818	2,696	2,618	2,585	2,564
Number of companies	52	52	47	47	44	44

**Table 15: Employment**

A breakdown of the airport staff headcount by area of employment is provided in Figure 7.



**Figure 7: Areas of employment**

Bristol Airport's Skills and Employment Plan aims to provide opportunities for local residents, particularly young people, to access jobs at Bristol Airport. The following activities were undertaken during 2016:

- Co-ordinated marketing of job opportunities across the airport through the Bristol Airport website, traditional print media, digital and social media, Jobcentre Plus, Westonworks, OneStop Skills Job Shop, and local Universities / Colleges. Seasonal recruitment activity was co-ordinated through the Bristol Airport Employers Forum.
- Work experience: Bristol Airport played host to 8 Work Experience students from 3 local secondary schools – Backwell, Churchill and St Bedes.
- Customer Experience (PCV) Drivers - A workshop was held at a local Job Centre which allowed our PCV Co-ordinator and People & Performance Advisor to meet with 13 possible candidates to discuss the role and give a flavour of not only the role, the team and the organisation, but also the application process and recruitment requirements.
- Job Fairs - During September, Bristol Airport had the opportunity to be present at two Job Fairs – Deaf and Disability job fair in Bristol and the other in Weston-super-Mare. Bristol Airport were joined by a number of Business Partners for the job fair in Weston-super-Mare. In early 2017 two seasonal job fairs were held at the airport.
- At the end of November 2016, Bristol Airport delivered a session at Weston College for their Fast Track Traineeship group. After a 12 week course they will be looking to gain employment and an Apprenticeship. The session not only informed them on how to apply for positions at Bristol Airport and the vast array of opportunities available but also some hints and tips to help them with any applications.
- Mock Interviews held at Priory School in Weston-super-Mare.
- As part of our ongoing commitment to expand the routes into careers at Bristol Airport, an Industrial Placement scheme has been developed within the Engineering Team and the first placement commenced in August 2016.

## 19. COMMUNITY RELATIONS

In 2016, Bristol Airport paid £130,650 into the Airport Environmental Improvement Fund, also known as the Bristol Airport Local Community Fund. The main purpose of the Fund is to mitigate the environmental and social impacts of the Airport's operations and give something back to the surrounding communities affected by being situated in close proximity to an international airport. It reflects our aim to develop the airport in a sustainable way, respectful of the local community and the environment.

The Fund supports projects in the following areas:

- Initiatives to mitigate the impact of aircraft and ground noise on the local community which may include (but not be limited to) noise insulation for schools and homes in affected areas, the construction of additional noise insulation barriers and the funding of school trips;

- The on-going improvement of transport infrastructure and services to and from Bristol Airport with an emphasis on reducing the impact of airport traffic in the community and villages surrounding the Airport which may include (but not be limited to) road improvements, public transport initiatives and measures to reduce community severance; and
- Nature conservation, educational projects and sustainability initiatives in the locality of the Airport.

The Fund's area of benefit concentrates on the areas most affected by aircraft operations and comprises the parishes of Winford, Wrington, Backwell, Brockley, Cleeve and Barrow Gurney.

The Local Community Fund has been set up as a Community Interest Company dedicated to the purpose of investment in local community projects. A partnership approach has been taken to the management of the fund which involves community representatives in determining how funds are allocated. Applications for funding are considered four times a year by a Management Committee comprising four representatives from Bristol Airport Limited and four elected members of North Somerset Council. The Management Committee is independently chaired and the Chairman has a casting vote on funding decisions. The Management Committee evaluates each application carefully and uses its local knowledge and expertise to ensure that the fund is used to deliver the greatest possible benefit to the local community.

In 2016 the Fund provided grants totalling over £161,563 to 46 local projects. A list of the organisations and projects that have been supported follows:

**Recipient**
**Project**

Farmlink Education Ltd	School transport costs
Ravenswood School	Insulation and cladding
Winford C of E School	School residential trip
Cleeve Parish Council	Speed restriction sign
Backwell Parish Council	Safety railing
Winford Parish Council	Winford Book Box
Backwell C of E School	Redecoration 2 classrooms
Wrington C of E Primary	Early years outdoor area
Regil Village Hall	Emergency Fire Doors
Wrington Primary	School Outdoor learning
Winford Pre-School	Outdoor learning
YACWAG	Bat detectors
Noise insulation x 24 residents	Noise insulation
Backwell Junior School	Outdoor learning
West Leigh Infant School	Outdoor learning
Meadowside Pre-School	Outdoor learning
St Katharine's Church	Tree removal
YMCA (Wrington)	Forest School equip
Claverham Yatton Cricket Club	Heating/insulation
Barrow Gurney Village Hall	Disabled toilet
Winford Parish Council	Footpath legal permissions
My Future My Choice	School engagement

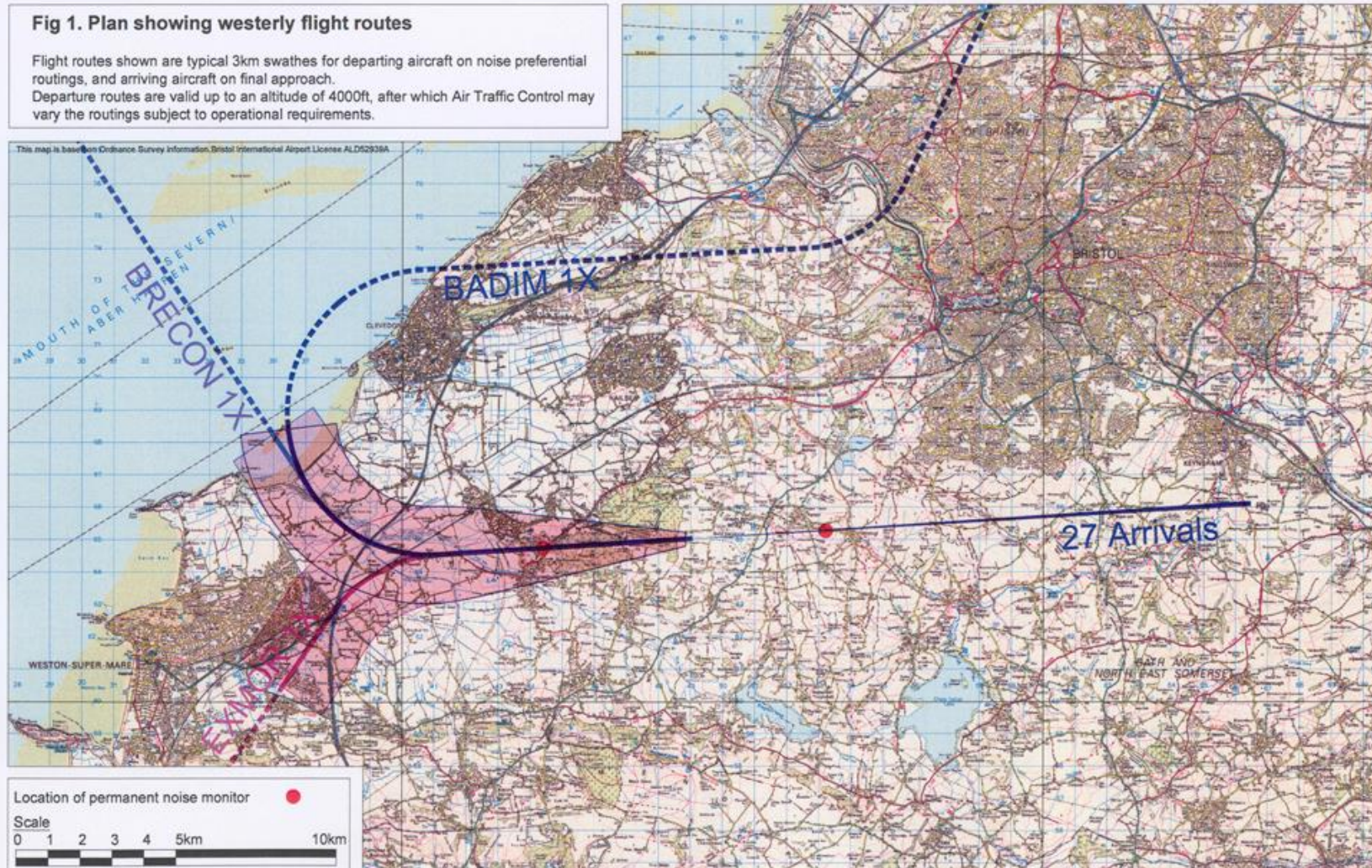
Airport staff raise money for a staff nominated charity of the year. In 2016 over £20,000 was raised by staff and customers for Children's Hospice South West. This charity provides hospice care for life-limited children and their families from across the South West of England. A further £4,000 was collected for the local Poppy Appeal.



## Appendix A – Flight routing maps

**Fig 1. Plan showing westerly flight routes**

Flight routes shown are typical 3km swathes for departing aircraft on noise preferential routings, and arriving aircraft on final approach. Departure routes are valid up to an altitude of 4000ft, after which Air Traffic Control may vary the routings subject to operational requirements.





**Fig 2. Plan showing easterly flight routes**

Flight routes shown are typical 3km swathes for departing aircraft on noise preferential routings, and arriving aircraft on final approach. Departure routes are valid up to an altitude of 4000ft, after which Air Traffic Control may vary the routings subject to operational requirements.

(Version A 17th March 2008 WOTAN 12 SID Corrected)

This map is based on Ordnance Survey information. Bristol International Airport License ALD52856A





## Appendix B – Predicted noise contours for summer 2017

Note: contours are at 3dB intervals with an outer contour of 57dB<sub>L<sub>Aeq</sub> 16hour</sub>

