Annual Monitoring Report
2017

London
Luton
Airport

Contents

Foreword

Demand for air travel across the UK is at an all-time high. Almost 16 million passengers chose to travel through London Luton Airport (LLA) in 2017. More local residents took advantage of the international airport on their doorstep - people from three Counties are by far our largest user.

To meet this soaring demand, we are investing £160 million to transform the airport and increase our annual capacity to 18 million. The revamped terminal and increased route network will create a better experience for our passengers. We also want to make sure that our local community feels the benefits of being home to a bigger and better LLA.

The redevelopment is forecast to bring a significant economical boost to the local area and the UK. We will contribute £1.4 billion a year to the local economy and £2.3 billion nationally, supporting over 37,700 jobs by 2031.

But as the airport grows, we know that some local residents may have concerns about noise levels.

Noise is an unavoidable part of running an airport but it's important to us to balance the benefits of a successful airport with our operational activity.

We already operate under the most stringent noise restrictions of any major UK airport, but we want to do more.

That's why we are working with representatives from local authorities and community groups to make improvements to existing flightpaths, and with airlines to introduce newer, quieter aircraft to LLA as quickly as possible. In 2017, LLA initiated a successful trial with more than three quarters of aircraft delaying their landing gear deployment, which cuts down drag and reduces noise, having worked with Stevenage MP Stephen McPartland and local communities.

The work which our noise team carries out is driven by the following commitments:

1. Inviting and listening to feedback
We hold regular noise surgeries and are available to listen to your concerns 365 days per year.

2. Acting on the feedback we receive
Whether it's introducing new mitigation initiatives, improving our monitoring capabilities or simplifying our complaints system. If it matters to you, it matters to us.

3. Communicate transparently
We update our community with quarterly monitoring reports, through our consultative committee and "Inform", our bi-monthly email newsletter.

4. Input into national policy-making
Airspace changes depend on national policies. LLA will make sure your views are heard in national consultations.

This Annual Noise Monitoring Report is one example of how we act on these commitments. We hope it answers some of the questions you may have about the impact of the airport's transformation.

If you have any other further queries please don't hesitate to contact the team by calling 01582 395382 or emailing noise@ltn.aero.

Neil Thompson
Operations Director
London Luton airport

Key Monitoring Indicators

Parameter		2017	2016
Total Aircraft Movements	↑	135,518	131,435
Day Movements (07:00 - 23:00)	↑	119,462	116,686
Night Movements (23.00 – 07.00)	↑	16,056	14,749
Early Morning Movements (06.00 – 07.00)	↑	5,962	5,161
Total Scheduled Passengers	↑	15,369,715	14,092,180
Total Charter Passengers	↓	429,504	459,657
Total Passengers	↑	15,799,219	14,551,837
Number of Destinations	↑	140	135
Number of New Airlines	↓	0	4
Number of New Routes	↓	19	23
Westerly/Easterly Runway Split (%)	-	79/21	70/30
Night Quota Used (3,500 Limit)	↑	3,078	2,663.75
Average Ratio of Aircraft movements % (day/night)	-	89/11	89/11
Track Violations	↓	63	91
Departure Noise Infringements (Day)	↓	7	21
Departure Noise Infringements (Night)	↑	4	3
Fines transferred into Community Trust Fund	↓	**£50,250**	£75,700
24hr Continuous Decent Approach (% achievement)	↑	93%	90%
No. Departures Recorded at ≥ 85 dB(A) during Day (Night)	↓	1 (0)	8 (1)
No. Departures Recorded at ≥ 76 dB(A) during Day (Night)	↑	7,785 (1,283)	6,379 (943)
No. Departures Recorded at ≥ 70 dB(A) during Day (Night)	↑	46,405 (5,339)	42,667 (4,511)
Night Noise Contour Area (48 dB $L_{Aeq, 8h}$)	↑	38.7km^2	36.5km^2
Population within Night Noise Contour (48 dB $L_{Aeq, 8h}$)	↑	17,800	16,105
Dwellings within Night Noise Contour (48 dB $L_{Aeq, 8h}$)	↑	7,500	6,767
Noise Complaints	↑	15,384	4,231
Complainants	↑	1,121	815
Number of New Complainants	↑	814	525
Largest Source of Complaints	-	Deps. West	Deps. West
Number of PM_{10} exceedances	-	0	0

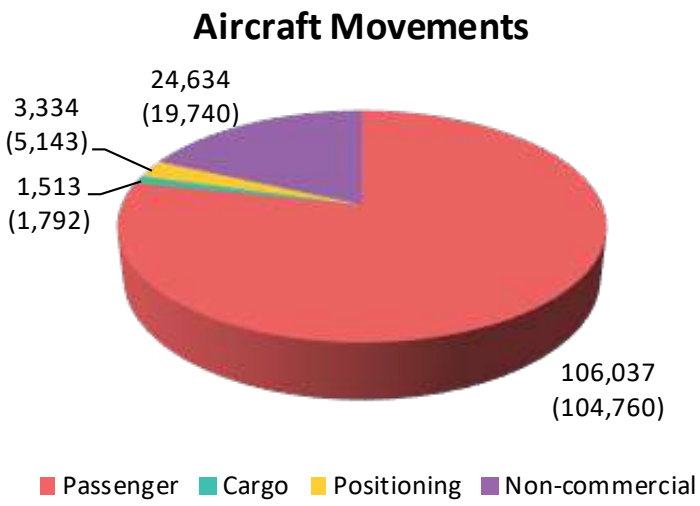
Air Traffic Data

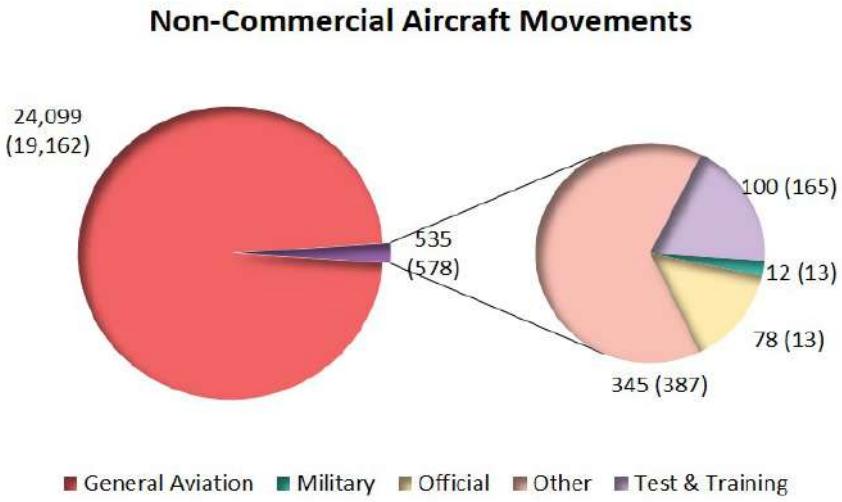
Aircraft movements

LLA handled a total of 135,518 aircraft movements during 2017, an increase of 3.1% compared to 2016. An aircraft movement is the take-off or landing of any aircraft from the airport.

The majority of aircraft movements were passenger flights at 106,037 movements. This includes commercial flights by executive aircraft (compared with 104,760 in 2016). Other movements included cargo, positioning flights and non-commercial flights.

For comparison purposes 2016 data is shown in brackets.

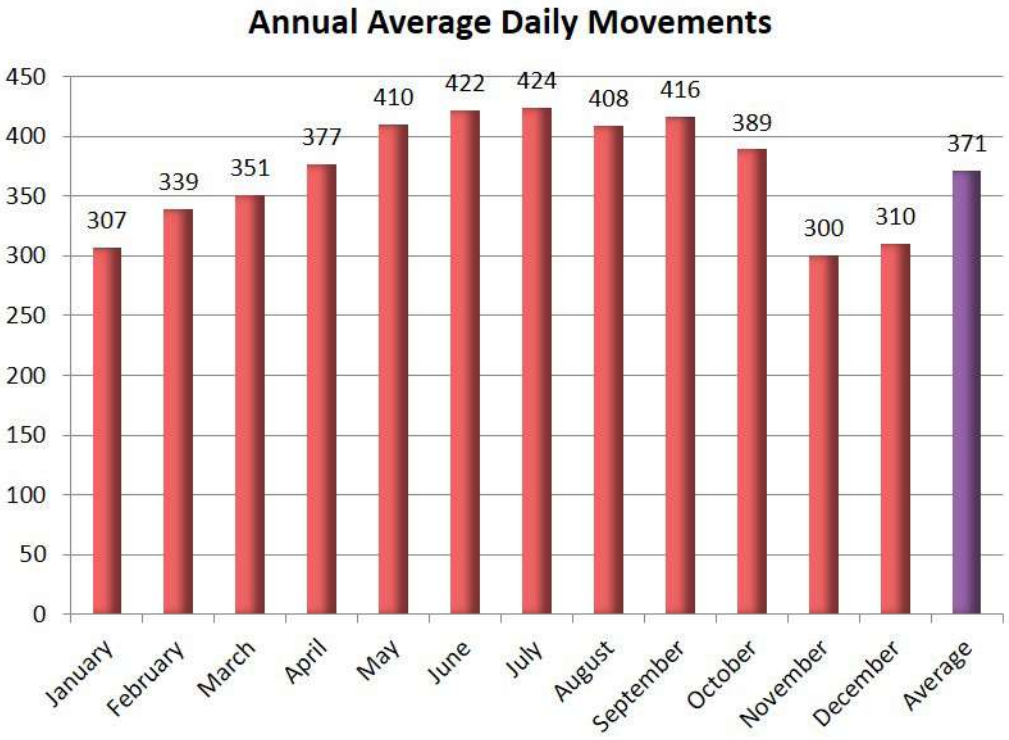




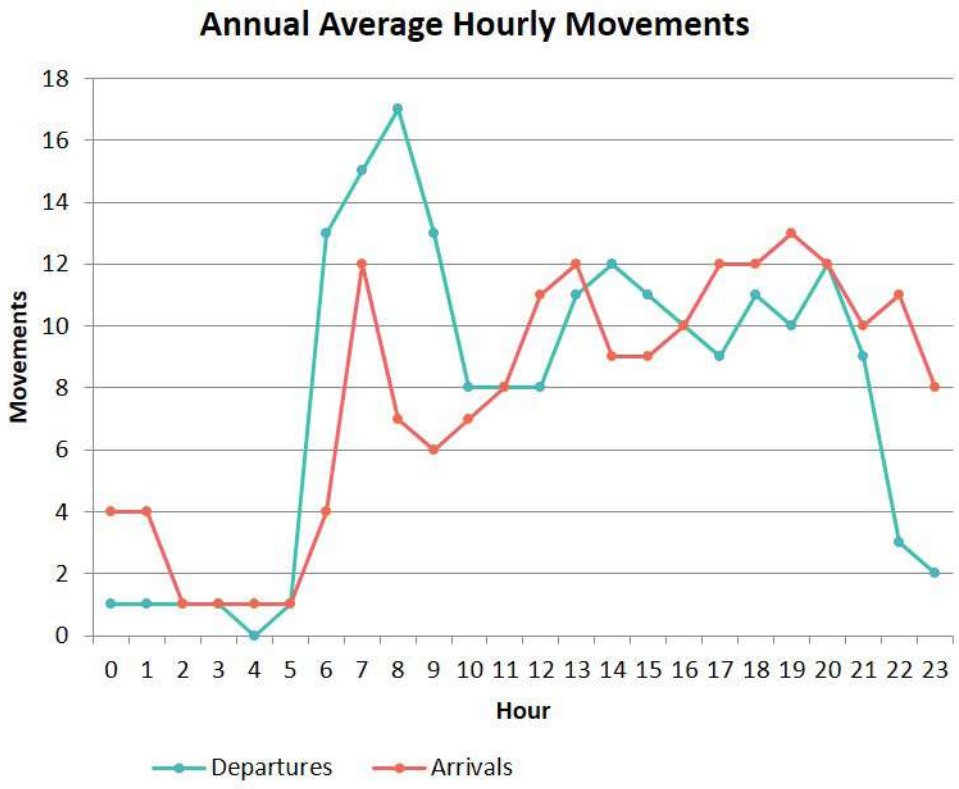
Movement Classification

Commercial – operating for hire or reward and includes cargo, passenger and positioning flights
Non-Commercial – not operating for hire and reward
Cargo – aircraft movements which are solely for freight. It should be noted that freight can also be carried on aircraft in other categories
General Aviation – private aircraft, helicopters and business jets not operating for hire or reward
Passenger – commercial passenger flights, including executive aircraft
Positioning – typically empty flights to/from other airports
Military – flights on military business
Official – flights solely for official purposes by British or foreign civil government departments
Other – flights coming for maintenance and or departing aircraft that have made an unscheduled return to base
Test & Training – training flights involving aircraft and also flights following or during aircraft maintenance

The graph below illustrates that the busiest time of year is May - October, with over 411 flights per day. **Our busiest day of the year was June 4th with 475 aircraft movements.** In comparison, winter months are the quietest, with just over 305 flights per day. On average there were 371 movements per 24 hours (compared to 359 in 2016).



The busiest time on average during 2017 for departing aircraft was 06:00-09:00 hrs, with another peak between 12:00-16:00. The average busiest time for arrivals was 17:00-19:00 hrs.The graph also highlights a low level of average movements during the hours of 00:00-05:00 hrs.



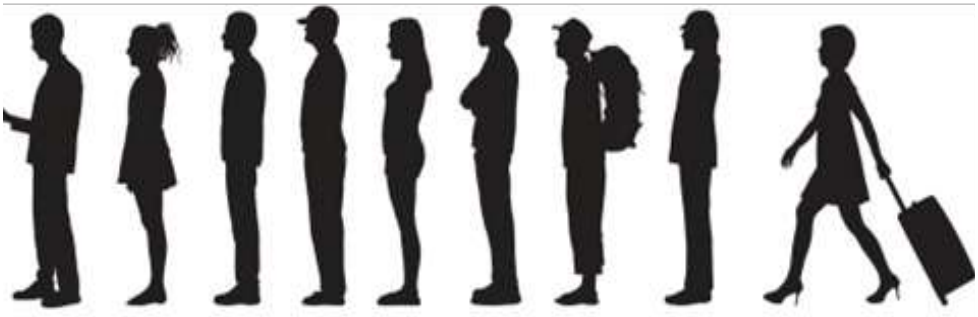
Passenger data

Scheduled	Charter	Totals
•**15,369,715** passengers •just over 9% increase compared with 2016 •**154** average passengers per flight	•**429,504** passengers •just over a 6% decrease compared with 2016 •**180** average passengers per flight	•**15,799,219** passengers •8.5% increase compared with 2016 •Total **154** average passengers per flights

Charter flights are flights in which the aircraft has been chartered (or leased) by a company, typically a tour operator or an executive customer. Charter seats are typically not sold directly by the airline. Scheduled flights are regular flights organised by the company which owns the aircraft.

A total of 15,799,219 passengers used LLA during 2017; 15,369,715 on scheduled flights (97%) and 429,504 on charter flights (3%). This represents an increase in passengers of 8.5% compared with 2016.

Domestic	EU	Non-EU	Totals
• **1,155,521** •just under 11% increase compared with 2016	• **10,411,283** •just over 6.5% increase compared with 2016	• **4,232,415** •just over 13% increase compared with 2016	• **15,799,219** •8.5% increase compared with 2016



Cargo

Cargo operations represent just over 1% of all air transport movements at London Luton Airport. Night movements accounted for 76% of total cargo movements. These were primarily postal flights or intra-European express delivery services moving time sensitive and perishable freight such as fresh food, medication and urgently needed technical equipment vital to supporting and sustaining economic growth. The flights carrying more general, less time-sensitive cargo already operate outside of the night-time period. This would include Formula 1 cars, live animals, clothing, machine parts and more.

Operator	Movements			Tonnes
	Day Movements	Night Movements	Total	Total
2017	455	1,442	1,897	22,061
2016	**648**	**1,515**	**2,163**	**25,788**
2017/2016 comparison	-29.8%	-4.8%	-12.3%	-14.4%

N.B. The cargo movement count is the total number of movements that carried cargo as opposed to flights that are primarily operated for the carriage of cargo. This is because just under 1% of total cargo tonnage was carried on passenger aircraft. Consequently the movement figures in this section will differ from figures in the Aircraft Movements piechart which shows dedicated cargo movements.

Airlines

London Luton Airport works very closely with its airline partners. The table below provides the movement statistics by the 10 largest operators.

Operator	Movements
easyJet	47,260
Wizz	31,094
Ryanair	9,974
Monarch	3,697
Blue Air	3,175
Thomson Airways	2,133
Vueling	3,046
DHL	1,136
El Al	833
VistaJet	758
Others	2,512
TOTAL	**105,618**

N.B This table includes movements for both passenger & cargo aircraft but excludes positioning flights and air-taxis.

Movements by aircraft type

Aircraft Type	Movements	% of Total movements
Airbus A319	27,828	20.5%
Airbus A320	48,261	35.6%
Airbus A320 NEO	975	0.7%
Airbus A321	9,869	7.3%
Airbus A306	896	0.7%
Airbus A330	110	0.1%
Boeing B737-300	396	0.3%
Boeing B737-400	1,202	0.9%
Boeing B737-500	159	0.1%
Boeing B737-700	114	0.1%
Boeing B737-800	14,218	10.5%
Boeing B737-900	434	0.3%
Boeing B757	1,247	0.9%
Beoing B767	130	0.1%
Boeing B777	18	0.01%
Boeing B787	42	0.03%
BAe ATP	295	0.2%
Canadair Global Express GLEX	219	0.2%
Cessna Citation Excel C56X	2,721	2.0%
Canadair Challenger CL60	1,278	0.9%
Canadair Challenger CL30	1,550	1.1%
Gulfstream 3,4 & 400 series	1,714	1.3%
Gulfstream 5 & 500 series	2,057	1.5%
Gulfstream 650	1,163	0.9%
Embraery Legacy 600	1,702	1.3%
Cessna Citation Jet C525	1,317	1.0%
Dassault Falcon FA7X	1,081	0.8%
Helicopter	531	0.4%
Other aircraft	13,991	10.3%
TOTAL	**135,518**	100%

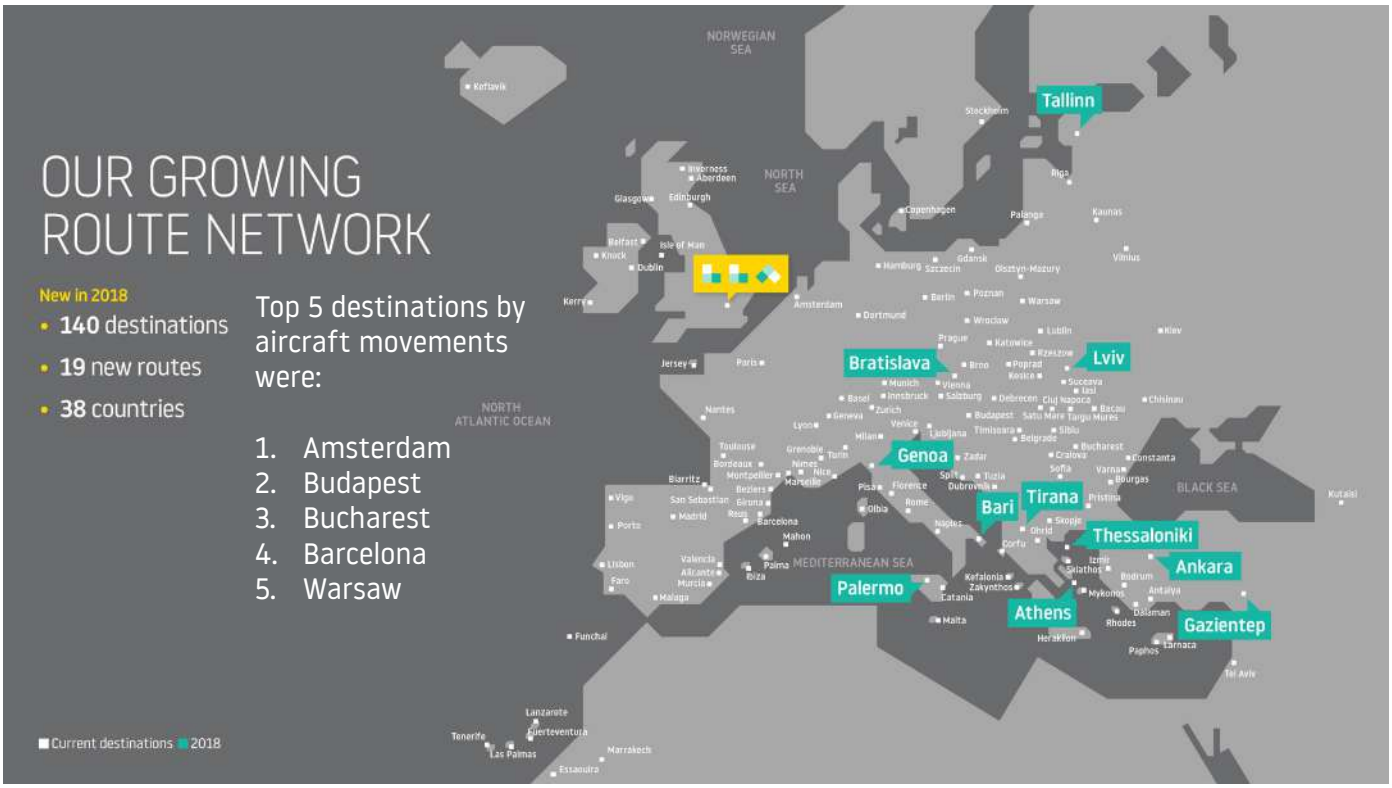
The aim of this section is to provide the number of movements for a specific aircraft type. The groups are conditional, assuming that these are the typical aircraft types used for passengers, cargo and general aviation movements. As a result the number quoted here within this section will differ from those within the Aircraft Movements Section.

[1] - Winglets and sharklets are small aerodynamic surfaces mounted almost vertically at the wingtips. There is no difference between winglets and sharklets; the term sharklet is just the name used by Airbus for the winglets fitted to their aircraft.

Destinations

London Luton Airport has seen forty four months of consecutive passenger growth (correct as of January 2017) making 2017 the busiest year ever in the airport's history.

The map below shows the destinations flown/on sale to and from London Luton in 2017. Our airlines fly to 140 destinations across 38 different countries.



New Routes 2017

Destination	Launch	Airline
Chambery, France	16-Dec-17	TUI
Alghero, Italy	28-Nov-17	easyJet
Seville, Spain	29-Oct-17	easyJet
Bydgoszcz, Poland	29-Oct-17	Ryanair
Biarritz, France	27-Jun-17	easyJet
Kutaisi, Georgia	24-Jun-17	Wizz Air
Tel Aviv, Israel	24-Jun-17	Wizz Air
Prishtina, Kosovo	18-Jun-17	Wizz Air
Rhodes, Greece	27-May-17	easyJet
Zadar, Croatia	27-May-17	easyJet
Florence, Italy	01-May-17	Vueling

Destination	Launch	Airline
Faro, Portugal	01-May-17	Ryanair
Isle of Man, UK	27-Mar-17	easyJet
Cluj-Napoca, Romania	26-Mar-17	Blue Air
Dusseldorf Weeze, Germany	26-Mar-17	Ryanair
Stockholm, Sweden	26-Mar-17	easyJet
Nantes, France	15-Feb-17	easyJet
Marseille, France	13-Feb-17	easyJet
Valencia, Spain	11-Feb-17	easyJet

Routes Ending 2017

Whilst there were 19 new routes launched from LLA in 2017, 16 ended with the collapse of Monarch.

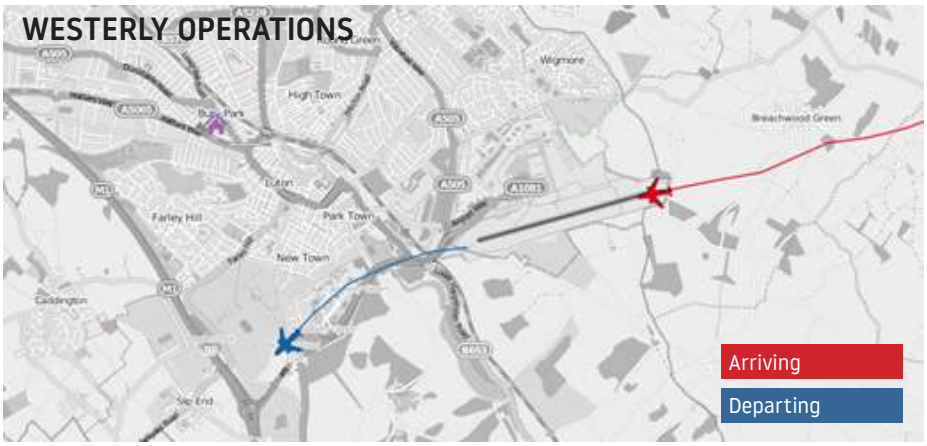
More information about our destinations can be found on the airport's website:
http://www.london-luton.co.uk/inside-lla/destination-map

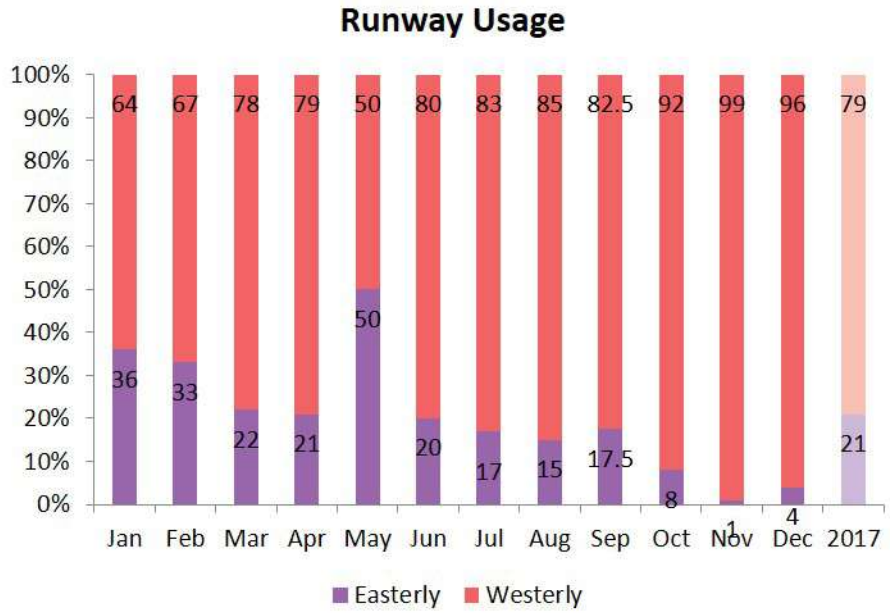
Runway usage

Aircraft need to land and take off into the wind and therefore the prevailing wind direction determines the direction of airfield operation. South westerly and westerly winds prevail for much of the year, typically around 70 per cent of the time.

Wind speeds and directions recorded at higher altitudes can vary considerably from those recorded at ground level. The position of the wind is under constant review by NATS which is why the operation can change direction more than once in a day. However it is also not unusual for the runway to operate in the same direction for several weeks.

A monthly breakdown is shown, highlighting unusually prolonged spells of westerly operations over the summer and increased levels of easterly operations over the winter and spring months of 2017.





Year	Easterly	Westerly
2017	**21%**	**79%**
2016	30%	70%
2015	28%	72%
2014	32%	68%
2013	36%	64%
Average	**29%**	**71%**

The runway split during 2017 was 21% easterly and 79% westerly (compared to 30% / 70% in 2016). A breakdown of runway usage over the last five years is also shown in the table, giving a historical split of 29% easterly and 71% westerly.

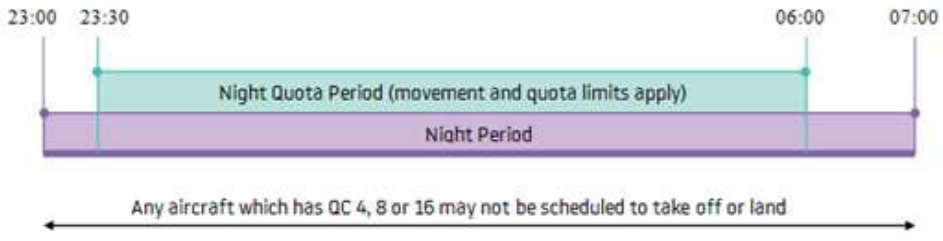
Night Flights

Night Flying Restrictions

As from 1st April 2015 London Luton Airport introduced new night restrictions as part of the planning conditions imposed by Luton Borough Council.

These restrictions have been put in place to limit and mitigate noise disturbance from aircraft operating at night, to prohibit aircraft of certain types from operating, as well as limiting the number of occasions on which aircraft may take off or land.

The night flying restrictions contain a 12 month period aircraft movement limit and a 12 month period quota count limit. The quota count (QC) means that points are allocated to different aircraft types according to how noisy they are. The noisier the aircraft type, the higher the points allocated. This provides an incentive for airlines to use quieter aircraft



The table overleaf records the QC bands identified by the certified noise levels, and gives some typical example aircraft, some of which operate from LLA.

The 'Night Quota Period'
The 'Night Quota Period' is from 23:30 to 06:00 hours local, during which period aircraft movements (take-off or landing) are restricted by a limit on the number of movements with noise quotas as an additional measure.

Aircraft are certificated by the International Civil Aviation Organisation (ICAO) according to the noise they produce during specific certification tests conducted by the manufacturer. They are classified separately for both take off and landing. The points are then allocated to different aircraft types according to how noisy they are.

The 'Early Morning Shoulder Period'
The 'Early Morning Shoulder Period' is 06:00 to 07:00 hours local. During this period aircraft movements (take-off or landing) are restricted by a limit on the number of movements (the same as the Night Quota Period).

Aircraft movement and quota count limits (per 12 month period)

Condition 9(iii) requires that for the Night Quota Period (2330 - 0600) the following limits shall not be exceeded:

- Total annual movements by aircraft per 12 month period shall be limited to 9,650;
- The total annual noise quota in any 12 month period shall be limited to 3,500.

Certificated noise level (EPNdB)	Typical aircraft	Quota Count
Greater than 101.9	Some B741/B742, AN124/AN225	QC 16
99 to 101.9	Some B744, MD8	QC 08
96 to 98.9	B732, MD10	QC 04
93 to 95.9	B772, A306, A332	QC 02
90 to 92.9	A320/A321, some B738, B752, B788	QC 01
87 to 89.9	A319/A320, some B734, B738, B788	QC 0.5
84 to 86.9	A319/A320, GLEX, FA7X/F900/F2TH	QC 0.25
Less than 84	Challenger series (eg CL60), ATP, C525/C550 & A320 NEO	QC 0

Condition 9(iv) requires that for the Early Morning Shoulder Period (0600 - 0700) the total annual movements by aircraft in any 12 month period shall be limited to 7,000.

The table below provides total aircraft annual movements and noise quota per 12 month period and compares those against the limits set by planning conditions.

	Night Quota Period (2330 - 0600)		Early Morning Shoulder (0600 - 0700)
	Movements Limited to 9,650	Quota Count Limited to 3,500	Movements Limited to 7,000
Jan 2017	318	146	331
Feb 2017	363	161	301
Mar 2017	388	172	393
Apr 2017	638	243	563
May 2017	850	304	636
Jun 2017	958	349	610
Jul 2017	1,063	375	622
Aug 2017	989	376	637
Sep 2017	898	328	637
Oct 2017	832	311	593
Nov 2017	204	70	336
Dec 2017	481	242	303
Total for preceding 12 months	**7,982**	**3,078**	**5,962**

There were 156 night time aircraft movements with a QC value of greater than 2 in 2017. Of the 156 QC 2 aircraft movements in 2017, 111 were departures by Airbus A300-600 aircraft.

There was one night time aircraft movement with a QC value of greater than 2 in 2017. This was an arrival by a Sikorsky S-92 helicopter. While this type is certificated differently to fixed wing aircraft, it can be assigned a QC value using a revised procedure.

Marginally Compliant Chapter 3 aircraft

Taking the year as a whole, of the 134,032 movements where Chapter 3 categorisation is applicable, only 66 are known to be marginally compliant. These movements were by three aircraft; a Boeing 737-200, a Gulfstream III and a Tupolev 204, with 55 of the 58 movements being the Boeing 737-200. A further 14 aircraft movements were by aircraft unkown classification. These comprised 4 different aircraft; an Antonov 12, a Boeing 767-200 and two Boeing 767-300s. It should be noted that the B737-200 no longer operates from Luton.

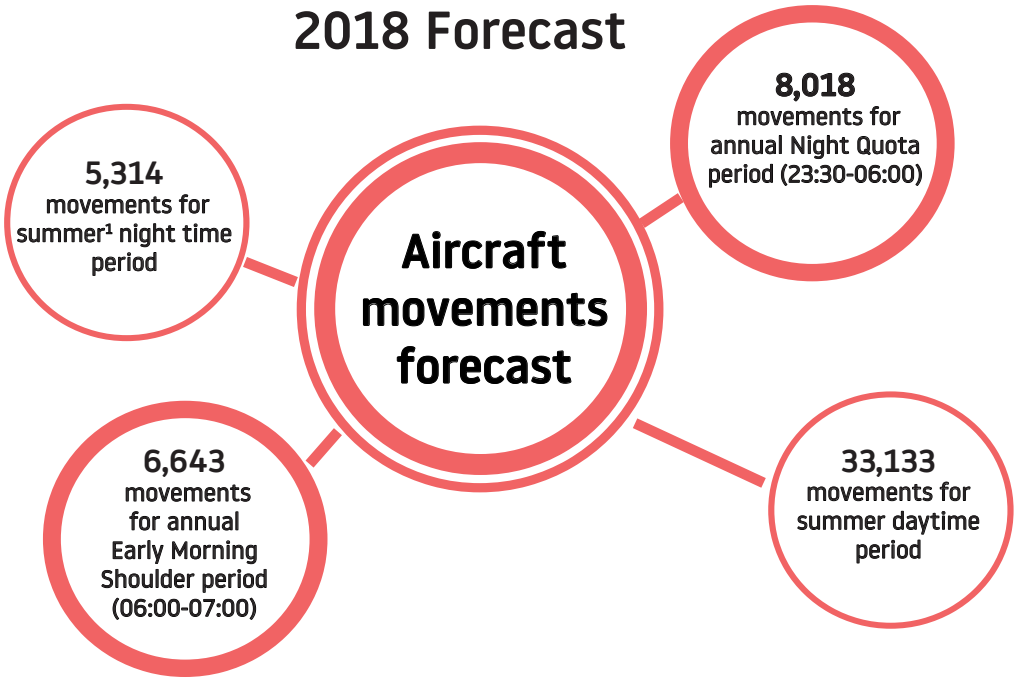
Day/Night ratio of movements

There were 16,056 night movements during 2017 (compared to 14,749 in 2016, a increase of 9%), an average of 44 movements per night (compared to 40 last year). Arriving aircraft accounted for 56% of total night movements, relating primarily to the last rotation of Luton based passenger aircraft scheduled to land back at the airport at night, between 23:00 hrs and midnight. 64% of total night departures took off between 0600 - 0700 in the morning.

The average ratio of total aircraft movements during 2017 was 89% day / 11% night (in line with 89% day / 11% night in 2016).

2017	Day Movements (0700 - 2300)	Night Movements (2300 - 0700)		
	Day Movements	Night Quota Period (2330 - 0600)	Early Morning Shoulder (0600 - 0700)	Total Night Movements (2300 - 0700)
Departures	60,688	2,113	4,571	7,072
Arrivals	58,774	5,869	1,391	8,984
TOTAL	**119,462**	**7,982**	**5,962**	**16,056**

The figure below shows forecast aircraft movements for 2018, separated into daytime and night time periods.



[1] - Summer time covers period from 16th June until 15th September

Departing Aircraft

All propeller-driven aircraft with Maximum Take Off Mass (MTOM) over 5,700kg and all jet aircraft leaving London Luton Airport are required to follow specific departure routes known as Noise Preferential Routes (NPRs). These are established by consultation with the Safety and Airspace Regulatory Group (SARG) at the CAA and the London Luton Airport Consultative Committee, and they are designed to avoid flying over built-up areas wherever possible.

There are four Standard Instrument Departure (SID) routes for each runway – OLNEY, COMPTON, MATCH and DETLING.

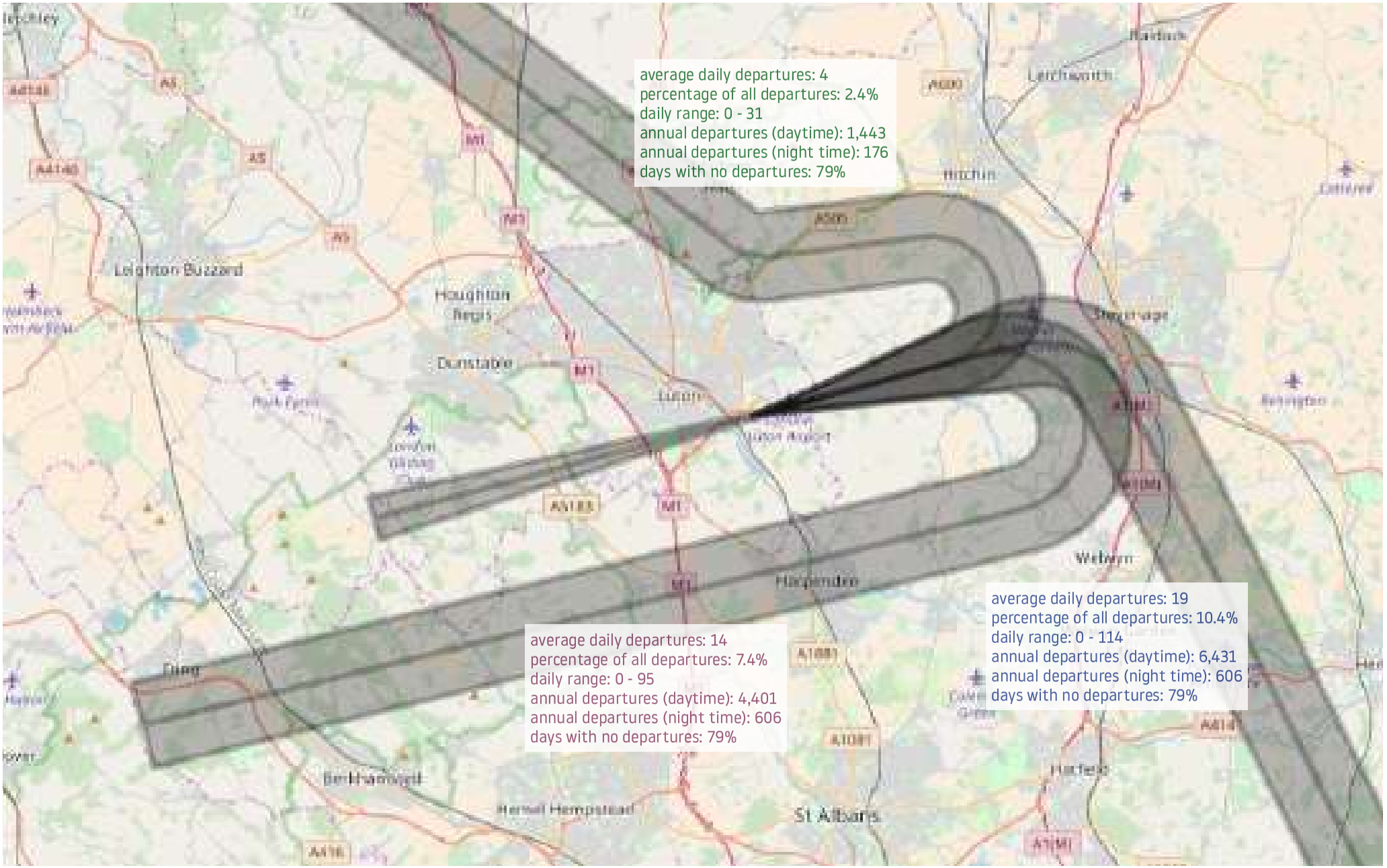
Associated with each NPR is a swathe of airspace extending 1.5km (1km for RNAV) each side of the NPR centre line, within which aircraft concentrate and are considered to be flying on track. Aircraft must follow the NPR controls applicable to the runway in use at that time.

In the UK, the obligations of Noise Preferential Routings for aircraft following conventional SIDs cease when a height of 3,000ft (between 07:00hrs to 23:00hrs local time) and 4,000ft (during night time, 23:00hrs to 07:00hrs local time) has been reached. The obligations of the RNAV NPR ceases when a height of 4,000ft has been reached at all times.

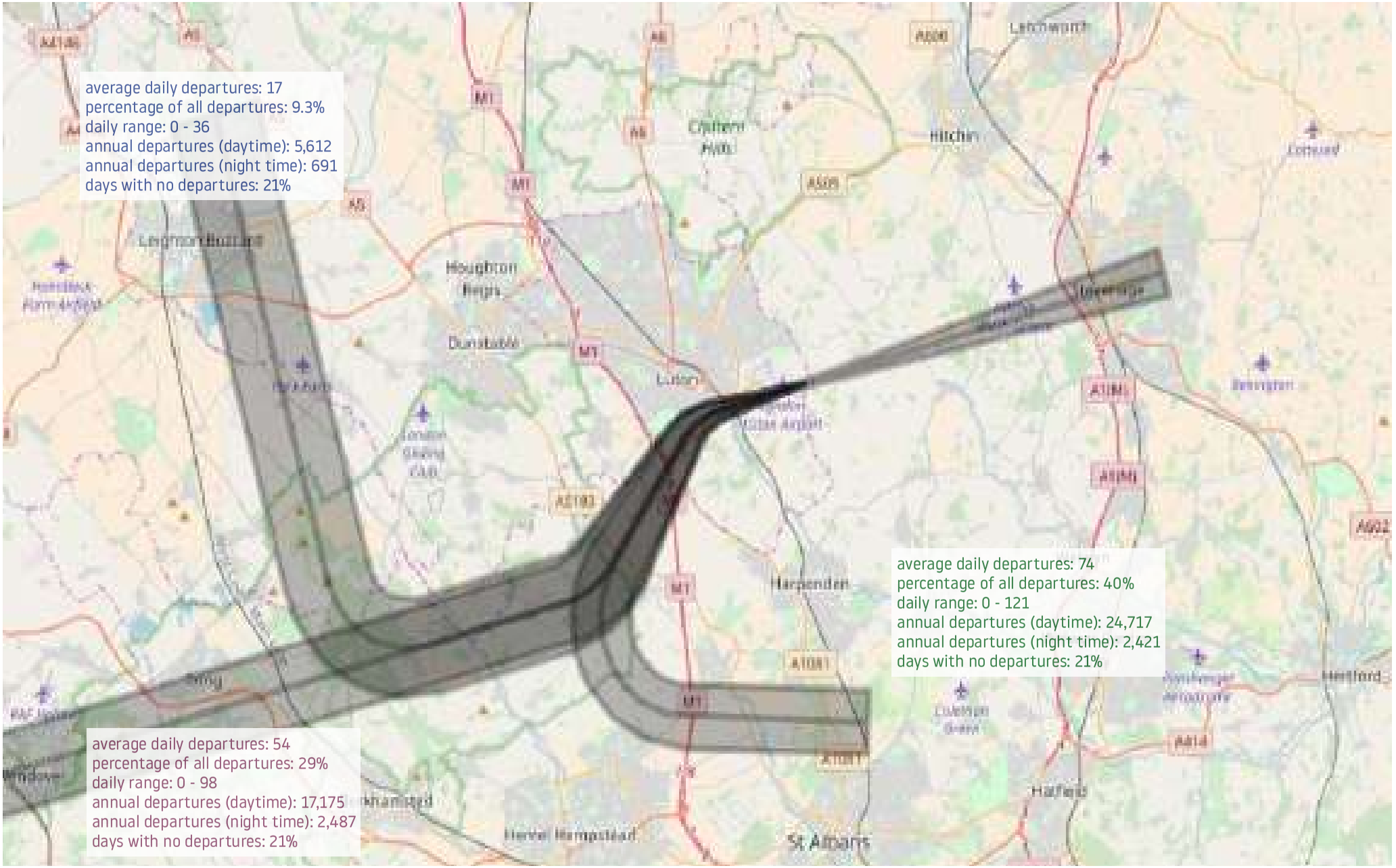
Once aircraft have reached the NPR restricted altitude they will be considered no longer on the Noise Preferential Route. At that stage the aircraft may be directed by Air Traffic Controllers onto a different heading in order to integrate with the overall flow of traffic, this is known as vectoring. However on RNAV Match/Detling SID aircraft should not be vectored before the railway line between St Albans and Harpenden, unless this is required for safe separation from other aircraft or for other safety issues such as avoiding adverse weather.

Two maps overleaf show indicative flight routes for westerly and easterly operations at London Luton Airport with detailed information about each departure route.

Plan showing Easterly (08) flight routes



Plan showing Westerly (26) flight routes



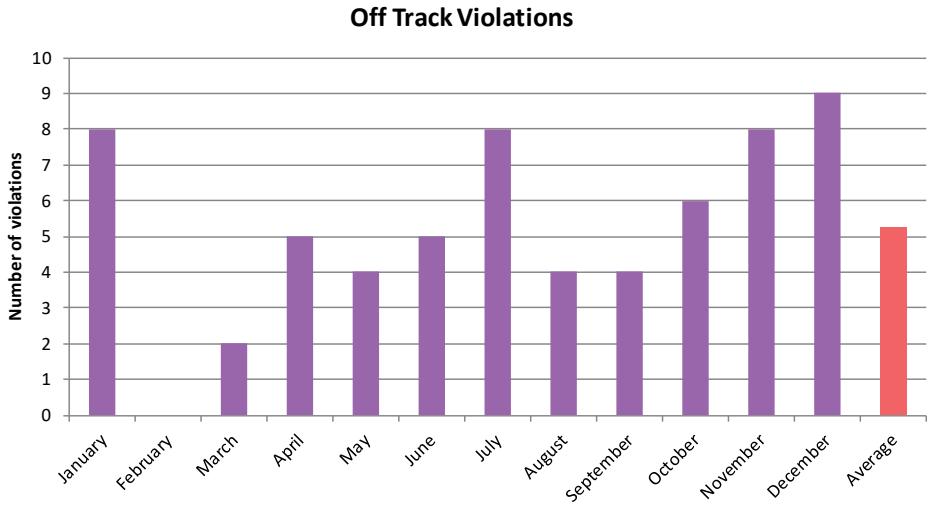
On Track performance

On the 1st April 2015 London Luton Airport implemented a Track Violation Penalty System as part of the noise related planning conditions. Using the airport's Aircraft Noise and Track Monitoring System, the Flight Operations Team evaluates the radar tracks and investigates them with required input from Air Traffic Control (ATC) and airlines. A departure is deemed to have complied with the Noise Preferential Routing if the portion of flight below the appropriate vectoring altitude is flown wholly within the Lateral Swathe (LS). Where the aircraft is clearly flying outside the LS, the aircraft is identified as causing a "possible" track violation and is subject to a nominal fine. This money is transferred to our Community Trust Fund which awards grants to community projects.

As always, safety is paramount and there may be cases which involve vectoring an aircraft sooner than at the NPR height restriction. If ATC identifies any valid justification that could explain the deviation from the track, then the operator causing it will be exempt from the fine. Valid justifications include:

- Safety or operational reasons, i.e ATC vectoring
- Weather avoidance due to thunderstorm activity (as instructed by ATC)
- Emergencies

The diagram below shows off-track violations by month in 2017. The track keeping performance was 99.6%. This calculation includes deviations for weather, traffic avoidance and those identified as violations.



£50,250 the total of all collected fines transferred to Community Trust Fund

The breakdown of the violations by aircraft type is shown in the tables below.

A/C Type	Total № Violations
GLF6	9
GL5T	8
A320, CL60	8
B738, C25A, GLF4, H25B	12
B734, C525, C650, F900, GALX	10
AT72, ATP, B462, B733, B788, C680, CL30, E145, E35L, F2TH, GLF5, H25C, LJ35, LJ60, RJ85, SW4	16
TOTAL	**63**

Area Navigation (RNAV) procedures

In the 2016, AMR we reported that a small number of operators were experiencing technical issues with the RNAV procedure and that we had identified a solution that was due to be implemented in February 2017.

We can confirm that this solution was implemented as planned and the technical issues that some operators were experiencing have now been resolved, resulting in 100% of operators using the RNAV procedure.

As part of the CAA's Post Implementation Review we submitted all of the requested data in October 2017 to the regulator for assessment of the airspace change, this includes flight track and complaint data. The details of the outcome of this will be published on the CAA's website in due course.

Next Steps in Airspace Change

In 2017, the CAA published new regulatory guidance that the aviation industry has to follow with regard to changing airspace arrangements (CAP 1616 - Airspace Design: Guidance on the regulatory process for changing airspace design including community engagement requirements).

In August 2017, LLA attended a meeting with the CAA to discuss the new process and how this would apply to the work that has already been completed to date relating to the 26 Match RNP airspace change. Following this meeting a decision was made to commence the ACP works from the beginning in order to fully comply with the new guidance.

LLA invited members of the airport consultative committee to form a small focus group with the objective of providing LLA with stakeholder views and potentially highlight previously overlooked consequences of a particular design option prior to formal consultation.

The Sky's the Limit

The London airspace is a particularly busy area and requires modernisation. The current airspace has not changed in the last 50 years despite the increase in movements from all airports. It is critical that the industry and Government now work together to deliver modernisation. In 2016, an industry campaign 'The Sky's the Limit' was set up to call on the Government to prioritise its work on airspace, noise and support industry efforts to do so. London Luton Airport strongly supports this campaign.

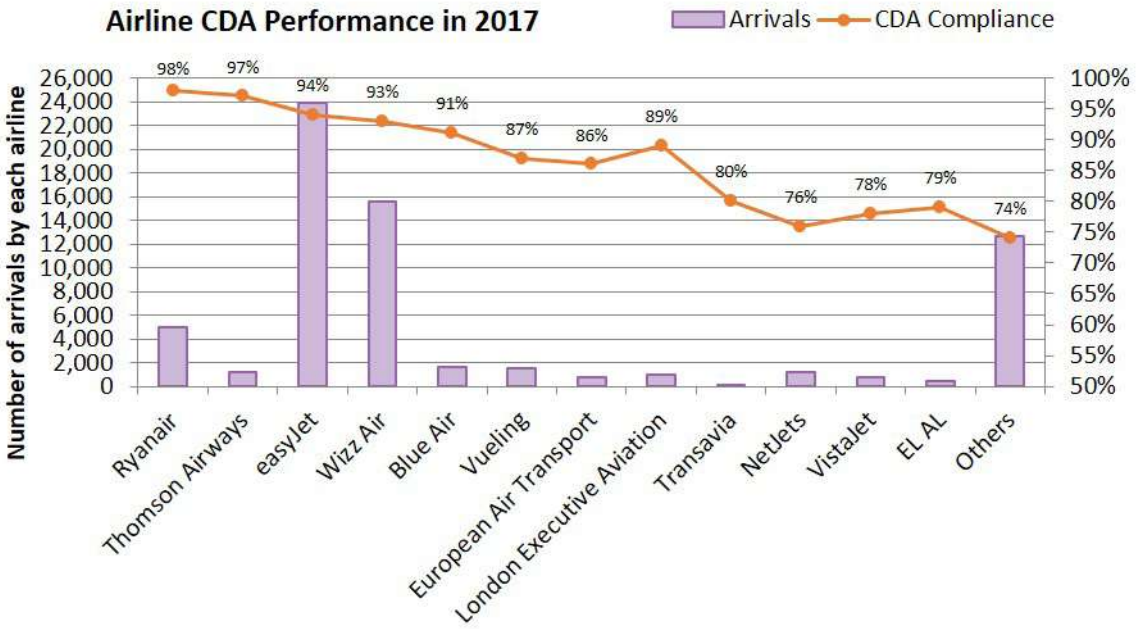
More information and videos regarding The Sky's the Limit campaign are available on their website which can be accessed http://theskysthelimit.aero/

Arriving Aircraft

Although there are no set routes for arriving aircraft there are long established procedures to mitigate the disturbance that can be caused on approach to the airfield. One of the most successful measures is a noise mitigation procedure called Continuous Descent Approach (CDA).

The conventional approach involves descending in steps using engine thrust to level off. In a Continuous Descent Approach, or CDA, an aircraft stays higher for longer and descends at a continuous rate to the runway threshold therefore reducing periods of prolonged level flight at lower altitudes. With CDA less fuel is burnt, less emissions are produced but most importantly it reduces the noise by avoiding the use of engine thrust required for level flight.

The overall CDA achievement was 93% with several major LLA operators achieving higher performance; easyJet, Ryanair and Thomson Airways. The chart compares the level of CDA performance by our main airline operators.



[1] - An Instrument Landing System (ILS) is a ground-based instrument approach aid based on two radio beams which together provide lateral and vertical guidance to an aircraft approaching and landing on a runway.

Delayed Landing Gear Deployment Trial

At LLA we always aim to work constructively with our local community inorder to reduce the impacts of noise. In 2017 LLA conducted an aviation leading trial to reduce noise by from arriving aircraft. The trial, conducted during the summer, consisted of aircraft delaying the deployment of landing gear.

As an aircraft makes its final approach most noise is caused by the flow of air over the fuselage as drag is created to slow the aircraft down. Noise was measured along the arrivals flightpath to understand what, if any, reduction which could be achieved. Stevenage, Dagnall and Whipsnade were among those communities who saw the greatest benefit of between 2.7db and 3.4db

Following the successful trial, some operators have already changed their operating procedures to make this standard practice. LLA is now working with all operators to encourage them to follow suit.

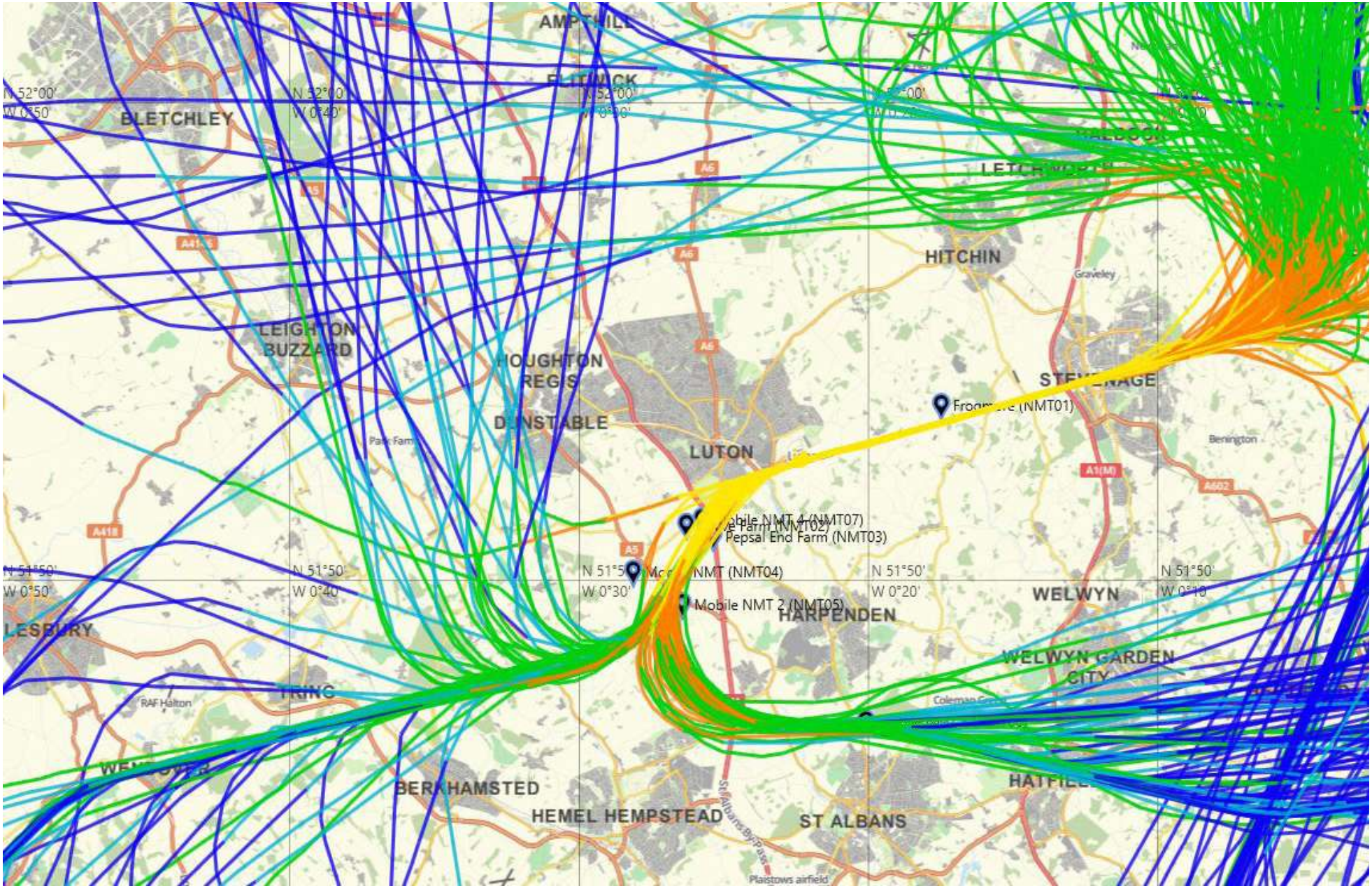
Departure and arrival flight tracks

Maps overleaf display typical 24 hour periods of both westerly and easterly operations. The colour coding from yellow to blue represents different altitude bands up to 10,000ft above mean sea level.

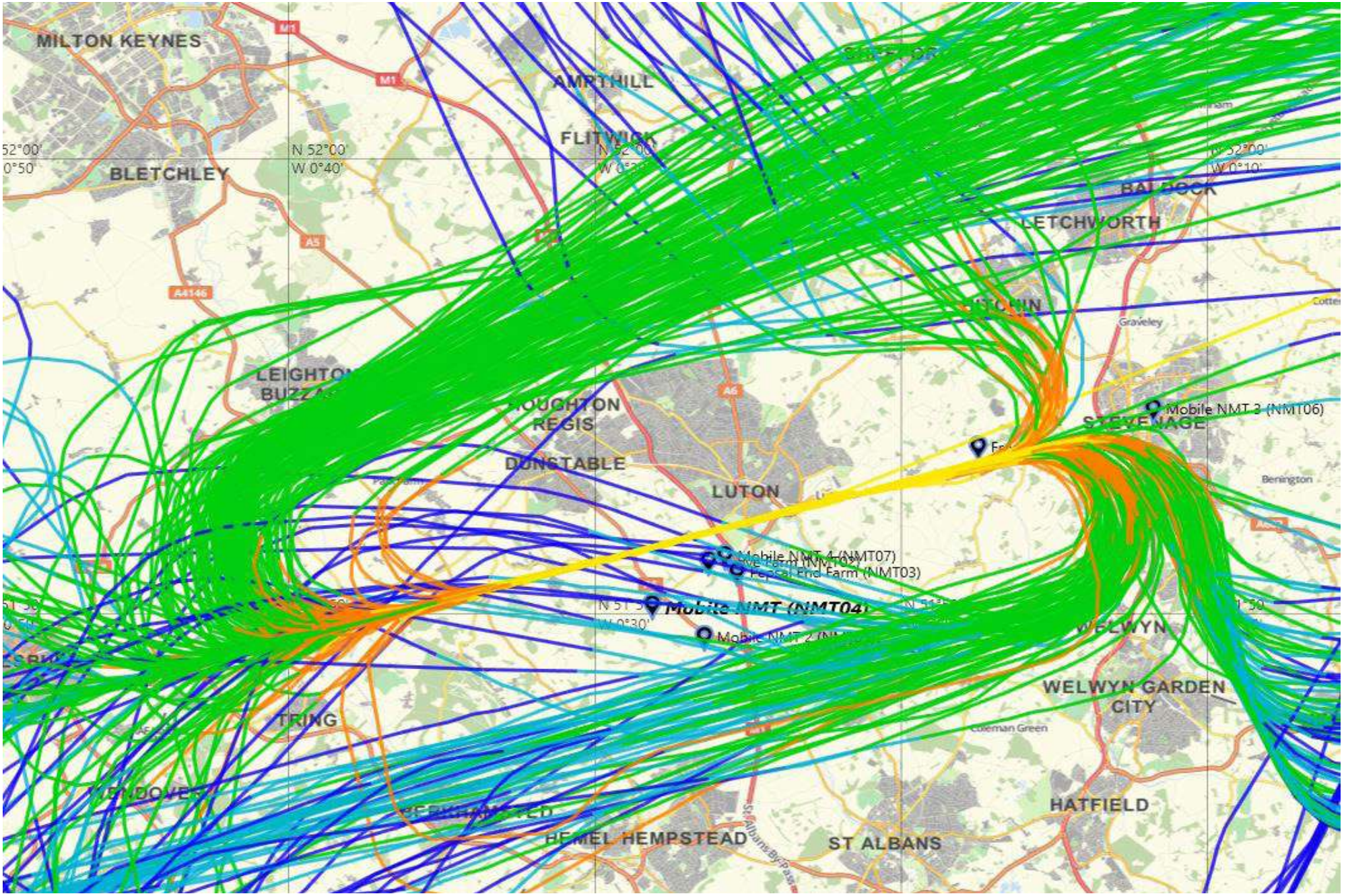
The last two maps display aircraft track density plots for the summer period 16th June - 15th September 2017. A track density plot is a map which displays the pattern of aircraft flight track passing over the region around the airport during a specific period. The system analyses the number of flights passing over each grid element of an array. The colour coding from purple to red represents the range 1 to over 147 flight tracks over a grid element. If any grid element is not colour-coded, the number of aircraft flight tracks passing over that element was less than 1 flight. The red areas represent locations where operations are more densely concentrated.

It should be noted that London Luton Airport's aircraft movements integrate with a traffic network travelling to and from other airports in the region, and the South East is one of the world's busiest sectors of airspace. However the following sample flight tracks only include operations for London Luton Airport and overflights from other airports have been omitted for clarity.

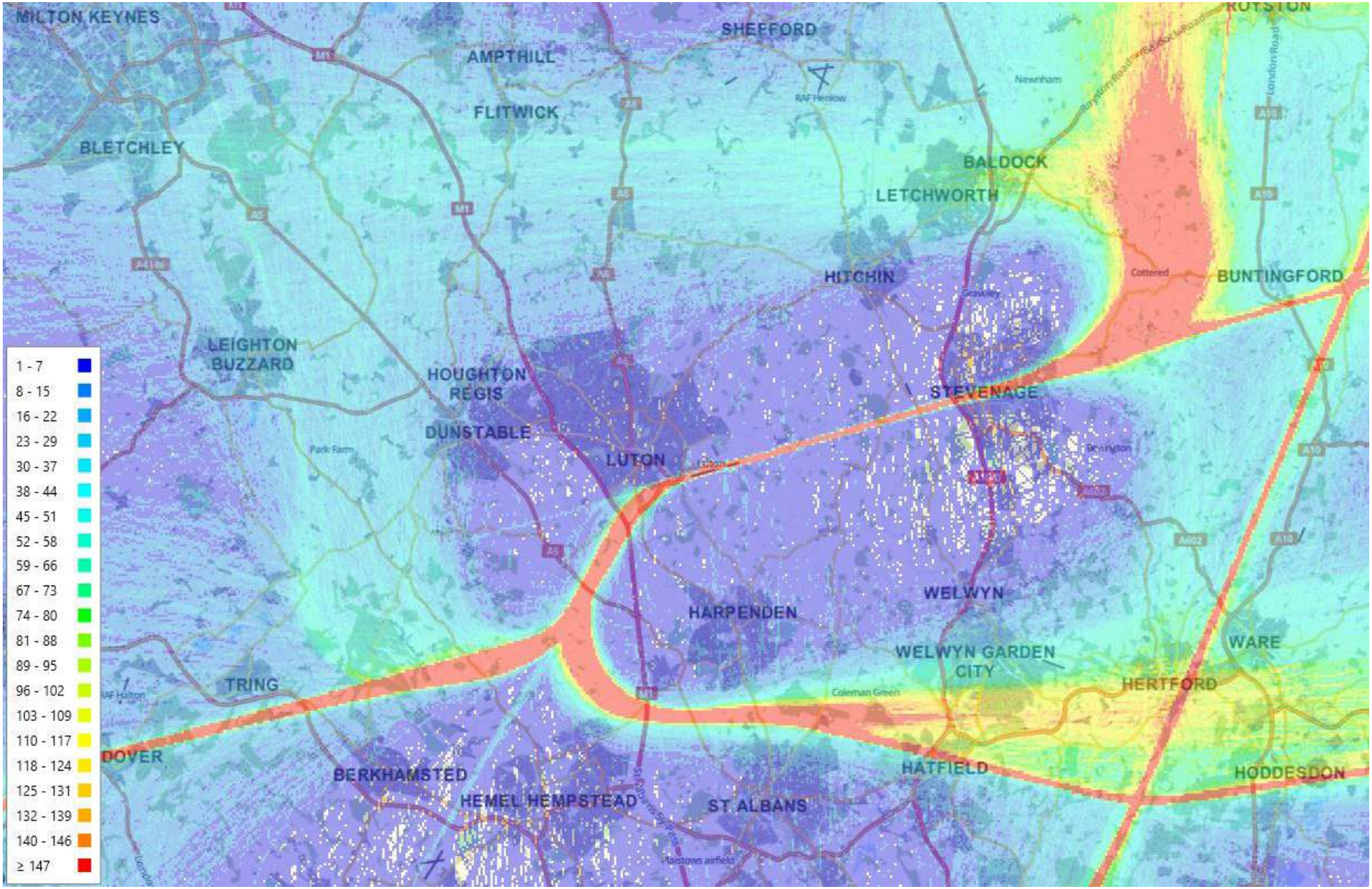
Westerly (26) Flight Routes (24 hour period)



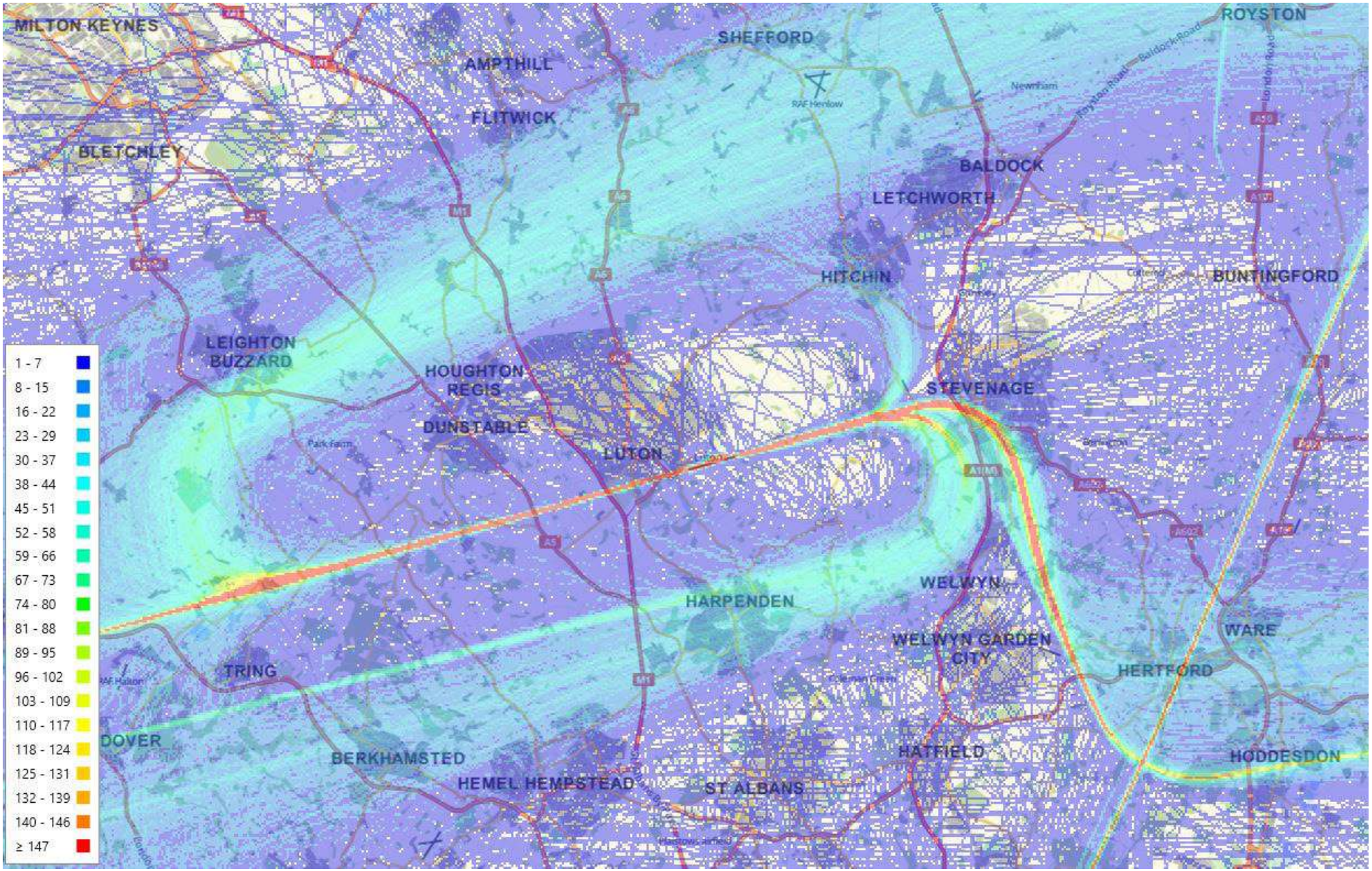
Easterly (08) Flight Routes (24 hour period)



Plot Density - 16th June - 15th September 2017 - Westerly (26)



Plot Density - 16th June - 15th September 2017 - Easterly (08)



Aircraft Noise

Noise is generally defined as unwanted sound. Although it is recognised that noise perception is very subjective, there are a number of internationally recognised terms to describe and measure aircraft noise. Most airport related noise is created by aircraft approaching, taking-off and taxiing to and from the runway. The management and control of noise continues to be a major element of the airport's policy to constantly seek to minimise and mitigate our environmental impact.

How is noise monitored?

People who live close to airports or under flight paths can often feel strongly about the disturbance to their lives from noise. Effects of noise include general distraction, speech interference and sleep disturbance which can lead to annoyance and complaints.

At LLA we monitor noise and track keeping with a specialised system that is designed to monitor air traffic within a radius around the airport (set at around 25 miles), and generally up to an altitude of 12,000ft. It downloads noise data from three fixed noise monitors located 6.5km from the aircraft start of roll, at either end of the runway within the neighbouring communities. This method records the maximum noise level at a point, rather than the way it is spread over the surrounding area. New features and system enhancements continue to improve the functionality and capabilities available to the Flight Operations Department.

In 2017, the Flight Operations team purchased three new mobile noise monitors which has allowed the team to expand the noise monitoring programme. During 2017, noise was monitored in Flamstead, Harpenden, Hemel Hempstead, Markyate, Redbourn, Sandridge, Slip End, South Luton, St Albans and Wheathampstead. Details of the latest Community Noise Reports can be found here.

Noise violation levels

The following table identifies daytime and night-time noise levels correlated to departing aircraft at the fixed noise monitoring terminals.

In order for a noise event to be correlated to an aircraft it should reach a detection threshold. The noise monitoring terminals are set at the lowest level to record the maximum number of aircraft noise events. However, a number of smaller aircraft types, such as business jets and propeller aircraft, get very close to but do not reach the detection threshold. Ambient background noise is also an important factor as specific incidents such as loud road traffic, emergency vehicle sirens, lawn mowers, drills etc. can register noise levels louder than an aircraft overhead, which results in not all aircraft movements being correlated to noise events. Generally, the louder noise events have more certainty of being correlated with aircraft movements.

Weather conditions can also effect the number of noise monitoring events recorded in the table; for example, if winds are greater than 10m/s and temperature is either higher than 25°C or below -10°C, results from noise monitors will be invalid and therefore will not be correlated.

	dB (A)	Daytime	NightTime	Total
Number of Correlated Events	<70	5,130	698	5,832
	70	1,324	163	1,489
	71	2,513	311	2,825
	72	5,510	626	6,140
	73	10,268	1,077	11,357
	74	11,504	1,121	12,640
	75	7,501	758	8,268
	76	3,584	475	4,069
	77	2,050	363	2,418
	78	1,224	273	1,504
	79	599	122	724
	80	226	46	274
	81	70	3	73
	82	25	1	26
	83	2	0	2
	84	4	0	4
	85	1	0	1
	86	0	0	0
	87	0	0	0
	88	0	0	0
	89	0	0	0
	90	0	0	0

During the daytime 98% of correlated departing aircraft recorded maximum noise levels less than 79dB(A), with 85% registering below 76dB(A). Throughout the year 927 correlated daytime departures (2%) registered maximum noise levels at 79dB(A) or above.

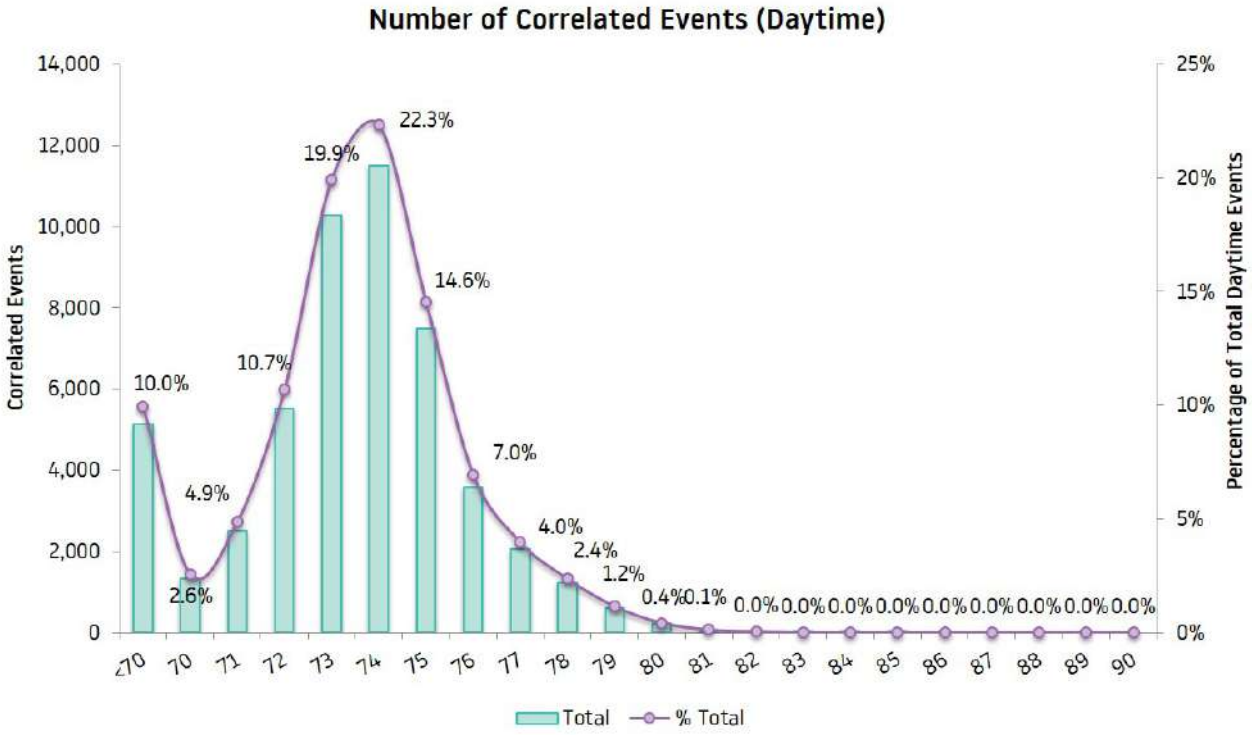
There were 7 correlated departing aircraft in the daytime which recorded a maximum noise level greater than 82dB, all of these departures were fined as part of the Noise Violation Scheme, these fines were added to the Community Trust Fund.

During the night 97% of correlated departures recorded maximum noise levels below 79dB(A), with 79% below 76dB(A). During the year 50 correlated night departures (3%) registered maximum noise levels at or above 79dB(A).

There were 4 correlated departing aircraft in the night time which recorded a maximum noise level greater than 80dB, all of these departures were fined as part of the Noise Violation Scheme, these fines are put into the Community Trust Fund.

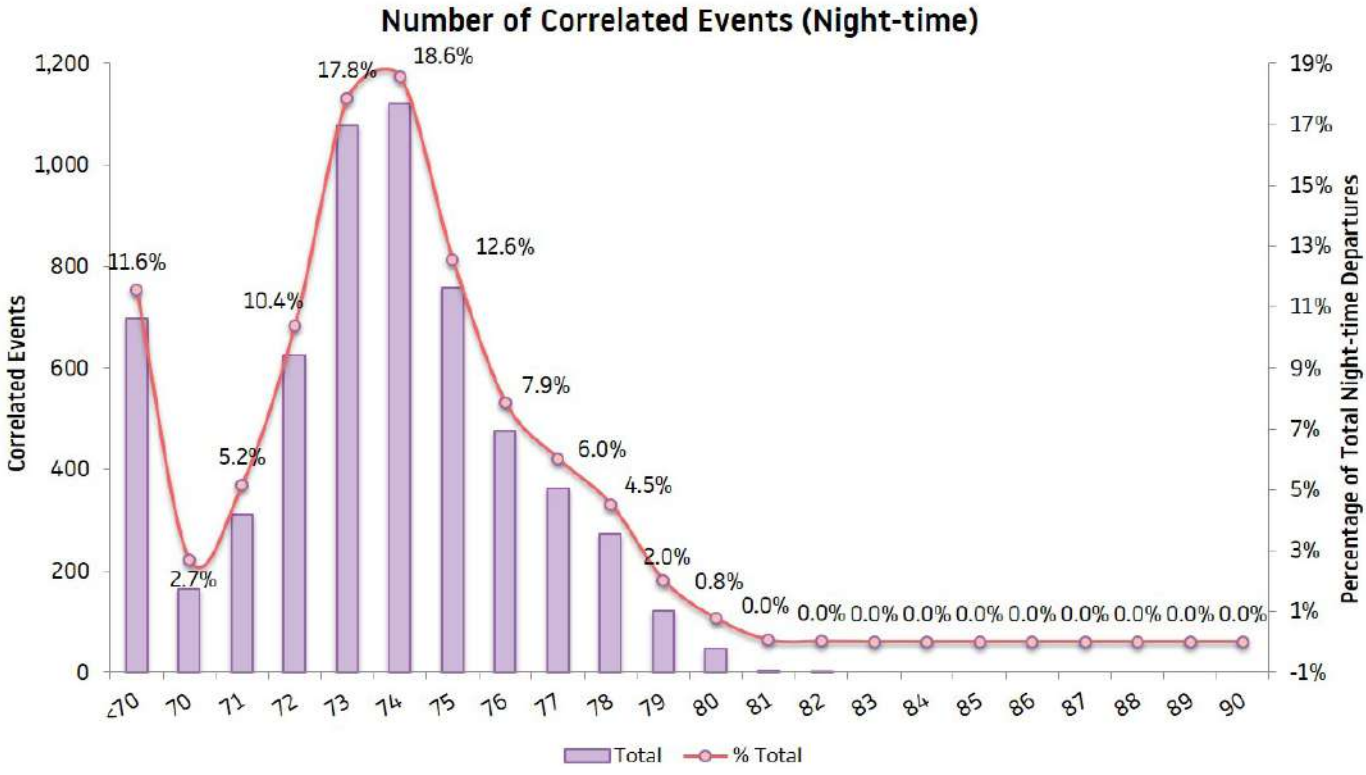
Daytime Noise

The following graph shows the number of correlated events during the daytime period (07:00hrs - 23:00hrs) compared to the total percentage of correlated events during the daytime.



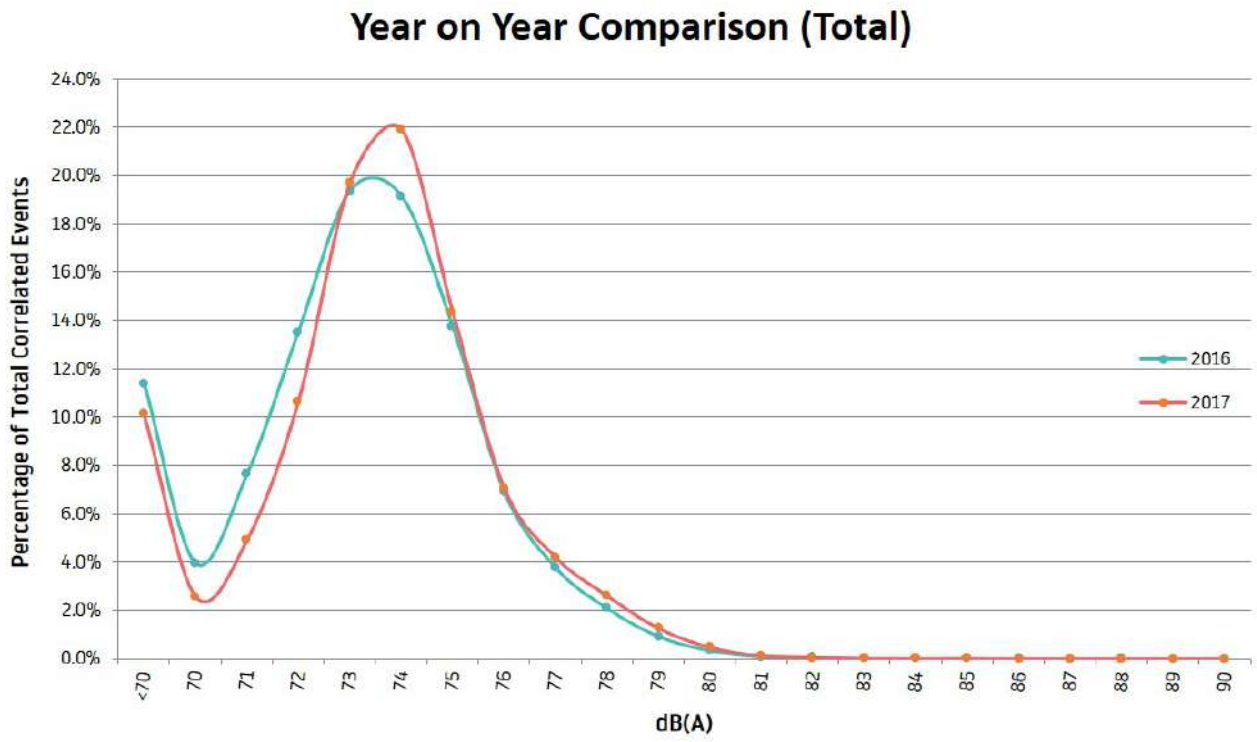
Night-time Noise

The following graph shows the number of correlated events during the night-time period (23:00hrs - 07:00hrs) compared to the total percentage of correlated events during the night-time.



Annual Comparison

The graph below shows the year on year comparison of the correlated departure noise events.



Please note, for a short period during Q3 2016, one noise monitor was out of service due to calibration and this may have an effect on the overall noise recordings for the year.

Noise violations during 2017

There were 7 violations of the daytime noise level in 2017, and a total of 4 violations of the 80dB(A) night noise violation level (details below), compared to 21 day-time noise violations and 3 night noise violations in 2016. Operators at London Luton Airport take these noise violation limits very seriously and in some cases these have led to changes in operating procedures in order to reduce the noise from their aircraft. As a result of the Boeing 732 noise violations during 2017, this aircraft no longer operates at Luton.

	Date / Time (Local)	Aircraft Type	Noise Level	Penalty
Daytime	26/01/2017 12:47:00	B732	84dB (A)	£100
	15/03/2017 07:07:00	B738	84dB (A)	£100
	31/03/2017 12:36:00	B732	84dB (A)	£100
	08/05/2017 13:14:00	B732	83dB (A)	£100
	02/07/2017 13:51:00	B732	83dB (A)	£100
	25/07/2017 14:33:00	B732	84dB (A)	£100
	05/08/2017 11:27:00	B732	85dB (A)	£100
Night-time	01/03/2017 03:13:00	A306	81dB (A)	£100
	31/03/2017 00:20:00	B739	81dB (A)	£100
	01/08/2017 00:48:00	AN12	82dB (A)	£100
	21/08/2017 06:06:00	A320	81dB (A)	£100

All fines are passed to the London Luton airport Community Trust Fund, further details of which can be found at: https://www.london-luton.co.uk/corporate/community/noise/

Noise Insulation Scheme

In 2016 we began our Noise Insulation Scheme, which is just one element of our noise management plan to reduce the impact of noise on those properties in Hertfordshire and Bedfordshire closest to the airport. Under the scheme we can install double glazing, secondary glazing and ventilation units to eligible rooms which include; living rooms, dining rooms, kitchen-diners and bedrooms.

During 2017, 78 properties were contacted and 38 properties accepted the insulation.

Noise Contours

Since 1989 the preferred measure of aircraft noise, recognised by UK Government, has been the A-weighted equivalent noise level Leq. This indicator takes account of all the noise energy that occurs over a particular time period and thus takes account of all the aircraft movements, both departures and arrivals, that occurred in that period. In the UK the noise impact of an airport is primarily described in terms of the LAeq averaged over the 16 hour period from 0700-2300 for an average day between the 16th June and 15th September.

When planning permission was given in 2014 for development at London Luton Airport a number of conditions were imposed. Condition 12 requires that daytime and night-time contours are produced on an annual basis for the previous summer period based on actual aircraft movement data and for the following summer period based on predicted aircraft movement data. The areas of these contours are to be compared to the area limits contained in Condition 12. Year on year changes in the noise impact are dependent on changes in the number and type of aircraft that used the airport and also the departure routes flown. Changes in the size and shape of the contours can also depend on differences in the runway usage which in turn depends on the relative proportion of westerly and easterly modes of operation, determined by the prevailing wind direction.

Annual noise contours summer 2017

The table below shows the annual noise contours for summer 2017 covering the standard summer period from 16th June to 15th September inclusive, using the latest version of INM software (the Integrated Noise Model) version 7.0d which is the method used by many other airports in the UK.

$L_{Aeq, 16\ hour}$ Daytime	Contour Area (km^2)					
	1984	1999	2016	2017	Difference 2016-2017	2018 (forecast)
>72	1.63	1.5	1.0	1.0	0.0	1.0
>69	2.80	2.5	1.7	1.7	0.0	1.7
>66	4.86	4.4	3.2	3.0	-0.2	3.1
>63	9.10	7.3	6.2	5.9	-0.3	6.0
>60	17.18	11.8	10.6	10.3	-0.3	10.5
>57	**31.52**	**19.6**	**19.2**	**19.0**	**-0.2**	**19.4**

Considering the 57 dB LAeq, 16h summer daytime 2017 noise contour there is a decrease in area of approximately 1% when comparing the 2017 contour with the 2016 contour. This is largely due to the updated validation for 2017, resulting in greater accuracy of the assessment from the additional noise monitoring carried out in the community.

A comparison of 2016, 2017 and 2018 forecast daytime contours is shown. This shows that the 2016, 2017 and 2018 forecast contours are all very similar, with the slight differences in shape being primarily due to differences in modal split.

$L_{Aeq, 8\ hour}$ **Night-time**						
	1984	1999	2016	2017	Difference 2016-2017	2018 (forecast)
>72	0.79	1.1	0.4	0.4	0.0	0.4
>69	1.39	1.8	0.6	0.7	+0.1	0.7
>66	2.42	3.0	1.0	1.0	0.0	1.1
>63	4.01	5.2	1.7	1.8	+0.1	1.8
>60	7.06	8.3	3.3	3.4	+0.1	3.5
>57	13.05	13.2	6.3	6.3	0.0	6.4
>54	24.48	21.6	11.5	12.2	+0.7	12.4
>51	44.92	36.0	20.7	22.3	+1.5	22.7
>48	**85.04**	**60.6**	**36.5**	**38.7**	**+2.2**	**39.6**

Considering the 48 dB LAeq, 8h night time noise contour there is an increase in area of approximately 6% when comparing the 2017 contour with the 2016 contour. This is largely due to the 13% increase in movement numbers, although this is partically offset by the updated 2017 validation.

The 48 dB LAeq,8h 2018 contour is forecast to grow by 2% compared to the 2017 contour. This is largely due to the forecast 3% increase in commercial aircraft movements. A comparison of 2016, 2017 and 2018 forecast night time 48 dB LAeq,8h is show. This shows that the 2017 contour is larger than the 2016 contour, particulary at the western end near Caddington. The contour is also slightly larger at the south-western end south of Markyate. The 2017 contour is very similar to the 2016 contour at the eastern end despite the increase in night movements, this is due to the changes in operating direction and validations.

The 2018 forecast contour is slightly wider and shorter than the 2017 contour at the eastern end, larger at the western end and slightly shorter at the south-western end, these slight change in shape are due to the change in operating direction.

Contour population counts

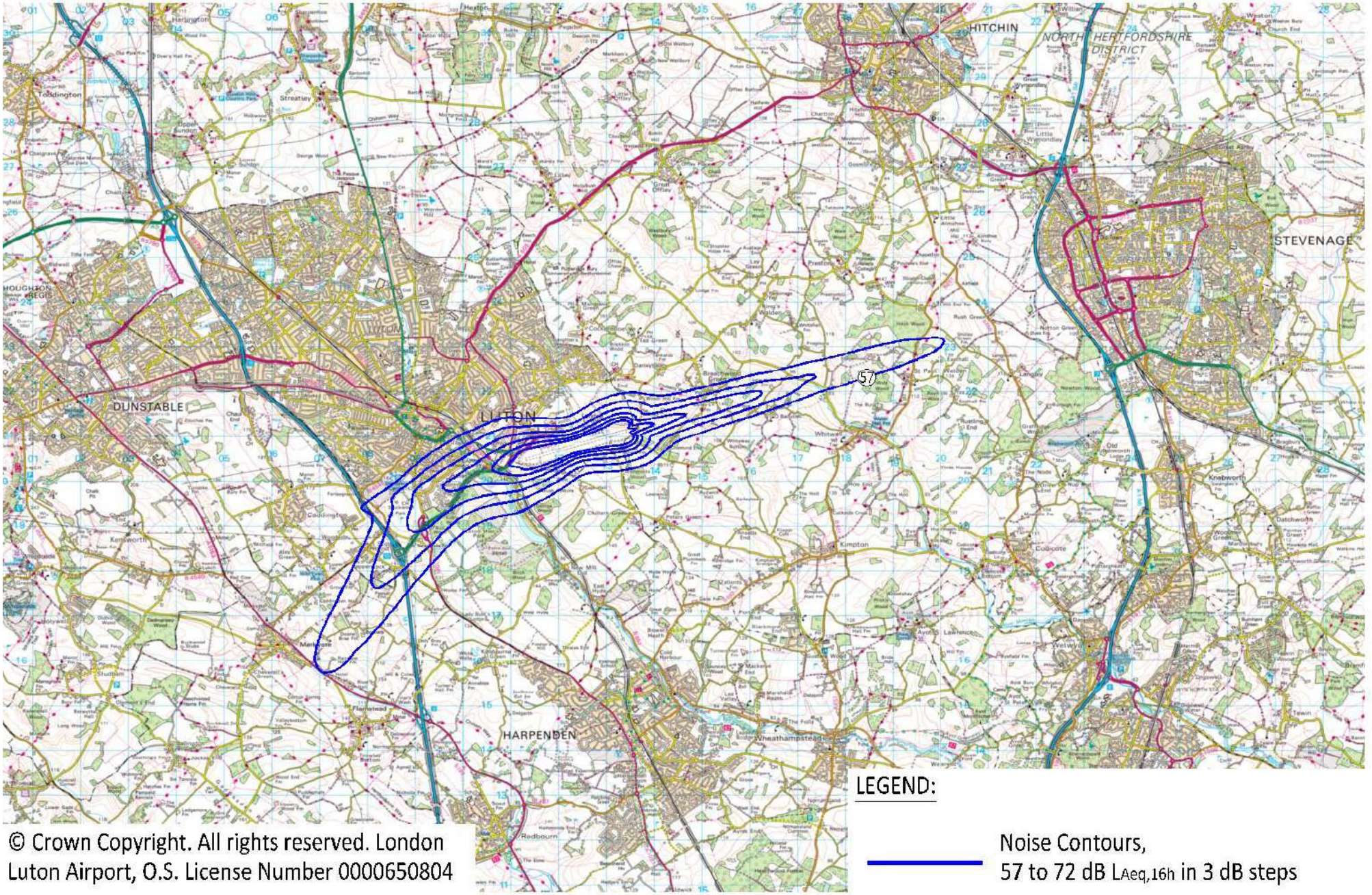
The population counts for this year were calculated using the CACI Ltd, 2015 postcode database. Each postcode in the database is described by a single geographical point, and if this point is within a contour then all of the dwellings and population in the postcode are counted. Please note, the population and dwellings data has been rounded to the nearest 50.

$L_{Aeq, 16\ hour}$ Daytime	2016		2017	
	Dwellings	Population	Dwellings	Population
>72	0	0	0	0
>69	0	0	0	0
>66	10	24	0	0
>63	700	1,850	550	1,400
>60	1,700	4,450	1,650	4,200
>57	**3,600**	**8,850**	**3,400**	**8,400**

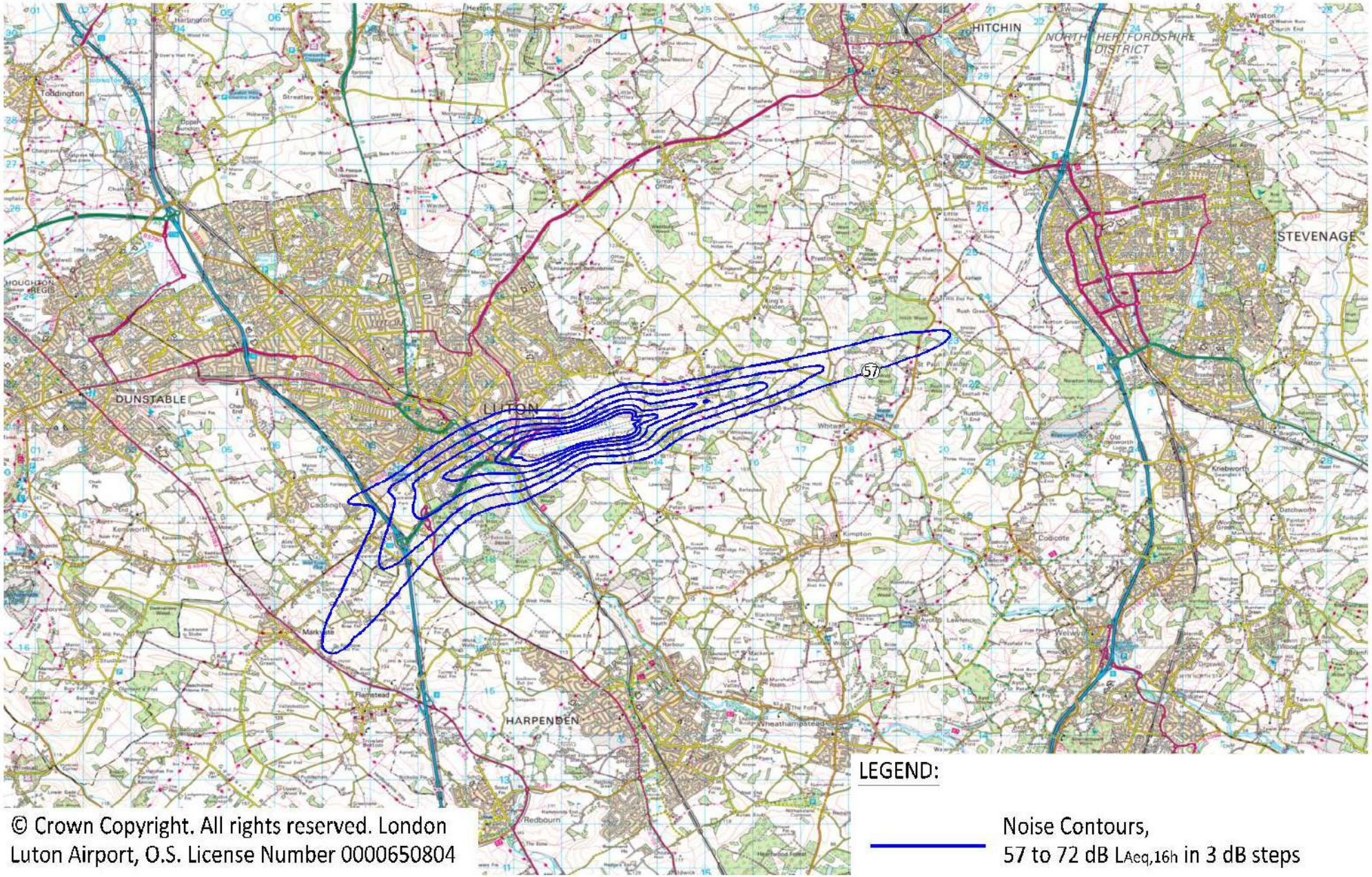
$L_{Aeq, 8\ hour}$ Night-time	2016		2017	
	Dwellings	Population	Dwellings	Population
>72	0	0	0	0
>69	0	0	0	0
>66	0	0	0	0
>63	0	0	0	0
>60	14	34	0	0
>57	500	1,300	500	1,400
>54	1,550	4,150	1,600	4,200
>51	3,250	8,100	3,450	8,500
>48	**6,750**	**16,100**	**7,500**	**17,800**

The population and number of dwellings within the contours has increased, in lined with the contour area. It can be seen that the contour shape is similar, although there have been slight changes due to the change in modal split. This mean that despite an increase in total movements, there were fewer runway 08 operations in 2017 compared to 2016. This has the effect of shortening the contour to the west and narrowing it to the east, with the associated increase in runway 26 operations leading to an increase in length to the east and both length and width to the south-west.

Annual Day Noise Contours Summer 2017



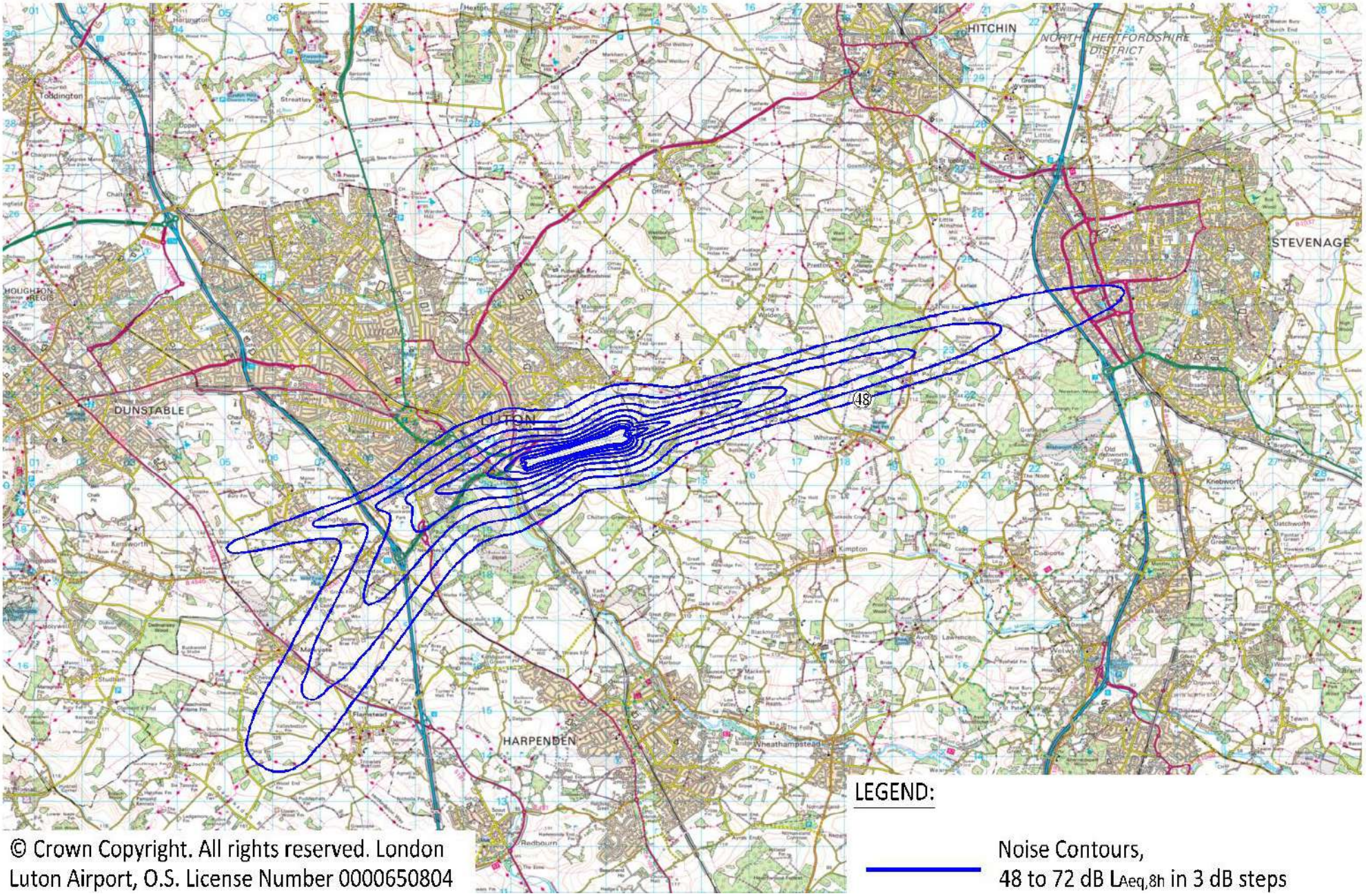
Annual Day Noise Contours Summer 2018



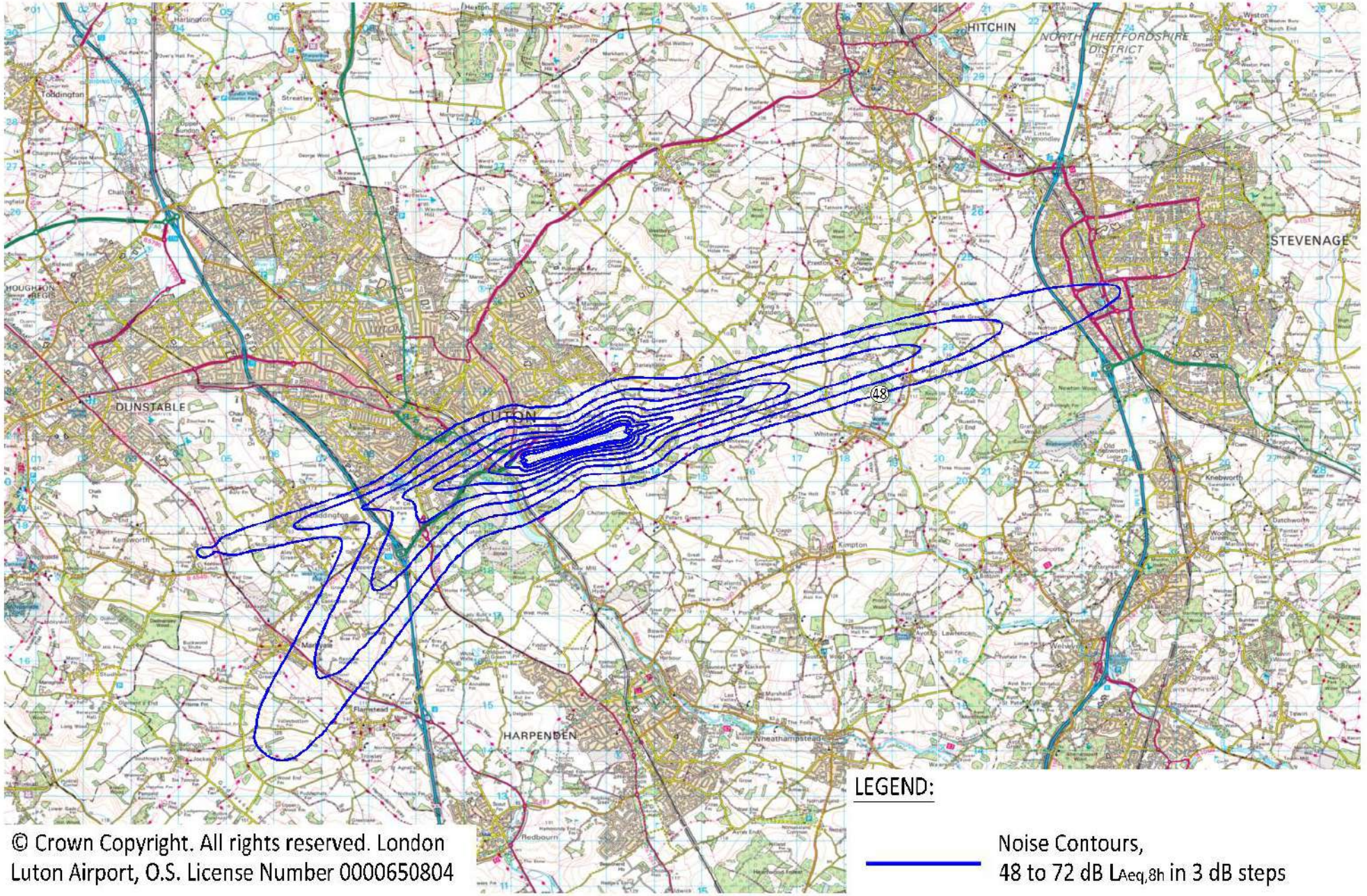
LEGEND:

Noise Contours,
57 to 72 dB $L_{Aeq,16h}$ in 3 dB steps

Annual Night Noise Contours Summer 2017



Annual Night Noise Contours Summer 2018



Annual Noise Contours 2017

The annual Lden noise contours for 2017 have been produced in accordance with London Luton Airport's Noise Action Plan. The corresponding annual Lnight noise contours have also been produced, along with population and dwelling counts for each contour.

Compared to annual summer 2017 noise contours Lden is an A-weighted, Leq noise level, measured for an average 24 hr day between 1st January and 31st December 2017, with a 10dB penalty added to the level between 23.00 and 07.00 hours and a 5 dB penalty added to the level between 19.00 and 23.00 hours to reflect people's extra sensitivity to noise during the night and the evening.

Lnight is similarly an A-weighted Leq noise level, for an average 8 hour night period between 2300 and 0700 for the period 1st January to 31st December 2017.

Annual Lden Noise Contour Results

Contour Value (dB(A) L_{den})	Contour Area (km²)		Population[1]		Dwellings[2]	
	2016	2017	2016	2017	2016	2017
>75	0.8	0.9	0	0	0	0
>70	1.9	1.9	0	0	0	0
>65	5.5	5.8	1,100	1,200	450	450
>60	15.2	15.8	5,700	6,600	2,200	2,600
>55	**39.3**	**39.9**	**17,100**	**18,800**	**7,000**	**7,850**

Annual Lnight Noise Contour Results

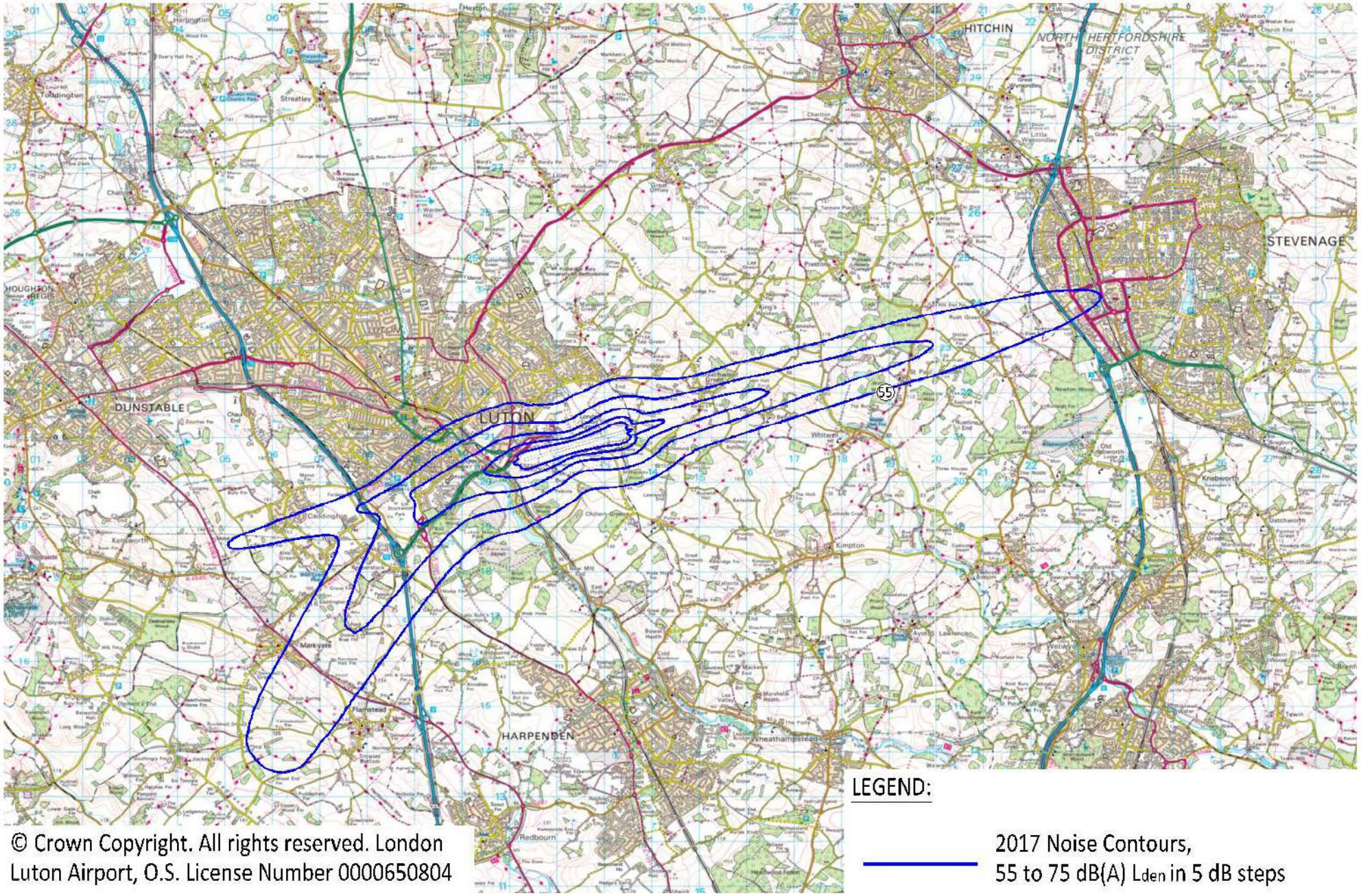
Contour Value (dB(A) L_{night})	Contour Area (km²)		Population[1]		Dwellings[2]	
	2016	2017	2016	2017	2016	2017
>66	0.9	0.9	0	0	0	0
>63	1.4	1.5	0	0	0	0
>60	2.4	2.5	0	0	0	0
>57	4.7	4.9	500	800	200	300
>54	8.5	8.9	2,100	2,200	800	800
>51	16.3	17.1	6,000	6,800	2,300	2,700
>48	**29.3**	**30.5**	**11,600**	**12,900**	**4,800**	**5,350**

The areas of every Lden contour have increased except the area of the 70 dB Lden contour, which has remained the same. The increases are relatively consistent across contour bands, ranging from 2-7%, and are in line with what would be expected due to the increase in aircraft movements and the slight reduction in dpearture noise levels. Similarly it can be seen that the areas of all the Lnight contours have increased by around 4-7%.

[1] - Population counts rounded to nearest 100

[2] - Dwelling counts rounded to nearest 50

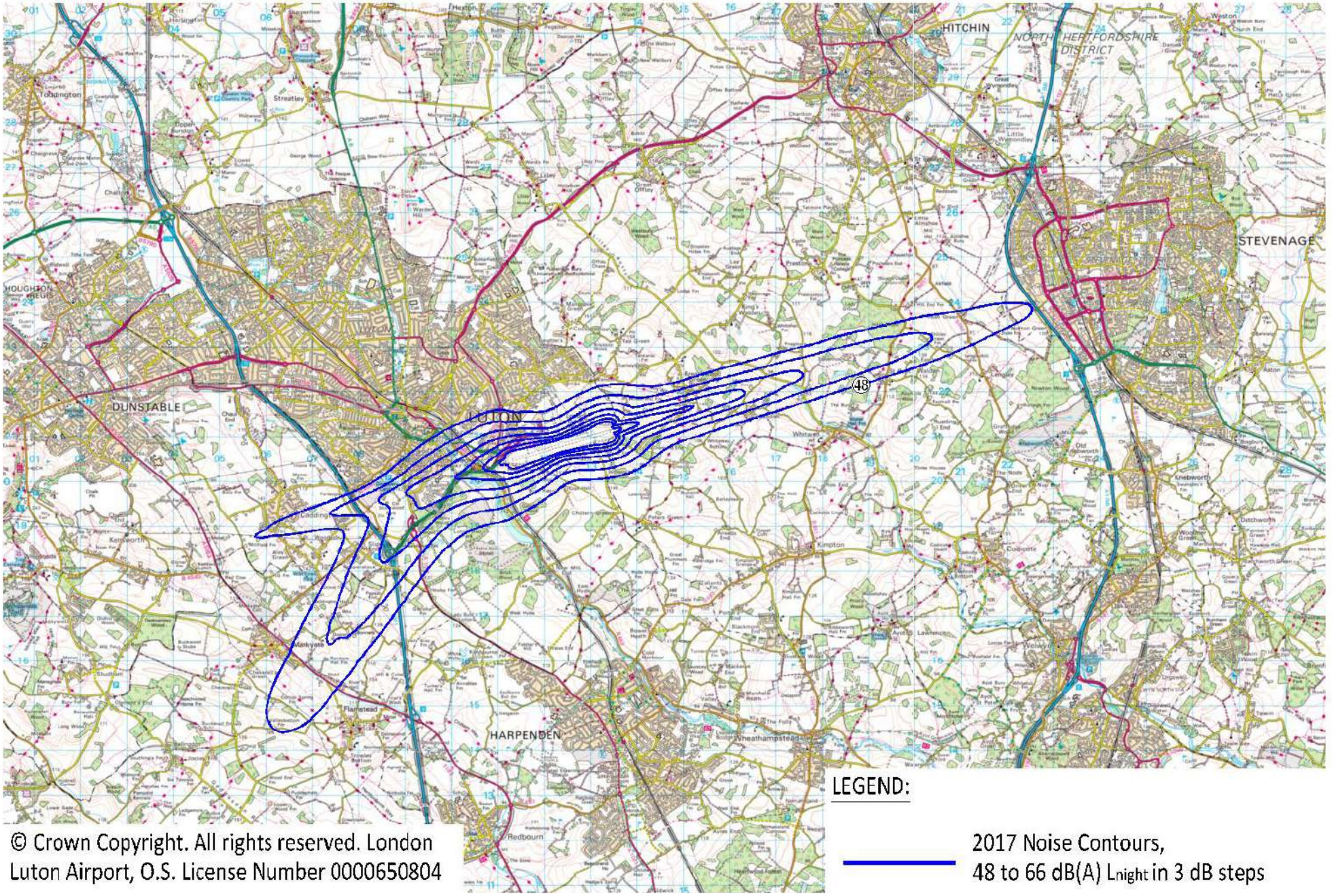
Annual L_{den} Noise Contours 2017



LEGEND:

2017 Noise Contours,
55 to 75 dB(A) L_{den} in 5 dB steps

Annual L_{night} Noise Contours 2017



Correspondence and Complaints

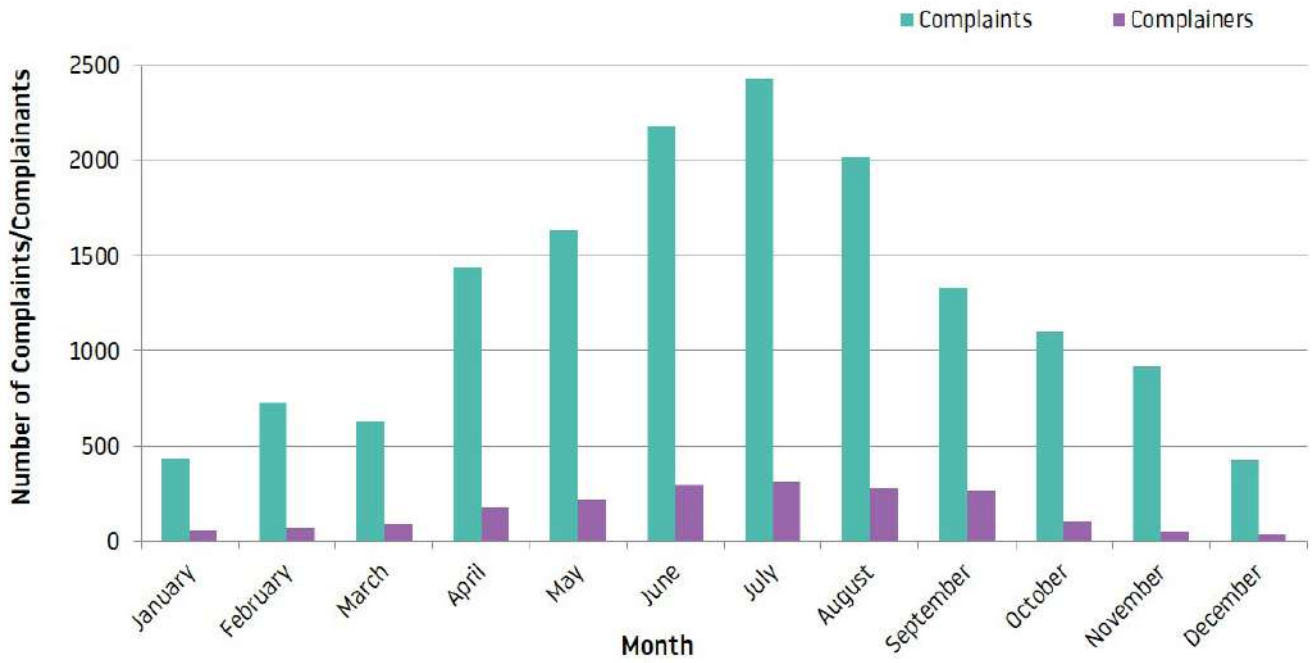
Complaint statistics can be extremely difficult to interpret as people's tolerance of noise and their perception of what causes annoyance varies widely. It is highly subjective and differs between neighbours experiencing the same levels of noise.

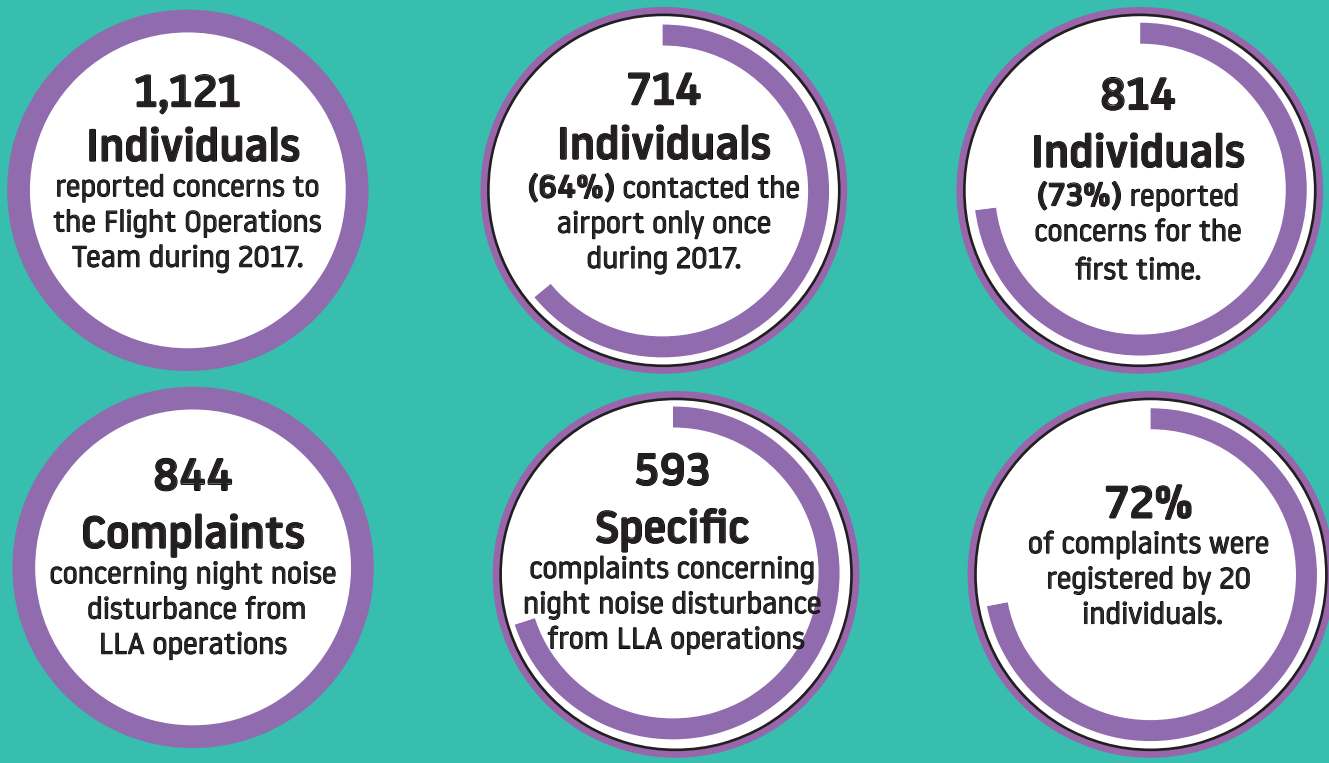
Complaints are reported in two forms – general disturbance and specific disturbance. A general disturbance relates to a complaint that does not specify a time period, examples of this type of complaint includes frequency, air quality and ground noise. A specific complaint relates to a complaint which specifies the time which can be correlated to an aircraft, example complaints of this type include too low, too loud, night flight and off-track. If a single piece of correspondence contains multiple specific disturbances, this will be logged as a general complaint regarding frequency.

Total complaints relating to LLA aircraft operations

	2016	2017
Total No. of Complaints relating to LLA aircraft operations	4,231	15,384
No. of Complainants	815	1,121
No. of General Complaints	1,174	3,333
No. of Specific Complaints	3,057	12,051
Average No. of Complaints per Complainant	5.2	13.7
No. of Aircraft Movements per Complaint	31.0	8.8

During 2017 a total of 15,384 complaints (on average 42 complaints per 24 hours) relating to LLA aircraft operations were received, compared with 4,231 complaints in 2016. Out of the total complaints 72% were registered by the 20 most regular complainants and 45% from just five individuals. A further 614 complaints received were not attributable to LLA traffic. The figure below shows the complaints statistics throughout 2017. More complaints were received in the summer months, correlating with an increase in aircraft activity.



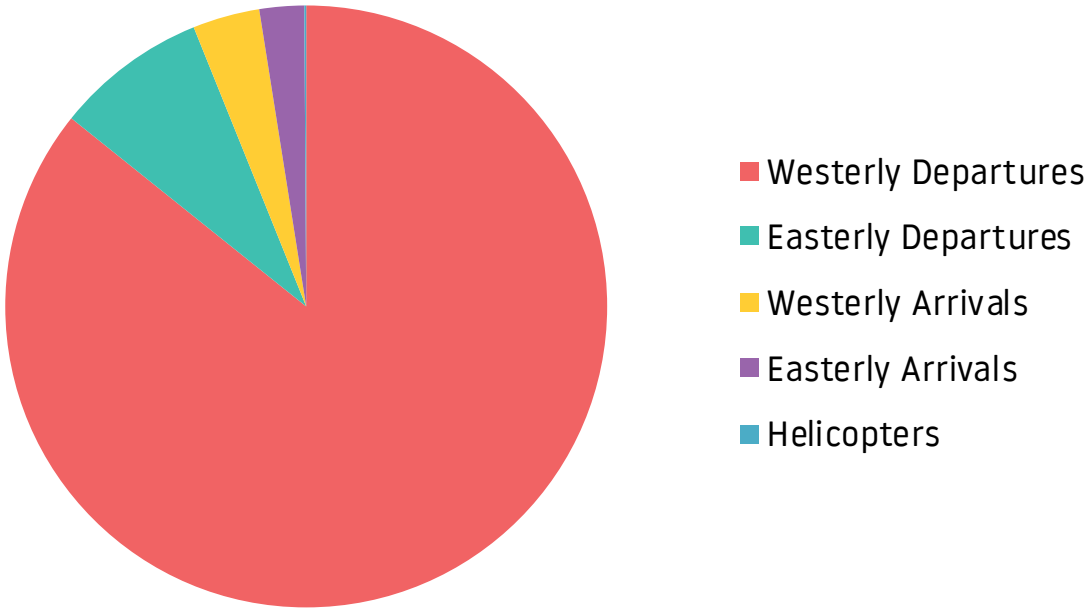


Complaints by aircraft type

Of the 15,384 complaints relating to LLA aircraft operations registered during the year, 11,726 complaints (76%) were clearly correlated to a specific aircraft type, although many complaints were of a general nature. The table below shows aircraft types generating complaints.

Aircraft Type	No. of Correlated Complaints	% of Correlated Complaints	Annual No. of Movements of Aircraft Type	Movements of Aircraft Type per Correlated Complaint
A319	1,274	10.86%	27,930	22
A320	6,147	52.42%	48,261	8
A321	1,645	14.03%	9,869	6
B737-800	975	8.31%	14,218	15
A306 (Cargo)	207	1.77%	896	4
B737-400	186	1.59%	1,202	6
GLF4/GLF5/GLF6	157	1.34%	4,930	31
ATP	15	0.13%	295	20
B757 & B767	120	1.02%	1,377	11
B737-300	74	0.63%	396	5
B737-200	13	0.11%	58	4
Helicopter	8	0.07%	531	66
CL30/CL60	145	1.24%	2,828	20
GLEX/GL5T	179	1.53%	4,095	23
Other Private Aircraft	409	3.49%	17,641	43
Other Cargo Aircraft	41	0.35%	110	3
Other Passenger Aircraft	132	1.13%	881	7

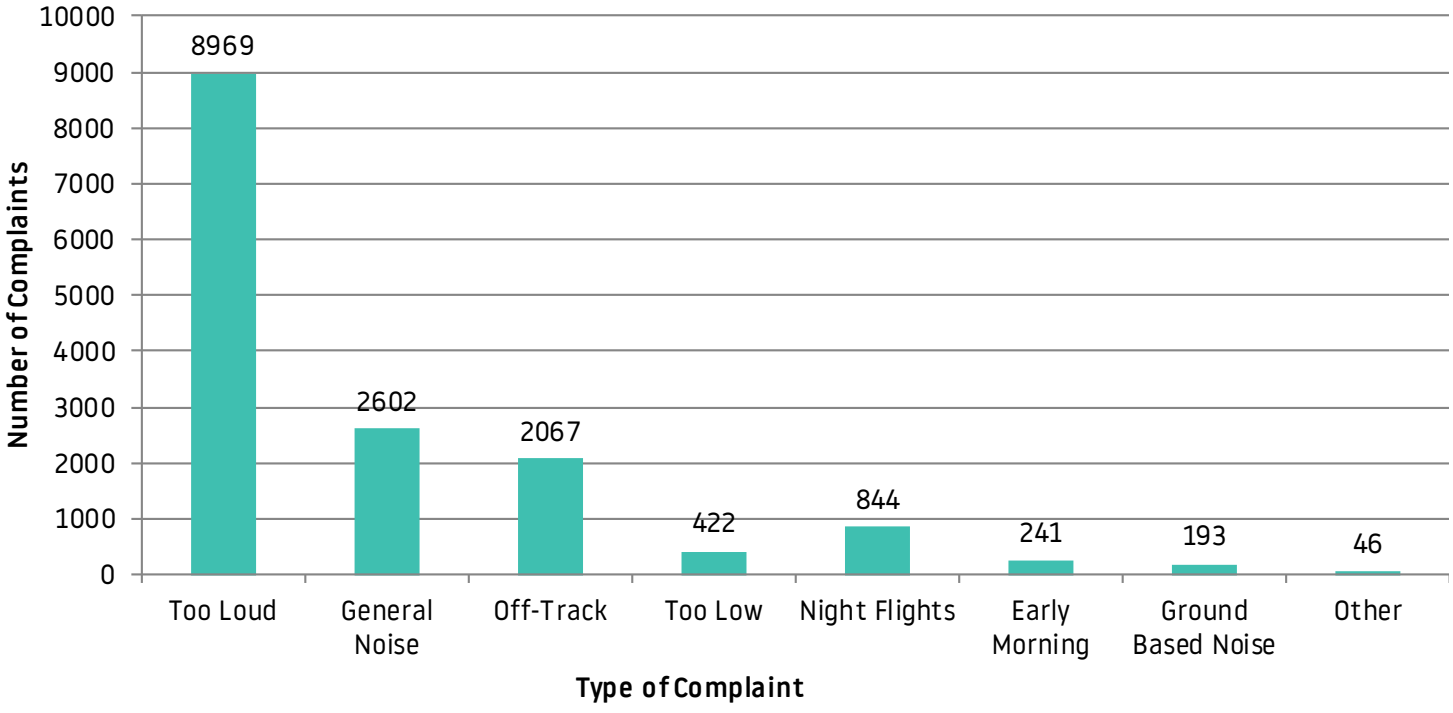
Nature of Disturbance



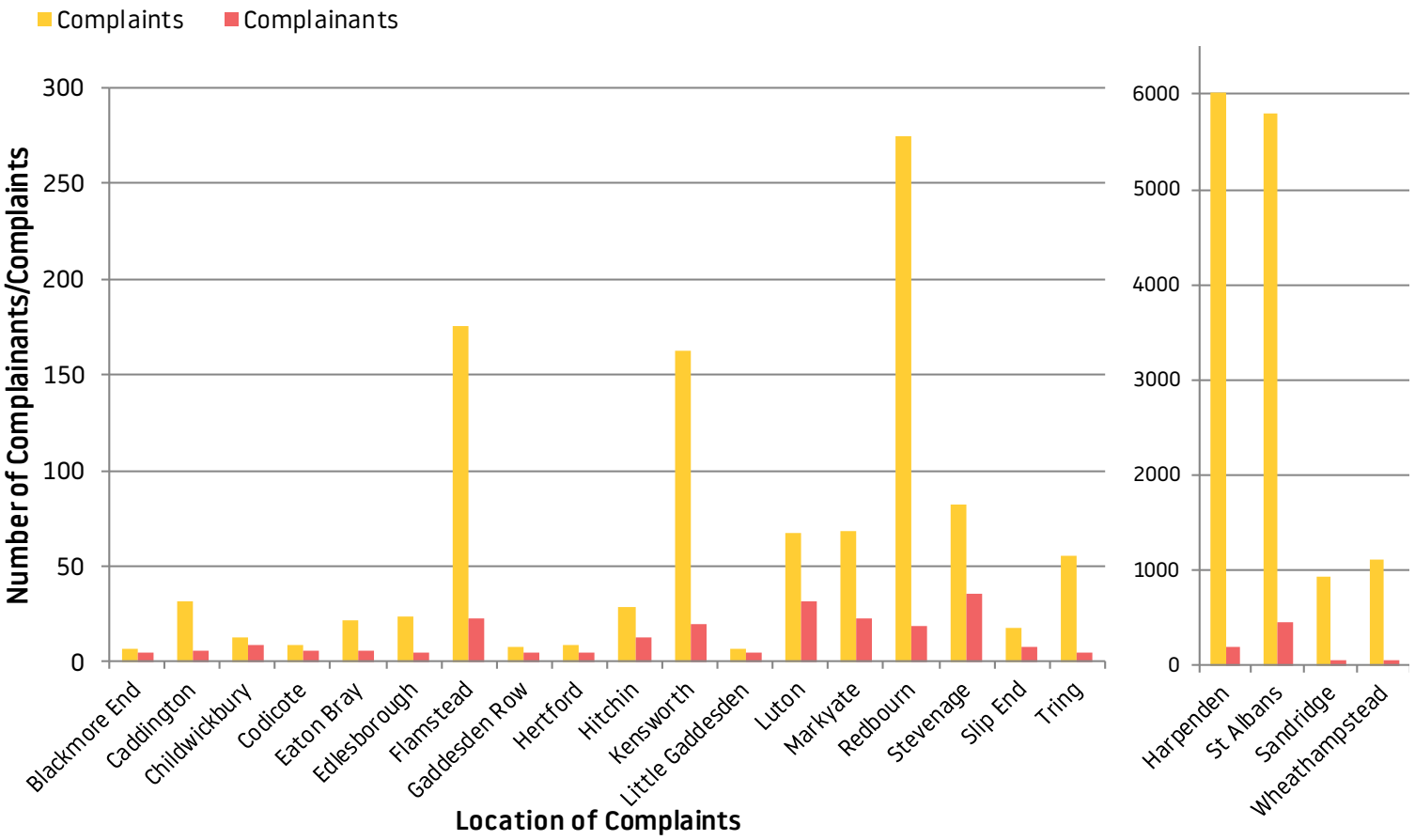
Within the 10,055 specific complaints correlated to aircraft movements concerning westerly departures, 9,924 reported specific aircraft following the Match/ Detling route, 68 related to aircraft on the Compton route and 25 related to aircraft following the Olney heading.

38 other complaints involved positioning flights following off-airways flight routes. Of the 956 complaints specifically attributed to easterly departures 887 related to aircraft following the Compton heading, 12 related to aircraft on Olney flight route and 34 to aircraft on the Match/Detling heading.

A further 23 complaints involved positioning flights following off-airways flight routes. Out of the total 703 complaints correlated to specific arriving aircraft, 422 related aircraft arriving at the airport during westerly operaitons and and 281 complaints related to easterly arrivals.

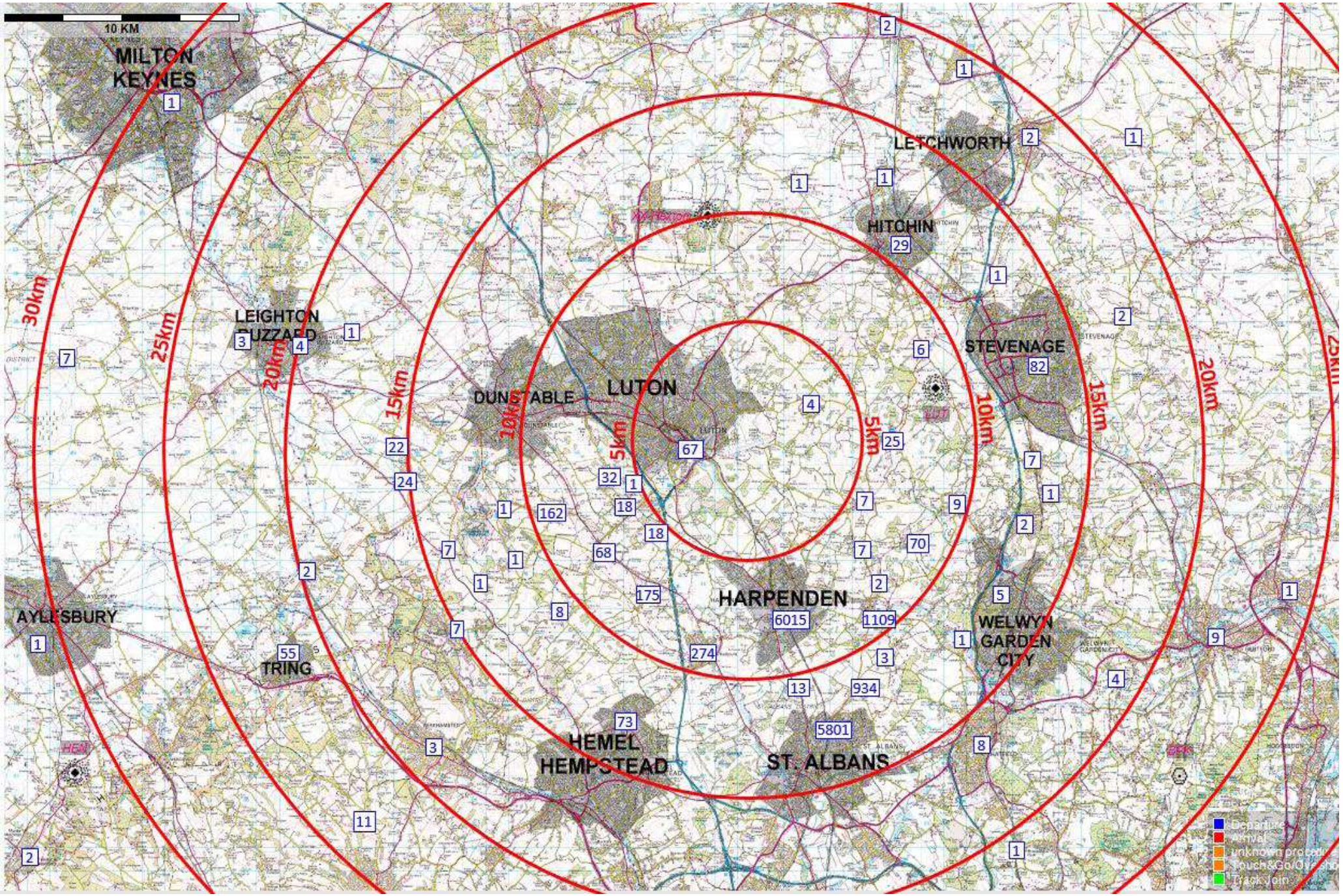


Location of Complainants (5+)



The map on the following page shows the location of complaints compared to distance from airport.

Location of Complaints 2017



Communication method

The following table shows the method of communication used to contact London Luton Airport regarding noise.

Communication Method	% of Total Complaints
TraVis	76%
Email	22%
Telephone	2%
Letter	0%

Any concerns relating to aircraft operations associated with London Luton Airport can be reported to the Flight Operations Team by the following means:

Postal Address **Flight Operations**
London Luton Airport
Navigation House
Airport Way
Luton
Beds
LU2 9LY
Direct Telephone **(01582) 395382 (24 hours)**
Direct email **noise@ltn.aero**
TraVis **www.travisltn.topsonic.aero**

Complaints analysis

During 2017 there was an increase in complaints compared to 2016; this is thought to be due to a number of reasons:

• The airport has grown considerably during 2017, in line with the redevelopment plans. This will have caused an increase in the number of movements on all routes.
• A large number of complaints were generated by a small number of people. The 20 most regular complainants in 2017 created 72% of total complaints and almost half of the total complaints came from 5 residents in Harpenden.
• High numbers of complaints were recorded from specific locations, for example Harpenden, Sandridge, St Albans and Wheathampstead. Complaints from these areas accounted for 90% of total complaints. In these areas there is a heightened awareness of aircraft, particularly in relation to the recent growth and RNAV implementation in 2015.
• Complaints recieved last year were submitted to the CAA as part of the Post Implementation Review, and during this time a number of leaflet campaigns were organised encouraging people to complain.
• As winds dictated westerly operations for 79% of the time, the largest percentage of complaints related to aircraft operations during westerlies.

Noise Action Plan

The table below provides an update on the actions in the Noise Action Plan.

	Action	Timescale
1	Operate and maintain a noise and track-keeping system to monitor aircraft operations, reporting statistics quarterly to the LLACC (via NTSC)	Ongoing
2	Produce Lden noise contours annually, based on an annual average 24 hour period and present to LLACC (via NTSC).	Ongoing
3	Undertake regular analysis of aircraft activity and noise to identify where a review of procedures may help minimise disturbance	Ongoing
4	Monitor % compliance of Continuous Descent Approaches (CDA) both day and night, reporting quarterly to the LLACC (via NTSC)	Ongoing
5	Undertake community visits with a portable handheld noise monitoring device, on request.	Ongoing
6	Present quarterly night contours to the LLACC (via NTSC)	Ongoing
7	Investigate, log and respond to all complaints relating to London Luton Airport aircraft activity, reporting in-depth statistics quarterly to the LLACC (via NTSC)	Ongoing
8	Quarterly Monitoring Reports to be available to view on the London Luton Airport website as well as the LLACC website	Ongoing
9	Monitor helicopter operations to/from London Luton Airport to ensure they avoid, where possible, the most densely populated areas	Ongoing
10	Calibrate noise and track-keeping system and INM noise contour model on an annual basis	Ongoing
11	Monitor the track-keeping compliance and follow up with operators, as necessary	Ongoing
12	Monitor the number of marginally compliant Chapter 3 aircraft	Ongoing
13	Monitor and report progress against Noise Action Plan actions to LLACC (via NTSC), providing statistics annually in the Annual Monitoring Report	Ongoing
14	Review the voluntary Night Noise Policy in consultation with the LLACC (via NTSC)	2015
15	Encourage daytime operations through higher landing fees at night	Ongoing
16	Fine any departing aircraft exceeding noise limits, to encourage airlines to operate the quietest aircraft types	Ongoing
17	Discourage residential development close to the airport boundary or areas affected by aircraft noise, in liaison with Local Authorities	Ongoing
18	Divert all noise violation limit penalties from airport operations to support the noise management programme and Community Trust Fund. Penalties will be reported to LLACC via NTSC on a quarterly basis.	Ongoing
19	Liaise regularly with airline operators via a 'Flight Ops' Committee to ensure adherence to existing standard procedures and encourage innovation	Ongoing
20	Review operational procedures in relation to noise with support of the 'Flight Ops' committee and NTSC	Ongoing
21	Work with operators to encourage the voluntary phase out of noisiest aircraft	Ongoing
22	Continue to review procedures for helicopter operations with the support of air traffic control	Ongoing
23	Work with operators on the voluntary phase out of marginally compliant Chapter 3 high aircraft i.e. hushkitted aircraft	2014
24	Explore with the 'Flight Ops' Committee/NTSC penalties for fl ying off track after the introduction of RNAV-1 departure routes	2015
25	Work with airlines, air traffic control, NATS and other stakeholders to introduce new technologies and environmental improvements	Ongoing

	Action	Timescale
26	Review the Engine Ground Running policy to minimise disturbance during the night and late in the evening	Ongoing
27	Operate within planning limits	Ongoing
28	Actively participate and support the work of the industry and Airport Operators Association with respect to its 'Sustainable Aviation' programme	Ongoing
29	Liaise with London Heathrow and other airports with respect to non-London Luton overflying traffic, where necessary	Ongoing
30	Work with the LLACC (via NTSC), the 'Flight Ops' committee and NATS to identify airspace improvements which will improve the noise environment	Ongoing
31	Agree key performance indicators and targets for noise 'actions', where appropriate, with the LLACC (via NTSC)	Ongoing
32	Assess the impact of London Luton Airport traffic on the Chilterns AONB and explore potential for operational improvements	Ongoing
33	Attend public meetings on request, where appropriate, to discuss the airport's operations	Ongoing
34	Provide an information pack to first time complainants and those wishing to relocate into the area	Ongoing
35	Formally engage with air traffic control and airline/other operators to help improve noise management/track keeping	Ongoing
36	Host visits from local residents and MPs to discuss community concerns and to demonstrate the Noise and Track-Keeping system	Ongoing
37	Prepare an Annual Monitoring Report, in conjunction with Luton Borough Council, incorporating detailed statistics on all aspects of the airport's operations including passenger throughput.	Ongoing
38	Provide information in the Annual Monitoring Report on progress made on actions set out in the Noise Action Plan	Ongoing
39	Establish a committee with Environmental Health Officers of Local Authorities (Herts, Beds and Bucks) to discuss the impact of the airport's operations and the Noise Action Plan	Ongoing
40	Continue to offer email, telephone and website as options for complaints and enquiries	Ongoing
41	Invite members of the public to visit LLA to review noise and track information	Ongoing
42	Engage effectively and proactively with the LLACC and NTSC	Ongoing
43	Engage with local planning authorities to ensure they are informed about noise matters	Ongoing
44	Review communication material, the noise information pack and the London Luton Airport website with respect to noise/noise management	2015/2016
45	Hold community surgeries to give local people an opportunity to discuss issues in person with representatives from the Community Relations and Flight Operations Department	Ongoing
46	Improve communication with transient and non-based operators/users to ensure environmental and operational procedures are understood and adhered to	Ongoing
47	Develop and implement a Noise Control Scheme to control the noise of aircraft both during the day (0700 – 2300) and night periods (2300-0700), including a Noise Quota System for the night period (2330 -0600) to include: • Sanctions in relation to operators of aircraft which land or take off in breach of the QC System • Exclusion of aircraft movements with a QC value in excess of QC2 during the night time (2300-0700) • Details of the procedures to be adopted and measures with the purpose of phasing out night time (2300 to 0700) operations by aircraft with a QC value greater than 1 on either departure or arrival.	Ongoing

	Action	Timescale
47	(continued) For the Night Quota Period (2330 – 0600) this shall have the following limits incorporated into the scheme: • Total annual movements by aircraft (per 12 month period) shall be limited to 9,650; • The total annual noise quota in any 12 month period shall be limited to 3,500 which, using all reasonable endeavours, shall be reduced at each review until it reaches a point where it does not exceed 2,800 by 2028. For the Early Morning Shoulder Period (06.00 – 07.00) this shall have the following limit incorporated into the schemes: • Total annual movements by aircraft in any 12 month period shall be limited to 7000. Review the Noise Control Scheme no later than the first and fourth year after introduction, and every subsequent five years.	Ongoing
48	Report actual and forecasted aircraft movements for the preceding and next twelve months every three months to Luton Borough Council.	Ongoing
49	Implement a progressive reduction in the daytime maximum noise violation limit (NVL) in line with the requirements of the planning conditions	2015
50	Develop a strategy to be submitted to Luton Borough Council for their approval which defines the methods to be used by London Luton Airport Operations Ltd (LLAOL) or any successor or airport operator to reduce the area of the noise contours by 2028 for daytime noise to 15.2km2 for the area exposed to >57dB Leq16hr (0700-2300) and above and for night time noise to 31.6 km2 for the area exposed to >48dB Leq8hr (2300-0700) and above.	Ongoing
51	Report forecasted aircraft movements and consequential noise contours (Day, Night and Quota Period) for the forthcoming calendar year annually, which shall utilise the standard 92 day summer contour. Where the area enclosed by the 57-72dB(A) Leq16hr (0700-2300) contour could exceed 19.4 sq km for daytime noise, or the area enclosed by the 48-72dB(A) Leq8hr (2300-0700) contours could exceed 37.2 sq km for night-time noise, an action plan will be put in place to ensure this level isn't breached.	Ongoing
52	Develop a Noise Control Monitoring Scheme and submit to Luton Borough Council for approval, to include: • Details of the fixed noise monitoring terminals and track keeping system (vertical and horizontal) • Details of the complaints handling system • Sanctions to be imposed on infringements by aircraft in respect of noise limits and track keeping • Arrangements for the verification of the submitted information Review the Noise Control Monitoring Scheme no later than the first and forth year after introduction, and every subsequent five years.	Ongoing
53	Develop a Ground Noise Scheme and submit to Luton Borough Council for approval, to include: • Measures to limit the ground running of aircraft propulsion engines between 2300-0700 • Preferential use of stands and taxiways between 2300-0700 • Steps to limit the use of auxiliary power units (including the provision of fixed electrical ground power to stands and or suitably quietened ground power units) • No ground running of aeroplane engines for testing or maintenance purposes between 2300-0700, and designated areas for such testing between 0700-2300. Review the Ground Noise Scheme no later than the first and forth year after introduction, and every subsequent five years.	**Ongoing**
54	Develop a Noise Insulation Scheme for residential as well as non-residential buildings.	2016
55	Reduce the night time noise violation limit to 80 dB(A) by April 2015	2015

Community Relations

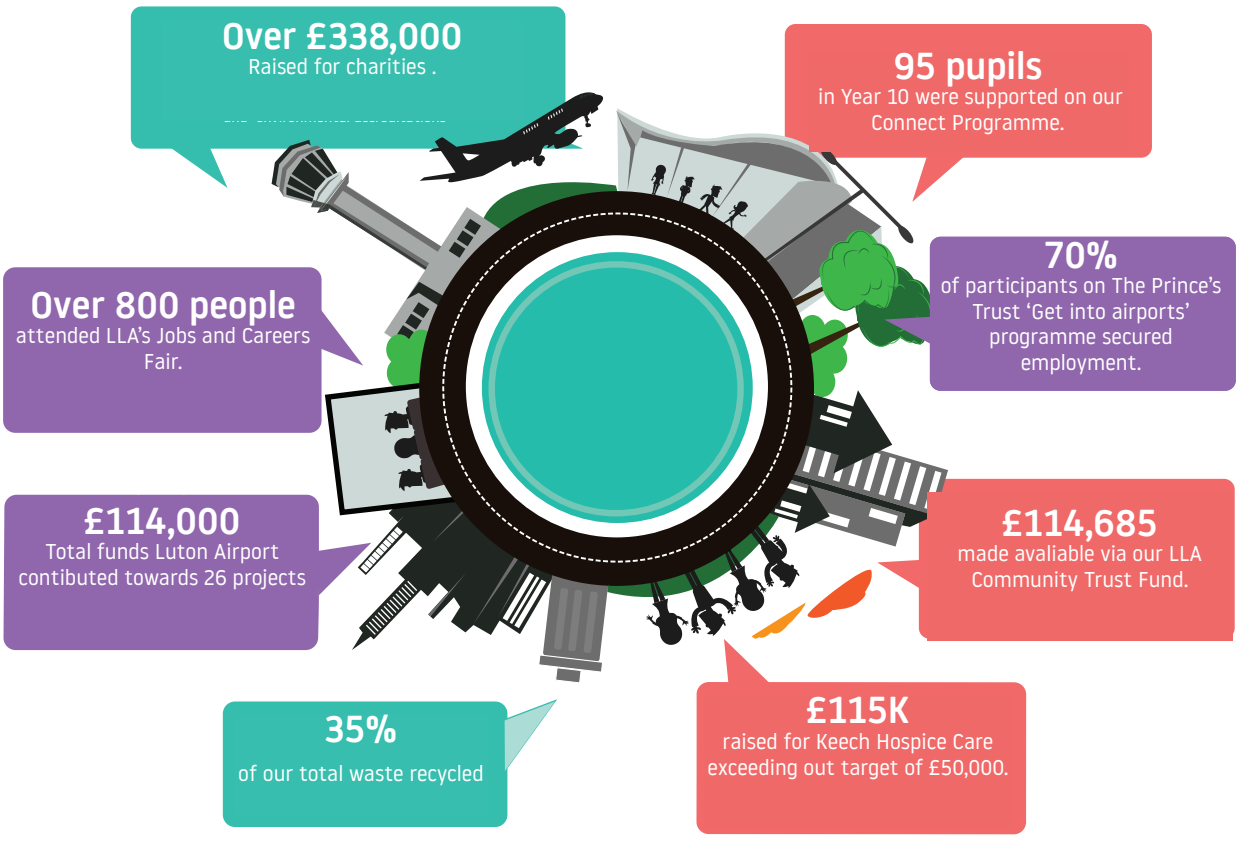
Through the London Luton Airport Consultative Committee (LLACC), which meets every quarter, London Luton Airport maintains a close working relationship with representatives of its local authorities and resident groups. Information on the Consultative Committee including meeting minutes and its representatives can be found at the following link: **http://www.llacc.com/**

In 2017, the Flight Operations Team continued the Public Surgery programme. These drop-in events allow local residents to talk to the team face to face to discuss any concerns regarding the impact of LLA's operations. Public Surgeries were held in Eaton Bray, Luton, Leighton Buzzard, Stevenage, Whitwell, Caddington and Baldock, along with an engagement day intended for those communities along the new RNAV Match/Detling route on the 29th June 2017. These will continue to be scheduled in 2018.

The Flight Operations team, also held regular meetings with Ann Main MP, Bim A MP and Stephen McPartland MP. The team also welcomed a visit from Ivinghoe Parish Council to disucss the airports noise and track monitoring system and airport tours. Furthermore, the team regularlay conducted visual and hand held monitoring in the community.

Community engagement strategy achievements

Our five year Community Relations Strategy forms part of LLA's corporate social responsibility programme and sets out how we will facilitate community development and meet the needs of key stakeholders. Initiatives are delivered by the airport in collaboration with key community partners. In 2016 we made ten commitments to ensure that we continued to play a positive role in our local community. We achieved 6 of these commitments, another 2 commitments we exceeded and 2 are still a working progress. The graphic below summarises the progress made towards these commitments during the year or more details can be found in the Community Engagement Annual Report found on our website here.



Employment

Employment at and surrounding London Luton airport contributes significant economic benefits to Luton as a whole and to the sub-region. A large number of businesses are based in Luton due to the presence of the airport. Thus, any analysis of the airport's impact upon the locality needs to contain an economic perspective, and this includes employment. An analysis of employers within and around the airport boundary has been conducted, the results of which are summarised below.

The methodology used for this year's survey was the same as for the 2016 survey. The Inter Departmental Business Register (IDBR) was used as the main administrative data source - this Office for National Statistics (ONS) dataset is a comprehensive list of UK businesses that is used by government for statistical purposes. It provides a sampling frame for surveys of businesses carried out by the ONS and by other government departments. It is also a key data source for analyses of business activity.

The IDBR combines administrative information on VAT traders and PAYE employers with ONS survey data in a statistical register comprising over two million enterprises, representing nearly 99% of economic activity. Analyses that are produced as part of this service are at the same level at which business statistical surveys are conducted. (Source: ONS website www.statistics.gov.uk).

An initial list was received from London Luton airport of companies within its boundary. The listing was matched against the IDBR. Companies outside the airport boundary were identified by the street names/areas as follows:

- Spittlesea Road
- Part of Frank Lester Way
- President Way
- Wigmore House
- Part of airport Way
- Barratt Industrial Park
- Airport Executive Park

A handful of Companies who appeared on the list but not the IDBR had imputed estimates from analysis of the size of the enterprise and information from the airport.

Total employment in and around the airport

Employment was measured using main section headings from the Standard Industrial Classification 2007 (SIC 2007). Data has been rounded to the nearest hundred, as per ONS guidelines.

Standard Industrial Classification 2007, Section Names	Total Employees
Accommodation and Food Service Activities	1000
Administrative and Support Service Activities	2,100
Financial and Insurance Activities	<100*
Manufacturing	1,200
Professional, Scientific and Technical Activities	<100*
Public Administration & Defence; Compulsory Social Security	<100*
Real Estate Activities	<100*
Transportation and Storage	5,300
Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	400
Grand Total	**10,200**

** - Figures have been suppressed where there are less than three companies in a given Section and/ or employment in that sector is less than 100 in accordance with the regulations covering the use of IBDR data.*

Due to confidentiality issues Luton Borough Council is bound by Office for National Statistics protocols to round to the nearest 100 when reporting IDBR figures. This will mean that any changes in reported figures will be in multiples of 100 and therefore lie within that range.

The table illustrates that there are an estimated 10,200 employees in and around the airport. This has increased by 900 siunce 2016, a rise of 10%.

Employment by working pattern

The IDBR provides employment figures by full and part time working pattern. The total full time figures (where a breakdown by full/part time was provided) was 8,700 employees. This was an increase of 800 on the previous year's figures. The figure for part time employees was 1,500 which was an increase of 100 from last year's figures.

The percentage split of full/part time employees found at the airport compared to that found in Luton as a whole is as follows:

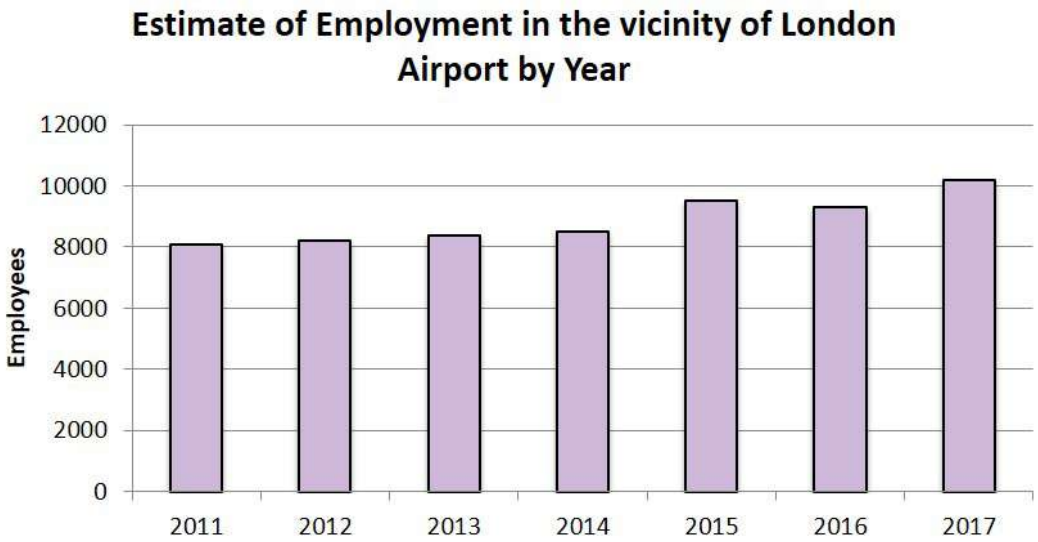
	Full Time Employees	Part Time Employees
Vicinity of LLA	85%	15%
Luton UA	66%	34%

Source for Luton UA Figures: Business Register & Employment Survey 2015, latest data. Figures are percentages of those in employment.

Full and part time working patterns in the vicinity of the airport differs from that found within Luton as a whole, with the airport having a higher proportion of full time workers.

Time series

The following figures from 2011 to 2017 show the estimated employment levels in the vicinity of the airport.



Source: AMR Employment Surveys 2011- 2017

There has been an increase in employment between 2016 and 2017 around Luton Airport. There are approximately 10,200 employees working in the vicinity of the Airport which is at the higher than 2016.

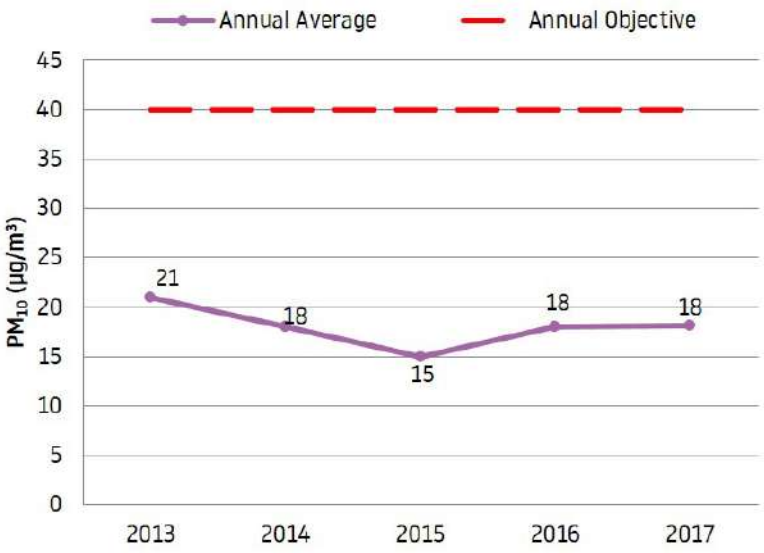
Air Quality

London Luton Airport has been monitoring air quality in and around the airport environment since 2003. Air quality data collected at LLA is integrated into a monitoring programme incorporating data collected by the surrounding Local Authorities, with a monthly report available to view online at http://www.airqualityengland.co.uk The parameters we measure are PM_{10} and NO_2.

PM_{10} (Particulates measuring 10µm or less)

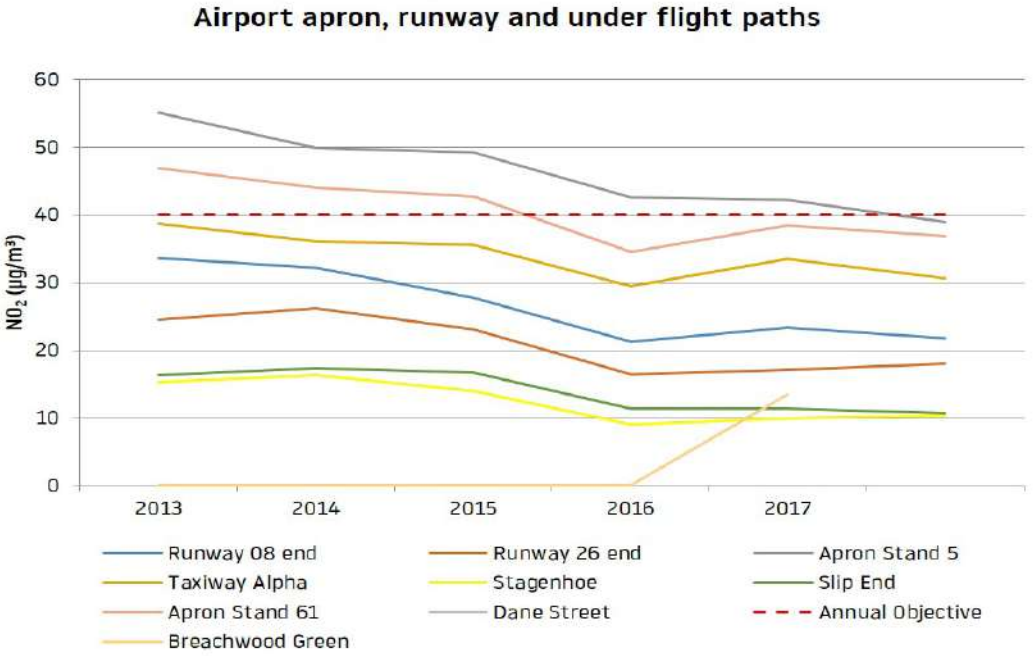
PM_{10} is one of the main contributors to reduced ambient air quality. Particulate matter is made up of fine particles including dust and soot which are suspended in the air. When you breathe in these particles they can stick to the surface of your lungs, and in areas of high pollution can cause respiratory health problems. Local sources include emissions from vehicles and aircraft engines, wear of brakes, tyres, and construction debris.

PM_{10} is monitored from one location in the middle of the airport site. The graph shows that the readings have remained well within the annual mean local air quality objective of 40µg/m³.

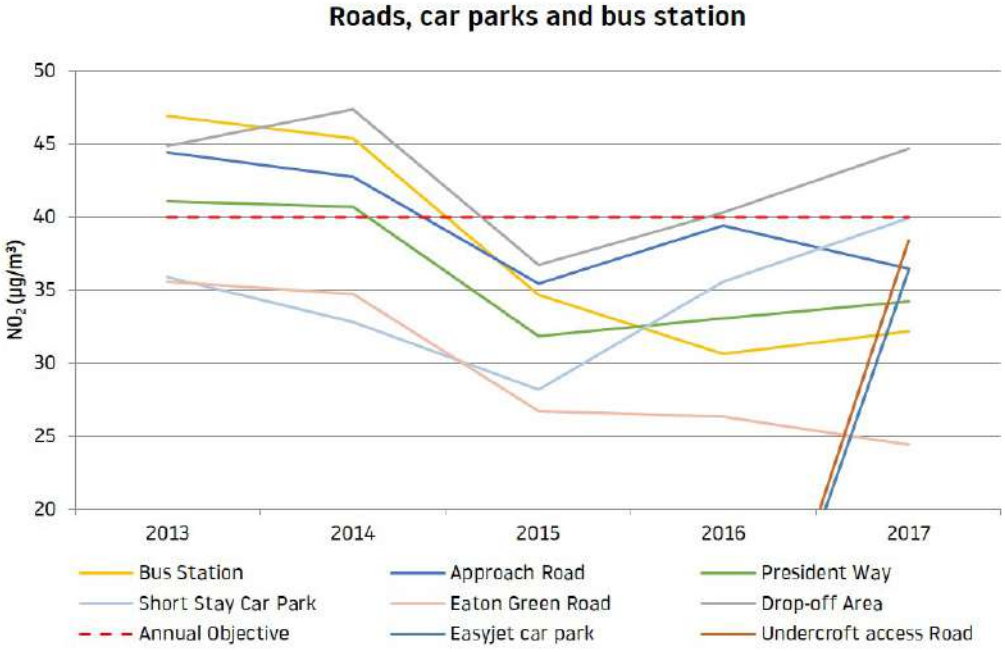


Nitrogen Dioxide (NO_2)

NO_2 in high concentrations can cause a wide variety of health and environmental impacts. The gas is produced from the combustion of fuels such as diesel and aviation fuel. NO_2 is currently measured from 14 locations around LLA, and the results have a bias-adjustment factor applied using national database factors. The annual mean local air quality objective of 40µg/m³ also applies to NO_2.



NO_2 levels at the closest residential receptors to the airport, and also along the aircraft flight paths are significantly below the the objective level laid out in the Air Quality (England) Regulations 2000 (as amended). Levels monitored by the roads around the airport, in the car parks and on the apron are a little higher, with a location on the main apron and the drop off zone slightly exceeding 40 µg/m³. A significant redesign of the roads and car parks on the approach to the terminal has reduced traffic congestion throughout 2017 and this work is ongoing, and a project to install a direct air to rail transit (DART) has commenced which is anticipated to improve connectivity to the airport using public transport. easyJet have also begun modernising their fleet at London Luton Airport, intorudcing the new A320 neo's which are 13-15% more fuel efficient.



Surface Access

LLA aims to improve access to the terminal, particularly by public transport in order to reduce the contribution that journeys make to total airport-related CO2 emissions and also to air pollution. LLA's current airport Surface Access Strategy runs from 2012-2017, with short and long term targets and action plans to encourage more sustainable travel amongst airport passengers and employees. These targets are being monitored regularly, as part of the wider Local Transport Plan (LTP) monitoring framework.

During August 2017 LLAOL undertook a consultation with key stakeholders for the airport surface access strategy covering period up to 2022. The responses all supported the proposed targets and actions with the construction of the DART (Direct Airport to Rail Transit) being noted as particularly welcome addition

Modes of Transport

Passengers transport mode share (CAA Data)

The Civil Aviation Authority (CAA) undertakes continual passenger surveys at many of the major airports in the UK, including London Luton. In common with other airports, LLA uses this survey data to assess trends in passenger 'modal shift' from private to public transport. The table below shows the weighted CAA data for 2011-2016. The CAA statistics suggest that 32% of airport passengers chose to use public transport in 2016.

Whilst the figures have remained fairly static for the last 5 years, LLA have been working to promote the us of sustainable transport. In the Last year, LLA, have been lobbying for 4 fast trains per hour to stop at Luton Airport Parkway as part of the new franchise agreement for the East Midlands line.

LLA have also invested in an upgraded bus station, including installing a traffic light system to improve safety. Electric charging points have also been installed in the multi-storey car park. Finally a new Mass Passenger Transit System is being developed by LLAL to replace the bus service between Luton Airport Parkway and the airport terminal. Construction is due to start in 2018, with the intention for it to be in operation by 2021.

%	2012	2013	2014	2015	2016
Drop Off	27	28	25	27	28
Car Park	23	23	28	27	23
Rail	17	16	14	16	16
Bus/Coach	16	16	15	15	16

Staff transport mode share

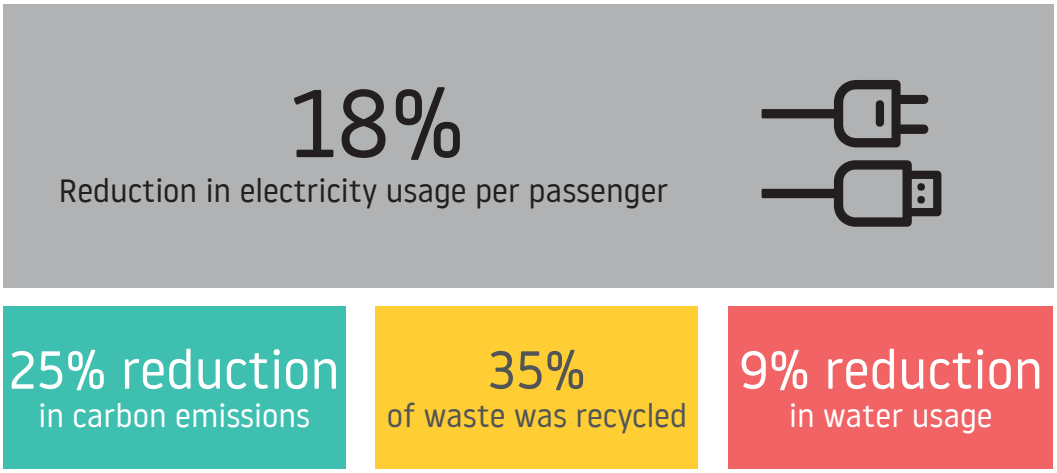
LLA aims to reduce the proportion of staff travelling alone by car to and from Lond Luton Airport. Whilst employee travel does not generate as many trips as passengers, it is an important consideration as employees making a more sustainable travel choice will give daily results due to the frequency of their need to commute to work. Staff travel surveys are underaken once every 2 years and the results since 2010 are presented in the table below.

%	2010	2012	2014	2016
Drive alone	66	66	62	68
Car share	12	8	11	7
Taxi	1	1	0	1
Motorcycle	1	1	1	1
Rail	5	5	10	7
Bus/Coach	7	9	8	9
Cycle	2	2	2	2
Walk	5	6	7	5

Sustainability

London Luton Airport is committed to operating in a way that maximises the socio-economic benefits for the local and regional area whilst minimising the environmental impacts. To ensure this vision is shared and supported, we work closely with airlines, stakeholders and business partners to promote this approach across the airport, ensuring that the full benefits that London Luton Airport can bring to the region are realised.

LLAOL aims to continuously improve on environmental performance in many different areas across the Airport. In 2016 the following was achieved:



The airport maintened the ISO14001 international accreditation for Environmental Management System and the ISO50001 international accreditation for Energy Management.

Sustainable Travel Improvements during 2016

During 2016 a new bus interchange was opened at LLA, providing 7 additional stands and improving safety and access for passengers. Construction works were also undertaken to redevelop the road network, taxi and drop-off facilities at the terminal entrance, and a new multi-storey car park opened providing additional parking near the terminal. Further information on these upgrades can be found under 'Planning and Development'.

Plans for a mass passenger transit system operating between Luton Airport Parkway station and the airport terminal were unveiled during 2016. The MPT system will be a fully-automated, two-way, 24-hour, guided light rail people mover covering a distance of 2.2km. Once complete, the rail link will provide a direct journey between London St Pancras and the airport within 30 minutes. Not only will this encourage passengers to travel by train rather than car, but it will also remove the need for the buses that currently transport passengers between the station and the terminal every 10 minutes. The scheme, being run by London Luton Airport Ltd, is anticipated to be operational by 2021.

Overnight rail services from Luton Airport Parkway began at the end of 2015, making rail a viable transport option for 2-3 million more airport passengers per year, and an uplift in passengers using the trains has been seen during 2016 as a result. LLA have also been lobbying to ensure 4 stops per hour are scheduled at Luton Airport Parkway as part of the refranchising of the East Midlands line due in 2018, providing additional fast services into London.

A staff travel survey was undertaken, along with a report looking into the feasibility of improving coach services to the airport from Northampton. Both reports have been shared with transport operators in order to facilitate transport planning.

Planning and Development

Through its Local Plan, Luton Borough Council (the Council) sets out local planning policies and identifies how land is used, determining what will be built where. The Council also is responsible for the Local Transport Plan (LTP) providing policies, strategies and schemes primarily for Luton, though the LTP does refer to strategic transport and infrastructure and other cross boundary matters for the whole conurbation (Dunstable and the Houghton Regis area).

Local Plan

On 7 November 2017 the Council adopted the Luton Local Plan (2011-2031). The adopted Local Pan is a strategic document setting out the vision, objectives and spatial planning strategy for the whole of Luton Borough Council's area for the period up to 2031.
It comprises the following document and accompanying plans as set out below:
- Luton Local Plan (2011-31), November 2017
- policies map
- town centre inset

These documents can be seen at the following page on the Council's website: https://www.luton.gov.uk/Environment/Planning/Regional%20and%20local%20planning/Pages/Local%20Plan%202011%20-%202031.aspx

The Local Plan includes Policy LLP6 that covers the London Luton Airport strategic allocation (an area of 325 hectares, identified on the policies map, which includes land within the airport boundary, Century Park and Wigmore Valley Park).

Planning Applications

Since the grant of planning permission for the development at the airport in 2014 (Council reference 12/01400/FUL)which enables an increase in passenger numbers up to 18 million passengers per annum (18mppa), much of the development has been completed.

In June 2017 planning permission was granted for a Direct Air Rail Transit (Luton DART) system which will provide a seamless link between Luton Airport Parkway station and the terminal at London Luton Airport. The Luton DART is a £225m investment, which will provide fast, easy access from the mainline trains (serving London and the East Midlands/South Yorkshire), encouraging more people to use public transport and help reduce congestion on the surrounding roads.

The route of the Luton DART crosses New Airport Way into the airport, passing through the mid-term car park and ending in a new station where the current drop-off zone is located. Consequently, there will be a number of changes to those areas, which the airport will undertake, including the provision of a new and improved drop-off zone and a further multi-storey car park.

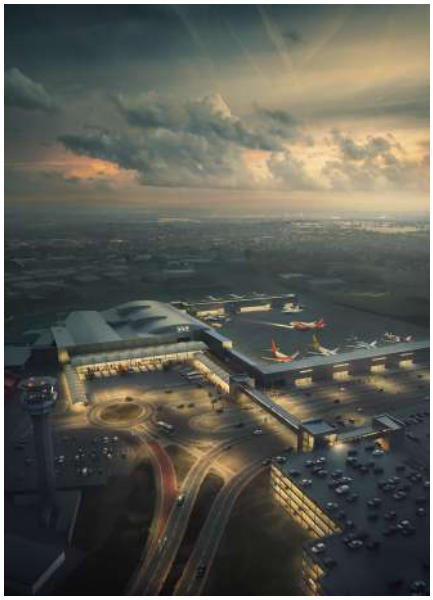
Hotel developments

The Luton hotel market is very much dominated by airport related demand, from passenger and crew, with the Luton Hotel Study (July 2015) indicating that demand was likely to continue to grow.

The following hotel developments have been granted planning permission, or are consideration, since the table in the 2016 AMR was produced -

Site address	Current status of application	Number of bedrooms
Premier Inn (The Brache)	Extension to provide additional 39 bedrooms approved in March 2016	171
Napier Park/Bartlett Square	Outline planning permission was granted in April 2015 for a mixed use development including two hotels (reserved matters still to be submitted).	250
Napier Gateway (part of the Napier Park site)	Mixed development including 209 bedroom hotel (still to be implemented)	209
Former Mondi Packaging car park site, Airport Way	Six storey hotel granted permission in 2013 and nearing completion	120
Former Mondi Packaging site, Airport Way	Nine storey hotel granted permission in July 2016 under construction	250
Power Court (Town Centre)	Outline application for football stadium and associated infrastructure submitted in 2016 including a hotel (still to be determined)	150
Land adjoining junction 10 to junction 10A of M1	Outline application for mixed use development submitted in 2016 including a hotel (still to be determined)	350
Former Honda Garage, Cumberland Stret (Town Centre)	Five to seven storey hotel granted planning permission in September 2017 (still to be implemented)	202
Phoenix House (Town Centre)	Change of use to hotel granted planning permission March 2017 subject to the copmletion of a s106 agreement (still to be implemented)	78

It is envisaged that the demand for hotel accommodation in Luton will grow as the number of passengers travelling through the airport increases.



National Aviation Policy

The Aviation Policy Framework (APF) published by the Coalition Government in March 2013 set out the Government's policy on aviation. The APF focuses on the benefits of aviation to the UK economy as well as its environmental impacts.

The Coalition Government also established the independent Airports Commission to consider issues relating to capacity in the UK over the short, medium and long term periods. The Final Report of the Airports Commission was published in July 2015 concluding that an additional runway at Heathrow was the preferred option, but also considering how to make best use of existing airport infrastructure in the meantime. The Government accepted the Airports Commission's recommendations in December 2015.

In February 2017 the Government began a public consultation on the draft Airports National Policy Statement (Airports NPS), this focused on the preferred option of a third runway at Heathrow. Following revised passenger demand forecasts and the impact of the publication of the final Air Quality Plan for the UK (July 2017) a revised draft Airports NPS was published in October 2017. The Airports NPS will provide the primary basis for decision making in relation to the Development Consent Order (DCO) for a new runway at Heathrow, whilst also being an important and relevant consideration in respect of applications for new runway capacity in London and the south east of England.

The revised draft Airports NPS sets out:
- The Government's policy on the need for new airport capacity in the South East of England;
- The Government's preferred location and scheme to deliver new capacity; and
- Particular considerations relevant to a development consent application to which the Airports NPS relates.

The revised draft Airports NPS includes policies that will be important and relevant for any nationally significant infrastructure project (NSIP) related to airports in the south east of England. In this regard it is important to note that in December 2017 London Luton Airport Limited (LLAL), the owner of the airport, published its 'Vision for Sustainable Growth 2020-2050' which considers the potential for making better use of the existing runway which could include an increase in passenger numbers of up to 36-38mppa. Such an increase would constitute a NSIP and result in the submission of an application for a DCO to be determined by the Secretary of State.

Local Transport Plan (LTP)

The current LTP is the third local transport plan produced by the Council in April 2011, which sets out how the Council will deal with transport matters in and around Luton. It comprises two parts, namely:

• A long term Transport Strategy up to 2026. With regard to the transport affecting the, airport this sets out anticipated passenger numbers of between 15.5mppa and 18mppa by 2026, together with an additional 3,000 employees; and
• The Implementation Plan. This includes a number of key elements that are relevant to the airport, such as: a focus on smarter choices and travel by more sustainable modes; implementation of a new entrance from the north to Luton Airport Parkway Station; and an extension of Airport Way to serve planned employment sites to the east of the airport.

The Luton DART was not specifically mentioned in the LTP, but it will serve to improve access from Luton Airport Parkway Station to the airport as well as encouraging a modal shift away from the use of private cars to public transport.

The LTP strategy also refers to the role of the Airport Surface Access Strategy (ASAS) in promoting sustainable travel to the airport for both passengers and employees, and the Council will work with the airport operator to achieve this.