

# Noise Control Scheme London Luton Airport

August 2015



# Foreword

London Luton Airport (LLA) continues to place aircraft noise high on its agenda. We recognise the potential for our operations to disturb nearby communities and we strive to be a good neighbour to local people and businesses alike. As we look to deliver our investment and development programme in the coming years, the noise impacts associated with our operations will have to be carefully balanced with the significant social and economic benefits that the airport brings to the region. As part of this we are dedicated to actively engaging with our local community on noise now and in the future through the London Luton Airport Consultative Committee (LLACC).

LLACC is a structured community forum and provides the local community, businesses and interested parties alike with the opportunity to exchange information and to feed back this information to the Airport's management team.

In order to honour our commitments to minimise noise we have developed a full suite of control measures, which together form our Noise Control Scheme. This includes measures that respond to the planning conditions associated with our planning permission, a number of voluntary measures agreed in consultation with LLACC and some that follow best industry practice. The Noise Control Scheme has been

approved by Luton Borough Council and is subject to periodic review.

We have produced this document to give an overview of the noise control measures employed by LLA, and to provide you with information on our commitments to our local community. This scheme sits along side the Noise Action Plan, which was prepared in response to the Environmental Noise (England) Regulations 2006 and details 55 measures to ensure aircraft noise is managed at LLA.

**Neil Thompson**  
**Operations Director**



## Introduction

Improvements in aircraft design have significantly reduced the noise levels generated over the last few decades. Aircraft noise, however, still causes disturbance and is generally most evident during aircraft take off and landing (an aircraft movement) and at altitudes of up to 4,000 feet.

The way in which noise travels from a source is subject to a number of factors but essentially the loudness of aircraft noise decreases with distance and is subject to weather conditions and wind direction.

Sound is measured in decibels (dB), which is a logarithmic scale. In most conditions, a change in noise level of 1dB is considered to be just perceptible and 3dB as perceptible. A 10dB increase generally appears to sound twice as loud. Average noise levels above 57dB in the daytime and 48dB during the night-time are widely considered to be the point at which noise disturbance may occur.

To put these average levels in context, the 57 dB (average level) is similar to the common noise level found in England and Wales to which approximately 25% of the population is exposed.

Aircraft noise impact is generally treated differently during the daytime and the night-time.

Daytime noise in the aviation industry covers the period 0700 to 2300. Night-time noise covers the period 2300 to 0700. The period known as the 'Early Shoulder Period' between 0600 to 0700 is often subject to its own defined controls.





## Departure and arrival routes

### Departures

For operational and safety reasons, aircraft usually take off and land into the wind. When the wind comes from a westerly direction, departing aircraft take off towards the west, towards the M1, and when the wind comes from the east, aircraft take off eastwards, in the direction of Stevenage.

During take off, and up to 4,000 feet, a departing aircraft has the potential to generate its most significant noise impact. Noise Preferential Routes aim to reduce the noise impact from departing aircraft on surrounding communities by restricting the area over which aircraft are allowed to fly before reaching their required altitude to minimise the noise impact area.

In recognition of this, LLA has defined a reasonably practical minimum area (a Noise Preferential Route) over which aircraft are permitted to fly during the ascent to 3,000 feet during the day and 4,000 feet at night. The approved Noise Preferential Routes for departures

from LLA are shown in figures 1 and 2. These areas have been established in consultation with the Civil Aviation Authority, the Department for Transport and the LLACC.

All operational airlines at the airport are informed of, and provided with, details of these Noise Preferential Routes and are required to comply with these other than in exceptional circumstances such as adverse weather conditions or under direct instruction from Air Traffic Control for safety reasons. Airlines failing to comply are fined according to the penalty system outlined in our [Charges and Conditions of Use](#) (LLA's Track Violation Penalty System). All fines are put into the Community Trust Fund; a grant making programme managed by the Bedfordshire and Luton Community Foundation.



1	average daily departures	14
	percentage of all departures	10%
	daily range	0 - 33
	annual departures (daytime)	4,861
	annual departures (night-time)	161
	days with no departures	32%

All figures from 2014

2	average daily departures	35
	percentage of all departures	25%
	daily range	0 - 76
	annual departures (daytime)	12,029
	annual departures (night-time)	648
	days with no departures	32%

3	average daily departures	47
	percentage of all departures	33%
	daily range	0 - 90
	annual departures (daytime)	16,353
	annual departures (night-time)	778
	days with no departures	32%

## Arrivals

Arriving aircraft are required to land into the wind. The runway at LLA runs broadly east to west in line with the prevailing wind direction. When the wind comes from the west, arriving aircraft will approach the runway and land from the east; these operations are referred to as westerlies. When the wind comes from the east, aircraft will approach the runway from the west and this operation is known as easterlies. Typically prevailing wind directions result in an average split of 70% westerly operations and 30% easterly operations. Subject to weather conditions, amongst others, an area within a 40km radius of the airport may be overflowed. On final approach, aircraft arriving from the east will typically fly over Stevenage and Breachwood Green. Aircraft approaching from the west will typically fly over north Studham, Kensworth, Caddington and south Luton.

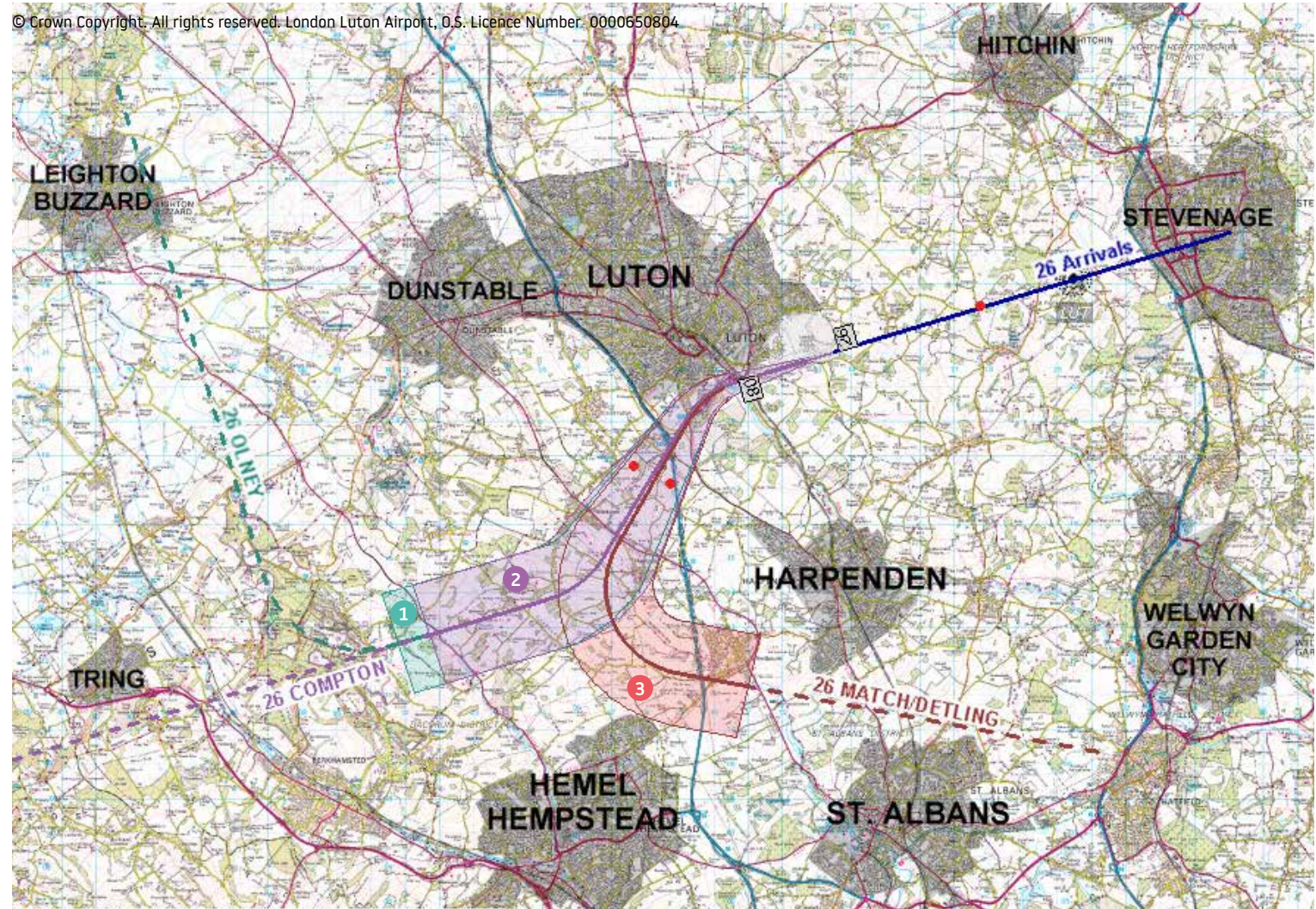


Figure 1: Arrival and departure routes during westerly operations



<b>1</b>	average daily departures	6	<b>2</b>	average daily departures	16	<b>3</b>	average daily departures	22
	percentage of all departures	4%		percentage of all departures	11%		percentage of all departures	15%
	daily range	0 - 30		daily range	0 - 76		daily range	0 - 101
	annual departures (daytime)	2,206		annual departures (daytime)	5,569		annual departures (daytime)	7,675
	annual departures (night-time)	72		annual departures (night-time)	301		annual departures (night-time)	411
	days with no departures	68%		days with no departures	68%		days with no departures	68%

All figures from 2014

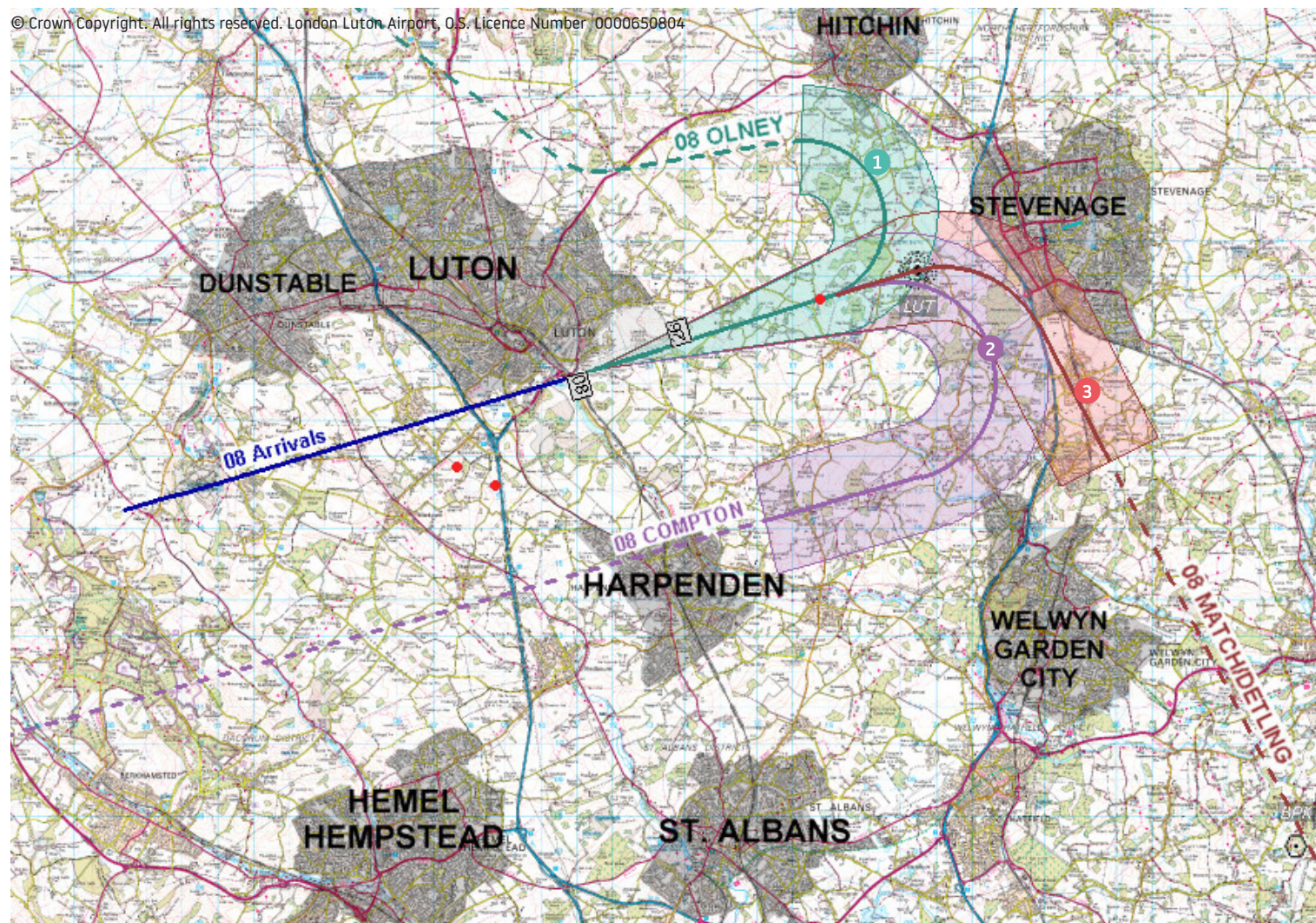


Figure 2: Arrival and departure routes during easterly operations

There are no clearly defined arrival tracks for arriving aircraft as approaching aircraft must carry out a stable approach so as not to jeopardise aircraft safety. However, during its final approach (approximately 7 nautical miles during the day and 10 nautical miles at night) and prior to landing, an aircraft aligns itself with the runway. The most significant noise generation during arrival is generally upon final approach i.e. at less than 3,000 feet with noise increasing with proximity to the ground.

To minimise this, aircraft are required to adopt a Continuous Descent Approach (CDA) where possible. Fundamentally CDA keeps an aircraft higher off the ground for longer, reduces thrust noise and

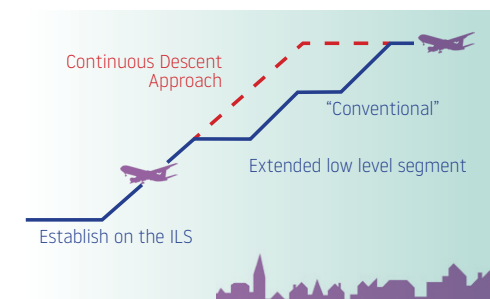


Figure 3: Continuous Descent Approaches



encourages a continuous steady descent (figure 3). This noise abatement technique for arriving aircraft typically results in noise reductions of approximately 5dB at locations between 10-25 nautical miles from touchdown. CDA compliance is monitored and around 85% of aircraft achieve the requirement.

## Track monitoring

Figure 4 is a plot density, depicting departure and arrival flight patterns. The colour coding from purple to red represents the frequency of aircraft flying directly overhead, with red indicating where operations are more densely concentrated. Overflights from other airports have not been included.

Aircraft movements are continually tracked by LLA using sophisticated noise and track monitoring software. TraVis is an online track visualisation flight tracking tool which can be used by local communities to view arriving and departing flights in their area. To use this online tool, please click on the following link:

<http://www.london-luton.co.uk/en/flighttracking/>

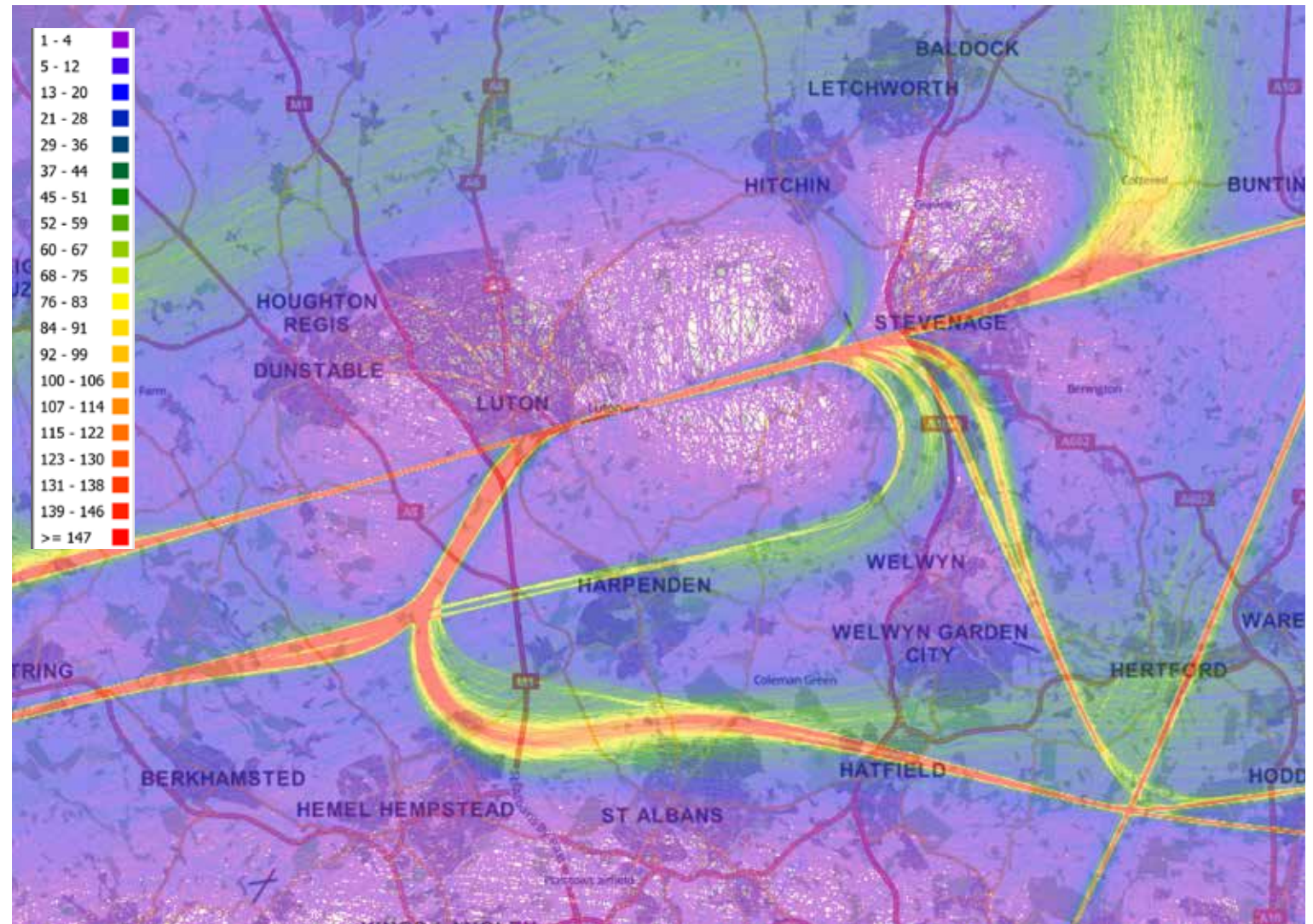


Figure 4: An illustration of the concentration of aircraft from London Luton Airport during the summer

## Airspace development

As congestion increases in the London airspace there is a need to increase the efficiency of aircraft movements, which in turn also reduces CO2 emissions and noise. The LLA departure and arrival routes are currently being reviewed as part of this to introduce modern navigation technology, allowing aircraft to fly a route more accurately. LLA will continue to update these routes in conjunction with the London Airspace Management Programme (LAMP). LAMP is re-designing the airspace around London in order to simplify its control and operation, to create capacity and to reduce environmental impact.

## Movement restrictions and quota count

Following the Government's practice at Stansted, Heathrow and Gatwick, aircraft operating at night are given a quota count rating determined from the aircraft manufacturer's noise certification test results.. Quieter aircraft have a lower quota count (QC), with some particularly quiet aircraft being exempt. The following

QC rated aircraft operate at LLA, with QC4 aircraft only operating occasionally during the daytime.

Noise Classification	Quota Count
Below 84 EPNdb <sup>1</sup>	Exempt
84-86.9 EPNdb	0.25
87-89.9 EPNdb	0.5
90-92.9 EPNdb	1
93-95.9 EPNdb	2
96-98.9 EPNdb	4

<sup>1</sup> The EPNdb is the 'effective perceived noise' level in decibels

The new QC system now employed at LLA is based on best practice that has been employed at Heathrow, Gatwick and Stansted airports for some time. It is designed to control the noise at night produced by aircraft movements.

Night-time noise can be particularly disturbing and can lead to sleep deprivation and sleep pattern disruption. Furthermore, noise generated during the night-time is often perceived to be louder in the absence of other daytime background noise.

<sup>2</sup> A 'movement' refers to an aircraft landing or take-off

<sup>3</sup> The 'Chapter' rating of an aircraft is determined by the noise levels it produces, based on a standard set by the ICAO (International Civil Aviation Organisation)

Since 2010 aircraft movements with a QC value of greater than 2 have been excluded during the night-time period.

Aircraft must also be Chapter 3 or above, and aircraft hush-kitted or modified to Chapter 3 <sup>3</sup> standards comply with this requirement. Furthermore flying training is not permitted between 20:00 and 08:00.

From October 2015 the airport is to be subject to a 3,500 night noise QC point limit, the QC value therefore indicating points per corresponding aircraft movement (e.g. 1,750 QC2 movements, or 3,500 QC 1 movements, or 7,000 QC0.5 movements). Aircraft are encouraged to operate during daytime hours through financial incentives. For example airline landing fees are increased during the night-time period.

The 3,500 night noise QC point is to be reduced at each review until it does not exceed 2,800 by 2028.

In addition to these restrictions, limits are also in place to control the total number of aircraft movements<sup>2</sup> during the night-time and Early Shoulder Period as follows:



Time Period	Total number of movements permitted per 12 month period
Night-time (2330 to 0600)	9,650
Early morning shoulder period (0600 to 0700)	7,000

## Noise monitoring and noise violation levels

Noise levels of departing aircraft are monitored from three locations 6.5km from start of roll on the runway.

Any aircraft departure exceeding the noise violations levels at these monitors will be surcharged according to the penalty system outlined in our [Charges and Conditions of Use](#).

**82dB(A) during the daytime** (07:00hrs – 23:00hrs)

**80dB(A) at night** (23:00hrs – 07:00hrs)

Further reductions to the noise violation levels are planned for 2020, down to 80dB(A) during the daytime and 79dB(A) at night. All fines are put into the Community Trust Fund, a grant making programme managed by the Bedfordshire and Luton Community Foundation.

## Noise contours

The flight paths of departing and arriving aircraft are recorded and monitored. Using calculations of average flight dispersal, height and speed we are able to produce noise contours to identify the average airborne noise levels with distance around the airport.

In the UK aircraft noise is measured by averaging out the noise levels during the day (a 16-hour day - 07:00-23:00) during the summer period and 8-hour night period 23:00-07:00.

Figures 5 and 6 show the daytime and night-time 'noise contour' maps for LLA and the surrounding area. The maps show the combined noise for all flights over a 92-day period in the summer. These noise maps are a graphic representation of the sound level distribution around the airport.

To manage residential amenity, the area within which the average noise level can exceed 57dBA is limited to 19.4 sq. km. during the daytime period. The area for which noise can exceed 48dB i.e. within the 48dB contour at night is restricted to

37.2 sq. km. Average noise levels are not permitted to exceed these levels outside of these areas.

Our ongoing aim is to encourage the use of quieter aircraft. To achieve this we intend to reduce the 57dB average daytime noise contour area to 15.2 sq. km. and the night-time noise to 31.6 sq. km. for the area exposed to 48dB and above by 2028.

Figures 5 and 6 overleaf show the noise contour area for 2014 for the night and day period.

## Ground noise

Aircraft ground noise is the noise generated by aircraft whilst on the ground during taxiing, engine testing or fuelling. Other sources of ground noise include surface access road traffic noise. The airport implements the following ground noise controls to reduce its noise impact:

- Between 2300 and 0700, preferential use of the southern stands rather than the northern stands which lie nearer to residential dwellings

- Encouraging airlines to taxi using only one engine
- Minimising the time spent by departing aircraft on taxiways
- An airline requirement to apply for the permission of LLA to conduct engine runs during the night-time period (2300-0559 on weekdays and 2300-0659 on Saturdays, Sundays and public holidays), and these are only granted in exceptional circumstances
- The ground running and testing of engines by airlines in areas approved by LLA only
- Minimise the use of auxiliary power units as far as possible.



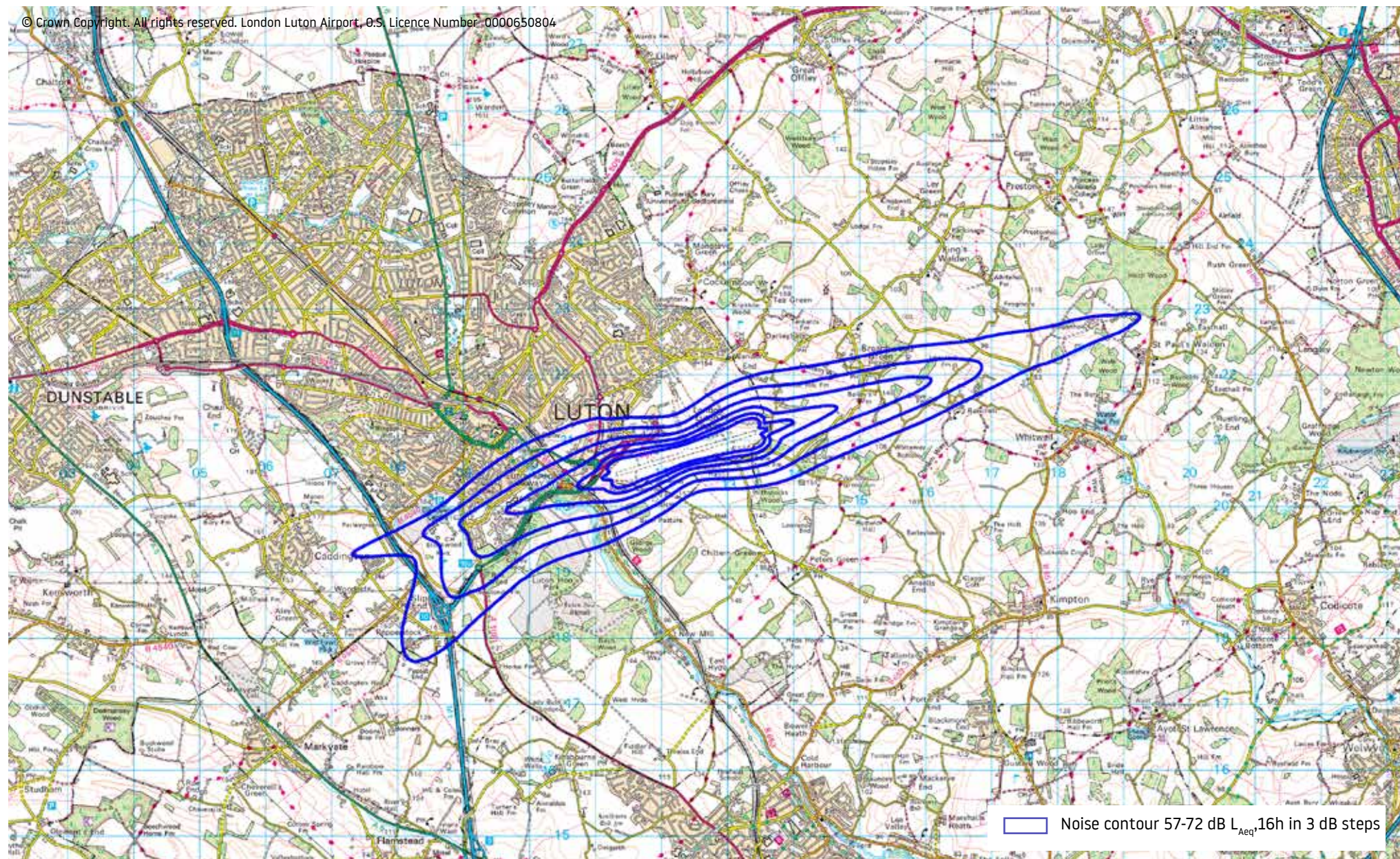


Figure 5: Summer daytime noise contours for 2014



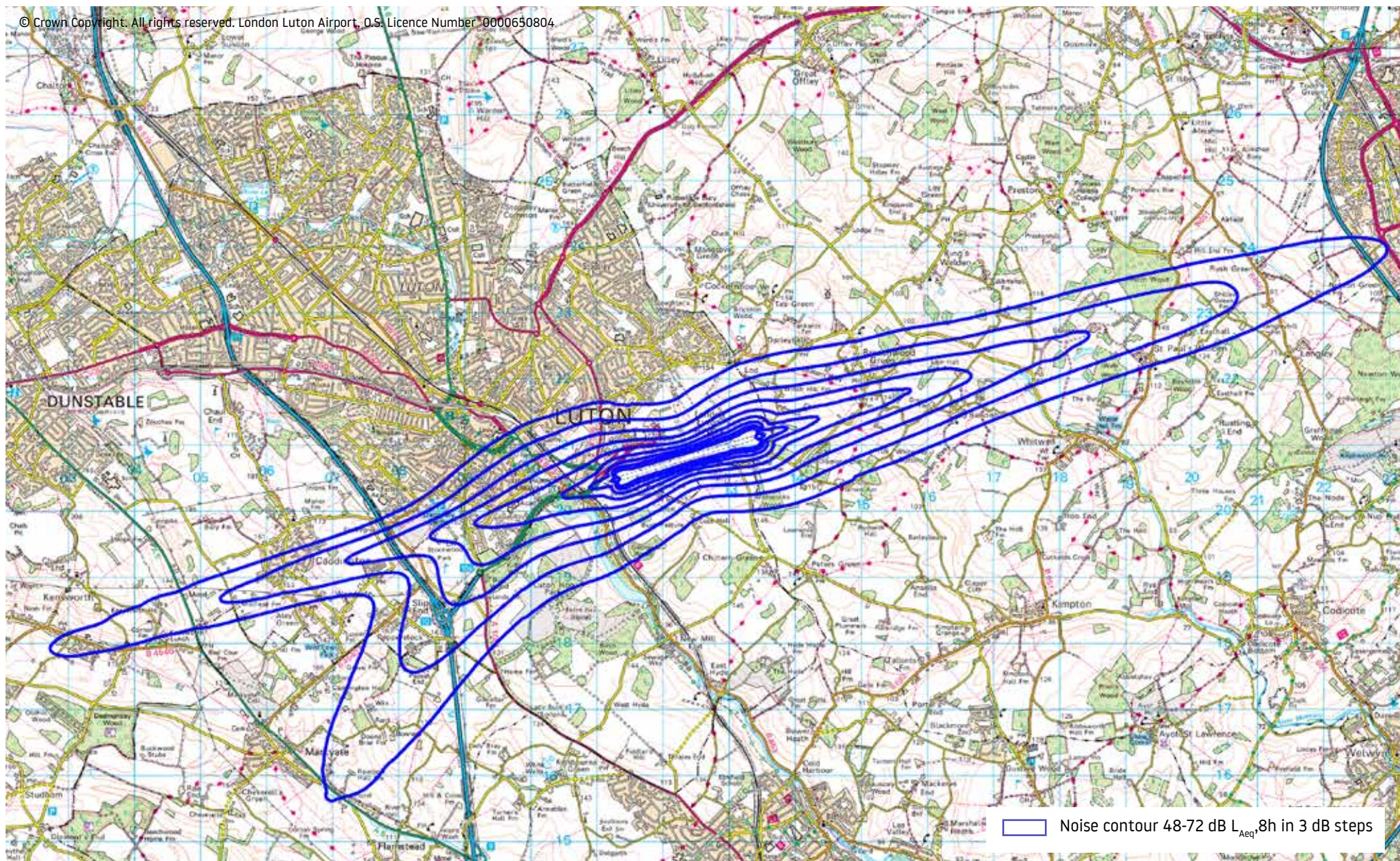


Figure 6: Summer night-time noise contours for 2014



## Noise insulation scheme

### Residential

In order to aid those households most affected by noise impact from the airport's operation, LLA provides a Residential Noise Insulation Fund to assist in reducing this. These may be residences experiencing disturbance due to the frequency of over flights and/or proximity to the airport. Residences which meet the following criteria are eligible for noise insulation.

### Airborne noise

Houses with habitable rooms within the 63dB daytime noise contour and/or bedrooms within the 55dB contour during the night-time from airborne traffic may be eligible to apply for noise insulation from the fund. Houses with habitable rooms with airborne noise levels regularly in excess of 90dB SEL during the night period will also be eligible.

### Ground noise

Houses with habitable rooms exposed externally to average daytime noise levels in excess of 55dB or 48dB during the night from ground noise sources may be eligible to apply for noise insulation from LLA's Residential Noise Insulation Fund.

### Non residential

LLA also operates a Non-Residential Noise Insulation Scheme for non-residential buildings which are exposed to the highest airborne noise levels by reference to the most recently published average summertime daytime and night-time noise contours.

Funding for noise insulation will be available from 2016, and a sub-group of LLACC will administer the scheme. LLA will contact residents and organisations directly if they are eligible, however if you would like further information please use the contact details provided at the end of this document.

## Reporting

An annual monitoring report is produced each June detailing noise contours relative to flight departure tracks and arrivals, total aircraft numbers, use of the continuous descent approach, breaches of noise limits or departure tracks and payments made from the noise insulation fund for the preceding 12 months. Access to the most recent annual monitoring report is available via the following link:

<http://www.london-luton.co.uk/en/content/8/243/annual-monitoring-report.html>

## Noise Action Plan

Under the Environmental Noise (England) Regulations 2006, as amended London Luton Airport Operation Ltd is required by the Department for Transport to produce a noise action plan for the airport. The action plan relates to limiting and where possible reducing noise associated with the airport for a five year period. Following consultation with members of the LLACC the action plan has been

adopted by the Secretary of State. LLA's Noise Action Plan for the period 2013 to 2018 can be found using the following link:

<http://www.london-lutoninthecommunity.co.uk/content/1/37/noise-action-plan.html>







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