

Community Noise Monitoring Kegworth, 31 January – 13 February 2012

Introduction

As a thriving regional airport, over 4 million passengers fly through East Midlands Airport each year. In addition, around 300,000 tonnes of mail and cargo are handled at the airport by logistics companies including DHL, UPS and Royal Mail. We are committed to our local communities, and understand that aircraft noise can be intrusive.

In response to requests from a local resident, the airport's Environment Department conducted noise monitoring at a residential property on Shepherd Walk, Kegworth. A noise monitor was installed between 31 January and 13 February 2012 with the aim of analysing noise levels in relation to UK Planning Policy Guidance concerning noise.

East Midlands Airport is equipped with one Runway which operates in two modes – Runway 09 (due east), and Runway 27 (due west). To ensure the safe operation of aircraft it is a requirement that take-offs and landings are performed into the wind, as such the active Runway mode is dictated by the prevailing wind direction.

As landing aircraft usually need to undertake a period of straight flight towards the airport's Runway, to safely reduce speed and altitude, it is not possible to re-route these operations and as a result when aircraft operate on Runway 27 (i.e. land from the east) they routinely overfly the village of Kegworth, and the monitoring location. Similarly, when operating on Runway 09, aircraft depart over Kegworth. In recent years the airport has operated a preferential Runway policy whereby aircraft continue to operate on Runway 27 even when there is a light easterly wind. This policy enables aircraft to continue to operate on Runway 27 and by implication to avoid aircraft departing from the airport over Kegworth. This policy has increased the proportion of westerly operations from typically 70% to more than 80%. The practical effect of this policy has been to reduce the number of aircraft departing over Kegworth by around one third.

Methodology

Noise monitoring equipment was installed in the garden of a residential property approximately 1.5km to the east of the airport, directly below the route flown by aircraft departing to or arriving from the east.

Noise levels were continuously monitored between 31 January and 13 February 2012. However, between approximately 1pm and 3pm on 8 February, no data was obtained due to technical issues.

In reviewing noise levels at the property, it is important to note that the noise monitoring equipment used detects noise events from all sources.

In relation to the collation of data, noise levels were recorded and are hereafter reported in A weighted decibels, dB(A), which seek to replicate the response of the human ear, with L_{Aeq} values representing the “average” noise energy over a given time period, and L_{Amax} figures being the highest or maximum noise level during a given time period or noise event.

All times hereafter are given in the 24hr format (HHMM), and refer to Greenwich Mean Time (GMT) unless otherwise stated. This report considers daytime hours to be from 0700-2300 (local time) and night hours to be from 2300-0700 (local time), this being consistent with UK Department for Environment, Food and Rural Affairs (DEFRA) best practice, UK PPG24 Planning Policy Guidance, and the published airport noise contour maps.

Results

A complete results dataset is attached as Appendix 1, this details hourly and period (i.e. day, or night) L_{Aeq} and L_{Amax} figures, and also indicates the Runway in use. Appendix 2 provides a useful summary of this data.

Discussion

Runway operation

During the sampling period, as would be expected, aircraft operated predominantly on Runway 27 (arriving over Kegworth). There were however a number of operations on Runway 09 which enabled noise levels to be analysed during periods of easterly winds with aircraft departing over Kegworth. Figure 1 demonstrates the percentage of operations in each Runway mode for each day and night period during the noise monitoring exercise. This graphic also demonstrates a number of periods during which only a very small percentage of operations were in an Easterly orientation, highlighting that Air Traffic Controllers at the airport were successful in applying our preferential Runway policy.



Figure 1. Operations by Runway (%) for day and night periods, 31 January to 13 February 2012.
Runway 09 = Dark Blue, Runway 27 = Light Blue.

LEQ and Planning Guidance Notes

In order to place these noise levels in context it is useful to consider the guidance provided by Planning Policy Guidance Note PPG24, Planning and Noise. Whilst this document applies to new developments it also provides a very useful context for this study.

PPG24 defines four noise exposure categories (NECs), detailed in table 2, which assumes a property is subject to a number of differing noise sources, the most sensitive case used by PPG24. Table 3 shows the distribution of these noise exposure categories in the day and night time periods, and figure 2 L_{Aeq} levels throughout the sampling period.

NEC	DAYTIME (LEQ)	NIGHT (LEQ)
A	<55 dB	<45 dB
B	55-63 dB	45-57 dB
C	63-72 dB	57-66 dB
D	>72 dB	>66 dB

Table 2. NEC Boundaries ('Mixed Source')

NEC	Runway 09			Runway 27		
	Day	Night	Total	Day	Night	Total
A	0	0	0	0	0	0
B	2	0	2	5	1	6
C	1	2	3	3	8	11
D	2	1	3	0	0	0

Table 3. Distribution of LEQ levels in relation to NEC categories.

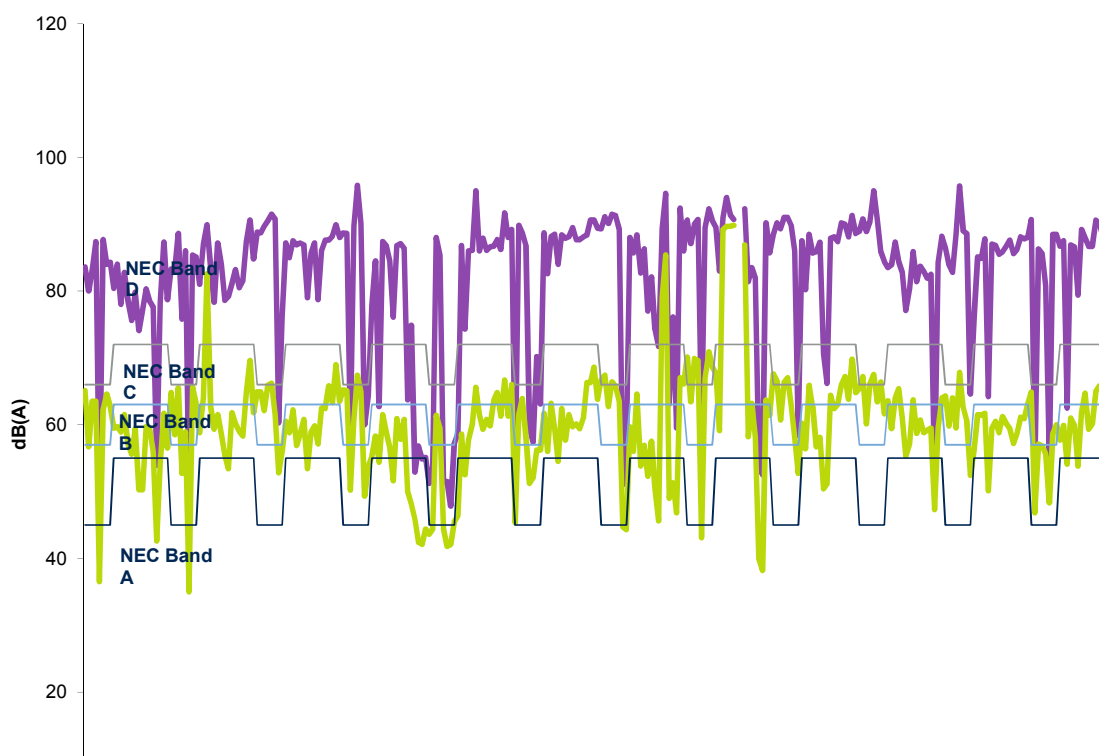


Figure 2. Hourly L_{Amax} (Purple) and L_{Aeq} (Green) values, with NEC bands (relating only to L_{Aeq}) labelled.

The above results show that when Runway 27 is in use, the sampling location is considered within NEC C during the vast majority of day and night time periods. However during periods of easterly winds and Runway 09 operations (approximately 20% of the time) the exposure categories are more widely spread from NEC B through to NEC D.

Within NEC A the guidance considers that *'Noise need not be considered as a determining factor in granting planning permission, although the noise level at the high end of the category should not be regarded as a desirable level'*.

Within NEC B the guidance considers that *'Noise should be taken into account when determining planning applications and, where appropriate, conditions imposed to ensure an adequate level of protection against noise'*.

Within NEC C the guidance considers that 'Planning permissions should not normally be granted. Where it is considered that permission should be given, for example because there are no alternative quieter sites available, conditions should be imposed to ensure a commensurate level of protection against noise'.

Within NEC D the guidance considers that 'Planning permissions should normally be refused'.

***L_{Amax}* Events**

The guidance in PPG24 also makes provision for areas that experience intermittent high noise events at night, such as aircraft operations, with the guidance noting that *'Sites where individual noise events regularly exceed 82 dB L_{Amax} in any hour should be treated as being in NEC C.'* Maximum noise values for each hour of day and night periods are detailed in Appendices 1 and 2.

Appendix 1 also specifies the aircraft type and origin/destination associated with the greatest *L_{Amax}* event of each period. A review of the aircraft types identified as being responsible for these period *L_{Amax}* events shows that they are generally wide bodied freight aircraft. These aircraft types are some of the largest aircraft operating at the airport and often serve long haul routes.

Total noise analysis

Appendix 3 summarises minimum, maximum and mean *L_{Aeq}* and *L_{Amax}* levels for operations on Runways 09 and 27. Analysis of the 24 hour day and of all operations (including both Runways 09 and 27) is also made. This table demonstrates that whilst average noise levels (*L_{Aeq}*) are greater when Runway 09 is in use, the maximum noise levels of individual events are actually greater when aircraft are arriving over the village.

Further investigation reveals that the common approach configurations associated with arriving aircraft result in more consistent noise profiles. The result of this is that the majority of noise events correlated to arriving aircraft result in an *L_{Amax}* of 90-95 dB and last around 20 seconds. Noise events from departing aircraft are however more variable in terms of *L_{Amax}*. Departing aircraft also produce a noise event of a longer duration, around 30 seconds. It is the increased duration of departing aircraft that results in a higher *L_{Aeq}* during easterly operations despite the higher maximum noise levels of arriving aircraft.

Conclusion

Night time noise levels at the monitoring location were found to be lower than those during the day. Although peak noise events are greater when aircraft are arriving over Kegworth, average noise levels were found to be higher during periods of Easterly wind when aircraft depart over the village. Considering LEQ values during both day and night time periods, and considering the 82 dB L_{Amax} provision made within PPG24, the monitoring location is assessed to fit into NEC C.

Further Information

For further information, or to review our wider environmental policies please visit www.eastmidlandsairport.com/environment or contact us:

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Appendix 1

	Hour Beginning	L _{Aeq} (dBA)	L _{Amax} (dBA)			
Night 31/01 - 01/02	23:00	65.1	83.6			
	00:00	56.7	80.0			
	01:00	63.5	83.3			
	02:00	63.5	87.4			
	03:00	36.5	47.9			
	04:00	62.3	87.7	Runway in use	09	
	05:00	64.6	84.0	L _{Amax} NIGHT (dB)	87.7	@ 04:58
	06:00	62.7	84.3	L _{Aeq,8h} NIGHT (dB)	62.6	B763 Departure to KPHL
Day 01/02	07:00	59.5	80.4			
	08:00	59.7	84.0			
	09:00	58.9	78.0			
	10:00	61.5	82.8			
	11:00	57.1	78.5			
	12:00	55.6	75.6			
	13:00	59.4	79.8			
	14:00	50.3	74.1			
	15:00	50.3	77.2			
	16:00	59.7	80.3			
	17:00	59.4	78.5			
	18:00	56.0	77.6			
	19:00	42.6	53.9			
	20:00	54.2	78.3	Runway in use	09	
	21:00	61.7	87.3	L _{Amax} DAY (dB)	87.3	@ 21:45
	22:00	56.5	78.7	L _{Aeq,16h} DAY (dB)	58.1	B76Y Departure to KCVG

	Hour Beginning	L _{Aeq} (dBA)	L _{Amax} (dBA)			
Night 01/02 - 02/02	23:00	64.8	83.3			
	00:00	58.5	83.0			
	01:00	65.5	88.6			
	02:00	52.7	75.8			
	03:00	58.9	86.0			
	04:00	35.0	46.9	Runway in use	09	
	05:00	65.6	85.4	L _{Amax} NIGHT (dB)	88.6	@ 01:52
	06:00	63.2	85.1	L _{Aeq,8h} NIGHT (dB)	62.4	B772 Departure to ZSPD
Day 02/02	07:00	58.8	81.0			
	08:00	64.1	87.1			
	09:00	82.6	89.9			
	10:00	62.7	83.6			
	11:00	59.3	78.3			
	12:00	61.5	87.2			
	13:00	58.6	84.0			
	14:00	55.4	78.6			
	15:00	53.4	79.2			
	16:00	61.8	81.1			
	17:00	60.1	83.2			
	18:00	59.0	80.5			
	19:00	58.3	81.5			
	20:00	64.8	87.4	Runway in use	09	
	21:00	69.6	90.6	L _{Amax} DAY (dB)	90.6	@ 21:56
	22:00	61.8	84.8	L _{Aeq,16h} DAY (dB)	71.1	B76Y Departure to KCVG

	Hour Beginning	L _{Aeq} (dBA)	L _{Amax} (dBA)			
Night 02/02 - 03/02	23:00	64.9	88.8			
	00:00	64.9	88.7			
	01:00	62.1	89.7			
	02:00	65.9	90.5			
	03:00	66.2	91.5			
	04:00	61.5	90.8	Runway in use	27	
	05:00	52.8	60.3	L _{Amax} NIGHT (dB)	91.5	@ 03:34
	06:00	56.0	76.3	L _{Aeq,8h} NIGHT (dB)	63.5	A300 Arrival from EDDP
Day 03/02	07:00	60.5	87.2			
	08:00	58.8	85.0			
	09:00	62.2	87.5			
	10:00	56.9	86.9			
	11:00	58.6	87.2			
	12:00	60.8	86.9			
	13:00	53.4	79.0			
	14:00	58.9	85.6			
	15:00	59.8	87.2			
	16:00	57.1	78.7			
	17:00	62.5	86.1			
	18:00	62.4	87.6			
	19:00	65.8	87.6			
	20:00	63.3	88.2	Runway in use	27	
	21:00	69.0	89.9	L _{Amax} DAY (dB)	89.9	@ 21:13
	22:00	63.5	88.0	L _{Aeq,16h} DAY (dB)	62.4	A300 Arrival from EIDW

	Hour Beginning	L _{Aeq} (dBA)	L _{Amax} (dBA)			
Night 03/02 - 04/02	23:00	65.2	88.7			
	00:00	65.1	88.6			
	01:00	50.2	58.4			
	02:00	60.8	89.7			
	03:00	67.4	95.8			
	04:00	64.9	90.1	Runway in use	27	
	05:00	49.3	60.0	L _{Amax} NIGHT (dB)	95.8	@ 03:55
	06:00	53.7	64.3	L _{Aeq,8h} NIGHT (dB)	63.2	B762 Departure to KCVG
Day 04/02	07:00	55.3	77.9			
	08:00	58.3	84.5			
	09:00	54.4	62.7			
	10:00	61.5	87.4			
	11:00	58.9	86.8			
	12:00	56.6	84.5			
	13:00	51.6	76.1			
	14:00	60.9	86.8			
	15:00	57.8	87.1			
	16:00	60.8	86.4			
	17:00	50.0	63.7			
	18:00	48.1	74.9			
	19:00	45.9	52.9			
	20:00	42.4	56.8	Runway in use	27	
	21:00	42.1	54.9	L _{Amax} DAY (dB)	87.4	@ 10:25
	22:00	44.4	55.1	L _{Aeq,16h} DAY (dB)	56.6	No correlated flight

	Hour Beginning	L _{Aeq} (dBA)	L _{Amax} (dBA)		
Night 04/02 - 05/02	23:00	43.6	51.2		
	00:00	44.4	53.6		
	01:00	61.4	88.0		
	02:00	59.4	85.3		
	03:00	44.4	51.4		
	04:00	41.8	51.5	Runway in use	27
	05:00	42.1	47.8	L _{Amax} NIGHT (dB)	88.0 @ 01:27
	06:00	45.5	57.2	L _{Aeq,8h} NIGHT (dB)	54.8 B76Y Arriving from EIDW
Day 05/02	07:00	46.4	58.6		
	08:00	58.6	86.8		
	09:00	52.5	74.3		
	10:00	57.7	86.0		
	11:00	60.1	86.1		
	12:00	65.6	95.0		
	13:00	61.5	86.0		
	14:00	59.3	87.9		
	15:00	60.8	86.1		
	16:00	59.8	86.6		
	17:00	63.6	86.7		
	18:00	64.8	87.7		
	19:00	61.3	86.2		
	20:00	66.7	91.7	Runway in use	27
	21:00	61.3	88.0	L _{Amax} DAY (dB)	95.0 @ 12:14
	22:00	66.0	89.2	L _{Aeq,16h} DAY (dB)	62.3 B742 Arriving from HSSS

	Hour Beginning	L _{Aeq} (dBA)	L _{Amax} (dBA)		
Night 05/02 - 06/02	23:00	45.3	52.2		
	00:00	61.5	89.8		
	01:00	63.9	88.6		
	02:00	58.2	86.8		
	03:00	51.2	59.4		
	04:00	52.1	57.4	Runway in use	27
	05:00	56.2	70.2	L _{Amax} NIGHT (dB)	89.8 @ 00:07
	06:00	56.2	63.1	L _{Aeq,8h} NIGHT (dB)	58.5 A300 Arriving from EDDP
Day 06/02	07:00	61.7	88.7		
	08:00	56.0	82.6		
	09:00	63.2	88.1		
	10:00	59.5	88.5		
	11:00	54.5	84.0		
	12:00	62.4	88.4		
	13:00	57.7	87.9		
	14:00	61.5	88.1		
	15:00	59.7	89.5		
	16:00	60.1	87.7		
	17:00	59.4	87.7		
	18:00	61.0	88.1		
	19:00	66.3	88.4		
	20:00	66.3	90.6	Runway in use	27
	21:00	68.6	90.6	L _{Amax} DAY (dB)	90.6 @ 20:52 & 21:52
	22:00	63.8	89.4	L _{Aeq,16h} DAY (dB)	62.9 ATP Arriving from EGPD & B75F Arriving from EGPB

	Hour Beginning	L _{Aeq} (dBA)	L _{Amax} (dBA)			
Night 06/02 - 07/02	23:00	66.7	89.3			
	00:00	67.4	91.1			
	01:00	62.7	90.1			
	02:00	66.4	91.5			
	03:00	65.7	91.3			
	04:00	63.5	89.2	Runway in use	27	
	05:00	44.7	51.0	L _{Amax} NIGHT (dB)	91.5	@ 02:37
	06:00	44.3	56.1	L _{Aeq,8h} NIGHT (dB)	64.5	A300 Arriving from EBBR
Day 07/02	07:00	59.7	88.0			
	08:00	56.0	85.7			
	09:00	64.6	88.4			
	10:00	53.8	82.7			
	11:00	56.9	86.3			
	12:00	52.3	77.0			
	13:00	57.5	82.1			
	14:00	50.6	74.2			
	15:00	45.6	71.7			
	16:00	79.1	89.4			
	17:00	85.4	94.6			
	18:00	49.0	63.1			
	19:00	51.3	76.1			
	20:00	46.8	59.5	Runway in use	09	
	21:00	67.0	92.4	L _{Amax} DAY (dB)	94.6	@ 17:41
	22:00	66.1	86.0	L _{Aeq,16h} DAY (dB)	74.4	B738 Arriving from LIPH

	Hour Beginning	L _{Aeq} (dBA)	L _{Amax} (dBA)			
Night 07/02 - 08/02	23:00	70.1	90.6			
	00:00	63.4	87.1			
	01:00	69.9	90.0			
	02:00	69.6	90.7			
	03:00	43.1	59.6			
	04:00	67.0	89.5	Runway in use	09	
	05:00	70.9	92.3	L _{Amax} NIGHT (dB)	92.3	@ 05:16
	06:00	68.6	90.5	L _{Aeq,8h} NIGHT (dB)	68.4	No correlated flight
Day 08/02	07:00	67.7	89.5			
	08:00	59.1	83.0			
	09:00	89.2	91.0			
	10:00	89.7	94.0			
	11:00	89.7	91.4			
	12:00	89.8	90.7			
	13:00	ND	ND			
	14:00	ND	ND			
	15:00	86.9	92.3			
	16:00	58.2	81.4			
	17:00	63.2	83.5			
	18:00	58.2	81.9			
	19:00	39.8	54.2			
	20:00	38.2	52.5	Runway in use	09	
	21:00	63.7	90.2	L _{Amax} DAY (dB)	94.0	@ 10:09
	22:00	61.4	85.7	L _{Aeq,16h} DAY (dB)	84.7	B738 Training to/from EGNX

	Hour Beginning	L _{Aeq} (dBA)	L _{Amax} (dBA)		
Night 08/02 - 09/02	23:00	67.6	88.4		
	00:00	66.5	90.2		
	01:00	60.7	89.3		
	02:00	66.3	91.0		
	03:00	67.0	91.0		
	04:00	62.9	89.8	Runway in use	27
	05:00	58.1	86.0	L _{Amax} NIGHT (dB)	91.0 @ 02:46 & 03:58
	06:00	52.7	58.4	L _{Aeq,8h} NIGHT (dB)	64.7 A300 Arriving from EBBR & A300 Arriving from EDDP
Day 09/02	07:00	60.2	87.5		
	08:00	56.4	80.2		
	09:00	65.9	88.5		
	10:00	62.6	85.7		
	11:00	56.7	85.9		
	12:00	58.1	87.3		
	13:00	50.4	70.6		
	14:00	51.2	66.2		
	15:00	64.4	87.9		
	16:00	62.4	88.1		
	17:00	63.0	87.4		
	18:00	66.0	90.2		
	19:00	67.2	90.0		
	20:00	63.8	88.1	Runway in use	27
	21:00	69.8	91.3	L _{Amax} DAY (dB)	91.3 @ 21:12
	22:00	64.8	88.6	L _{Aeq,16h} DAY (dB)	63.9 B733 Departing to EGAA

	Hour Beginning	L _{Aeq} (dBA)	L _{Amax} (dBA)			
Night 09/02 - 10/02	23:00	65.4	88.9			
	00:00	67.2	90.8			
	01:00	60.1	88.9			
	02:00	66.2	90.4			
	03:00	67.5	95.0			
	04:00	63.4	90.7	Runway in use	27	
	05:00	66.4	85.9	L _{Amax} NIGHT (dB)	95.0	@ 03:43
	06:00	61.6	84.4	L _{Aeq,8h} NIGHT (dB)	65.4	No correlated flight
Day 10/02	07:00	63.6	83.5			
	08:00	59.4	83.9			
	09:00	63.9	87.3			
	10:00	65.4	84.4			
	11:00	61.0	82.8			
	12:00	55.3	77.1			
	13:00	57.2	80.4			
	14:00	63.7	85.9			
	15:00	58.7	81.4			
	16:00	60.7	83.7			
	17:00	58.8	82.9			
	18:00	59.2	81.9			
	19:00	59.5	82.5			
	20:00	47.3	51.6	Runway in use	09	
	21:00	59.5	84.3	L _{Amax} DAY (dB)	88.2	@ 22:56
	22:00	64.0	88.2	L _{Aeq,16h} DAY (dB)	61.3	A300 Departing to EDDP

	Hour Beginning	L _{Aeq} (dBA)	L _{Amax} (dBA)			
Night 10/02 - 11/02	23:00	64.3	86.5			
	00:00	59.8	83.9			
	01:00	64.0	82.8			
	02:00	59.5	88.5			
	03:00	67.8	95.7			
	04:00	62.6	89.0	Runway in use	09	
	05:00	60.6	88.6	L _{Amax} NIGHT (dB)	95.7	@ 03:54
	06:00	52.4	64.6	L _{Aeq,8h} NIGHT (dB)	63.1	B76Y Departing to KCVG
Day 11/02	07:00	56.0	76.2			
	08:00	61.5	85.1			
	09:00	61.4	84.9			
	10:00	61.7	87.8			
	11:00	50.1	64.2			
	12:00	59.5	87.0			
	13:00	60.5	86.8			
	14:00	58.8	85.5			
	15:00	61.2	85.9			
	16:00	60.2	86.7			
	17:00	59.4	87.6			
	18:00	57.2	85.6			
	19:00	58.7	86.2			
	20:00	61.1	88.1	Runway in use	27	
	21:00	60.9	87.8	L _{Amax} DAY (dB)	88.1	@ 20:07
	22:00	63.1	88.0	L _{Aeq,16h} DAY (dB)	60.2	B733 Arriving from LFLB

	Hour Beginning	L _{Aeq} (dBA)	L _{Amax} (dBA)			
Night 11/02 - 12/02	23:00	64.9	90.7			
	00:00	46.8	52.5			
	01:00	57.1	86.3			
	02:00	56.8	85.6			
	03:00	55.6	80.8			
	04:00	48.3	55.6	Runway in use	27	
	05:00	58.7	88.5	L _{Amax} NIGHT (dB)	90.7	@ 23:09
	06:00	60.0	88.5	L _{Aeq,8h} NIGHT (dB)	59.0	ATP Arriving from EGPD
Day 12/02	07:00	57.7	86.7			
	08:00	59.9	87.5			
	09:00	54.1	62.5			
	10:00	61.0	86.9			
	11:00	59.9	86.6			
	12:00	53.8	79.4			
	13:00	61.9	89.2			
	14:00	64.7	87.9			
	15:00	59.3	86.7			
	16:00	60.1	86.7			
	17:00	65.0	90.6			
	18:00	65.8	90.1			
	19:00	64.5	88.1			
	20:00	65.1	91.6	Runway in use	27	
	21:00	69.0	95.2	L _{Amax} DAY (dB)	95.2	@ 21:44
	22:00	58.0	87.4	L _{Aeq,16h} DAY (dB)	63.0	B763 Arriving from KPHL

	Hour Beginning	L _{Aeq} (dBA)	L _{Amax} (dBA)			
Night 12/02 - 13/02	23:00	64.3	91.5			
	00:00	61.2	88.2			
	01:00	60.3	88.6			
	02:00	60.9	90.0			
	03:00	50.1	61.5			
	04:00	53.6	60.2	Runway in use	27	
	05:00	56.9	70.4	L _{Amax} NIGHT (dB)	91.5	@ 23:48
	06:00	59.7	65.1	L _{Aeq,8h} NIGHT (dB)	60.0	A300 Arriving from EDDP
Day 13/02	07:00	62.9	88.2			
	08:00	63.7	87.3			
	09:00	64.8	90.5			
	10:00	63.4	89.0			
	11:00	58.3	82.0			
	12:00	62.4	88.4			
	13:00	61.0	89.3			
	14:00	59.1	84.9			
	15:00	62.7	88.8			
	16:00	62.6	87.9			
	17:00	59.9	86.5			
	18:00	61.5	86.6			
	19:00	66.9	88.7			
	20:00	65.5	88.1	Runway in use	27	
	21:00	67.3	91.1	L _{Amax} DAY (dB)	91.1	@ 21:38
	22:00	66.5	91.0	L _{Aeq,16h} DAY (dB)	63.8	B763 Arriving from EGAA

Code	Airport
EBBR	Brussels
EDDP	Leipzig
EGAA	Belfast International
EGNX	East Midlands Airport
EGPD	Aberdeen
EGPH	Edinburgh
EIDW	Dublin
HSSS	Khartoum
KCVG	Cincinnati
KPHL	Philadelphia
LFLB	Chambery
LIPH	Treviso
ZSPD	Shanghai

Code	Aircraft
A300	Airbus A300F
ATP	Advanced Turbo Prop
B733	Boeing 737-300
B738	Boeing 737-800
B742	Boeing 747-200
B75F	Boeing 757F
B762	Boeing 767-200F
B763	Boeing 767-300
B76Y	Boeing 767-300F
B772	Boeing 777-200F

Appendix 2

Date	Period	Runway in Use	L _{Aeq} (dBA)	NEC	L _{Amax} (dBA)	Adjusted NEC
31 Jan - 1 Feb	Night	09	62.6	C	87.7	C
1 Feb	Day	09	58.1	B	87.3	C
1 - 2 Feb	Night	09	62.4	C	88.6	C
2 Feb	Day	09	71.1	C	90.6	C
2 - 3 Feb	Night	27	63.5	C	91.5	C
3 Feb	Day	27	62.4	B	89.9	C
3 - 4 Feb	Night	27	63.2	C	95.8	C
4 Feb	Day	27	56.6	B	87.4	C
4 - 5 Feb	Night	27	54.8	B	88	C
5 Feb	Day	27	62.3	B	95	C
5 - 6 Feb	Night	27	58.5	C	89.8	C
6 Feb	Day	27	62.9	B	90.6	C
6 - 7 Feb	Night	27	64.5	C	91.5	C
7 Feb	Day	09	74.4	D	94.6	D
7 - 8 Feb	Night	09	68.4	D	92.3	D
8 Feb	Day	09	84.7	D	94	D
8 - 9 Feb	Night	27	64.7	C	91	C
9 Feb	Day	27	63.9	C	91.3	C
9 - 10 Feb	Night	27	65.4	C	95	C
10 Feb	Day	09	61.3	B	88.2	C
10 - 11 Feb	Night	09	63.1	C	95.7	C
11 Feb	Day	27	60.2	B	88.1	C
11 - 12 Feb	Night	27	59.0	C	90.7	C
12 Feb	Day	27	63.0	C	95.2	C
12 - 13 Feb	Night	27	60.0	C	91.5	C
13 Feb	Day	27	63.8	C	91.1	C

Appendix 3

Total Noise Levels - L_{AeqT} (dBA)									
	Runway 09			Runway 27			All operations		
	Day	Night	24hrs	Day	Night	24hrs	Day	Night	24hrs
Min	42.6	35.0	35.0	42.1	41.8	41.8	38.2	35.0	35.0
Max	89.8	70.9	89.8	69.8	67.8	69.8	89.8	70.9	89.8
Average	79.6	65.1	76.7	62.5	62.4	62.4	73.9	63.5	72.3
Total Noise Levels - L_{AmaxT} (dBA)									
Min	53.9	46.9	46.9	52.9	47.8	47.8	51.6	46.9	46.9
Max	94.6	92.3	94.6	95.2	95.8	95.8	95.2	95.8	95.8
Average	86.1	86.9	86.1	87.5	88.3	87.8	87.0	87.9	87.3