LONDON LUTON AIRPORT

A9457-N24-NW

29 November 2016

ACTUAL 2016 AND FORECAST 2017 SUMMER NOISE CONTOURS

1.0 INTRODUCTION

When planning permission was given in 2014 for development at Luton Airport (Application No: 12/01400/FUL) 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 ATM data, and for the following summer period based on predicted ATM data. The areas of these contours are to be compared to the limits contained in Condition 12.

Luton Airport Operations Limited (LLAOL) have retained Bickerdike Allen Partners (BAP) to produce airborne aircraft noise contours for the 92 day summer period based on the actual movements for 2016.

LLAOL have also provided BAP with forecast movements for 2017. Using these, forecast summer contours have been produced.

The resulting contours for 2016 and 2017 provide part of the information required to comply with Condition 12. Also required is information on the current QC Annual Budget for 2016, which will be determined once the year is complete.

2.0 CONTOUR PRODUCTION

Aircraft movement data for use in the contour production has been supplied by LLAOL. The contour production methodology is the same as that used for the quarterly night noise contours for 2016. That is, with the inclusion of terrain, the latest INM software (Version 7.0d) has been used with a validation based on measured results in 2015 at the fixed noise monitors.

The methodology is similar to that used for the 2015 summer contours. The only difference is described in the note A9457-N22-NW, and relates to the latest measured results, used for the validation, being for 2015 instead of 2014.

3.0 NOISE CONTOUR RESULTS

The resulting noise contours for 2016 and 2017 are shown in the attached Figures A9457-N24-01 to A9457-N24-04. They are presented at values from 57 to 72 dB $L_{Aeq,16h}$ (daytime) and 48 to 72 dB $L_{Aeq,8h}$ (night time). The area of each noise contour is given in Table 1 (daytime) and Table 2 (night time), and compared with the corresponding values for the 2015.

The modal split for summer 2016 was 84% westerly and 16% easterly, compared with 77% westerly and 23% easterly in summer 2015. In terms of movements, the daytime movements increased from 29,679 in 2015 to 32,584 in 2016. Night time movements also increased from 4,376 to 4,945. There have been some slight changes in aircraft mix, with the proportion of daytime movements by the Airbus A321 increasing from 2015 to 2016 at the expense of those for the Airbus A319 and A320, similarly the proportion of night time movements by the Airbus A320 has increased at the expense of those for the Boeing 737-400, Airbus A306 and Airbus A319.

In 2017, the average modal split from the 5 preceding years has been used, which results in 75% of movements using runway 26. This has been applied equally to each aircraft type. Compared to 2016, the aircraft mix is forecast to be similar, with a slight shift from Airbus A319s to A320s and A321s. There is a forecast increase in movement numbers of 8% in both the daytime and night time periods.

Contour Value (dB $L_{Aeq,16h}$)	Contour Area (km^2)		
	2015	2016	2017 (forecast)
57	17.2	19.2	20.7
60	9.0	10.6	11.2
63	4.9	6.2	6.3
66	2.5	3.2	3.3
69	1.5	1.7	1.8
72	0.9	1.0	1.1

Table 1: Area of Daytime Summer Noise Contours, 2015, 2016 and 2017 (forecast)

Considering the 57 dB $L_{Aeq,16h}$ daytime noise contour there is an increase in area of approximately 12% when comparing the 2016 contour with the 2015 contour. This is generally in line with what would be expected based on the increase in movement numbers.

A comparison of 2015, 2016 and 2017 forecast daytime 57 dB $L_{Aeq,16h}$ contours is shown in Figure A9457-N24-05. This shows that the 2016 contour is marginally larger than the 2015 contour at the eastern end towards Stevenage, marginally smaller at the western edge near Caddington, and larger in the south-western lobe ending near Markyate. This variation of effects is largely due to the change in modal split.

The 2017 contours are forecast to grow by 6 to 8% compared to the 2016 contours at the lower values, and by a smaller amount at the higher values. This is largely due to a forecast 8% increase in movement numbers. At 57 dB $L_{Aeq,16h}$ the 2017 contour is a similar shape but slightly larger than the 2016 contour.

Contour Value (dB $L_{Aeq,8h}$)	Contour Area (km^2)		
	2015	2016	2017 (forecast)
48	35.3	36.5	40.2
51	20.2	20.7	23.6
54	10.8	11.5	12.9
57	5.7	6.3	6.9
60	3.0	3.3	3.7
63	1.7	1.7	2.0
66	1.0	1.0	1.2
69	0.6	0.6	0.8
72	0.4	0.4	0.5

Table 2: Area of Night Time Summer Noise Contours, 2015, 2016 and 2017 (forecast)

Considering the 48 dB $L_{Aeq,8h}$ night time noise contour there is an increase in area of approximately 3% when comparing the 2016 contour with the 2015 contour, while some of the higher value contours, 54 to 60 dB $L_{Aeq,8h}$, have increased in area by around 10%. This is largely due to the increase in movement numbers, although the departure movements, which make the most noise, have remained similar, with the increase comprising mainly arrivals.

The 48 dB $L_{Aeq,8h}$ 2017 contour is forecast to grow by 10% compared to the 2016 contour. This is largely due to a forecast 8% increase in movement numbers.

A comparison of 2015, 2016 and 2017 night time 48 dB $L_{Aeq,8h}$ contours is shown in Figure A9457-N24-06. This shows that the 2016 contour is larger than the 2015 contour at the eastern end near Stevenage, but smaller at the western end near Caddington. This is largely due to the change in modal split. The contour is a similar size and shape at the south-western end south of Markyate.

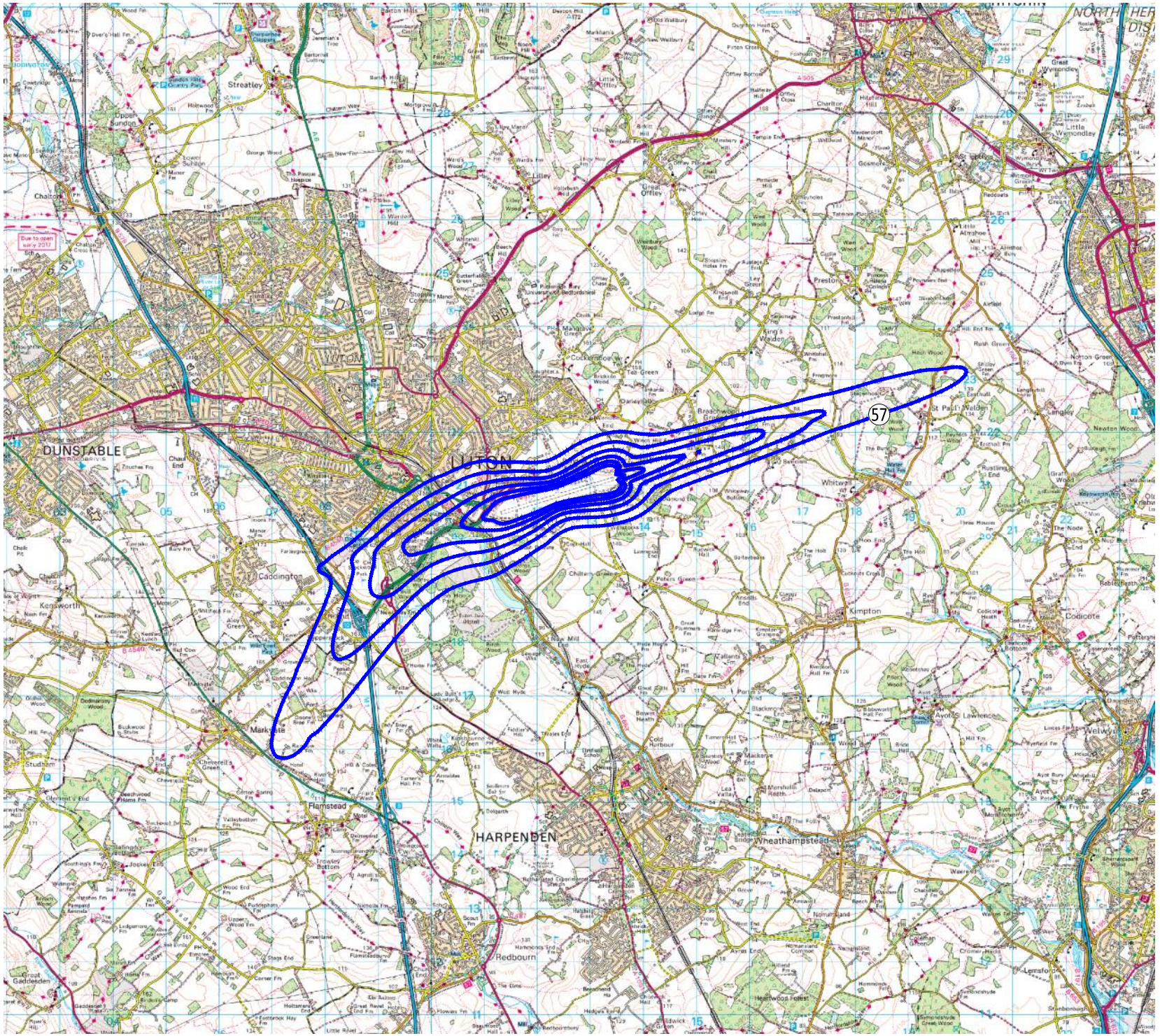
The 2017 forecast contour is larger than the 2016 contour except at the eastern end where it is smaller, again this is due to the change in modal split

4.0 SUMMARY

As can be seen from in Table 1 the area of the daytime 57 dB $L_{Aeq,16h}$ contour has increased by approximately 12% from 2015 to 2016. This is largely due to the increase in movements. The area of the 57 dB $L_{Aeq,16h}$ contour is forecast to increase by 8% between 2016 and 2017. This is also largely due to the increase in movements. The resulting 57 dB $L_{Aeq,16h}$ contour for 2017 has an area of 20.7 km^2, above the planning limit of 19.4 km^2, although the 2016 contour was within the limit.

Table 2 shows the area of the night time 48 dB $L_{Aeq,8h}$ contour has increased by approximately 3% from 2015 to 2016. This is due to the increase in arrival movements, while departure movements have remained similar. An increase of 10% is forecast between 2016 and 2017, attributed to the increase in movement numbers. The resulting 48 dB $L_{Aeq,8h}$ contour for 2017 has an area of 40.2 km^2, above the planning limit of 37.2 km^2, although the 2016 contour was within the limit.

Nick Williams	**David Charles**	**Peter Henson**
for Bickerdike Allen Partners	**Associate**	**Partner**



LEGEND:

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

REVISIONS

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London Luton Airport
Regular Contouring

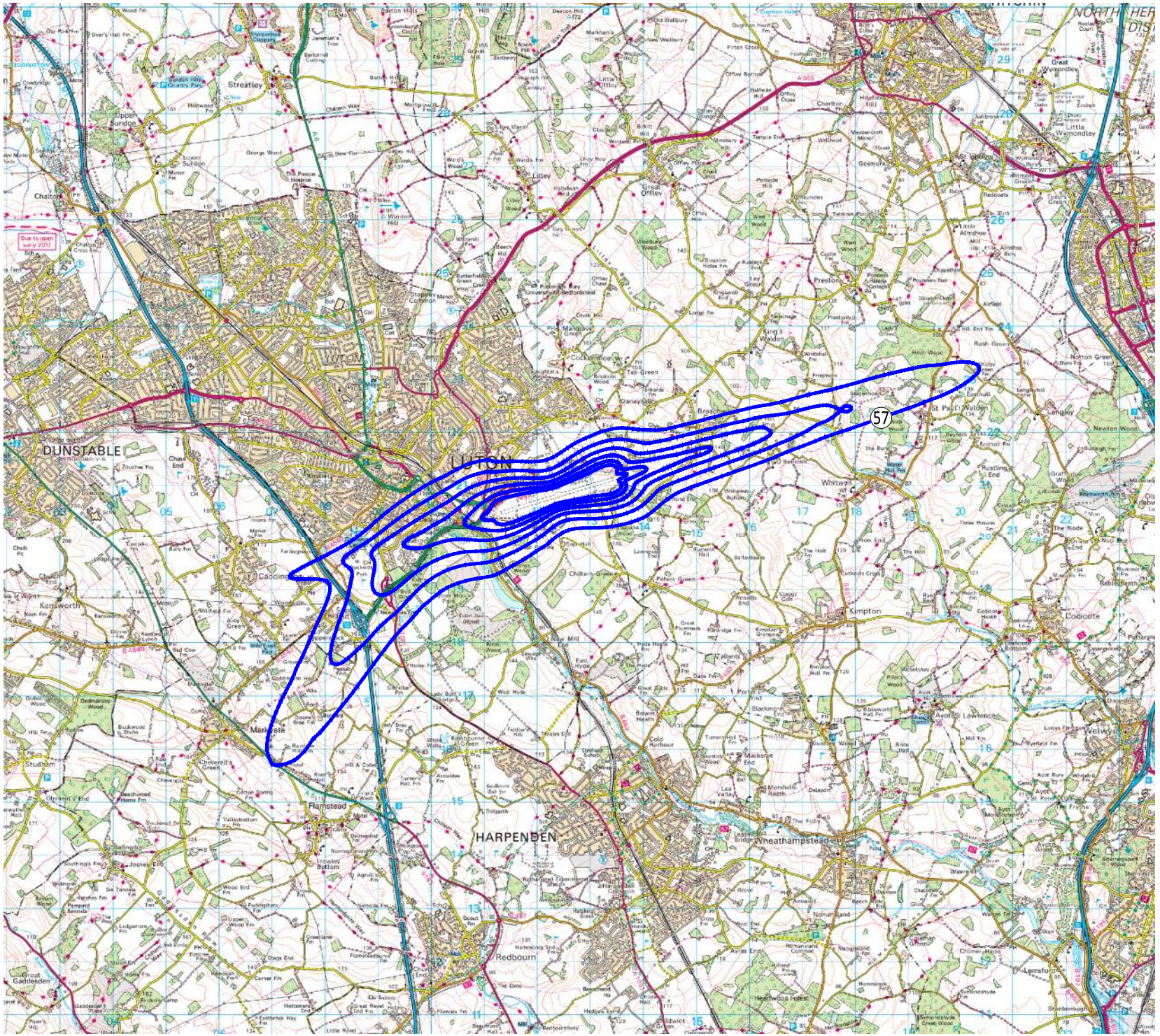
Airborne Aircraft Noise Contours
2016 Summer Actual Daytime

DRAWN: NW CHECKED: DC

DATE: November 2016 SCALE: 1:100000@A4

FIGURE No:

A9457/N24/01



LEGEND:

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

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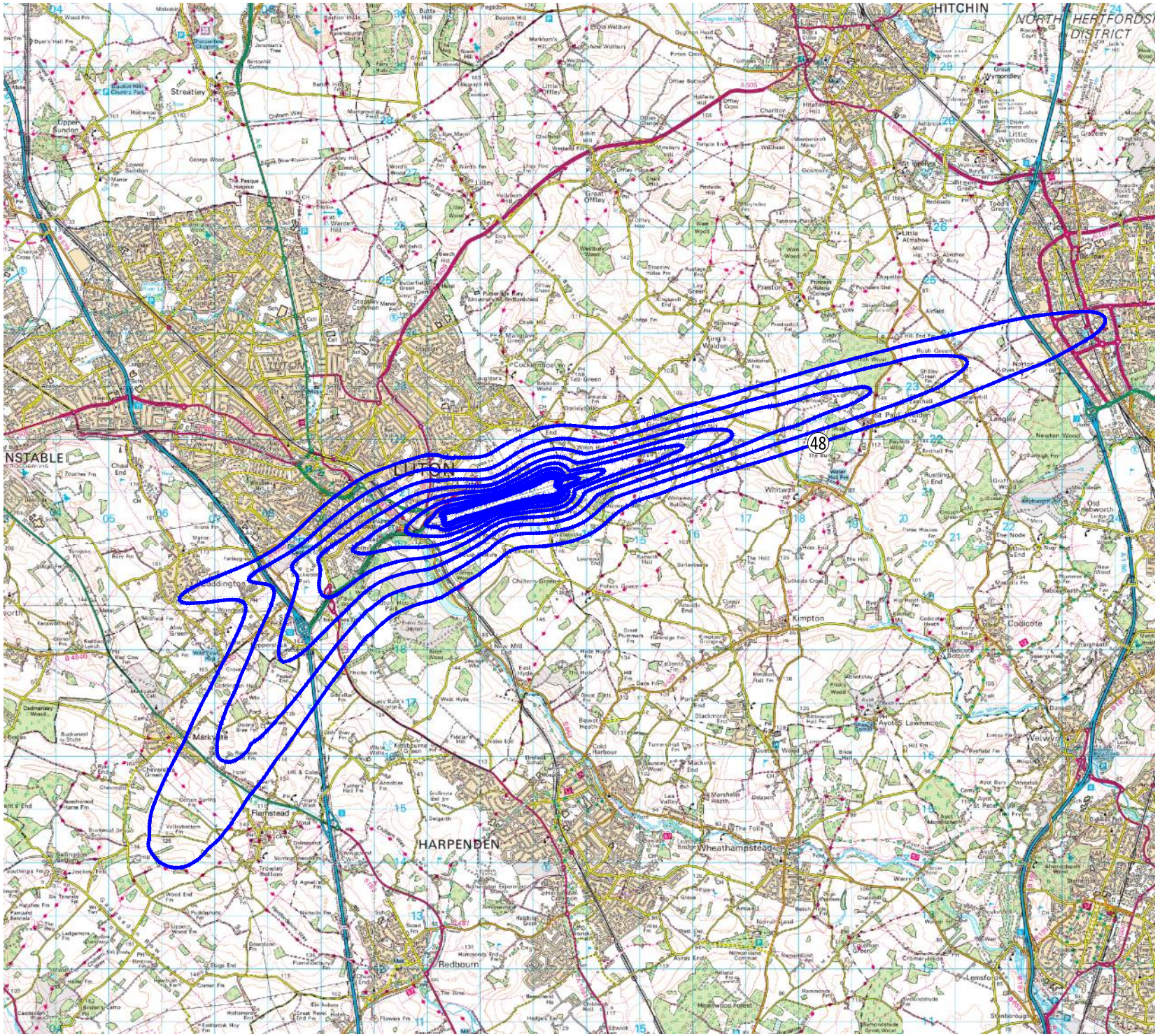
Airborne Aircraft Noise Contours
2017 Summer Forecast Daytime

DRAWN: NW CHECKED: DC

DATE: November 2016 SCALE: 1:100000@A4

FIGURE No:

A9457/N24/02



LEGEND:

Noise Contours,
48 to 72 dB $L_{Aeq,8h}$ in 3 dB steps

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London Luton Airport
Regular Contouring

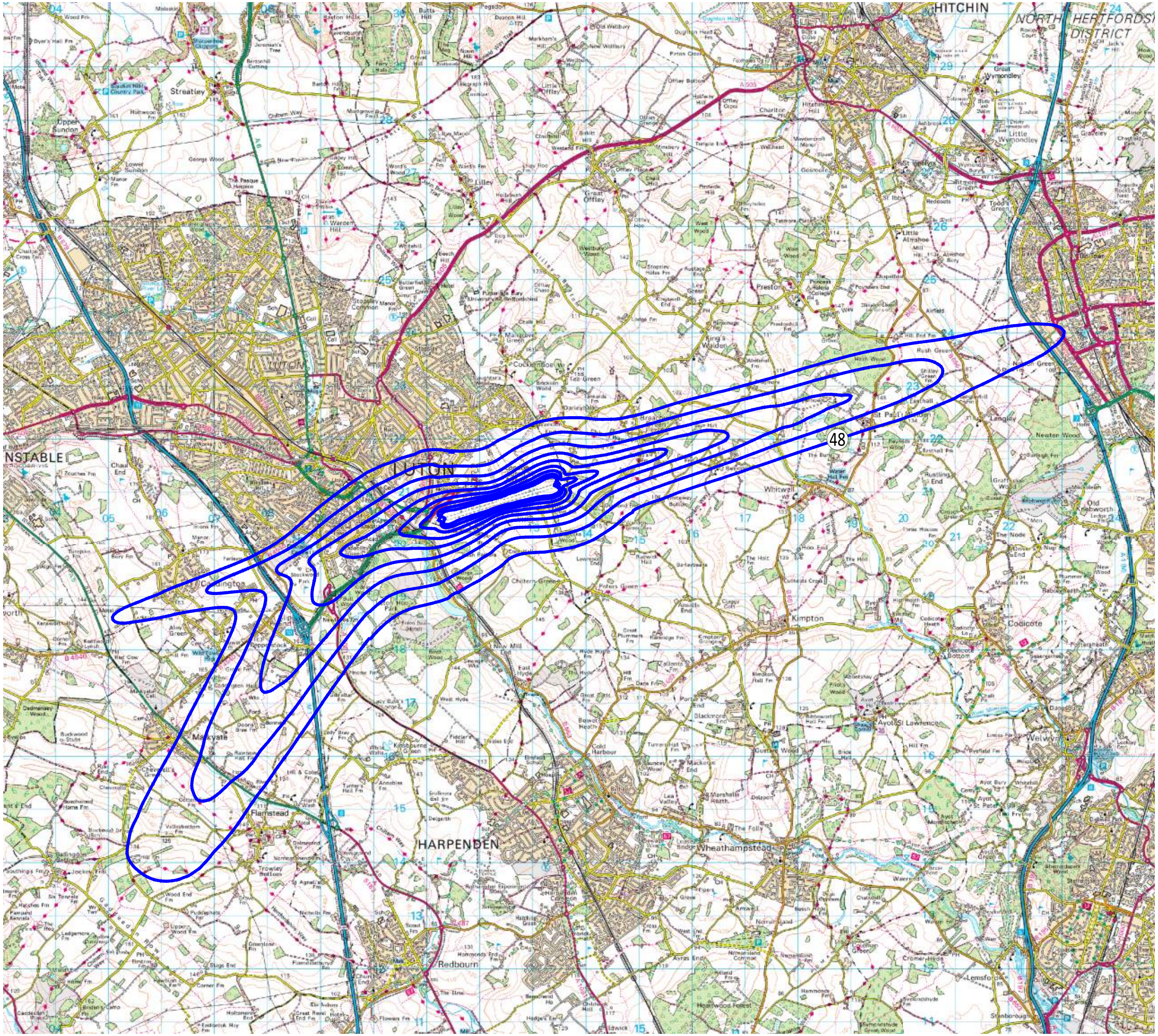
Airborne Aircraft Noise Contours
2016 Summer Actual Night time

DRAWN: NW CHECKED: DC

DATE: November 2016 SCALE: 1:100000@A4

FIGURE No:

A9457/N24/03



LEGEND:

Noise Contours,
48 to 72 dB $L_{Aeq,8h}$ in 3 dB steps

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2017 Summer Forecast Night time

DRAWN: NW CHECKED: DC

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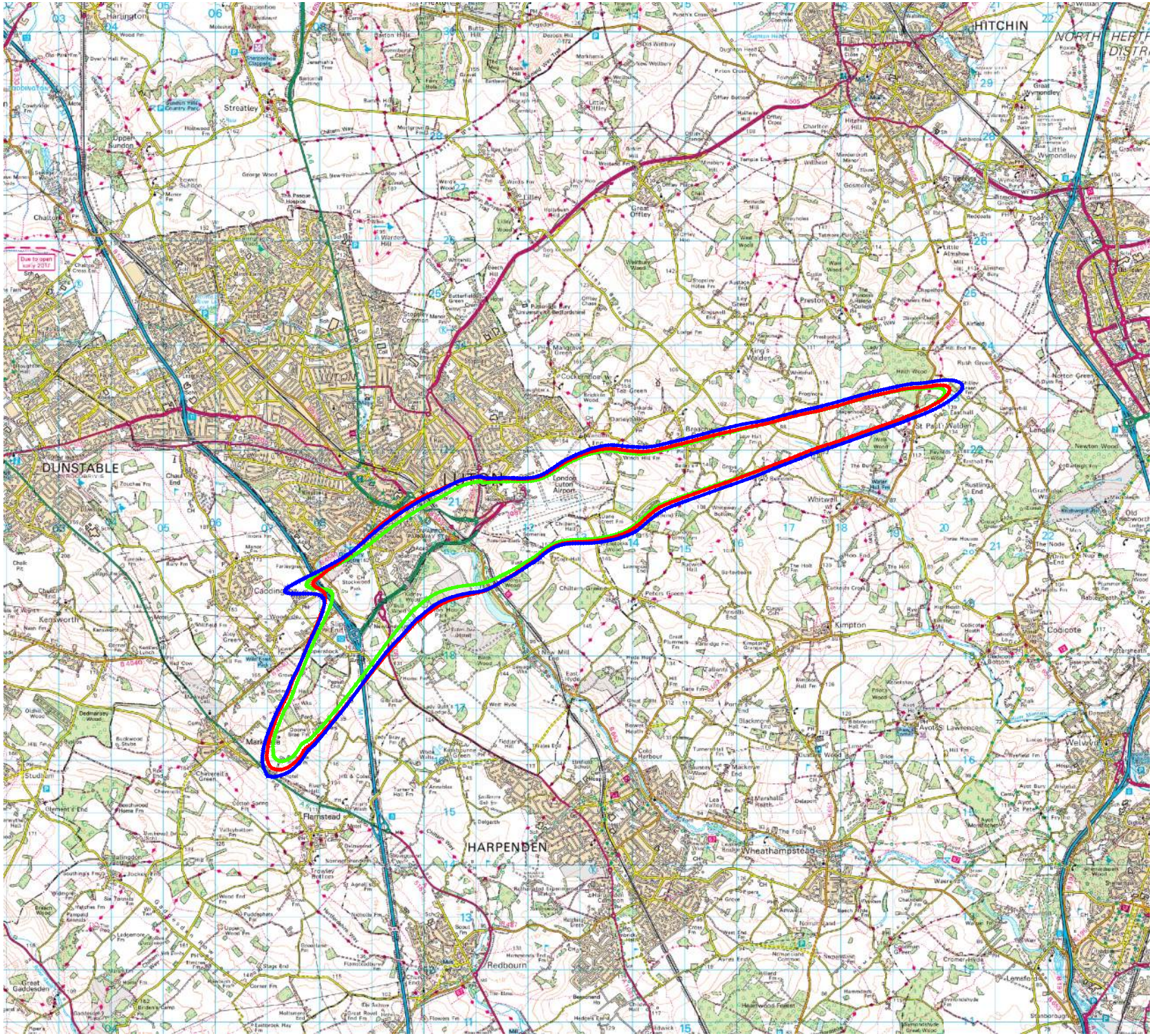
FIGURE No:

A9457/N24/04



LEGEND:

- 2015, 57 dB $L_{Aeq,16h}$ Contour
- 2016, 57 dB $L_{Aeq,16h}$ Contour
- 2017, 57 dB $L_{Aeq,16h}$ Contour

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London Luton Airport
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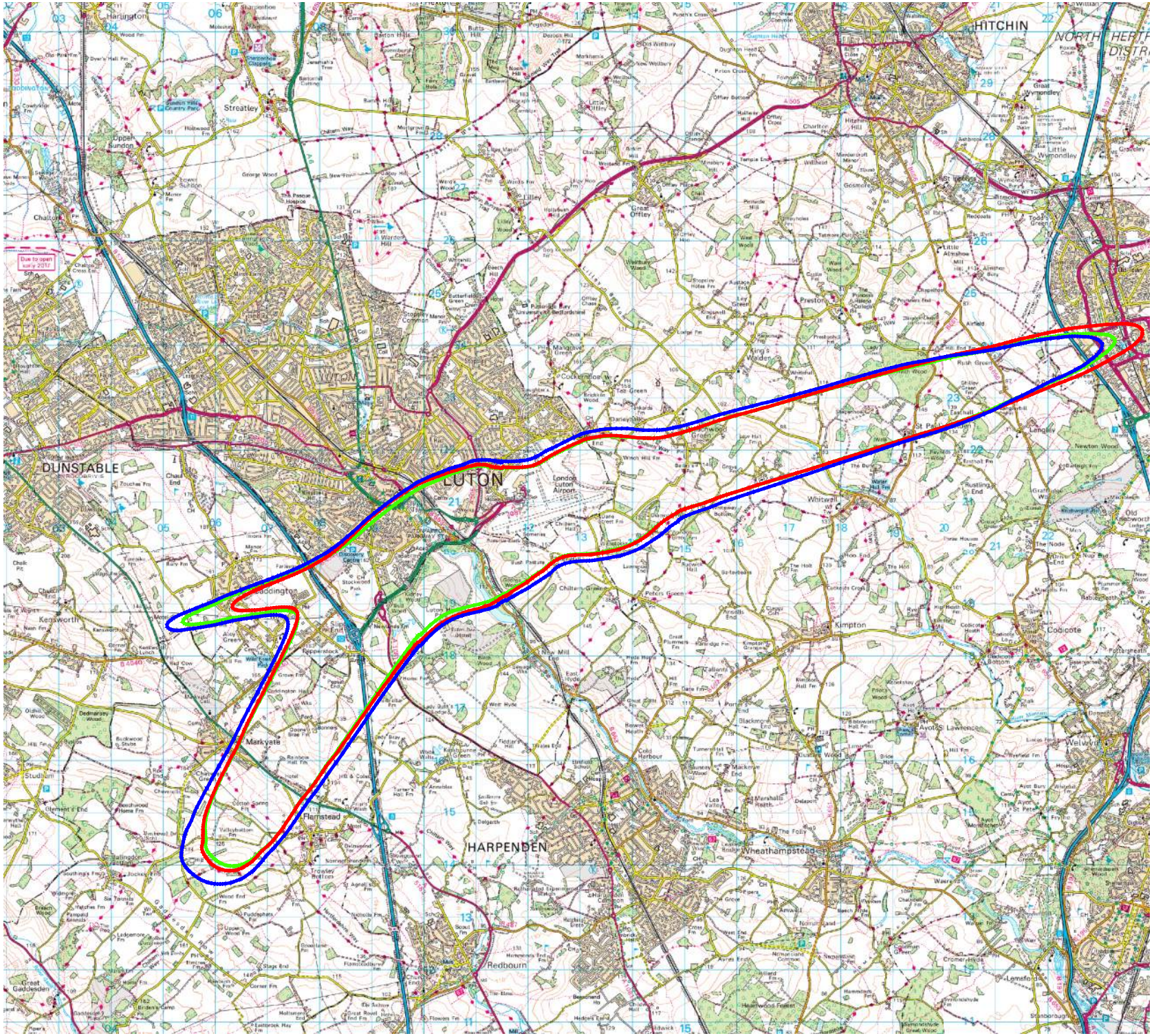
Airborne Aircraft Noise Contours
Summer Daytime Comparison
2015, 2016 and 2017 (Forecast)

DRAWN: NW CHECKED: DC

DATE: November 2016 SCALE: 1:100000@A4

FIGURE No:

A9457/N24/05



LEGEND:

- 2015, 48 dB $L_{Aeq,8h}$ Contour
- 2016, 48 dB $L_{Aeq,8h}$ Contour
- 2017, 48 dB $L_{Aeq,8h}$ Contour

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2015, 2016 and 2017 (Forecast)

DRAWN: NW CHECKED: DC

DATE: November 2016 SCALE: 1:100000@A4

FIGURE No:

A9457/N24/06