LONDON LUTON AIRPORT

A11060-N41-DR

07 November 2019

ACTUAL 2019 AND FORECAST 2020 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 required 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 were to be compared to the limits contained in Condition 12.

London Luton Airport Operations Limited (LLAOL) have retained Bickerdike Allen Partners LLP (BAP) to produce airborne aircraft noise contours for the 92 day summer period based on the actual movements for 2019.

LLAOL have also provided BAP with a forecast for 2020. Using this, forecast summer contours have been produced.

The resulting contours for 2019 and 2020 provide part of the information that would be required to comply with Condition 12. Also required is information on the current QC Annual Budget for 2019, 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 2019 contour production methodology has been updated from that used for the 2018 contours. It retains the inclusion of terrain, and the use of the INM software (Version 7.0d), but the validation has been updated. The validation is now based on measured results in 2018 at the fixed noise monitors.

The exception to this is the Airbus A321neo, which operated in 2019 and is forecast to operate in 2020, but for which there are only limited measured results are available as it didn't operate at Luton in significant numbers in 2018. Therefore modelled noise levels for this new type have been based on its certification noise levels when compared to the Airbus A321ceo, which it is the replacement for, as shown in Table 1 below.

Replacement Aircraft Type	Current Aircraft Type	Noise Level Adjustment (dB)	
		Arrival	Departure
Airbus A321neo	Airbus A321	-1.8	-6.3

Table 1: Modelled Noise Levels

The 2020 contours have been produced using a long term (2015-2019) average modal split, which is shown in Table 2 below. 2019 contours have been produced twice, once based on this long term average runway split, and also based on the actual runway usage in 2019. The 2018 contours which are included for comparison are based on the actual runway usage in 2018.

Year	% of Summer Movements	
	Runway 08	Runway 26
2018 Actual	27%	73%
2019 Actual	27%	73%
Long Term Average (2015-2019)	22%	78%

Table 2: 2018, 2019 and Long Term Average Summer Modal Split

3.0 NOISE CONTOUR RESULTS

The resulting noise contours for 2019 and 2020 are shown in the attached Figures A11060-N41-01 to A11060-N41-06. 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 contour is given in Table 3 (daytime) and Table 4 (night time), and compared with area for the corresponding 2018 contour.

Daytime movements have increased from 32,961 in 2018 to 34,124 in 2019. Night-time movements have increased from 4,917 in 2018 to 5,398 in 2019. Daytime movements are forecast to increase slightly to 34,391 in 2020. Night time movements are forecast to decrease to 5,131 in 2020.

Contour Value (dB $L_{Aeq,16h}$)	Contour Area (km^2)			
	2018 Actual	2019 Actual	2019 Avg. Modal	2020 (Forecast)
57	19.4	20.8	20.8	21.3
60	10.6	11.5	11.5	11.8
63	6.1	6.7	6.7	6.9
66	3.1	3.6	3.6	3.7
69	1.7	1.9	1.9	1.9
72	1.0	1.1	1.1	1.2

Table 3: Area of Daytime Summer Noise Contours, 2018, 2019 and 2020 (Forecast)

Considering the 57 dB $L_{Aeq,16h}$ daytime noise contour there is an increase in area of approximately 8% when comparing the 2019 actual contour with the 2018 actual contour. This is largely due to the increase in daytime movements. The 2019 contours based on the long term average runway split have the same areas as those based on the actual runway usage in 2019. The 2020 daytime contours are slightly larger than those for 2019, largely due to the forecast increase in daytime movements.

A comparison of the 2018 actual, 2019 actual, 2019 average modal and 2020 forecast daytime 57 dB $L_{Aeq,16h}$ contours is shown in Figure A11060-N41-07. This shows that the 2018 actual, 2019 actual, 2019 average modal and 2020 forecast contours are all similar, with the slight differences in shape being primarily due to differences in modal split.

Contour Value (dB $L_{Aeq,8h}$)	Contour Area (km^2)			
	2018 Actual	2019 Actual	2019 Avg. Modal	2020 (Forecast)
48	40.2	44.2	44.0	42.6
51	23.0	26.0	26.1	25.0
54	12.6	14.6	14.6	14.0
57	6.8	8.0	8.0	7.6
60	3.7	4.4	4.4	4.2
63	1.9	2.2	2.2	2.1
66	1.1	1.3	1.3	1.2
69	0.7	0.8	0.8	0.8

Table 4: Area of Night-Time Summer Noise Contours, 2018, 2019 and 2020 (Forecast)

Considering the 48 dB $L_{Aeq,8h}$ night time noise contour there is an increase in area of approximately 10% when comparing the 2019 actual contour with the 2018 actual contour. This is largely due to the increase in movements. The 2019 contours based on the long term average runway split have very similar areas to those based on the actual runway usage in 2019. The 2020 night time contours are smaller than those for 2019, largely due to the forecast decrease in night time movements.

A comparison of the 2018 actual, 2019 actual, 2019 average modal and 2020 forecast night-time 48 dB $L_{Aeq,8h}$ contours is shown in Figure A11060-N21-08. This shows that the 2018 actual, 2019 actual, 2019 average modal and 2020 forecast contours are all similar in both size and shape. The 2018 actual and 2019 actual contours are longer at the western end and slightly shorter at the eastern and south western ends compared to the 2019 average modal contours, this is due to the differences in modal split.

4.0 DWELLING AND POPULATION COUNTS

An assessment has been carried out of the number of dwellings and the population within the actual noise contours produced for 2019. This has utilised a postcode database supplied by CACI Ltd, specifically the 2018 iteration of the database. Each postcode in the database is described by a single geographical point, and if this point is within a given contour then all of the dwellings and population in the postcode are counted as within the contour.

The dwelling and population counts are given for the 2018 actual and 2019 actual daytime and night-time contours in Table 5 and Table 6 respectively. The values in these tables have been rounded to the nearest 50, except where less than 50 when the actual value is given.

Contour Value (dB $L_{Aeq,16h}$)	2018 Actual		2019 Actual	
	Dwellings	Population	Dwellings	Population
57	3,950	9,100	4,550	10,550
60	1,650	4,350	2,050	5,150
63	550	1,400	700	1,950
66	9	22	11	27
69	0	0	0	0
72	0	0	0	0

Table 5: Dwelling and Population Counts for Daytime Summer Noise Contours, 2018-2019

Contour Value (dB $L_{Aeq,8h}$)	2018 Actual		2019 Actual	
	Dwellings	Population	Dwellings	Population
48	8,050	19,150	8,950	21,250
51	4,500	10,300	5,100	11,800
54	1,950	5,000	2,450	6,150
57	750	2,050	800	2,150
60	150	400	150	450
63	0	0	0	0
66	0	0	0	0
69	0	0	0	0

Table 6: Dwelling and Population Counts for Night-Time Summer Noise Contours, 2018-2019

5.0 SUMMARY

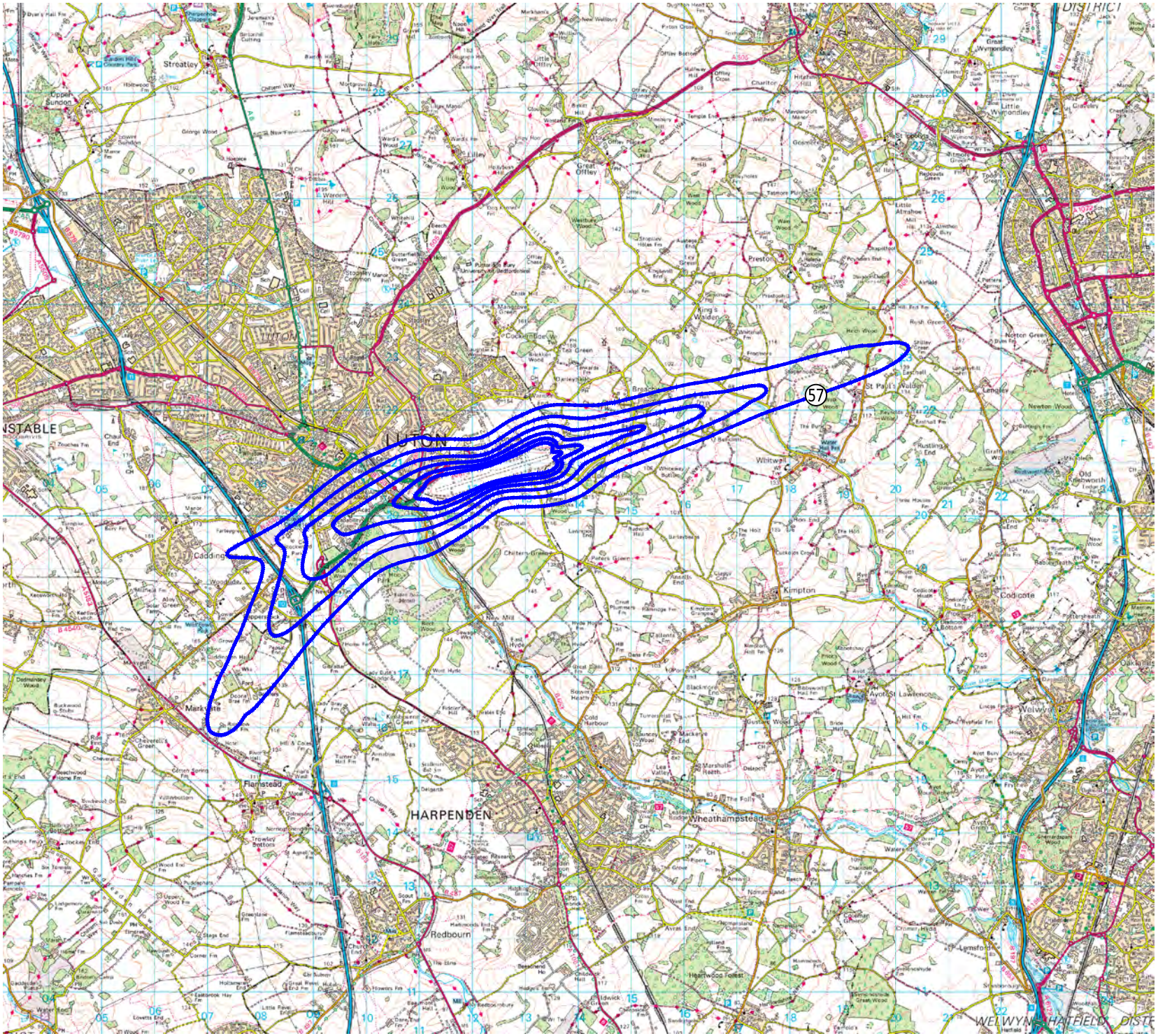
As can be seen in Table 3, the area of the actual daytime 57 dB $L_{Aeq,16h}$ contour has increased from 2018 to 2019. This is largely due to the increase in the total number of daytime movements. The resulting 57 dB $L_{Aeq,16h}$ contour for 2019 has an area of 20.8 km^2. The 2019 contour based on the long term average runway split has the same area. The 2020 contour area, also based on the long term average runway split, is forecasts to increase slightly to 21.3 km^2.

Table 4 shows the area of the actual night time 48 dB $L_{Aeq,8h}$ contour has increased by approximately 10% from 2018 to 2019, largely due to an increase in night time aircraft movements. The resulting 48 dB $L_{Aeq,8h}$ contour has an area of 44.2 km^2. The 2019 contour based on the long term average runway split has a very similar area of 44.0 km^2. The 2020 contour area is forecast to reduce to 42.6 km^2.

Dwelling and population counts for the daytime and night-time contours for both 2018 actual and 2019 actual have been determined based on a common 2018 postcode database.

Duncan Rogers
for Bickerdike Allen Partners

David Charles
Partner



LEGEND:

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

REVISIONS

Bickerdike Allen Partners
Architecture Acoustics Technology

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London Luton Airport
Regular Contouring

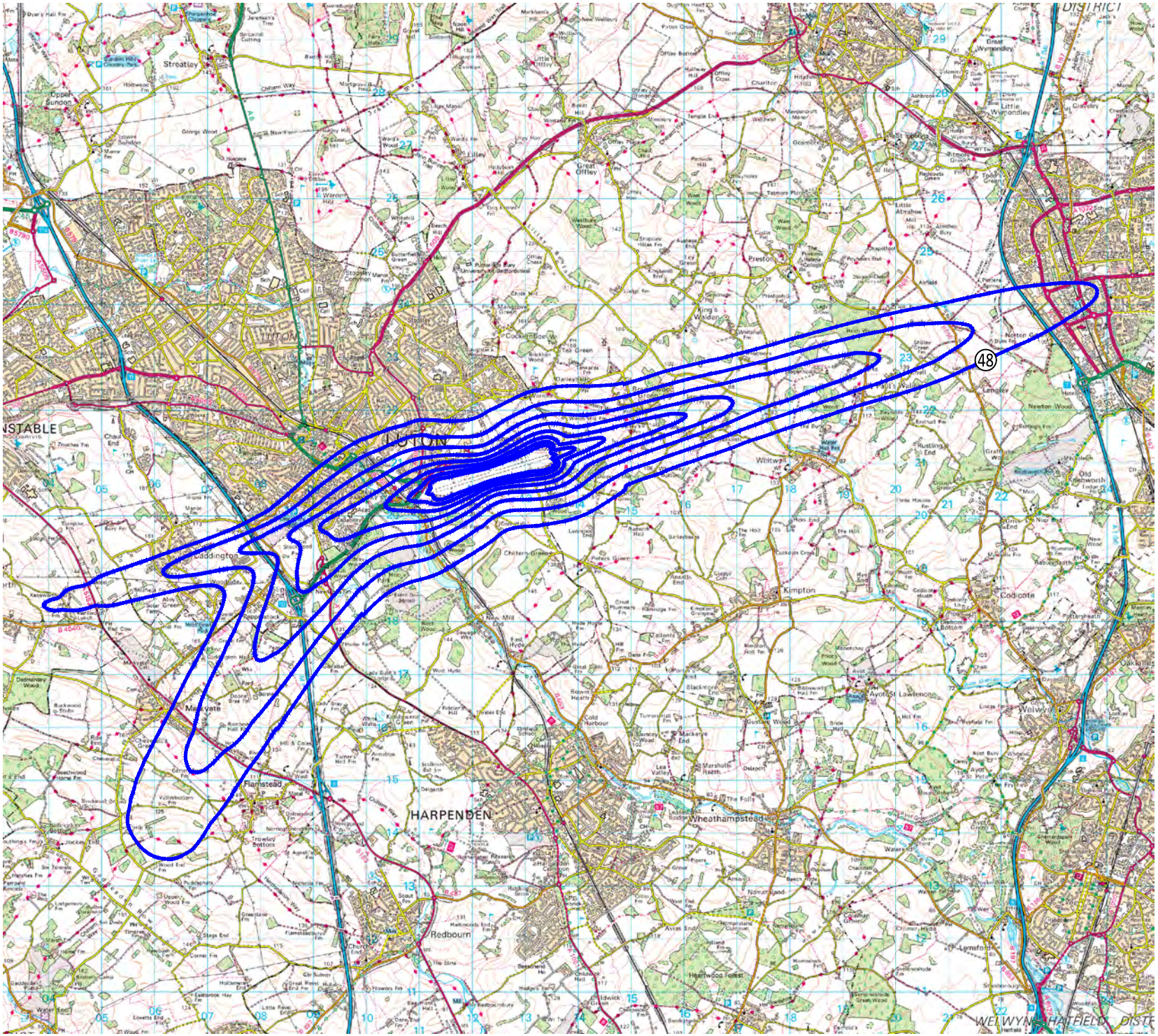
Airborne Aircraft Noise Contours
2019 Summer Actual Daytime

DRAWN: DR CHECKED: DC

DATE: November 2019 SCALE: 1:100000@A4

FIGURE No:

A11060/N41/01



LEGEND:

Noise Contours,
48 to 69 dB $L_{Aeq,8h}$ in 3 dB steps

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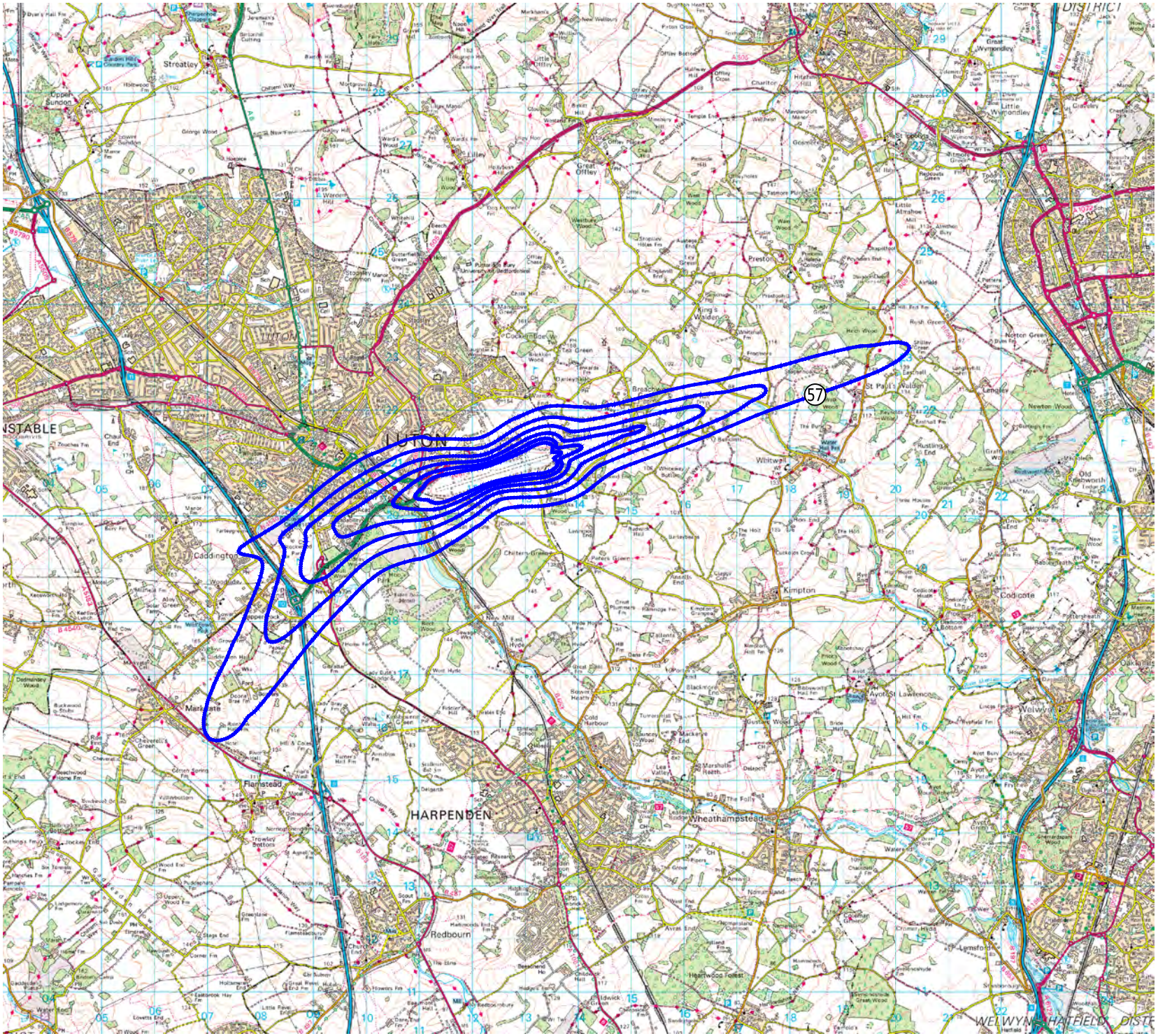
Airborne Aircraft Noise Contours
2019 Summer Actual Night time

DRAWN: DR CHECKED: DC

DATE: November 2019 SCALE: 1:100000@A4

FIGURE No:

A11060/N41/02



LEGEND:

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

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London Luton Airport
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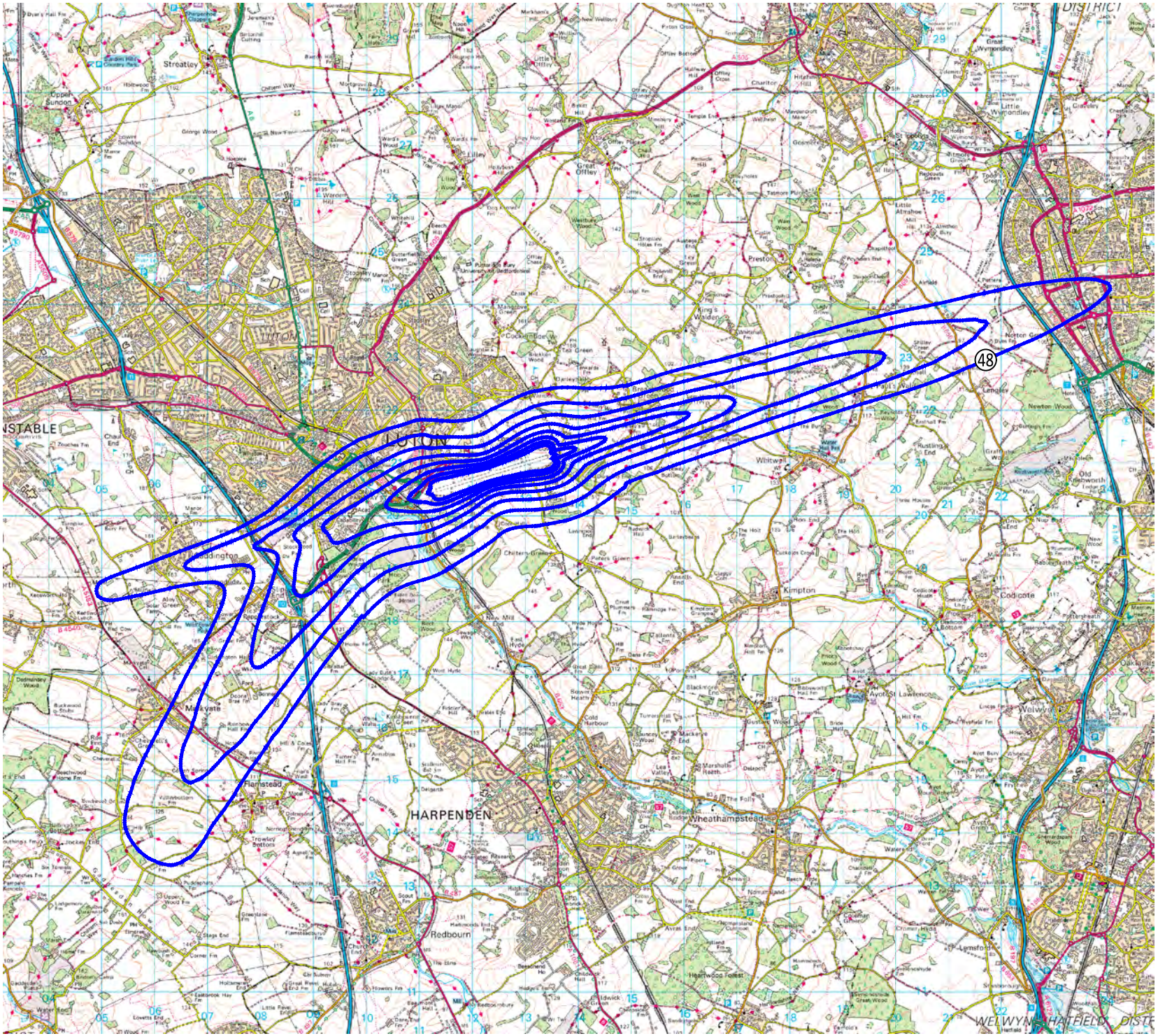
Airborne Aircraft Noise Contours
2019 Summer Average Modal Daytime

DRAWN: DR CHECKED: DC

DATE: November 2019 SCALE: 1:100000@A4

FIGURE No:

A11060/N41/03



LEGEND:

Noise Contours,
48 to 69 dB $L_{Aeq,8h}$ in 3 dB steps

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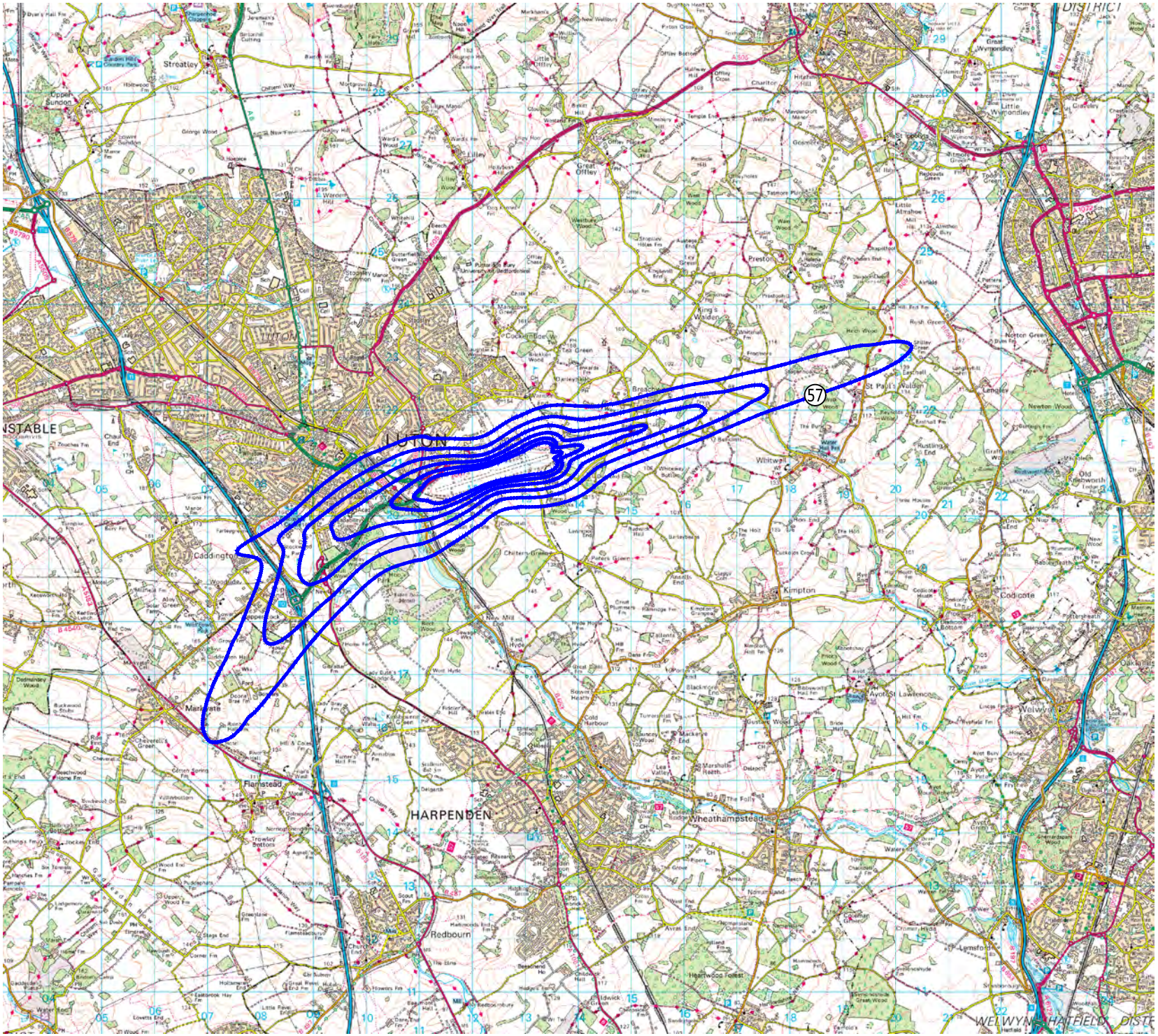
Airborne Aircraft Noise Contours
2019 Summer Average Modal Night time

DRAWN: DR CHECKED: DC

DATE: November 2019 SCALE: 1:100000@A4

FIGURE No:

A11060/N41/04



LEGEND:

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

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London Luton Airport
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Airborne Aircraft Noise Contours
2020 Summer Forecast Daytime

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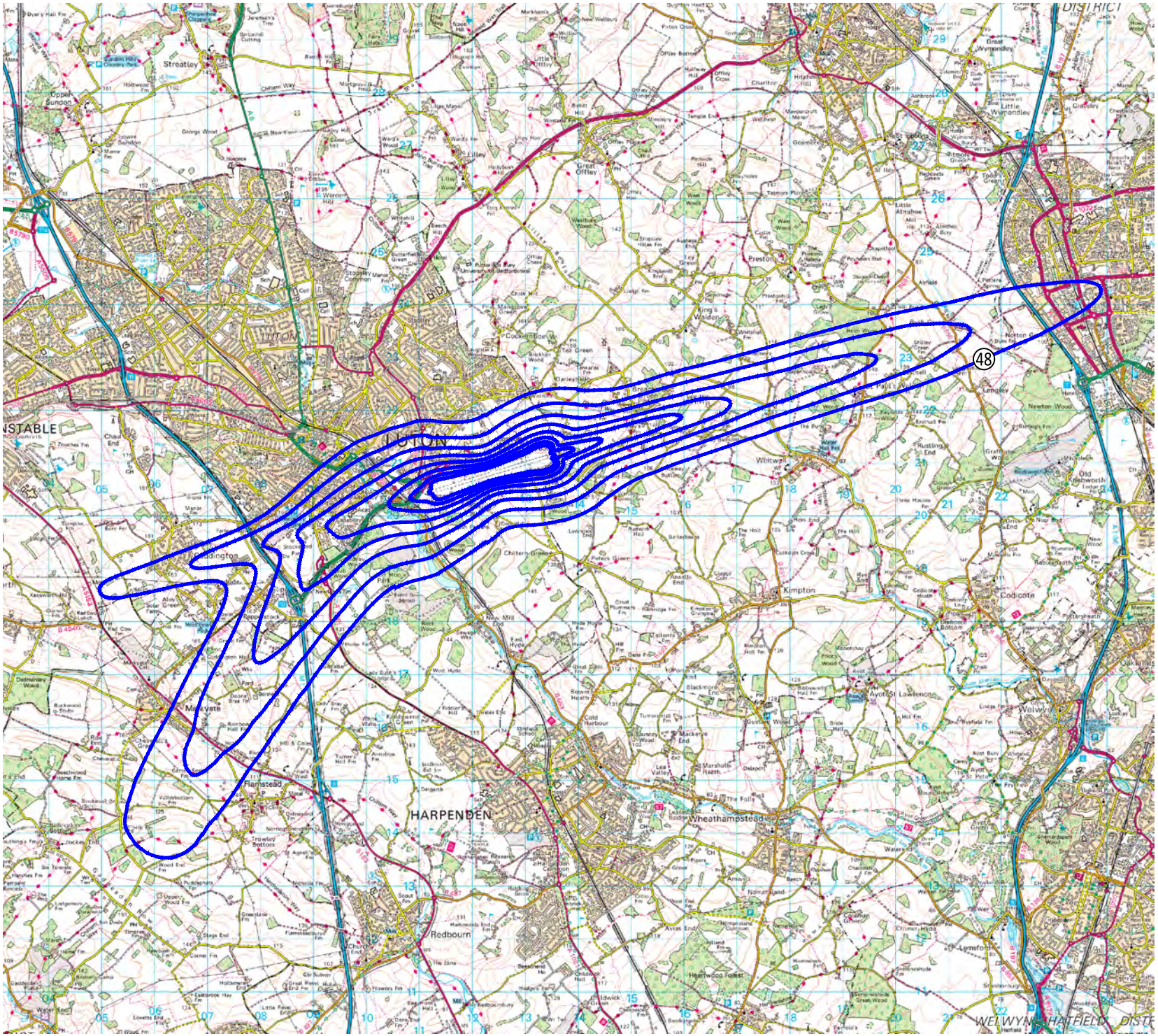
DATE: November 2019 SCALE: 1:100000@A4

FIGURE No:

A11060/N41/05



LEGEND:

Noise Contours,
48 to 69 dB $L_{Aeq,8h}$ in 3 dB steps

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2020 Summer Forecast Night time

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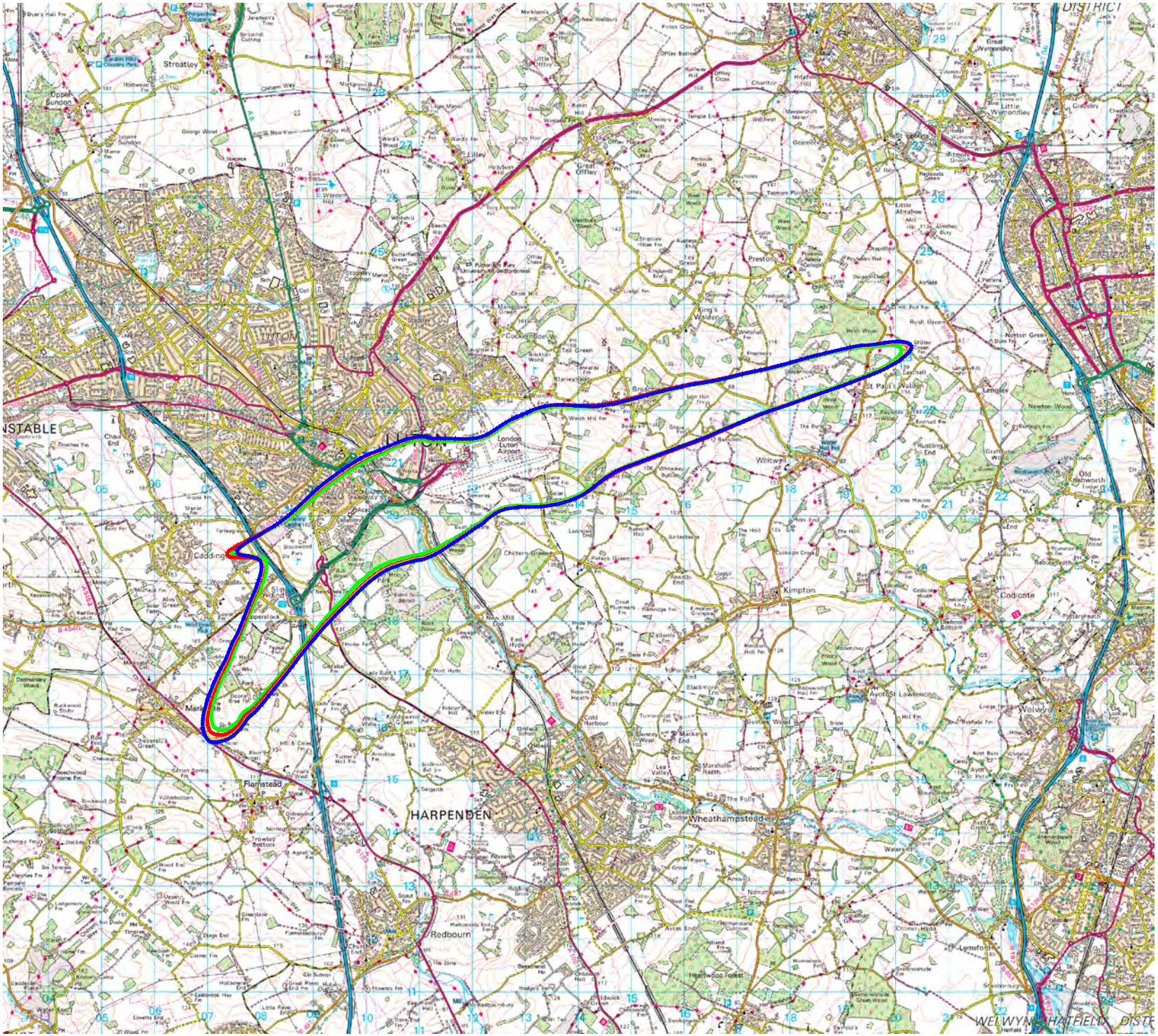
DATE: November 2019 SCALE: 1:100000@A4

FIGURE No:

A11060/N41/06



LEGEND:

57 dB $L_{Aeq,16h}$ Noise Contours,

- 2018 Actual
- 2019 Actual
- 2019 Average Modal
- 2020 Forecast

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London Luton Airport
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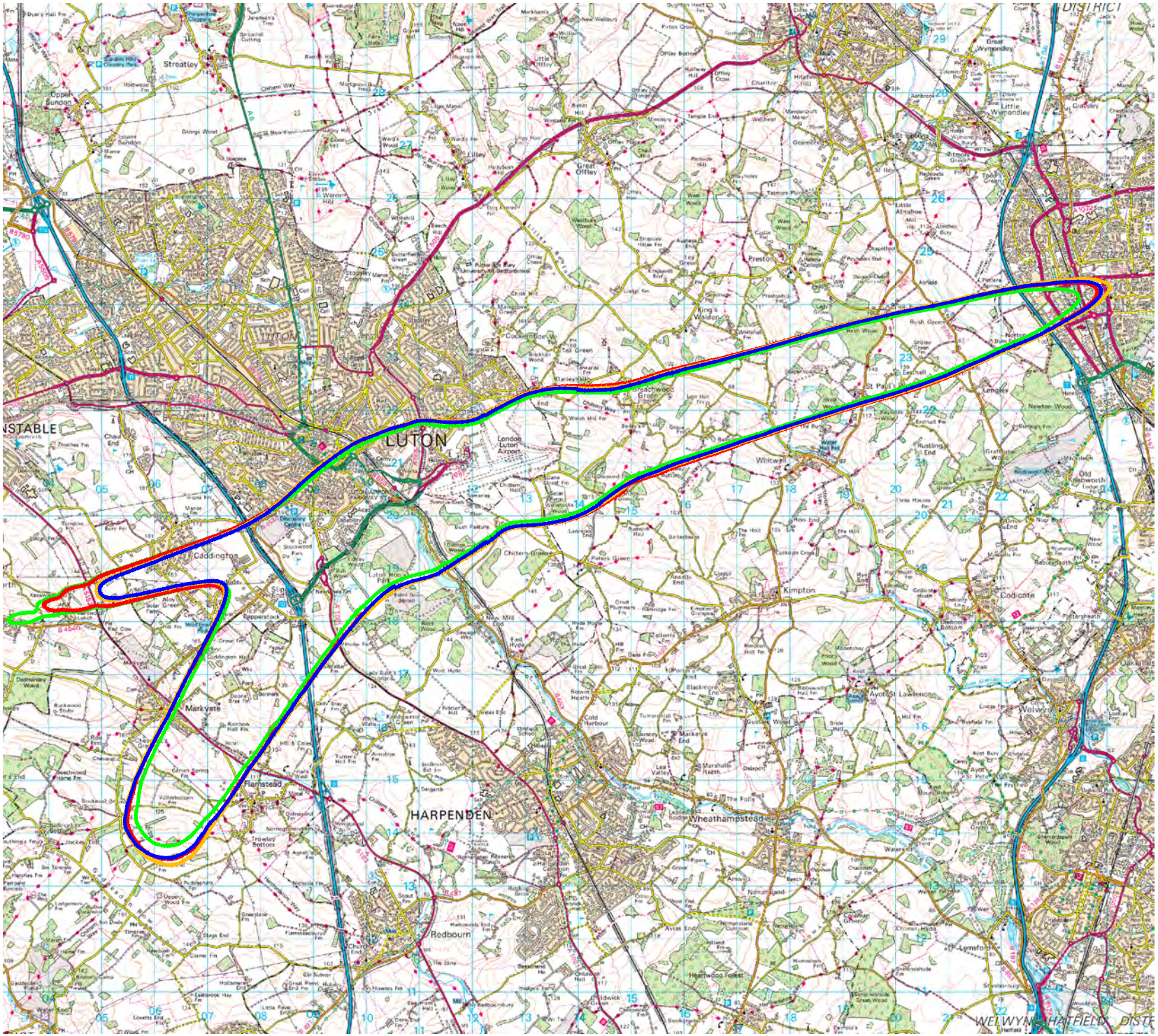
Airborne Aircraft Noise Contours
Summer Daytime Comparison
2018, 2019 and 2020

DRAWN: DR CHECKED: DC

DATE: November 2019 SCALE: 1:100000@A4

FIGURE No:

A11060/N41/07



LEGEND:

48 dB $L_{Aeq,8h}$ Noise Contours,

- 2018 Actual
- 2019 Actual
- 2019 Average Modal
- 2020 Forecast

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2018, 2019 and 2020

DRAWN: DR CHECKED: DC

DATE: November 2019 SCALE: 1:100000@A4

FIGURE No:

A11060/N41/08