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LONDON CITY AIRPORT

AIRSPACE CHANGE

NOISE ASSESSMENT

Report to

London City Airport
The Royal Docks
London E16 2PB

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1.0 INTRODUCTION

London City Airport (LCY) are proposing an airspace change to introduce an alternative 4.49° final approach angle that is intended to permit operations by the Airbus A320neo. Other aircraft types are expected to primarily continue using the existing 5.5° approach. However, a qualitative consideration of how the noise effects of the airspace change might differ if some other aircraft types did use the shallower approach is included at the end of this report.

The introduction of the Airbus A320neo is expected to accelerate a reduction in future noise levels, both due to the A320neo being quieter than the current key aircraft type the Embraer E190, and due to fewer flights being required to move the same number of passengers, due to its greater seating capacity.

The process for undertaking airspace changes is set out in CAP1616 and its various supplementary documents. This noise report has been prepared as part of Stage 3 of the airspace change process set out in CAP1616f. This report presents details of the methodology used for the noise calculations, followed by the noise results including a discussion of the potential effects.

Contour diagrams Figures 1-46, with Ordnance Survey background maps, are supplied in Appendix A at the end of this report.

2.0 NOISE ASSESSMENT METHODOLOGY

The noise assessment has been undertaken in accordance with CAP1616i, which gives guidance on the environmental assessment requirements for airspace change proposals. In addition, the assessment allows for CAP2091, which specifies the minimum acceptable level of sophistication of noise modelling that can be used to provide the CAA with the outputs required for an airspace change proposal.

Noise contours are routinely produced for LCY. The methodology used for this noise assessment is generally the same as that used for the routine noise contours, which has been agreed with the London Borough of Newham (LBN). The only differences are allowing for the proposed shallower 4.49° approach angle and the modelling of two aircraft types which do not currently operate or have only recently started regularly operating, and these are discussed in more detail in the sections below.

2.1 Noise Category

CAP2091 sets minimum standards for noise modelling for airspace changes, with five different noise modelling categories based on how many people are within the 51 dB $L_{Aeq,16h}$ summer day and 45 dB $L_{Aeq,8h}$ summer night noise contours.

Comparing the results presented in Section 3.1 of this report with Table 4.1 and Table 4.2 from CAP2091, suggest LCY is potentially a Category C airport. However, CAP2091 also contains a “no decrement criterion” at paragraph 4.10, which requires that you shouldn’t downgrade the level of noise modelling already in use. The routine noise modelling for LCY already meets the greater requirements of Category B. Therefore, Category B has been used for the noise assessment for this airspace change.

2.2 Software

The noise calculations have been undertaken using the Aviation Environmental Design Tool (AEDT) software which was developed by the US Federal Aviation Administration (FAA). This software is one of the options listed in CAP1616i. Specifically, version 3g of AEDT has been used, which was released on 28 August 2024.

The AEDT noise model has the facility to allow for terrain in its noise predictions. As required by CAP1616i, terrain has been allowed for in the LCY noise model.

2.3 Runway Usage

As required by CAP1616i, the noise calculations have been based on the 20-year average modal split, shown below in Table 1. In order to allow a like for like comparison, the 2024 results presented are also based on the long-term average modal split.

Runway	Average Runway Usage 2005-2024
Runway 09	32%
Runway 27	68%

Table 1: Long-Term Average Modal Split

2.4 Flight Tracks

2.4.1 Departures

There are three pairs of Standard Instrument Departure routes (SIDs) in use at LCY, three from each runway end, although these are not initially distinct. A set of modelled departure routes has been developed based on an analysis of recent radar data, as required by CAP2091 and CAP1616i. The resulting modelled routes are shown on Figure 01.

The departure routes are not altered by the proposed airspace change and therefore the routes based on existing radar data are considered representative of what can be expected to occur in the future, with or without the airspace change.

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Table 2 shows the distribution of flights across the SIDs. When modelling actual flights, the specific SID followed was allowed for where this data is available. Where this is not available, such as for modelling scenarios which consider future traffic, the overall distribution below has been used.

SID	Proportion of Departures (2022-24)
BPK	27%
CLN	29%
DVR	44%

Table 2: Modelled Departure Tracks

2.4.2 Arrivals

At most airports arrival tracks are straight for an extended distance, i.e. they follow the runway centreline until outside the area of any noise contours produced. However, for arrivals using runway 09 at LCY, they line up with the runway relatively late, having previously followed a parallel track to the south of the runway and then conducting a turn of 180 degrees. A single arrival route for each runway end has been modelled based on the latest radar data. This allows for the parallel track used by runway 09 arrivals.

2.4.3 Dispersion

For flights it is typical that there is some variation around the centre track. This variation is known as dispersion. Arrival tracks which follow the extended runway centreline normally do not show significant dispersion. However, due to the turn of the runway 09 arrival route, it was considered necessary to also include dispersion on the arrival routes. Therefore dispersion has been included for all the modelled arrival and departure routes.

Each dispersed track has been split into 7 sub-tracks, as per the recommendation in ECAC Doc 29[1]. The percentage of flights assigned to each sub-track in the model is given in Table 3.

[1] ECAC Doc 29 4th Edition, 7th December 2016. Available at https://www.ecac-ceac.org/documents/ecac-documents-and-international-agreements

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Sub-Track	Percentage of Modelled Flights
Centre Track	28.2%
Sub-Track 1	22.2% (each side)
Sub-Track 2	10.6% (each side)
Sub-Track 3	3.1% (each side)

Table 3: Distribution of Dispersed Flights

For each dispersed track, radar data has been analysed in order to determine the location of the centre track and each sub track, as required by CAP1616i and CAP2091. The radar data used is for the 3-year period of 2022-24. The dispersed centre and sub-tracks can be seen on Figure 01.

The departure routes are not altered by the proposed airspace change and therefore the dispersion based on existing radar data is considered representative of what can be expected to occur in the future, with or without the airspace change.

For the arrival routes, only the final approach descent angle is altered, not the lateral position of the track. In addition, the analysis of radar data shows that flights are already tightly grouped around the centre track and therefore dispersion based on the existing radar data is also considered representative of what can be expected to occur in the future, with or without the airspace change.

2.5 Flight Profiles

An aircraft's flight profile for the purposes of noise modelling describes how its altitude, speed, and thrust vary in relation to the distance covered. In the AEDT software this is represented by a number of discrete procedural steps.

While information on the thrust used during the profile is not readily available, this can be estimated for a given aircraft type if the aircraft weight, altitude, and speed are known. The aircraft weight can be estimated based on destination, and the radar data contains the altitude and ground speed of the aircraft, particularly after the initial steps when radar data is largely complete and unaffected by the presence of buildings etc. In addition, the comparison with measured noise levels discussed in Section 2.6 provides a further check.

The flight profiles for the major aircraft types have been compared to the 2022-2024 radar data. Where differences were found, adjustments were made to the modelled profile to match the average actual profile more closely. Based on the analysis of radar data, custom profiles were produced for each departure/arrival route for the major aircraft types, which currently produce more than 75% of the noise energy produced at LCY, as required by CAP2091 for a Category B airport.

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In addition, due to the consistency across the aircraft types, even for those with limited radar data, some adjustments to the default profiles have been applied. In general there were five main changes from the default AEDT profiles that are common to all aircraft types at LCY, these are discussed below.

The first is to extend the initial climb step for departures, from 1000 ft which is the default for most aircraft, to a higher altitude. In most cases this was to 1700 ft, although the radar analysis for some aircraft types show that they maintain a constant climb gradient up to 3000 ft.

The second change relates to the next phase of flight for departures. The majority of the default profiles in AEDT have alternating steps which focus on either climbing with a constant speed, or on accelerating with a low climb gradient. Reviewing the actual radar data finds that in general aircraft at LCY maintain a relatively constant acceleration and climb in this phase, and this has been replicated in the model.

The third change is to implement the altitude holds which are in place in the airspace around LCY and are unaltered with the airspace change. These hold runway 09 arrivals at 2,000 ft for an extended distance, with an additional shorter hold for most aircraft at 3,000 ft. For other operations there are altitude holds at 3,000 or 4,000 ft in certain areas, which have been allowed for. The altitude holds can be seen in the operational diagrams presented in the consultation document Section 5.

The fourth change relates to arrivals, the default AEDT profiles use a 3° final approach angle, with some AEDT aircraft types having stepped approaches before final approach. The modelled arrival profiles have been based on the analysis of radar data, which finds that within the noise study area, when not being held, aircraft typically descend continuously. The existing final approach angle of 5.5° has been allowed for. The proposed 4.49° final approach angle has also been allowed for in the modelling of the Airbus A320neo in the With Change scenario.

The final change is allowing for an extended speed restriction on the BPK SID for departures from runway 27. Aircraft departing from runway 27 on this SID are restricted to a maximum of 200 knots within the model area.

With the exception of the shallower final approach angle for the Airbus A320neo, which would only happen if the airspace change is permitted, the custom profiles based on existing radar data are considered representative of what can be expected to occur in the future, with or without the airspace change.

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2.6 Adjustment to Noise Levels

For a number of years at LCY aircraft noise levels have been validated on a per type basis. For each validated aircraft type, a user-defined aircraft type has been created in the modelling software by adjusting the noise level of an aircraft type in the software database in order to minimise the difference between the measured and predicted noise levels at NMTs 1-6. The location of the NMTs is shown in Figure 1 below.

Figure 1: Location of NMTs 1-6

The general approach to the validation is set out below. This is followed for each aircraft type and operation (i.e. arrival/departure) separately, except for aircraft types with fewer than 50 measured results at each of the 6 NMTs, for which no adjustment is made to the noise levels of the default aircraft type. The only exception is the Piaggio P180, for which an adjustment is made despite limited results. This is because this aircraft is not well represented by any of the aircraft types in the AEDT library and would otherwise result in a significant under-prediction of its noise level. The adjusted types currently produce more than 75% of the noise energy produced at LCY, as required by CAP2091 for a Category B airport.

1. Determine the average measured noise level at each NMT for the calendar years of 2022-2024.
2. Determine the modelled noise level at each NMT using AEDT for the modelled type used in the previous validation exercise, or for the type suggested by AEDT, for newly validated aircraft types.
3. Compute the difference between the average measured noise levels and the AEDT modelled noise levels at each NMT.
4. Compute the adjustment required to best represent the aircraft's effect on the noise contours. This is done by giving equal weight to sideline (NMTs 1-4) and flyover (NMTs 5-6) measurements, and by weighting the runway 09 and runway 27 results according to typical usage of each.

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5. For aircraft types previously validated, if the adjustment required is not more than 1 dB different from that required previously, and the modelled flight profile adequately represents the radar data (after being adjusted based on the radar data as described in Section 2.5), then the same aircraft type is used, with the adjustment updated to reflect the latest measured results.
6. For aircraft not covered by step 5, a range of candidate aircraft are considered and the best fit is used, taking into account the size of the aircraft, the flight profile, the variation between noise monitors and the magnitude of the adjustment required.

The resulting adjustments to the default AEDT noise levels are given in Table 4.

LCY Aircraft Type Code	Arrivals		Departures	
	AEDT Type	Adjustment, dB	AEDT Type	Adjustment, dB
A221	737500	-1.5	737500	-4.7
ATR42	SD330	4.9	DO328	3.9
ATR72	SD330	4.2	DO328	4.6
C510	CNA510	1.1	CNA510	-2.0
C525	CNA525C	-0.8	CNA525C	-4.1
C56X	CNA560XL	1.9	CNA525C	-5.8
C680	CNA680	0.1	CNA525C	-3.6
C68A	CNA680	0.2	CNA525C	-5.0
CL35	CL600	3.4	CL600	-4.2
DH8D	SD330	2.1	CVR580	-4.1
E190	737500	1.5	737500	0.8
E290	EMB190	-0.9	EMB190	-4.7
E550	CNA55B	-1.5	CNA55B	-2.5
E55P	CNA55B	-0.4	CNA525C	-4.0
F2TH	EMB145	-0.1	EMB145	0.7
FA7X	F10062	1.0	GIV	0.2
FA8X	F10062	0.9	GIV	-0.8
GLEX	GV	1.2	F10065	-6.9
J328	EMB145	3.0	CNA680	-1.7
P180	DHC6	3.7	CNA441	6.9
PC24	CNA55B	2.8	CNA55B	0.4

Table 4: 2025 Validation Adjustments

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2.6.1 New Aircraft Types

Forecasts have been provided for future years by York Aviation LLP with and without the airspace change. These forecasts include the Airbus A320neo aircraft type which cannot currently operate and the Embraer E195-E2 which only recently started regularly operating.

For the Embraer E195-E2 at the time of modelling there were relatively few measured noise results available. These were not considered sufficient to form a robust basis for modelling this type. Therefore the modelled noise levels of the Embraer E195-E2 has been based on the similar Embraer E190-E2, for which there are many measured results, but with an allowance for the slightly higher expected noise levels of the E195-E2 due to its larger size. The noise adjustments were based on a comparison of certification noise levels for the two types.

Regarding the Airbus A320neo, the AEDT noise model contains data for this type. However, there is no similar type currently operating at the airport, due to the steep approach angle currently required. Consideration was given to using measured noise data from other airports to adjust the modelled noise levels for the A320neo. However, there are a number of issues with this which are discussed below.

Close to the airport in the areas most relevant to noise modelling, most UK airports have relatively similar departure and particularly arrival procedures. At major airports, typically a final approach angle of 3° is used, or in a few cases up to 3.5°. This is not the case at LCY, where the proposed approach angle for the Airbus A320neo is 4.49°. Bickerdike Allen Partners LLP (BAP) are not aware of any other UK airport which uses a 4.49° approach angle.

In addition, LCY has an unusually short runway, with a length of just 1.5 km. BAP understand that the short length of the runway affects the departure procedures used, with full thrust departures regularly used at LCY. Whereas at other airports with longer runways, BAP understand varying levels of reduced thrust are commonly used. This thrust difference can result in significant differences in noise level from aircraft on the runway and in the initial climb phase, and even after they have cutback to climb thrust there can be differences in altitude, which would affect the measured levels at airport noise monitors.

These differences in arrival and departure procedures, due to the steep approach angle and short runway, mean that measured noise levels from another airport are less applicable at LCY.

Nonetheless, BAP have reviewed the adjustments made at three other airports BAP hold data for. This finds that in one instance no adjustments were required, and at the other airports where adjustments are made, they were all small reductions in noise level of less than 1 dB, however the magnitude of adjustments were not consistent, particularly on departure.

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Therefore, the A320neo has been modelled using the LCY specific arrival and departure profiles discussed in Section 2.5 above, but with the arrival profile allowing for the proposed shallower 4.49° final approach angle. The noise levels have been based on the data included in the AEDT software.

2.7 92-Day Summer Movements

The noise calculations all relate to the 92-day summer period. This is the period required to be assessed by CAP1616i. This period is generally a busier period at most airports including LCY compared to the average over the whole year. Additionally, it is often considered a potentially more sensitive period, as people are more likely to have their windows open. The 2024 actual and 2027 and 2038 forecast summer movements are summarised in Table 5 and Table 6 for the daytime and night-time periods respectively. Note some of the totals for the forecast years may not match exactly due to rounding.

Aircraft Type	Summer Day Aircraft Movements (16th June – 15th September)				
	2024 Actual Avg. Modal	2027 (Year 1) No Change	2027 (Year 1) With Change	2038 (Year 12) No Change	2038 (Year 12) With Change
Airbus A220-100	1,377	1,738	1,732	5,187	3,527
Airbus A320neo	0	0	468	0	9,650
ATR 72	529	590	588	793	771
Bombardier Dash 8-Q400	692	934	931	0	0
Dornier 328	26	0	0	0	0
Embraer E190	8,747	8,891	7,509	989	0
Embraer E190-E2	198	335	333	999	679
Embraer E195-E2	0	407	406	16,981	4,291
Jet Centre	804	800	800	800	800
Total	**12,373**	**13,696**	**12,766**	**25,748**	**19,719**

Table 5: Summer Day Aircraft Movements

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Aircraft Type	Summer Night Aircraft Movements (16th June – 15th September)				
	2024 Actual Avg. Modal	2027 (Year 1) No Change	2027 (Year 1) With Change	2038 (Year 12) No Change	2038 (Year 12) With Change
Airbus A220-100	0	7	7	21	14
Airbus A320neo	0	0	0	0	177
ATR 72	0	2	2	3	3
Bombardier Dash 8-Q400	25	4	4	0	0
Dornier 328	0	0	0	0	0
Embraer E190	94	222	182	29	0
Embraer E190- E2	0	1	1	4	3
Embraer E195-E2	0	2	2	340	17
Jet Centre	13	0	0	0	0
Total	**132**	**239**	**198**	**397**	**214**

Table 6: Summer Night Aircraft Movements

3.0 NOISE RESULTS

All of the noise results have been prepared for 2024 representing the current situation and for Year 1 (2027) and Year 12 (2038) with and without the proposed airspace change.

The results include contour areas, estimates of the number of existing people and dwellings within the contours, and estimates of the number of noise sensitive non-residential buildings with the contours. These are presented in the sections below.

Population and dwelling counts are presented in thousands after being rounded to the nearest 100, as required by CAP1616i. The population and dwelling counts are based on a 2024 postcode-level database provided by CACI Ltd. This has been supplemented with ward level data for 2027 and 2038 from the London Population Projection for the relevant future years as described below.

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Each postcode from the CACI data has been checked to determine which ward it is within, and the corresponding change from the projection has been applied to the 2024 population and dwelling numbers to obtain estimated 2027 and 2038 population and dwelling counts. The ward level data covers the full area of the primary noise metrics, but does not cover the full extent of some of the secondary metrics. For postcodes outside of the population projection ward data the 2024 population and dwelling data has been used without adjustment. Table 7 below gives details of the modelled future population change by ward.

Ward	**Population Change Compared to 2024 Baseline**	
	2027	**2038**
Beckton	+12%	+90%
Royal Albert	+11%	+42%
Royal Victoria	+12%	+41%
Custom House	+3%	+12%
Canning Town South	+17%	+40%
Canning Town North	+26%	+59%
Poplar	+6%	+43%
Blackwall and Cubitt Town	+10%	+26%
Bromley South	+0%	+11%
Canary Wharf	+11%	+34%
Lansbury	+8%	+22%
Limehouse	-1%	+6%
Mile End	-0%	+0%
Shadwell	-2%	-2%
St Katharine's and Wapping	+3%	+19%
Whitechapel	+1%	+5%
Greenwich Peninsula	+26%	+150%
West Thamesmead	+7%	+27%
Thamesmead Moorings	+6%	+31%
Abbey Wood	+0%	+11%
Thamesmead East	+0%	+9%
Belvedere	-1%	+1%

Table 7: Population Projection by Ward

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The non-residential receptors assessed are the types required by CAP1616i, as set out below. They have been identified from AddressBase Plus data provided by EMapSite. The non-residential receptor data covers the full area of the primary noise metrics, but does not cover the full extent of some of the secondary metrics. Where the secondary metric contours go outside of the non-residential receptor data area, this is indicated in the text accompanying results tables. The non-residential receptors assessed include:

- Long-term healthcare, such as hospitals, hospices and nursing homes, but excluding short-term settings such as pharmacies and dentists;
- Places of worship;
- Schools, including nurseries and colleges, but exclude informal settings such as daycare.

3.1 Primary Metrics

As set out in CAP1616i, the primary noise metrics for an airspace change are average summer day ($L_{Aeq,16h}$) and average summer night ($L_{Aeq,8h}$) noise levels and contours.

The summer day and summer night outputs for the noise WebTAG calculation have also been prepared, the results of the WebTAG analysis are presented in the Full Options Appraisal document Appendix B.

3.1.1 Average Summer Day

The average summer day contours are presented in Figure 02 to Figure 06. The average summer day results presented below are based on the standard daytime period (07:00-23:00) as required by CAP1616i. The results are presented in the tables below.

The 07:00-23:00 daytime contours differ from the summer day contours based on the airport's operating hours (06:30-22:30) which are routinely prepared. The contours based on the airport's operating hours are the ones that the airport's contour area limit and sound insulation scheme relate to. Contours based on the airport's operating hours have also been prepared and the areas of the 57 dB $L_{Aeq,16h}$ contours are presented in Section 3.2.9 below, where they are compared to the contour area limits.

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Noise Contour, dB $L_{Aeq,16h}$	Contour Area, km^2				
	2024 Actual Avg. Modal	2027 (Year 1) No Change	2027 (Year 1) With Change	2038 (Year 12) No Change	2038 (Year 12) With Change
51	18.2	18.8	17.1	17.0	14.6
54	10.6	10.9	9.9	9.9	8.5
57	5.7	5.9	5.3	5.5	4.5
60	2.9	3.0	2.7	2.9	2.3
63	1.4	1.5	1.3	1.5	1.2
66	0.8	0.8	0.7	0.9	0.7
69	0.4	0.5	0.4	0.5	0.4

Table 8: Average Summer Day Contour Area

Noise Contour, dB $L_{Aeq,16h}$	Population, 000s				
	2024 Actual Avg. Modal	2027 (Year 1) No Change	2027 (Year 1) With Change	2038 (Year 12) No Change	2038 (Year 12) With Change
51	132.2	146.9	133.7	164.4	135.3
54	68.3	78.6	68.2	92.2	76.1
57	26.3	31.3	25.0	38.6	27.9
60	9.5	11.9	9.2	14.5	7.1
63	1.1	1.3	1.1	2.0	1.5
66	<0.1	<0.1	<0.1	0.1	0.0
69	0.0	0.0	0.0	0.0	0.0

Table 9: Average Summer Day Population

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Noise Contour, dB $L_{Aeq,16h}$	Dwellings, 000s				
	2024 Actual Avg. Modal	2027 (Year 1) No Change	2027 (Year 1) With Change	2038 (Year 12) No Change	2038 (Year 12) With Change
51	51.9	57.5	52.8	65.7	54.9
54	28.1	32.4	28.1	37.9	31.4
57	10.6	12.6	10.2	15.5	11.4
60	3.9	5.0	3.6	5.7	2.5
63	0.4	0.4	0.4	0.7	0.5
66	<0.1	<0.1	<0.1	<0.1	0.0
69	0.0	0.0	0.0	0.0	0.0

Table 10: Average Summer Day Dwellings

Noise Contour, dB $L_{Aeq,16h}$	Long-Term Healthcare				
	2024 Actual Avg. Modal	2027 (Year 1) No Change	2027 (Year 1) With Change	2038 (Year 12) No Change	2038 (Year 12) With Change
51	1	1	1	1	1
54	1	1	1	1	1
57	0	0	0	0	0
60	0	0	0	0	0
63	0	0	0	0	0
66	0	0	0	0	0
69	0	0	0	0	0

Table 11: Average Summer Day Long-Term Healthcare

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Noise Contour, dB $L_{Aeq,16h}$	Places of Worship				
	2024 Actual Avg. Modal	2027 (Year 1) No Change	2027 (Year 1) With Change	2038 (Year 12) No Change	2038 (Year 12) With Change
51	25	26	23	17	16
54	13	13	10	11	6
57	2	2	2	2	1
60	1	1	0	1	0
63	0	0	0	0	0
66	0	0	0	0	0
69	0	0	0	0	0

Table 12: Average Summer Day Places of Worship

Noise Contour, dB $L_{Aeq,16h}$	Schools				
	2024 Actual Avg. Modal	2027 (Year 1) No Change	2027 (Year 1) With Change	2038 (Year 12) No Change	2038 (Year 12) With Change
51	71	72	66	60	54
54	36	37	33	33	29
57	10	12	10	11	9
60	4	4	3	3	2
63	1	1	0	1	0
66	0	0	0	0	0
69	0	0	0	0	0

Table 13: Average Summer Day Schools

With or without the proposed change, by Year 12 the summer day noise contours are forecast to be smaller overall than what occurred in 2024, due to the transition to quieter, new-generation aircraft types. These more than offset the forecast increase in movements. The noise contours are forecast to be smaller overall in Year 1 than in 2024 with the proposed change, due to the faster transition to quieter aircraft; but slightly larger without the proposed change, due to the greater number of movements compared to 2024. The number of people and dwellings is forecast to increase over time with or without the change, despite the area of the contours reducing by Year 12. This is due to the projected increase in the population around the airport.

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In both Year 1 and Year 12 the proposed change results in smaller contours which contain fewer receptors. In Year 1 with the proposed change all of the receptors within the contours are forecast to experience a reduction in noise of between 0.4 and 0.6 dB compared to without the change. The improvement in noise is forecast to be greater in Year 12, with reductions in noise for all receptors of up to 1.6 dB. The change in noise is not evenly distributed, with those primarily affected by departure noise such as those to the west and north of the airport forecast to see greater reductions than those primarily affected by arrivals on final descent.

These reductions in noise with the change are due to the introduction of the Airbus A320neo. Individual departures by this type are substantially quieter than the existing main type, the Embraer E190. Even allowing for the shallower approach angle needed by the A320neo, it is also quieter per arrival at most locations. However, the further major benefit of the A320neo is that it can carry far more passengers per flight than an E190.

The improvement in noise would be even greater in the interim years just after the change, as the transition to quieter, new-generation aircraft types is forecast to be faster with the change, which would permit operations by the Airbus A320neo. The improvement in noise is forecast to peak around 2031, when without the change the fleet is still expected to be primarily the current generation E190.

Without the change, the fleet is still forecast to transition to other new-generation aircraft types such as the Embraer E2 jets, just more slowly than with the change. Compared to the other new-generation aircraft types, the A320neo is slightly louder on arrival and departure per flight. Although the differences compared to the other key new-generation type the Embraer E195-E2 are less than 2 dB, which would generally be considered not perceptible by most people. However, as fewer flights are required with the A320neo to move the same number of passengers, once the airport reaches its cap of 9 million passengers per annum (mppa) there are fewer flights with the change. Allowing for the greater passenger capacity, the A320neo is quieter overall on both arrival and departure than the other new-generation aircraft types, even with the shallower approach angle required by the A320neo.

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3.1.2 Average Summer Night

The average summer night contours are presented in Figure 07 to Figure 11. The average summer night results presented below are based on the standard night-time period (23:00-07:00) as required by CAP1616i. The airport only operates for 30 minutes (06:30-07:00) of the night-time period, hence the number of movements and resulting contours are relatively small. The results are presented in the tables below.

Noise Contour, dB $L_{Aeq,8h}$	Contour Area, km^2				
	2024 Actual Avg. Modal	2027 (Year 1) No Change	2027 (Year 1) With Change	2038 (Year 12) No Change	2038 (Year 12) With Change
45	2.1	6.8	5.6	4.3	2.5
48	1.1	3.5	2.8	2.3	1.3
51	0.6	1.7	1.4	1.3	0.8
54	0.4	0.9	0.8	0.8	0.5
57	0.2	0.5	0.5	0.5	0.3
60	0.1	0.3	0.3	0.3	0.2
63	0.1	0.2	0.2	0.2	0.1

Table 14: Average Summer Night Contour Area

Noise Contour, dB $L_{Aeq,8h}$	Population, 000s				
	2024 Actual Avg. Modal	2027 (Year 1) No Change	2027 (Year 1) With Change	2038 (Year 12) No Change	2038 (Year 12) With Change
45	3.5	34.8	26.7	18.0	6.6
48	0.8	13.1	10.8	5.7	1.2
51	0.0	1.7	1.0	1.0	0.1
54	0.0	0.1	0.1	0.1	0.0
57	0.0	0.0	0.0	0.0	0.0
60	0.0	0.0	0.0	0.0	0.0
63	0.0	0.0	0.0	0.0	0.0

Table 15: Average Summer Night Population

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Noise Contour, dB $L_{Aeq,8h}$	Dwellings, 000s				
	2024 Actual Avg. Modal	2027 (Year 1) No Change	2027 (Year 1) With Change	2038 (Year 12) No Change	2038 (Year 12) With Change
45	1.3	14.4	11.0	7.5	2.5
48	0.2	5.5	4.5	2.1	0.4
51	0.0	0.6	0.3	0.3	<0.1
54	0.0	<0.1	<0.1	<0.1	0.0
57	0.0	0.0	0.0	0.0	0.0
60	0.0	0.0	0.0	0.0	0.0
63	0.0	0.0	0.0	0.0	0.0

Table 16: Average Summer Night Dwellings

Noise Contour, dB $L_{Aeq,8h}$	Long-Term Healthcare				
	2024 Actual Avg. Modal	2027 (Year 1) No Change	2027 (Year 1) With Change	2038 (Year 12) No Change	2038 (Year 12) With Change
45	0	1	0	0	0
48	0	0	0	0	0
51	0	0	0	0	0
54	0	0	0	0	0
57	0	0	0	0	0
60	0	0	0	0	0
63	0	0	0	0	0

Table 17: Average Summer Night Long-Term Healthcare

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Noise Contour, dB $L_{Aeq,8h}$	Places of Worship				
	2024 Actual Avg. Modal	2027 (Year 1) No Change	2027 (Year 1) With Change	2038 (Year 12) No Change	2038 (Year 12) With Change
45	0	3	3	2	0
48	0	1	1	0	0
51	0	0	0	0	0
54	0	0	0	0	0
57	0	0	0	0	0
60	0	0	0	0	0
63	0	0	0	0	0

Table 18: Average Summer Night Places of Worship

Noise Contour, dB $L_{Aeq,8h}$	Schools				
	2024 Actual Avg. Modal	2027 (Year 1) No Change	2027 (Year 1) With Change	2038 (Year 12) No Change	2038 (Year 12) With Change
45	1	17	11	9	3
48	0	9	5	3	1
51	0	1	1	1	0
54	0	0	0	0	0
57	0	0	0	0	0
60	0	0	0	0	0
63	0	0	0	0	0

Table 19: Average Summer Night Schools

With or without the proposed change, summer night noise is forecast to be higher overall than what occurred in 2024, as there were relatively few night-time movements in 2024 compared to the airport's limit of 9 per night.

In both Year 1 and Year 12 the proposed change results in smaller contours which contain fewer receptors. In Year 1 with the proposed change all of the receptors within the contours are forecast to experience a reduction in noise of around 0.9 dB compared to without the change. The improvement in noise is forecast to be greater in Year 12, with reductions in noise for all receptors of between 1.7 and 3.8 dB. The improvement in night-time noise in Year 12 is greater than for daytime noise, as most night-time flights are forecast to be departures, for which the improvement from the Airbus A320neo is greater.

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3.2 Supplementary Metrics

3.2.1 Summer Day N65

The average summer day N65 contours are presented in Figure 12 to Figure 16. The 5, 10, 20, and 50 event contours go outside of the area the non-residential receptor data covers for 2024 and all future scenarios. Counts are presented based on the available data. The results are presented in the tables below.

Number Above 65 dB L_{ASmax}, events	Contour Area, km²				
	2024 Actual Avg. Modal	2027 (Year 1) No Change	2027 (Year 1) With Change	2038 (Year 12) No Change	2038 (Year 12) With Change
5	104.0	103.8	101.1	80.0	77.3
10	93.5	91.9	86.8	71.3	59.2
20	44.4	49.5	43.3	63.2	49.7
50	15.7	16.5	14.8	21.3	20.0
100	1.6	1.8	1.6	12.4	10.1
200	-	-	-	1.3	0.7

Table 20: Average Summer Day N65 Contour Area

Number Above 65 dB L_{ASmax}, events	Population, 000s				
	2024 Actual Avg. Modal	2027 (Year 1) No Change	2027 (Year 1) With Change	2038 (Year 12) No Change	2038 (Year 12) With Change
5	711.1	716.7	702.8	642.5	620.3
10	660.1	658.1	634.8	565.9	503.9
20	368.3	409.7	374.4	513.9	444.6
50	95.5	106.7	97.0	214.4	199.1
100	6.2	9.0	6.6	107.5	95.5
200	-	-	-	6.3	0.1

Table 21: Average Summer Day N65 Population

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Number Above 65 dB L_{ASmax}, events	Dwellings, 000s				
	2024 Actual Avg. Modal	2027 (Year 1) No Change	2027 (Year 1) With Change	2038 (Year 12) No Change	2038 (Year 12) With Change
5	290.6	292.3	287.0	262.5	253.7
10	269.9	268.8	259.8	232.4	206.5
20	149.9	167.3	152.3	211.2	181.8
50	39.3	44.0	39.8	86.1	79.5
100	2.1	3.2	2.3	43.8	38.8
200	-	-	-	2.1	<0.1

Table 22: Average Summer Day N65 Dwellings

Number Above 65 dB L_{ASmax}, events	Long-Term Healthcare				
	2024 Actual Avg. Modal	2027 (Year 1) No Change	2027 (Year 1) With Change	2038 (Year 12) No Change	2038 (Year 12) With Change
5	2	2	2	2	2
10	2	2	2	1	2
20	2	2	2	1	1
50	1	1	1	1	1
100	0	0	0	1	1
200	-	-	-	0	0

Table 23: Average Summer Day N65 Long-Term Healthcare

Number Above 65 dB L_{ASmax}, events	Places of Worship				
	2024 Actual Avg. Modal	2027 (Year 1) No Change	2027 (Year 1) With Change	2038 (Year 12) No Change	2038 (Year 12) With Change
5	33	33	33	32	33
10	33	33	33	29	33
20	32	32	32	29	32
50	15	15	15	28	28
100	0	1	0	11	11
200	-	-	-	0	0

Table 24: Average Summer Day N65 Places of Worship

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Number Above 65 dB L_{ASmax}, events	Schools				
	2024 Actual Avg. Modal	2027 (Year 1) No Change	2027 (Year 1) With Change	2038 (Year 12) No Change	2038 (Year 12) With Change
5	95	95	95	89	92
10	95	95	95	87	91
20	92	92	92	84	89
50	47	54	46	76	74
100	6	7	6	40	33
200	-	-	-	4	0

Table 25: Average Summer Day N65 Schools

The 2024 N65 contours are generally similar in overall size and shape to the 2027 contours with and without the change.

The 2027 With Change contours are slightly smaller in overall area than the Without Change contours. The number of receptors within the contours is similar with or without the change in 2027. Although where there are differences, the With Change contours contain fewer receptors as they are slightly smaller.

In 2038 the N65 contours are also broadly similar with or without the change. Overall the areas of the 2038 With Change contours are slightly smaller, illustrating the benefit of the change. Although due to the differences in fleet and movement numbers between the scenarios, there are areas where the With Change contours do extend beyond the Without Change contours and vice versa. Due to the smaller overall area, the With Change contours contain fewer people and dwellings than the Without Change contours. The 5, 10, and 20 event With Change N65 contours contain more non-residential receptors. This is due to a combination of the slightly greater width of the With Change contours close to the airport and the limited data area, with these contours extending well beyond the extent of the non-residential data.

3.2.2 Summer Night N60

CAP1616i says that Nx contours should be plotted for five events and above. There was not an average of 5 flights per night in 2024, nor are there forecast to be with or without the proposed airspace change. Therefore, 5 event (or higher) N60 night-time contours do not occur.

It should be noted that the airport has a limit of 9 flights per night. However, this limit is a maximum that can occur on any night. It is therefore expected that the average number that would occur across all nights in the summer period (or annual period) would be lower.

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3.2.3 100% Westerly Mode Summer Day

Summer day and summer night single mode contours have been produced. These have been prepared in the same way as the primary noise metric contours, with the exception that they are based on the airport operating in either a 100% westerly or easterly direction respectively.

The 100% westerly mode summer day contours are presented in Figure 17 to Figure 21. The 51 dB $L_{Aeq,16h}$ contours go outside of the area the non-residential receptor data covers for 2024 and all future scenarios. Counts are presented based on the available data. The results are presented in the tables below.

Noise Contour, dB $L_{Aeq,16h}$	Contour Area, km^2				
	2024 Actual Avg. Modal	2027 (Year 1) No Change	2027 (Year 1) With Change	2038 (Year 12) No Change	2038 (Year 12) With Change
51	18.3	18.8	17.3	18.1	15.3
54	10.8	11.1	10.1	10.1	8.6
57	5.8	6.0	5.3	5.5	4.6
60	3.0	3.1	2.8	2.9	2.4
63	1.5	1.5	1.4	1.5	1.2
66	0.8	0.8	0.7	0.8	0.7
69	0.4	0.5	0.4	0.5	0.4

Table 26: 100% Westerly Mode Summer Day Contour Area

Noise Contour, dB $L_{Aeq,16h}$	Population, 000s				
	2024 Actual Avg. Modal	2027 (Year 1) No Change	2027 (Year 1) With Change	2038 (Year 12) No Change	2038 (Year 12) With Change
51	156.6	173.0	156.4	178.1	149.1
54	80.5	92.4	79.1	97.7	81.0
57	28.5	33.8	27.7	40.0	29.9
60	9.7	11.3	10.4	14.6	6.2
63	1.1	1.3	1.1	1.6	1.3
66	<0.1	<0.1	<0.1	1.2	<0.1
69	0.0	0.0	0.0	0.0	0.0

Table 27: 100% Westerly Mode Summer Day Population

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Noise Contour, dB $L_{Aeq,16h}$	Dwellings, 000s				
	2024 Actual Avg. Modal	2027 (Year 1) No Change	2027 (Year 1) With Change	2038 (Year 12) No Change	2038 (Year 12) With Change
51	61.6	68.3	61.7	70.6	59.8
54	32.8	37.6	32.6	40.4	33.6
57	12.0	14.1	11.7	16.1	12.2
60	4.3	5.0	4.7	6.4	2.5
63	0.4	0.4	0.3	0.5	0.4
66	<0.1	<0.1	<0.1	0.4	<0.1
69	0.0	0.0	0.0	0.0	0.0

Table 28: 100% Westerly Mode Summer Day Dwellings

Noise Contour, dB $L_{Aeq,16h}$	Long-Term Healthcare				
	2024 Actual Avg. Modal	2027 (Year 1) No Change	2027 (Year 1) With Change	2038 (Year 12) No Change	2038 (Year 12) With Change
51	1	1	1	1	1
54	1	1	1	1	1
57	0	0	0	0	0
60	0	0	0	0	0
63	0	0	0	0	0
66	0	0	0	0	0
69	0	0	0	0	0

Table 29: 100% Westerly Mode Summer Day Long-Term Healthcare

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Noise Contour, dB $L_{Aeq,16h}$	Places of Worship				
	2024 Actual Avg. Modal	2027 (Year 1) No Change	2027 (Year 1) With Change	2038 (Year 12) No Change	2038 (Year 12) With Change
51	28	28	28	24	18
54	16	16	15	11	8
57	3	3	3	3	2
60	1	1	1	1	0
63	0	0	0	0	0
66	0	0	0	0	0
69	0	0	0	0	0

Table 30: 100% Westerly Mode Summer Day Places of Worship

Noise Contour, dB $L_{Aeq,16h}$	Schools				
	2024 Actual Avg. Modal	2027 (Year 1) No Change	2027 (Year 1) With Change	2038 (Year 12) No Change	2038 (Year 12) With Change
51	80	80	76	64	56
54	46	47	43	40	33
57	14	15	11	12	7
60	5	6	3	4	1
63	1	1	1	1	1
66	0	0	0	0	0
69	0	0	0	0	0

Table 31: 100% Westerly Mode Summer Day Schools

The 100% westerly mode summer day contour results broadly mirror those for the average mode contours.

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3.2.4 100% Westerly Mode Summer Night

The 100% westerly mode summer night contours are presented in Figure 22 to Figure 26. The results are presented in the tables below.

Noise Contour, dB $L_{Aeq,8h}$	Contour Area, km^2				
	2024 Actual Avg. Modal	2027 (Year 1) No Change	2027 (Year 1) With Change	2038 (Year 12) No Change	2038 (Year 12) With Change
45	2.2	6.9	5.8	4.2	2.8
48	1.1	3.7	3.1	2.5	1.5
51	0.6	2.0	1.6	1.4	0.8
54	0.4	1.0	0.8	0.8	0.5
57	0.2	0.6	0.5	0.5	0.3
60	0.1	0.3	0.3	0.3	0.2
63	0.1	0.2	0.2	0.2	0.1

Table 32: 100% Westerly Mode Summer Night Contour Area

Noise Contour, dB $L_{Aeq,8h}$	Population, 000s				
	2024 Actual Avg. Modal	2027 (Year 1) No Change	2027 (Year 1) With Change	2038 (Year 12) No Change	2038 (Year 12) With Change
45	6.5	54.2	40.3	31.1	17.6
48	0.8	18.4	13.4	14.7	1.8
51	<0.1	6.0	2.3	1.8	1.2
54	0.0	0.8	<0.1	1.2	0.0
57	0.0	<0.1	0.0	0.0	0.0
60	0.0	0.0	0.0	0.0	0.0
63	0.0	0.0	0.0	0.0	0.0

Table 33: 100% Westerly Mode Summer Night Population

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Noise Contour, dB $L_{Aeq,8h}$	Dwellings, 000s				
	2024 Actual Avg. Modal	2027 (Year 1) No Change	2027 (Year 1) With Change	2038 (Year 12) No Change	2038 (Year 12) With Change
45	2.9	23.4	17.7	13.1	7.7
48	0.2	7.9	5.9	6.5	0.6
51	<0.1	2.6	0.8	0.6	0.4
54	0.0	0.3	<0.1	0.4	0.0
57	0.0	<0.1	0.0	0.0	0.0
60	0.0	0.0	0.0	0.0	0.0
63	0.0	0.0	0.0	0.0	0.0

Table 34: 100% Westerly Mode Summer Night Dwellings

Noise Contour, dB $L_{Aeq,8h}$	Long-Term Healthcare				
	2024 Actual Avg. Modal	2027 (Year 1) No Change	2027 (Year 1) With Change	2038 (Year 12) No Change	2038 (Year 12) With Change
45	0	1	0	0	0
48	0	0	0	0	0
51	0	0	0	0	0
54	0	0	0	0	0
57	0	0	0	0	0
60	0	0	0	0	0
63	0	0	0	0	0

Table 35: 100% Westerly Mode Summer Night Long-Term Healthcare

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Noise Contour, dB $L_{Aeq,8h}$	Places of Worship				
	2024 Actual Avg. Modal	2027 (Year 1) No Change	2027 (Year 1) With Change	2038 (Year 12) No Change	2038 (Year 12) With Change
45	0	9	7	3	2
48	0	2	2	1	0
51	0	0	0	0	0
54	0	0	0	0	0
57	0	0	0	0	0
60	0	0	0	0	0
63	0	0	0	0	0

Table 36: 100% Westerly Mode Summer Night Places of Worship

Noise Contour, dB $L_{Aeq,8h}$	Schools				
	2024 Actual Avg. Modal	2027 (Year 1) No Change	2027 (Year 1) With Change	2038 (Year 12) No Change	2038 (Year 12) With Change
45	3	28	22	9	7
48	0	8	6	4	1
51	0	3	1	1	0
54	0	0	0	0	0
57	0	0	0	0	0
60	0	0	0	0	0
63	0	0	0	0	0

Table 37: 100% Westerly Mode Summer Night Schools

The 100% westerly mode summer night contour results broadly mirror those for the average mode contours when it comes to the relationship between the future scenarios.

3.2.5 100% Easterly Mode Summer Day

The 100% easterly mode summer day contours are presented in Figure 27 to Figure 31. The 51 dB $L_{Aeq,16h}$ contours go outside of the area the non-residential receptor data covers for 2024 and all future scenarios The 54 dB $L_{Aeq,16h}$ contours also go outside of this area for 2024 and the future scenarios except 2038 With Change, which is small enough to remain within the data area. Counts are presented based on the available data.

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Noise Contour, dB $L_{Aeq,16h}$	Contour Area, km^2				
	2024 Actual Avg. Modal	2027 (Year 1) No Change	2027 (Year 1) With Change	2038 (Year 12) No Change	2038 (Year 12) With Change
51	18.1	18.7	17.1	54.3	15.2
54	10.5	10.9	9.8	15.4	8.5
57	5.7	5.9	5.3	5.5	4.6
60	3.0	3.1	2.8	2.9	2.4
63	1.5	1.6	1.4	1.5	1.2
66	0.8	0.8	0.7	0.8	0.7
69	0.4	0.5	0.4	0.5	0.4

Table 38: 100% Easterly Mode Summer Day Contour Area

Noise Contour, dB $L_{Aeq,16h}$	Population, 000s				
	2024 Actual Avg. Modal	2027 (Year 1) No Change	2027 (Year 1) With Change	2038 (Year 12) No Change	2038 (Year 12) With Change
51	75.9	85.8	79.7	388.0	114.2
54	49.9	58.5	50.9	112.7	64.7
57	21.5	24.7	21.7	34.2	25.9
60	9.2	10.5	9.5	13.5	10.7
63	3.5	3.9	3.4	5.4	4.0
66	0.1	0.2	0.1	0.4	0.1
69	0.0	0.0	0.0	0.1	0.0

Table 39: 100% Easterly Mode Summer Day Population

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Noise Contour, dB $L_{Aeq,16h}$	Dwellings, 000s				
	2024 Actual Avg. Modal	2027 (Year 1) No Change	2027 (Year 1) With Change	2038 (Year 12) No Change	2038 (Year 12) With Change
51	30.1	33.9	31.7	161.4	46.5
54	19.6	23.2	20.1	46.6	26.7
57	8.0	9.2	8.0	13.3	9.8
60	3.3	3.8	3.4	5.0	3.9
63	1.3	1.4	1.2	1.9	1.4
66	0.1	0.1	<0.1	0.2	<0.1
69	0.0	0.0	0.0	<0.1	0.0

Table 40: 100% Easterly Mode Summer Day Dwellings

Noise Contour, dB $L_{Aeq,16h}$	Long-Term Healthcare				
	2024 Actual Avg. Modal	2027 (Year 1) No Change	2027 (Year 1) With Change	2038 (Year 12) No Change	2038 (Year 12) With Change
51	1	1	1	1	1
54	1	1	1	1	0
57	0	0	0	0	0
60	0	0	0	0	0
63	0	0	0	0	0
66	0	0	0	0	0
69	0	0	0	0	0

Table 41: 100% Easterly Mode Summer Day Long-Term Healthcare

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Noise Contour, dB $L_{Aeq,16h}$	Places of Worship				
	2024 Actual Avg. Modal	2027 (Year 1) No Change	2027 (Year 1) With Change	2038 (Year 12) No Change	2038 (Year 12) With Change
51	7	8	7	13	9
54	4	4	4	5	3
57	2	2	1	1	1
60	0	0	0	0	0
63	0	0	0	0	0
66	0	0	0	0	0
69	0	0	0	0	0

Table 42: 100% Easterly Mode Summer Day Places of Worship

Noise Contour, dB $L_{Aeq,16h}$	Schools				
	2024 Actual Avg. Modal	2027 (Year 1) No Change	2027 (Year 1) With Change	2038 (Year 12) No Change	2038 (Year 12) With Change
51	35	37	32	41	35
54	25	25	24	23	19
57	10	10	7	7	6
60	4	4	3	4	4
63	2	2	1	2	0
66	0	0	0	0	0
69	0	0	0	0	0

Table 43: 100% Easterly Mode Summer Day Schools

The 100% easterly mode summer day contour results broadly show the same comparisons between scenarios as the average mode contours. The exceptions are the 51 and 54 dB $L_{Aeq,16h}$ contours for 2038 Without Change. They are much larger than the corresponding average mode contours and are much larger than the 100% easterly mode contours for 2038 With Change.

The larger size is due to the altitude holds for the runway 09 approach. The additional flights required for 9 mppa without the change compared to with the change, result in the 51 dB contour being continuous in the areas where the runway 09 arrivals are being held at 2,000 ft and 3,000 ft and for most of the descent from 3,000 ft to 2,000 ft. There is also an area of 54 dB contour before the 180° turn to the north, primarily due to the aircraft flight tracks being particularly concentrated in this area.

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3.2.6 100% Easterly Mode Summer Night

The 100% easterly mode summer night contours are presented in Figure 32 to Figure 36. The results are presented in the tables below.

Noise Contour, dB $L_{Aeq,8h}$	Contour Area, km^2				
	2024 Actual Avg. Modal	2027 (Year 1) No Change	2027 (Year 1) With Change	2038 (Year 12) No Change	2038 (Year 12) With Change
45	2.2	6.8	5.7	4.3	2.8
48	1.1	3.7	3.1	2.5	1.5
51	0.6	2.0	1.6	1.4	0.8
54	0.4	1.0	0.8	0.8	0.5
57	0.2	0.6	0.5	0.5	0.3
60	0.1	0.3	0.3	0.3	0.2
63	0.1	0.2	0.2	0.2	0.1

Table 44: 100% Easterly Mode Summer Night Contour Area

Noise Contour, dB $L_{Aeq,8h}$	Population, 000s				
	2024 Actual Avg. Modal	2027 (Year 1) No Change	2027 (Year 1) With Change	2038 (Year 12) No Change	2038 (Year 12) With Change
45	7.3	31.8	26.2	24.7	16.0
48	2.6	15.6	12.6	13.1	7.2
51	0.1	7.5	4.3	5.8	0.3
54	0.0	2.5	0.5	0.5	0.1
57	0.0	0.1	0.0	0.1	0.0
60	0.0	0.0	0.0	0.0	0.0
63	0.0	0.0	0.0	0.0	0.0

Table 45: 100% Easterly Mode Summer Night Population

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Noise Contour, dB $L_{Aeq,8h}$	Dwellings, 000s				
	2024 Actual Avg. Modal	2027 (Year 1) No Change	2027 (Year 1) With Change	2038 (Year 12) No Change	2038 (Year 12) With Change
45	2.6	11.4	9.4	8.8	5.8
48	0.9	5.6	4.5	4.7	2.5
51	<0.1	2.7	1.6	2.1	0.1
54	0.0	0.9	0.2	0.2	<0.1
57	0.0	<0.1	0.0	<0.1	0.0
60	0.0	0.0	0.0	0.0	0.0
63	0.0	0.0	0.0	0.0	0.0

Table 46: 100% Easterly Mode Summer Night Dwellings

Noise Contour, dB $L_{Aeq,8h}$	Long-Term Healthcare				
	2024 Actual Avg. Modal	2027 (Year 1) No Change	2027 (Year 1) With Change	2038 (Year 12) No Change	2038 (Year 12) With Change
45	0	0	0	0	0
48	0	0	0	0	0
51	0	0	0	0	0
54	0	0	0	0	0
57	0	0	0	0	0
60	0	0	0	0	0
63	0	0	0	0	0

Table 47: 100% Easterly Mode Summer Night Long-Term Healthcare

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Noise Contour, dB $L_{Aeq,8h}$	Places of Worship				
	2024 Actual Avg. Modal	2027 (Year 1) No Change	2027 (Year 1) With Change	2038 (Year 12) No Change	2038 (Year 12) With Change
45	0	3	2	0	0
48	0	0	0	0	0
51	0	0	0	0	0
54	0	0	0	0	0
57	0	0	0	0	0
60	0	0	0	0	0
63	0	0	0	0	0

Table 48: 100% Easterly Mode Summer Night Places of Worship

Noise Contour, dB $L_{Aeq,8h}$	Schools				
	2024 Actual Avg. Modal	2027 (Year 1) No Change	2027 (Year 1) With Change	2038 (Year 12) No Change	2038 (Year 12) With Change
45	3	15	11	7	5
48	0	5	5	4	3
51	0	3	3	3	0
54	0	0	0	0	0
57	0	0	0	0	0
60	0	0	0	0	0
63	0	0	0	0	0

Table 49: 100% Easterly Mode Summer Night Schools

The 100% easterly mode summer night contour results broadly mirror those for the average mode contours when it comes to the relationship between the future scenarios.

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3.2.7 Overflight Day Contours

The average summer day overflight contours are presented in Figure 37 to Figure 41. The overflight contours have been prepared in line with the guidance in CAP1498, based on the 48.5° elevation angle required by CAP1616i. The 48.5° angle results in wider contours than if the alternate 60° angle is used.

The specific changes proposed are limited to the final approach path below 3,000 ft, no material changes would be expected in flight operations between 4,000 and 7,000 ft. The existing noise model extends to slightly above 4,000 ft and this is sufficient for all the other noise metrics required as part of the airspace change process. Extending the noise model to 7,000 ft would have required significant additional analysis, which was considered disproportionate given the lack of changes proposed in this altitude range. As such, it has been agreed with the CAA that the overflight contours have been prepared covering the area overflown by aircraft up to 4,000 ft.

The areas overflown by aircraft between 4,000 and 7,000 ft are expected to remain the same as what already occurs, which is illustrated in the operational diagrams presented in the Consultation Document Section 5. However as shown in Table 5, the total number of flights is forecast to be around 25% lower by 2038 with the change compared to without the change, due to the greater passenger capacity of the Airbus A320neo.

As set out in CAP1616i, overflight contours do not represent a noise impact, but they give an illustration of the areas overflown. The number of people and dwellings within the contours are presented in the tables below.

Number Above 65 dB L_{ASmax}, events	Population, 000s				
	2024 Actual Avg. Modal	2027 (Year 1) No Change	2027 (Year 1) With Change	2038 (Year 12) No Change	2038 (Year 12) With Change
5	1,137.5	1,190.6	1,160.3	1,291.0	1,287.5
10	942.0	960.6	952.0	1,116.9	1,054.4
20	639.2	676.2	655.8	955.8	818.9
50	29.4	59.5	33.2	403.7	306.2
100	-	-	-	45.3	24.1

Table 50: Average Summer Day Overflight Population

Number Above 65 dB L_{ASmax}, events	Dwellings, 000s				
	2024 Actual Avg. Modal	2027 (Year 1) No Change	2027 (Year 1) With Change	2038 (Year 12) No Change	2038 (Year 12) With Change
5	448.5	469.1	457.6	509.5	506.7
10	376.8	384.2	380.8	444.8	421.4
20	256.3	272.1	263.6	383.2	328.7
50	12.3	24.1	14.0	158.2	119.3
100	-	-	-	19.1	10.4

Table 51: Average Summer Day Overflight Dwellings

An additional explanation is required for the blue hatched area to the east in each of the figures. Within that indicative triangle (but excluding the central strip), the modelling predicts a frequency of 5 to fewer than 20 overflights per day. However, the statistical output provides lots of “bubbles” where overflight exceeds 5 but not 20, due to ATC vectoring in that region. It would not be proportionate to attempt to show all those bubbles because they would give a confusing picture and not be a realistic illustration of the overflights as intended. We have created that triangle to express a more realistic picture, so an observer in that area would be more accurately expect to experience 5 or more overflights per day.

In 2024 and 2027 there are insufficient movements to generate a 100 overflight contour and there are insufficient movements to generate a 200 overflight contour for any of the years or scenarios.

The 2024 overflight contours are generally broadly similar in overall size and shape to the 2027 contours with and without the change. The exception being the 2027 Without Change 50 event contour, which is much larger due to the forecast increase in flights.

For both 2027 and 2038 the population and dwelling counts are always slightly lower with the change compared to without the change, indicating a reduced overall impact. In most cases the With Change contours are slightly inside the Without Change contours. However, in some cases the With Change contours are significantly inside or outside the equivalent Without Change contours. This is mainly a function of how the frequency distribution changes between bands, coupled with precisely where the modelling places aircraft reaching 4,000ft. In theory this implies that some areas would be overflown more in that band with the change, but the experience of an observer on the ground would be less variable than the overflight contours imply. For example, the daily overflight frequency of 20 to 49 (green) does not occur between South Woodford and Chingford in 2038 with the change (Figure 41) compared to without the change (Figure 40), but is present in the lower-frequency contours.

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This lack of northbound green contour indicates that there would be no overflight frequency of 20+ per day in that area, therefore the entire flow north of South Woodford would be overflown by 10+ and 5+ as per the dark and light blue contours on Figure 41 above. This is factually correct, however the raw data behind this contour shows that the actual daily frequency would be, on average, 19.4, just beneath the contour limit. The experience in that area would thus be barely different than if the average was 20.1 per day, which would trigger a green contour northwards. This is an example of how contour banding can illustrate apparently-large changes in impact that may be far smaller in practice.

3.2.8 Overflight Night Contours

As for N60 night-time contours, CAP1616i says that overflight contours should be plotted for five overflights and above. There were not an average of 5 flights per night in 2024, nor are there forecast to be with or without the proposed airspace change. Therefore, 5 (or higher) night-time overflight contours cannot be produced.

3.2.9 Operating Hours Average Summer Day

Average summer day contours have been prepared based on the airport's operating hours (06:30-22:30), these therefore allow for the movements in both the standard daytime period (07:00-23:00) and those in the 30 minutes of the standard night period (23:00-07:00) in which the airport is open. Contours based on the airport's operating hours are routinely prepared and presented in the airport's annual performance report (APR) and these are the contours to which the contour area limit and sound insulation scheme relate. The resulting 57 dB $L_{Aeq,16h}$ contour areas are presented in the table below.

Noise Contour, dB $L_{Aeq,16h}$	Contour Area, km^2				
	2024 Actual Avg. Modal	2027 (Year 1) No Change	2027 (Year 1) With Change	2038 (Year 12) No Change	2038 (Year 12) With Change
57	5.7	6.1	5.4	5.6	4.6

Table 52: Operating Hours Average Summer Day Contour Area

The 2024 contour area presented in the table above differs slightly from the area presented in the 2024 APR. This is partly due to being based on the average modal split, and partly due to the airspace change contours using the latest methodology. The latest methodology allows for the measured noise levels in the period 2022-2024, as opposed to the previous methodology used for the APR contours, which was based on the measured noise levels in the period 2019-2021. The methodology update was agreed with LBN.

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The airport currently has a contour area limit of 9.1 km^2, which applies to the area of the 57 dB $L_{Aeq,16h}$ contour. Once the airport reaches 9 mppa this limit reduces to 7.2 km^2. The 57 dB contour areas for 2024 and all future scenarios are less than the current limit, and less than the lower limit that would apply once the airport reaches 9 mppa.

4.0 OTHER AIRCRAFT TYPES USING SHALLOWER APPROACH ANGLE

The results presented above for the With Change scenario have been prepared in accordance with the forecasts provided by York Aviation Ltd and on the basis that only the Airbus A320neo uses the new 4.49° final approach angle. This assumption is consistent with any aircraft operator wishing to use the shallower approach needing airport authorisation, however the new approach angle will not be formally restricted to a specific aircraft type.

It is not considered proportionate to quantify multiple potential combinations of aircraft types using the shallower approach, however consideration has been given to the general noise effects if this were to happen.

The With Change scenario results in overall noise benefits compared to Without Change. This is due to a combination of a transition to the Airbus A320neo, which is quieter than the current key aircraft the Embraer E190, combined with fewer overall flights being required due to the greater passenger capacity of the Airbus A320neo compared to the other types that currently operate or are forecast to operate at the airport.

Neither of these beneficial effects would necessarily apply to permitting other aircraft types to fly the shallower approach, consequently the only effect compared to the With Change scenario presented would be to have the aircraft types other than the A320neo lower on final approach than they otherwise would be. Therefore broadly, noise under the approach paths would be higher than that presented for the With Change scenario.

However, the difference in noise for individual flights due to the shallower approach angle would be relatively small. The 4.49° approach would result in aircraft being around 20% lower at the same distance from the airport compared to aircraft flying the existing 5.5° approach. Based on a 6 dB change in noise per doubling of distance, this would equate to an increase in less than 2 dB, which would generally be considered not perceptible by most people.

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5.0 SUMMARY

London City Airport (LCY) are proposing an airspace change to introduce an alternative 4.49° final approach angle that is intended to permit operations by the Airbus A320neo. Other aircraft types are expected to primarily continue using the existing 5.5° approach.

Bickerdike Allen Partners LLP (BAP) have undertaken a noise assessment considering the situation in 2027 and 2038 with and without the proposed change. This assessment has been undertaken in accordance with CAP1616 and its associated supplementary documents.

The primary metrics for considering the noise impact of an airspace change are average summer day and average summer night noise. Comparing the With Change and Without Change results for 2027 and 2038 finds that With Change results in smaller contours and hence lower noise levels for all people and non-residential receptors within the contours, with larger benefits by 2038.

Supplementary noise metrics have also been considered as required by CAP1616i. These find that overall the With Change contours are smaller than the Without Change contours, illustrating the overall noise benefit of the change. Although, in some areas there are instances where the supplementary metric With Change contours go outside the Without Change contours, where this is the case it is generally by a relatively small amount.

Qualitative consideration has been given to the noise effect of other aircraft types using the proposed shallower approach angle. In general, this would result in more noise than the With Change results presented in the assessment, as more aircraft on final approach would be lower, reducing the benefit of the change. However, the difference in noise level between the proposed 4.49° approach and the existing 5.5° approach would be expected to be less than 2 dB, which would generally be considered not perceptible by most people.

Duncan Rogers	**David Charles**
for Bickerdike Allen Partners LLP	**Partner**

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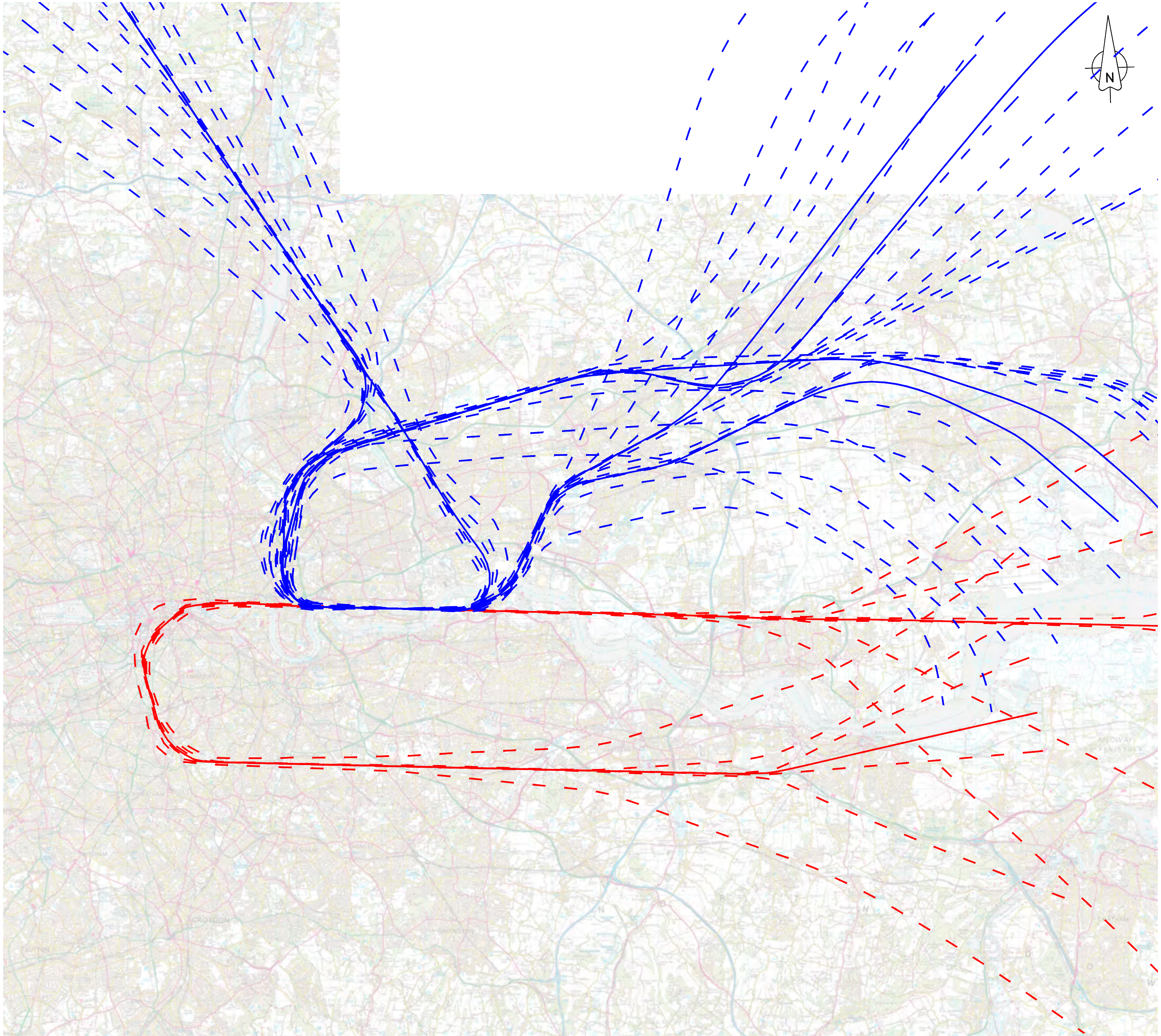
6.0 APPENDIX A: CONTOUR MAPS FIGURES 1-46

The following pages provide relevant contour diagrams with Ordnance Survey map backgrounds.



LEGEND:

- Modelled Arrival Route Centre Track
- Modelled Arrival Route Sub Track
- Modelled Departure Route Centre Track
- Modelled Departure Route Sub Track

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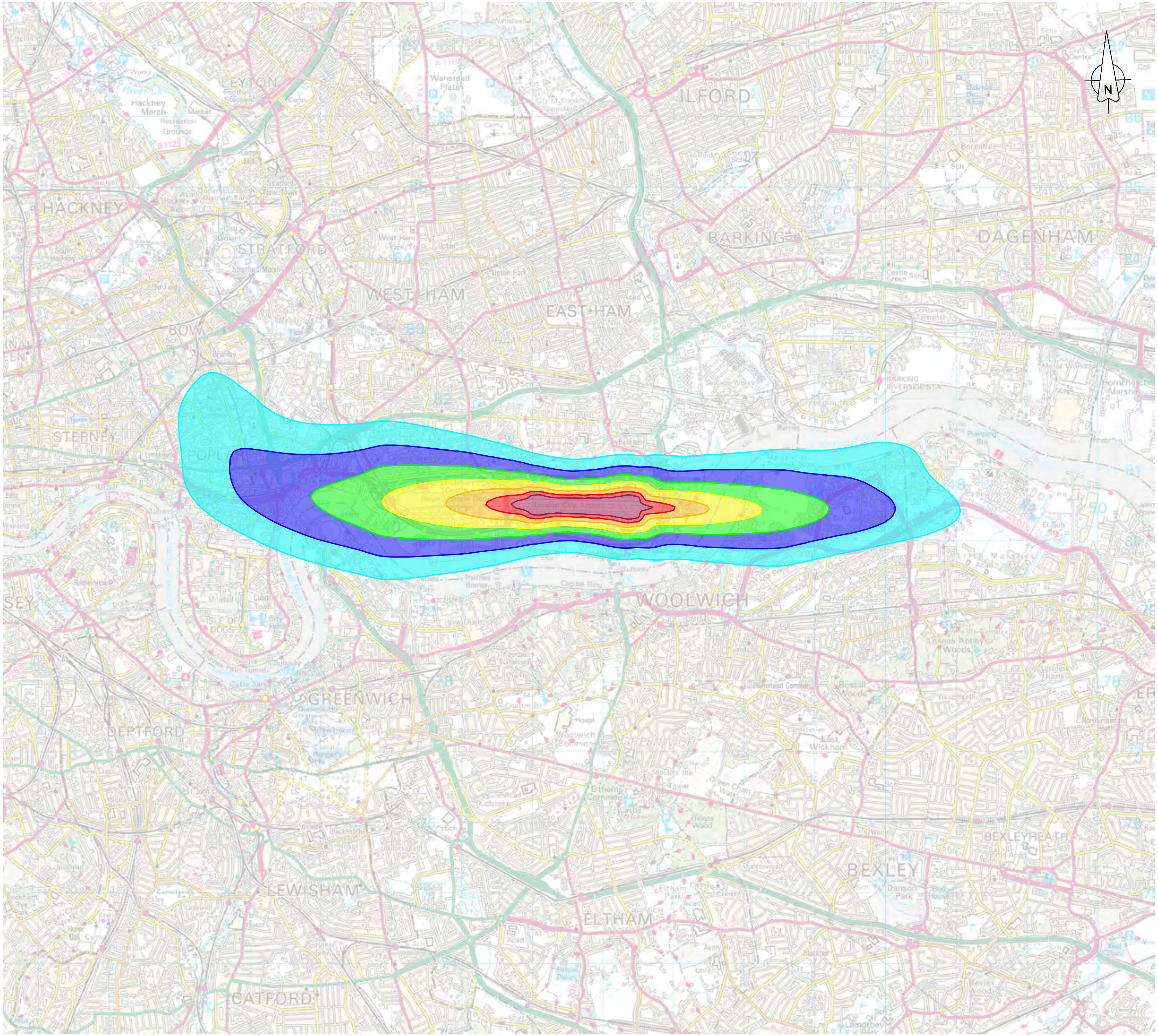
Figure 1
Modelled Arrival and Departure Routes

DRAWN: DR CHECKED: DC

DATE: December 2025 SCALE: 1:250,000@A4

FIGURE No:

A11580_DR013_1.0



LEGEND:

- 51 - 53.9 dB(A) $L_{Aeq,16h}$
- 54 - 56.9 dB(A) $L_{Aeq,16h}$
- 57 - 59.9 dB(A) $L_{Aeq,16h}$
- 60 - 62.9 dB(A) $L_{Aeq,16h}$
- 63 - 65.9 dB(A) $L_{Aeq,16h}$
- 66 - 68.9 dB(A) $L_{Aeq,16h}$
- 69 + dB(A) $L_{Aeq,16h}$

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Figure 02
Average Summer Day Noise Contours
2024 Actual Average Modal

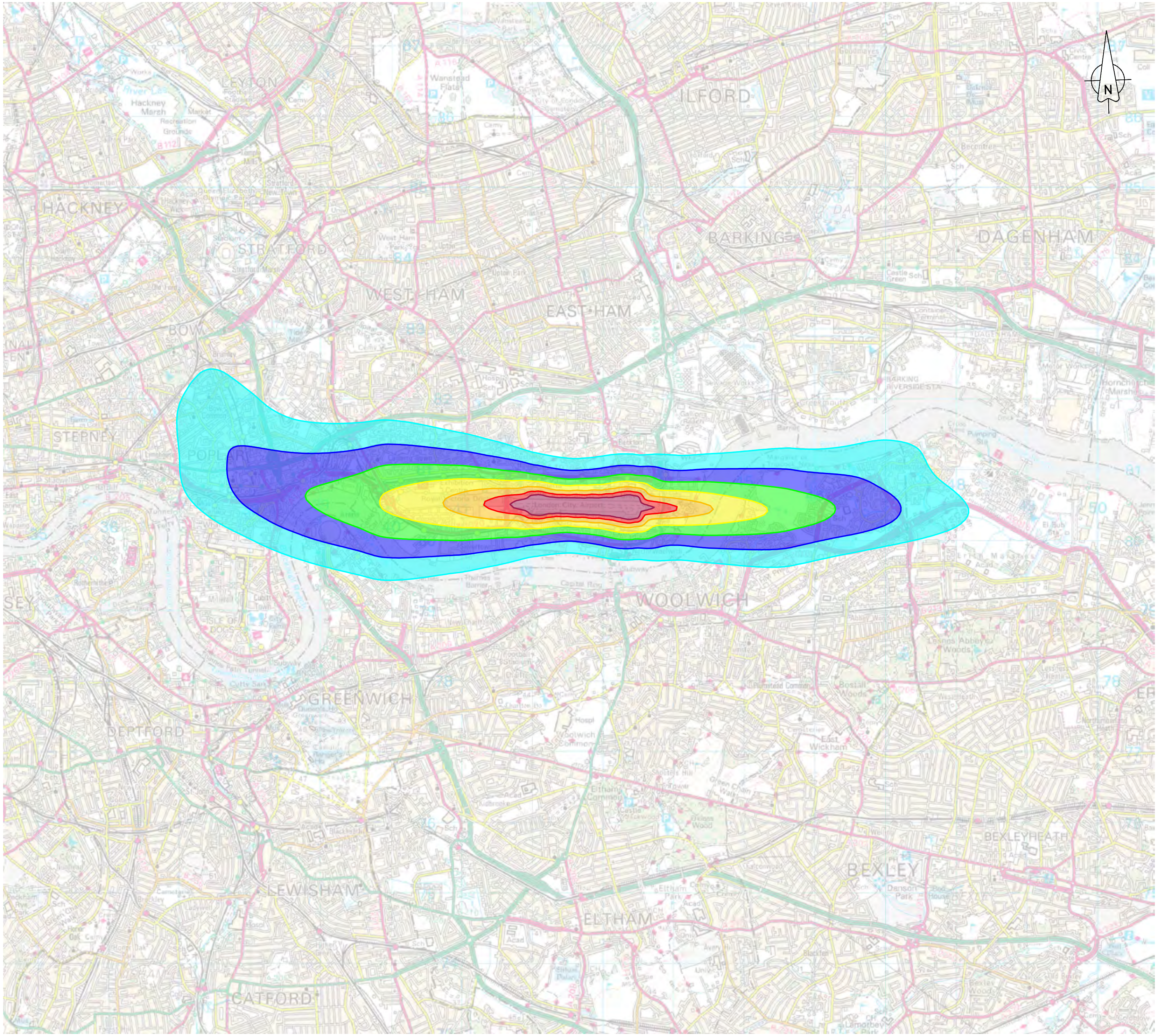
DRAWN: AM CHECKED: DC

DATE: December 2025 SCALE: 1:75,000@A4

FIGURE No:

A11580_DR014_1.0

Appendix A Contour diagrams and maps



LEGEND:

- 51 - 53.9 dB(A) $L_{Aeq,16h}$
- 54 - 56.9 dB(A) $L_{Aeq,16h}$
- 57 - 59.9 dB(A) $L_{Aeq,16h}$
- 60 - 62.9 dB(A) $L_{Aeq,16h}$
- 63 - 65.9 dB(A) $L_{Aeq,16h}$
- 66 - 68.9 dB(A) $L_{Aeq,16h}$
- 69 + dB(A) $L_{Aeq,16h}$

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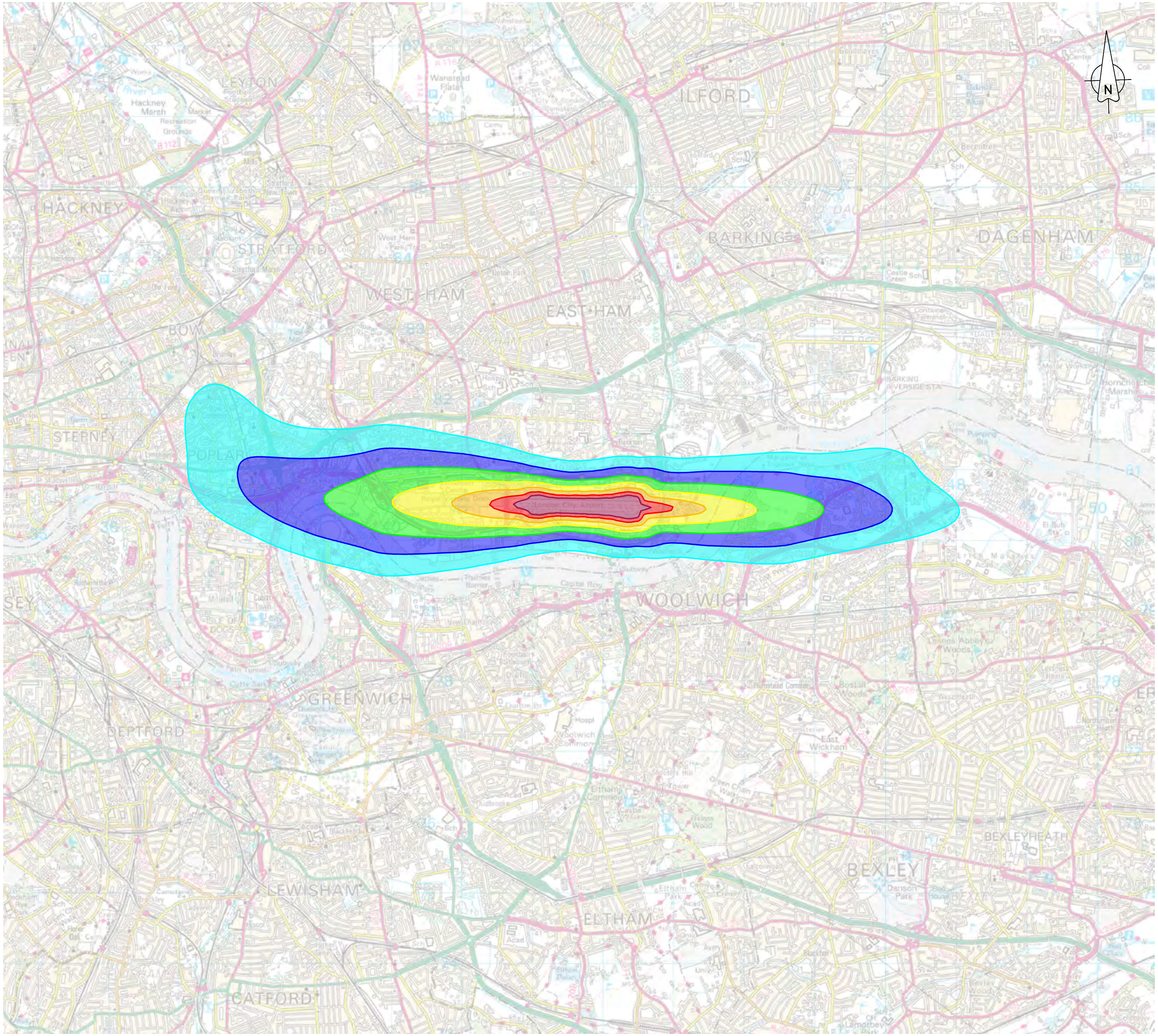
Figure 03
Average Summer Day Noise Contours
2027 No Change (Year 1)

DRAWN: AM
CHECKED: DC

DATE: December 2025
SCALE: 1:75,000@A4

FIGURE No:

A11580_DR015_1.0



LEGEND:

- 51 - 53.9 dB(A) $L_{Aeq,16h}$
- 54 - 56.9 dB(A) $L_{Aeq,16h}$
- 57 - 59.9 dB(A) $L_{Aeq,16h}$
- 60 - 62.9 dB(A) $L_{Aeq,16h}$
- 63 - 65.9 dB(A) $L_{Aeq,16h}$
- 66 - 68.9 dB(A) $L_{Aeq,16h}$
- 69 + dB(A) $L_{Aeq,16h}$

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Figure 04
Average Summer Day Noise Contours
2027 With Change (Year 1)

DRAWN: AM

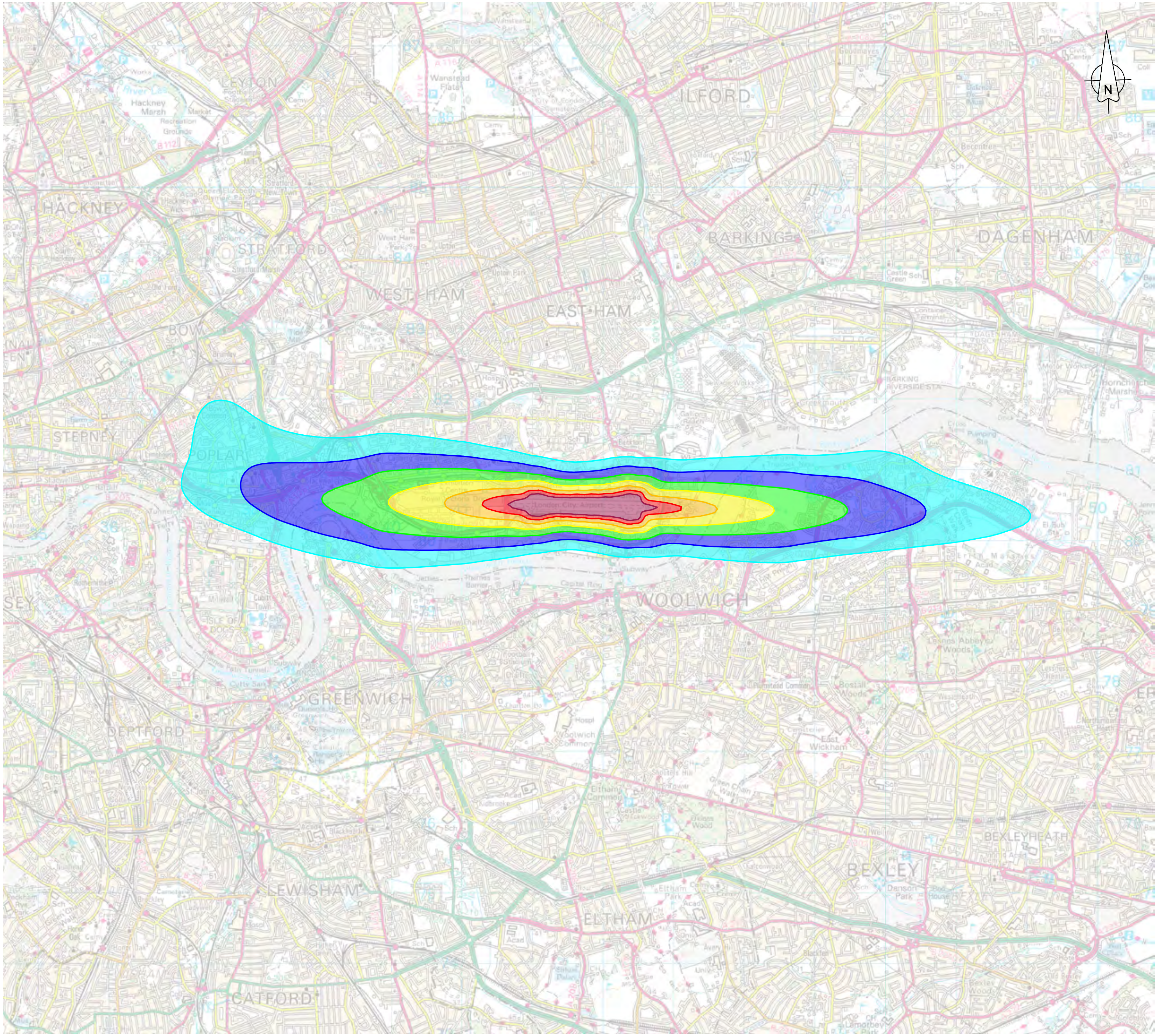
CHECKED: DC

DATE: December 2025

SCALE: 1:75,000@A4

FIGURE No:

A11580_DR016_1.0



LEGEND:

- 51 - 53.9 dB(A) $L_{Aeq,16h}$
- 54 - 56.9 dB(A) $L_{Aeq,16h}$
- 57 - 59.9 dB(A) $L_{Aeq,16h}$
- 60 - 62.9 dB(A) $L_{Aeq,16h}$
- 63 - 65.9 dB(A) $L_{Aeq,16h}$
- 66 - 68.9 dB(A) $L_{Aeq,16h}$
- 69 + dB(A) $L_{Aeq,16h}$

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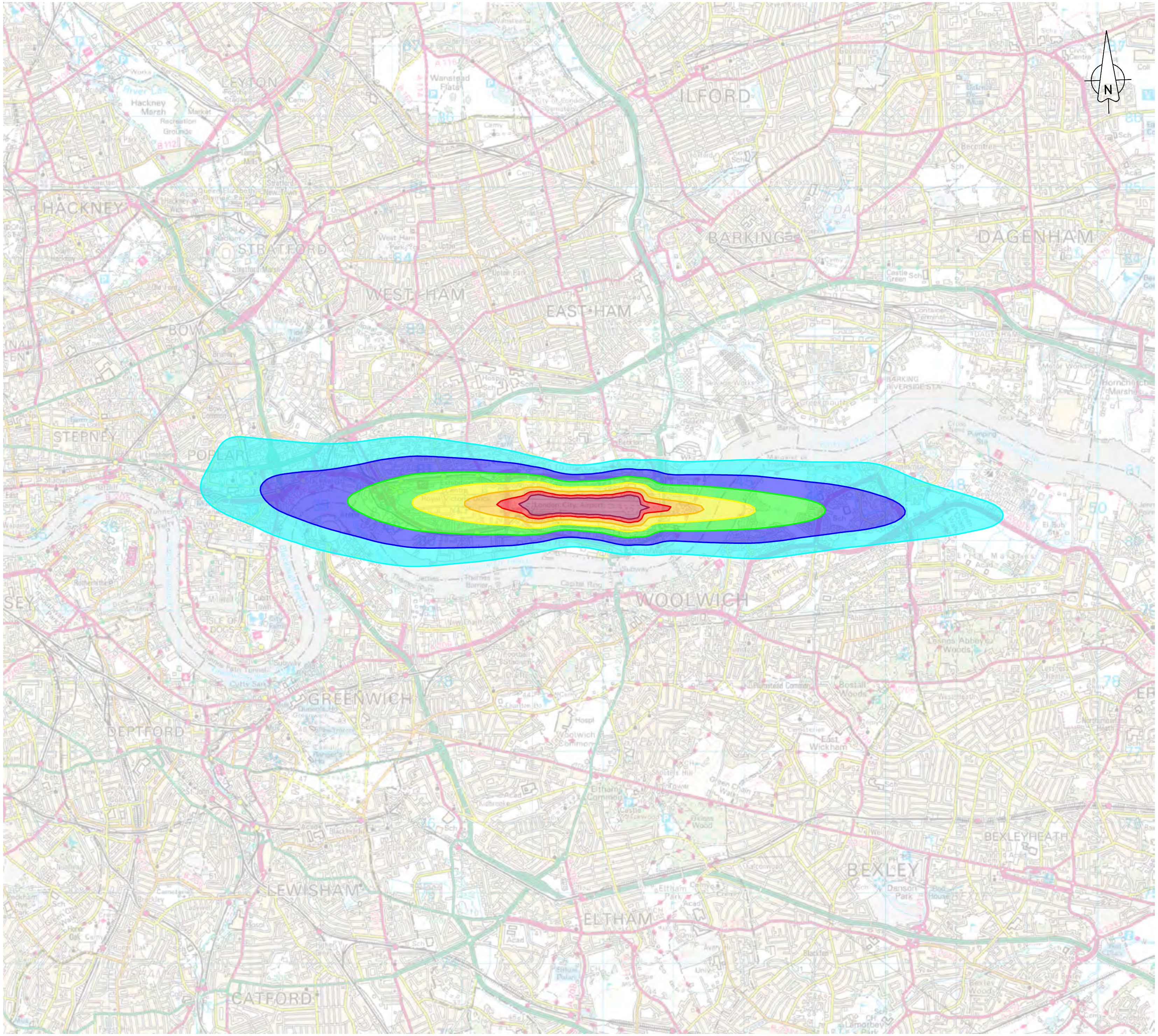
Figure 05
Average Summer Day Noise Contours
2038 No Change (Year 12)

DRAWN: AM CHECKED: DC

DATE: December 2025 SCALE: 1:75,000@A4

FIGURE No:

A11580_DR017_1.0



LEGEND:

- 51 - 53.9 dB(A) $L_{Aeq,16h}$
- 54 - 56.9 dB(A) $L_{Aeq,16h}$
- 57 - 59.9 dB(A) $L_{Aeq,16h}$
- 60 - 62.9 dB(A) $L_{Aeq,16h}$
- 63 - 65.9 dB(A) $L_{Aeq,16h}$
- 66 - 68.9 dB(A) $L_{Aeq,16h}$
- 69 + dB(A) $L_{Aeq,16h}$

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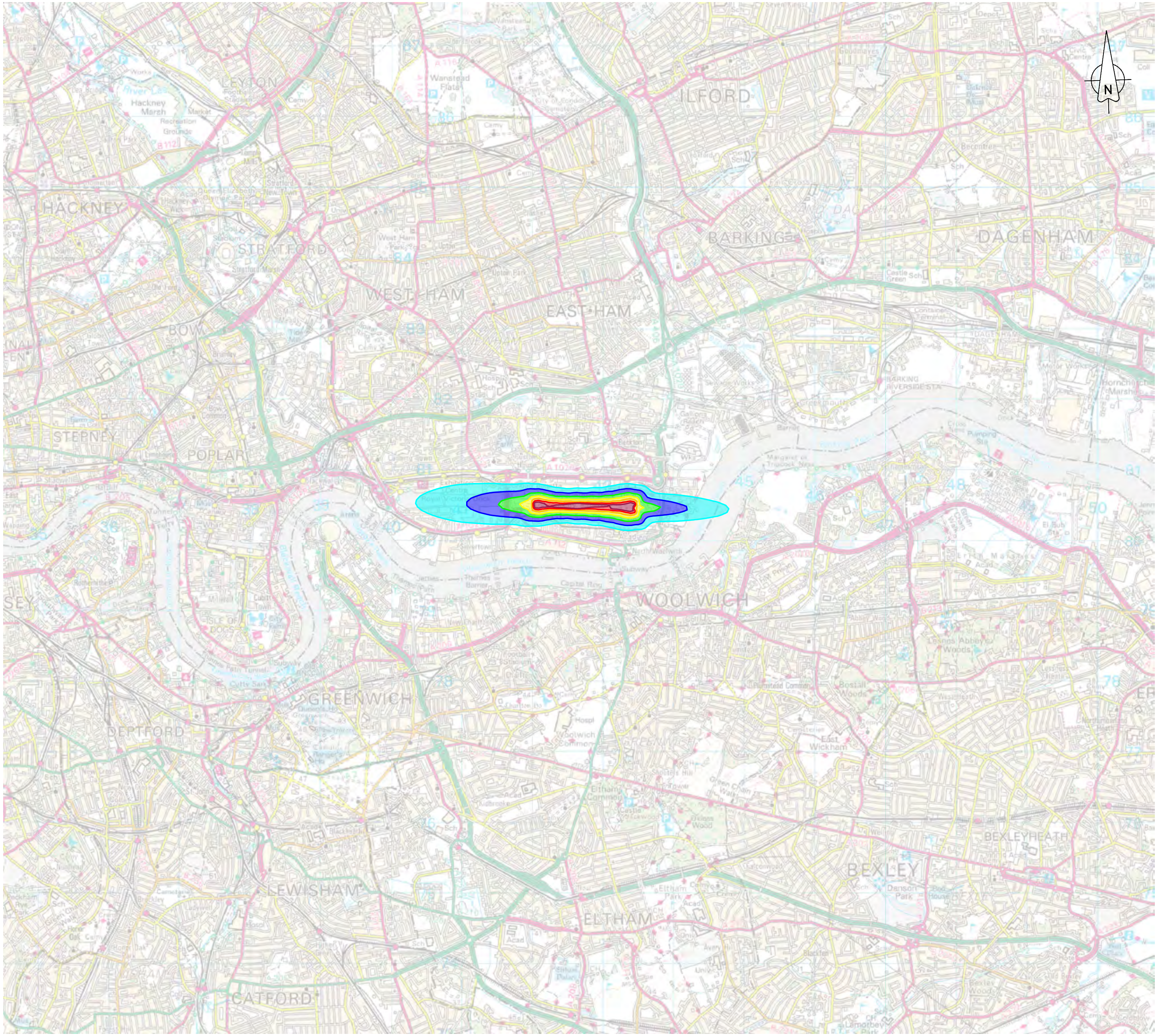
Figure 06
Average Summer Day Noise Contours
2038 With Change (Year 12)

DRAWN: AM CHECKED: DC

DATE: December 2025 SCALE: 1:75,000@A4

FIGURE No:

A11580_DR018_1.0



LEGEND:

- 45 - 47.9 dB(A) $L_{Aeq,8h}$
- 48 - 50.9 dB(A) $L_{Aeq,8h}$
- 51 - 53.9 dB(A) $L_{Aeq,8h}$
- 54 - 56.9 dB(A) $L_{Aeq,8h}$
- 57 - 59.9 dB(A) $L_{Aeq,8h}$
- 60 - 62.9 dB(A) $L_{Aeq,8h}$
- 63 + dB(A) $L_{Aeq,8h}$

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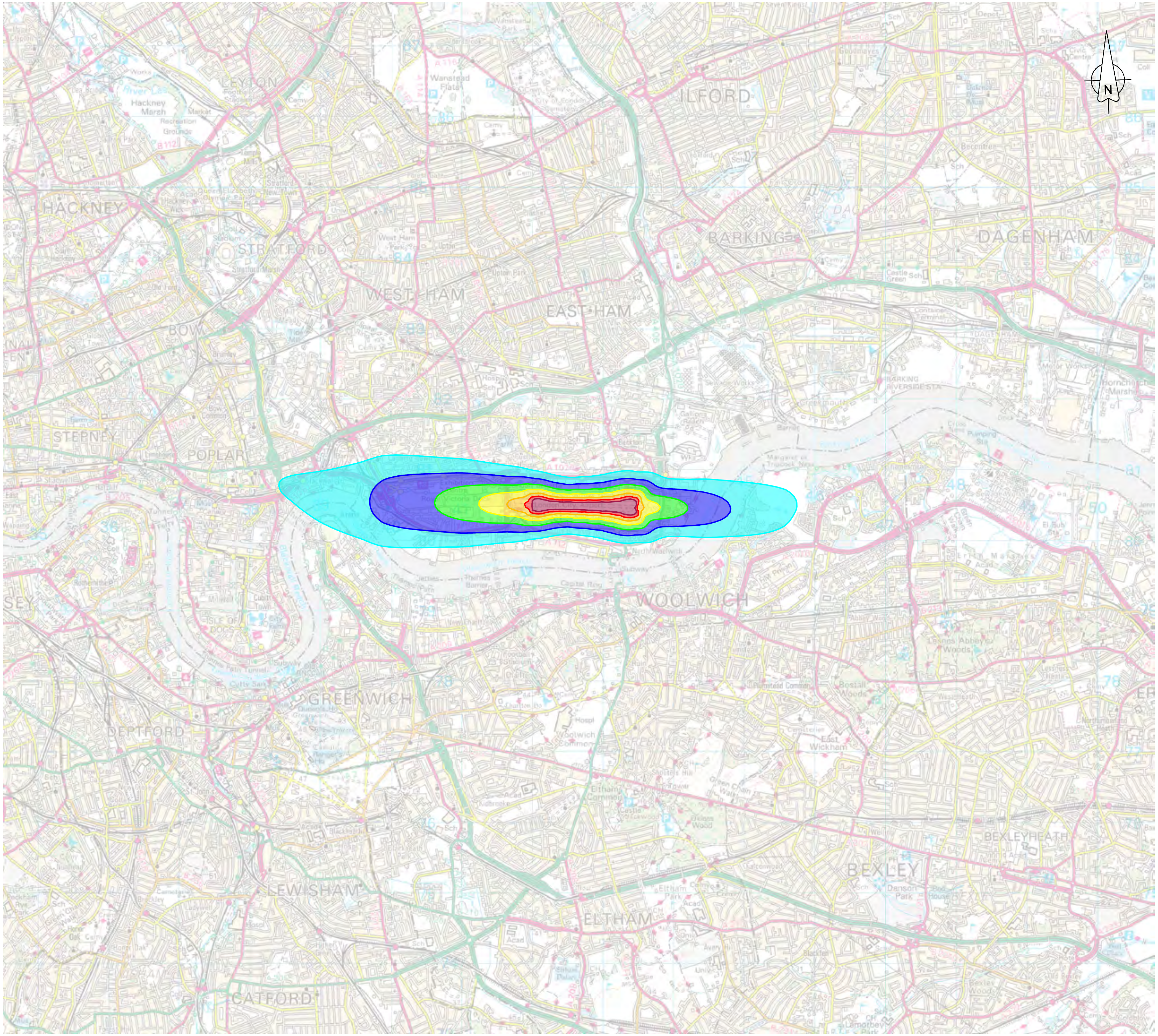
Figure 07
Average Summer Night Noise Contours
2024 Actual Average Modal

DRAWN: AM | CHECKED: DC

DATE: December 2025 | SCALE: 1:75,000@A4

FIGURE No:

A11580_DR019_1.0



LEGEND:

- 45 - 47.9 dB(A) $L_{Aeq,8h}$
- 48 - 50.9 dB(A) $L_{Aeq,8h}$
- 51 - 53.9 dB(A) $L_{Aeq,8h}$
- 54 - 56.9 dB(A) $L_{Aeq,8h}$
- 57 - 59.9 dB(A) $L_{Aeq,8h}$
- 60 - 62.9 dB(A) $L_{Aeq,8h}$
- 63 + dB(A) $L_{Aeq,8h}$

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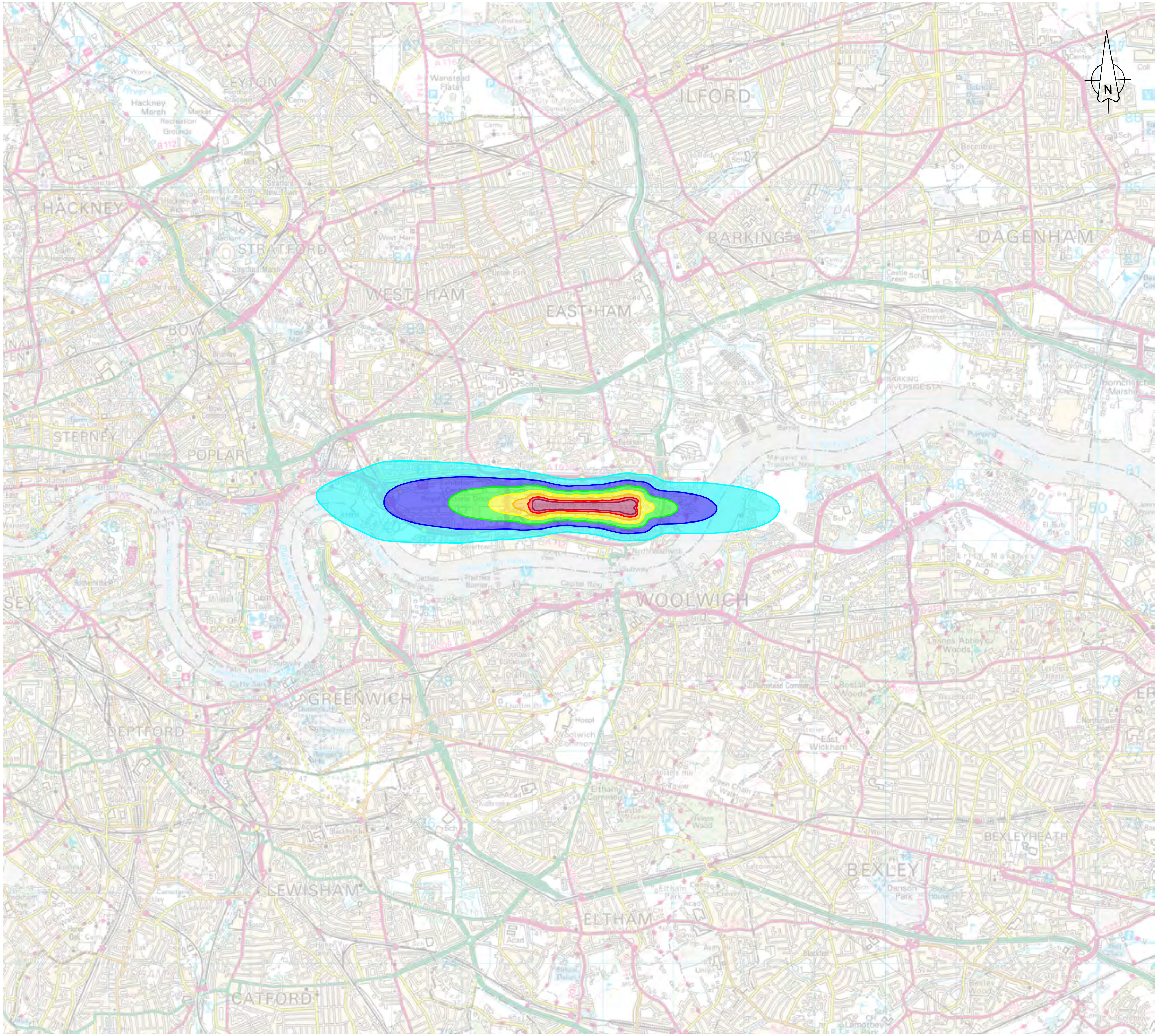
Figure 08
Average Summer Night Noise Contours
2027 No Change (Year 1)

DRAWN: AM
CHECKED: DC

DATE: December 2025
SCALE: 1:75,000@A4

FIGURE No:

A11580_DR020_1.0



LEGEND:

- 45 - 47.9 dB(A) $L_{Aeq,8h}$
- 48 - 50.9 dB(A) $L_{Aeq,8h}$
- 51 - 53.9 dB(A) $L_{Aeq,8h}$
- 54 - 56.9 dB(A) $L_{Aeq,8h}$
- 57 - 59.9 dB(A) $L_{Aeq,8h}$
- 60 - 62.9 dB(A) $L_{Aeq,8h}$
- 63 + dB(A) $L_{Aeq,8h}$

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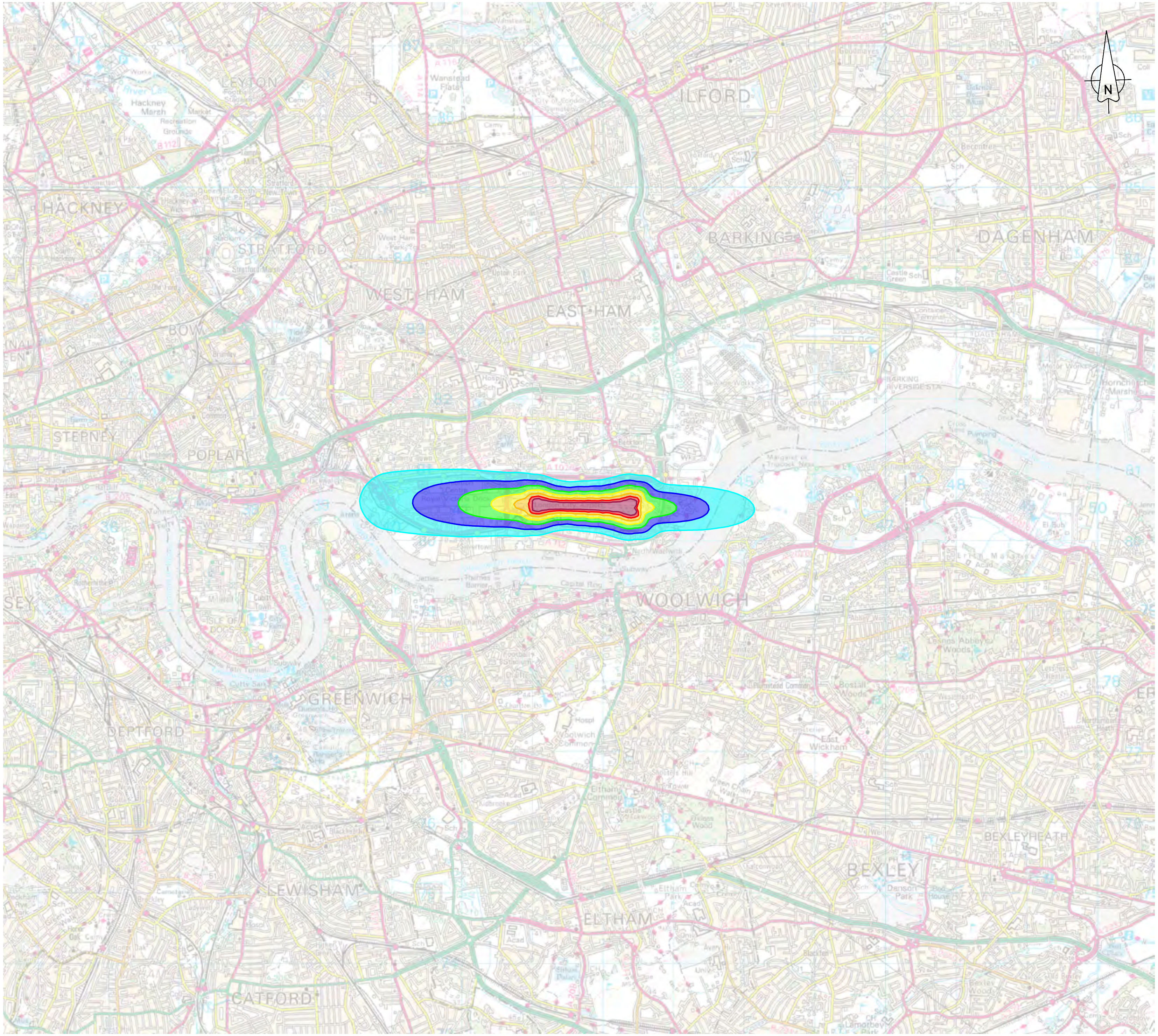
Figure 09
Average Summer Night Noise Contours
2027 With Change (Year 1)

DRAWN: AM
CHECKED: DC

DATE: December 2025
SCALE: 1:75,000@A4

FIGURE No:
A11580_DR021_1.0



LEGEND:

- 45 - 47.9 dB(A) $L_{Aeq,8h}$
- 48 - 50.9 dB(A) $L_{Aeq,8h}$
- 51 - 53.9 dB(A) $L_{Aeq,8h}$
- 54 - 56.9 dB(A) $L_{Aeq,8h}$
- 57 - 59.9 dB(A) $L_{Aeq,8h}$
- 60 - 62.9 dB(A) $L_{Aeq,8h}$
- 63 + dB(A) $L_{Aeq,8h}$

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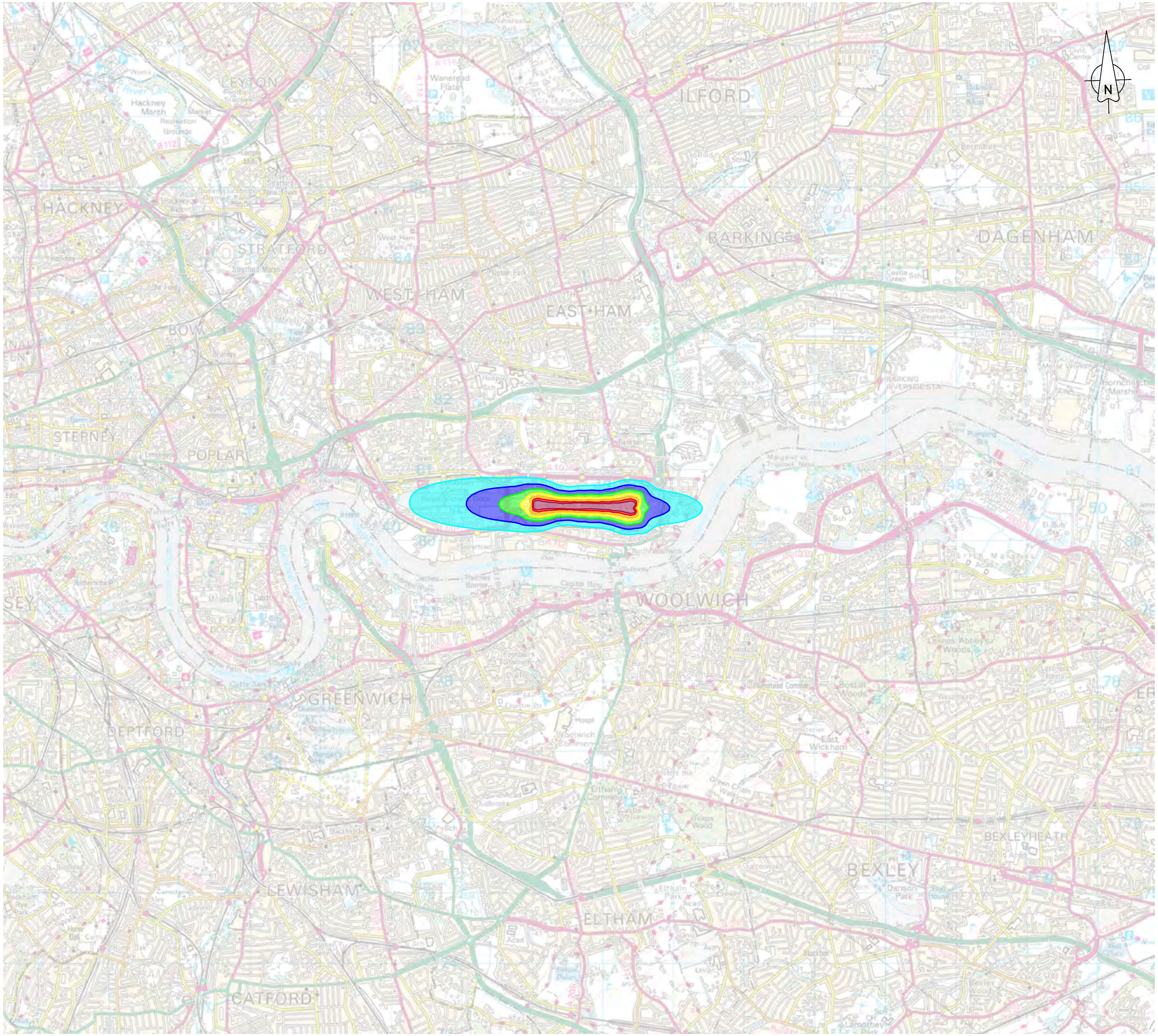
Figure 10
Average Summer Night Noise Contours
2038 No Change (Year 12)

DRAWN: AM CHECKED: DC

DATE: December 2025 SCALE: 1:75,000@A4

FIGURE No:

A11580_DR022_1.0



LEGEND:

- 45 - 47.9 dB(A) $L_{Aeq,8h}$
- 48 - 50.9 dB(A) $L_{Aeq,8h}$
- 51 - 53.9 dB(A) $L_{Aeq,8h}$
- 54 - 56.9 dB(A) $L_{Aeq,8h}$
- 57 - 59.9 dB(A) $L_{Aeq,8h}$
- 60 - 62.9 dB(A) $L_{Aeq,8h}$
- 63 + dB(A) $L_{Aeq,8h}$

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Figure 11
Average Summer Night Noise Contours
2038 With Change (Year 12)

DRAWN: AM CHECKED: DC

DATE: December 2025 SCALE: 1:75,000@A4

FIGURE No:

A11580_DR023_1.0

LEGEND:

- N65, 5 - 9 events
- N65, 10 - 19 events
- N65, 20 - 49 events
- N65, 50 - 99 events
- N65, 100 - 199 events
- N65, 200+ events

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Figure 12
Average Summer Day N65 Noise Contours
2024 Actual Average Modal

DRAWN: AM CHECKED: DC

DATE: December 2025 SCALE: 1:150,000@A4

FIGURE No:

A11580_DR024_1.0

LEGEND:

- N65, 5 - 9 events
- N65, 10 - 19 events
- N65, 20 - 49 events
- N65, 50 - 99 events
- N65, 100 - 199 events
- N65, 200+ events

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Figure 13
Average Summer Day N65 Noise Contours
2027 No Change (Year 1)

DRAWN: AM

CHECKED: DC

DATE: December 2025

SCALE: 1:150,000@A4

FIGURE No:

A11580_DR025_1.0

LEGEND:

- N65, 5 - 9 events
- N65, 10 - 19 events
- N65, 20 - 49 events
- N65, 50 - 99 events
- N65, 100 - 199 events
- N65, 200+ events

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Figure 14
Average Summer Day N65 Noise Contours
2027 With Change (Year 1)

DRAWN: AM

CHECKED: DC

DATE: December 2025

SCALE: 1:150,000@A4

FIGURE No:

A11580_DR026_1.0

Appendix A Contour diagrams and maps

LEGEND:

- N65, 5 - 9 events
- N65, 10 - 19 events
- N65, 20 - 49 events
- N65, 50 - 99 events
- N65, 100 - 199 events
- N65, 200+ events

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Figure 15
Average Summer Day N65 Noise Contours
2038 No Change (Year 12)

DRAWN: AM CHECKED: DC

DATE: December 2025 SCALE: 1:150,000@A4

FIGURE No:

A11580_DR027_1.0

LEGEND:

- N65, 5 - 9 events
- N65, 10 - 19 events
- N65, 20 - 49 events
- N65, 50 - 99 events
- N65, 100 - 199 events
- N65, 200+ events

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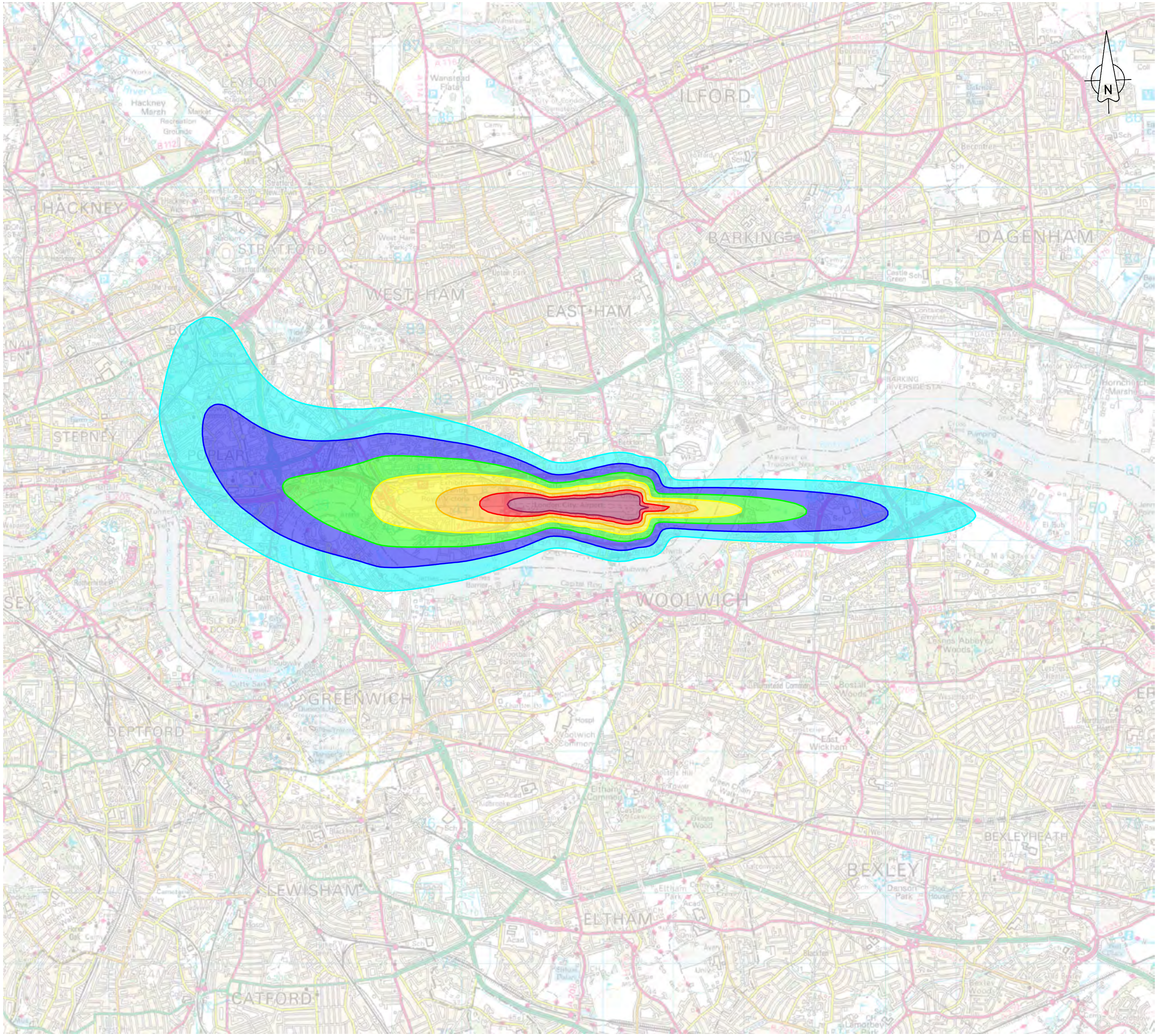
Figure 16
Average Summer Day N65 Noise Contours
2038 With Change (Year 12)

DRAWN: AM CHECKED: DC

DATE: December 2025 SCALE: 1:150,000@A4

FIGURE No:

A11580_DR028_1.0



LEGEND:

- 51 - 53.9 dB(A) $L_{Aeq,16h}$
- 54 - 56.9 dB(A) $L_{Aeq,16h}$
- 57 - 59.9 dB(A) $L_{Aeq,16h}$
- 60 - 62.9 dB(A) $L_{Aeq,16h}$
- 63 - 65.9 dB(A) $L_{Aeq,16h}$
- 66 - 68.9 dB(A) $L_{Aeq,16h}$
- 69 + dB(A) $L_{Aeq,16h}$

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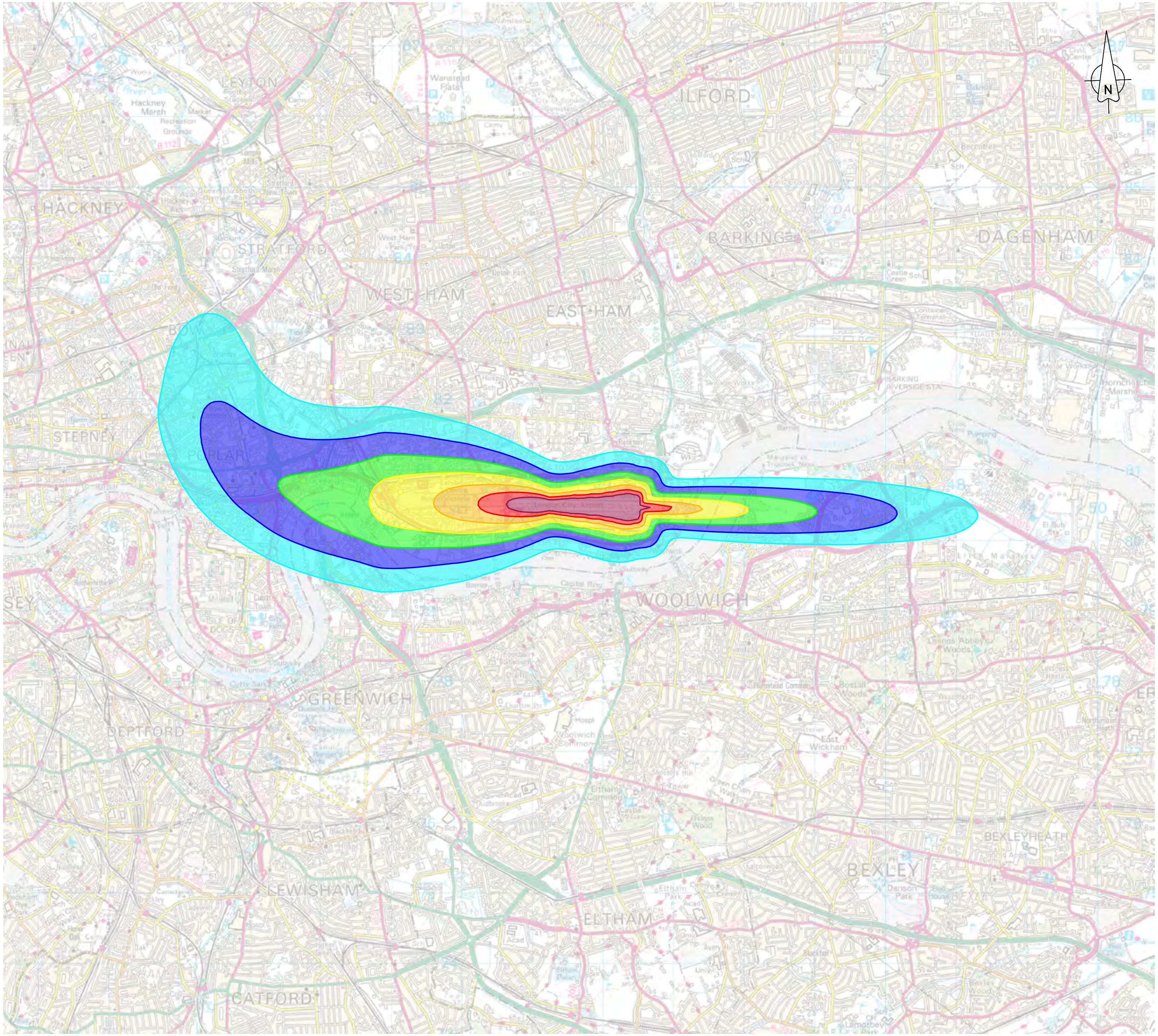
Figure 17
Westerly Mode Summer Day Noise Contours
2024 Actual

DRAWN: AM CHECKED: DC

DATE: December 2025 SCALE: 1:75,000@A4

FIGURE No:

A11580_DR029_1.0



LEGEND:

- 51 - 53.9 dB(A) $L_{Aeq,16h}$
- 54 - 56.9 dB(A) $L_{Aeq,16h}$
- 57 - 59.9 dB(A) $L_{Aeq,16h}$
- 60 - 62.9 dB(A) $L_{Aeq,16h}$
- 63 - 65.9 dB(A) $L_{Aeq,16h}$
- 66 - 68.9 dB(A) $L_{Aeq,16h}$
- 69 + dB(A) $L_{Aeq,16h}$

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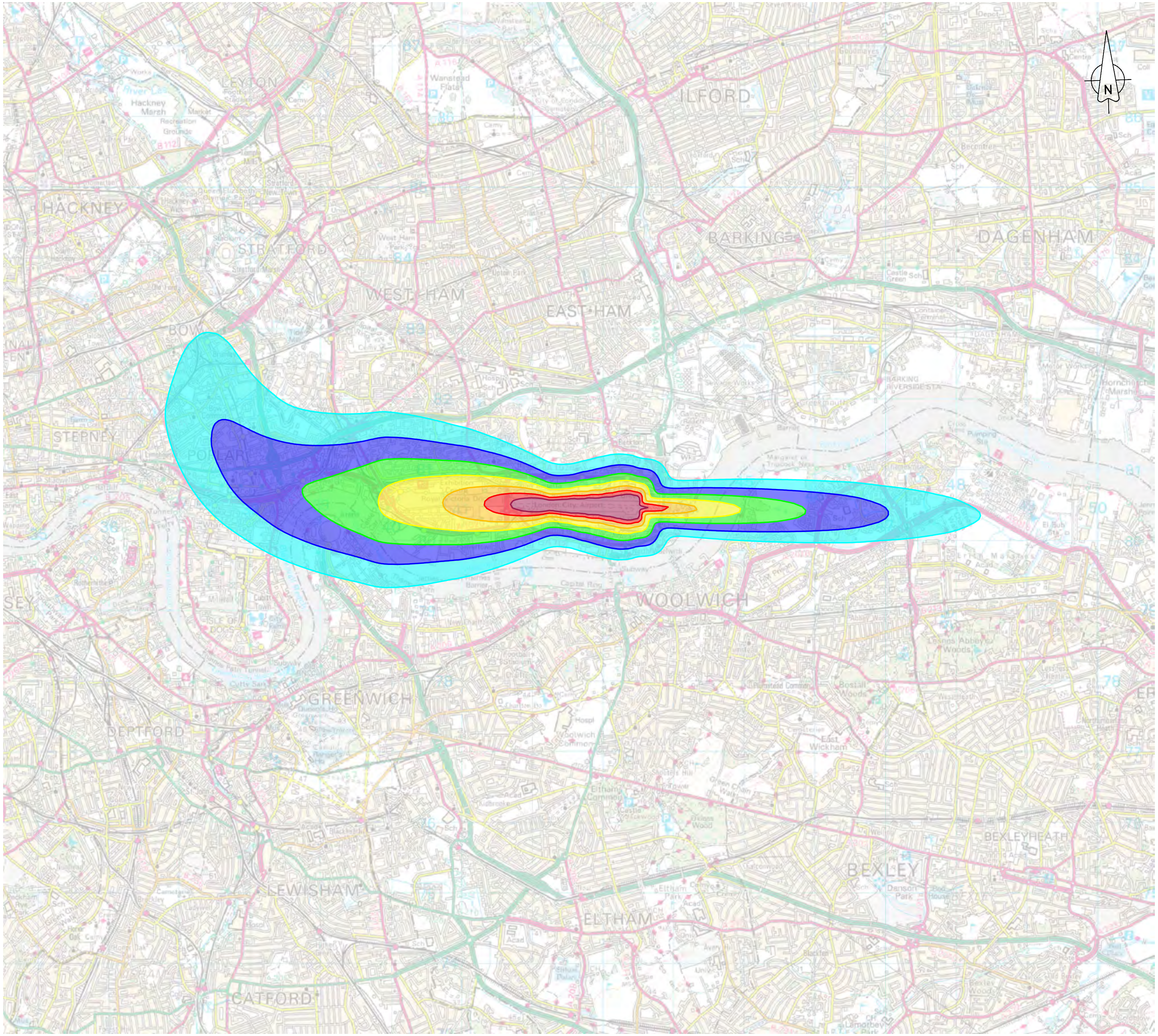
Figure 18
Westerly Mode Summer Day Noise Contours
2027 No Change (Year 1)

DRAWN: AM CHECKED: DC

DATE: December 2025 SCALE: 1:75,000@A4

FIGURE No:

A11580_DR030_1.0



LEGEND:

- 51 - 53.9 dB(A) $L_{Aeq,16h}$
- 54 - 56.9 dB(A) $L_{Aeq,16h}$
- 57 - 59.9 dB(A) $L_{Aeq,16h}$
- 60 - 62.9 dB(A) $L_{Aeq,16h}$
- 63 - 65.9 dB(A) $L_{Aeq,16h}$
- 66 - 68.9 dB(A) $L_{Aeq,16h}$
- 69 + dB(A) $L_{Aeq,16h}$

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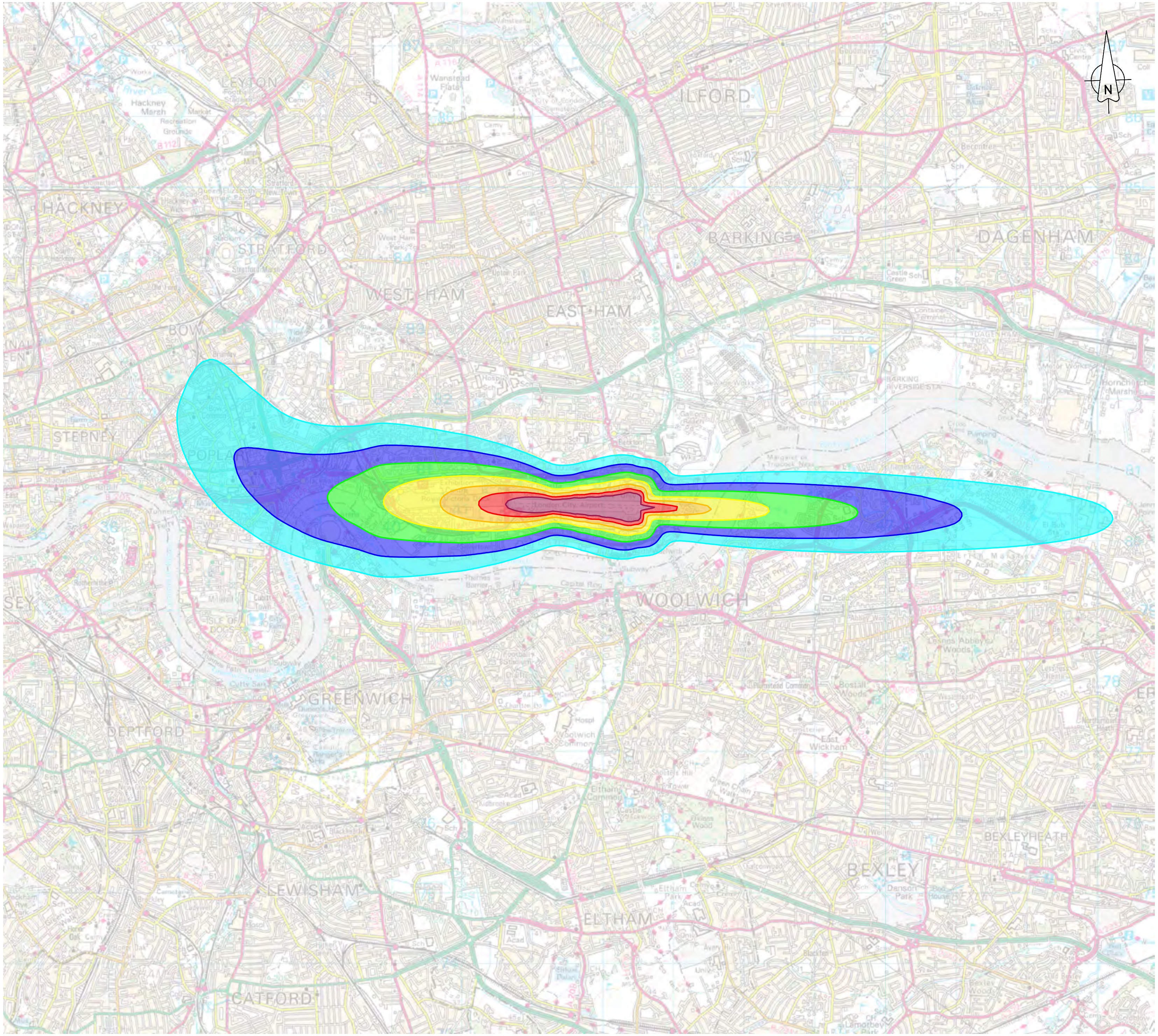
Figure 19
Westerly Mode Summer Day Noise Contours
2027 With Change (Year 1)

DRAWN: AM CHECKED: DC

DATE: December 2025 SCALE: 1:75,000@A4

FIGURE No:

A11580_DR031_1.0



LEGEND:

- 51 - 53.9 dB(A) $L_{Aeq,16h}$
- 54 - 56.9 dB(A) $L_{Aeq,16h}$
- 57 - 59.9 dB(A) $L_{Aeq,16h}$
- 60 - 62.9 dB(A) $L_{Aeq,16h}$
- 63 - 65.9 dB(A) $L_{Aeq,16h}$
- 66 - 68.9 dB(A) $L_{Aeq,16h}$
- 69 + dB(A) $L_{Aeq,16h}$

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Figure 20
Westerly Mode Summer Day Noise Contours
2038 No Change (Year 12)

DRAWN: AM

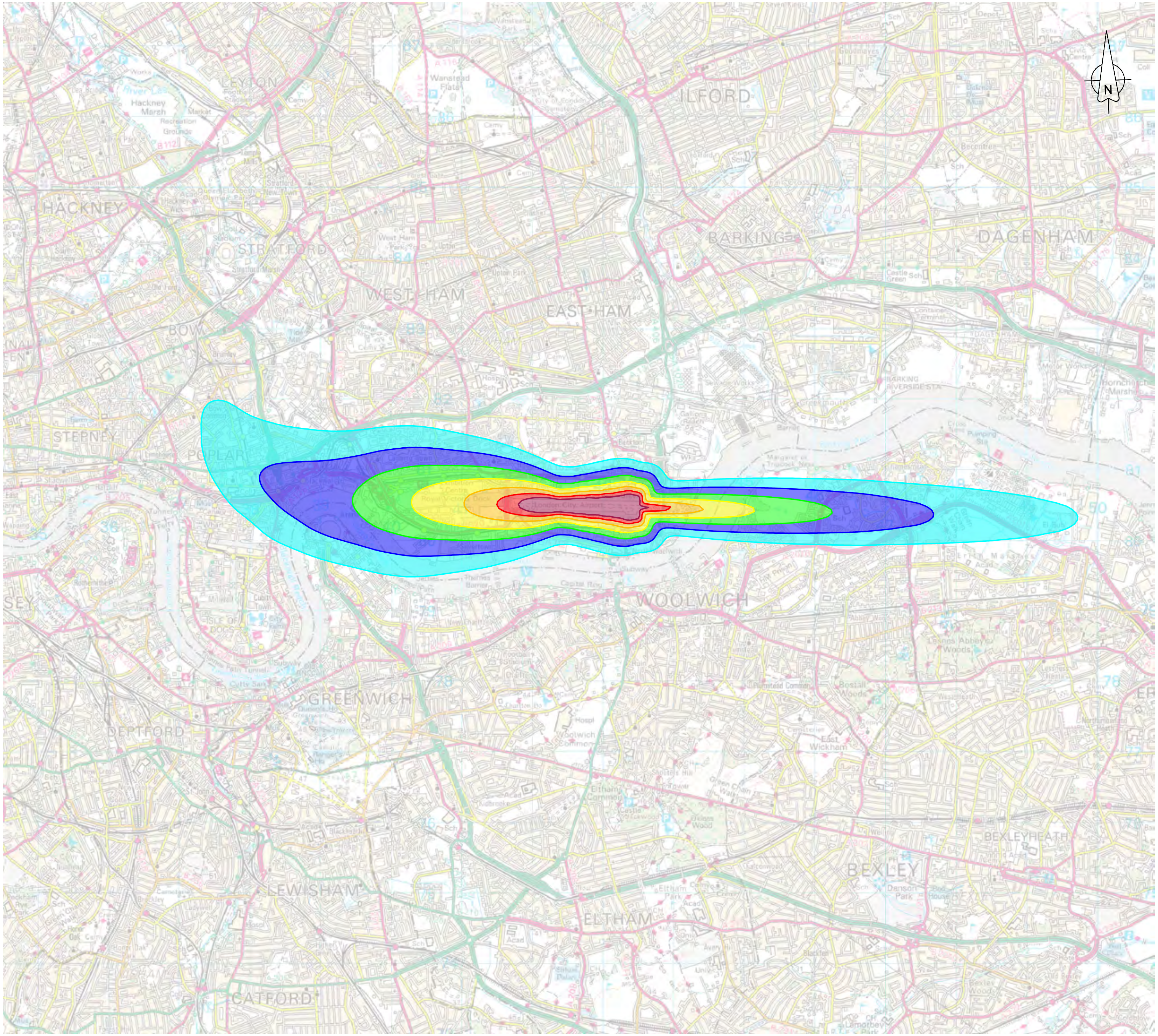
CHECKED: DC

DATE: December 2025

SCALE: 1:75,000@A4

FIGURE No:

A11580_DR032_1.0



LEGEND:

- 51 - 53.9 dB(A) $L_{Aeq,16h}$
- 54 - 56.9 dB(A) $L_{Aeq,16h}$
- 57 - 59.9 dB(A) $L_{Aeq,16h}$
- 60 - 62.9 dB(A) $L_{Aeq,16h}$
- 63 - 65.9 dB(A) $L_{Aeq,16h}$
- 66 - 68.9 dB(A) $L_{Aeq,16h}$
- 69 + dB(A) $L_{Aeq,16h}$

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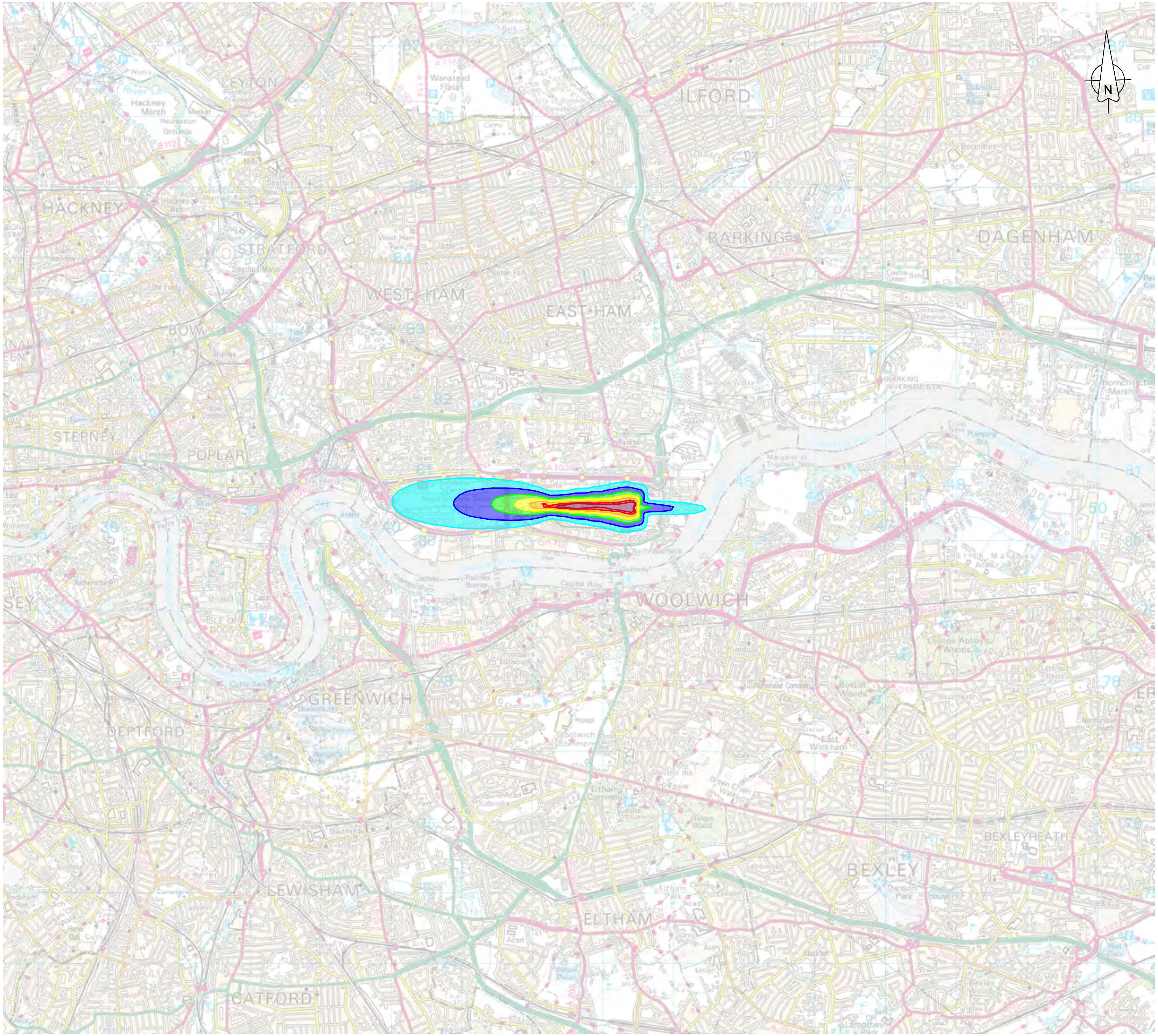
Figure 21
Westerly Mode Summer Day Noise Contours
2038 With Change (Year 12)

DRAWN: AM CHECKED: DC

DATE: December 2025 SCALE: 1:75,000@A4

FIGURE No:

A11580_DR033_1.0



LEGEND:

- 45 - 47.9 dB(A) $L_{Aeq,8h}$
- 48 - 50.9 dB(A) $L_{Aeq,8h}$
- 51 - 53.9 dB(A) $L_{Aeq,8h}$
- 54 - 56.9 dB(A) $L_{Aeq,8h}$
- 57 - 59.9 dB(A) $L_{Aeq,8h}$
- 60 - 62.9 dB(A) $L_{Aeq,8h}$
- 63 + dB(A) $L_{Aeq,8h}$

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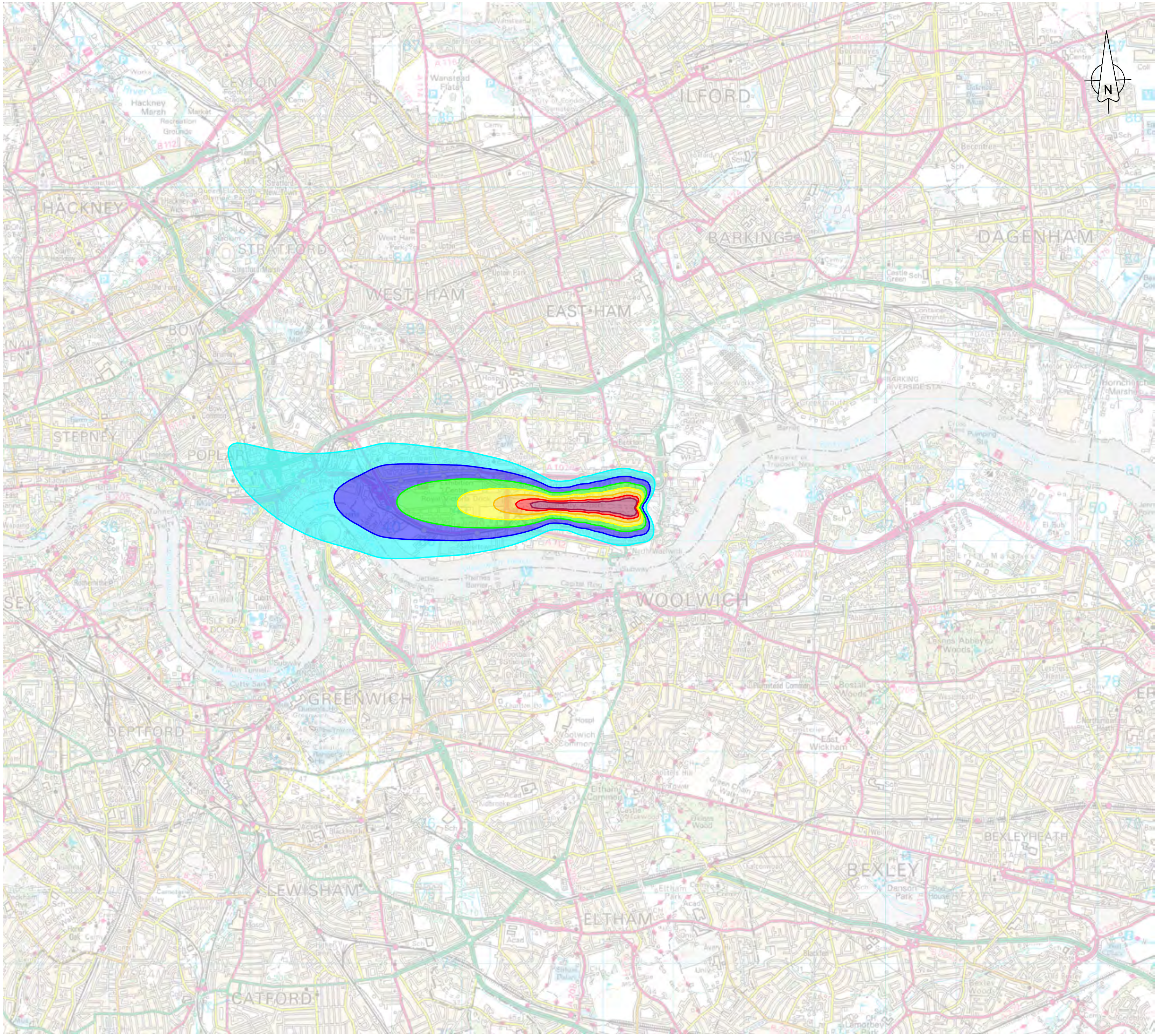
Figure 22
Westerly Mode Summer Night Noise Contours
2024 Actual

DRAWN: AM
CHECKED: DC

DATE: December 2025
SCALE: 1:75,000@A4

FIGURE No:
A11580_DR034_1.0



LEGEND:

- 45 - 47.9 dB(A) $L_{Aeq,8h}$
- 48 - 50.9 dB(A) $L_{Aeq,8h}$
- 51 - 53.9 dB(A) $L_{Aeq,8h}$
- 54 - 56.9 dB(A) $L_{Aeq,8h}$
- 57 - 59.9 dB(A) $L_{Aeq,8h}$
- 60 - 62.9 dB(A) $L_{Aeq,8h}$
- 63 + dB(A) $L_{Aeq,8h}$

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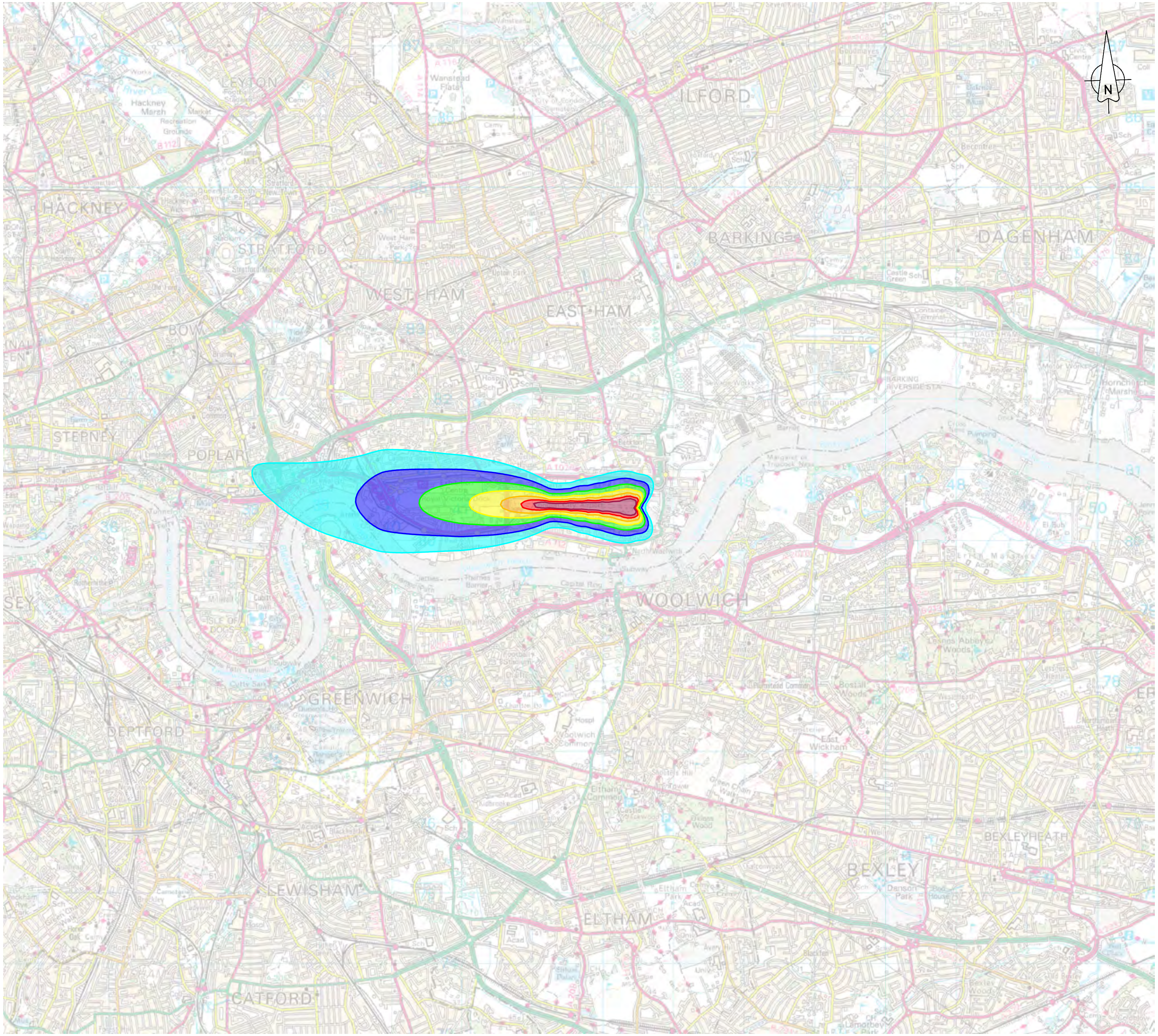
Figure 23
Westerly Mode Summer Night Noise Contours
2027 No Change (Year 1)

DRAWN: AM
CHECKED: DC

DATE: December 2025
SCALE: 1:75,000@A4

FIGURE No:
A11580_DR035_1.0



LEGEND:

- 45 - 47.9 dB(A) $L_{Aeq,8h}$
- 48 - 50.9 dB(A) $L_{Aeq,8h}$
- 51 - 53.9 dB(A) $L_{Aeq,8h}$
- 54 - 56.9 dB(A) $L_{Aeq,8h}$
- 57 - 59.9 dB(A) $L_{Aeq,8h}$
- 60 - 62.9 dB(A) $L_{Aeq,8h}$
- 63 + dB(A) $L_{Aeq,8h}$

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Figure 24
Westerly Mode Summer Night Noise Contours
2027 With Change (Year 1)

DRAWN: AM

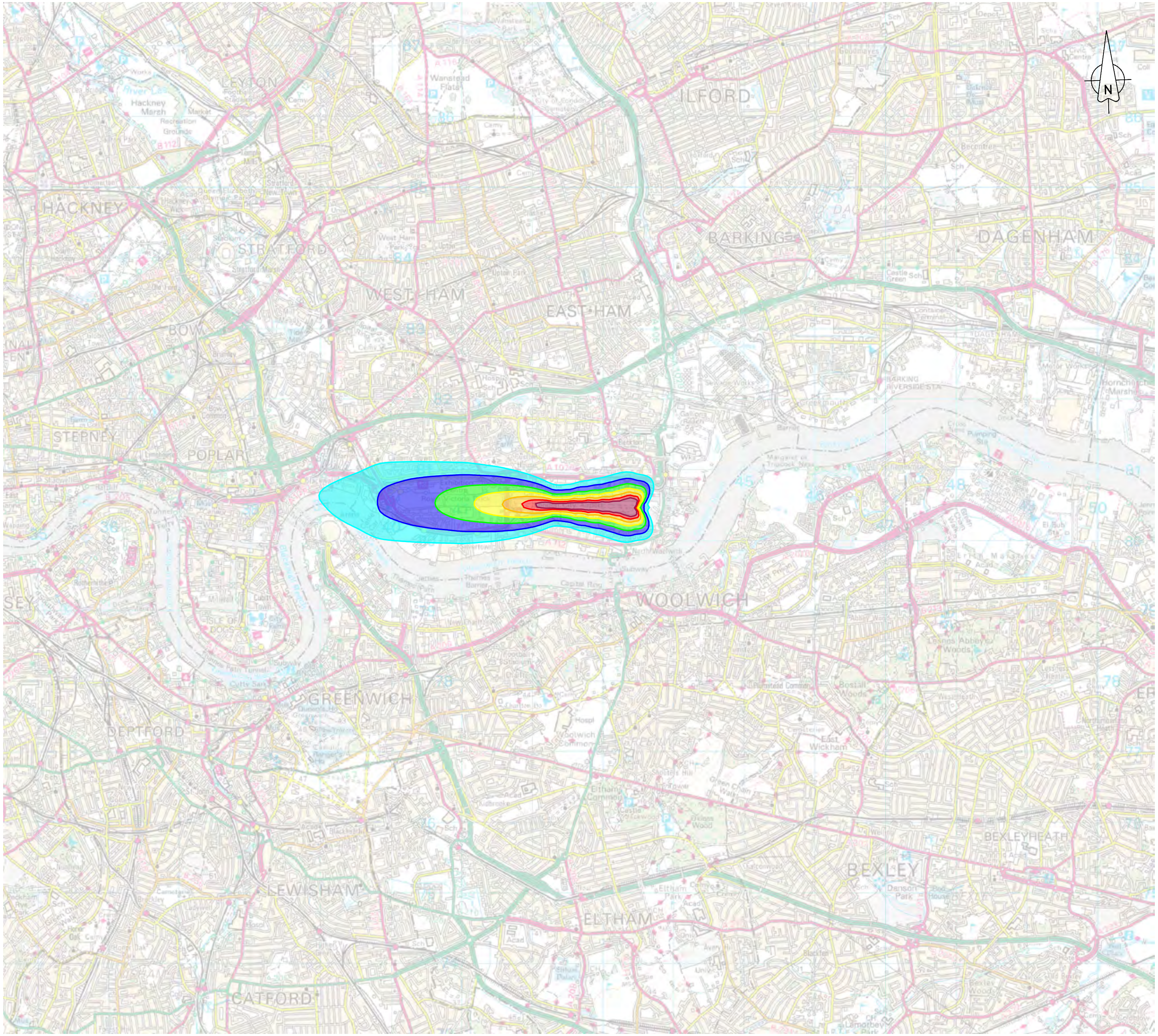
CHECKED: DC

DATE: December 2025

SCALE: 1:75,000@A4

FIGURE No:

A11580_DR036_1.0



LEGEND:

- 45 - 47.9 dB(A) $L_{Aeq,8h}$
- 48 - 50.9 dB(A) $L_{Aeq,8h}$
- 51 - 53.9 dB(A) $L_{Aeq,8h}$
- 54 - 56.9 dB(A) $L_{Aeq,8h}$
- 57 - 59.9 dB(A) $L_{Aeq,8h}$
- 60 - 62.9 dB(A) $L_{Aeq,8h}$
- 63 + dB(A) $L_{Aeq,8h}$

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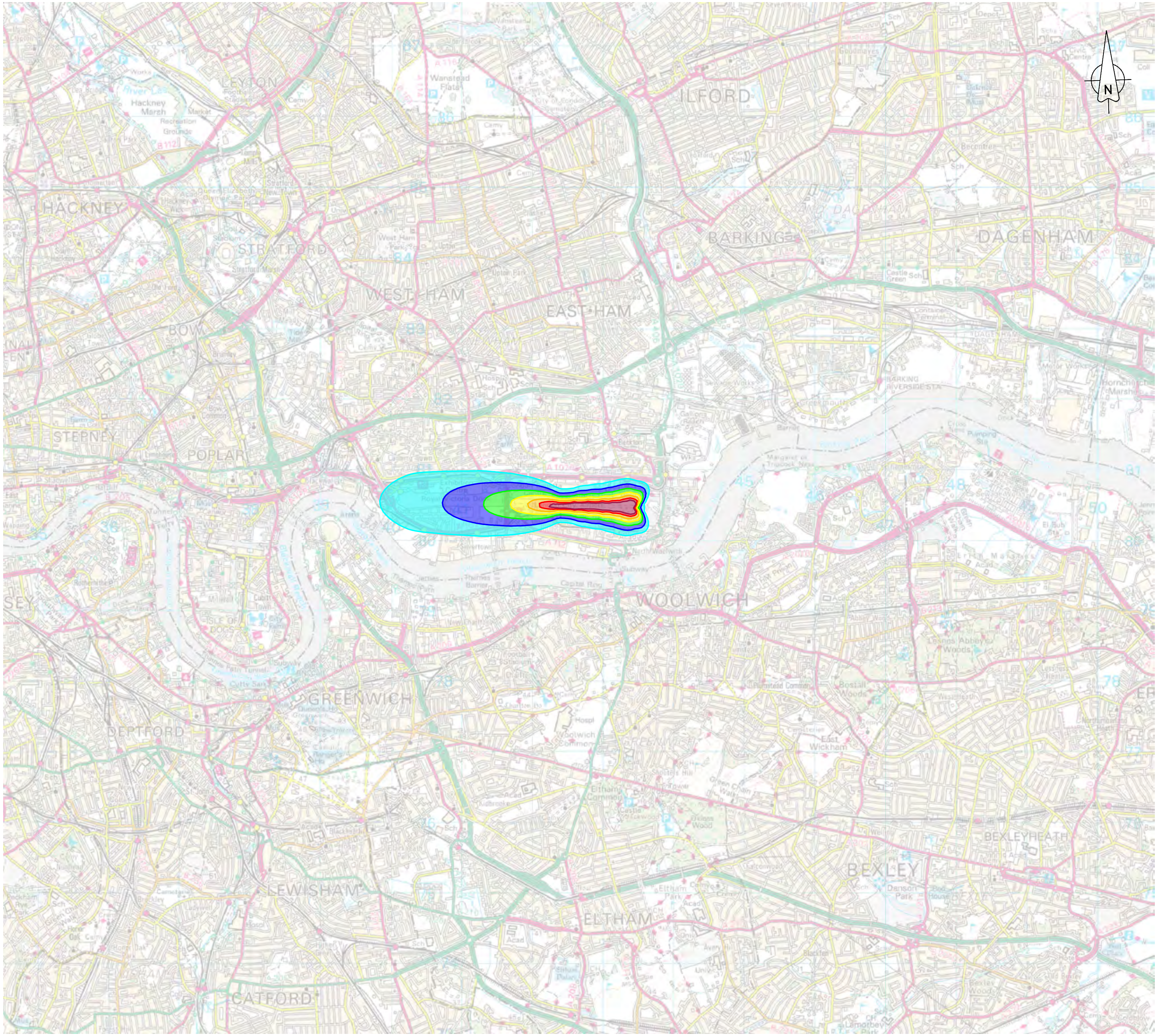
Figure 25
Westerly Mode Summer Night Noise Contours
2038 No Change (Year 12)

DRAWN: AM
CHECKED: DC

DATE: December 2025
SCALE: 1:75,000@A4

FIGURE No:

A11580_DR037_1.0



LEGEND:

- 45 - 47.9 dB(A) $L_{Aeq,8h}$
- 48 - 50.9 dB(A) $L_{Aeq,8h}$
- 51 - 53.9 dB(A) $L_{Aeq,8h}$
- 54 - 56.9 dB(A) $L_{Aeq,8h}$
- 57 - 59.9 dB(A) $L_{Aeq,8h}$
- 60 - 62.9 dB(A) $L_{Aeq,8h}$
- 63 + dB(A) $L_{Aeq,8h}$

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Figure 26
Westerly Mode Summer Night Noise Contours
2038 With Change (Year 12)

DRAWN: AM CHECKED: DC

DATE: December 2025 SCALE: 1:75,000@A4

FIGURE No:

A11580_DR038_1.0

LEGEND:

- 51 - 53.9 dB(A) $L_{Aeq,16h}$
- 54 - 56.9 dB(A) $L_{Aeq,16h}$
- 57 - 59.9 dB(A) $L_{Aeq,16h}$
- 60 - 62.9 dB(A) $L_{Aeq,16h}$
- 63 - 65.9 dB(A) $L_{Aeq,16h}$
- 66 - 68.9 dB(A) $L_{Aeq,16h}$
- 69 + dB(A) $L_{Aeq,16h}$

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Figure 27
Easterly Mode Summer Day Noise Contours
2024 Actual

DRAWN: AM CHECKED: DC

DATE: December 2025 SCALE: 1:150,000@A4

FIGURE No:

A11580_DR039_1.0

LEGEND:

- 51 - 53.9 dB(A) $L_{Aeq,16h}$
- 54 - 56.9 dB(A) $L_{Aeq,16h}$
- 57 - 59.9 dB(A) $L_{Aeq,16h}$
- 60 - 62.9 dB(A) $L_{Aeq,16h}$
- 63 - 65.9 dB(A) $L_{Aeq,16h}$
- 66 - 68.9 dB(A) $L_{Aeq,16h}$
- 69 + dB(A) $L_{Aeq,16h}$

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Figure 28
Easterly Mode Summer Day Noise Contours
2027 No Change (Year 1)

DRAWN: AM CHECKED: DC

DATE: December 2025 SCALE: 1:150,000@A4

FIGURE No:

A11580_DR040_1.0

LEGEND:

- 51 - 53.9 dB(A) $L_{Aeq,16h}$
- 54 - 56.9 dB(A) $L_{Aeq,16h}$
- 57 - 59.9 dB(A) $L_{Aeq,16h}$
- 60 - 62.9 dB(A) $L_{Aeq,16h}$
- 63 - 65.9 dB(A) $L_{Aeq,16h}$
- 66 - 68.9 dB(A) $L_{Aeq,16h}$
- 69 + dB(A) $L_{Aeq,16h}$

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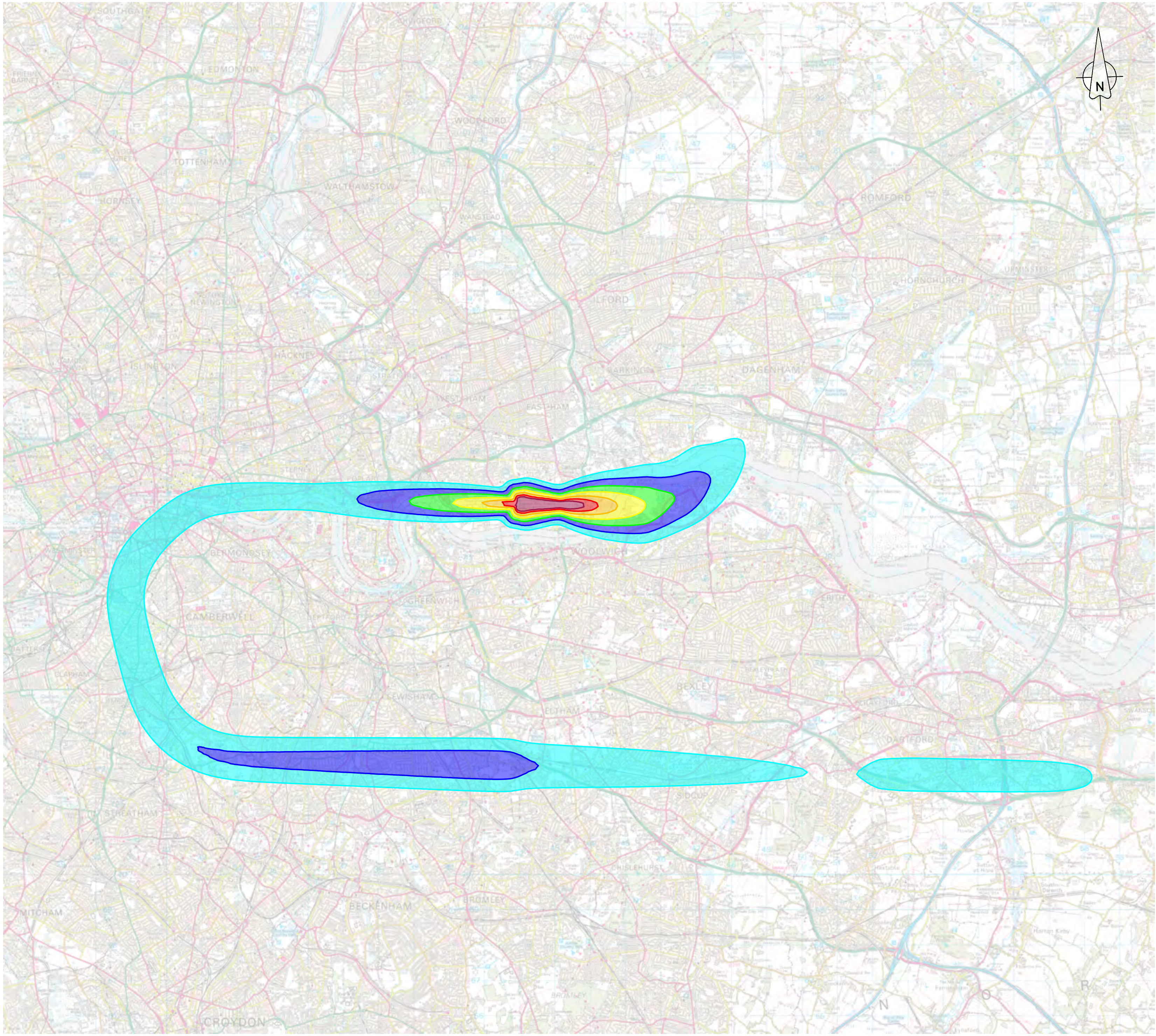
Figure 29
Easterly Mode Summer Day Noise Contours
2027 With Change (Year 1)

DRAWN: AM CHECKED: DC

DATE: December 2025 SCALE: 1:150,000@A4

FIGURE No:

A11580_DR041_1.0



LEGEND:

- 51 - 53.9 dB(A) $L_{Aeq,16h}$
- 54 - 56.9 dB(A) $L_{Aeq,16h}$
- 57 - 59.9 dB(A) $L_{Aeq,16h}$
- 60 - 62.9 dB(A) $L_{Aeq,16h}$
- 63 - 65.9 dB(A) $L_{Aeq,16h}$
- 66 - 68.9 dB(A) $L_{Aeq,16h}$
- 69 + dB(A) $L_{Aeq,16h}$

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Figure 30
Easterly Mode Summer Day Noise Contours
2038 No Change (Year 12)

DRAWN: AM CHECKED: DC

DATE: December 2025 SCALE: 1:150,000@A4

FIGURE No:

A11580_DR042_1.0

LEGEND:

- 51 - 53.9 dB(A) $L_{Aeq,16h}$
- 54 - 56.9 dB(A) $L_{Aeq,16h}$
- 57 - 59.9 dB(A) $L_{Aeq,16h}$
- 60 - 62.9 dB(A) $L_{Aeq,16h}$
- 63 - 65.9 dB(A) $L_{Aeq,16h}$
- 66 - 68.9 dB(A) $L_{Aeq,16h}$
- 69 + dB(A) $L_{Aeq,16h}$

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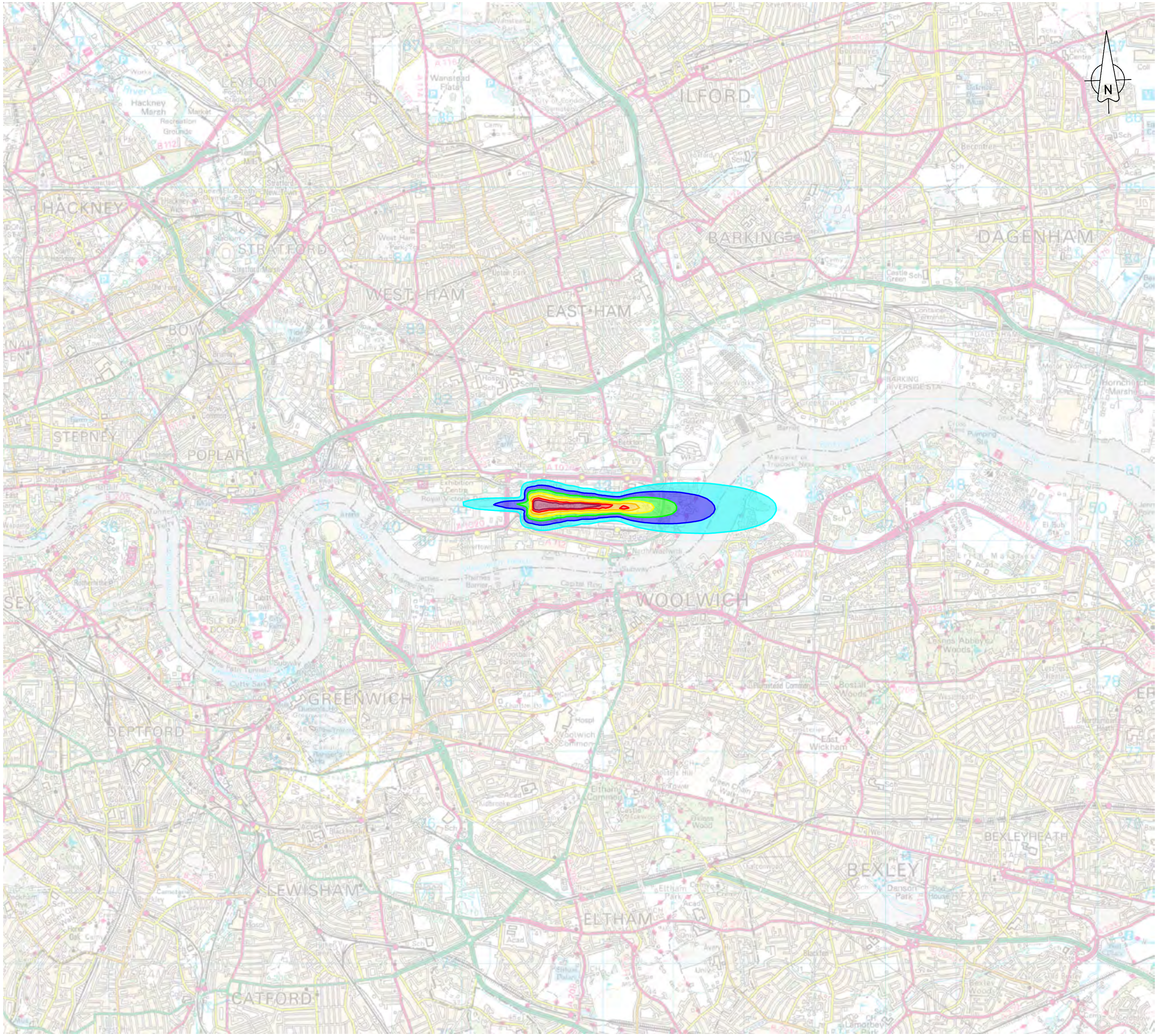
Figure 31
Easterly Mode Summer Day Noise Contours
2038 With Change (Year 12)

DRAWN: AM CHECKED: DC

DATE: December 2025 SCALE: 1:150,000@A4

FIGURE No:

A11580_DR043_1.0



LEGEND:

- 45 - 47.9 dB(A) $L_{Aeq,8h}$
- 48 - 50.9 dB(A) $L_{Aeq,8h}$
- 51 - 53.9 dB(A) $L_{Aeq,8h}$
- 54 - 56.9 dB(A) $L_{Aeq,8h}$
- 57 - 59.9 dB(A) $L_{Aeq,8h}$
- 60 - 62.9 dB(A) $L_{Aeq,8h}$
- 63 + dB(A) $L_{Aeq,8h}$

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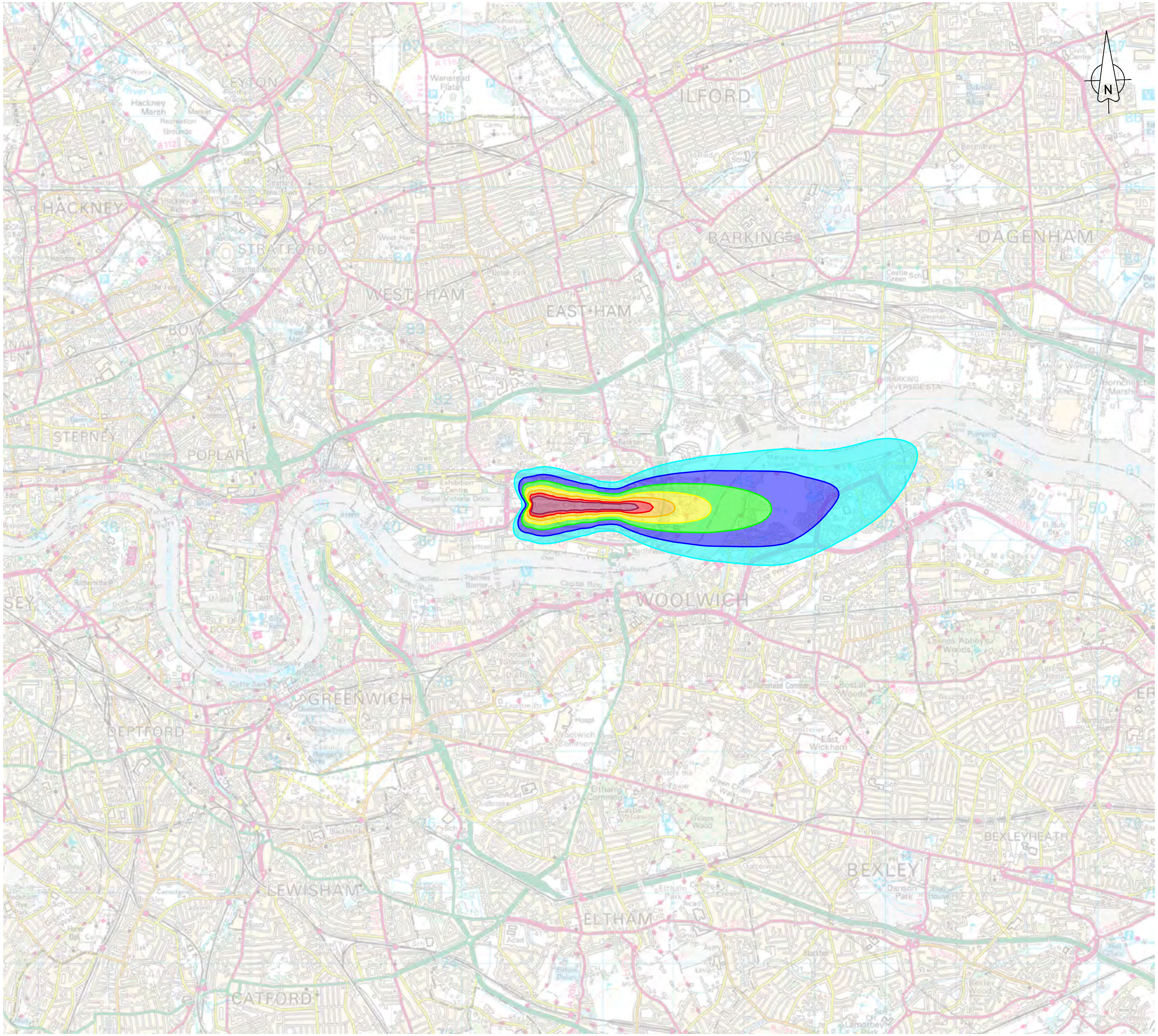
Figure 32
Easterly Mode Summer Night Noise Contours
2024 Actual

DRAWN: AM
CHECKED: DC

DATE: December 2025
SCALE: 1:75,000@A4

FIGURE No:
A11580_DR044_1.0



LEGEND:

- 45 - 47.9 dB(A) $L_{Aeq,8h}$
- 48 - 50.9 dB(A) $L_{Aeq,8h}$
- 51 - 53.9 dB(A) $L_{Aeq,8h}$
- 54 - 56.9 dB(A) $L_{Aeq,8h}$
- 57 - 59.9 dB(A) $L_{Aeq,8h}$
- 60 - 62.9 dB(A) $L_{Aeq,8h}$
- 63 + dB(A) $L_{Aeq,8h}$

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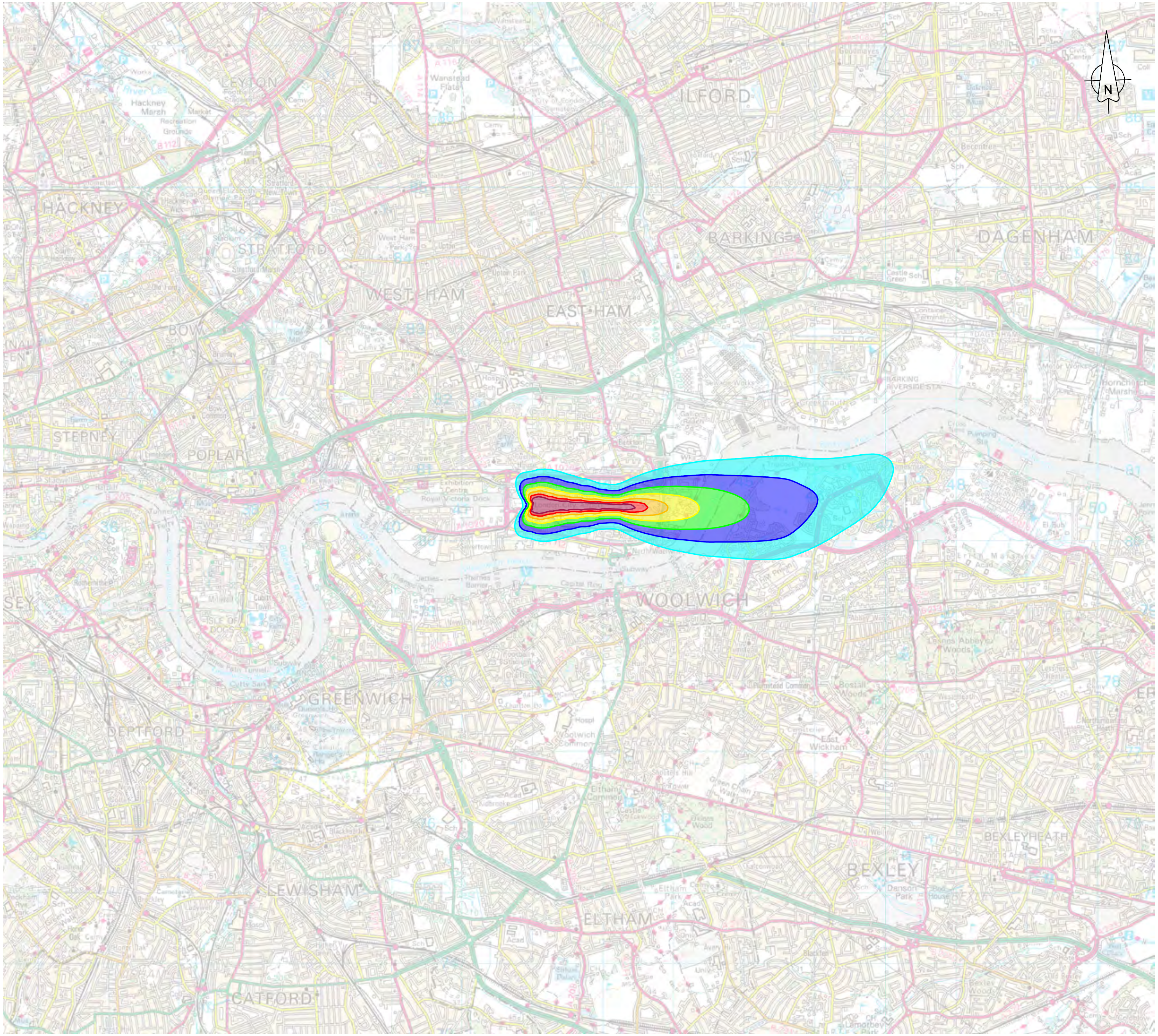
Figure 33
Easterly Mode Summer Night Noise Contours
2027 No Change (Year 1)

DRAWN: AM CHECKED: DC

DATE: December 2025 SCALE: 1:75,000@A4

FIGURE No:

A11580_DR045_1.0



LEGEND:

- 45 - 47.9 dB(A) $L_{Aeq,8h}$
- 48 - 50.9 dB(A) $L_{Aeq,8h}$
- 51 - 53.9 dB(A) $L_{Aeq,8h}$
- 54 - 56.9 dB(A) $L_{Aeq,8h}$
- 57 - 59.9 dB(A) $L_{Aeq,8h}$
- 60 - 62.9 dB(A) $L_{Aeq,8h}$
- 63 + dB(A) $L_{Aeq,8h}$

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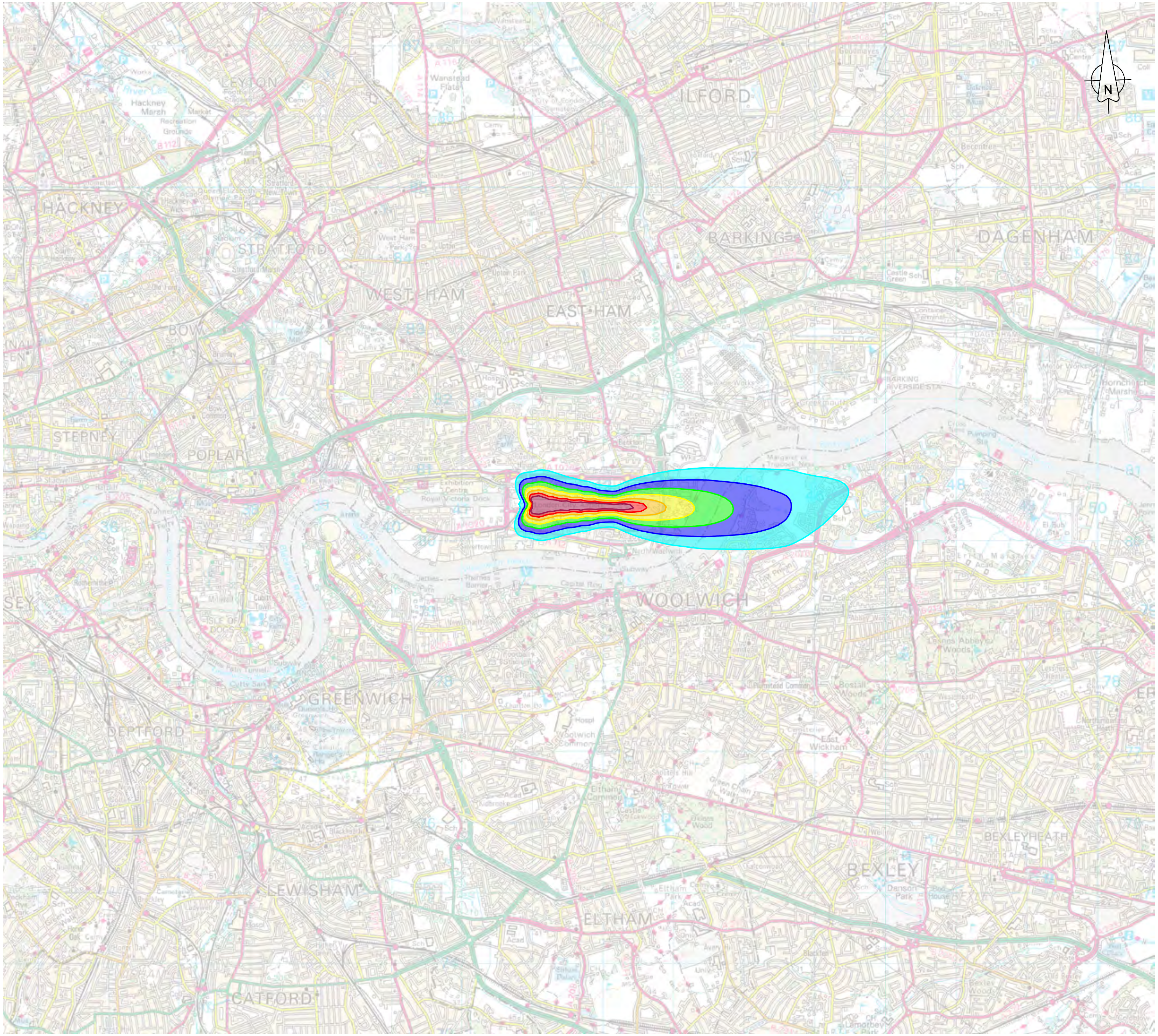
Figure 34
Easterly Mode Summer Night Noise Contours
2027 With Change (Year 1)

DRAWN: AM | CHECKED: DC

DATE: December 2025 | SCALE: 1:75,000@A4

FIGURE No:

A11580_DR046_1.0



LEGEND:

- 45 - 47.9 dB(A) $L_{Aeq,8h}$
- 48 - 50.9 dB(A) $L_{Aeq,8h}$
- 51 - 53.9 dB(A) $L_{Aeq,8h}$
- 54 - 56.9 dB(A) $L_{Aeq,8h}$
- 57 - 59.9 dB(A) $L_{Aeq,8h}$
- 60 - 62.9 dB(A) $L_{Aeq,8h}$
- 63 + dB(A) $L_{Aeq,8h}$

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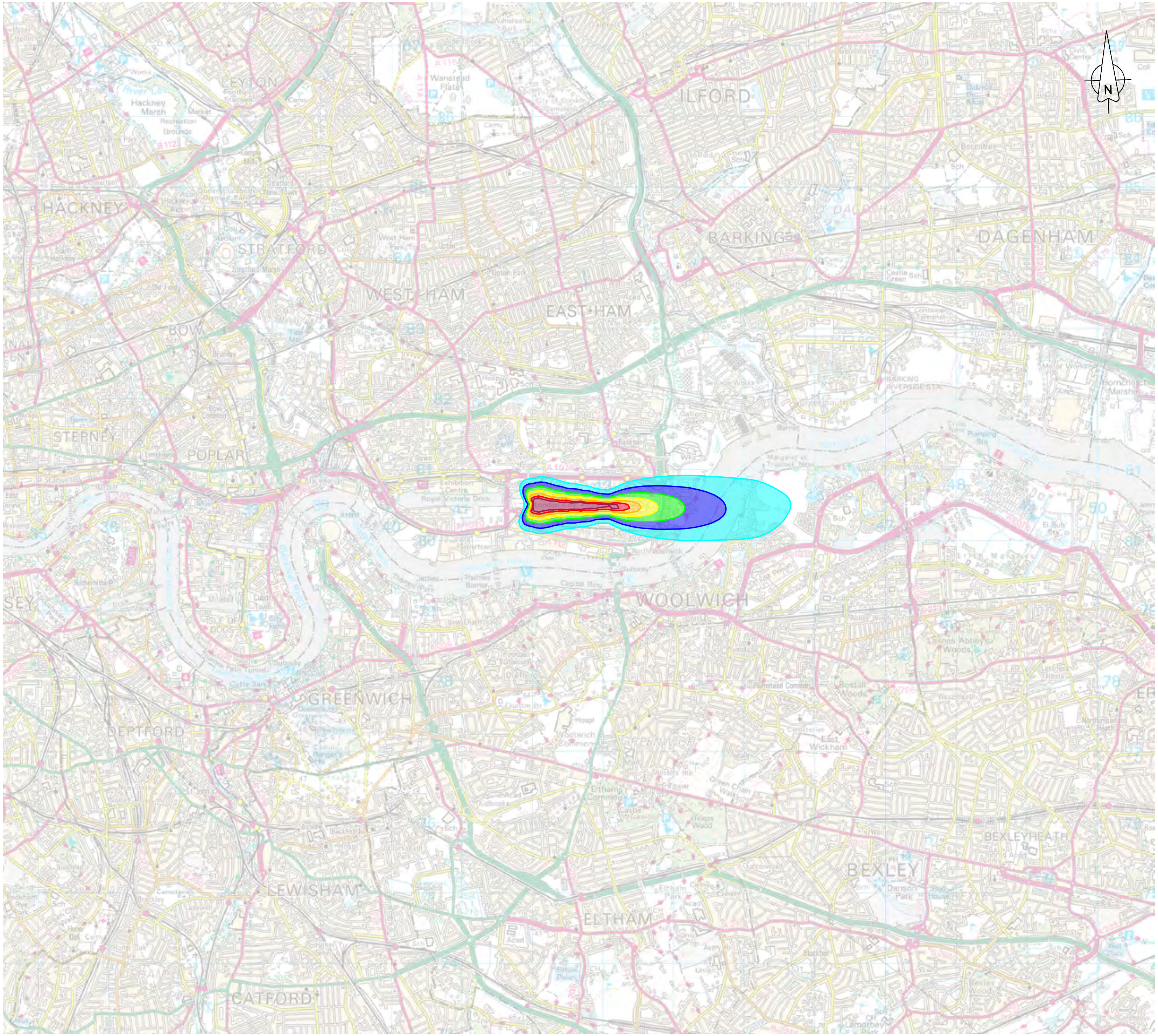
Figure 35
Easterly Mode Summer Night Noise Contours
2038 No Change (Year 12)

DRAWN: AM CHECKED: DC

DATE: December 2025 SCALE: 1:75,000@A4

FIGURE No:

A11580_DR047_1.0



LEGEND:

- 45 - 47.9 dB(A) $L_{Aeq,8h}$
- 48 - 50.9 dB(A) $L_{Aeq,8h}$
- 51 - 53.9 dB(A) $L_{Aeq,8h}$
- 54 - 56.9 dB(A) $L_{Aeq,8h}$
- 57 - 59.9 dB(A) $L_{Aeq,8h}$
- 60 - 62.9 dB(A) $L_{Aeq,8h}$
- 63 + dB(A) $L_{Aeq,8h}$

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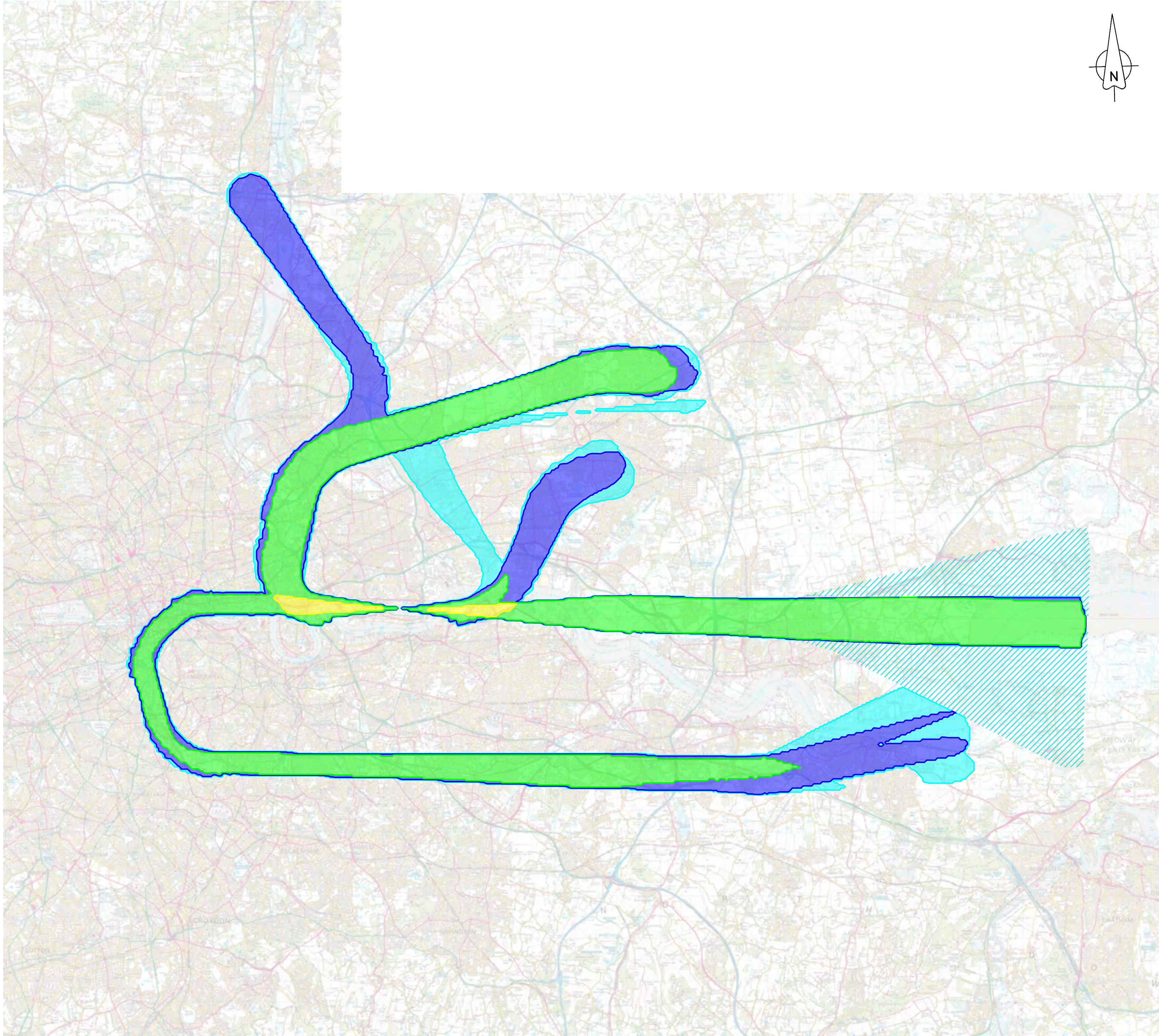
Figure 36
Easterly Mode Summer Night Noise Contours 2038 With Change (Year 12)

DRAWN: AM CHECKED: DC

DATE: December 2025 SCALE: 1:75,000@A4

FIGURE No:

A11580_DR048_1.0



LEGEND:

- 5 - 9 Overflights
- 10 - 19 Overflights
- 20 - 49 Overflights
- 50 - 99 Overflights
- 100 - 199 Overflights
- Indicative area of 5 or more overflights dependent on ATC routing

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Figure 37
Average Summer Day Overflight Contours
2024 Actual

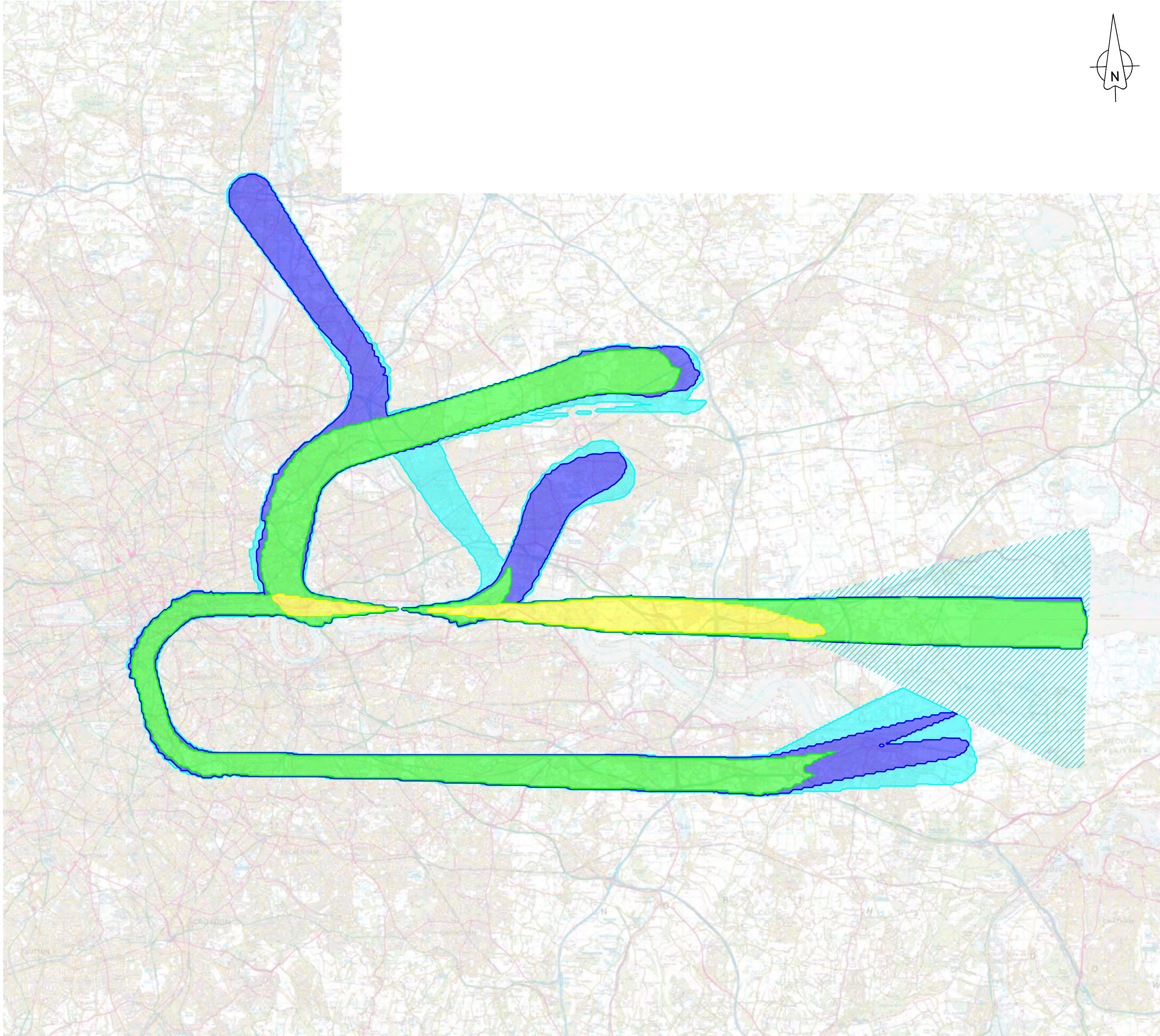
DRAWN: AM CHECKED: DC

DATE: December 2025 SCALE: 1:250,000@A4

FIGURE No:

A11580_DR049_1.0

Appendix A Contour diagrams and maps



LEGEND:

- 5 - 9 Overflights
- 10 - 19 Overflights
- 20 - 49 Overflights
- 50 - 99 Overflights
- 100 - 199 Overflights
- Indicative area of 5 or more overflights dependent on ATC routing

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Figure 38
Average Summer Day Overflight Contours
2027 No Change (Year 1)

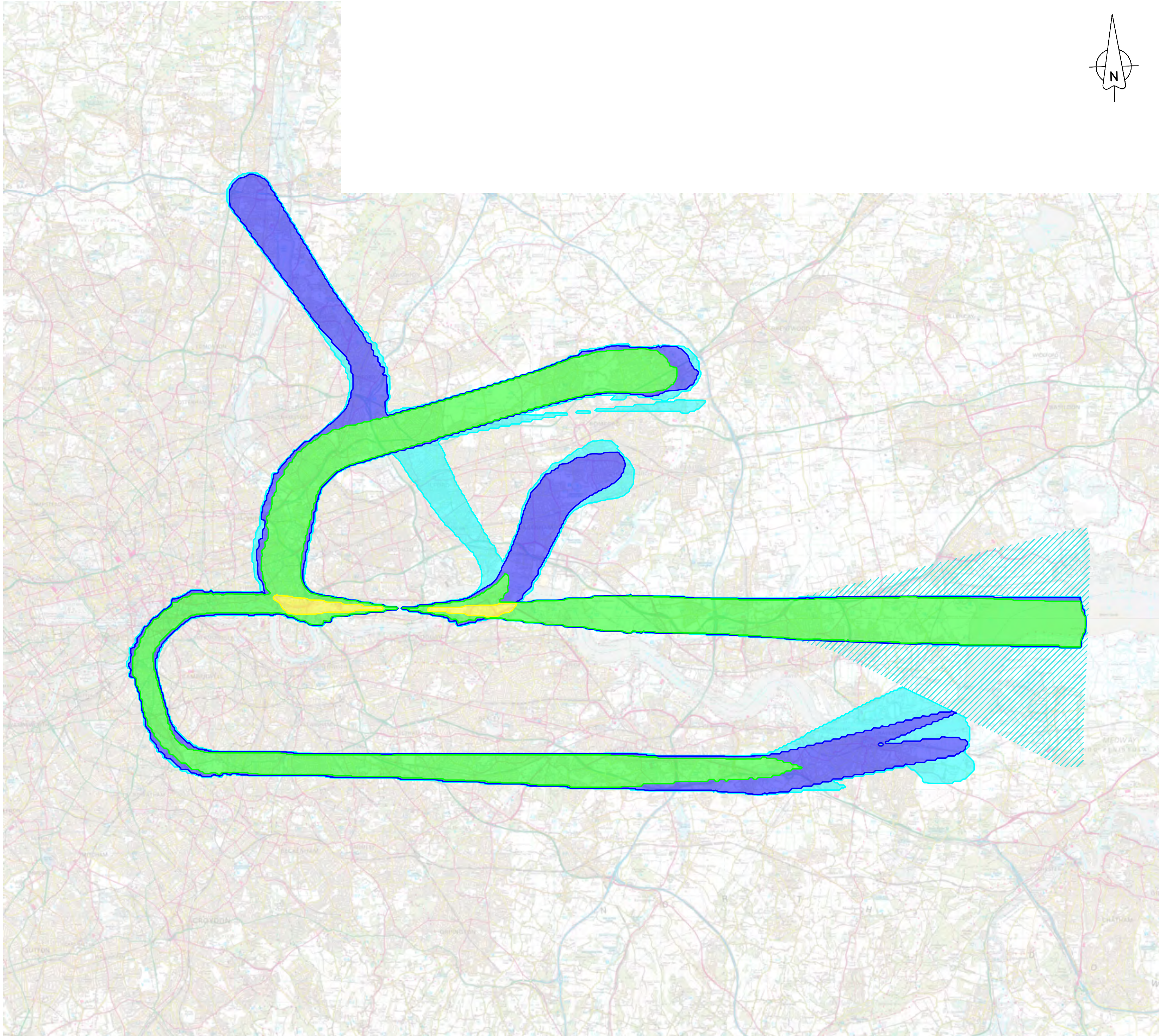
DRAWN: AM CHECKED: DC

DATE: December 2025 SCALE: 1:250,000@A4

FIGURE No:

A11580_DR050_1.0

Appendix A Contour diagrams and maps



LEGEND:

- 5 - 9 Overflights
- 10 - 19 Overflights
- 20 - 49 Overflights
- 50 - 99 Overflights
- 100 - 199 Overflights
- Indicative area of 5 or more overflights dependent on ATC routing

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Figure 39
Average Summer Day Overflight Contours
2027 With Change (Year 1)

DRAWN: AM CHECKED: DC

DATE: December 2025 SCALE: 1:250,000@A4

FIGURE No: A11580_DR051_1.0

LEGEND:

- 5 - 9 Overflights
- 10 - 19 Overflights
- 20 - 49 Overflights
- 50 - 99 Overflights
- 100 - 199 Overflights
- Indicative area of 5 or more overflights dependent on ATC routing

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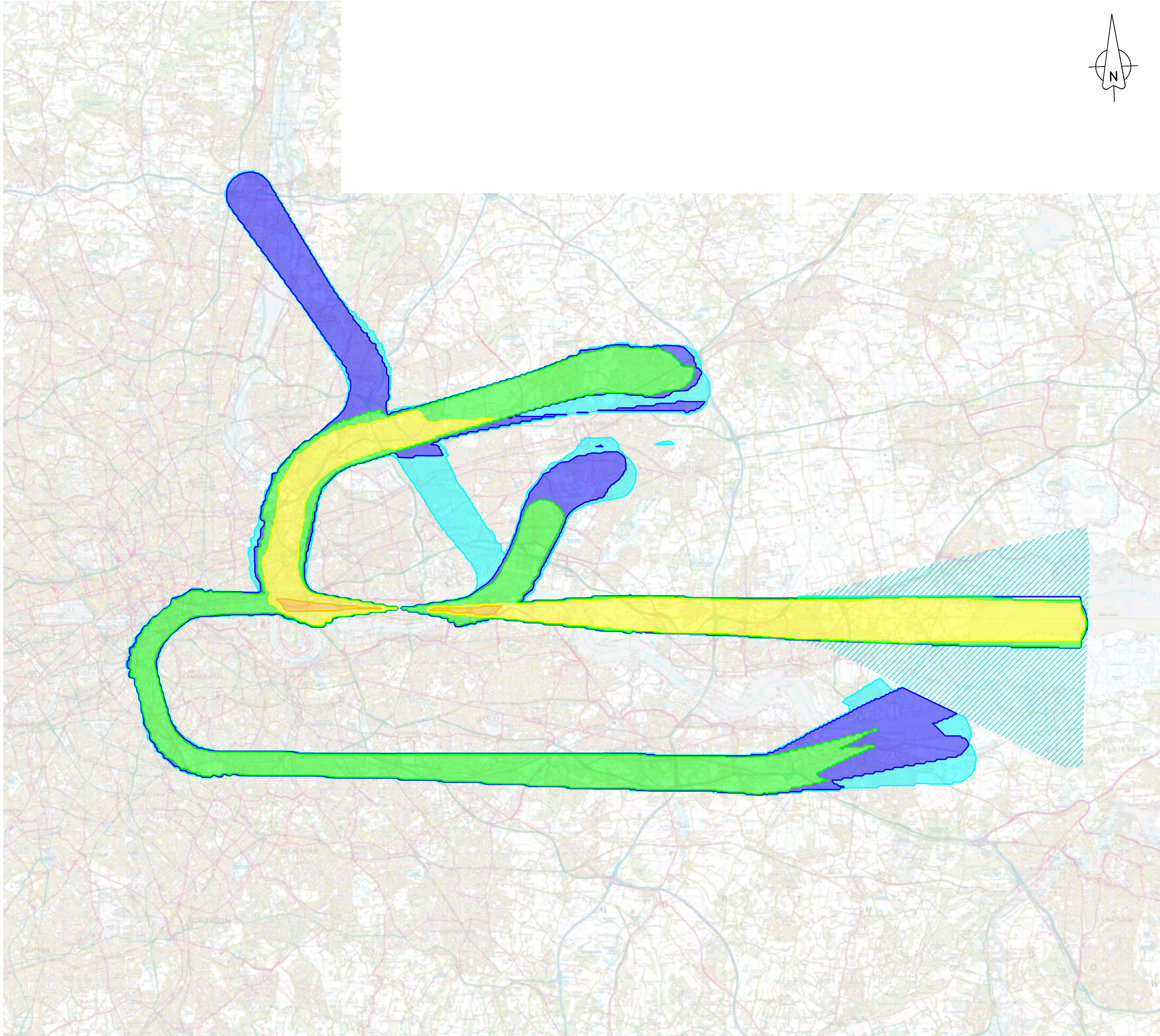
Figure 40
Average Summer Day Overflight Contours
2038 No Change (Year 12)

DRAWN: AM CHECKED: DC

DATE: December 2025 SCALE: 1:250,000@A4

FIGURE No:

A11580_DR052_1.0



LEGEND:

- 5 - 9 Overflights
- 10 - 19 Overflights
- 20 - 49 Overflights
- 50 - 99 Overflights
- 100 - 199 Overflights
- Indicative area of 5 or more overflights dependent on ATC routing

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Figure 41
Average Summer Day Overflight Contours
2038 With Change (Year 12)

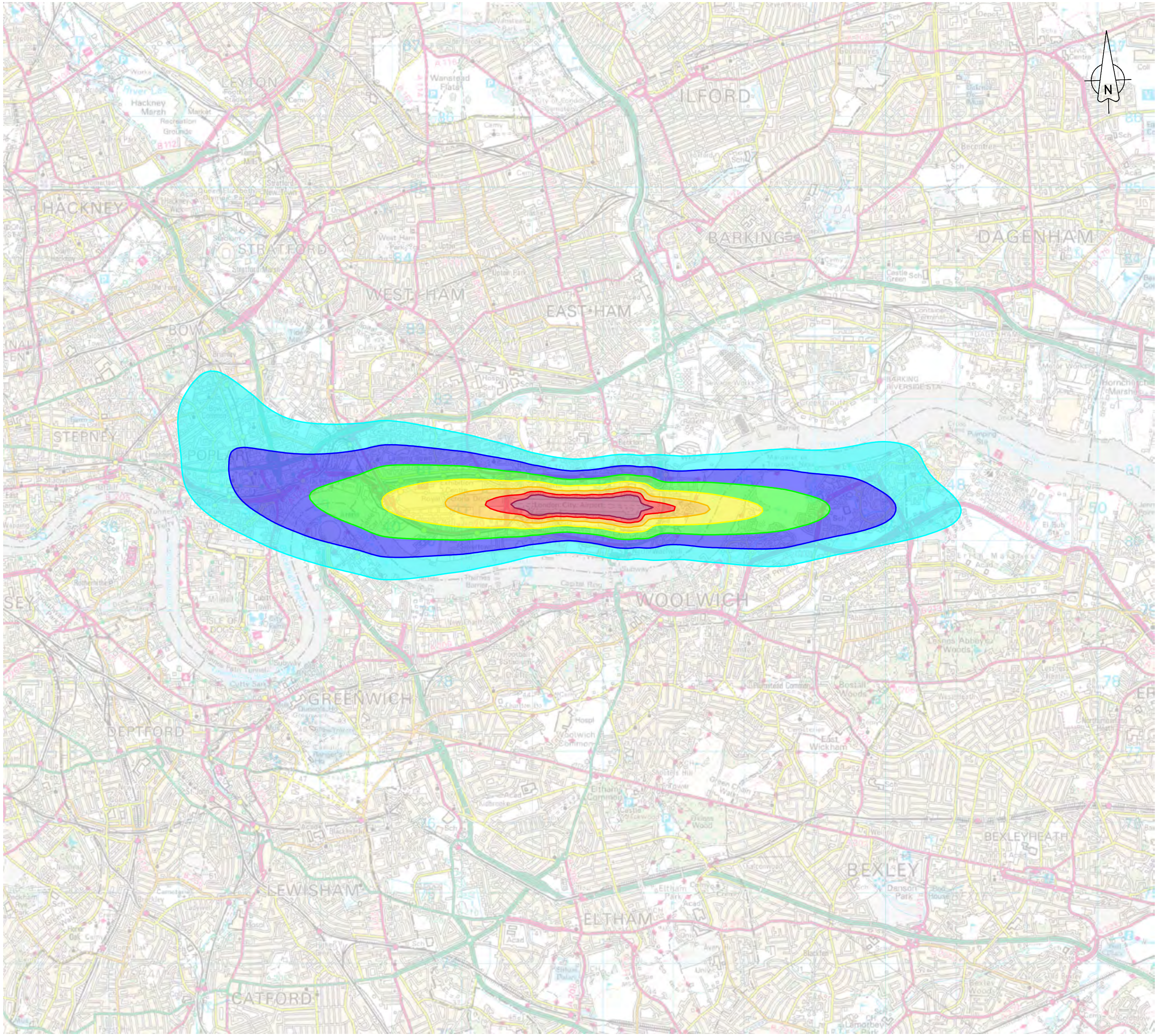
DRAWN: AM
CHECKED: DC

DATE: December 2025
SCALE: 1:250,000@A4

FIGURE No:
A11580_DR053_1.0

Annex C for ACP-2025-003 London City RNP-AR

Appendix A Contour diagrams and maps



LEGEND:

- 51 - 53.9 dB(A) $L_{eq,16A}$
- 54 - 56.9 dB(A) $L_{eq,16A}$
- 57 - 59.9 dB(A) $L_{eq,16A}$
- 60 - 62.9 dB(A) $L_{eq,16A}$
- 63 - 65.9 dB(A) $L_{eq,16A}$
- 66 - 68.9 dB(A) $L_{eq,16A}$
- 69 + dB(A) $L_{eq,16A}$

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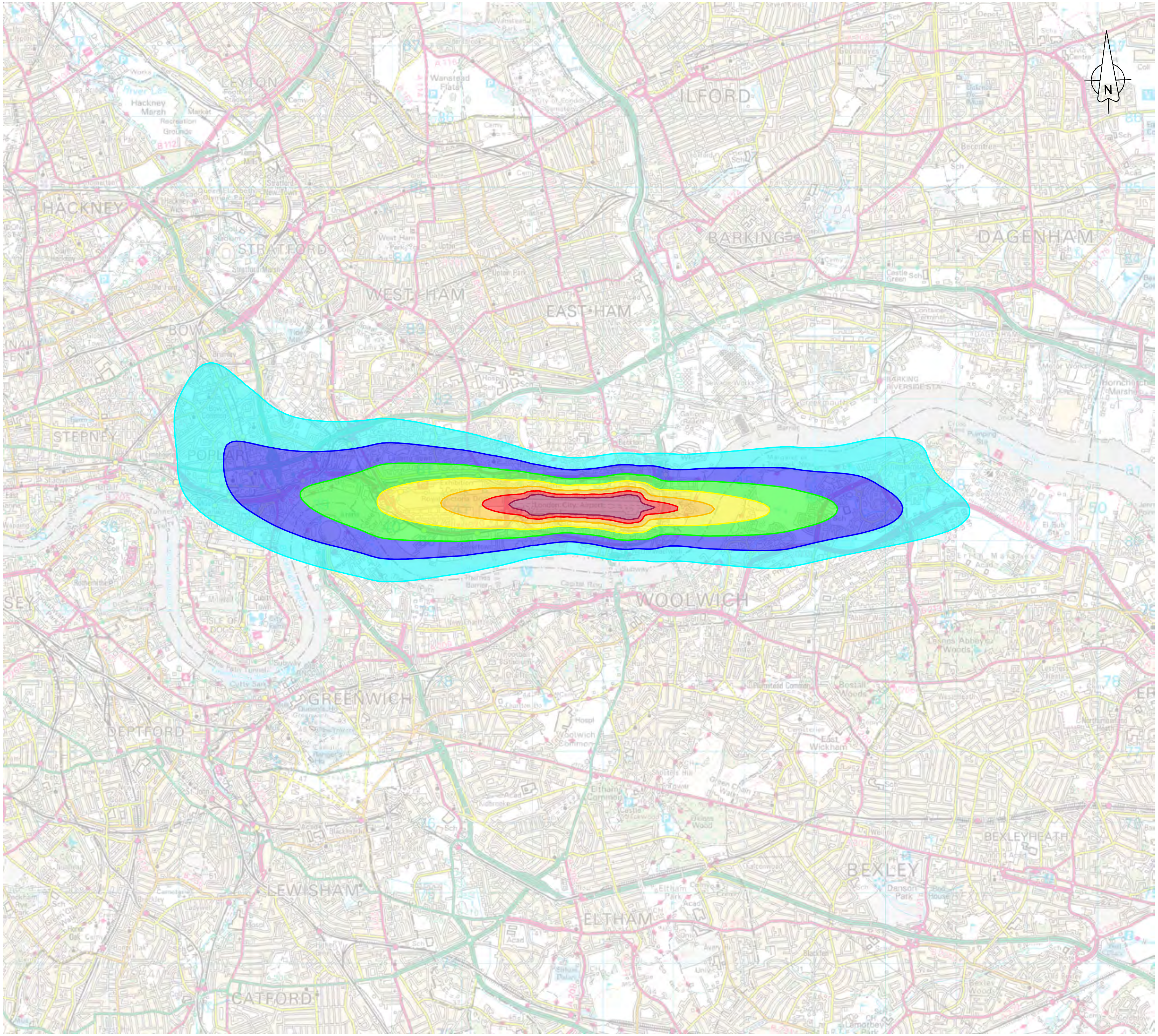
Figure 42
Summer Day Operating Hours Noise Contours
2024 Actual Average Modal

DRAWN: AM CHECKED: DC

DATE: December 2025 SCALE: 1:75,000@A4

FIGURE No:

A11580_DR054_1.0



LEGEND:

- 51 - 53.9 dB(A) $L_{eq,16A}$
- 54 - 56.9 dB(A) $L_{eq,16A}$
- 57 - 59.9 dB(A) $L_{eq,16A}$
- 60 - 62.9 dB(A) $L_{eq,16A}$
- 63 - 65.9 dB(A) $L_{eq,16A}$
- 66 - 68.9 dB(A) $L_{eq,16A}$
- 69 + dB(A) $L_{eq,16A}$

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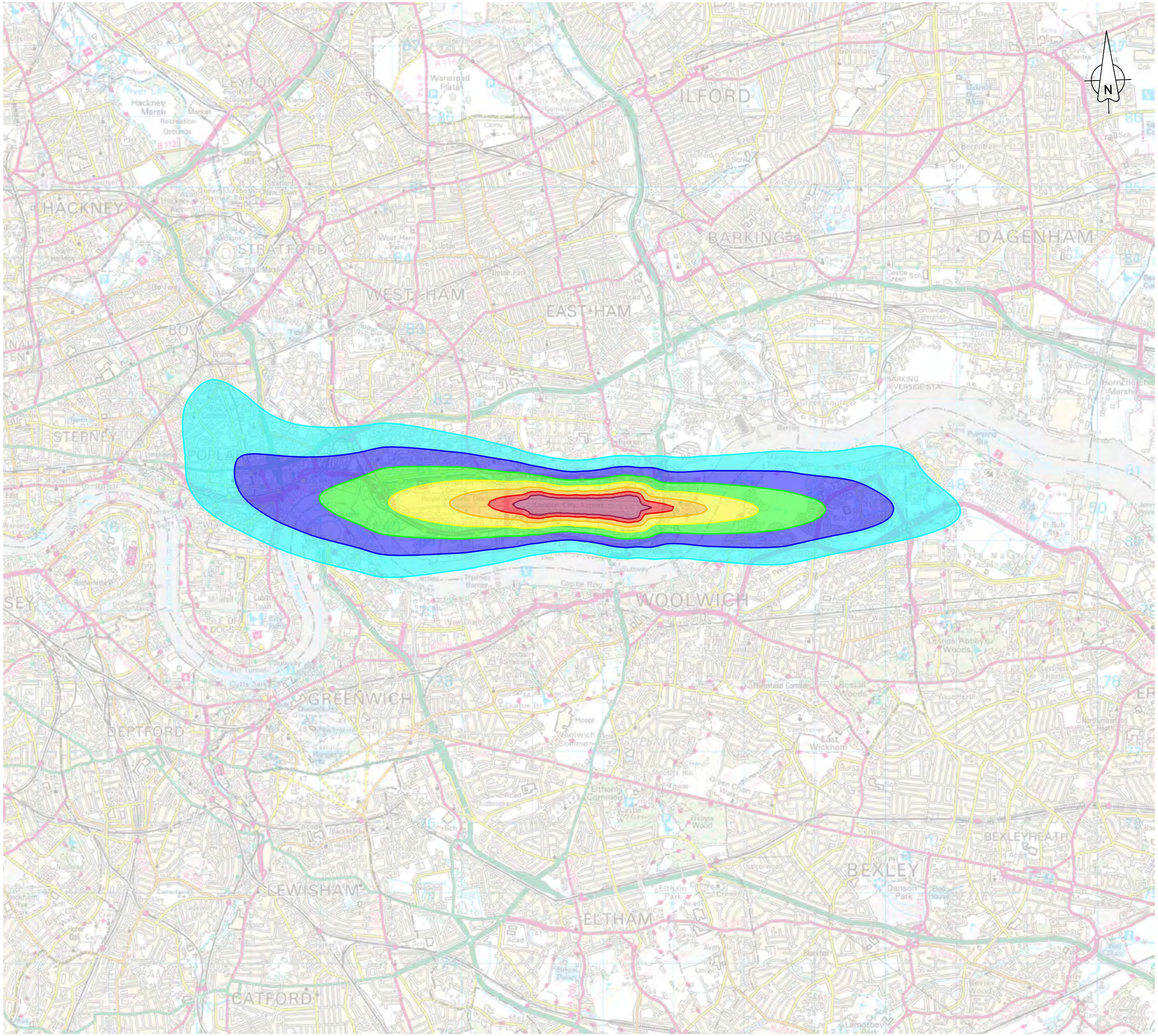
Figure 43
Summer Day Operating Hours Noise Contours
2027 No Change (Year 1)

DRAWN: AM | CHECKED: DC

DATE: December 2025 | SCALE: 1:75,000@A4

FIGURE No:

A11580_DR055_1.0



LEGEND:

- 51 - 53.9 dB(A) $L_{eq,16A}$
- 54 - 56.9 dB(A) $L_{eq,16A}$
- 57 - 59.9 dB(A) $L_{eq,16A}$
- 60 - 62.9 dB(A) $L_{eq,16A}$
- 63 - 65.9 dB(A) $L_{eq,16A}$
- 66 - 68.9 dB(A) $L_{eq,16A}$
- 69 + dB(A) $L_{eq,16A}$

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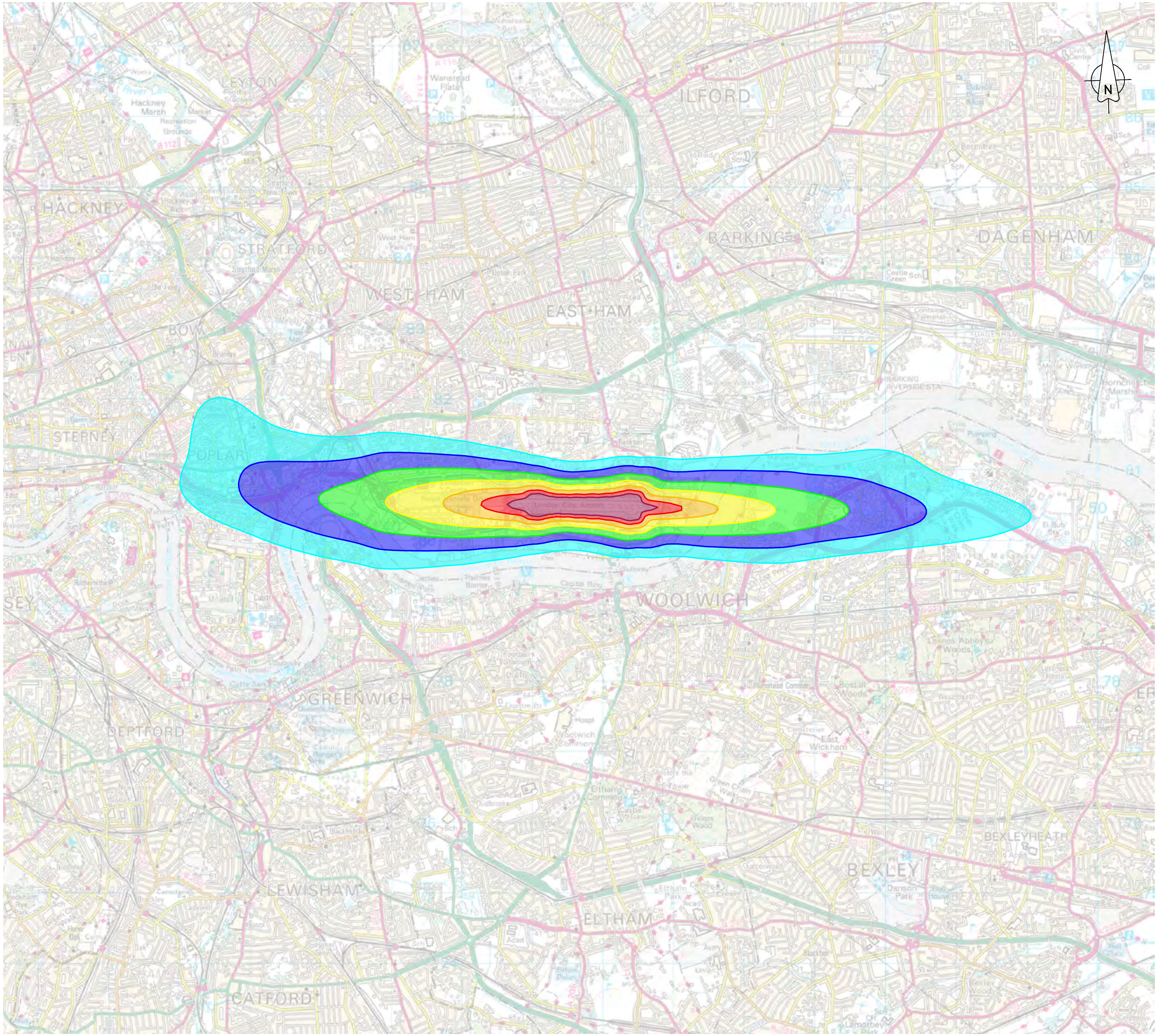
Figure 44
Summer Day Operating Hours Noise Contours 2027 With Change (Year 1)

DRAWN: AM
CHECKED: DC

DATE: December 2025
SCALE: 1:75,000@A4

FIGURE No:
A11580_DR056_1.0



LEGEND:

- 51 - 53.9 dB(A) $L_{eq,16A}$
- 54 - 56.9 dB(A) $L_{eq,16A}$
- 57 - 59.9 dB(A) $L_{eq,16A}$
- 60 - 62.9 dB(A) $L_{eq,16A}$
- 63 - 65.9 dB(A) $L_{eq,16A}$
- 66 - 68.9 dB(A) $L_{eq,16A}$
- 69 + dB(A) $L_{eq,16A}$

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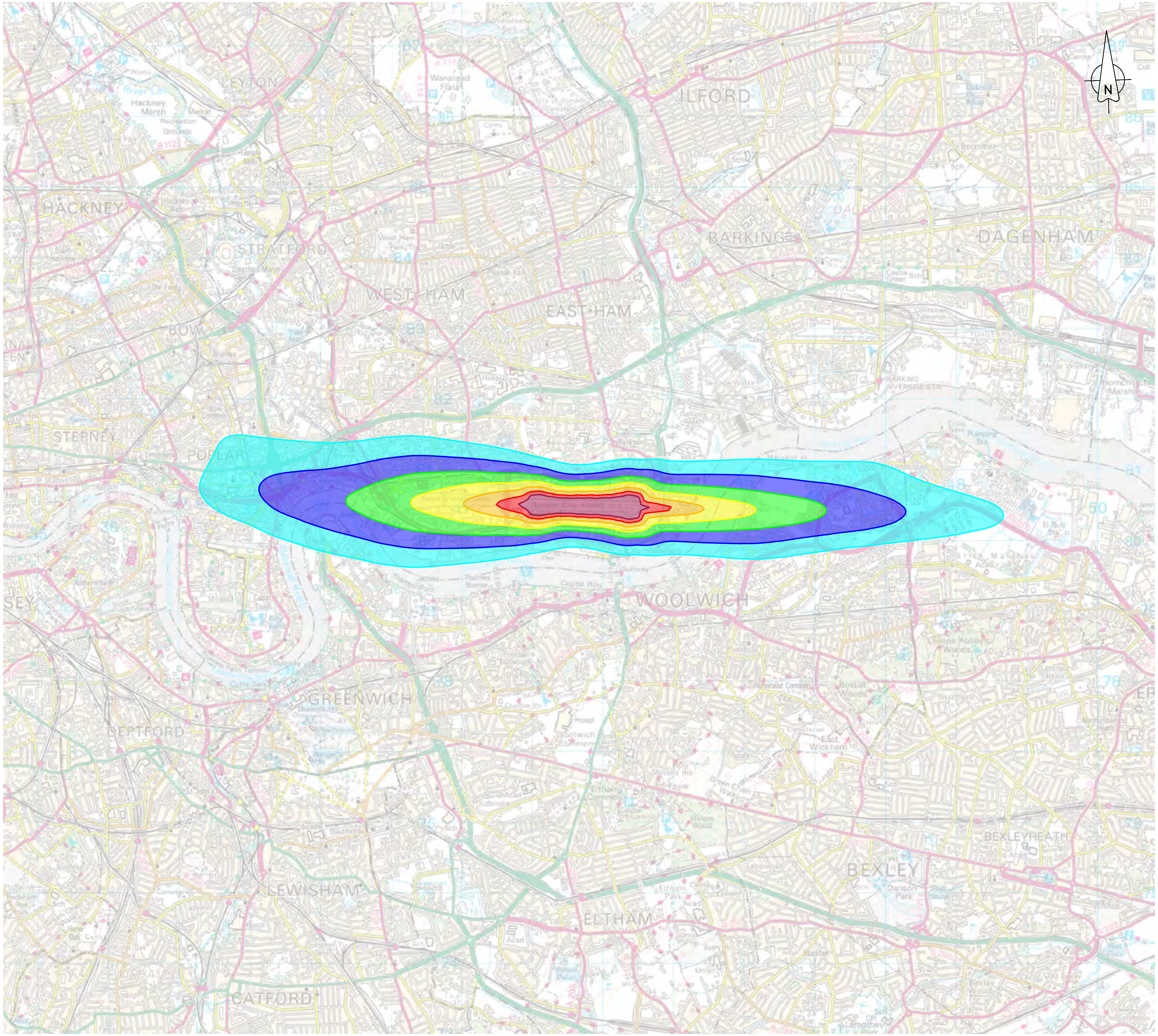
Figure 45
Summer Day Operating Hours Noise Contours
2038 No Change (Year 12)

DRAWN: AM CHECKED: DC

DATE: December 2025 SCALE: 1:75,000@A4

FIGURE No:

A11580_DR057_1.0



LEGEND:

- 51 - 53.9 dB(A) $L_{eq,16A}$
- 54 - 56.9 dB(A) $L_{eq,16A}$
- 57 - 59.9 dB(A) $L_{eq,16A}$
- 60 - 62.9 dB(A) $L_{eq,16A}$
- 63 - 65.9 dB(A) $L_{eq,16A}$
- 66 - 68.9 dB(A) $L_{eq,16A}$
- 69 + dB(A) $L_{eq,16A}$

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Figure 46
Summer Day Operating Hours Noise Contours 2038 With Change (Year 12)

DRAWN: AM

CHECKED: DC

DATE: December 2025

SCALE: 1:75,000@A4

FIGURE No:

A11580_DR058_1.0