APP/2/B

CITY AIRPORT DEVELOPMENT PROGRAMME (CADP)
S73 APPLICATION

APPENDICES TO PROOF OF EVIDENCE OF RICHARD GREER - NOISE

7 NOVEMBER 2023

Report of Richard Greer | Appendix 1

Contents

1. Introduction and purpose

1.1.1 This is Appendix 1 to my proof of evidence (APP/2) and should be read in conjunction with my proof.

1.1.2 At paragraph 5.10 of its Statement of Case ("SoC"), the London Borough of Newham ("LBN") notes that the section 73 appeal (actually a called in application) in relation to London Luton Airport's proposed expansion to 19 mppa would, in effect, set a new precedent for the assessment of noise change at airports. In that application the airport operator, London Luton Airport Operations Limited ("LLAOL"), used a significance threshold for noise at receptors experiencing a change in aircraft noise of 1 dB or more above the relevant Significant Observed Adverse Effect Level ("SOAEL").

1.1.3 The LLAOL application has now been granted planning permission (CD8.6). This appendix presents a sensitivity test where the criteria used to indicate a potential significant effect at exposures at, or above, the relevant SOAEL is altered from the 2 dB or more change, as applied in Chapter 8 of the Environmental Statement ("ES") (CD1.15), to a 1 dB or more change.

1.1.4 It is important to note that the assessment criteria adopted in the LLAOL application are the same as those used to assess the Proposed Amendments in all other respects - e.g. Lowest Observed Adverse Effects Level ("LOAEL"), SOAEL and Unacceptable Adverse Effect Level ("UAEL") values, as well as the application of a change of 3 dB or more as an indicator of potential Environmental Impact Assessment ("EIA") significance where the absolute exposure is between LOAEL and SOAEL. I have summarised the noise assessment methodology employed for the ES at Section 5 of my proof of evidence.

1.1.5 As I will explain in the remainder of this Appendix, the application of this alternative noise change threshold above SOAEL does not alter the conclusion of the noise assessment for the Proposed Development.

2. Context and background

2.1.1 As set out in Chapter 8 of the ES (CD1/15), the noise change thresholds adopted to identify potential EIA significance were those adopted to assess the expansion of the Bristol Airport (CD8.1). It is also important to note that the assessment methodology adopted for the Bristol Airport expansion was itself considered progressive in adopting a 2 dB or more change above SOAEL as an indicator of potential EIA significance. The previous norm in aviation noise assessment was to consider a change of 3 dB or more.

2.1.2 The change in methodology adopted at London Luton Airport for its expansion to 19 mppa[1] continues this progression and is a precautionary approach. It is precautionary as it applies additional sensitivity and hence 'weight' in assessment terms to noise changes above SOAEL to reflect the greater effects of such changes in noise above SOAEL. But in noise exposure-response terms there is no 'digital' switch in human sensitivity to noise change meaning that we are materially more sensitive (indicated by a 1 dB change) just above the SOAEL threshold than we are just below the SOAEL (indicated by an accepted 3 dB change). So, the noise change criteria for EIA effects are indicators and the adoption of a 1 dB or more change above SOAEL is precautionary.

2.1.3 It is important to keep in mind that this sensitivity test relates to the identification of potential EIA significance (positive and negative) due to noise change. In noise policy terms any exposure above a SOAEL is an indication of a significant adverse effect on health and quality of life, subject to compensatory mitigation, regardless of the noise change that results in that outcome.

[1] Also now used in the noise assessments provided as part of the Development Consent Order applications for the further expansion of London Luton Airport and a second runway at Gatwick

3. Assessment of effects

3.1 Daytime

3.1.1 For daytime (Monday to Sunday) **air noise**, applying the precautionary 1 dB or more change threshold above SOAEL to the assessments only identifies one new potentially significant effect. This is a positive effect (i.e. noise reduction) for approximately 6,750 people in 2027 (Table 4).

3.1.2 For daytime (Monday to Sunday) **ground noise**, applying the 1 dB or more change threshold above SOAEL to the assessments identifies three new potentially significant effects. This an additional positive effect (i.e. noise reduction) for one receptor in 2027 (Table 13) and negative effects (i.e. noise increases) on 22 receptors in 2027 (Table 13) and for approximately 46 receptors in 2031 (Table 16). All of these receptors are within the Airport's air noise sound insulation contours and therefore have already been treated or offered treatment under the SIS or have been treated under the CSIS. In line with the ES, this would be a minor adverse, but not significant, effect.

3.1.3 The conclusions in the ES on daytime noise are, therefore, robust whether the threshold for potential significance is taken as a 2dB increase above SOAEL, as adopted in the ES, or an even more precautionary 1 dB increase as was adopted as part of the approved application for the LLAOL application to expand Luton Airport from 18 mppa to 19 mppa (CD8.6).

3.2 Night-time

3.2.1 As I have set out in Section 7 of my evidence, taking account of the embedded mitigation that only the quietest new generation aircraft will operate the additional movements, for **air noise** the ES noise assessment acknowledges that the Development Case would result in noise increases (generally changes less than 2 dB in the summer average $L_{Aeq,8hr}$) compared with a do-minimum scenario (i.e. without the Proposed Amendments). Table 7 notes that in 2031, 70 people (in 20 properties located on Camel Road) would be identified as being subject to a potential significant EIA effect using a 1 dB change above SOAEL. However, as I note in Section 7 of my evidence, these are changes in noise outdoors whereas the effects would be predominantly experienced indoors at night-time. These receptors have already been offered treatment under the high tier of the current SIS as they are all within the existing 66 dB $L_{Aeq,16hr}$ daytime contour. Indoor effects with the Proposed Amendments would be avoided by the sound insulation which would reduce noise inside to provide good living conditions[2] in bedrooms and living spaces, therefore avoiding any significant adverse effect on people's health and quality of life[3].

3.2.2 For **ground noise**, there are no potentially new significant effects identified using the more precautionary 1 dB change above SOAEL criterion (Tables 11, 14 and 17).

3.2.3 The conclusions in the ES on night-time noise are, therefore, robust whether the threshold for potential significance is taken as a 2dB increase above SOAEL, as adopted in the ES, or an even more precautionary 1 dB increase as was adopted as part of the approved application for the LLAOL application to expand London Luton Airport from 18 mppa to 19 mppa (CD8.6).

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[2] In line with NPPF paragraph 185 (CD3.2.1) and BS8233 2014 (CD3.7.24) and ProPG (CD3.7.21)

[3] Consistent with precedent, for example the decision to overturn the refusal of Heathrow Airport Ltd's application to end the Cranford Agreement (CD8.5) at paragraph 16 and the inspector's conclusion at P1087 of his report that "I consider that the proffered mitigation [full noise insulation] between SOAEL and UAEL is consistent with the APF and would be sufficient to avoid significant observed adverse effects".

3.3 Weekends

3.3.1 For weekend **air noise**, applying this threshold to the supplementary assessment of summer average weekend day noise levels, Tables 3 and 6 in this appendix show that no one is forecast to experience increases between 1 and 2.9 dB above the weekend daytime SOAEL in 2025 or 2027, although around 2,650 people are forecast to experience an increase in this category in 2031 (Table 9). I consider that this remains a 'not significant' effect for the following reasons:

a. No receptors are identified above SOAEL using the government's primary indicator (summer average weekday LAeq,16hr - Monday to Sunday) with a change plus 1 dB or more resulting from the Proposed Amendments (Table 7);
b. The weekend daytime noise and its associated SOAEL are supplementary indicators;
c. Section 11 of my evidence shows that forecast Development Case noise levels on a Saturday afternoon are lower than Saturday morning which in turn are lower than a weekday (Monday to Friday);
d. Section 11 of my evidence sets out in more detail the effects arising on a Saturday afternoon and how these are minor adverse and not significant;
e. The Appellant's enhanced SIS will cover the full cost of secondary glazing and mechanical vents or a contribution towards high acoustic performance double glazing based on the cost of fitting secondary glazing to any property where the forecast weekend noise level exceeds 60 dB (3 dB below the supplementary SOAEL threshold for weekends) and offer that exceeds government policy expectation (CD3.7.8); and
f. Previous planning decisions[4] have accepted that the offer of sound insulation above SOAEL is sufficient mitigation to avoid daytime as well as night-time significant effects on health and quality of life that result from noise associated with a development. As I describe in more detail in Section 11 of my evidence, this is because greater weight is given in noise assessment guidance to achieve good living standards inside properties, where people tend to spend most of their time, than noise levels in outdoor amenity areas, provide such external noise levels are reduced as far as practicable.

3.3.2 For **ground noise**, there are no potentially new significant effects identified using the more precautionary 1 dB change above SOAEL criterion (Tables 12, 15 and 18, noting that five of the six receptors identified in 2031 with a 1 dB or more increase above the supplementary weekend SOAEL are the same receptors identified in the ES identified using a 2 dB or more increase above SOAEL).

3.3.3 The conclusion in the ES on weekend noise is therefore robust whether the threshold for potential significance is taken as a 2dB increase above SOAEL, as adopted in the ES based on the Bristol airport decision, or an even more precautionary 1 dB increase as noted by LBN in the SoCG that was considered as part of the approved application for Luton airport to expand from 18 mppa to 19 mppa (CD8.6).

[4] For example, ending the Cranford agreement at Heathrow (CD8.5), Thames Tideway DCO, highway DCOs since 2014 and HS2 Phase 1 and Phase 2A hybrid Bills.

4. Supporting information – Air noise

4.1.1 The key air noise assessment tables have been reproduced based on a change of 1 to 2.9 dB being a low magnitude of change and therefore a potentially significant effect when combined with a medium absolute impact (noise level at or above the SOAEL). These are presented in the following tables.

4.2 2025 Do-Minimum (DM) vs 2025 Development Case (DC) - Air Noise

Table 1: Population Exposed to Absolute and Relative Air Noise Impacts, 2025 DC vs 2025 DM, Daytime

2025 DC Noise Level, dB $L_{Aeq,16h}$	Absolute Impact	Population including Permitted Developments								
		Change in Noise Level DC vs DM, dB $L_{Aeq,16h}$								
		Beneficial					Adverse			
		High	Med	Low	Negligible			Low	Med	High
		≥6	3 to 5.9	1 to 2.9	.1 to .9	0	.1 to .9	1 to 2.9	3 to 5.9	≥6
51 (LOAEL) to 62.9	Low	0	0	0	317,850	4,700	19,950	0	0	0
63 (SOAEL) to 68.9	Medium	0	0	**0**	12,000	140	490	**0**	0	0
≥69 dB (UAEL)	High	0	0	0	0	0	0	0	0	0

KEY: Scale of effect	Not significant		Potential significant effect	
	Negligible	Minor	Moderate	Major

(SOAEL+1dB sensitivity test: potential new significant effects **bold underline**)

Table 2: Population Exposed to Absolute and Relative Air Noise Impacts, 2025 DC vs 2025 DM, Night-time

2025 DC Noise Level, dB $L_{Aeq,8h}$	Absolute Impact	Population including Permitted Developments								
		Change in Noise Level DC vs DM, dB $L_{Aeq,8h}$								
		Beneficial					Adverse			
		High	Med	Low	Negligible			Low	Med	High
		≥6	3 to 5.9	1 to 2.9	.1 to .9	0	.1 to .9	1 to 2.9	3 to 5.9	≥6
45 (LOAEL) to 54.9	Low	0	0	0	0	0	14,750	63,850	0	0
55 (SOAEL) to 62.9	Medium	0	0	**0**	0	0	0	**0**	0	0
≥63 dB (UAEL)	High	0	0	0	0	0	0	0	0	0

Table 3: Population Exposed to Absolute and Relative Air Noise Impacts, 2025 DC vs 2025 DM, Weekend

2025 DC Noise Level, dB $L_{Aeq,16h}$	Absolute Impact	Population including Permitted Developments								
		Change in Noise Level DC vs DM, dB $L_{Aeq,16h}$								
		Beneficial					Adverse			
		High	Med	Low	Negligible			Low	Med	High
		≥6	3 to 5.9	1 to 2.9	.1 to .9	0	.1 to .9	1 to 2.9	3 to 5.9	≥6
51 (LOAEL) to 62.9	Low	0	0	0	104,300	7,350	107,700	0	0	0
63 (SOAEL) to 68.9	Medium	0	0	**0**	2,250	0	750	**0**	0	0
≥69 dB (UAEL)	High	0	0	0	0	0	0	0	0	0

4.3 2027 Do-Minimum (DM) vs 2025 Development Case (DC) - Air Noise

Table 4: Population Exposed to Absolute and Relative Air Noise Impacts, 2027 DC Vs 2027 DM, Daytime

2027 DC Noise Level, dB $L_{Aeq,16h}$	Absolute Impact	Population including Permitted Developments								
		Change in Noise Level DC vs DM, dB $L_{Aeq,16h}$								
		Beneficial					Adverse			
		High	Med	Low	Negligible			Low	Med	High
		≥6	3 to 5.9	1 to 2.9	.1 to .9	0	.1 to .9	1 to 2.9	3 to 5.9	≥6
51 (LOAEL) to 62.9	Low	0	0	244,250	31,850	180	1,150	0	0	0
63 (SOAEL) to 68.9	Medium	0	0	**6,750**	600	0	0	**0**	0	0
≥69 dB (UAEL)	High	0	0	0	0	0	0	0	0	0

KEY: Scale of effect	Not significant		Potential significant effect	
	Negligible	Minor	Moderate	Major

(SOAEL+1dB sensitivity test: potential new significant effects **bold underline**)

Table 5: Population Exposed to Absolute and Relative Air Noise Impacts, 2027 DC vs 2027 DM, Night-time

2027 DC Noise Level, dB $L_{Aeq,8h}$	Absolute Impact	Population including Permitted Developments								
		Change in Noise Level DC vs DM, dB $L_{Aeq,8h}$								
		Beneficial					Adverse			
		High	Med	Low	Negligible			Low	Med	High
		≥6	3 to 5.9	1 to 2.9	.1 to .9	0	.1 to .9	1 to 2.9	3 to 5.9	≥6
45 (LOAEL) to 54.9	Low	0	0	4,700	14,050	100	10,850	20,600	0	0
55 (SOAEL) to 62.9	Medium	0	0	**0**	0	0	0	**0**	0	0
≥63 dB (UAEL)	High	0	0	0	0	0	0	0	0	0

Table 6: Population Exposed to Absolute and Relative Air Noise Impacts, 2027 DC vs 2027 DM, Weekend

2027 DC Noise Level, dB $L_{Aeq,16h}$	Absolute Impact	Population including Permitted Developments								
		Change in Noise Level DC vs DM, dB $L_{Aeq,16h}$								
		Beneficial					Adverse			
		High	Medium	Low	Negligible			Low	Medium	High
		≥6	3 to 5.9	1 to 2.9	.1 to .9	0	.1 to .9	1 to 2.9	3 to 5.9	≥6
51 (LOAEL) to 62.9	Low	0	0	69,400	92,500	250	13,750	1,050	0	0
63 (SOAEL) to 68.9	Medium	0	0	**750**	750	0	0	**0**	0	0
≥69 dB (UAEL)	High	0	0	0	0	0	0	0	0	0

4.4 2031 Do-Minimum (DM) vs 2025 Development Case (DC) - Air Noise

Table 7: Population Exposed to Absolute and Relative Air Noise Impacts, 2031 DC vs 2031 DM, Daytime

2031 DC Noise Level, dB $L_{Aeq,16h}$	Absolute Impact	Population including Permitted Developments								
		Change in Noise Level DC vs DM, dB $L_{Aeq,16h}$								
		Beneficial					Adverse			
		High	Med	Low	Negligible			Low	Med	High
		≥6	3 to 5.9	1 to 2.9	.1 to .9	0	.1 to .9	1 to 2.9	3 to 5.9	≥6
51 (LOAEL) to 62.9	Low	0	0	0	5,900	480	287,250	0	0	0
63 (SOAEL) to 68.9	Medium	0	0	**0**	0	0	8,600	**0**	0	0
≥69 dB (UAEL)	High	0	0	0	0	0	0	0	0	0

KEY: Scale of effect	Not significant		Potential significant effect	
	Negligible	Minor	Moderate	Major

(SOAEL+1dB sensitivity test: potential new significant effects **bold underline**)

Table 8: Population Exposed to Absolute and Relative Air Noise Impacts, 2031 DC vs 2031 DM, Night-time

2031 DC Noise Level, dB $L_{Aeq,8h}$	Absolute Impact	Population including Permitted Developments								
		Change in Noise Level DC vs DM, dB $L_{Aeq,8h}$								
		Beneficial					Adverse			
		High	Med	Low	Negligible			Low	Med	High
		≥6	3 to 5.9	1 to 2.9	.1 to .9	0	.1 to .9	1 to 2.9	3 to 5.9	≥6
45 (LOAEL) to 54.9	Low	0	0	6,250	13,200	90	11,750	23,900	0	0
55 (SOAEL) to 62.9	Medium	0	0	**0**	0	0	0	**70**	0	0
≥63 dB (UAEL)	High	0	0	0	0	0	0	0	0	0

Table 9: Population Exposed to Absolute and Relative Air Noise Impacts, 2031 DC Vs 2031 DM, Weekend

2031 DC Noise Level, dB $L_{Aeq,16h}$	Absolute Impact	Population including Permitted Developments								
		Change in Noise Level DC vs DM, dB $L_{Aeq,16h}$								
		Beneficial					Adverse			
		High	Med	Low	Negligible			Low	Med	High
		≥6	3 to 5.9	1 to 2.9	.1 to .9	0	.1 to .9	1 to 2.9	3 to 5.9	≥6
51 (LOAEL) to 62.9	Low	0	0	0	0	0	36,750	159,800	0	0
63 (SOAEL) to 68.9	Medium	0	0	**0**	0	0	750	**2,650**	0	0
≥69 dB (UAEL)	High	0	0	0	0	0	0	0	0	0

5. Supporting information – Ground noise

5.1.1 The key ground noise assessment tables from the ES have been reproduced based on a change of 1 to 2.9 dB being a low magnitude of change and therefore a potentially significant effect when combined with a medium absolute impact (noise level at or above the SOAEL). These are presented in the sections below.

5.2 2025 Do-Minimum (DM) vs 2025 Development Case (DC) – Ground Noise

Table 10: Receptors Exposed to Absolute and Relative Ground Noise Impacts, 2025 DC vs 2025 DM, Daytime

2025 DC Noise Level, dB $L_{Aeq,16h}$	Absolute Impact	Receptors								
		Change in Noise Level DC vs DM, dB $L_{Aeq,16h}$								
		Beneficial					Adverse			
		High	Med	Low	Negligible			Low	Med	High
		≥6	3 to 5.9	1 to 2.9	.1 to .9	0	.1 to .9	1 to 2.9	3 to 5.9	≥6
50 (LOAEL) to 59.9	Low	0	0	0	75	8	603	0	0	0
60 (SOAEL) to 69.9	Medium	0	0	**0**	3	1	1	**0**	0	0
≥ 70 dB (UAEL)	High	0	0	0	0	0	0	0	0	0

KEY: Scale of effect	Not significant		Potential significant effect	
	Negligible	Minor	Moderate	Major

(SOAEL+1dB sensitivity test: potential new significant effects **bold underline**)

Table 11: Receptors Exposed to Absolute and Relative Ground Noise Impacts, 2025 DC vs 2025 DM, Night-time

2025 DC Noise Level, dB $L_{Aeq,8h}$	Absolute Impact	Receptors								
		Change in Noise Level DC vs DM, dB $L_{Aeq,8h}$								
		Beneficial					Adverse			
		High	Med	Low	Negligible			Low	Med	High
		≥6	3 to 5.9	1 to 2.9	.1 to 09	0	.1 to .9	1 to 2.9	3 to 5.9	≥6
45 (LOAEL) to 54.9	Low	0	0	0	0	0	0	100	0	0
55 (SOAEL) to 64.9	Medium	0	0	**0**	0	0	0	**0**	0	0
≥ 65 dB (UAEL)	High	0	0	0	0	0	0	0	0	0

Table 12: Population Exposed to Absolute and Relative Ground Noise Impacts, 2025 DC vs 2025 DM, Weekend

2025 DC Noise Level, dB $L_{Aeq,16h}$	Absolute Impact	Receptors								
		Change in Noise Level DC vs DM, dB $L_{Aeq,16h}$								
		Beneficial					Adverse			
		High	Med	Low	Negligible			Low	Med	High
		≥6	3 to 5.9	1 to 2.9	.1 to .9	0	.1 to .9	1 to 2.9	3 to 5.9	≥6
50 (LOAEL) to 59.9	Low	0	0	0	0	3	338	18	0	0
60 (SOAEL) to 69.9	Medium	0	0	**0**	0	0	1	**0**	0	0
≥ 70 dB (UAEL)	High	0	0	0	0	0	0	0	0	0

5.3 2027 Do-Minimum (DM) vs 2025 Development Case (DC) – Ground Noise

Table 13: Receptors Exposed to Absolute and Relative Ground Noise Impacts, 2027 DC vs 2027 DM, Daytime

2027 DC Noise Level, dB $L_{Aeq,16h}$	Absolute Impact	Receptors								
		Change in Noise Level DC vs DM, dB $L_{Aeq,16h}$								
		Beneficial					Adverse			
		High	Med	Low	Negligible			Low	Med	High
		≥6	3 to 5.9	1 to 2.9	.1 to .9	0	.1 to .9	1 to 2.9	3 to 5.9	≥6
50 (LOAEL) to 59.9	Low	0	0	77	12	0	12	663	34	0
60 (SOAEL) to 69.9	Medium	0	0	**1**	0	0	0	**23**	0	0
≥ 70 dB (UAEL)	High	0	0	0	0	0	0	0	0	0

KEY: Scale of effect	Not significant		Potential significant effect	
	Negligible	Minor	Moderate	Major

(SOAEL+1dB sensitivity test: potential new significant effects **bold underline**)

Table 14: Receptors Exposed to Absolute and Relative Ground Noise Impacts, 2027 DC vs 2027 DM, Night-time

2027 DC Noise Level, dB $L_{Aeq,8h}$	Absolute Impact	Receptors								
		Change in Noise Level DC vs DM, dB $L_{Aeq,8h}$								
		Beneficial					Adverse			
		High	Med	Low	Negligible			Low	Med	High
		≥6	3 to 5.9	1 to 2.9	.1 to .9	0	.1 to .9	1 to 2.9	3 to 5.9	≥6
45 (LOAEL) to 54.9	Low	0	0	2	3	0	0	0	162	0
55 (SOAEL) to 64.9	Medium	0	0	**0**	0	0	0	**0**	0	0
≥ 65 dB (UAEL)	High	0	0	0	0	0	0	0	0	0

Table 15: Receptors Exposed to Absolute and Relative Ground Noise Impacts, 2027 DC vs 2027 DM, Weekend

2027 DC Noise Level, dB $L_{Aeq,16h}$	Absolute Impact	Receptors								
		Change in Noise Level DC vs DM, dB $L_{Aeq,16h}$								
		Beneficial					Adverse			
		High	Med	Low	Negligible			Low	Med	High
		≥6	3 to 5.9	1 to 2.9	.1 to .9	0	.1 to .9	1 to 2.9	3 to 5.9	≥6
50 (LOAEL) to 59.9	Low	0	0	26	17	1	4	333	124	0
60 (SOAEL) to 69.9	Medium	0	0	**0**	1	0	0	**0**	0	0
≥ 70 dB (UAEL)	High	0	0	0	0	0	0	0	0	0

5.4 2031 Do-Minimum (DM) vs 2025 Development Case (DC) – Ground Noise

Table 16: Receptors Exposed to Absolute and Relative Ground Noise Impacts, 2031 DC vs 2031 DM, Daytime

2031 DC Noise Level, dB $L_{Aeq,16h}$	Absolute Impact	Receptors								
		Change in Noise Level DC vs DM, dB $L_{Aeq,16h}$								
		Beneficial					Adverse			
		High	Medium	Low	Negligible		Low	Medium	High	
		≥6	3 to 5.9	1 to 2.9	0.1 to 0.9	0	0.1 to 0.9	1 to 2.9	3 to 5.9	≥6
50 (LOAEL) to 59.9	Low	0	2	23	46	25	374	328	11	0
60 (SOAEL) to 69.9	Medium	0	0	**0**	0	0	2	**46**	0	0
≥ 70 dB (UAEL)	High	0	0	0	0	0	0	0	0	0

KEY: Scale of effect	Not significant		Potential significant effect	
	Negligible	Minor	Moderate	Major

(SOAEL+1dB sensitivity test: potential new significant effects **bold underline**)

Table 17: Receptors Exposed to Absolute and Relative Ground Noise Impacts, 2031 DC vs 2031 DM, Night-time

2031 DC Noise Level, dB $L_{Aeq,8h}$	Absolute Impact	Receptors								
		Change in Noise Level DC vs DM, dB $L_{Aeq,8h}$								
		Beneficial					Adverse			
		High	Med	Low	Negligible		Low	Med	High	
		≥6	3 to 5.9	1 to 2.9	.1 to .9	0	.1 to 09	1 to 2.9	3 to 5.9	≥6
45 (LOAEL) to 54.9	Low	0	0	0	0	0	0	10	217	0
55 (SOAEL) to 64.9	Medium	0	0	**0**	0	0	0	**0**	0	0
≥ 65 dB (UAEL)	High	0	0	0	0	0	0	0	0	0

Table 18: Receptors Exposed to Absolute and Relative Ground Noise Impacts, 2031 DC vs 2031 DM, Weekend

2031 DC Noise Level, dB $L_{Aeq,16h}$	Absolute Impact	Receptors								
		Change in Noise Level DC vs DM, dB $L_{Aeq,16h}$								
		Beneficial					Adverse			
		High	Med	Low	Negligible		Low	Med	High	
		≥6	3 to 5.9	1 to 2.9	.1 to .9	0	.1 to 09	1 to 2.9	3 to 5.9	≥6
50 (LOAEL) to 59.9	Low	0	0	6	10	1	13	529	17	0
60 (SOAEL) to 69.9	Medium	0	0	**0**	0	0	0	**6**	0	0
≥ 70 dB (UAEL)	High	0	0	0	0	0	0	0	0	0

Report of Richard Greer | Appendix 2

1. Introduction and purpose

1.1.1 This is Appendix 2 to my proof of evidence (APP/2) and should be read in conjunction with my proof (APP/2/A).

1.1.2 At 4.2.2 of its Statement of Case (SoC), HACAN-East asserts "*A Citizen Study beyond the proximity of the runways suggests that the overflight noise of the new generation aircraft is not meaningfully quieter than their predecessors.*"

1.1.3 I review the Citizen Study in this Appendix.

2. Review of the Citizen Study (CD3.7.20)

2.1.1 The Citizen Study (CD3.7.20) referred to in the HACAN-East SoC was first published in August 2022 and was updated in February 2023. The study reports noise level measurements of aircraft operating from the Airport undertaken by members of the public using a mobile phone app and then seeks to use this data to compare the noise levels of current and new generation aircraft. The Appellant has engaged with HACAN-East about the study.

2.1.2 The measurements presented in the study were undertaken at a number of locations under the arrivals flight path when the Airport is operating in an easterly direction, roughly between the Horniman museum, at the western end of the study area, and Mottingham, at the eastern end of the study area.

2.1.3 With regard to the appeal, I would note four points.

2.1.4 First, I note that the study area is located substantially outside of the LOAEL contours in the ES. These contours are a matter of common ground with the LPA as noted in Section 9 of the SoCG (CD11.2).

2.1.5 As I have set out in Section 3 of my evidence, LOAEL values for aviation noise are set by government policy (CD3.7.7) and government guidance (CD3.5.9); the guidance states that the LOAEL thresholds set for aviation should be "*regarded as the point at which adverse effects begin to be seen on a community*". This is consistent, for example, with the recent decision to grant London Luton Airport Operations Limited's application to expand London Luton Airport operations to 19 mppa (CD8.6). In the decision, the Secretary of State agreed with the Inspector and concluded that areas overflown outside the 51dB daytime contour and the 45dB night-time LOAEL contours would not experience harm to amenity.

2.1.6 The Citizen Study does not, therefore, materially assist on noise levels within the LOAEL contour area.

2.1.7 Secondly, I note that the study area is overflown by the flight path that is only used by easterly arrivals. This means that communities in these areas are only experience around 15% of the flights at LCY. Easterly operations occur around 30% of the time, the Proposed Amendments would therefore typically only result in aircraft movements on just over one weekend afternoon a month on average. Most people in these areas are more impacted by London Heathrow westerly arrivals, which occur around 80% of the time.

2.1.8 Thirdly, I consider the Citizen Study to be of greater potential relevance to the Airport's ongoing Airspace Change Proposal (ACP) in connection with the CAA's airspace modernisation programme.

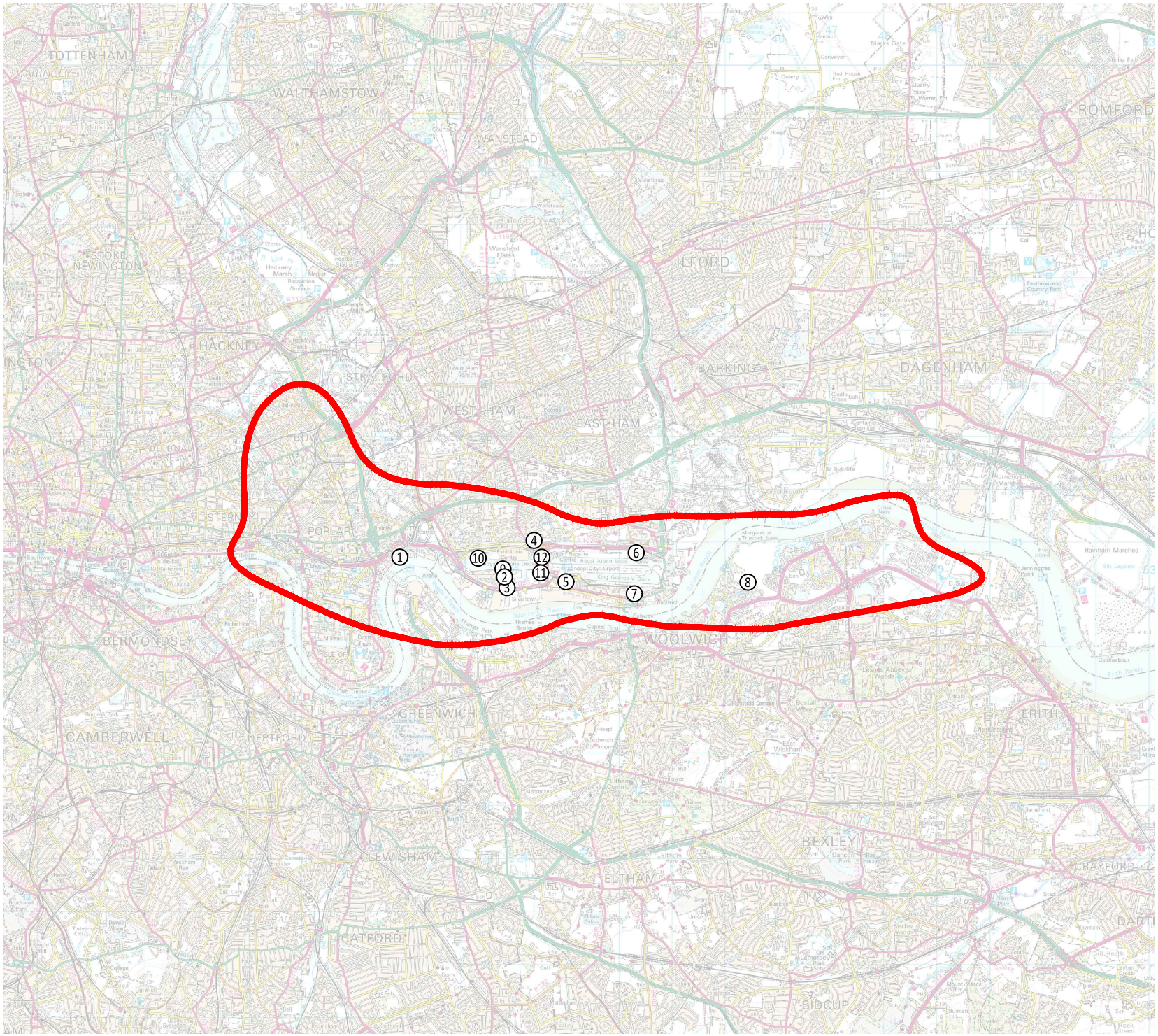
2.1.9 I am of this view because the Citizen Study notes the opportunities to reduce noise in its study area through the implementation of Continuous Decent Approaches (or Operations) and / or the definition of additional flight paths to support flight path alternation and hence provide predictable periods of respite for overflown communities. Such changes to flight paths and operations are outside the scope of the Appeal and are matters for the separate ACP process overseen by the CAA in line with Air Navigation Guidance (CD3.5.9) and in accordance with CAP1616 (CD3.7.29). LBN share the view that the ACP process falls under a separate determining regime as set out at paragraph 168 of the Committee Report (CD4.3.1). The Airport's ACP passed the CAP1616 stage 2 gateway in June 2022 and so has completed its initial options appraisal (IOA) and is now at stage 3a (consultation preparation). The timing of consultation is coordinated by the Government and CAA across all airports and timelines have yet to be announced. Consultation will be informed by environmental assessment of the proposed airspace change, including noise, in line with CAP1616.

2.1.10 ANG (CD3.5.9) (paragraph 3.11) requires that, for communities further away from airports that will not be affected by noise above the LOAELs, it is important that other aspects of noise are also taken into account where the total adverse effects of noise on people between different airspace options are similar. Metrics that must be considered for these purposes include the overall number of overflights and number above metrics: N65 for daytime noise and N60 for night-time noise. This consideration of maximum noise levels for aircraft movements for ACP purposes is more like the approach adopted in the Citizen Study. However, this ANG applies to airspace change proposals and therefore carries minimal weight in determining the Appeal.

2.1.11 Fourthly, and finally, I note that the surveys for the Citizen Study were not, so far as I am aware, undertaken:

- by appropriately qualified persons;
- using certified or calibrated sound level monitoring equipment in line with the relevant British Standards, BS EN 61672-1:2013 - Electroacoustics. Sound level meters; and / or
- using a survey methodology in accordance with the relevant British Standard, BS 7445-1:2003 'Description and Measurement of Environmental Noise. Guide to quantities and procedures'.

2.1.12 I therefore do not consider the Citizen Study to provide reliable information.



LEGEND:

Study Area

Representative Location

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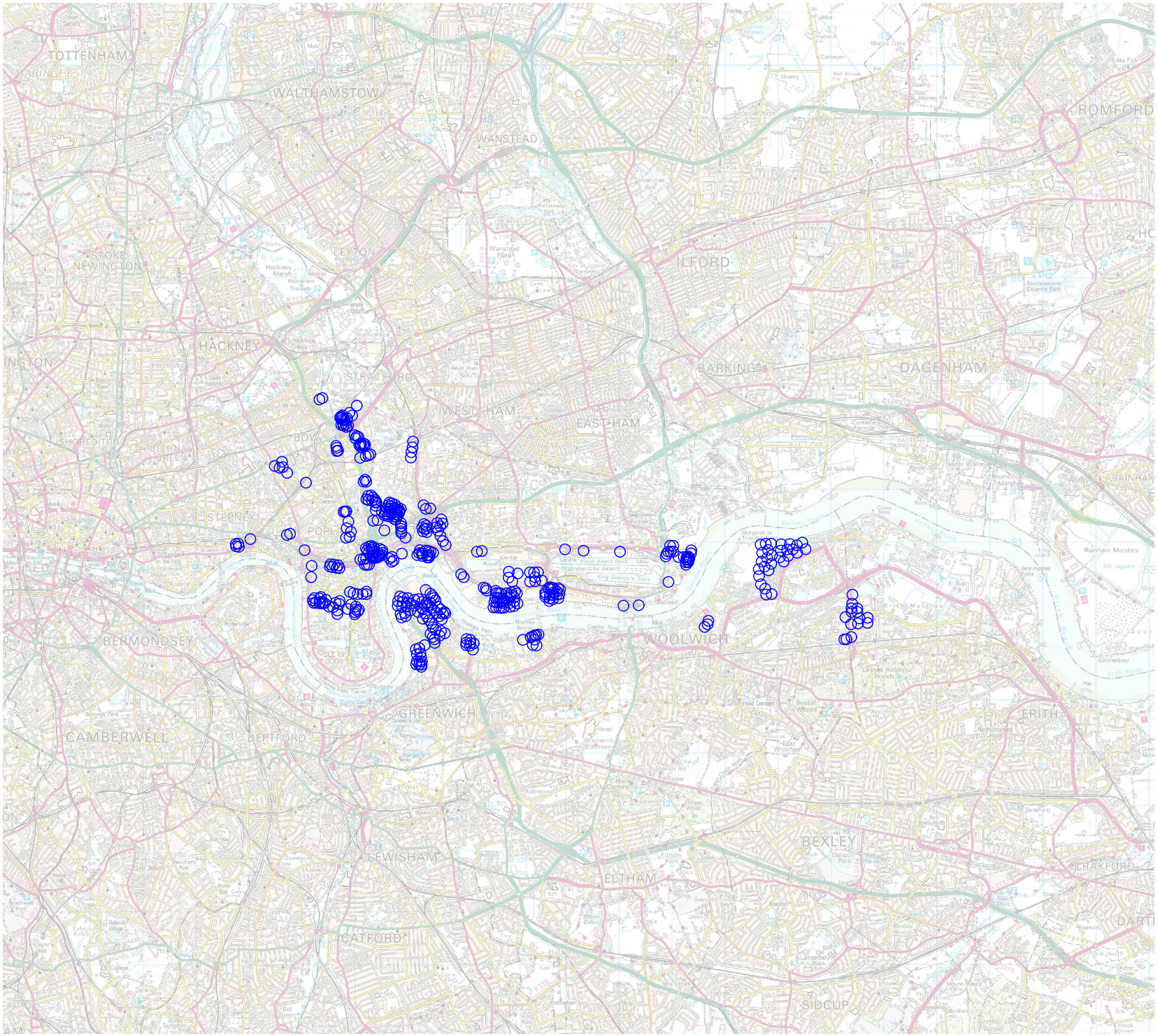
Figure 8.3.1
Air Noise Study Area and
Representative Locations

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:100,000@A4

FIGURE No:

A11407_09_DR001_1.0



LEGEND:

○ Permitted Developments

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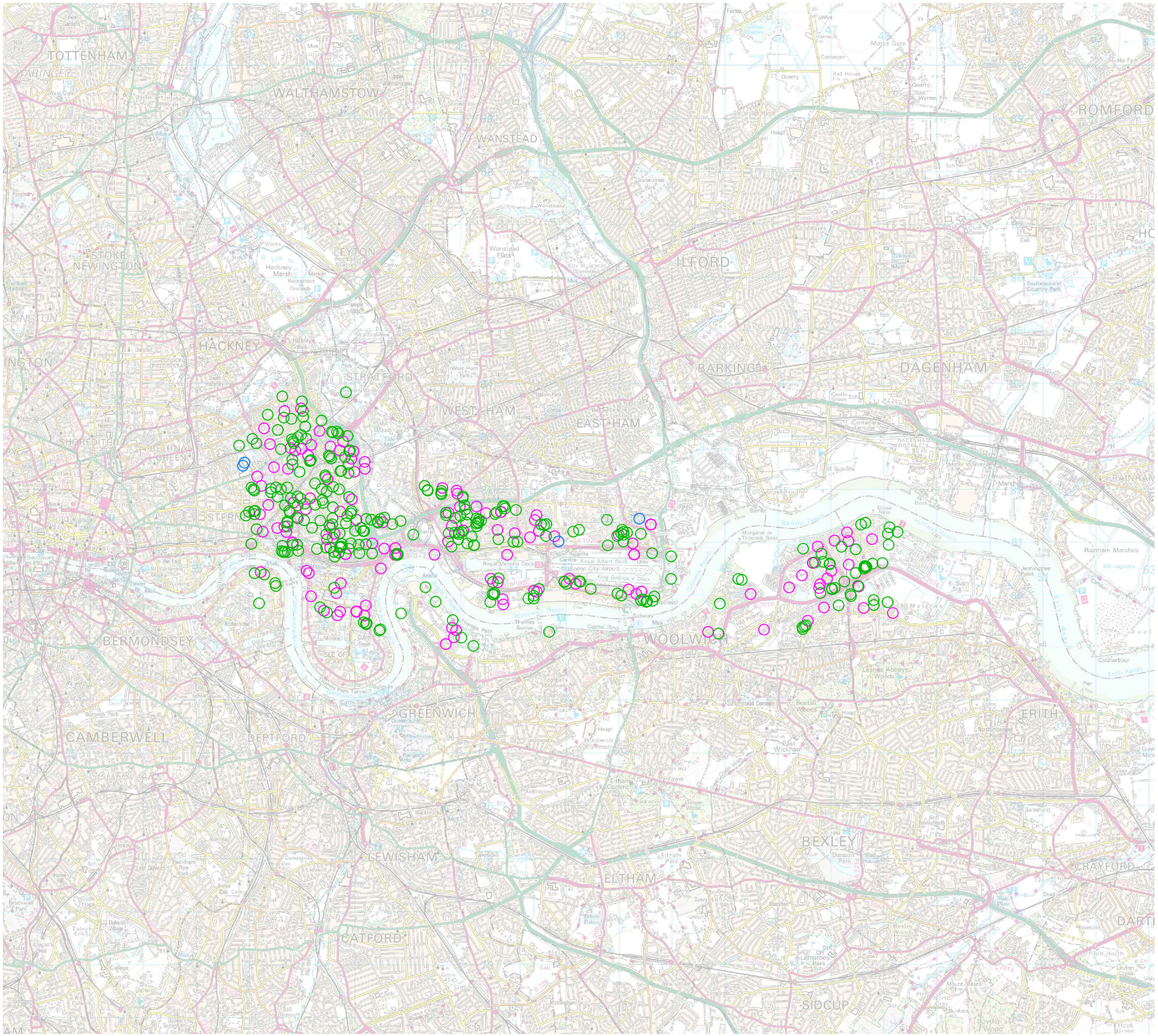
Figure 8.3.2
Air Noise Residential Receptors
Permitted Developments

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:100,000@A4

FIGURE No:

A11407_09_DR002_1.0



LEGEND:

- Schools
- Long-Term Healthcare
- Outdoor Amenity Areas

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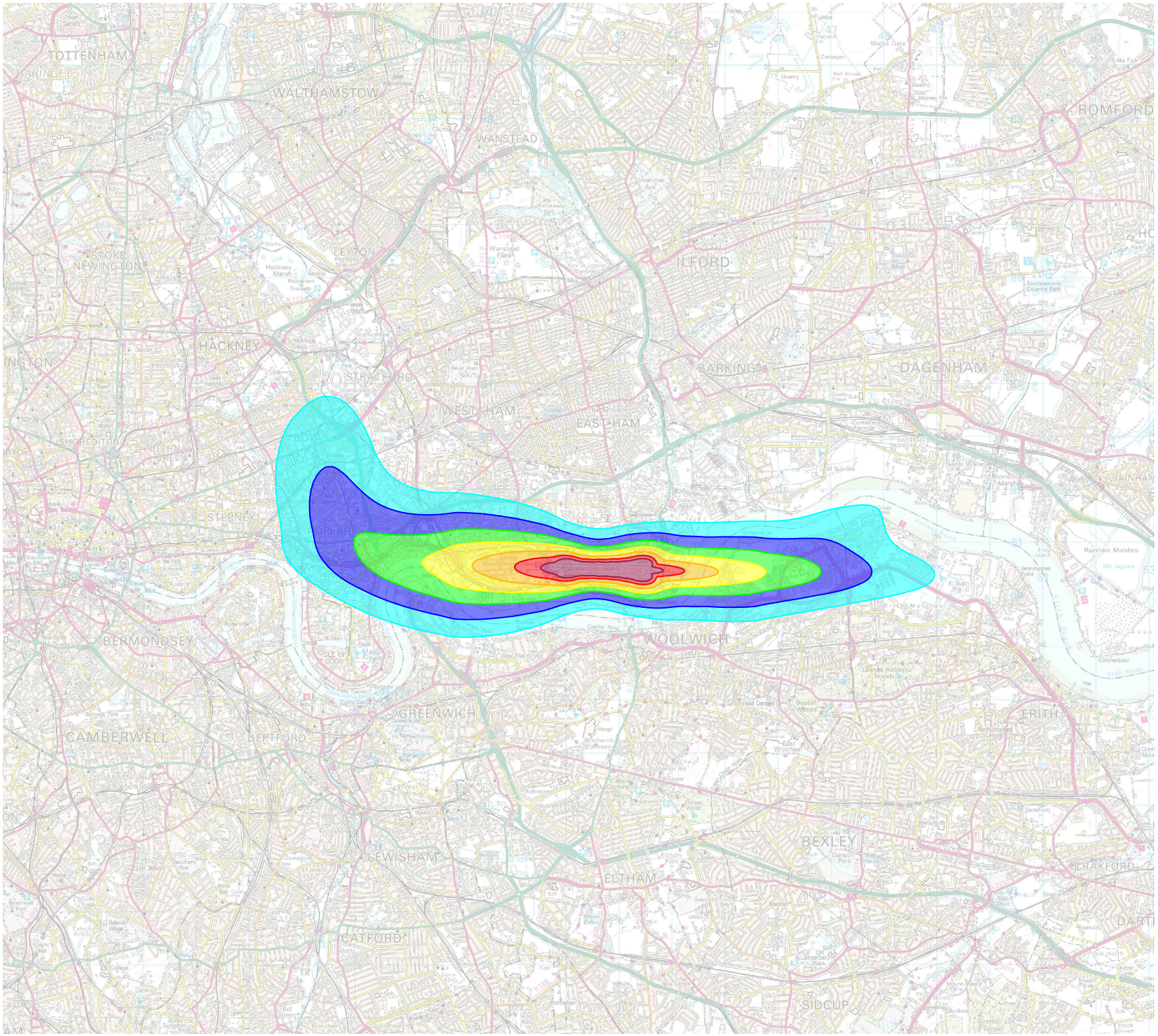
Figure 8.3.3
Air Noise Non-Residential Receptors

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:100,000@A4

FIGURE No:

A11407_09_DR003_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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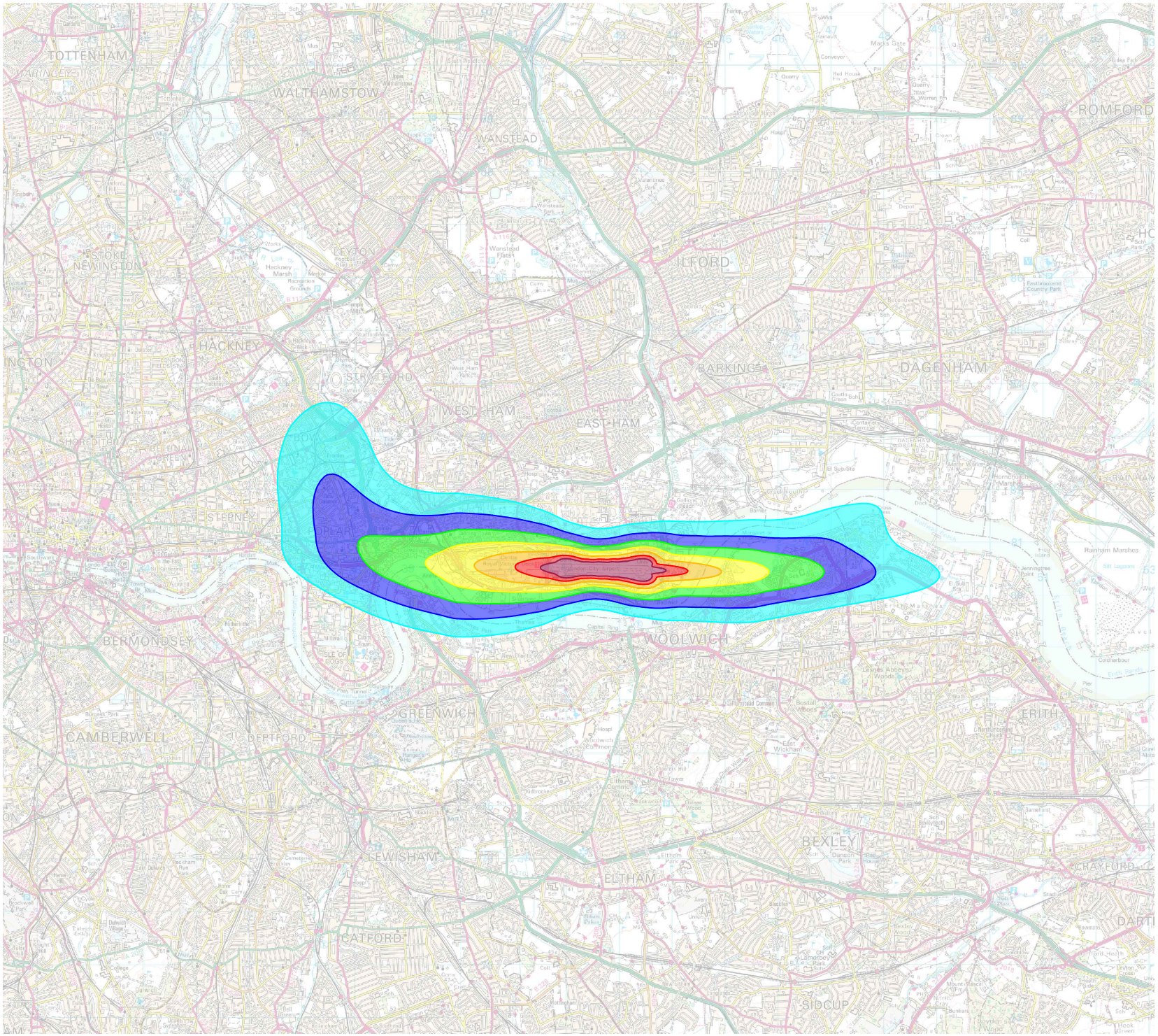
Figure 8.3.4
Average Mode Summer Day Noise Contours
2019 Actual

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:100,000@A4

FIGURE No:

A11407_09_DR004_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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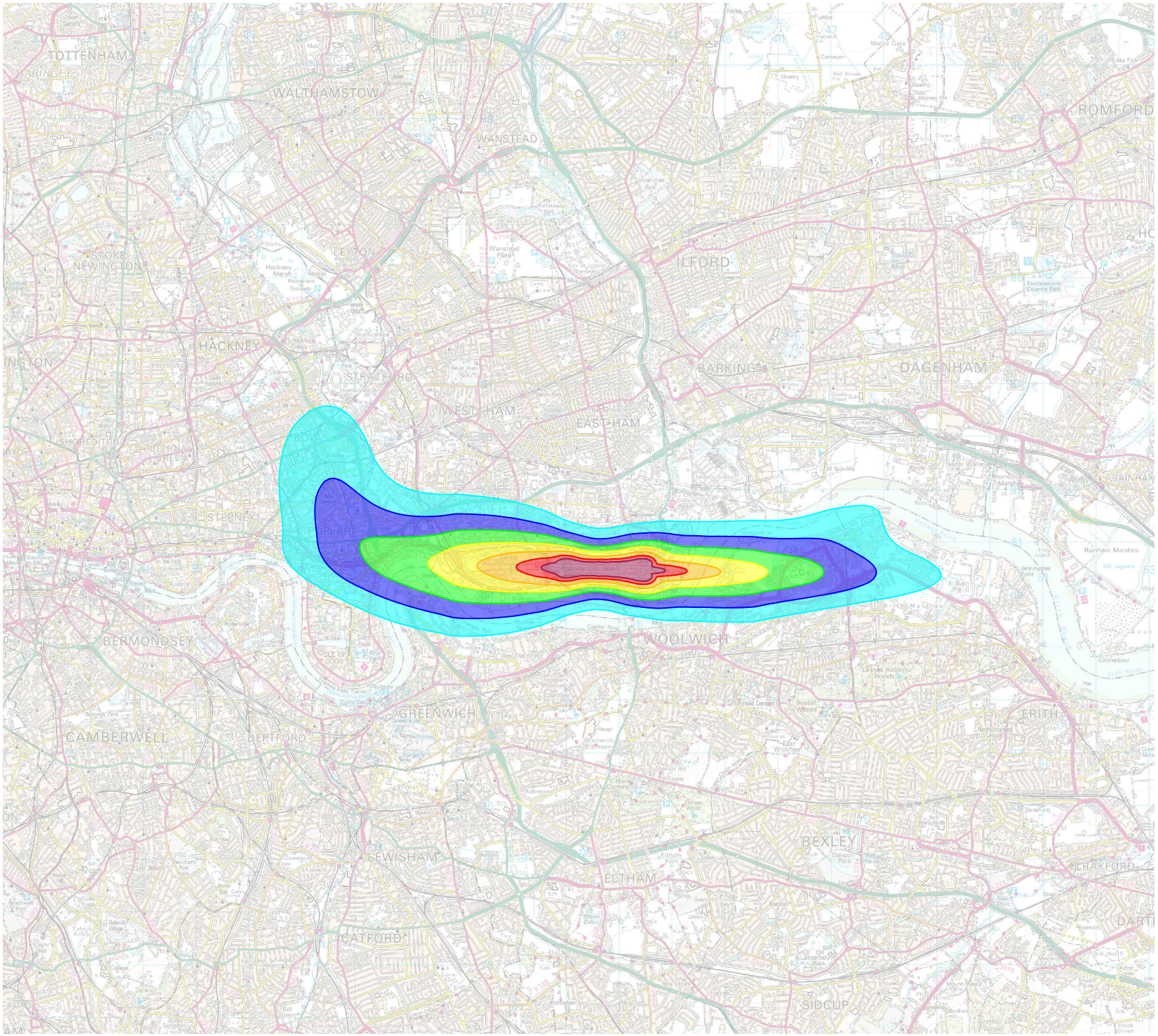
Figure 8.3.5
Average Mode Summer Day Noise Contours
2025 DM Scenario

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:100,000@A4

FIGURE No:

A11407_09_DR005_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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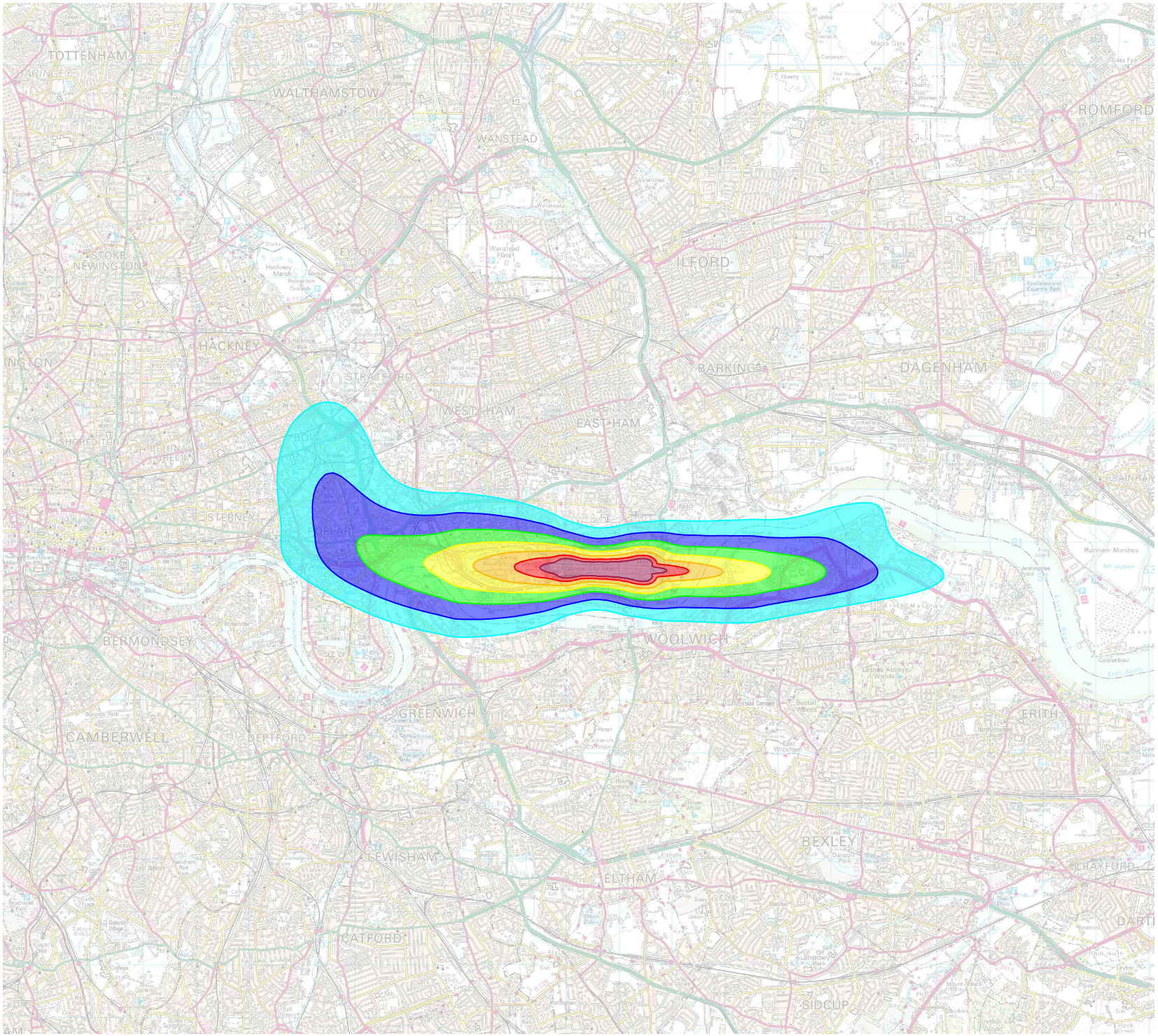
Figure 8.3.6
Average Mode Summer Day Noise Contours
2025 DC Scenario

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:100,000@A4

FIGURE No:

A11407_09_DR006_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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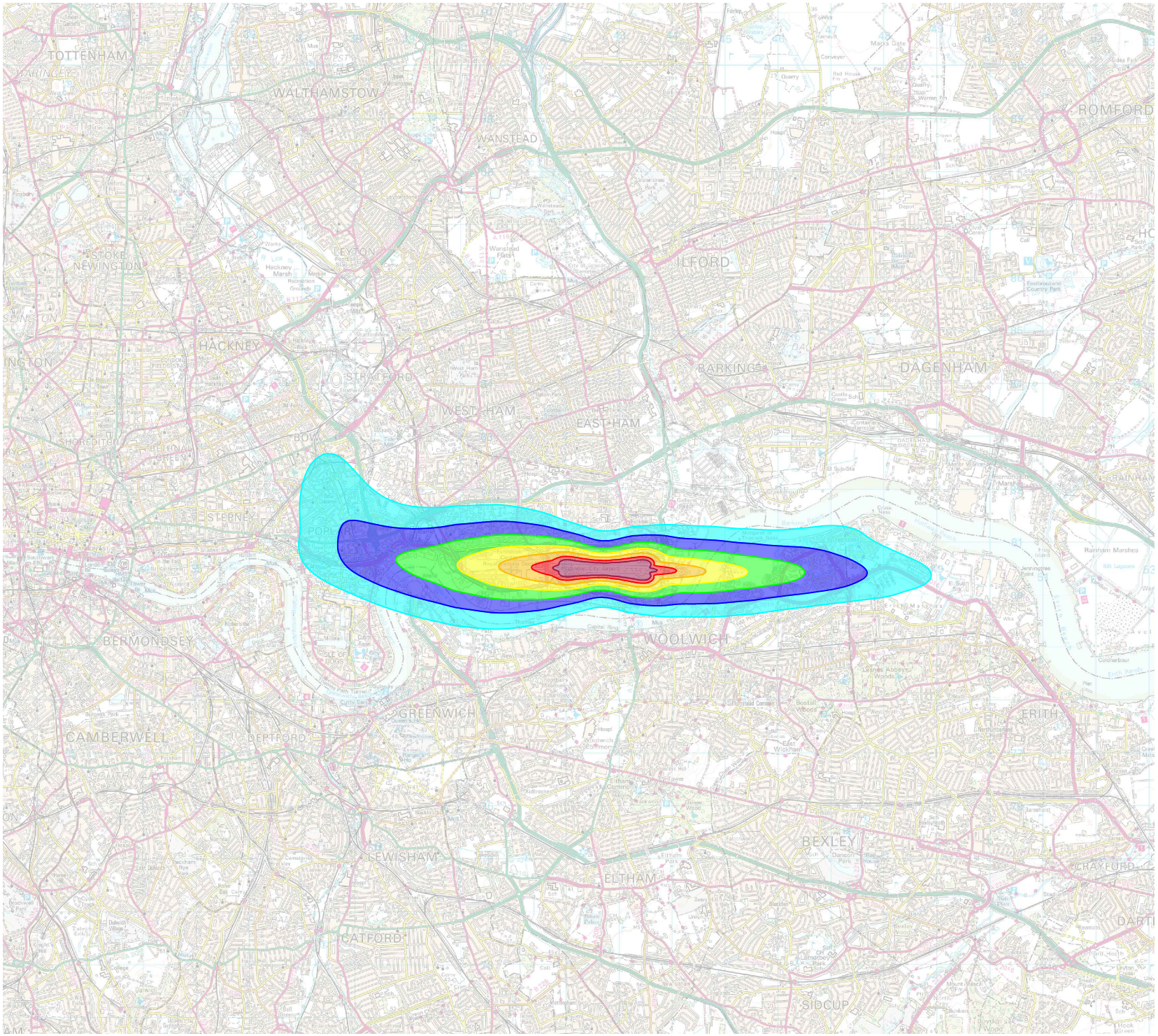
Figure 8.3.7
Average Mode Summer Day Noise Contours
2027 DM Scenario

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:100,000@A4

FIGURE No:

A11407_09_DR007_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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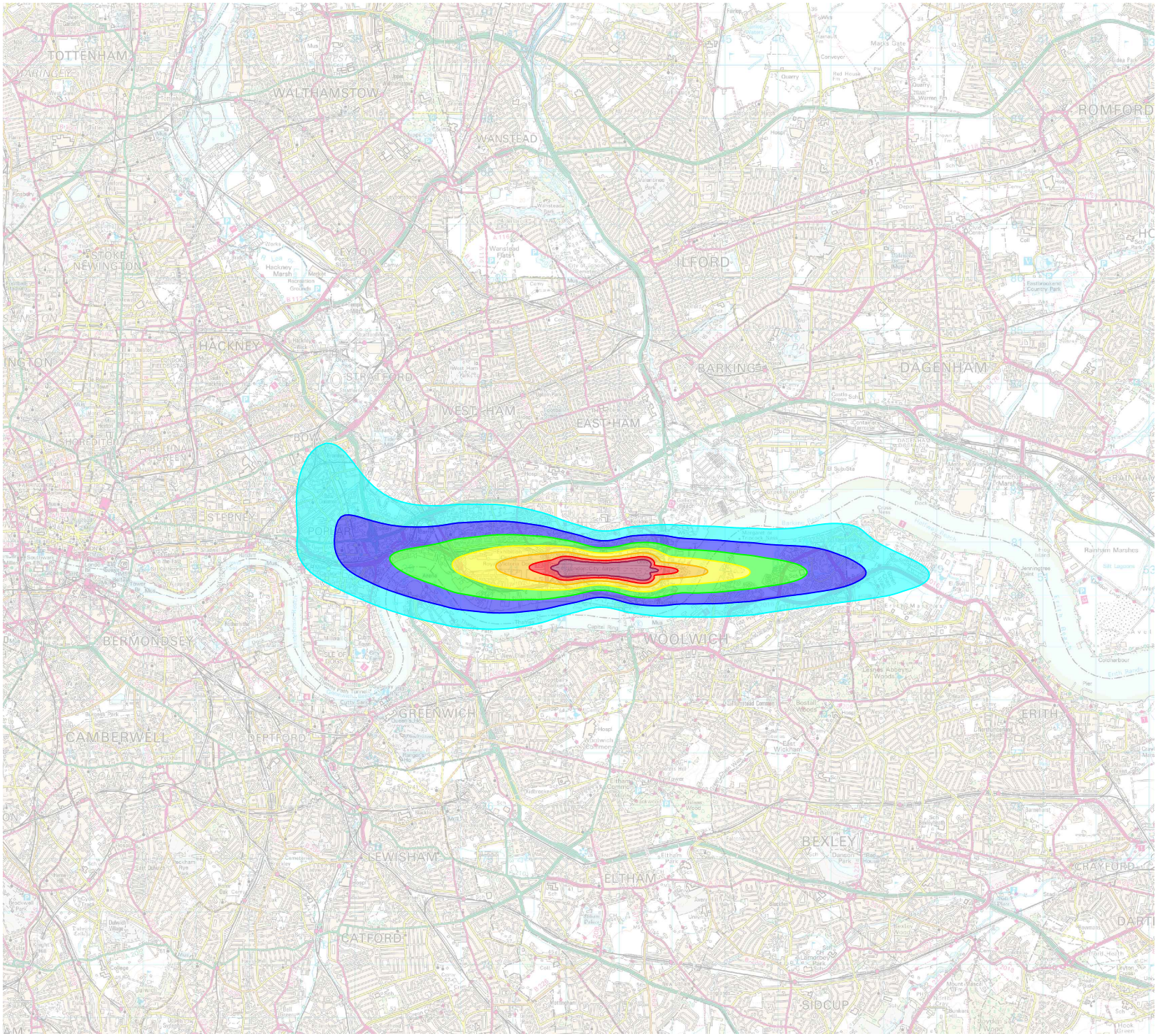
Figure 8.3.8
Average Mode Summer Day Noise Contours
2027 DC Scenario

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:100,000@A4

FIGURE No:

A11407_09_DR008_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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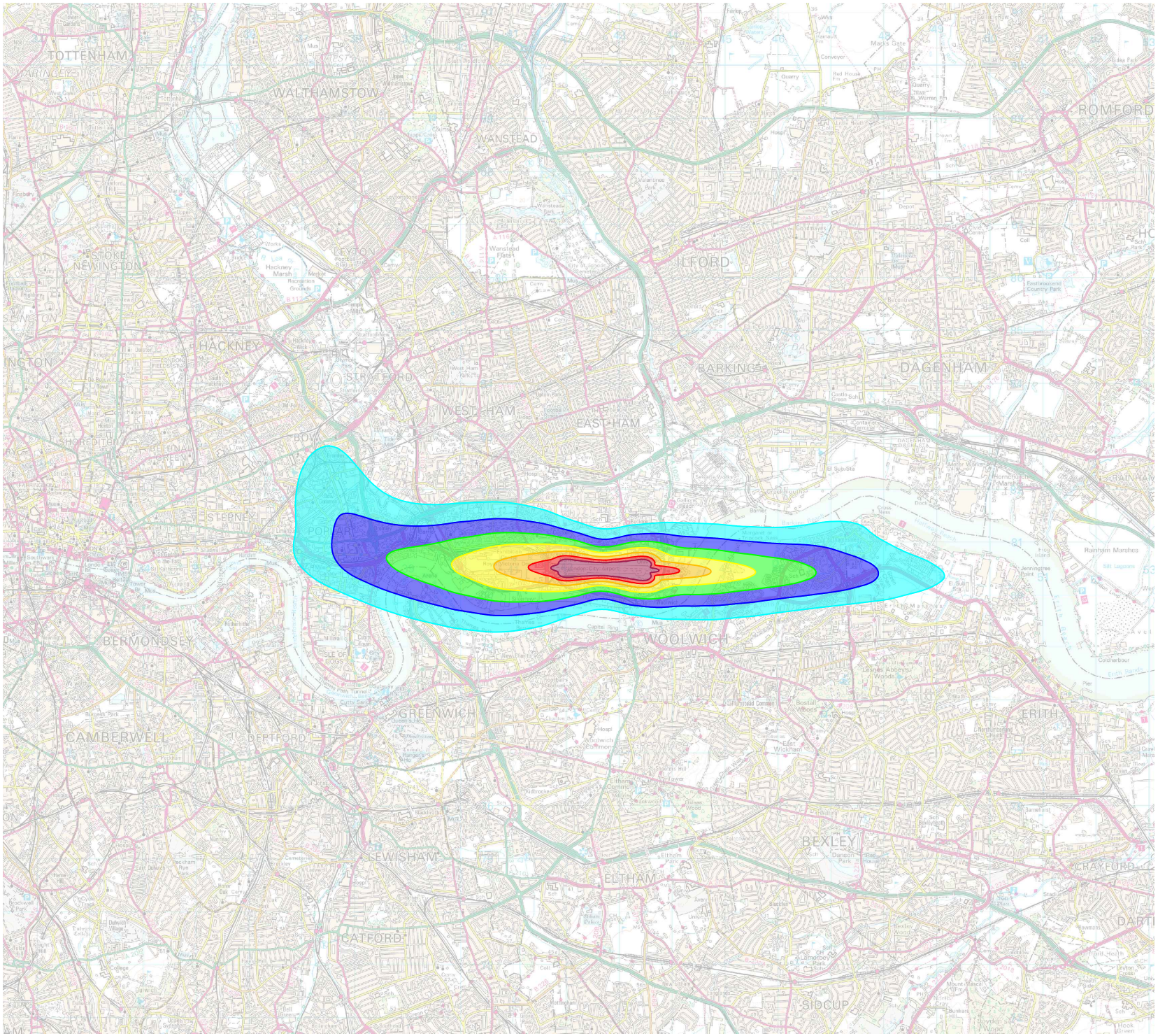
Figure 8.3.9
Average Mode Summer Day Noise Contours
2031 DM Scenario

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:100,000@A4

FIGURE No:

A11407_09_DR009_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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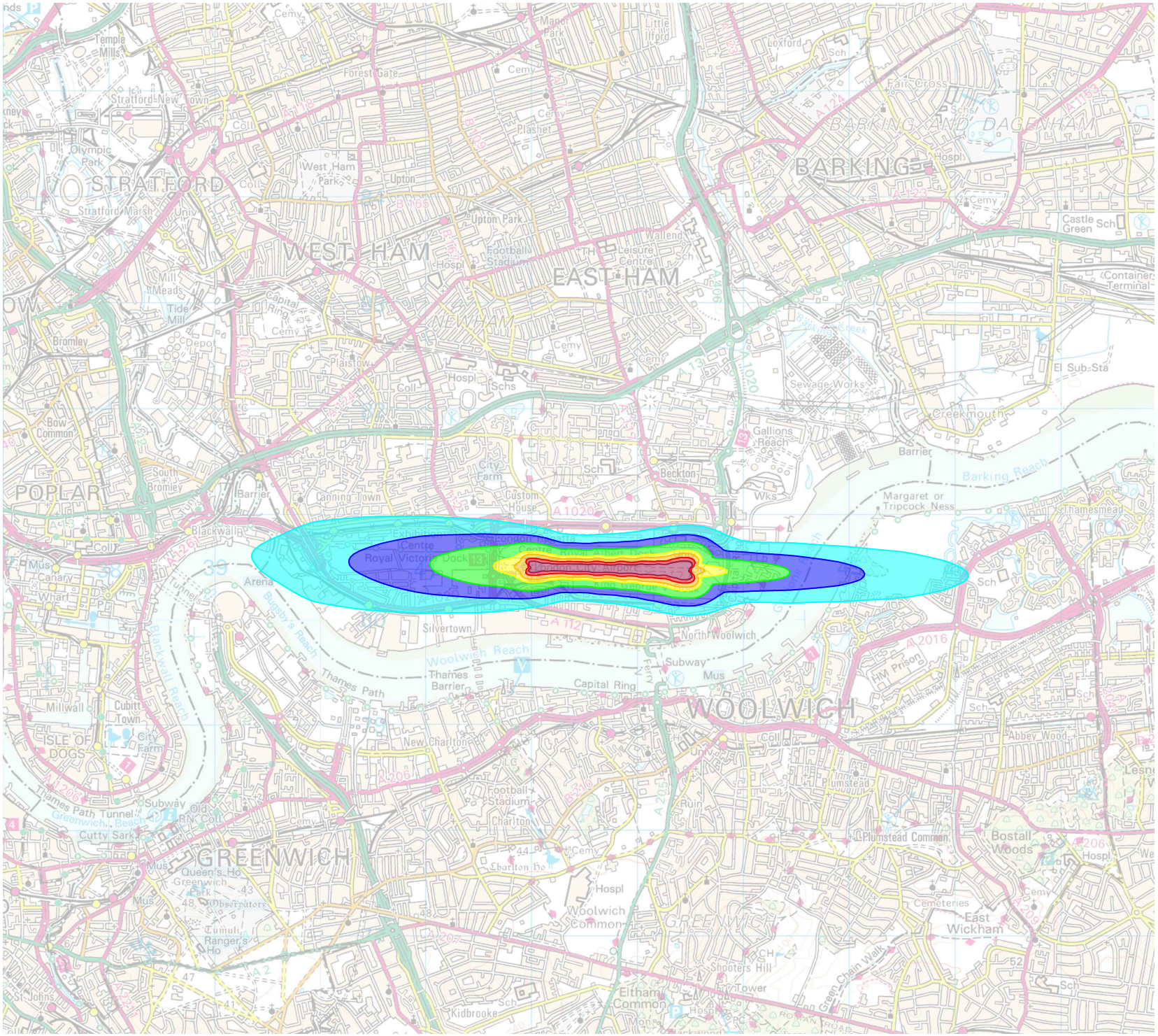
Figure 8.3.10
Average Mode Summer Day Noise Contours
2031 DC Scenario

DRAWN: MP CHECKED: DR

DATE: December 2022 SCALE: 1:100,000@A4

FIGURE No:

A11407_09_DR010_2.0



LEGEND:

- 45 - 47.9 dB(A) $L_{Aeq,8h}$
- 48 - 50.9 dB(A) $L_{Aeq,8h}$
- 51 - 54.9 dB(A) $L_{Aeq,8h}$
- 55 - 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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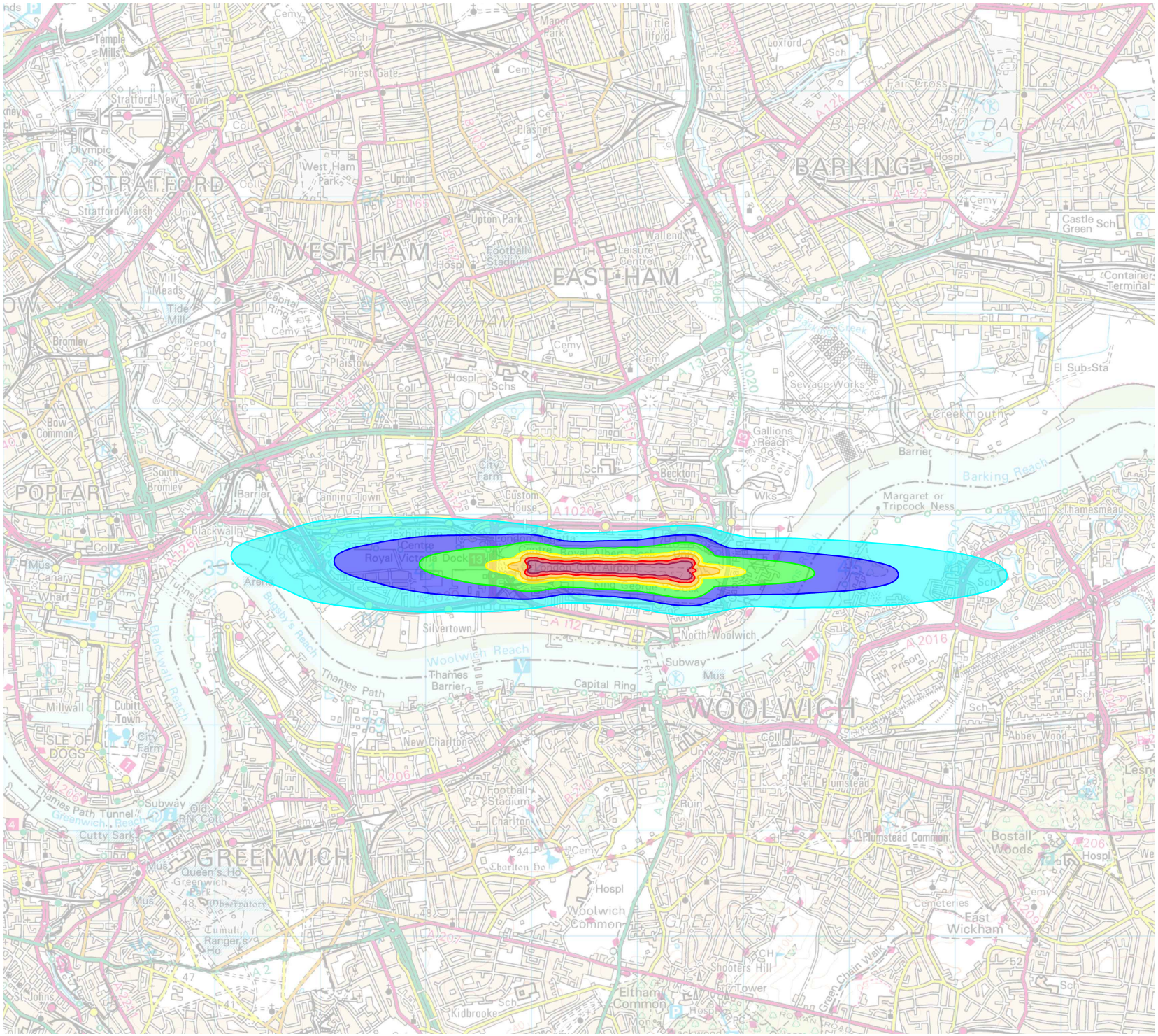
Figure 8.3.11
Average Mode Summer Night Noise Contours - 2019 Actual

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:50,000@A4

FIGURE No:

A11407_09_DR011_1.0



LEGEND:

- 45 - 47.9 dB(A) $L_{Aeq,8h}$
- 48 - 50.9 dB(A) $L_{Aeq,8h}$
- 51 - 54.9 dB(A) $L_{Aeq,8h}$
- 55 - 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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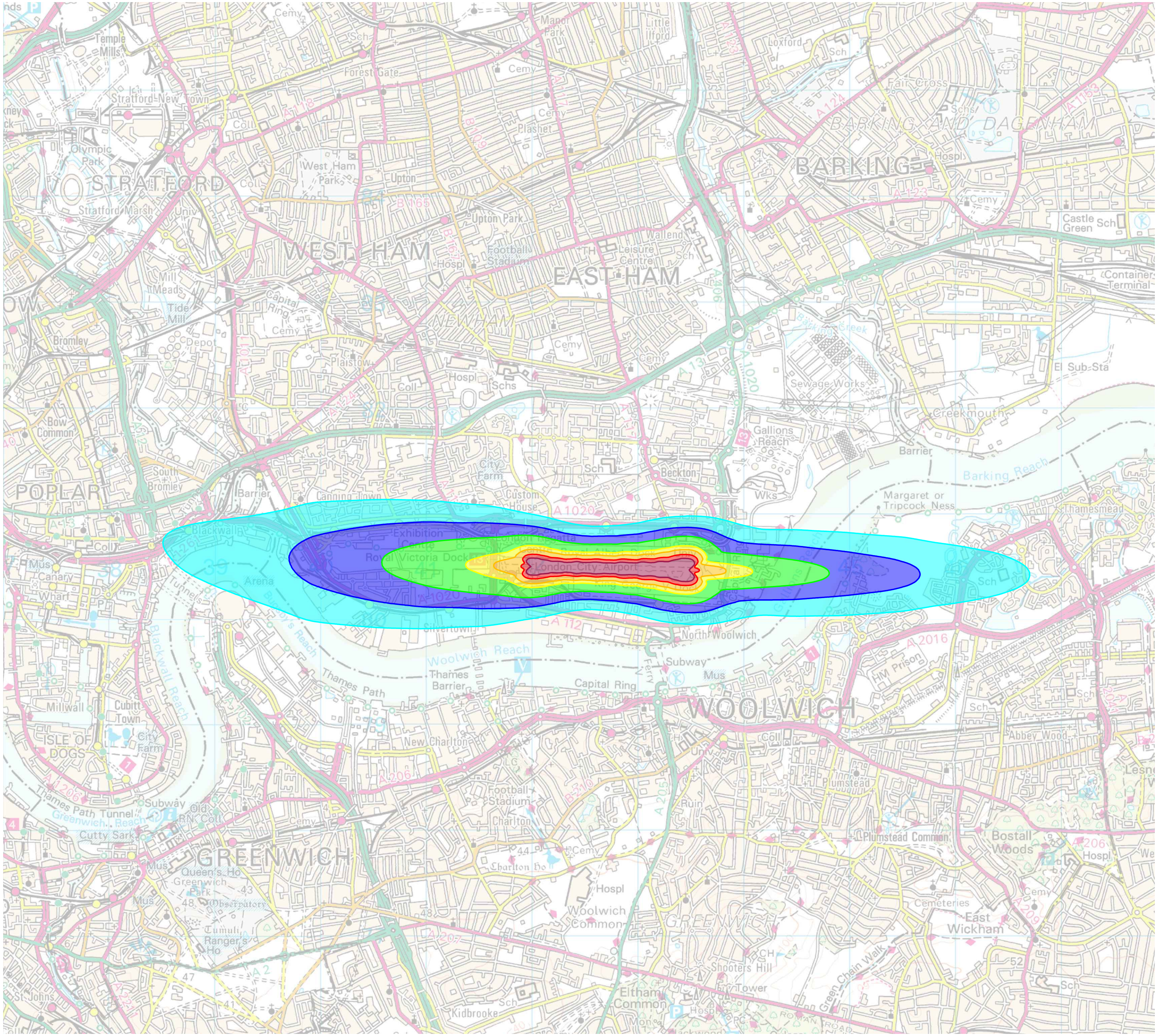
Figure 8.3.12
Average Mode Summer Night Noise Contours - 2025 DM Scenario

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:50,000@A4

FIGURE No:

A11407_09_DR012_1.0



LEGEND:

- 45 - 47.9 dB(A) $L_{Aeq,8h}$
- 48 - 50.9 dB(A) $L_{Aeq,8h}$
- 51 - 54.9 dB(A) $L_{Aeq,8h}$
- 55 - 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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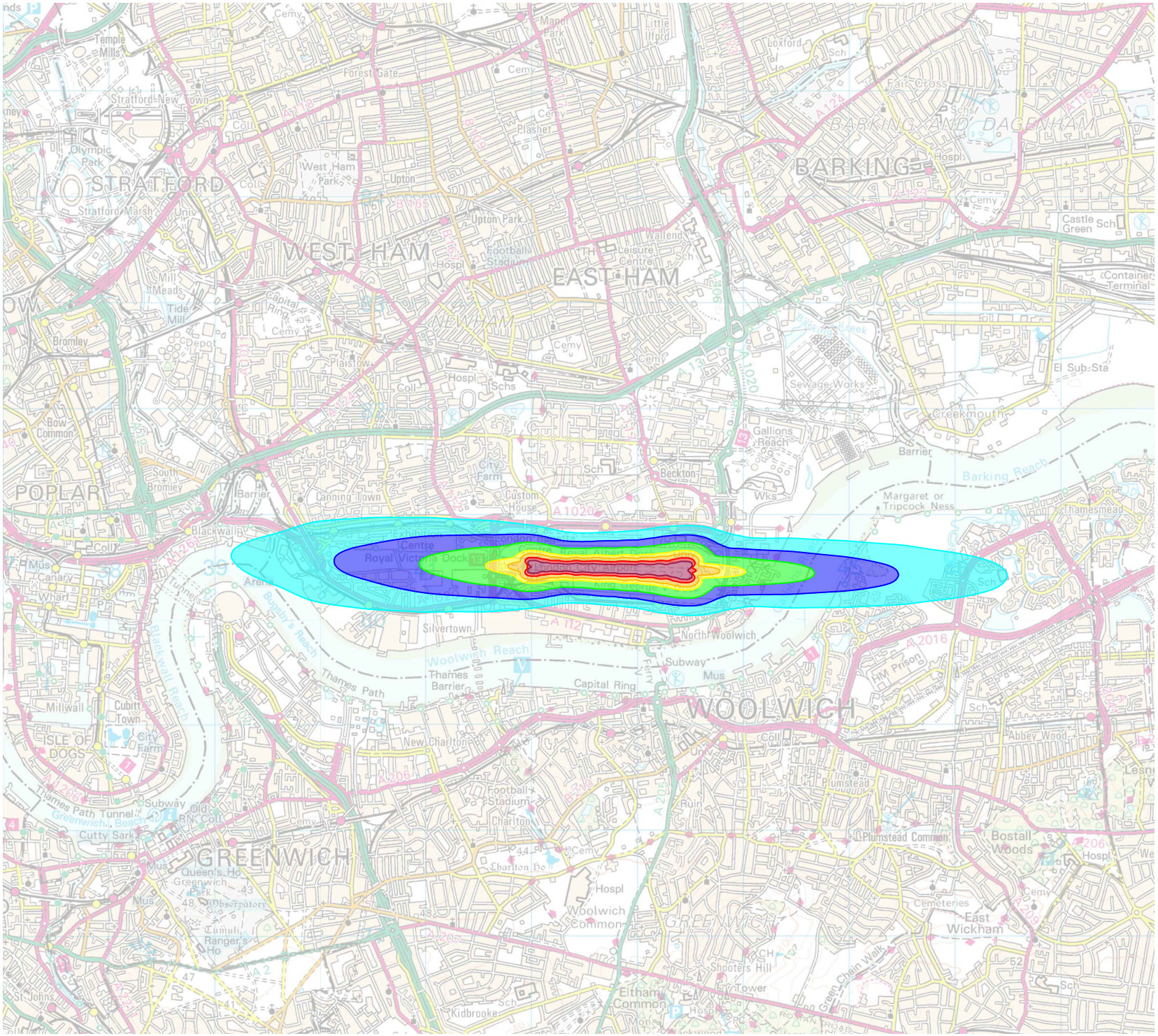
Figure 8.3.13
Average Mode Summer Night Noise Contours - 2025 DC Scenario

DRAWN: MG | CHECKED: DC

DATE: November 2022 | SCALE: 1:50,000@A4

FIGURE No:

A11407_09_DR013_1.0



LEGEND:

- 45 - 47.9 dB(A) $L_{Aeq,8h}$
- 48 - 50.9 dB(A) $L_{Aeq,8h}$
- 51 - 54.9 dB(A) $L_{Aeq,8h}$
- 55 - 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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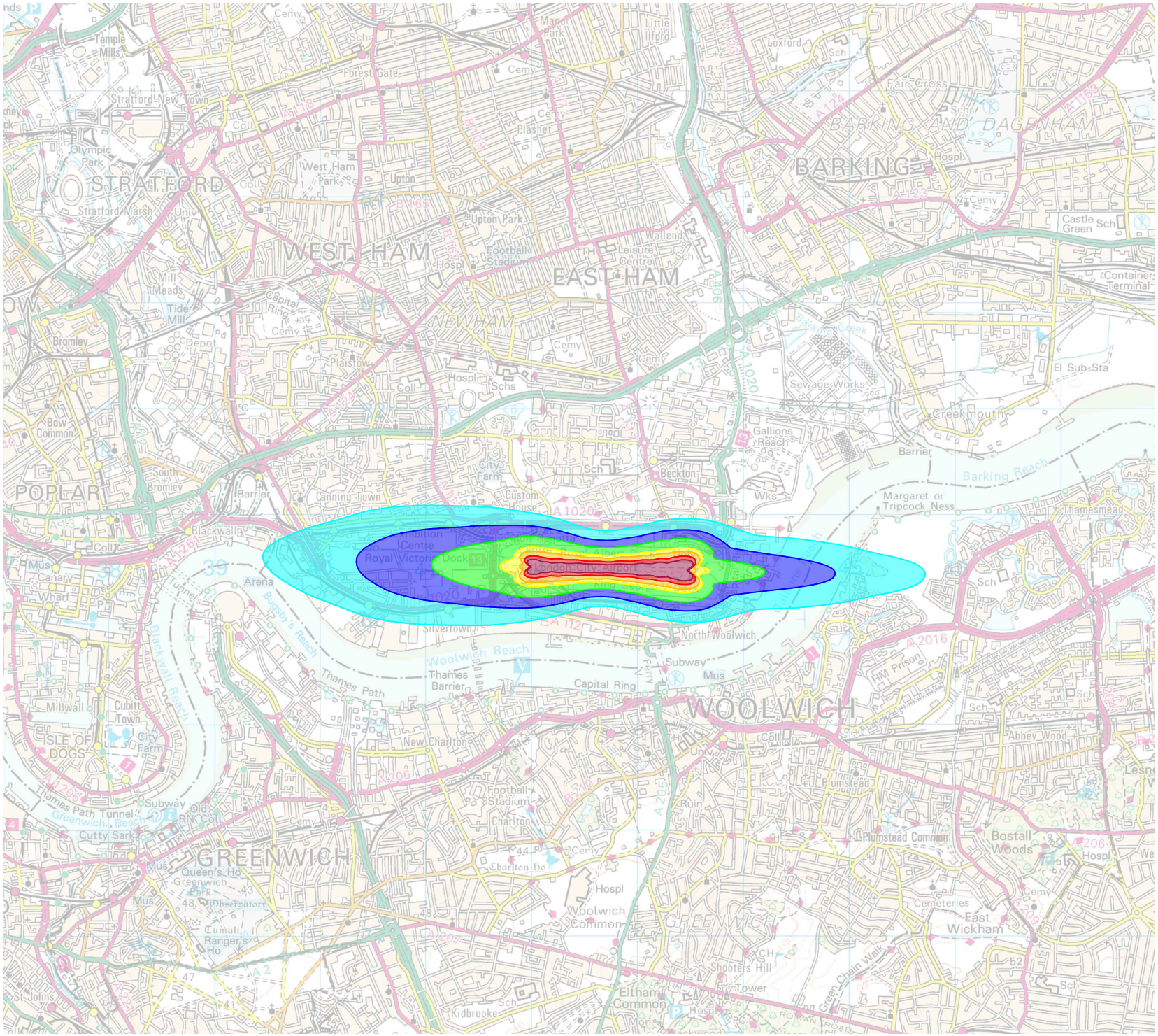
Figure 8.3.14
Average Mode Summer Night Noise Contours - 2027 DM Scenario

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:50,000@A4

FIGURE No:

A11407_09_DR014_1.0



LEGEND:

- 45 - 47.9 dB(A) $L_{Aeq,8h}$
- 48 - 50.9 dB(A) $L_{Aeq,8h}$
- 51 - 54.9 dB(A) $L_{Aeq,8h}$
- 55 - 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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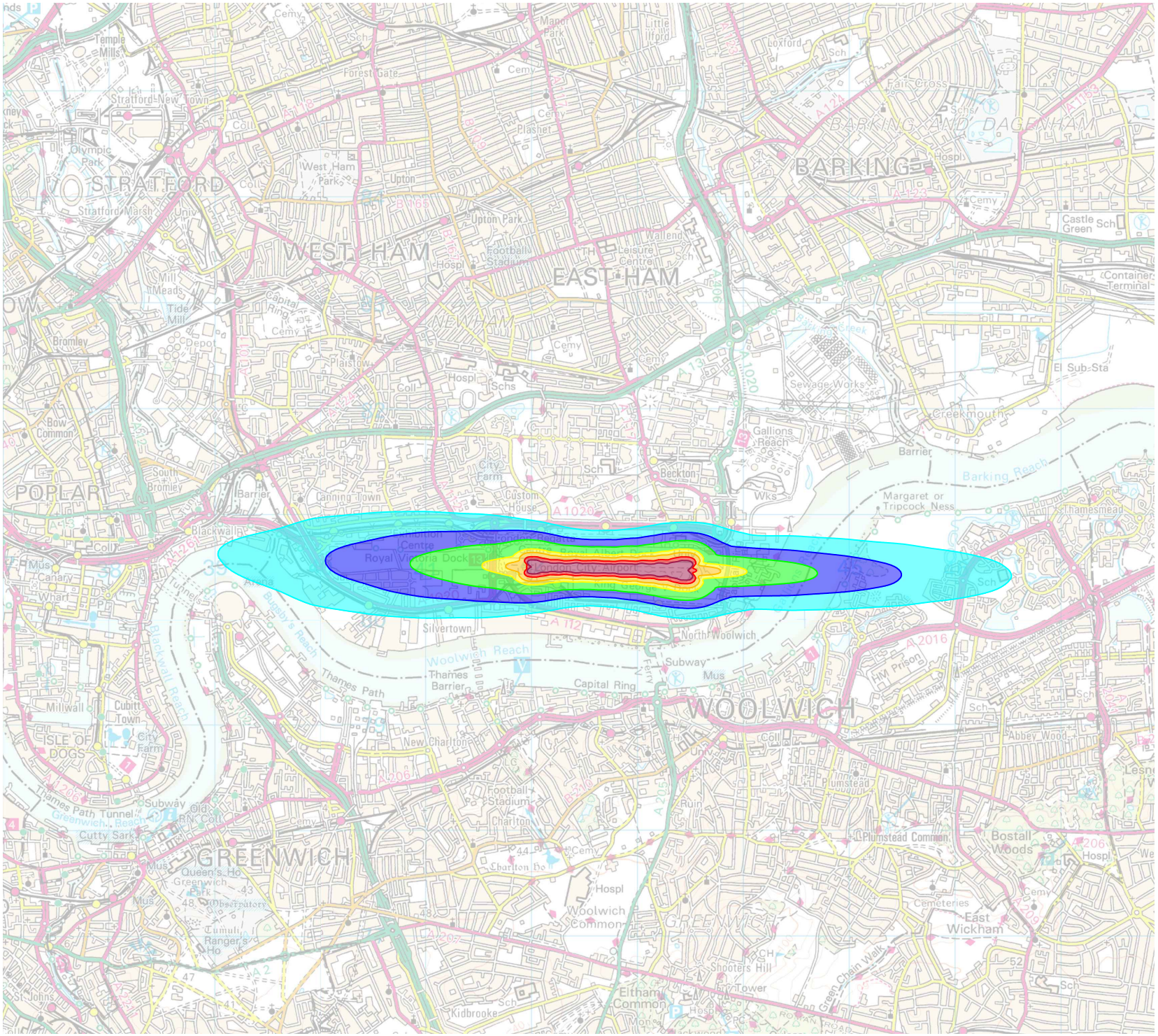
Figure 8.3.15
Average Mode Summer Night Noise Contours - 2027 DC Scenario

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:50,000@A4

FIGURE No:

A11407_09_DR015_1.0



LEGEND:

- 45 - 47.9 dB(A) $L_{Aeq,8h}$
- 48 - 50.9 dB(A) $L_{Aeq,8h}$
- 51 - 54.9 dB(A) $L_{Aeq,8h}$
- 55 - 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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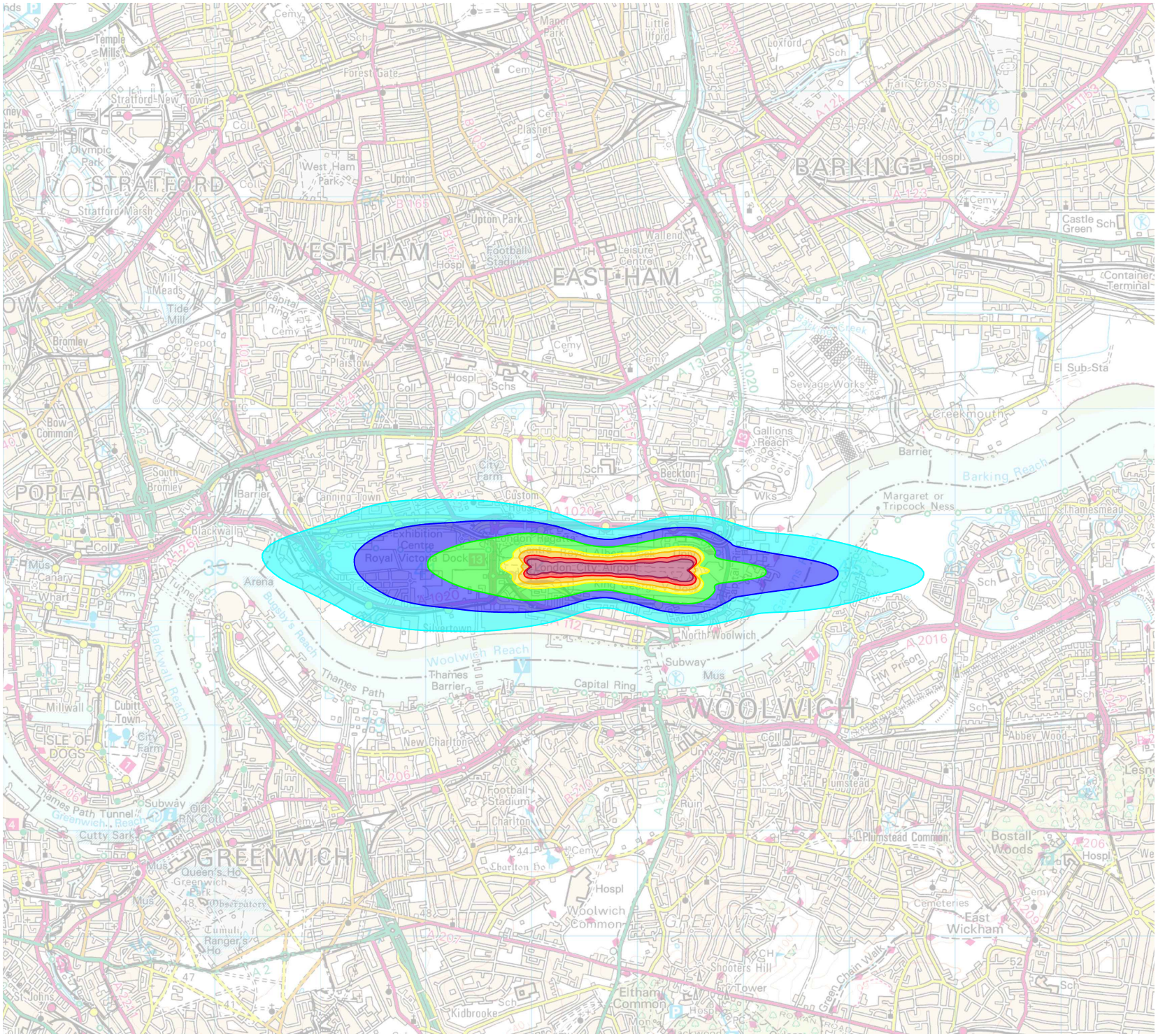
Figure 8.3.16
Average Mode Summer Night Noise Contours - 2031 DM Scenario

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:50,000@A4

FIGURE No:

A11407_09_DR016_1.0



LEGEND:

- 45 - 47.9 dB(A) $L_{Aeq,8h}$
- 48 - 50.9 dB(A) $L_{Aeq,8h}$
- 51 - 54.9 dB(A) $L_{Aeq,8h}$
- 55 - 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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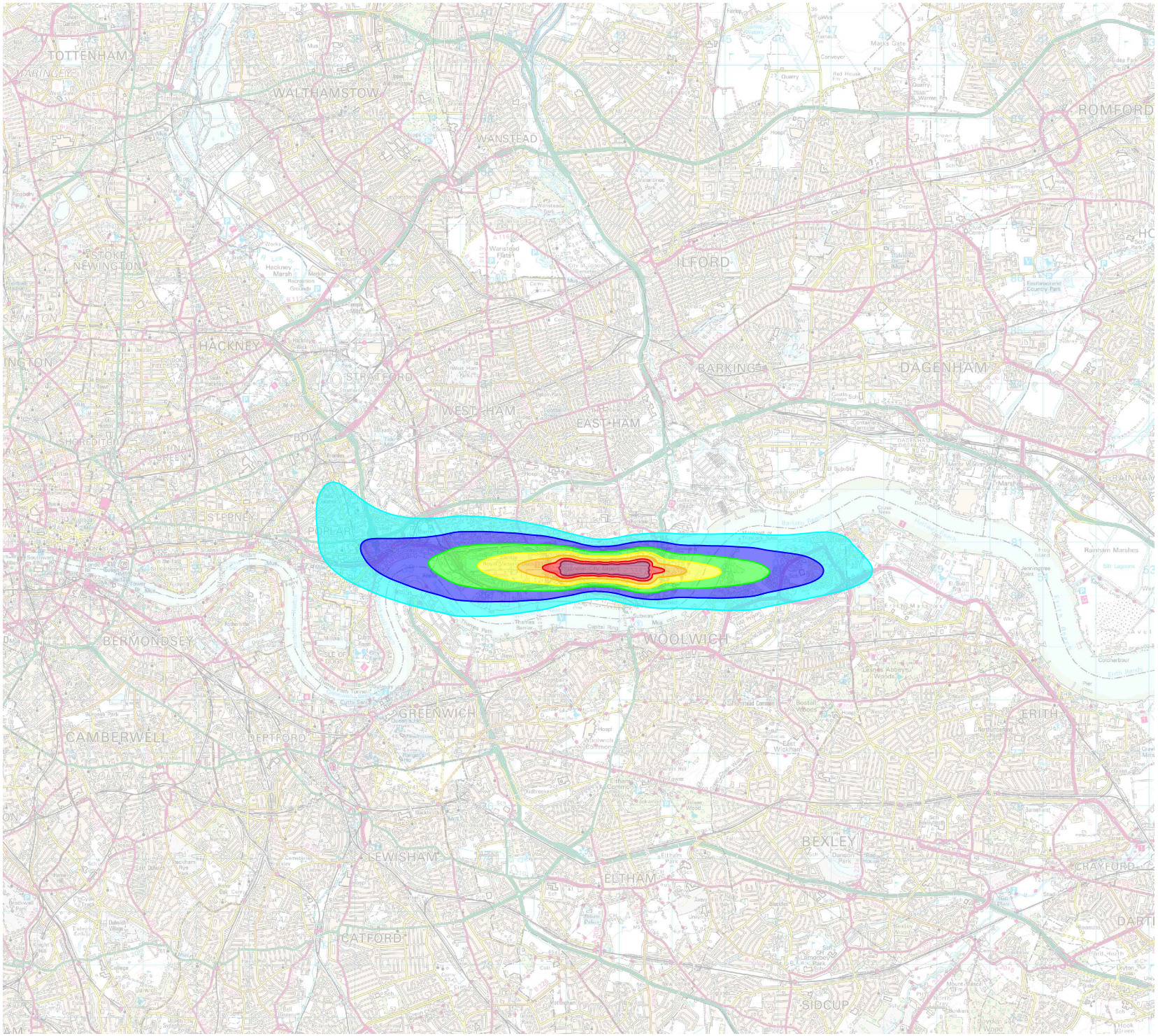
Figure 8.3.17
Average Mode Summer Night Noise Contours - 2031 DC Scenario

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:50,000@A4

FIGURE No:

A11407_09_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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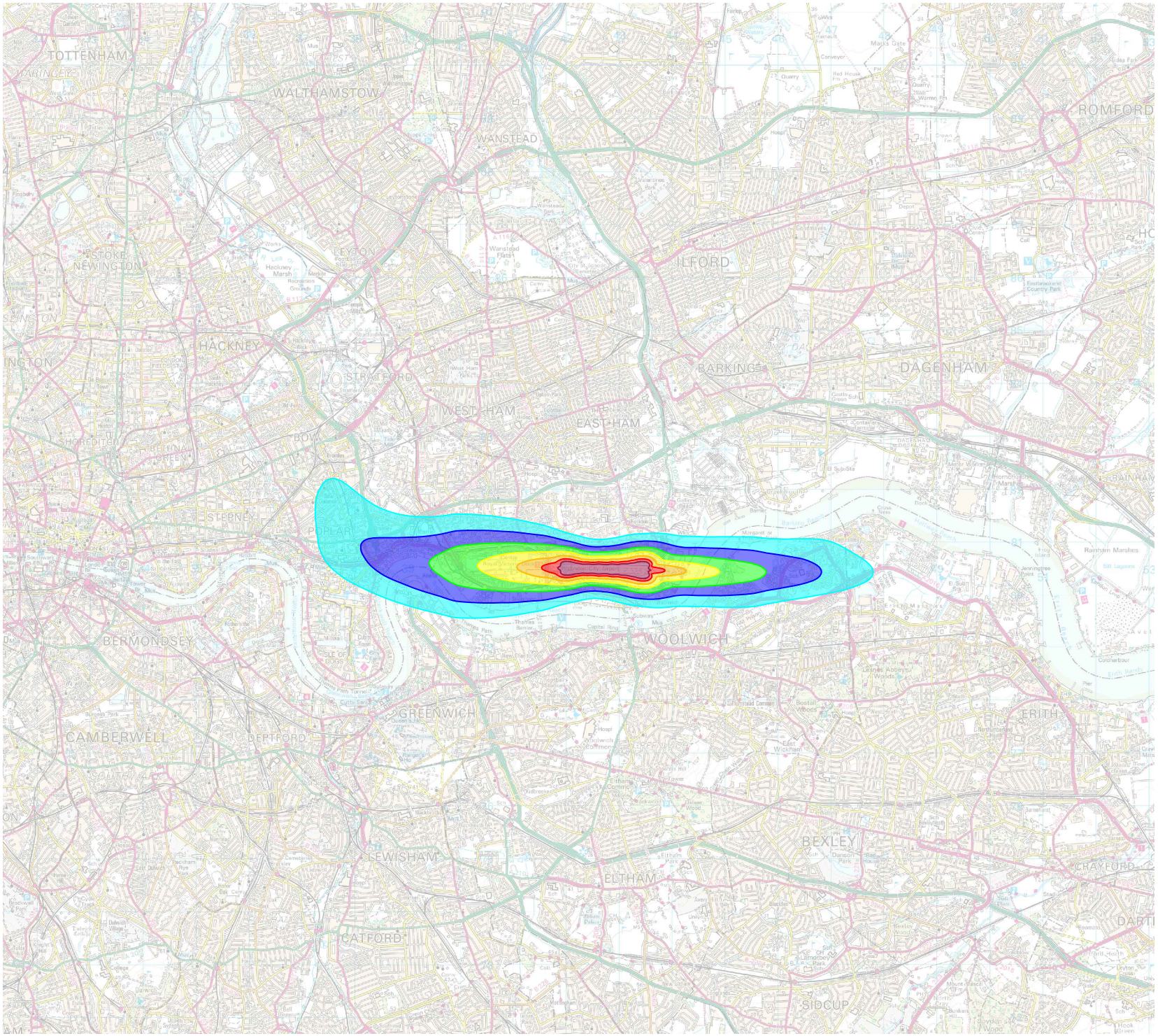
Figure 8.3.18
Average Mode Summer Weekend Noise Contours - 2019 Actual

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:100,000@A4

FIGURE No:

A11407_09_DR018_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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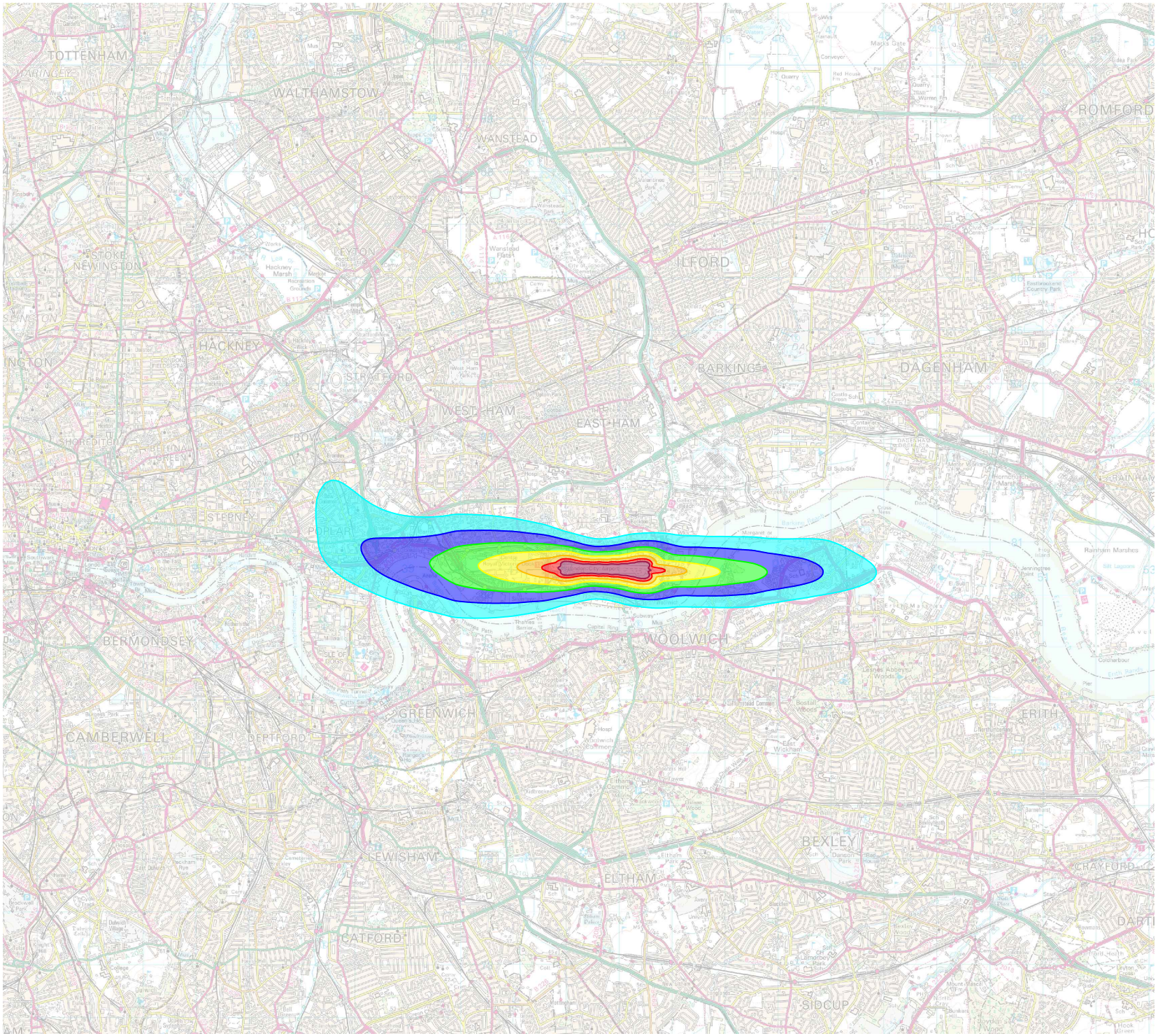
Figure 8.3.19
Average Mode Summer Weekend Noise Contours - 2025 DM Scenario

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:100,000@A4

FIGURE No:

A11407_09_DR019_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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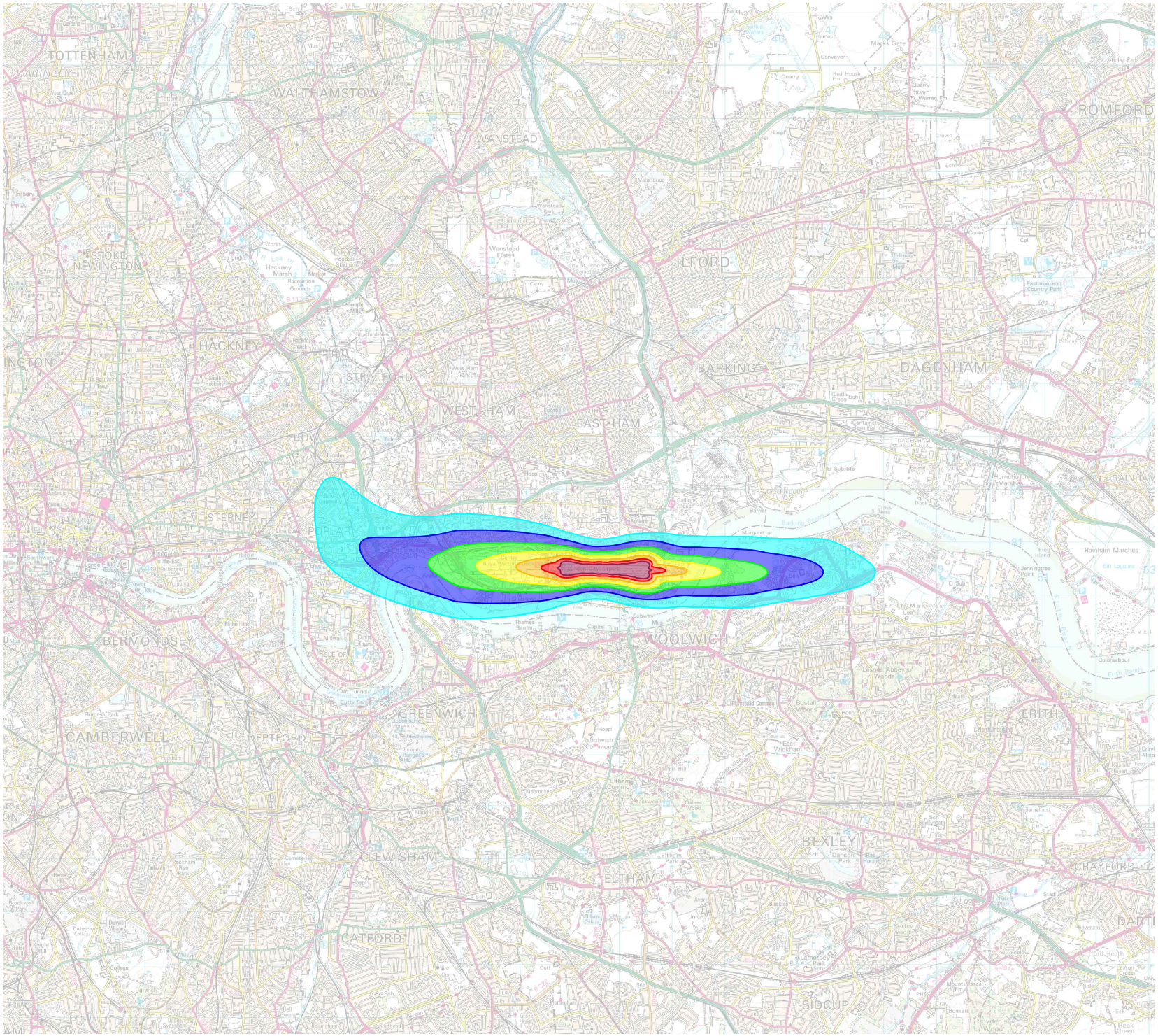
Figure 8.3.20
Average Mode Summer Weekend Noise Contours - 2025 DC Scenario

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:100,000@A4

FIGURE No:

A11407_09_DR020_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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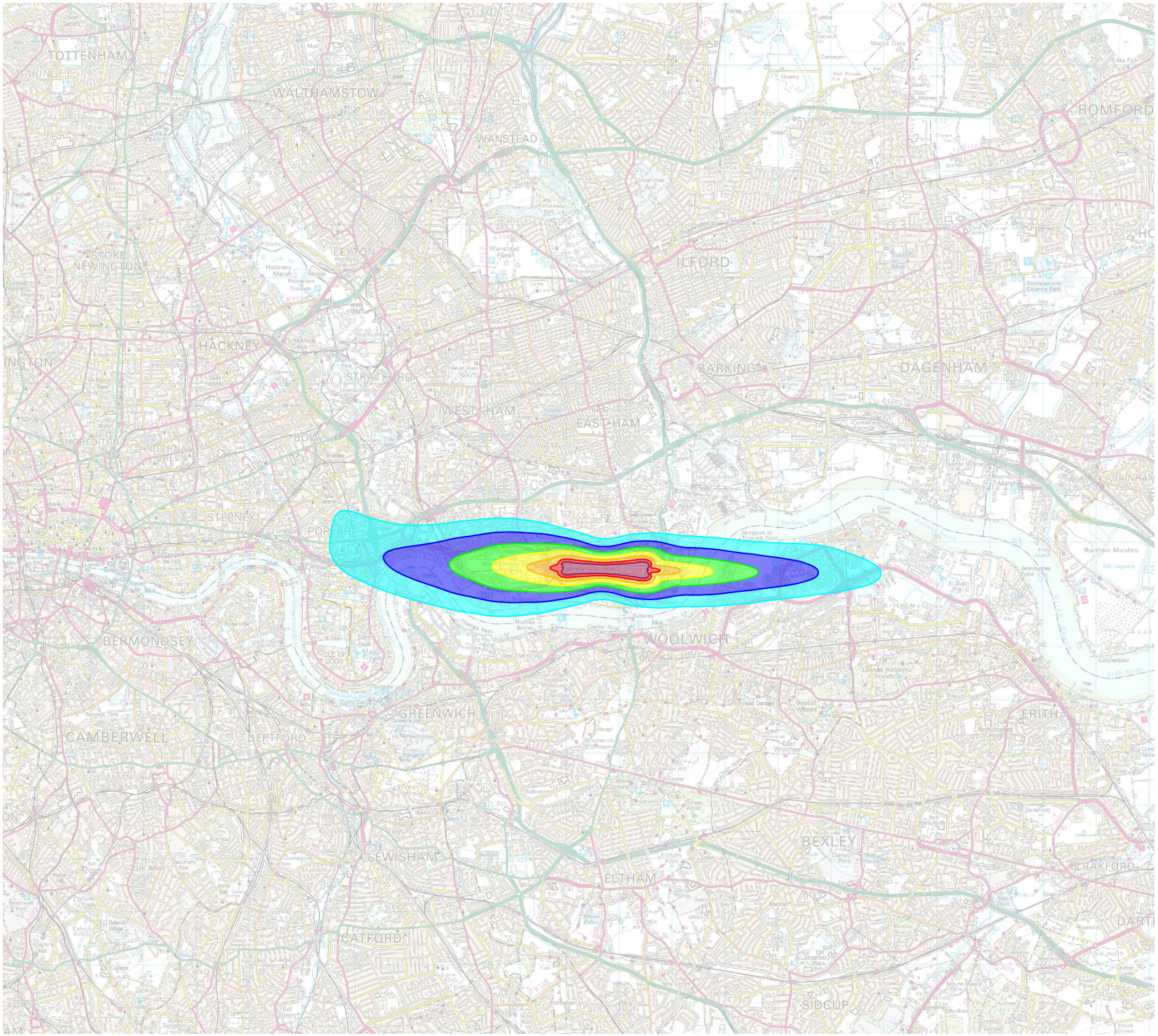
Figure 8.3.21
Average Mode Summer Weekend Noise Contours - 2027 DM Scenario

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:100,000@A4

FIGURE No:

A11407_09_DR021_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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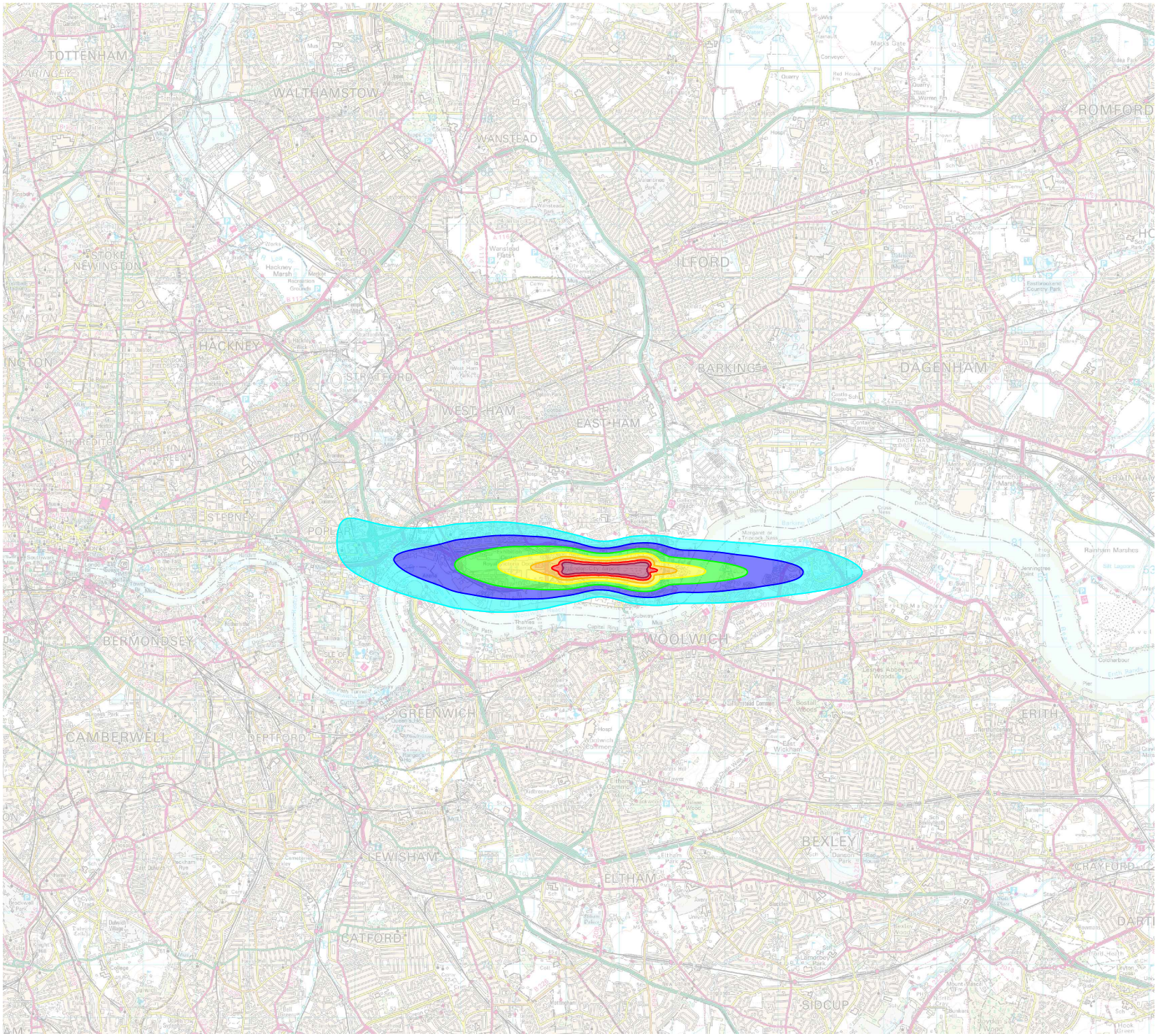
Figure 8.3.22
Average Mode Summer Weekend Noise Contours - 2027 DC Scenario

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:100,000@A4

FIGURE No:

A11407_09_DR022_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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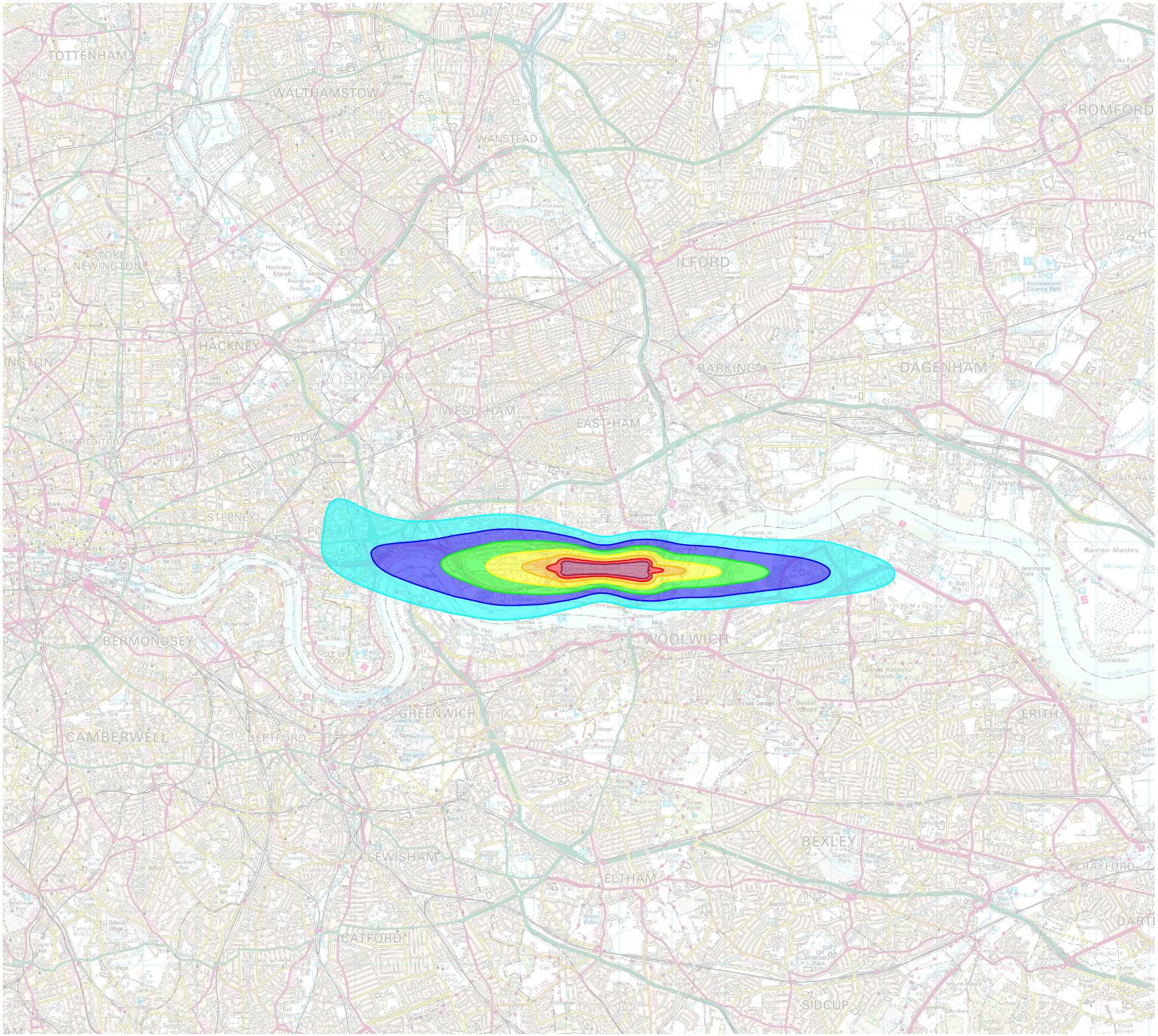
Figure 8.3.23
Average Mode Summer Weekend Noise Contours - 2031 DM Scenario

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:100,000@A4

FIGURE No:

A11407_09_DR023_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 8.3.24
Average Mode Summer Weekend Noise Contours - 2031 DC Scenario

DRAWN: MP CHECKED: DR

DATE: December 2022 SCALE: 1:100,000@A4

FIGURE No:

A11407_09_DR024_2.0

LEGEND:

- N65, 10 - 24 events
- N65, 25 - 49 events
- N65, 50 - 99 events
- N65, 100 - 199 events
- N65, 200+ events

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Figure 8.3.39
Average Mode N65 Summer Day Noise Contours - 2019 Actual

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:150,000@A4

FIGURE No:

A11407_09_DR039_1.0

LEGEND:

- N65, 10 - 24 events
- N65, 35 - 49 events
- N65, 50 - 99 events
- N65, 100 - 199 events
- N65, 200+ events

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Figure 8.3.40
Average Mode N65 Summer Day Noise Contours - 2025 DM Scenario

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:150,000@A4

FIGURE No:

A11407_09_DR040_1.0

LEGEND:

- N65, 10 - 24 events
- N65, 25 - 49 events
- N65, 50 - 99 events
- N65, 100 - 199 events
- N65, 200+ events

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Figure 8.3.41
Average Mode N65 Summer Day Noise Contours - 2025 DC Scenario

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:150,000@A4

FIGURE No:

A11407_09_DR041_1.0

LEGEND:

- N65, 10 - 24 events
- N65, 25 - 49 events
- N65, 50 - 99 events
- N65, 100 - 199 events
- N65, 200+ events

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Figure 8.3.42
Average Mode N65 Summer Day Noise Contours - 2027 DM Scenario

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:150,000@A4

FIGURE No:

A11407_09_DR042_1.0

LEGEND:

- N65, 10 - 24 events
- N65, 25 - 49 events
- N65, 50 - 99 events
- N65, 100 - 199 events
- N65, 200+ events

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Figure 8.3.43
Average Mode N65 Summer Day Noise Contours - 2027 DC Scenario

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:150,000@A4

FIGURE No:

A11407_09_DR043_1.0

LEGEND:

- N65, 10 - 24 events
- N65, 25 - 49 events
- N65, 50 - 99 events
- N65, 100 - 199 events
- N65, 200+ events

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Figure 8.3.44
Average Mode N65 Summer Day Noise Contours - 2031 DM Scenario

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:150,000@A4

FIGURE No:

A11407_09_DR044_1.0

LEGEND:

- N65, 10 - 24 events
- N65, 25 - 49 events
- N65, 50 - 99 events
- N65, 100 - 199 events
- N65, 200+ events

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Figure 8.3.45
Average Mode N65 Summer Day Noise Contours - 2031 DC Scenario

DRAWN: MP CHECKED: DR

DATE: December 2022 SCALE: 1:150,000@A4

FIGURE No:

A11407_09_DR045_2.0

LEGEND:

- N65, 10 - 24 events
- N65, 25 - 49 events
- N65, 50 - 99 events
- N65, 100+ events

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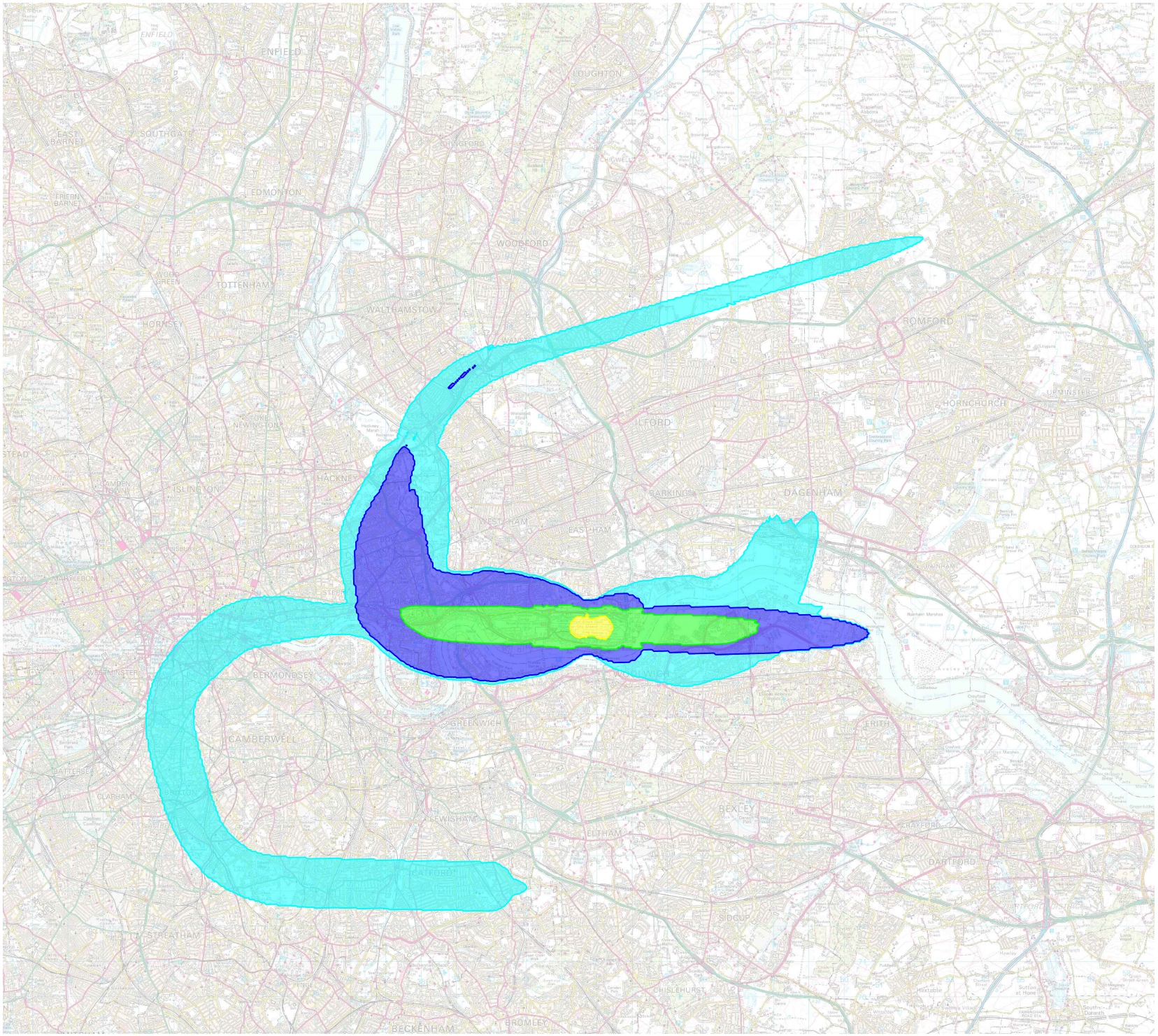
Figure 8.3.46
Average Mode N65 Weekend Noise Contours - 2019 Actual

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:150,000@A4

FIGURE No:

A11407_09_DR046_1.0



LEGEND:

- N65, 10 - 24 events
- N65, 25 - 49 events
- N65, 50 - 99 events
- N65, 100+ events

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Figure 8.3.47
Average Mode N65 Weekend Noise Contours - 2025 DM Scenario

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:150,000@A4

FIGURE No:

A11407_09_DR047_1.0

LEGEND:

- N65, 10 - 24 events
- N65, 25 - 49 events
- N65, 50 - 99 events
- N65, 100+ events

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Figure 8.3.48
Average Mode N65 Weekend Noise Contours - 2025 DC Scenario

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:150,000@A4

FIGURE No:

A11407_09_DR048_1.0

LEGEND:

- N65, 10 - 24 events
- N65, 25 - 49 events
- N65, 50 - 99 events
- N65, 100+ events

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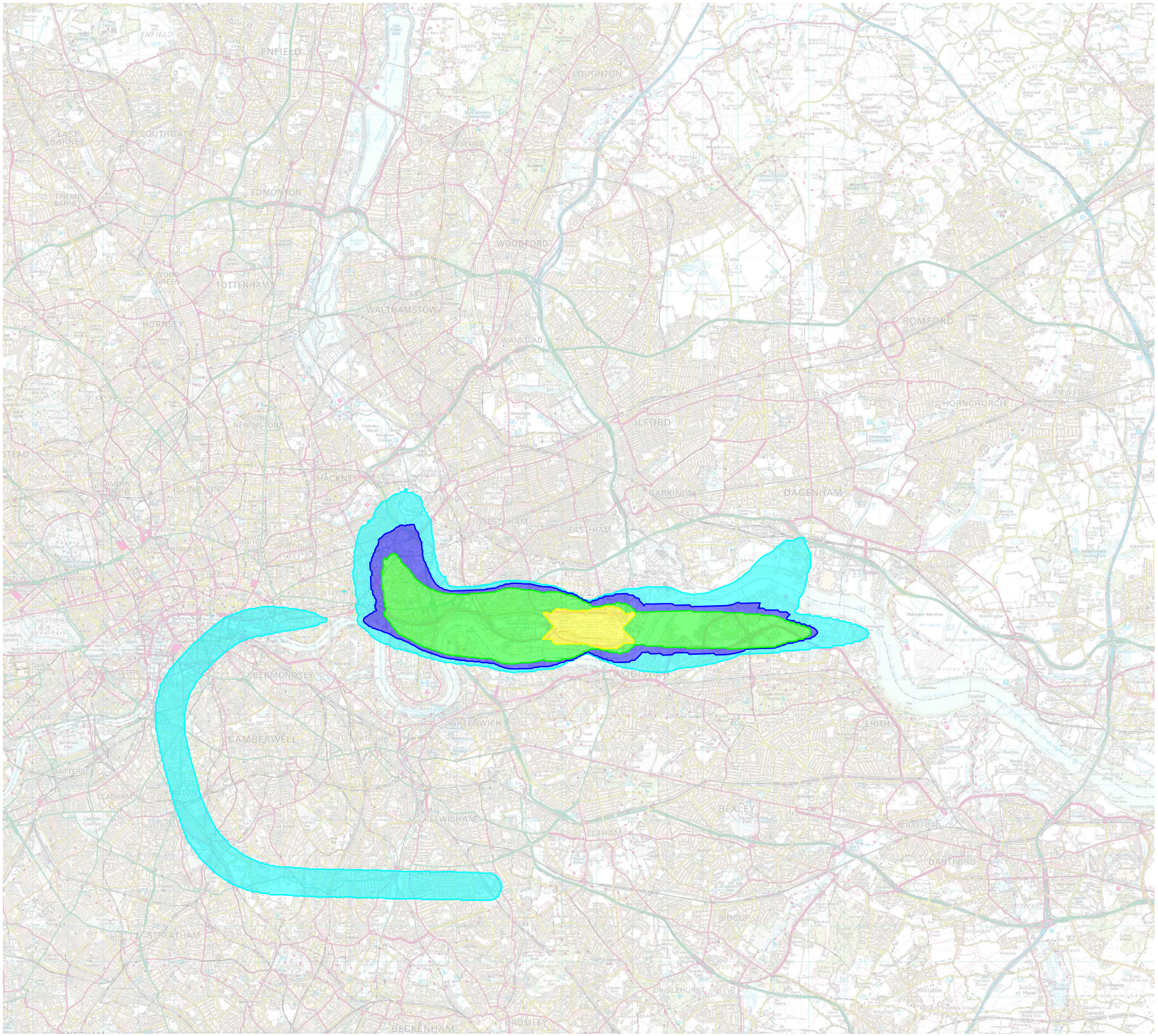
Figure 8.3.49
Average Mode N65 Weekend Noise Contours - 2027 DM Scenario

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:150,000@A4

FIGURE No:

A11407_09_DR049_1.0



LEGEND:

- N65, 10 - 24 events
- N65, 25 - 49 events
- N65, 50 - 99 events
- N65, 100+ events

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Figure 8.3.50
Average Mode N65 Weekend Noise Contours - 2027 DC Scenario

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:150,000@A4

FIGURE No:

A11407_09_DR050_1.0

LEGEND:

- N65, 10 - 24 events
- N65, 25 - 49 events
- N65, 50 - 99 events
- N65, 100+ events

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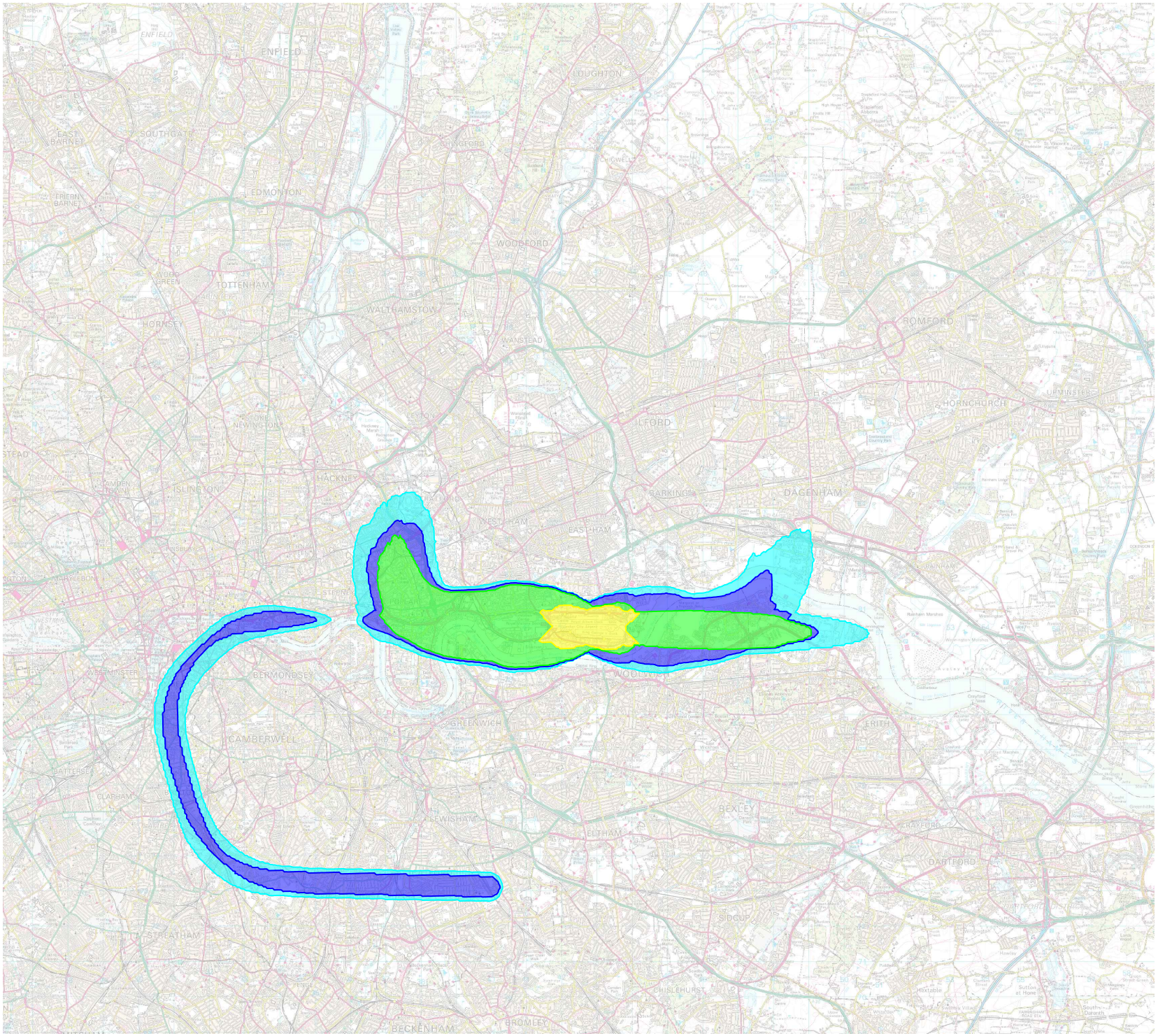
Figure 8.3.51
Average Mode N65 Weekend Noise Contours - 2031 DM Scenario

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:150,000@A4

FIGURE No:

A11407_09_DR051_1.0



LEGEND:

- N65, 10 - 24 events
- N65, 25 - 49 events
- N65, 50 - 99 events
- N65, 100+ events

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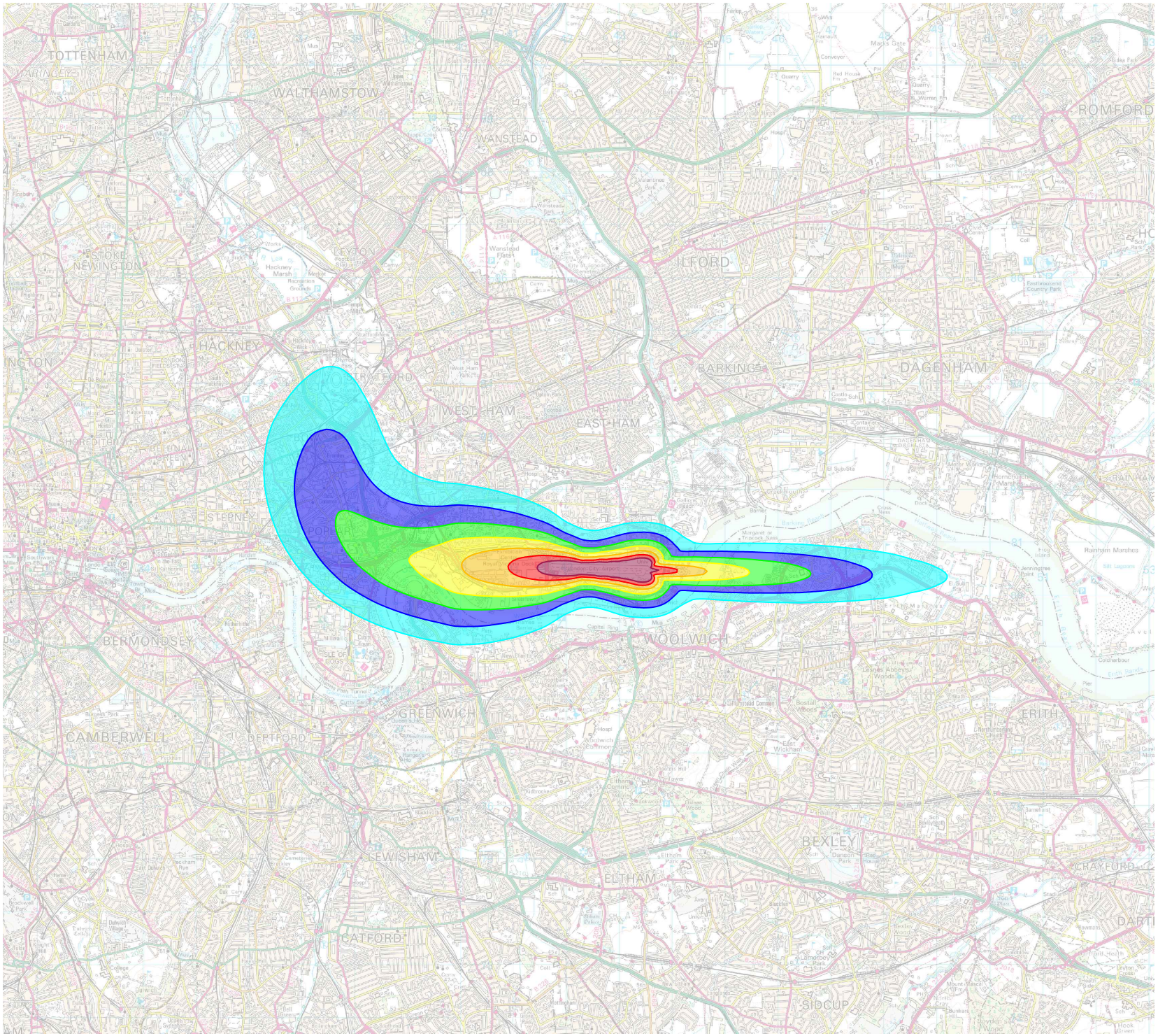
Figure 8.3.52
Average Mode N65 Weekend Noise Contours - 2031 DC Scenario

DRAWN: MP CHECKED: DR

DATE: December 2022 SCALE: 1:150,000@A4

FIGURE No:

A11407_09_DR052_2.0



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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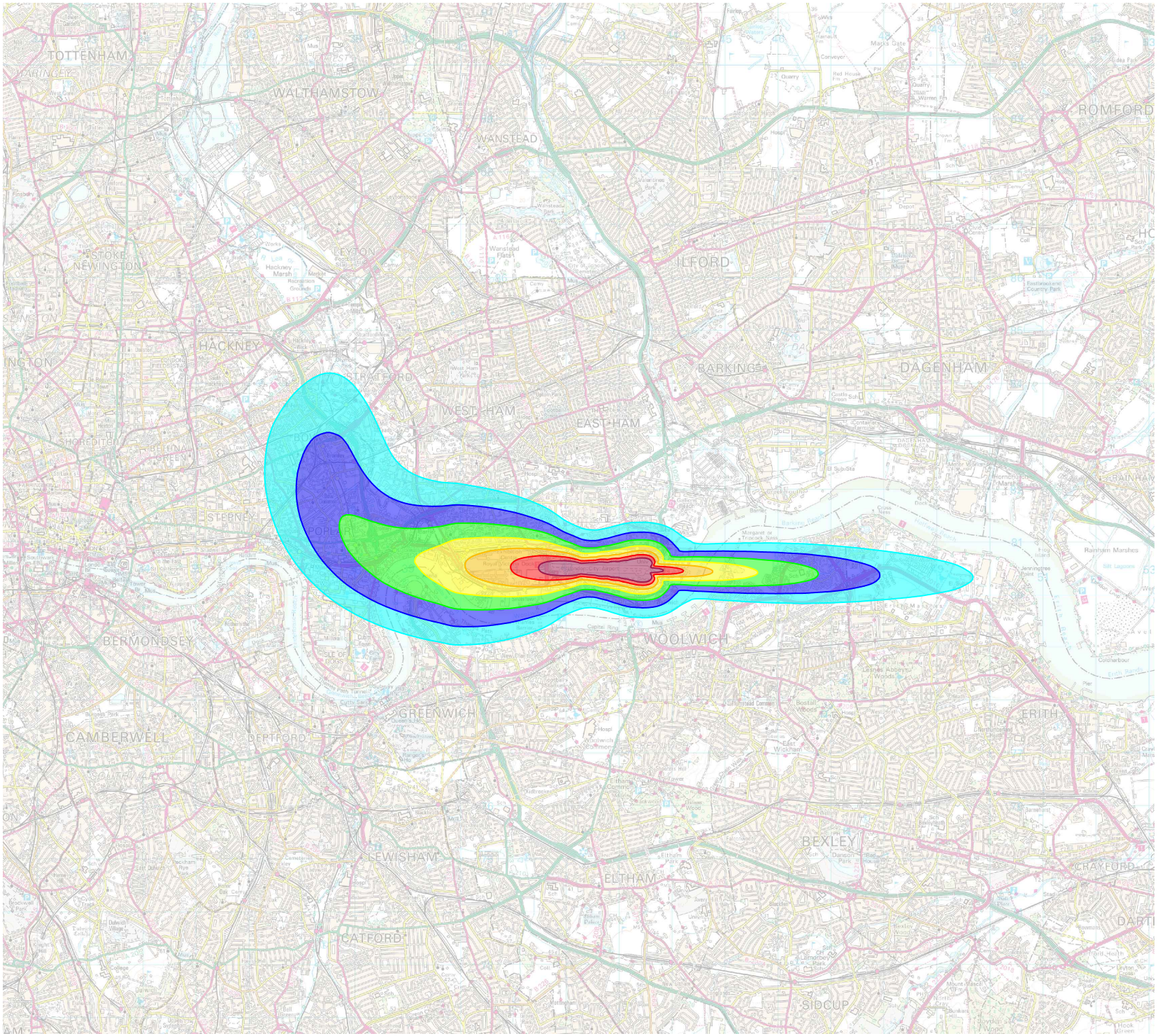
Figure 8.3.60
Westerly Mode Summer Day Noise Contours
2019 Actual

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:100,000@A4

FIGURE No:

A11407_09_DR060_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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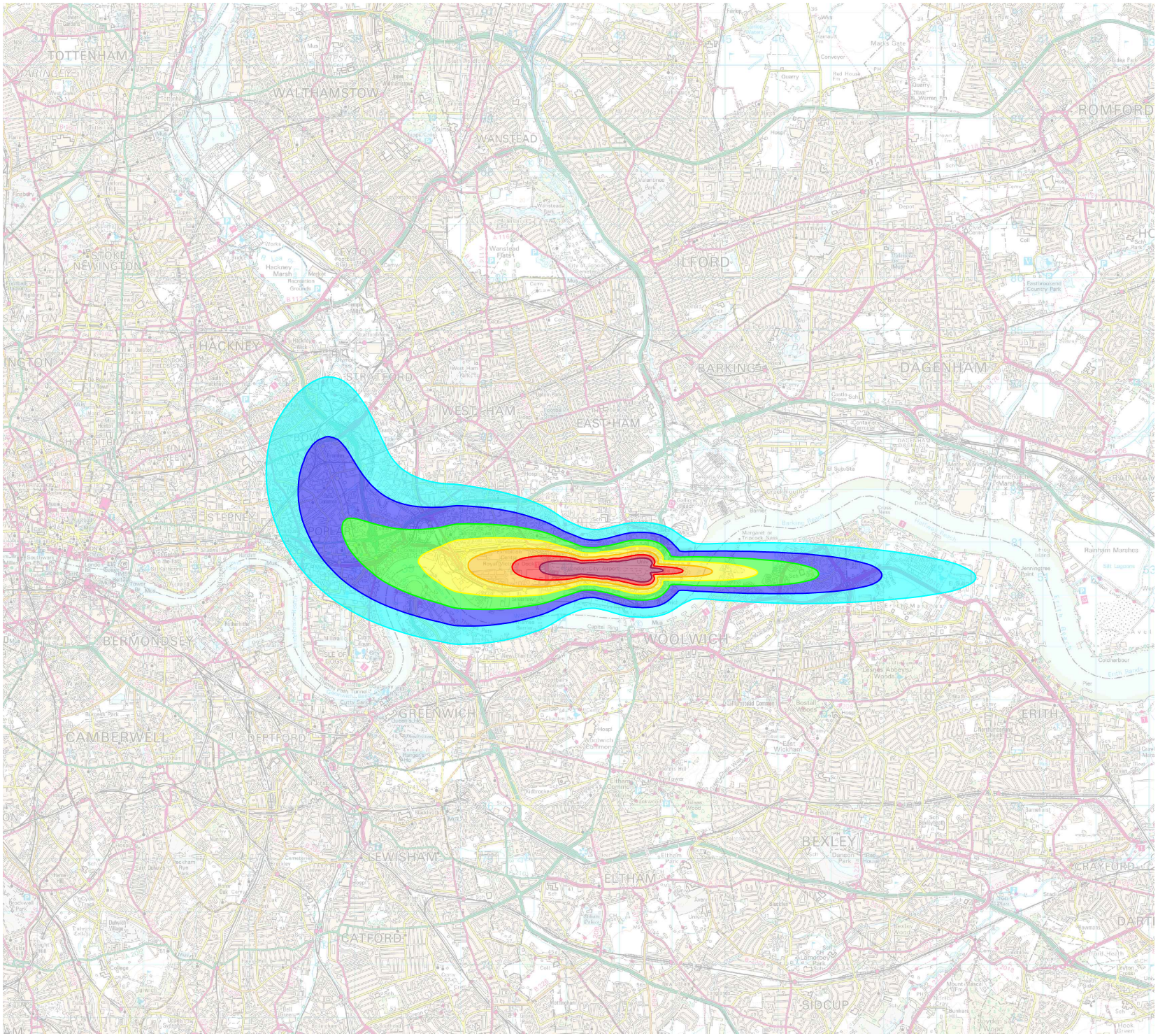
Figure 8.3.61
Westerly Mode Summer Day Noise Contours
2025 DM Scenario

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:100,000@A4

FIGURE No:

A11407_09_DR061_1.0



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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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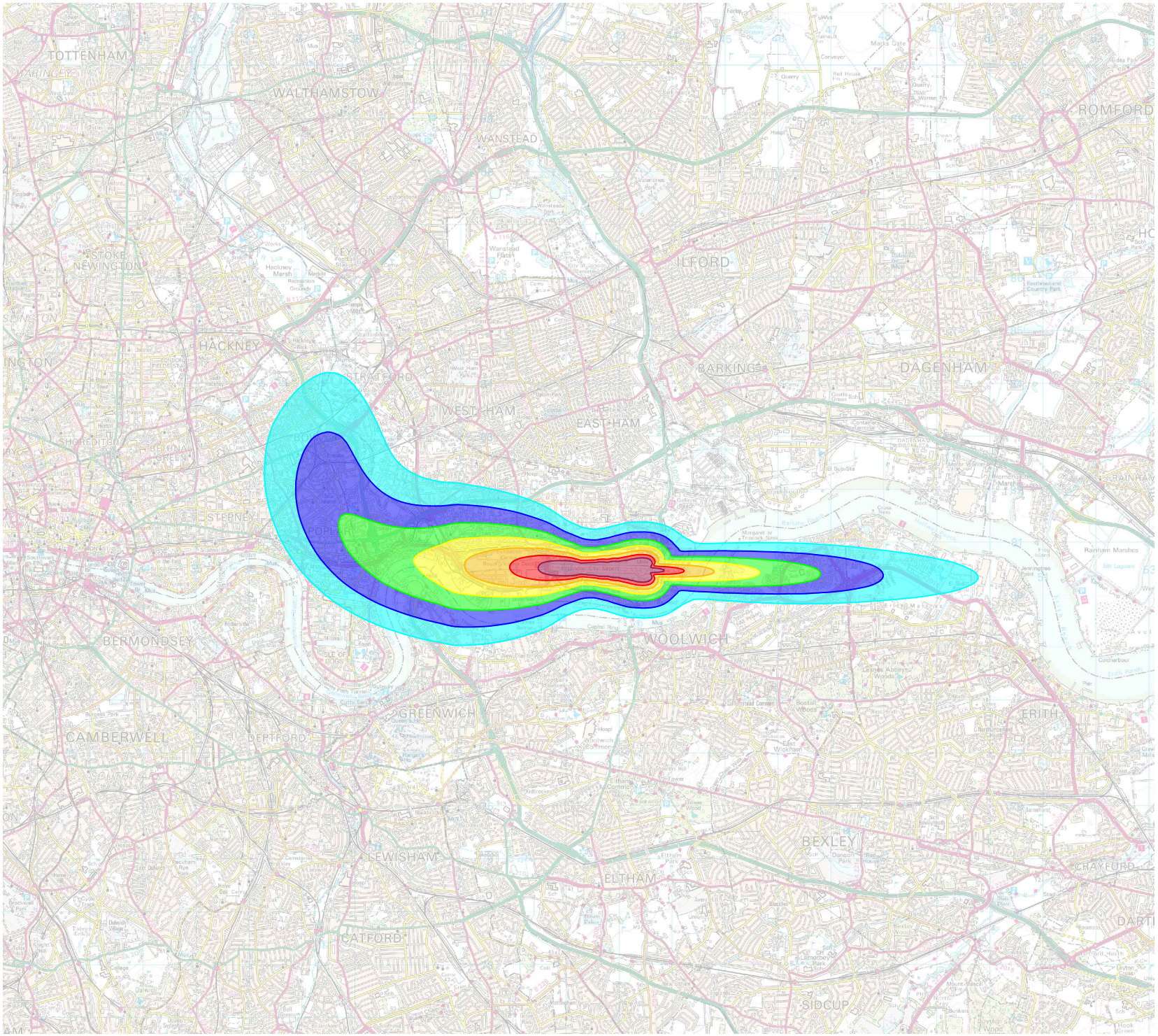
Figure 8.3.62
Westerly Mode Summer Day Noise Contours
2025 DC Scenario

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:100,000@A4

FIGURE No:

A11407_09_DR062_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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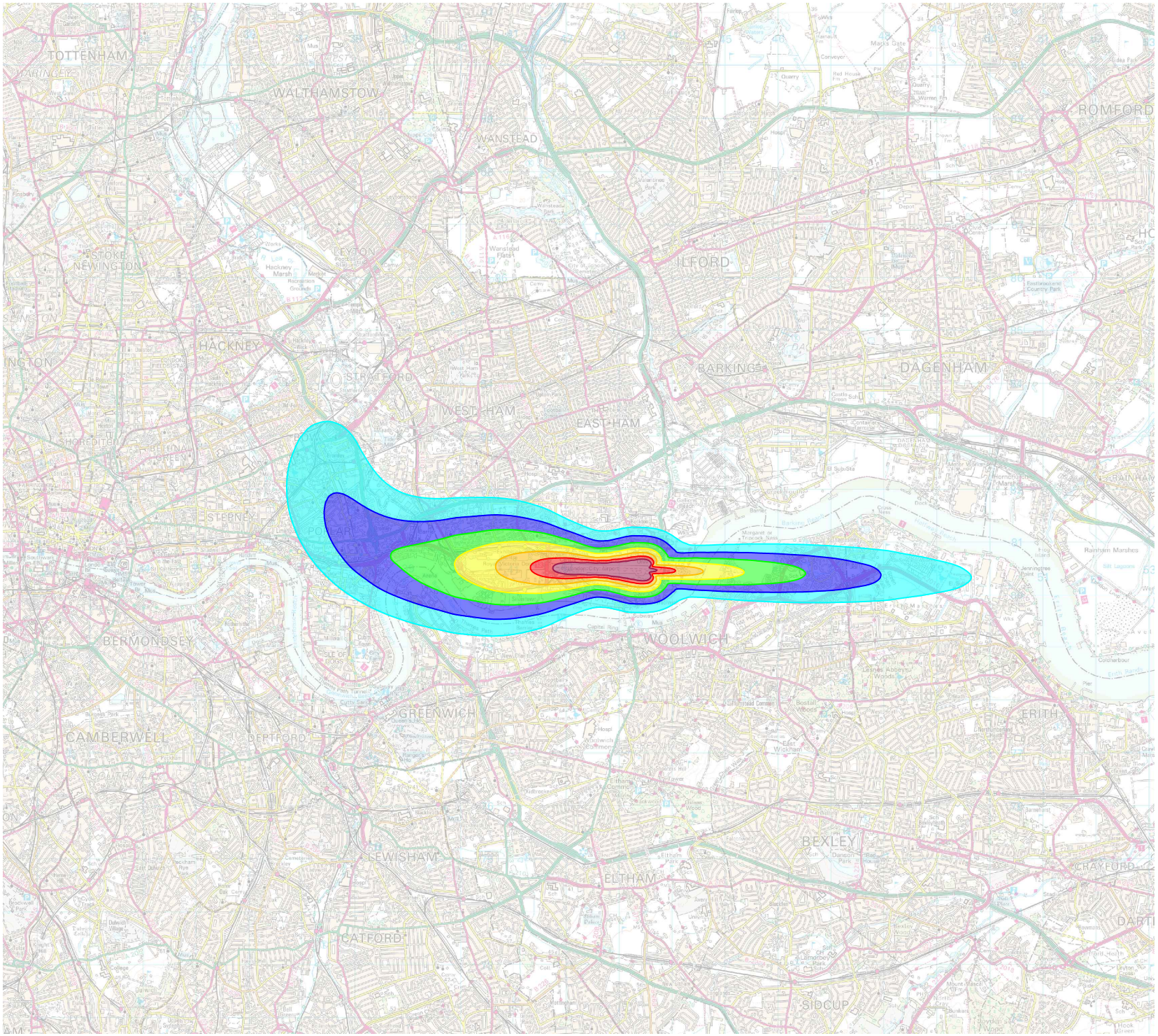
Figure 8.3.63
Westerly Mode Summer Day Noise Contours
2027 DM Scenario

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:100,000@A4

FIGURE No:

A11407_09_DR063_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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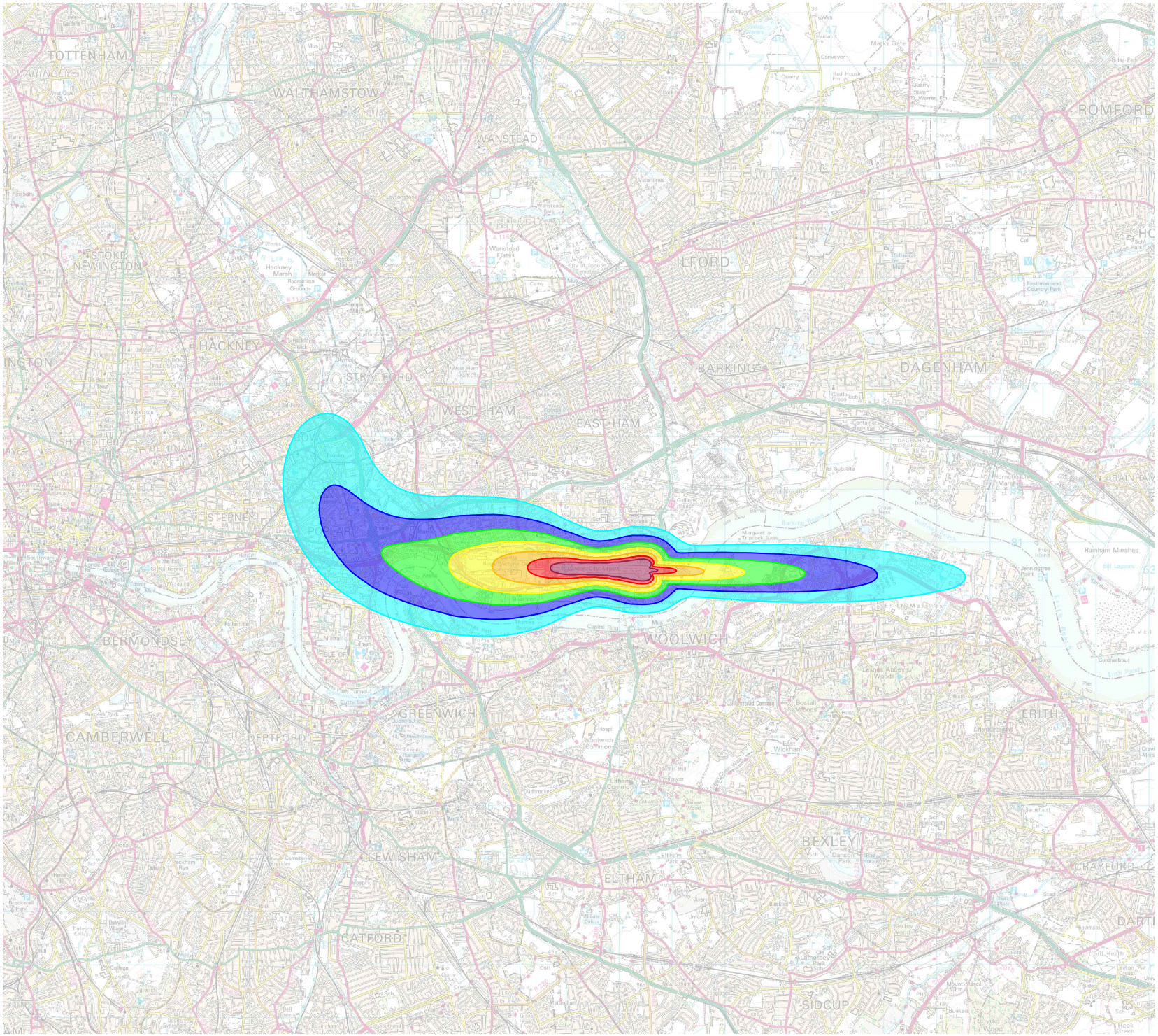
Figure 8.3.64
Westerly Mode Summer Day Noise Contours
2027 DC Scenario

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:100,000@A4

FIGURE No:

A11407_09_DR064_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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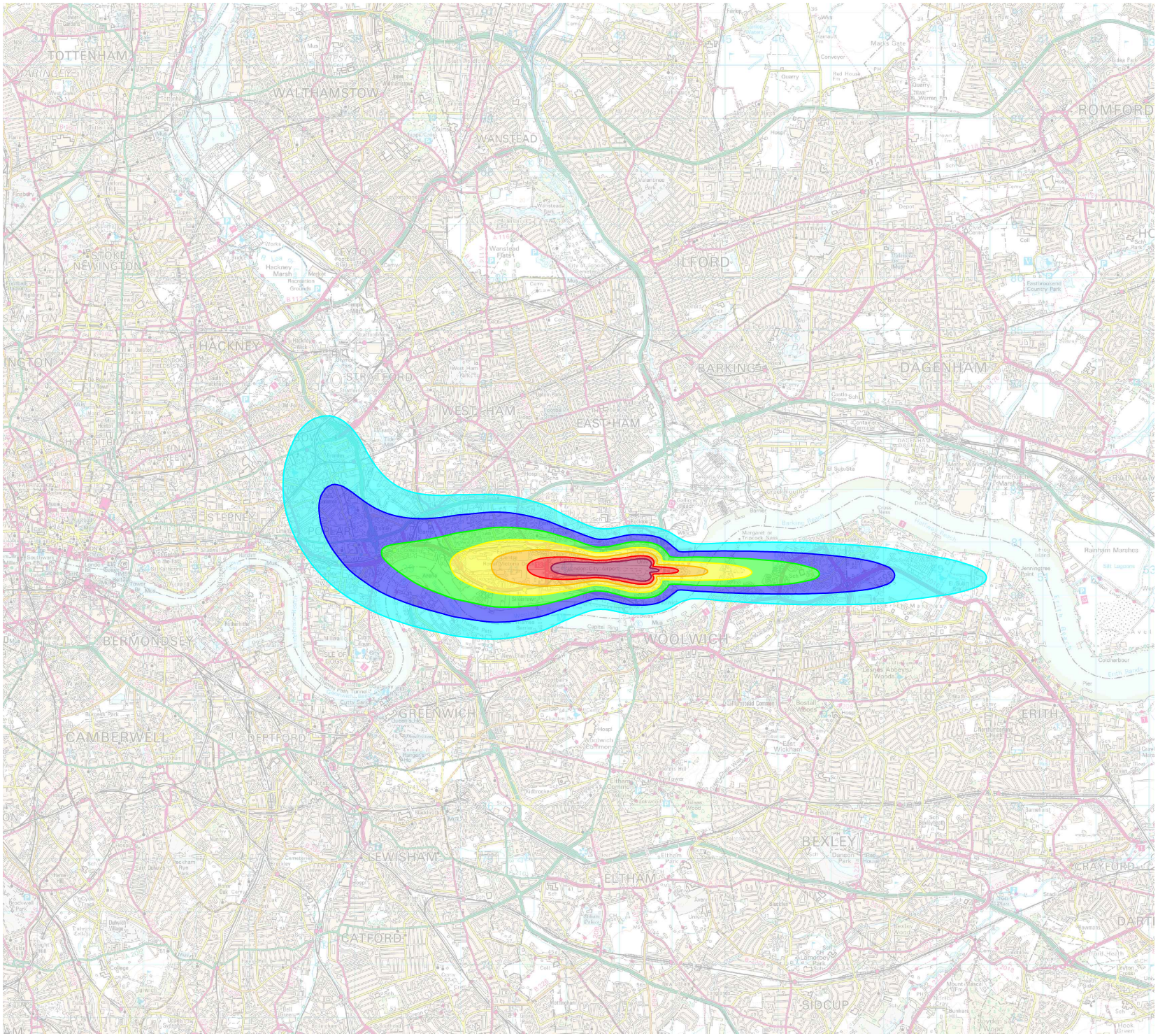
Figure 8.3.65
Westerly Mode Summer Day Noise Contours
2031 DM Scenario

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:100,000@A4

FIGURE No:

A11407_09_DR065_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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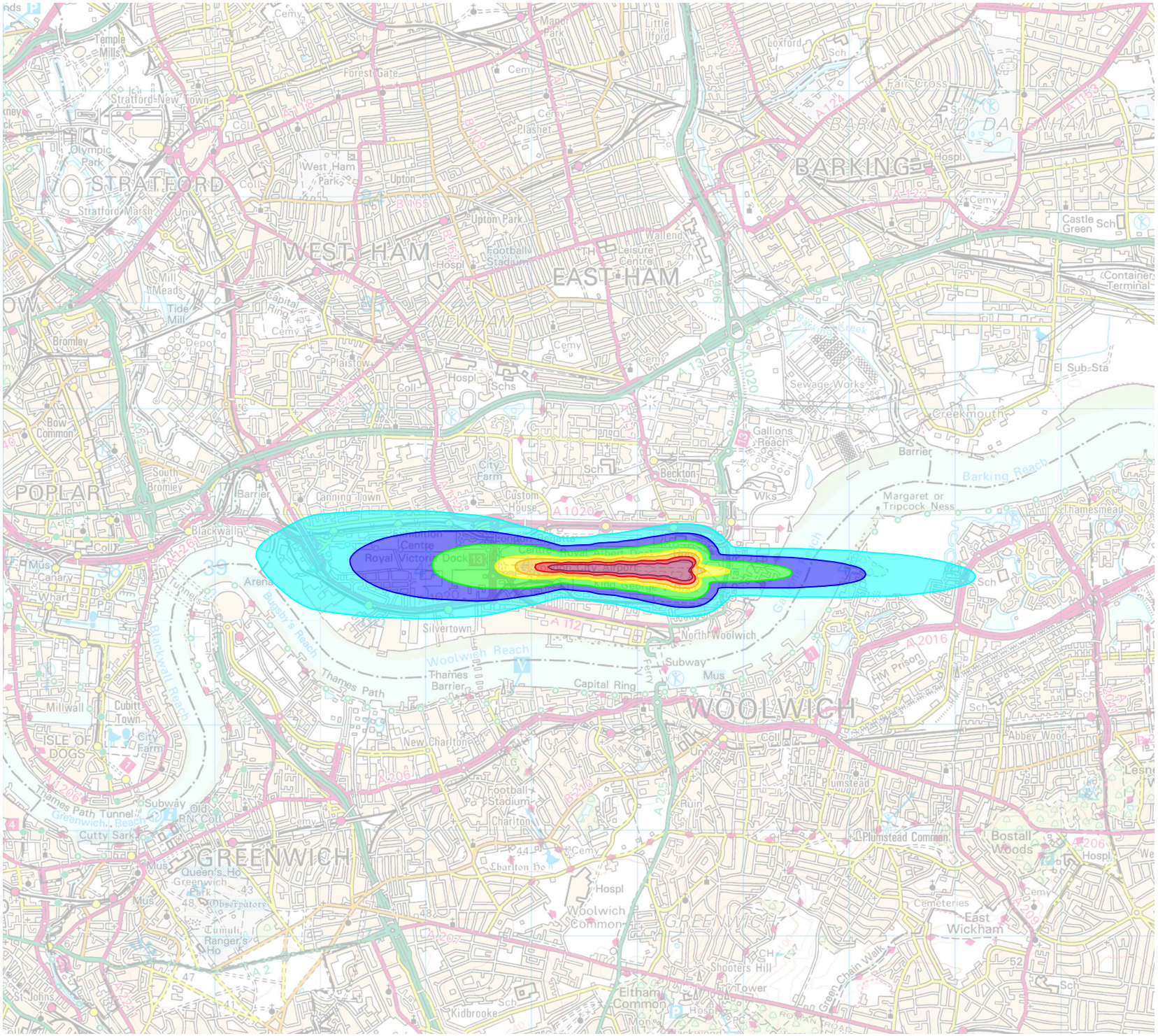
Figure 8.3.66
Westerly Mode Summer Day Noise Contours
2031 DC Scenario

DRAWN: MP CHECKED: DR

DATE: December 2022 SCALE: 1:100,000@A4

FIGURE No:

A11407_09_DR066_2.0



LEGEND:

- 45 - 47.9 dB(A) $L_{Aeq,8h}$
- 48 - 50.9 dB(A) $L_{Aeq,8h}$
- 51 - 54.9 dB(A) $L_{Aeq,8h}$
- 55 - 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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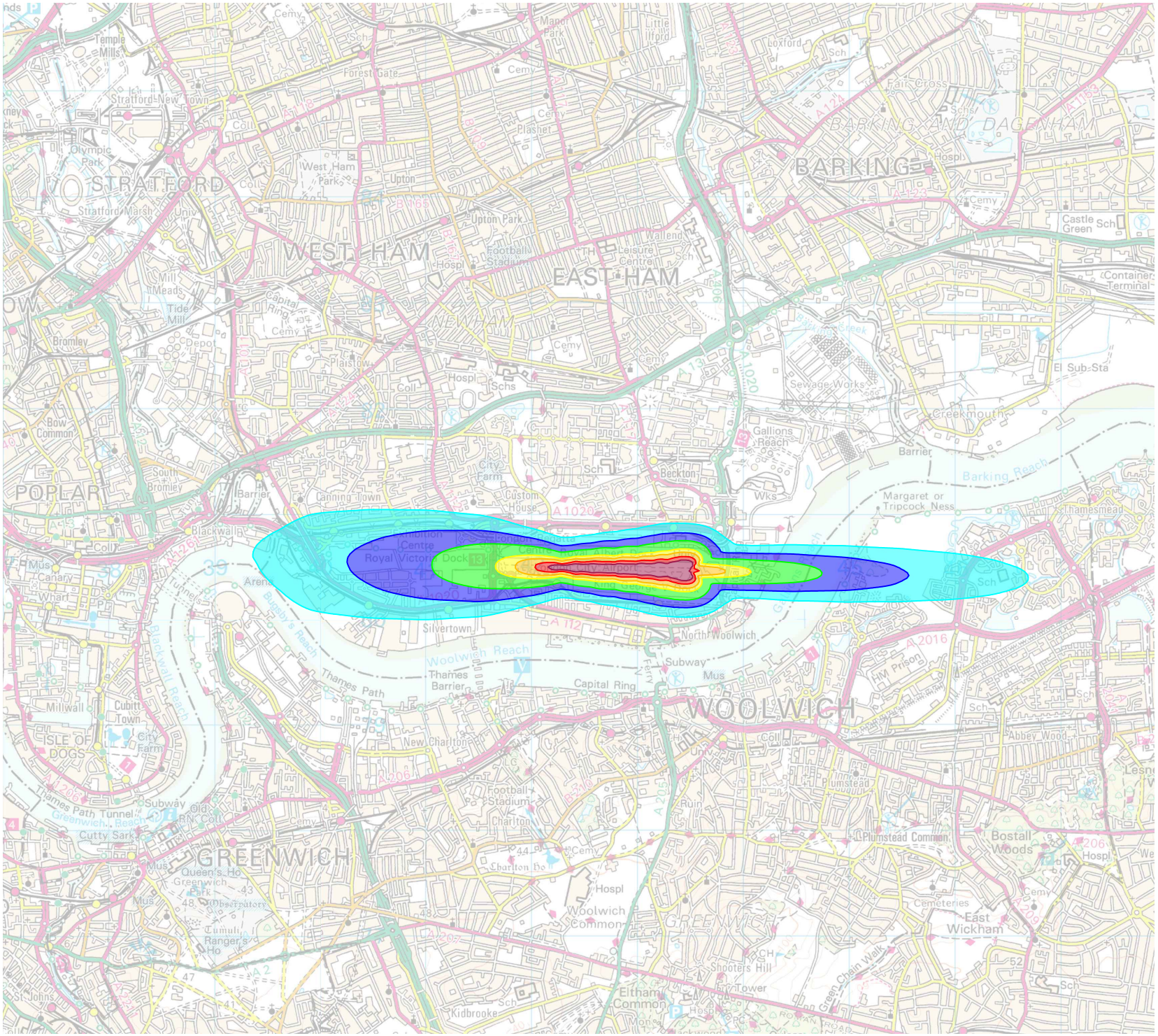
Figure 8.3.67
Westerly Mode Summer Night Noise Contours - 2019 Actual

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:50,000@A4

FIGURE No:

A11407_09_DR067_1.0



LEGEND:

- 45 - 47.9 dB(A) $L_{Aeq,8h}$
- 48 - 50.9 dB(A) $L_{Aeq,8h}$
- 51 - 54.9 dB(A) $L_{Aeq,8h}$
- 55 - 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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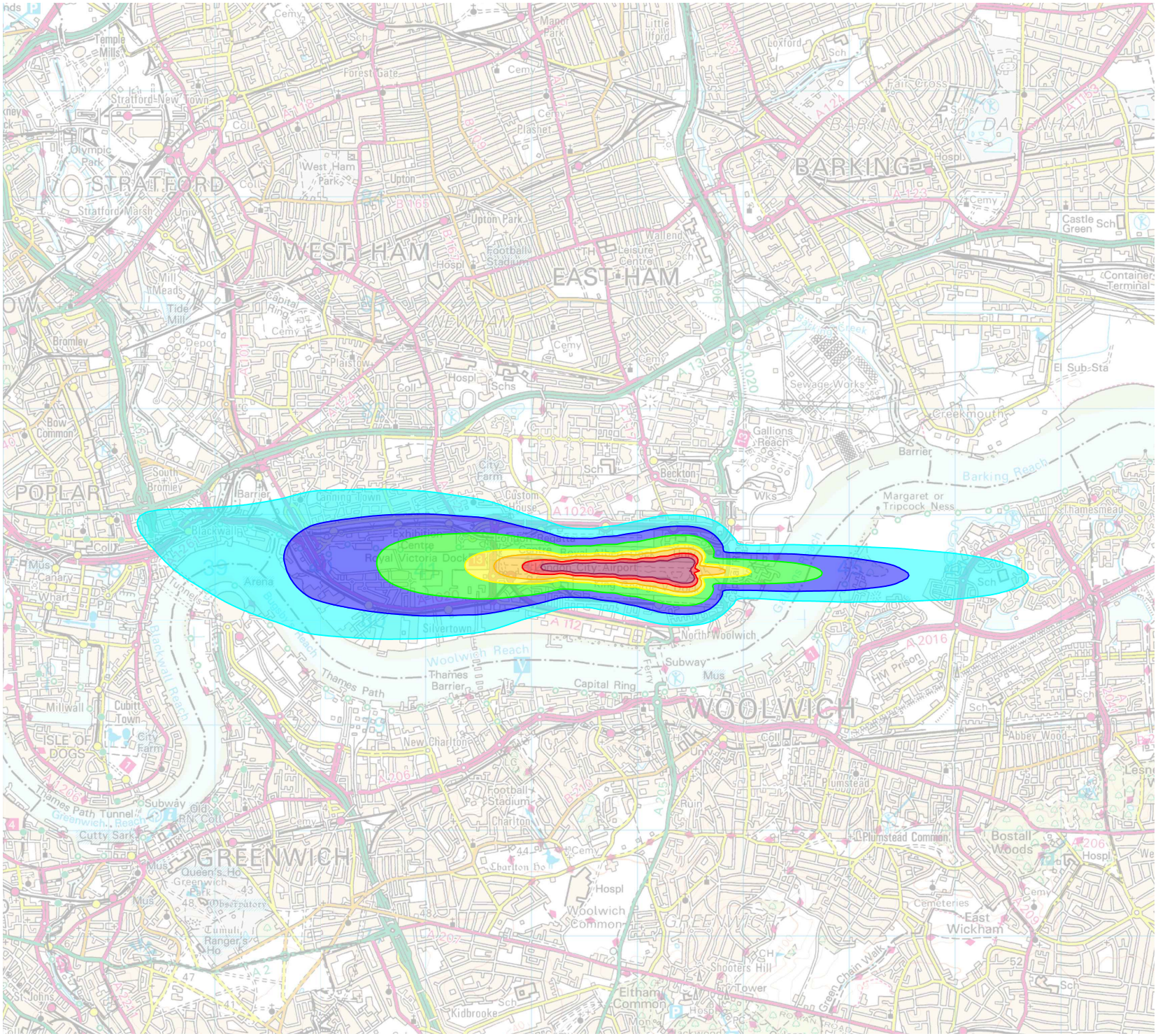
Figure 8.3.68
Westerly Mode Summer Night Noise Contours - 2025 DM Scenario

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:50,000@A4

FIGURE No:

A11407_09_DR068_1.0



LEGEND:

- 45 - 47.9 dB(A) $L_{Aeq,8h}$
- 48 - 50.9 dB(A) $L_{Aeq,8h}$
- 51 - 54.9 dB(A) $L_{Aeq,8h}$
- 55 - 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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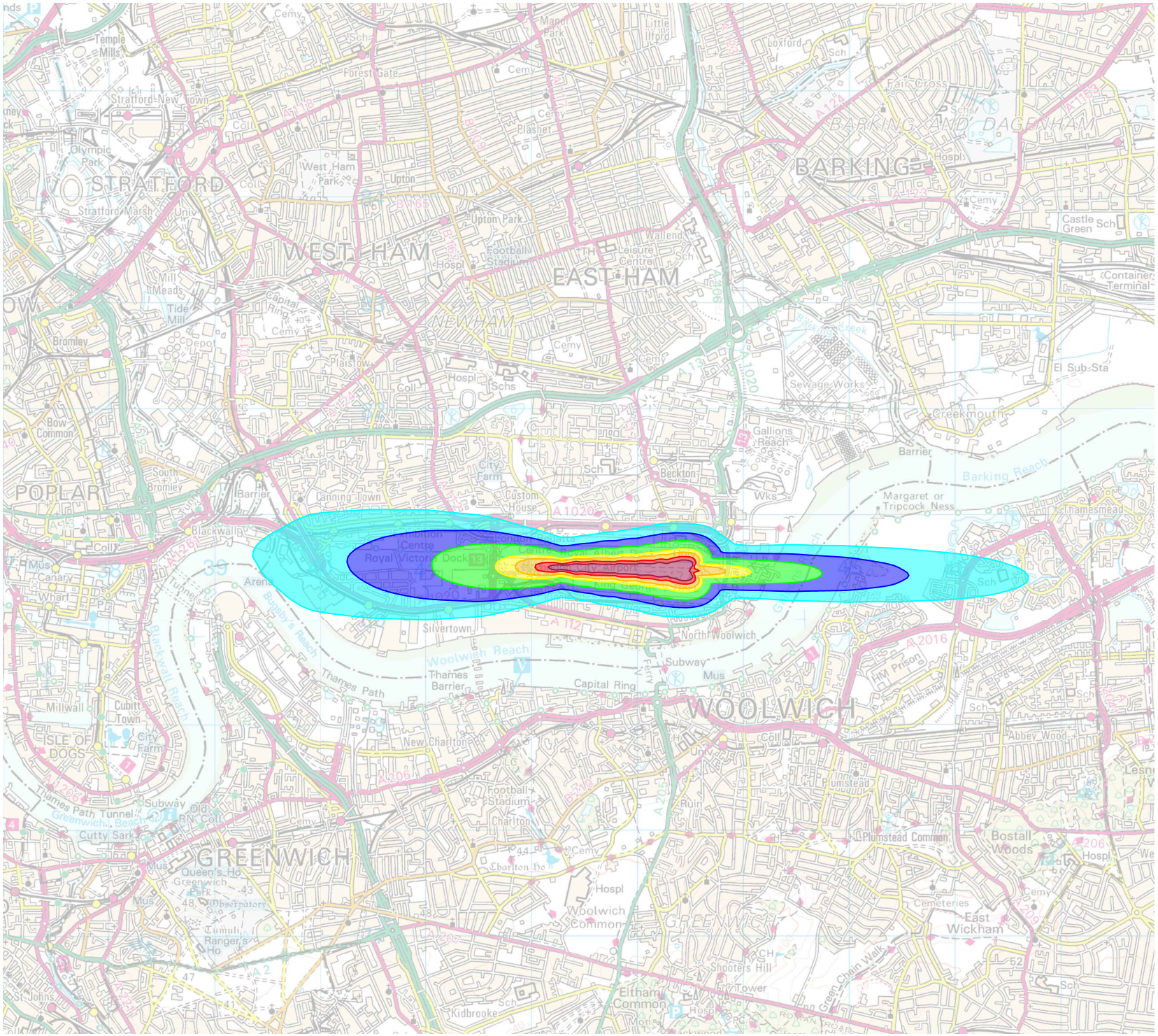
Figure 8.3.69
Westerly Mode Summer Night Noise Contours - 2025 DC Scenario

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:50,000@A4

FIGURE No:

A11407_09_DR069_1.0



LEGEND:

- 45 - 47.9 dB(A) $L_{Aeq,8h}$
- 48 - 50.9 dB(A) $L_{Aeq,8h}$
- 51 - 54.9 dB(A) $L_{Aeq,8h}$
- 55 - 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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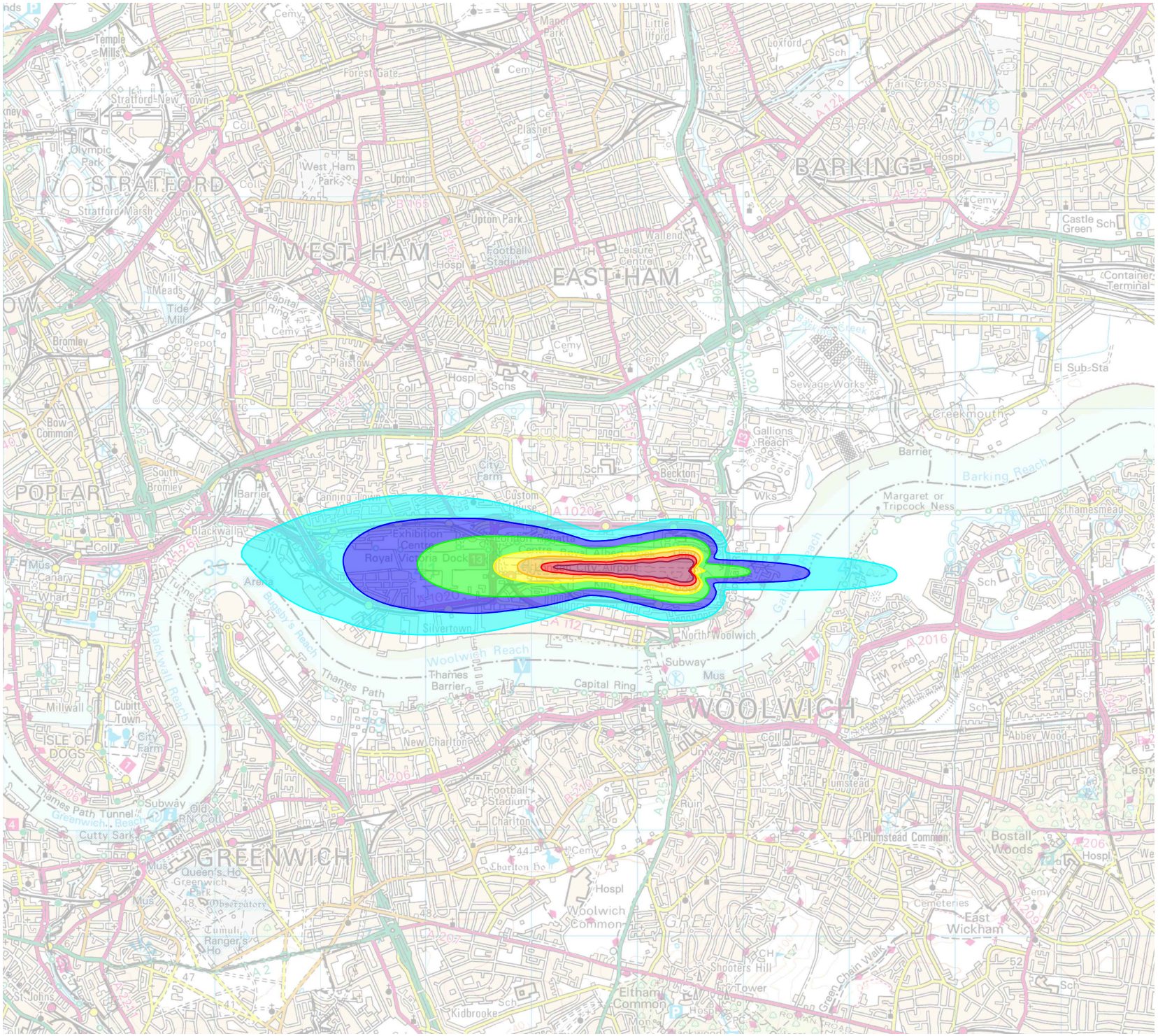
Figure 8.3.70
Westerly Mode Summer Night Noise Contours - 2027 DM Scenario

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:50,000@A4

FIGURE No:

A11407_09_DR070_1.0



LEGEND:

- 45 - 47.9 dB(A) $L_{Aeq,8h}$
- 48 - 50.9 dB(A) $L_{Aeq,8h}$
- 51 - 54.9 dB(A) $L_{Aeq,8h}$
- 55 - 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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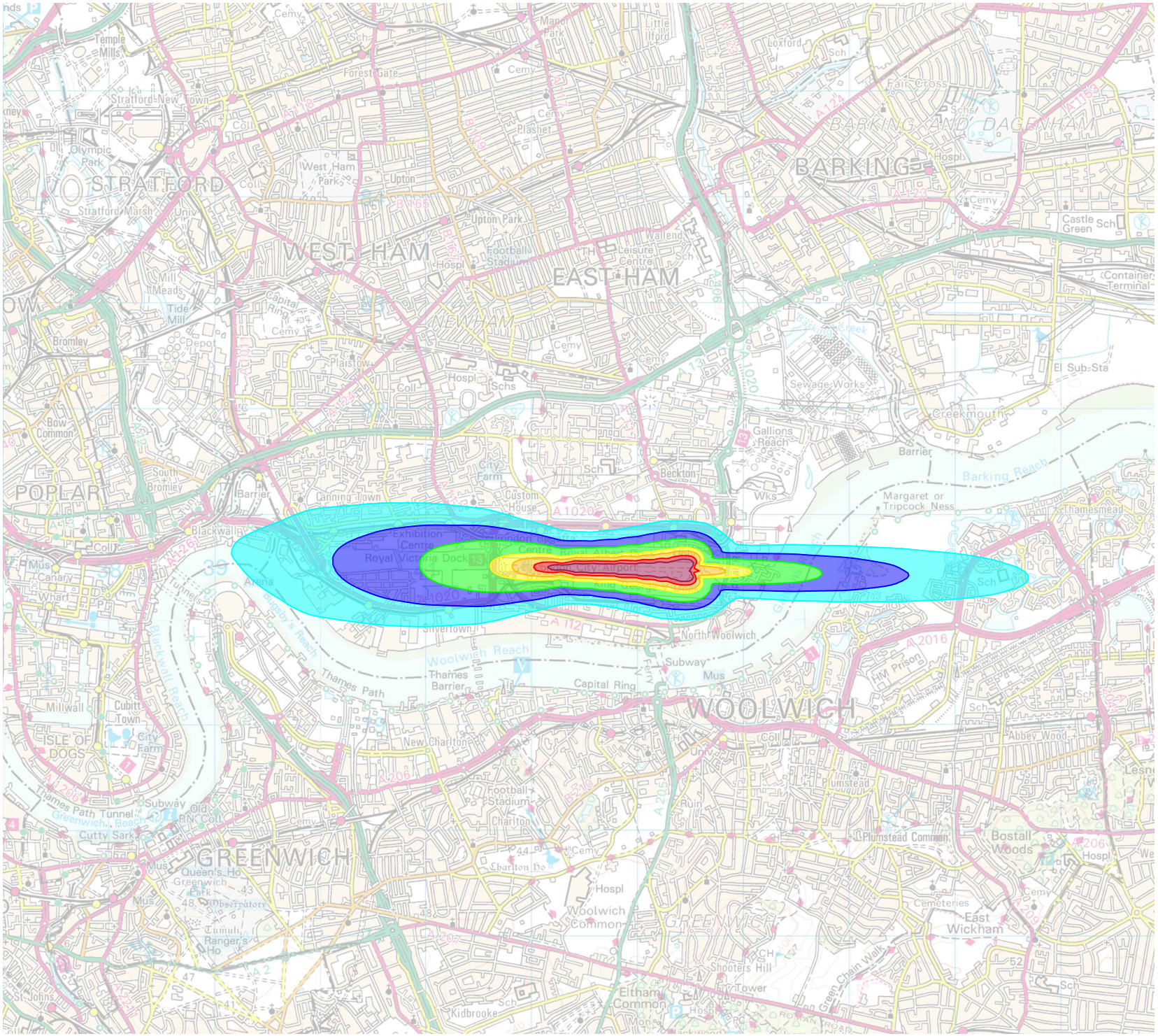
Figure 8.3.71
Westerly Mode Summer Night Noise Contours - 2027 DC Scenario

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:50,000@A4

FIGURE No:

A11407_09_DR071_1.0



LEGEND:

- 45 - 47.9 dB(A) $L_{Aeq,8h}$
- 48 - 50.9 dB(A) $L_{Aeq,8h}$
- 51 - 54.9 dB(A) $L_{Aeq,8h}$
- 55 - 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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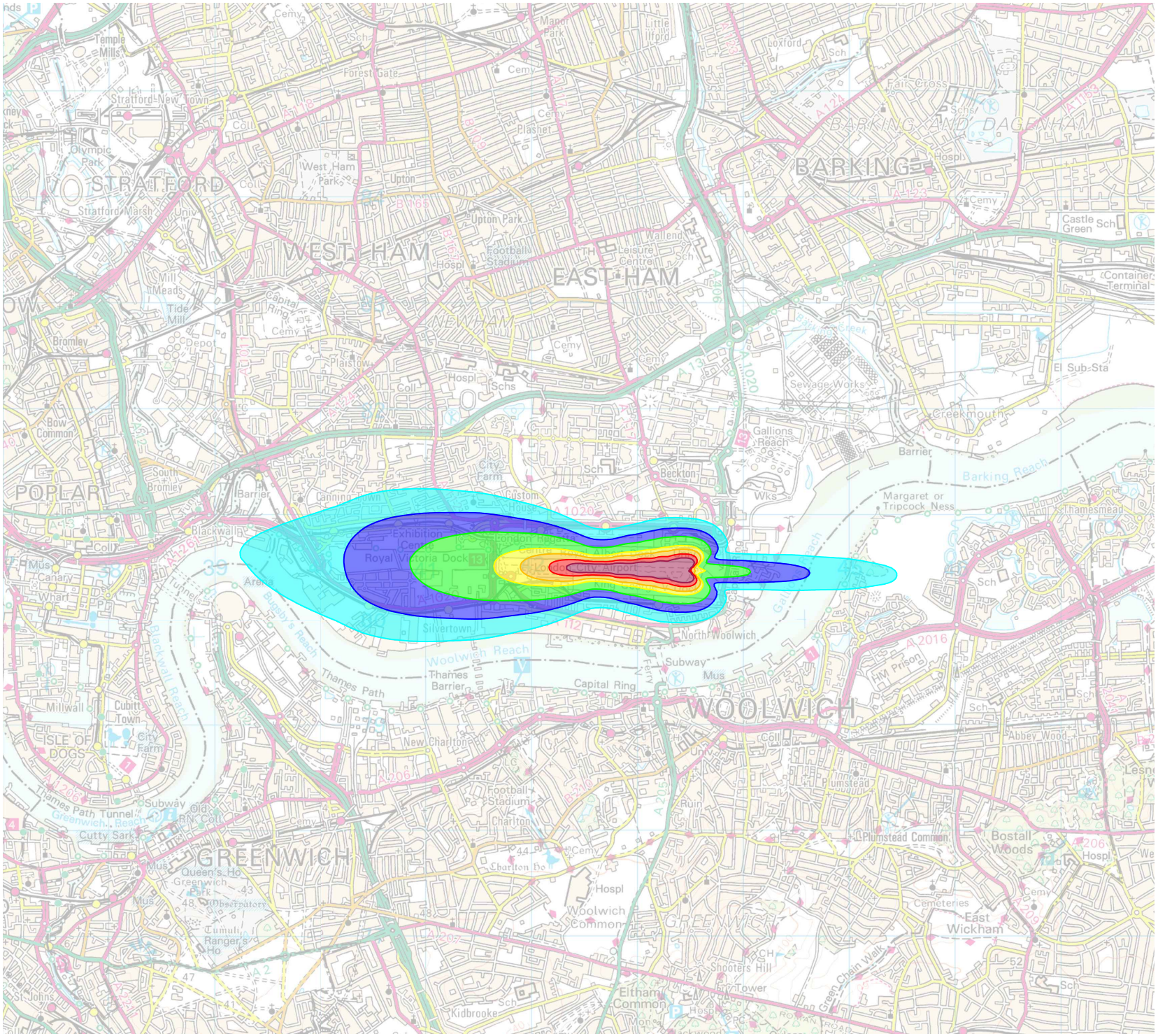
Figure 8.3.72
Westerly Mode Summer Night Noise Contours - 2031 DM Scenario

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:50,000@A4

FIGURE No:

A11407_09_DR072_1.0



LEGEND:

- 45 - 47.9 dB(A) $L_{Aeq,8h}$
- 48 - 50.9 dB(A) $L_{Aeq,8h}$
- 51 - 54.9 dB(A) $L_{Aeq,8h}$
- 55 - 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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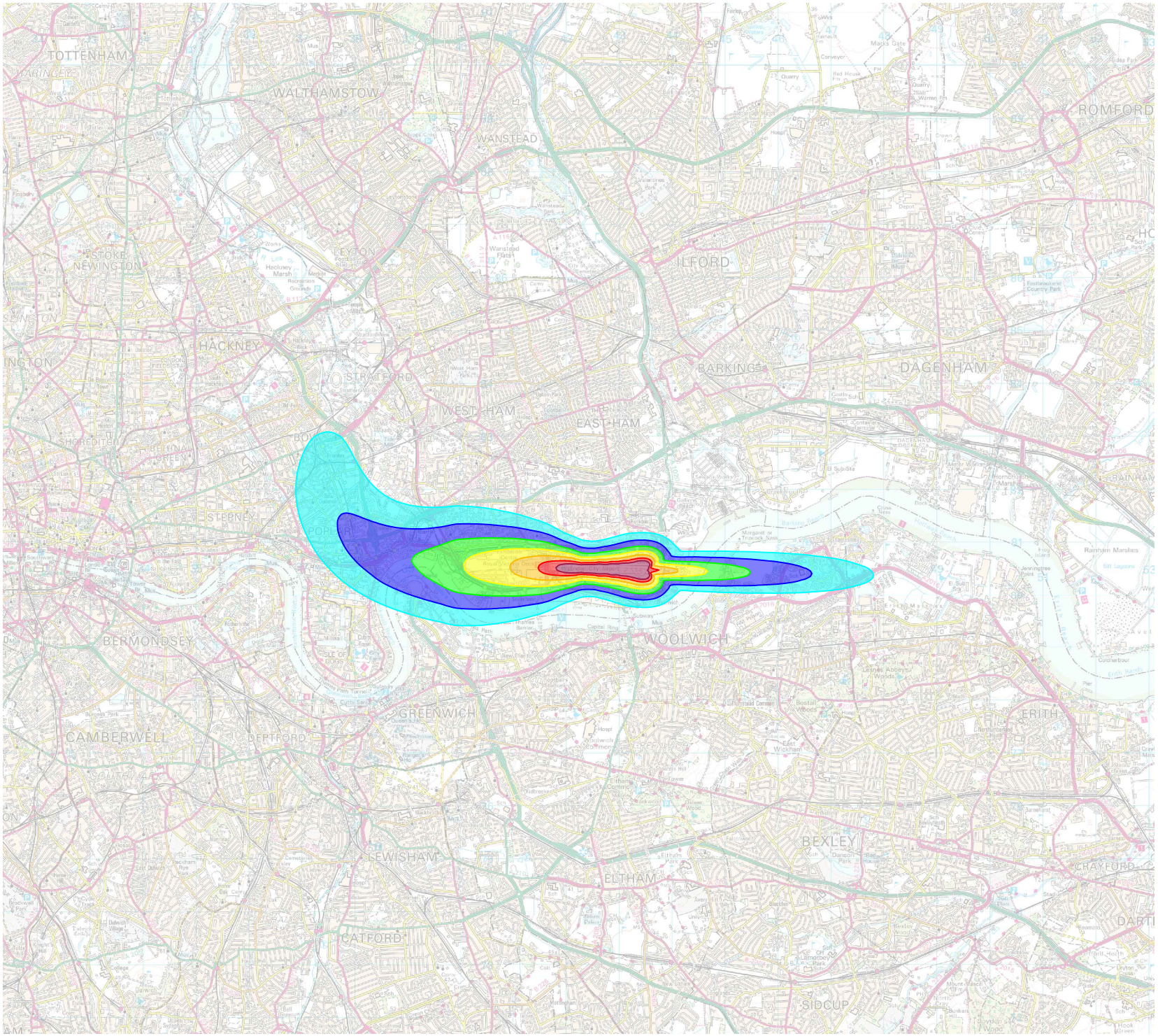
Figure 8.3.73
Westerly Mode Summer Night Noise Contours - 2031 DC Scenario

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:50,000@A4

FIGURE No:

A11407_09_DR073_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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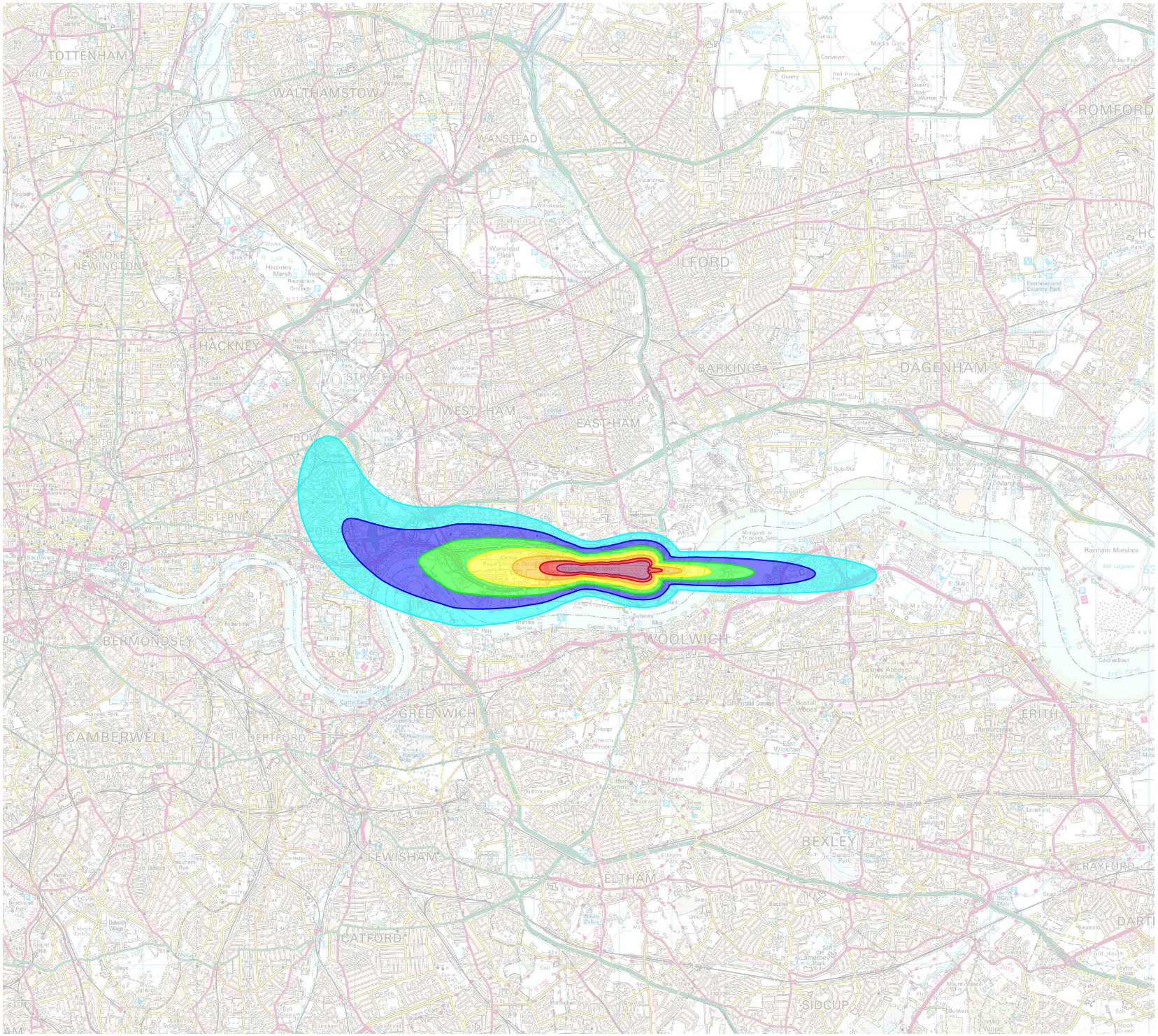
Figure 8.3.74
Westerly Mode Summer Weekend Noise Contours - 2019 Actual

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:100,000@A4

FIGURE No:

A11407_09_DR074_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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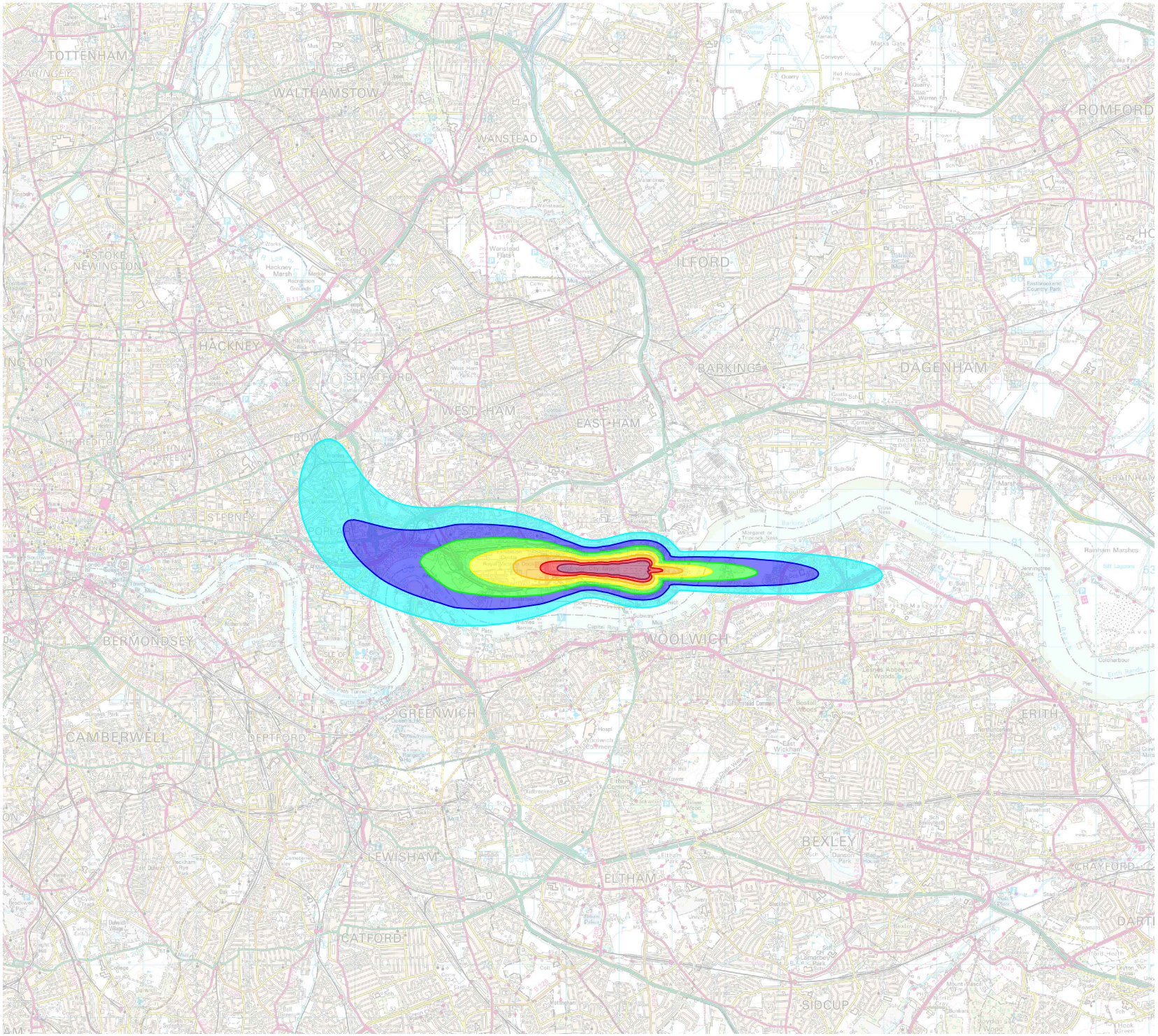
Figure 8.3.75
Westerly Mode Summer Weekend Noise Contours - 2025 DM Scenario

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:100,000@A4

FIGURE No:

A11407_09_DR075_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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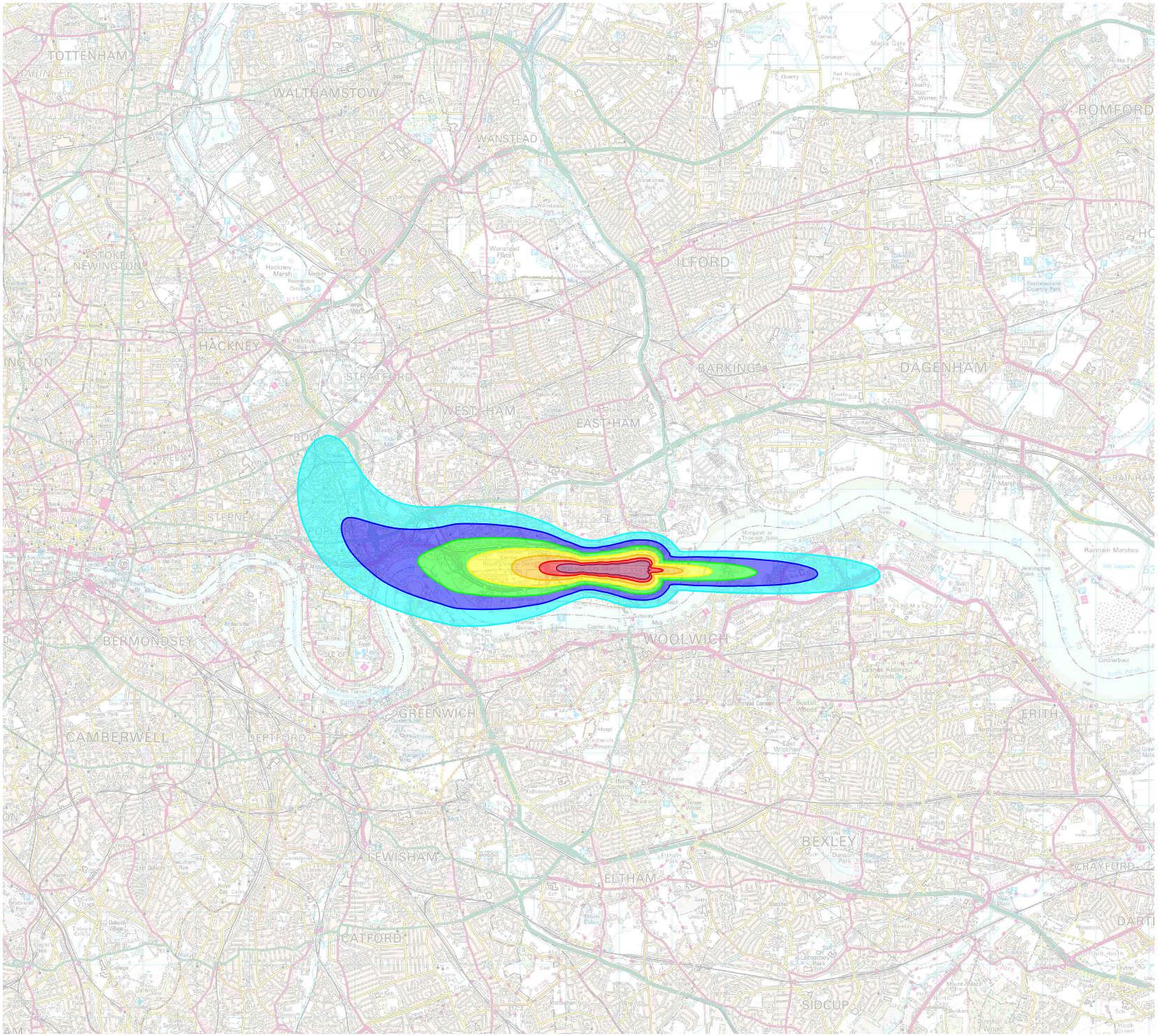
Figure 8.3.76
Westerly Mode Summer Weekend Noise Contours - 2025 DC Scenario

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:100,000@A4

FIGURE No:

A11407_09_DR076_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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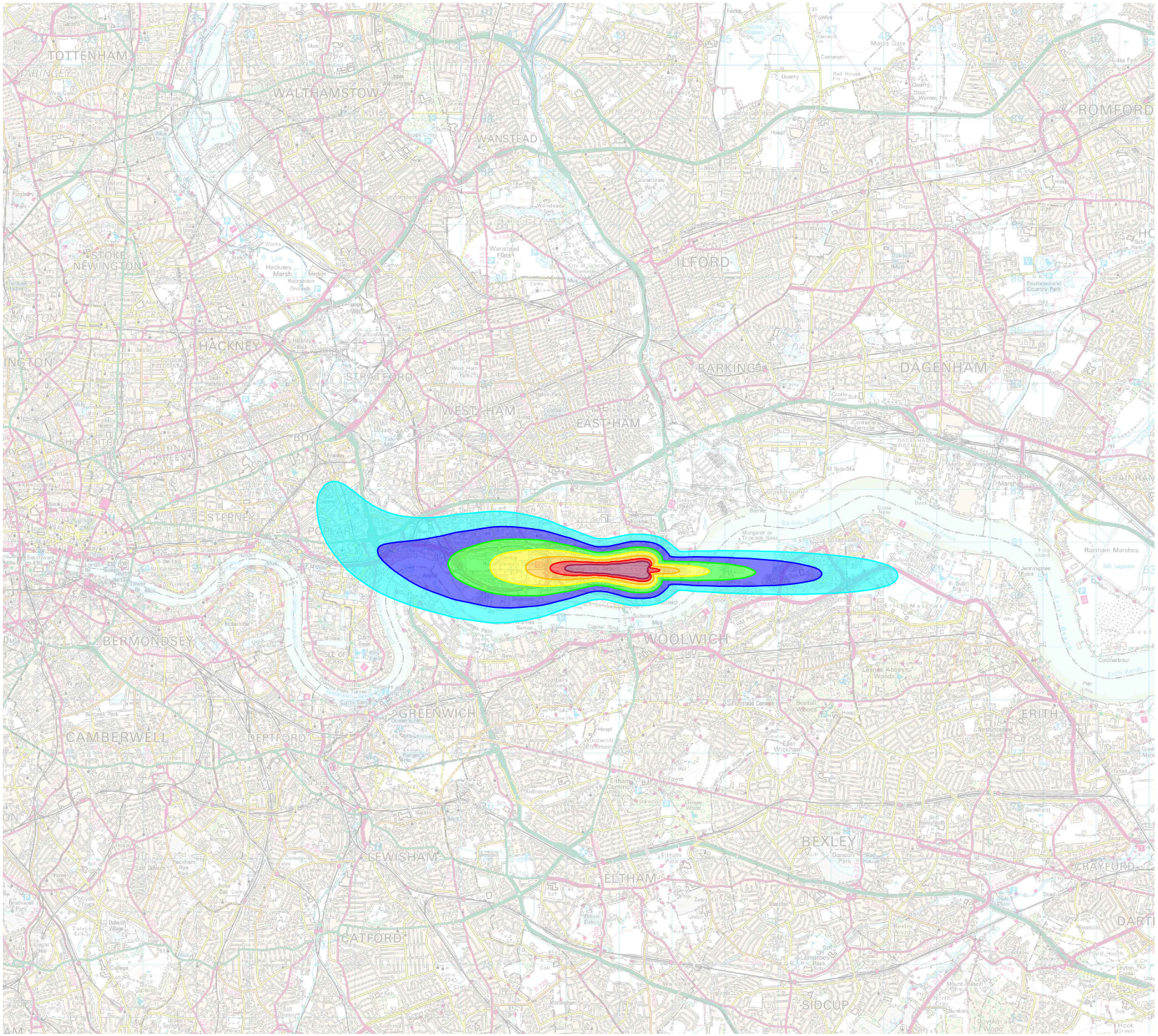
Figure 8.3.77
Westerly Mode Summer Weekend Noise Contours - 2027 DM Scenario

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:100,000@A4

FIGURE No:

A11407_09_DR077_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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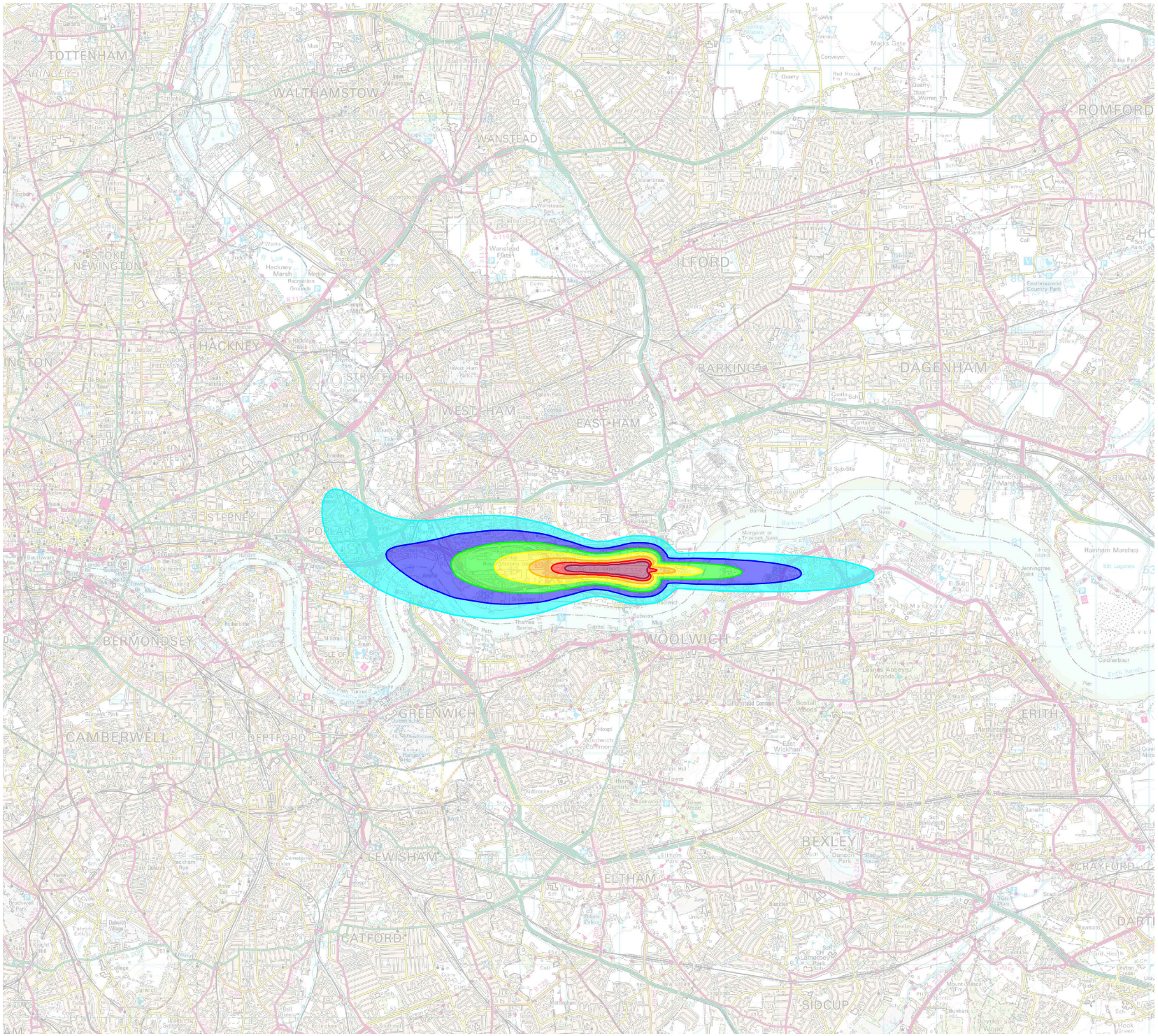
Figure 8.3.78
Westerly Mode Summer Weekend Noise Contours - 2027 DC Scenario

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:100,000@A4

FIGURE No:

A11407_09_DR078_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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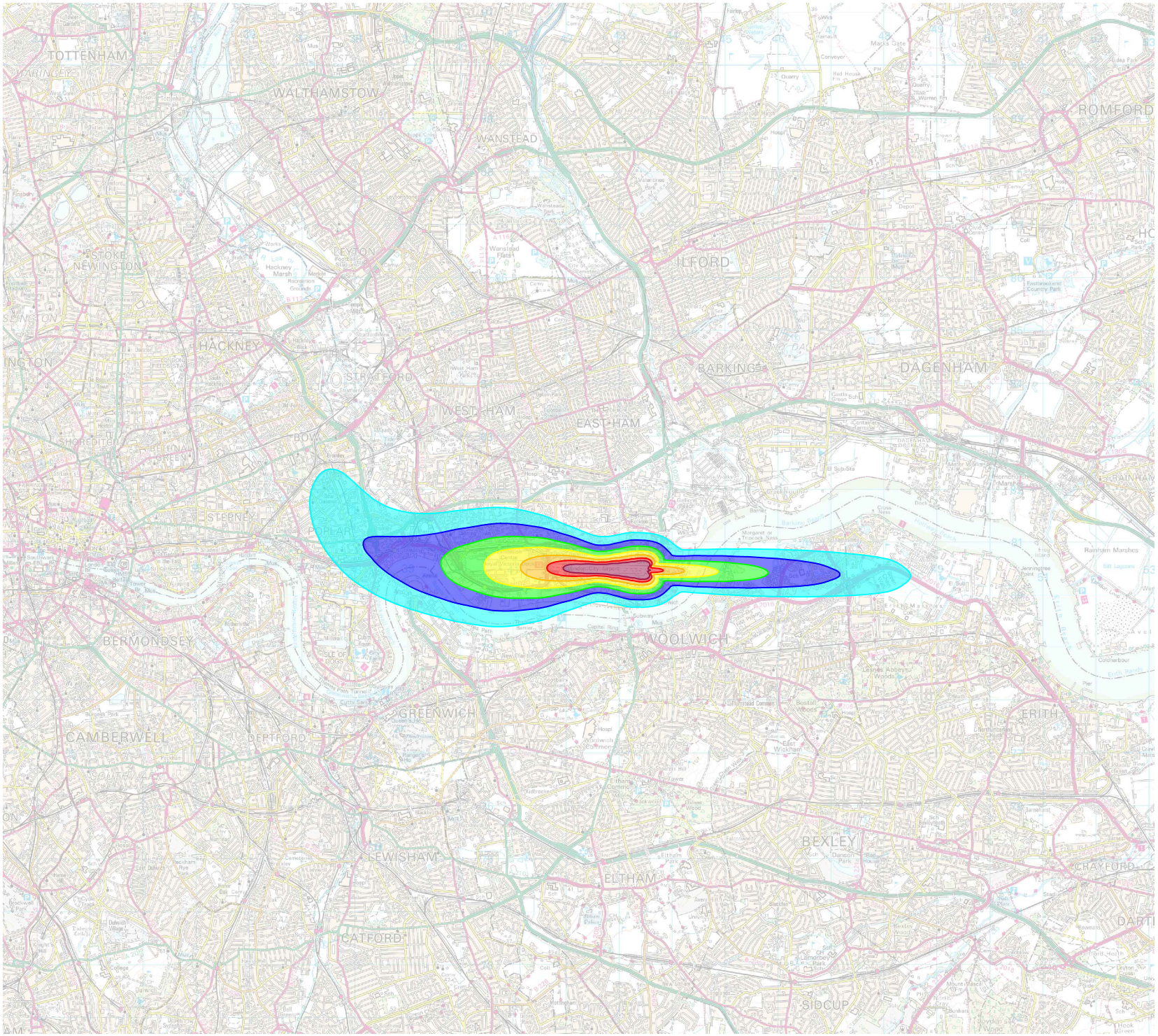
Figure 8.3.79
Westerly Mode Summer Weekend Noise Contours - 2031 DM Scenario

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:100,000@A4

FIGURE No:

A11407_09_DR079_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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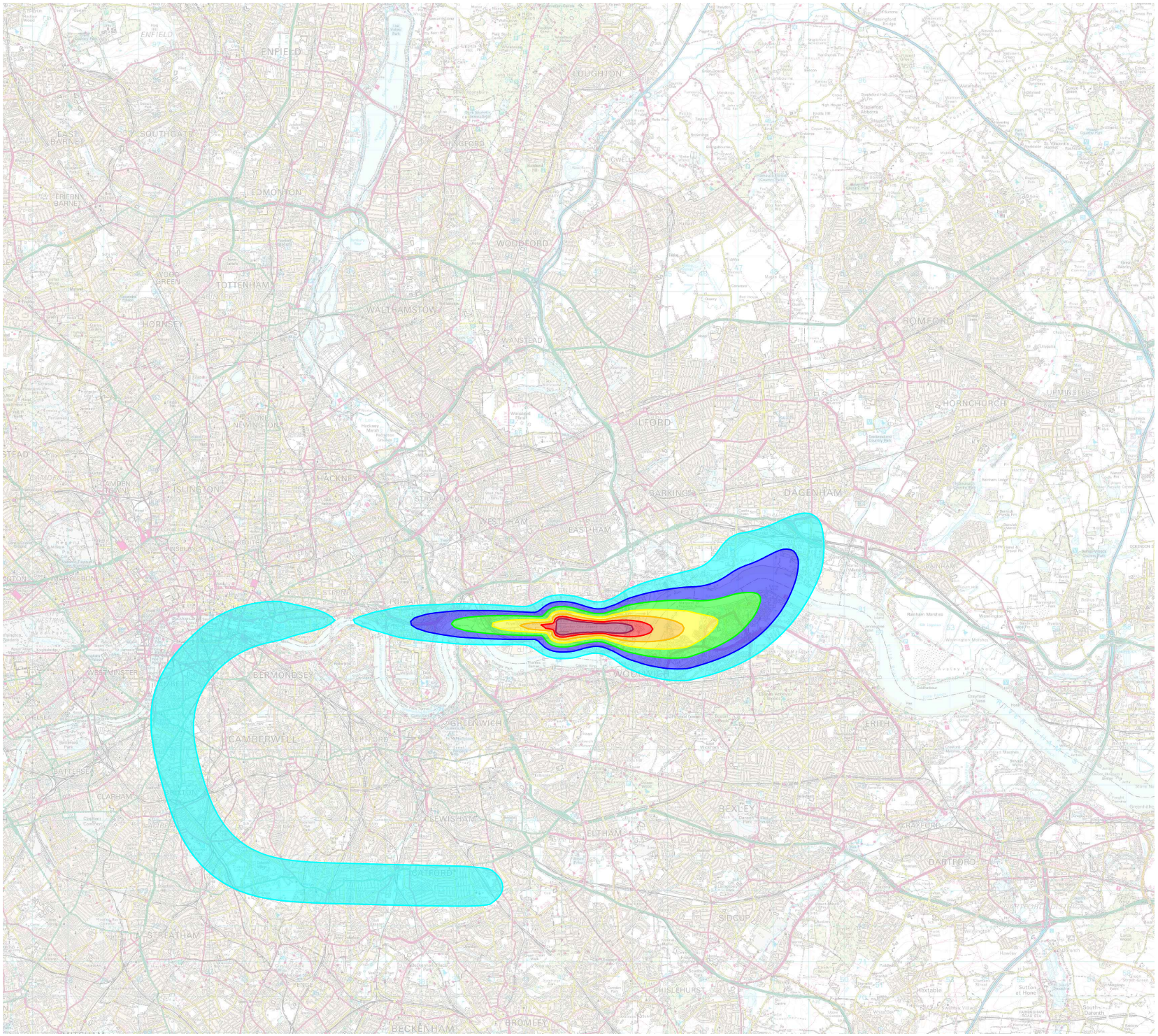
Figure 8.3.80
Westerly Mode Summer Weekend Noise Contours - 2031 DC Scenario

DRAWN: MP CHECKED: DR

DATE: December 2022 SCALE: 1:100,000@A4

FIGURE No:

A11407_09_DR080_2.0



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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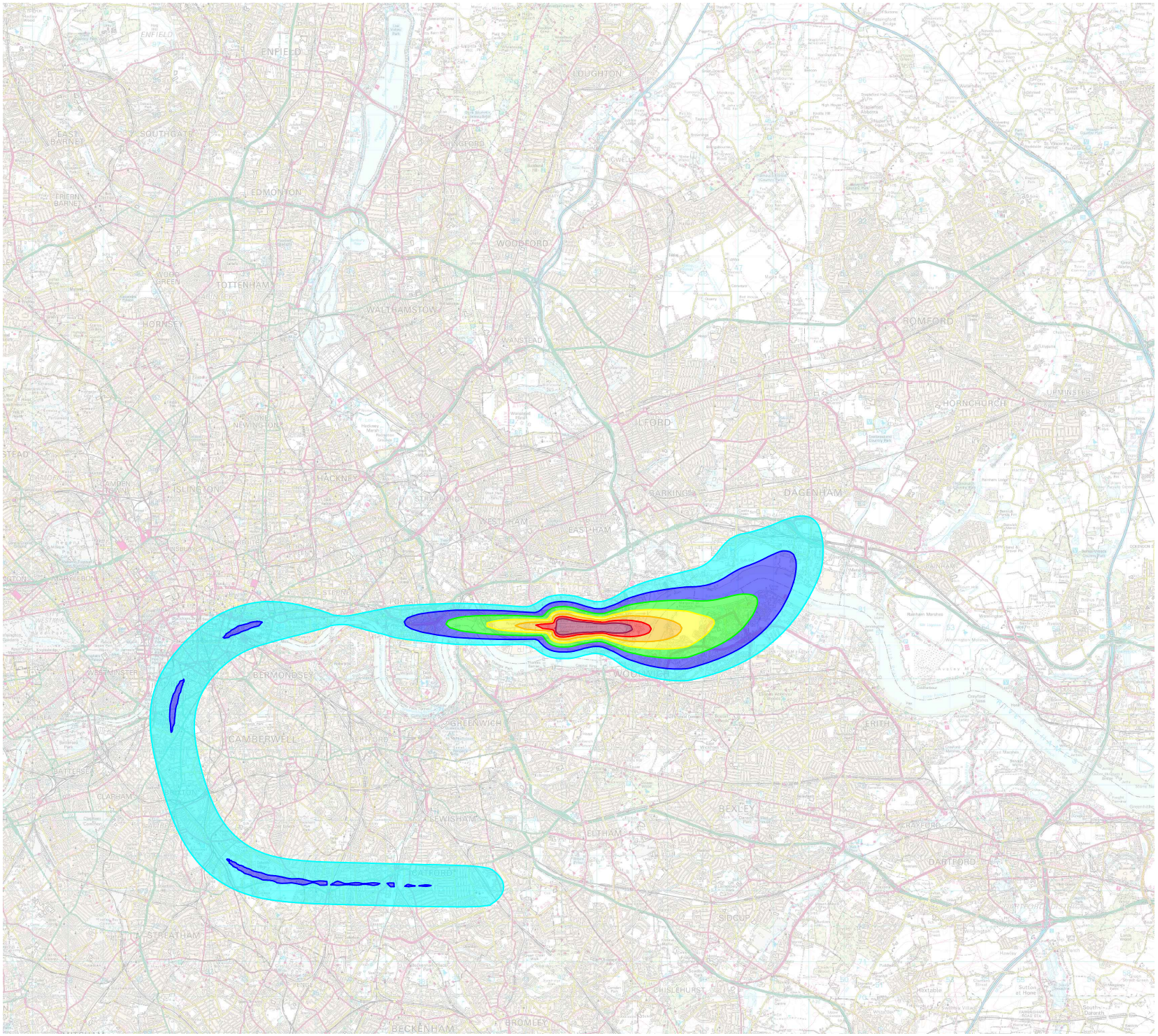
Figure 8.3.81
Easterly Mode Summer Day Noise Contours
2019 Actual

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:150,000@A4

FIGURE No:

A11407_09_DR081_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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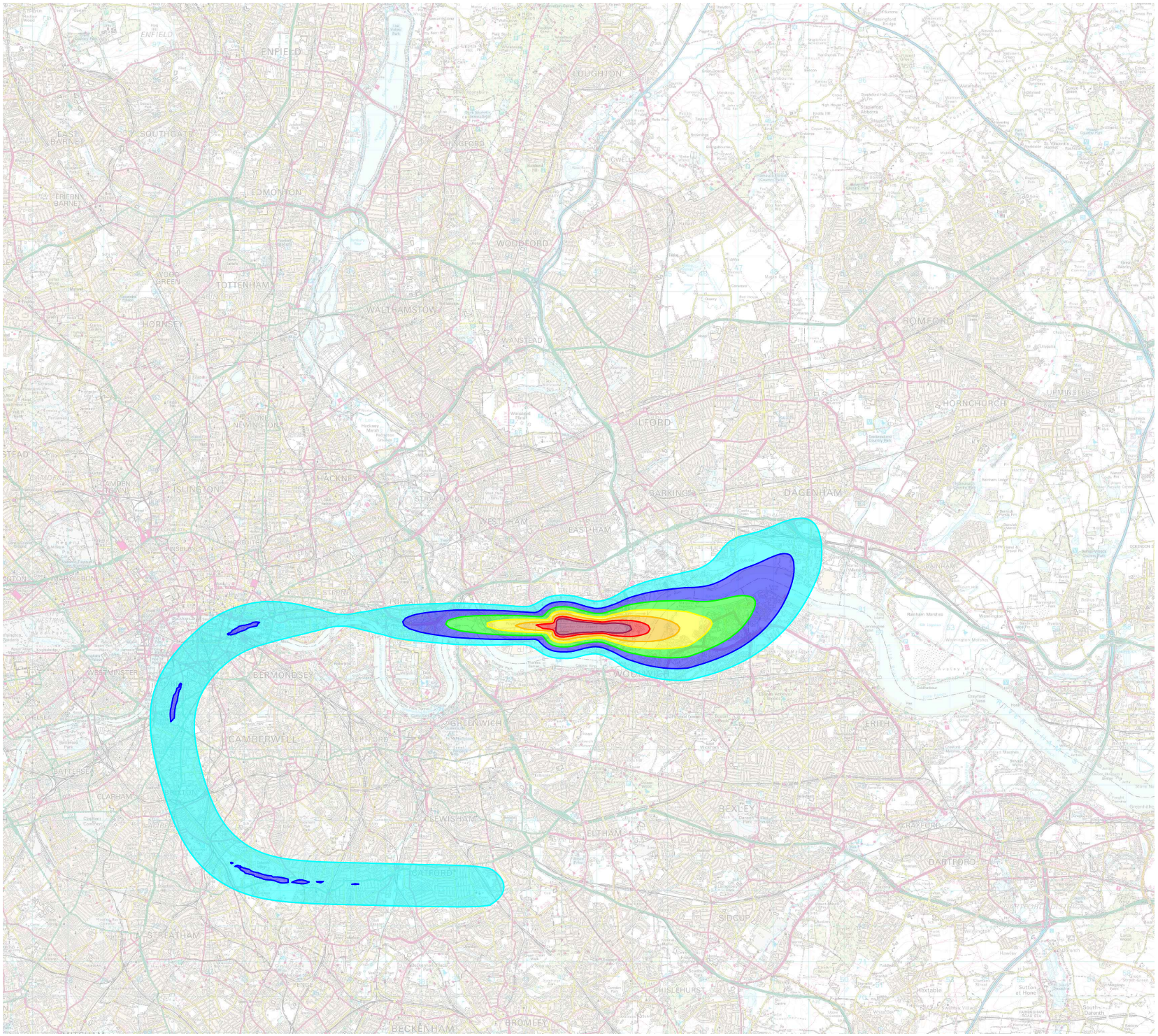
Figure 8.3.82
Easterly Mode Summer Day Noise Contours
2025 DM Scenario

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:150,000@A4

FIGURE No:

A11407_09_DR082_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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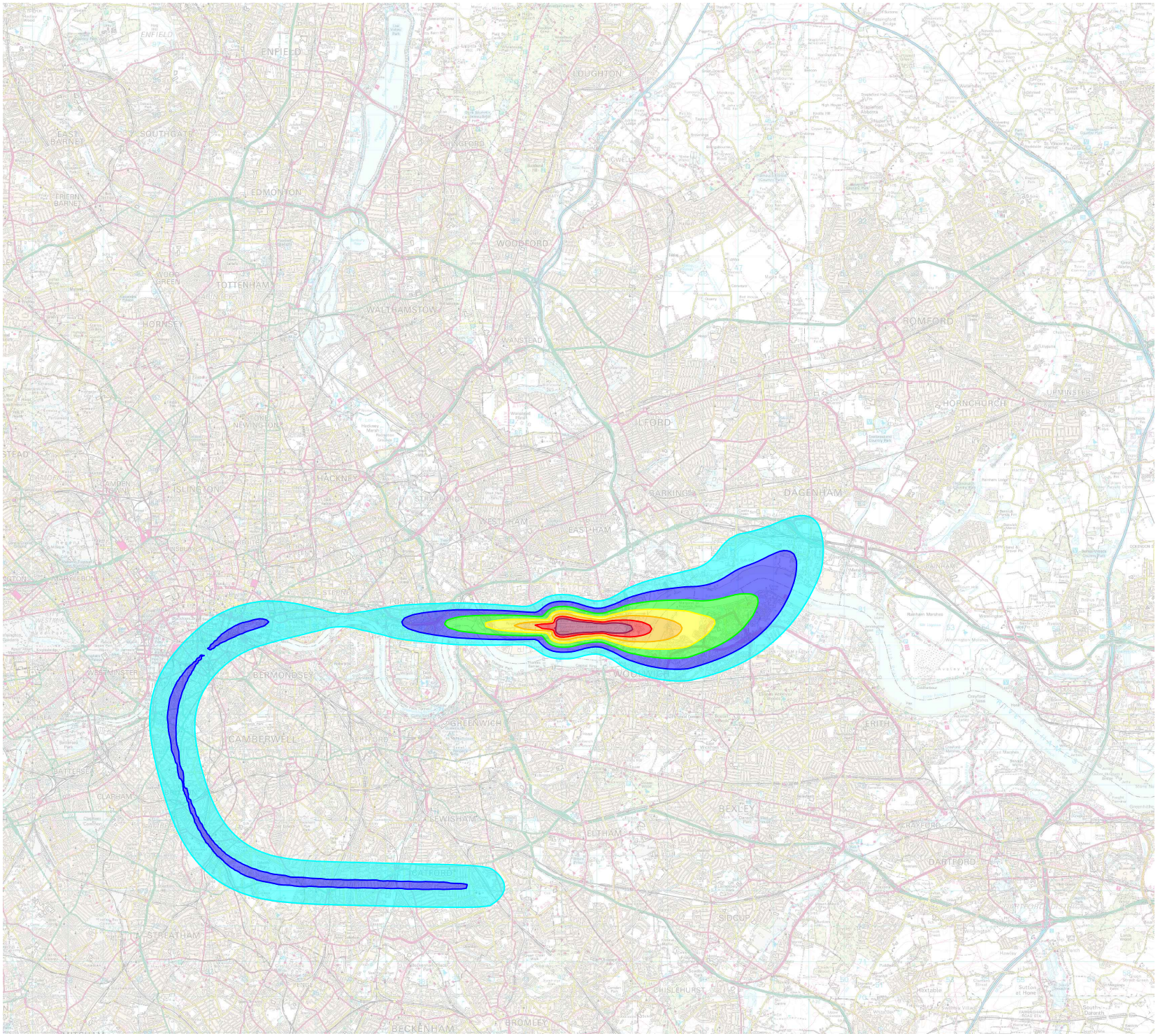
Figure 8.3.83
Easterly Mode Summer Day Noise Contours
2025 DC Scenario

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:150,000@A4

FIGURE No:

A11407_09_DR083_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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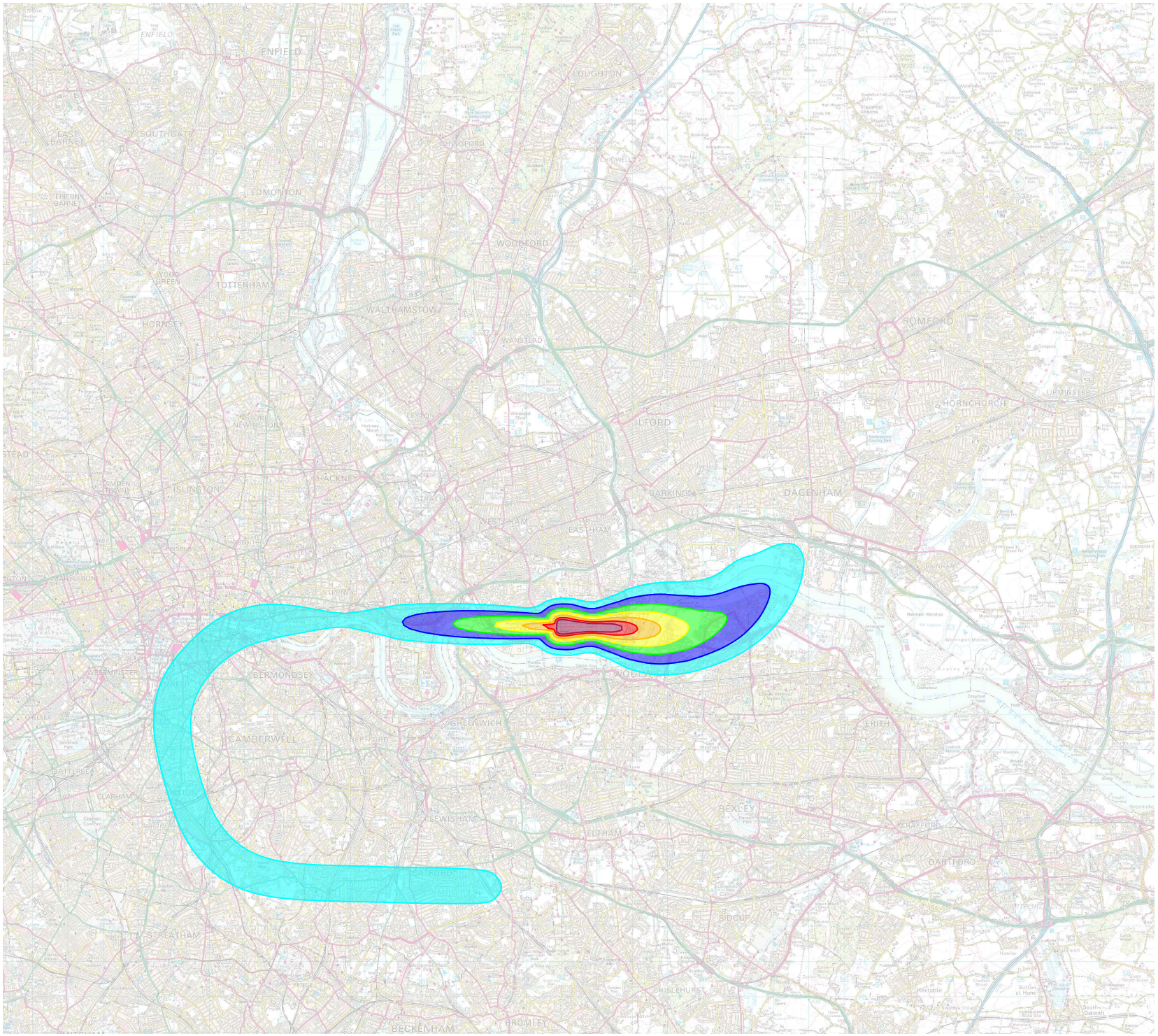
Figure 8.3.84
Easterly Mode Summer Day Noise Contours
2027 DM Scenario

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:150,000@A4

FIGURE No:

A11407_09_DR084_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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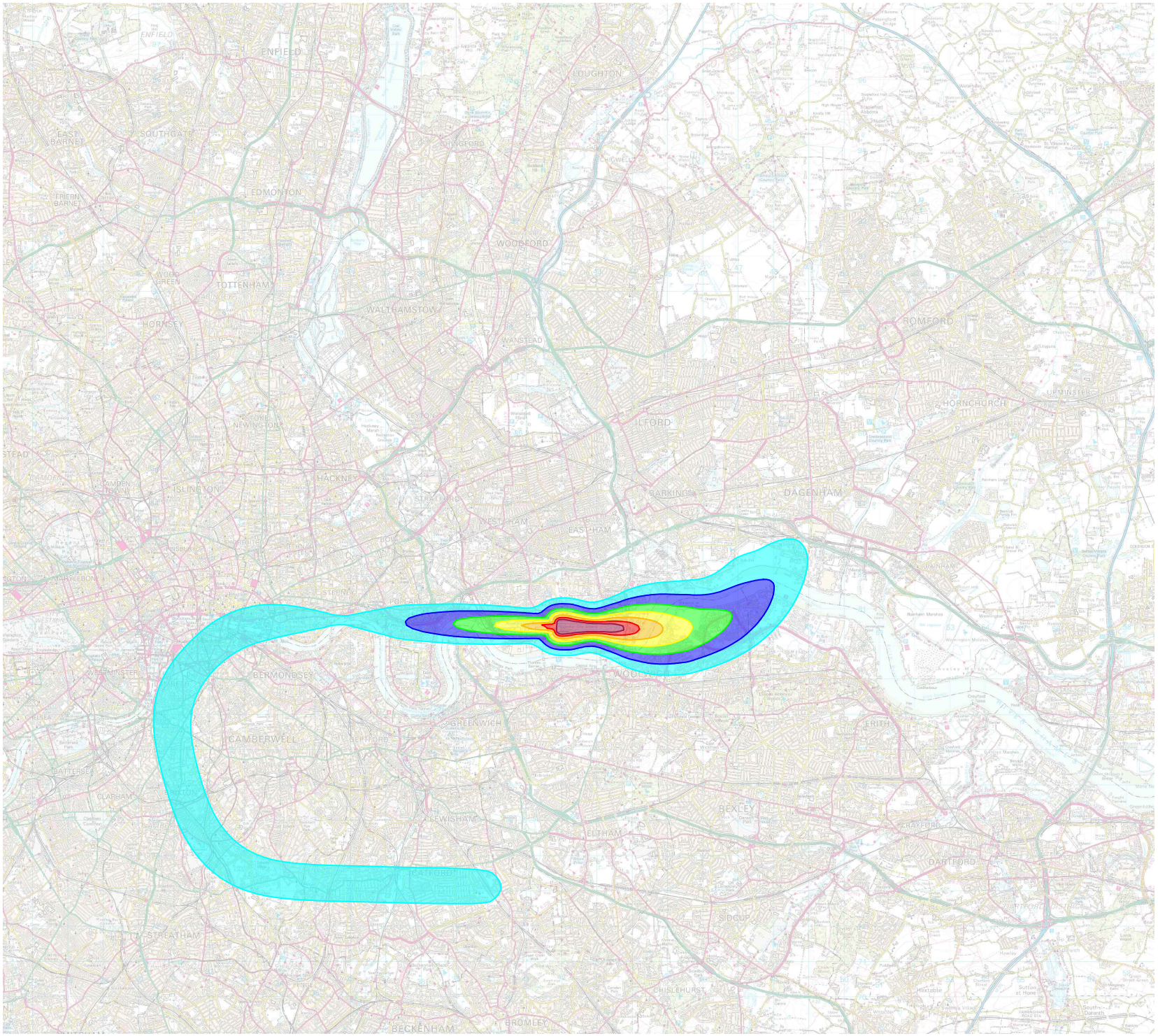
Figure 8.3.85
Easterly Mode Summer Day Noise Contours
2027 DC Scenario

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:150,000@A4

FIGURE No:

A11407_09_DR085_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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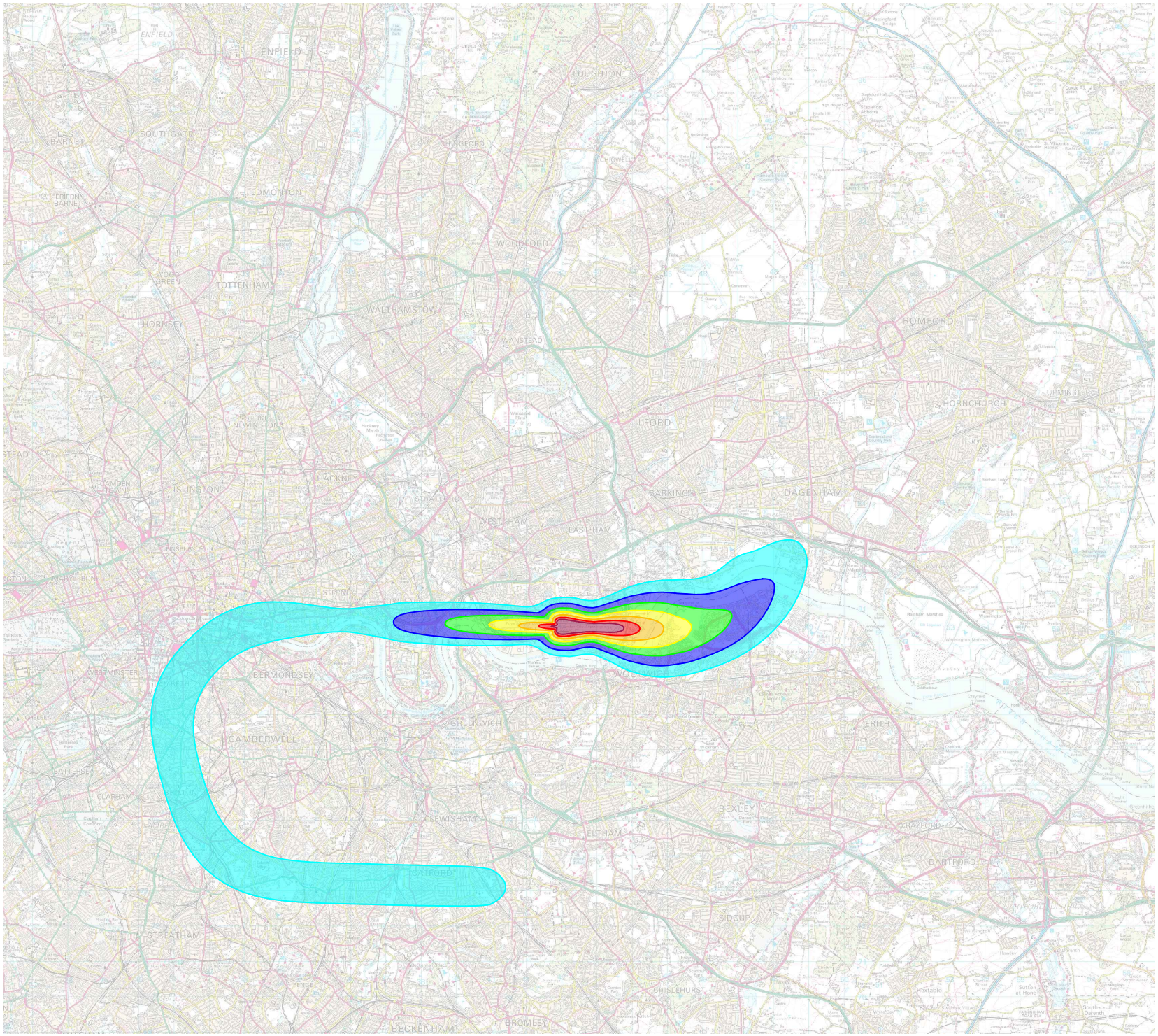
Figure 8.3.86
Easterly Mode Summer Day Noise Contours
2031 DM Scenario

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:150,000@A4

FIGURE No:

A11407_09_DR086_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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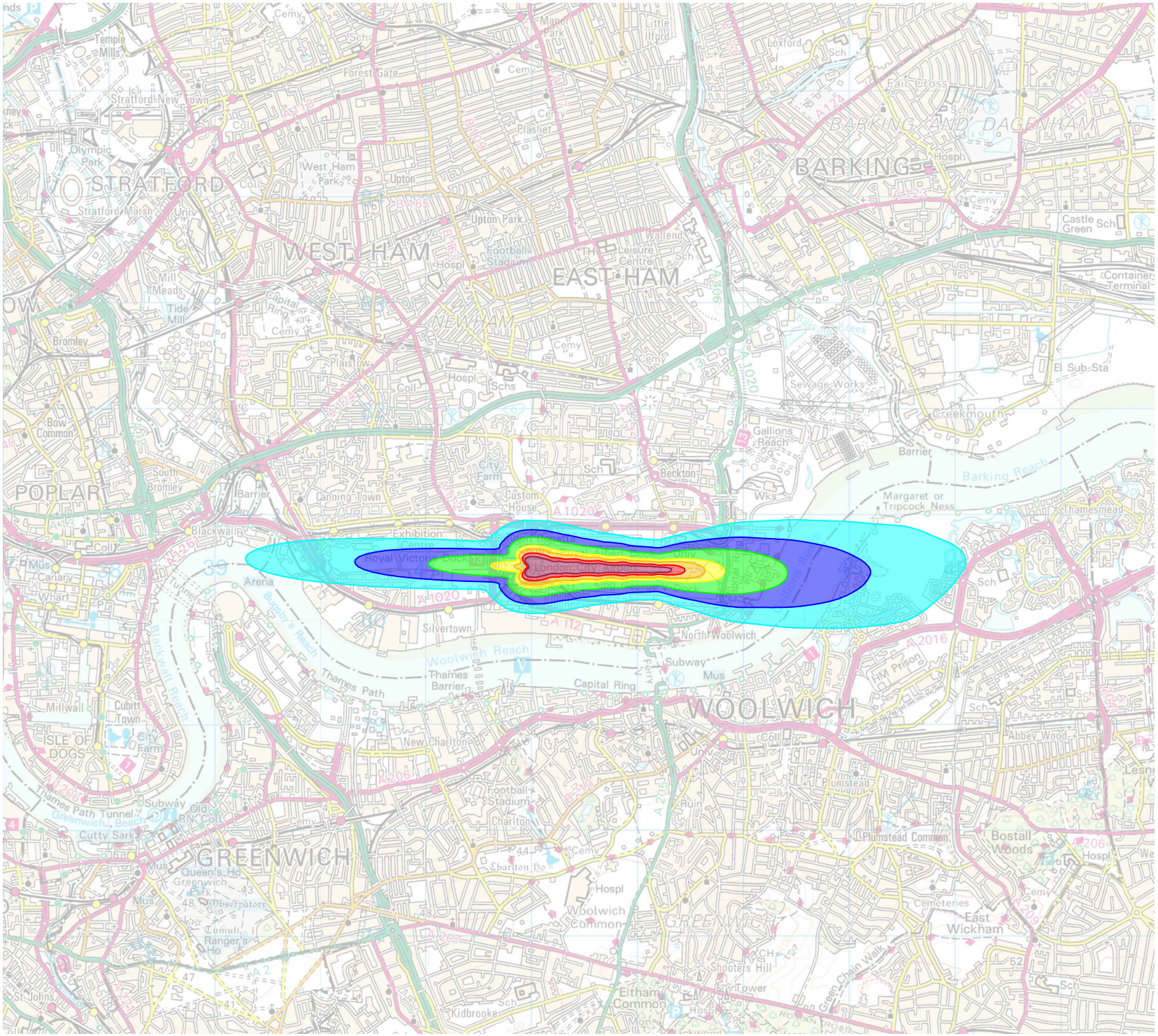
Figure 8.3.87
Easterly Mode Summer Day Noise Contours
2031 DC Scenario

DRAWN: MP CHECKED: DR

DATE: December 2022 SCALE: 1:150,000@A4

FIGURE No:

A11407_09_DR087_2.0



LEGEND:

- 45 - 47.9 dB(A) $L_{Aeq,8h}$
- 48 - 50.9 dB(A) $L_{Aeq,8h}$
- 51 - 54.9 dB(A) $L_{Aeq,8h}$
- 55 - 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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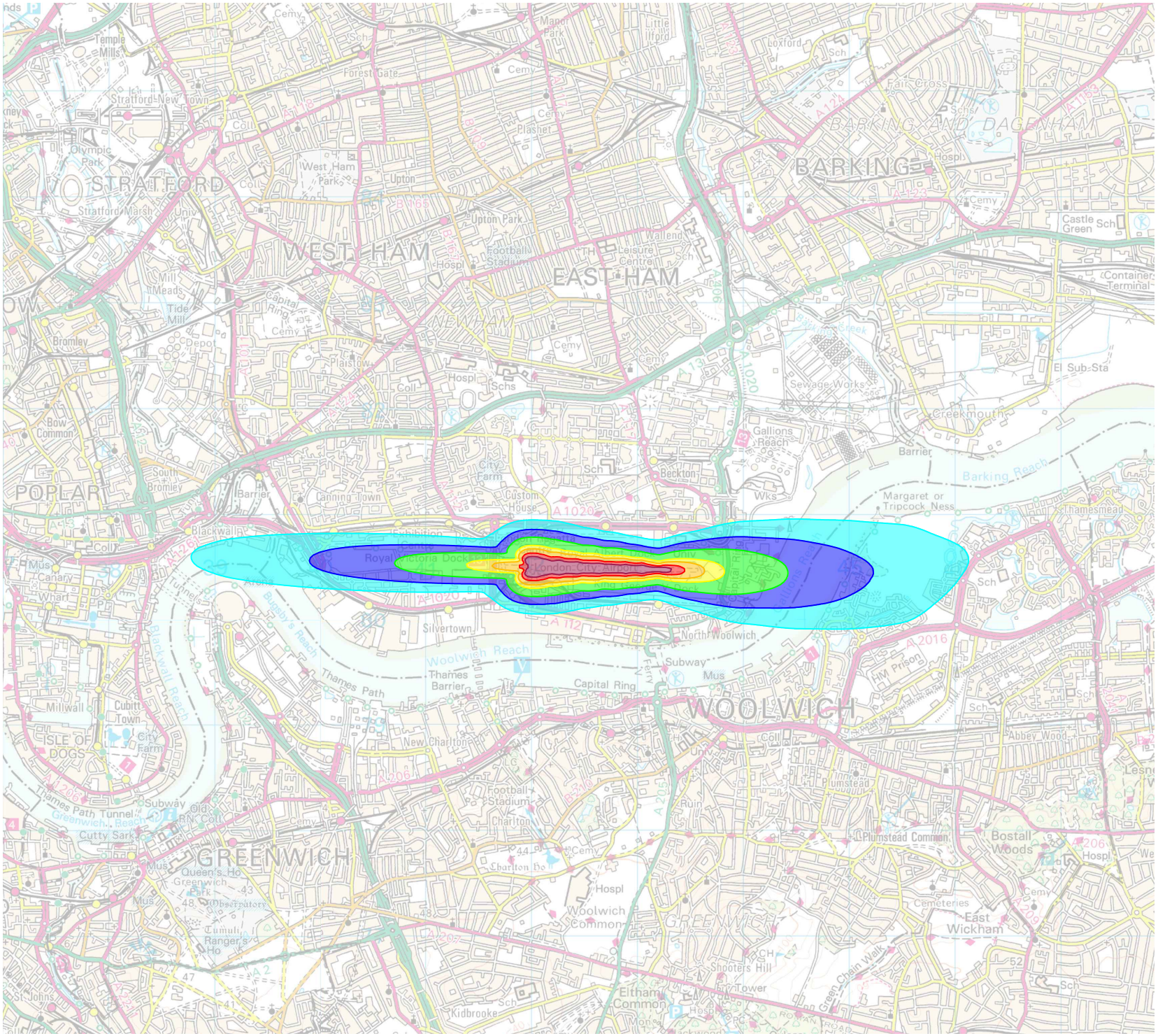
Figure 8.3.88
Easterly Mode Summer Night Noise Contours - 2019 Actual

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:50,000@A4

FIGURE No:

A11407_09_DR088_1.0



LEGEND:

- 45 - 47.9 dB(A) $L_{Aeq,8h}$
- 48 - 50.9 dB(A) $L_{Aeq,8h}$
- 51 - 54.9 dB(A) $L_{Aeq,8h}$
- 55 - 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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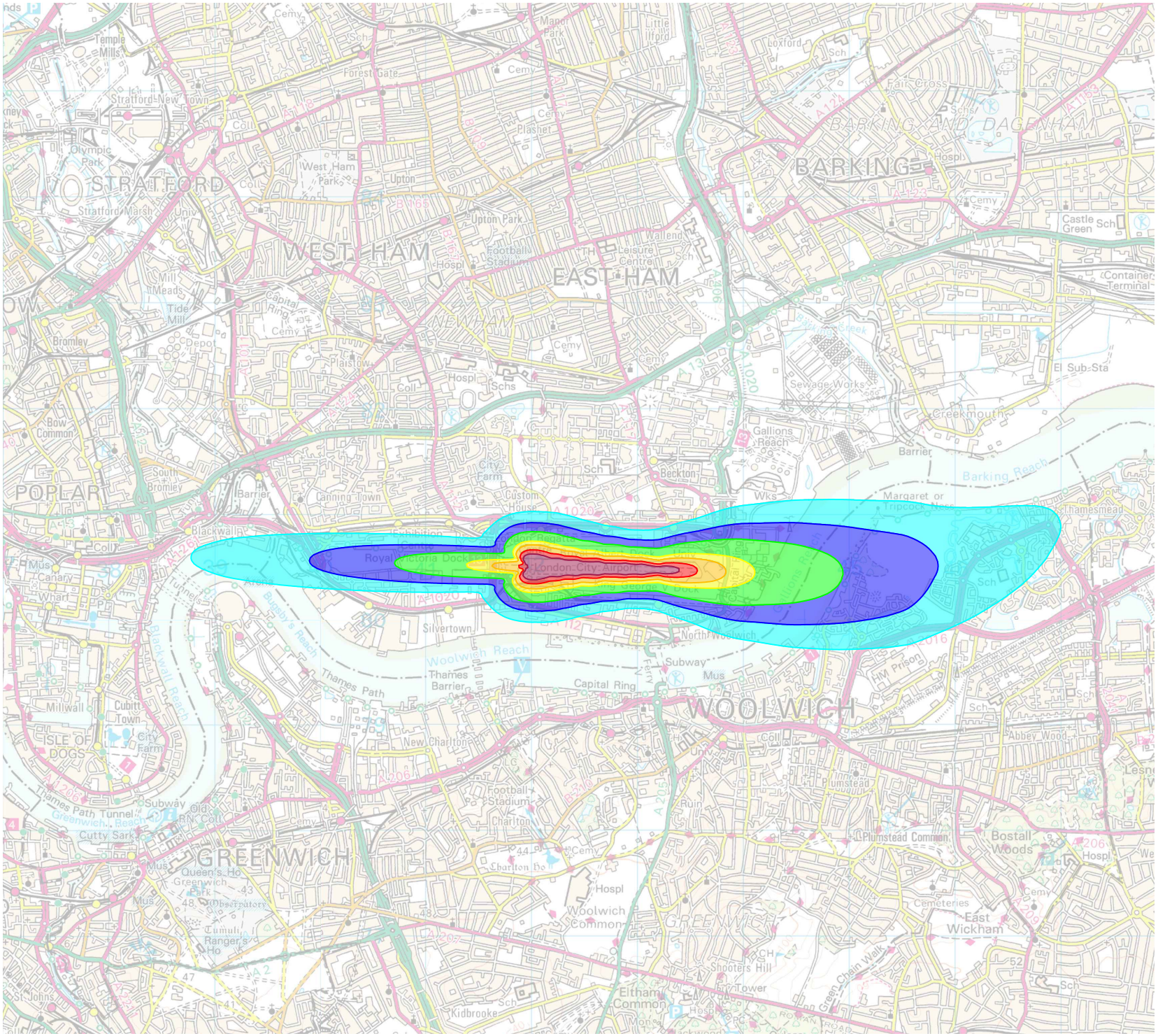
Figure 8.3.89
Easterly Mode Summer Night Noise Contours - 2025 DM Scenario

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:50,000@A4

FIGURE No:

A11407_09_DR089_1.0



LEGEND:

- 45 - 47.9 dB(A) $L_{Aeq,8h}$
- 48 - 50.9 dB(A) $L_{Aeq,8h}$
- 51 - 54.9 dB(A) $L_{Aeq,8h}$
- 55 - 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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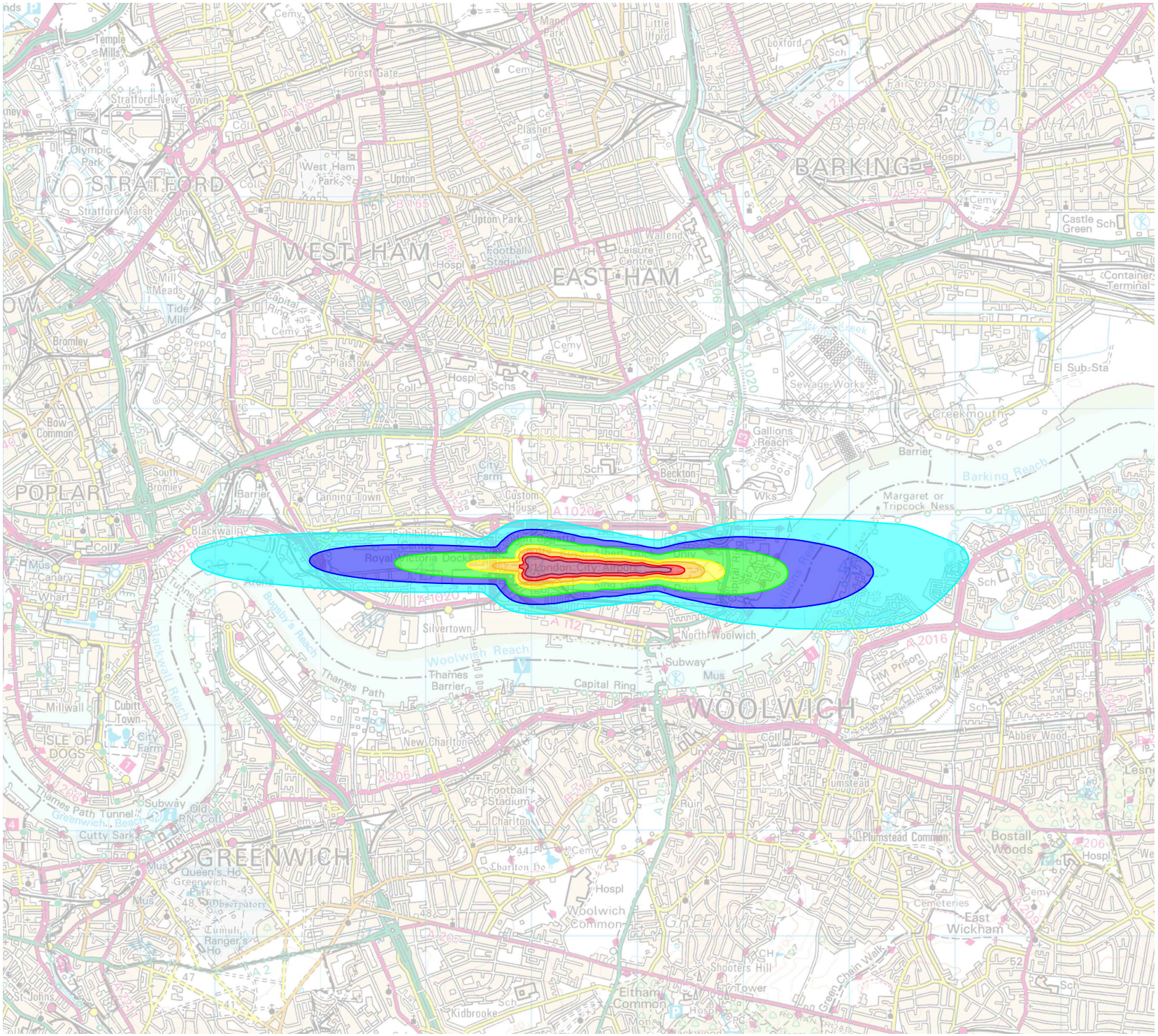
Figure 8.3.90
Easterly Mode Summer Night Noise Contours - 2025 DC Scenario

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:50,000@A4

FIGURE No:

A11407_09_DR090_1.0



LEGEND:

- 45 - 47.9 dB(A) $L_{Aeq,8h}$
- 48 - 50.9 dB(A) $L_{Aeq,8h}$
- 51 - 54.9 dB(A) $L_{Aeq,8h}$
- 55 - 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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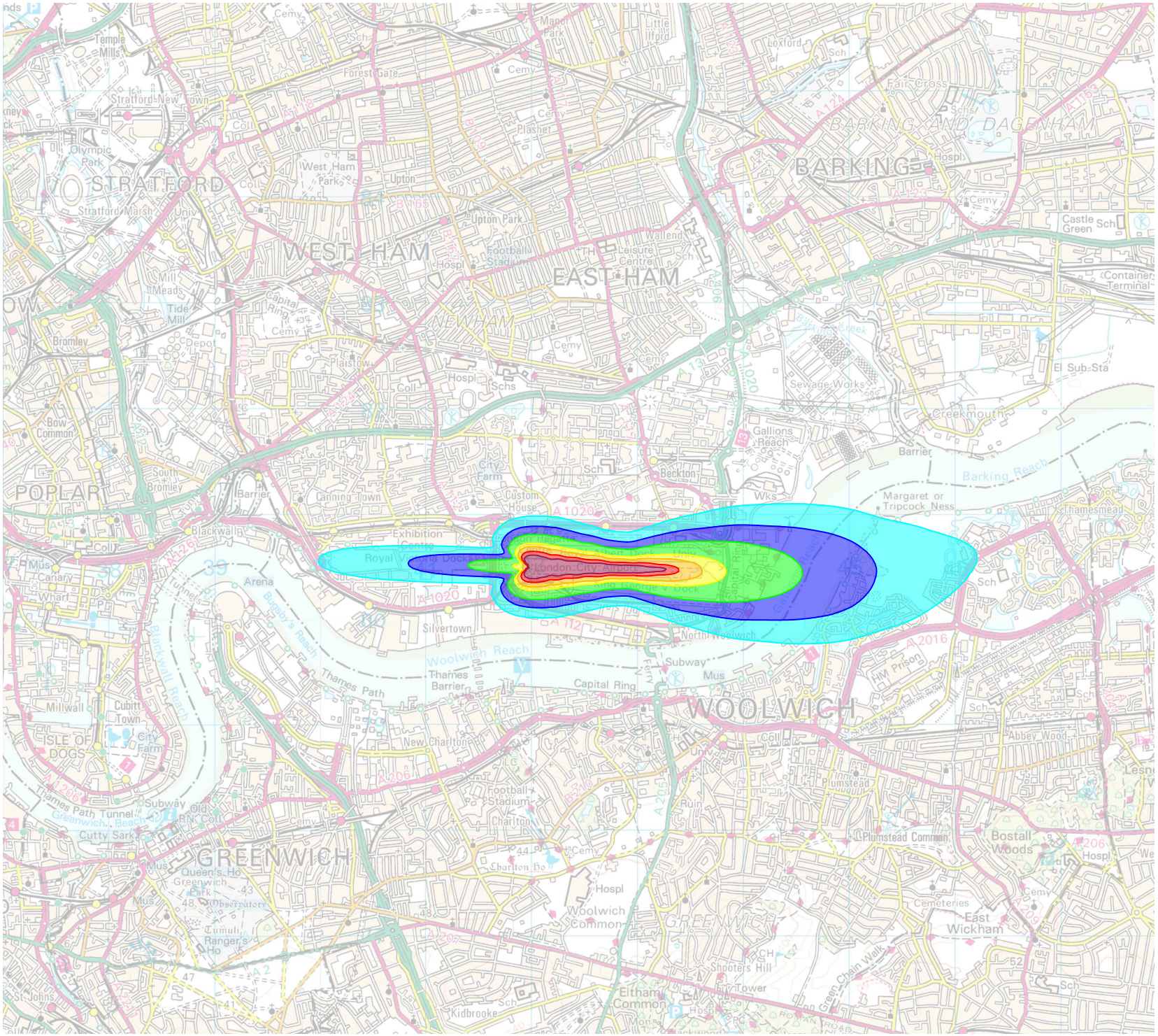
Figure 8.3.91
Easterly Mode Summer Night Noise Contours - 2027 DM Scenario

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:50,000@A4

FIGURE No:

A11407_09_DR091_1.0



LEGEND:

- 45 - 47.9 dB(A) $L_{Aeq,8h}$
- 48 - 50.9 dB(A) $L_{Aeq,8h}$
- 51 - 54.9 dB(A) $L_{Aeq,8h}$
- 55 - 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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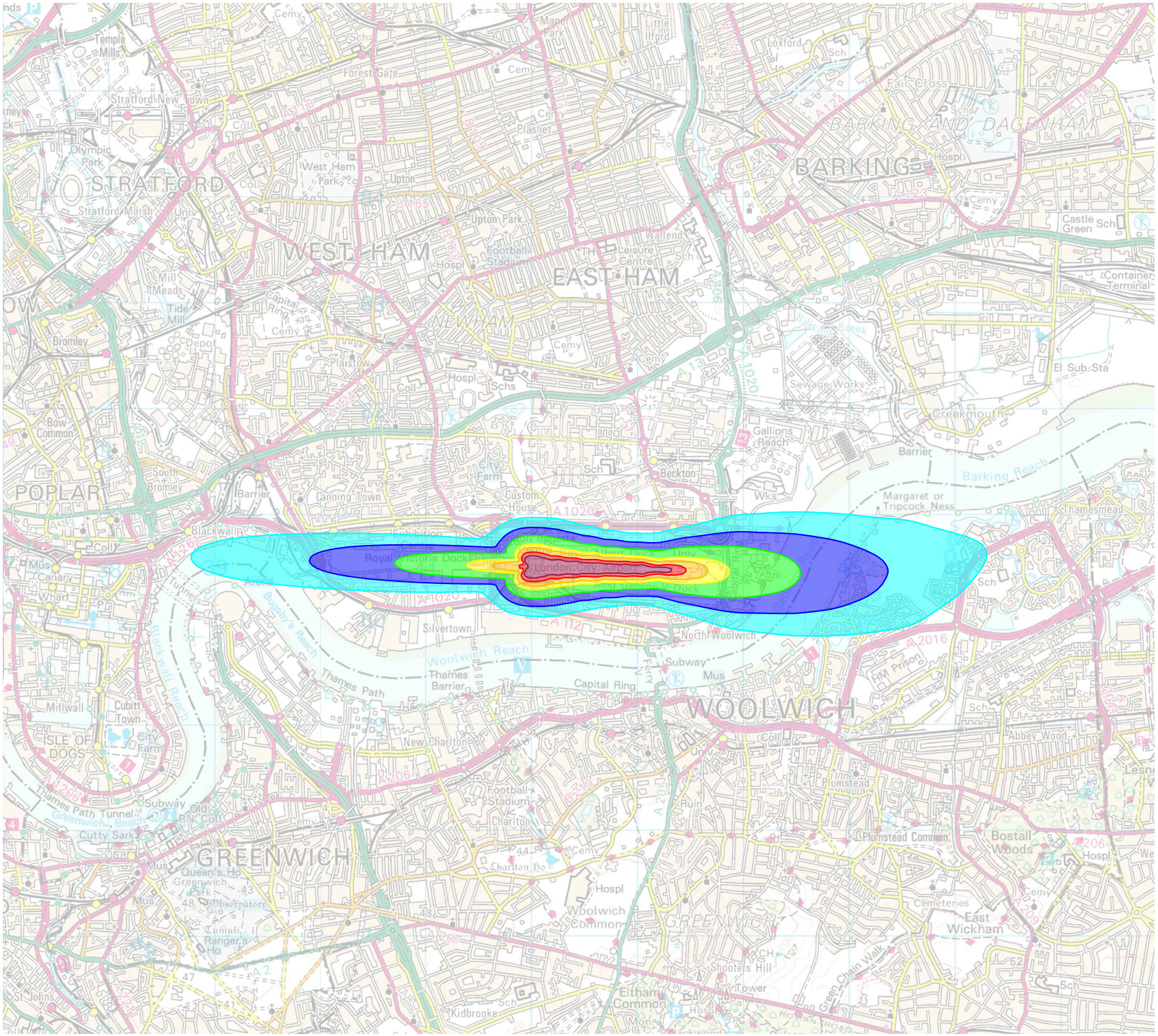
Figure 8.3.92
Easterly Mode Summer Night Noise Contours - 2027 DC Scenario

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:50,000@A4

FIGURE No:

A11407_09_DR092_1.0



LEGEND:

- 45 - 47.9 dB(A) $L_{Aeq,8h}$
- 48 - 50.9 dB(A) $L_{Aeq,8h}$
- 51 - 54.9 dB(A) $L_{Aeq,8h}$
- 55 - 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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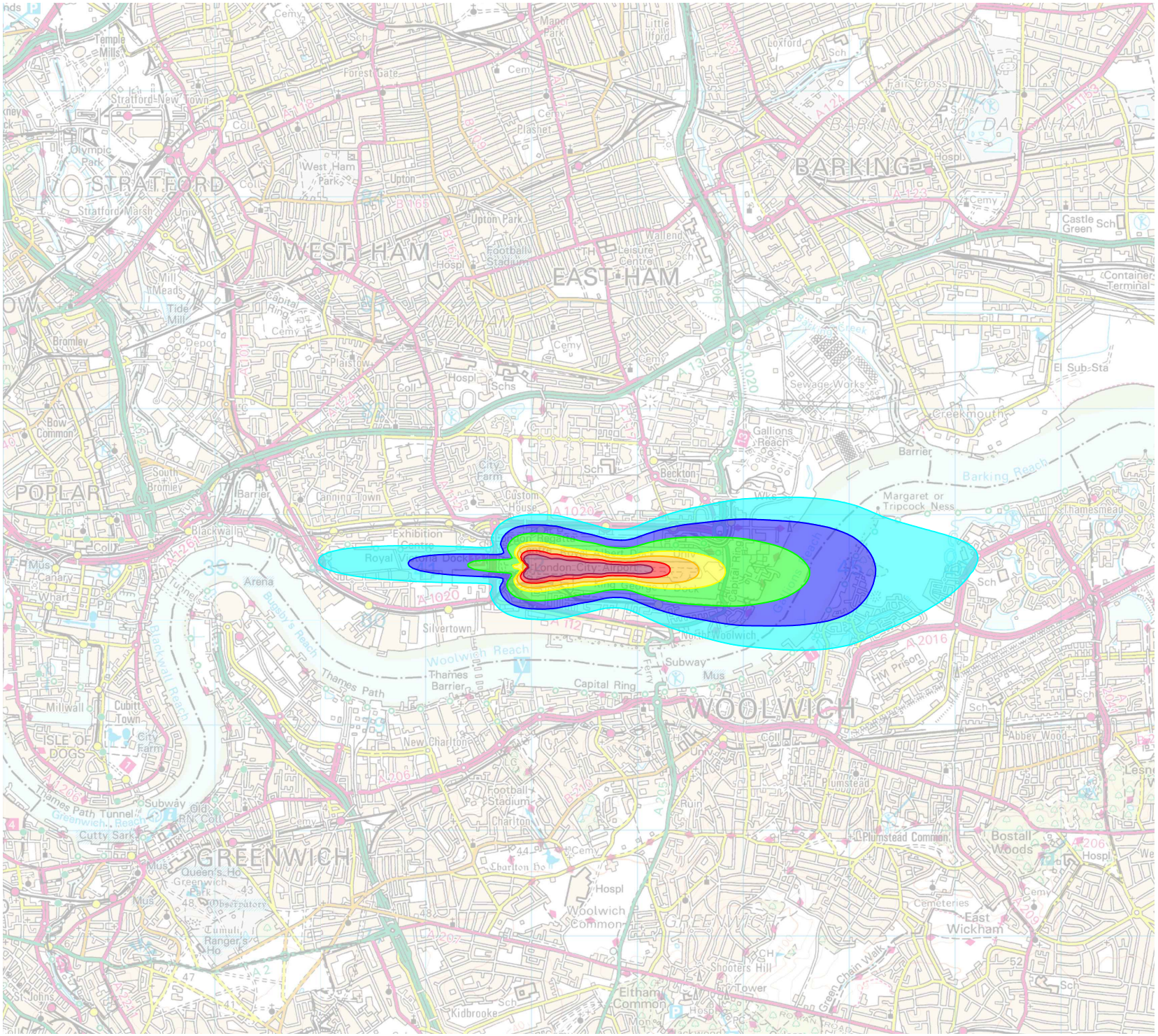
Figure 8.3.93
Easterly Mode Summer Night Noise Contours - 2031 DM Scenario

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:50,000@A4

FIGURE No:

A11407_09_DR093_1.0



LEGEND:

- 45 - 47.9 dB(A) $L_{Aeq,8h}$
- 48 - 50.9 dB(A) $L_{Aeq,8h}$
- 51 - 54.9 dB(A) $L_{Aeq,8h}$
- 55 - 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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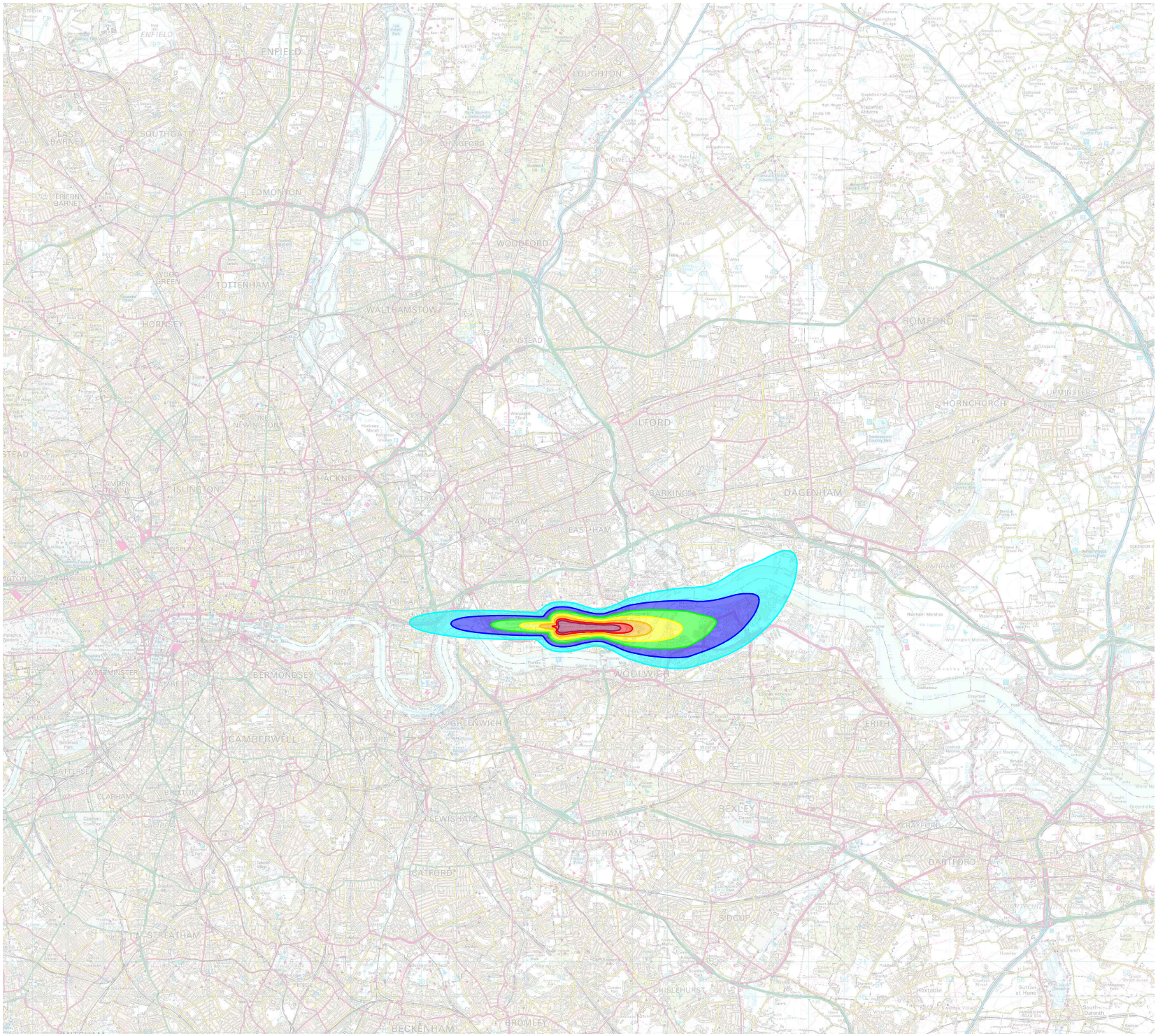
Figure 8.3.94
Easterly Mode Summer Night Noise Contours - 2031 DC Scenario

DRAWN: MG CHECKED: DC

DATE: November 2022 SCALE: 1:50,000@A4

FIGURE No:

A11407_09_DR094_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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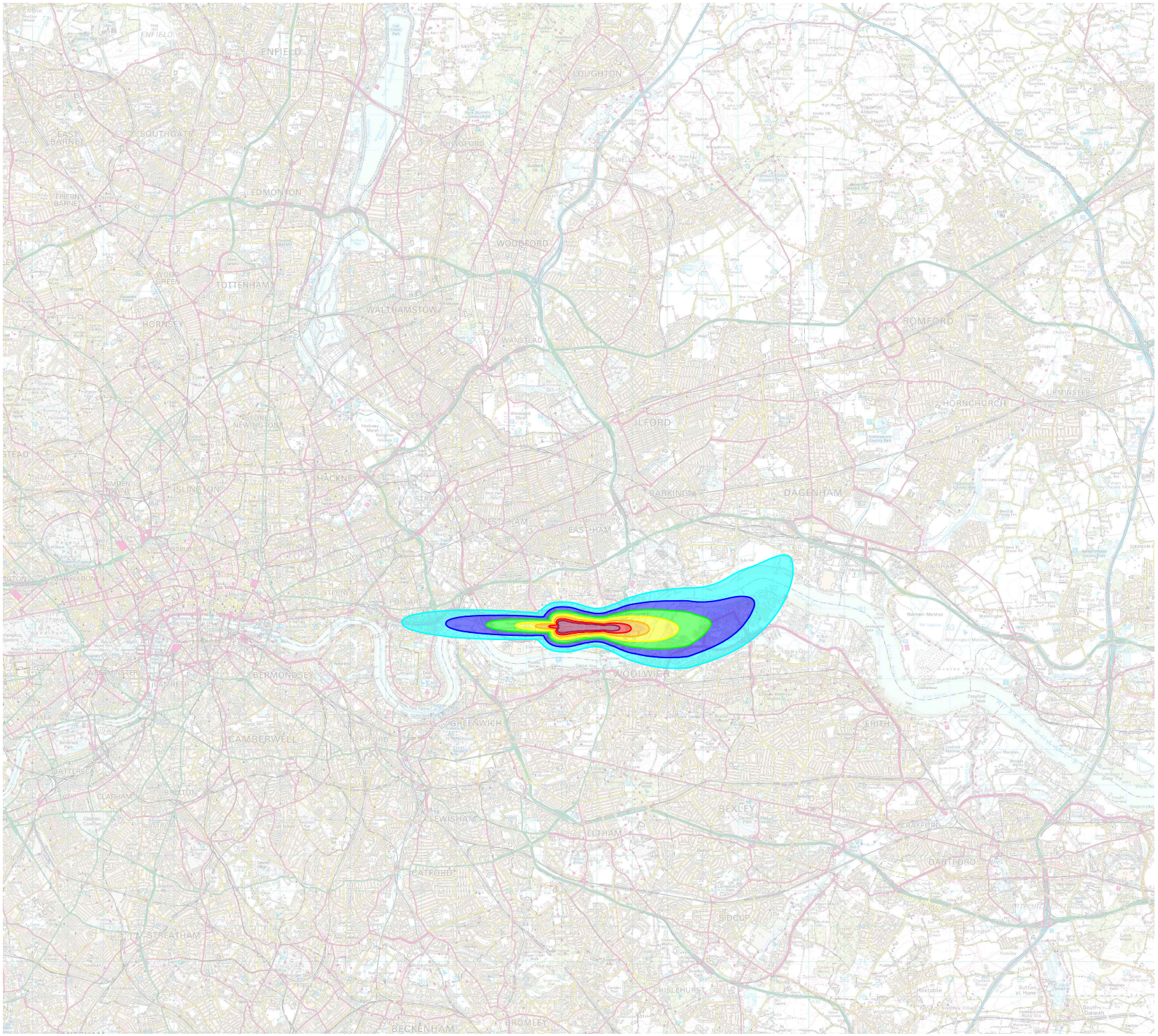
Figure 8.3.95
Easterly Mode Summer Weekend Noise Contours - 2019 Actual

DRAWN: MP CHECKED: DR

DATE: December 2022 SCALE: 1:150,000@A4

FIGURE No:

A11407_09_DR095_2.0



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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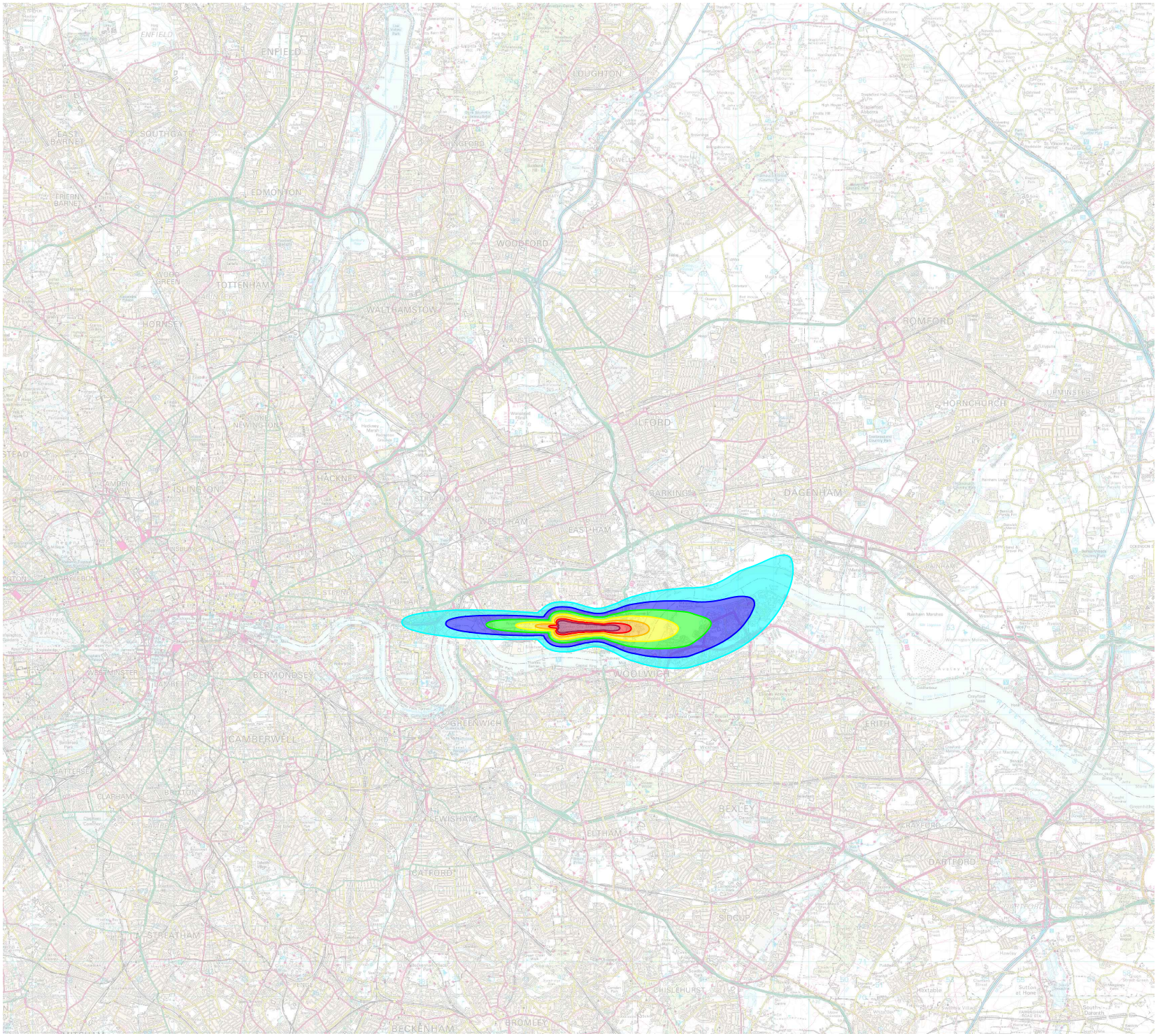
Figure 8.3.96
Easterly Mode Summer Weekend Noise Contours - 2025 DM Scenario

DRAWN: MP CHECKED: DR

DATE: December 2022 SCALE: 1:150,000@A4

FIGURE No:

A11407_09_DR096_2.0



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 8.3.97
Easterly Mode Summer Weekend Noise Contours - 2025 DC Scenario

DRAWN: MP CHECKED: DR

DATE: December 2022 SCALE: 1:150,000@A4

FIGURE No:

A11407_09_DR097_2.0

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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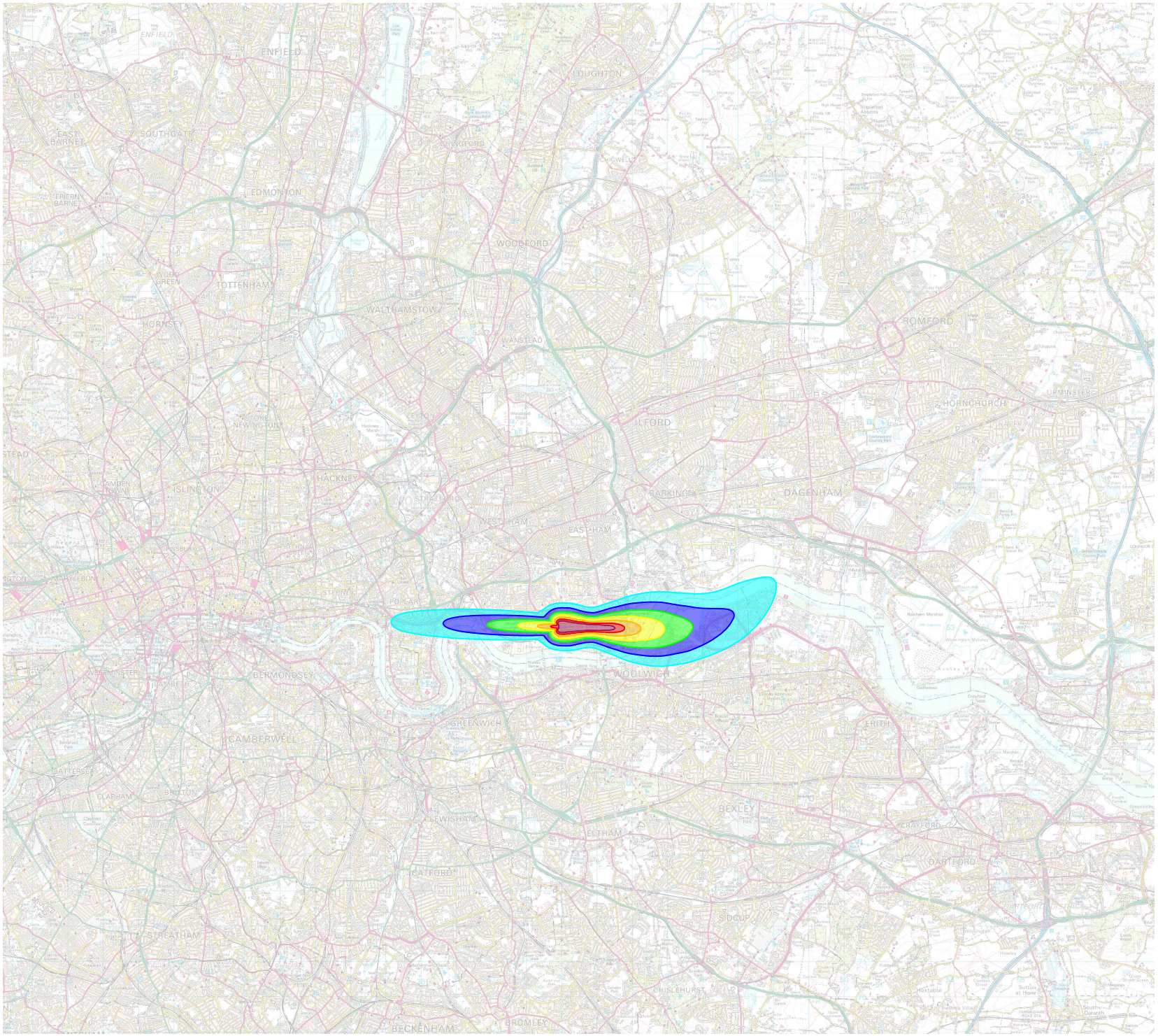
Figure 8.3.98
Easterly Mode Summer Weekend Noise Contours - 2027 DM Scenario

DRAWN: MP CHECKED: DR

DATE: December 2022 SCALE: 1:150,000@A4

FIGURE No:

A11407_09_DR098_2.0



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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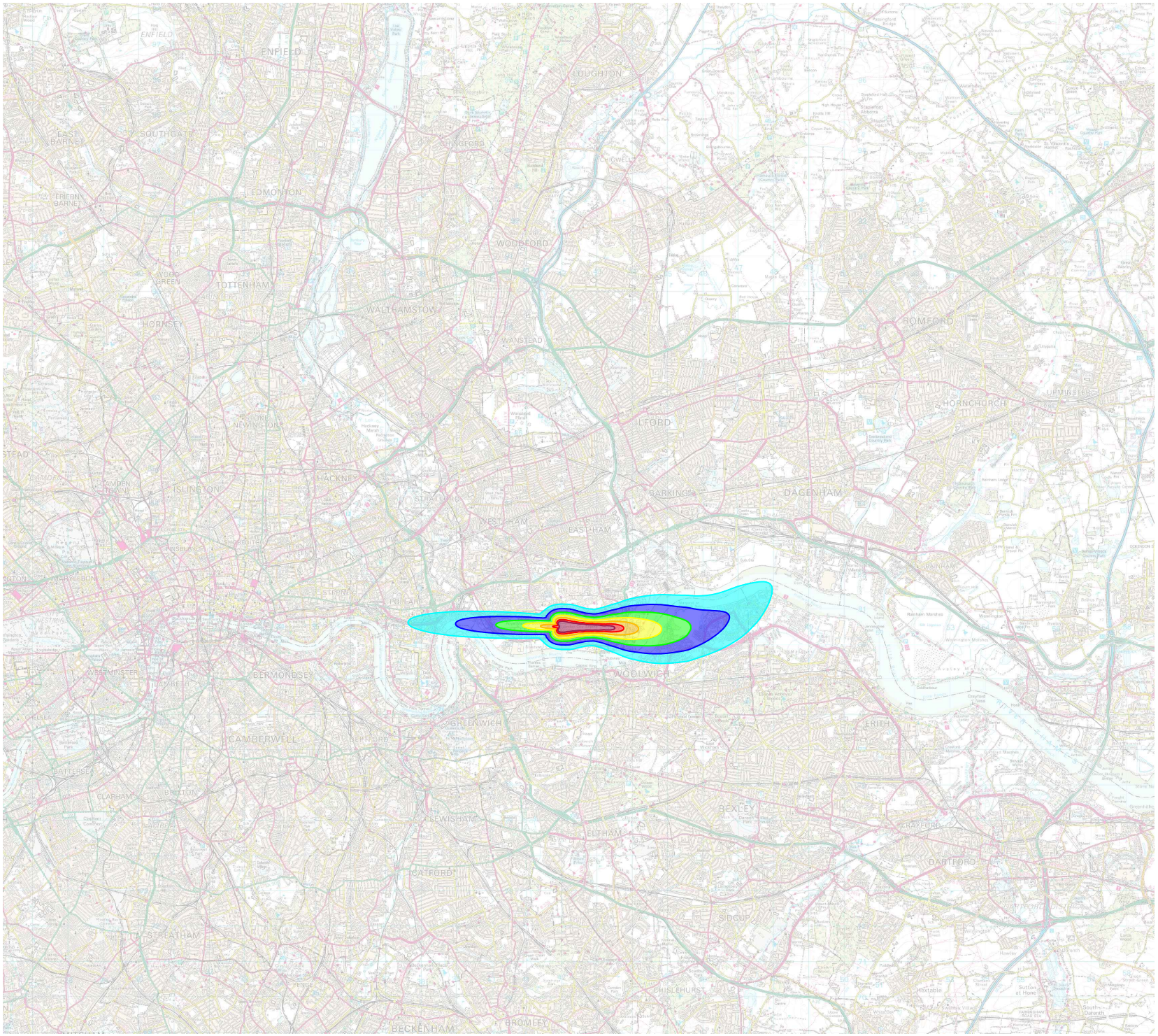
Figure 8.3.99
Easterly Mode Summer Weekend Noise Contours - 2027 DC Scenario

DRAWN: MP CHECKED: DR

DATE: December 2022 SCALE: 1:150,000@A4

FIGURE No:

A11407_09_DR099_2.0



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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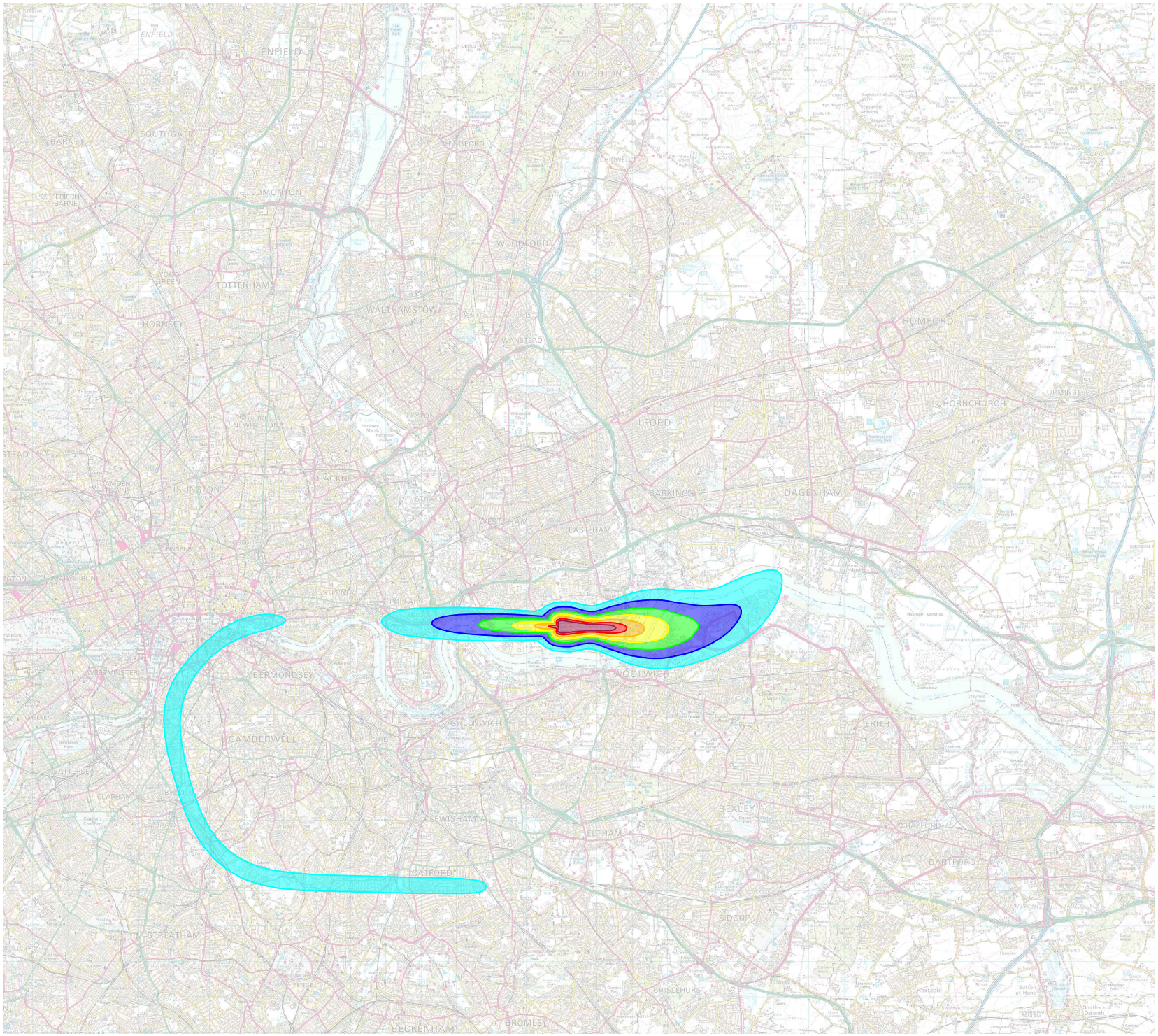
Figure 8.3.100
Easterly Mode Summer Weekend Noise Contours - 2031 DM Scenario

DRAWN: MP CHECKED: DR

DATE: December 2022 SCALE: 1:150,000@A4

FIGURE No:

A11407_09_DR100_2.0



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) $L_{Aeq,16h}$

REVISIONS

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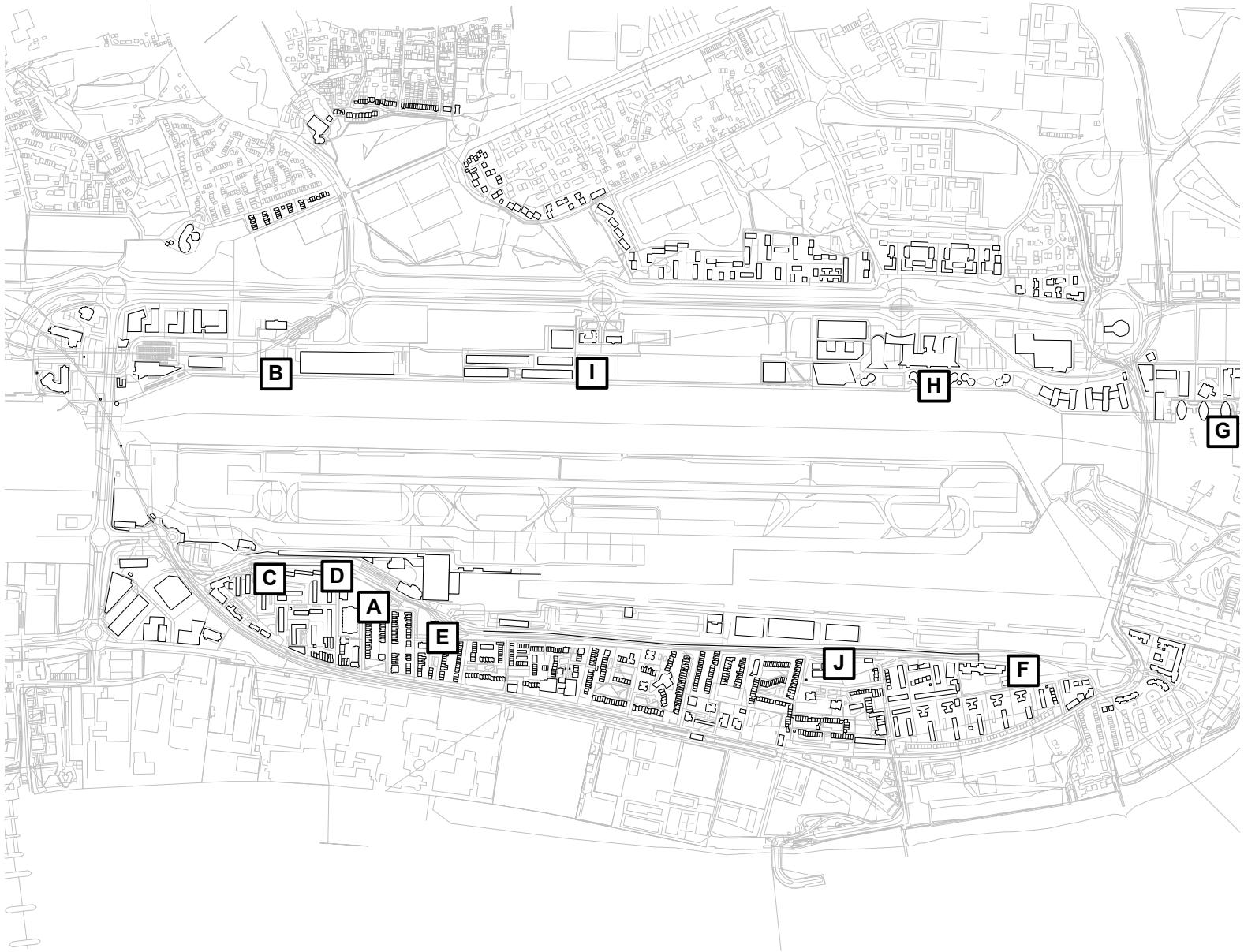
Figure 8.3.101
Easterly Mode Summer Weekend Noise Contours - 2031 DC Scenario

DRAWN: MP CHECKED: DR

DATE: December 2022 SCALE: 1:150,000@A4

FIGURE No:

A11407_09_DR0101_2.0



Legend:

[X] Representative Locations

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Figure 8.4.1

Ground Noise
Representative Locations

Drawn: MP **Checked: DC**

Date: November 2022 **Scale: 1:12,500 @ A4**

Figure Ref.:

A11407_10_CA002_1.0 (01)