Chapter 17: Noise

A. INTRODUCTION

This chapter assesses the potential for the Proposed Actions to result in significant adverse noise impacts. The analysis determines whether the Proposed Actions would result in increases in noise levels that could have a significant adverse impact on nearby sensitive receptors and also considers the effect of existing and future noise levels on the projected and potential developments that could result from the Proposed Actions.

The analysis in Chapter 14, "Transportation," concludes that the Proposed Actions would change traffic volumes in the vicinity of the Project Area. Therefore, a mobile source analysis was conducted to determine whether there are any noise-sensitive locations where project-generated traffic would have the potential to result in significant adverse noise impacts. Furthermore, because the Proposed Actions would introduce new noise-sensitive receptors, an analysis of cumulative noise exposure, including vehicular and rail noise, at these receptors was conducted to determine the necessary level of window/wall attenuation at each projected/potential development site and evaluate noise levels at newly introduced open space.

B. PRINCIPAL CONCLUSIONS

A noise assessment was undertaken to determine the levels of noise attenuation that would be needed to achieve interior noise levels that are acceptable and in accordance with 2021 *City Environmental Quality Review (CEQR) Technical Manual* guidance. With Action Condition $L_{10(1)}$ noise levels were determined by adjusting the existing noise measurements to account for future increases in traffic with the Proposed Actions based on the Noise Passenger Car Equivalent (PCE) proportional analysis results, including the noise contribution from vehicular traffic on adjacent roadways, and by calculating the cumulative noise level in the future condition based on the playground noise and future vehicular traffic noise on adjacent roadways.

Noise PCE proportional analysis showed significant noise increases and potential for significant adverse noise impacts at Monitoring Locations 5, 8, 13, and 16. Therefore, the Proposed Actions could result in significant adverse noise impacts at noise receptors other than the future projected and potential development sites. Between Draft and Final EIS, further assessment will be conducted to determine these potential impacts in detail.

Based on the projected noise levels, between 28 and up to 44 dBA of window/wall attenuation would be required at the projected/potential development sites to achieve acceptable interior noise levels per the *CEQR Technical Manual* noise exposure guideline at residential and community facility uses. The requirement for this level of attenuation as well as the requirement for an alternate means of ventilation will be included in an (E) designation (E-848) for all privately held projected and potential development

sites. For City-owned parcels/sites the requirement for attenuation as well as the requirement for an alternate means of ventilation will be required through a Land Disposition Agreement (LDA) or a similar institutional control. Therefore, there would be no significant adverse noise impact with respect to building attenuation at projected and potential development sites.

C. ACOUSTICAL FUNDAMENTALS

Sound is a fluctuation in air pressure. Sound pressure levels are measured in units called "decibels" ("dB"). The particular character of the sound that we hear is determined by the speed, or "frequency," at which the air pressure fluctuates, or "oscillates." Frequency defines the oscillation of sound pressure in terms of cycles per second. One cycle per second is known as 1 Hertz ("Hz"). People can hear over a relatively limited range of sound frequencies, generally between 20 Hz and 20,000 Hz, and the human ear does not perceive all frequencies equally well. High frequencies (e.g., a whistle) are more easily discernible and therefore more intrusive than many of the lower frequencies (e.g., diesel truck engine).

"A"-WEIGHTED SOUND LEVEL (DBA)

In order to establish a uniform noise measurement that simulates people's perception of loudness and annoyance, the decibel measurement is weighted to account for those frequencies most audible to the human ear. This is known as the A-weighted sound level, or "dBA"; it is the descriptor of noise levels most often used for community noise. As shown in **Table 17-1**, the threshold of human hearing is defined as 0 dBA; very quiet conditions (as in a library, for example) are approximately 40 dBA; levels between 50 dBA and 70 dBA define the range of noise levels generated by normal daily activity; levels above 70 dBA would be considered noisy, and then loud, intrusive, and deafening as the scale approaches 130 dBA.

Table 17-1
Noise Levels of Common Sources

Sound Source	SPL (dBA)
Air Raid Siren at 50 feet	120
Maximum Levels at Rock Concerts (Rear Seats)	110
On Platform by Passing Subway Train	100
On Sidewalk by Passing Heavy Truck or Bus	90
On Sidewalk by Typical Highway	80
On Sidewalk by Passing Automobiles with Mufflers	70
Typical Urban Area	60–70
Typical Suburban Area	50–60
Quiet Suburban Area at Night	40–50
Typical Rural Area at Night	30–40
Isolated Broadcast Studio	20
Audiometric (Hearing Testing) Booth	10
Threshold of Hearing	0
Source: 2021 *CEQR Technical Manual*	

In considering these values, it is important to note that the dBA scale is logarithmic, meaning that each increase of 10 dBA describes a doubling of perceived loudness. Thus, the background noise in an office, at 50 dBA, is perceived as twice as loud as a library at 40

dBA. For most people to perceive an increase in noise, it must be at least 3 dBA. At 5 dBA, the change will be readily noticeable.

NOISE DESCRIPTORS USED IN IMPACT ASSESSMENT

Because the sound pressure level unit of dBA describes a noise level at just one moment and very few noises are constant, other ways of describing noise over extended periods have been developed. One way of describing fluctuating sound is to describe the fluctuating noise heard over a specific time period as if it had been a steady, unchanging sound. For this condition, a descriptor called the "equivalent sound level," L_{eq}, can be computed. L_{eq} is the constant sound level that, in a given situation and time period (e.g., 1 hour, denoted by $L_{eq(1)}$, or 24 hours, denoted as $L_{eq(24)}$), conveys the same sound energy as the actual time-varying sound. Statistical sound level descriptors such as L_1, L_{10}, L_{50}, L_{90}, and L_x, are used to indicate noise levels that are exceeded 1, 10, 50, 90, and x percent of the time, respectively.

The relationship between L_{eq} and levels of exceedance is worth noting. Because L_{eq} is defined in energy rather than straight numerical terms, it is not simply related to the levels of exceedance. If the noise fluctuates very little, L_{eq} will approximate L_{50} or the median level. If the noise fluctuates broadly, the L_{eq} will be approximately equal to the L_{10} value. If extreme fluctuations are present, the L_{eq} will exceed L_{90} or the background level by 10 or more decibels. Thus, the relationship between L_{eq} and the levels of exceedance will depend on the character of the noise. In community noise measurements, it has been observed that the L_{eq} is generally between L_{10} and L_{50}.

A descriptor for cumulative 24-hour exposure is the day-night average sound level, abbreviated as L_{dn}. This is a 24-hour measurement that accounts for the moment-to-moment fluctuations in A-weighted noise levels due to all sound sources, combined. Mathematically, the L_{dn} noise level is the energy average of all $L_{eq(1)}$ noise levels over a 24-hour period, where nighttime noise levels (10 PM to 7 AM) are increased by 10 dBA before averaging because of increased noise sensitivity during nighttime, when people are typically sleeping.

For purposes of the Proposed Actions, the L_{eq} descriptor has been selected as the noise descriptor to be used in this noise impact evaluation. Consistent with *CEQR Technical Manual* guidance, when vehicular traffic is the dominant noise source, the 1-hour L_{10} and the L_{dn} descriptors are used to determine the required attenuation values to achieve acceptable interior noise levels.

D. NOISE STANDARDS AND CRITERIA

NEW YORK CEQR TECHNICAL MANUAL NOISE STANDARDS

The *CEQR Technical Manual* sets external noise exposure standards; these standards are shown in **Table 17-2**. Noise exposure is classified into four categories: acceptable, marginally acceptable, marginally unacceptable, and clearly unacceptable.

Table 17-2
Noise Exposure Guidelines for Use in City Environmental Impact Review

Receptor Type	Time Period	Acceptable General External Exposure	Airport[3] Exposure	Marginally Acceptable General External Exposure	Airport[3] Exposure	Marginally Unacceptable General External Exposure	Airport[3] Exposure	Clearly Unacceptable General External Exposure	Airport[3] Exposure
Outdoor area requiring serenity and quiet[2]		$L_{10} \leq$ 55 dBA	---------- DNL ≤ 60 dBA ----------	NA	---------- 60 < DNL ≤ 65 dBA ----------	NA	(i) 65 < DNL ≤ 75 dBA	NA	---------- DNL > 75 dBA ----------
Hospital, nursing home		$L_{10} \leq$ 55 dBA		55 < $L_{10} \leq$ 65 dBA		65 < $L_{10} \leq$ 80 dBA		L_{10} > 80 dBA	
Residence, residential hotel, or motel	7 AM to 10 PM	$L_{10} \leq$ 65 dBA		65 < $L_{10} \leq$ 70 dBA		70 < $L_{10} \leq$ 80 dBA		L_{10} > 80 dBA	
	10 PM to 7 AM	$L_{10} \leq$ 55 dBA		55 < $L_{10} \leq$ 70 dBA		70 < $L_{10} \leq$ 80 dBA		L_{10} > 80 dBA	
School, museum, library, court, house of worship, transient hotel or motel, public meeting room, auditorium, outpatient public health facility		Same as Residential Day (7 AM–10 PM)		Same as Residential Day (7 AM–10 PM)		Same as Residential Day (7 AM–10 PM)		Same as Residential Day (7 AM–10 PM)	
Commercial or office		Same as Residential Day (7 AM–10 PM)		Same as Residential Day (7 AM–10 PM)		Same as Residential Day (7 AM–10 PM)		Same as Residential Day (7 AM–10PM)	
Industrial, public areas only[4]	Note 4	Note 4		Note 4		Note 4		Note 4	

Notes:
(i) In addition, any new activity shall not increase the ambient noise level by 3 dBA or more.
(ii) *CEQR Technical Manual* noise criteria for train noise are similar to the above aircraft noise standards; the noise category for train noise is found by taking the L_{dn} value for such train noise to be an $L_{\overline{dn}}$ (L_{dn} contour) value.
[1] Measurements and projections of noise exposures are to be made at appropriate heights above site boundaries as given by American National Standards Institute (ANSI) Standards; all values are for the worst hour in the time period.
[2] Tracts of land where serenity and quiet are extraordinarily important and serve an important public need, and where the preservation of these qualities is essential for the area to serve its intended purpose. Such areas could include amphitheaters, particular parks, or portions of parks, or open spaces dedicated or recognized by appropriate local officials for activities requiring special qualities of serenity and quiet.
[3] One may use Federal Aviation Administration (FAA)-approved L_{dn} contours supplied by the Port Authority of New York and New Jersey, or the noise contours may be computed from the federally approved Integrated Noise Model (INM) Computer Model using flight data supplied by the Port Authority of New York and New Jersey.
[4] External Noise Exposure standards for industrial areas of sounds produced by industrial operations other than operating motor vehicles or other transportation facilities are spelled out in the New York City Zoning Resolution, Sections 42-20 and 42-21. The referenced standards apply to M1, M2, and M3 manufacturing districts and to adjoining residence districts (performance standards are octave band standards).
Source: New York City Department of Environmental Protection (DEP) (adopted policy 1983).

The *CEQR Technical Manual* defines attenuation requirements for buildings based on exterior noise levels (see **Table 17-3**). Where vehicular traffic is the dominant noise source, recommended noise attenuation values for buildings are designed to maintain interior $L_{10(1)}$ noise levels of 45 dBA or lower for residential or community facility uses and 50 dBA or lower for commercial and office uses and are determined based on exterior $L_{10(1)}$ noise levels. Where trains are the dominant noise source, recommended noise

attenuation values for buildings are designed to maintain interior L_{dn} noise levels of 40 dBA or lower for residential uses and are determined based on exterior L_{dn} noise levels.

Table 17-3
Required Attenuation Values to Achieve Acceptable Interior Noise Levels

	Marginally Unacceptable				Clearly Unacceptable
Vehicular Traffic	$70 < L_{10} \leq 73$	$73 < L_{10} \leq 76$	$76 < L_{10} \leq 78$	$78 < L_{10} \leq 80$	$80 < L_{10}$
Aircraft[A]	$65 < DNL \leq 68$	$68 < DNL \leq 71$	$71 < DNL \leq 73$	$73 < DNL \leq 75$	$75 < DNL$
Train	$65 < L_{dn} \leq 68$	$68 < L_{dn} \leq 71$	$71 < L_{dn} \leq 73$	$73 < L_{dn} \leq 75$	$75 < L_{dn}$
Attenuation[B]	(I) 28 dBA	(II) 31 dBA	(III) 33 dBA	(IV) 35 dBA	See note [C]

Notes:
[A] DNL descriptor based on average values of L_{dn} over a year period.
[B] The above composite window-wall attenuation values are for residential dwellings and community facility development. Commercial office spaces and meeting rooms would be 5 dBA less in each category. All the above categories require a closed window situation and hence an alternate means of ventilation.
[C] The required attenuation value is the difference between L_{build} and $L_{interior}$, using the appropriate noise descriptor
Where:
L_{build} is the projected noise level under the build condition rounded up to the whole number
$L_{interior}$ is the designed interior noise level (45 dBA for vehicular noise, 40 dBA for aircraft and train noise)
Source: DEP

ENVIRONMENTAL CONDITIONS FOR BUILDINGS IN MX DISTRICTS

Development sites 20, 21, 22, and 54 are located within the Queens Plaza subdistrict of the Long Island City Special Mixed-Use District, which is subject to the Zoning Resolution (ZR) Section 123-32 – Environmental Conditions. These conditions require that all new dwelling units (DUs) in Special Mixed-Use Districts be provided with a minimum of 35 dBA window-wall attenuation to maintain an interior noise level of 45 dBA or less. The 35 dBA window-wall attenuation is for a closed-window condition; consequently, a means of alternate ventilation that does not degrade the acoustical performance of the building façade is required for all residential developments. However, it is possible to review and alter the minimum attenuation requirements via a process overseen by the New York City Mayor's Office of Environmental Remediation (OER), which could be undertaken at a later time. While residential development on these sites would be subject to the ZR 123-32 window-wall attenuation requirements, any other noise-sensitive development (e.g., community facility, commercial office) would be included in the building attenuation analysis described herein.

E. NOISE PREDICTION METHODOLOGY

GENERAL METHODOLOGY

At all receptor locations in the vicinity of the Project Area, the dominant noise sources are vehicular traffic on adjacent and nearby streets and roadways, and train traffic from elevated subway lines.

At locations where rail traffic is the dominant noise source, the measured existing noise levels are assumed to represent the levels in the future with the Proposed Actions, because rail service would not substantially change.

For locations where vehicular traffic on adjacent roadways is the dominant source, future noise levels (including in the future without the Proposed Actions and the future with the

Proposed Actions) were calculated using a proportional modeling technique. The proportional modeling technique is an analysis methodology recommended for analysis purposes in the *CEQR Technical Manual*. The noise analysis examined the weekday AM, midday (MD), PM, and Saturday midday peak hours at all receptor locations. The selected time periods are when the Proposed Actions would be expected to result in the maximum traffic generation (based on the traffic studies presented in Chapter 14, "Transportation"), and therefore result in the maximum potential for significant adverse noise impacts. The proportional modeling used for the noise analysis is described below.

PROPORTIONAL MODELING

Proportional modeling was used to determine locations with the potential for having significant noise impacts. Proportional modeling is one of the techniques recommended in the *CEQR Technical Manual* for mobile source analysis.

Using this technique, the prediction of future noise levels where traffic is the dominant noise source is based on a calculation using measured existing noise levels and predicted changes in traffic volumes to determine No Action and With Action condition noise levels. Vehicular traffic volumes are converted into Noise Passenger Car Equivalent (Noise PCE) values, for which one medium-duty truck (having a gross weight between 9,900 and 26,400 pounds) is assumed to generate the noise equivalent of 13 cars, and one heavy-duty truck (having a gross weight of more than 26,400 pounds) is assumed to generate the noise equivalent of 47 cars, and one bus (vehicles designed to carry more than nine passengers) is assumed to generate the noise equivalent of 18 cars. The difference between future noise levels for the No Action and With Action conditions and existing noise levels are calculated using the following equation:

$$F\ NL = E\ NL + 10 * \log_{10} (F\ PCE / E\ PCE)$$

where:

F NL = Future Noise Level

E NL = Existing Noise Level

F PCE = Future Noise PCEs

E PCE = Existing Noise PCEs

Sound levels are measured in decibels and therefore increase logarithmically with sound source strength. In this case, the sound source is traffic volumes measured in Noise PCEs. For example, assume that traffic is the dominant noise source at a particular location. If the existing traffic volume on a street is 100 PCE and if the future traffic volume were increased by 50 PCE to a total of 150 PCE, the noise level would increase by 1.8 dBA. Similarly, if the future traffic were increased by 100 PCE, or doubled to a total of 200 PCE, the noise level would increase by 3.0 dBA.

PLAYGROUND NOISE

At each of the noise receptor locations that has a direct line of sight to a playground, noise associated with any nearby playground was estimated using the Early Childhood playground boundary noise level (to conservatively represent children of any age using the playground) and any applicable noise level reduction due to distance.

Table 17-4 shows measured maximum hourly playground boundary noise levels. These values are based upon measurements made at a series of New York City school playgrounds for the New York City School Construction Authority (SCA).[1] The noise associated with nearby playgrounds was estimated using the Early Childhood playground boundary noise level to conservatively represent children of any age using the playground. Playground L_{10} noise levels are assumed to be 3 dBA greater than projected L_{eq} values or the difference between the measured L_{eq} and L_{10} values, whichever is most conservative. At receptors with line-of-sight to both existing and proposed playgrounds, cumulative noise levels including contribution from traffic on adjacent roadways and playground noise is calculated.

Table 17-4
Playground Boundary Noise $L_{eq(1)}$ Noise Levels (dBA)

Early Childhood	Elementary Schools	Intermediate Schools	High Schools
71.5	71.4	71.0	68.2
Source: 2021 *New York City Environmental Quality Review (CEQR) Technical Manual.*			

RAILWAY NOISE DISTANCE ADJUSTMENT

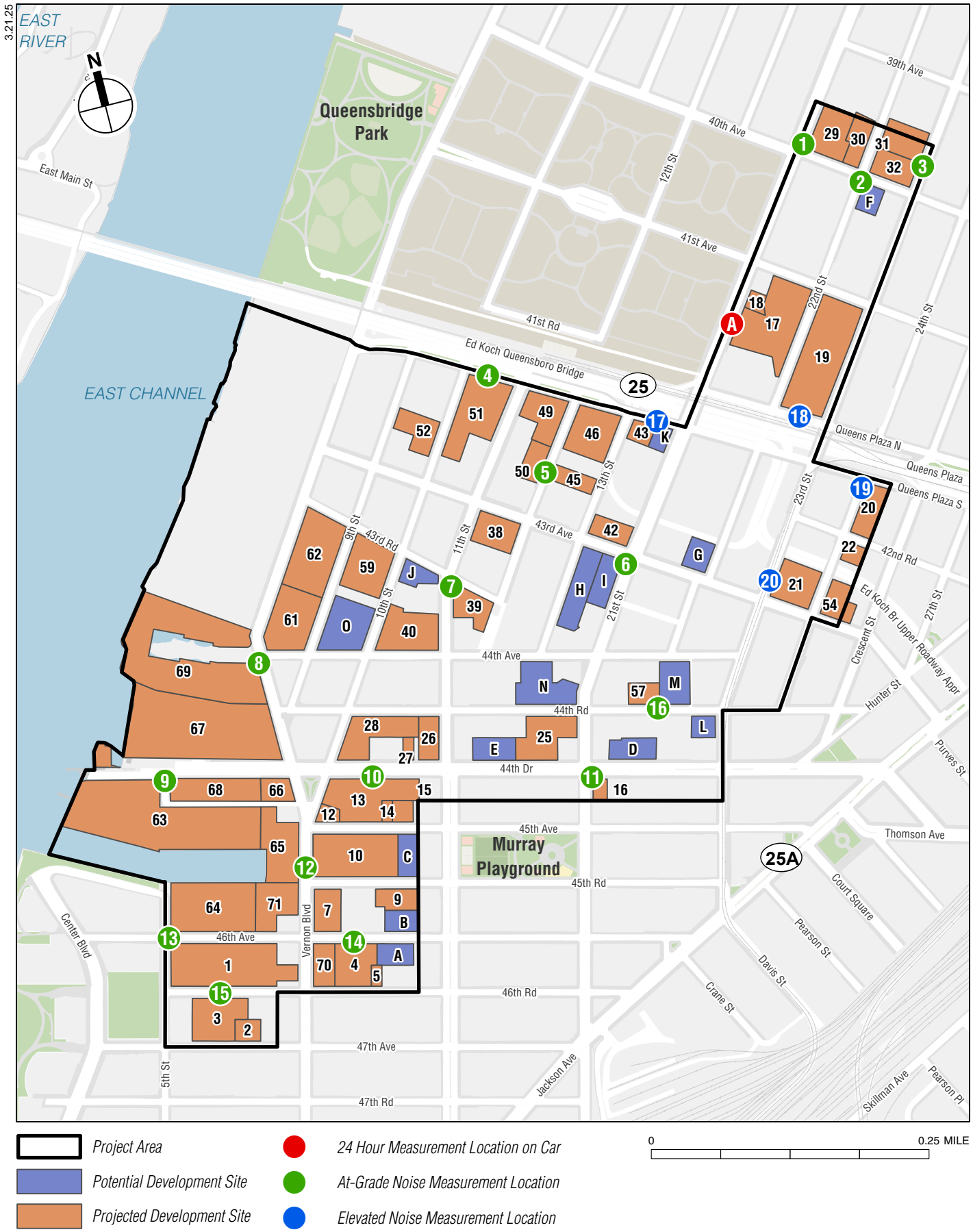
At development sites farther from the rail source than the locations where rail noise was measured (i.e., locations 18, 19, and 20), a distance calculation was used to adjust the measured rail-dominated L_{dn} to reflect the noise exposure at the development site. The distance calculation followed the guidance of the Federal Transit Administration (FTA) guidance manual, equation 4-46 with the assumption of hard ground (i.e., pavement).

F. EXISTING NOISE LEVELS

SELECTION OF NOISE RECEPTOR LOCATIONS

A total of 21 receptor locations within the Project Area were selected for evaluation of noise attenuation requirements. These locations are detailed below in **Table 17-5** and shown in **Figure 17-1**. The receptor locations were selected based on the following criteria: (1) locations near development sites; and (2) locations that provide comprehensive geographic coverage throughout the study area to get an accurate picture of the ambient noise environment. As discussed below, local traffic or elevated rail lines are the dominant source of noise in the vicinity of the Project Area. These receptors, due to their proximity to the projected and potential development sites, provide an effective and conservative representation of existing ambient noise levels at the projected and potential development sites.

[1] SCA Playground Noise Study, AKRF, Inc., October 23, 1992.



Noise Measurement Locations

LONG ISLAND CITY NEIGHBORHOOD PLAN

Figure 17-1

Table 17-5
Noise Receptor Locations

Receptor	Measurement Duration	Location
1	Weekday AM, MD, PM, and Saturday MD 20-minute Spot Measurements, as well as School PM 20-minute Spot Measurements as necessary	Along 21st Street, between 40th Avenue and 39th Avenue
2		Intersection of 22nd Street and 40th Avenue
3		Along 23rd Street, between 40th Avenue and 39th Avenue
4		Along Queens Plaza South, between 10th Street and 11th Street
5		Along 12th Street, between Queens Plaza South and 43rd Avenue
6		Intersection of 43rd Avenue and 21st Street
7		Intersection of 43rd Road and 11th Street
8		Intersection of Vernon Boulevard and 44th Avenue
9		West of the intersection of Vernon Boulevard and 44th Drive
10		Along 44th Drive, between 10th Street and 11th Street
11		Intersection of 44th Drive and 21st Street
12		Along Vernon Boulevard, between 45th Avenue and 45th Road
13[1]		Intersection of 46th Avenue and 5th Street
14		Along 46th Avenue, between Vernon Boulevard and 11th Street
15		Along 46th Road, between 5th Street and Vernon Boulevard
16		Along 44th Road, between 21st Street and 23rd Street
17	Weekday AM, MD, and PM 60-minute Spot Measurements	Along Queens Plaza South, between 13th Street and 21st Street (Elevated)
18	Weekday AM, MD, PM, Late-Night 60-minute Spot Measurements	Along Queens Plaza North, between 22nd Street and 23rd Street (Elevated)
19		Intersection of Queens Plaza South and 24th Street (Elevated)
20[2]		North of the intersection of 23rd Street and 43rd Avenue (Elevated)
A	Weekday 24-hour continuous measurement	Along 21st Street, between 41st Avenue and Queens Plaza North (On Car)

Note:
[1] School PM period included due to proximity to school.
[2] AM time period measurements at this site occurred between 5:00 AM and 6:30 AM to account for peak traffic on adjacent elevated roadway.

NOISE MONITORING

At each receptor location, existing noise levels were determined by field measurements. Noise monitoring was performed on January 15, 16, 18, 21, 23, 25, 30; and February 4, 5, 11, 12, 2025. Traffic counts were completed during all attended field measurements.

At receptor locations adjacent to elevated rail lines (Receptors 18 through 20), 60-minute measurements were conducted during the typical weekday AM (7:15 AM to 9:15 AM), midday (12:00 PM to 2:00 PM), and PM (4:00 PM to 6:00 PM) peak periods as well as the late-night period (10:00 PM to 7:00 AM). At Receptor 20, AM time period measurements were conducted between 5:00 AM and 6:30 AM to account for peak traffic on the adjacent elevated roadway. At these noise measurement locations, the microphones were on a pole at an approximate height of 12 feet above the ground. The microphones were approximately six feet or more away from any large sound-reflecting surface to avoid major interference with sound propagation.

Train noise from the elevated subway line was the dominant source of noise at Receptors 18, 19, and 20. The L_{dn} at Receptors 18, 19, and 20 (i.e., the appropriate noise level descriptor for train noise) was calculated in accordance with the 2018 *FTA Transit Noise and Vibration Impact Assessment Manual,* Appendix E, Option 3.

At Receptor 16, 60-minute measurements were conducted during the typical weekday AM (7:15 AM to 9:15 AM), midday (12:00 PM to 2:00 PM), and PM (4:00 PM to 6:00 PM) peak periods. At all other receptor locations, 20-minute spot noise measurements were conducted during the typical weekday AM, midday, PM, and weekend midday (12:00 PM to 2:00 PM) peak periods. An additional measurement at Receptor 13 was also conducted during the school PM period (2:00 PM to 4:00 PM). At these noise measurement locations, the microphones were mounted at a height of approximately five feet above the ground surface on a tripod and approximately six feet or more away from any large sound-reflecting surface to avoid major interference with sound propagation.

An unattended 24-hour measurement was conducted at Receptor A starting at 6:00 PM on January 15, 2025; a parked car was used due to site access and security issues. The microphone was placed on top of the car approximately five feet above the ground surface and approximately six feet or more away from any other large sound-reflecting surface, such as buildings, other cars, or the ground. The sound level meter was secured inside the car with doors locked to prevent outside tampering.

Vehicular traffic along 21st Street was the dominant source of noise at Receptor A. The maximum L_{10} was used each typical weekday peak period, which was 6:00 AM for the AM period, 1:00 PM for the midday period, and 3:00 PM for the PM period.

EQUIPMENT USED DURING NOISE MONITORING

Measurements were performed using Brüel & Kjær Types 2250 and 2270 Sound Level Meters (SLMs), one NTi Type XL2 SLM, Brüel & Kjær Type 4189 1/2-inch microphones, one NTi Type M2230 1/2-inch microphone, Brüel & Kjær Type 4231 Sound Level Calibrators, and one Larson Davis Type CAL200 Sound Level Calibrator. The Brüel & Kjær and NTi SLMs are Class 1 instruments according to ANSI Standard S1.4-1983 (R2006). The SLMs have a laboratory calibration date within the past one year at the time of use. The SLMs were calibrated before and after readings with either a Brüel & Kjær Type 4231 or Larson Davis Type CAL200 Sound Level Calibrator using the appropriate adaptor. The data were digitally recorded by the SLMs and displayed at the end of the measurement period in units of dBA. Measured quantities included the L_{eq}, L_1, L_{10}, L_{50}, and L_{90}. Windscreens were used during all sound measurements except for calibration. All measurement procedures were based on the guidelines outlined in ANSI Standard S1.13-2005.

EXISTING NOISE LEVELS AT NOISE RECEPTOR LOCATIONS

The results of the measurements of existing noise levels are summarized in **Table 17-6**. The elevated subway line was the dominant noise source at Receptors 18, 19, and 20. Roadway traffic was the dominant noise source for all other receptor locations.

Table 17-6
Measured Noise Levels (in dBA)

Receptor	Measurement Location	Time	L_{eq}	L_1	L_{10}	L_{50}	L_{90}	L_{dn}
1	Along 21st Street, between 40th Avenue and 39th Avenue	AM	70.7	80.4	74.1	67.3	60.2	N/A
		MD	70.5	80.5	72.7	67.7	61.1	
		PM	70.2	79.5	72.5	68.6	61.4	
		SAT	69.8	77.5	73.1	68.2	60.0	
2	Intersection of 22nd Street and 40th Avenue	AM	63.8	73.6	67.1	60.9	56.6	N/A
		MD	67.5	78.8	68.1	58.7	53.6	
		PM	61.7	72.5	64.6	58.0	52.9	
		SAT	60.8	69.9	64.1	57.6	51.9	
3	Along 23rd Street, between 40th Avenue and 39th Avenue	AM	62.4	72.9	65.1	58.9	53.1	N/A
		MD	63.8	74.3	67.5	58.5	52.6	
		PM	60.6	69.7	64.7	56.0	51.2	
		SAT	63.6	73.6	64.9	56.2	50.5	
4	Along Queens Plaza South, between 10th Street and 11th Street	AM	69.0	73.7	70.8	68.6	65.4	N/A
		MD	69.6	74.2	71.3	69.2	66.7	
		PM	69.9	75.0	71.7	69.3	67.1	
		SAT	67.6	71.7	69.7	67.2	64.2	
5	Along 12th Street, between Queens Plaza South and 43rd Avenue	AM	64.0	68.7	66.0	63.6	60.1	N/A
		MD	66.2	73.8	68.1	64.9	62.6	
		PM	63.9	68.8	65.6	63.5	61.6	
		SAT	64.8	68.7	66.8	64.5	61.4	
6	Intersection of 43rd Avenue and 21st Street	AM	69.1	78.7	71.8	66.6	61.1	N/A
		MD	70.0	80.3	72.7	66.5	60.9	
		PM	69.4	80.4	71.0	65.8	61.3	
		SAT	66.2	74.8	69.5	63.8	57.9	
7	Intersection of 43rd Road and 11th Street	AM	66.4	77.0	69.0	63.1	58.4	N/A
		MD	63.9	73.9	66.6	59.4	54.3	
		PM	63.4	70.7	67.0	60.9	54.3	
		SAT	64.4	72.6	67.3	58.1	51.7	
8	Intersection of Vernon Boulevard and 44th Avenue	AM	68.1	78.9	71.2	63.9	56.0	N/A
		MD	64.6	72.8	68.5	61.4	54.9	
		PM	65.2	73.7	68.7	60.8	53.3	
		SAT	65.9	77.3	69.0	58.2	50.8	
9	West of the intersection of Vernon Boulevard and 44th Drive	AM	63.4	75.6	61.7	54.2	50.1	N/A
		MD	56.9	67.5	58.1	51.8	50.0	
		PM	58.1	69.1	59.9	53.9	51.1	
		SAT	53.4	62.1	56.5	50.9	49.5	
10	Along 44th Drive, between 10th Street and 11th Street	AM	61.3	70.6	63.9	57.4	54.5	N/A
		MD	60.6	70.3	63.2	57.6	53.7	
		PM	57.4	66.5	60.7	54.1	51.7	
		SAT	61.6	72.4	65.0	55.8	51.6	
11	Intersection of 44th Drive and 21st Street	AM	69.1	78.2	72.0	66.2	62.4	N/A
		MD	68.8	79.9	70.9	64.9	60.6	
		PM	67.5	78.0	69.5	64.3	60.4	
		SAT	65.3	73.0	68.5	63.4	57.7	
12	Along Vernon Boulevard, between 45th Avenue and 45th Road	AM	69.3	79.2	72.0	65.8	57.5	N/A
		MD	66.8	76.0	70.7	63.9	57.2	
		PM	67.6	77.6	70.2	64.8	55.2	
		SAT	66.5	73.6	70.0	64.1	57.0	
13	Intersection of 46th Avenue and 5th Street	AM	61.5	72.9	63.0	55.7	53.1	N/A
		MD	60.3	70.5	63.6	56.0	54.1	
		School PM	59.7	70.7	62.5	55.6	52.1	
		PM	59.8	69.6	62.0	56.2	53.0	
		SAT	62.0	71.7	64.2	58.6	54.6	
14	Along 46th Avenue, between Vernon Boulevard and 11th Street	AM	62.3	72.7	65.6	55.1	51.8	N/A
		MD	59.2	70.0	62.7	53.1	50.3	
		PM	58.4	69.2	61.9	52.8	50.4	
		SAT	58.0	67.6	60.6	54.9	53.3	

Table 17-6
Measured Noise Levels (in dBA)

Receptor	Measurement Location	Time	L_{eq}	L_1	L_{10}	L_{50}	L_{90}	L_{dn}
15	Along 46th Road, between 5th Street and Vernon Boulevard	AM	60.6	73.5	59.0	50.0	48.4	N/A
		MD	58.2	71.0	58.2	50.5	47.1	
		PM	60.3	73.5	61.4	51.0	49.1	
		SAT	58.3	70.2	60.9	51.1	48.1	
16	Along 44th Road, between 21st Street and 23rd Street	AM	66.3	76.4	70.2	59.2	57.1	N/A
		MD	63.8	75.8	66.0	57.5	56.1	
		PM	66.1	76.5	69.0	61.1	56.3	
		SAT	61.0	73.7	63.2	56.2	54.2	
17	Along Queens Plaza South, between 13th Street and 21st Street (Elevated)	AM	77.6	84.2	80.4	76.4	71.7	N/A
		MD	76.8	83.5	79.5	75.8	72.3	
		PM	77.8	83.8	79.4	75.3	72.4	
18[2]	Along Queens Plaza North, between 22nd Street and 23rd Street (Elevated)	AM	75.7	85.6	80.0	70.3	66.7	78.5
		MD	76.4	87.4	80.6	70.0	65.6	
		PM	75.5	85.4	80.1	70.3	65.1	
		LN	73.6	85.9	74.7	67.1	62.9	
19[2]	Intersection of Queens Plaza South and 24th Street (Elevated)	AM	82.2	90.2	87.6	76.6	69.9	83.6
		MD	80.7	90.9	85.6	73.6	68.5	
		PM	83.0	92.0	88.2	74.0	67.6	
		LN	78.7	90.9	80.5	69.5	65.1	
20[2]	North of the intersection of 23rd Street and 43rd Avenue (Elevated)	AM	74.8	87.4	77.5	63.5	59.7	80.1
		MD	75.2	86.7	79.6	64.8	61.4	
		PM	77.6	87.8	82.7	66.0	61.5	
		LN	75.7	87.9	79.3	63.0	60.2	
A[3]	Along 21st Street, between 41st Avenue and Queens Plaza North (On Car)	AM	70.6	78.0	73.7	69.2	60.6	74.5
		MD	70.0	78.9	72.9	68.3	60.7	
		PM	71.2	80.0	73.4	68.7	61.5	

Note:
[1] Field measurements were performed by AKRF, Inc. between January 15, 2024 and February 12, 2025.
[2] The dominant noise source at receptor locations 18, 19, and 20 was the elevated subway line. Roadway traffic was the dominant noise source for all other receptor locations.
[3] One minute of atypical events (e.g., sirens and motorcycles) excluded.

In terms of *CEQR Technical Manual* criteria, measured noise levels measured at Receptors 9, 10, 13, and 15 are categorized as “acceptable”, noise levels measured at Receptors 2, 3, 5, 7, and 14 are categorized as “marginally acceptable,” noise levels measured at Receptors 1, 4, 6, 8, 11, 12, 16, and A are categorized as “marginally unacceptable,” and noise levels measured at Receptors 17, 18, 19, and 20 are categorized as “clearly unacceptable.”

G. THE FUTURE WITHOUT THE PROPOSED ACTIONS (NO ACTION CONDITION)

Using the methodology previously described, 2035 No Action condition noise levels were calculated for each of the 21 noise receptors during each of the analysis periods. These No Action values are shown in **Table 17-7**.

Table 17-7
2035 No Action Condition Noise Levels (in dBA)

Receptor	Measurement Location	Time	Existing $L_{eq(1)}$	No-Action $L_{eq(1)}$	$L_{eq(1)}$ Change	No-Action $L_{10(1)}$
1	Along 21st Street, between 40th Avenue and 39th Avenue	AM	70.7	71.3	0.6	74.7
		MD	70.5	71.0	0.5	73.2
		PM	70.2	70.7	0.5	73.1
		SAT	69.8	70.2	0.4	73.5
2	Intersection of 22nd Street and 40th Avenue	AM	63.8	67.1	3.3	70.4
		MD	67.5	69.3	1.8	69.9
		PM	61.7	63.4	1.7	66.3
		SAT	60.8	62.2	1.4	65.5
3	Along 23rd Street, between 40th Avenue and 39th Avenue	AM	62.4	65.7	3.3	68.4
		MD	63.8	65.5	1.8	69.3
		PM	60.6	62.3	1.7	66.4
		SAT	63.6	65.0	1.4	66.4
4	Along Queens Plaza South, between 10th Street and 11th Street	AM	69.0	69.9	1.0	71.7
		MD	69.6	70.5	0.9	72.2
		PM	69.9	70.7	0.8	72.6
		SAT	67.6	68.3	0.8	70.5
5	Along 12th Street, between Queens Plaza South and 43rd Avenue	AM	64.0	64.0	0.0	66.1
		MD	66.2	66.2	0.0	68.1
		PM	63.9	63.9	0.0	65.6
		SAT	64.8	64.8	0.0	66.8
6	Intersection of 43rd Avenue and 21st Street	AM	69.1	70.2	1.1	72.9
		MD	70.0	71.2	1.2	73.9
		PM	69.4	70.6	1.2	72.2
		SAT	66.2	67.3	1.1	70.6
7	Intersection of 43rd Road and 11th Street	AM	66.4	66.8	0.4	69.4
		MD	63.9	64.2	0.3	66.9
		PM	63.4	63.7	0.3	67.4
		SAT	64.4	64.7	0.3	67.6
8	Intersection of Vernon Boulevard and 44th Avenue	AM	68.1	68.6	0.5	71.7
		MD	64.6	65.1	0.5	69.0
		PM	65.2	65.8	0.6	69.3
		SAT	65.9	66.4	0.6	69.6
9	West of the intersection of Vernon Boulevard and 44th Drive	AM	63.4	63.4	0.0	61.7
		MD	56.9	56.9	0.0	58.0
		PM	58.1	58.1	0.0	59.9
		SAT	53.4	53.4	0.0	56.5
10	Along 44th Drive, between 10th Street and 11th Street	AM	61.3	61.6	0.4	64.2
		MD	60.6	61.5	0.9	64.1
		PM	57.4	58.4	1.0	61.8
		SAT	61.6	62.9	1.3	66.3
11	Intersection of 44th Drive and 21st Street	AM	69.1	70.4	1.3	73.3
		MD	68.8	70.2	1.4	72.3
		PM	67.5	69.1	1.6	71.1
		SAT	65.3	66.9	1.6	70.1
12	Along Vernon Boulevard, between 45th Avenue and 45th Road	AM	69.3	70.2	1.0	73.0
		MD	66.8	67.7	1.0	71.6
		PM	67.6	68.6	1.0	71.2
		SAT	66.5	67.4	0.9	70.9
13	Intersection of 46th Avenue and 5th Street	AM	61.5	61.6	0.1	63.1
		MD	60.3	60.6	0.3	63.9
		School PM	59.7	60.1	0.4	62.9
		PM	59.8	60.1	0.3	62.3
		SAT	62.0	62.3	0.3	64.5
14	Along 46th Avenue, between Vernon Boulevard and 11th Street	AM	62.3	63.7	1.4	67.0
		MD	59.2	60.7	1.5	64.1
		PM	58.4	60.3	1.9	63.8
		SAT	58.0	59.4	1.4	62.0

Table 17-7
2035 No Action Condition Noise Levels (in dBA)

Receptor	Measurement Location	Time	Existing $L_{eq(1)}$	No-Action $L_{eq(1)}$	$L_{eq(1)}$ Change	No-Action $L_{10(1)}$
15	Along 46th Road, between 5th Street and Vernon Boulevard	AM	60.6	60.7	0.1	59.2
		MD	58.2	58.2	0.1	58.3
		PM	60.3	60.3	0.0	61.4
		SAT	58.3	58.3	0.0	60.9
16	Along 44th Road, between 21st Street and 23rd Street	AM	66.3	69.1	2.8	73.0
		MD	63.8	64.9	1.1	67.1
		PM	66.1	67.4	1.3	70.3
		SAT	61.0	62.9	1.9	65.1
17	Along Queens Plaza South, between 13th Street and 21st Street (Elevated)	AM	77.6	78.9	1.3	81.7
		MD	76.8	77.7	0.9	80.4
		PM	77.8	78.4	0.6	79.9
18[1]	Along Queens Plaza North, between 22nd Street and 23rd Street (Elevated)	AM	75.7	75.7	0.0	80.0
		MD	76.4	76.4	0.0	80.6
		PM	75.5	75.5	0.0	80.1
		LN	73.6	73.6	0.0	74.7
19[1]	Intersection of Queens Plaza South and 24th Street (Elevated)	AM	82.2	82.2	0.0	87.6
		MD	80.7	80.7	0.0	85.6
		PM	83.0	83.0	0.0	88.2
		LN	78.7	78.7	0.0	80.5
20[1]	North of the intersection of 23rd Street and 43rd Avenue (Elevated)	AM	74.8	74.8	0.0	77.5
		MD	75.2	75.2	0.0	79.6
		PM	77.6	77.6	0.0	82.7
		LN	75.7	75.7	0.0	79.3
A	Along 21st Street, between 41st Avenue and Queens Plaza North (On Car)	AM	70.6	71.9	1.3	75.0
		MD	70.0	70.9	0.9	73.8
		PM	71.2	72.0	0.8	74.2

Note:
[1] The dominant noise source at receptor locations 18, 19, and 20 was the elevated subway line. Since service on the subway is not expected to change, noise levels are not predicted to change in the future.

Comparing future 2035 No Action condition with existing conditions, the maximum increase in $L_{eq(1)}$ noise levels would be less than 3.3 dBA. Increases of this magnitude would be considered just noticeable according to *CEQR Technical Manual* guidance.

In terms of *CEQR Technical Manual* criteria, No Action condition noise levels at Receptors 9, 13, and 15 are categorized as “acceptable”, noise levels measured at Receptors 3, 5, 7, 10, and 14 are categorized as “marginally acceptable,” noise levels measured at Receptors 1, 2, 4, 6, 8, 11, 12, 16, and A are categorized as “marginally unacceptable,” and noise levels measured at Receptors 17, 18, 19, and 20 are categorized as “clearly unacceptable.”

H. THE FUTURE WITH THE PROPOSED ACTIONS (WITH ACTION CONDITION)

Using the methodology previously described, the With Action condition noise levels were calculated for each of the 21 noise receptors during each of the analysis periods. The With Action values are shown in **Table 17-8**.

Table 17-8
2035 With Action Condition Noise Levels (in dBA)

Receptor	Measurement Location	Time	No-Action $L_{eq(1)}$	With-Action $L_{eq(1)}$	$L_{eq(1)}$ Change	With-Action $L_{10(1)}$
1	Along 21st Street, between 40th Avenue and 39th Avenue	AM	71.3	71.7	0.4	75.1
		MD	71.0	71.6	0.6	73.8
		PM	70.7	71.1	0.4	73.5
		SAT	70.2	70.4	0.2	73.7
2	Intersection of 22nd Street and 40th Avenue	AM	67.1	66.9	-0.2	70.2
		MD	69.3	69.6	0.3	70.2
		PM	63.4	64.5	1.1	67.4
		SAT	62.2	63.3	1.1	66.6
3	Along 23rd Street, between 40th Avenue and 39th Avenue	AM	65.7	65.5	-0.2	68.2
		MD	65.5	65.8	0.3	69.6
		PM	62.3	63.4	1.1	67.5
		SAT	65.0	66.1	1.1	67.5
4	Along Queens Plaza South, between 10th Street and 11th Street	AM	69.9	71.6	1.7	73.4
		MD	70.5	73.4	2.9	75.1
		PM	70.7	72.0	1.3	73.9
		SAT	68.3	70.3	2.0	72.5
5	Along 12th Street, between Queens Plaza South and 43rd Avenue	AM	64.0	67.6	3.6	69.7
		MD	66.2	69.2	3.0	71.1
		PM	63.9	67.2	3.3	68.9
		SAT	64.8	67.7	2.9	69.7
6	Intersection of 43rd Avenue and 21st Street	AM	70.2	71.0	0.8	73.7
		MD	71.2	71.9	0.7	74.6
		PM	70.6	71.0	0.4	72.6
		SAT	67.3	68.1	0.8	71.4
7	Intersection of 43rd Road and 11th Street	AM	66.8	67.5	0.7	70.1
		MD	64.2	65.2	1.0	67.9
		PM	63.7	64.5	0.8	68.2
		SAT	64.7	65.3	0.6	68.2
8	Intersection of Vernon Boulevard and 44th Avenue	AM	68.6	71.1	2.5	74.2
		MD	65.1	68.5	3.4	72.4
		PM	65.8	67.8	2.0	71.3
		SAT	66.4	67.7	1.3	70.9
9	West of the intersection of Vernon Boulevard and 44th Drive	AM	63.4	67.1	3.7	65.4
		MD	56.9	60.9	4.0	62.0
		PM	58.1	60.9	2.8	62.7
		SAT	53.4	59.9	6.5	63.0
10	Along 44th Drive, between 10th Street and 11th Street	AM	61.6	64.4	2.8	67.0
		MD	61.5	63.7	2.2	66.3
		PM	58.4	61.0	2.6	64.4
		SAT	62.9	63.7	0.8	67.1
11	Intersection of 44th Drive and 21st Street	AM	70.4	71.3	0.9	74.2
		MD	70.2	70.9	0.7	73.0
		PM	69.1	69.5	0.4	71.5
		SAT	66.9	68.0	1.1	71.2
12	Along Vernon Boulevard, between 45th Avenue and 45th Road	AM	70.2	73.0	2.8	75.8
		MD	67.7	69.8	2.1	73.7
		PM	68.6	70.2	1.6	72.8
		SAT	67.4	69.5	2.1	73.0
13	Intersection of 46th Avenue and 5th Street	AM	61.6	62.2	0.6	63.7
		MD	60.6	63.1	2.5	66.4
		School PM	60.1	62.1	2.0	64.9
		PM	60.1	63.6	3.5	65.8
		SAT	62.3	65.4	3.1	67.6
14	Along 46th Avenue, between Vernon Boulevard and 11th Street	AM	63.7	63.8	0.1	67.1
		MD	60.7	60.8	0.1	64.2
		PM	60.3	60.9	0.6	64.4

Table 17-8
2035 With Action Condition Noise Levels (in dBA)

Receptor	Measurement Location	Time	No-Action $L_{eq(1)}$	With-Action $L_{eq(1)}$	$L_{eq(1)}$ Change	With-Action $L_{10(1)}$
		SAT	59.4	60.4	1.0	63.0
15	Along 46th Road, between 5th Street and Vernon Boulevard	AM	60.7	64.0	3.3	62.5
		MD	58.2	61.7	3.5	61.8
		PM	60.3	61.1	0.8	62.2
		SAT	58.3	63.1	4.8	65.7
16	Along 44th Road, between 21st Street and 23rd Street	AM	69.1	70.4	1.3	74.3
		MD	64.9	68.0	3.1	70.2
		PM	67.4	69.1	1.7	72.0
		SAT	62.9	65.5	2.6	67.7
17	Along Queens Plaza South, between 13th Street and 21st Street (Elevated)	AM	78.9	79.9	1.0	82.7
		MD	77.7	79.3	1.6	82.0
		PM	78.4	79.5	1.1	81.0
18[1]	Along Queens Plaza North, between 22nd Street and 23rd Street (Elevated)	AM	75.7	75.7	0.0	80.0
		MD	76.4	76.4	0.0	80.6
		PM	75.5	75.5	0.0	80.1
		LN	73.6	73.6	0.0	74.7
19[1]	Intersection of Queens Plaza South and 24th Street (Elevated)	AM	82.2	82.2	0.0	87.6
		MD	80.7	80.7	0.0	85.6
		PM	83.0	83.0	0.0	88.2
		LN	78.7	78.7	0.0	80.5
20[1]	North of the intersection of 23rd Street and 43rd Avenue (Elevated)	AM	74.8	74.8	0.0	77.5
		MD	75.2	75.2	0.0	79.6
		PM	77.6	77.6	0.0	82.7
		LN	75.7	75.7	0.0	79.3
A	Along 21st Street, between 41st Avenue and Queens Plaza North (On Car)	AM	71.9	72.2	0.3	75.3
		MD	70.9	71.7	0.8	74.6
		PM	72.0	72.6	0.6	74.8

Note:
[1] The dominant noise source at receptor locations 18, 19, and 20 was the elevated subway line. Since service on the subway is not expected to change, noise levels are not predicted to change in the future.

Comparing With Action and No Action conditions, the maximum increase in $L_{eq(1)}$ noise levels would be 6.5 dBA at receptor location 9, which represents the area along 44th Drive west of Vernon Boulevard. Changes of this magnitude would be considered noticeable. However, there are no existing noise-sensitive uses in the area represented by this receptor. As such, the noise level increase at receptor location 9 would not represent a significant adverse impact. As for Monitoring Locations 5, 8, 13, and 16, analyzed noise increases (from 3 to 3.6 dBA of noise increases) at these locations were considered significant and, therefore, indicate the potential for significant adverse noise impacts. Between Draft and Final EIS, further assessment will be conducted to determine these potential impacts in detail. The total With Action noise levels were also used to set appropriate building attenuation requirements for future noise-sensitive uses.

At all other noise analysis receptors, the maximum increase in $L_{eq(1)}$ noise levels would be less than 4.8 dBA but not considered significant due to high No-Action Leq noise levels. Changes of this magnitude would be considered just noticeable according to *CEQR Technical Manual* noise impact criteria.

In terms of *CEQR Technical Manual* criteria, With Action condition noise levels at Receptors 3, 9, 10,13, 14, and 15 are categorized as “marginally acceptable,” noise levels measured at Receptors 1, 2, 4, 5, 6, 7, 8, 11, 12, 16, and A are categorized as “marginally

unacceptable," and noise levels measured at Receptors 17, 18, 19, and 20 are categorized as "clearly unacceptable."

PLAYGROUND NOISE

Projected Development Site 1 is located across 5th Street from the existing playground at PS312Q. The minimum distance between the playground boundary and the Development Site is approximately 55 feet. Using the methodology described in **Table 17-4**, total noise exposure at Development Site 1 with the play area were calculated. The results of the calculated noise levels are shown in **Table 17-9**.

Table 17-9
Noise Levels due to School Playground (dBA)

Location	Governing Noise Receptor Site	Time	Traffic-Only With-Action $L_{eq(1)}$	Traffic-Oly With-Action L_{10}	Play Area $L_{eq(1)}$	Total $L_{eq(1)}$	Total L_{10}
Projected Development Site 1	13	AM	62.2	63.7	60.3	64.4	67.4
		MD	63.1	66.4	60.3	64.9	68.2
		School PM	62.1	64.9	60.3	64.3	67.3
		PM	63.6	65.8	60.3	65.3	68.3
		SAT	65.4	67.6	60.3	66.6	69.6

I. NOISE ATTENUATION MEASURES

As shown in **Table 17-3**, the *CEQR Technical Manual* has set noise attenuation values for buildings based on exterior noise levels in order to maintain acceptable interior noise levels for residential, community facility, and commercial office uses.

Table 17-10 shows the minimum window/wall attenuation necessary to meet *CEQR Technical Manual* requirements for internal noise levels at each of the noise measurement locations. The With Action condition $L_{10(1)}$ noise levels at locations where vehicular traffic is the dominant source of noise were determined as described above and include the noise contribution from vehicular traffic on adjacent roadways. The window/wall attenuation requirements at these locations are based on the maximum With Action $L_{10(1)}$ noise levels from any peak period. At receptors where the elevated subway was the dominant noise source, the measured existing L_{dn} noise levels were used to establish those in the With Action condition since service is not expected to change in the future.

Based on the noise levels shown in **Table 17-10**, up to 44 dBA window/wall attenuation would be required to provide acceptable interior noise levels per the *CEQR Technical Manual* noise exposure guideline. These noise levels account for noise from projected vehicular traffic in the future as well as contribution from existing railway noise.

Table 17-10
Minimum Building Attenuation to Comply with CEQR Requirements (in dBA)

Receptor	Location	Observed Dominant Noise Source	Applicable Noise Exposure Descriptor	Noise Exposure	Required Building Attenuation[1]
1	Along 21st Street, between 40th Avenue and 39th Avenue	Vehicular Traffic	L_{10}	75.1	31
2	Intersection of 22nd Street and 40th Avenue	Vehicular Traffic	L_{10}	70.2	28
3	Along 23rd Street, between 40th Avenue and 39th Avenue	Vehicular Traffic	L_{10}	69.6	N/A
4	Along Queens Plaza South, between 10th Street and 11th Street	Vehicular Traffic	L_{10}	75.1	31
5	Along 12th Street, between Queens Plaza South and 43rd Avenue	Vehicular Traffic	L_{10}	71.1	28
6	Intersection of 43rd Avenue and 21st Street	Vehicular Traffic	L_{10}	74.6	31
7	Intersection of 43rd Road and 11th Street	Vehicular Traffic	L_{10}	70.1	28
8	Intersection of Vernon Boulevard and 44th Avenue	Vehicular Traffic	L_{10}	74.2	31
9	West of the intersection of Vernon Boulevard and 44th Drive	Vehicular Traffic	L_{10}	65.4	N/A
10	Along 44th Drive, between 10th and 11th Streets	Vehicular Traffic	L_{10}	67.1	N/A
11	Intersection of 44th Drive and 21st Street	Vehicular Traffic	L_{10}	74.2	31
12	Along Vernon Boulevard, between 45th Avenue and 45th Road	Vehicular Traffic	L_{10}	75.8	31
13	Intersection of 46th Avenue and 5th Street	Vehicular Traffic	L_{10}	69.6[2]	N/A
14	Along 46th Avenue, between Vernon Boulevard and 11th Street	Vehicular Traffic	L_{10}	67.1	N/A
15	Along 46th Road, between 5th Street and Vernon Boulevard	Vehicular Traffic	L_{10}	65.7	N/A
16	Along 44th Road, between 21st and 23rd Streets	Vehicular Traffic	L_{10}	74.3	31
17	Along Queens Plaza South, between 13th and 21st Streets (Elevated)	Vehicular Traffic	L_{10}	82.7	38
18	Along Queens Plaza North, between 22nd and 23rd Streets (Elevated)	Railway	L_{dn}	78.5	39
19	Intersection of Queens Plaza South and 24th Street (Elevated)	Railway	L_{dn}	83.6	44
20	North of the intersection of 23rd Street and 43rd Avenue (Elevated)	Railway	L_{dn}	80.1	41
A	Along 21st Street, between 41st Avenue and Queens Plaza North (On Car)	Vehicular Traffic	L_{10}	75.3	31

Notes:
[1] Required attenuation values shown are for residential or community facility use. Commercial office uses would require 5 dBA less attenuation.
[2] Contribution of playground noise from PS312Q playground (located 55 feet away from nearest Development Site) was added to the proportional modeling results

Based on the values shown in **Table 17-10**, required attenuation levels in order to provide an interior L_{10} noise level of 45 dBA for residential or community facility uses and 50 dBA for commercial uses and interior L_{dn} noise level of 40 dBA for residential uses were determined for all projected and potential development sites. These values are shown in **Table 17-11**. Note that projected and potential development sites without noise sensitive uses are excluded from the results below.

Table 17-11
Minimum Required Attenuation at Development Sites (in dBA)

Development Site	Block(s)	Lot(s)	Representative Receptor Location	Required Attenuation[1,2,3]
Projected Development Sites				
1	27	2, 3, 4, 5, 15, 17, 23, 25, 37	12, 13, 15	31
2	28	9, 10, 11	15	N/A
3	28	12, 15, 17, 18, 121	15	N/A
4	48	5, 8, 37, 40, 43	14	N/A
5	48	12	14	N/A
7	49	1, 5, 44	12, 14	31
9	49	35, 37	14	N/A
10	50	1	12, 14	31
12	51	1	12	31
13	51	6, 11, 28, 33, 36, 38, 42	12	31
14	51	13	14	N/A
15	51	15, 16	14	N/A
16	78	54	11	31
17	411	12, 31	18	33[5]
18	411	18	A	31
19	412	1, 25	18	39
20	424	1	19	44[6]
21	428	1	20	41[6]
22	429	16	19	37[5,6]
25	447	40	11	31
26	448	1	7, 10	28
27	448	6	10	N/A
28	448	24	10, 12	31
29	392	1, 5, 43	1, 2	31
30	392	38, 39, 40, 41	2	28
31	393	1, 27	2, 3	28
32	393	34	2, 3	28
38	444	12, 14	7	28
39	445	1, 12	7	28
42	457	143, 144, 149	6	31
43	457	169	17	38
45	458	87, 129	5	28
49	459	23, 64	4	31
50	459	65	5	28
51	460	10, 16, 30, 40	4	31
52	461	12, 13, 47	5	28
54	429	3	19	35[5,6]
57	439	8	16	31
59	454	21, 22, 25, 26, 39	7	28
62	486	24	8	31
63	25	15	9	N/A
64	26	17, 21	13	N/A
65	25, 26	1 / 10	12	31
66	24	1	8, 9	31
67	488, 489	11, 15 / 1, 23	8, 9	31
68	24	7	9	N/A
69	488	1, 3	8	31
70	480	1, 45, 46, 47, 48	12, 14	31
71	26	4	12	31
Potential Development Sites				
A[4]	48	30, 31, 35	14	N/A
B	49	15	14	N/A
C	50	17	14	N/A
D	438	7502	11	31
E	447	13	11	31

Table 17-11
Minimum Required Attenuation at Development Sites (in dBA)

Development Site	Block(s)	Lot(s)	Representative Receptor Location	Required Attenuation[1,2,3]
F	409	21	2	28
G	427	11	20	31[5]
H	442	5	6	31
I	442	18	6	31
J	453	29	7	28
K	457	175	17	38
L	438	45	16	31
M	439	2	16	31
N	446	9, 10	11	31
O	454	1, 17	7, 8	31

Notes:
[1] Attenuation values are shown for residential or community facility uses; commercial office uses would require 5 dBA less attenuation.
[2] "N/A" indicates that the highest calculated L_{10} is below 70 dBA. The *CEQR Technical Manual* does not specify minimum attenuation guidance for exterior L_{10} values below this level.
[3] Attenuation requirement based on cumulative noise level prediction including contribution from traffic on adjacent roadways and projected playground noise.
[4] Site A would include residential and manufacturing use in the same building; consequently, interior wall/partition separating manufacturing use from nose-sensitive use would be required to provide sufficient attenuation to ensure that the interior L_{10} noise level would be 45 dBA or less for residential uses. Residential uses would be required by New York City Department of Buildings (DOB) Building Code to have demising partitions that meet at least Sound Transmission Class (STC) 50.
[5] Noise exposure adjusted based on greater distance from railway source than representative receptor location.
[6] Residential dwelling units required by ZR 123-32 to provide sufficient window-wall attenuation (minimum 35 dBA) to maintain an interior noise level of 45 dBA or less as well as a means of alternate ventilation that does not degrade the acoustical performance of the building façade.

To require attenuation at the projected and potential development sites other than City-owned development sites, an (E) Designation (E-848) for noise would be applied, specifying the appropriate amount of window/wall attenuation. The text of the (E) Designation would be as follows for all development sites except 20, 21, 22, and 54:

> **To ensure an acceptable interior noise environment, the building façade(s) of future development on the sites shown in Table 17-11 must provide minimum composite building façade attenuation as shown in Table 17-11, in order to maintain an acceptable interior noise level not greater than the thresholds specified for residential, community facility, or commercial office. To maintain a closed-window condition in these areas, an alternate means of ventilation that brings outside air into the building without degrading the acoustical performance of the building façade(s) must also be provided.**

For development sites 20, 21, 22, and 54, the text of the (E) Designation would be as follows:

> **To ensure an acceptable interior noise environment, the building façade(s) of future development on the sites shown in Table 17-11 must provide minimum composite building façade attenuation as shown in Table 17-11, in order to maintain an acceptable interior noise level not greater than the thresholds specified for community facility or commercial office. To maintain a closed-window condition in these areas, an alternate means of**

ventilation that brings outside air into the building without degrading the acoustical performance of the building façade(s) must also be provided.

Additionally, as discussed above, the façade attenuation and the requirement for an alternate means of ventilation included in ZR Section 123-32, as enforced by DOB, would apply to all dwelling units at development sites 20, 21, 22, and 54. Further review by OER would be required to alter the attenuation requirements at these sites. Regardless of the final attenuation requirement, requirements of ZR Section 123-32 would be sufficient to ensure acceptable interior noise levels at all dwelling units.

The requirement for façade attenuation as well as the requirement for an alternate means of ventilation for City-owned sites will be required through disposition agreements or similar binding mechanisms between the City of New York and the future developer.

By adhering to the requirements specified in ZR 123-32 and the (E) Designation described above, buildings to be developed on the projected and potential development sites as a result of the Proposed Actions would provide sufficient attenuation to achieve acceptable interior noise levels according to the *CEQR Technical Manual* guidelines for residential, community facility, or commercial office uses.

To achieve 40 dBA or more of building attenuation, special design features that go beyond the normal double-glazed window and central air conditioning would be necessary and may include using specially designed windows (i.e., windows with small sizes, windows with air gaps, windows with thicker glazing, etc.), and additional building insulation.

J. MECHANICAL EQUIPMENT

It is assumed that the building mechanical systems (i.e., HVAC systems) in all developments facilitated by the Proposed Actions would be designed to meet all applicable noise regulations (i.e., Subchapter 5, §24-227 of the New York City Noise Control Code, DOB Code) and to avoid producing levels that would result in any significant increase in ambient noise levels. Therefore, the Proposed Actions would not result in any significant adverse noise impacts related to building mechanical equipment. ✷