4.4 Noise

4.4.1 Introduction

Prior to the preparation of this EIR, an Initial Study was prepared using the California Environmental Quality Act (CEQA) Environmental Checklist Form to assess potential environmental impacts associated with noise. The IS found that for all six noise-related thresholds, the proposed MSC North Project would result in a "less than significant impact" and that no further analysis of that topic in an EIR was required. However, during the EIR Notice of Preparation (NOP) public comment period, LAWA received a request to analyze the potential impacts of aircraft noise from changes to taxi routes that would occur as a result of the proposed MSC North Project; therefore, this section analyzes potential taxi-noise impacts that would result from the development of the proposed MSC North Project. The analysis describes the existing noise environment within the MSC North Project area, estimates future noise levels at surrounding land uses resulting from operations of the proposed MSC North Project, and evaluates the potential for significant impacts. Noise calculation and data sheets for the proposed MSC North Project are included in **Appendix D** of this EIR.

Implementation of the future phase(s) of the MSC Program would also generate changes to taxi routes and thus taxiway noise. However, noise impacts from the MSC Program were analyzed in the LAX Master Plan EIR and it is expected that these impacts would not be substantively different from the MSC North Project. Thus, taxiway noise for the future phase(s) of the MSC Program is not analyzed in this EIR.

4.4.1.1 Noise Descriptors

Noise levels are measured using a variety of scientific metrics. As a result of extensive research into the characteristics of aircraft noise and human response to that noise, standard noise descriptors have been developed for aircraft noise exposure analyses. The descriptors used in this noise analysis are described below.

A-Weighted Sound Pressure Level (dBA): The decibel (dB) is a unit used to describe sound pressure level. When expressed in dBA, the sound has been filtered to reduce the effect of very low and very high frequency sounds, much as the human ear filters sound frequencies. Without this filtering, calculated and measured sound levels would include events that the human ear cannot hear (e.g., dog whistles and low frequency sounds, such as the groaning sounds emanating from large buildings with changes in temperature and wind). With A-weighting, calculations and sound monitoring equipment approximate the sensitivity of the human ear to sounds of different frequencies.

Some common sounds on the dBA scale are listed in **Table 4.4-1**. As shown, the relative perceived loudness of a sound doubles for each increase of 10 dBA, although a 10-dBA change in the sound level corresponds to a factor of 10 change in relative sound energy.

Table 4.4-1

Common Sounds On The A-Weighted Decibel Scale

Sound	Sound Level (dBA)	Relative Loudness (approximate)	Relative Sound Energy
Rock Music, with amplifier	120	64	1,000,000
Thunder, snowmobile (operator)	110	32	100,000
Boiler shop, power mower	100	16	10,000
Orchestral crescendo at 25 feet, noisy kitchen	90	8	1,000
Busy Street	80	4	100
Interior of department store	70	2	10
Ordinary conversation, 3 feet away	60	1	1
Quiet automobiles at low speed	50	½	0.1
Average office	40	1/4	0.01
City residence	30	1/8	0.001
Quite country residence	20	1/16	0.0001
Rustle of leaves	10	1/32	0.00001
Threshold of hearing	0	1/64	0.000001

Source: U.S. Department of Housing and Urban Development, Aircraft Noise Impact--Planning Guidelines for Local Agencies, 1972

In general, humans find a change in sound level of 3 dB is just noticeable, a change of 5 dB is clearly noticeable, and a change of 10 dB is perceived as doubling or halving sound level. Because of the logarithmic scale of the decibel unit, sound levels cannot be added or subtracted arithmetically. If a sound's physical intensity is doubled, the sound level increases by 3 dB, regardless of the initial sound level. For example, 60 dB plus 60 dB equals 63 dB, 80 dB plus 80 dB equals 83 dB. However, where ambient noise levels are high in comparison to a new noise source, there will be a small change in noise levels. For example, when 70 dB ambient noise levels are combined with a 60 dB noise source the resulting noise level equals 70.4 dB.

Maximum Noise Level (L_{max}): L_{max} is the maximum or peak sound level during a noise event. The metric only accounts for the instantaneous peak intensity of the sound, and not for the duration of the event. As an aircraft passes by an observer, the sound level increases to a maximum level and then decreases. Some sound level meters measure and record the maximum or L_{max} level.

Sound Exposure Level (SEL): SEL, expressed in dBA, is a time integrated measure, expressed in decibels, of the sound energy of a single noise event at a reference duration of one second. The sound level is integrated over the period that the level exceeds a threshold. Therefore, SEL accounts for both the maximum sound level and the duration of the sound. The standardization of discrete noise events into a one-second duration allows calculation of the cumulative noise exposure of a series of noise events that occur over a period of time. Because of this compression of sound energy, the SEL of an aircraft noise event is typically 7 to 12 dBA greater than the L_{max} of the event. SELs for aircraft noise events depend on the location of the aircraft relative to the noise receptor, the type of operation (landing, takeoff, or overflight), and the type of aircraft.

Equivalent Continuous Noise Level (L_{eq}): L_{eq} is the sound level, expressed in dBA, of a steady sound which has the same A-weighted sound energy as the time-varying sound over the averaging period. Unlike SEL, L_{eq} is the average sound level for a specified time period (e.g., 24 hours, 8 hours, 1 hour, etc.). L_{eq} is calculated by integrating the sound energy from all noise events over a given time period and applying a factor for the number of events. L_{eq} can be expressed for any time interval, for example the L_{eq} representing an averaged level over an 8 hour period would be expressed as $L_{eq(8)}$.

Day-Night Average Sound Level (DNL): DNL, formerly referred to as L_{dn}, is expressed in dBA and represents the noise level over a 24-hour period. Because environmental noise fluctuates over time, DNL was devised to relate noise exposure over time to human response. DNL is a 24-hour average of the hourly L_{eq}, but with penalties to account for the increased sensitivity to noise events that occur during the more sensitive nighttime periods. Specifically, DNL penalizes noise 10 dB during the nighttime time period (10:00 p.m. to 7:00 a.m.). The U.S. Environmental Protection Agency (USEPA) introduced the metric in 1976 as a single number measurement of community noise exposure. The FAA adopted DNL as the noise metric for measuring cumulative aircraft noise under Federal Aviation Regulations (FAR) Part 150, Airport Noise Compatibility Planning. The Department of Housing and Urban Development, the Veterans Administration, the Department of Defense, the United States Coast Guard, and the Federal Transit Administration have also adopted DNL for measuring cumulative noise exposure. DNL is used to describe existing and predicted noise exposure in communities in airport environs based on the average daily operations over the year and the average annual operational conditions at an airport. Therefore, at a specific location near an airport, the noise exposure on a particular day is likely to be higher or lower than the annual average noise exposure, depending on the specific operations at an airport on that day. DNL is widely accepted as the best available method to describe aircraft noise exposure and is the noise descriptor required for aircraft noise exposure analyses and land use compatibility planning under FAR Part 150 and for environmental assessments for airport improvement projects (FAA Order 10501.E).

Community Noise Equivalent Level (CNEL): CNEL, expressed in dBA, is the standard metric used in California to represent cumulative noise exposure. The metric provides a single-number description of the sound energy to which a person or community is exposed over a period of 24 hours similar to DNL. CNEL includes penalties applied to noise events occurring after 7:00 p.m. and before 7:00 a.m., when noise is considered more intrusive. The penalized time period is further subdivided into evening (7:00 p.m. through 9:59 p.m.) and nighttime (10:00 p.m. to 6:59 a.m.). When a noise event occurs in the evening, a penalty of 4.77 dBA is added to the nominal sound level (equivalent to a three-fold increase in aircraft operations). A 10 dBA penalty is added to nighttime noise events (equivalent to a ten-fold increase in aircraft operations). The evening weighting is the only difference between CNEL and DNL. For purposes of aircraft noise analysis in the State of California, the FAA recognizes the use of CNEL.[1]

[1] See FAA Order 5050.4B, Page 8, Section 9, Paragraph "n" for FAA's acceptance of the CNEL metric as a suitable substitute for the Day-Night Average Sound Level (DNL).

4.4.2 Methodology

The proposed MSC North Project involves construction and operation of a new midfield satellite concourse at LAX in order to reduce reliance on the West Remote Gates/Pads, allow for the modernization of other outdated terminals, and for taxilane and apron pavement rehabilitation within the CTA at LAX. The MSC North Project will not increase passenger or gate capacity, nor flights and/or aircraft operations at LAX; the proposed MSC North Project would only change the location of aircraft gates. Therefore, the operational noise analysis associated with the proposed MSC North Project addresses potential impacts from aircraft taxi operations to and from the Project site.

As indicated above, implementation of the proposed MSC North Project would not increase the number of aircraft operations at LAX, but would result in a change to the normal taxi route that certain aircraft currently take (e.g., the proposed MSC North Project would reduce reliance on the West Remote Gates/Pads located on the far west side of the Airport; thus, these aircraft would travel to/from a new location at the center of the airfield and may travel a different taxi route than what they do today under baseline conditions). Additionally, as compared to the 2012 baseline and the 2019 Without Project scenario, the 2019 With Project scenario would include three additional taxiways/taxilanes: Taxiway C14, Taxilane C12, and the extension of Taxilane T. The addition of these taxiways/taxilanes would improve aircraft ground movements for aircraft traveling between the north and south airfields, as well as to and from the MSC North building. Detailed Project information regarding the new taxiways/taxilanes is outlined in Chapter 2, *Project Description*.

The FAA's Integrated Noise Model (INM) was used for the taxi noise analysis. Taxi paths delineating the routes of aircraft traveling to and from the Project site were defined based on conservative assumptions (i.e., long taxiing distances) regarding which runways those taxiing trips would begin or end. Modeled taxi paths (see Appendix D for taxi paths) are as follows:

- Runway 25L Arrivals, utilizing Taxiways U, C, and R traveling to the west gates of the MSC North building;
- Runway 25L Arrivals, utilizing Taxiways U and C, and Taxilane T traveling to the east gates of the MSC North building;
- Runway 24R Arrivals, utilizing Taxiways BB and E, and Taxilane C12 traveling to the west gates of the MSC North building;
- Runway 24R Arrivals, utilizing Taxiways BB and E, and Taxilane T traveling to the east gates of the MSC North building;
- Runway 25R Departures, utilizing Taxilane T and Taxiway B traveling from the east gates of the MSC North building;
- Runway 24L Departures, utilizing Taxilane T and Taxiways E and V, traveling from the east gates of the MSC North building; and
- Runway 25L Departures, utilizing Taxilane T and Taxiways C, U, A and F, traveling from the east gates of the MSC North building.

As the proposed MSC North Project would reduce reliance on the West Remote Gates/Pads (located on the far west side of the Airport), and allow for modernization of terminals, and for taxilane and apron pavement rehabilitation within the CTA, aircraft utilizing the MSC North Project gates would now be traveling to/from the center of the airfield and would travel a different taxi route than what they do today under existing conditions. The MSC North Project taxi routes would have both increased and decreased taxi distances depending on runway use; however, it is expected that these differences in taxi distances would generally even out between arrival and departure operations.

Based on the 2019 With Project design day flight schedule (DDFS), it is estimated that a maximum of 106 aircraft operations (53 arrivals and 53 departures) would use the MSC North Project site on a daily basis in 2019. Assumptions of daily aircraft arriving to and departing from the MSC North building based on time of day (day, evening, and night) are presented in **Table 4.4-2**.

Table 4.4-2

Daily Number of Operations Arriving/Departing at MSC North

Aircraft	Day [1]	Evening [2]	Night [3]	Total
B737-300	4	0	0	4
B737-700	4	2	2	8
B737-800	15	0	9	24
B747-400	8	4	1	13
B757-300	1	1	3	5
B757-RR	2	3	1	6
B767-300	1	2	1	4
B777-200	6	2	3	11
B777-300	6	0	0	6
A319	6	2	1	9
A320	0	2	0	2
A321	1	0	1	2
A340	2	0	0	2
A380	4	0	0	4
CRJ9-ER	2	2	0	4
EMB190	2	0	0	2
Total	**64**	**20**	**22**	**106**

Notes:
1 Daytime hours are between 7 a.m. and 6:59 p.m.
2 Evening hours are between 7 p.m. and 9:59 p.m.
3 Nighttime hours are between 10 p.m. and 6:59 a.m.

Source: Ricondo & Associates, Inc., November 2013.

Based on the above, sound exposure level (SEL) noise footprints were prepared for typical Airplane Design Group (ADG) III (Boeing 737-800), ADG IV (Boeing 767-300), ADG V (Boeing 777-300), and ADG VI (Airbus A380-841) aircraft. **Table 4.4-3** identifies the SEL footprints prepared for each ADG/runway combination. SEL noise footprints only consider the west flow runway operating configuration as aircraft operate in this configuration at LAX approximately 97.9 percent of the time on an annual basis.[2] Figures depicting the SEL footprints are included in Appendix D of this EIR.

SEL is a time integrated measure that accounts for both the maximum sound level and the duration of the sound. CNEL values were calculated based on the number and time of day operations were estimated to occur.

Taxi profiles were created in the INM to represent each taxi operation. Assumptions include:

- The altitude was assumed to be the average engine-installation height;
- A constant taxi speed of 15 knots; and
- Thrust setting assumed to be 10 percent of the maximum thrust value in the noise power distance (NPD) curves associated with the aircraft.

Table 4.4-3

Aircraft SEL Footprints

Airplane Design Group (ADG)	Representative Aircraft	Arrival Runway(s)	Departure Runway(s)
III	B737-800	25L, 24R	25R, 24L
IV	B767-300	25L, 24R	25R, 24L
V	B777-300	25L, 24R	25R, 24L
VI	A380-841	25L, 24R	25L

Source: Ricondo & Associates, Inc., November 2013.

4.4.3 Existing Conditions

4.4.3.1 Regulatory Context

Many government agencies have established noise standards and guidelines to protect citizens from potential hearing damage and various other adverse physiological and social effects associated with noise and ground-borne vibration. The City of Los Angeles has adopted a number of policies, which are based in part on federal and State regulations and are directed at controlling or mitigating environmental noise effects. The government agency policies that are relevant to the MSC North Project operational noise levels are discussed below.

[2] Based on analysis of radar data for aircraft operating at LAX.

Federal – Federal Aviation Administration

The FAA Order 1050.1E states that a significant noise impact would occur if an analysis shows that the proposed action will cause noise sensitive areas to experience an increase in DNL of 1.5 dB or more at or above DNL 65 dB noise exposure when compared to the no action alternative for the same timeframe.[3] DNL values are considered to be comparable to CNEL values.[4]

State

The State of California mandates the use of CNEL as the required noise metric, which is also accepted by the FAA for airport noise studies in California.[5] Accordingly, the Aeronautics Division of Caltrans establishes 65 dBA CNEL as a noise impact boundary within which no incompatible land uses should be implemented. Federal and state airport noise regulations, as well as local plans and ordinances, ensure that a buffer of compatible land uses is maintained in the vicinity of LAX.

Local

The City of Los Angeles Municipal Code (LAMC) (Section 41.40 and Chapter XI, Articles 1 through 6) establishes regulations regarding allowable increases in noise levels in terms of established noise criteria. Supplementing these LAMC regulations, the City has also established CNEL guidelines that are used for land use planning purposes. Those regulations and guidelines are described in more detail below.

City of Los Angeles Noise Regulation

Chapter XI of the Los Angeles Municipal Code (City of Los Angeles Noise Ordinance) establishes acceptable ambient sound levels to regulate intrusive noises (e.g., stationary mechanical equipment and vehicles other than those traveling on public streets, including, but not limited to, those used for construction activity, as further described below) within specific land use zones. In accordance with the City's Noise Ordinance, a noise level increase of 5 dBA over the existing average ambient noise level at an adjacent property line is considered a noise violation. For the purposes of determining whether or not a violation of the City of Los Angeles Noise Ordinance is occurring, the sound level measurements of an offending noise that has a duration of five minutes or less during a one-hour period is reduced by 5 dBA to account for people's increased tolerance for short-duration noise events. In cases in which the actual measured ambient noise level is not known, the presumed ambient noise level, as indicated in **Table 4.4-4** is used.

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3 Federal Aviation Administration Order 1050.1E, Change 1, Environmental Impacts: Policies and Procedures, March 20, 2006.

4 CNEL is used by the State of California and is similar to DNL except that an additional penalty is associated with noise events occurring during evening hours (7:00 p.m. – 10:00 p.m.). Noise events occurring during this period are weighted by 4.77 dBA. FAA Order 5050.4B, accepts the use of CNEL for airport noise studies in California.

5 Federal Aviation Administration, Order 5050.4B, National Environmental Policy Act (NEPA) Implementing Instructions for Airport Projects, CH.1(9)(n), June 8, 2004.

Table 4.4-4

City of Los Angeles Presumed Ambient Noise Levels

Zone	Daytime Hours [1] dBA (L_{eq})	Nighttime Hours [2] dBA (L_{eq})
Residential	50	40
Commercial	60	55
Manufacturing (M1, MR1, MR2)	60	55
Heavy Manufacturing (M2, M3)	65	65

Notes:
1 Daytime hours are between 7 a.m. and 10 p.m.
2 Nighttime hours are between 10 p.m. and 7 a.m.

Source: Los Angeles Municipal Code, Chapter XI, Article I, Section 111.03.

City of Los Angeles General Plan Noise Element

The City of Los Angeles has developed a Noise Element of the General Plan to guide in the development of noise regulations.[6] The Noise Element of the City of Los Angeles General Plan addresses noise mitigation regulations, strategies, and programs and delineates federal, state, and City jurisdiction relative to rail, automotive, aircraft, and nuisance noise. The City of Los Angeles has adopted local guidelines based, in part, on the community noise compatibility guidelines established by the State Department of Health Services (CDHS) for use in assessing the compatibility of various land use types with a range of noise levels. CNEL guidelines for specific land uses are classified into four categories: (1) "normally acceptable," (2) "conditionally acceptable," (3) "normally unacceptable," and (4) "clearly unacceptable." As shown in **Table 4.4-5**, a CNEL value of 65 dBA is the upper limit of what is considered a "normally acceptable" noise environment for multi-family residential uses, although a CNEL as high as 70 dBA is considered "conditionally acceptable." The upper limit of what is considered "normally unacceptable" for residential uses is set at 75 dBA CNEL.

City of El Segundo Noise Ordinance

The City of El Segundo has enacted a noise ordinance[7] that prohibits the creation of noise levels greater than 5 dB higher than ambient noise levels on residential land uses, or greater than 8 dBA higher than ambient noise levels on commercial and industrial property. However, the ordinance also states that activities that are preempted by State or Federal law (such as aircraft) are exempted from the ordinance.

6 City of Los Angeles, Noise Element of the Los Angeles City General Plan, February 3, 1999.

7 City of El Segundo Municipal Code, Title 7, Chapter 2, "Noise and Vibration."

Table 4.4-5

City of Los Angeles Land Use Compatibility for Community Noise

	Community Noise Exposure CNEL, dBA			
Land Use	**Normally Acceptable [1]**	**Conditionally Acceptable [2]**	**Normally Unacceptable [3]**	**Clearly Unacceptable [4]**
Single-Family, Duplex, Mobile Homes	50 to 60	55 to 70	70 to 75	Above 70 [a]
Multi-Family Homes	50 to 65	60 to 70	70 to 75	Above 70 [a]
Schools, Libraries, Churches, Hospitals, Nursing Homes	50 to 70	60 to 70	70 to 80	Above 80
Transient Lodging—Motels, Hotels	50 to 65	60 to 70	70 to 80	Above 80
Auditoriums, Concert Halls, Amphitheaters	—	50 to 70	—	Above 65
Sports Arena, Outdoor Spectator Sports	—	50 to 75	—	Above 70
Playgrounds, Neighborhood Parks	50 to 70	—	67 to 75	Above 72
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50 to 75	—	70 to 80	Above 80
Office Buildings, Business and Professional Commercial	50 to 70	67 to 77	Above 75	—
Industrial, Manufacturing, Utilities, Agriculture	50 to 75	70 to 80	Above 75	—

Notes:

1 Normally Acceptable: Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.

2 Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.

3 Normally Unacceptable: New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

4 Clearly Unacceptable: New construction or development should generally not be undertaken.

a This 70 dB figure is quoted directly from the City of Los Angeles L.A. CEQA Thresholds Guide. However, other sources quote this number as 75 dB (i.e., State of California General Plan Guidelines, Preliminary Draft, Governor's Office of Planning and Research, October 2002, p. 258, and Noise Element of the City of Los Angeles General Plan, Department of City Planning Los Angeles, California, February 1999, p. I-1). This may be a typographical error in the L.A. CEQA Thresholds Guide. Note that this potential error does not affect the determination of significant impacts for this report.

Source: California Department of Health Services, Guidelines for the Preparation and Content of the Noise Element of the General Plan, 1999.

4.4.3.2 Environmental Setting

The existing noise environment at and around the MSC North Project site consists of noise from Airport-related activities including aircraft departing, landing, and taxiing on runways and connecting taxiways; and noise from vehicular traffic movements on local roadways. Some land uses are considered more sensitive to intrusive noise than others due to the amount of noise exposure and the types of activities typically involved at the receptor location. The *L.A. CEQA Thresholds Guide* states that residences, schools, motels and hotels, libraries, religious institutions, hospitals, nursing homes, and parks are generally more sensitive to noise than commercial and industrial land uses.

Potential noise sensitive locations that may be affected by the proposed MSC North Project were identified based on the closest areas to the change in taxi paths. Since the proposed MSC North Project site is located in the center of the Airport, the identification of representative noise-sensitive receptors focused on areas in El Segundo west of Sepulveda Boulevard and areas in Playa del Rey and Westchester west of Lincoln Boulevard. These receptors, as well as additional modeled receptors, are depicted on **Figure 4.4-1**.

4.4.3.3 Existing Ambient Noise

Information regarding existing CNEL values was obtained from LAWA's California State Airport Noise Standards Quarterly Report, Fourth Quarter 2012.[8] As discussed above, noise sensitive areas include areas in El Segundo west of Sepulveda Boulevard and areas in Playa del Rey and Westchester west of Lincoln Boulevard.

Existing ambient noise levels in the southern portion of Westchester, nearest to LAX, range between approximately 63 to 64 dBA during the daytime and 59 to 60 dBA during the nighttime. As also indicated on that page, existing ambient noise levels in El Segundo adjacent to the airport are estimated to be approximately 65 dBA or greater during the daytime and 60 dBA or greater during the nighttime.

4.4.4 Thresholds of Significance

The following CEQA thresholds of significance are included in the City of Los Angeles CEQA Thresholds Guide[9] for the assessment of community noise exposure and are applicable to the proposed MSC North Project noise impacts analysis. A significant noise impact from airport operations would occur if:

- Noise levels at a noise sensitive use attributable to airport operations exceed 65 dB CNEL and the project increases ambient noise levels by 1.5 dB CNEL or greater.

4.4.5 Applicable LAX Master Plan Commitments and Mitigation Measures

LAX Master Plan commitments and mitigation measures are described in the LAX Master Plan's Mitigation Monitoring and Reporting Program (MMRP). Of the commitments and mitigation measures that were designed to address noise impacts, none of the four mitigation measures or three LAX Master Plan Commitments consider taxiway noise, and therefore are not applicable, and not considered, in the noise analysis for the proposed MSC North Project.

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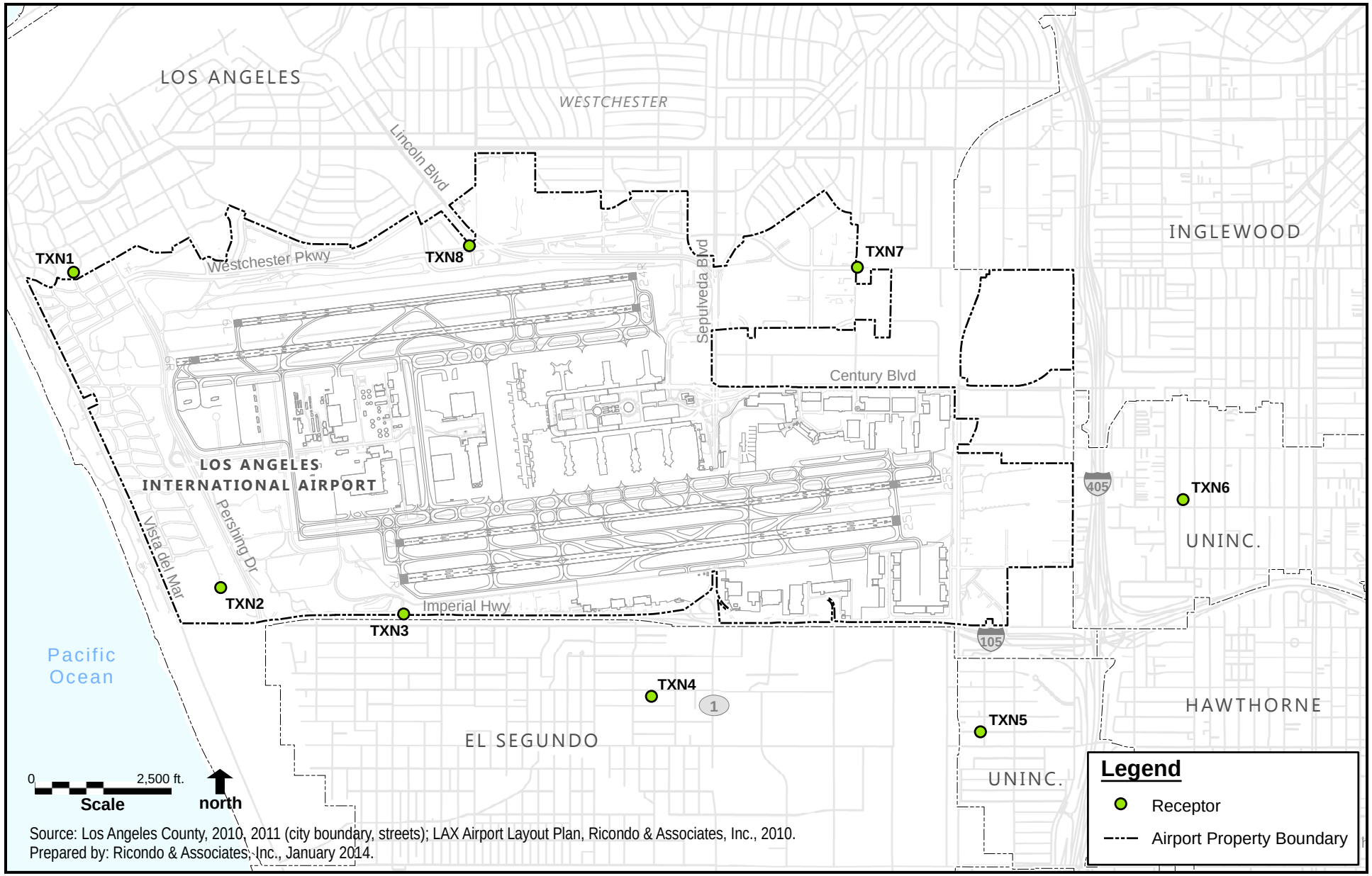
8 City of Los Angeles, Los Angeles World Airports, "California State Airport Noise Standards Quarterly Report," Fourth Quarter 2012, Available: http://lawa.org/uploadedFiles/LAX/pdf/4Q12 Quarterly Report map.pdf, accessed January 9, 2014.

9 City of Los Angeles, *L.A. CEQA Thresholds Guide*, 2006.



Source: Los Angeles County, 2010, 2011 (city boundary, streets); LAX Airport Layout Plan, Ricondo & Associates, Inc., 2010.
Prepared by: Ricondo & Associates, Inc., January 2014.

LAX Midfield Satellite Concourse Draft EIR	Modeled Noise Receptor Locations	Figure 4.4-1

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4.4.6 Impact Analysis

As described earlier, implementation of the proposed MSC North Project would not increase the number of aircraft operations at LAX, but would result in a change to the normal taxi routes that certain aircraft currently take to and from aircraft gates. The evaluation of potential noise impacts associated with that change focuses on the taxi routes aircraft would take going to and from the proposed MSC North Project site that would be different from the routes currently used. Given that the vast majority of existing aircraft taxiing operations at LAX would be unaffected by the proposed MSC North Project, the evaluation of Project-related impacts focuses specifically on the number, type, and route of aircraft taxiing to and from the Project site, as opposed to modeling the entirety of taxiing operations at LAX with and without the MSC North Project. Assumptions associated with aircraft movement to and from the proposed MSC North Project site are discussed in Section 4.4.2, *Methodology*.

With the taxiing operations identified in Section 4.4.2, CNEL values were calculated based on the number and time of day operations were estimated to occur and added to the existing ambient CNELs in residential areas to the north and south of the airport, to determine whether the Project-related aircraft taxiing noise would result in a 1.5 dB CNEL or greater increase at a noise sensitive use.

The total average daytime noise level associated with the MSC North Project taxi operations, defined as occurring between 7:00 a.m. and 7:00 p.m., and the total average evening and nighttime noise level associated with proposed MSC North Project taxi operations, defined as occurring between 7:00 p.m. and 7:00 a.m., were calculated based on the data in Section 4.4.2. Those noise levels were compared to the existing daytime ambient noise level and existing nighttime ambient noise levels that occur in residential areas to the north and south of the airport, being the community of Westchester and the City of El Segundo, respectively.

4.4.6.1 Average Hourly Ambient Daytime and Nighttime Noise Levels

The average hourly noise levels associated with Project-related taxiing operations in the daytime and taxiing operations at nighttime were estimated assuming 106 daily aircraft (53 arrivals and 53 departures) along each taxi route between the MSC North Project site and respective runway end. The resultant Project-related taxiing noise levels at the southern edge of Westchester directly north of the nearest taxi route were estimated to be approximately 47.3 dBA in the daytime and 42.7 dBA at night. As indicated in Section 4.4.3, Existing Conditions, existing ambient noise levels in the southern portion of Westchester are approximately 63-64 dBA in the day and 59-60 dBA at night. The MSC North Project-related aircraft taxiing noise would be substantially less than existing ambient noise levels, and when added to existing ambient noise levels, would increase the existing ambient noise levels by approximately 0.09 dB in the daytime and 0.08 dB at night.[10]

[10] Sound levels are expressed in decibels and are based on a logarithmic scale. Sound levels cannot be added directly (i.e., 60 dB + 60 dB does not equal 120 dB; instead it equates to 63 dB). The addition of noise decibels can be computed by the following equation: (10 Log10 (10^(P1/10) + 10^(P2/10))).

At the northern edge of El Segundo directly south of the nearest taxi route, the Project-related taxiing noise levels are estimated to be approximately 52.8 dBA in the daytime and 38.6 dBA at night. Existing ambient noise levels in the northern portion of El Segundo near LAX are approximately 65 dBA or greater in the day and 60 dBA or greater at night. The Project-related aircraft taxiing noise would be substantially less than existing ambient noise levels, and when added to existing ambient noise levels, would increase the existing ambient noise levels by approximately 0.25 dB in the daytime and 0.03 dB at night.

4.4.6.2 CNEL

Based on the number of taxiing operations and the day/night split described above in the discussion of ambient noise levels, the CNEL value associated with Project-related taxiing was estimated. The resultant CNEL values, as shown in **Table 4.4-6**, would range between 39.9 and 50.6 dBA at the noise sensitive uses north of the nearest taxi route (Westchester), and between 35.4 and 51.8 dBA at the noise sensitive uses south of the nearest taxi route in the City of El Segundo. When added to the existing CNELs at each respective receptor location, these Project-related CNEL values would increase the existing CNEL by between 0.00 and 0.10 dB. As shown in **Table 4.4-7**, the increase would be substantially less than the threshold of significance of a 1.5 dB increase; hence, the increased Project-related taxiing noise impact would be less than significant.

Table 4.4-6

Taxiway Noise CNELs

Receptor ID #	Project (dBA)	Background (dBA)	Total (dBA)	Incremental Difference
TXN1	40.3	68.0	68.01	0.01
TXN2	42.1	80.0	80.00	0.00
TXN3	51.8	75.0	75.02	0.02
TXN4	41.9	61.0	61.05	0.05
TXN5	35.4	55.0	55.05	0.05
TXN6	32.2	75.0	75.00	0.00
TXN7	39.9	75.0	75.00	0.00
TXN8	50.6	67.0	67.10	0.10

Source: Ricondo & Associates, Inc., 2013.

Table 4.4-7

Taxiway Noise CNELs, Incremental Difference

Receptor ID #	Incremental Difference	Threshold (dBA)	Significant?
TXN1	0.01	1.5	No
TXN2	0.00	1.5	No
TXN3	0.02	1.5	No
TXN4	0.05	1.5	No
TXN5	0.05	1.5	No
TXN6	0.00	1.5	No
TXN7	0.00	1.5	No
TXN8	0.10	1.5	No

Source: Ricondo & Associates, Inc., 2013.

4.4.7 Cumulative Impacts

The geographic context for the analysis of cumulative noise impacts depends on the impact being analyzed. Noise is by definition a localized phenomenon, which substantially reduces in magnitude as the distance from the source increases. As such, only projects and growth due to occur in the immediate MSC North Project area, including LAX Master Plan projects as well as other capital improvement projects undertaken by LAWA and other local agencies, would be likely to contribute to cumulative noise impacts. The following cumulative impacts analysis is based on the "list approach" taking into account the projects identified in Section 3.3, *Development Setting*.

As indicated in the impacts analysis above, operations-related increases in existing CNEL levels, estimated at nearby noise-sensitive receptors, resulting from implementation of the proposed Project would include a maximum 0.10 dBA increase associated with aircraft taxiing. This increase would be substantially less than the threshold of significance (i.e., 1.5 dBA CNEL increase). Of the related projects identified in Section 3.3, the two projects with the most potential to result in operations related changes to existing CNEL levels at the nearest sensitive noise-receptors also affected by the proposed MSC North Project would be the Runway 7L/25R Runway Safety Area (RSA) and Associated Improvements Project and the West Aircraft Maintenance Area Project. Other related projects that may result in changes in operational noise are located much farther away from the nearest noise-sensitive receptors affected by the proposed MSC North Project and are not expected to have a notable contribution to cumulative operational noise impacts. As indicated in Figure 4.6-7 of the Runway 7L/25R Runway Safety Area (RSA) and Associated Improvements Project Draft EIR, it is anticipated that CNEL levels in the northwest portion of El Segundo for 2015 With Project Conditions would increase by approximately 0.3 dB compared to 2011 Baseline Conditions.[11] As indicated in Section 4.5.6 of

[11] City of Los Angeles, Los Angeles World Airports, Draft Environmental Impact Report for Los Angeles International Airport (LAX) Runway 7L/25R Runway Safety Area (RSA) and Associated Improvements Project, September 2013.

the West Aircraft Maintenance Area Project Draft EIR[12], it is anticipated that Project-related CNEL levels in the northwest portion of El Segundo would increase by approximately 0.07 dB. These increases in combination with the increases described above for the proposed MSC North Project would not result in a 1.5 dB increase in the existing ambient noise level (i.e., CNEL) for the affected area; hence, cumulative impacts associated with operational noise would be less than significant.

4.4.8 Mitigation Measures

As no significant noise impacts would occur as a result of the operation of the proposed MSC North Project, no mitigation measures specific to the proposed Project are required.

4.4.9 Level of Significance After Mitigation

Impacts are less than significant, as indicated above; therefore, no mitigation measures are required.

[12] City of Los Angeles, Los Angeles World Airports, Draft Environmental Impact Report for Los Angeles International Airport (LAX) West Aircraft Maintenance Area Project, October 2013.