4.11 Noise

4.11.1 Introduction

This section evaluates the potential for the proposed project, which includes the Housing Element Update (HEU), the Stanford Community Plan (SCP) update, and related rezonings (collectively, the "project") to result in substantial adverse effects related to noise and vibration. Below, the Environmental Setting portion of this section includes descriptions of existing conditions relevant to noise and vibration. Further below, existing plans and policies relevant to noise and vibration associated with implementation of the project are provided in the Regulatory Setting section. Finally, the impact discussion evaluates potential impacts from noise and vibration that could result from implementation of the project in the context of existing conditions.

Notice of Preparation Comments

A Notice of Preparation (NOP) for the Draft EIR was circulated on August 8, 2022, and a scoping meeting was held on August 23, 2022. A revised NOP reflecting changes to the HEU's list of opportunity sites was circulated on March 21, 2023. Both NOPs circulated for a period of 30 days, and the NOPs and the comments received during their respective comment periods can be found in **Appendix A** of this EIR. No comments related to noise were received during either NOP comment period.

Information Sources

The primary sources of information referenced in this section included those listed below. Please note that a full list of references for this topic can be found at the end of this section.

- Santa Clara County General Plan (1994).
- Stanford University Community Plan (2000).

Technical Background and Noise Terminology

Noise can be generally defined as unwanted sound. Sound, traveling in the form of waves from a source, exerts a sound pressure level (referred to as sound level) that is measured in decibels (dB), with zero dB corresponding roughly to the threshold of human hearing and 120 to 140 dB corresponding to the threshold of pain.

Sound pressure fluctuations can be measured in units of hertz (Hz), which correspond to the frequency of a particular sound. Typically, sound does not consist of a single frequency, but rather a broad band of frequencies varying in levels of magnitude (sound power). The sound pressure level, therefore, constitutes the additive force exerted by a sound corresponding to the frequency/sound power level spectrum.

The typical human ear is not equally sensitive to all frequencies of the audible sound spectrum. Therefore, when assessing potential noise impacts, sound is measured using an electronic filter that de-emphasizes the frequencies below 1,000 Hz and above 5,000 Hz in a manner corresponding to

the human ear's decreased sensitivity to low and extremely high frequencies instead of the frequency mid-range. This method of frequency weighting is referred to as A weighting and is expressed in units of A-weighted decibels (dBA). Frequency A-weighting follows an international standard methodology of frequency de-emphasis and is typically applied to community noise measurements.

Noise exposure is a measure of noise over a period of time. Noise level is a measure of noise at a given instant in time. Community noise varies continuously over a period of time with respect to the contributing sound sources of the community noise environment. Community noise is primarily the product of many distant noise sources, which constitute a relatively stable background noise exposure, with the individual contributors unidentifiable. The background noise level changes throughout a typical day, but does so gradually, corresponding with the addition and subtraction of distant noise sources such as traffic and atmospheric conditions. What makes community noise constantly variable throughout a day, besides the slowly changing background noise, is the addition of short duration single event noise sources (e.g., aircraft flyovers, motor vehicles, sirens), which are readily identifiable to the individual receptor. These successive additions of sound to the community noise environment vary the community noise level from instant to instant, requiring the measurement of noise exposure over a period of time to legitimately characterize a community noise environment and evaluate cumulative noise impacts.

This time-varying characteristic of environmental noise is described using statistical noise descriptors. The most frequently used noise descriptors are summarized below:

- **L_{eq}:** the energy-equivalent sound level is used to describe noise over a specified period of time, typically one hour, in terms of a single numerical value. The L_{eq} is the constant sound level, which would contain the same acoustic energy as the varying sound level, during the same time period (i.e., the average noise exposure level for the given time period).
- **L_{max}:** the instantaneous maximum noise level for a specified period of time.
- **L_{dn}:** is a 24-hour day and night A-weighted noise exposure level, which accounts for the greater sensitivity of most people to nighttime noise by weighting noise levels at night ("penalizing" nighttime noises). Noise between 10:00 p.m. and 7:00 a.m. is weighted (penalized) by adding 10 dB to take into account the greater annoyance of nighttime noises.
- **CNEL:** similar to L_{dn}, the Community Noise Equivalent Level (CNEL) adds a 5-dB "penalty" for the evening hours between 7:00 p.m. and 10:00 p.m. in addition to a 10-dB penalty between the hours of 10:00 p.m. and 7:00 a.m.

As a general rule, in areas where the noise environment is dominated by traffic, the L_{eq} during the peak-hour is generally within one to two decibels of the L_{dn} at that location.

Effects of Noise on People

When a new noise is introduced to an environment, human reaction can be predicted by comparing the new noise to the ambient noise level, which is the existing noise level comprised of all sources of noise in a given location. In general, the more a new noise exceeds the ambient

noise level, the less acceptable the new noise will be judged by those hearing it. With regard to increases in A-weighted noise level, the following relationships occur:

- Except in carefully controlled laboratory experiments, a change of 1-dB cannot be perceived;
- Outside of the laboratory, a 3-dB change is considered a just-perceivable difference;
- A change in level of at least 5-dB is required before any noticeable change in human response would be expected; and
- A 10-dB change is subjectively heard as approximately a doubling in loudness and can cause an adverse response.

The perceived increases in noise levels shown above are applicable to both mobile and stationary noise sources. These relationships occur in part because of the logarithmic nature of sound and the decibel system. The human ear perceives sound in a non-linear fashion; hence, the decibel scale was developed. Because the decibel scale is based on logarithms, two noise sources do not combine in a simple additive fashion, rather logarithmically. For example, if two identical noise sources produce noise levels of 50 dBA, the combined sound level would be 53 dBA, not 100 dBA.

Noise Attenuation

Stationary point sources of noise, including stationary mobile sources such as idling vehicles, attenuate (lessen) at a rate between 6 dB for hard sites and 7.5 dB for soft sites for each doubling of distance from the reference measurement. Hard sites are those with a reflective surface between the source and the receiver such as parking lots or smooth bodies of water. No excess ground attenuation is assumed for hard sites and the changes in noise levels with distance (drop-off rate) is simply the geometric spreading of the noise from the source. Soft sites have an absorptive ground surface such as soft dirt, grass, or scattered bushes and trees. In addition to geometric spreading, an excess ground attenuation value of 1.5 dB (per doubling distance) is normally assumed for soft sites. Line sources (such as traffic noise from vehicles) attenuate at a rate between 3 dB for hard sites and 4.5 dB for soft sites for each doubling of distance from the reference measurement.

Noise levels may also be reduced by intervening structures, such as a row of buildings, a solid wall, or a berm located between the receptor and the noise source.

Fundamentals of Vibration

As described in the Federal Transit Administration's (FTA) Transit Noise and Vibration Impact Assessment Manual (FTA, 2018), ground borne vibration can be a serious concern for nearby neighbors, causing buildings to shake and rumbling sounds to be heard. In contrast to airborne noise, ground borne vibration is not a common environmental problem. It is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads. Some common sources of ground borne vibration are trains, buses and heavy trucks on rough roads, and construction activities such as blasting, sheet pile-driving, and operation of heavy earth-moving equipment.

There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is defined as the maximum instantaneous peak of the vibration signal, which is measured in inches per second (in/sec). The PPV is most frequently used to describe vibration impacts to buildings. The root mean square (RMS) amplitude is most frequently used to describe the effect of vibration on the human body. The RMS amplitude is defined as the average of the squared amplitude of the signal. Decibel notation (V_{db}) is commonly used to express RMS. The decibel notation acts to compress the range of numbers required to describe vibration. Typically, ground borne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration. Sensitive receptors for vibration assessment include structures (especially older masonry structures), people who spend a lot of time indoors (especially residents, students, the elderly and sick), and vibration sensitive equipment such as hospital analytical equipment and equipment used in computer chip manufacturing.

The effects of ground borne vibration include movement of the building floors, rattling of windows, shaking of items on shelves or hanging on walls, and rumbling sounds. In extreme cases, the vibration can cause damage to buildings. Building damage is not a factor for most projects, with the occasional exception of blasting and pile-driving during construction. Annoyance from vibration often occurs when the vibration exceeds the threshold of perception by only a small margin.

4.11.2 Environmental Setting

Existing Noise-Sensitive Land Uses

Human response to noise varies considerably from one individual to another. Effects of noise at various levels can include interference with sleep, concentration, and communication, and can cause physiological and psychological stress and hearing loss. Given these effects, some land uses are considered more sensitive to noise levels than others due to the duration and nature of time people spend at these uses. In general, residences are considered most sensitive to noise as people spend extended periods of time in them, including the nighttime hours. Therefore, noise impacts to rest and relaxation, sleep, and communication are highest at residential uses. Schools, hotels, hospitals, nursing homes, and recreational uses are also considered to be more sensitive to noise as activities at these land uses involve rest and recovery, relaxation and concentration, and increased noise levels tend to disrupt such activities. Places such as churches, libraries, and cemeteries, where people tend to pray, study, and/or contemplate, are also sensitive to noise but due to the limited time people spend at these uses, impacts are usually tolerable. Commercial and industrial uses are considered the least noise sensitive.

Existing Noise Environment

The noise environment in and around the County is influenced by vehicular traffic along arterial roadways such as Tully Road and White Road. Other noise sources in the region include the Valley Transit light rail operations and Caltrain operations. Average noise levels during the day and night range from 75 to 79 dBA, L_{dn} near Interstate 280 to 65 to 69 dBA, L_{dn} near Camden Avenue, as indicated in the City of San José's Road Noise Map tool. Noise levels in rear yards of homes can be as low as 49 dBA in locations far away from highways or arterial roadways.

Traffic noise modeling was conducted using existing traffic volumes for roadways near to housing opportunity sites that were identified as part of the transportation analysis. Results of this traffic modeling are presented in **Table 4.11-1** and are representative of transportation noise levels generated along identified roadways.

TABLE 4.11-1
EXISTING CNEL TRAFFIC NOISE LEVELS ALONG STREETS IN THE VICINITY OF THE HOUSING ELEMENT UPDATE

Roadway	Location	Existing (2022) Traffic Noise Level (CNEL)
Bascom Avenue	between Olive Avenue and Forest Avenue	69
Bascom Avenue	between Maywood Avenue and Lindaire Avenue	68
Camden Avenue	between New Jersey Avenue and Leigh Avenue	72
Capitol Avenue	between I-680 and Hostetter Road	68
Fleming Avenue	between Neves Way and Mahoney Drive	63
Hostetter Road	between I-680 and Capitol Avenue	71
Hostetter Road	between Capitol Ave and Peachwood Drive	68
Kirk Avenue	between Summit Avenue and Madeline Drive	70
Kirk Avenue	between Madeline Drive and Hyland Avenue	59
Leigh Avenue	between Camden Avenue and Weeth Drive	65
McKee Road	between Challenger Avenue and White Road	70
McKee Road	between La Pala Drive and Delia Street	68
Moorpark Avenue	between SR 17 and Thornton Way	69
Quarry Road	between Campus Dr and El Camino Real	64
San Carlos Street	between Vaughn Avenue and Arleta Avenue	68
San Carlos Street	between Leigh Avenue and Richmond Avenue	68
Stanford Avenue	between Bowdoin Street and El Camino Real	59
Stevens Creek Blvd	between Bascom Avenue and Bradley Avenue	68
Thornton Way	between Clove Drive and Moorpark Avenue	60
Toyon Avenue	between Cortese Circle and McKee Road	61
Tully Road	between White Road and Buckhill Court	67
White Road	between White Court and Westboro Drive	69
White Road	between Florence Court and Rose Avenue	68
White Road	between Kentridge Drive and McKee Road	67
White Road	between Tully Road and Cunningham Lake Avenue	69

NOTES:

a Noise levels were determined using methodology described in the Fedaeral Highway Administation (FHWA)s Traffic Noise Model Technical Manual.

SOURCE: ESA, 2023 (Appendix D)

4.11.3 Regulatory Setting

Federal

Noise Control Act

In 1972, the Noise Control Act was established to address the concerns of noise as a growing danger to the health and welfare of the Nation's population, particularly in urban areas. In 1974, in response to the Noise Control Act, the U.S. Environmental Protection Agency (EPA) published Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety. (U.S. EPA, 2074) **Table 4.11-2** summarizes U.S. EPA findings for residential land uses.

TABLE 4.11-2
SOUND LEVELS THAT PROTECT PUBLIC HEALTH (DBA)

Category	Measure of Exposure	Indoor			Outdoor		
		Activity Interference	Hearing Loss	To Protect Against Both Effects	Activity Interference	Hearing Loss	To Protect Against Both Effects
Residential with Outside Space	L_{dn}	45	70	45	55	70	55
Residential with No Outside Space	L_{dn}	45	70	45	-	-	-

NOTES: Sound levels are yearly average equivalent in decibels; the exposure period which results in hearing loss at the identified level is a period of forty years.

SOURCE: U.S. Environmental Protection Agency, Information of Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an adequate Margin of Safety, 1974.

Occupational Safety and Health Administration

The Occupational Safety and Health Administration (OSHA) aims to ensure worker safety and health in the United States by working with employers and employees to create better working environments. With regard to noise exposure and workers, OSHA regulations set forth accepted criteria to protect the hearing of workers exposed to occupational noise. Noise exposure regulations are listed in 29 Code of Federal Regulations (CFR) Section 1910.95. Section 1910.95(c)(1) states that an employer shall administer a hearing conservation program whenever noise exposure levels equal or exceed an 8-hour time-weighted average sound level of 85 dBA.

Federal Aviation Administration

The Federal Aviation Administration (FAA) has published guidelines for land use compatibility in 14 CFR Part 150. For aviation noise analyses, the FAA has determined that the 24-hour cumulative exposure of individuals to noise resulting from aviation activities must be established in terms of L_{dn} as FAA's primary metric. However, the FAA recognizes CNEL as an alternative metric for assessing aircraft (e.g., helicopters) noise exposure in California.

Based on FAA standards, a significant noise impact would occur if analysis shows that the project would cause noise sensitive areas to experience an increase in the aircraft noise level of 1.5 dB CNEL or more when aircraft levels are 65 dBA CNEL or higher. In addition, a significant noise impact would occur if noise sensitive land uses would be newly exposed to levels of 65 dBA CNEL or higher as a result of a project. For example, a 1.5 dB increase at an aircraft noise level of 63.5 dBA CNEL that brings the aircraft noise level to 65 dBA CNEL would be considered a significant impact.

According to Chapter 65 of Title 42 of the United States Code, and Articles 3 and 3.5 of Chapter 4 of Division 9 of the Public Utilities Code of the State of California, local enforcement of noise regulations and land use regulations related to noise control of airports (e.g., helistops) are preempted by the FAA.

State

Title 24

Title 24 of the California Code of Regulations codifies Sound Transmission Control requirements, which establishes uniform minimum noise insulation performance standards for new hotels, motels, dormitories, apartment houses, and dwellings other than detached single-family dwellings. Specifically, Title 24 states that interior noise levels attributable to exterior sources shall not exceed 45 dBA CNEL in any habitable room of new dwellings.

Department of Industrial Relations

The Division of Occupational Safety and Health (DOSH) protects workers and the public from safety hazards through its California Divisions of Occupational Safety and Health (Cal/OSHA) program. The Cal/OSHA Program is responsible for enforcing California laws and regulations pertaining to workplace safety and health and for providing technical assistance to employers and workers about workplace safety and health issues. DOSH enforces noise standards in the workplace in conjunction with OSHA through the CAL/OSHA program.

Local

Santa Clara County General Plan

The Santa Clara County General Plan is a comprehensive long-range general plan for the physical development of the County of Santa Clara (County of Santa Clara, 1994). The General Plan contains the current County of Santa Clara Housing Element, which was adopted in 2015. The various elements within the General Plan include goals and policies for the physical development of the County. General Plan strategies and policies related to noise and vibration and relevant to implementation of the project are listed below.

Strategy #1: Prevent or Minimize Noise Conflicts

> ***Policy C-HS 24*:** Environments for all residents of Santa Clara County free from noises that jeopardize their health and well-being should be provided through measures which promote noise and land use compatibility.

***Policy C-HS 25*:** Noise impacts from public and private projects should be mitigated.

Strategy #2: Provide Adequate Sound Buffers

***Policy C-HS 26*:** New development in areas of noise impact (areas subject to sound levels of 55 DNL or greater) should be approved, denied, or conditioned so as to achieve a satisfactory noise level for those who will use or occupy the facility (as defined in "Noise Compatibility Standards for Land Use" and "Maximum Interior Noise Levels for Intermittent Noise").

Strategy #3: Minimize Exposure to Airport Noise

***Policy C-HS 27*:** Land uses approved by the County and the cities shall be consistent with the adopted policies of the Santa Clara County Airport Land Use Commission Plan.

Stanford University Community Plan

The current Stanford University Community Plan was adopted in 2000 (County of Santa Clara, 2000). The primary purpose of the Community Plan is to guide future use and development of Stanford lands in a manner that incorporates key County General Plan principles of compact urban development, open space preservation, and resource conservation. The Community Plan was adopted as an amendment of the General Plan in the manner set forth by California Government Code Section 65350 et seq. Any revisions to the Community Plan must also be made according to the provisions of State law for adopting and amending general plans. Community strategies and policies related to noise and vibration and relevant to implementation of the HEU and Community Plan Update are listed below.

Strategy #8: Prevent or Minimize Excessive Noise

***Policy SCP-HS 21*:** Identify potential noise-producing uses and determine needs for mitigation using applicable County, local, and other government standards when evaluating proposals for new Stanford facilities.

***Policy SCP-HS 22*:** Locate new land uses and development projects to conform with County noise compatibility standards for land uses.

***Policy SCP-HS 23*:** Minimize noise from construction equipment and other operational sources, through engineering solutions, hours of operation, delivery schedules, and the location of specific noise sources as far away from sensitive receptors as possible.

County of Santa Clara Ordinance Code

The Santa Clara County Ordinance Code includes regulations associated with noise. Within Title B Regulations specifically, Division B11 – Environmental Health, Chapter 8 – Control of Noise and Vibration details a noise policy that is meant to protect the peace and well-being of Santa Clara County residents from excessive and unnecessary noise. **Table 4.11-3** summarizes the maximum permissible noise exterior noise limits by receiving land use.

TABLE 4.11-3
OUTDOOR NOISE LIMITS

Receiving Land Use Category	Time Period	Noise Level (dBA)
One- and Two-Family Residential	10 p.m.—7 a.m.	45
	7 a.m.—10 p.m.	55
Multiple-Family Dwelling	10 p.m.—7 a.m.	50
Residential Public Space	7 a.m.—10 p.m.	55
Commercial	10 p.m.—7 a.m.	60
	7 a.m.—10 p.m.	65
Light Industrial	Any Time	70
Heavy Industrial	Any Time	75

SOURCE: Santa Clara County, 2023.

Additionally, Section 5-207 Prohibited Acts (h) Air Conditioning and Air Handling Equipment of the Ordinance Code establishes maximum noise levels from air handling equipment at the nearest neighboring residential properties, windows and patios. Specifically, such equipment is prohibited from generating a noise level in excess of 45 dBA at any point on a neighboring residential property line, or 40 dBA at the center of neighboring patio or outside the neighboring living area window nearest the equipment location.

Section B11-154 Prohibited acts (b)(6) Construction/demolition, specifically addresses noise from construction activities within the County:

a. No Operating or causing the operation of any tools or equipment used in construction, drilling, repair, alteration or demolition work between weekdays and Saturday hours of 7:00 p.m. and 7:00 a.m., or at any time on Sundays or holidays, that the sound therefrom creates a noise disturbance across a residential or commercial real property line, except for emergency work of public service utilities or by variance. This section will not apply to the use of domestic power tools as specified in Subsection 11.

b. Where technically and economically feasible, construction activities will be conducted in a manner that the maximum noise levels at affected properties will not exceed those listed in the following schedule.

    i. *Mobile equipment*. Maximum noise levels for nonscheduled, intermittent, short-term operation (less than ten days) of mobile equipment (**Table 4.5-4**).

    ii. *Stationary equipment.* Maximum noise levels for repetitively scheduled and relatively long-term operation (periods of ten days or more) of stationary equipment (**Table 4.11-5**).

TABLE 4.11-4
MAXIMUM NOISE LEVELS FOR NONSCHEDULED, INTERMITTENT, SHORT-TERM OPERATION OF MOBILE EQUIPMENT (LESS THAN 10 DAYS)

	Single- and Two-Family Dwelling Residential Area	Multifamily Dwelling Residential Area	Commercial Area
Daily, except Sundays and legal holidays 7:00 a.m.—7:00 p.m.	75 dBA	80 dBA	85 dBA
Daily, 7:00 p.m. to 7:00 a.m. and all day Sunday and legal holiday	50 dBA.	55 dBA	60 dBA

SOURCE: Santa Clara County, 2020.

TABLE 4.11-5
MAXIMUM NOISE LEVELS FOR REPETITIVELY SCHEDULED AND RELATIVELY LONG-TERM OPERATION OF STATIONARY EQUIPMENT (10 DAYS OR MORE)

	Single- and Two-Family Dwelling Residential Area	Multifamily Dwelling Residential Area	Commercial Area
Daily, except Sundays and legal holidays 7:00 a.m.—7:00 p.m.	60 dBA	65 dBA	70 dBA
Daily, 7:00 p.m. to 7:00 a.m. and all day Sunday and legal holiday	50 dBA.	55 dBA	60 dBA

SOURCE: Santa Clara County, 2020.

4.11.4 Environmental Impacts and Mitigation Measures

Significance Thresholds

The thresholds used to determine the significance of impacts related to noise and vibration are based on Appendix G of the *CEQA Guidelines*. Implementation of the proposed project would have a significant impact on the environment if it would:

- Result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- Generate excessive groundborne vibration or groundborne noise levels; or
- For a project located within the vicinity of a private air strip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the region surrounding the Project Site to excessive noise levels.

Issues Not Discussed in Impacts

Expose people or structures to or generate excessive groundborne noise levels. The second criterion above relates to groundborne vibration and groundborne noise levels, but only the issue

of groundborne vibration is relevant to the project. Groundborne noise occurs when vibrations transmitted through the ground result in secondary radiation of noise. Groundborne noise is generally associated with underground railway operations and with construction activities such as blasting, neither of which are likely to result from implementation of the proposed project. Future planned development within the County would not involve equipment that would produce groundborne vibration; therefore, no impacts related to the exposure of people or structures to, or the generation of, excessive groundborne noise levels would occur in connection with the project. The potential for construction activities to result in groundborne vibration is addressed below in Impact NOI-3.

Methodology and Assumptions

Information for this assessment of impacts relative to noise and vibration is based on a review of County Plans, including the Santa Clara County General Plan, and existing and future traffic volumes provided by Hexagon Transportation Consultants.

Roadside noise levels were calculated for the same roadways analyzed in Section 4.14, *Transportation*. The street segments selected for analysis are those expected to be most directly impacted by the proposed project. These streets are forecast to experience the greatest percentage increase in traffic generated by development under the project.

CEQA generally requires the consideration of both the Existing Plus Project condition and Cumulative Plus Project condition when evaluating whether a project would expose existing sensitive receptors to traffic noise that would result in a substantial increase over existing conditions. The analysis in Impact NOI-4 presents the traffic noise increases along roadways within the County under the project in comparison to both existing and cumulative (2040) conditions.

The California Supreme Court's *CBIA v. BAAQMD* decision[1] has indicated that the impact of existing environmental conditions on a project's future users or residents are generally not required to be considered in a CEQA evaluation, except when the project may exacerbate existing hazards or existing conditions. CEQA analysis is therefore concerned with a project's impact on the environment, rather than with the environment's impact on a project and its users or residents. Thus, with existing traffic noise on proposed sensitive land uses, the County is not required under CEQA to consider the effects of locating new receptors into an area where such noise levels already exist. Therefore, traffic noise exposure on existing future sensitive receptors within the County is not assessed in this Draft EIR. It should be noted, however, that *CBIA v. BAAQMD* decision does not preclude jurisdictions like the County from considering these types of impacts during its own planning and development review processes.

[1] *California Building Industry Association v. Bay Area Air Quality Management District,* S213478. (A135335, A136212; 218 Cal.App.4th 1171; Alameda County Superior Court; RG10548693. Filed December 17, 2015.)

Impacts and Mitigation Measures

Impacts

Impact NOI-1: Construction activities associated with implementation of the proposed project would not result in generation of a substantial temporary increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. (*Significant and Unavoidable Impact, with Mitigation*)

HEU and Stanford Community Plan Update

With implementation of the project, the primary source of temporary noise within the County and on the Stanford campus would be from demolition and construction. Construction activities would involve both off-road construction equipment (e.g., excavators, dozers, cranes, etc.) and transport of workers and equipment to and from construction sites. **Table 4.11-6** shows typical noise levels produced by the types of off-road equipment that would likely be used during future construction areas within the County. In addition, depending on the types of buildings constructed and the specific area, development of residential uses could require impact pile driving or similar equipment that could generate high noise levels.

To quantify construction-related noise exposure at the nearest sensitive land uses, it is assumed that the two loudest pieces of construction equipment would operate within 50 feet of a sensitive receptor.

TABLE 4.11-6
REFERENCE CONSTRUCTION EQUIPMENT NOISE LEVELS (50 FEET FROM SOURCE)

Type of Equipment	L_{max}, dBA	Hourly L_{eq}, dBA/Percent Use[a]
Backhoe	80	76/40
Jackhammer	85	78/20
Roller	85	78/20
Compactor	80	73/20
Paver	85	82/50
Crane	85	77/16
Grader	85	81/40
Concrete Mixer Truck	85	81/40
Loader	80	76/40
Air Compressor	80	76/40
Excavator	85	81/40
Auger Drill Rig	84	77/20
Pile Driver	101	94/20

NOTES:
a Percent used during the given time period (usually an hour – hourly L_{eq}) were obtained from the FHWA Roadway Construction Noise Model User's Guide.

SOURCE: FHWA, 2006.

Under the project, sensitive receptors located within 50 feet of an excavator or other standard construction equipment producing similar levels of noise could be exposed to a noise level of 82 dBA L_{eq}. This would be an increase of 10 to 23 dBA above the existing CNEL[2] traffic noise levels along streets in the vicinity of the identified housing opportunity sites (see Table 4.11-1 above). Additionally, if impact pile driving were necessary for foundation construction, noise levels of up to 94 dBA could be generated with increases over 30 dBA or higher. These predicted noise levels could exceed the daytime and nighttime noise standards established in Section B11-154 Prohibited acts (b)(6)(b) Construction/demolition of the County of Santa Clara Ordinance Code. The specific noise impacts and need for mitigation for each development project would be evaluated on a site-specific basis during the approval process for each project. There are several standard mitigation measures that may be appropriate and feasible to mitigate construction-related noise impacts. These mitigation measures are identified in Mitigation Measures NOI-1 and NOI-2 below.

While development under the project could also trigger the need for infrastructure upgrades that could occur in proximity to sensitive uses, such projects tend to progress linearly and, therefore, would not be expected to result in localized increases in noise affecting a given receptor for a prolonged period of time.

Mitigation Measure NOI-1: Best Management Practices for Construction Noise Control.

Noise Control. Require contractors to implement noise controls for on-site activities and describe measures that shall be implemented to reduce the potential for noise disturbance at adjacent or nearby residences. Noise control measures required by the specification include:

- Contractor is responsible for taking appropriate measures, including muffling of equipment, selecting quieter equipment, erecting noise barriers, modifying work operations, and other measures to bring construction noise into compliance.
- Each internal combustion engine used for any purpose on the job or related to the job, shall be equipped with a muffler of a type recommended by the manufacturer. No internal combustion engine shall be operated on the project without said muffler.
- Best available noise control techniques (including mufflers, intake silencers, ducts, engine enclosures, and acoustically attenuating shields or shrouds) shall be used for all equipment and trucks.
- Stationary noise sources (e.g., chippers, grinders, compressors) shall be located as far from sensitive receptors as possible. If they must be located near receptors, adequate muffling (with enclosures) shall be used. Enclosure opening or venting shall face away from sensitive receptors. Enclosures shall be designed by a registered engineer regularly involved in noise control analysis and design.
- Material stockpiles as well as maintenance/equipment staging and parking areas (all on site) shall be located as far as practicable from residential receptors.

[2] The CNEL metric is a 24-hour metric that penalizes noise during the evening and nighttime hours. For traffic noise, the CNEL is typically within 2 to 2.5 dBA of the peak traffic hour (Caltrans 2013).

- If impact equipment (e.g., jack hammers, pavement breakers, and rock drills) is used, the contractor is responsible for taking appropriate measures, including but not limited to the following:

  - Hydraulically or electric-powered equipment shall be used wherever feasible to avoid the noise associated with compressed-air exhaust from pneumatically powered tools. However, where the use of pneumatically powered tools is unavoidable, an exhaust muffler on the compressed-air exhaust shall be used (a muffler can lower noise levels from the exhaust by up to about 10 dB). External jackets on the tools themselves shall be used, where feasible, which could achieve a reduction of 5 dB. Quieter procedures, such as drilling rather than impact equipment, will be used whenever feasible. It is the contractor's responsibility to implement any mitigations necessary to meet applicable noise requirements.

  - Impact construction including jackhammers, hydraulic backhoe, concrete crushing/recycling activities, and vibratory pile drivers will be limited to between 8:00 a.m. and 4:00 p.m., Monday through Friday, within residential communities, and will be limited in duration to the maximum extent feasible.

NOI-2: Noise Control for Pile Installation Activities.

When pile driving would occur within 300 feet of a noise-sensitive receptor, implement "quiet" pile-driving technology (such as pre-drilling of piles, sonic pile drivers, auger cast-in-place, or drilled-displacement), where feasible, in consideration of geotechnical and structural requirements and conditions.

- Where the use of driven impact piles cannot be avoided, properly fit impact pile driving equipment with an intake and exhaust muffler and a sound-attenuating shroud, as specified by the manufacturer.

- Limit pile driving activities to weekdays from 9:00 a.m. to 4:00 p.m. if occurring within 500 feet of a noise-sensitive receptor.

- Notify neighboring noise-sensitive receptors within 500 feet of a PMA construction area at least 30 days in advance of high-intensity noise-generating activities (e.g., well drilling, pile driving, and other activities that may generate noise levels greater than 90 dBA at noise sensitive receptors) about the estimated duration of the activity.

Significance after Mitigation: Mitigation Measures NOI-1 and NOI-2 would reduce, to the extent feasible, the severity of noise generated by demolition and construction activities and reduce the potential annoyance to nearby residents and others who could be disturbed by these activities. Implementation of Mitigation Measures NOI-1 is projected to reduce noise levels associated with demolition and construction activities for construction by 5 to 10 dBA, while Mitigation Measure NOI-2 would reduce noise levels associated with pile installation activities by 17 dBA. However, because of the potential proximity of receptors, it could still be likely that during peak construction activities, noise levels in excess of 10 dBA over ambient may still occur at some sensitive receptors on or near the project site after mitigation, and the construction noise impact would be **significant and unavoidable with mitigation**.

Impact NOI-2: Stationary noise sources from development associated with the proposed project would not result in a substantial permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. (*Less than Significant Impact*)

HEU and Stanford Community Plan Update

Since residential uses are not typically associated with excess stationary noise production, the development of housing potentially facilitated by the project would have minimal potential to result in new noise-producing stationary sources to developed areas of the County. Air conditioning units could potentially increase noise exposure at existing nearby noise-sensitive uses. However, at the present time, the type, size, and the location of any air handling equipment that may be associated with housing developed under the project is unknown. Section B11-152 Exterior Noise Limits of the County of Santa Clara Ordinance Code establishes maximum noise levels at the nearest residential properties, presented in **Table 4.11-3** above. Therefore, for housing sites under the project, any impacts associated with the potential for future stationary noise sources conflicting with local noise standards would be **less than significant**.

Mitigation Measures: None required.

Impact NOI-3: Implementation of the proposed project would not result in exposure of persons to or generation of excessive groundborne vibration levels. (*Less than Significant Impact*)

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Construction activities potentially facilitated by implementation of the project would occur in a variety of locations throughout the County under the project, which may require activities or use of off-road equipment known to generate some degree of vibration. Activities that would potentially generate excessive vibration, such as blasting or impact pile driving, would not be expected to occur from housing development under the project, as such activities would typically be associated with high-rise development that is not envisioned. Receptors sensitive to vibration include structures (especially older masonry structures), people (especially residents, the elderly, and the sick), and equipment (e.g., magnetic resonance imaging equipment, high resolution lithographic, optical and electron microscopes). Regarding the potential effects of groundborne vibration to people, except for long-term occupational exposure, vibration levels rarely affect human health.

Since specific future projects within the County are unknown at this time, it is conservatively assumed that the construction areas associated with these future projects could be located within 50 feet of sensitive land uses.

The primary vibration-generating activities associated with development would occur during grading, placement of underground utilities, and construction of foundations. **Table 4.11-6** shows the typical vibration levels produced by construction equipment at various distances. The most

substantial source of groundborne vibrations associated with housing development construction would be the use of drill rigs for foundation piers, if required.

According to the Caltrans' *Transportation and Construction Vibration Guidance Manual,* the building damage threshold for historic and some older buildings is 0.25 PPV (in/sec). As indicated in **Table 4.11-7**, construction activities at distances of 25 feet or further from the nearest existing buildings would be well below the threshold of 0.25 PPV to avoid structural damage to historic and older buildings. For these reasons, project-related construction and operational groundborne vibration impacts would be **less than significant**.

TABLE 4.11-7
VIBRATION LEVELS FOR CONSTRUCTION EQUIPMENT

Equipment	PPV (in/sec)[a]	
	At 25 Feet (Reference)	At 50 feet
Large Bulldozer	0.089	0.35
Auger Drill Rig	0.089	0.35
Loaded Trucks	0.076	0.30
Jackhammer	0.035	0.14

NOTES:

a Vibration amplitudes for construction equipment assume normal propagation conditions and were calculated using the following formula: PPV (equip) = PPV (ref) x (25/D)1.1 where:

PPV (equip) = the peak particle velocity in in/sec of the equipment adjusted for the distance
PPV (ref) = the reference vibration level in in/sec from pp. 31–33 and Table 18 of the Caltrans Vibration Guidance Manual, as well as Table 12-2 of the FTA's Noise and Vibration Guidance Manual
D = the distance from the equipment to the receiver

SOURCES: Caltrans, Transportation *and Construction Vibration Guidance Manual*, April 2020, pp. 29–34, http://www.dot.ca.gov/hq/env/noise/publications.htm, accessed on December 21, 2021; FTA, *Transit Noise and Vibration Impact Assessment Manual*, September 2018, https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf, accessed April 21, 2023.

Mitigation Measures: None required.

Impact NOI-4: Transportation activities under the proposed project would not result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project. (*Less than Significant Impact*)

HEU and Stanford Community Plan Update

Vehicular traffic noise increases associated with the proposed project were estimated using algorithms found in the FHWA's *Traffic Noise Model Technical Manual* and the estimated 2022 and 2040 traffic volumes provided in this EIR's traffic analysis for the No Project and with Project scenarios. The results of the vehicular traffic noise modeling effort for the project are summarized in **Table 4.11-8**.

TABLE 4.11-8
EXISTING AND PROJECTED LDN TRAFFIC NOISE LEVELS ALONG STREETS
HOUSING ELEMENT UPDATE

Roadway Segment	Traffic Noise Level, LDN[a]			
	Existing Condition (2022)[b]	2022 with Project	2022 Plus Project minus 2022 Existing Condition	Significant Increase (Yes or No)?[c]
Bascom Avenue between Olive Avenue and Forest Avenue	69	69	0.1	No
Bascom Avenue between Maywood Avenue and Lindaire Avenue	68	68	0.1	No
Camden Avenue between New Jersey Avenue and Leigh Avenue	72	72	0.0	No
Capitol Avenue between I-680 and Hostetter Road	68	69	0.4	No
Fleming Avenue between Neves Way and Mahoney Drive	63	63	0.0	No
Hostetter Road between I-680 and Capitol Avenue	71	71	0.5	No
Hostetter Road between Summit Avenue and Madeline Drive	68	68	0.0	No
Kirk Avenue between Summit Avenue and Madeline Drive	70	70	0.0	No
Kirk Avenue between Madeline Drive and Hyland Avenue	59	59	0.0	No
Leigh Avenue between Camden Avenue and Weeth Drive	65	65	0.0	No
McKee Road between Challenger Avenue and White Road	70	70	0.0	No
McKee Road between La Pala Drive and Delia Street	68	68	0.0	No
Moorpark Avenue between SR 17 and Thornton Way	69	69	0.1	No
Quarry Road between Campus Drive and El Camino Real	64	64	0.2	No
San Carlos Street between Vaughn Avenue and Arleta Avenue	68	68	0.1	No
San Carlos Street between Leigh Avenue and Richmond Avenue	68	68	0.0	No
Stanford Avenue between Bowdoin Street and El Camino Real	59	59	0.0	No
Stevens Creek Blvd between Bascom Avenue and Bradley Avenue	68	68	0.1	No
Thornton Way between Clove Drive and Moorpark Avenue	60	61	1.3	No
Toyon Avenue between Cortese Circle and McKee Road	61	61	0.0	No
Tully Road between White Road and Buckhill Court	67	67	0.0	No
White Road between White Court and Westboro Drive	69	69	0.4	No
White Road between Florence Court and Rose Avenue	68	68	0.5	No
White Road between Kentridge Drive and McKee Road	67	67	0.1	No
White Road between Tully Road and Cunningham Lake Avenue	69	71	1.8	No

NOTES:
a Noise levels were determined using methodology described in FHWA's Traffic Noise Model Technical Manual.
b Existing sensitive receptors exposed to a traffic noise increase greater than 3 dB between Existing and 2040 Plus Project conditions is considered a significant impact.
c The 2040 Project contribution to any traffic noise increase is considered considerable if existing sensitive receptors are exposed to a traffic noise increase between 2040 No Project and 2040 Plus Project conditions is greater than 3 dB.

SOURCE: ESA, 2022 (Appendix B of this EIR)

According to Caltrans, a 3 dB increase in noise is considered barely perceptible to the average human.[3] As shown in Table 4.11-8**,** none of the sensitive land uses along roadway segments analyzed would be exposed to an increase in traffic noise that would exceed 2 dB. Therefore, the increase in vehicular traffic along local roadways would not result in the exposure of adjacent existing sensitive land uses substantial increases in vehicular traffic noise and the impact would be **less than significant**.

Mitigation Measures: None required.

Impact NOI-5: Implementation of the proposed project would not expose people residing or working in the project area to excessive noise levels due to being located within the vicinity of a private airstrip or an airport land use plan or within two miles of a public airport or public use airport. ***(Less than Significant Impact)***

HEU and Stanford Community Plan Update

There are four public use airports in Santa Clara County: 1) Palo Alto Airport; 2) San Martin Airport; 3) Norman Y. Mineta San José International Airport; and 4) Reid-Hillview County Airport. The Palo Alto Airport is located approximately 3 miles from the nearest prospective housing opportunity site on Quarry Road (Stanford). The Palo Alto Airport Comprehensive Land Use Plan Report (Santa Clara County Airport Land Use Commission, 2016) indicates that the existing 55 dBA CNEL noise contour of Palo Alto Airport does not extend west of US-101 and is approximately 3 miles northeast of the Quarry Road site.

The San Martin Airport is located over 20 miles from the nearest prospective housing opportunity site (Camden Avenue), and would therefore have no noise impacts to any portion of the project areas.

Norman Y. Mineta San José International Airport is located approximately two miles from the nearest prospective housing opportunity site on West San Carlos Street (San José). The Norman Y. Mineta San José International Airport Master Plan Update Project indicates that the existing 60 dBA CNEL noise contour of the airport does not extend west of The Alameda and is approximately 1.9 miles northeast of the W San Carlos Street site.

The Reid-Hillview County Airport is located approximately 0.9 miles from the nearest prospective housing opportunity site at the former Pleasant Hills golf course on South White Road (San José). The Reid-Hillview County Airport Master Plan indicates that the existing 60 dBA CNEL noise contour of Reid-Hillview County Airport does not extend east of Capitol Expressway and is approximately 0.7 miles west of the South White Road site.

Based upon these considerations, aircraft operations of all four of the County Airports would not impact the potential occupants of any of the prospective housing opportunity sites of the project area.

[3] California Department of Transportation (Caltrans), 2013. Technical Noise Supplement to the Traffic Noise Analysis Protocol. September 2013.

Mitigation Measures: None required.

Cumulative Impacts

This section presents an analysis of the cumulative effects of the project in combination with other past, present, and reasonably foreseeable future projects that could cause cumulatively considerable impacts. Significant cumulative impacts related to noise and vibration could occur if the incremental impacts of the project combined with the incremental impacts of one or more of the cumulative projects or cumulative development projections included in the project description and described in Section 4.0.3, *Cumulative Impacts*.

Impact NOI-6: Construction activities associated with implementation of the proposed project update, when combined with other past, present, or reasonably foreseeable projects, would not result in generation of a substantial temporary increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. (*Less than Significant Impact*)

Development that could occur with implementation of the project update and the cumulative projects listed in Table 4.0-1 (see Section 4.0 of this EIR), if constructed contemporaneously, could result in construction noise levels higher than those of development of the project alone at some receptor locations. Three of the 13 foreseeable projects are already under construction and, therefore, construction of these projects would not combine with construction activities associated with development under the project.

As discussed in Impact NOI-1, above, sensitive receptors located within 50 feet of an excavator or other standard construction equipment producing similar levels of noise could be exposed to a noise level of 82 dBA L_{eq} and receptors within 50 feet of pile driving could be exposed to noise levels of 94 dBA L_{eq} . However, all 10 of the remaining cumulative projects would be located 1,400 feet or further from the nearest opportunity sites and, at this distance, noise from an excavator would be attenuated to 48 dBA, which would be well below typical daytime noise levels for a suburban area. Therefore, under the project, likely construction equipment operations from multiple construction projects happening simultaneously in close proximity are unlikely to combine to create cumulative noise impacts. Therefore, cumulative impacts associated with future construction activities conflicting with local noise standards would be **less than significant**, notwithstanding the fact that other cumulative projects would not contribute to a cumulative construction noise impact, because the project alone could result in a significant and unavoidable construction noise impact as discussed in Impact NOI-1, Mitigation Measures NOI-1 and NOI-2 would still apply.

Mitigation Measure: Mitigation Measures NOI-1 and NOI-2.

Impact NOI-7: Stationary noise sources from development within the proposed project, when combined with other past, present, or reasonably foreseeable projects, would not result in a substantial permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. (*Less than Significant Impact*)

Development that could occur with implementation of the project and the cumulative development described in Section 4.0 of this EIR, could result in stationary source noise levels higher than those of development of the project alone at some receptor locations.

As discussed in Impact NOI-2, above, air conditioning units installed as part of development resulting from implementation of the project could be expected to increase noise exposure at existing nearby noise-sensitive uses or affect proposed noise-sensitive uses in the vicinity.

At the present time, the type, size, and the location of any air handling equipment that may be associated with developed under the project is unknown. However, all 13 of the cumulative projects would be located 1,400 feet or further from the nearest housing opportunity sites and, at this distance, noise from an HVAC system would be attenuated to well below typical daytime noise levels for a suburban area and would therefore not contribute considerably to the cumulative noise environment.

As discussed in Impact NOI-2, Section B11-152 Exterior Noise Limits of the Santa Clara County Ordinance Code establishes maximum noise levels at the nearest residential properties. Because these requirements would apply to all past, present, or reasonably foreseeable projects as well as from development with the proposed project, the cumulative impact with respect to stationary noise sources potentially resulting in a substantial permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance would be **less than significant**.

Mitigation Measures: None required.

Impact NOI-8: Construction activities associated with implementation of the proposed project, when combined with other past, present, or reasonably foreseeable projects, would not result in exposure of persons to or generation of excessive ground borne vibration levels. (*Less than Significant Impact*)

Development that could occur with implementation of the project and the cumulative development described in Section 4.0 of this EIR could be constructed contemporaneously. Regarding the potential for a cumulative vibration-related damage impact to occur, because vibration impacts are based on instantaneous PPV levels and are only impactful for very short distances, worst-case groundborne vibration levels from construction are generally determined by whichever individual piece of equipment generates the highest vibration levels. Unlike the analysis for average noise levels, in which noise levels of multiple pieces of equipment can be combined to generate a maximum combined noise level, instantaneous peak vibration levels do not combine in this way. Vibration from multiple construction sites, even if they are located close

to one another, would not combine to raise the maximum PPV. For this reason, the cumulative impact of construction vibration from multiple construction projects located near one another would generally not combine to further increase vibration levels. In essence, vibration effects are highly localized.

Additionally, all 13 of the cumulative projects would be located 1,400 feet or more from the nearest housing opportunity sites and, at this distance, vibration from construction activities would be attenuated to well below typical levels in a suburban environment.

Vibration impacts resulting from construction of subsequent projects under the project would not combine with vibration effects from cumulative projects in the vicinity. Therefore, cumulative groundborne vibration impacts related to potential damage effects and interference with vibration-sensitive equipment would be ***less than significant***.

Mitigation Measures: None required.

Impact NOI-9: Transportation activities under the proposed project, when combined with other past, present, or reasonably foreseeable projects, would not result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project. (*Less than Significant Impact*)

Development that could occur with implementation of the project and the cumulative development described in Section 4.0 of this EIR could result in increased roadside noise levels generated by an increase in roadway traffic. Vehicular traffic noise increases associated with the project inclusive of projected development in the cumulative year 2040 scenario were estimated using algorithms found in the FHWA's *Traffic Noise Model Technical Manual* and the estimated 2040 traffic volumes provided in this Draft SEIR's traffic analysis for the project. The results of the vehicular traffic noise modeling effort for the project are included below in **Table 4.11-9**.

According to Caltrans, a 3 dB increase in noise is considered barely perceptible to the average human.[4] As can be seen from the increases in roadside noise presented in Table 4.11-9, the cumulative increase in roadside noise levels compared to baseline 2021 conditions along all roadways analyzed was less than 3 dBA. Therefore, the cumulative increase in roadside noise levels would be **less than significant**.

Mitigation Measure: None required.

[4] California Department of Transportation (Caltrans), 2013. Technical Noise Supplement to the Traffic Noise Analysis Protocol. September 2013.

TABLE 4.11-9
EXISTING AND PROJECTED LDN TRAFFIC NOISE LEVELS ALONG STREETS
HOUSING ELEMENT UPDATE

Roadway Segment	Traffic Noise Level, LDN[a]			
	Existing Condition (2022)[b]	2040 with Project	2040 Plus Project minus 2022 Existing Condition	Significant Increase (Yes or No)?[c]
Bascom Avenue between Olive Avenue and Forest Avenue	69	70	0.5	No
Bascom Avenue between Maywood Avenue and Lindaire Avenue	68	70	1.9	No
Camden Avenue between New Jersey Avenue and Leigh Avenue	72	73	1.2	No
Capitol Avenue between I-680 and Hostetter Road	68	69	0.7	No
Fleming Avenue between Neves Way and Mahoney Drive	63	64	0.6	No
Hostetter Road between I-680 and Capitol Avenue	71	71	0.3	No
Hostetter Road between Summit Avenue and Madeline Drive	68	68	0.0	No
Kirk Avenue between Summit Avenue and Madeline Drive	70	70	0.1	No
Kirk Avenue between Madeline Drive and Hyland Avenue	59	59	0.1	No
Leigh Avenue between Camden Avenue and Weeth Drive	65	66	0.8	No
McKee Road between Challenger Avenue and White Road	70	71	0.5	No
McKee Road between La Pala Drive and Delia Street	68	69	0.9	No
Moorpark Avenue between SR 17 and Thornton Way	69	71	2.1	No
Quarry Road between Campus Drive and El Camino Real	64	64	0.0	No
San Carlos Street between Vaughn Avenue and Arleta Avenue	68	70	1.5	No
San Carlos Street between Leigh Avenue and Richmond Avenue	68	69	1.5	No
Stanford Avenue between Bowdoin Street and El Camino Real	59	60	1.3	No
Stevens Creek Blvd between Bascom Avenue and Bradley Avenue	68	68	0.3	No
Thornton Way between Clove Drive and Moorpark Avenue	60	60	0.0	No
Toyon Avenue between Cortese Circle and McKee Road	61	61	0.3	No
Tully Road between White Road and Buckhill Court	67	67	0.0	No
White Road between White Court and Westboro Drive	69	70	1.1	No
White Road between Florence Court and Rose Avenue	68	69	1.2	No
White Road between Kentridge Drive and McKee Road	67	67	0.5	No
White Road between Tully Road and Cunningham Lake Avenue	69	71	2.1	No

NOTES:
a Noise levels were determine using methodology described in FHWA's Traffic Noise Model Technical Manual.
b Existing sensitive receptors exposed to a traffic noise increase greater than 3 dB between Existing and 2040 Plus Project conditions is considered a significant impact.
c The 2040 Project contribution to any traffic noise increase is considered considerable if existing sensitive receptors are exposed a traffic noise increase between 2040 No Project and 2040 Plus Project conditions is greater than 3 dB.

SOURCE: ESA, 2022 (Appendix B of this EIR)

4.11.5 References

Caltrans, 2020. *Transportation and Construction Vibration Guidance Manual*, April 2020, Table 19, p. 38, https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/tcvgm-apr2020-a11y.pdf, accessed April 24, 2023.

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U.S. Department of Transportation, Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual*, September 2018, https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf, accessed April 27, 2023.

U.S. EPA, *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*, March 1974.

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