Harris & Associates

# TECHNICAL MEMORANDUM

**To:** Matthew Esquivel, Project Manager, Warmington Residential
**From:** Sharon Toland, Project Manager, and Kelsey Hawkins, Noise Analyst, Harris & Associates
**Subject:** Vista II Residential Project – Noise Impact Analysis
**Date:** August 30, 2024
**CC:** Ryan Binns, Senior Director, Harris & Associates
**Att**: 1, Roadway Construction Noise Model Results; 2, FHWA Noise Prediction Model Results

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Dear Mr. Esquivel,

The following presents the results of Harris & Associates' analysis of the potential noise impacts from implementation of the proposed Vista II Residential Project (project). The project is a Tentative Map and Major Use Permit to subdivide an 8.93-acre site into three lots. Lot 1 would contain an existing church and driveway that would be improved as a secondary access for Lot 2. Lot 2, which would be 5.33 acres, would be improved with 37 multi-family condominium units with associated parking and 14,800 square feet of private usable open space. The third lot, Lot A, which has not been approved for future development, would consist of an existing cellular facility. Access to the project site would be from Hannalei Drive, with secondary emergency access in the northwestern area of the site connecting to the adjacent church property to the west (on Lot 1). The project would be part of the North County Metro Community Planning Area. The Vista Fire Protection District would provide fire service, the Buena Sanitation District would provide sewer service, and the Vista Irrigation District would provide water to the project site. The site is subject to General Plan Designation VR-7.3. Zoning for the site is RS. In total, the project would include 111 parking spaces and 61,462 square feet of open space. Earthwork would consist of 10,700 cubic yards of cut, 22,500 cubic yards of fill, and 11,800 cubic yards of imported material. Currently, the project site contains a stockpile of approximately 3,500 cubic yards of soil spread over a 1-acre area, which violates the County's Grading Ordinance. The stockpile would remain on site and be considered part of the project. Final mapping for the project would occur in phases. The first unit would create Lots 1 and 2 and Lot A for finance and conveyance purposes only, not for development. Once the first unit is recorded, Lot 2 would be transferred to the future developer. Lot 2 would then be developed per the conditions of approval for Tentative Tract Map 5647. The primary existing noise sources on the project site are vehicle noise on Santa Fe Avenue and the North County Transit District SPRINTER rail line adjacent to the eastern boundary of the project site. The purpose of this analysis is to evaluate the potential noise impacts of construction and operation of the project based on the County of San Diego Guidelines for Determining Significance – Noise (County of San Diego 2009). Significance is based primarily on consistency with the County's Noise Ordinance (Sections 36.401 through 36.435 of the County Municipal Code) and the General Plan Noise Element.

## Background

The California Department of Transportation defines "noise" as sound that is loud, unpleasant, unexpected, or undesired. Sound pressure levels are quantified using a logarithmic ratio of actual sound pressures to a reference pressure squared called "bels." A bel is typically divided into tenths, or decibels (dB). Sound pressure alone is not a reliable indicator of loudness because frequency (or pitch) also affects how receptors respond to sound. To account for the pitch of sounds and the corresponding sensitivity of human hearing to sounds, the raw sound pressure level is adjusted with a frequency-dependent A-weighting scale that is stated in units of decibels (dBA) (Caltrans 2013).

A receptor's response to a given noise may vary depending on the sound level, duration of exposure, character of the noise sources, time of day during which the noise is experienced, and the activity affected by the noise. Activities most affected by noise include rest, relaxation, recreation, study, and communications. In consideration of these factors, different measures of noise exposure have been developed to quantify the extent of the effects from a variety of noise levels. The $L_{eq}$, or equivalent energy level, provides an average acoustical or sound energy content of noise measured during a prescribed period, such as one minute, 15 minutes, one hour, or eight hours. The sound level may not be constant over the measured time period, but the average dB sound level, given as dBA $L_{eq}$, contains an equal amount of energy as the fluctuating sound level (Caltrans 2013). Community noise equivalent level (CNEL) is an average sound level during a 24-hour day that considers the 24-hour day divided into three periods. CNEL is obtained by adding an additional five dBA to sound levels in the evening between 7:00 p.m. and 10:00 p.m. and an additional ten dBA to noise levels in the nighttime hours between 10:00 p.m. and 7:00 a.m. (County of San Diego 2009).

The dB level of a sound decreases (or attenuates) as the distance from the source of that sound increases. For a single point source, such as a piece of mechanical equipment, the sound level normally decreases by approximately six dBA for each doubling of distance from the source. Sound that originates from a linear, or "line" source, such as vehicular traffic, attenuates by approximately three dBA per doubling of distance. Other contributing factors that affect sound reception include ground absorption, natural topography that provides a natural barrier, meteorological conditions, or the presence of human-made obstacles, such as buildings and sound barriers (Caltrans 2013).

Existing predominant noise sources within the vicinity of the project site include traffic noise from Hannalei Drive and the North County Transit District SPRINTER rail line.

### Groundborne Vibration

The Federal Transit Administration describes groundborne vibration as vibration that can cause buildings to shake and rumbling sounds to be heard. In contrast to airborne noise, groundborne 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. Common sources of groundborne vibration are trains, buses on rough roads, and construction activities such as blasting, pile driving, and operation of heavy earthmoving equipment. The effects of groundborne vibration include feel-able 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 typically only a factor in the case of blasting and pile driving during construction. Groundborne vibration related to potential building damage effects is generally related to the peak particle velocity (PPV) in inches per second (FTA 2018).

## Regulatory Setting

### County of San Diego General Plan Noise Element

The Noise Element of the County's General Plan includes a noise/land use compatibility matrix for assessing the suitability of different categories of planned land uses based on exterior ambient noise level exposure (Table N-1 from the County's General Plan) (County of San Diego 2011). For the project site's zoning designation (Single Family Residential), the Noise Element specifies exterior noise levels up to 60 CNEL as normally acceptable and up to 75 CNEL as conditionally acceptable. Exterior noise levels up to 65 dBA CNEL are normally acceptable for multi-family residential development. Noise levels exceeding 75 CNEL are generally unacceptable for residential uses. In addition, the County defines a noise standard of 45 dBA CNEL for residential interior areas. A land use in an area identified as "acceptable" indicates that standard construction methods would attenuate exterior noise to an acceptable indoor noise level and that people can carry out outdoor activities with minimal noise interference. For land uses indicated as "conditionally acceptable," structures must be able to attenuate the exterior noise to the indoor noise level limit (45 dBA CNEL).

### County Noise Ordinance

Sections 36.401 through 36.435 of the County Municipal Code pertain to noise requirements and enforcement of violations. Table 1, Applicable Exterior Property Line Noise Limits, lists the applicable exterior property line noise limits in Section 36.404 of the County of San Diego Noise Ordinance. It is unlawful for any person to cause or allow the creation of any noise to the extent that the one-hour average sound level at any point on or beyond

the boundaries of the property exceeds these limits. The sound level limit at a location on a boundary between two zones is the arithmetic mean of the respective limits for the two zones.

**Table 1. Applicable Exterior Property Line Noise Limits**

| Zone | Time | Applicable Limit One-Hour Average Sound Level (dB) |
|---|---|---|
| RS, RD, RR, RMH, A70, A72, S80, S81, S90, S92 and RV and RU with a density of less than 11 dwelling units per acre. | 7:00 a.m.–10:00 p. m.<br>10:00 p.m.–7:00 a. m. | 50<br>45 |

**Source:** County of San Diego 2021.

**Notes:** dB = decibel; RS = Single Family Residential; RD = Duplex/Two Family Residential; RR = Rural Residential; RMH = Mobile Home Residential; A70 = Limited Agricultural Use; A72 = General Agricultural Use; S80 = Open Space; S81 = Ecological Resources Area; S90 = Holding Area; S92 = General Rural Use; RV = Variable Family Residential; RU = Urban Residential

The project site and surrounding area are zoned for single-family residential use. The project site zoning is RS (Single-Family Residential).

The County of San Diego Noise Ordinance also includes stipulations controlling construction noise. San Diego County Code of Regulatory Ordinances, Sections 36.408 and 36.409, Construction Equipment, state that, except for emergency work, it shall be unlawful for any person to operate or cause to be operated, construction equipment (County of San Diego 2021):

A. Between 7:00 p.m. and 7:00 a.m.

B. On Sunday or a holiday. For the purposes of this section, a holiday means January 1, the last Monday in May, July 4, the first Monday in September, December 25, and any day appointed by the President as a special national holiday or the Governor of the State as a special State holiday. A person may, however, operate construction equipment on a Sunday or holiday between the hours of 10:00 a.m. and 5:00 p.m. at the person's residence or for the purpose of construction of a residence for himself or herself, provided that the operation of construction equipment is not carried out for financial consideration or other consideration of any kind and does not violate the limits in Sections 36.409 and 36.410.

C. Except for emergency work, it shall be unlawful for any person to operate construction equipment or cause construction equipment to be operated, that exceeds an average sound level of 75 dBA for an 8-hour period, between 7:00 a.m. and 7:00 p.m., when measured at the boundary line of the property where the noise source is located or on any occupied property where the noise is being received.

## Significance Thresholds

Impacts would be significant if the project would cause ambient vehicle noise levels to exceed 60 dBA CNEL, interior noise levels to exceed 45 dBA CNEL, or an increase of ten dBA (CNEL) over pre-existing exterior noise, as described in the Guidelines for Determining Significance for Noise (County of San Diego 2009).

Per the Noise Ordinance, impacts would be significant if the project would generate noise levels at a common property line with the adjacent single-family residential zone to the west that would exceed the following one-hour average exterior noise levels: 50 dBA from 7:00 a.m. to 10:00 p.m. and 45 dBA from 10:00 p.m. to 7:00 a.m.

Construction activity would be considered significant for nearby residences if it exceeds an eight-hour average exterior noise level of 75 dBA or a maximum impulsive noise level of 82 dBA on an occupied residential use, or would take place during the prohibited hours of 7:00 p.m. and 7:00 a.m. of the next day, on Sundays, or on a holiday.

Construction-related groundborne vibration would be significant if it exceeds the vibration impact criteria for impacts to daytime uses from infrequent events, as specified by the Federal Transit Administration and included in the County's Guidelines for Determining Significance, of 0.014 inch per second PPV (County of San Diego 2009).

# Construction Impact Analysis

## Temporary Construction Noise

Construction of the proposed project would have the potential to result in temporary noise level increases as a result of operation of heavy equipment. Construction of the proposed project would generate noise that could expose nearby receptors to elevated noise levels that may disrupt communication and routine activities. The magnitude of the impact would depend on the type of construction activity, equipment, duration of the construction phase, distance between the noise source and receiver, and intervening structures. Sound levels from typical construction equipment range from 60 to 90 dBA $L_{eq}$ at 50 feet from the source (FHWA 2008). Noise from construction equipment generally exhibits point source acoustical characteristics. Strictly speaking, a point source sound decays at a rate of six dBA per doubling of distance from the source. The rule applies to the propagation of sound waves with no ground interaction.

Standard equipment, such as dozers, loaders, graders, backhoes, scrapers, and miscellaneous trucks, would be used for construction of the proposed project. Noise levels from construction on the project site were determined based on typical equipment noise levels established by the Roadway Construction Noise Model (FHWA 2008) (Attachment 1, Roadway Construction Noise Model Results). The three noisiest pieces of construction equipment (concrete saw, excavator, dozer) that could be required for the project were assumed to operate simultaneously in the same location and would have the potential to generate noise levels up to 84.6 dBA at 50 feet from the construction site. An average distance of 50 feet from the project boundary is assumed for worst-case noise levels because individual equipment location would vary throughout a given day, and all equipment would not operate in the same location on a given day.

Construction equipment noise would be considered significant if it exceeds an eight-hour average exterior noise level of 75 dBA or a maximum impulsive noise level of 82 dBA at an occupied residential use. Construction activities would take place across the project site within the allowable hours of 7:00 a.m. and 7:00 p.m.; thus, noise exposure at individual residences would vary. The nearest receiver, the adjacent church, is approximately 50 feet west of the project site. At this distance, construction would have the potential to reach 84.6 dBA, which exceeds the average exterior noise level of 75 dBA. However, the County would continue to enforce its Noise Ordinance. As such, the project would implement a Construction Noise and Vibration Management Plan to achieve the noise limit specified in San Diego County Code of Regulatory Ordinances, Sections 36.408 and 36.409. Measures to achieve the Noise Ordinance standards would be included on construction plans that are submitted to the County of San Diego Planning and Development Services for approval before issuance of the grading permit. Measures in the Construction Noise and Vibration Management Plan may include but not be limited to the following:

- Construction activities that could generate high noise or vibration levels at receptors shall be scheduled during times that would have the least impact on sensitive receptor locations. This could include restricting construction activities in the areas of potential impact to the middle hours of the workday, such as from 10:00 a.m. to 4:00 p.m., Monday through Friday, when residents are least likely to be home.
- Stationary construction noise sources, such as temporary generators, shall be as far from nearby noise-sensitive receptors as possible.
- Trucks shall be prohibited from idling along streets serving the construction site where noise-sensitive residences are.
- Construction equipment shall be outfitted with properly maintained, manufacturer-approved, or recommended sound and vibration abatement means on air intakes, combustion exhausts, heat dissipation vents, and interior surfaces of engine hoods and power train enclosures.
- Construction laydown and vehicle staging areas shall be positioned (to the extent practical) as far from noise-sensitive land uses as feasible.
- Simultaneous operation of construction equipment shall be limited or construction time shall be limited to within an hour to reduce the hourly average noise level and vibration exposure.
- Temporary sound barriers or sound blankets may be installed between construction operations and adjacent noise-sensitive receptors. Due to equipment exhaust pipes being approximately seven to eight feet above

ground, a sound wall at least ten feet in height above grade located along the western and southern property lines between the project and neighboring residences would mitigate noise levels to within acceptable levels. To effectively reduce noise levels, the sound barrier should be constructed of a material with a minimum weight of two pounds per square foot with no gaps or perforations and should remain in place until the conclusion of demolition, grading, and construction activities.

The project would be required to comply with the noise levels limits in Noise Ordinance Sections 36.408 and 36.409. Because heavy construction equipment would be required near sensitive receptors, a combination of the above measures would be implemented to avoid Noise Ordinance enforcement that may result in the loss of permits. Therefore, the project would comply with the Noise Ordinance, and impacts would be less than significant.

## Temporary Construction Groundborne Vibration

The main concerns associated with groundborne vibration from this type of project are annoyance and damage; however, vibration-sensitive instruments and operations can be disrupted at much lower levels than would typically affect other uses. Operation of the SPRINTER rail line has the potential to generate vibration on the project site. However, per the *California Building Industry Association v. Bay Area Air Quality Management District* (*CBIA v. BAAQMD*) decision, the California Supreme Court ruled that the purpose of California Environmental Quality Act (CEQA) is to analyze impacts of a project on the existing environment. It is not to analyze impacts of the existing environment on future projects or to analyze the impacts of the project itself on its own future users or residents. Project design would be required to consider potential vibration exposure in demonstrating consistency with building codes; however, project exposure to existing vibration is not a CEQA impact. Therefore, this analysis focuses on the potential for the project to generate vibration at surrounding land uses. Groundborne vibration occurring as part of the project would result from construction equipment. Following construction, the proposed residences would not generate groundborne vibration.

Conventional construction techniques, such as earth movement by trucks, have the potential to generate groundborne vibration and noise. Construction techniques that commonly result in excessive vibration, such as blasting and pile driving, are not anticipated for the proposed project. Reference vibration levels available from the Federal Transit Administration for typical construction equipment are provided in Table 2, Vibration Levels from Typical Construction Equipment.

**Table 2. Vibration Levels from Typical Construction Equipment**

| Equipment Description | Approximate RMS Vibration Level at 25 Feet (VdB) | Approximate RMS Vibration Level at 50 Feet (VdB) | Approximate RMS Vibration Level at 150 Feet (VdB) |
|---|---|---|---|
| Vibratory Roller | 0.21 | 0.074 | 0.014 |
| Hoe Ram | 0.089 | 0.031 | 0.006 |
| Large Bulldozer | 0.089 | 0.031 | 0.006 |
| Caisson Drilling | 0.089 | 0.031 | 0.006 |
| Loaded Trucks | 0.076 | 0.027 | 0.005 |
| Jackhammer | 0.035 | 0.012 | 0.002 |
| Small Bulldozer | 0.003 | 0.001 | 0.0002 |

**Notes:** RMS = Root Mean Square Amplitude; VdB = vibration decibel

Excessive groundborne vibration would occur if construction-related groundborne vibration exceeds the vibration impact criteria for impacts to daytime uses from infrequent events, as specified by the Federal Transit Administration, of 0.014 inch per second PPV (County of San Diego 2009). The nearest structure to the project site is the adjacent church approximately 50 feet to the west. As shown in Table 2, at this distance construction equipment would have the potential to result in groundborne vibration above the Federal Transit Administration threshold. Construction would have the potential to exceed the 0.014 inch per second threshold up to 150 feet from the construction area. Off-site exposure to such groundborne vibration would be temporary because it would be limited to the short-term construction period. Additionally, the Construction Noise and Vibration Management Plan

that would be implemented to achieve Noise Ordinance standards for construction would also minimize vibration. Finally, per Section 87.208 of the County's Grading Ordinance, all property owners within 300 feet of the construction area would be notified prior to the start of grading, when the most intense construction would occur, which would reduce nuisance impacts by allowing receptors to prepare. Therefore, temporary impacts would be less than significant.

# Operation Impact Analysis

## Permanent Increase in Vehicle Noise

The potential for implementation of the proposed project to permanently increase ambient noise levels as a result of increased traffic was assessed using standard noise modeling equations adapted from the Federal Highway Administration Noise Prediction Model (Attachment 2, FHWA Noise Prediction Model Results). The modeling calculations take into account the posted vehicle speed, median width, average daily trip volume, and estimated vehicle mix. Existing and future traffic volumes and roadway characteristics with the operation of the proposed project were obtained from CR Associates (CRA 2022). Noise levels were calculated at 50 feet from the centerline of each roadway segment. Generally, noise from heavily traveled roadways would experience a decrease of approximately three dBA for every doubling of distance. The actual sound level at any receptor location depends on such factors as the source-to-receptor distance and the presence of intervening structures, barriers, vegetation, and topography; therefore, the result of the calculations is the worst-case scenario.

Existing and future increases in traffic, with and without the proposed project, are provided in Table 3, Existing Plus Project Traffic Noise Levels.

**Table 3. Existing Plus Project Traffic Noise Levels**

| Roadway | Segment | Applicable Threshold (dBA Ldn) | Existing (dBA Ldn) | Exceeds Threshold Without Project? | Existing + Project (dBA Ldn) | Increase in Noise Level From Existing | Significant Impact? |
|---|---|---|---|---|---|---|---|
| Hannalei Drive | West of Watson Way to Watson Way | 60 | 55 | No | 55.3 | +0.3 | No |
| | Watson Way to Project Driveway | 60 | 50.7 | No | 51.6 | +0.9 | No |
| | Project Driveway to Woodland Drive | 60 | 50.7 | No | 51.6 | +0.9 | No |

**Notes:** dBA = A-weighted decibel; Ldn = day-night average sound level

As shown in Table 3, implementation of the proposed project would not cause any roadway segment to exceed 60 CNEL or result in an increase of the noise level of ten CNEL or more above existing noise levels. Impacts would be less than significant.

## Other Operational Noise Sources

Noise generated from residential uses is generally described as "nuisance noise." Nuisance noise is defined as intermittent or temporary neighborhood noise from sources such as amplified music, barking dogs, and landscape maintenance equipment that may be disturbing to other residents. Nuisance noise impacts are more likely to occur in more densely developed areas where residences would be closer together and where neighbors would be more likely to hear a neighbor's dog or music. A multi-family townhome development would likely be exposed

to and generate occasional nuisance noise. Section 36.404 of the County Municipal Code contains the noise control standards for the county and prohibits nuisance noise from exceeding the noise standards at any time. Compliance with the County Municipal Code would limit exposure to excessive nuisance noise. Additionally, nuisance noises would be different from each other in kind, duration, and location. Therefore, the overall effects would be separate and, in most cases, would not affect the receptors at the same time. Therefore, nuisance noise would not result in a significant impact.

Details on future mechanical HVAC equipment installation were provided by the project applicant (Esquivel, pers. comm. 2021). HVAC equipment would be at ground-level locations on the side of the new townhomes. The anticipated unit to be installed is the Carrier 38HDR060 split system condenser. The analysis assumes that the buildings would use a typical to larger-sized residential condenser mounted on ground-level pads. Based on an analysis of the same equipment used for a similar project, the equipment would have the potential to generate noise levels that average 56 dBA at a distance of seven feet and may run continuously during the day and night (HELIX 2020). As such, HVAC equipment could have the potential to generate noise that may exceed the County's hourly noise limit for sensitive receptors of 50 dBA during daytime hours (45 dBA at night). The nearest receptor is a church, approximately 50 feet west from each property line. At this distance, noise from HVAC equipment would be approximately 36.9 dBA at the property line, which complies with the County Municipal Code limit of 50 dBA during daytime hours and 45 dBA during nighttime hours. Therefore, this impact would be less than significant.

Noise sources from the proposed parking lot would include car alarms, door slams, radios, and tire squeals. These sources typically range from approximately 51 to 66 dBA at a distance of ten feet (Gordon Bricken & Associates 2012) and are generally short term and intermittent. Parking lots have the potential to generate temporary noise levels that exceed 50 dBA, depending on the location of the source; however, noise sources from the parking lot would be different from each other in kind, duration, and location. Therefore, the overall effects would be separate and, in most cases, would not affect noise-sensitive receptors at the same time, and noise generated from the proposed parking lot would not exceed the one-hour average sound level limit of 50 dBA. Parking lot noise would be less than significant.

## General Plan Noise Compatibility

As noted above, CEQA typically does not include the impacts of the existing environment on a proposed project. However, conflicts with County's General Plan Noise Element may be considered a potentially significant land use impact. The County's General Plan Noise Element includes a specific standard for new development in Policy N-2.1, which discourages new noise-sensitive land uses from locating and existing noise-sensitive land uses from expanding in areas where noise levels are 60 dB CNEL or above. Additionally, Policy N-2.2 requires noise attenuation to be incorporated into balcony and patio design where exterior noise would exceed 65 dBA at a proposed mixed-use residential development. Due to proximity of the SPRINTER rail line to the project site, the following analysis of potential noise exposure to the proposed residences has been included for consistency with Noise Element Policy N-2.1. During operations, the project may be exposed to noise from the North County Transit District SPRINTER rail line adjacent to the eastern boundary of the project site. The Vista General Plan 2030 (2012) includes SPRINTER rail line noise contour distances, as shown in Table 4, SPRINTER Rail Line Noise Contour Distances.

**Table 4. SPRINTER Rail Line Noise Contour Distances**

| Rail Centerline to 60 dBA CNEL Contour (feet) | Rail Centerline to 65 dBA CNEL Contour (feet) | Rail Centerline to 70 dBA CNEL Contour (feet) |
|---|---|---|
| 300 | 140 | 70 |

Notes: CNEL = community noise equivalent level; dBA = A-weighted decibel

The nearest receptors on the project site would be approximately 100 feet from the center of the SPRINTER rail line. At this distance, noise levels from the rail line would have the potential to be up to approximately 68 dBA, which would exceed the screening level of 60 dBA CNEL for residences and the exterior noise level standard of 65 dBA CNEL for multi-family residences.

The 60 dBA CNEL screening level indicates that interior noise levels may exceed an acceptable interior noise level of 45 dBA CNEL without consideration for noise attenuation. As such, a noise easement is required for the portion of the site within 300 feet of the SPRINTER rail line, and an interior noise study would confirm implementation of attenuation to meet General Plan standards. Compliance with the interior noise standard is also required in accordance with the existing California Building Code before obtaining a building permit. Units with the potential to be exposed to exterior noise levels in excess of 60 dBA CNEL would be designed to include window and wall construction that would reduce interior noise levels to an acceptable level. For example, it is anticipated that windows with a Sound Transmission Class rating of 28 would be selected, which are calculated to achieve an approximately 30 dBA reduction between exterior and interior noise levels (HELIX 2020). Appropriate means of air circulation and provision of fresh air would be present to allow windows to remain closed for extended intervals of time so that acceptable levels of noise could be maintained in the interior. The building design would include a mechanical ventilation system that would meet the criteria of the International Building Code (Chapter 12, Section 1202 of the 2019 California Building Code) to ensure that windows would be able to remain permanently closed. Additionally, the exterior noise level standard of 65 dBA CNEL applies to usable open space such as yards, decks, and balconies. As shown in Table 4, residential units with a balcony or patio within 140 feet for the railroad centerline would potentially be exposed to exterior noise levels above 65 dBA CNEL. As required by Policy N-2.2, as a condition of approval, these units would be designed to include a solid noise barrier that reduces noise exposure in the balcony or patio to below 65 dBA CNEL but does not completely enclose the usable area. Decorative six-foot-high fencing and landscaping on the northwestern boundary of the project site between residences and the rail line may provide additional noise reduction, but wall specifications are not available at this time to estimate potential noise attenuation. However, this potential noise-related land use impact would be less than significant with implementation of conditions of approval to prepare an interior noise study and to install solid noise barriers on residential units exposed to railroad noise.

### Aircraft Noise

The project site is not within the boundaries of an Airport Land Use Plan and is not within two miles of a public use airport or private airstrip. The nearest airports are the McClellan–Palomar Airport, approximately 4.5 miles to the southwest, and Oceanside Municipal Airport, approximately 7.8 miles to the northwest. The project site is outside of the noise contours for either airport; therefore, the project would not expose residents to excessive noise levels and no impacts would occur.

## Summary

Implementation of the proposed project would have the potential to result in temporary noise and vibration exposure from construction equipment, and proposed residences may be exposed to SPRINTER railroad noise in excess of County standards. However, the County would continue to enforce Noise Ordnance Sections 36.408 and 36.409. The project would achieve compliance with the County Noise Ordinance and reduce nuisance impacts from vibration by implementing a Construction Noise and Vibration Management Plan, as described above. Implementation of conditions of approval to prepare an interior noise study and to install solid noise barriers on residential units exposed to railroad noise would achieve compliance with General Plan interior and exterior noise standards.

Operational noise sources including vehicle noise, nuisance noise, HVAC equipment, parking lots, and aircraft noise would be less than significant.

Sincerely,

**Sharon Toland**
Project Manager
Harris & Associates

# References

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# Attachment 1. Roadway Construction Noise Model Results

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Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 9/1/2021
Case Description: Warmingtion Vista 145 Hannalei

| | | ---- Receptor #1 ---- | | |
|---|---|---|---|---|
| | | Baselines (dBA) | | |
| Description | Land Use | Daytime | Evening | Night |
| Receptor | Residential | 60 | 55 | 50 |

| | | | Equipment | | | |
|---|---|---|---|---|---|---|
| | | | Spec | Actual | Receptor | Estimated |
| | | Impact | Lmax | Lmax | Distance | Shielding |
| Description | | Device | (dBA) | (dBA) | (feet) | (dBA) |
| Concrete Saw | | No | 20 | 89.6 | 50 | 0 |
| Excavator | | No | 40 | 80.7 | 50 | 0 |
| Dozer | | No | 40 | 81.7 | 50 | 0 |

| | | Results | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Calculated (dBA) | | Noise Limits (dBA) | | | | | | Noise Limit Exceedance (dBA) | | | | | |
| | | | | Day | | Evening | | Night | | Day | | Evening | | Night | |
| Equipment | | *Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq | Lmax | Leq |
| Concrete Saw | | 89.6 | 82.6 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Excavator | | 80.7 | 76.7 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Dozer | | 81.7 | 77.7 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| | Total | 89.6 | 84.6 | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |

*Calculated Lmax is the Loudest value.

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## Attachment 2. FHWA Noise Prediction Model Result

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## TRAFFIC NOISE LEVELS AND NOISE CONTOURS

**Project Number:**
**Project Name:** Warmington Vista 145 Hannalei

**Background Information**

Model Description: FHWA Highway Noise Prediction Model (FHWA-RD-77-108) with California Vehicle Noise (CALVENO) Emission Levels.
Source of Traffic Volumes: CRA Mobility 2021
Community Noise Descriptor: $L_{dn}$: _____ CNEL: X

| Assumed 24-Hour Traffic Distribution: | Day | Evening | Night |
|---|---|---|---|
| Total ADT Volumes | 77.70% | 12.70% | 9.60% |
| Medium-Duty Trucks | 87.43% | 5.05% | 7.52% |
| Heavy-Duty Trucks | 89.10% | 2.84% | 8.06% |

"-" = contour is located within the roadway right-of-way.
Distance is from the centerline of the roadway segment to the receptor location.

| | | | | | | | | | | | | | Traffic Volumes | | | | | | | | | Ref. Energy Leve | | | | Dist | Ld | | | | Le | | | | Ln | | | | DISTANCE TO CONTOUR (2) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Analysis Condition** | | Median | ADT | Design Speed | Alpha | Vehicle Mix | | **Distance from Centerline of Roadway** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Roadway, Segment | Lanes | Width | Volume | (mph) | Factor | Medium Trucks | Heavy Trucks | **CNEL at 50 Feet** | Distance to Contour 70 CNEL | 65 CNEL | 60 CNEL | 55 CNEL | Calc Dist | Day | Eve | Night | MTd | HTd | MTe | HTe | MTn | HTn | A | MT | HT | Adj | A | MT | HT | Total | A | MT | HT | Total | A | MT | HT | Total | 70 CNEL | 65 CNEL | 60 CNEL | 55 CNEL |
| **Hannalei Drive** | | | | | | | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | ##### | ##### | ##### | ##### | ##### | ##### | ##### | ##### | ##### | ##### | ##### | ##### | ##### | ##### | ##### | ##### | 0 | 0 | 0 | 0 |
| West of Watson Way to Watson Way, existing | 2 | 0 | 2,322 | 25 | 0.5 | 2.0% | 1.0% | **55.0** | - | - | - | 50 | 50 | 1,804 | 295 | 223 | 41 | 21 | 2 | 1 | 3 | 2 | 59.4 | 71.1 | 78.7 | -0.1 | 51.7 | 47.0 | 51.8 | 55.4 | 48.8 | 39.4 | 41.6 | 49.9 | 36.0 | 37.6 | 42.5 | 44.4 | 5 | 11 | 23 | 50 |
| West of Watson Way to Watson Way, existing + project | 2 | 0 | 2,507 | 25 | 0.5 | 2.0% | 1.0% | **55.3** | - | - | - | 53 | 50 | 1,948 | 318 | 241 | 44 | 22 | 3 | 1 | 4 | 2 | 59.4 | 71.1 | 78.7 | -0.1 | 52.0 | 47.4 | 52.1 | 55.8 | 49.1 | 39.8 | 41.9 | 50.3 | 36.3 | 37.9 | 42.9 | 44.7 | 5 | 11 | 24 | 53 |
| **Hannalei Drive** | | | | | | | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | ##### | ##### | ##### | ##### | ##### | ##### | ##### | ##### | ##### | ##### | ##### | ##### | ##### | ##### | ##### | ##### | 0 | 0 | 0 | 0 |
| Watson Way to Woodland Drive, existing | 2 | 0 | 868 | 25 | 0.5 | 2.0% | 1.0% | **50.7** | - | - | - | - | 50 | 674 | 110 | 83 | 15 | 8 | 1 | 0 | 1 | 1 | 59.4 | 71.1 | 78.7 | -0.1 | 47.4 | 42.8 | 47.5 | 51.2 | 44.5 | 35.2 | 37.3 | 45.7 | 31.7 | 33.3 | 38.2 | 40.1 | 3 | 6 | 12 | 26 |
| Watson Way to Woodland Drive, existing + project | 2 | 0 | 1,053 | 25 | 0.5 | 2.0% | 1.0% | **51.6** | - | - | - | - | 50 | 818 | 134 | 101 | 18 | 9 | 1 | 0 | 2 | 1 | 59.4 | 71.1 | 78.7 | -0.1 | 48.3 | 43.6 | 48.3 | 52.0 | 45.3 | 36.0 | 38.2 | 46.5 | 32.5 | 34.1 | 39.1 | 41.0 | 3 | 6 | 14 | 30 |
| **Hannalei Drive** | | | | | | | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | ##### | ##### | ##### | ##### | ##### | ##### | ##### | ##### | ##### | ##### | ##### | ##### | ##### | ##### | ##### | ##### | 0 | 0 | 0 | 0 |
| Watson Way to Project Driveway, existing | 2 | 0 | 868 | 25 | 0.5 | 2.0% | 1.0% | **50.7** | - | - | - | - | 50 | 674 | 110 | 83 | 15 | 8 | 1 | 0 | 1 | 1 | 59.4 | 71.1 | 78.7 | -0.1 | 47.4 | 42.8 | 47.5 | 51.2 | 44.5 | 35.2 | 37.3 | 45.7 | 31.7 | 33.3 | 38.2 | 40.1 | 3 | 6 | 12 | 26 |
| Watson Way to Project Driveway, existing + project | 2 | 0 | 1,053 | 25 | 0.5 | 2.0% | 1.0% | **51.6** | - | - | - | - | 50 | 818 | 134 | 101 | 18 | 9 | 1 | 0 | 2 | 1 | 59.4 | 71.1 | 78.7 | -0.1 | 48.3 | 43.6 | 48.3 | 52.0 | 45.3 | 36.0 | 38.2 | 46.5 | 32.5 | 34.1 | 39.1 | 41.0 | 3 | 6 | 14 | 30 |
| **Hannalei Drive** | | | | | | | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | ##### | ##### | ##### | ##### | ##### | ##### | ##### | ##### | ##### | ##### | ##### | ##### | ##### | ##### | ##### | ##### | 0 | 0 | 0 | 0 |
| Project Driveway to Woodland Drive, existing | 2 | 0 | 868 | 25 | 0.5 | 2.0% | 1.0% | **50.7** | - | - | - | - | 50 | 674 | 110 | 83 | 15 | 8 | 1 | 0 | 1 | 1 | 59.4 | 71.1 | 78.7 | -0.1 | 47.4 | 42.8 | 47.5 | 51.2 | 44.5 | 35.2 | 37.3 | 45.7 | 31.7 | 33.3 | 38.2 | 40.1 | 3 | 6 | 12 | 26 |
| Project Driveway to Woodland Drive, existing + project | 2 | 0 | 1,053 | 25 | 0.5 | 2.0% | 1.0% | **51.6** | - | - | - | - | 50 | 818 | 134 | 101 | 18 | 9 | 1 | 0 | 2 | 1 | 59.4 | 71.1 | 78.7 | -0.1 | 48.3 | 43.6 | 48.3 | 52.0 | 45.3 | 36.0 | 38.2 | 46.5 | 32.5 | 34.1 | 39.1 | 41.0 | 3 | 6 | 14 | 30 |

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