

11.0 Noise

This section of the EIR examines sources of noise that would be generated by the proposed project, particularly traffic noise and stationary noise, and whether those noise sources could adversely impact existing sensitive noise receptors located outside the site and/or future noise sensitive receptors within the site. Short-term noise effects of constructing improvements are also addressed. Exposure of future on-site residents to aircraft noise is also addressed. The significance of noise impacts is primarily determined based on whether noise levels exceed noise standards identified in the General Plan EIR.

The information within this section is largely sourced from the General Plan, the Humboldt County Code, and the *Humboldt County Airport Land Use Compatibility Plan* (Humboldt County 2021). Additional sources of information are utilized where applicable.

Responses to the Notice of Preparation

There were no comments on the NOP regarding the noise scope of analysis.

11.1 Environmental Setting

This environmental setting section incorporates information provided in the General Plan EIR where applicable and information specific to the proposed project and/or the project site.

Noise Background and Terminology

Noise is defined as unwanted or objectionable sound. The objectionable nature of sound could be caused by its pitch or its loudness. Pitch is the height or depth of a tone or sound, depending on the relative rapidity (i.e., frequency) of the vibrations by which it is produced. Higher pitched signals sound louder to humans than sounds with a lower pitch. Loudness is the amplitude of sound waves combined with the reception characteristics of the ear. Amplitude may be compared with the height of an ocean wave.

Noises vary widely in their scope, source, and volume, ranging from individual occurrences such as leaf blowers, to the intermittent disturbances of overhead aircraft, to the constant noise generated by traffic on freeways or mechanical equipment associated with an industrial facility. Noise is primarily a concern for residences, schools, churches, parks, and hospitals. Excessive noise also can adversely affect the quality of life and the rural ambiance that attracts many visitors to Humboldt County.

In addition to the concepts of pitch and loudness, there are several noise measurement metrics which describe noise in a particular location. A decibel (dB) is a unit of measurement which indicates the relative amplitude of a sound. The zero on the decibel scale is based on the lowest sound level that the healthy, unimpaired human ear can detect. Sound levels in dB are calculated on a logarithmic scale. An increase of 10 dB represents a ten-fold increase in acoustic energy, while 20 dB is 100 times more intense, 30 dB is 1,000 times more intense, and so on. There is a relationship between the subjective noisiness or loudness of a sound and its dB level. Each 10 dB increase in sound level is perceived as approximately a doubling of loudness over a wide range of intensities.

As a general rule, sound from localized or point sound sources spreads out as it travels away from the source and the sound level drops at a rate of 6 dB per doubling of distance. The sound level from a line source such as traffic on a highway will drop off at a rate of 3 dB per doubling of distance. If the intervening ground between the roadway and the receptor is acoustically “soft” (e.g., ground vegetation, scattered trees, clumps of bushes), an attenuation rate of 4.5 dB per doubling of distance is generally used.

Noise intensity measurements/terminology used in this section includes:

- Decibel, dB - A unit for describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micronewtons per square meter).
- CNEL - Community Noise Equivalent Level: The average equivalent sound level during a 24-hour day, obtained after addition of approximately five decibels to sound levels in the evening from 7:00 p.m. to 10:00 p.m. and ten decibels to sound levels in the night before 7:00 a.m. and after 10:00 p.m.
- DNL/Ldn: Day/Night Average Sound Level: The average equivalent sound level during a 24-hour day, obtained after addition of ten decibels to sound levels in the night after 10:00 p.m. and before 7:00 a.m.
- Leq - Equivalent Sound Level: The sound level containing the same total energy as a time varying signal over a given sample period. Leq is typically computed over 1, 8 and 24-hour sample periods.

Except under special conditions, a change in sound level of 1 dB cannot be perceived; a 3 dB change is considered a just-noticeable difference; a 5 dB change is required before any noticeable change in community response would be expected, with this magnitude of change typically considered to a significant impact; and a 10 dB change is subjectively heard as an approximate doubling in loudness and almost always causes an adverse community response.

Traffic noise depends primarily on traffic speed (tire noise increases with speed) and the proportion of truck traffic (trucks generate engine, exhaust, and wind noise in addition to tire noise). Changes in traffic volumes can also have an impact on overall traffic noise levels. For example, it takes 25 percent more traffic volume to produce an increase of only 1 dBA in the ambient noise level. A doubling of traffic volume results in a 3 dBA increase in noise levels.

Atmospheric conditions, including wind, temperature gradients, and humidity, can change how sound propagates over distance and can affect the level of sound received at a given location. The degree to which the ground surface absorbs acoustical energy also affects sound propagation. Sound that travels over an acoustically absorptive surface, such as grass, attenuates at a greater rate than sound that travels over a hard surface, such as pavement. The increased attenuation is typically in the range of 1 to 2 dB per doubling of distance. Barriers, such as buildings and topography that block the line of sight between a source and receiver, also increase the attenuation of sound over distance.

Vibration Background and Terminology

Vibration is like noise such that noise involves a source, a transmission path, and a receiver. While related to noise, vibration differs in that noise is generally considered to be pressure waves transmitted through air, whereas vibration usually consists of the excitation of a structure or surface. As with noise, vibration consists of an amplitude and frequency. A person's perception to vibration depends on their individual sensitivity to vibration, as well as the amplitude and frequency of the source and the response of the system that is vibrating.

Vibration can be measured in terms of acceleration, velocity, or displacement. A common practice is to monitor vibration measures in terms of peak particle velocity in inches per second. Standards pertaining to perception as well as damage to structures have been developed for vibration levels. The County does not have specific policies pertaining to vibration levels. However, vibration levels associated with construction activities and proposed project operations are addressed as potential noise impacts associated with the proposed project implementation. Human and structural response to different vibration levels is influenced by a number of factors, including ground type, distance between source and receptor, duration, and the number of perceived vibration events.

Perceptible groundborne vibration is generally limited to areas within a few hundred feet of construction activities. In Humboldt County, construction activities are the most common ground-borne vibration source.

Existing and Future Noise Sensitive Uses

Land uses such as residential, schools, hospitals, parks, outdoor restaurants, and lodging are most affected by noise and are referred to as noise sensitive land uses. Existing nearby representative noise sensitive uses outside the site include residential uses that border south, west, and north sides of the site and residential uses adjacent to the eastern site boundary; the

Timber Ridge senior living facility located along Nursery Way, adjacent to the southern site boundary; and McKinleyville Middle School, located along Central Avenue. Existing noise sensitive uses within the site include residences along the south side of Hiller Road and residential uses along the south side of Railroad Drive near Central Avenue.

Existing Noise Conditions

The existing noise environment in a project area is characterized by the area's general level of development due to the correlation between development intensity and noise generation. Areas which are not urbanized are relatively quiet, while areas which are more urbanized are noisier as a result of roadway traffic, stationary noise sources, and other human activities.

As noted in Section 3.0, Environmental Setting, McKinleyville is an area of urban development within unincorporated Humboldt County. The project site is an infill location adjacent to urban density residential uses and commercial uses. There are no known major industrial, heavy commercial or other point sources of noise in the immediate area. Other than typical stationary noise sources from service and retail commercial uses (e.g., rooftop or ground positioned fans and blower and HVAC units, truck deliveries, loading dock activities, trash compactors, etc.), traffic on Central Avenue is the primary source of ambient noise in the immediate project area.

Traffic Noise

The General Plan EIR reported that as part of the 1999 draft EIR for the Community Plan, projected traffic noise levels in the Community Plan area were expected to increase over time as development occurs. Table 13-A of the General Plan lists Central Avenue and U.S. Highway 101 as the prominent transportation sources of noise in McKinleyville.

Existing and projected traffic noise levels have been reported in the General Plan EIR solely for major roadways in the County (e.g., U.S. Highway 101 and State Route 299). At its nearest point, U.S. Highway 101 is approximately 1,500 feet to the west of the site. The General Plan EIR reported that traffic noise along U.S. Highway 101 through McKinleyville could increase by approximately 1 dB by 2028. Table 13-B in the General Plan shows that the 60 dB CNEL noise contour for the highway extended to about 1,228 feet from its centerline in the McKinleyville area as of 2016.

A traffic operations analysis was conducted as part of the transportation analysis prepared by W-Trans for the proposed project. That report is available upon request from the County Planning and Building Department. Traffic modeling conducted for that analysis was used to identify existing and future condition (cumulative) traffic volumes on the major local roadways onto which project traffic would be distributed (Central Avenue, Railroad Drive, McKinleyville Avenue, and Hiller Road). Traffic noise that affects existing noise-sensitive uses along these roadways and that could affect future noise sensitive uses within the site will increase.

Airport Operations

Aircraft takeoffs, landings, and over-flights are among the most common sources of noise in communities located near airports. In general, airport noise is concentrated towards the end of a runway and will vary depending on the type of aircraft (e.g., size and type of engine), the frequency of flights, flight patterns, and local topography. Noise from aircraft is often more intrusive and has a higher potential noise impact than noise from traffic along roadways.

The California Redwood Coast – Humboldt County Airport is the County’s only commercial-service airport. It is located approximately 1.2 miles to the north of the project site. General Plan Table 13-A notes that the airport, in addition to traffic on U.S. Highway 101 and Central Avenue, is the other most prominent noise source in McKinleyville.

Noise contours are one of the factors used to define land use compatibility zones around airports. Noise contours depict lines of equal noise impact that connect points where equal noise impact is observed or calculated. The Noise Contours: 2002 map for the Arcata-Eureka Airport shows that at its closest, the 60 dB CNEL noise contour for aircraft overflights, the maximum outdoor noise intensity generally considered to be acceptable at the outdoor use areas of noise sensitive receptors, was about 7,000 feet to the north. Projected noise contour maps for the airport are included in the *Humboldt County Airport Land Use Compatibility Plan* (Humboldt County 2021) (“Compatibility Plan”). The Compatibility Plan identifies the future noise contours based on aircraft activity forecasts contained in the airport master plan. These are described in Section 11.4 below.

Ground-Borne Vibration

There are no known sources of significant ground-borne vibration in the immediate project area. Common sources of ground-borne vibration are trains, buses and large trucks on rough roads, and construction activities such as blasting, pile driving, and operating heavy earthmoving equipment.

11.2 Regulatory Setting

Noise exposure standards and regulations identified in the General Plan, General Plan EIR and Humboldt County Code are applicable for assessing environmental impacts of the proposed project. The standards and regulations in the general plan EIR are not replicated here, but are referenced where applicable.

State

State California Building Standards Code

CCR Part 2, Title 24, California Noise Insulation Standards, establishes minimum noise insulation standards to protect persons within new hotels, motels, dormitories, long-term care facilities,

apartment houses, and dwellings other than single-family residences. Under Section 1207.11 “Exterior Sound Transmission Control,” interior noise levels attributable to exterior noise sources cannot exceed 45 Ldn in any habitable room. Where such residences are located in an environment where exterior noise is 60 Ldn or greater, an acoustical analysis is required to ensure interior levels do not exceed the 45 Ldn interior standard. If the interior allowable noise levels are met by requiring that windows be kept closed, the design for the building must also specify a ventilation or air conditioning system to provide a habitable interior environment.

California Green Building Standards

The CalGreen Code identifies standards for building roof and wall construction to minimize interior noise exposures when buildings would be exposed to noise intensities of 65 dB CNEL from airport operations, transportation facilities (e.g., freeways, expressways, and railroad), and industrial sources.

Local

McKinleyville Community Plan

Land use policies which are applicable within the McKinleyville Planning Area are contained in the McKinleyville Community Plan and the Humboldt County General Plan, The General Plan covers countywide issues while the McKinleyville Community Plan deals with land use within the McKinleyville Planning Area. Section 3240 of the McKinleyville Community Plan contains noise policies, standards and implementation programs. Figure 8 of the McKinleyville Community Plan shows community noise impact areas to be used in implementing the McKinleyville Community Plan noise policies and includes Central Avenue, Hiller Road, and McKinleyville Avenue. Those most relevant to the proposed project include:

3242 Policies

1. Interior noise levels generated from exterior sources shall be limited to a maximum of 45 CNEL in all habitable rooms as specified in the California Noise Insulation Standards (Title 25, Section 28 of the California Code of Regulations establishes uniform minimum noise insulation standards to protect persons within new hotels, motels, apartment houses, and dwellings other than detached single family dwellings). This law requires that interior noise levels with windows closed shall not exceed annual CNEL of 45 dB in any habitable room. It also requires acoustical analysis for new residential structures located within an airport CNEL contour of 60 dB showing that the structure has been designed to limit intruding noise to allowable levels. This interior standard is required for single family detached dwellings, as well as multiple family dwellings, although the State noise insulation standards do not apply to this type of dwelling.

2. Minimum exterior to interior noise reduction requirements shall be determined by subtracting 45 CNEL or 45 Ldn from outside noise levels as determined from adopted community noise level information.

Example:

Outside Noise Level = 70 CNEL

Inside Standard = 45 CNEL

Required Noise Level Reduction 25 CNEL

Note that if a project is, for example, in the 65-70 CNEL noise impact area, the noise level reduction requirement would be calculated using the higher value.

3. The County shall update the Ldn Street and Highway Noise Tables to include School Rd, Hiller Rd, Railroad Dr, Sutter Rd, McKinleyville Ave, Murray Rd, and Dows Prairie Rd.

3243 Standards

1. The Land Use/Noise Compatibility Standards shall be used in determining consistency of land uses with the McKinleyville Community Plan (Table 6 shall be interpreted to apply to Ldn and CNEL noise values).
2. Figure 8 shows community noise impact areas to be used in implementing the McKinleyville Community Plan noise policies.

General Plan

The General Plan includes policies, standards and implementation measures relevant to evaluating noise impacts and defining mitigation measures. Those most relevant to the proposed project include:

N-P1. Minimize Noise from Stationary and Mobile Sources. Minimize stationary noise sources and noise emanating from temporary activities by applying appropriate standards for average and short-term noise levels during permit review and subsequent monitoring.

N-P2. Guide to Land Use Planning. Evaluate current noise levels and mitigate projected noise levels when making community planning and zoning decisions to minimize the exposure of community residents to nuisance noise levels. Minimize vehicular and aircraft noise exposure by planning land uses compatible with transportation corridors and airports, and applying noise attenuation designs and construction standards. Avoid zoning patterns that permit people to “move to the nuisance” unless mitigated through project conditions or recorded notice.

N-S1. Land Use/Noise Compatibility Matrix. The Land Use/Noise Compatibility Standards (Table 13-C) shall be used as a guide to ensure compatibility of land uses. Development may occur in areas identified as

“normally unacceptable” if mitigation measures can reduce indoor noise levels to “Maximum Interior Noise Levels” and outdoor noise levels to the maximum “Normally Acceptable” value for the given Land Use Category.

N-S2. Noise Impact Combining Zones. The 20-year projected noise contours in the Map Book Appendix and the most current Airport Land Use Compatibility Plans shall be used to identify noise impact combining zone areas to indicate where special sound insulation measures may apply.

N-S3. Environmental Review Process. For noise sensitive locations where noise contours do not exist, the environmental review process required by the California Environmental Quality Act shall be utilized to generate the required analysis and determine the appropriate mitigation per Plan and state standards. Future noise levels shall be predicted for a period of at least 10 years from the time of building permit application.

N-S4. Noise Study Requirements. When a discretionary project has the potential to generate noise levels in excess of Plan standards, a noise study together with acceptable plans to assure compliance with the standards shall be required. The noise study shall measure or model as appropriate, Community Noise Equivalent Level (CNEL) and Maximum Noise Level (Lmax) levels at property lines and, if feasible, receptor locations. Noise studies shall be prepared by qualified individuals using calibrated equipment under currently accepted professional standards and include an analysis of the characteristics of the project in relation to noise levels, all feasible mitigations, and projected noise impacts. The Noise Guidebook published by the U.S. Department of Housing and Urban Development, or its equivalent, shall be used to guide analysis and mitigation recommendations.

N-S5. Noise Standards for Habitable Rooms. Noise reduction shall be required as necessary in new development to achieve a maximum of 45 CNEL (Community Noise Equivalent Level) interior noise levels in all habitable rooms per California building standards.

N-S6. Noise Reduction Requirements for Exterior Areas in Residential Zones. Newly created single family residential lots of 5,000 square feet or more, should contain a usable outdoor area at least 200 square feet in size per dwelling unit that meets the 60 CNEL (Community Noise Equivalent Level) standard.

N-S7. Short-term Noise Performance Standards (Lmax). The following noise standards, unless otherwise specifically indicated, shall apply to all property within their assigned noise zones and such standards shall constitute the maximum permissible noise level within the respective zones.

N-IM1. Noise Impact Combining Zone. Utilize Noise Impact Combining Zone designations to identify areas where noise impact mitigations are required.

Regarding the Land Use/Noise Compatibility Standards referenced in policy N-S1, the information in the Land Use/Noise Compatibility Matrix shown in Table 13-C of the General Plan forms the basis for evaluating potential noise impacts on various types of existing and proposed land uses. That table is replicated in [Figure 11-1, Land Use/Noise Compatibility Standards](#). Noise exposures in the “clearly acceptable range” require no further consideration. “Normally acceptable” noise exposure levels may require construction techniques that reduce maximum interior noise levels to the levels shown. “Normally unacceptable” noise exposures levels are considered to be potentially significant impacts that require noise mitigation that may consist of construction techniques, noise barriers, building/outdoor use area setbacks from the noise source, etc. Noise exposure that is “clearly unacceptable” would be harmful to sensitive receptors, particularly residentially uses, and would typically not be permitted.

Humboldt County Code

The Humboldt County Code includes a regulation that is pertinent to existing conditions and the proposed project. Noise Impact Combining Zones (Section 314-29.1), Noise Impact Combining Zones, is applied to areas where airport or major road noise exposure would be in excess of 60 dBA and would require residential interior noise be limited to acceptable levels.

As shown in Figure 3-6, Existing Town Center Zoning, the “N” combining zone is included in the zoning designations for most of the property within the project site to reflect the potential for traffic noise levels and airport overflights to affect existing noise conditions as reflected in the McKinleyville Community Plan Figure 8. The County Code also states that manufactured homes are prohibited in areas with noise levels above 60 dB CNEL unless interior noise levels are limited to 45 dB, and that interior noise levels in habitable rooms of residential development and structures for transient habitation (e.g., hotels/motels) must be limited to 45 dB.

Airport Land Use Plan and Land Use Compatibility

Airport Influence Areas (AIA) are defined for all airports in the county in the County Airport Compatibility Plan (discussed in Section 11.1 above), including for the nearby California Redwood Coast – Humboldt County Airport. The AIA boundaries for this airport represent the geographical extent of the County Airport Land Use Commission’s authority and define areas where noise, safety, airspace protection, and overflight notification policies and compatibility criteria are applied to proposed future land use policy actions. An AIA is the area in which current or future airport-related noise, overflight, safety, or airspace protection factors may significantly affect land uses or necessitate restrictions on those uses.

AIA Review Area 1 represents the area in which the policies and compatibility criteria in the Compatibility Plan associated with noise and safety apply. Review Area 2 represents the area in which airspace protection and overflight notification policies of the Compatibility Plan are applicable. Compatibility Plan Figure 1-2, Airport Influence Area, included here as [Figure 11-2](#),

California Redwood Coast-Humboldt County Airport Area of Influence, shows that a portion of the project site near the Railroad Drive/Central Avenue intersection is within Review Area 1, while the remainder of the site is within Review Area 2.

Regarding noise, Compatibility Plan policy NP-4 states that the maximum airport-related noise level considered compatible for new residential development is 60 dB CNEL.

Compatibility Plan Policy GP-4 identifies land use actions for projects located in an AIA that are subject to review by the Humboldt County Airport Land Use Commission for compatibility with the Compatibility Plan. Two actions relevant to the proposed project suggest that some types of future individual projects within the site may be subject to Airport Land Use Commission review – planned unit developments of more than five units, and building permit applications for projects having a valuation greater than \$1,000,000.

11.3 Thresholds of Significance

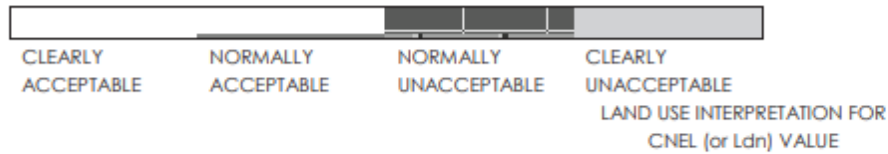
CEQA Guidelines Appendix G is a sample initial study checklist that includes a number of factual inquiries related to the subject of noise, as it does on a whole series of additional environmental topics. Lead agencies are under no obligation to use these inquiries in fashioning thresholds of significance on the subject of noise impacts, or on any subject addressed in the checklist. Rather, with few exceptions, CEQA grants agencies discretion to develop their own thresholds of significance. Even so, it is a common practice for lead agencies to take the language from the inquiries set forth in Appendix G and to use that language in fashioning thresholds. The County has done so here. Therefore, for purposes of this EIR, a significant impact would occur if implementation of the proposed project would:

- Generate 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.

The General Plan noise compatibility standards found in Table 13-C of the General Plan are used as the basis for thresholds of significance in the respective impact discussions below where applicable. Where the General Plan or County Code is silent on noise level standards needed for this analysis, commonly utilized criteria are referenced.

- For a project located within the vicinity of a private airstrip 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 project area to excessive noise levels.

General Plan land use/noise compatibility standards as presented in Section 11.2 above, and guidance from the Compatibility Plan for residential noise exposure from aircraft operations is applicable.



LAND USE CATEGORY	Maximum Interior Noise Levels*	50 - 60	61 - 70	71 - 80	81 - 90	91+
Residential Single Family, Duplex, Mobile Homes	45					
Residential Multiple Family, Dormitories, etc.	45					
Transient Lodging	45					
School Classrooms, Libraries, Churches	45					
Hospitals, Nursing Homes	45					
Auditoriums, Concert Halls, Music Shells	35					
Sports Arenas, Outdoor Spectator Sports						
Playgrounds, Neighborhood Parks						
Golf Courses, Riding Stables, Water Rec., Cemeteries						
Office Buildings, Personal, Business & Professional	50					
Commercial: Retail, Movie Theaters, Restaurants	50					
Commercial: Wholesale, Some Retail, Ind., Mfg., Util.						
Manufacturing, Communications (Noise Sensitive)						
Livestock Farming, Animal Breeding						
Agriculture (except Livestock), Mining, Fishing						
Public Right-of-Way						
Extensive Natural Recreation Areas						

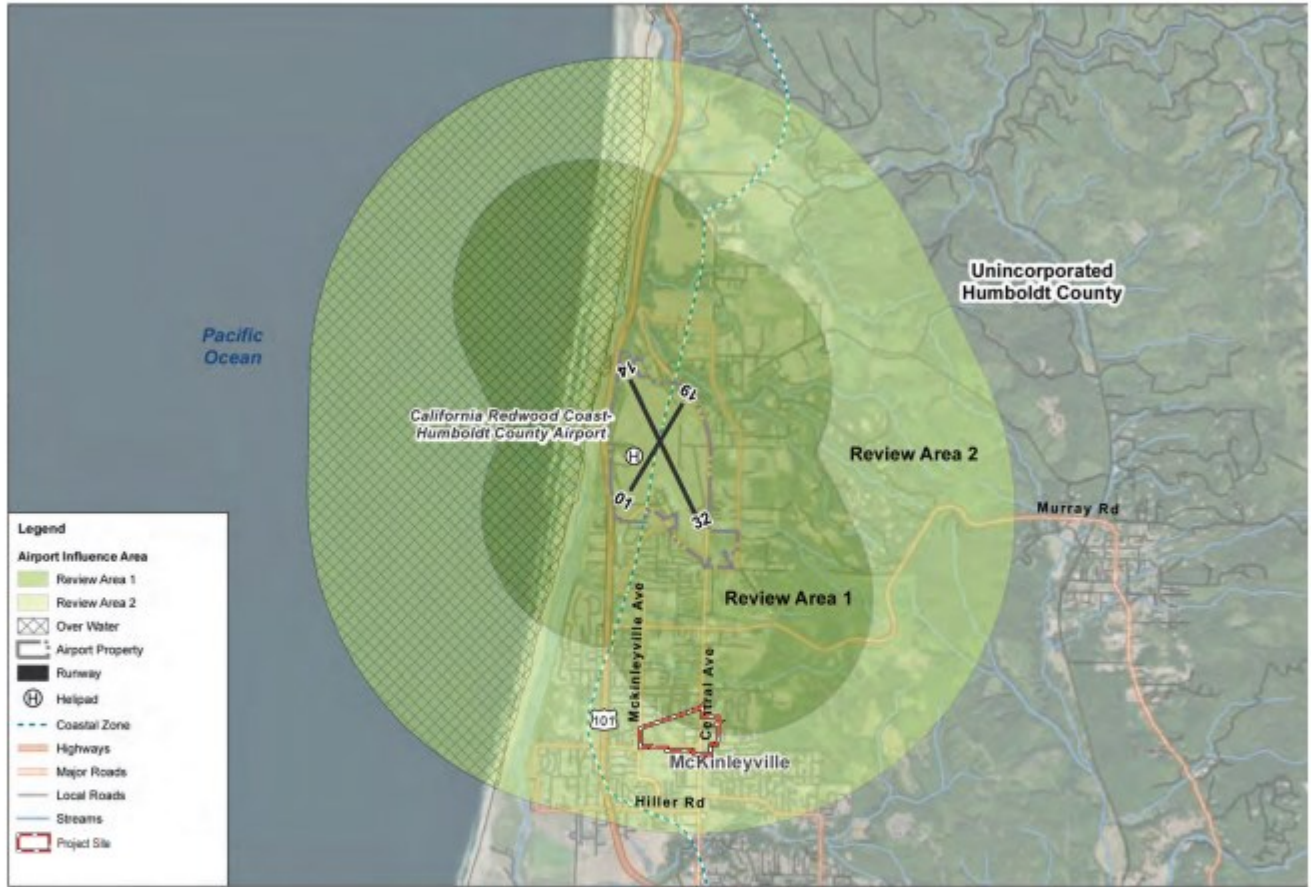
Source: Humboldt County General Plan 2017

Figure 11-1
Land Use/Noise Compatibility Standards

McKinleyville Town Center Zoning Amendment EIR



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Source: Humboldt County Airport Land Use Compatibility Plan 2021

Figure 11-2
 California Redwood Coast-Humboldt County Airport Area of Influence

McKinleyville Town Center Zoning Amendment EIR



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- Generate excessive groundborne vibration or groundborne noise levels.

The General Plan does not contain standards for groundborne vibration intensity. Consequently, guidance from Caltrans is referenced for determining the significance of vibration effects.

11.4 Analysis, Impacts, and Mitigation Measures

Construction Noise

IMPACT 11-1	Temporary Noise Increase from Construction Activities	Less than Significant with Mitigation
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Construction noise would occur at various locations within the project site through the buildout period (assumed to be approximately 20 years), but would likely be concentrated in currently vacant areas west of Central Avenue. Construction activities would include use of various types of equipment that produce a wide range of noise intensities. For example, at distance of 100 feet, noise intensities for representative equipment are: front end loader (73 dB), pneumatic tools (79 dB), trucks (80 dB), backhoe (80 dB) and paver (71 dB). Construction activities would include excavation activities and grading, foundation work, building construction, and paving. Each construction stage has its own mix of equipment and, consequently, its own noise characteristics. The loudest construction activities include excavation, building construction, and grading - earthmoving and grading equipment is typically the loudest construction noise source.

Existing noise sensitive single-family residential receptors are located within the site along the south side of Railroad Drive and the south side of Hiller Road, and adjacent to the site along, McKinleyville Avenue. Single-family, multi-family, and senior housing are along Railroad Drive (west and east of Central Avenue). Senior housing receptors (Timber Ridge senior living facility) and single-family uses are adjacent to the southern boundary of the Town Center. These receptors, as well as McKinleyville Middle School, could be located as close as 50 feet from future construction activities. Refer back to Figure 3-2, Existing Conditions, for locations of these receptors.

Construction noise is typically not considered to be a significant impact if construction is limited to daytime hours and construction equipment is adequately maintained and muffled. Extraordinary noise-producing activities (e.g., pile driving) are not anticipated. With the exception of the Life Plan Humboldt project, there are no known foreseeable individual projects being proposed within the project site. Consequently, specific potential construction noise impacts from future development cannot be determined at present.

The County does not have specific performance standards for construction noise. General Plan noise standard N-S7 identifies short-term maximum permitted noise performance standards for properties with various zoning classifications, but the standards do not apply to construction activities per Exception 4 to the standard, which reads, “Heavy equipment and power tools used during construction of permitted structures when conforming to the terms of the approved permit.”

Construction activities for individual future projects could be a source of short-term noise impacts at adjacent and future on-site noise sensitive uses. This impact is potentially significant. Implementation of the following mitigation measure, which includes best management practices for controlling construction noise, would reduce the impact to less than significant.

Mitigation Measure

- 11-1 The following best management practices shall be applied during periods of project construction for all future individual projects and other activities within the site needed to support future development. The management practices shall be included in all construction documents, subject to review and approval by Planning and Building Director prior to issuance of a demolition or grading permit:
- a. Construction activities shall not occur outside the hours of 8:00 am to 5:00 pm and shall be prohibited on Sundays and holidays;
 - b. All construction equipment shall be properly maintained and muffled as to minimize noise generation at the source;
 - c. Noise-producing equipment shall not be operating, running, or idling while not in immediate use;
 - d. All noise-producing construction equipment shall be located and operated, to the extent possible, at the greatest possible distance from noise-sensitive land uses; and
 - e. To the extent possible, construction staging areas shall be located at the greatest possible distances from nearby noise-sensitive land uses.

Life Plan Humboldt

Construction activities associated with the Life Plan Humboldt project would be similar to those assumed for future development within the remainder of the project site. This foreseeable project would have no new or more severe construction noise impacts than assumed for the project as a whole. The construction mitigation measure above would also apply to the Life Plan project to assure its construction noise impacts are less than significant.

Traffic Noise Impacts at Existing Sensitive Receptors

IMPACT 11-2	Permanent Traffic Noise Level Increases at Existing Sensitive Receptors on Railroad Drive	Significant and Unavoidable
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The analysis of traffic noise impacts is based on comparing the change in existing versus existing plus project traffic levels on the main streets onto which future project traffic would be distributed (Central Avenue, Hiller Road, McKinleyville Avenue, and Railroad Drive) and forecasting the difference in traffic noise volumes that result from such change.

Impacts of Increased Traffic Noise at Existing Sensitive Receptors

As shown in Figure 3-2, Existing Conditions, there are a number of sensitive receptors located along the major local roads onto which traffic from the project would be distributed. Existing sensitive single-family residential receptors are located within the site along Railroad Drive and Heller Road, and adjacent to the site along, McKinleyville Avenue. Single-family, multi-family, and senior housing are along Railroad Drive (west and east of Central Avenue). Traffic noise increases from project traffic at these receptors could be significant if noise levels exceed County noise compatibility standards as reflected in Figure 11-1 or if the change in noise level is deemed perceptible by these receptors. This analysis of project traffic noise focuses on single-family and multi-family residential land uses, as the most restrictive noise level exposure levels identified in the General Plan apply to such uses. The maximum normally acceptable exterior noise exposure level for these use types is 60 dB CNEL, which is applied at their outdoor activity areas, typically assumed to be backyards and common areas, respectively.

When outdoor pre-project traffic noise levels at sensitive receptors are greater than 60 dB, a change in sound level of 1 dB generally cannot be perceived; a 3 dB change is considered a just-noticeable difference; and a 5 dB change would likely trigger a change in community response. Where pre-project noise levels are greater than 60 dB, an increase of 3 dB or more is typically considered to be a significant impact. Where pre-project traffic noise levels are less than 60 dB, a significant impact would occur if the traffic noise increase from the project causes noise levels at outdoor activity areas to exceed 60 dB or when the noise level remains below 60 dB, but the traffic noise increase from the project is 5 dB or more relative to pre-project conditions.

To evaluate changes in traffic noise conditions under future conditions with and without the project, traffic volume information generated by W-Trans, the project traffic engineer, was input into the Federal Highway Administration Traffic Noise Model. The Federal Highway Administration Model is a standard analytical method used by state and local agencies for roadway traffic noise prediction. The model is based upon reference energy emission levels for automobiles, medium trucks (two axles) and heavy trucks (three or more axles), with

consideration given to vehicle volume, speed, roadway configuration, distance to the receiver, and site acoustical characteristics. The model was developed to predict hourly values for free-flowing traffic conditions, and is generally considered to be accurate within ± 1.5 dB.

Table 11-1, Project Contribution to Future Traffic Noise, shows the traffic noise modeling results. Noise levels are reported in dB Ldn, with noise levels assumed to occur at a distance of 75 feet from the centerline of the respective roadways. The traffic volume information used as an input to the noise model is derived from Humboldt County Travel Demand Model, which was also used to evaluate the vehicle miles traveled effects of the project as described in Section 13.0, Transportation. The traffic model horizon year is 2045, as is the assumed project buildout year. Consequently, the “future” traffic volumes and noise volumes represent cumulative conditions.

Table 11-1 Project Contribution to Future Traffic Noise Levels

Roadway ¹	Future without Project ²	Future with Project	Project Contribution	Significant Impact?
McKinleyville (south of Murray)	54	56	+2	No
McKinleyville (north of Railroad)	55	58	+3	No
McKinleyville (south of Railroad)	55	58	+3	No
McKinleyville (north of Hiller)	55	59	+4	No
Central (south of Murray)	61	62	+1	No
Central (north of Railroad)	62	63	+1	No
Central (south of Railroad)	62	63	+1	No
Central (north of Hiller)	63	63	0	No
Railroad (west of McKinleyville)	43	43	0	No
Railroad (east of McKinleyville)	49	54	+5	Yes
Railroad (west of Central)	50	55	+5	Yes
Railroad (east of Central)	47	54	+7	Yes
Hiller (west of McKinleyville)	57	57	0	No
Hiller (east of McKinleyville)	57	63	+6	Yes
Hiller (west of Central)	56	62	+6	Yes

SOURCE: WJV Acoustics 2024

NOTE:

1. Noise levels are measured at 75 feet from the centerline of the respective road segments
2. Noise volumes are reported in dB Ldn

The noise model is not sensitive to local conditions that could intensify or reduce exposure of existing (and future on-site) sensitive receptors to traffic noise levels. Factors such as the weather and reflecting or shielding, also help intensify or reduce the noise level at any given location. A commonly used rule of thumb for roadway noise is that for every doubling of distance from the noise source, the noise level drops off by about 3 dB at acoustically “hard” locations (i.e., the area between the noise source and the receptor is nearly complete asphalt, concrete, hard-packed soil, or other solid materials) and 4.5 dB at acoustically “soft” locations (i.e., the area between the source and receptor is earth or has vegetation, including grass). Noise levels may also be reduced by intervening structures. Generally, buildings located between the receptor and the noise source reduce noise by about 5 dB, while a solid wall or berm reduces noise levels by 5 to 10 dB.

As can be seen from Table 11-1, the project has potential to generate traffic noise along Railroad Drive and along Hiller Road that exceeds County land use/noise compatibility standards. Further, at project buildout, traffic noise levels along Central Avenue could exceed exterior noise compatibility standards for new development within the project site that could occur over time. The associated traffic noise impacts on the respective road segments are summarized below.

Railroad Drive Traffic Noise Impacts

Based on a Google Earth review, several existing single-family homes along the segment of Railroad Drive between Central Avenue and McKinleyville Avenue have outdoor activity areas that are directly exposed to Railroad Drive and that are within 75 feet of the roadway centerline. Multi-family residential and senior residential uses within the site along the south side of this segment would also be exposed. Per the criteria described above, the 5 dB noise level increase at these locations when existing noise levels are below 60 dB would be considered a significant impact.

Traffic noise on the segment of Railroad Drive east of Central Avenue would increase by about 7 dB. Backyards and common open space areas of single-family and multi-family residential uses along the north side of the road are within 75 feet of the roadway centerline. The noise increase would have a significant impact, as existing noise levels in this location are below 60 dB.

Table 13-C in the General Plan shows that schools have an acceptable outdoor noise exposure of up to 65 dB. The noise increase would exceed the 5 dB criterion, but not exceed 65 dB. The noise increase would be noticeable at the school buildings and grounds adjacent to the street, but the resulting ambient noise level of 54 dB would remain well below 65 dB threshold. Therefore, the traffic noise increase would not constitute a significant impact on this sensitive land use receptor.

Mitigation

Mitigation of traffic noise impacts at existing, off-site and on-site sensitive receptors can be challenging from feasibility and/or implementation practicality perspectives. Common mitigation options can include: 1) constructing soundwalls along the impacted receptor property frontage with the road; 2) installing “quieter” pavement as a road surface that can reduce noise from vehicle tires; and/or 3) installing insulation such as sound rated windows and doors at impacted residences.

Constructing soundwalls and installing noise insulation would require cooperation with and approval of all affected residents and property owners. Further, since not all impacted receptors along Railroad Drive are adjacent to each other, soundwalls would only be required intermittently where receptors would be impacted. It is not certain that such approval would be provided, nor would non-continuous soundwalls be as effective at attenuating noise at the receptors as would continuous walls with few openings.

Research shows that a minimum of 3 dBA can be achieved by using alternative roadway pavements, such as rubberized asphalt or open gap materials. Costs for these pavement technologies vary, but they have been proven to be comparable to traditional pavements. However, alternative pavement tends to wear down as vehicles travel over these roadway segments, decreasing its noise reduction effectiveness and increasing replacement costs. As such, rubberized asphalt is not highly desirable in most communities and may not be practical as a long-term traffic noise reduction option.

Due to these challenges, the feasibility of mitigation measures that might be employed to reduce the impacts at the affected receptors on Railroad Drive both west and east of Central Avenue to less than significant is uncertain. Therefore, this impact is conservatively assumed to be significant and unavoidable.

Hiller Road Traffic Noise Impacts

Several homes are located on the south side of Hiller Road near its intersection with McKinleyville Avenue. Based on a Google Earth review. Noise levels in this area would exceed the 60 dB noise compatibility standard by 2 dB – 3 dB at 75 feet from the centerline of the roadway. None of the homes have outdoor activity areas (backyards) that are exposed to and within 75 feet of the Railroad Drive centerline - backyards/common activity areas are located behind the residences. The residential buildings located between Hiller Road and the rear outdoor activity areas of the homes can be assumed to reduce noise levels at the outdoor activity area by 5 dB or more. Therefore, the traffic noise increase at the residences would have a less-than-significant impact.

Life Plan Humboldt

Traffic that would be generated by the Life Plan Humboldt project is a component of the overall traffic generation volume for the Town Center project as a whole. It is that overall traffic volume on which the traffic noise impact evaluation is based. The Life Plan Humboldt project would have no new or more severe criteria air quality impacts than assumed for the project as a whole.

Traffic Noise Impacts at Future On-Site Sensitive Receptors

IMPACT 11-3	Permanent Traffic Noise Level Increases on Central Avenue at Future On-Site Sensitive Receptors	Less than Significant with Mitigation
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Future noise sensitive uses proposed within the site along its frontages with the segment of Central Avenue between Railroad Drive and Hiller Road would potentially be exposed to exterior traffic noise levels that exceed 60 dB. Such development would contribute traffic to the roadway that would create elevated traffic noise exposure. At the current program level of analysis, it is unknown whether such uses would be designed such that common outdoor activity areas would be exposed to traffic noise levels that exceed the standard.

Implementation of the following mitigation measure would reduce the impact to a less-than-significant level.

Mitigation Measure

11-2 Individual project developers who propose noise sensitive residential uses along the project site frontage with Central Avenue shall prepare a noise report to evaluate potential traffic noise impacts on the uses. The noise report shall quantify site-specific outdoor activity area noise exposure levels for such projects and recommend appropriate mitigation measures to achieve compliance with County noise standards. Noise impacts may be effectively mitigated by incorporating measures into the project design that consider the geographical relationship between traffic noise on the roadways and the receptor, the noise-producing characteristics of the sources and the path of transmission between noise sources and receptors. Options for noise mitigation include, but may not be limited to building setbacks and/or constructing sound walls. Noise reports shall be subject to review and approval of the Director of Planning and Building prior to approval of individual project entitlements.

Life Plan Humboldt

The Life Plan Humboldt project, which may be considered a noise sensitive use given that it would house a permanent “resident” population, is not planned for a location adjacent to Central Avenue where existing or future post-project traffic noise levels could impact this planned sensitive receptor. Traffic that would be generated by the Life Plan Humboldt project is a component of the overall traffic generation volume for the Town Center project as a whole. It is that overall traffic volume on which the traffic noise impact along Central Avenue has been identified. The Life Plan Humboldt contribution to traffic noise impact would not result in new or more severe impacts than described above. Because the project is not planned for a location adjacent to Central Avenue, it would not be subject to the mitigation measure described above.

Future Commercial Use Stationary Noise Effects

IMPACT 11-4	Future Commercial Uses Could Cause a Permanent Noise Increase at Sensitive Receptors	Less than Significant with Mitigation
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Noise sources not associated with transportation are considered to be stationary sources. Future commercial development within the site could include a wide variety of stationary noise sources such as HVAC equipment, loading docks, and compactors. Noise levels from new stationary noise sources cannot be predicted with any certainty at this time since specific future commercial projects have not yet been proposed and the precise locations of stationary noise sources relative to the locations of existing on-site, future new on-site noise sensitive uses, and existing off-site noise sensitive are not known. However, under some circumstances there is a potential for noise from new commercial stationary sources to exceed County standards at these noise sensitive receptors.

At the level of information available about the types of proposed commercial uses, their locations, and their stationary source noise characteristics, it is uncertain, but possible that noise from future commercial uses would exceed standards at existing off-site sensitive receptors and/or at existing on-site or future constructed on-site noise sensitive uses. This would be a potentially significant impact. Implementation of the following mitigation measure would reduce this impact to less than significant.

Mitigation Measure

11-3 Applicants proposing commercial uses directly adjacent to existing off-site and/or existing on-site or future constructed on-site noise sensitive uses shall, at the discretion of the Director of Planning and Building, prepare an acoustical analysis based on the Director of Planning and Building’s determination as to whether land use noise compatibility impacts are likely. The acoustical analysis shall define the site-specific potential impacts of associated stationary noise sources. If potentially

significant impacts are identified, mitigation measures shall be identified to reduce impacts to less than significant by ensuring compliance with the County noise standards. Mitigation could include, but may not be limited to: site design to separate commercial uses from adjacent sensitive residential uses, building setbacks, noise equipment enclosures, etc. The acoustical analyses shall be subject to review and approval of the Director of Planning and Building prior to approval of entitlements for future commercial projects.

Life Plan Humboldt

The Life Plan Humboldt project is considered a commercial use with the potential to include stationary noise sources that could impact existing and potentially future adjacent noise sensitive receptors. Impacts of stationary noise sources are described above. The Life Plan project would have no new or more severe stationary noise impacts than assumed for other future commercial uses within the site. The mitigation measure above is also applicable to the Life Plan Humboldt project as a means to reduce its potential stationary noise impact.

California Redwood Coast-Humboldt County Airport Noise Compatibility

IMPACT 11-5	Exposure of Future Project Site Residents to Excessive Aircraft Overflight Noise	Less than Significant
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Future noise-sensitive uses within the project site could be significantly impacted by aircraft overflight noise if noise exposure levels at these uses were to exceed County land use/noise compatibility standards. The overflight notification policies in Section 3.5 of the Compatibility Plan indicate that many people are sensitive to the frequent presence of aircraft overhead even at low noise levels. Compatibility policies require real estate disclosure statements and overflight notification for residential development within overflight notification areas, which based on Figure 4-4, Overflight Compatibility Map California Redwood Coast-Humboldt Airport, includes the entire Town Center area. Policy NP-4 in the Compatibility Plan states that the maximum airport-related noise level considered compatible for new residential development is 60 dB. [Figure 11-3, Noise Compatibility Policy Map](#), shows projected noise contours from aircraft overflights based on anticipated changes in aircraft operations at the airport to the year 2039. No portion of the project site is within the 60 dB contour, which at its closest point, is approximately 6,000 feet to the north of the site. Consequently, new future development within the site would not be exposed to aircraft noise that exceeds the applicable standard. Therefore, this potential impact is less than significant.

Groundborne Vibration Effects

IMPACT 11-6	Groundborne Vibration Intensity from Construction Activities that Exceeds Standards	Less than Significant
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There are no state or federal standards that specifically address construction vibration. Guidance is provided by the *Caltrans Transportation and Construction Vibration Guidance Manual* (California Department of Transportation 2020). The Manual provides direction for determining annoyance potential criteria and damage potential threshold criteria. These criteria are provided below in [Table 11-2, Vibration Annoyance Potential Criteria](#) and [Table 11-3, Vibration Damage Potential Threshold Criteria](#). Data is presented in terms of peak particle velocity (PPV) in inches per second (in/sec).

Table 11-2 Vibration Annoyance Potential Criteria

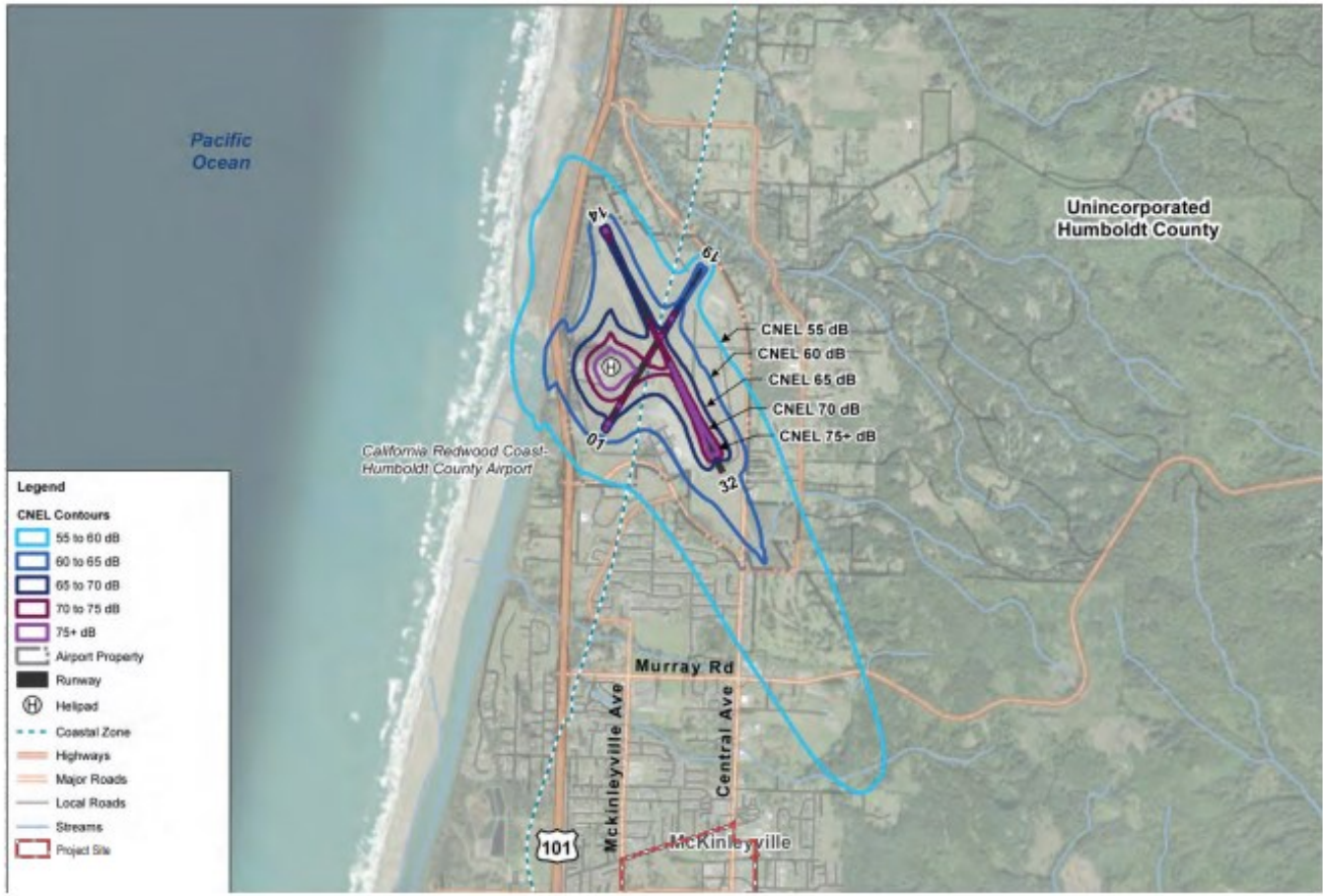
Human Response	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Barely Perceptible	0.04	0.01
Distinctly Perceptible	0.25	0.04
Strongly Perceptible	0.9	0.10
Severe	2.0	0.40

SOURCE: Caltrans 2020

Table 11-3 Vibration Damage Potential Threshold Criteria

Structure and Condition	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Extremely fragile, historic buildings, ancient monuments	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	1.0	0.5

SOURCE: Caltrans 2020



Source: Humboldt County Airport Land Use Compatibility Plan 2021

Figure 11-3
Noise Compatibility Policy Map
 McKinleyville Town Center Zoning Amendment EIR



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The dominant sources of man-made vibration are sonic booms, blasting, pile driving, pavement breaking, demolition of major structures or infrastructure, and diesel locomotives and rail-car coupling. None of these activities are anticipated to occur with construction or operation of the proposed project. Vibration from construction activities could be detected at the closest off-site and/or on-site sensitive land uses, especially during movements by heavy equipment or loaded trucks and during some paving activities. Typical vibration levels at distances of 100 feet and 300 feet are summarized in [Table 11-4, Typical Vibration Levels During Construction](#). These levels would not be expected to exceed any significant threshold levels for annoyance or damage, as provided above in Table 11-2.

Table 11-4 Typical Vibration Levels During Construction

Equipment	PPV (in/sec)	
	@ 100 Feet	@ 300 Feet
Extremely fragile, historic buildings, ancient monuments	0.011	0.0006
Fragile buildings	0.0004	0.00019
Historic and some old buildings	0.01	0.005
Older residential structures	0.005	0.002
New residential structures	0.3	0.013
Modern industrial/commercial buildings	0.1	0.006

SOURCE: Caltrans 2020

It is not expected that ongoing operational activities of planned residential, commercial or office uses in the Town Center would have vibration impacts at nearby sensitive uses. Activities involved in trash bin collection could result in minor on-site vibration as the bin is placed back onto the ground. Such vibration would not be expected to be felt at the closest off-site sensitive uses.

Based on the information presented above, the proposed project is not expected to be a source of significant vibration. The impact is less than significant.

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