4.4 NOISE

This section describes the existing noise setting of the project site, identifies associated regulatory requirements, evaluates potential impacts, and identifies mitigation measures as necessary related to implementation of the Alta Oceanside Project (proposed project). The following analysis is based on the Noise Technical Report for the Alta Oceanside project that was prepared for the proposed project by Dudek in 2019 and other information included in the project record. The Noise Technical Report is included in Appendix G of this Environmental Impact Report (EIR).

4.4.1 Existing Conditions

4.4.1.1 Methodology

Noise Characteristics and Descriptors

Sound is mechanical energy transmitted by pressure waves in a compressible medium, such as air. Noise is defined as sound that is loud, unpleasant, unexpected, or undesired. The sound-pressure level has become the most common descriptor used to characterize the loudness of an ambient sound level. The unit of measurement of sound pressure is a decibel (dB). Under controlled conditions in an acoustics laboratory, the trained, healthy human ear is able to discern changes in sound levels of one dB when exposed to steady, single-frequency signals in the mid-frequency range. Outside such controlled conditions, the trained ear can detect changes of two dB in normal environmental noise. It is widely accepted that the average healthy ear, however, can barely perceive noise level changes of three dB. A change of five dB is readily perceptible, and a change of 10 dB is perceived as twice or half as loud. A doubling of sound energy results in a three dB increase in sound, which means that a doubling of sound energy (e.g., doubling the number of daily trips along a given road) would result in a barely perceptible change in sound level.

Sound may be described in terms of level or amplitude (measured in dB), frequency or pitch (measured in hertz or cycles per second), and duration (measured in seconds or minutes). Because the human ear is not equally sensitive to sound at all frequencies, a special frequency-dependent rating scale is used to relate noise to human sensitivity. The A-weighted decibel (dBA) scale performs this compensation by discriminating against low and very high frequencies in a manner approximating the sensitivity of the human ear.

Several descriptors of noise (noise metrics) exist to help predict average community reactions to the adverse effects of environmental noise, including traffic-generated noise. These descriptors include the equivalent noise level over a given period (L_{eq}), the day–night average noise level (L_{dn}), and the community noise equivalent level (CNEL). Each of these descriptors uses units of dBA.

L_{eq} is a decibel quantity that represents the constant or energy-averaged value equivalent to the amount of variable sound energy received by a receptor during a time interval. For example, a one hour L_{eq} measurement of 60 dBA would represent the average amount of energy contained in all the noise that occurred in that hour. L_{eq} is an effective noise descriptor because of its ability to assess the total time-varying effects of noise on sensitive receptors, which can then be compared to an established L_{eq} standard or threshold of the same duration. Another descriptor is maximum sound level (L_{max}), which is the greatest sound level measured during a designated time interval or event. The minimum sound level (L_{min}) is often called the *floor* of a measurement period.

Unlike the L_{eq}, L_{max}, and L_{min} metrics, L_{dn} and CNEL descriptors always represent 24-hour periods and differ from a 24-hour L_{eq} value because they apply a time-weighted factor designed to emphasize noise events that occur during the non-daytime hours (when speech and sleep disturbance is of more concern). *Time weighted* refers to the fact that L_{dn} and CNEL penalize noise that occurs during certain sensitive periods. In the case of CNEL, noise occurring during the daytime (7:00 a.m. to 7:00 p.m.) receives no penalty. Noise during the evening (7:00 p.m. to 10:00 p.m.) is penalized by adding five dB, and nighttime (10:00 p.m. to 7:00 a.m.) noise is penalized by adding 10 dB. L_{dn} differs from CNEL in that the daytime period is longer (defined instead as 7:00 a.m. to 10:00 p.m.), thus eliminating the dB adjustment for the evening period. L_{dn} and CNEL are the predominant criteria used to measure roadway noise affecting residential receptors. These two metrics generally differ from one another by no more than 0.5 to one dB, and are often considered or actually defined as being essentially equivalent by many jurisdictions.

Vibration Fundamentals

Vibration is oscillatory movement of mass (typically a solid) over time. It is described in terms of frequency and amplitude and, unlike sound, can be expressed as displacement, velocity, or acceleration. For environmental studies, vibration is often studied as a velocity that, akin to the discussion of sound pressure levels, can also be expressed in dB as a way to cast a large range of quantities into a more convenient scale. Vibration impacts to buildings are generally discussed in terms of inches per second (ips) peak particle velocity (PPV), which will be used herein to discuss vibration levels for ease of reading and comparison with relevant standards. Vibration can also be annoying and thereby impact occupants of structures, and vibration of sufficient amplitude can disrupt sensitive equipment and processes, such as those involving the use of electron microscopes and lithography equipment. Common sources of vibration within communities include construction activities and railroads. Groundborne vibration generated by construction projects is usually highest during pile driving, rock blasting, soil compacting, jack hammering, and demolition-related activities where sudden releases of subterranean energy or powerful impacts of tools on hard materials occur. Depending on their distances to a sensitive receptor, operation of large bulldozers, graders, loaded dump trucks, or other heavy construction equipment and vehicles on a construction site also have the

potential to cause high vibration amplitudes. The maximum vibration level standard used by the California Department of Transportation (Caltrans) for the prevention of structural damage to typical residential buildings is 0.3 ips PPV.

Effect of Noise

Excessively noisy conditions can affect an individual's quality of life, health, and well-being. The effects of noise can be organized into six broad categories: sleep disturbance, permanent hearing loss, human performance and behavior, social interaction or communication, extra-auditory health effects, and general annoyance. An individual's reaction to noise and its level of disturbance depends on many factors such as the source of the noise, its loudness relative to the background noise level, time of day, whether the noise is temporary or permanent, and subjective sensitivity.

Project Site Survey

Sound-pressure level measurements were conducted near the project site on May 28, 2019, to quantify and characterize the existing outdoor noise levels. Table 4.4-1 provides the location, date, and time at which these baseline noise level measurements were taken. The sound-pressure level measurements were performed by an attending Dudek field investigator using a Rion NL-52 sound level meter equipped with a 0.5-inch, pre-polarized condenser microphone with pre-amplifier. The sound level meter meets the current American National Standards Institute standard for a Type 1 (Precision Grade) sound level meter. The accuracy of the sound level meter was verified using a field calibrator before and after the measurements, and the measurements were conducted with the microphone positioned approximately five feet above the ground.

Three short-term noise level measurement locations (ST1–ST3) that represent existing sensitive receivers were selected on and near the project site. The L_{eq} and L_{max} noise levels are provided in Table 4.4-1. The primary noise sources at the sites identified in Table 4.4-1 consisted of traffic along adjacent roadways, the sounds of leaves rustling, and birdsong. As shown in Table 4.4-1, the measured sound levels ranged from approximately 48.8 dBA L_{eq} at ST2 to 57.9 dBA L_{eq} at ST3. Noise measurement data is also included in Appendix G.

Table 4.4-1
Measured Baseline Outdoor Noise Levels

Receptor	Location/Address	Date (dd.mm.yy)	Time (hh:mm)	L_{eq} (dBA)	L_{max} (dBA)
ST1	Northwest parking lot of Coast Inn	05.28.19	11:20 a.m. – 11:30 a.m.	51.4	61.8
ST2	Northeastern property line of 1019 Costa Pacifica Way	05.28.19	10:30 a.m. – 10:45 a.m.	48.8	53.8

Table 4.4-1
Measured Baseline Outdoor Noise Levels

Receptor	Location/Address	Date (dd.mm.yy)	Time (hh:mm)	L_{eq} (dBA)	L_{max} (dBA)
ST3	North of Costa Pacifica Way, approximately 90 feet west of North Coast Highway	05.28.19	10:50 a.m. – 11:00 a.m.	57.9	71.2

Source: Appendix G.
Notes: L_{eq} = equivalent continuous sound level (time-averaged sound level); L_{max} = maximum sound level during the measurement interval; dBA = A-weighted decibels; ST = short-term noise measurement locations.

4.4.2 Regulatory Setting

Federal

Federal Transit Administration

In its Transit Noise and Vibration Impact Assessment guidance manual, the Federal Transit Administration (FTA) recommends a daytime construction noise level threshold of 80 dBA L_{eq} over an eight hour period when detailed construction noise assessments are performed to evaluate potential impacts to community residences surrounding a project (FTA 2006). Although this FTA guidance is not a regulation, it can serve as a quantified standard in the absence of such limits at the state and local jurisdictional levels.

State

California Code of Regulations, Title 24

Title 24 of the California Code of Regulations sets standards that new development in California must meet. According to Title 24 (Part 2, Volume 1, Chapter 12 – Interior Environment, Section 1206.4), interior noise levels attributed to exterior noise sources are not to exceed 45 dBA CNEL for any habitable room.

California Department of Health Services Guidelines

The California Department of Health Services has developed guidelines of community noise acceptability for use by local agencies. Selected relevant levels are listed here:

- Below 60 dBA CNEL: normally acceptable for low-density residential use
- 50 to 70 dBA: conditionally acceptable for low-density residential use
- Below 65 dBA CNEL: normally acceptable for high-density residential use and transient lodging

- 60 to 70 dBA CNEL: conditionally acceptable for high-density residential, transient lodging, churches, educational, and medical facilities

The normally acceptable exterior noise level for high-density residential use is up to 65 dBA CNEL. Conditionally acceptable exterior noise levels range up to 70 dBA CNEL for high-density residential use.

California Department of Transportation

In its Transportation and Construction Vibration Guidance Manual, Caltrans recommends a vibration velocity threshold of 0.2 ips PPV for assessing annoying vibration impacts to occupants of residential structures. Although this Caltrans guidance is not a regulation, it can serve as a quantified standard in the absence of such limits at the local jurisdictional level. Similarly, thresholds to assess building damage risk due to construction vibration vary with the type of structure and its fragility, but tend to range between 0.2 ips and 0.3 ips PPV for typical residential structures.

Local

City of Oceanside General Plan Noise Element

The Noise Element of the City of Oceanside (City) General Plan establishes target maximum noise levels in the City. The Noise Element provides the following limitations on construction noise (City of Oceanside 1974):

1. It should be unlawful for any person within any residential zone of 500 feet there from to operate any pile driver, power shovel, pneumatic, power hoist, or other construction equipment between 8:00 p.m. and 7:00 a.m. generating an ambient noise levels of 50 dBA at any property line unless an emergency exists.
2. It should be unlawful for any person to operate any construction equipment at a level in excess of 85 dBA at 100 feet from the source.
3. It should be unlawful for any person to engage in construction activities between 6:00 p.m. and 7:00 a.m. when such activities exceed the ambient noise level by five dBA. A special permit may be granted by the Director of Public Works if extenuating circumstances exist.

In addition, the Noise Element addresses nuisance noise and states that it should be unlawful for any person to make or continue any loud, unnecessary noise that causes annoyance to any reasonable person of normal sensitivity.

The City's Noise Element outlines general goals, objectives, and noise policies as follows:

Goal: To minimize the effects of excessive noise in the City of Oceanside.

Objective: To protect the residents and visitors to Oceanside from noise pollution. To improve the quality of Oceanside's environment.

Policies:

- Noise levels shall not be so loud as to cause danger to public health in all zones except manufacturing zones where noise levels may be greater.
- Noise shall be controlled at the source where possible.
- Noise shall be intercepted by barriers or dissipated by space where the source cannot be controlled.
- Noise levels shall be considered in any change to the Land Use and Circulation Elements of the City's General Plan.
- Noise levels of City vehicles, construction equipment, and garbage trucks shall be reduced to acceptable levels.

In a manner similar to the state's land use planning guidelines, the City's Noise Element establishes an implementation recommendation (#5) that puts attention to the careful planning of future residents in areas "subjected to noise levels of 65 dBA or higher."

For interior noise, the Noise Element refers to the aforementioned California Title 24 noise insulation standard: 45 dBA CNEL as the maximum acceptable level for inhabited rooms when exterior noise levels are 60 dBA CNEL or more. This implies that if windows and doors are required to be closed to meet this standard, then mechanical ventilation (i.e., air conditioning) shall be included in the project design.

City of Oceanside Noise Control Ordinance

Chapter 38, Noise Control, of the Oceanside Municipal Code governs operational noise and contains the maximum 1-hour average sound levels for various land uses for operational noise (Table 4.4-2). The Noise Control Ordinance (Noise Ordinance) sets an allowed level for areas in the Downtown base district zone to be 65 dBA L_{eq} from 7:00 a.m. to 9:59 p.m. (daytime), and 55 dBA L_{eq} from 10:00 p.m. to 6:59 a.m. (nighttime) (City of Oceanside 1990). As both the proposed project site and the existing residences immediately to the west and south are within the Downtown base district zone, the arithmetic mean of the noise limits for such zones sharing a joint boundary would be the same: 65 dBA L_{eq} (daytime) and 55 dBA L_{eq} (nighttime).

Table 4.4-2
City of Oceanside Exterior Noise Standards

Zone	Applicable Limit (decibels) [1]	Time Period
Residential Estate, Single-Family Residential, Medium Density Residential, Agricultural, Open Space	50 45	7:00 a.m. to 9:59 p.m. 10:00 p.m. to 6:59 a.m.
High Density, Residential Tourist	55 50	7:00 a.m. to 9:59 p.m. 10:00 p.m. to 6:59 a.m.
Commercial	65 60	7:00 a.m. to 9:59 p.m. 10:00 p.m. to 6:59 a.m.
Industrial	70 65	7:00 a.m. to 9:59 p.m. 10:00 p.m. to 6:59 a.m.
Downtown	65 55	7:00 a.m. to 9:59 p.m. 10:00 p.m. to 6:59 a.m.

Source: Appendix G.
Note: [1] One-hour average sound level.

Construction activities are subject to Section 38.17 of the Noise Ordinance, which specifically prohibits the operation of any pneumatic or air hammer, pile driver, steam shovel, derrick, steam, or electric hoist, parking lot cleaning equipment, or other appliance, the use of which is attended by loud or unusual noise, between the hours of 10:00 p.m. and 7:00 a.m.

Section 38.16 prohibits nuisance noise as recommended in the City's General Plan Noise Element. It is unlawful for any person to make, continue, or cause to be made or continued within the limits of the City any disturbing, excessive, or offensive noise that causes discomfort or annoyance to reasonable persons of normal sensitivity. However, Section 35.15 provides construction, maintenance or other public improvement activities by government agencies or public utilities may be exempt from the noise level limits upon the city manager (or manager's designee) determination that the authorization furthers the public interest.

City of Oceanside Engineering Manual

Construction noise in the City is governed by the City Engineering Manual (City of Oceanside 2017), which states the following:

> All operations conducted on the premises, including the warming up, repair, arrival, departure, or running of trucks, earthmoving equipment, construction equipment, and any other associated equipment shall be limited to the period between 7:00 a.m. and 6:00 p.m. each day, Monday through Friday, and no earthmoving or grading operations shall be conducted on the premises on Saturdays, Sundays or legal holidays, unless waived by the City Engineer. (Engineers Design and Processing Manual Appendix Construction Guidelines and Requirements, Page 139)
>
> Hours of Operation (515)(34): 7:00 am to 6:00 p.m. M-F; including equipment warm-up.

Saturday Operation: Requires filing a permit by 2:30 p.m. on the preceding Thursday. (Engineers Design and Processing Manual Appendix Construction Guidelines and Requirements, Page 159)

4.4.3 Thresholds of Significance

The significance criteria used to evaluate the project impacts related to noise are based on Appendix G of the CEQA Guidelines. According to Appendix G of the CEQA Guidelines, a significant impact related to noise would occur if the proposed project would:

1. Result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?
2. Result in generation of excessive groundborne vibration or groundborne noise levels?
3. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such 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?

In light of these above significance criteria, this analysis uses the following standards to evaluate potential noise and vibration impacts.

- Construction noise – Although Chapter 38 of the Oceanside Municipal Code does not quantify a threshold for allowable construction noise, the City's General Plan allows noise from construction equipment operation to be as high as 85 dBA at 100 feet from the source. Applying the principles of sound propagation for a point-type source, this level could be interpreted to mean 91 dBA at 50 feet, which is greater than the maximum sound levels of most operating construction equipment (DOT 2006) and would thus imply all but the loudest construction activities (e.g., pile driving) could be compliant with this standard. However, the apparent proximity of existing residential receptors to the southwest of the proposed project site suggests that source-to-receiver distances could be as short as 15 feet. Additionally, most construction equipment and vehicles on a project site do not operate continuously. Therefore, consistent with the FTA guidance mentioned in Section 2, Regulatory Setting, this analysis will use 80 dBA Leq over an 8-hour period as the construction noise impact criterion during daytime hours (7:00 a.m. to 6:00 p.m.). If construction work were to occur outside 7:00 a.m. to 6:00 p.m., the impact threshold would align with the City's General Plan requirement during such hours: no more than a 5 dBA increase over existing ambient noise levels.
- Off-site project-attributed transportation noise – For purposes for this analysis, a direct roadway noise impact would be considered significant if increases in roadway traffic

noise levels attributed to the proposed project were greater than 3 dBA CNEL at an existing noise-sensitive land use.

- On-site project-attributed transportation noise – For purposes for this analysis, a direct roadway noise impact would be considered significant if increases in roadway traffic noise levels attributed to the proposed project were greater than 3 dBA CNEL at an existing noise-sensitive land use.
- Off-site project-attributed stationary noise – For purposes for this analysis, a noise impact would be considered significant if noise from typical operation of heating, ventilation, and air conditioning and other electro-mechanical systems associated with the proposed project exceeded 65 dBA hourly Leq at the property line from 7:00 a.m. to 9:59 p.m., and 55 dBA hourly Leq from 10:00 p.m. to 6:59 a.m. Note that these are the City's thresholds for the Downtown base district zones that characterize the proposed project site and its existing immediately adjoining residential neighbors to the south and west. Section 38.19.d of the City's noise ordinance indicates that these same limits would also apply to entertainment hosted at the project site.
- Construction vibration – Guidance from Caltrans indicates that a vibration velocity level of 0.2 ips PPV received at a structure would be considered annoying by occupants within (Caltrans 2013b). As for the receiving structure itself, aforementioned Caltrans guidance from Section 2 recommends that a vibration level of 0.3 ips PPV would represent the threshold for building damage risk.

For purposes of disclosure, since current CEQA noise criteria listed above do not consider it, this analysis also evaluates compatibility of on-site noise levels with the City of Oceanside exterior and interior noise standards of 65 dBA CNEL and 45 dBA CNEL, respectively.

4.4.4 Impacts Analysis

Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Short-Term Construction

Construction noise and vibration are temporary phenomena. Construction noise and vibration levels vary from hour to hour and day to day, depending on the equipment in use, the operations performed, and the distance between the source and receptor. Equipment that would be in use during construction would include, in part, graders, backhoes, rubber-tired dozers, loaders, cranes, forklifts, cement mixers, pavers, rollers, and air compressors. The typical maximum noise levels for various pieces of construction equipment at a distance of 50 feet are presented in Table 4.4-3. The listed maximum noise levels in Table 4.4-3 are, when downwardly adjusted by 6 dB to account for

doubling the distance to 100 feet, all compliant with the 85 dBA at 100 feet criterion per the City's General Plan Noise Element. Note that the equipment noise levels presented in Table 4.4-3 are maximum noise levels. Usually, construction equipment operates in alternating cycles of full power and low power, producing average noise levels over time that are less than the maximum noise level. The average sound level of construction activity also depends on the amount of time that the equipment operates and the intensity of construction activities during that time.

Table 4.4-3
Typical Construction Equipment Maximum Noise Levels

Equipment Type	Typical Equipment (L_{max}, dBA at 50 Feet)
Air compressor	78
Backhoe	78
Concrete pump truck	81
Grader	85
Crane	81
Dump Truck	76
Dozer	82
Generator	72
Front End Loader	79
Paver	77
Pneumatic tools	85
Water pump	77

Source: Appendix G.
Note: L_{max} = maximum sound level; dBA = A-weighted decibels.

Aggregate noise emission from proposed project construction activities, broken down by sequential phase, was predicted at two distances to the nearest existing noise-sensitive receptor: 1) from the nearest position of the construction site boundary and 2) from the geographic center of the construction site, which serves as the time-averaged location or geographic *acoustical centroid* of active construction equipment for the phase under study. The intent of the former distance is to help evaluate anticipated construction noise from a limited quantity of equipment or vehicle activity expected to be at the boundary for some period of time, which would be most appropriate for phases such as site preparation, grading, and paving. The latter distance is used in a manner similar to the general assessment technique as described in the Federal Transit Administration guidance for construction noise assessment, when the location of individual equipment for a given construction phase is uncertain over some extent of (or the entirety of) the construction site area. Because of this uncertainty, the assessment is done based on all the equipment for a construction phase operating—on average—from the acoustical centroid. Table 4.4-4 summarizes these two distances to the apparent closest noise-sensitive receptor for each of the seven sequential construction phases. At the site boundary, based on expected construction operations, this analysis evaluates impacts based on up to only one piece of

equipment of each listed type per phase will be involved in the construction activity for a limited portion of the eight hour period. In other words, at such proximity, the operating equipment cannot "stack" or crowd the vicinity and still operate. For the acoustical centroid case, which intends to be a geographic average position for all equipment during the indicated phase, this analysis evaluates the impacts as if the equipment may be operating up to all eight hours per day.

Table 4.4-4
Estimated Distances between Construction Activities and the Nearest Noise-Sensitive Receptors

Construction Phase (and Equipment Types Involved)	Distance from Nearest Noise-Sensitive Receptor to Construction Site Boundary (Feet)	Distance from Nearest Noise-Sensitive Receptor to Acoustical Centroid of Site (Feet)
Demolition (dozer, excavator, concrete saw)	15	300
Site preparation (dozer, backhoe, front-end loader)	15	300
Grading (excavator, grader, dozer, front-end loader, backhoe, scraper)	15	300
Building construction (crane, man-lift, generator, backhoe, front-end loader, welder/torch)	25	300
Trenching (excavator, tractor)	15	300
Architectural finishes (air compressor)	25	300
Paving (paver, roller, other equipment)	15	300

Source: Appendix G.

A Microsoft Excel–based noise prediction model emulating and using reference data from the Federal Highway Administration Roadway Construction Noise Model (RCNM) was used to estimate construction noise levels at the nearest occupied noise-sensitive land use. This model incorporates information about equipment, and hours of operations. Construction is proposed to occur Monday to Saturday, between the hours of 7:00 a.m. and 6:00 p.m.. In compliance with the City Engineering Manual (City of Oceanside 2017), the project would obtain a permit for Saturday construction (see Section 3.2.6, Construction Phasing and Conceptual Grading). Conservatively, no topographical or structural shielding was assumed in the modeling. The predicted construction noise levels per activity phase are displayed in Table 4.4-5 based on the project construction information input into the RCNM model.

Table 4.4-5
Predicted Construction Noise Levels per Activity Phase

Construction Phase (and Equipment Types Involved)	8-Hour Leq at Nearest Noise-Sensitive Receptor to Construction Site Boundary (dBA)	8-Hour Leq at Nearest Noise-Sensitive Receptor to Acoustical Centroid of Site (dBA)
Demolition (dozer, excavator, concrete saw)	88	72
Site preparation (dozer, backhoe, front-end loader)	87	68
Grading (excavator, grader, dozer, front-end loader, backhoe, scraper)	87	72
Building construction (crane, man-lift, generator, backhoe, front-end loader, welder/torch)	80	66
Trenching (excavator, tractor)	86	66
Architectural finishes (air compressor)	77	58
Paving (paver, roller, other equipment)	88	70

Source: Appendix G.
Notes: L_{eq} = equivalent noise level; dBA = A-weighted decibels.

As presented in Table 4.4-5, the estimated construction noise levels are predicted to be as high as 88 dBA L_{eq} over an eight hour period at the nearest existing mobile home residences (as close as 15 feet away) when site preparation activities take place near the southwestern project boundaries. Based on the noise reductions per doubling distance characteristics of noise and an approximate distance of 25 feet, construction noise at the Seacliff condominiums would be up to 83 dBA L_{eq} over an eight hour period. Note that these estimated noise levels at these source-to-receiver distance would only occur when noted pieces of heavy equipment would each operate for a cumulative period from one to three hours a day. By way of example, a grader might make multiple passes on site that are this close to a receiver; but, for the remaining time during the day, the grader is sufficiently farther away, performing work at a more distant location, or simply not operating. None-the-less, the project would potentially exceed construction noise limits on occasion at residential receivers, and would result in a **potentially significant** impact.

Long-Term Operational

Increase of Off-Site Roadway Traffic Noise

The proposed project would result in additional vehicle trips on local arterial roadways (i.e., North Coast Highway), which could result in increased traffic noise levels at adjacent noise-sensitive land uses. The greatest traffic noise increase resulting from the project would be along North Coast Highway and Costa Pacifica Way, thus this analysis focuses on the noise increases from those roadways.

The City's Noise Element establishes a policy for exterior sensitive areas to be protected from high noise levels. The Noise Element sets 65 dBA CNEL for the outdoor areas and 45 dBA CNEL for

interior areas as the normally acceptable levels. For the purposes of this noise analysis, such impacts are considered significant when they cause an increase of three dB from existing noise levels. Based on the limits of human hearing, an increase or decrease in noise level of at least three dB is required before any noticeable change in community response would be expected.

Potential noise effects from vehicular traffic were assessed using the Federal Highway Administration's Traffic Noise Model version 2.5. Information used in the model included the roadway geometry, posted traffic speeds, and traffic volumes for the following scenarios: existing (year 2019), existing plus project, existing plus cumulative without project, existing plus cumulative plus project, buildout (2035), and buildout plus project. Noise levels were modeled at representative off-site noise-sensitive receivers ST1 through ST3. The noise model results are summarized in Table 4.4-6. As shown in the table, the addition of proposed project traffic to the roadway network would result in a CNEL increase of less than three dB at all three locations evaluated, which is below the discernible level of change for the average healthy human ear.

The project would have to roughly double the traffic volumes on North Coast Highway to increase traffic by 3 dBA. Based on the ADT discussed in Section 4.5, Transportation, there are no traffic volumes where the volumes would double as a result of the project and thus cause a traffic noise increase over 3 dBA.

Overall, a **less-than-significant** impact would occur for proposed project–related off-site traffic noise increases affecting existing residences in the vicinity.

Table 4.4-6
Off-site Roadway Traffic Noise Modeling Results

Modeled Receiver Tag (Location Description)	Existing (2019) Noise Level (dBA CNEL)	Existing (2019) Plus Project Noise Level (dBA CNEL)	Existing Plus Cumulative without Project Noise Level (dBA CNEL)	Existing Plus Cumulative with Project Noise Level (dBA CNEL)	Buildout (2035) Noise Level (dBA CNEL)	Buildout (2035) Plus Project Noise Level (dBA CNEL)	Maximum Project-Related Noise Level Increase (dB)
ST1 (just north of Costa Pacifica Way)	53.4	54	53.6	54.2	54.5	54.9	0.6
ST2 (southern project boundary)	48.4	51.2	48.5	51.3	49.2	51.7	2.8
ST3 (western project boundary)	59.9	61.1	60	61.2	61.6	62.5	1.2

Source: Appendix G.
Notes: dBA = A-weighted decibel; CNEL = Community Noise Equivalent Level; dB = decibel.

Exposure of On-Site Occupants to Roadway Noise

Although not currently required by the California Environmental Quality Act (CEQA), for informational purposes this noise assessment also predicted the potential exposure of new proposed project residential building occupants to roadway noise. Noise impacts of the environment onto the project are not required to satisfy CEQA analysis, as this reflects an impact of the environment onto the project and not a project impact. Thus, this analysis is provided for informational purposes only.

The Federal Highway Administration (FHWA) Traffic Noise Model was also used to predict the buildout plus project scenario traffic noise levels at multiple on-site exterior areas, as listed in Table 4.4-7. Modeled receptor locations include multiple floors of the eastern and northern facades, the pool area, and courtyards. At all on-site exterior locations, the predicted CNEL values are less than 65 dBA, and thus compatible with the City's guidance for exterior noise levels.

Table 4.4-7
On-site Roadway Traffic Noise Modeling Results

Modeled Receiver Tag (Location Description)	Buildout (2035) Plus Project Noise Level (dBA CNEL)
Pool	21.4
Courtyard	21.4
Exercise Courtyard	46.8
East Balcony 1st	63.6
East Balcony 2nd	63.7
East Balcony 3rd	63.3
East Balcony 4th	63
East Balcony 5th	62.8
North Balcony 1st	53.2
North Balcony 2nd	54.2
North Balcony 3rd	54.7
North Balcony 4th	54.7
North Balcony 5th	54.6

Source: Appendix G.
Notes: dBA = A-weighted decibel; CNEL = Community Noise Equivalent Level; dB = decibel.

Rail Operations Noise

Although not currently required by the California Environmental Quality Act, for informational purposes this noise assessment also predicted the potential exposure of new proposed project residential building occupants to passing railroad operations as explained in the proceeding section. The San Diego Northern Rail passes parallel to the nearest western façade of the proposed project at a distance of approximately 600 feet.

Existing rail activity on the San Diego Northern Rail was modeled using the CREATE railroad noise model, which is based on the Federal Transit Administration – General Transit Noise Assessment spreadsheet and uses inputs identical (or comparable) to those described in the Federal Transit Administration – Transit Noise and Vibration Impact Assessment guidance manual (FTA 2006). To model the train whistle noise, a separate Grade Crossing Noise Model based on Federal Railroad Administration guidance was used. Based on the CREATE model, exterior noise exposure at the nearest proposed project western façade would be 56 dBA CNEL and thus below the 60 dBA CNEL threshold considered normally acceptable for outdoor areas per the California State Planning Guidelines described in Section 4.4.2.

Usage of the Federal Railroad Administration Grade Crossing Noise Model, shown in Appendix G, estimates that at a distance of 1,700 feet, representing the proximity of the Surfrider Way grade crossing south of the proposed project, the train whistle would be approximately 57 dBA CNEL; this is also compliant with the 60 dBA CNEL guidance level. Logarithmically added together, the estimated 56 dBA CNEL from rail operations and estimated 57 dBA CNEL from horn noise levels would yield 60 dBA CNEL, which would also comply with the guidance level.

Although compliant with the CNEL criteria, predicted rail noise exposure may cause occupant annoyance during each pass-by event. However, with windows closed on the modern buildings planned for the proposed project that will provide air conditioning, resultant occupied interior background sound levels resulting from rail noise intrusion would still be compliant with the 45 dBA CNEL interior standard as required by the California Building Code. This is expected due to the exterior-to-interior sound insulation properties of the proposed project building shell assemblies. According to the FHWA Highway Traffic Noise: Analysis and Abatement Guidance (FHWA 2011), storm windows in a light-framed structure provide 25 dB of noise reduction. Since the proposed project building shell (apparent double-glazed windows in a framed assembly) would appear to match or exceed this example, the resulting interior background noise level would be the difference between the anticipated 60 dBA CNEL and this noise reduction: 60 – 25 = 35 dBA CNEL, which is well below the 45 dBA CNEL interior threshold.

On-Site Combined Roadway and Rail Noise

As stated above, the impact of combined roadway and rail noise onto the project is not required to be addressed under CEQA analysis since it is an impact of the environment onto the project and not a project impact. Thus, this on-site combined roadway and rail noise information is provided for informational purposes only. The City's compatibility standards apply to all sources of transportation-related noise, including roadway traffic noise and rail operations noise. Therefore, to assess compliance with the 65 dBA CNEL standard, the noise generated from rail and traffic should be considered together. Conservatively assuming the estimated combined rail-plus-horn noise level of 60 dBA CNEL at all locations and no shielding, the resulting combined noise level would be less than 65 dBA CNEL at exterior locations on the site.

To determine the interior noise level, it was assumed that the building would provide an exterior-to-interior noise reduction of 25 dB. Since the exterior noise level was determined to be less than 65 CNEL, the corresponding habitable interior noise levels would be 40 dBA CNEL (i.e., 65 – 25 = 40) and thus compliant with the City's interior noise standard.

Stationary Operations Noise

The incorporation of new multifamily homes, commercial, open space and recreational uses attributed to development of the proposed project would add a variety of noise-producing mechanical equipment. Most of these noise-producing equipment or sound sources would be considered stationary, or limited in mobility to a defined area. Additionally, the open space and recreational uses would attract residents and their guests to enjoy proposed project facilities and thus create potential community noise relating to added aggregate speech and amplified music as appropriate or expected for the venue. These stationary operational noise sources are evaluated below.

Residential Unit Heating, Ventilation, and Air Conditioning Noise

The proposed residential project would include an air conditioning system with a refrigeration condenser unit mounted on the roof shielded by a parapet. Considering the building's roof height, the 25-foot distance to the nearest sensitive receiver and the presence of the sight-occluding parapet wall, the predicted sound emission level from the combination of four condenser units at the single-story receptor would only be 43 dBA L_{eq}, and would thus be compliant with the City's nighttime threshold of 55 dBA hourly L_{eq}. Please see Appendix G for quantitative details of this prediction. As such, the operation of residential air-conditioning units would result in **less-than-significant** noise impacts.

Parking Garage Ventilation

The parking garage would require exhaust fans for ventilation. The parking would require a tube-axial type fan on each corner of the building, with a total estimated fan sound power of 97 dBA L_{eq}. As a worst-case scenario, if one to be located at each corner of the roof parking level, then the closest existing noise-sensitive receptor to the west would be as near as 75 horizontal feet. Vertically, these fans on the roof would be 65 feet above grade, and the fan discharge plane would be behind a parapet wall, like the aforementioned residential condenser units. The predicted sound emission level from the closest ventilation fan at the closest sensitive single-story receptor would be 45 dBA L_{eq}, and would thus be compliant with the City's nighttime threshold of 55 dBA hourly L_{eq}. Please see Appendix G for quantitative details of this prediction. Under such conditions, the impacts of the operation of parking garage ventilation units would be **less than significant**.

On-site Amplified Sound

As the proposed project envisions a number of outdoor amenities, including a pool surrounded by lounging areas, this noise assessment predicted outdoor noise emission from a likely entertainment activity scenario having the following features and characteristics:

- Three outdoor speakers are mounted at ten feet above grade, with roughly one attached to the horizontal midpoint of each building façade exposed to the pool courtyard area. Each speaker emits pre-recorded music at a level not to exceed 94 dBA at a distance of one meter (3.28 feet), thus providing an audible signal over the background sound at the vicinity of the pool area while the event is in progress.
- A total attendance of up to 54 residents and their guests, with individual hourly average speech levels at 72 dBA L_{eq} at three feet each (i.e., *loud speaking* [Hayne 2006]), distributed around the proposed pool area. The average speech level means that for limited portions of a sample hour, some voices could be louder (84 dBA, comparable to a "shout") or quieter (60 dBA, "normal speaking level") (Hayne 2006).
- The proposed project has an eight foot tall solid wall or barrier (including a 2.5 foot tall concrete masonry unit wall topped by a 5.5-foot solid vinyl fencing as currently proposed) that blocks direct line of sight between the event in progress and the nearest existing residential receptors immediately to the south.

Under these conditions, including the aforementioned proposed project property boundary wall that would yield at least five dBA of noise reduction (FHWA 2011), an event of this type could occur during daytime hours (i.e., 7:00 a.m. through 9:59 p.m.) and comply with the City's noise ordinance of 65 dBA L_{eq}. Please see Appendix G for quantitative details of this prediction, which include a plot of predicted noise levels. As indicated in the project description (Section 3.2.1.3), such events would be limited to daytime hours. Hence, anticipated noise impacts from such outdoor gatherings associated with operation of the proposed project would be considered **less than significant**.

If an event was permitted to continue into the nighttime period (i.e., at and after 10:00 p.m.), the outdoor speakers would need to be deactivated, but the event guests could continue speaking at the same average elevated levels (72 dBA L_{eq} at one meter each) and still comply with the City's nighttime noise limit of 55 dBA L_{eq} for Downtown land uses. Hence, under these conditions, anticipated noise impacts from such outdoor gatherings at night and associated with operation of the proposed project would be considered **less than significant**.

Although not currently required by CEQA, for informational purposes this noise assessment also predicted the potential exposure of new proposed project residential building occupants to these onsite outdoor entertainment events. According to the FHWA Highway Traffic Noise: Analysis and Abatement Guidance (FHWA 2011), storm windows in a light-framed structure provide 25

dB of noise reduction. Since the proposed project building shell (apparent double-glazed windows in a framed assembly) would appear to match or exceed this example, the resulting interior background noise level would be the difference between the anticipated outdoor noise level in the pool area and this noise reduction.

For example, if the outdoor noise level of the pool area impinging on the building façade was 82 dBA L_{eq} during daytime events, the resulting interior background level from this intrusion would be 57 dBA L_{eq} (i.e., 82-25=57). At this predicted elevated interior noise level, events at the pool area as described herein would need to be brief in order to yield an interior level of 45 dBA CNEL within the occupied new residence: approximately 1.5 hours during daytime hours (with speakers on), or 1.5 hours at night (speakers off). Increasing the noise reduction performance of the building shell assembly (via upgrades in glazing) by 5 dB, or reducing the outdoor speaker volume by 5 dB during these daytime events, would extend these daytime or nighttime event durations to 4 hours.

Combined Stationary Noise Sources

While the preceding subsections have analyzed discrete types of anticipated project-attributed stationary noise emission, some off-site community receptors would be exposed to multiple concurrent sources. For example, the closest existing noise-sensitive residential receptor to the west of the proposed project's westernmost building façade (at a perpendicular distance of 25 feet) could receive rooftop condenser noise (43 dBA L_{eq}), parking garage ventilation fan noise (45 dBA L_{eq}), and amplified sound from a nighttime event at the pool area (40 dBA L_{eq}). Taken together considering the logarithmic analysis method, the total combined noise at the receiver location is 48 dBA L_{eq} and thus still compliant with the nighttime limit of 55 dBA hourly L_{eq} for downtown land uses. Neighboring residential receptors to the south might be exposed to higher pool event noise levels, as shown by Appendix G, but such locations would be more distant from the other two project-related stationary noise sources (rooftop condenser units and parking ventilation) and therefore receive less acoustical contribution from them, resulting in estimated aggregate stationary noise source levels that would also comply with the 55 dBA hourly L_{eq} standard. As the stationary noise generated by the project would not exceed the hourly standard, the project would have a **less than significant** stationary noise impact.

Would the project result in generation of excessive groundborne vibration or groundborne noise levels?

Construction activities may expose persons to excessive groundborne vibration or groundborne noise, causing a potentially significant impact. Caltrans has collected groundborne vibration information related to construction activities. Information from Caltrans indicates that continuous vibrations with a PPV of approximately 0.2 ips is considered annoying. For context, heavier pieces of construction equipment, such as a bulldozer that may be expected on the project site, have peak particle velocities of approximately 0.089 ips or less at a reference distance of 25 feet.

Groundborne vibration attenuates rapidly, even over short distances. The attenuation of groundborne vibration as it propagates from source to receptor through intervening soils and rock strata can be estimated with expressions found in Federal Transit Administration and Caltrans guidance. By way of example, for a bulldozer operating on site and as close as the western project boundary (i.e., 15 feet from the nearest receiving sensitive land use) the estimated vibration velocity level would be 0.19 ips per the equation as follows (FTA 2006):

$$PPV_{rcvr} = PPV_{ref} * (25/D)^{1.5} = 0.19 = 0.089 * (25/15)^{1.5};$$

where PPV_{rcvr} is the predicted vibration velocity at the receiver position, PPV_{ref} is the reference value at 25 feet from the vibration source (the bulldozer), and D is the actual horizontal distance to the receiver.

Therefore, at this predicted PPV, the impact of vibration-induced annoyance to occupants of nearby existing homes would be **less than significant**.

Construction vibration, at sufficiently high levels, can also present a building damage risk. However, anticipated construction vibration associated with this proposed project would yield levels of 0.19 ips that do not surpass the guidance limit of 0.2 to 0.3 ips PPV for preventing damage to residential structures (Caltrans 2013). Because the predicted vibration level at 15 feet is less than this guidance limit, the risk of vibration damage to nearby structures is considered **less than significant**.

Once operational, the proposed project would not be expected to feature major producers of groundborne vibration. Anticipated mechanical systems like heating, ventilation, and air-conditioning units are designed and manufactured to feature rotating (fans, motors) and reciprocating (compressors) components that are well-balanced with isolated vibration within or external to the equipment casings. On this basis, potential vibration impacts due to proposed project operation would be **less than significant**.

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?

There are no private airstrips within the vicinity of the project site. The closest airport to the project site is the Oceanside Municipal Airport, approximately 1.85 miles northeast of the site. According to the Airport Land Use Compatibility Plan (San Diego County Regional Airport Authority 2010), the project site is not located within an aviation noise exposure range of 60 dB CNEL and would therefore not expose people residing or working in the project area to excessive noise levels, since this 60 dB CNEL exterior noise standard is compatible with aforementioned state noise insulation standards. Impacts from aviation overflight noise exposure would be **less than significant**.

4.4.5 Mitigation Measures

The following mitigation measure would ensure that noise impacts during construction are reduced to below a level of significance:

MM-NOI-1 Prior to the issuance of a Construction Permit, the Applicant/Owner or Construction Contractor shall prepare and submit a Construction Noise Management Plan (CNMP) to the City of Oceanside Planning Division (City Planner) for review and approval. Prior to the issuance of a Construction Permit, Construction Plans shall also include a note indicating compliance with the CNMP is required. The CNMP shall be prepared or reviewed by a Qualified Acoustician (retained at the Applicant/Owner or Construction Contractor's expense) and feature the following:

a. A detailed construction schedule at daily (or weekly, if activities during each day of the week are typical) resolution and correlating to areas or zones of on-site project construction activity(ies) and the anticipated equipment types and quantities involved. Information will include expected hours of actual operation per day for each type of equipment per phase, and indication of anticipated concurrent construction activities on site.

b. Suggested locations of a set of noise level monitors, attended by a Qualified Acoustician or another party under its supervision or direction, at which sample outdoor ambient noise levels will be measured and collected over a sufficient sample period and subsequently analyzed (i.e., compared with applicable time-dependent A-weighted decibel [dBA] thresholds) to ascertain compliance with the eight hour Federal Transit Administration (FTA) guidance-based limit of 80 dBA equivalent sound level over a consecutive eight hour period. Sampling shall be performed, at a minimum, on the first (or otherwise considered typical construction operations) day of each distinct construction phase

c. If sample collected noise level data indicates that the eight hour noise threshold has or will be exceeded, construction work shall be suspended (for the activity or phase of concern) and the Applicant/Owner or Construction Contractor shall implement one or more of the following measures as detailed or specified in the CNMP:

   i. Administrative controls (e.g., reduce operating time of equipment and/or prohibit usage of equipment type[s] within certain distances).

   ii. Engineering controls (upgrade noise controls, such as install better engine exhaust mufflers).

iii. Install noise abatement on the site boundary fencing (or within, as practical and appropriate) in the form of sound blankets or comparable temporary barriers to occlude construction noise emission between the site (or specific equipment operation as the situation may define) and the noise-sensitive receptor(s) of concern.

The implemented measure(s) will be reviewed or otherwise inspected and approved by the Qualified Acoustician (or another party under its supervision or direction) prior to resumption of the construction activity or process that caused the measured noise concern or need for noise mitigation. Noise levels shall be re-measured after installation of said measures to ascertain post-mitigation compliance with the noise threshold. As needed, this process shall be repeated and refined until noise level compliance is demonstrated and documented. A report of this implemented mitigation and its documented success will be provided to the City Planner.

d. The Applicant/Owner or Construction Contractor shall make available a telephone hotline so that concerned neighbors in the community may call to report noise complaints. The CNMP shall include a process to investigate these complaints and, if determined to be valid, detail efforts to provide a timely resolution and response to the complainant, with a copy of resolution provided to the City Planner.

4.4.6 Level of Significance After Mitigation

With implementation of **MM-NOI-1**, potentially significant noise impacts would be reduced to a level below significance. Proper application of temporary noise barriers or comparable sound abatement due to implementation of **MM-NOI-1** would reduce noise levels by 10 dB, which would correspondingly reduce the predicted 88 dBA eight hour L_{eq} for the grading phase to 78 dBA L_{eq}, which would make the level compliant with the 80 dBA threshold.

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