HELIX Environmental Planning

Escondido Centre City Parkway Condominium Project

Noise Technical Report

February 2021 | WRS-06

Prepared for:

Warmington Residential
3900 Pullman Street
Costa Mesa, CA 92626

Prepared by:

HELIX Environmental Planning, Inc.
7578 El Cajon Boulevard
La Mesa, CA 91942

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ACRONYMS AND ABBREVIATIONS

ADT	average daily trips/traffic
ANSI	American National Standards Institute
APN	Assessor's Parcel Number
CAD	Computer Aided (engineering and architectural) Design
CadnaA	Computer Aided Noise Abatement
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
City	City of Escondido
CNEL	Community Noise Equivalent Level
CY	cubic yard
dB	decibel
dBA	A-weighted decibel
EIR	Environmental Impact Report
FTA	Federal Transit Administration
HVAC	Heating, ventilation, and air conditioning
Hz	Hertz
kHz	kilohertz
L_{DN}	Day-Night level
L_{EQ}	equivalent sound level
LLG	Linscott, Law & Greenspan, Engineers
L_{MAX}	maximum noise level
mPa	micro-Pascals
NSLU	noise-sensitive land use
RCNM	Roadway Construction Noise Model
SPL	sound pressure level
STC	Sound Transmission Class
S_{WL}	sound power level
TNM	Traffic Noise Model
USDOT	U.S. Department of Transportation
VdB	vibration decibel

EXECUTIVE SUMMARY

This report presents an assessment of noise and vibration impacts during construction and operation of the proposed Escondido Centre City Parkway Condominium Project (project), located at the southeast corner of the intersection of South Escondido Boulevard and Sherman Way in the City of Escondido, California. The project proposes to demolish the existing on-site uses and construct 62 condominium units within 10 three-story buildings. The project would also provide approximately 30,000 square feet of useable/active shared open space.

Anticipated construction activities would generate temporary elevated noise levels for nearby residences. Noise levels from construction would not exceed the noise limits set by the City, and impacts would be less than significant.

The project would add traffic to nearby roadways, but transportation noise impacts to off-site land uses would be less than significant.

Operational noise sources, including the project's heating, ventilation, and air conditioning (HVAC) systems would not exceed allowable City limits within the noise ordinance at the nearest property lines.

Future residential units and common exterior use areas would be exposed to noise from vehicular traffic along adjacent roadways. Noise levels at common exterior use areas would not exceed the applicable 65 Community Noise Equivalent Level (CNEL) limit. With the incorporation of project design features related to exterior wall and window construction, interior noise levels would not exceed the applicable 45 CNEL limit for residential uses.

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1.0 INTRODUCTION

This report presents an assessment of noise and vibration impacts during construction and operation of the proposed Escondido Centre City Parkway Condominium Project (project), located at the southeast corner of the intersection of South Escondido Boulevard and Sherman Way in the city of Escondido, California. Analysis within this report addresses the relevant issues listed in Appendix G of the California Environmental Quality Act (CEQA) Guidelines and addresses compliance with City of Escondido (City) regulations.

1.1 PROJECT LOCATION

The project is located within a 3.47-gross acre site comprised of five parcels (Assessor's Parcel Numbers [APNs] 236-390-02, -03, -52, -53, and -54). The site reference address is 2200 South Escondido Boulevard, which is bounded by Sherman Way and a mobile home park on the north; a tire shop, commercial center, and multi-family residences to the south, single-family residences to the east, and South Escondido Boulevard to the west (see Figure 1, *Regional Location,* and Figure 2, *Aerial Photograph*). The western portion of the site, totaling 2.39 acres is within the Centre City Specific Plan and is designated as S-P (Specific Plan) and zoned as Specific Plan Area SPA-15 (Specific Plan Area) and the eastern portion of the site, totaling 1.08 acres is designated as Urban-1 (Residential, 5.5 dwelling units per acre) and zoned as R-1-10 (Single Family Residential, 10,000 square feet lot, minimum).

1.2 PROJECT DESCRIPTION

The project proposes to demolish the existing on-site uses and construct 62 condominium units within 10 three-story buildings (see Figure 3, *Site Plan*). The unit mix is proposed to include 16 two-bedroom units, 38 three-bedroom units, and 8 four-bedroom units. Each unit would provide garage parking for two vehicles and an additional 16 guest parking spaces and 17 unit-specific driveway spaces would be provided, for a total of 157 parking spaces. In addition, 16 dedicated bike parking spaces would be provided.

The project would provide approximately 30,000 square feet of useable/active shared open space. An additional 21,000 square feet of open space would be divided among private patios and decks and landscaped slopes. Buildings 2 through 9 are designed to have entrances facing landscaped courtyards, while entrances to building 1 and 10 are landscaped along the project's proposed South Escondido Boulevard frontage. Common open space would include group gathering areas with tables and chairs situated under a shade trellis as well as two barbeques and an activity lawn for communal use. Beyond providing outdoor amenities for the project site residents, the common open space also acts as a visual buffer between the site structures and the existing residential neighborhood to the east of Cranston Drive. Landscaping would include nearly 100 low branching mature trees that would be planted throughout the site, providing both shade and visual interest.

Construction of the project is expected to occur over a period of approximately 2.5 years. Construction would begin in winter 2021, with site preparation and demolition of the existing on-site uses, and is expected to be completed in summer 2023. Remedial grading is anticipated to require approximately 31,400 cubic yards (CY) of cut and 35,990 CY of fill during construction. Existing materials such as demolished building materials, concrete, asphalt, and vegetative material would be exported off site.

1.2.1 Project Design Features

The project's habitable areas (including living rooms, dining rooms, kitchens, and bedrooms) with a direct line-of-sight to Centre City Parkway and South Escondido Boulevard would incorporate the following noise control features, or like-kind to achieve the required noise control, to ensure that noise levels at interior habitable areas are 45 Community Noise Equivalent Level (CNEL) or less:

- Exterior wall requirement of Sound Transmission Class (STC) 46 including standard 0.875-inch stucco over 0.5-inch shearwall on 2-inch x 6-inch studs with 0.625-inch Type "X" Drywall.
- Minimum window requirement of STC 28 including windows with dual glazing, window thickness 0.125-inch, and 0.5-inch air gap.
- Appropriate means of air circulation and provision of fresh air must be present to allow windows to remain closed for extended intervals of time so that acceptable levels of noise can be maintained on the interior.
- The building design would include a mechanical ventilation system that would meet the criteria of the International Building Code (Chapter 12, §1203.3 of the 2013 California Building Code) to ensure that windows would be able to remain permanently closed.

1.3 NOISE AND SOUND LEVEL DESCRIPTORS AND TERMINOLOGY

1.3.1 Descriptors

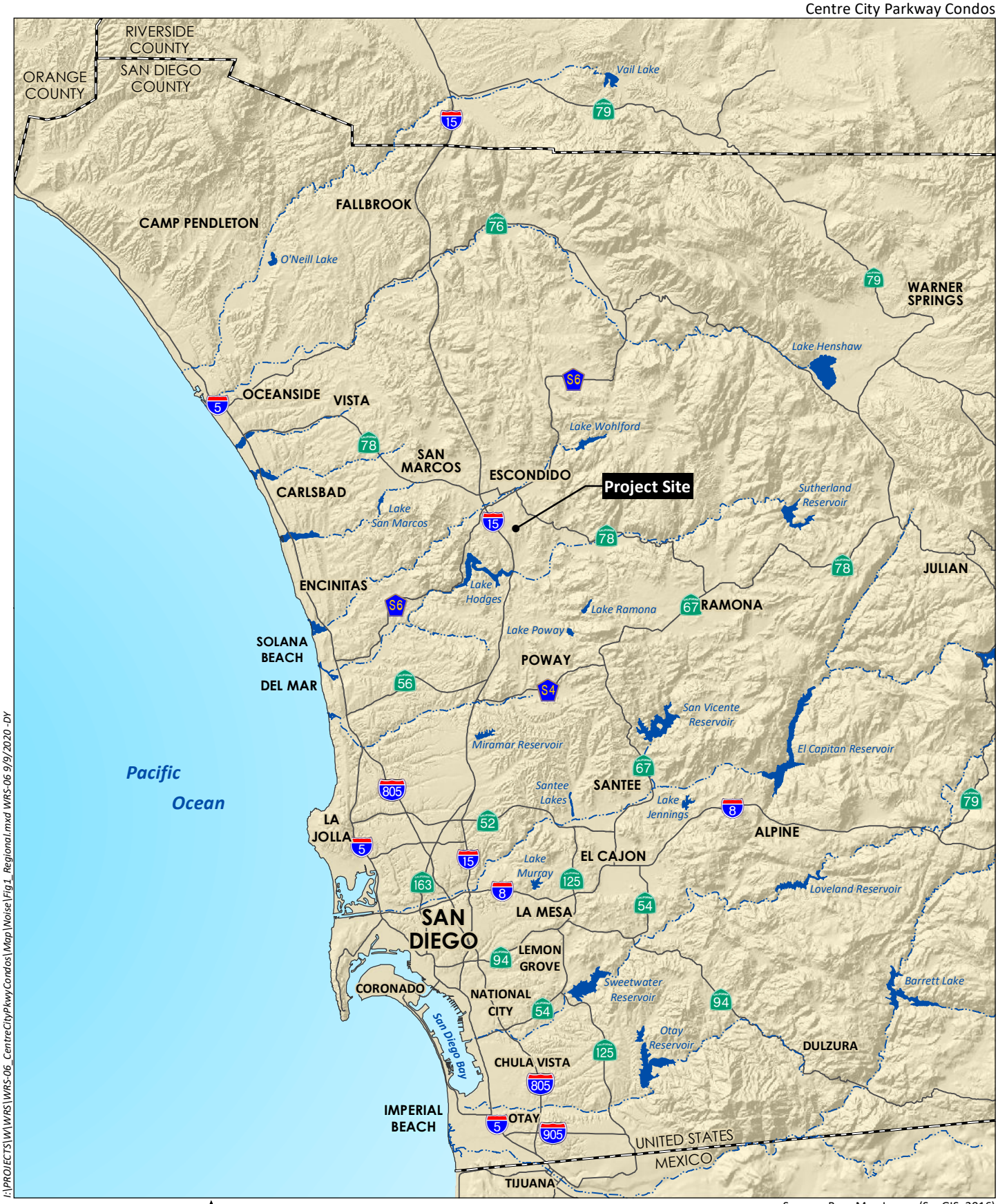
All noise level or sound level values presented herein are expressed in terms of decibels (dB), with A-weighting (dBA) to approximate the hearing sensitivity of humans. Time-averaged noise levels are expressed by the symbol L_{EQ}, with a specified duration. The CNEL is a 24-hour average, where noise levels during the evening hours of 7:00 p.m. to 10:00 p.m. have an added 5 dBA weighting, and noise levels during the nighttime hours of 10:00 p.m. to 7:00 a.m. have an added 10 dBA weighting. This is similar to the Day Night sound level (L_{DN}), which is a 24-hour average with an added 10 dBA weighting on the same nighttime hours but no added weighting on the evening hours. Sound levels expressed in CNEL are always based on dBA. These metrics are used to express noise levels for both measurement and municipal regulations, as well as for land use guidelines and enforcement of noise ordinances.

1.3.2 Terminology

1.3.2.1 Sound, Noise, and Acoustics

Sound can be described as the mechanical energy of a vibrating object transmitted by pressure waves through a liquid or gaseous medium (e.g., air) to a hearing organ, such as a human ear. Noise is defined as loud, unexpected, or annoying sound.

In the science of acoustics, the fundamental model consists of a sound (or noise) source, a receiver, and the propagation path between the two. The loudness of the noise source and obstructions or atmospheric factors affecting the propagation path to the receiver determines the sound level and characteristics of the noise perceived by the receiver. The field of acoustics deals primarily with the propagation and control of sound.



I:\PROJECTS\W\WRS\WRS-06_CentreCityPkwyCondos\Map\Noise\Fig1_RegionalLmxd WRS-06 9/9/2020 -DY

0 8 Miles

Source: Base Map Layers (SanGIS, 2016)

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Regional Location

Figure 1

I:\PROJECTS\W\WRS\WRS-06_CentreCityPkwyCondos\Map\Noise\Fig2_Aerial.mxd WRS-06 9/9/2020 -DY

0 100 Feet

Source: Aerial (SanGIS, 2017)

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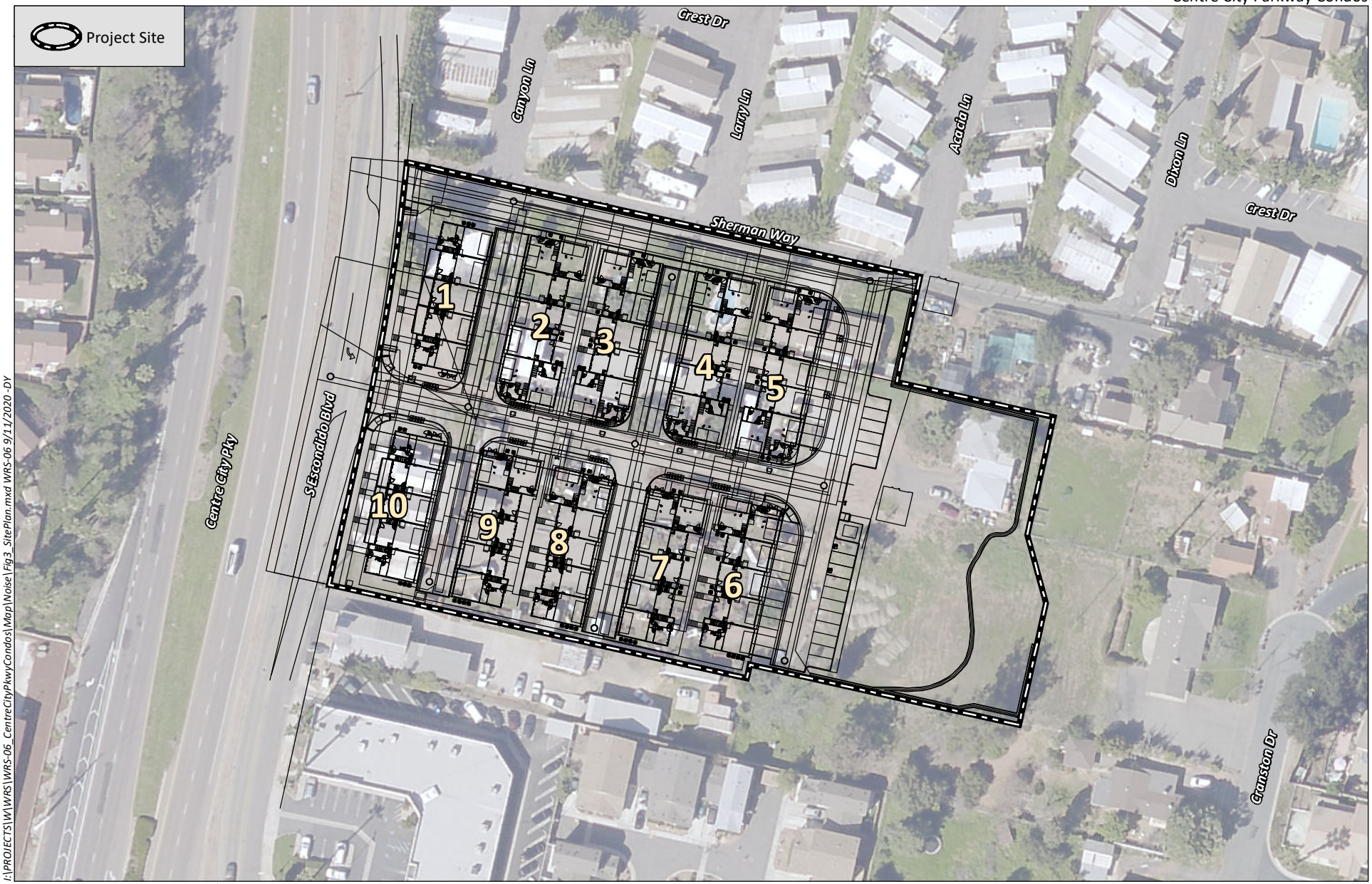
Aerial Photograph

Figure 2



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0 100 Feet

Source: Aerial (SanGIS, 2017)

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Site Plan

Figure 3

1.3.2.2 Frequency

Continuous sound can be described by frequency (pitch) and amplitude (loudness). A low-frequency sound is perceived as low in pitch. Frequency is expressed in terms of cycles per second, or Hertz (Hz) (e.g., a frequency of 250 cycles per second is referred to as 250 Hz). High frequencies are sometimes more conveniently expressed in kilohertz (kHz), or thousands of Hertz. The audible frequency range for humans is generally between 20 Hz and 20,000 Hz.

Sound Pressure Levels and Decibels

The amplitude of pressure waves generated by a sound source determines the loudness of that source. Sound pressure amplitude is measured in micro-Pascals (mPa). One mPa is approximately one hundred billionth (0.00000000001) of normal atmospheric pressure. Sound pressure amplitudes for different kinds of noise environments can range from less than 100 to 100,000,000 mPa. Because of this wide range of values, sound is rarely expressed in terms of mPa. Instead, a logarithmic scale is used to describe sound pressure level (SPL) in terms of dBA. The threshold of hearing for the human ear is about 0 dBA, which corresponds to 20 mPa.

1.3.2.3 Addition of Decibels

Because decibels are logarithmic units, SPL cannot be added or subtracted through standard arithmetic. Under the decibel scale, a doubling of sound energy corresponds to a 3 dBA increase. In other words, when two identical sources are each producing sound of the same loudness, the resulting sound level at a given distance would be 3 dBA higher than from one source under the same conditions. For example, if one automobile produces an SPL of 70 dB when it passes an observer, two cars passing simultaneously would not produce 140 dBA—rather, they would combine to produce 73 dBA. Under the decibel scale, three sources of equal loudness together produce a sound level 5 dBA louder than one source.

Under controlled conditions in an acoustical laboratory, the trained, healthy human ear is able to discern 1-dBA changes in sound levels, when exposed to steady, single-frequency (“pure-tone”) signals in the mid-frequency (1,000 Hz–8,000 Hz) range. In typical noisy environments, changes in noise of 1 to 2 dBA are generally not perceptible. It is widely accepted, however, that people begin to detect sound level increases of 3 dB in typical noisy environments. Further, a 5-dBA increase is generally perceived as a distinctly noticeable increase, and a 10-dBA increase is generally perceived as a doubling of loudness.

No known studies have directly correlated the ability of a healthy human ear to discern specific levels of change in traffic noise over a 24-hour period. Many ordinances, however, specify a change of 3 CNEL as the significant impact threshold. This is based on the concept of a doubling in noise energy resulting in a 3 dBA change in noise, which is the amount of change in noise necessary for the increase to be perceptible to the average healthy human ear.

1.4 NOISE-SENSITIVE AND VIBRATION-SENSITIVE LAND USES

Noise-sensitive land uses (NSLUs) are land uses that may be subject to stress and/or interference from excessive noise, including residences, hospitals, schools, hotels, resorts, libraries, sensitive wildlife habitat, or similar facilities where quiet is an important attribute of the environment. Noise receptors are individual locations that may be affected by noise. NSLUs in the project vicinity include residences

adjacent to the project's northern, southern, and eastern boundaries and residences across Centre City Parkway to the west.

Land uses in which ground-borne vibration could potentially interfere with operations or equipment, such as research, manufacturing, hospitals, and university research operations (Federal Transit Administration [FTA] 2018) are considered "vibration-sensitive." The degree of sensitivity depends on the specific equipment that would be affected by the ground-borne vibration. In addition, excessive levels of ground-borne vibration of either a regular or an intermittent nature can result in annoyance to land uses where people sleep, such as residences, hotels, hospitals, and dormitories. Vibration-sensitive uses include residences adjacent to the project's northern, southern, and eastern boundaries and residences across Centre City Parkway to the west.

1.5 REGULATORY FRAMEWORK

1.5.1 California Noise Control Act

The California Noise Control Act is a section within the California Health and Safety Code that describes excessive noise as a serious hazard to the public health and welfare and that exposure to certain levels of noise can result in physiological, psychological, and economic damage. It also finds that there is a continuous and increasing bombardment of noise in the urban, suburban, and rural areas. The California Noise Control Act declares that the State of California has a responsibility to protect the health and welfare of its citizens by the control, prevention, and abatement of noise. It is the policy of the State to provide an environment for all Californians free from noise that jeopardizes their health or welfare.

1.5.2 California Noise Insulation Standards [California's Title 24 Noise Standards, Cal. Adm. Code Title 24, Chap. 2-35]

In 1974, the California Commission on Housing and Community Development adopted noise insulation standards for multi-family residential buildings (Title 24, Part 2, California Code of Regulations). Title 24 establishes standards for interior room noise (attributable to outside noise sources). Such acoustical analysis must demonstrate that the residence has been designed to limit intruding noise to an interior CNEL (or L_{DN}) of at least 45.

1.5.3 City of Escondido Community Protection Element

The goal of the Community Protection Element of the City General Plan (City 2012a) is to minimize the impact of noise on the community by identifying existing and potential noise sources and providing the policies and standards needed to keep noise from reducing the quality of life in the City. The Community Protection Element establishes guidelines to evaluate the compatibility of land uses and noise exposure levels. Table 1, *City of Escondido Exterior Land Use/Noise Compatibility Guidelines*, summarizes the City's exterior land use/noise compatibility guidelines. A land use located in an area identified as "normally acceptable" indicates that standard construction methods would attenuate exterior noise to an acceptable indoor noise level and that people can conduct outdoor activities with minimal noise interference. For land uses where the exterior noise level falls within the "conditionally unacceptable" range, new construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of noise reduction requirements must be made with noise insulation features included in the design. For land uses where the exterior noise levels fall within the "clearly unacceptable" range, new construction generally should not be undertaken.

Table 1
CITY OF ESCONDIDO EXTERIOR LAND USE/
NOISE COMPATIBILITY GUIDELINES

Land Use Category	Annual CNEL (dBA)						
	55	60	65	70	75	80	
Residential Single-family, Duplex, Mobile Home							
Residential Multi-family, Residential Mixed Use							
Transient Lodging, Motels, and Hotels							
Schools, Libraries, Churches, Hospitals, and Nursing Homes							
Auditoriums, Concert Halls, Amphitheaters							
Sports Arena, Outdoor Spectator Sports							
Playgrounds, Neighborhood Parks							
Golf Courses, Riding Stables, Water Recreation, Cemeteries							
Offices Buildings, Business, Commercial, and Professional							
Industrial, Manufacturing, Utilities, Agriculture							

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

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

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

Clearly Unacceptable - New construction or development clearly should not be undertaken.

Source: City 2012a

The Community Protection Element also states that the exterior standard should not normally be applied to balconies or patios associated with residential uses. In addition, noise impacts of proposed projects on existing land uses should be evaluated in terms of potential for adverse community response, based on a significant increase in existing noise levels. For example, if an area currently is below the maximum normally acceptable level, an increase in noise up to the maximum should not necessarily be allowed. Projects increasing noise levels by 5 dBA or greater should be considered as generating a significant impact that requires mitigation.

The Community Protection Element also includes exterior incremental environmental noise impact standards for NSLUs, shown in Table 2, *City of Escondido Incremental Noise Impact Standards*. The allowable increase in noise levels decreases as ambient noise levels increases. In addition, the standards include separate allowable noise increases for uses that are more noise sensitive during the day (peak hour) versus at night where people normally sleep (24-hour).

Table 2
CITY OF ESCONDIDO INCREMENTAL NOISE IMPACT STANDARDS

Residences and Building Where People Normally Sleep		Institutional Land Uses with Primarily Daytime and Evening Uses	
Existing L_{DN}[1]	Allowable Noise Increment	Existing Peak Hour L_{EQ}[2]	Allowable Noise Increment
45	8	45	12
50	5	50	9
55	3	55	6
60	2	60	5
65	1	65	3
70	1	70	3
75	0	75	1
80	0	80	0

Source: City 2012a

[1] L_{DN} is a 24-hour average with an added 10 dBA weighting on the nighttime hours of 10:00 p.m. to 7:00 a.m.

[2] L_{EQ} stands for one-hour average sound level.

Noise Policy 5.5 of the Community Protection Element requires that construction projects and new development ensure acceptable vibration levels at nearby NSLUs based on FTA criteria. These criteria are outlined in the Escondido General Plan Update, Downtown Specific Plan Update and Climate Action Plan Environmental Impact Report (General Plan EIR; City 2012b) and shown in Table 3, *City of Escondido Ground-borne Vibration Impact Criteria*. The General Plan EIR states that the category of infrequent events is applicable to construction activities.

Table 3
CITY OF ESCONDIDO GROUND-BORNE VIBRATION IMPACT CRITERIA

Land Use Category	Impact Levels (VdB)		
	Frequent Events[1]	Occasional Events[2]	Infrequent Events[3]
Category 1: Buildings where vibration would interfere with interior operations	65[4]	65[4]	65[4]
Category 2: Residences and buildings where people normally sleep	72	75	80
Category 3: Institutional land uses with primarily daytime uses	75	78	83

Source: City 2012b
VdB = vibration decibels

[1] "Frequent Events" is defined as more than 70 vibration events of the same source per day.

[2] "Occasional Events" is defined as between 30 to 70 vibration events of the same source per day.

[3] "Infrequent Events" is defined as fewer than 70 vibration events of the same source per day.

[4] This criterion limit is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes. Vibration-sensitive manufacturing or research will require detailed evaluation to define the acceptable vibration levels.

1.5.4 City of Escondido Municipal Code Chapter 17, Article 12, Noise Abatement and Control

City of Escondido Municipal Code Chapter 17, Article 12, Noise Abatement and Control, establishes prohibitions for the purpose of securing and promoting the public health, comfort, safety, peace, and quiet for its citizens (City 2019). Table 4, *City of Escondido Noise Ordinance – Exterior Noise Limits*, shows the allowable noise levels at any point on or beyond the boundaries of the property on which the sound is produced, and corresponding times of day for each zoning designation. The noise standards apply to each property or portion of property substantially used for a particular type of land use. Where two or more dissimilar land uses occur on a single property, the more restrictive noise limits apply. Noise is measured by the one-hour average sound level known as L_{EQ}. Noise restrictions are listed in Sections 17-230 through 17-241 of the Noise Ordinance, such as specific regulations pertaining to motor vehicles. Additional sections of the Noise Ordinance applicable to this analysis are listed below.

Table 4
CITY OF ESCONDIDO NOISE ORDINANCE –
EXTERIOR NOISE LIMITS

Zone	Time	Noise Level (dBA)
Residential zones	7:00 a.m. to 10:00 p.m.	50
	10:00 p.m. to 7:00 a.m.	45
Multi-residential zones	7:00 a.m. to 10:00 p.m.	55
	10:00 p.m. to 7:00 a.m.	50
Commercial zones	7:00 a.m. to 10:00 p.m.	60
	10:00 p.m. to 7:00 a.m.	55
Light industrial	Anytime	70
General industrial zones	Anytime	75

Source: City of Escondido Municipal Code Section 17-229, Sound Level Limits
dBA = A-weighted decibel

Section 17-229(c)(5) (Corrections to Exterior Noise Level Limits)

Section 17-229 (c)(5) of the Noise Ordinance, Corrections to Exterior Noise Level Limits, includes the following regulations:

a) If the noise is continuous, the L_{EQ} for any hour will be represented by any lesser time period within that hour. Noise measurements of a few minutes only will thus suffice to define the noise level.

b) If the noise is intermittent, the L_{EQ} for any hour may be represented by a time period typical of the operating cycle. Measurement should be made of a representative number of noisy/quiet periods. A measurement period of not less than 15 minutes is, however, strongly recommended when dealing with intermittent noise.

c) In the event the alleged offensive noise, as judged by the enforcement officer, contains a steady, audible sound such as a whine, screech or hum, or contains a repetitive impulsive noise such as hammering or riveting, the standard limits set forth in Table 4, shall be reduced by 10 dBA or to the ambient noise level when such noises are not occurring.

d) If the measured ambient level exceeds that permissible in Table 4, the allowable noise exposure standard shall be the ambient noise level. The ambient level shall be measured when the alleged noise violations source is not operating.

e) The sound level limit at a location on a boundary between two land use classifications is the limit applicable to the receiving land use; provided, however, that the one-hour average sound level limit applicable to extractive industries including, but not limited to, borrow pits and mines, shall be 75 dBA at the property line regardless of the zone where the extractive industry is actually located.

Fixed-location public utility distribution or transmission facilities located on or adjacent to a property line shall be subject to the noise level limits of this section, measured at or beyond 6 feet from the boundary of the easement upon which the equipment is located.

Section 17-234 (Construction Equipment)

Except for emergency work, it shall be unlawful for any person, including the City of Escondido, to operate construction equipment as follows:

(a) It shall be unlawful for any person, including the City of Escondido, to operate construction equipment at any construction site, except on Monday through Friday during a week between the hours of 7:00 a.m. and 6:00 p.m. and on Saturdays between the hours of 9:00 a.m. and 5:00 p.m., and provided that the operation of such construction equipment complies with the requirements of subsection (c) of this section.

(b) It shall be unlawful for any person, including the City of Escondido, to operate construction equipment at any construction site on Sundays and on days designated by the President, Governor, or City Council as public holidays.

(c) No construction equipment or combination of equipment, regardless of age or date of acquisition, shall be operated so as to cause noise in excess of a one-hour average sound level limit of 75 dBA at any time, unless a variance has been obtained in advance from the City Manager.

Section 17-237 (Landscape Equipment)

It shall be unlawful for any person, including the City of Escondido, to use any motorized landscape equipment, including but not limited to power blowers and vacuums, which causes a disturbing, excessive or offensive noise as defined under Section 17-227(k) of the Noise Ordinance. Disturbing, excessive or offensive noise refers to any sound or noise exceeding the noise standards established in the Noise Ordinance (Table 4.12-5, City of Escondido Exterior Sound Limit Levels).

Section 17-238 (Grading)

a) It shall be unlawful for any person, including the City of Escondido, to do any authorized grading at any construction site, except on Mondays through Fridays during a week between the hours of 7:00 a.m. and 6:00 p.m. and, provided a variance has been obtained in advance from the City Manager, on Saturdays from 10:00 a.m. to 5:00 p.m.

b) For the purpose of this section, "grading" shall include, but not be limited to, compacting, drilling, rock crushing or splitting, bulldozing, clearing, dredging, digging, filling, and blasting.

c) In addition, any equipment used for grading shall not be operated so as to cause noise in excess of a one-hour sound level limit of 75 dBA at any time when measured at or within the property lines of any property which is developed and used in whole or in part for residential purposes, unless a variance has been obtained in advance from the City Manager.

Section 17-240

Section 17-240 includes additional general noise regulations. This section states that it is unlawful for any person to make, continue or cause to be made or continued, any disturbing, excessive or offensive noise which causes discomfort or annoyance to reasonable persons of normal sensitivity. Noises declared to be disturbing, excessive and offensive include stereo equipment, animal noise, and loading and unloading of vehicles that disturbs neighboring receptors.

1.5.5 City of Escondido Municipal Code Chapter 33, Article 47, Environmental Quality Regulations

The Environmental Quality Regulations implement CEQA and the CEQA Guidelines (guidelines) by applying the provisions and procedures contained in CEQA to development projects proposed within the City of Escondido. Section 33-924(a)(8)(A) and (B) pertain to noise impacts, specifically noise impacts related to the widening of Circulation Element street widening. In situations where a negative declaration is otherwise appropriate, the following incremental noise increases are generally not considered significant:

a. Short or long-term increases, regardless of the extent, that do not result in noise increases in excess of General Plan standards.

b. Short or long-term increases that result in a 3 dBA or less incremental increase in noise beyond the General Plan's noise standards.

2.0 ENVIRONMENTAL SETTING

2.1 SURROUNDING LAND USES

Surrounding land uses include residential uses adjacent to the project's northern, southern, and eastern boundaries and across Centre City Parkway to the west. Commercial uses are also located to the south of the project site. Refer to Figure 2 for nearby land uses.

2.2 EXISTING NOISE ENVIRONMENT

The existing environment is dominated by traffic noise from Centre City Parkway. Additional noise sources include a tire shop located along the project site's southern boundary and a car wash located at the northwestern corner of the intersection of Centre City Parkway and Brotherton Road.

2.2.1 Ambient Noise Survey

Two measurements were taken at the project site for the ambient noise survey.[1] The first measurement (M1) was recorded along the western boundary of the project site adjacent to South Escondido Boulevard and Centre City Parkway. A traffic count was conducted at this location to estimate the breakdown of heavy trucks (three or more axles), medium trucks (double tires/two axles), and automobiles along Centre City Parkway (which carries substantially more vehicles than South Escondido Boulevard and is therefore the dominant noise source in the area). The second measurement (M2) was taken along the northern boundary of the project site near the intersection of Sherman Way and Acacia Lane. The measured noise levels are shown in Table 5, *Noise Measurement Results*. Traffic counts for the timed measurement and the one-hour equivalent volume are shown in Table 6, *Recorded Traffic Volume and Vehicle Mix*. The full site visit sheets are provided in Appendix A, *Site Survey Measurement Sheets*. Measurement locations are shown in Figure 2.

Table 5
NOISE MEASUREMENT RESULTS

Measurement 1 – Traffic	
Date:	August 26, 2020
Conditions:	Temperature: 91°F. Wind Speed: 8 mph. 41% humidity. Sunny.
Time:	12:21 p.m. – 12:36 p.m.
Location:	Along the western boundary of the project site adjacent to South Escondido Boulevard and Centre City Parkway
Measured Noise Level:	65.8 dBA L_{EQ}
Notes:	Roadway traffic along Centre City Parkway dominant noise source; occasional car passing along South Escondido Boulevard
Measurement 2 – Ambient	
Date:	August 26, 2020
Conditions:	Temperature: 91°F. Wind Speed: 8 mph. 41% humidity. Sunny.
Time:	12:51 p.m. – 1:01 p.m.
Location:	Along the northern boundary of the project site near the intersection of Sherman Way and Acacia Lane
Measured Noise Level:	47.6 dBA L_{EQ}
Notes:	Noise sources: distant traffic along Centre City Parkway, wind chimes, sprinkler, leaves rustling

Table 6
RECORDED TRAFFIC VOLUME AND VEHICLE MIX

Measurement	Roadway	Traffic	Autos	MT[1]	HT[2]
M1	Centre City Parkway	15-minute count	305	3	2
		One-hour equivalent	1,220	12	8
		Percent	98.4%	0.97%	0.65%

[1] Medium Trucks (double tires/two axles)
[2] Heavy Trucks (three or more axles)

[1] These measurements were taken during the COVID-19 pandemic, which forced the mandatory closures of non-essential business throughout the region. Because of this, vehicular traffic during the measurement was likely lower than normal levels, and noise levels are therefore likely lower than what would be expected.

3.0 ANALYSIS, METHODOLOGY, AND ASSUMPTIONS

3.1 METHODOLOGY

3.1.1 Ambient Noise Survey

The following equipment was used to measure existing noise levels at the project site:

- Larson Davis 831 Noise Meter
- Larson Davis Model CA250 Calibrator
- Windscreen and tripod for the sound level meter

The sound level meter was field-calibrated immediately prior to the noise measurements to ensure accuracy. All sound level measurements conducted and presented in this report were made with a sound level meter that conforms to the American National Standards Institute (ANSI) specifications for sound level meters (ANSI SI.4-1983 R2006). All instruments were maintained with National Institute of Standards and Technology traceable calibration per the manufacturers' standards.

3.1.2 Noise Modeling Software

Modeling of the exterior noise environment for this report was accomplished using two computer noise models: Computer Aided Noise Abatement (CadnaA) version 2019 and Traffic Noise Model (TNM) version 2.5. CadnaA is a model-based computer program developed by DataKustik for predicting noise impacts in a wide variety of conditions. CadnaA assists in the calculation, presentation, assessment, and mitigation of noise exposure. It allows for the input of project related information, such as noise source data, barriers, structures, and topography to create a detailed CadnaA model, and uses the most up-to-date calculation standards to predict outdoor noise impacts. CadnaA traffic noise prediction is based on the data and methodology used in the TNM.

TNM was released in February 2004 by the U.S. Department of Transportation (USDOT) and calculates the daytime average hourly L_{EQ} from three dimensional model inputs and traffic data (California Department of Transportation [Caltrans] 2004). TNM was developed from Computer Aided Design (CAD) plans provided by the project applicant. Input variables included road alignment, elevation, lane configuration, area topography, existing and planned noise control features, projected traffic volumes, estimated truck composition percentages, and vehicle speeds.

Peak-hour traffic volumes are estimated based on the assumption that approximately 10 percent of the average daily traffic would occur during a peak hour. The one-hour L_{EQ} noise level is calculated utilizing peak-hour traffic. Peak hour L_{EQ} can be converted to CNEL using the following equation, where $L_{EQ}(h)pk$ is the peak hour L_{EQ}, *P* is the peak hour volume percentage of the average daily trips (ADT), *d* and *e* are divisions of the daytime fraction of ADT to account for daytime and evening hours, and *N* is the nighttime fraction of ADT:

$$CNEL = L_{EQ}(h)pk + 10\log10\ 4.17/P + 10\log10(d + 4.77e + 10N)$$

The model-calculated one-hour L_{EQ} noise output is therefore approximately equal to the CNEL (Caltrans 2013).

Project construction noise was analyzed using the Roadway Construction Noise Model (RCNM; USDOT 2008), which utilizes estimates of sound levels from standard construction equipment.

3.2 ASSUMPTIONS

3.2.1 Construction

3.2.1.1 General Equipment Assumptions

Project construction would involve demolition of existing on-site structures and pavements, site preparation, grading, soil hauling, underground utilities/infrastructure installation, building construction, paving, and architectural coating. The project would entail the use of equipment throughout the site for the full term of construction. See Table 7, *Construction Phases and Equipment*, for typical equipment information by phase.

Table 7
CONSTRUCTION PHASES AND EQUIPMENT

Construction Phase	Equipment
Demolition	Concrete/Industrial Saw
	Excavator
	Rubber Tired Dozer
Site Preparation	Rubber Tired Dozer
	Tractor/Loader/Backhoe
Grading	Excavator
	Grader
	Rubber Tired Dozer
	Tractor/Loader/Backhoe
Underground Utilities/Infrastructure	Excavator
	Tractor/Loader/Backhoe
Building Construction	Crane
	Forklift
	Generator Set
	Tractor/Loader/Backhoe
	Welder
Paving	Cement and Mortar Mixers
	Pavers
	Paving Equipment
	Roller
	Tractor/Loader/Backhoe
Architectural Coating	Air Compressor

Demolition would be required for existing on-site structures and pavements. Grading of the site would require approximately 4,590 CY of import. It was indicated by the Project Applicant that this import would occur via 328 haul trucks loads over four working days.

3.2.2 Operation

Anticipated operational noise sources associated with eventual development of the site include heating, ventilation, and air conditioning (HVAC) systems, and vehicular traffic.

3.2.2.1 Heating, Ventilation, and Air Conditioning Units

The project would include HVAC units at various ground-level locations adjacent to the proposed buildings. Specific planning data for the future HVAC systems is not available at this stage of project design. The analysis assumes that the design for the future residential buildings would use a typical to larger-sized residential condenser. The unit used in this analysis is a Carrier 38HDR060 split system condenser (see Appendix B, *Carrier 38HDR060 Split System Condenser*). The manufacturer's noise data is provided below in Table 8, *Carrier HDR060 Condenser Noise.*

Table 8
CARRIER HDR060 CONDENSER NOISE

Noise Levels in Decibels[1] (dB) Measured at Octave Frequencies							Overall Noise Level in A-weighted Scale (dBA)[1]
125 Hz	250 Hz	500 Hz	1 KHz	2 KHz	4 KHz	8 KHz	
63.0	61.5	64.0	66.5	66.0	64.5	55.5	72.0

[1] Sound Power Level (S_{WL})
HZ = Hertz; KHz = kilohertz

3.2.2.2 Vehicular Traffic

Traffic data and trip generation for surrounding streets was based on volumes from the Transportation Impact Analysis prepared for the project by Linscott, Law & Greenspan, Engineers (LLG; 2021). A typical traffic distribution of 97 percent automobiles, 2 percent medium trucks, and 1 percent heavy trucks was used in this analysis for the traffic, which includes slightly higher percentages of medium and heavy trucks that what was observed during the traffic count conducted along Centre City Parkway during the site survey. Project-generated traffic would consist almost entirely of automobiles. Table 9, *Existing Plus Project Traffic Volumes*, summarizes the ADT data for nearby roadways, both with and without the project.

Table 9
EXISTING AND FUTURE TRAFFIC VOLUMES

Roadway Segment	Average Daily Trips (ADT)					
	Existing	Existing Plus Project	Opening Year Without Project	Opening Year With Project	Long-Term Without Project	Long-Term With Project
Centre City Parkway						
Felicita Road to Brotherton Road	23,900	24,020	23,900	24,020	34,100	34,220
Brotherton Road to Citracado Parkway	27,240	27,240	27,240	27,240	35,400	35,400
South Escondido Boulevard						
Felicita Road to Centre City Parkway Connector	18,000	18,120	18,060	18,180	21,500	21,620
Centre City Parkway Connector to Brotherton Road	4,861	5,111	4,999	5,249	9,500	9,750
Brotherton Road to Citracado Parkway	3,538	3,788	3,676	3,926	3,892	4,142

Source: LLG 2021

3.3 GUIDELINES FOR THE DETERMINATION OF SIGNIFICANCE AND CONDITIONS OF APPROVAL

Implementation of the project would result in a significant adverse impact if it would exceed the following thresholds based on the City General Plan EIR and Noise Ordinance, as applicable to the project:

Threshold 1: *Generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the Escondido General Plan or noise ordinance.*

Impacts would be significant if the project would expose new development to noise levels in excess of the Noise Compatibility Standards established in the City's Community Protection Element, provided in Table 1. For multi-family uses, the exterior noise compatibility standard is 65 CNEL.

Operational noise impacts would occur if the project results in a permanent increase in ambient noise levels from operational sources that would exceed the sound level limits that exceed the noise limits in the City of Escondido Municipal Code Section 17-229, Sound Level Limits (included above in Table 4), at any point on or beyond the boundaries of the property on which the sound is produced, or result in a permanent increase in transportation noise that would exceed the incremental noise standards listed in Table 2.

Construction impacts would occur if the project generates construction noise that exceeds the standards listed in the City of Escondido Municipal Code Section 17-234, Construction Equipment, and Section 17-238, Grading, both of which restrict construction noise to 75 dBA L_{EQ} (1 hour). Impacts would also occur if the project operates construction equipment outside of the allowed construction hours specified in Section 17-234, which are between 7:00 a.m. and 6:00 p.m. Monday through Friday and between 9:00 a.m. and 5:00 p.m. on Saturdays.

Threshold 2: *Generate excessive ground-borne vibration or ground-borne noise levels.*

For infrequent vibration events (defined as fewer than 30 events per day, applicable to construction operations), impacts would occur if the project would expose vibration-sensitive uses to vibration levels that exceed 65 VdB, residences and buildings where people normally sleep to 80 VdB, or institutional land uses with primarily daytime uses to 83 VdB.

Threshold 3**:** *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 use airport or private airstrip, expose people residing or working in the project area to excessive noise*.

An impact would occur if the project would expose land uses to noise levels that exceed the standards in the City's noise compatibility standard for that use.

4.0 IMPACTS

4.1 ISSUE 1: EXCESSIVE NOISE LEVELS

Would the project generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the Escondido General Plan or noise ordinance.

4.1.1 Exposure to Excessive Noise

4.1.1.1 Exterior Use Areas

The noise levels associated with traffic under the Long Term with Project scenario were modeled at the project site using CadnaA. Future on-site residential land uses would be exposed to noise from vehicular traffic along Centre City Parkway and South Escondido Boulevard. Impacts related to exterior noise would be significant if future residential exterior use areas are exposed to noise levels in excess of 65 CNEL. The project includes an active exterior use area in the eastern portion of the site. Receivers were placed at three locations (northern, central, and southern) within the portion of the active exterior use area closest to South Escondido Boulevard and Centre City Parkway. Receiver locations are shown on Figure 4, *Receiver Locations*. The modeled noise levels at the project's active exterior use area range from 28.6 CNEL (at the northern location that is shielded from traffic noise by the project's buildings) to 52.2 CNEL (at the central location that has a direct line of sight to the roadways down the center of the project site in between the buildings). Noise levels would be below the 65 CNEL standard.

Private patios/decks would be exposed to traffic noise, as they would have a direct line-of-sight to nearby roadways; however, as described in Section 1.6.3, the outdoor standard is not applied to balconies or patios associated with residential units. Impacts related to excessive noise at these locations would be less than significant.

4.1.1.2 Interior Noise Levels

Traditional architectural materials are conservatively estimated to attenuate noise levels by 15 CNEL; therefore, if exterior noise levels at building facades exceed 60 CNEL, interior noise levels may exceed the Title 24 interior noise standard of 45 CNEL (California Building Standards Commission 2010). In the noise model, receivers were placed at first-, second-, and third-story façades at the northwestern and southwestern portions of each building, as these locations would be the closest portions of each building to the roadways and could have a direct line of site to the roadways. Receiver locations are shown on Figure 4 and modeled noise levels can be found in Table 10, *Modeled Façade Noise Levels*. Using calculated noise levels, an exterior-to-interior noise analysis was conducted to calculate expected interior noise levels at these locations to determine if they would comply with the 45 CNEL standard. In all but Buildings 1 and 10, non-end units would be shielded from roadway noise by the building(s) to the west and would not be exposed to exterior noise levels in excess of 60 CNEL.

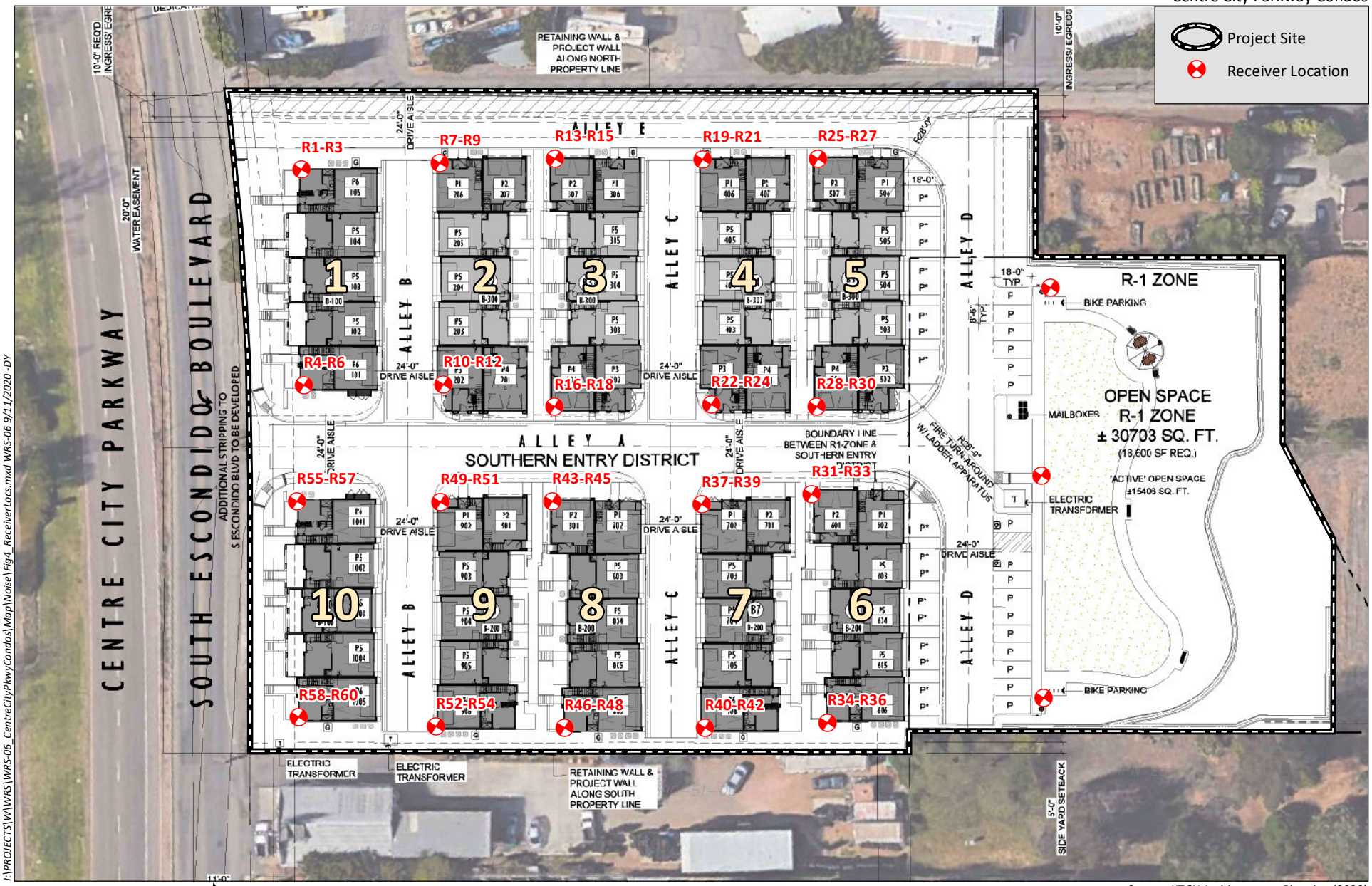
Table 10
MODELED FAÇADE NOISE LEVELS

Receiver Number	Location	Exterior Noise Level (CNEL)[1]	Receiver Number	Location	Exterior Noise Level (CNEL)[1]
R1	1st Floor Building 1 – NW	**71.2**	R31	1st Floor Building 6 – NW	55.6
R2	2nd Floor Building 1 – NW	**71.1**	R32	2nd Floor Building 6 – NW	55.2
R3	3rd Floor Building 1 – NW	**71.1**	R33	3rd Floor Building 6 – NW	55.4
R4	1st Floor Building 1 – SW	**72.0**	R34	1st Floor Building 6 – SW	43.4
R5	2nd Floor Building 1 – SW	**71.6**	R35	2nd Floor Building 6 – SW	52.4
R6	3rd Floor Building 1 – SW	**71.5**	R36	3rd Floor Building 6 – SW	53.7
R7	1st Floor Building 2 – NW	**62.8**	R37	1st Floor Building 7 – NW	57.3
R8	2nd Floor Building 2 – NW	**64.5**	R38	2nd Floor Building 7 – NW	56.8
R9	3rd Floor Building 2 – NW	**64.6**	R39	3rd Floor Building 7 – NW	57.0
R10	1st Floor Building 2 – SW	**63.1**	R40	1st Floor Building 7 – SW	51.7
R11	2nd Floor Building 2 – SW	**62.6**	R41	2nd Floor Building 7 – SW	56.9
R12	3rd Floor Building 2 – SW	**63.8**	R42	3rd Floor Building 7 – SW	58.3
R13	1st Floor Building 3 – NW	59.0	R43	1st Floor Building 8 – NW	59.7
R14	2nd Floor Building 3 – NW	**62.4**	R44	2nd Floor Building 8 – NW	59.3
R15	3rd Floor Building 3 – NW	**62.0**	R45	3rd Floor Building 8 – NW	59.5
R16	1st Floor Building 3 – SW	59.4	R46	1st Floor Building 8 – SW	54.6
R17	2nd Floor Building 3 – SW	59.2	R47	2nd Floor Building 8 – SW	**60.1**
R18	3rd Floor Building 3 – SW	59.5	R48	3rd Floor Building 8 – SW	**61.2**
R19	1st Floor Building 4 – NW	57.7	R49	1st Floor Building 9 – NW	**64.3**
R20	2nd Floor Building 4 – NW	**60.9**	R50	2nd Floor Building 9 – NW	**63.7**
R21	3rd Floor Building 4 – NW	**60.8**	R51	3rd Floor Building 9 – NW	**63.8**
R22	1st Floor Building 4 – SW	55.2	R52	1st Floor Building 9 – SW	59.1
R23	2nd Floor Building 4 – SW	55.3	R53	2nd Floor Building 9 – SW	**63.7**
R24	3rd Floor Building 4 – SW	56.0	R54	3rd Floor Building 9 – SW	**64.5**
R25	1st Floor Building 5 – NW	57.5	R55	1st Floor Building 10 – NW	**72.1**
R26	2nd Floor Building 5 – NW	59.8	R56	2nd Floor Building 10 – NW	**71.9**
R27	3rd Floor Building 5 – NW	**60.0**	R57	3rd Floor Building 10 – NW	**71.7**
R28	1st Floor Building 5 – SW	54.5	R58	1st Floor Building 10 – SW	**72.0**
R29	2nd Floor Building 5 – SW	54.0	R59	2nd Floor Building 10 – SW	**71.8**
R30	3rd Floor Building 5 – SW	54.4	R60	3rd Floor Building 10 – SW	**71.7**

Note: Noise levels are based on traffic volumes provided by the project's traffic engineers (LLG 2021) for nearby roadways.
BOLD font indicates an exceedance of the standard.
CNEL = Community Noise Equivalent Level; NW = northwest; SW = southwest

The information in this interior noise analysis includes wall heights/lengths, room volumes, window/door tables typical for a standard building plan, as well as information on any other openings in the building shell for the habitable residential rooms. The analysis provides information for the rooms with the highest potential interior noise and extends these requirements to other similar rooms.

Buildings 1 and 10 are the project's closest proposed buildings to the roadways and would be exposed to the highest traffic noise levels. The end units of Buildings 1 and 10 would have two walls exposed to traffic noise and would therefore have the potential for the highest interior noise levels of the project's proposed units; as such, these units are used to represent a conservative exterior-to-interior analysis and to ensure that the analysis applies to all planned project units. The end units within Buildings 1



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Source: KTGY Architecture + Planning (2020)

HELIX Environmental Planning

Receiver Locations

Figure 4

and 10 have a bedroom on the first floor facing the roadways, a living room/dining room/kitchen on the second floor facing the roadways, and a primary bedroom on the third floor facing the roadways. The first floor bedroom, second floor living room/dining room/kitchen, and the third floor primary bedroom were analyzed with the conservative noise condition of 72.1 CNEL that occurred at the northwestern first floor of Building 10 (refer to Table 10). The room specifications used in this analysis are based on current floor plans provided by the project applicant. Refer to Figure 5, *Analyzed Rooms*, for the project plans for the rooms included in this Title 24 analysis. As discussed in Section 1.2.1, the project's habitable areas with a direct line-of-sight to Centre City Parkway and South Escondido Boulevard would incorporate exterior walls with an STC 46 rating and windows with a minimum STC 28 rating.

Table 11, *Exterior-to-Interior Noise Levels*, displays the calculated interior noise levels with the planned STC ratings necessary to ensure interior noise levels for the proposed project are consistent with the City's interior 45 CNEL limit. Detailed modeling results can be seen in Appendix C, *Exterior-to-Interior Noise Reduction Analysis*.

Table 11
EXTERIOR-TO-INTERIOR NOISE LEVELS

Specification	1st Floor Bedroom	2nd Floor Living Room/ Dining Room / Kitchen	3rd Floor Primary Bedroom
Minimum exterior wall requirement	STC 46	STC 46	STC 46
Wall construction	Standard 0.875-inch Stucco over 0.5-inch Shearwall on 2x6 Studs with 0.625-inch Type "X" Drywall	Standard 0.875-inch Stucco over 0.5-inch Shearwall on 2x6 Studs with 0.625-inch Type "X" Drywall	Standard 0.875-inch Stucco over 0.5-inch Shearwall on 2x6 Studs with 0.625-inch Type "X" Drywall
Minimum window requirement	STC 28	STC 28	STC 28
Window construction	Dual Glazing Window Thickness 0.125-inch and 0.5-inch Air Gap	Dual Glazing Window Thickness 0.125-inch and 0.5-inch Air Gap	Dual Glazing Window Thickness 0.125-inch and 0.5-inch Air Gap
Exterior Noise	72.1 CNEL	72.1 CNEL	72.1 CNEL
Interior Noise	42.4 CNEL (windows closed)	41.5 CNEL (windows closed)	41.8 CNEL (windows closed)
Above 45 CNEL interior noise standard?	**No**	**No**	**No**

STC = Sound Transmission Class; CNEL = Community Noise Equivalent Level

Through incorporation of the building materials described above, all rooms would comply with the relevant interior noise standards of 45 CNEL for habitable areas. Appropriate means of air circulation and provision of fresh air would be present to allow windows to remain closed for extended intervals of time so that acceptable levels of noise can be maintained on the interior. The building design would include a mechanical ventilation system that would meet the criteria of the International Building Code (Chapter 12, §1203 of the 2016 California Building Code) to ensure that windows would be able to remain permanently closed. With incorporation of appropriate architectural materials and techniques, the project would be consistent with City Noise Element policies.

4.1.2 Operational On-site Noise Generation

The project would include HVAC units at various ground-level locations adjacent to the proposed buildings. Specific planning data for the future HVAC systems is not available at this stage of project design. As mentioned in Section 3.2.2.1, modeling assumed that the HVAC unit would be a Carrier 38HDR060 split system condenser. A single unit typically generates a noise level of 56 dBA at a distance of 7 feet. The project would include six-foot tall solid concrete masonry walls along the site's northern border, northeastern corner, and southern border that would provide attenuation between the project's HVAC units and the adjacent off-site properties.

With the incorporation of the six-foot solid concrete masonry walls mentioned above, noise levels from project's HVAC units are modeled to range between 35.0 dBA and 45.8 dBA at adjacent off-site properties. Noise levels were modeled to exceed 45 dBA only at properties adjacent to the project site's southern border. These properties are zoned for commercial uses. Noise levels at adjacent residential properties were modeled to be below 45 dBA. As such, the project's HVAC units would not generate noise that would exceed the City's nighttime allowable hourly limit of 45 dBA L_{EQ} for residential zones or 55 for commercial zones; therefore, impacts would be less than significant.

4.1.3 Operational Off-site Transportation Noise Generation

As noted in the assumptions, Existing and Existing Plus Project traffic noise levels presented in this analysis are based on traffic volumes provided by LLG (2021). Refer to Table 9 for the forecasted ADT data for existing and project-added traffic volumes.

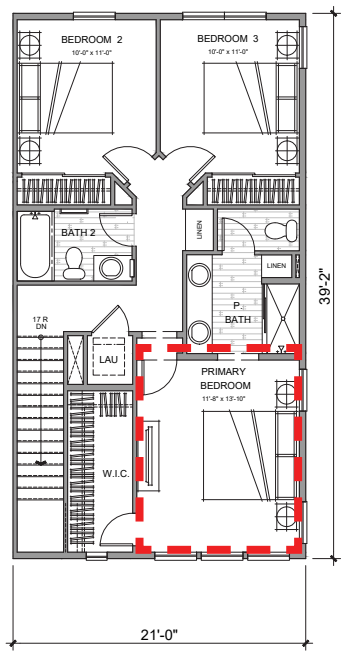
TNM software was used to calculate the noise contour distances for Existing and Existing Plus Project conditions along roadways that would accommodate project-generated traffic. The off-site roadway modeling represents a conservative analysis that does not consider topography or attenuation provided by existing structures. The results of this analysis for the CNEL at the nearest NSLUs to the roadway centerline are shown below in Table 12, *Off-site Traffic Noise Levels.*

Table 12
OFF-SITE TRAFFIC NOISE LEVELS

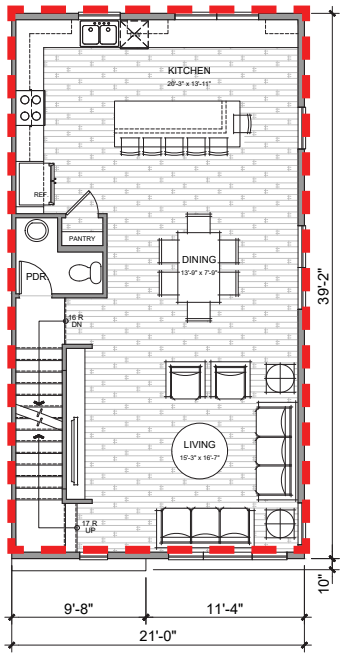
Roadway Segment	Distance to Nearest NSLU	CNEL at distance to nearest NSLU			Direct Impact[1]
		Existing	Existing Plus Project	Change from Existing	
Centre City Parkway					
Felicita Road to Brotherton Road	100	71.3	71.3	0.0	No
South Escondido Boulevard					
Felicita Road to Centre City Parkway Connector	70	67.5	67.5	0.0	No
Centre City Parkway Connector to Brotherton Road	50	61.8	61.9	+0.1	No
Brotherton Road to Citracado Parkway	60	59.6	59.9	+0.3	No

[1] A direct impact to off-site uses would occur if the project more than doubles (increases by more than 3 CNEL) the existing noise level.

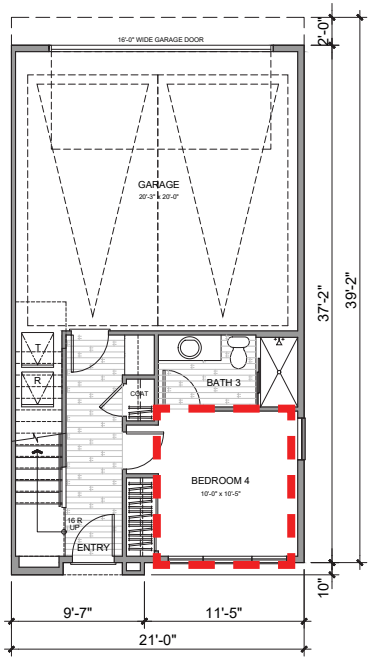
A significant increase would be a greater than a perceptible change of 3 CNEL over existing conditions. As shown in Table 12, noise levels would increase by less than 1 CNEL. Therefore, impacts from project-generated traffic would be less than significant.



THIRD FLOOR



SECOND FLOOR



FIRST FLOOR

GROSS SF	
1ST FLOOR	362 SQ. FT.
2ND FLOOR	822 SQ. FT.
3RD FLOOR	764 SQ. FT.
TOTAL LIVING	1947 SQ. FT.
GARAGE	431 SQ. FT.

NET SF	
1ST FLOOR	332 SQ. FT.
2ND FLOOR	774 SQ. FT.
3RD FLOOR	718 SQ. FT.
TOTAL LIVING	1823 SQ. FT.

ktgy
Architecture + Planning
17911 Von Karman Ave,
Suite 200
Irvine, CA 92614
949.851.2133
ktgy.com

Warmington RESIDENTIAL
Warmington Residential
3090 Pullman Street
Costa Mesa, CA 92626
714-434-4439

ESCONDIDO CENTRE CITY PKWY
Escondido, CA #2018-0859

Plot Date: 05-05-2020
1st Submittal:

PLAN 6

SCALE: 1/4"=1'-0"

A3.30

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Source: KTGY Architecture +Planning (2020)

4.1.4 Construction Noise Generation

Construction of the project would require the demolition of existing structures, site preparation, grading, installation of underground utilities/infrastructure, construction of new buildings, paving, and architectural coating. The magnitude of the impact would depend on the type of construction activity, equipment, duration of each construction phase, distance between the noise source and receiver, and any intervening structures. Construction would generate elevated noise levels that may disrupt nearby residences. The closest off-site residences are the mobile homes located near the project site's northern boundary. Additional residences are located to the east, to the south, and to the west across Centre City Parkway.

Construction equipment would not all operate at the same time or location and would not be in constant use during the 8-hour operating day; therefore, for noise level prediction purposes, a conservative average distance from construction activities to off-site residential receptors is estimated at 120 feet. This is considered conservative because construction equipment would be mobile across the site, and the approximate distance from the center of the site to the nearest off-site residences is 180 feet. The other nearby residences would be located at greater distances from the project's construction activities. Multiple construction equipment types would be in use throughout the day. A dozer and an excavator could work on the site simultaneously but would not work in close proximity to one another at a given time due to the nature of their respective operations. Similarly, a concrete saw would likely operate independently from other equipment. An excavator, loader, and dump truck were analyzed together for construction noise impacts due to their likelihood of being used in conjunction with one another.

Based on these assumptions, operations using an excavator, loader, and dump truck at the nearest NSLU would be 72.3 dBA L_{EQ} at 120 feet (see Appendix D, *Construction Noise Modeling Outputs*). Therefore, construction noise from this equipment was modeled to be below the significance threshold of 75 dBA L_{EQ} (1 hour), and temporary noise impacts would be less than significant. Table 13, *Construction Equipment Noise Levels,* provides the 120-foot distance noise level for expected construction equipment.

Table 13
CONSTRUCTION EQUIPMENT NOISE LEVELS

Unit	Percent Operating Time	L_{MAX} at 120 feet	dBA L_{EQ} at 120 feet
Backhoe	40	70	66
Compressor	40	70.1	66.1
Concrete Mixer Truck	40	71.2	67.2
Concrete/Industrial Saw	20	82	75
Crane	16	72.9	65
Dozer	40	74.1	70.1
Dump Truck	40	68.8	64.9
Excavator	40	73.1	69.1
Front End Loader	40	71.5	67.5
Generator Set	50	73	70
Grader	40	77.4	73.4
Paver	50	69.6	66.6
Roller	20	72.4	65.4
Welder	40	66.4	62.4
Excavator/Loader/Dump Truck	40	73.1	72.3

Source: RCNM
L_{MAX} = maximum noise level; dBA = A-weighted decibel; L_{EQ} = equivalent sound level

4.1.5 Construction Traffic Noise Generation

TNM software was used to calculate the noise contour distances for construction-related truck trips. As discussed in Section 3.2.1.1, it is anticipated that 328 haul truck loads, or 656 one-way haul truck trips, would be required for soil import over the course of four days, which would equate to 164 haul truck trips per day. Over the course of an eight-hour construction day, it is assumed 21 haul truck trips would occur per hour. This daily traffic level associated with soil hauling is anticipated to be the highest daily traffic level associated with project construction.

A general rule of thumb is that a doubling in noise energy, a 3 CNEL increase, would be considered a significant increase. The existing traffic volume and the increased traffic volume from construction were input into TNM on the roadway analyzed in the Transportation Impact Analysis (LLG 2021) as having the lowest traffic volumes, thus providing a conservative analysis of the project's potential to increase noise levels through the addition of the project's construction traffic. This roadway is South Escondido Boulevard from Brotherton Road to Citracado Parkway. The modeling conservatively assumes that all haul trucks would use this roadway. Receivers were modeled at 60 feet from the roadway centerline (the approximate distance to the nearest NSLU), and construction haul trips were modeled as heavy trucks. The results of the modeling are shown in Table 14, *Construction Traffic Noise Levels.* As shown in the table, the addition of construction traffic would temporarily increase noise levels by less than 3 CNEL. Therefore, impacts from construction traffic noise would be less than significant.

Table 14
CONSTRUCTION TRAFFIC NOISE LEVELS

Roadway Segment	CNEL @ 60 feet			Direct Impact[1]
	Existing	Existing + Construction	Change from Existing	
South Escondido Boulevard				
Brotherton Road to Citracado Parkway	59.6	62.1	+2.5	No

[1] A direct impact to off-site uses would occur if the project more than doubles (increases by more than 3 CNEL) the existing noise level.

CNEL = Community Noise Equivalent Level

4.2 ISSUE 2: EXCESSIVE VIBRATION

Would the project expose persons to or generate excessive ground-borne vibration or noise levels?

4.2.1 Construction Vibration

The primary potential for generation of ground-borne vibration would occur during project construction. Per FTA vibration levels provided in the General Plan EIR, an impact would occur if construction would generate vibration levels greater than 65 VdB at buildings were vibration could interfere with interior operations, 80 VdB at the nearest residence or building where people sleep, or 83 VdB at the nearest institutional land use with primarily daytime uses. There are no sensitive types of uses where vibration could interfere with interior operations or institutional uses in proximity to the project site. The nearest buildings where people sleep are the residences to the north of the project site across Sherman Way.

A vibratory roller would be expected to create the highest vibration levels during fill compaction. Table 4.12-9 of the City General Plan EIR provides vibration source levels for common construction equipment and lists a vibratory roller as generating approximately 94 VdB at 25 feet. As discussed under Section 4.1.4, construction equipment would be mobile throughout the site and is assessed as operating at an average distance of 120 feet from the off-site residential uses. Using the vibration formula[2] provided in that table, a roller would generate approximately 74 VdB at 120 feet, which would be below the 80 VdB threshold. Therefore, construction vibration impacts would be less than significant.

4.3 ISSUE 3: AIRPORT NOISE EXPOSURE

Would the project expose people residing or working in the project area to excessive noise from a nearby public use airport or private airstrip?

4.3.1 Airport Noise

The project is subject to some distant aircraft noise, though the site is not located near an active airport. The nearest airports are the Ramona Airport, located approximately 9 miles to the southeast, and the McClellan-Palomar Airport, located approximately 12 miles to the west. At these distances, no effects related to airport noise would occur at the project site, and impacts would be less than significant.

[2] VdB = VdB (VdB at 25 feet) – 30log(distance/25)

5.0 LIST OF PREPARERS

Hunter Stapp, Noise Analyst
Joanne M. Dramko, AICP, Senior Technical Specialist, QA/QC
Kara Palm, Project Manager

HELIX Environmental Planning, Inc.
7578 El Cajon Boulevard
La Mesa, CA 91942

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Appendix A

Site Survey Measurement Sheets

Site Survey

Job # WRS-06 | Project Name: Centre City Parkway Condos

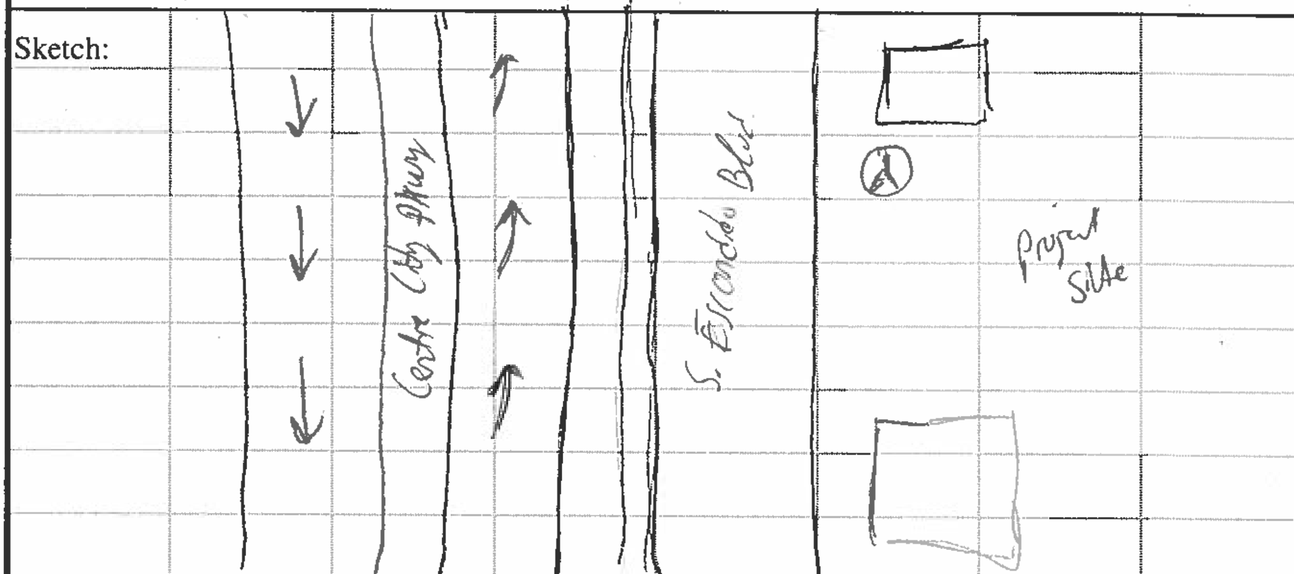
Date: 8/26/20 | Site #: 1 | Engineer: HTS

Address: along S. Escondido Blvd, South of Sherman Way

249 Meter: LD 831 | Serial #: | Calibrator: CA 250 | Serial #: 2621

Notes: traffic count for Centre City
Occassional cars passing on S. Escondido Blvd

Sketch:



Temp: 91	Wind Spd: 8 mph	Humidity: 41 %
Start of Measurement: 12:21 pm	End of Measurement: 12:36 pm	65.8 dBA L_{EQ}

Cars (tally per 5 cars)	Medium Trucks (MT)	Heavy Trucks (HT)
卌 卌 卌 卌 卌 卌 卌 卌 卌 卌 卌 卌 |	|||	||

Noise Measurement for Information Only

No Through Roadways

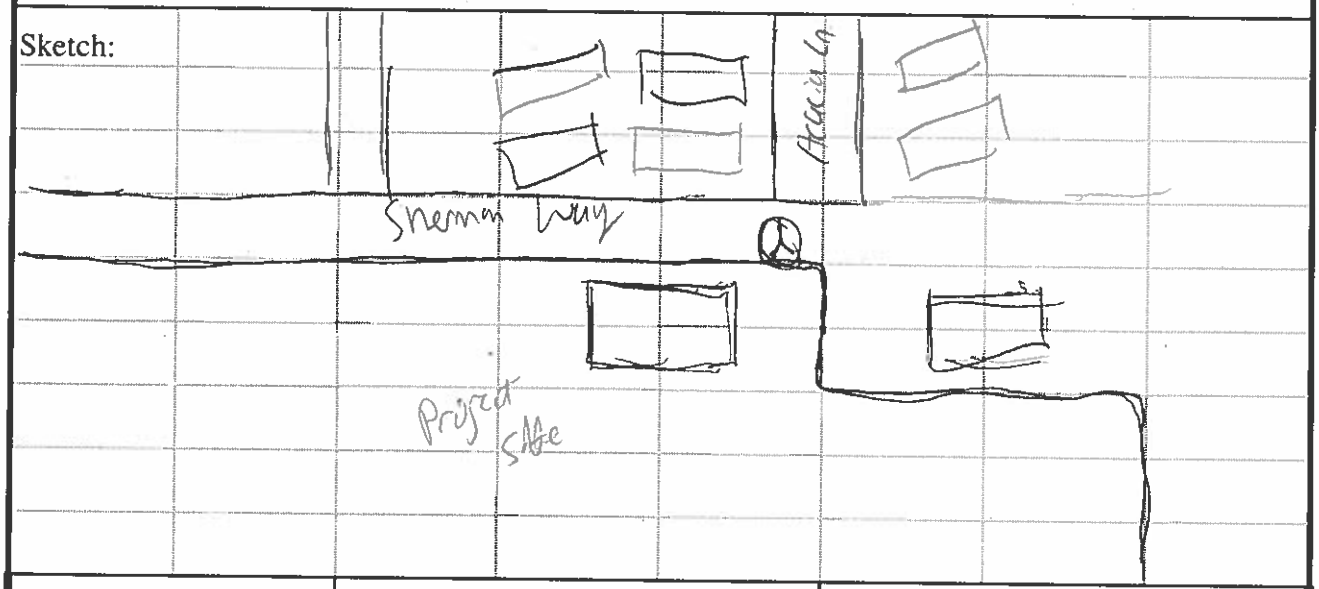
No Calibration Analysis Will Be Provided

Site Survey

Job # LNBS-06	Project Name: Centre City Parkway Condos		
Date: 8/26/20	Site #: 2	Engineer: HTS	
Address: along northern project site boundary near Sherman Way & Acacia Lane			
Meter:	Serial #:	Calibrator:	Serial #:

Notes: noise sources: distant traffic from Centre City Parkway; wind chimes; sprinkler; leaves rustling

Sketch:



Temp: 91 °F	Wind Spd: 8 mph	Humidity: 41 %
Start of Measurement: 12:51 pm	End of Measurement: 1:01 pm	47.6 dBA L_{EQ}

Cars (tally per 5 cars)	Medium Trucks (MT)	Heavy Trucks (HT)

Noise Measurement for Information Only

No Through Roadways

No Calibration Analysis Will Be Provided

Centre City Parkway Condos

H:\PROJECTS\W\WRS\WRS-06_CentreCityPkwyCondos\Map\CUL\Fig3_Aerial.mxd WRS-06 7/8/2020 -DY

0 100 Feet

Source: Aerial (SanGIS, 2017)

HELIX Environmental Planning

Aerial Photograph

Figure 3

Appendix B

Carrier 38HDR060 Split System Condenser

ELECTRICAL DATA

38HDR UNIT SIZE	V–PH–Hz	VOLTAGE RANGE*		COMPRESSOR		OUTDOOR FAN MOTOR			MIN CKT AMPS	FUSE/ HACR BKR AMPS
		Min	Max	RLA	LRA	FLA	NEC Hp	kW Out		
018	208/230–1–60	187	253	9.0	48.0	0.80	0.125	0.09	12.1	20
024	208/230–1–60	187	253	12.8	58.3	0.80	0.125	0.09	16.8	25
030	208/230–1–60	187	253	14.1	73.0	1.45	0.25	0.19	19.1	30
036	208/230–1–60	187	253	14.1	77.0	1.45	0.25	0.19	19.1	30
	208/230–3–60	187	253	9.0	71.0	1.45	0.25	0.19	12.7	20
	460–3–60	414	506	5.6	38.0	0.80	0.25	0.19	7.8	15
048	208/230–1–60	187	253	21.8	117.0	1.45	0.25	0.19	28.7	50
	208/230–3–60	187	253	13.7	83.1	1.45	0.25	0.19	18.6	30
	460–3–60	414	506	6.2	41.0	0.80	0.25	0.19	8.6	15
060	208/230–1–60	187	253	26.4	134.0	1.45	0.25	0.19	34.5	60
	208/230–3–60	187	253	16.0	110.0	1.45	0.25	0.19	21.5	35
	460–3–60	414	506	7.8	52.0	0.80	0.25	0.19	10.6	15

* Permissible limits of the voltage range at which the unit will operate satisfactorily

FLA – Full Load Amps
HACR – Heating, Air Conditininng, Refrigeration
LRA – Locked Rotor Amps
NEC – National Electrical Code
RLA – Rated Load Amps (compressor)

NOTE: Control circuit is 24–V on all units and requires external power source. Copper wire must be used from service disconnect to unit.
All motors/compressors contain internal overload protection.

SOUND LEVEL

Unit Size	Standard Rating (dB)	Typical Octave Band Spectrum (dBA) (without tone adjustment)						
		125	250	500	1000	2000	4000	8000
018	68	52.0	57.5	60.5	63.5	60.5	57.5	46.5
024	69	57.5	61.5	63.0	61.0	60.0	56.0	45.0
030	72	56.5	63.0	65.0	66.0	64.0	62.5	57.0
036	72	65.0	61.5	63.5	65.0	64.5	61.0	54.5
048	72	58.5	61.0	64.0	67.5	66.0	64.0	57.0
060	72	63.0	61.5	64.0	66.5	66.0	64.5	55.5

CHARGING SUBCOOLING (TXV-TYPE EXPANSION DEVICE)

UNIT SIZE–VOLTAGE, SERIES	REQUIRED SUBCOOLING °F (°C)
018	12 (6.7)
024	12 (6.7)
030	12 (6.7)
036	12 (6.7)
048	12 (6.7)
060	12 (6.7)

Appendix C

Exterior-to-Interior Noise Reduction Analysis

EXTERIOR TO INTERIOR NOISE REDUCTION ANALYSIS

Project Name: Escondido Centre City Parkway Condos
Project # : WRS-06
Room Name: 1st Floor Bedroom

Wall 1 of 2

Room Type : Soft

	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Reverberation Time (sec) :	0.8	0.8	0.8	0.8	0.7	0.7	: Highly Absorptive Room
Room Absorption (Sabins) :	50	50	50	50	62	62	

		Noise Level		125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Source 1:	Traffic	72.1	CNEL	55.4	60.9	63.4	67.4	67.4	61.4	: Traffic Spectrum
Source 2:	<N/A>	0.0	CNEL	0.0	0.0	0.0	0.0	0.0	0.0	
Source 3:	<N/A>	0.0	CNEL	0.0	0.0	0.0	0.0	0.0	0.0	
Source 4:	<N/A>	0.0	CNEL	0.0	0.0	0.0	0.0	0.0	0.0	
Overall:		72.1	CNEL	55.4	60.9	63.4	67.4	67.4	61.4	: Effective Noise Spectrum

Assembly Type	Open	Width	Height	Qty	Total Area	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz
STC 46 Typical Exterior Wall	N	10	8	1	59.0	29	40	46	46	44	53
STC 28 1/2-inch Dual Insulating Window	Y	7	3	1	21.0	23	23	22	32	43	37
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0

Room Depth: 10.4 ft **Overall Area:** 80 ft²
Volume: 832 ft³

Number of Impacted Walls: 2

Windows Open
Interior Noise Level: 57.7 CNEL

Windows Closed
Interior Noise Level: 42.4 CNEL

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
55.4	60.9	63.4	67.4	67.4	61.4	: Exterior Wall Noise Exposure
8.8	8.8	8.8	8.8	8.8	8.8	: Transmission Loss
0.0	0.0	0.0	0.0	0.0	0.0	: Noise Reduction
17.0	17.0	17.0	17.0	18.0	18.0	: Absorption
38.4	43.9	46.4	50.4	49.5	43.5	: Noise Level
54.7	**CNEL**	WINDOWS OPEN				

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
55.4	60.9	63.4	67.4	67.4	61.4	: Exterior Wall Noise Exposure
26.4	28.5	27.8	37.6	43.6	42.8	: Transmission Loss
7.4	9.4	8.8	18.6	24.6	23.8	: Noise Reduction
17.0	17.0	17.0	17.0	18.0	18.0	: Absorption
31.0	34.5	37.6	31.8	24.9	19.7	: Noise Level
40.7	**CNEL**	WINDOWS CLOSED				

EXTERIOR TO INTERIOR NOISE REDUCTION ANALYSIS

Project Name: Escondido Centre City Parkway Condos
Project # : WRS-06
Room Name: 1st Floor Bedroom

Wall 2 of 2

		Noise Level		125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Source 1:	Traffic	72.1	CNEL	55.4	60.9	63.4	67.4	67.4	61.4	: Traffic Spectrum
Source 2:	<N/A>	0.0	CNEL	0.0	0.0	0.0	0.0	0.0	0.0	
Source 3:	<N/A>	0.0	CNEL	0.0	0.0	0.0	0.0	0.0	0.0	
Source 4:	<N/A>	0.0	CNEL	0.0	0.0	0.0	0.0	0.0	0.0	
Overall:		72.1	CNEL	55.4	60.9	63.4	67.4	67.4	61.4	: Effective Noise Spectrum

Assembly Type	Open	Width	Height	Qty	Total Area	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz
STC 46 Typical Exterior Wall	N	10.4	8	1	75.2	29	40	46	46	44	53
STC 28 1/2-inch Dual Insulating Window	Y	2	4	1	8.0	23	23	22	32	43	37
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
	10		Overall Area:		83.2	ft²					
	3										

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
55.4	60.9	63.4	67.4	67.4	61.4	: Exterior Wall Noise Exposure
13.1	13.2	13.2	13.2	13.2	13.2	: Transmission Loss
0.0	0.0	0.0	0.0	0.0	0.0	: Noise Reduction
17.0	17.0	17.0	17.0	18.0	18.0	: Absorption
38.4	43.9	46.4	50.4	49.5	43.5	: Noise Level
54.7	**CNEL**	WINDOWS OPEN				

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
55.4	60.9	63.4	67.4	67.4	61.4	: Exterior Wall Noise Exposure
27.9	32.3	32.1	41.0	43.8	46.5	: Transmission Loss
8.7	13.1	12.9	21.8	24.6	27.3	: Noise Reduction
17.0	17.0	17.0	17.0	18.0	18.0	: Absorption
29.8	30.8	33.5	28.6	24.8	16.1	: Noise Level
37.4	**CNEL**	WINDOWS CLOSED				

EXTERIOR TO INTERIOR NOISE REDUCTION ANALYSIS

Project Name: Escondido Centre City Condos
Project # : WRS-06
Room Name: 2nd Floor Living Room/Dining Room/Kitchen

Wall 1 of 2

Room Type : **Hard**

	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Reverberation Time (sec) :	2.5	2.5	2.5	2.5	2.0	2.0	: Highly Reflective Room
Room Absorption (Sabins) :	164	164	164	164	205	205	

		Noise Level		125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Source 1:	**Traffic**	**72.1**	**CNEL**	55.4	60.9	63.4	67.4	67.4	61.4	: Traffic Spectrum
Source 2:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 3:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 4:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Overall:		**72.1**	**CNEL**	55.4	60.9	63.4	67.4	67.4	61.4	: Effective Noise Spectrum

Assembly Type	Open	Width	Height	Qty	Total Area	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz
STC 46 Typical Exterior Wall	N	21	10	1	174.0	29	40	46	46	44	53
STC 28 1/2-inch Dual Insulating Window	Y	2	4	1	8.0	23	23	22	32	43	37
STC 28 1/2-inch Dual Insulating Window	Y	7	4	1	28.0	23	23	22	32	43	37
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0

Room Depth: 39.1 ft **Overall Area:** 210 ft²
Volume: 8211 ft³

Number of Impacted Walls: 2

Windows Open
Interior Noise Level: 52.6 CNEL

Windows Closed
Interior Noise Level: 41.5 CNEL

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
55.4	60.9	63.4	67.4	67.4	61.4	: Exterior Wall Noise Exposure
10.6	10.6	10.6	10.7	10.7	10.7	: Transmission Loss
0.0	0.0	0.0	0.0	0.0	0.0	: Noise Reduction
22.2	22.2	22.2	22.2	23.1	23.1	: Absorption
33.3	38.8	41.3	45.3	44.3	38.3	: Noise Level

49.5 **CNEL** WINDOWS OPEN

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
55.4	60.9	63.4	67.4	67.4	61.4	: Exterior Wall Noise Exposure
27.2	30.1	29.7	39.2	43.7	44.4	: Transmission Loss
3.9	6.9	6.4	16.0	20.5	21.2	: Noise Reduction
22.2	22.2	22.2	22.2	23.1	23.1	: Absorption
29.3	31.8	34.8	29.3	23.8	17.1	: Noise Level

38.2 **CNEL** WINDOWS CLOSED

EXTERIOR TO INTERIOR NOISE REDUCTION ANALYSIS

Project Name: Escondido Centre City Condos **Wall 2 of 2**
Project # : WRS-06
Room Name: 2nd Floor Living Room/Dining Room/Kitchen

		Noise Level		125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Source 1:	**Traffic**	**72.1**	**CNEL**	55.4	60.9	63.4	67.4	67.4	61.4	: Traffic Spectrum
Source 2:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 3:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 4:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Overall:		**72.1**	**CNEL**	55.4	60.9	63.4	67.4	67.4	61.4	: Effective Noise Spectrum

Assembly Type	Open	Width	Height	Qty	Total Area	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz
STC 46 Typical Exterior Wall	N	39.1	10	1	355.0	29	40	46	46	44	53
STC 28 1/2-inch Dual Insulating Window	Y	2	4	2	16.0	23	23	22	32	43	37
STC 28 1/2-inch Dual Insulating Window	Y	5	4	1	20.0	23	23	22	32	43	37
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
	21		**Overall Area:**		**391**	ft²					
	1										

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
55.4	60.9	63.4	67.4	67.4	61.4	: Exterior Wall Noise Exposure
13.2	13.3	13.3	13.4	13.4	13.4	: Transmission Loss
0.0	0.0	0.0	0.0	0.0	0.0	: Noise Reduction
22.2	22.2	22.2	22.2	23.1	23.1	: Absorption
33.3	38.8	41.3	45.3	44.3	38.3	: Noise Level
49.5	**CNEL**	WINDOWS OPEN				

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
55.4	60.9	63.4	67.4	67.4	61.4	: Exterior Wall Noise Exposure
27.9	32.5	32.3	41.2	43.9	46.7	: Transmission Loss
2.0	6.6	6.4	15.2	17.9	20.7	: Noise Reduction
22.2	22.2	22.2	22.2	23.1	23.1	: Absorption
31.3	32.2	34.9	30.0	26.4	17.6	: Noise Level
38.8	**CNEL**	WINDOWS CLOSED				

EXTERIOR TO INTERIOR NOISE REDUCTION ANALYSIS

Project Name: Escondido Centre City Condos
Project # : WRS-06
Room Name: 3rd Floor Primary Bedroom

Wall 1 of 2

Room Type : Soft

	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Reverberation Time (sec) :	0.8	0.8	0.8	0.8	0.7	0.7	: Highly Absorptive Room
Room Absorption (Sabins) :	78	78	78	78	97	97	

		Noise Level		125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Source 1:	**Traffic**	**72.1**	**CNEL**	55.4	60.9	63.4	67.4	67.4	61.4	: Traffic Spectrum
Source 2:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 3:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 4:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Overall:		**72.1**	**CNEL**	55.4	60.9	63.4	67.4	67.4	61.4	: Effective Noise Spectrum

Assembly Type	Open	Width	Height	Qty	Total Area	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz
STC 46 Typical Exterior Wall	N	11.7	8	1	69.6	29	40	46	46	44	53
STC 28 1/2-inch Dual Insulating Window	Y	2	4	3	24.0	23	23	22	32	43	37
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0

Room Depth: 13.8 ft **Overall Area:** 93.6 ft²
Volume: 1292 ft³

Number of Impacted Walls: 2

Windows Open Interior Noise Level:	**55.8**	**CNEL**
Windows Closed Interior Noise Level:	**41.8**	**CNEL**

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
55.4	60.9	63.4	67.4	67.4	61.4	: Exterior Wall Noise Exposure
8.9	8.9	8.9	8.9	8.9	8.9	: Transmission Loss
0.0	0.0	0.0	0.0	0.0	0.0	: Noise Reduction
18.9	18.9	18.9	18.9	19.9	19.9	: Absorption
36.5	42.0	44.5	48.5	47.5	41.5	: Noise Level
52.8	**CNEL**	WINDOWS OPEN				

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
55.4	60.9	63.4	67.4	67.4	61.4	: Exterior Wall Noise Exposure
26.5	28.6	27.9	37.7	43.6	42.9	: Transmission Loss
6.7	8.8	8.2	18.0	23.9	23.2	: Noise Reduction
18.9	18.9	18.9	18.9	19.9	19.9	: Absorption
29.8	33.2	36.3	30.5	23.7	18.4	: Noise Level
39.4	**CNEL**	WINDOWS CLOSED				

EXTERIOR TO INTERIOR NOISE REDUCTION ANALYSIS

Project Name: Escondido Centre City Condos
Project # : WRS-06
Room Name: 3rd Floor Primary Bedroom

Wall 2 of 2

		Noise Level		125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
Source 1:	**Traffic**	**72.1**	**CNEL**	55.4	60.9	63.4	67.4	67.4	61.4	: Traffic Spectrum
Source 2:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 3:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Source 4:	**<N/A>**	**0.0**	**CNEL**	0.0	0.0	0.0	0.0	0.0	0.0	
Overall:		**72.1**	**CNEL**	55.4	60.9	63.4	67.4	67.4	61.4	: Effective Noise Spectrum

Assembly Type	Open	Width	Height	Qty	Total Area	125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz
STC 46 Typical Exterior Wall	N	13.8	8	1	94.4	29	40	46	46	44	53
STC 28 1/2-inch Dual Insulating Window	Y	2	4	2	16.0	23	23	22	32	43	37
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
<N/A>	N	0	0	0	0.0	0	0	0	0	0	0
	11.7		**Overall Area:**		**110.4**	ft²					

3

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
55.4	60.9	63.4	67.4	67.4	61.4	: Exterior Wall Noise Exposure
11.3	11.4	11.4	11.4	11.4	11.4	: Transmission Loss
0.0	0.0	0.0	0.0	0.0	0.0	: Noise Reduction
18.9	18.9	18.9	18.9	19.9	19.9	: Absorption
36.5	42.0	44.5	48.5	47.5	41.5	: Noise Level
52.8	**CNEL**	WINDOWS OPEN				

125 Hz	250 Hz	500 Hz	1KHz	2KHz	4KHz	
55.4	60.9	63.4	67.4	67.4	61.4	: Exterior Wall Noise Exposure
27.4	30.8	30.4	39.7	43.8	45.1	: Transmission Loss
7.0	10.4	9.9	19.3	23.3	24.6	: Noise Reduction
18.9	18.9	18.9	18.9	19.9	19.9	: Absorption
29.6	31.6	34.6	29.2	24.2	16.9	: Noise Level
38.0	**CNEL**	WINDOWS CLOSED				

Appendix D

Construction Noise Modeling Outputs

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 8/28/2020
Case Description: Escondido Centre City Parkway Condos

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

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	120	0
Compressor (air)	No	40		77.7	120	0
Concrete Mixer Truck	No	40		78.8	120	0
Concrete Saw	No	20		89.6	120	0
Crane	No	16		80.6	120	0
Dozer	No	40		81.7	120	0
Dump Truck	No	40		76.5	120	0
Excavator	No	40		80.7	120	0
Front End Loader	No	40		79.1	120	0
Generator	No	50		80.6	120	0
Grader	No	40	85		120	0
Paver	No	50		77.2	120	0
Roller	No	20		80	120	0
Welder / Torch	No	40		74	120	0

	Calculated (dBA)		Results	Noise Limits (dBA)			
			Day		Evening		Night
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Backhoe	70	66	N/A	N/A	N/A	N/A	N/A
Compressor (air)	70.1	66.1	N/A	N/A	N/A	N/A	N/A
Concrete Mixer Truck	71.2	67.2	N/A	N/A	N/A	N/A	N/A
Concrete Saw	82	75	N/A	N/A	N/A	N/A	N/A
Crane	72.9	65	N/A	N/A	N/A	N/A	N/A
Dozer	74.1	70.1	N/A	N/A	N/A	N/A	N/A
Dump Truck	68.8	64.9	N/A	N/A	N/A	N/A	N/A
Excavator	73.1	69.1	N/A	N/A	N/A	N/A	N/A
Front End Loader	71.5	67.5	N/A	N/A	N/A	N/A	N/A
Generator	73	70	N/A	N/A	N/A	N/A	N/A
Grader	77.4	73.4	N/A	N/A	N/A	N/A	N/A
Paver	69.6	66.6	N/A	N/A	N/A	N/A	N/A
Roller	72.4	65.4	N/A	N/A	N/A	N/A	N/A
Welder / Torch	66.4	62.4	N/A	N/A	N/A	N/A	N/A
Total	82	80.7	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 8/28/2020
Case Description: Escondido Centre City Parkway Condos

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

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dump Truck	No	40		76.5	120	0
Excavator	No	40		80.7	120	0
Front End Loader	No	40		79.1	120	0

		Results						
		Calculated (dBA)		Noise Limits (dBA)				
				Day		Evening		Night
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Dump Truck		68.8	64.9	N/A	N/A	N/A	N/A	N/A
Excavator		73.1	69.1	N/A	N/A	N/A	N/A	N/A
Front End Loader		71.5	67.5	N/A	N/A	N/A	N/A	N/A
	Total	73.1	72.3	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.