

NOISE IMPACT ANALYSIS

NEWPORT PLACE

NEWPORT BEACH, CA

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NOISE SETTING

Sound is mechanical energy transmitted by pressure waves in a compressible medium such as air. Noise is generally considered to be unwanted sound. Sound is characterized by various parameters that describe the rate of oscillation of sound waves, the distance between successive troughs or crests, the speed of propagation, and the pressure level or energy content of a given sound. In particular, the sound pressure level has become the most common descriptor used to characterize the loudness of an ambient sound level.

The decibel (dB) scale is used to quantify sound pressure levels. Although decibels are most commonly associated with sound, "dB" is a generic descriptor that is equal to ten times the logarithmic ratio of any physical parameter versus some reference quantity. For sound, the reference level is the faintest sound detectable by a young person with good auditory acuity.

Since the human ear is not equally sensitive to all sound frequencies within the entire auditory spectrum, human response is factored into sound descriptions by weighting sounds within the range of maximum human sensitivity more heavily in a process called "A-weighting," written as dB(A). Any further reference in this discussion to decibels written as "dB" should be understood to be A-weighted.

Time variations in noise exposure are typically expressed in terms of a steady-state energy level equal to the energy content of the time varying period (called LEQ), or alternately, as a statistical description of the sound pressure level that is exceeded over some fraction of a given observation period. Finally, because community receptors are more sensitive to unwanted noise intrusion during the evening and at night, state law requires that, for planning purposes, an artificial dB increment be added to quiet time noise levels in a 24-hour noise descriptor called the Ldn (day-night) or the Community Noise Equivalent Level (CNEL). The CNEL metric has gradually replaced the Ldn factor, but the two descriptors are essentially identical.

CNEL-based standards are generally applied to transportation-related sources because local jurisdictions are pre-empted from exercising direct noise control over vehicles on public streets, aircraft, trains, etc. The City of Newport Beach therefore regulates the traffic noise exposure of the receiving property through land use controls.

Noise/land use compatibility standards for various classes of land uses are generally expressed in the Noise Element of the General Plan to insure that noise exposure is considered in any development decisions. The City of Newport Beach has guidelines for noise exposure standards which are shown in Table 1. The City has established 65 and 45 CNEL as the outdoor and indoor noise compatibility criteria for residential land uses

For "stationary" noise sources, the City has legal authority to establish noise performance standards designed to not adversely impact adjoining residential uses. These standards are typically articulated in the jurisdictional Municipal Code. These standards recognize the varying noise sensitivity of both transmitting and receiving land uses. The property line noise performance standards are normally structured according to land use and time-of-day.

Table 1
City of Newport Beach Interior and Exterior Noise Standards
General Plan 2006

Table N2 Land Use Noise Compatibility Matrix		Community Noise Equivalent Level (CNEL)						
<i>Land Use Categories</i>								
<i>Categories</i>	<i>Uses</i>	<55	55-60	60-65	65-70	70-75	75-80	>80
Residential	Single Family, Two Family, Multiple Family	A	A	B	C	C	D	D
Residential	Mixed Use	A	A	A	C	C	C	D
Residential	Mobile Home	A	A	B	C	C	D	D
Commercial Regional, District	Hotel, Motel, Transient Lodging	A	A	B	B	C	C	D
Commercial Regional, Village District, Special	Commercial Retail, Bank, Restaurant, Movie Theatre	A	A	A	A	B	B	C
Commercial Industrial Institutional	Office Building, Research and Development, Professional Offices, City Office Building	A	A	A	B	B	C	D
Commercial Recreational Institutional Civic Center	Amphitheatre, Concert Hall Auditorium, Meeting Hall	B	B	C	C	D	D	D
Commercial Recreation	Children's Amusement Park, Miniature Golf Course, Go-cart Track, Equestrian Center, Sports Club	A	A	A	B	B	D	D
Commercial General, Special Industrial, Institutional	Automobile Service Station, Auto Dealership, Manufacturing, Warehousing, Wholesale, Utilities	A	A	A	A	B	B	B
Institutional	Hospital, Church, Library, Schools' Classroom	A	A	B	C	C	D	D
Open Space	Parks	A	A	A	B	C	D	D
Open Space	Golf Course, Cemeteries, Nature Centers Wildlife Reserves, Wildlife Habitat	A	A	A	A	B	C	C
Agriculture	Agriculture	A	A	A	A	A	A	A

SOURCE: Newport Beach, 2006

Zone A: Clearly Compatible—Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.

Zone B: Normally Compatible**—New construction or development should be undertaken only after detailed analysis of the noise reduction requirements and are made and needed noise insulation features in the design are determined. Conventional construction, with closed windows and fresh air supply systems or air conditioning, will normally suffice.

Zone C: Normally Incompatible—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 and needed noise insulation features included in the design.

Zone D: Clearly Incompatible—New construction or development should generally not be undertaken.

CITY OF NEWPORT BEACH NOISE STANDARDS

The Newport Beach Municipal Code (section 10.26.025 Exterior Noise Standards) limits the noise level generated on a property that may cross to a neighboring residential property. The City's noise ordinance limits are stated in terms of a 15-minute energy averaged level (Leq) with allowable deviations from this standard. The larger the deviation, the shorter the allowed duration up to a never-to-exceed 20 dB increase above the 15-minute Leq standard standard.

Ordinance limits generally apply to "stationary" sources such as mechanical equipment, or vehicles operating on private property. Noise from adjoining commercial uses must meet the City of Newport Beach Residential Noise Standards at the nearest residential property line, as shown in Table 2. The applicable requirement is a function of the time of day with an Leq daytime standard of 55 dB and a 15-minute Leq nighttime of 50 dB.

According to the Municipal Code, in the event the ambient noise level exceeds the noise standard, the maximum allowable noise level under said category shall be increased to reflect the maximum ambient noise level.

The City's Noise Ordinance (section 10.28.040 Construction Activity-Noise Regulations) exempts noise generated by construction activities from the Noise Ordinance standards if construction is restricted to the hours of 7 a.m. and 6:30 p.m. on weekdays and 8 a.m. and 6 p.m. on Saturdays. Construction is not permitted on any national holiday or on any Sunday.

The Newport Beach Noise Ordinance also provides limitations on the installation of new HVAC equipment as follows:

- New permits for heating, venting and air conditioning (HVAC) equipment in or adjacent to residential areas shall be issued only where installations can be shown by computation, based on the sound rating of the proposed equipment, not to exceed an A-weighted sound pressure level of fifty (50) dBA or not to exceed an A-weighted sound pressure level of fifty-five (55) dBA and be installed with a timing device that will deactivate the equipment during the hours of ten p.m. to seven a.m.

Permits are now required demonstrating specifications for proposed equipment meets these standards.

Table 2

NEWPORT BEACH NOISE STANDARDS

Noise Zone	Type of Land Use	Allowable Exterior Noise Level (Equivalent Noise Level, Leq) 7 a.m. to 10 p.m.	Allowable Exterior Noise Level (Equivalent Noise Level, Leq) 10 p.m. to 7 a.m.
I	Single-, two-or multiple-family residential	55 dBA	50 dBA
II	Commercial	65 dBA	60 dBA
III	Residential portions of mixed-use properties	60 dBA	50 dBA
IV	Industrial or manufacturing	70 dBA	70 dBA

It is unlawful for any person at any location within the incorporated area of the City to create any noise, or to allow the creation of any noise on property owned, leased, occupied or otherwise controlled by such person, which causes the noise level when measured on any other property, to exceed either of the following:

1. The noise standard for the applicable zone for any fifteen-minute period;
2. A maximum instantaneous noise level equal to the value of the noise standard plus twenty (20) dBA for any period of time (measured using A-weighted slow response).

Notes:

- In the event the ambient noise level exceeds the noise standard, the maximum allowable noise level under said category shall be increased to reflect the maximum ambient noise level.
- The Noise Zone III standard shall apply to that portion of residential property falling within one hundred (100) feet of a commercial property, if the intruding noise originates from that commercial property.
- If the measurement location is on boundary between two different noise zones, the lower noise level standard applicable to the noise zone shall apply. (Ord. 95-53 § 1, 1995; Ord. 95-38 § 11 (part), 1995)

BASELINE NOISE LEVELS

Existing noise levels on the proposed project site derive mainly from vehicular sources on the adjacent arterial roadways and aircraft noise from John Wayne Airport. Short term on-site noise measurements were conducted on Thursday, November 19, 2015 from 1:45 p.m. – 3:05 p.m. Measurement locations are shown in Figure 1 and summarized below.

Measured Noise Levels (dBA)

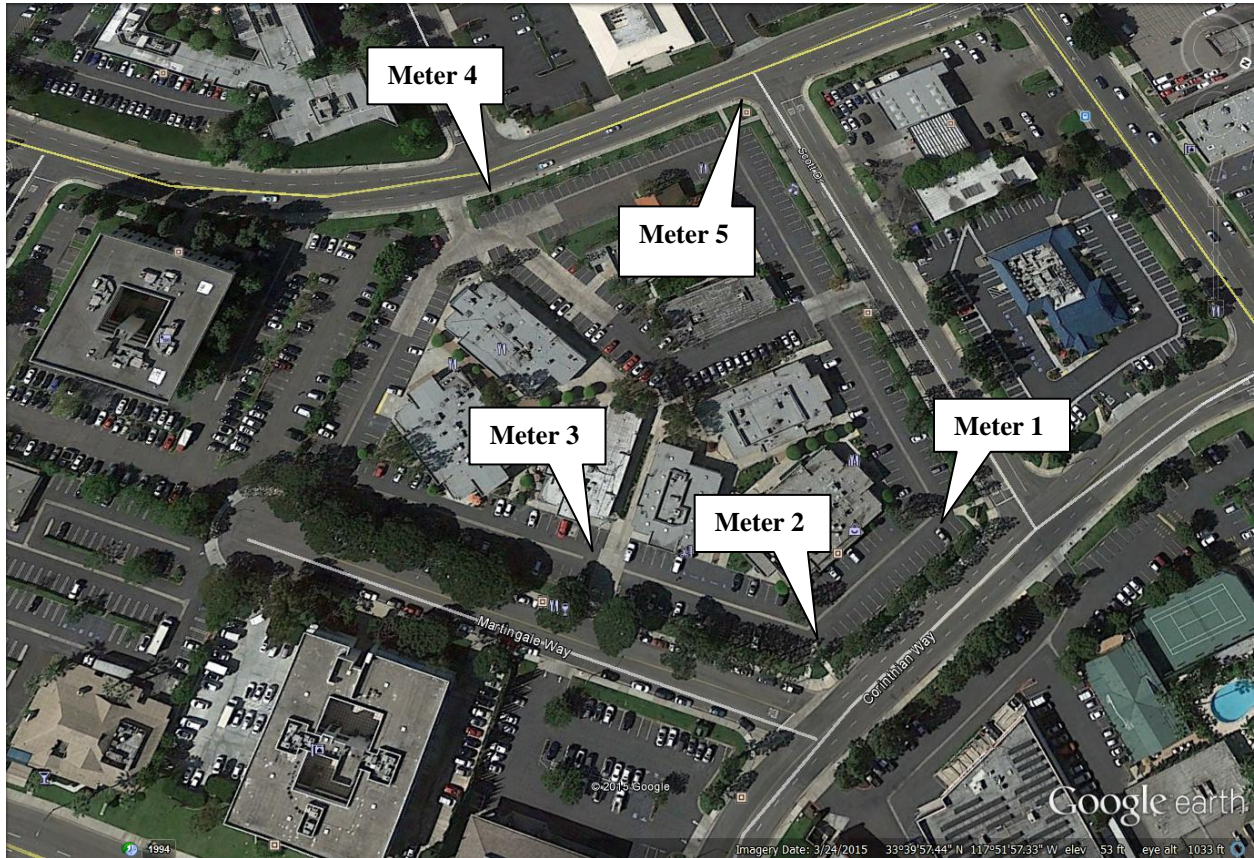
	Leq	Lmax	Lmin	L10	L33	L50	L90
Meter 1	54	70	47	61	55	54	50
Meter 2	56	71	43	58	52	50	47
Meter 3	58	70	46	62	51	49	47
Meter 4	63	75	46	66	60	56	49
Meter 5	60	70	50	64	58	56	52

Monitoring experience shows that 24-hour weighted CNELs can be reasonably well estimated from mid-afternoon noise readings. CNEL's are approximately equal to mid-afternoon Leq plus 2 (Caltrans Technical Noise Supplement, 2009). This would equate to on-site CNELs of 56-65 dB. This range of noise levels would not provide a noise constraint for the proposed residential use and would fall within the recommend compatibility guidelines.

Traffic noise was heaviest along Dove Street with aircraft full power take-offs adding to the total noise signature. The project frontages along Corinthian and Martingale were the least noisy. Car wash and car detailing activities were faintly audible along the Scott Drive frontage, but not at levels that measurably increase baseline noise readings.

Figure 1

Noise Monitor Locations



NOISE IMPACTS

NOISE SIGNIFICANCE CRITERIA

Noise impacts are considered significant if they result in:

- a. Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.
- b. Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.
- c. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.
- d. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

The term "substantial increase" is not defined by any responsible agency. The limits of perceptibility by ambient grade instrumentation (sound meters) or by humans in a laboratory environment is around 1.5 dB. Under ambient conditions, people generally do not perceive that noise has clearly changed until there is a 3 dB difference. A threshold of 3 dB is commonly used to define "substantial increase." An increase of +3 dBA CNEL in traffic noise would be considered a significant impact if the noise compatibility threshold were also exceeded.

SOURCES OF IMPACT

There are several characteristic noise sources are typically identified with general development such as proposed at the Newport Place project site. Construction activities, especially heavy equipment, will create short-term noise increases near the project area. Upon completion, project-related traffic may cause an incremental increase in area-wide noise levels throughout the project area. Noise impacts are generally analyzed both to insure that the project not adversely impact the acoustic environment of the surrounding community, as well as to insure that the project site is not exposed to an unacceptable level of noise resulting from the ambient noise environment acting on the project. This project can cause an increase in area wide traffic but the increase will likely be small relative to the overall traffic volumes.

CONSTRUCTION NOISE IMPACTS

Temporary construction noise impacts will vary markedly because the noise strength of construction equipment ranges widely as a function of the equipment used and its activity level. Short-term construction noise impacts tend to occur in discrete phases dominated initially by demolition of existing structures and large earth-moving sources, then by foundation work, and finally for finish construction.

As shown in Figure 2, heavy equipment noise can exceed 90 dB(A) and averages about 85 dB(A) at 50 feet from the source when the equipment is operating at typical loads. Most heavy equipment operates with varying load cycles over any extended period of time. The upper end of the noise generation range shown in Figure 1 represents short-term effects, while the longer term averages are most representative of the lower end of the indicated noise curves.

Construction noise exposure can be further worsened when several pieces of equipment operate in close proximity. Because of the logarithmic nature of decibel addition, two equally loud pieces of equipment will be +3 dB louder than either one individually. Three simultaneous sources are +5 dB louder than any single source. Thus, while average operational equipment noise levels are perhaps 5 dB less than at peak power, simultaneous equipment operation can still yield an apparent noise strength equal to any individual source at peak noise output. Whereas the average heavy equipment reference noise level is 85 dB(A), short-term levels from either peak power or from several pieces operating in close proximity can be as high as 90 dB(A). Because equipment operations at peak power at one single location do not generally occur and the project site is too small to accommodate a large heavy equipment fleet, a reference noise level of 85 dB(A) is most appropriate.

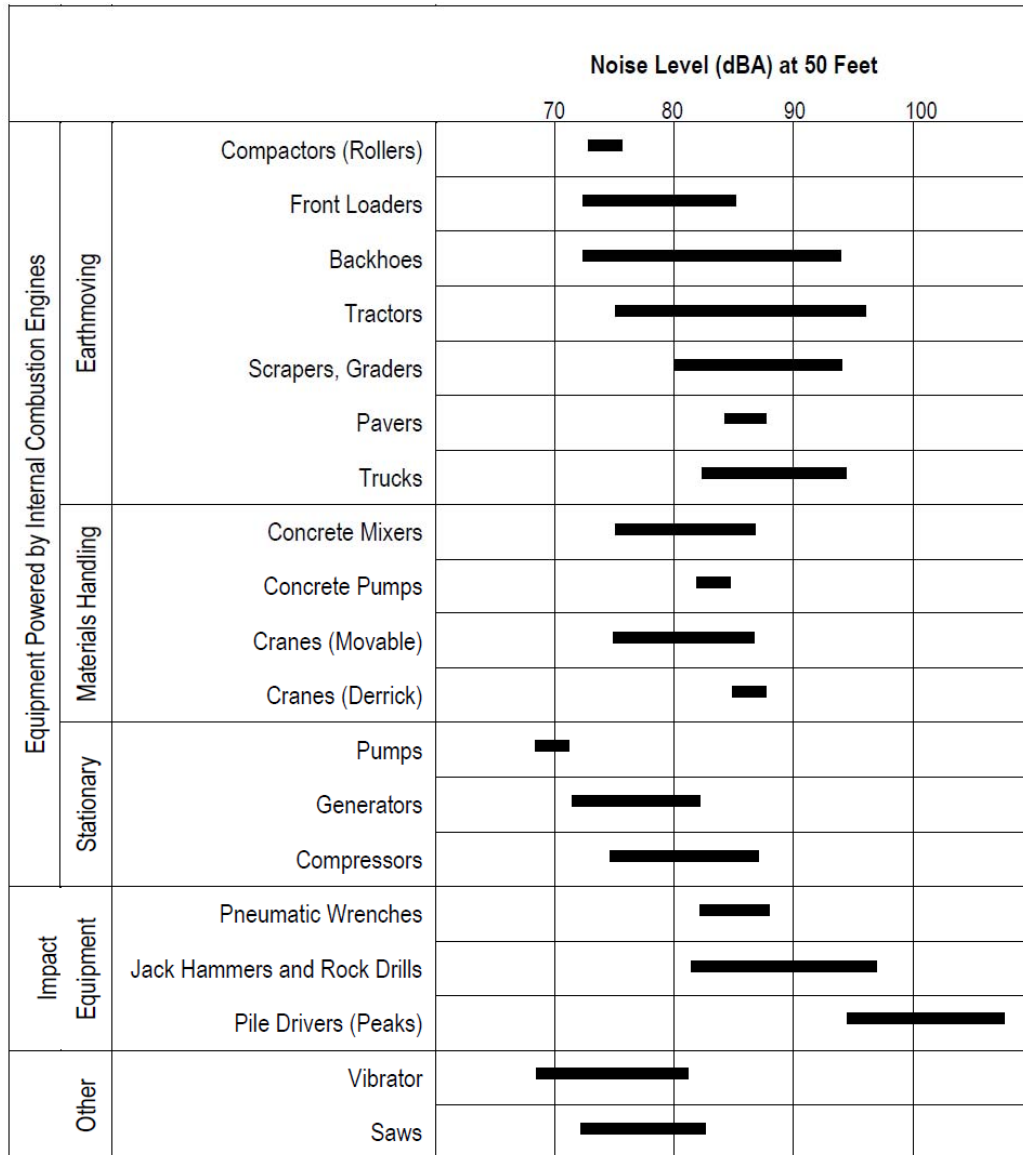
There are no sensitive uses adjacent to the project site. The back end of the Radisson Hotel is across Corinthian Way, but is approximately 350 feet from the closest project site perimeter. Exterior to interior noise mitigation in modern construction is generally 25-30 dB with closed windows and doors.

Point sources of noise emissions are atmospherically attenuated by a factor of 6 dB per doubling of distance. Distance attenuation alone would reduce the exterior noise exposure at the Radisson Hotel to 68 dB. Intervening structures would reduce this level even further. With closed windows and doors the recommended residential interior noise level of 45 dB CNEL is easily achieved. Regardless, as long as construction occurs only during daytime hours there is minimal issue with sleep disturbance.

According to the City of Newport Beach Municipal Code, permissible hours of construction are 7 a.m. and 6:30 p.m. on weekdays and 8 a.m. and 6 p.m. on Saturdays. Construction is not permitted on any national holiday or on any Sunday. These hours are included as conditions on any project construction permits and these limits will serve to minimize any adverse construction noise impact potential.

Figure 2

Typical Construction Equipment Noise Generation Levels



Source: EPA PB 206717, Environmental Protection Agency, December 31, 1971, "Noise from Construction Equipment and Operations."

DEMOLITION DEBRIS CRUSHING AND DISPOSAL

Under the City of Newport Beach Municipal Code, construction activities, including demolition, are exempt from property line noise performance standards if they occur during allowed daytime hours. However, on-site debris crushing operations are often considered a chronic noise source because the equipment operates semi-continuously at one fixed location. If the planned crushing activity were required to comply with the City's noise ordinance standard, the allowable daytime noise level at the boundary of two properties in Noise Zone II is 65 dB Leq and 85 dB Lmax.

Noise measurements made at an operating crusher of the type likely to be used at the project site indicated a variable pattern of noise levels ranging from 90 dB Leq at 50 feet from the unit at the noisiest location to 80 dB Leq at 50 feet from the quietest. Under normal spherical spreading losses, without any structural interference, the 65 dB Leq contour would extend to a distance of 250 feet in the quietest direction, to over 800 feet in the noisiest direction. Judicious placement of the crusher may be enough to meet the ordinance standard in the quieter direction without any need for additional mitigation. If the crushing activity is determined to require noise ordinance compliance, some noise reduction measures would be needed in the noisiest direction.

The noise attenuation benefit of a semi-solid barrier is typically -10 dB. If the noisiest crusher orientation were directed toward any remaining structures before they were demolished, the property line noise level could be met.

If the crushing activity were presumed to be regulated by the municipal code, the following measures would need to be implemented:

- The crusher should be located near the center of the site
- The screen end of the crusher should be oriented away from nearby restaurant and hotel uses
- A partial wall of structures should be retained as long as practical to interrupt the line-of-sight to surrounding off-site uses.

Debris hauling will require around 300 loads of crushed material over a 60 day time span. At an average of 5 loads per day (10 trips per day), hauling will involve 1-2 trucks per hour. The noise level from 1-2 trucks per hour is in the low 50 dB range at 50 feet from the centerline. Measured noise levels near Dove Street were 60 dB or more. Noise level changes associated with debris hauling will be imperceptible.

CONSTRUCTION ACTIVITY VIBRATION

Typical background vibration levels in residential areas are usually 50 VdB or lower, below the threshold of human perception. Perceptible vibration levels inside residences are typically attributed to the operation of heating and air conditioning systems, door slams or street traffic.

Construction activities and street traffic are some of the most common external sources of vibration that can be perceptible inside residences.

Construction activities generate ground-borne vibration when heavy equipment travels over unpaved surfaces or when it is engaged in soil movement. The effects of ground-borne vibration include discernable movement of building floors, rattling of windows, shaking of items on shelves or hanging on walls, and rumbling sounds. Vibration related problems generally occur due to resonances in the structural components of a building because structures amplify groundborne vibration. Within the “soft” sedimentary surfaces of much of Southern California, ground vibration is quickly damped out. Groundborne vibration is almost never annoying to people who are outdoors (FTA 2006).

Groundborne vibrations from construction activities rarely reach levels that can damage structures. Because vibration is typically not an issue, very few jurisdictions have adopted vibration significance thresholds. Vibration thresholds have been adopted for major public works construction projects, but these relate mostly to structural protection (cracking foundations or stucco) rather than to human annoyance.

Vibration is most commonly expressed in terms of the root mean square (RMS) velocity of a vibrating object. RMS velocities are expressed in units of vibration decibels. The range of vibration decibels (VdB) is as follows:

- 65 VdB - threshold of human perception
- 72 VdB - annoyance due to frequent events
- 80 VdB - annoyance due to infrequent events
- 94-98 VdB - minor cosmetic damage

To determine potential impacts of the project’s construction activities, estimates of vibration levels induced by the construction equipment at various distances are presented below:

Equipment	Approximate Vibration Levels (VdB)*		
	25 feet	50 feet	100 feet
Pile Driver	93	87	81
Large Bulldozer	87	81	75
Loaded Truck	86	80	74
Jackhammer	79	73	67
Small Bulldozer	58	52	46

* (FTA Transit Noise & Vibration Assessment, Chapter 12, Construction, 2006)

With the exception of pile driving which is not anticipated for use on this project, the on-site construction equipment that will create the maximum potential vibration is a large bulldozer. The stated vibration source level in the FTA Handbook for such equipment is 81 VdB at 50 feet from the source. The nearest sensitive use is approximately 350 feet from the project site. By 350 feet the vibration level dissipates to 64 VdB which is generally below the threshold of human perception. Additionally, vibration from street traffic on MacArthur Boulevard will

likely mask any residual construction vibration contribution. Therefore construction activity vibration impacts are judged as less-than-significant.

AIRPORT NOISE

John Wayne Santa Ana Airport (SNA) serves both general aviation and scheduled commercial passenger airline and cargo operations. SNA has a long history of noise issues. Extensive data from its noise monitoring system and from other studies relating to aircraft operations and noise levels enables precise modeling and noise level predictions. Radar tracings and sophisticated use of noise monitoring stations has produced very accurate depictions of flight tracks. The noise levels of all commercial aircraft operations and many general aviation operations are recorded at 10 permanent noise monitoring stations (NMS) around the Airport. In accordance with State of California Airport Noise standards, a detailed report is compiled every three months and each year an annual CNEL contour is calculated. The aircraft operational data, noise measurements and contours for SNA are considered to be very accurate.

As of the 2014, a report prepared by Mestre Greve Associates prepared for the City of Newport Beach¹ calculated the project site to fall within the 60 dB CNEL noise contour but outside the 65 dB CNEL contour. Residential noise compatibility threshold CNEL values are weighted daily averages. Though airplane noise is more a single-event driven nuisance, it is nonetheless characterized by planning agencies with CNEL values. There are no single event noise based noise/land use compatibility criteria that have been adopted by the Federal Government or the State of California.

The Newport Beach General Plan Policy N 2.1 states that new development of proposed noise-sensitive uses in areas of 60 dBA and greater, demonstrate that they meet interior and exterior noise levels. Therefore, the following conditions are recommended to ensure Newport Place residential uses have adequate noise protection:

- All residential lots and dwellings shall be sound attenuated against present and projected noise which shall be the sum of all noise impacting the project so as not to exceed a composite interior standard of 45 dBA CNEL in all habitable rooms and a source specific exterior standard of 65 dBA CNEL in outdoor living areas.
- All on site structures would require a Continuous Positive Ventilation System in order to achieve a 45 dB CNEL interior noise level with windows closed. Other noise insulation measures would likely include upgraded windows and doors, ceiling insulation, caulking, and weather stripping.
- Prior to the issuance of building permits for residential uses within the 60 dB contour, the project property owner/developer should submit a final acoustical report. The report would show that the development will include mitigation measures to ensure that the

¹ DRAFT ENVIRONMENTAL IMPACT REPORT NO. 617 JOHN WAYNE AIRPORT SETTLEMENT AGREEMENT AMENDMENT, April 2014

project is sound-attenuated against present and projected noise levels to meet the 45 dB CNEL interior noise standard in any habitable room. Additionally, anyone buying or leasing a residential property within the project site should be notified that their home is within an “airport influence area”.

PROJECT-RELATED VEHICULAR NOISE IMPACTS

Long-term noise concerns from the project development include mobile source emissions on project area roadways. However, the proposed project is expected to generate 3,065 daily trips as compared to existing on-site uses which currently generate 4,112 daily trips. Therefore, project implementation will result in 1,047 fewer trips than existing such that project related vehicular impacts are judged to be less-than-significant.

ON-SITE NOISE GENERATION

Project use will entail passive activities, primarily indoors. The primary noise sources for off-site uses that would be of possible concern would be any changes in the parking lot activity noise. However, as discussed, parking lot activity will decrease with fewer trips subsequent to project development. The existing surface parking lot will be replaced by subterranean parking which will also generate less off-site noise. Therefore, parking noise is expected to be less-than-significant. Additionally, any new HVAC equipment installed for the proposed uses would be required to meet noise standards as outlined in the City of Newport Beach Municipal Code. This would be validated during the permitting stage.

The proposed project would include a restaurant near the Dove/Scott property corner. A large restaurant has historically operated for many years near that corner. There are no noise-sensitive uses in close proximity to that location. Any possible noise issues related to such uses would be along the restaurant/residential interface within the proposed project itself. Restaurants operate under a conditional use permit (CUP). The CUP for the proposed use would specify hours of operation, location of possible noise generation and types of permitted activities to minimize noise spill-over into the residential portion of the project. A number of mixed use developments exist in the area where possible noise conflicts between on-site restaurants and residences are minimized by project design and operating conditions. Such issues are design issues and not CEQA-based impacts on the environment.

SUMMARY

Short-term construction noise intrusion and vibration impacts will be limited by conditions on construction permits requiring compliance with the City of Newport Beach Noise Ordinance. The allowed hours of construction are 7 a.m. and 6:30 p.m. on weekdays and 8 a.m. and 6 p.m. on Saturdays. Construction is not permitted on any national holiday or on any Sunday. In addition the following construction practices are recommended:

- Stockpiling and staging activities must be located as far as practicable from surrounding office and restaurant.
- All mobile equipment shall have properly operating and maintained mufflers.

Construction related vibration impacts are less-than-significant.

Maximum on-site traffic and parking are less than generated by the current uses and are less-than-significant. In addition, the project replaces a surface parking lot with underground parking which will generate less off-site noise.

Off-site traffic noise impacts on area roadways are less than significant.

The following conditions are recommended to ensure Newport Place residential uses have adequate noise protection attributed to airport proximity:

- All residential lots and dwellings shall be sound attenuated against present and projected noise which shall be the sum of all noise impacting the project so as not to exceed a composite interior standard of 45 dBA CNEL in all habitable rooms and a source specific exterior standard of 65 dBA CNEL in outdoor living areas.
- All on site structures would require a Continuous Positive Ventilation System in order to achieve a 45 dB CNEL interior noise level with windows closed. Other noise insulation measures would likely include upgraded windows and doors, ceiling insulation, caulking, and weather stripping.
- Prior to the issuance of building permits for residential uses within the 60 dB contour, the project property owner/developer should submit a final acoustical report. The report would show that the development will include mitigation measures to ensure that the project is sound-attenuated against present and projected noise levels to meet the 45 dB CNEL interior noise standard in any habitable room. Additionally, anyone buying or leasing a residential property within the project site should be notified that their home is within an “airport influence area”.

It is not anticipated that mechanical equipment for the project would exceed applicable noise standards. Regardless, any HVAC equipment site must meet the City’s noise standard at the nearest off-site sensitive use.