



J. Transportation Study

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TECHNICAL MEMORANDUM

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Date: January 7, 2025

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LLG Ref: 2.23.4668.1

Subject: ***Vehicle Miles Traveled (VMT) Analysis for the Proposed Hive Live Apartments Project - Costa Mesa, CA***

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As requested, Linscott, Law & Greenspan, Engineers (LLG) is pleased to submit this Vehicle Miles Traveled (VMT) Analysis Technical Memorandum for the proposed Hive Live Apartments Project (hereinafter referred to as Project) in the City of Costa Mesa, California. This Technical Memorandum presents the VMT screening criteria, analysis methodology, threshold criteria, and conclusion. It should be noted that the approach and methodology outlined in this Technical Memorandum are consistent with the *City of Costa Mesa Traffic Impact Analysis (TIA) Guidelines (dated October 2020)*, which provides additional detail on the language and analysis procedures described in this Technical Memorandum.

PROJECT DESCRIPTION

The Project site is located west of Susan Street, south of Sunflower Avenue and north of South Coast Drive in the City of Costa Mesa. The existing development on the site consists of 182,520 (SF) of office use within three (3) buildings and the entitled development consists of 70,128 SF of office use on the portion of the Project site currently occupied with a professional football training field. **Figure 1** presents the vicinity map showing the surrounding transportation system while **Figure 2** presents the existing site aerial, which shows the existing development on the site.

The proposed Project will consist of demolishing the existing office buildings and football training field to construct 1,050 multifamily dwelling units within three (3) five-story apartment buildings of which approximately 45 dwelling units will be affordable. In addition, 3,692 SF of ground floor retail is proposed in Building A. Specifically, each residential building will be comprised of the following:

Building A (536 parking spaces):

- | | |
|-----------------|-----------|
| ➤ Studios: | 41 Units |
| ➤ One Bedrooms: | 154 Units |
| ➤ Two Bedrooms: | 120 Units |
| ➤ Retail: | 3,692 SF |

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Building B (572 parking spaces):

- Studios: 57 Units
- One Bedrooms: 186 Units
- Two Bedrooms: 103 Units

Building C (643 parking spaces):

- Studios: 43 Units
- One Bedrooms: 222 Units
- Two Bedrooms: 124 Units

Figure 3 presents the proposed site plan for the Project, prepared by *Architects Orange*, which shows the proposed apartment development. Site access for the proposed apartments will continue to be provided via the two (2) existing full movement driveways along Susan Street. The existing driveway on Sunflower Avenue will be maintained for emergency access only.

PROJECT SCREENING CRITERIA

Project screening is used to determine if a project will be required to conduct a detailed VMT analysis. The following section discusses the various screening methods outlined in the *City of Costa Mesa Traffic Impact Analysis (TIA) Guidelines (dated October 2020)*, and outlines whether the Project will screen-out, either in its entirety or partially, based on individual land uses.

The *City of Costa Mesa Traffic Impact Analysis (TIA) Guidelines (dated October 2020)* state that three types of screening that can be applied to screen projects from project-level assessment. These screening steps are summarized below:

Step 1: Transit Priority Area (TPA) Screening

The *City of Costa Mesa Traffic Impact Analysis (TIA) Guidelines (dated October 2020)* state:

*“Project located within a TPA¹ may be presumed to have a less than significant impact absent substantial evidence to the contrary. This presumption may **NOT** be appropriate if the project:*

¹ A TPA is defined as a half mile area around an existing major transit stop or an existing stop along a high-quality transit corridor per the definitions below.

Pub. Resources Code, § 21064.3 - ‘Major transit stop’ means a site containing an existing rail transit station, a ferry terminal served by either a bus or rail transit service or the intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods.

Pub. Resources Code, § 21155 - For purposes of this section, a ‘high-quality transit corridor’ means a corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hours.

- Based on the above, two bus routes operate within the half-mile circle at the Project Site. ***OCTA Bus Route 43***, ***OCTA Bus Route 47*** and ***OCTA Bus Route 150*** operate with a frequency of service interval of between 20 minutes and 40 minutes during the morning and afternoon peak commute periods, along Sunflower Avenue, Harbor Boulevard and Fairview Street as shown below:



Based on the above the proposed Project will not screen out under the TPA Screening criteria since it is not within the TPA area. It should be noted that *Figure I- Costa Mesa VMT Screening Map* in the *City of Costa Mesa Traffic Impact Analysis (TIA) Guidelines (dated October 2020)* show the Project site with a TPA, but based on

discussions with City staff, it was determined that this site is no longer on a TPA since the headways are greater than 15 minutes.

Step 2: Low VMT Area Screening

The second screening methodology is provided for residential and office land-use projects. The *City of Costa Mesa Traffic Impact Analysis (TIA) Guidelines* (dated October 2020) states:

“Residential and office projects located within a low VMT-generating area may be presumed to have a less than significant impact absent substantial evidence to the contrary. In addition, other employment-related and mixed-use land use projects may qualify for the use of screening if the project can reasonably be expected to generate VMT per service population that is similar to the existing land uses in the low VMT-area.

To identify if the project is in a low VMT-generating area, the analyst may review the screening map attached to these guidelines, or consult with City staff. Additionally, as noted above, the analyst must identify if the project is consistent with the existing land use (i.e. if the project is proposing single-family housing, there should be existing single-family housing of approximately the same density) within that TAZ and use professional judgement that there is nothing unique about the project that would otherwise be misrepresented utilizing the data from the travel demand model.”

Please note that the Screening Map attached to the *City of Costa Mesa Traffic Impact Analysis (TIA) Guidelines* (dated October 2020) uses data from OCTAM Version 5.0 (Base Year 2016), which is outdated. The Low VMT Area Screening has been conducted using the most current travel demand model, OCTAM Version 5.1 (Base Year 2019). The corresponding VMT per Service Population is provided in **Table 1** below:

Table 1 - Low VMT Area Screening

Baseline (Year 2019) VMT per Service Population	
Baseline City of Costa Mesa VMT/SP	28.54
15% Below the City of Costa Mesa VMT/SP (Threshold)	24.26
Project TAZ Total VMT (by Origin-Destination (OD) Methodology)	135,485.87
Project TAZ Service Population	3,010
Project TAZ VMT/SP	45.01
Compared to the City of Costa Mesa Threshold	Need 46.11% Reduction



Based on the above, the proposed Project is not within a low VMT area since it exceeds the threshold adopted in the *City of Costa Mesa Traffic Impact Analysis (TIA) Guidelines (dated October 2020)*. Therefore, the proposed Project will not screen out under the Low VMT Area Screening criteria since it is not within a low VMT area.

Step 3: Project Type Screening

The third screening methodology is for the project type screening. The *City of Costa Mesa Traffic Impact Analysis (TIA) Guidelines (dated October 2020)* states:

“Some project types have been identified as having the presumption of a less than significant impact. The following uses can be presumed to have a less than significant impact absent substantial evidence to the contrary as their uses are local serving in nature:

- *Local-serving K-12 public schools*
- *Local parks*
- *Day care centers*
- *Local-serving retail uses less than 50,000 square feet, including:*
 - *Gas stations*
 - *Banks*
 - *Restaurants*
 - *Shopping Center*
- *Student housing projects or adjacent to college campuses*
- *Local-serving assembly uses (places of worship, community organizations)*
- *Community institutions (public libraries, fire stations, local government)*
- *Assisted living facilities*
- *Senior housing (as defined by HUD)*
- *Projects generating less than 110 daily vehicle trip*²
 - *To confirm whether a Project generates 110 daily trips or less, the analyst should consult with City staff*

² This threshold ties directly to the OPR technical advisory and notes that CEQA provides a categorical exemption for existing facilities, including additions to existing structures of up to 10,000 square feet, so long as the project is in an area where public infrastructure is available to allow for maximum planned development and the project is not in an environmentally sensitive area. (CEQA Guidelines, § 15301, subd. (e)(2).) Typical project types for which trip generation increases relatively linearly with building footprint (i.e., general office building, single tenant office building, office park, and business park) generate or attract an additional 110-124 trips per 10,000 square feet. 2012 California Household Travel Survey (CHTS) average trip length was applied to 110 daily trips to determine the associated total VMT with 10,000 square feet of office.



Based on the above, the residential component of the proposed Project is not a type listed in the categories above and the residential component generates 2,788 net daily trips (Proposed Residential vs. Existing Office), which is greater than the screening threshold of 110 daily trips as shown in **Table 6 – Project Traffic Generation Rates and Forecast**. However, the 3,692 SF retail component of the proposed Project falls under the “Local-serving retail uses less than 50,000 square feet” criteria above.

Therefore, the residential component of the proposed Project will not screen out under the Project Type Screening criteria, but the 3,692 SF retail component of the proposed Project will screen out under the Project Type Screening criteria.

VEHICLE MILES TRAVELED (VMT) ANALYSIS METHODOLOGY

As required by the *City of Costa Mesa Transportation Impact Analysis (TIA) Guidelines (Dated October 2020)*, projects not screened out through the steps above should complete VMT analyses and forecasting through the OCTAM model to determine if they have a significant VMT impact. This analysis shall include both “Project-generated VMT”³ for project TAZ (or TAZs) and “Project’s effect on VMT”⁴ estimates under the four scenarios listed below:

- Baseline Conditions (Year 2019)
- Baseline Plus Project (Year 2019)
- Cumulative No Project (Year 2050)
- Cumulative Plus Project (Year 2050)

Both “Plus Project” scenarios noted above will summarize two types of VMT: (1) project generated VMT per service population and comparing it back to the appropriate benchmark noted in the next section, and (2) the project effect on VMT, comparing how the project changes VMT on the network looking at citywide VMT per service population comparing it to the no project condition.

Project-generated VMT shall be extracted from the travel demand forecasting model using the origin-destination trip matrix and shall multiply that matrix by the final assignment skims. The project effect on VMT shall be estimated using the City

³ Project Generated VMT: This refers to the total vehicle miles traveled that are directly attributable to the project itself. It includes trips generated by the land use of the project, such as residents, employees, or visitors. For example, if a new residential complex is built, the VMT generated would include trips made by residents living in the new units.

⁴ Project's Effect on VMT: This refers to the overall impact of the project on the broader transportation network. It includes not only the trips generated by the project but also the secondary effects on existing traffic patterns and behaviors. For instance, a new commercial development might attract customers from surrounding areas, potentially increasing VMT in the region. Conversely, if the project promotes alternative modes of transportation like transit or walking, it might reduce the total VMT in the area.



boundary and extracting the total link-level VMT for both the no project and with project condition.

Based on the above, a VMT analysis for the proposed Project was conducted utilizing OCTAM v5.1 to determine the proposed Project and the City of Costa Mesa's VMT for the following:

- Project-Generated VMT: VMT per service population (Origin-Destination Methodology)
- Projects Effect on VMT: VMT per service population (Boundary Methodology)

VEHICLE MILES TRAVELED (VMT) IMPACT THRESHOLDS

As previously discussed, a project that does not meet the screening criteria will require the preparation of a detailed transportation analysis. The project VMT will be evaluated in order to determine if the project is expected to cause a significant transportation impact. The VMT significance criteria as stated in the *City of Costa Mesa Transportation Impact Analysis (TIA) Guidelines (Dated October 2020)* are detailed below:

Project-generated VMT threshold:

A project would result in a significant project-generated VMT impact if it resulted in either of the following conditions:

- The baseline project-generated VMT per service population exceeds 15 percent below the City of Costa Mesa baseline VMT per service population (85 percent of the Costa Mesa baseline VMT per service population), or
- The cumulative project-generated VMT per service population exceeds 15 percent below the City of Costa Mesa baseline VMT per service population (85 percent of the Costa Mesa baseline VMT per service population).

Project's effect on VMT threshold:

The project's effect on VMT would be considered significant if it resulted in either of the following conditions:

- The baseline link-level Citywide VMT per service population increases under the plus project condition compared to the no project condition, or
- The cumulative link-level Citywide VMT per service population increases under the plus project condition compared to the no project condition.



Please note that the cumulative no project shall reflect the adopted RTP/SCS; as such, if a project is consistent with the SCAG RTP/SCS, then the cumulative impacts project effect on VMT shall be considered less than significant subject to consideration of other substantial evidence.

VEHICLE MILES TRAVELED (VMT) ANALYSIS

Summarized in the section below are the average VMT per service population and regional boundary VMT per service population values utilizing OCTAM for the City of Costa Mesa and the proposed Project. It should be noted that the Project is located in Traffic Analysis Zones (TAZ) 1233 and the proposed Project development totals were converted into Socio-Economic Data (SED) and inputted into OCTAM. **Figure 4** presents the OCTAM TAZ Map for the proposed Project.

1) Project-Generated VMT

Baseline Project-Generated VMT – As shown in **Table 2**, the proposed Project baseline Project-generated VMT per Service Population needs a 1.67% reduction compared with the City of Costa Mesa baseline VMT per Service Population threshold:

Table 2: Baseline Project-Generated VMT Summary

Baseline (Year 2019) Project-Generated VMT per Service Population	
Baseline City of Costa Mesa VMT/SP	28.54
15% Below the City of Costa Mesa VMT/SP (Threshold)	24.26
Project TAZ Total VMT (by OD Methodology)	136,017
Project TAZ Service Population	5,514
Project-Generated VMT/SP	24.67
Compared to the City of Costa Mesa Threshold	1.67% Reduction Needed

Cumulative Project-Generated VMT – As shown in **Table 3**, the proposed Project cumulative Project-generated VMT per Service Population is **6.09%** less than the City of Costa Mesa cumulative VMT per Service Population threshold:

Table 3: Cumulative Year Project-Generated VMT Summary

Cumulative (Year 2050) Project-Generated VMT per Service Population	
Baseline City of Costa Mesa VMT/SP	28.54
15% Below the City of Costa Mesa VMT/SP (Threshold)	24.26
Project TAZ Total VMT (by OD Methodology)	183,550.61
Project TAZ Service Population	8,059
Project-Generated VMT/SP	22.78
Compared to the City of Costa Mesa Threshold	6.09% Lower

Based on the criteria outlined in this report, the proposed Project's baseline project-generated VMT will exceed the City of Costa Mesa threshold, but the cumulative generated VMT will not. Thus, the proposed Project will have a generated VMT impact for the baseline condition.

2) Project's Effect on VMT

Baseline Project Effect on VMT – As shown in **Table 4**, the baseline plus Project link-level Citywide boundary VMT per Service Population is **0.91% less** than the City of Costa Mesa baseline boundary VMT per Service Population threshold:

Table 4: Baseline Project Effect on VMT Summary

Baseline (Year 2019) Boundary VMT per Service Population	
Baseline No Project link-level boundary Citywide VMT/SP (Threshold)	14.82
Baseline Plus Project link-level boundary Citywide Total VMT	3,762,910.11
Baseline Plus Project Citywide Service Population	256,222
Baseline Plus Project link-level boundary Citywide VMT/SP	14.69
Compared to the City of Costa Mesa Threshold	0.91% Lower

Cumulative Project Effect on VMT – As shown in **Table 5**, the cumulative plus Project link-level Citywide boundary VMT per Service Population is **0.51% less** than the City of Costa Mesa cumulative boundary VMT per Service Population threshold:

Table 5: Cumulative Project Effect on VMT Summary

Cumulative (Year 2050) Boundary VMT per Service Population	
Cumulative No Project link-level boundary Citywide VMT/SP (Threshold)	14.22
Cumulative Plus Project link-level boundary Citywide Total VMT	3,905,641.64
Cumulative Plus Project Citywide Service Population	276,066
Cumulative Plus Project link-level boundary Citywide VMT/SP	14.15
Compared to the City of Costa Mesa Threshold	0.51% Lower

Based on the criteria outlined in this report, the proposed Project's effect on VMT will not exceed the City of Costa Mesa's baseline or cumulative thresholds. Thus, the proposed Project will not have a significant VMT impact on the baseline and cumulative conditions.

VMT MITIGATION MEASURES

As required by the *City of Costa Mesa Transportation Impact Analysis (TIA) Guidelines (Dated October 2020)*:

"To mitigate VMT impacts, the following choices are available to the applicant:

- 1. Modify the project's built environment characteristics to reduce VMT generated by the project.*
- 2. Implement Transportation Demand Management (TDM) measures to reduce VMT generated by the project.*
- 3. Participate in a VMT fee program and/or VMT mitigation exchange/banking program (if available) to reduce VMT from the project or other land uses to achieve acceptable levels. (The applicant should confirm with City staff the status of said programs as a mitigation.)*

VMT reductions should be evaluated using state-of-the-practice methodologies recognizing that many of the TDM strategies are dependent on building tenant performance over time. As such, actual VMT reduction cannot be reliably predicted and monitoring may be necessary to gauge performance related to mitigation expectations."

The California Air Pollution Control Officers Association's Handbook for *Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity, Designed for Local Government, Communities, and Project Developers Report, Chapters 3 - Transportation, December 2021, (CAPCOA Report)* quantifies the reduction in vehicle miles traveled (VMT) associated with a particular mitigation measure. The CAPCOA VMT reduction strategies include built environment changes and transportation demand management (TDM) actions.

The Transportation Demand Management (TDM) strategies are sub-categorized into the following:

- 1) Land Use
- 2) Trip Reduction Program
- 3) Parking or Road Pricing/Management
- 4) Neighborhood Design
- 5) Transit
- 6) Clean Vehicles and Fuels

It may be noted that there are rules and combined maximums for calculating the VMT reduction when applying multiple mitigation measures. To safeguard the accuracy and reliability of the methods while maintaining their case of use, the following rules should be followed when considering reductions achieved by transportation measures.

Recommended Mitigation Measures

The recommended mitigation measures for the Project focus on the "Project/Site" scale categories in CAPCOA, and consist of the following:

- T-23 (Provide Community-Based Travel Planning): up to 2.3% maximum VMT reduction.

T-23. Provide Community-Based Travel Planning

This measure will target residences in the plan/community with community-based travel planning (CBTP). CBTP is a residential-based approach to outreach that provides households with customized information, incentives, and support to encourage the use of transportation alternatives in place of single occupancy vehicles, thereby reducing household VMT and associated GHG emissions.

Based on the Project description and targeting all 1,050 apartments, the CAPCOA T-23 formula was applied accordingly, as shown below:



Project VMT Reduction Due to Community-Based Travel Planning	
B Residences in plan/community (residences)	1,050
C Residences in plan/community targeted with CBTP (residences)	1,050
D Percent of targeted residences that participate	19.0%
E Percent vehicle trip reduction by participating residences	12.0%
F Adjustment factor from vehicle trips to VMT	1
A $VMT\ Reduction = (C/B) * D * (-E) * F$	2.3%
VMT Reduction	2.3%

Based on the above, the Project's VMT could reasonably be reduced by **2.3%** (equal to CAPCOA's maximum VMT reduction of 2.3%).

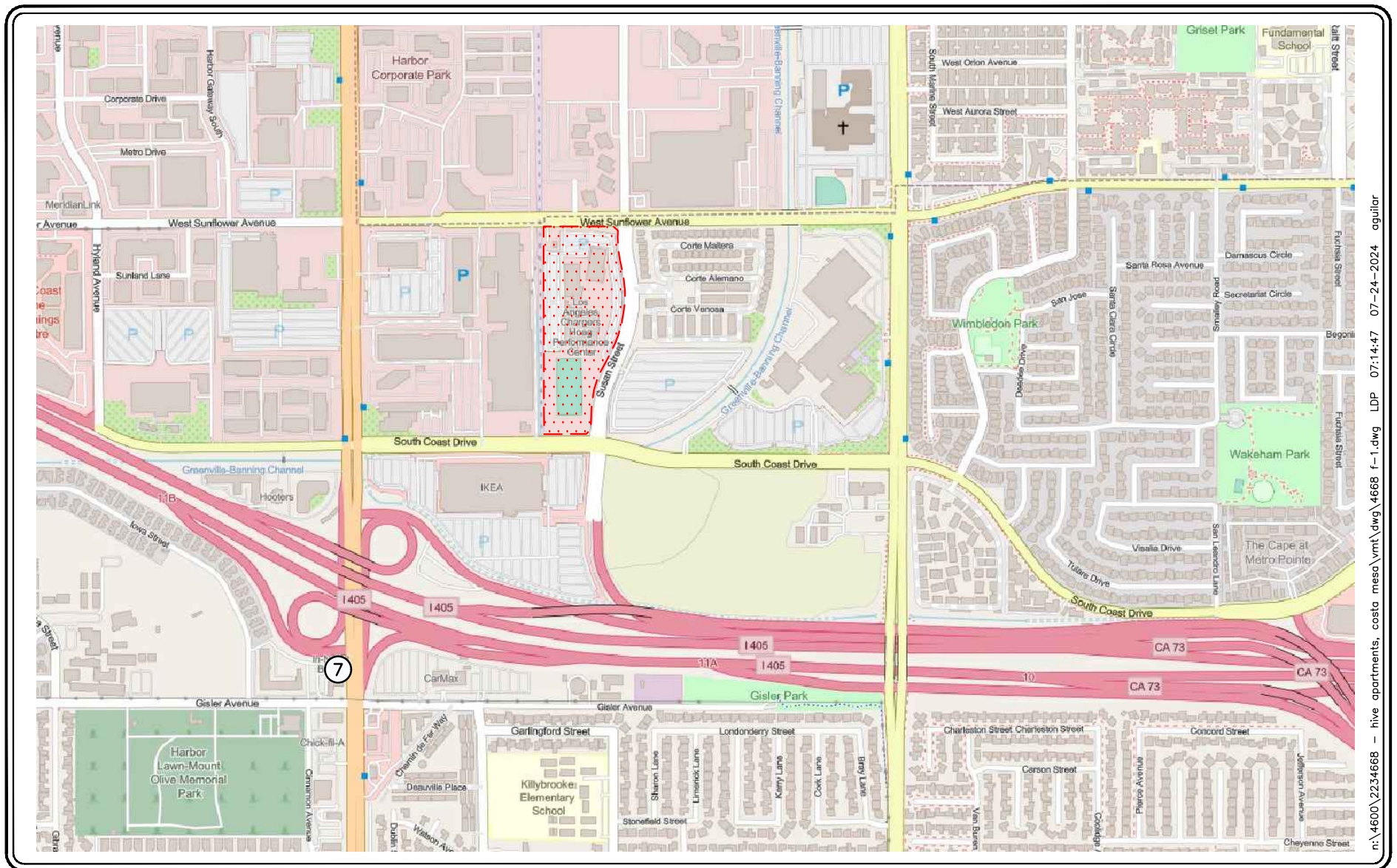
CONCLUSION

Consistent with the *City of Costa Mesa Traffic Impact Analysis (TIA) Guidelines (dated October 2020)* and based on the VMT screening methodology, criteria, threshold, analysis, and findings outlined in this Technical Memorandum, the proposed Project will not have a significant VMT impact after implementation of the recommended VMT mitigation measures outlined in this memorandum. It should be noted that the 3,692 SF retail component of the proposed Project will screen out under the Project Type Screening criteria. The required 1.67% reduction identified from the VMT calculation can be fully mitigated via CAPCOA measure T-23 (Provide Community-Based Travel Planning). Therefore, in accordance with the City of Costa Mesa's guidelines, the proposed Project is presumed to have a less than significant CEQA related transportation impact.

* * * * *

We appreciate the opportunity to provide this Technical Memorandum. Should you have any questions regarding the memorandum, please contact us at (949) 825-6175.





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SOURCE: GOOGLE

KEY

 = PROJECT SITE



NO SCALE

FIGURE 1

VICINITY MAP
HIVE APARTMENTS, COSTA MESA



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SOURCE: GOOGLE

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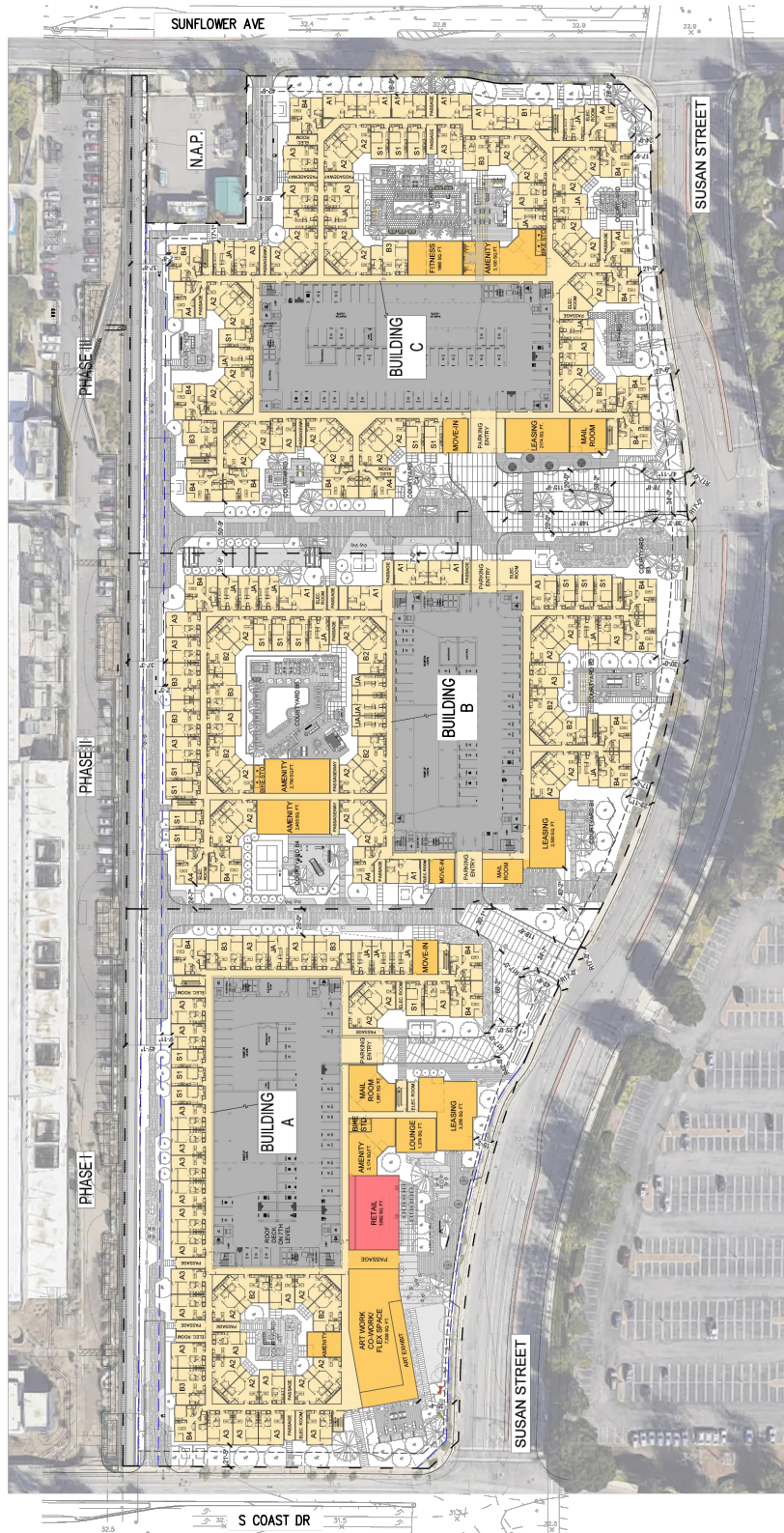
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NO SCALE

FIGURE 2

EXISTING SITE AERIAL
HIVE APARTMENTS, COSTA MESA



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SOURCE: ARCHITECTS ORANGE



NO SCALE

FIGURE 3

PROPOSED SITE PLAN
HIVE APARTMENTS, COSTA MESA

TABLE 6
PROJECT TRAFFIC GENERATION RATES AND FORECAST⁵

ITE Land Use Code / Project Description	Daily 2-Way	AM Peak Hour			PM Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total
<u>Trip Generation Rates:</u>							
▪ 221: Multifamily Housing (Mid-Rise) Not Close to Rail Transit (TE/DU)	4.54	23%	77%	0.37	61%	39%	0.39
▪ 710: General Office Building (TE/TSF)	10.84	88%	12%	1.52	17%	83%	1.44
▪ 822: Strip Retail Plaza Less than 40 KSF (TE/TSF)	54.45	60%	40%	2.36	50%	50%	6.59
<u>Proposed Project Trip Generation Forecast:</u>							
▪ Hive Apartments (1,050 DU)	4,767	89	300	389	250	160	410
▪ Hive Retail (3,692 SF)	201	5	4	9	12	12	24
Pass-by/Internal Capture (10%, 10%, 10%)	<u>-20</u>	<u>-1</u>	<u>0</u>	<u>-1</u>	<u>-1</u>	<u>-1</u>	<u>-2</u>
<i>Total Proposed Project Trip Generation</i>	4,948	94	304	397	261	171	432
<u>Existing and Entitled Trip Generation Forecast:</u>							
▪ Existing Office Buildings (182,520 SF)	1,979	244	33	277	45	218	263
▪ Entitled Office Buildings (70,128 SF) ⁶	<u>760</u>	<u>94</u>	<u>13</u>	<u>107</u>	<u>17</u>	<u>84</u>	<u>101</u>
<i>Total Existing/Entitled Trip Generation</i>	2,739	338	46	384	62	301	363
(A) Net Project Trip Generation Forecast (Proposed Project vs. Existing)	2,969	-151	271	120	216	-47	169
(B) Net Project Trip Generation Forecast (Proposed Project vs. Exiting/Entitled) ⁷	2,209	-245	258	13	199	-131	68

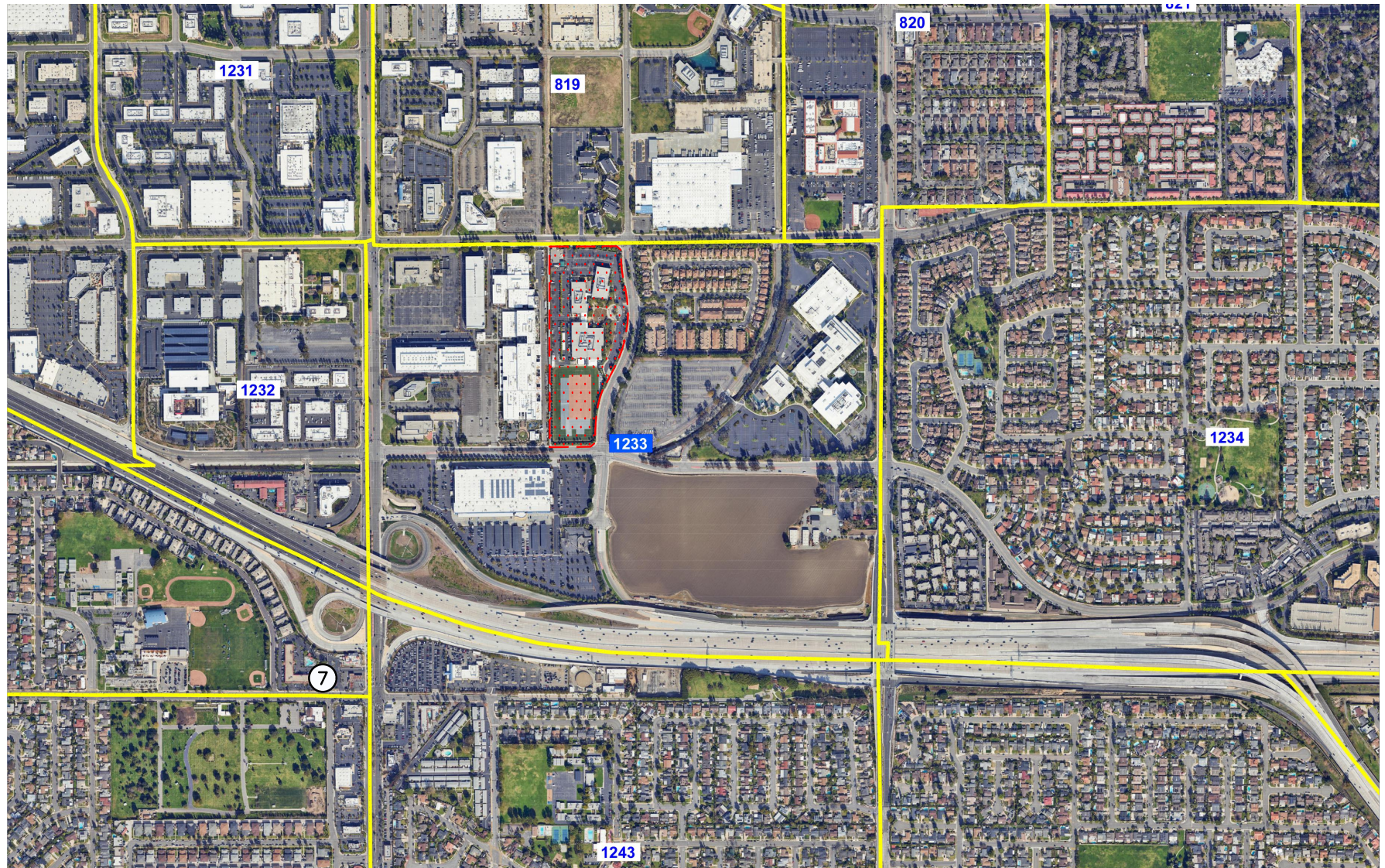
Notes:

- TE/DU = trip end per dwelling unit
- TE/TSF = trip ends per 1,000 square feet

⁵ Source: *Trip Generation*, 11th Edition, Institute of Transportation Engineers (ITE), Washington, D.C. (2021).

⁶ Source: *North Costa Mesa Specific Plan*.

⁷ Row B shown for VMT screening purposes only and not for traffic impact analyses.



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NO SCALE

SOURCE: OCTAM

KEY

 = PROJECT SITE

FIGURE 4

TAZ MAP

HIVE APARTMENTS, COSTA MESA