

4.5 TRAFFIC AND TRANSPORTATION

This section analyzes traffic and transportation impacts of the proposed project based on the analyses and conclusions in a project traffic study prepared for the Applicant by Hatch Mott MacDonald (October 2016) that was reviewed by the City of Santa Cruz Public Works Department staff and consulting traffic engineer, Ron Marquez. The traffic study is included in Appendix D-3 of this document and also is available on the City of Santa Cruz website at: <http://www.cityofsantacruz.com/departments/planning-and-community-development/environmental-documents>. This section also draws from analyses contained in the City of Santa Cruz *General Plan 2030* EIR (SCH#2009032007), which was certified on June 26, 2013. The General Plan EIR is available for review at the City of Santa Cruz Planning and Community Development Department (809 Center Street, Room 107, Santa Cruz, California) during business hours: Monday through Thursday, 8 AM to 12 PM and 1 PM to 5 PM. The General Plan EIR is also available online on the City's website at: <http://www.cityofsantacruz.com/departments/planning-and-community-development/general-plan-2030>.

Public and agency comments related to traffic and transportation were received during the public scoping period in response to the Notice of Preparation (NOP). Issues raised in these comments include:

- ☐ Traffic counts should be less than 2 years old.
- ☐ Graham Hill Road traffic concerns were expressed related to: traffic at other times of the day in addition to PM peak hour, including AM peak hour and seasonal variations in traffic.
- ☐ Review traffic impacts on Highway 9, Highway 17, Highway 1 and Ocean Street.
- ☐ Graham Hill Rd/Ocean Street Extension intersection concerns were expressed regarding: intersection safety and line-of-sight concerns; difficulty with left-turns from Ocean Street Extension to Graham Hill Road; difficulty with right turns from Graham Hill Road onto Ocean Street Extension; effects of change in turn lane; farm and truck delivery traffic; and accident incidents.
- ☐ Traffic impact analysis should use AMBAG traffic model and include multi-modal travel demand analysis.
- ☐ Effects on emergency access along Ocean Street Extension.
- ☐ Impacts on pedestrian and bicycle travel with vehicular traffic increases from the project and projects under construction along/off of Ocean Street.
- ☐ Public transportation availability and needed improvements.
- ☐ Project overflow parking onto Ocean Street Extension.
- ☐ Cumulative impacts with projects under construction.

To the extent that issues identified in public comments involve potentially significant effects on the environment according to the California Environmental Quality Act (CEQA) and/or are raised by responsible agencies, they are identified and addressed within this EIR. Public comments received during the public scoping period are included in Appendix B.

4.5.1 Environmental Setting

Regulatory Setting

A number of local, regional and state agencies are involved with transportation planning and implementation of transportation programs and improvements within the City of Santa Cruz. The City maintains local roadways and transportation facilities. The California Department of Transportation (Caltrans) has jurisdiction over State highway segments that traverse the City, including portions of Highways 1, 9, and 17. To address roadway and intersection improvements needed as a result of impacts of new development, the City has developed a “Traffic Impact Fee” (TIF). The TIF is applied to new development and redevelopment and is collected at the time of issuance of building permits (see discussion below in the “Planned Transportation Improvements” subsection for more details). The City also is active in acquiring transportation funding from federal and state sources.

Other local and regional agencies responsible for transportation services and/or transportation planning are summarized below.

- ❑ *The Association of Monterey Bay Area Governments* (AMBAG) is the federally designated Metropolitan Planning Organization (MPO) for transportation planning activities in the tri-county Monterey Bay region (Santa Cruz, Monterey and San Benito counties). It is the lead agency responsible for developing and administering plans and programs to maintain eligibility and receive federal funds for the transportation systems in the region. AMBAG conducts regional transportation planning activities through its Metropolitan Transportation Plan (MTP), the Metropolitan Transportation Improvement Program (MTIP), maintenance of a regional travel demand model and demographic forecasts. AMBAG works with regional transportation planning agencies, transit providers, the Monterey Bay Unified Air Pollution Control District (MBUAPCD), state and federal governments, and organizations having interest in or responsibility for transportation planning and programming.
- ❑ *The Santa Cruz Regional Transportation Commission* (SCCRTC) is the State designated Regional Transportation Planning Authority (RTPA) for transportation planning activities in Santa Cruz County. SCCRTC oversees planning and funding programs for local and countywide projects within Santa Cruz County using state and federal transportation funds. The City of Santa Cruz has one City representative on the 12-member SCCRTC board and some City transportation projects are funded through grant programs administered by the SCCRTC.

- *The Santa Cruz Metropolitan Transit District (SCMTD)* provides transit services throughout Santa Cruz County.

Study Area

The project site is located at the northern edge of the city of Santa Cruz along Ocean Street Extension, which is located northwest of the Ocean Street / Graham Hill Road intersection and due west of the Highway 1 / Highway 17 interchange at Ocean Street. (See Figure 1-1 in Chapter 3, Project Description). The study area and intersections to be evaluated were reviewed by the City Public Works Department and include:

- Ocean Street / Graham Hill Road;
- Ocean Street / Highway 1 Northbound On Ramp;
- Ocean Street / Highway 1 Southbound Off Ramp;
- Ocean Street – Highway 17 Ramps / Ocean Street – Plymouth Street.

No additional intersections were identified by the City based on the City's "Transportation Impact Study Guidelines" (February 2011), which require traffic analyses to be conducted where a project would result in an increase of 50 or more trips during the weekday PM peak hour. Based on the traffic study results that are explained below, project trip generation during the PM peak hour is 25 vehicle trips, therefore no further intersections were identified that required further review. In the City of Santa Cruz, the peak hour for weekdays occurs in the evening. The PM peak hour (between 4 PM and 6PM) generally has the highest number of trips compared to the AM peak hour (between 7 AM and 9 AM) or the midday peak hour (City of Santa Cruz, April 2012, DEIR volume), and is considered the peak hour period for traffic studies in the City.

Roadway Network

Local Streets and Roads

Project site access will be provided from Ocean Street Extension. Other nearby local streets and roads include Graham Hill Road and Ocean Street.

Ocean Street Extension is a two lane local roadway (City of Santa Cruz, June 2012). There are no shoulders, bicycle lanes or sidewalks. The City boundary is immediately north of the project site. North of the City boundary Ocean Street Extension is within the jurisdiction of the County of Santa Cruz and it provides access to residential areas within the unincorporated area of the County. The road extends north approximately 1.5 miles to a locked gate/bridge over the San Lorenzo River. The Paradise Park residential neighborhood is located to the west of the bridge.

Ocean Street is a four-lane, north-south arterial in the City of Santa Cruz that provides access to commercial, residential and recreational areas. Ocean Street is approximately 1.5 miles long and extends from Graham Hill Road near the project site to East Cliff Drive adjacent to the San Lorenzo River. It has a posted speed limit of 30 miles per hour (mph) and has sidewalks and

striped (Class II) bicycle lanes on both sides of the street, except there are no bicycle lanes south of Broadway Avenue. South of the Ocean Street–Highway 17 Ramps / Ocean Street – Plymouth Street intersection, time restricted (two hour) on-street parking is allowed between the hours of 9:00 AM and 6:00 PM.

Graham Hill Road is a two lane roadway with three foot shoulders and no parking. The road extends approximately 6 miles from the Santa Cruz city limits to Highway 9 in Felton. In the City of Santa Cruz it is classified as an arterial street. North of the City boundary it is classified as an arterial by the County of Santa Cruz General Plan (County of Santa Cruz, 1994). Graham Hill Road is also an arterial in the City of Santa Cruz General Plan 2030 (City of Santa Cruz, June 2012). Graham Hill Road provides access to Henry Cowell State Park and Felton in unincorporated Santa Cruz County. Graham Hill Road provides access to local residential streets east of the project site. However, no access to the project site will be provided from Graham Hill Road.

State Highways

State highways that are in the vicinity of the project site include segments of State Routes 1 and 17; State Route 9 is located approximately 1/2 mile driving distance west of the project site. Though referenced as “state routes” in Caltrans documents, the more common term, “highway,” is used in this EIR. Highways 1 and 17 serve regional traffic, including motorists who commute to jobs in the Santa Clara Valley and motorists who travel into Santa Cruz County for recreational opportunities offered in the county (City of Santa Cruz, April 2012, DEIR volume).

Highway 1 provides access to San Francisco to the north and Monterey to the south. Regionally, Highway 1 is the major inter- and intra-county route for Santa Cruz County. Within the City of Santa Cruz, it is oriented in an east-west direction, although the interregional alignment of Highway 1 is primarily north-south. It is a four-lane arterial along Mission Street from the west side of Santa Cruz to Chestnut Street Extension, a four-lane expressway between Mission Street–Chestnut Street and River Street, and a four-lane freeway east of River Street. The speed limit on Highway 1 is 25 mph along Mission Street, 45 mph along the expressway section, and 55 and 65 mph on the freeway sections. Recurrent congestion results in queuing on Highway 1 that extends for several miles during peak hours. Accidents, events, and other incidents in the corridor can further increase congestion related delays in either direction, on any day, including weekends (City of Santa Cruz, April 2012, DEIR volume).

Highway 9 is a two-lane state highway that connects the City of Santa Cruz with the San Lorenzo Valley, and eventually, Saratoga and Los Gatos.

Highway 17 connects Santa Cruz with Scotts Valley and San Jose and other Santa Clara County communities. It is a four-lane freeway north of the Highway 1/ Highway 9 intersection. Highway 17 is the primary route between the Santa Clara Valley and Santa Cruz County that serves as both a commute route for Santa Cruz County residents that work in Santa Clara County and as a route for recreational visitors that come to Cruz County. Congestion occurs both during weekday commute times and on summer weekends. This winding, four-lane road has steep sections,

frequent road crossings, and substandard median shoulders and outside shoulders for most of its length. In addition to the challenging roadway configuration, weather-related conditions such as thick fog, heavy rains and mudslides affect roadway operations (City of Santa Cruz, April 2012, DEIR volume).

Other Transportation Modes

Pedestrian and Bicycle Facilities

Bicycle and pedestrian facilities within the study area vary. Ocean Street has sidewalks and bike lanes on both sides of the street. However, north of the Ocean Street / Graham Hill Road intersection there are no sidewalks or bike lanes on either Graham Hill Road or Ocean Street Extension.

The San Lorenzo Riverwalk is a north-south bicycle and pedestrian path that follows the San Lorenzo River in Santa Cruz for approximately 2.5 miles. The paved trail is on the river levee on both the east and west sides of the river, except for a short segment in the vicinity of the County Building north of Soquel Avenue, for which design plans have been prepared to complete this section of missing trail. The northern reach of the trail provides access to Felker Street south of Highway 1 and the project site. A pedestrian/bicycle bridge south of Highway 1 connects both sides of the levee trail system, and can be accessed from Felker Street off Ocean Street, approximately 1/2 mile south of the project site.

Public Transit Service

Public transit service in the City and County of Santa Cruz is provided by the Santa Cruz Metropolitan Transit District (SCMTD). In September 2016, SCMTD implemented a large service reduction to address funding shortfalls. Due to service changes there is no longer bus service on Graham Hill Road or Ocean Street Extension. The closest bus service is provided by Route 4 which connects Harvey West and Emeline. The nearest bus stop for Route 4 is on the east side of the Ocean Street / Southbound Highway 1 Off Ramp intersection, less than 1/2 mile from the project site.

Existing Traffic Conditions

According to City data, from the years 2010 to 2014, 63 percent of commuters within the City drove alone, 11 percent walked, 10 percent bicycled, 8 percent carpooled, 6 percent took the bus, and 2 percent used other modes such as taxi, motorcycle (City of Santa Cruz, 2016 Annual Traffic Safety Report). This data shows significant progress towards the City's Climate Action Plan goals to increase biking and walking and decrease single-occupancy vehicle use within the City. Santa Cruz has one of the highest bicycle mode splits in the country, and a lower "Drive Alone" mode split than most California cities (Ibid.).

Vehicle Traffic

Vehicle traffic conditions are measured by average daily traffic (ADT), peak hour traffic volumes, level of service (LOS), average delay, and/or volume to capacity (V/C) ratio. Average daily traffic is the total number of cars passing over a segment of the roadway, in both directions on an average day. Peak hour volumes are the total number of cars passing over a roadway segment during the peak hour in the morning (AM) or afternoon/evening (PM) (City of Santa Cruz, April 2012, DEIR volume).

To evaluate the performance of roadways and levels of traffic congestion, many jurisdictions, including the city of Santa Cruz, use a measurement known as level of service (LOS). “Level of Service” (LOS) is a qualitative scale that describes the level of traffic congestion and delay at intersections based on the amount of auto traffic that a roadway or intersection can accommodate and factors such as maneuverability, driver dissatisfaction, and delay. Traffic flows along city streets typically are controlled by the volume and capacity of the nearest intersection. Intersections are rated based on a grading scale of LOS “A” through LOS “F,” with LOS A representing free-flowing conditions and LOS F representing congested conditions. The intermediate levels of service represent incremental levels of congestion and delay between these two extremes. Table 4.5-1 relates the operational characteristics associated with each LOS category for signalized and unsignalized intersections.

The signalized intersection LOS methodology addresses the LOS for the intersection as a whole, whereas LOS methodology for unsignalized intersections computes delay for the minor movements. The critical volume to capacity ratio (V/C) is another measure of the operating conditions of an intersection as opposed to LOS. It is not the average of all the movements at the intersection and is not used as a measure to define the levels of service.

The City of Santa Cruz General Plan 2030 seeks to maintain LOS D or better at signalized intersections (Action M3.1.3). However, the General Plan also accepts a lower level of service and higher congestion at major regional intersections if necessary improvements would be prohibitively costly or result in significant, unacceptable environmental impacts (Action M3.1.4).

Caltrans, which has jurisdiction over state highways, endeavors to maintain a target LOS at the transition between LOS C and D. However, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS (Caltrans, December 2002). If an existing State highway facility is operating at less than the appropriate target LOS, the existing LOS should be maintained (Ibid.).

Table 4.5-1: Intersection Level of Service Definitions

Level of Service	Description	Signalized (sec/veh.)	Unsignalized (sec/veh.)*
A	Free flow with no delays. Users are virtually unaffected by others in the traffic stream.	≤ 10	≤ 10
B	Stable traffic. Traffic flows smoothly with few delays.	$>10 - 20$	$>10 - 15$
C	Stable flow but the operation of individual users becomes affected by other vehicles. Modest delays.	$>20 - 35$	$>15 - 25$
D	Approaching unstable flow. Operation of individual users becomes significantly affected by other vehicles. Delays may be more than one cycle during peak hours.	$>35 - 55$	$>25 - 35$
E	Unstable flow with operating conditions at or near the capacity level. Long delays and vehicle queuing.	$>55 - 80$	$>35 - 50$
F	Forced or breakdown flow that causes reduced capacity. Stop and go traffic conditions. Excessive long delays and vehicle queuing.	> 80	> 50

*Two-way stop control intersection

SOURCE: Transportation Research Board, *Highway Capacity Manual 2010*, National Research Council as cited in City of Santa Cruz General Plan 2030 EIR.

Intersection Levels of Service

Intersection turning movement counts were conducted in October 2014 at the study intersections during the PM peak period (4:00 pm to 6:00 pm). From these counts, which are shown on Figure 4.5-1, the peak one-hour period was identified. These counts are approximately 6 percent higher than more recent data collected on Graham Hill Road by the Santa Cruz County Regional Transportation Commission in February 2015 and therefore represent a worst-case scenario. Levels of Service for the project traffic study were determined using methods defined in the *Highway Capacity Manual, 2010* (HCM) and Synchro 8 traffic analysis software. The delay and corresponding LOS for each of the study intersections was calculated for the PM peak hour. Table 4.5-2 shows the existing LOS at the study intersections. All intersections operate at an acceptable LOS with the exception of the Ocean Street / Southbound Highway 1 off-ramp intersection, which currently operates at an unacceptable LOS F for the side street movement.

Table 4.5-2: Existing Intersection Weekday PM Peak Hour Levels of Service

	Intersection	Existing Intersection Control	Delay [in seconds per vehicle]	PM Peak Hour LOS
1	Ocean Street Extension / Graham Hill Road	One-way Stop on Side Street Side Street	0.7 [1] 13.9 [2]	A [1] B [2]
2	Ocean Street / Highway 1 Northbound On-ramp	Uncontrolled Northbound On-Ramp	1.8 [1] 2.7 [2]	A [1] A [2]
3	Ocean Street / Highway 1 Southbound Off-ramp	One-way Stop on Off-Ramp Side Street	23.0 [1] 70.1 [2]	C [1] F [2]
4	Ocean Street / Highway 17 Ramps	Signal	39.6	D

[1] Calculated for Entire Intersection

[2] Calculated for Constrained Movement

SOURCE: Hatch Mott MacDonald, October 2016

State Highway Operations

Based on the most recent (2015) Caltrans Traffic Census Program (Caltrans 2015) data, the annual average daily traffic (AADT) on state highways within Santa Cruz is as follows:

- ❑ Highway 1
 - At Highway 17, AADT is approximately 61,000 to 86,000 trips with 4,950 to 6,300 trips occurring during the peak hour.
 - At Emeline Street Connection, AADT is approximately 85,000 to 86,000 trips with approximately 5,900 to 6,300 trips occurring during the peak hour.
 - At Morrissey Boulevard, AADT is approximately 85,000 to 94,000 trips with 5,900 to 6,300 trips occurring during the peak hour.
- ❑ Highway 17, at Pasatiempo (between Santa Cruz and Scotts Valley). AADT is approximately 67,000 to 70,000 trips with 5,700 to 6,000 trips occurring during the peak hour.
- ❑ Highway 9 within Santa Cruz City Limits. AADT is approximately 5,000 to 5,200 trips with 530 to 550 trips occurring during the peak hour as measured at the City limits, north of Encinal.

Review by the City's consulting traffic engineer indicates that the highway segments in the vicinity of the project site are operating at LOS of C and D during the peak hour as summarized on Table 4.5-3.

Table 4.5-3: Existing Highway Traffic Volumes and Peak Hour Levels of Service

Segment	Direction	Number of Lanes	Volume	Max Flow Rate for C	Max Flow Rate for D	LOS
Route 1: Route 9 to Route 17	N	2	2,080	2,761	3,444	C
	S	2	3,120	2,761	3,444	D
Route 1: Route 17 to Emeline	N	3	2,820	2,761	3,444	D
	S	3	1,880	2,761	3,444	C
Route 17: Route 1 to Pasatiempo	N	3	3,300	3,888	5,165	C
	S	3	2,700	3,888	5,165	C
Peak hour volumes from Caltrans 2015						
Peak hour factor-.92, free flow speed – 55, heavy vehicle factor-.985 (Exhibit 11-17 HCM 2010)						

SOURCE: Ron Marquez, Traffic Engineer Consultant

Planned Transportation System Improvements

Metropolitan Transportation Improvement Program

AMBAG, as an MPO, is required by state and federal laws to develop and adopt a Metropolitan Transportation Improvement Program (MTIP), a multi-year transportation project program that includes multi-modal projects, including but not limited to major highway, arterial, transit, bikeway and pedestrian projects. The 2016 MTIP is a four-year program that covers the federal fiscal years from October 1, 2016 through September 30, 2020. The MTIP implements the 2035 Monterey Bay Area Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS) adopted by the AMBAG Board of Directors in June 2014. The 2035 MTP/SCS is a financially constrained document and includes identified transportation improvement projects for the region. Once the projects are included in the MTP, they become eligible for inclusion in the MTIP and FSTIP. The projects included in the 2016 MTIP are consistent with the 2035 MTP/SCS (AMBAG, September 2016). Planned projects in the vicinity of Ocean Street and Ocean Street Extension include improvements to the Highway/9 intersection, Highway 1 auxiliary lanes (Soquel Avenue to 41st Avenue), and High Occupancy Vehicle (HOV) lanes between the Morrissey and San Andreas interchanges.

City of Santa Cruz Planned Improvements

The City's adopted Capital Improvements Program (CIP) is a multi-year schedule of projects with their associated costs and proposed funding sources. The CIP represents the best efforts to allocate available resources toward projects that provide the most benefit for the people of Santa Cruz. Major improvements on the current 2017-2019 CIP include: Highway 1 / Highway 9-River Street intersection improvement (programmed for 2016/17) described below; intersection improvements at the Ocean Street/Water Street intersection (to be completed in 2018); Branciforte Creek bike/pedestrian bridge path connection on the San Lorenzo River levee; and preliminary work to replace the Highway 1 bridge over the San Lorenzo River.

The City of Santa Cruz has adopted a “Traffic Impact Fee” (TIF) program based on future projected trips generated for each new project. The TIF program, originally adopted in June 2005, evaluated over 60 intersections and identified numerous projects within the City which were needed in order to address the effects of cumulative development, and established fees. The fees are used to fund planned improvements at intersections and roadways included in the program. New development and redevelopment projects are required to pay traffic impact fees, which are paid at the time of building permit issuance. The TIF was updated in November 2012 to reflect traffic conditions associated with buildout accommodated by the City’s General Plan as identified in the City’s *General Plan 2030* EIR. All of the projects noted above are TIF program intersections, except for the Highway 1 bridge project. The program also funds bike and pedestrian projects (15 percent of fees collected) and neighborhood improvement projects (5 percent of fee collected).

Bicycle and Pedestrian Improvements

The City’s *Active Transportation Plan* (February 2017) includes the following new paths: Branciforte Creek Connection to complete the levee path over Branciforte Creek and under the Soquel Bridge, Monterey Bay Sanctuary Scenic Trail Network Segment 7 along the railroad track on the west side of the City, and the San Lorenzo River Trestle Bridge trail widening project. The Plan also includes numerous other improvements to existing bike and pedestrian facilities.

Regional Transportation Plan Improvements

The SCCRTC periodically completes a Regional Transportation Plan (RTP) and Regional Transportation Improvement Program (RTIP) according to state guidelines to guide short- and long-range transportation planning and project implementation for the county. This 2014 RTP provides guidance for transportation policy and projects through the year 2035. Projects identified in the RTP that are within the project vicinity include:

- Highway 1/Highway 9 Intersection Modifications (also on City CIP and MTIP).
- Highway 1 bridge replacement over San Lorenzo River (also on City CIP).
- Highway 17: Preparation of study to determine long-range solutions to access, operations and safety on this route.
- Branciforte Creek multi-use path and bridge (also on City CIP).
- Ocean Street and San Lorenzo River Levee Bike/Pedestrian Connection Improvements at Felker, Kennan, Blain, Barson Streets.
- Ocean Street Streetscape and Intersection Improvements (Plymouth to Water), including modifications to Plymouth Street to provide separate turn lanes and through lanes, widening of sidewalks, pedestrian islands, transit improvements, street lighting and street trees and median landscaping. This includes pedestrian and bicycle crossing improvements and detection and connectivity to the pedestrian and bicycle path on the San Lorenzo River and adjacent neighborhoods. Include Gateway treatment.

Planned State Highway Improvements

Highway 1. As indicated above, improvements for the Highway 1 Soquel to Morrissey Auxiliary Lanes Project are complete. In addition, the SCCRTC has been working with Caltrans and the Federal Highway Administration since 1986 on studies for longer-term improvements to Highway 1. The current Caltrans Route Concept Report for Highway 1 includes the addition of HOV lanes to Highway 1 to reduce congestion, encourage carpooling, expand express bus service, and improve safety in the Watsonville to Santa Cruz corridor (Caltrans, April 2006). This project will add a lane in each direction from Morrissey Boulevard in the City of Santa Cruz to San Andreas/Larkin Valley Road. Caltrans' *Corridor System Management Plan* for Routes 1 and 183 also supports HOV lanes on Highway 1 in conjunction with other transportation demand management strategies (Caltrans, October 2011).

A Draft EIR for the Highway 1 Corridor Investment Program was prepared and released for public review and comment in November 2015 (Caltrans and FHWA, November 2015). The Draft EIR considers three alternatives including an HOV Lane alternative with auxiliary lanes and a Transportation System Management alternative without HOV lanes. A final decision on the preferred alternative has not been made yet. The Draft EIR provides a program level analysis of the Highway 1 corridor alternatives using a two tiered approach. Tier I is a long term, program-level analysis for the future of the Highway 1 corridor between Santa Cruz and Aptos. The Tier I concept for the corridor would be built over time through a series of smaller incremental projects (referred to as Tier II projects). The Tier II analysis includes project-level analysis of smaller incremental projects within the Tier I corridor which would move forward based on available funding. Each of the Tier II projects would undergo separate environmental and public review. Caltrans received a total of 263 letters, emails, and recorded comments from public agencies, organizations and individuals, on the Draft EIR. Based on review of the comments received, the project team has identified a need to update the air quality, natural environment, and traffic operations studies, as well as reporting of the cumulative impacts of the project alternatives prior to completion and release of a Final EIR.

Caltrans has prepared and approved a "Corridor System Management Plan" (CSMP) for Highway 1 from the junction of Highway 68 in Monterey County to King Street/Mission Street in Santa Cruz. The following strategies will be used to manage State Route 1 over the next 20 years:

- Cost-effective maintenance and preservation of the roadway.
- Support improvement of transit service, including new express bus service on HOV lanes if implemented in the Santa Cruz corridor.
- Support land use and transportation planning efforts through participating in local development review and regional planning efforts.
- Reduce congestion through transportation demand management to increase the use of transit, improve bicycle and pedestrian programs, and encourage programs such as carpools, ridesharing, telecommuting, and park-and-ride facilities.

- Implement Intelligent Transportation Systems/Traveler Information/Traffic Management to improve incident management and provide real time traveler information which helps reduce delay.
- Increase modal options such as Caltrain and integrate transit, bicycle and pedestrian transportation into a coordinated multimodal system.
- Collaborate with local partners on a ramp metering plan.
- Operational Improvements, including auxiliary lanes, intersection improvements, and other system refinements to enhance existing services and reduce delay.
- Upgrade intersections to maximize throughput on the State highway and parallel routes.
- Increase the capacity, operational efficiency and connections on parallel roads to reduce local traffic demand on Highway 1.
- Improve mobility, accessibility, reliability, reduce congestion and improve safety by improving capacity on the existing system (Caltrans, October 2011).

Highway 17. Highway 17 connects Santa Cruz with Scotts Valley and San Jose and other Santa Clara County communities. It is a four-lane freeway north of the Highway 1/Highway 9 intersection. The highway is the primary route between the Santa Clara Valley and Santa Cruz County that serves as both a commute route for Santa Cruz County residents that work in Santa Clara County and for recreational visitors that come to Cruz County. Congestion occurs both during weekday commute times and on summer weekends. This winding, four-lane road has steep sections, frequent road crossings, and substandard median shoulders and outside shoulders for most of its length. In addition to the challenging roadway configuration, weather-related conditions such as thick fog, heavy rains and mudslides affect roadway operations (City of Santa Cruz, April 2012, DEIR volume). According to the Transportation Concept Report for State Route 17 in District 5, (Caltrans District 5, January 2006), the target level of service for Highway 17 between Ocean Street and Scotts Valley is LOS E. The highway segment between Santa Cruz and Scotts Valley is considered to be a four-lane freeway (Caltrans, January 2006).

Highway 9. The current Caltrans Route Concept Report for Highway 9 includes recommendations to widen the shoulders to accommodate bicycle traffic, widening to four lanes from the junction of Highway 1 and Highway 9 to the Santa Cruz city limits, and other left turn improvements outside of the City of Santa Cruz (Caltrans, September 2007).

The Highway 1/Highway 9-River Street intersection, which is controlled by a signal, currently operates at LOS E during the both the PM and Design Day peak hours, which does not meet Caltrans standards. The City is working with Caltrans to implement lane modifications at this intersection. The improvements require Caltrans approval and an encroachment permit. With implementation of these improvements, the intersection would continue to operate at LOS E during the existing PM peak hours, but the average delay would be reduced by approximately 20 seconds.

The following improvements are identified for the Highway 1/Highway 9-River Street intersection, and are included in the current City Traffic Impact Fee (TIF) Program:

- Northbound Approach: Modify the intersection to consist of one left/thru, one-thru, two right lanes and a bike lane; add one northbound lane on Highway 9 and a shoulder/bike lane.
- Southbound Approach: Modify the intersection to consist of two-left, one-left/thru, one-thru, one right lane and a bike lane.
- Eastbound Approach: Reconstruct to consist of two left, three through, and one right-turn lanes. The northbound receiving leg would be widened to two lanes and a shoulder that is also available for bike use.
- Upgrade all sidewalks and access ramps to meet ADA requirements.

Currently, a Project Report, preliminary engineering and associated studies, and environmental review are complete. Construction is programmed in 2018. The improvements are already required under existing conditions.

4.5.2 Impacts and Mitigation Measures

Thresholds of Significance

In accordance with the California Environmental Quality Act (CEQA); State CEQA Guidelines (including Appendix G); City of Santa Cruz plans, policies and/or guidelines; and agency and professional standards, a project impact would be considered significant if the project would:

- 5a Conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit (see discussion of City standards below);
- 5b Change the level of service of a State Highway roadway segment from acceptable operation (LOS A, B, or C) to deficient operation (LOS D, E or F) or result in a change in LOS for a segment currently operating at a deficient level based on Caltrans significance criteria¹;
- 5c Conflict with an applicable congestion management program, including, but not limited to, level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways;

¹ Caltrans. December 2002. "Guide for the Preparation of Traffic Impact Studies."

- 5d Substantially increase hazards due to a design feature (for example, sharp curves or dangerous intersections) or incompatible uses (for example, farm equipment);
- 5e Result in inadequate emergency access; or
- 5f Conflict with adopted policies, plans, or programs regarding public transit, bicycle or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

The City of Santa Cruz General Plan 2030 strives to maintain a LOS of “D” or better as the acceptable level of service for intersections. A significant impact would result if LOS dropped below a “D” level of service or where a project would contribute traffic increases of more than three percent at intersections currently operating at unacceptable levels (E or F), as further described below. This criteria is applied only to intersections within the City’s jurisdiction, but not to Caltrans intersections. The City’s General Plan 2030 also accounts for accepting a LOS below “D” at major regional intersections where improvements would be prohibitively costly or result in significant, unacceptable environmental impacts. There are no other adopted plans, ordinances, or policies that establish “measures of effectiveness” for the performance of the circulation system.

For City intersections that already operate at unacceptable levels of service (E or F), the City considers project impacts to be significant if congestion will worsen measurably at the intersection as a result of the project. “Measurably worse” is considered to be a three percent increase in trips at the affected intersection. The City has used the three percent significance criterion for project trip contribution at existing impacted intersections, except for Caltrans-maintained intersections (which are subject to the criteria in 3b above), in part based on directives in the City’s existing General Plan to accept a certain level of congestion during peak hours at major intersections, as well as to reflect variations in daily traffic volumes. The three percent criterion has been used throughout the City and is based upon the likelihood that a project will result in an observable increase in congestion at a given intersection or road segment. This is based in part on information provided by Caltrans, in the yearly “Traffic Volumes” reports, which identifies the standard deviation expected with regard to reliability of traffic count data. The standard deviation ranges indicate a 12 percent deviation at 10,000 vehicle trips, meaning that if a traffic count totals 10,000 vehicles per day, then approximately 90 percent of the time, the actual traffic counts will lie within a range of 8,800 to 11,200 vehicles. Thus, the three percent reflects this variation in daily traffic conditions (California Department of Transportation, June 2015).

Vehicle Miles Traveled

In September 2013 Governor Brown signed Senate Bill 743 which made significant changes to how transportation impacts are to be assessed under CEQA. SB 743 directs the Governor’s Office of Planning and Research (OPR) to develop a new metric to replace LOS as a measure of impact significance and suggests vehicle miles travelled as that metric. SB 743 also creates a new CEQA exemption for certain projects that are consistent with the regional Sustainable Communities Strategy.

OPR has released draft CEQA Guidelines to address this requirement; however, at the time this analysis was completed the Guidelines have not been finalized or adopted. It is anticipated that the revisions to the CEQA Guidelines will be finalized in 2017. According to the most recent draft CEQA Guidelines released by the OPR, lead agencies would have a grace period of two years to update and adopt new thresholds once the final Guidelines have been adopted. The City of Santa Cruz has not yet updated its transportation standards of significance to reflect SB 743 requirements. Because there are no adopted thresholds and the State CEQA Guidelines' revisions have not yet been finalized, vehicle miles travelled is not analyzed as a standard of significance in this EIR.

Analytical Method

A project traffic impact study was prepared for the project in accordance with City requirements. As indicated, above, the City of Santa Cruz uses LOS to evaluate the performance of roadways and levels of traffic congestion. The project traffic impact study was based on intersection turning movement counts taken in October 2014 at the study intersections during the PM peak period (4:00 pm to 6:00 pm), from which the PM peak hour was determined. While the counts are slightly over two years old, the City has indicated that development and traffic has not substantially changed in two years to warrant new counts. Traffic counts taken by the SCCRTC on Graham Hill Road just north of Ocean Street in February 2015 show peak hour counts that are about 5-6 percent lower than traffic counts in the project traffic study. The SCCRTC count shows 586 northbound and 439 southbound trips at 5 PM. The project traffic report (Hatch Mott McDonald) reports a count of 616 northbound and 465 southbound trips at the same location during the PM peak hour. Although the SCCRTC counts fall within the two year time frame, the October 2014 traffic volumes used in the project traffic report are higher, and, thus the project traffic study provides a worse-case scenario for the impact analysis.

The traffic study computed intersection LOS using the 2010 HCM methodology and Synchro 8 software. The result of the HCM calculations is an estimate of average control delay at the intersection which corresponds to an LOS grade as shown in Table 4.5-1.

Project trip generation was provided in the traffic impact study, and traffic distributed on city streets utilizing the City's traffic model that was developed as part of the General Plan 2030 based on Traffix software. AMBAG also has a traffic model, but it was not used as the City's model is more detailed and specific to conditions in the City. The study scenarios analyzed include existing conditions, existing with the project, and cumulative conditions, including the project. The traffic impact study results are supplemented with review of other travel modes based on review of existing adopted regional plans and review with City of Santa Cruz staff.

Impacts and Mitigation Measures

As described in the Initial Study (see Appendix A), there are no adopted congestion management programs² for the project area (5c). The following impact analyses address impacts to City streets and intersections (5a) and state highways (5b), the potential to substantially increase hazards or result in inadequate emergency access (5d-e), and potential project conflicts with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities or impacts to the performance of these facilities (5f).

Traffic Impacts

Impact Trans-1: Circulation System Impacts. The project will result in an increase in daily and peak hour trips, but would not cause existing or planned intersections to operate at an unacceptable Level of Service (LOS). However, project trips would contribute to the existing unacceptable LOS at the Ocean Street / Highway 1 Southbound Off Ramp intersection (5a), which is considered a *significant impact*.

A LOS analysis was completed to comply with City regulations, and as discussed above, LOS is the performance measure used to evaluate the effectiveness of the circulation system. In order to identify the potential traffic impacts of the project using LOS, a multi-step process was utilized. The first step is calculating trip generation, which estimates the total arriving and departing traffic during a peak hour and on a daily basis. Trip generation was estimated in the project traffic study by applying the appropriate vehicle trip generation rates to the project development based on trip rates from the 9th Edition of Trip Generation Manual, published by the Institute of Transportation Engineers (Hatch Mott MacDonald, October 2016). The project would generate 25 weekday PM peak hour trips (16 in and 9 out) between 4 and 6 PM and 266 daily trips as summarized on Table 4.5-4.

The second step of the forecasting process is trip distribution, which identifies the origins and destinations of inbound and outbound project traffic. These origins and destinations are typically based on demographics and existing or anticipated travel patterns in the study area. Table 4.5-5 shows the trip distribution that was applied to the study area roadway network.

The third step is traffic assignment, which involves the allocation of project traffic to streets and intersections in the study area. Traffic distribution patterns are indicated by percentage orientation, while traffic assignment allocates specific volume forecasts to individual roadway links and intersection turning movements throughout the study area. Figure 4.5-2 graphically depicts project trip distribution and assignment.

² The Code of Federal Regulations, Title 23 Volume 1, adopted in April, 2005 require Transportation Management Areas (TMAs) to prepare Congestion Management Programs. TMAs are defined as urbanized areas with a population over 200,000. There are eight such areas in California plus Santa Barbara that asked to be included (City of Santa Cruz, 2012).

Table 4.5-4: Project Trip Generation

Land Use	Project Size	PM Peak Hour			Daily
		Total	In	Out	
Trip General Rates					
Apartment	40 du	0.62	65 percent	35 percent	6.65
Total Trips					
Apartment	40 du	25	16	9	266

SOURCE: Hatch Mott MacDonald, October 2016

TABLE 4.5-5: Project Trip Distribution

Direction	Roadway	Percent of Traffic
To/from North	Graham Hill Road	10 percent
To/from North	Highway 17	15 percent
To/from South	Ocean Street	25 percent
To/from East	Highway 1	25 percent
To/from West	Highway 1	25 percent

SOURCE: Hatch Mott MacDonald, October 2016

With the forecasting process complete and project traffic assignments developed, the impact of the project is identified by comparing operational (LOS) conditions with and without the project at the study intersections. Table 4.5-5 summarizes the PM peak hour LOS at the study intersections for Existing Conditions with and without the project. See Figure 4.5-3 for intersection traffic volumes with the addition of project traffic. As shown, traffic associated with the project will not degrade LOS to below acceptable levels at any of the study intersections, except the project would contribute traffic to the Ocean Street / Highway 1 Southbound Off-Ramp intersection that currently operates at a deficient level of service. The off-ramp is controlled by a stop sign, but there are no stop signs on Ocean Street.

Caltrans considers any traffic added to a deficiently-operating intersection under its jurisdiction to be a significant impact. Therefore, because the project would add traffic to the Ocean Street / Highway 1 Southbound Off-Ramp intersection, which is already operating at a deficient LOS, the project would result in a significant impact at this intersection.

The Highway 1 Southbound Off-Ramp to Ocean Street is currently a single-lane ramp. However, the off-ramp is wider at its intersection with Ocean Street. This allows vehicles to simultaneously turn left and right from the ramp onto Ocean Street even though it is not striped as a two-lane approach. This element of the intersection geometrics was incorporated into the traffic impact analysis. However, as there is only space for one to two right-turning vehicles to queue simultaneously with the left-turning vehicles, left-turn queues can block access for right-turning vehicles during periods of heavy traffic. This situation is not directly accounted for in the HCM 2010 analysis as the HCM 2010 methodologies do not incorporate queue blockages of adjacent lanes. Widening the ramp would minimize the potential for left-turn queues to block right turning vehicles and improve operations. Additionally, the Caltrans peak hour signal warrant is met at this intersection (Hatch Mott MacDonald, October 2016). As shown in Table 4.5-6 signalization with widening the off-ramp would improve the LOS to a “B” level, which would be an acceptable operating condition under Caltrans standards.

Table 4.5-6: Intersection Weekday PM Peak Hour Levels of Service with Project

	Intersection	Traffic Control	Approach	Existing		Existing with Project	
				Delay [in seconds per vehicle]	PM Peak Hour LOS	Delay [in seconds per vehicle]	PM Peak Hour LOS
1	Ocean Street Extension / Graham Hill Road	SSSC	One-way Stop	0.7	A	0.9	A
			Side Street	13.9	B	14.1	B
2	Ocean Street / Highway 1 Northbound On Ramp	None	Uncontrolled	1.8	A	1.7	A
			Northbound	2.7	A	2.7	A
3	Ocean Street / Highway 1 Southbound Off Ramp	SSSC	One-way Stop	23.0	C	25.6	D
			Side Street	70.1	F	78.4	F
				<i>With Improvements</i>		10.7	B
4	Ocean Street / Highway 17 Ramps	Signal		39.6	D	40.2	D

SOURCE: Hatch Mott MacDonald, October 2016

Notes: SSSC = Side street stop controlled

Mitigation Measures

Implementation of Mitigation Measure Trans-1 will reduce the impact to a less-than-significant level.

MITIGATION TRANS-1: Require the project applicant to contribute the project’s share of the cost of signalization and widening of the Highway 1 Southbound Off-ramp at Ocean Street.

Mitigation measure Trans-1 would improve LOS to an acceptable condition of “B.” Since the intersection is already operating at a deficient LOS, the project will contribute its fair share towards the mitigation. Project traffic would represent 1.3 percent of the traffic volume at the deficient intersection; therefore, the project will be responsible for 1.3 percent of the cost of signalizing this intersection and widening the off ramp.

Impact Trans-2: Highway Segment Impacts. The project will result in an increase in daily and peak hour trips, but would not result in a change to an unacceptable LOS along state highway segments (5b). This is a *less-significant impact*.

The project will result in approximately two to four additional PM peak hour trips along Highway 1 and two additional peak hour trips along Highway 17, representing a 0.1 percent increase. All of the study highway segments would operate at acceptable levels of service according the LOS targets established by Caltrans as summarized on Table 4.5-7.

Table 4.5-7: Highway Traffic Volumes and Peak Hour Levels of Service with Project

Segment	Existing Volume	Max Flow Rate for C	Max Flow Rate for D	LOS	Trips Added By Project	Volume	LOS
Route 1: Route 9 to Route 17	2,080	2,761	3,444	C	2	2,082	C
	3,120	2,761	3,444	D	4	3,124	D
Route 1: Route 17 to Emeline	2,820	2,761	3,444	D	2	2,822	D
	1,880	2,761	3,444	C	4	1,884	C
Route 17: Route 1 to Pasatiempo	3,300	3,888	5,165	C	2	3,302	C
	2,700	3,888	5,165	C	2	2,702	C
Peak hour volumes from Caltrans 2015							
Peak hour factor-.92, free flow speed – 55, heavy vehicle factor-.985 (Exhibit 11-17 HCM 2010)							

SOURCE: Ron Marquez, Traffic Engineer Consultant

Mitigation Measures

No mitigation measures are required as a significant impact has not been identified.

Access and Hazards

Impact Trans-3: Project Access. The project will not result in creation of hazards due to design of the project circulation system or introduction of incompatible uses. Therefore, the project would result in *no impact* (5d).

Accidents, collisions, and sight distance limitations at the Ocean Street-Graham Hill Road / Ocean Street Extension intersection were raised as concerns, especially in relation to vehicle speeds on southbound Graham Hill Road. The Ocean Street Extension/Graham Hill Road intersection is not included in the list of highest injury collision locations within the City from 2012 through 2015

(City of Santa Cruz 2016 Annual Safety Report). However, the project traffic study provides a review of collisions at this intersection, which is summarized below. Generally, unsafe speed was the number one cause of collisions within the City (34 percent), followed by automobile right of way (17 percent), which is failure to yield right of way to other roadway users, and improper turning (13 percent), which includes making an unsafe turning movement or failure to signal (Ibid.).

Table 4.5-8 provides the reported collision history at the Ocean Street / Graham Hill Road intersection between October 2003 and September 2016, including all collisions within 300 feet in each direction of the intersection. During this 13-year span, there were ten collisions, of which there were two injuries and no fatalities. This represents a collision rate of approximately 0.18 collisions per million vehicle miles, which is below the statewide average of 0.30 collisions per million vehicle miles reported by Caltrans at similar intersections within California. Therefore, there is not a significant reported collision issue at the Graham Hill / Ocean intersection (Mott Hatch MacDonald, October 2016).

Table 4.5-8: Reported Collision History at Ocean Street / Graham Hill Road

Date of Collision	Location Relative to Intersection	Type of Collision	Primary Collision Factor	Injuries	Fatalities
6/14/2007	250 Feet North	Rear-end	Following Too Closely	0	0
10/3/2007	50 Feet North	Rear-end	Unsafe Speed	0	0
12/8/2008	26 Feet West	Hit Object	Unknown	1	0
5/13/2012	At intersection	Overtaken	Unknown	0	0
4/6/2014	15 Feet South	Sideswipe	Unknown	0	0
7/31/2015	At intersection	Rear-end	Unknown	0	0
12/20/2015	At intersection	Hit Object	Unknown	0	0
1/6/2016	At intersection	Hit Object	Improper Turning	0	0
2/6/2016	At intersection	Overtaken	Unknown	1	0
3/30/2016	At intersection	Sideswipe	Unknown	0	0

SOURCE: Hatch Mott MacDonald, October 2016

The project proposes improvements that address safety concerns and associated operational issues. The proposed project includes improvements at the Ocean Street / Graham Hill Road intersection to modify the existing intersection geometry, improve sight distance, and deter speeding as shown on Figure 3-1 in Chapter 3, Project Description. The current left-turn lane on westbound Ocean Street is less than standard width and lacks a standard bay taper. The project includes removing the existing median island on northbound Ocean Street. This will allow the northbound left turn lane to be widened and lengthened to 60 feet. The other two channelizing islands at Graham Hill Road/Ocean Street Extension will be reconfigured to improve vehicle maneuverability. Removal of the tree within the northeast island and trimming of the tree within the northwest island will improve visibility (Hatch Mott MacDonald, October 2016).

Sight distance at the Graham Hill Road / Ocean Street Extension intersection has been brought up as a concern, especially in relation to vehicle speeds on southbound Graham Hill Road. The project proposes improvements that address both issues. First, the tree within the channelizing island at the northeastern corner of the intersection is proposed to be removed as part of the reconfiguration of this island. This tree poses the greatest obstacle to sight distance at this intersection. Second, a radar speed feedback sign will be installed 300 feet north of the intersection, facing southbound Graham Hill Road. This speed feedback sign, combined with appropriate warning signs, will advise drivers of the impending intersection and the importance of maintaining a safe speed while traversing the downgrade to Ocean Street. A hedge at the existing Mausoleum site (at the corner of Graham Hill Road and Ocean Street) will be partially removed. All of these improvements will improve the sight distance and associated operational issues at the intersection (Hatch Mott MacDonald, October 2016).

The project includes widening Ocean Street Extension to 20 feet along most of the project frontage from the project entrance south to Ocean Street. This segment of the street will be the acceptable width for a local street intended to accommodate all vehicle types. As indicated above, the western island at the Ocean Street Extension/Ocean Street intersection will be reduced in size, which will allow a travel lane with expansion of the existing sidewalk around an existing utility structure. Additionally, the widening of Ocean Street Extension will provide for approximately eight on-street parking spaces.

The proposed project improvements will improve safety and will not result in new or increased safety hazards. Therefore, there is no impact related to transportation safety and hazards.

Mitigation Measures

No mitigation measures are required as a significant impact has not been identified.

Impact Trans-4: Emergency Access. The project will not result in inadequate emergency access. Therefore, the project would result in *no impact* (5e).

The proposed project has been reviewed by the City of Santa Cruz Fire Department and meets all the City's requirements for emergency access to the project site. Project traffic volumes would not result in unacceptable traffic conditions on the street as discussed above. Therefore, the project would not result in inadequate emergency access.

Use of Ocean Street Extension has been used as an alternative access to and from the Paradise Park community, north of the project area, during times when Highway 9 is closed. Access to the Paradise Park neighborhood is provided by Highway 9. There is an existing bridge over San Lorenzo River with a locked gate at the end of Ocean Street. In the Past during emergency situations, such as closure of segments of Highway 9, the gate has been opened to allow residents of Paradise Park to access to Ocean Street Extension. The proposed project would not affect or interfere with emergency access either to the project site or emergency access for

residents to the north as has occurred in the past. The project-proposed improvements at the Graham Hill Road / Ocean Street intersection (including widening of Ocean Street Extension and lengthening of the northbound Ocean Street left turn lane) will improve operations at this location.

Mitigation Measures

No mitigation measures are required as a significant impact has not been identified.

Transit, Pedestrian and Bicycle Travel

Impact Trans-5: Transit, Pedestrian and Bicycle Travel. The project will not conflict with adopted policies, plans, or programs regarding public transit, bicycle or pedestrian facilities, or otherwise decrease the performance or safety of such facilities. Therefore, the project would result in *no impact* (5f).

The proposed project would not conflict with adopted policies or programs regarding transit, bicycle or pedestrian facilities as summarized in Section 4.7, Land Use. Additionally, the project proposes installation of a new sidewalk along the west side of Ocean Street Extension from the project site south to the existing sidewalk.

The project would generate bicycle and pedestrian trips in addition to vehicle trips. Based on average vehicle occupancy (2011-2015 American Community Survey 5-year Estimates) and the current mode split from the City's Annual Traffic Safety Report, it is estimated that there will be approximately 40 bicycle trips and 44 walking trips per day. There would be 4 bicycle trips and 4 walking trips in the PM peak hour. See Table 4.5-9 for a summary of estimate trips by mode. (It should be noted that the traffic impact analysis assumes a worst-case scenario in which all trips are vehicle trips.) Currently, there are bicycle lanes and sidewalks along both sides of Ocean Street which end just south of the Graham Hill Road / Ocean Street Extension intersection. The proposed project includes provision of 40 covered bicycle spaces as well as a bike rack in the common area.

As mentioned previously, the existing pavement width of Ocean Street Extension north of Graham Hill Road is only 17 feet wide. With the proposed widening to a standard 20-foot roadway, there is not enough right-of-way to also add bicycle lanes or a dedicated bicycle path without prohibiting on-street parking along the southbound side. However, field investigation reveals that low traffic volumes and speeds on Ocean Street Extension allow for bicyclists to navigate the road without experiencing major vehicle conflicts. Ocean Street Extension north of the project site will not likely experience any increase in vehicle traffic as it primarily provides access to other residential land uses. Therefore, bicyclists should be able to continue to use Ocean Street Extension without any additional or new intermodal conflicts (Hatch Mott MacDonald, October 2016). Furthermore, bicyclists would be approximately 1/2 mile from the San Lorenzo Riverwalk multi-use levee trail and bridge, located off of Ocean Street, which would provide access to the Downtown area and other neighborhoods.

Table 4.5-9: Estimated Trips by Mode

Mode	Citywide Average Mode Split	Daily		Peak	
		Number of Person Trips ¹	Number of Vehicle Trips	Number of Person Trips ¹	Number of Vehicle Trips
Drive Alone	63 percent	251	251	24	24
Carpool ²	8 percent	32	15	3	1
Transit	6 percent	24	-	2	
Bicycle	10 percent	40	-	4	
Walk	11 percent	44	-	4	
Other ³	2 percent	8	-	1	
Total	100 percent	399	266	38	25

SOURCE: 2011-2015 American Community Survey 5-year Estimates: Table S0801; City of Santa Cruz, 2016 Annual Traffic Safety Report

NOTES:

1. Based on NCHRP Report 758 methodology for converting ITE trip rates to person trips and the above cited data sources.
2. Assumes a carpool vehicle occupancy rate of 2.1 which is imputed from 2011-2015 American Community Survey 5-year Estimates, Table S0801.

Includes taxi, motorcycles and other modes.

The project includes adding a new 5-foot sidewalk along the west side of Ocean Street Extension (i.e. the cemetery side of the street). The new sidewalk will start across from the entrance to the project site and extend south to join the existing sidewalk south of the Graham Hill Road / Ocean Street Extension intersection. For pedestrians traveling to and from the project site, use of this sidewalk would require crossing Ocean Street Extension north of Graham Hill Road. Vehicle volumes are very low on Ocean Street Extension, and no safety issues were identified (Hatch Mott MacDonald, October 2016). Furthermore as indicated above, pedestrians would be approximately 1/2 mile from the San Lorenzo Riverwalk multi-use levee trail and bridge.

Public transit service in the City and County of Santa Cruz is provided by the SCMTD. As previously indicated, in September 2016, SCMTD implemented a large service reduction to address funding shortfalls. Due to service changes there is no longer bus service on Ocean Street south of the project site. The closest bus service is provided by Route 4 which connects the Harvey West and Emeline Street neighborhoods with the downtown Metro Station. The nearest bus stop for Route 4 is on the east side of the Ocean Street / Southbound Highway 1 Off Ramp intersection, less than 1/2 mile from the project site, which is within walking distance from the project site.

The project includes widening Ocean Street Extension from 17 feet to 20 feet along most of the project frontage and improving pedestrian access with installation of a new sidewalk. No issues have been identified and the project residents that walk or bicycle would not result in changes in

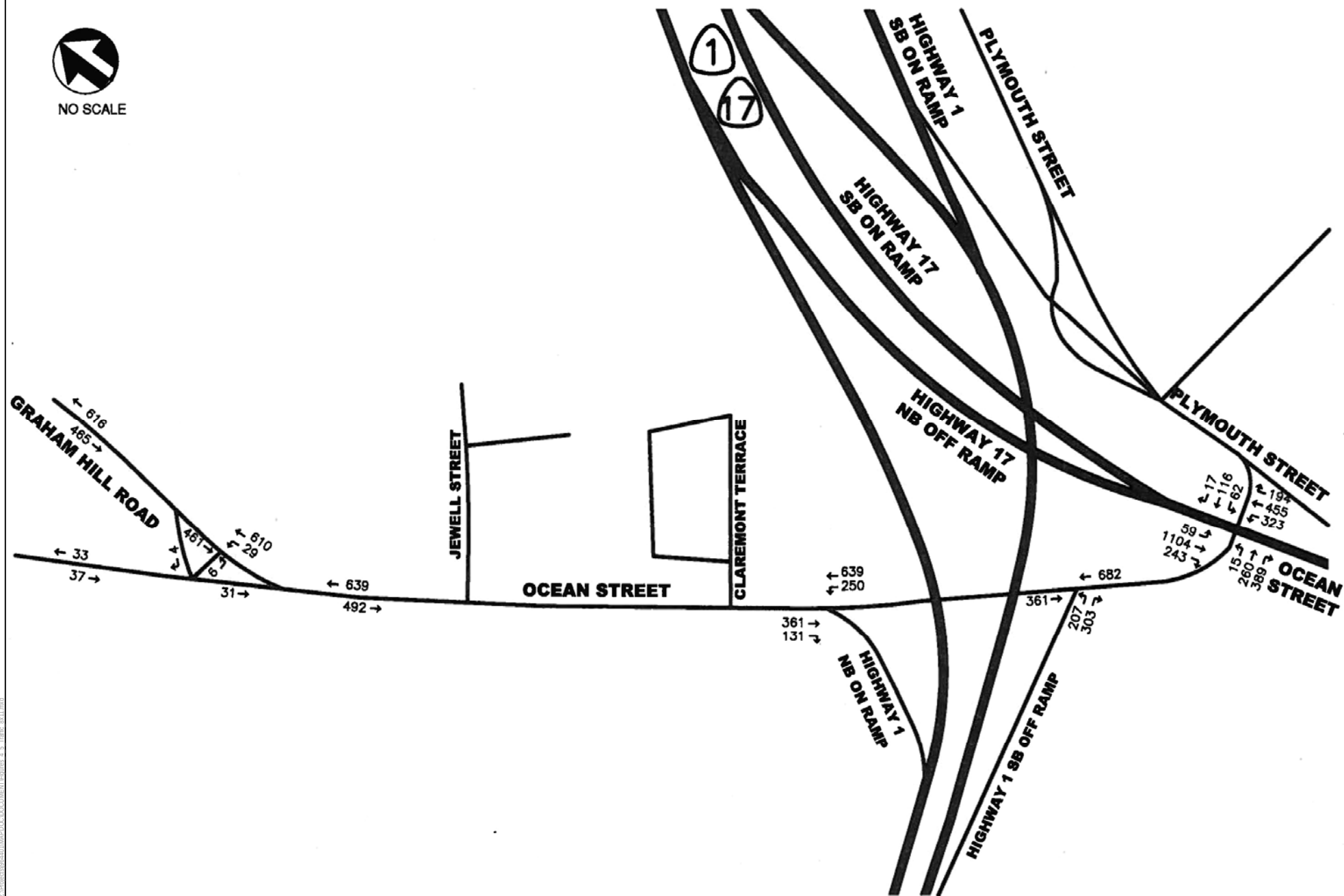
performance of facilities or safety issues. Therefore, there is no impact related to alternative transportation modes.

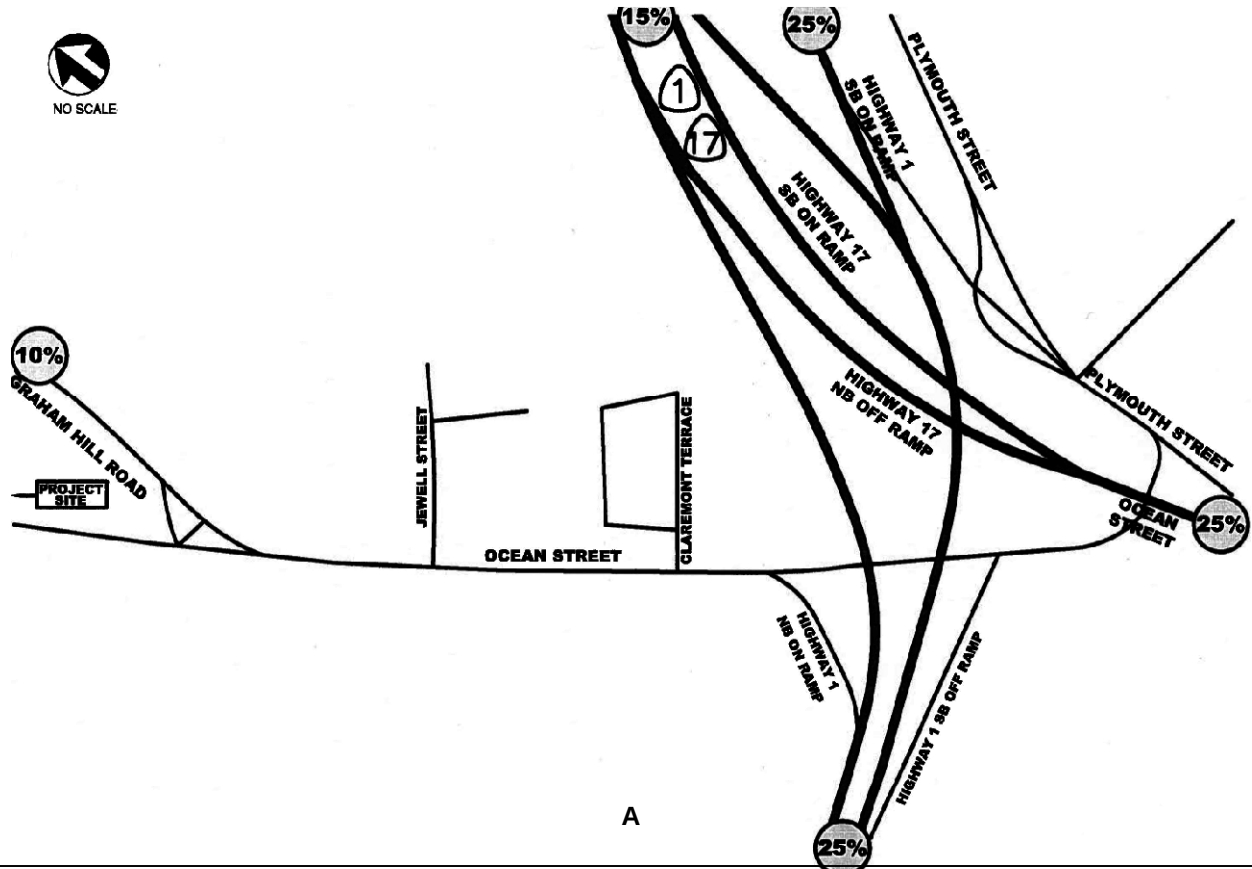
Mitigation Measures

No mitigation measures are required as a significant impact has not been identified.

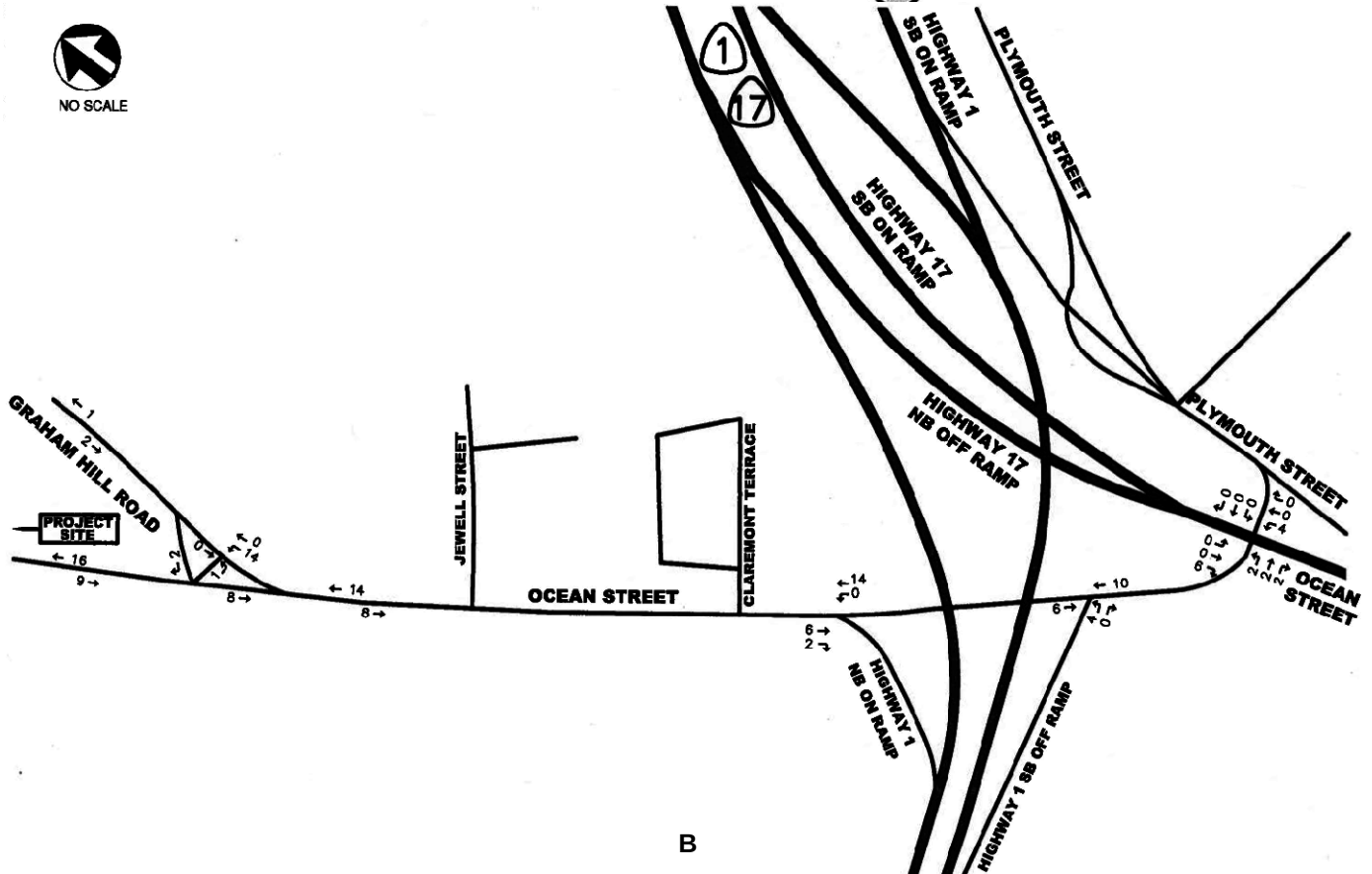


NO SCALE





A



B

SOURCE: Hatch Mott MacDonald 2016

FIGURE 4.5-2

Project Trip Distribution (A) and Assignment (B)

1930 Ocean Street Extension Residential Project



NO SCALE

