

EXHIBIT M-2 EXCERPT

**EXCERPTS FROM UPDATED AND REVISED TRAFFIC IMPACT
ANALYSIS REPORT PULELEHUA DEVELOPMENT (AUGUST 13,
2019)**

SECTIONS 6 and 7

TRAFFIC IMPACT ANALYSIS REPORT PULELEHUA DEVELOPMENT

Lahaina, Maui, Hawaii

FINAL DRAFT

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Prepared for:

Maui Oceanview LP
2525 McKinney Ave., Suite B
Dallas, Texas 75201



Austin, Tsutsumi & Associates, Inc.

Civil Engineers • Surveyors
501 Sumner Street, Suite 521
Honolulu, Hawaii 96817-5031
Telephone: (808) 533-3646
Facsimile: (808) 526-1267
E-mail: atahnl@atahawaii.com
Honolulu • Wailuku • Hilo, Hawaii



6. CONCLUSIONS

The Project is located upon approximately 310 acres of undeveloped land in Lahaina, bounded by Honoapiilani Highway to the west and the Kapalua Airport to the east. The Project proposes to provide 100 single-family (SF) residential units (with an additional 100 ohana units on each lot), 800 multi-family (MF) residential units, an elementary school, a 10-acre park and three (3) retail centers, totaling 70,000 square feet. In addition, a new roadway will be constructed just east and parallel to Honoapiilani Highway that will provide vehicular, bike and pedestrian access to link the Project's development north and south of Mahinahina Gulch. The Project will be constructed in seven (7) phases, but for purposes of this TIAR, will be analyzed as four (4) scenarios.

Scenario 1 – Develop Phase 1 with a build-out of 2022 that includes the following:

- 240 MF residential units north of Akahahele Street, with direct access provided by a new Project roadway, Road A, intersecting Akahahele Street, and a new right-in, right-out (RIRO) access via Honoapiilani Highway.

Scenario 2 - Develop Phases 2A and 2B with a build-out of 2025 that include the following:

- 100 MF residential units (Phase 2A) south of Akahahele Street with direct access provided by a new Project roadway, Road C, intersecting Akahahele Street to the east of Road A.
- 250 MF residential units (Phase 2B) south of Akahahele Street with direct access provided by Road A and Road C. 70 of the units will be located in live/work buildings.

Scenario 3 – Develop Phases 3-5 with a build-out of 2030 that include the following:

- 210 MF residential units (Phase 3) south of Mahinahina Gulch, with access provided by a new Project roadway, Road J, intersecting Honoapiilani Highway south of Mahinahina Gulch.
- 10-acre park (Phase 3) with two (2) practice fields south of Mahinahina Gulch, with access provided by Road J.
- North Central Neighborhood Retail (Phase 4) consisting of approximately 6,000 square feet of commercial space located north of Akahahele Street near the Kapalua Airport, with access provided by Road C.
- South Core Retail (Phase 4) consisting of approximately 55,000 square feet of commercial space located on the southeast corner of the Honoapiilani Highway/Akahahele Street intersection, with access provided by Road A.
- South Central Neighborhood Retail (Phase 4) consisting of approximately 9,000 square feet of commercial space located on the northeast corner of the proposed Honoapiilani Highway/Road J intersection, with access provided by Road J.
- 86 SF (Phase 5) residential lots north of Akahahele Street, with access provided by Road C. An additional ohana unit may be constructed on each lot for a total of 172 SF residential units.
- 14 SF residential lots (Phase 5) south of Mahinahina Gulch, with access provided by Road J. An additional ohana unit may be constructed on each lot for a total of 28 SF residential units.



Scenario 4 – A future elementary school, to be planned/developed by the Department of Education (DOE). Since the development of the school is not in the direct controller of the Pulelehua development, the timeframe for this school has yet to be determined. For purposes of this TIAR, a forecast build-out of 2035 was assumed.

- 750-student elementary school, with access provided by Road A.

6.1 Existing Conditions

In the vicinity of the Project, Honoapiilani Highway services the area as the main thoroughfare that connects the West Maui region. Honoapiilani Highway generally operates as a two (2) lane highway from Napilihau Street to Lower Honoapiilani Road and continues south as a four (4) lane highway from Lower Honoapiilani Road to beyond Keawe Street. In the vicinity of the Project, the intersections along the highway operate with either fixed coordinated signal timing plans or uncoordinated plans with lengthy through volume green times. As a result, numerous mainline left-turn movements and minor street approaches at various study intersections operate at LOS E/F conditions due to lengthy delays from the signal timing plans that favor the through movements along Honoapiilani Highway. Numerous movements also operate with low left-turning volumes (< 25 vehicles), which contribute to the LOS E/F conditions.

However, with the exception of the southbound left-turn movement at the Honoapiilani Highway/Keawe Street intersection, all vehicular movements at each study intersection operate adequately with under-capacity conditions during all peak hours of traffic.

Although the Lahaina Bypass Road (LBR) Phase 1B-2 along with improvements at the Honoapiilani Highway/Keawe Street intersection were completed in 2018, traffic count data was collected prior to completion, and the improvements were not included in the existing conditions scenario.

6.2 Base Year 2022

It is anticipated that by Base Year 2022, traffic will have increased over existing conditions due to various anticipated new developments in the Lahaina region and a 0.5% ambient growth rate, adjusted and applied from HDOT's MRTDM. By Base Year 2022 without the Project, traffic at the study intersections along Honoapiilani Highway is estimated to increase overall by approximately 15-30% on various parts of the corridor during the AM, PM and WE peak hours of traffic.

By Base Year 2022, it is assumed that various planned roadway improvements will be implemented even without the Project and include the LBR Phase 1B-2, improvements at the Honoapiilani Highway/Keawe Street/Lahaina Cannery Mall intersection to support the LBR extension, and various widening/restriping improvements at the Honoapiilani Highway/Napilihau Street intersection.

With the anticipated growth in traffic and planned roadway improvements, all study intersections are forecast to operate similar to existing conditions. Overall intersection delays generally increased by only 1-5 seconds at most study intersections. The majority of intersection movements currently operating at LOS E/F conditions will continue to operate similarly in Base Year 2022 and at under-capacity conditions, with the exception of the eastbound shared left-turn/through movement at Honoapiilani Highway/Kaanapali Parkway and the westbound left-



turn at Honoapiilani Highway/Kapunakea Street during the PM peak hour of traffic, which are forecast to operate at LOS F and overcapacity conditions.

6.3 Base Year 2022 With Mitigation

There are currently no plans to implement the following improvements, but they could be considered to mitigate forecast over-capacity conditions.

[7] Honoapiilani Highway/Kaanapali Parkway/Halelo Street

- Modify the eastbound approach to incorporate a dedicated left-turn lane, a shared left-turn/through lane and two (2) dedicated right-turn lanes.

With the recommended mitigation, the intersection is anticipated to improve and operate adequately at overall LOS D or better during all peak hours of traffic. Similar to existing conditions, numerous minor street approaches and major street left-turn movements will continue operating at LOS E/F due to the long through movement green time and cycle length.

[10] Honoapiilani Highway/Kapunakea Street

- Restripe the eastbound approach to provide an exclusive left-turn lane and a shared through/right-turn lane.

Restriping the eastbound approach will provide lane configuration consistent with the westbound approach. With the restriping, the intersection is anticipated to operate with all movements under capacity during all peak hours of traffic. As in existing conditions, various left-turn movements are expected to operate at LOS E/F due to the long coordinated cycle length.

6.4 Base Year 2025

By Base Year 2025 without the Project, traffic at the study intersections along Honoapiilani Highway is estimated to increase by approximately 1% for the majority of sections along the corridor over Base Year 2022 during all peak hours of traffic due to a 0.5% ambient growth rate adjusted and applied from HDOT's MRTDM. Intersection movements are expected to continue operating similar to Base Year 2022 with overall intersection delays expected to increase by 1-5 seconds.

6.5 Base Year 2030

By Base Year 2030 without the Project, traffic at the study intersections along Honoapiilani Highway is estimated to increase by approximately 2% for the majority of sections along the corridor over Base Year 2025 during all peak hours of traffic due to a 0.5% ambient growth rate adjusted and applied from HDOT's MRTDM. Intersection movements are expected to continue operating similar to Base Year 2022 with overall intersection delays expected to increase by 1-5 seconds.

The Honoapiilani Highway/Keawe Street intersection is expected to experience LOS E conditions along the northbound major through movement due to the projected increase in traffic during the PM peak hour of traffic. It should be noted that the LBR Phase 1C and Phase 1D extending the bypass to Kaanapali and Kapalua, respectively, are expected to help alleviate congestion along Honoapiilani Highway. However, as funding for construction of Phase 1C is



currently under discussion, extension of the LBR was not assumed to be completed by Base Year 2030.

6.6 Base Year 2035

By Base Year 2035 without the Project, traffic at the study intersections along Honoapiilani Highway is estimated to increase by approximately 2% along the corridor over Base Year 2030 during all peak hours of traffic due to a 0.5% ambient growth rate adjusted and applied from HDOT's MRTDM. Intersection movements are expected to continue operating similar to Base Year 2030 with overall intersection delays expected to increase by 1-5 seconds.

As noted for Base Year 2030, the Honoapiilani Highway/Keawe Street intersection is anticipated to operate at LOS E conditions for the northbound approach of the highway during the PM peak hour of traffic. Although no mitigation is proposed at this time, the LBR Phase 1C extension to Kaanapali is expected to alleviate long delays at the Keawe Street intersection once constructed.

6.7 Future Year 2022 Scenario 1

By completion of Scenario 1 in Future Year 2022, the Project is projected to generate a total of 77(103)[120] new external trips during the AM(PM)[WE] peak hours of traffic. Trips generated by the Project are expected to result in growth along major roadways in the study area. All generated traffic will access the site via Honoapiilani Highway at Akahahele Street and a new right-in, right-out (RIRO) access.

Due to the relatively minimal traffic increases due to Scenario 1, regional traffic at the study intersections (those not providing direct access to the Project) along Honoapiilani Highway is estimated to increase overall by less than 5%, while local traffic at the study intersections (those providing direct access to the Project) along Honoapiilani Highway is estimated to increase overall by less than 10% from Base Year 2022 without the Project scenario, during the AM, PM and WE peak hours of traffic.

All study intersections are forecast to operate similar to Base Year 2022 because of the minimal traffic generated by Scenario 1. Based on the AASHTO Green Book, all existing left-turn storage lane lengths at the Honoapiilani Highway/Akahahele Street intersection are adequate for the additional traffic generated by Scenario 1.

The new RIRO access along Honoapiilani Highway was analyzed as a stop-controlled intersection with stop control on the westbound right-turn movement out of the Project. The westbound right-turn movement is expected to operate adequately with LOS C or better during all peak hours. It is recommended that a northbound right-turn deceleration lane be provided for entry into the Project at the RIRO.

A new Road A is proposed to intersect Akahahele Street to provide internal Project access. The approach of Road A north of Akahahele Street is proposed for construction with Scenario 1. Due to the low through volumes currently using Akahahele Street, lengthy gaps in traffic are currently available. Because volumes at the new intersection are anticipated to be low with a maximum of 150 vehicles in a given peak hour, the intersection is expected to operate adequately.



6.8 Future Year 2025 Scenario 2

By completion of Scenario 2 in Future Year 2025, the Project is projected to generate a total of 118(144)[175] new external trips during the AM(PM)[WE] peak hours of traffic. Trips generated by the Project are expected to result in growth along major roadways in the study area. Traffic will access the site via Honoapiilani Highway at its intersections with Akahahele Street and the RIRO access.

By Future Year 2025 with the cumulative increases of Project Scenarios 1 and 2, regional traffic at the study intersections (those not providing direct access to the Project) along Honoapiilani Highway is estimated to increase overall by approximately 5-10%, while local traffic at the study intersections (those providing direct access to the Project) along Honoapiilani Highway is estimated to increase overall by approximately 10-20% from Base Year 2025 without the Project scenario, during the AM, PM and WE peak hours of traffic.

All study intersections are forecast to operate similar to Future Year 2022 Scenario 1 with the exception of the Honoapiilani Highway/Akahahele Street intersection. Since this intersection is the primary access from Honoapiilani Highway into the Project's Scenario 2 site, turning movements into and out of Akahahele Street will increase. As a result, the intersection will worsen, but operate adequately from an overall LOS B(C)[B] during the Future Year 2022 Scenario 1 condition to an overall LOS C(C)[C] for the Future Year 2025 Scenario 2. Various left-turn movements will operate at LOS E/F conditions during all peak hours due to the long cycle length and generally low turning movement volumes at the intersection. However, all movements will continue to operate under capacity. Based on the AASHTO Green Book, all existing left-turn storage lane lengths at the Honoapiilani Highway/Akahahele Street intersection are adequate for the additional traffic generated by Scenario 2.

The southern approach of Road A at Akahahele Street is proposed for construction with Scenario 2. Although lengthy gaps in through traffic are expected along Akahahele Street to help prevent long queues for opposing left-turn movements, exclusive left-turn storage lanes should be considered along Akahahele Street as traffic begins to increase as a result of the Project.

Road C is proposed to cross Akahahele Street east of Road A. With Scenario 2 of the Project, a maximum of 185 vehicles are forecast to traverse the intersection in a given peak hour with under 25 through vehicles along Akahahele Street in each direction. Although volumes are anticipated to be low, exclusive left-turn storage lanes should be considered to remove left-turns from the through lanes on Akahahele Street.

6.9 Future Year 2030 Scenario 3

By completion of Scenario 3 in Future Year 2030, the Project is projected to generate an additional 390(568)[748] new external trips during the AM(PM)[WE] peak hours of traffic. Trips generated by the Project are expected to result in growth along major roadways in the study area. Traffic generated by Project Scenario 3 will access the site via Honoapiilani Highway at Akahahele Street, the RIRO access and the proposed Road J south of Mahinahina Gulch.

By Future Year 2030 with cumulative increases of Project Scenarios 1, 2 and 3, regional traffic at the study intersections (those not providing direct access to the Project) along Honoapiilani Highway is estimated to increase overall by approximately 5-25%, while local traffic at the study intersections (those providing direct access to the Project) along Honoapiilani Highway is



estimated to increase overall by approximately 15-55% from Base Year 2030 without the Project scenario, during the AM, PM and WE peak hours of traffic.

The Honoapiilani Highway/Akahele Street intersection is expected to experience increases in delay as the Project is further developed. The majority of left-turn and minor street movements are anticipated to operate at LOS E/F with the projected growth. However, all movements will continue to operate under capacity, and the intersection is expected to operate adequately at overall LOS C(D)[C]. Based on the AASHTO Green Book, various storage lengths are recommended at the intersection as shown in Table 5.7. The Road A and Road C intersections with Akahele Street will continue to operate adequately at LOS D or better.

The new Honoapiilani Highway/Road J intersection was analyzed as an unsignalized intersection, which includes an exclusive westbound left-turn and westbound right-turn lane, an exclusive southbound left-turn lane and an exclusive northbound right-turn lane. A southbound median refuge lane along Honoapiilani Highway may be constructed to facilitate westbound vehicles making the left-turn movement from the Full Access onto Honoapiilani Highway. With the proposed configuration, the westbound left-turn out of the Project is expected to operate under capacity at LOS E/F during all peak hours of traffic. Although lengthy delays are anticipated, based on the MUTCD Four-Hour Vehicular Volume traffic signal warrant, a traffic signal is not forecast to be warranted based on weekday forecast volumes. However, the intersection should be monitored to determine if or when a traffic signal is warranted.

6.10 Future Year 2035 Scenario 4

A future elementary school will be planned/developed by the Department of Education (DOE) on the Project site. Since the development of the school is not in the direct controller of the Pulelehua development, the timeframe for this school has yet to be determined. For the purposes of this TIAR, a forecast build-out of 2035 with inclusion of the elementary school as part of the Project was assumed as Scenario 4.

By completion of Scenario 4 in Future Year 2035, the Project is projected to generate an additional 471(115)[0] new external trips during the AM(PM)[WE] peak hours of traffic. Elementary school students in Lahaina are currently serviced primarily by Princess Nahienaena Elementary School and King Kamehameha III Elementary School, further south of Keawe Street. It's anticipated that upon opening of the new Elementary School in the Project site, many students will transfer to this site from the Kaanapali, Honokowai, Kahana, Napili and Kapalua regions. Trips generated by the new elementary school were rerouted from existing traffic along Honoapiilani Highway to the new site. As a result, the majority of traffic increases were turning movement traffic turning into and out of Akahele Street on the east leg of its intersection with Honoapiilani Highway. Traffic reductions to various through movements along the highway were a result of the reroute.

With the additional trips generated by Scenario 4 and background traffic growth, several study intersections are forecast to operate with increased delay from Future Year 2030 with Scenarios 1, 2 and 3. All intersection movements forecast to operate at LOS E/F for Future Year 2030 Scenario 3 conditions will continue to operate at LOS E/F conditions during Future Year 2035 Scenario 4. Based on the AASHTO Green Book, various storage lengths are recommended at the Honoapiilani Highway/Akahele Street intersection as shown in Table 5.9.

As noted previously, some deficiencies in capacity and delay are forecast along northbound Honoapiilani Highway in the vicinity of the current northern terminus of the LBR at Keawe



Street. Upon completion of the LBR Phase 1C, which will extend the bypass road to Kaanapali, the majority of capacity and delay issues are anticipated to be resolved as a portion of vehicles will continue further north on the LBR rather than exiting to Honoapiilani Highway at Keawe Street. Because allocation of State funds for Phase 1C of the LBR is currently under discussion, the bypass extension was not assumed to be completed by Future Year 2035.



7. RECOMMENDATIONS

Full Base Year and Future Year 2022, 2025, 2030 and 2035 roadway improvements are listed in Appendix D and discussed in more detail below.

7.1 Planned Roadway Improvements

The following roadway improvements are anticipated to be completed by other entities by Year 2022.

Honoapiilani Highway/Napilihau Street

- An exclusive right-turn lane on the northbound Honoapiilani Highway approach and exclusive left-turn lane and shared through/right-turn lane on the westbound Napilihau Street approach will be constructed as part of Waialele Ridge roadway improvements.

7.2 Base Year 2022 Mitigation

There are currently no plans to implement the following improvements, but they could be considered by other entities to mitigate forecast over-capacity conditions.

[7] Honoapiilani Highway/Kaanapali Parkway/Halelo Street

- Modify the eastbound approach to incorporate a dedicated left-turn lane, a shared left-turn/through lane and two (2) dedicated right-turn lanes.

[10] Honoapiilani Highway/Kapunakea Street

- Restripe the eastbound approach to provide an exclusive left-turn lane and a shared through/right-turn lane.

7.3 Future Year 2022 Scenario 1 Mitigation

The following mitigations are proposed for Future Year 2022 Scenario 1.

[3] Honoapiilani Highway/Akahele Street

- Optimize existing signal timing to accommodate turning movement increases

[12] Honoapiilani Highway/Project RIRO

- Provide a new RIRO access for direct entry/exit to the Project via Honoapiilani Highway. Storage lane lengths shown below are exclusive of deceleration/taper length and will need to be verified upon design. Based on the AASHTO Green Book, 425 feet accommodates full deceleration length with a design speed of 50 mph.
 - Northbound right-turn lane → Provide at least 100 feet of storage space.



7.4 Future Year 2025 Scenario 2 Mitigation

[3] Honoapiilani Highway/Akahele Street

- Optimize existing signal timing to accommodate turning movement increases

[14-15] Akahele Street/Road A and Road C

- Consider providing exclusive left-turn storage lanes on Akahele Street to remove left-turns from the through lanes along Akahele Street. A minimum 50 feet of storage for the eastbound left-turn and 50 feet of storage for the westbound left-turn lanes should be provided, exclusive of taper and deceleration length

7.5 Future Year 2030 Scenario 3 Mitigation

[3] Honoapiilani Highway/Akahele Street

- Optimize existing signal timing to accommodate turning movement increases
- Lengthen existing left-turn storage lane lengths to provide the following storage space. Note, storage lane lengths shown below are exclusive of taper length or deceleration length and will need to be verified upon design:
 - Northbound left-turn lane → Lengthen left-turn lane to provide at least 250 feet of storage space.
 - Westbound left-turn lane → Lengthen left-turn lane to provide at least 200 feet of storage space.

[13] Honoapiilani Highway/Road J

- Provide a new unsignalized stop-controlled intersection south of the existing Honoapiilani Highway/Akahele Street intersection, with the westbound approach as the stopped approach. Monitor the intersection to determine if or when a signal will be warranted based on actual traffic volumes:
 - Northbound Approach → Provide one (1) through lane and a new right-turn deceleration lane with at least 100 feet of storage space. Additional taper and/or deceleration length to be provided based upon design.
 - Southbound Approach → Provide one (1) through lane and a new right-turn deceleration lane with at least 100 feet of storage space. Additional taper and/or deceleration length to be provided based upon design.
 - AASHTO Green Book recommends 425 feet for full deceleration length with a design speed of 50 mph for both northbound and southbound approaches.
 - A median refuge lane may be constructed to facilitate westbound left-turn traffic exiting Road J going onto Honoapiilani Highway.
 - Westbound Approach → Provide a new left-turn storage lane and a new 100 feet right-turn storage lane.



7.6 Future Year 2035 Scenario 4 Mitigation

[3] Honoapiilani Highway/Akahele Street

- Optimize existing signal timing to accommodate turning movement increases
- Lengthen existing left-turn storage lane lengths to provide the following storage space. Note, storage lane lengths shown below are exclusive of taper length or deceleration length and will need to be verified upon design:
 - Northbound left-turn lane → Lengthen left-turn lane to provide at least 275 feet of storage space.
 - Southbound left-turn lane → Lengthen left-turn lane to provide at least 275 feet of storage space.
 - Westbound left-turn lane → Lengthen left-turn lane to provide at least 275 feet of storage space.

[13] Honoapiilani Highway/Road J

- Monitor the intersection to determine if or when a signal will be warranted based on actual traffic volumes.