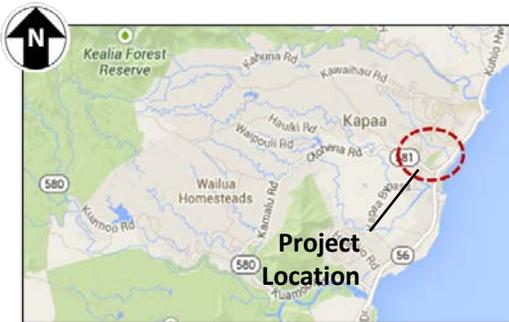


Appendix

B

Terminate Hauaala Road at Kuhio Highway



Background and Needs

Kuhio Highway intersects with Kawaihau Road, Hauaala Road, and the north terminus of the Temporary Kapaa Bypass Road within a 250-foot stretch. Kawaihau Road and Hauaala Road have full access with Kuhio Highway, while the Temporary Kapaa Bypass Road is a one-way southbound bypass road. The intersections at Kawaihau Road and Hauaala Road operate at LOS 'F' during peak hours. Vehicles coming from Kawaihau Road and Hauaala Road have a difficult time turning onto Kuhio Highway. Northbound left-turns from Kuhio Highway to these roads often exceed the turn lane storage length and queue back onto the highway, affecting overall corridor operations.

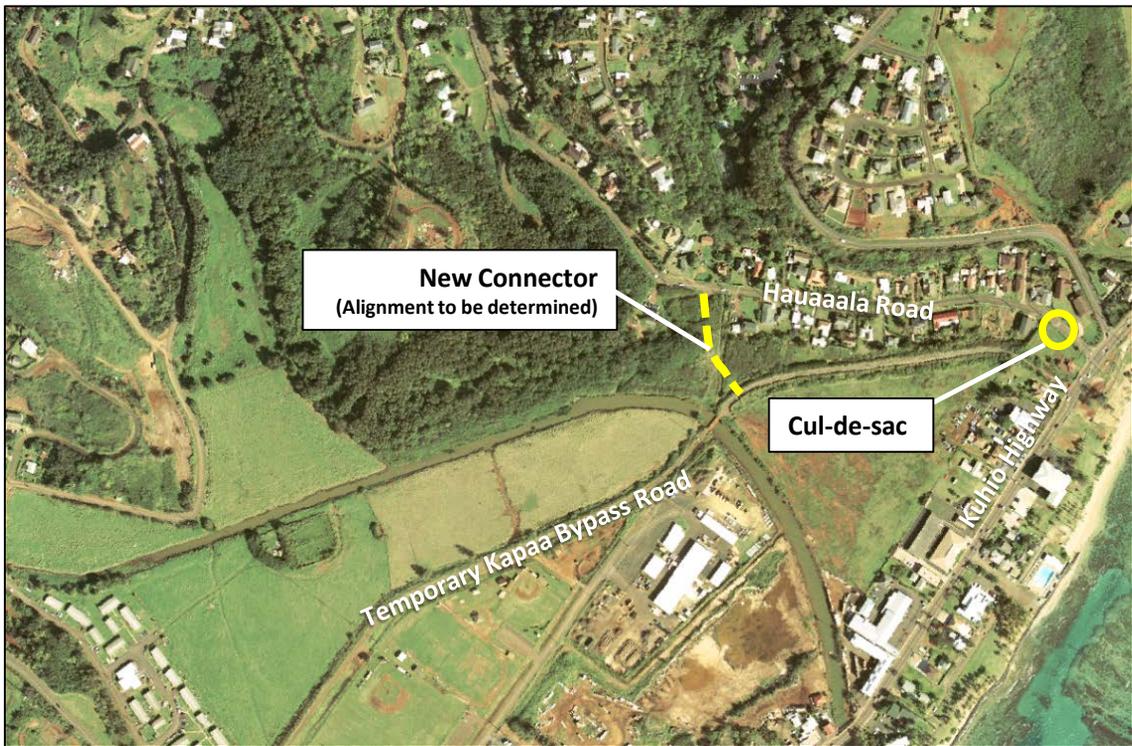
Also identified in the *Statewide Pedestrian Master Plan* (HDOT, 2013), this is an area of concern for pedestrians. Pedestrians from the residential neighborhoods in the area cross Kuhio Highway to access the multi-use path on the makai side of the highway. There are no marked crosswalks across Kuhio Highway. Adding to the challenge is the closely spaced intersecting roads. The combination of these factors creates challenging conditions for pedestrians intending to cross Kuhio Highway.

Another priority project, Project #6 proposes to widen the Temporary Kapaa Bypass Road, north of Oloheha Road, to provide a northbound lane and pedestrian and bicycle facilities.

Potential Solution

This area would benefit from a reduction in the number of access points to Kuhio Highway. One approach would be to convert Hauaala Road into a cul-de-sac and construct a new collector road to connect to the Temporary Kapaa Bypass Road, after the Temporary Kapaa Bypass Road has been widened to accommodate two-way traffic. This potential solution would reduce overlapping turn movements and provide more queue storage for northbound left-turn traffic from the highway to Kawaihau Road so that waiting vehicles do not block the mainline of Kuhio Highway. This potential solution could also divert trips from Kuhio Highway to the new two-way Temporary Kapaa Bypass Road and directly back to the neighborhoods without having to access Kuhio Highway.

Pedestrian safety can be enhanced by installing a marked crosswalk and/or other pedestrian related features.



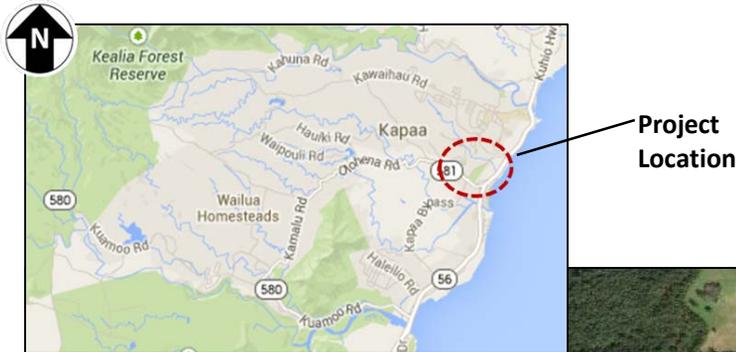
Cost Estimate

\$3,924,000

Readiness for Implementation

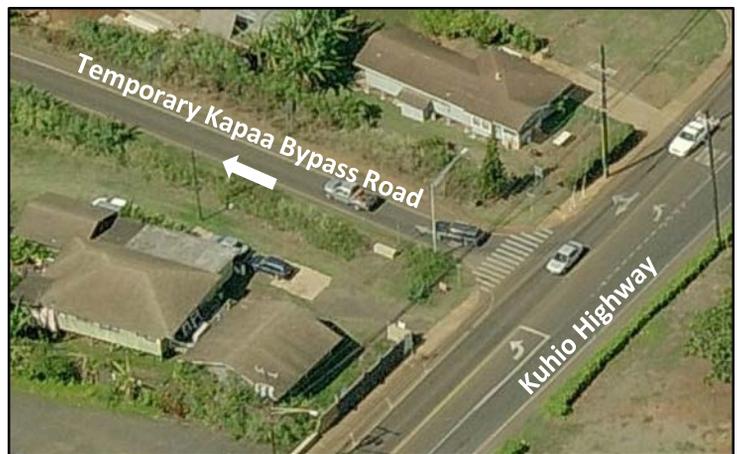
The Kapaa Transportation Solutions study used a range of environmental, community, and economic **goals, objectives, and evaluation criteria** to select and evaluate projects. This helps to ensure that the recommendations best meet the purpose and need for the study. The analysis and information used will help to ease the transition of this project through environmental analysis into project delivery. This project performed well when compared to other projects. Safety and congestion relief are the primary benefits. This project assumes that the widening of the Temporary Kapaa Bypass Road (Project #6) has been completed. It has strong support from the community. There are no wetlands, waterways, or known historic or archaeological sites in the project area. In 2020 during the PM peak hour, delay for vehicles from Hauaala Road heading south would improve by more than 5 minutes via the Temporary Kapaa Bypass Road as they no longer have to wait to turn onto Kuhio Highway. Other future traffic results are not as significant. There would be some right-of-way and environmental impacts due to the construction of the connector road.

Temporary Kapaa Bypass Road, north of Olohena Road



Background and Needs

In December 2006, the State of Hawaii Department of Transportation completed a one-lane extension of the Temporary Kapaa Bypass Road, from Olohena Road to Kuhio Highway. The extension allows vehicles heading south to bypass Kuhio Highway through Kapaa downtown. Despite this, the vehicle demand continues to exceed the capacity of Kuhio Highway and the corridor remains congested during peak traffic hours. Due to the density of adjacent roadside developments and other issues, widening of Kuhio Highway is not expected to be feasible.

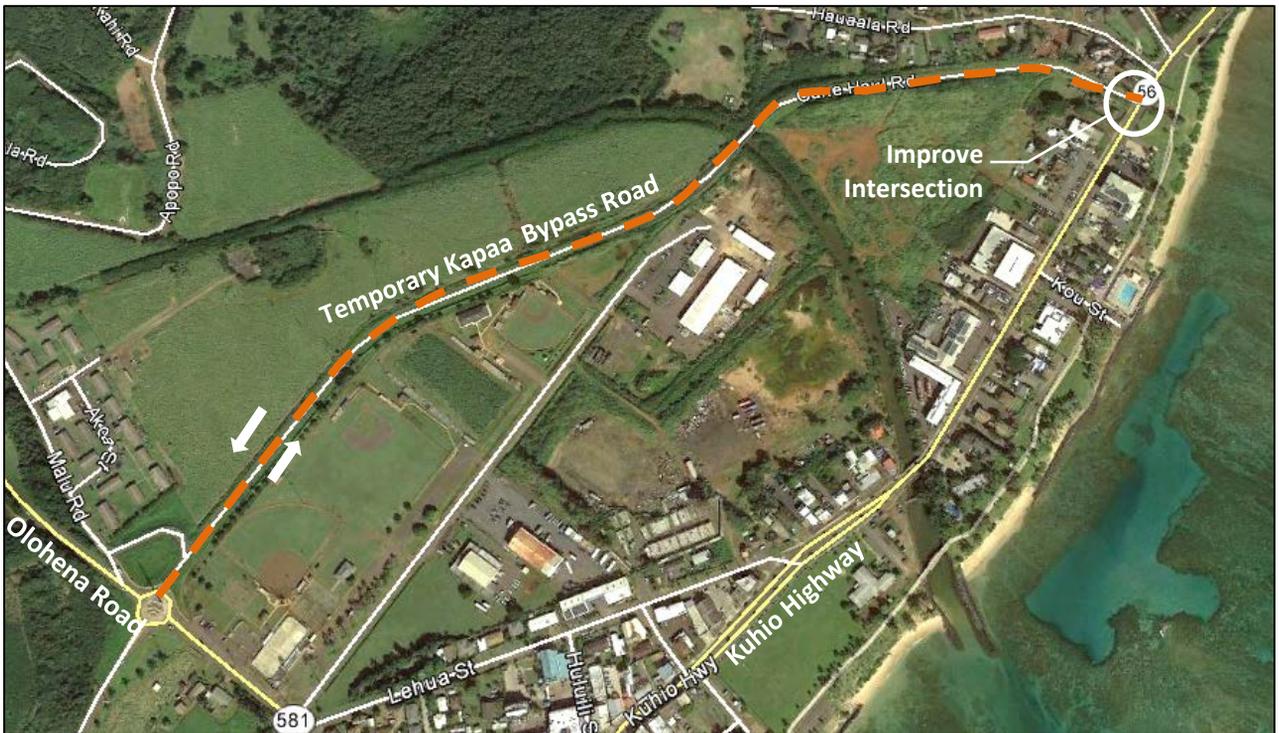


Kuhio Highway and north terminus of the Temporary Kapaa Bypass Road intersection

Potential Solution

Additional capacity could be provided by widening the Temporary Kapaa Bypass Road north of Olohena Road and providing a northbound lane to this segment. This will allow vehicular traffic to travel in both directions to bypass Kapaa downtown during peak traffic hours and help ease congestion along Kuhio Highway. Widening of the Temporary Kapaa Bypass Road will require improvements at the north terminus intersection with Kuhio Highway. Improvements to accommodate pedestrians and bicyclists should also be considered. The project is anticipated to improve capacity and relieve congestion.

A separate project, Project #3, can be included to address some of the issues that may rise related to a series of closely spaced intersection by the northern terminus.



Cost Estimate

\$22,560,000

Readiness for Implementation

The Kapaa Transportation Solutions study used a range of environmental, community, and economic **goals, objectives, and evaluation criteria** to select and evaluate projects. This helps to ensure that the recommendations best meet the purpose and need for the study. The analysis and information used will help to ease the transition of this project through environmental analysis into project delivery. This project performed well when evaluated and compared to other projects trying to achieve the purpose of the study. This project is one of the community's top priorities. There are no known historic or archaeological sites within the project area. The route crosses the Mo'ikeha Canal, but there are no other waterways or wetlands in the project area. Although the project by itself is not anticipated to significantly improve travel time on Kuhio Highway in year 2020 (due to wait time at the intersection with the Temporary Kapaa Bypass Road and Kuhio Highway), it is expected to shift both northbound and southbound vehicles to the Temporary Kapaa Bypass Road. This project combined with other priority projects (e.g. Project #3 – Terminate Hauaala Road at Kuhio Highway) will have a cumulative improvement in travel delay. Roadway widening may require right-of-way acquisition.

Group B: Project #8

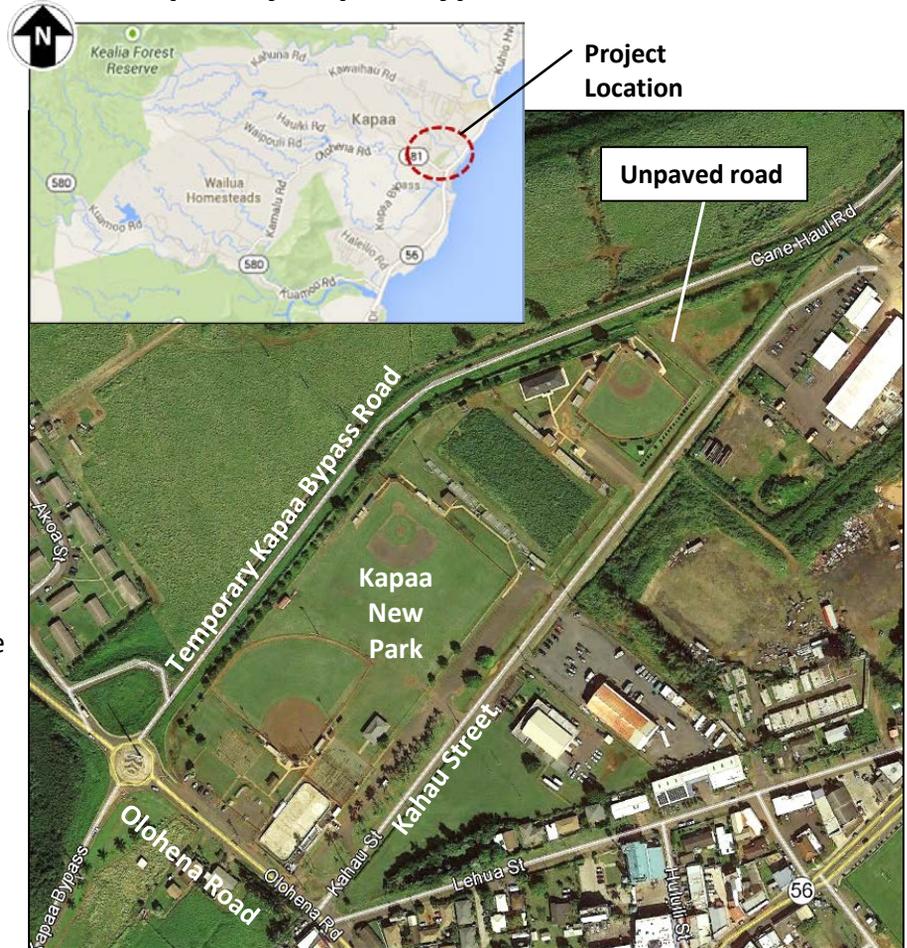
July 27, 2015

Kapaa New Park Access to Temporary Kapaa Bypass Road

Background and Needs

Kapaa New Park is envisioned as an expanded district park complex to include a new gym. The Kapaa Neighborhood Center and the swimming pool are proposed for relocation to this expanded district park complex. Soccer fields are planned north of Kapaa New Park and more housing will be built adjacent to the park. Congestion around Kapaa New Park will worsen as the land use intensifies and park uses increase.

Currently, park users access the park via Olohena Road and Kahau Street. On special occasions such as graduations, the unpaved dirt road near the recycling plant is opened and allows people to exit onto Temporary Kapaa Bypass Road so that Kahau Road does not back up.

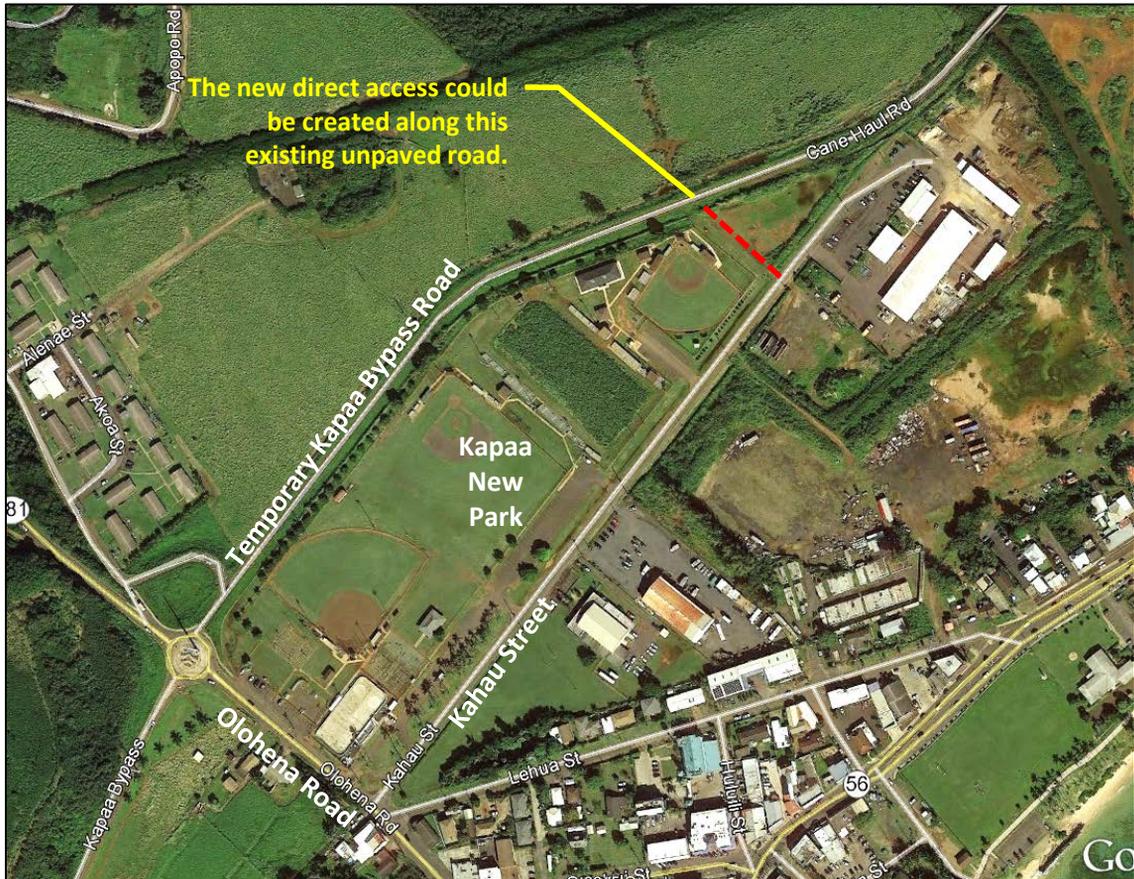


Kapaa New Park Concept Site Plan (Kauai Parks & Recreation Master Plan, 2013)

Potential Solution

This area would benefit from a permanent direct access from Kapaa New Park to the Temporary Kapaa Bypass Road (after it has been widened to accommodate two-way traffic – Project #6). Providing an alternative new access would relieve congestion on Kahau Road. People coming from the north could also access the park via the Temporary Kapaa Bypass Road without going onto Kuhio Highway through downtown Kapaa.

The new direct access could be created along the existing unpaved road. Consultation and coordination with County of Kauai, Department of Parks and Recreation is needed. Bicycle and pedestrian access between the park and the proposed soccer fields should also be considered.



Cost Estimate

\$4,102,000

Readiness for Implementation

The Kapaa Transportation Solutions study used a range of environmental, community, and economic **goals, objectives, and evaluation criteria** to select and evaluate projects. This helps to ensure that the recommendations best meet the purpose and need for the study. The analysis and information used will help to ease the transition of this project through environmental analysis or documentation (if needed) into project delivery. This project performed well when compared to other projects evaluated for meeting the purpose of the study. The project is expected to improve congestion relief and access. The community generally supports this project. There are no wetlands, waterways, or known historic or archaeological sites in the project area. Little to no right-of-way is required because of the existing unpaved road. The project would help to carry the additional vehicular, pedestrian and bicycle trips to/from the park.

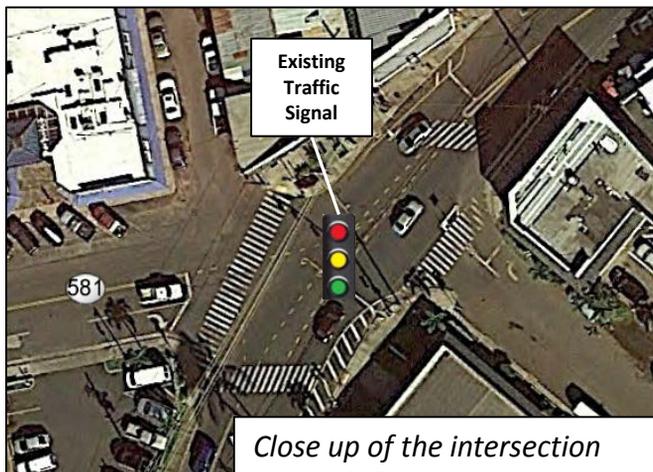
Intersection Improvements in Downtown/Historic Kapaa Town



Background and Needs

The intersection of Kuhio Highway at Kukui Street and Hululi Street is a signalized intersection with five approaches. It experiences heavy congestion and long queues along Kuhio Highway during the morning and afternoon peak hours. Due to the geometry of the intersection, the distance between the northbound and southbound stop bars on Kuhio Highway is approximately 120 feet. In addition, the crosswalk on the north approach of Kuhio Highway is skewed to align with Kukui Street. This skew increases the pedestrian crossing distance. The width of the intersection and the skew of the crosswalk require longer clearance intervals and decrease the available green time for northbound and

southbound movements. However, because the signal's cycle length is long, pedestrians need to wait for a long time for the pedestrian signal and many of them get impatient and jaywalk.



Close up of the intersection

The intersection of Kuhio Highway and Lehua Street is two-way stop-controlled and vehicles coming from Lehua Street experience long delays while waiting to turn onto Kuhio Highway. The majority of the vehicles want to turn left onto Kuhio Highway northbound.

Potential Solution

The current geometry of the Kuhio Highway and Kukui Street intersection limits efficient signal operations. Operations on Kuhio Highway could be improved by reconfiguring the intersection. The *Kuhio Highway Traffic Operation Review* study done by Kimley-Horn in December 2005 recommended that the east leg of Kukui Street could be closed and potentially converted to additional parking for surrounding businesses. In this case, the crosswalk on the north leg of Kuhio Highway would be relocated and the stop bar would be relocated south to the curb return of Hululili Street/Kukui Street. These modifications would essentially create a signalized “T” intersection that could allocate the majority of the signal green time to the northbound and southbound through movements while improving safety. The east leg of Kukui Street is currently closed on the first Saturday of the month for the Kapaa Art Walk event.

The area could also benefit from improvements at the Niu Street and Kuhio Street intersection. Improving the southbound Niu Street approach could attract vehicles and relieve congestion at Lehua Street by providing motorists another option to access Kuhio Highway.



Currently, the east leg of the intersection (Kukui Street) operates with right-in/right-out only movements.

Cost Estimate

\$642,000

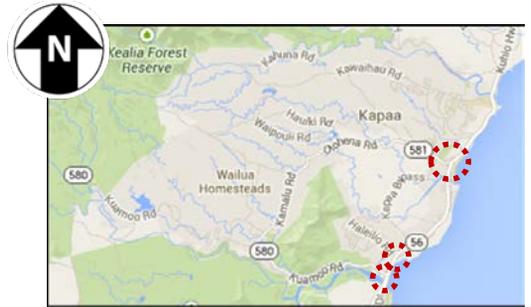
Readiness for Implementation

The Kapaa Transportation Solutions study used a range of environmental, community, and economic **goals, objectives, and evaluation criteria** to select and evaluate projects. This helps to ensure that the recommendations best meet the purpose and need for the study. The analysis and information used will help to ease the transition of this project through environmental analysis (if needed; these two projects are likely to have little impacts) into project delivery. These two projects performed well when evaluated and compared to other projects trying to achieve the purpose of the study. Main benefits include economic vitality, congestion relief, and safety.

The projects are supported by surrounding businesses because of its potential to improve safety and the increase in available parking. There are no waterways, wetlands, or known historic or archaeological sites in the project area. The project requires no additional right-of-way, and has limited environmental impacts.

Although the projects are not anticipated to significantly improve north/south travel time on Kuhio Highway in year 2020, it will reduce local street vehicle queues. It will also improve sight-distance for a complicated intersection, which is expected to enhance vehicle, pedestrian, and bicycle safety.

Kuhio Highway – Traffic Signal Optimization

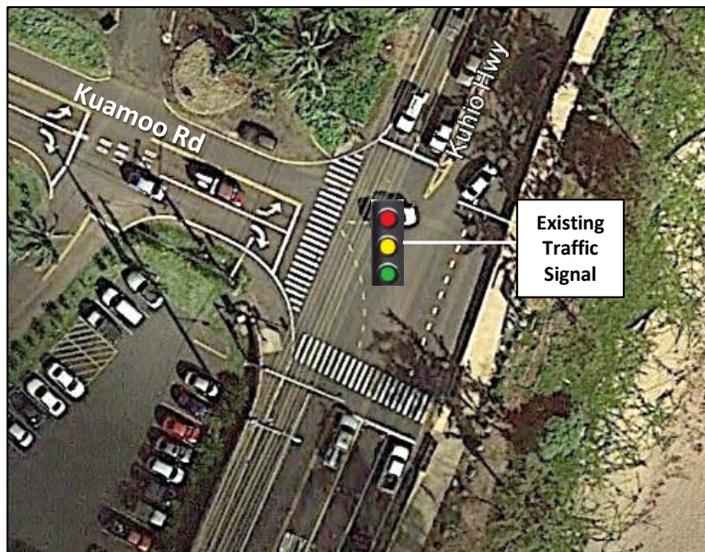


Background and Needs

The intersection of Kuhio Highway at Kukui Street and Huluili Street is a signalized intersection with five approaches. The signal system is a three-phase pre-timed system with a cycle length of 240 seconds. The intersection accommodates high through-traffic volumes, and northbound and southbound queues often affect overall corridor operations by causing delays and restricting upstream vehicle movements.



The intersections of Kuhio Highway at Haleilio Road and Kuamoo Road are approximately 1,700 feet apart. Both intersections are signalized 'T' intersections. The signal system at Haleilio Road is a pre-timed signal system with three phases, while the signal system at Kuamoo Road is a three-phase semi pre-timed system. Both signal systems have cycle lengths of 240 seconds. These two intersections experience long delays and operate at LOS E or F during the morning and afternoon peak hours. Queues at Haleilio Road exceed the available storage length on all approaches. At both intersections, makai-bound left-turning vehicles approaching Kuhio Highway experience long delays as they wait to turn onto the highway.



Potential Solution

Existing signal cycle lengths and timings should be reviewed against current traffic volumes and existing phases should be optimized to improve operations and reduce queue lengths along Kuhio Highway. Additional intersection channelization improvements, such as reconfiguration of lane approaches or modification of turn lanes (see Project #33 for example of shared left- and right-turns from Kuamoo Road during the peak morning commute), may be needed to further enhance intersection operations.

Splits and Phases: 6: Kuhio Highway & Kukui Street



Splits and Phases: 15: Kuhio Highway & Kuamoo Road



Example of phase movements at signalized intersections, along with associated green, yellow, and red times.

Cost Estimate

\$1,124,000

Readiness for Implementation

The Kapaa Transportation Solutions study used a range of environmental, community, and economic **goals, objectives, and evaluation criteria** to select and evaluate projects. This helps to ensure that the recommendations best meet the purpose and need for the study. The analysis and information used in this study should set the stage for implementation of these projects. It is not expected that environmental analysis will be required, due to no known environmental, land use, or societal impacts.

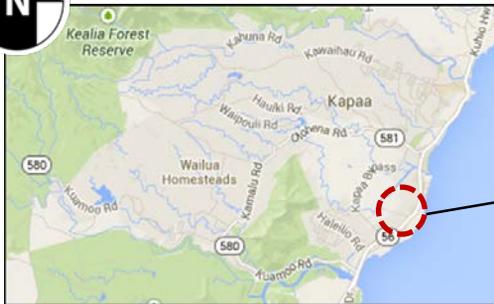
These projects performed well when evaluated and compared to other projects trying to achieve the purpose of the study. The cumulative benefits mostly include congestion relief.

These projects may not be enough to significantly reduce congestion on Kuhio Highway, since mid-block crosswalks, parallel parking maneuvers, driveways and turn movements also affect traffic flow. The project could be combined with other intersection improvement projects (e.g. Projects #16 and #20 – Intersection Improvements in Downtown/Historic Kapaa Town) to show more congestion relief benefit.

There are no waterways, wetlands, or known historic or archaeological sites in the project area. The projects require no additional right-of-way, and have no known environmental impacts.

Group B: Project #23 **Pouli Road Extension**

August 17, 2015



**Project
Location**



Background and Needs

The Waipouli Town Center and the Kauai Village Shopping Center are the primary commercial and shopping centers in East Kauai. The two centers are located on either side of the Uhelekawawa Canal and are connected by a pedestrian bridge. The two shopping centers generate a high volume of traffic throughout the day, with many vehicles coming from nearby homes or visitor accommodations. Currently, the Waipouli Town Center can be accessed via Pouli Road and Kuhio Highway, while the Kauai Village Shopping Center can only be accessed from Kuhio Highway. Pouli Road is a dead end road that leads to a private access. Vehicles headed to and from these shopping centers must use Kuhio Highway for a portion of their local trips, which can have a noticeable effect on regional highway operations.

Potential Solution

Improving and extending Pouli Road to connect with the Temporary Kapaa Bypass Road would create a direct access to the Waipouli Town Center from north of Kapaa Town and the mauka communities. The connection would provide an alternate route for the highway and would help reduce traffic volumes on Kuhio Highway between downtown Kapaa and the Waipouli Area. The alignment of the extension could potentially follow the existing cane haul road. If feasible, it could connect with the potential Eggerking Road extension (Project #24) to create a four-leg intersection with the Temporary Kapaa Bypass Road.



Cost Estimate

\$24,406,000

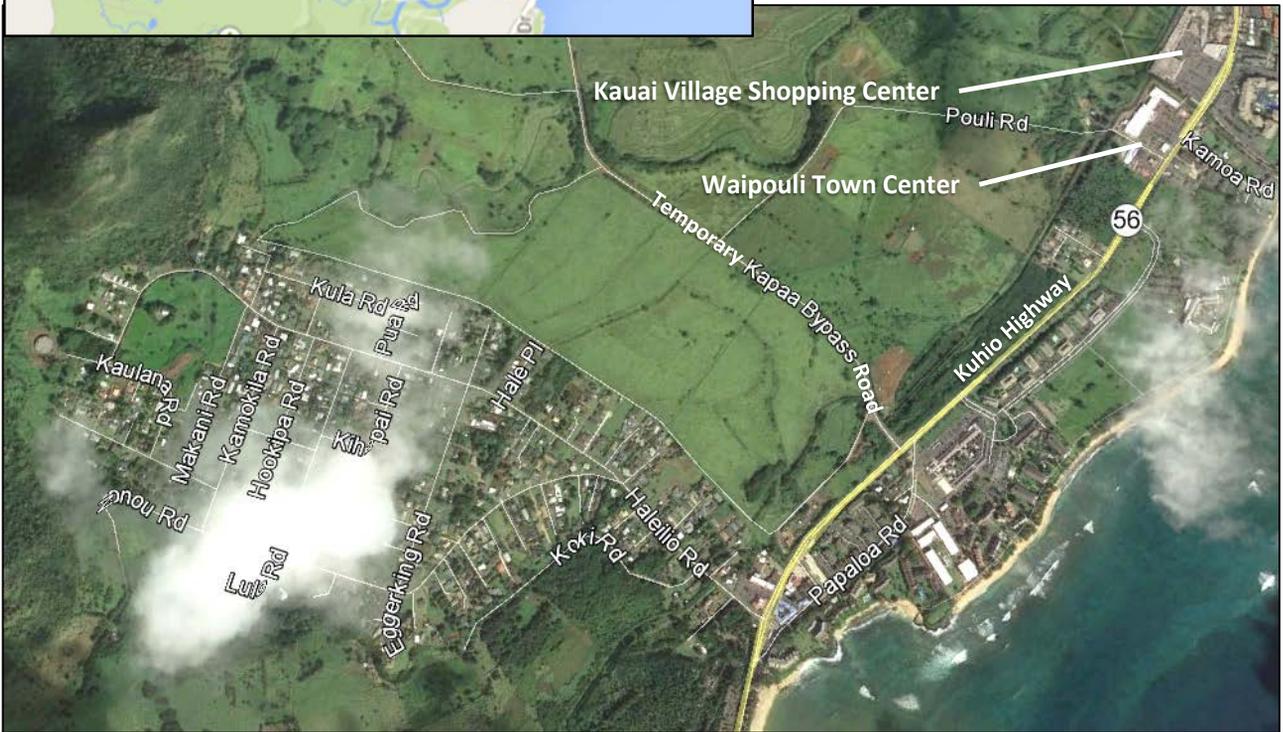
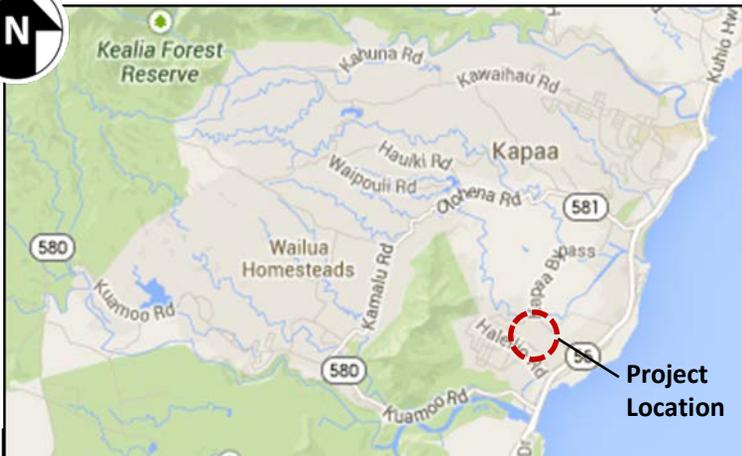
Readiness for Implementation

The Kapaa Transportation Solutions study used a range of environmental, community, and economic **goals, objectives, and evaluation criteria** to select and evaluate projects. This helps to ensure that the recommendations best meet the purpose and need for the study. The analysis and information used will help to ease the transition of this project through environmental analysis into project delivery. This project performed well when compared to other projects. Main benefits include capacity and congestion relief by providing an alternate route to Kuhio Highway. The community believes the project has benefits. There are no known historic or archaeological sites in the project area. The project would cross the Waipouli Canal, and would require analysis for impact to excavated wetlands mauka of the canal. In year 2020, the project would improve travel time between the Temporary Kapaa Bypass Road and Waipouli Town Center because vehicles could avoid the southbound left turn from the Temporary Kapaa Bypass Road to northbound Kuhio Highway. There would be right-of-way and environmental impacts due to the construction of the extension, including potential impacts to a house and undeveloped land.

Group B: Project #24

Eggerking Road Extension

August 17, 2015



Background and Needs

There is no other access for the Wailua Home Lots community south of the intersection of Kuhio Highway and the Temporary Kapaa Bypass Road, except via Haleililo Road from Kuhio Highway. An alternate access route from this community to the highway is needed for emergency access and evacuation. In addition, an alternate access route would help to improve traffic circulation by diverting a portion of trips from Kuhio Highway and Haleililo Road to the new connection. For instance, residents that currently make local trips to the nearby Waipouli Town Center and the Kauai Village Shopping Center, which are the primary commercial and shopping centers in East Kauai, via the Kuhio Highway/Haleililo Road intersection would have the option of using an alternate route.

Potential Solution

Improving and extending Eggerking Road to connect with the Temporary Kapaa Bypass Road would create an alternate access for the community. The connection would help to reduce traffic volumes on Kuhio Highway between Wailua and the Waipouli Area. The alignment of the extension is still to be determined but it could potentially follow the existing cane haul road. If feasible, it could connect with the potential Pouli Road extension (Project #23) to create a four-leg intersection with the Temporary Kapaa Bypass Road. This connection would provide the community a direct access to the Waipouli Town Center without accessing Kuhio Highway.



Cost Estimate

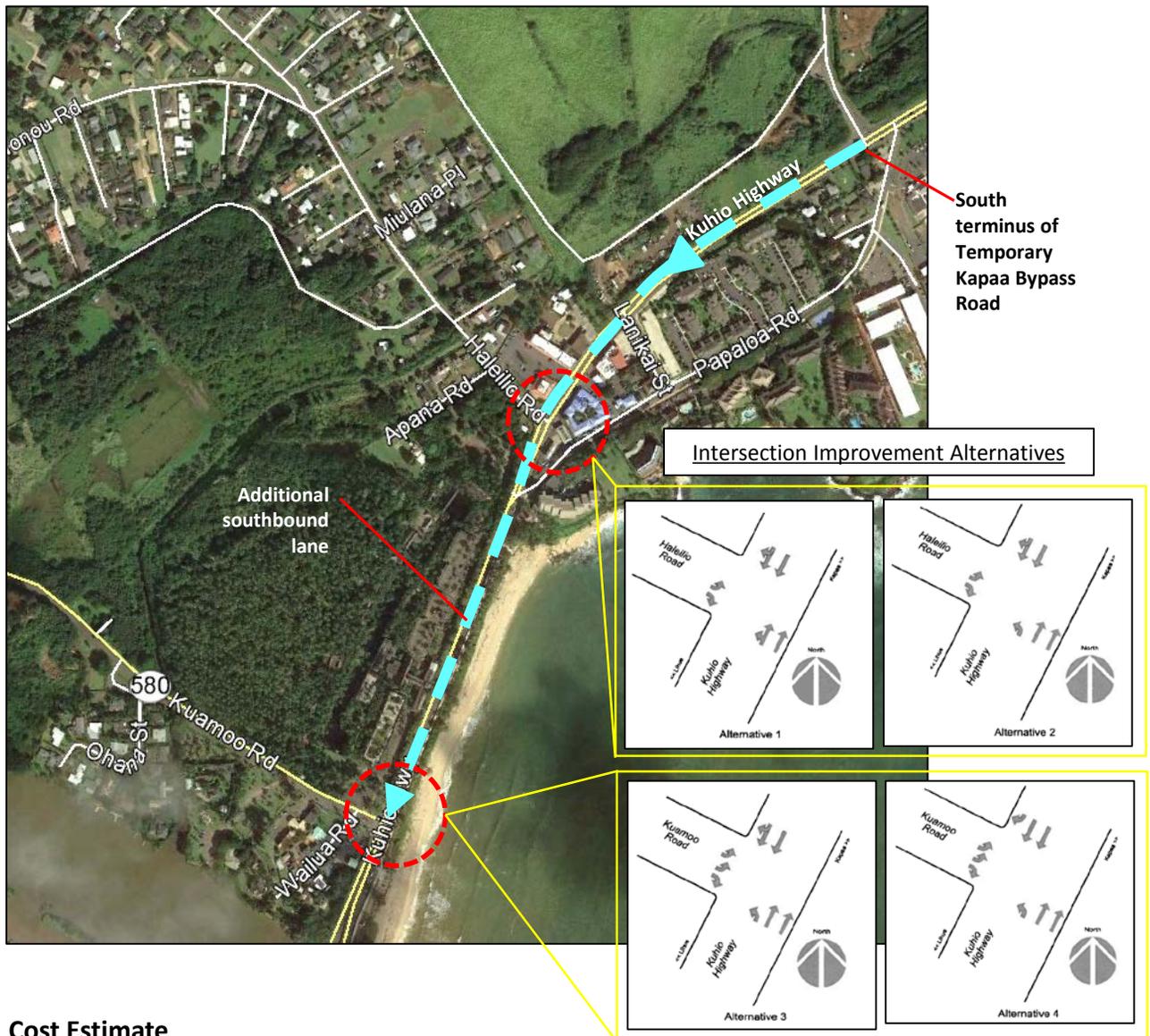
\$6,453,000

Readiness for Implementation

The Kapaa Transportation Solutions study used a range of environmental, community, and economic **goals, objectives, and evaluation criteria** to select and evaluate projects. This helps to ensure that the recommendations best meet the purpose and need for the study. The analysis and information used will help to ease the transition of this project through environmental analysis into project delivery. This project performed well when compared to other projects. Main benefits include capacity, congestion relief, and emergency access. The community believes the project has significant local benefit. There are no wetlands, waterways, or known historic or archaeological sites in the project area. In year 2020, the project is expected to improve local travel time between the Temporary Kapaa Bypass Road and Wailua homesteads, because vehicles from Wailua can avoid the Haleliio intersection to head north on the temporary bypass. There would be right-of-way and environmental impacts due to the construction of the extension in undeveloped land.

Potential Solution

The potential solution is to provide an additional southbound lane along Kuhio Highway between the south terminus of the Temporary Kapaa Bypass Road and Kuamoo Road. Improvements will be needed at the intersections with Haleililo Road and Kuamoo Road.



Cost Estimate

\$30,000,000 (already obligated)

Readiness for Implementation

It's been identified that the proposed improvements are part of the ongoing Kuhio Highway Short-term Improvements project. The Kuhio Highway Short-term Improvement project has already been funded and is currently in design. The project will improve capacity by adding one southbound lane to the highway, and will improve intersection operations at Haleililo Road and Kuamoo Road. The project is a high priority for the community. The project is anticipated to have regional traffic and queuing benefits – the southbound travel time on Kuhio Highway between the Temporary Kapaa Bypass Road and Kuamoo Road would improve by two minutes.

Kuhio Highway at Kuamoo Road



Project Location

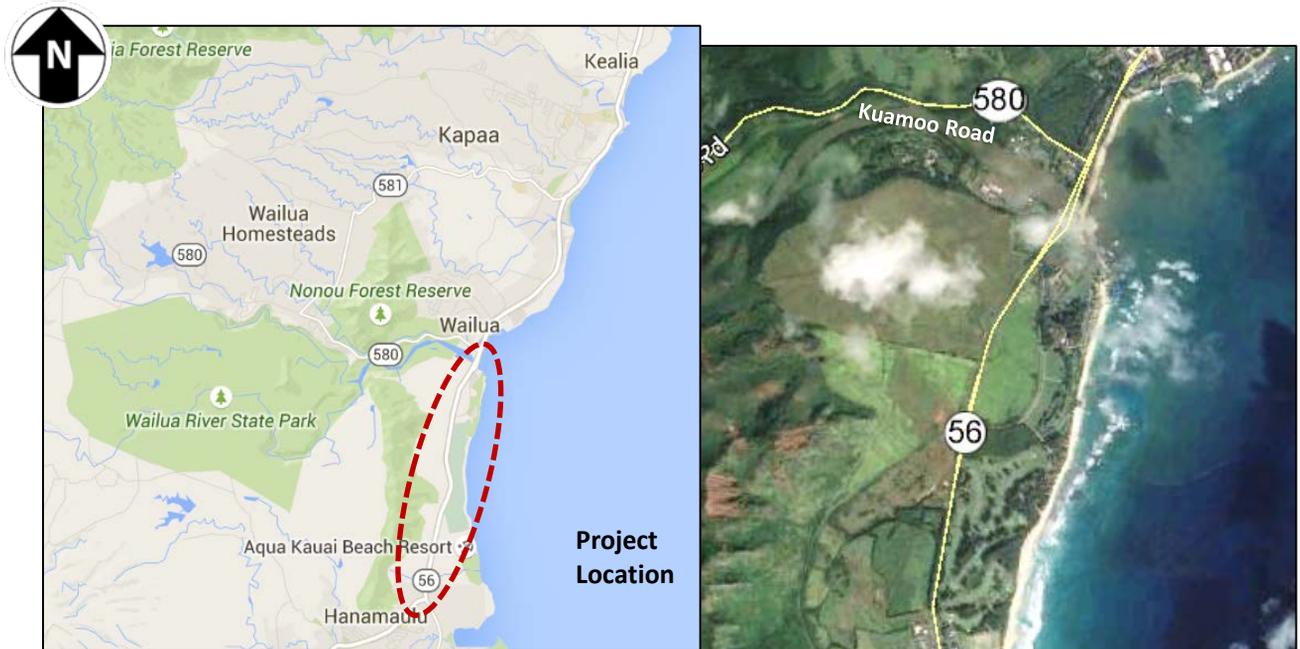


Existing Traffic Signal

Background and Needs

The T-intersection of Kuhio Highway and Kuamoo Road is over its capacity and motorists experience long delays and queues during peak traffic hours. The intersection operates at LOS 'F' during AM peak hours and at LOS 'E' during PM peak hours. The northbound Kuhio Highway approach consists of two through lanes and a left-turn pocket. The southbound approach consists of a single through lane and a right-turn pocket. The eastbound Kuamoo Road approach consists of a right-turn pocket and a left-turn lane. During the morning contraflow operations, one of the northbound Kuhio Highway through lanes is utilized for southbound traffic to accommodate commuters heading toward Lihue.

Kuamoo Road is the primary access route for Wailua Homesteads, one of the most densely populated census blocks in East Kauai. Heavy turning movement volumes associated with commuter traffic are a factor creating delays at the intersection. During the AM peak hour, right-turn volume onto southbound Kuhio Highway is high while makai-bound left-turning vehicles also experience long delays as they wait to turn onto Kuhio Highway northbound.

Group B: Project #38**Kuhio Highway between Kuamoo Road and Kapule Highway****Background and Needs**

Traffic along Kuhio Highway is heavily congested through Kapaa and Wailua. Within the study area, Kuhio Highway is a three-lane, two-way highway with two northbound lanes and one southbound lane. A contraflow lane is currently used to facilitate morning peak traffic headed toward Lihue.

Beginning at the south terminus of the Temporary Kapaa Bypass Road, one of the two northbound lanes is separated by traffic cones and converted to carry southbound traffic. This southbound contraflow lane is continuous through Wailua

and terminates at Kuamoo Road, where two permanent southbound lanes are provided over the Wailua River Bridge. The southbound contraflow lane begins again just south of the Wailua River Bridge, where southbound Kuhio Highway becomes one lane, and ends at the intersection of Kuhio Highway and Kapule Highway. The contraflow lane adds capacity to the southbound direction, but reduces capacity in the northbound direction. Tourists and some drivers may not be familiar with the contraflow operation and navigating intersections with turn lanes. The contraflow operation requires daily manual set-up and break-down and it costs over \$1 million a year.

Potential Solution

The potential solution is to provide an additional southbound lane along Kuhio Highway between south of Wailua River Bridge and Kapule Highway. The additional southbound lane could be provided by widening existing Kuhio Highway or using an existing cane haul road mauka of Kuhio Highway. The existing cane haul road is currently owned by the Department of Hawaiian Home Lands.

Cost Estimate

\$43,458,000

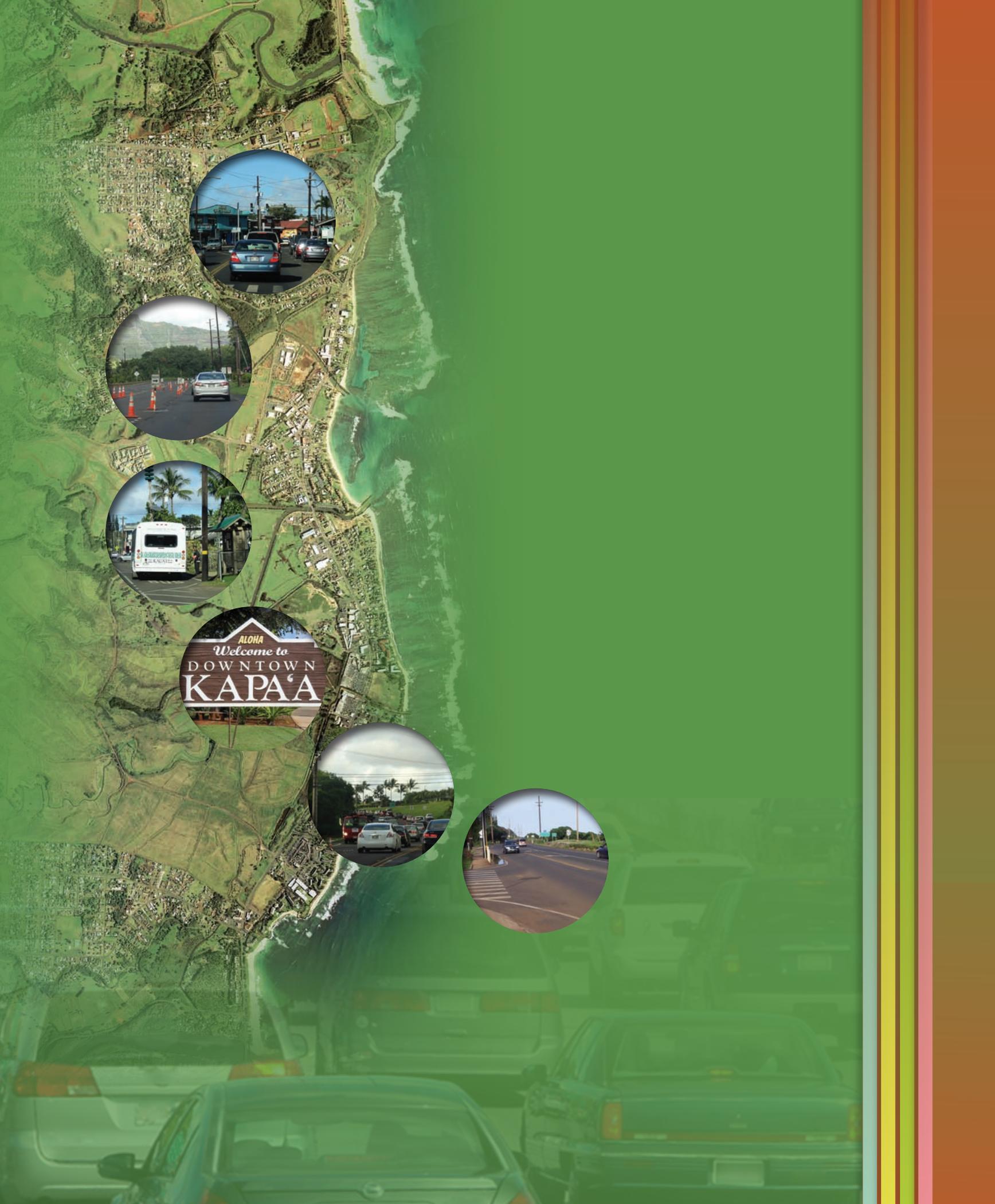
Readiness for Implementation

The Kapaa Transportation Solutions study used a range of environmental, community, and economic **goals, objectives, and evaluation criteria** to select and evaluate projects. This helps to ensure that the recommendations best meet the purpose and need for the study. The analysis and information used will help to ease the transition of this project through environmental analysis into project delivery. This project performed well when evaluated and compared to other projects trying to achieve the purpose of the study. Benefits include enhanced capacity and reduced congestion. The project would eliminate the need for contraflow lanes

between Wailua and Lihue and would have significant regional benefit for traffic operations and travel time. The project area contains the Wailua River. Depending on the route (widening the existing Kuhio Highway or using the cane haul road) the route is adjacent to the Wailua Golf Course or the Kalepa Mountain Forest Reserve. The route passes over a stream close to the Kuhio Highway/Kapule Highway intersection.

The option of using the existing cane haul road could be a more feasible option than the other because it would not involve widening the highway between the ditch and the golf course, moving utilities, and overcoming the environmental clearances for moving the ditch.





ALOHA
Welcome to
DOWNTOWN
KAPA'A

