

As a means to manage protection commitments and implement programs that ensure that cultural resources are not compromised, individuals consulted have recommended that the project proponents enter into a Memorandum of Agreement with the families of Olowalu and interested organizations. Such an agreement would address the concerns brought forward as a part of this study and draft a plan of action to ensure that the integrity of the cultural resources is maintained.

The Applicants recognize that there are several issues relating to potential impacts on cultural resources both offshore and within the project area that require further clarity as more defined project plans are developed. The Applicants have expressed a willingness to continue discussions with the cultural participants, caretakers of Ka'iwaloa Heiau, the families of Olowalu and organizations, such as Polanui Hiu. Further, the Applicants are open to further discussions to discuss the possibility of entering into a Memorandum of Agreement.

As the Master Plan for Alternatives 1 and 2 progresses, there will be ongoing consultation with the residents, especially those with lineal ties to the land and generational knowledge of current traditional cultural practices. Consultation with the residents, interested groups, agencies and community will continue to identify current traditional practices and seek the *mana`o* (thought, idea, opinion) on the potential for either positive or adverse effects to such practices. Adequate measures will be implemented to preserve and maintain the resources of the Olowalu Ahupua`a, as well as the traditional cultural practices of the area. Through these efforts, adverse impacts to cultural resources are not anticipated.

## **1213. Air Quality**

### **a. Existing Conditions**

There are no point sources of airborne emissions within close proximity of the Master Plan area. Smoke and dust from sugarcane harvesting and cultivation operations formerly caused an intermittent impact to the region's air quality. However, since Pioneer Mill Company, Inc. has ceased its sugar growing operations, this temporary air quality impact has also ceased.

According to the Air Quality Study prepared by B.D. Neal & Associates, except for periodic impacts from volcanic emissions (vog) and possibly occasional localized impacts from traffic congestions and local agricultural sources, the present air quality of the project area is relatively good. See **Appendix “H”**.

**b. Potential Impacts and Mitigation Measures**

Air quality impacts attributed to the Master Plan for Alternatives 1 and 2 will include short- and long-term impacts either directly or indirectly. Short-term impacts will occur during construction from fugitive dust and exhaust emissions from stationary and mobile construction equipment and from the disruption of traffic during the construction period. Implementation of an effective dust control plan such as limiting the extent of the area to be disturbed, mulching and chemical stabilization of disturbed areas, watering active work areas, wind screens, keeping adjacent paved roads clean, minimizing traffic disruptions and covering of open-bodied trucks will mitigate construction related impacts.

Motor vehicles coming to and from the Master Plan area (under both Alternatives 1 and 2) will result in a long-term increase in air pollutant emissions in the project area from the exhaust of the internal combustion engines. The mesoscale analysis of traffic is shown in the following **Table 1426**.

**Table 1426.** Estimated Emissions for Honoapiʻilani Highway at Olowalu

Scenario	Emissions (tons/yr)		
	Carbon Monoxide (CO)	Nitrogen Oxides (NOx)	Volatile Organic Compounds (VOC)
Existing	237	24	19
2020 Without Project	189	11	12
2020 With Project	226	13	13
Source: B.D. Neal & Associates			

Although increased traffic volumes are expected, these would be offset by the retirement of older, higher-emission vehicles over time with newer more efficient lower-emission vehicles. Emissions in 2020 with the project would

be slightly higher compared to without the project, however, emissions would be lower than the existing emissions. Emissions from project traffic will not have a significant adverse impact on air quality in the project area.

Depending on the demand levels, long-term impact on regional air quality are also possible due to indirect emissions associated with the project's electrical power and solid waste disposal requirements which may create more emissions at the power plant and at the landfill. Incorporating energy conservation design features and promoting conservation and recycling programs within the Master Plan area (for Alternatives 1 and 2) such as those recommended by LEED ND will reduce any indirect impacts due to increased power usage and solid waste disposal.

Updated traffic counts were conducted in 2013 with a new buildout year of 2024. B.D. Neal & Associates reviewed the updated traffic impact analysis report (TIAR) and found the revised estimated traffic volumes are approximately 10 to 15 percent higher, as such, the traffic-related air pollution emissions can also be expected to be 10 to 15 percent higher. However, the emissions would likely not have a significant adverse impact on air quality. This conclusion will not change with the slightly higher traffic volumes forecast in the revised TIAR. See **Appendix "I-1"**.

#### **1314. Noise**

##### **a. Existing Conditions**

Vehicular noise from traffic traveling along Honoapi'ilani Highway is the primary source of intermittent noise at the Master Plan area for both Alternatives 1 and 2. Ambient noise conditions are generally attributable to natural conditions such as ocean waves, wind and rain.

According to the Preliminary Acoustic Study prepared by Y. Ebisu & Associates, dated October 2011, two (2) existing residences along Honoapi'ilani Highway at the east end of the Master Plan Olowalu presently experience traffic noise levels near the State of Hawai'i Department of Transportation (HDOT) 66 Equivalent Hourly Sound Level (Leq(h)) noise abatement criteria when appropriate noise mitigation may be warranted. Existing traffic noise levels do not exceed the 71 Leq(h) noise abatement

threshold criteria for commercial properties at the Olowalu General Store. See **Appendix “FJ”**.

**b. Potential Impacts and Mitigation Measures**

At full build-out, the primary noise generator from the proposed Master Plan under both Alternatives 1 and 2 would be traffic along the realigned Honoapiʻilani Highway. The Acoustic Study predicted noise levels in 2020 for the existing Honoapiʻilani Highway and the proposed realignment that will connect to the relocated highway. Refer to **Appendix “FJ”**. The Study concluded that future traffic noise levels are not expected to exceed the HDOT 66 Leq(h) noise abatement threshold criteria at existing structures. Therefore, additional sound attenuation measures should not be required to mitigate future traffic noise impacts at these existing structures. However, traffic noise from the future relocation of Honoapiʻilani Highway may exceed HDOT 66 Leq(h) noise criteria at planned residences, parks, and other noise sensitive land uses along the proposed highway alignment. The Applicants will implement noise mitigation measures to reduce future traffic noise levels to acceptable levels at new noise sensitive receptors, such as dwellings on the rural lots. Mitigation measures may include the following:

- Increasing the rights-of-way widths along the new highway;
- Providing additional buffer distances between the rights-of-way and structures or exterior areas with frequent human use; or
- Adding sound attenuating walls along the rights-of-way, tops of fill, or tops of retaining walls fronting noise sensitive lots.

Potential noise impacts at any new noise sensitive or commercial establishment within the Master Plan for Alternatives 1 and 2 may be mitigated through the use of sound walls or other noise mitigation measures within the individual lot development plans. The proposed relocation of Honoapiʻilani Highway is expected to be completed prior to the redevelopment of open areas adjacent to the roadway. Noise abatement measures such as adequate setbacks and sound attenuating walls or berms will be incorporated into these new developments along the roadway as may be required.

Ambient noise conditions will be temporarily impacted by construction of the proposed Master Plan under both Alternatives 1 and 2, including construction of the proposed relocation of Honoapiʻilani Highway, as well as development of the vertical structures. Heavy construction equipment, such as bulldozers, front-end loaders, and material-transport vehicles, will likely be the dominant source of noise during the construction period. These noise impacts will be mitigated by standard curfew periods, properly muffled equipment, administrative controls, and construction barriers as required.

In addition, the possible use of blasting or chemicals to break or dislodge rock will be considered for the proposed relocation of Honoapiʻilani Highway to reduce the overall highway construction period, and to reduce the amount of time required to remove the rock if only mechanical equipment were used. Controlled blasting using relatively small charges may be feasible without causing adverse noise and vibration impacts at nearby residences. Use of chemical expansion to break or dislodge rock during construction will also be considered where blasting or mechanical means are less desirable. Nighttime or early morning blasting operations are not anticipated. If blasting is utilized, the following recommended mitigation measures will be implemented:

- Regularly monitor air blast and ground vibration levels at the closest noise sensitive residence(s) or structures(s) during blasting operations.
- For initial blasts, use the minimum practical charge weight per delay as well as the minimum practical number of delays or bore holes.
- If practical, reduce maximum air blasts to less than 110 decibel Level (dBL) at the nearest noise sensitive residences.
- Schedule blasting during the warm periods of the day and if possible, during fixed time periods.
- Use the most conservative vibration criteria for damage to “Ruins and Ancient Monuments”.

Updated traffic counts were conducted in 2013 with a new buildout year of 2024. Y. Ebisu & Associates reviewed the updated traffic counts and

concluded the findings presented in the Preliminary Acoustic Study are still deemed applicable. See **Appendix “J-1”**.

A Community Noise Permit will be obtained from the DOH, as applicable, if construction noise is expected to exceed allowable levels.

#### **1415. Scenic and Open Space Resources**

##### **a. Existing Conditions**

From Honoapiʻilani Highway, on either side of Olowalu where the highway is in close proximity to the shoreline, mauka and coastal views are exceptional due to the scarcity of development in the area and the sloping topography on the mauka side. However, where the highway moves more inland near Kapaʻiki, the mauka/makai views become obstructed by existing vegetation and development (in the vicinity of the former Manager’s house and the Olowalu General Store). At this portion of the highway, there are partial glimpses of the ocean through existing landscaping and virtually no views to the mountains, due to the vegetation and buildings on the mauka side of Honoapiʻilani Highway. The existing monkey pod trees along both sides of the highway are a visual resource in this part of Olowalu. See **Appendix “JK”**.

Shoreline views in the Olowalu area offer vistas of the Pacific Ocean, as well as the islands of Lanaʻi and Kahoʻolawe. Portions of the Kīhei-Mākena coastline and the islet of Molokini are also visible from Olowalu as well as portions of the west-facing slopes of Haleakalā. The West Maui Mountains and Olowalu Valley can be seen looking mauka over the residences at Kapaʻiki.

The Olowalu Mauka Subdivision approved in 2002 proposed a system of greenways and open space areas. A total of 14 lots were developed and sold. The developed 14-lot Olowalu Mauka Subdivision included greenways along Luawai Street. The remaining lots and easements owned by Olowalu Town, LLC and Olowalu Ekolu, LLC are included in the Master Plan for Alternatives 1 and 2.

**b. Potential Impacts and Mitigation Measures**

The Master Plan for Alternatives 1 and 2 offers an architecturally integrated plan which sets standards for height, landscaping, parks, open space corridors and street alignments oriented mauka to makai in order to preserve scenic views from the mountains to the ocean. The orientation of the town centers to preserves scenic view planes from Pu'u Kilea through the OCR and Ka'iwaloa Heiau which maintains its visual connection to the islands of Lana'i and Kaho'olawe. Scenic views to the ocean and mountains will be created when the future relocated Honoapi'ilani Highway is constructed further mauka at a higher elevation. Refer to **Appendix "JK"**.

The proposed Green Space Plan integrates parks and open space areas within the Master Plan for both Alternatives 1 and 2 to relieve the massing and densities of the built environment as well as preserve significant open space resources such as the OCR, Olowalu Stream and the existing 150 feetfoot shoreline setback area. Refer to **Figure 3** and, **Figure 4** and, **Figure 5** and see **Figure 1524**. TheIn Alternative 1, the creation of recreational parks and open space along the shoreline near Camp Olowalu and north of Olowalu Stream will create new scenic view corridors to the ocean from the existing Honoapi'ilani Highway by removing the dense vegetation that currently block views to the ocean.

The removal of vegetation does not include the existing monkey pod trees which will be preserved in order to maintain the existing canopy along Honoapi'ilani Highway. In Alternative 2, the area makai of Honoapi'ilani Highway will remain in its existing condition. As the Master Master Plan is for Alternatives 1 and 2 is developed a system of greenways incorporating pedestrian paths and bicycle paths will be implemented. New subdivision actions will be required to create the system of greenways in accordance with the Green Space Plan.

**1516. Shoreline Access**

**a. Existing Conditions**

A government beach reserve is located along the shoreline extent of Olowalu. Refer to **Figure 3**. The shoreline along the government beach reserve consists

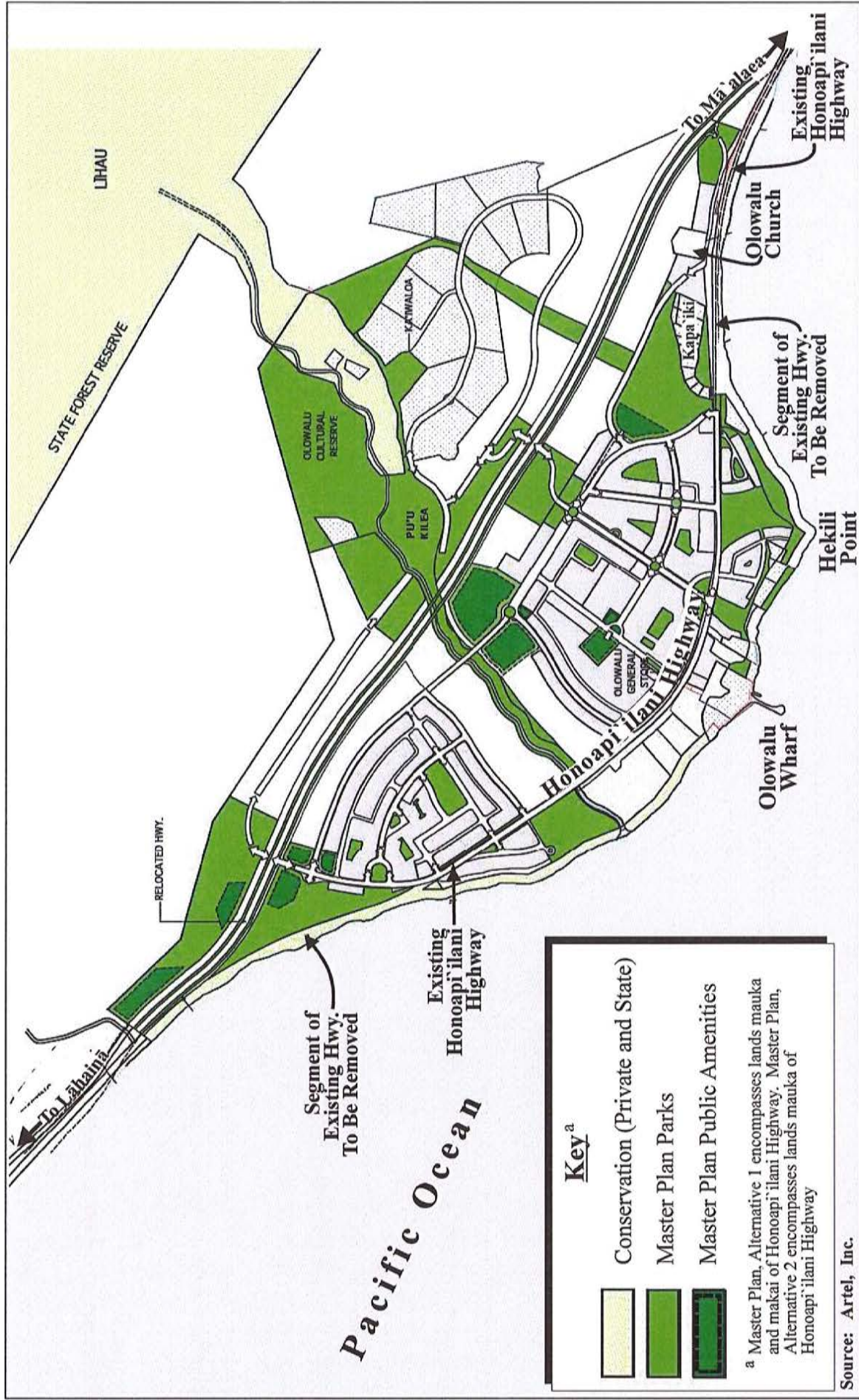


Figure 1524

# Proposed Olowalu Town Master Plan Conceptual Green Space Plan

NOT TO SCALE



of rounded, waterworn basalt and bleached coral rubble and heavily vegetated areas consisting of `opiuma, kiawe and grasses. Lateral shoreline access opportunities to the coastline are available through the government beach reserve on the makai side of the Master Plan area for Alternative 1. In areas where the beach reserve is not contiguous, access is provided through the adjacent lots via a minimum 50-foot wide lateral access easement established as part of a SMA approved in 2000. Refer to **Appendix "S"**. Access to the government beach reserve is available through both the eastern and western ends where the reserve meets Honoapi`ilani Highway, and through the beach access to Olowalu Wharf from Honoapi`ilani Highway. Refer to **Figure 24**. Due to traffic volume and speeding vehicles along Honoapi`ilani Highway, there are existing concerns regarding access to the beach reserve entries. Near Mile Marker 14, there are currently no turning lanes to the shoreline which creates a hazardous condition from vehicles pulling off and parking randomly along the highway. ~~Refer to Figure 15.~~

**b. Potential Impacts and Mitigation Measures**

The preservation and enhancement of public access to shoreline resources is an important planning element of the proposed Master Plan for Alternative 1. In Alternative 2, the area makai of the highway will remain in its existing condition and existing access maintained. Notably, the relocation and widening of Honoapi`ilani Highway inland from the shoreline creates the opportunity to utilize the existing highway as a recreational corridor which will result in a safer and enhanced access to the shoreline.

The Master Plan Alternatives 1 and 2 will maintain the existing 150-foot-foot shoreline setback area where established as part of the SMA approval for the Olowalu Subdivision in 2000. Within the setback in Alternative 1 development will be limited to public access to the shoreline, non-structural recreational parks uses and open space. Refer to **Figure 4**. In Alternative 2, the area makai of Honoapi`ilani Highway will retain the existing uses. Refer to **Figure 5**. The Master Plan for Alternatives 1 and 2 once developed will ~~provide~~ maintain continuous public access to the shoreline from the Lāhainā end to the Mā`alaea end of Olowalu.

## **B. SOCIO-ECONOMIC ENVIRONMENT**

### **1. Population**

#### **a. Existing Conditions**

The population of the County of Maui has exhibited relatively strong growth over the past decade. The County's resident population grew by 20.9 percent between 2000 and 2010, compared to a 12.3 percent increase in the State of Hawai'i as a whole during the same time period. Maui County's population increased from 128,094 residents in 2000 to 154,834 residents in 2010. Population on the island of Maui exhibited even stronger growth than the County as a whole, with a 22.8 percent population increase over the decade. Approximately 144,444 residents lived on the island of Maui in 2010 (U.S. Census Bureau, 2000 and 2010). Maui County's resident population is projected to rise to 174,450 people in 2020 and to 199,550 people in 2030 (County of Maui, June 2006).

The resident population of the West Maui Community Plan region has also demonstrated substantial increases. Population gains were especially evident in the 1970's as the rapidly developing visitor industry attracted many new residents. The population of the West Maui Community Plan region increased from 14,574 in 1990 to 17,967 in 2000. The resident population of West Maui increased by 23.3 percent over the next decade, reaching approximately 22,150 residents in 2010, including 80 residents in Olowalu, according to the U.S. Census. This is above the 21,577 residents projected by 2006 Socio-Economic Forecast prepared for the 2030 General Plan Update. The strong population growth in the region is expected to continue over the next 20 years. Population in West Maui is projected to be 25,100 in 2020 and 28,900 in 2030 (County of Maui, June 2006).

#### **b. Potential Impacts and Mitigation Measures**

The proposed Master Plan is for Alternatives 1 and 2 are intended to provide new housing opportunities in the context of a comprehensively planned community. The establishment of a new community in Olowalu as an

integrated living and working village is a means to accommodate growth in population envisioned over the next 20 years.

The proposed project alternatives are intended to meet demand for workforce housing and would result in an increase in the population in Olowalu subregion of West Maui. Based on the average household size in Maui County in 2010 of 2.82 (U.S. Census, 2010), the proposed project would have an estimated population of 4,239 residents at full build-out (U.S. Census, 2010). While the proposed project would increase the number of residents living in Olowalu, the project is expected to attract existing Maui residents who currently live in West Maui, Central Maui, and other regions of the island. New employment opportunities attributed to construction and long-term commercial ventures may attract new residents to the island. However, this element of in-migration population growth is factored into the population projections developed by the County of Maui.

## **2. Economy**

### **a. Existing Conditions**

The economy of Maui is heavily dependent upon the visitor industry. The dependency on the visitor industry is especially evident in West Maui, which is one of the State's major resort destination areas. The Kā'anapali Resort includes a number of hotels, including the Maui Marriott Resort, Hyatt Regency Maui, the Westin Maui, and the Sheraton Maui.

West Maui's visitor orientation is reflected in the character of Lāhainā Town, which serves as a center for visitor-related retail outlets, as well as visitor-related activities.

In terms of the agriculture industry, Pioneer Mill Company, Inc. ceased sugarcane cultivation on its lands in 1999. Of its 6,700 acres, approximately 500 acres are currently utilized for the growing of coffee. Other crops, such as seed corn, are being planted. Another large agricultural operation was Maui Land & Pineapple Company's pineapple fields in the Honolua region. In December 2009, the company ceased its pineapple operations.

The State and County economies have been impacted by the nation's recent economic recession, with the major industries of tourism, construction, and real estate being particularly hard hit due to, among other factors, reduced discretionary income and tightening of credit. Unemployment rates in the State and County peaked in the summer of 2009. Since that time, the unemployment rate has slowly declined. In ~~October 2011~~ August 2015, the seasonally unadjusted unemployment rate in Hawai'i was 3.3 percent and in Maui County stood at 6.53.4 percent. ~~The unemployment rate in the County of Maui was higher at 7.6 percent. However, this~~ This represents an improvement from one year ago, when the County's seasonally unadjusted unemployment rate was 7.84.3 percent in ~~October 2010~~ August 2014. The seasonally unadjusted unemployment rate for Maui was 3.2 percent in August 2015, an improvement from 4.0 percent from August 2014 (DLIR, ~~December 2011~~ September 2015).

**b. Potential Impacts and Mitigation Measures**

According to the Market Study prepared for the project by ACM Consultants, Inc., the Master Plan ~~shows there are signs for~~ Alternatives 1 and 2 indicates that the housing market is improving. As the economic conditions improve, the demand for housing in the workforce segment will continue to be the most sought after. The ~~2015~~ 2019 release of the first housing units in the Master Plan for Alternatives 1 and 2 may be timely with the ~~anticipated economic turnaround~~ improving housing market. The Master Plan for Alternatives 1 and 2 will be heavily targeted toward the workforce segment. Statistically, regardless of conditions, this market segment has had the greatest demand. As such, it is anticipated that the housing units can be absorbed within eight (8) to ten (10) years. See Appendix "KL".

A key component of the proposed Master Plan ~~is for Alternatives 1 and 2 is~~ the economic viability of the project in providing potential centers of employment within Olowalu Town, as well as offering daily goods and services to the community's residents. Initially the project will be supported largely by highway traffic ~~and tourists~~. As the residential uses in the project are developed, the local residents would become more important in supporting the commercial uses in the project.

The project, proposed to contain approximately 300,000 to 375,000 sq. ft. of commercial space, could support a variety of eating and drinking food/dining outlets while retail space could include a general store, health/organic foods, pharmacy, general merchandise stores, banks, boutiques, and galleries. Other noncommercial and non-retail tenants that may be in demand could include a post office, medical professional, financial, professionals, such as architects, and live/work space.

An Economic and Fiscal Impact study was prepared for the proposed project. See **Appendix "EM"**. The Master Plan for Alternatives 1 and 2 would generate positive economic impacts during the construction period, as well as at full build-out of the project. Total construction expenditures for the Master Plan for Alternatives 1 and 2 are estimated at \$465.6 million. The project, which is expected to be built out over 10 years, would create an average of 377 direct and indirect jobs on Maui annually. Indirect employment on Oahu could add an average of 100 jobs per year during the construction phase.

At full build-out, the project would support long-term employment through the provision of commercial and industrial space within the Master Plan area. The Economic and Fiscal Study estimates that the Master Plan for Alternatives 1 and 2 could result in approximately 1,000 jobs just in the commercial and industrial sectors of the project. It should be noted that not all of these jobs would be new as some existing Maui businesses may relocate to the project Master Plan area.

With a proposed 1,500 residential units, the Master Plan for Alternatives 1 and 2 will create a greater number of housing units than jobs. However, the Master Plan for Alternatives 1 and 2 is located in close proximity to major employment centers in West Maui, including Lāhainā, Ka'anapali, and Kapalua. As previously mentioned, the Master Plan for Alternatives 1 and 2 will target the workforce market segment, which has consistently been in high demand. Central Maui has historically housed the largest proportion of the island's workforce population and many residents commute from Wailuku and Kahului to jobs in West Maui. The proposed project will provide workforce housing opportunities closer to West Maui employment destinations.

At full-build out, County revenues would primarily be generated in the form of real property taxes. The total estimated annual real property tax attributed

to the residential and commercial portion of the project is \$1.62.0 million. County of Maui expenditures for general services, infrastructure maintenance, and public safety were estimated as \$628,000.00627,000.00. The net revenue attributed to the project, at full-build out, was estimated to be \$968,000.00986,000.001.4 million annually. Based on the County's tax structure, owner-occupied units are essentially subsidized by revenue received from other property classes. The majority of Maui's property tax revenue is generated by time share, hotel/resort, industrial and commercial properties, which have substantially higher mill rates.

For the State of Hawai'i, the revenue sources are personal income tax, excise tax, and other revenues. Total revenues are estimated as \$1.05 million annually while total annual expenditures are approximately \$1.4 million. The net annual revenue at full build-out is forecasted to be negative \$377,000.00. The negative net annual revenue was primarily attributed to the lower household income levels which are geared toward the workforce market segment. In general, State services to workforce residential communities are subsidized by revenues received from the visitor industry, businesses and communities with higher annual household incomes.

ACM Consultants, Inc. reviewed the economic data and overall economic condition of Maui since the preparation of the Draft EIS. An updated Market and Fiscal Impact study was prepared. Appropriate changes have been incorporated into the EIS. Refer to **Appendix "M"**.

### 3. Agriculture

#### a. Existing Conditions

Maui has a long history in agriculture cultivation, beginning from pre-contact to the plantation industry playing an important role in the island's culture, landscape, and economy.

The ahupua'a system allowed Hawaiians to thrive as they were able to grow breadfruit and taro in the higher areas and sweet potato and coconuts closer to shore. The sea provided fish and the forest supplied wood for canoes and housing. Hawaiians supported themselves by growing kalo (taro) in extensive

*lo'i* (irrigated terraces), and by cultivating *`uala* (sweet potato), *`ulu* (breadfruit), and *niu* (coconut).

The modern commercial agriculture industry began in the eighteenth century, with sugarcane and pineapple plantations driving Maui's economy for over 90 years. Over the past 20 years, the agricultural industry has evolved, with a decline in large-scale sugarcane and pineapple cultivation and an increase in diversified crops and products, including vegetables, tropical fruits, flowers, seed crops, coffee, exotic herbs, taro, and livestock, such as cattle, horses, goats, and chickens.

The diverse geography and microclimates found on Maui support a variety of crops. Agricultural endeavors in the West Maui region include bananas, coffee, nursery products, papayas, pineapples, and vegetables, as well as livestock, such as cattle, horses, goats, and roosters. ~~Average rainfall in Lāhainā is 15.5 inches per year.~~

There were 230,000 acres of land used for farming and ranching in Maui County in 2008, the most recent year for which complete data is available. See **Table 1527**. This represents a decrease of approximately 11.5 percent since 2004, when there were 260,000 acres of farmland in the County. While the amount of farmland has farm and ranch land have declined, the number of farms have actually increased. This is consistent with the decline of large-scale operations of plantation agriculture and increase in diversified agriculture (all crops other than sugarcane and pineapple), which is largely comprised of individual or family sole proprietorships. In 2008, there were 1,150 farms in Maui County.<sup>1</sup>

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<sup>1</sup> Farms are defined as establishments with \$1,000.00 or more of agricultural sales.

**Table 1527.** Agriculture Summary, Maui County, 2004 and 2008

	2004	2008
Acreage in Farms and Ranches	260,000	230,000
Hired Workers	1,850	1,700
Number of Farms <sup>(a)</sup> and Ranches	850	1,150
Value of Crop Sales	\$145,983,000	\$144,231,000
Value of Livestock Sales	\$ 6,510,000	\$ 7,013,000
Note: <sup>(a)</sup> Based on definition of \$1,000 or more of agricultural sales. Source: Maui County Databook, 2010. Prepared by: Munekiyo & Hiraga, Inc., 2011.		

In 2008, there were 1,700 hired workers in the agriculture industry in Maui County. Crop sales totaled \$144.2 million while livestock sales stood at approximately \$7.0 million in 2008. These sales figures were comparable to sales numbers in 2004.

It should be noted that several key factors have affected the agriculture industry since 2008. Most notably, Maui Land & Pineapple Company (ML&P) ceased its pineapple cultivation operations on the island in December 2009. Citing ongoing financial losses associated with its pineapple farming, ML&P eliminated pineapple cultivation on approximately 2,000 acres of land. While the company continued in its other areas of operation, such as land development and resort management, the end of the pineapple operations resulted in 208 employees losing their jobs (Gomes, 2009).

Although ML&P has ceased its pineapple operations, a smaller operation by the Maui Gold Pineapple Company, located in Hali`imaile and initiated by a group of former pineapple employees, currently cultivates approximately 1,350 acres of pineapple.

The recent economic recession has also impacted Maui County's agricultural industry. In August 2011, there were approximately 1,500 agricultural jobs in the County, compared to 1,700 in 2008 (State Department of Labor and Industrial Relations, 2011). Unfortunately, updated data is not available for other measures.

With the end of ML&P's pineapple operations on Maui, sugarcane is the last remaining plantation-scale crop cultivated on the island. As shown in **Table 1628**, sugarcane accounted for 34,500 acres, or 15 percent, of the County's 230,000 acres of farmland and ranch land in 2008. Diversified agriculture crops, such as vegetables and fruits, represented a much smaller proportion of the County's farmland. In 2008, 700 acres were being cultivated for vegetables and melons while 600 acres were used for growing other fruits, excluding pineapple.

**Table 1628.** Farm and Ranch Acreage for Select Crops, Maui County, 2004 and 2008

	2004	2008
Total	260,000	230,000
Sugarcane	34,800	34,500
Vegetables and melons	900	700
Fruits (excluding pineapple)	500	600
Note: Acreage data for other crops such as coffee, macadamia nuts, pineapples, and others not available to avoid disclosure of individual operations. Source: Maui County Databook, 2010. Prepared by: Munekiyo & Hiraga, Inc., 2011.		

Consistent with data on farm acreage, sugarcane also represents a large proportion of crop sales in Maui County. In 2008, sugar sales totaled \$34.5 million. See **Table 1729**. This represented nearly 24 percent of the \$144.2 million total crop sales in the County that year. Vegetables, ginger root, herbs, and melon sales stood at approximately \$6.6 million while fruit sales (excluding pineapple) totaled \$2.4 million.

**Table 1729.** Crop Sales for Select Crops, Maui County, 2004 and 2008

	2004	2008
Total crop sales	\$129,200,000	\$144,231,000
Sugar (unprocessed cane)	\$43,200,000	\$34,500,000
Vegetables, ginger root, herbs, and melons	\$9,632,000	\$6,630,000
Fruits (excluding pineapple)	\$1,316,000	\$2,382,000
Flowers and Nursery Products	\$9,535,000	\$139,222,000
Note: Sales data for other crops such as coffee, macadamia nuts, pineapples, and others not available to avoid disclosure of individual operations. Source: Maui County Databook, 2010. Prepared by: Munekiyo & Hiraga, Inc., 2011.		

While sugarcane represents a large share of farmland and crop sales in the County, the vast majority of farm establishments are smaller, diversified agriculture farms. **Table 1830** presents a breakdown of crop farms by type in Maui County. As shown, there were 651 crop farms in the County in 2008, representing 57 percent of the 1,150 total farms countywide. Among crop growers, fruits (excluding pineapple) and flowers and nursery products comprised the largest number of farms; there were 272 fruit farms and 200 flowers and nursery product farms in Maui County. Vegetable and melon farms also comprised a substantial share of crop farms, with 102 establishments in 2008.

**Table 1830.** Number of Crop Farms by Type, Maui County, 2004 and 2008

	2004	2008
Sugarcane	1	1
Pineapple	5	9
Vegetables and melons	107	102
Fruits (excluding pineapple)	260	272
Coffee	27	32
Macadamia Nuts	10	20
Taro	25	15
Flowers and nursery products	180	200
Total <sup>(a)</sup>	615	651
Note: <sup>(a)</sup> Represents total of crop farms only and therefore does not equal number of total farms in Maui County. Source: Maui County Databook, 2010. Prepared by: Munekiyo & Hiraga, Inc., 2011.		

**(1) Water Availability**

As previously mentioned, Olowalu is a dry region with minimal rain. The original irrigation system in Olowalu was developed by the former sugar plantation companies. The system included diverting water from Olowalu Stream, as well as wells that pump groundwater. The water was delivered to the fields by way of ditches, tunnels, and pipes, as well as stored in reservoirs. Portions of the irrigation system are still in use today.

The Olowalu Water Company, LLC (OWC) was established in 2000 by Olowalu Elua Associates, LLC. OWC provides agricultural irrigation water as well as ~~potable~~-drinking water to the Olowalu region, including the Master Plan area for Alternatives 1 and 2. OWC received a Certificate of Public Convenience and Necessity (CPCN) from the State Public Utilities Commission (PUC) to provide ~~potable~~drinking water service in Olowalu in 2000 and non-~~potable~~drinking water service in 2003. In December 2007, OWC, LLC became OWC, Inc. The existing non-~~potable~~drinking water irrigation system services a 700-acre region in Olowalu.

According to the Impact on Water Resources Study prepared by Tom Nance, Water Resources Engineering, the non-potable irrigationdrinking water system consists of a diversion from Olowalu Stream at a 502-foot elevation, a 1.1-mile long conveyance ditch and tunnel system, and a main open storage reservoir at about 306-foot elevation. The low head diversion dam on Olowalu Stream and the conveyance ditch system, referred to as Olowalu Ditch, was installed sometime prior to 1911. The open reservoir, which has an impervious liner is of more recent vintage. The system also has three (3) other lower-elevation, unlined reservoirs, one (1) of which is still in use. SeeRefer to Appendix “CD”.

Historically, the ditch system has averaged four (4) to five (5) million gallons per day (MGD) and daily flows have rarely dropped below two (2) MGD. In addition to the ditch system, there are also two (2) existing skimming wells within the project site. State Well No. 4937-01, also known as Olowalu Shaft and Pump N, is currently unused and is available as a back up source of slightly brackish non-potabledrinking water supply. The second onsite skimming well, State Well No. 4837-01 (the O Pump), is also unused and available (Tom Nance Water Resource Engineering, 2011).

The irrigation system in Olowalu is quite dated, with portions of it built in the late 19<sup>th</sup> and early 20<sup>th</sup> centuries. While portions of the irrigation system are currently in good condition, more intensive agricultural endeavors on the scale of the former plantation would likely require costly improvements and significant upgrades to the system. The actual scale and cost of improvements would depend on the type of crop being cultivated. In general, OWC, Inc. estimates that over \$1 million would be required to restore the irrigation system to sufficiently support viable agriculture in Olowalu. The existing non-potabledrinking water rates would not cover the costs for improvements to the irrigation system. In 2010, OWC, Inc. realized a loss of approximately \$44,000.00 between both its potabledrinking and non-potabledrinking water services. Additional expenditures to pay for improvements or upgrades to the irrigation system would need to be covered by an increase in non-potabledrinking water rates. However, rate increases to support over \$1 million in infrastructure

improvements would be very high and not feasible for agricultural users (Tremble, 2011).

OWC, Inc. currently has several agricultural customers for its non-potable drinking water service. These customers are largely located in areas where the irrigation is in better working condition. Due to ongoing losses OWC, Inc. has experienced, the PUC recently approved a rate increase for both the potable drinking and non-potable drinking water service in Olowalu. Current non-potable drinking water service rates, effective September 12, 2011 March 12, 2012, are \$0.951.09 per thousand gallons, approximately 2515 percent higher than previous rates. Bulk users with over 1,000,000 gallons per month or owner/lessees of at least 50 acres are eligible for a reduced rate of \$0.480.58 per thousand gallons. Beginning March 12, 2012, non-potable water service rates will be \$1.09 per thousand gallons and \$0.55 per thousand gallons for bulk users (Olowalu Water Company, 20112015).

**(2) Locational Advantages and Disadvantages**

From an agriculture perspective, the Olowalu region has several key advantages. Located on the south facing slopes of the West Maui Mountains, the region receives ample sunlight for crop cultivation. Olowalu is also centrally located with respect to major markets on the island. Farmers in Olowalu have access to West Maui, South Maui, and Central Maui. In comparison, farmers in Upcountry are further removed from some of these markets. While farms in Olowalu benefit from proximity to various market areas on Maui, the farms themselves are relatively isolated from existing urban development. This is particularly beneficial for some agricultural uses that may not be compatible with residential or commercial uses.

Although Olowalu receives minimal rain, non-potable drinking water for agriculture is available from OWC, Inc. While the irrigation system may be dated and require improvements, a water source is available for agriculture cultivation in the area.

The primary disadvantage associated with vacant agricultural lands in Olowalu is the threat of wildfires. This dry region of the island is at risk for wildfires; there have been several large fires in Olowalu in recent history. Lands that were formerly cultivated for sugarcane have reverted to dry grassland and shrubland, serving as a fuel hazard for fires. In 2007, a wildfire destroyed a hydroponic farm in Olowalu, resulting in hundreds of thousands of dollars in damages to facilities and losses from plant production.

Another disadvantage of Olowalu is that it can be a windy region, creating challenges for particular crops. In addition, existing infrastructure is somewhat limited. For example, some farms in the area do not have infrastructure for potable irrigation water in place, and to install this would be very costly.

### (3) Olowalu Agricultural History

#### Sugarcane

Commercial sugar cultivation began in Olowalu in 1864. Sugar cultivation continued in Olowalu for over 100 years under the management of several different companies. The West Maui Sugar Association first planted sugar on crown lands in Olowalu and Ukumehame leased from Kamehameha V. The sugar industry slumped in the 1870s, and in 1874, the West Maui Sugar Association sold both its plantation and mill to the owners of the Pioneer Mill, another plantation located in West Maui.

In 1876, two (2) Maui residents started the Olowalu Plantation after acquiring former crown and *kuleana* lands in Olowalu and Ukumehame. Milton Philip, a Lāhainā businessman, started to acquire land in Olowalu and Ukumehame in 1875. Another Maui resident, Goodale Armstrong, also acquired Olowalu property and together they formed what they called the Olowalu Plantation. Utilizing former crown and *kuleana* land, they started growing sugar in 1876 (Ainsworth, 2011).

In 1878, Olowalu Plantation produced six (6) tons of sugar per acre. The Olowalu Plantation was said to have *kipikua* (pickax) lands, because in order to plant and cultivate the soil it was necessary to use a pick and shovel. While the plantation utilized the most modern equipment in most areas, it practiced perhaps the most intensive cultivation methods in Hawai'i due to its stony soil. Approximately 20 percent of the plantation had to be cultivated with a pick. Despite containing much stone and rocks, the soil proved fertile for growing sugarcane.

By 1904, the Olowalu Company owned 98 acres of land and leased an additional 7,702 acres. However, of this total, only 450 acres could be utilized for growing sugarcane; 250 acres were used for pasturage, 400 acres was forest land, and 6,700 acres were considered non-productive land and gulches. Much of the leased land was secured to protect water rights.

Due to the dry conditions in Olowalu, the plantation was totally dependent on irrigation. In 1904, water moved along a six-mile supply ditch from Olowalu Valley and was distributed via four (4) miles of additional ditches. Water delivered by the supply ditch from Olowalu Stream amounted to 1,000,000 gallons per 24 hours. Water was stored in two (2) reservoirs with a total 1,000,000-gallon capacity.

In 1930, Olowalu produced 2,967 tons of sugar from 373 harvested acres (roughly eight (8) tons of sugar per acre). Olowalu's output represented only 1.5 percent of total Maui sugar production and 0.3 percent of the State's total. A total of 645 acres was under cultivation that year.

In 1931, Olowalu Company merged with Pioneer Mill Company, the company that would retain management and ownership of the lands through the end of sugar cultivation in the region. Pioneer Mill Company paid \$400,000.00 for Olowalu Company, which included 1,178 acres of fee-simple land and all of its sugar equipment and railroad. The acquisition brought Pioneer Mill's total plantation size to more than 14,000 acres. At the time, Pioneer Mill was one of only five (5) sugar plantations remaining on Maui. With the merger, the

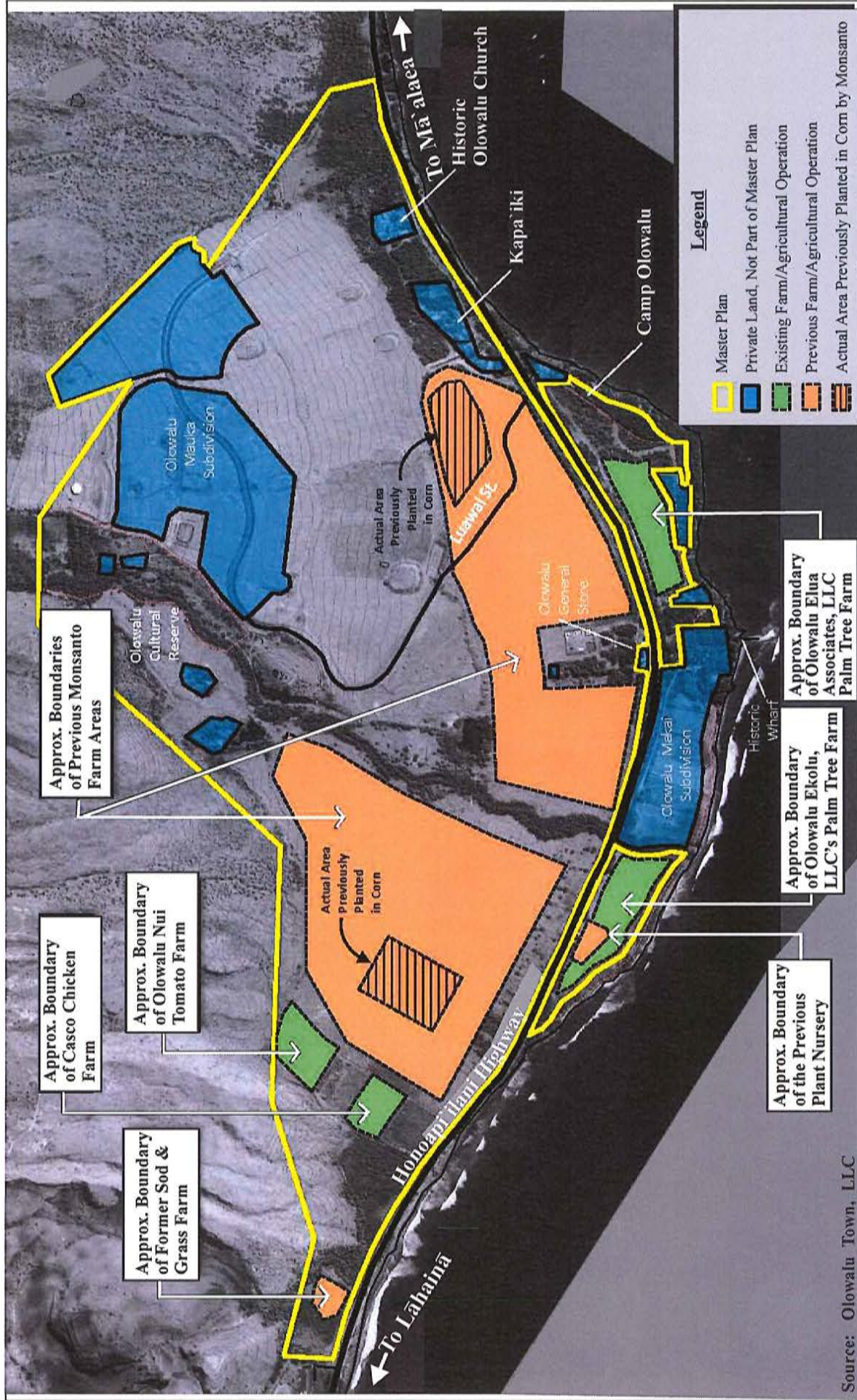
mill at Olowalu was closed and all milling operations were transferred to Pioneer Mill's Lāhainā mill. In 1932, Pioneer Mill produced 53,246 tons of sugar and employed approximately 2,400 people (Ainsworth).

The sugar industry underwent a dramatic transformation in the latter part of the 20<sup>th</sup> century. In 1990, there were 55 farms producing 6.5 million of cane statewide (Cai, 2004). By 1999, Pioneer Mill was one of the last remaining sugar plantations in Hawai'i, and one of only two (2) on Maui. However, Pioneer Mill was unable to compete with low sugar prices from foreign markets and claimed losses of over \$9 million in its final six years of operation, ending in 1999 (Fischer). Amfac/JMB Hawaii, the parent company of Pioneer Mill, decided to close the operation in 1999. The Pioneer Mill processed its last harvest in the fall of 1999.

Approximately 500 acres of sugarcane was being cultivated in Olowalu when Olowalu Associates, LLC purchased the land from Pioneer Mill in 1998. Pioneer Mill retained the right to complete the last crop cycle on the land at the time of the sale. The last harvest of sugarcane in Olowalu occurred in 1999, the same year Pioneer Mill ended its operations.

### **Diversified Agriculture**

Following the closure of Pioneer Mill, several unsuccessful agricultural endeavors were attempted on portions of former sugarcane land in Olowalu. These included a seed corn operation, grass and sod farm, and a plant nursery. **Figure 1625** illustrates the location of these unsuccessful agricultural ventures.



Source: Olowalu Town, LLC

Figure 1625

# Proposed Olowalu Town Master Plan Existing and Previous Agricultural Operations

NOT TO SCALE



- **Monsanto Seed Corn**

Monsanto Hawaii leased land in Olowalu for seed corn cultivation between 2002 and 2005. Monsanto is a St. Louis, Missouri based company with locations around the world, including a presence in Hawai'i on Maui, Moloka'i, and O'ahu. In 2009, the company employed approximately 800 people in Hawai'i, with most of its efforts in the State focused on producing seed corn for the U.S. mainland market. About three-quarters of the Monsanto corn grown locally is genetically engineered (Leone, 2009).

The company did not grow anything on its leased lands in Olowalu during the initial term of its lease between 2002 and 2004. In 2004, Monsanto extended its lease through 2007. Although Monsanto's lease was for approximately 215 acres of land, the company only cultivated a fraction of that. Beginning in 2004, the company cultivated seed corn on four (4) or five (5) acres of land in Olowalu. However, Monsanto ended its lease early in 2005. The company consolidated its operations on other properties on Maui (Tremble, 2011).

- **Grass and Sod Farm**

A grass and sod farm was established on approximately five (5) acres of land in Olowalu, mauka of Honoapi'ilani Highway, near the former Olowalu Landfill. Refer to **Figure 1625**. The farm attempted to grow grass and sod for landscaping companies. However, the business never got off the ground and the farm effort was abandoned in 2004 after three (3) years (Tremble, 2011).

- **Plant Nursery**

Another agricultural endeavor in Olowalu was a small plant nursery located makai of Honoapi'ilani Highway, north of the Olowalu General Store. Refer to **Figure 1625**. The nursery leased approximately two (2) acres of land from Olowalu Elua

Associates, LLC and attempted to grow a variety of plants for sale. The business, however, was unsuccessful. The high construction cost associated with the installation of Maui County's fire protection improvements to the nursery site contributed to the financial struggles of the nursery business. The plant nursery existed for approximately one (1) year between 2002 and 2003 (Tremble, 2011).

- **Casco Rooster Farm**

Mr. Karl Casco leased approximately four (4) acres of land from Olowalu Elua Associates, Inc. on a portion of TMK(2)4-8-003:114 and 115 for his rooster farm and to raise goats and pigs. Refer to **Figure 25**. Mr. Casco signed a lease in April 2009 for two (2) years, with renewal in one (1) year increments. In August 2013, Mr. Casco relocated his rooster farm elsewhere and ceased his farming operations in Olowalu (West Maui Land Company, 2015).

### **Existing Agriculture and Related Uses**

~~The majority~~Most of the former sugarcane lands now remain ~~vacant and fallow~~. Existing agricultural activities within the Master Plan area for Alternatives 1 and 2 are limited to a few small commercial farms and, several informal agricultural uses and other related uses. These uses are described below and their locations are also illustrated in **Figure 1625** presented earlier.

- **Olowalu Nui Hydroponic Tomato Farm**

TheOlowalu Nui Farm is registered as Olowalu Nui Hydroponic Tomato Farm (Olowalu Nui) and leases approximately four (4) acres of land from Olowalu Elua Associates on a portion of TMK No. (2) 4-8-003:115 (por.) and 117 (por.). Olowalu Nui grows tomatoes and other vegetables hydroponically in greenhouses, and also grows various fruit and palm trees on adjoining land.

The Olowalu Nui farm was owned by Mr. Jon Applegate, who owned several restaurants on Maui, including a few in West Maui. Mr. Applegate passed away in June 2011 and the ~~tomato~~ farm is currently managed by his wife, Ms. Connie Applegate.

Olowalu Nui originated in Hana, where the farm cultivated seven (7) acres of land for seven (7) years. In 2001, Olowalu Nui relocated to Olowalu and began leasing land from Olowalu Elua Associates, LLC. The initial lease began with a 5-year term that was extended for another five (5) years. Over the first 10 years of the lease, the tomato farm paid heavily ~~subsidized~~discounted rents to Olowalu Elua Associates, LLC. Rent payments totaled approximately \$300 per year and Olowalu Elua Associates, LLC paid for water used by the farm.

~~In January 2011, Olowalu Nui entered into a new one-year~~continues to lease for the land in Olowalu. Under the current lease, the farm ~~paid \$500.00~~pays \$900.00 per month ~~over the first six (6) months of the lease and \$900.00 per month during the last (6) months of the lease~~with annual increases of 15 percent (West Maui Land Company, 2015). Olowalu Nui is also ~~now~~responsible for paying for all of its water use provided by the OWC, Inc. Between ~~January~~March 2014 and ~~August 2011~~March 2015, Olowalu Nui used an average of ~~433,000~~230,916 gallons of non-potable~~drinking~~ water per month, with an average monthly water bill of ~~\$330~~251 (Olowalu Water Company, Inc., ~~2011~~2015). ~~The average monthly water bill, however, represents costs prior to OWC, Inc.'s rate increase in September 2011.~~

Olowalu Nui ~~grows~~has grown four (4) varieties of tomatoes and other vegetables using hydroponics, a method of growing plants that uses mineral nutrient solutions in water, without soil. In addition to tomatoes, the farm ~~grows~~has grown a small amount of lettuce, ~~cucumber~~, peppers, basil, parsley, cilantro, and other herbs using hydroponics. These crops are grown in

five (5) greenhouses on the property. Olowalu Nui also has approximately 200 citrus trees, as well as approximately 600 coconut palm, banana, papaya, and mango trees. The farm sells its crops to restaurants and retail stores in West, Central, and South Maui. The farm in Olowalu is centrally located to these various destinations. The palms are sold to Maui landscapers and individuals.

Olowalu Nui suffered a major setback in 2007 when a wildfire destroyed the entire property, including the greenhouses the farm had built. The farm was profitable in 2007 prior to the fire. However, the fire caused \$600,000.00 in damages and losses from plant production. ~~Since~~ After the fire, the farm has ~~been operating~~ operated at a loss for many years due to low production yields. Olowalu Nui built new greenhouses and repaired its facilities in 2010 and early 2011. ~~Now that repairs have been completed, the farm is hoping to return~~ In recent years, the farm has returned to profitability ~~in the next few months~~ (Applegate, 2011)(Plasch, 2015). See Appendix “~~E-1N-1~~”.

Olowalu Nui Farm is located in an area that is planned for rural lots, a rural park, portions of an interior road, and a portion of the corridor for the realigned Honoapiʻilani Highway, which will require the farm to relocate. Olowalu Nui Farm estimates that the cost to relocate the hydroponic component of the farm would be about \$50,000. This cost covers the effort to disassemble the greenhouses and equipment, move them, then reassembling them at the new location. After operations cease at the existing location, the farm could lose up to eight (8) months of production and its associated revenues before newly planted crops are produced at the new location. Another alternative is for the farm to invest in new facilities at the new site, then disassemble the existing facilities.

The Applicants have initiated discussions with Olowalu Nui Farm and will continue to engage the owner in discussions as

plans for the project progresses. Consistent with their current approach, it is recommended that the developers remain flexible regarding two (2) alternatives:

- Modify the project plan so that Olowalu Nui Farm can continue at its current location, and possibly provide some additional farmland to offset land that will be lost to roads in the project.
- Assist with the cost to relocate Olowalu Nui Farm with new facilities built before the move so that production and revenues can be maintained during the transition.

#### ● Casco Rooster Farm

Mr. Karl Casco leases approximately four (4) acres of land from Olowalu Elua Associates, Inc. on a portion of TMK (2) 4-8-003:114. Mr. Casco relocated his rooster farm from Lāhainā to Olowalu in 2009 due to nuisance complaints from neighbors at the former location. The lease signed in April 2009 was for two (2) years, with renewal in one (1) year increments. Monthly rent for the 4-acre property is \$600.00; the farm operation is responsible for paying for its water usage. Between January and August 2011, the rooster farm used an average of 113,000 gallons of water per month. The average monthly water bill paid by the farm during this time period, before the recent OWC, Inc. rate increase, was approximately \$86.00 per month. The water costs for the farm, however, are highly seasonal. During the hot and drier months, the water bill has exceeded \$200.00 (Olowalu Water Company, Inc., 2011).

The Casco Rooster Farm raises approximately 250 roosters; there are no hens at the farm. The farm acquires chicks from hens that Mr. Casco used to own but gave away to others to raise. In addition, Mr. Casco raises goats and some pigs. There are currently about 15 goats at the farm. The goats roam within the fenced areas of the farm and help to control the grass growing on the property. Currently, there are five (5)

pigs at the farm. The roosters are the primary focus of the farm while the goats are raised to help with additional costs and to control the grass. The pigs are raised on just a small-scale, intermittent basis.

The Casco Rooster Farm sells its roosters primarily in the Philippines. Mr. Casco takes two (2) trips to the Philippines per year to sell the roosters. In addition to sales in the Philippines, the farm does sell some roosters locally in Hawaii. Mr. Casco also sells the goats and pigs on his farm. The sale of these animals take place at his farm. The revenues from rooster, goat, and pig sales allow the farm to break even financially. The sales help to cover the lease payments, water bill, and feed (Casco, 2011). See **Appendix “L-1”**.

- **Olowalu Ekolu, LLC Palm Tree Farm**

Olowalu Ekolu, LLC, operates a palm tree farm on approximately 10 acres of property which it owns (Tax Map Key: (2) 4-8-003:124) and is located on the north side of Olowalu Stream and makai of Honoapiʻilani Highway. Refer to **Figure 1625**. Olowalu Ekolu, LLC hires a company who manages and maintains the operation; which costs approximately \$750.00 a month. The farm spends an average of \$450.00 on 500,000 gallons of water a month. The palms are sold locally on Maui to landscape companies as well as individuals, generating approximately \$4,700.00 annually, covering expenses (Tremble, 2011). Olowalu Ekolu, LLC views the operation as a temporary income-generating use for the property. Olowalu Ekolu, LLC intends to continue the farming operation up until the development of Olowalu Town.

- **Olowalu Elua Associates, LLC Palm Tree Farm**

Similar to Olowalu Ekolu, LLC, Olowalu Elua Associates, LLC operates a palm tree farm on approximately ten (10) acres of property which it owns (Tax Map Key (2) 4-8-003:084) and

is located on the makai side of Honoapiʻilani Highway, north of Camp Olowalu. Refer to **Figure 1625**. Olowalu Elua Associates, LLC manages and maintains the operation. The farm spends an average of \$450.00 on 500,000 gallons of water a month. The palms are sold locally on Maui to landscape companies as well as individuals, generating approximately \$3,000.00 annually, covering expenses (Tremble, 2011). As is the case with Olowalu Ekolu, LLC, Olowalu Elua Associates, LLC views the operation as a temporary income-generating use for the property. Olowalu Elua Associates, LLC intends to continue the farming operation up until the development of Olowalu Town.

- **Olowalu Cultural Reserve**

The Olowalu Cultural Reserve (OCR) supports and promotes the revitalization of traditional Hawaiian culture by providing cultural and educational experiences for Hawaiʻi residents and visitors. The OCR is restoring former irrigation systems and loʻi for taro cultivation, and is planting other native crops. Currently, about five (5) acres are used to demonstrate the cultivation of taro, sweet potato, breadfruit, banana, sugarcane, kukui, ti, kava, and many other crops. Project plans include expanding the OCR, which will allow more varieties and greater quantities of native crops to be grown at the OCR.

- **Informal Uses**

In addition to the formal agricultural leases, there are several informal agricultural uses within the Master Plan Area for Alternatives 1 and 2. Olowalu Elua Associates, LLC allows a small-scale subsistence cattle rancher to use approximately 200 acres of land for grazing. The rancher raises approximately 20 head of cattle in Olowalu. There is no formal lease for this grazing use and the rancher does not pay rent. Similar to the cattle rancher, Olowalu Elua Associates, LLC allows a small retired horse ranch to utilize its lands for grazing at no charge. These grazing activities are viewed as a temporary use that is

mutually beneficial to both the ranchers and Olowalu Elua Associates, LLC. The ranchers are able to utilize land for grazing at no cost. The grazing helps to control weeds and grasses on the property, mitigating fire hazards.

In addition to small scale cattle and horse ranching, there is a small juice and fruit stand and garden. The juice and fruit stand is located on the mauka side of Honoapi'ilani Highway near Olowalu General Store. In addition to the roadside stand, the operator cultivates a variety of fruit on approximately 0.75 acre of land adjacent to the stand. The fruit grown on this land is sold at the roadside stand. The stand operator provides a proof of insurance and pays for water usage, but does not make annual rent payments.

- **Maui Paintball**

Mr. Clint Hansen operates Maui Paintball on TMK(2)4-8-003:113 (por.) and 114 (por.) in Olowalu. County Special Permit No. CUP 2011/0001 was approved by the Maui Planning Commission on November 22, 2011, which allows the paintball operation in the County Agricultural District on ten (10) acres of land. The permit will expire on September 30, 2016 unless a time extension is granted. Also, Special Management Area Minor Permit No. SM2 2011/0108 was issued on November 28, 2011 for the construction of the paintball fields and related improvements. Maui Paintball is currently in operation. This is a temporary use on the properties (West Maui Land Company, 2015).

**b. Potential Impacts and Mitigation Measures**

Since preparation of the Draft EIS, an Impacts on Agriculture Study was prepared by Plasch Econ Pacific LLC. Refer to **Appendix "N-1"**.

## **1. Impact on the Supply of Agricultural Land**

The proposed Master Plan for Alternative 1 involves the reclassification of approximately 460,434 acres of “Agricultural” lands to the “Urban” and “Rural” State Land Use designations. Approximately 290,266 acres would be reclassified to “Urban” while 170,168 acres would be reclassified to “Rural”. Alternative 2 involves the reclassification of approximately 396 acres of agricultural lands. Approximately 228 acres to Urban and 168 acres to Rural. In total, the reclassification of 460 acres of “Agricultural” lands represents approximately less than 0.2 percent of the roughly 235,770,242,720 acres of “Agricultural” lands on the island of Maui.

Since 1990, the contraction and eventual closure of Pioneer Mill Co. (sugarcane) and Maui Land and Pineapple Co. released over 19,000 acres of good farmland in Central and West Maui. While some of this former plantation land was planted in other crops (e.g., seed corn and coffee) and some were developed for homes, most of it remains available for farming. Since the closure of Pioneer Mill Co. there have been other agricultural uses in Olowalu as identified in **Figure 25**. Currently, the majority of the agricultural lands in Olowalu have remained fallow with only Olowalu Nui Farm, Olowalu Ekolu Palm Tree Farm, and Olowalu Elua Palm Tree Farm in operation.

## **2. Impact on Diversified Agriculture Opportunities in the Region**

The project two (2) alternatives will result in the loss of agricultural lands that could be used for diversified agriculture. However, the decline of plantation agriculture on Maui and statewide, has made additional land available for diversified agriculture. The amount of land released from plantation agriculture has exceeded the demand for diversified agriculture lands. The closure of Wailuku Sugar Company and Pioneer Mill, as well as Maui Land & Pineapple Company’s exit from the pineapple growing business in 2009 has resulted in thousands of acres of land being released from plantation agriculture. While some of these former plantation lands have been developed, converted to other uses, or used to cultivate other crops, much of it has remained fallow or been used for grazing. As such, the proposed reclassification

of approximately 434 and 396 acres, respectively, of “Agricultural” lands in Olowalu is not expected to impact diversified agriculture on Maui or in the State as a whole.

Assuming typical field farming of vegetables, annual production of food crops by small farms could total over 650,000 pounds per year, thereby contributing to food self-sufficiency and food security. Farm employment could total about three (3) full-time equivalent farm jobs.

For comparison, the entire County has an estimated 1,700 acres in food crops (vegetables, melons, and fruits) grown mostly for the Hawai‘i market. Statewide, the supply of good farmland exceeds 170,000 acres compared to about 87,400 acres in crop, of which about 10,300 acres are food crops grown mostly for the Hawai‘i market, and about 77,100 acres are crops grown mostly for export (sugar, seeds, macadamia nuts, coffee, etc.). The supply of available farmland is large because all but two (2) of Hawai‘i’s many sugar and pineapple plantations closed.

Hawai‘i has a long history of strong support of agriculture. But since 1983, there has been no significant growth in diversified crop acreage with the single exception of seed corn, which has grown at an average rate of 300 acres per year. Following the closures of plantations on O‘ahu, food-crop acreage expanded there, but this was followed by declines on the Neighbor Islands.

The Olowalu Nui farm and rooster farm other agricultural operations were heavily subsidized strongly supported by the landowners during its start years where rents were in terms of rents and water rates that were not charged and only until recently water has been charged or heavily discounted, especially during the initial years of operations. Land, climatic, and economic conditions remain challenging, as evidenced by the limited number of establishments that have succeeded in cultivating on former sugarcane lands in Olowalu. The soils within the Master Plan area for Alternatives 1 and 2 contain rocks and stones, requiring more intensive cultivation methods than other areas. In addition, new agricultural ventures in Olowalu would require costly infrastructure improvements to start up. As previously

mentioned, the irrigation system is dated and would require improvements and upgrades for most new ventures. OWC, Inc. estimates that an upgrade to the irrigation system would cost over \$1 million (Tremble, 2011).

Crops that may be grown in Olowalu include bananas, nursery products, papayas, pineapples, and vegetables, among others. Coffee has been grown in some areas formerly used for plantation agriculture, including Kā'anapali on the slopes of the West Maui Mountains. However, Olowalu lands are not ideal for coffee production. Cloudless, dry, high-temperature areas are not favorable to coffee. Temperature is the key factor in coffee production and the Olowalu area is too hot for this crop (Bittenbender, 2008).

In addition to traditional crops, interest in biofuel crops has grown, particularly in response to efforts to reduce Hawai'i's dependence on imported fossil fuels. Crops can be grown to produce biomass or serve as feedstock to produce fuels. However, large land areas are required to achieve viability for biofuel crops. Oahu Ethanol Corporation, for example, aims to have 15,000 acres for growing sweet sorghum. Their initial goal was to start with 5,000 to 7,200 acres (Yerton, 2006). This amount far exceeds Olowalu Town's 636 acres.

Alternatively, hydroponic farming could produce about 4.6 million pounds per year, or the equivalent of about 190 acres in field farming.

According to the Impacts on Agriculture Study, in advanced economies, such as Europe, the U.S. mainland, and Hawai'i, there is a strong and well-established trend of growing vegetables and melons hydroponically in greenhouses. For example, most tomatoes sold in U.S. supermarkets are now grown hydroponically. In comparison to field farming, hydroponic farming in greenhouses provides higher quality produce; generates far higher yields; allows for year-round production regardless of season; provides secure production unaffected by droughts and storms; does not require good-quality farmland; requires much less land, water and energy; and requires no pesticides or herbicides.

The Master Plan for Alternatives 1 and 2 will result in a relatively small loss of prime agricultural land. With the relatively slow growth in demand for farmland over the past 30 years, and the trends toward hydroponic farming, agricultural productivity requirements can be effectively and efficiently addressed through modern and technologically advanced farming methods. As a result, ample farmland will remain available to accommodate the future growth of diversified agriculture, food self-sufficiency, and food security. In compliance with constitutional mandates and State and County plans, more than sufficient land is being preserved to accommodate the future growth of agriculture while addressing other community needs (i.e., housing, commercial and industrial needs, recreation, etc.).

The primary factors that have limited the growth of diversified agriculture in Hawai'i are listed below:

- Hawai'i's subtropical climate is not well-suited to the commercial production of major crops that grow better in the temperate mainland climates.
- For certain crops, special hybrids adapted to Hawai'i's subtropical climate are yet to be developed.
- For some crops, local varieties are not perfect substitutes for imports (e.g., premium-priced sweet Maui onions versus inexpensive storage onions).
- Crop pests are more prevalent and more expensive to control in Hawai'i than they are on the mainland where the cold winters kill many pests.
- Fruit-fly infestations prevent exportation of many crops, or require expensive treatment.
- Most soils in Hawai'i have low nutrient levels and therefore require high expenditures for fertilizer.
- Hawai'i suffers from high farm-labor costs, largely because the agriculture industry must compete against the visitor industry and related industries for its labor.

- Compared to many other farm areas that supply U.S. markets, the cost of shipping agricultural supplies and equipment to Hawai'i is high, as is the cost of exporting produce from Hawai'i to mainland markets. High shipping costs are due to Hawai'i's remote location and to Federal regulations that require use of American built ships and U.S. crews between U.S. ports.
- For a number of crops, consumption volumes in Hawai'i are too small to support large, efficient farms (i.e., the volumes are too small to realize economies of scale).
- Trends toward crops that are certified as safe and toward a single supplier of many food items favor large farms.
- Hawai'i farmers must compete against highly efficient mainland and foreign farms which, in a number of cases, can deliver produce to Hawai'i more cheaply than can local producers. This is due to economies of scale and, in comparison to Hawai'i, low costs for land, labor, supplies, fertilizer, pest control, equipment, etc.
- Some crops cannot be produced profitably in the summer due to competition from low-cost fruit and vegetable imports from California, other states, and Mexico.

### **Impact on Existing Agriculture**

While Olowalu lands were once used for sugarcane cultivation, the majority most of the "Agricultural" lands in the Master Plan area has remained fallow since the closure of Pioneer Mill in 1999. The primary agricultural uses within the Master Plan area for Alternatives 1 and 2 today are the Olowalu Nui farm, rooster farm, and the palm tree farms. The palm tree farms, which isare operated by the project's landowners, Olowalu Ekolu, LLC, is and Olowalu Elua, LLC are viewed as a temporary agricultural endeavors that will cease when development of Olowalu Town commences. Olowalu Ekolu, LLC and Olowalu Elua, LLC does not plan for the long term operation of the palm tree farms and does not plan to relocate it to another location.

### **Olowalu Nui Hydroponic Tomato Farm**

The Olowalu Nui farm is located on the fringe of the proposed Olowalu Town, in an area of the Master Plan for Alternatives 1 and 2 designated for rural lots and rural/park land. The project developers have discussed the proposed Master Plan with the farm owner and will continue to engage the owner in discussions as plans for Olowalu Town progress. The project developers will maintain flexibility in land uses to allow for Olowalu Nui farm to continue to operate in its current location if it wishes to or provide assistance to the farm if it were to relocate to one of the agricultural lots adjacent to Olowalu Stream.

### **Casco Rooster Farm**

~~If residential or commercial uses were developed in areas surrounding the Casco Rooster Farm, nuisance complaints associated with noise would be anticipated. Roosters naturally crow and there are not many mitigation measures to control this noise.~~

~~Casco Rooster Farm does not have replacement land currently available if they were required to relocate from Olowalu. Mr. Casco indicated that he would look at other areas on the island and would relocate somewhere if the relocation area has no plans for development in the foreseeable future. Mr. Casco noted that a lengthy relocation period, such as six (6) months, would make the relocation process much more affordable. This would allow Mr. Casco to do the improvements and relocation slowly over time. Due to the nature of the farm, the relocation process would not result in the loss of animals or sales. The project developers have discussed the proposed Olowalu Town with Mr. Casco and will continue to coordinate with him as plans for the development progress. The project developers will explore ways to assist Casco Rooster Farm, if relocation is necessary.~~

### **Other Agriculture**

The other existing agricultural uses within the Master Plan area for Alternatives 1 and 2 are limited to informal uses such as cattle and

horse grazing and a roadside fruit and juice stand. The project developers will discuss the proposed Olowalu Town project with these agricultural users and provide ample notification prior to development in the areas that would affect them.

### **Impact on Surrounding Agricultural Uses**

Lands mauka of the proposed Master Plan for Alternatives 1 and 2 are designated as “Agricultural” by the State Land Use Commission. The majority of the “Agricultural” lands surrounding Olowalu Town is owned by the State of Hawai‘i and is primarily fallow.

Olowalu Town has been designed to minimize potential impacts to surrounding agricultural uses. In particular, urban uses will be concentrated makai of the proposed relocated and widened Honoapi‘ilani Highway. Lands closest to surrounding “Agricultural” lands will be designated as “Rural” and will be limited to low-density rural lots. The “Rural” designated lands are envisioned as a transition zone between the agricultural lands and the proposed urban town centers. This buffer zone of low-density rural lots seeks to mitigate potential nuisance complaints related to any future agricultural endeavors on the surrounding lands from new residents or businesses in the urban areas of Olowalu Town.

### **Proposed Agricultural Lots and Other Offsetting Benefits**

Although the proposed Olowalu Town will commit agricultural lands to other uses, it will provide for agricultural lots along Olowalu Stream. Approximately 40 to 50 acres are planned for agricultural and farming activities. These lots, which will be a minimum of two (2) acres each, will be located along Olowalu Stream. Between 15 and 20 About 14 agricultural lots are planned in the Master Plan for Alternatives 1 and 2. The development of the infrastructure, such as the potable drinking and R-1 recycled water transmission lines and roadway systems, will benefit existing and future agricultural uses that will utilize the same infrastructure.

In addition to providing agricultural lots, the Master Plan for Alternatives 1 and 2 will provide other benefits to the community and surrounding areas. The project will convert underutilized vacant lands into a sustainable, mixed-use community. By developing areas currently dominated by dry vegetation, the project will also reduce wildfire threats by removing fuel for fires. Doing so will benefit surrounding agricultural lands, which are threatened by wildfires. In summary, the benefits of the proposed project are expected to outweigh the loss of 460,434 and 396 acres, respectively, of “Agricultural” land.

#### 4. Housing

##### a. Existing Conditions

In Olowalu, the 2010 U.S. Census recorded a total of 40 housing units. Thirty-five of the units were occupied, of which 14 were owner-occupied and 21 were renter-occupied. Of the remaining five (5) units, four (4) were used seasonally and one (1) was vacant.

Maui’s real estate market saw significant increases between 2000 and 2005. However, like many places across the State and nation, the County experienced a downturn in its housing market in recent years due to the economic recession and more stringent lending practices. Through 2009, residential sales statistics showed lower median prices, lower sales volume, and longer marketing times. However, 2010 and 2011 show some evidence of stability. Between January 1, 2011 and September 30, 2011, the median sales price for single-family residences and condominiums in Maui County was \$432,000.00 and \$314,000.00, respectively. Single-family housing prices in Lāhainā are higher than prices in the County as a whole, while condominiums were slightly lower. During the same time period, the median price for a single-family home in Lāhainā was \$606,050.00 while condominiums sold for a median price of \$345,000.00. During the same period for Olowalu, two (2) homes were sold at a median sales price of \$1,175,000.00. There are no condominiums in Olowalu, while two (2) lots were sold with a median sales price of \$3,775,000.00 (Realtors Association of Maui, November 2011-March 2015).

Socio-economic forecast data prepared for the County of Maui's 2030 General Plan Update process reflect a continuing increase in housing demand through the planning horizon year of 2030. For the Lāhainā region, total housing demand for the year 2030 is estimated to be 15,037 units, with a total resident demand of 11,369 units. These figures compare to the 2005 housing demand estimate of 7,644 units and a 2005 resident demand of 7,121 units (County of Maui, June 2006).

Socio-economic forecast data prepared for the County of Maui's 2030 General Plan Update process reflect a continuing increase in housing demand through the planning horizon year of 2030. The 2011 Hawai'i Housing Study prepared for the Department of Housing and Human Concerns also indicated the continuing increase in housing demand. Of the 48,817 units in the County of Maui in 2011, West Maui has 4,022 units. Twenty-one (21) percent of the units were crowded, double-up, or both indicating a shortage of resident housing. By comparison, County-wide the units that were crowded, double-up, or both was 19 percent. The MIP adopted in 2012 identified future growth areas to meet future housing demand and included Olowalu Town in the plan's Urban and Rural Growth Boundaries.

**b. Potential Impacts and Mitigation Measures**

Although the MIP allocates housing to the various community plan regions, it is also important to recognize that those seeking housing opportunities do not necessarily observe projections identified in each of the community plan regions. Other factors determine where residents choose to live, such as, but not limited to location, cost, housing types, available services, employment, recreation, and the environment. Therefore, although the forecasts used in the MIP indicates a surplus of dwelling units in the West Maui Community Plan area, the availability of units associated with the Master Plan for Alternatives 1 and 2 should not be restricted to only West Maui but should be considered in the context of the housing needs of the entire island of Maui.

The projections of the Planning Department held value and purpose with respect to guiding land use allocation decisions through the MIP development process. The projections should be considered a long range planning tool with a degree of flexibility. From a project planning and development standpoint, factors which affect development feasibility and timing include

market conditions, financial capacity of the development entity, and regulatory, infrastructural and policy considerations affecting a particular parcel or region (e.g. water availability).

In the 18 years leading up to 2030, there will likely be fallout in the planned projects that comprise the 11,369 forecasted units. In the past there have been numerous projects planned and approved which have been either delayed or never built. Whether for financial reasons or regulatory or policy constraints, certain projects will not be built. From a technical and analytical standpoint, the assumption that some projects will not be implemented, combined with an unconstrained free market assumption (i.e., units in West Maui will not necessarily be purchased by those living in West Maui), provides a reasonable basis for deriving market absorption conclusions as set forth in **Appendix “L”**.

The Master Plan for Alternatives 1 and 2 will provide approximately 1,500 residential units in a variety of product types including much needed affordable housing. The Market Study which was prepared for the proposed project estimated that the project’s 1,500 units could be absorbed within eight (8) to 10 years. Refer to **Appendix “KL”**.

The Master Plan for Alternatives 1 and 2 will heavily target the workforce market segment desiring a small-scale community environment. Statistical evidence has shown that regardless of conditions, this market segment has the most demand. Although the pricing of the project units have not been determined, the proposed project alternatives are anticipated to give entry level market participants an opportunity for home ownership.

The proposed project alternatives are subject to the workforce housing requirement as set out in the Residential Workforce Housing Ordinance enacted in December 2006 (MCC, Section 2.96.040) and amended by Ordinance No. 4177 effective December 22, 2014. The ordinance provides that residential developments where more than half of the units and/or lots in the development sell for less than \$600,000.00, at least 25 percent of the total number of units and/or lots must be made affordable to workforce households. In developments where more than half of the units and/or lots sell for more than \$600,000.00, at least 50 percent of the total number of units and/or lots must be made affordable to workforce households. It is noted that the

foregoing requirements apply to projects where workforce housing is provided on-site.

The Master Plan for Alternatives 1 and 2 will provide 750 affordable units to meet the Workforce Housing Ordinance requirements. Previously, **Table 4** provided a breakdown of the proposed affordable units by income category in accordance with Chapter 2.96, MCC. The allocation of units across income categories will comply with the requirements set forth in the Workforce Housing Ordinance in a housing agreement with the County's Department of Housing and Human Concerns.

Sale prices for the affordable units will be based on County standards and median income levels at the time of sale. Although the sale prices of the market units have not been set, the proposed project is intended to serve the workforce housing demand for Maui residents. As such, residents will have selection priority over non-residents, consistent with County regulations. The required workforce housing units will remain affordable for 25 years and will be subject to the resale restrictions established in the Workforce Housing Ordinance. See **Appendix "O"**.

Infrastructure improvements will be phased concurrently with residential development within the Master Plan for Alternatives 1 and 2 to ensure that new residences are adequately served by basic services.

## **C. PUBLIC SERVICES**

### **1. Solid Waste Disposal**

#### **a. Existing Conditions**

SingleThe County of Maui provides single-family residential solid waste collection service is provided by the County of Maui on a weekly basis. Residential solid waste collected by County crews is disposed at the County's Central Maui Landfill, located four (4) miles southeast of the Kahului Airport. In addition to County-collected refuse, the Central Maui Landfill accepts commercial waste from private collection companies. The County of Maui's 2009 Integrated Solid Waste Management Plan (ISWMP) utilized the 2030

population projections and estimates that the Central Maui Landfill has adequate capacity to accommodate commercial and residential waste needs through the year 2026 (Gershman, Brickner & Bratton, Inc., 2009). Privately owned facilities, such as the Maui Demolition and Construction Landfill and the Pohakulepo Concrete Recycling Facility, accept solid waste and concrete from demolition and construction activities. These facilities are located at Mā'alaea, near Honoapi'ilani Highway's junction with North Kihei Road and Kūihelani Highway. A County supported green waste recycling facility is located at the Central Maui Landfill.

To facilitate solid waste collection services for the West Maui region, a refuse transfer station, referred to as the Olowalu Recycling and Refuse Convenience Center, has been established at the former County Olowalu Landfill site which is located immediately adjacent to the northern boundary of the Master Plan. Refer to **Figure 4**. The County of Maui does not provide solid waste collection in the Olowalu area.

**b. Potential Impacts and Mitigation Measures**

According to the Department of Environmental Management (DEM), Solid Waste Division, as Olowalu Town is constructed and the number of homes increase the County of Maui can make provisions to service the single-family homes in the area with one (1) automated truck and driver which can accommodate up to 1,000 single-family residential homes. The single-family residential users will pay appropriate user fees to the County of Maui for its solid waste collection. Solid waste collection for the multi-family units, commercial and public facilities will require a private refuse collection company (Takamine, 2012).

All solid waste generated by the proposed project will be disposed of at the Central Maui Landfill in Pu'unēnē by County collection crews or private refuse collection company, as applicable.

According to the ISWMP, the per-capita residential waste disposal rate for Maui island, excluding Hana, is 2.3 tons per household annually. Based on this waste disposal rate per household, at full-build-out, the proposed project is expected to generate approximately 3,450 tons of residential solid waste annually. The per-capita waste disposal rate for commercial uses in the

ISWMP is 1.58 tons per employee annually. The commercial uses in the Master Plan are for Alternatives 1 and 2 is expected to generate 1,000 jobs. At full-build out, commercial solid waste is expected to be 1,580 tons annually. Total solid waste from the Master Plan for Alternatives 1 and 2 is expected to be approximately 5,030 tons annually. In 2007, the ISWMP estimated the existing Central Maui Landfill (Phases IV-VI) had remaining capacity of 780,000 tons. According to the ISWMP, the existing landfill has adequate capacity to accommodate residential and commercial waste needs through the year 2026 which is within the build-out period of the Master Plan for Alternatives 1 and 2. In the ISWMP, the Department of Environmental Management (DEM) anticipates that additional land will be acquired for future capacity at the landfill (Integrated Solid Waste Management Plan, 2009).

Since the preparation of the Draft EIS, the County of Maui on January 10, 2014 signed an agreement with Maui Resource Recovery Facility, LLC to finance, design, build, own and operate an Integrated Waste Conversion and Energy Facility on Maui that is expected to divert approximately 85 percent of the County's municipal solid waste from the Central Maui Landfill (Pacific Business News, 2014). The facility is expected to be fully operational in 2018 (Maui News, 2015). It is expected the new facility will extend the capacity of the Central Maui Landfill to meet the future solid waste needs for the island of Maui, including the Master Plan areas for Alternatives 1 and 2.

As Further, as a LEED ND project, the Master Plan for Alternatives 1 and 2 will be built upon practices aimed at reducing the amount of solid waste generated by the project. As such, a solid waste management program will be incorporated into the Master Plan for Alternatives 1 and 2 to reduce solid waste generated by the project. Additionally, recycling will be a major component of the solid waste management program. The following recommended measures by LEED ND will be considered for the Master Plan for Alternatives 1 and 2:

- Include as part of the *project* at least one (1) recycling or reuse station, available to all project occupants, dedicated to the separation, collection, and storage of materials for recycling; or locate the project in a local government jurisdiction that provides recycling services. The recyclable materials must include, at a minimum, paper, corrugated cardboard, glass, plastics and metals.

- Include as part of the project at least one (1) drop-off point, available to all project occupants, for potentially hazardous office or household wastes; or locate the project in a local government jurisdiction that provides collection services. Examples of household hazardous wastes include paints, solvents, oil, and batteries. If a plan for post collection disposal or use does not exist, establish one.
- Include as part of the project at least one (1) compost station or location, available to all project occupants, dedicated to the collection and composting of food and yard wastes; or locate the project in a local government jurisdiction that provides composting services. If a plan for post collection use does not exist, establish one.
- On every mixed-use or nonresidential *block* or at least every 800 feet, whichever is shorter, include recycling containers adjacent to other receptacles or recycling containers integrated into the design of the receptacle.
- Recycle and/or salvage at least 50 percent of nonhazardous construction and demolition debris. Develop and implement a construction waste management plan that, at a minimum, identifies the materials to be diverted from disposal and specifies whether the materials will be stored on-site or comingled. Excavated soil and land-clearing debris do not contribute to this credit. Calculations can be done by weight or volume but must be consistent throughout.

As the project progresses, a solid waste management plan will be developed for the Master Plan for Alternatives 1 and 2 prior to its implementation.

## 2. Medical Facilities

### a. Existing Conditions

The only major medical facility on the Island is Maui Memorial Medical Center, located approximately 16 miles from Olowalu, midway between Wailuku and Kahului. The 231-bed facility provides general, acute, and emergency care services (Maui Memorial Medical Center, 2014). A West Maui Hospital is proposed near the Lāhainā Civic Center complex at Ka'anapali.

Regular hours are offered by private medical practices in Lāhainā, which include the Maui Medical Group, Lāhainā Physicians, West Maui Healthcare Center, and Kaiser Permanente Lāhainā Clinic.

**b. Potential Impacts and Mitigation Measures**

Demand for medical services will increase over time, as population growth occurs. The proposed Master Plan for Alternatives 1 and 2 will help to accommodate a portion of the island's growth over the next 10 years. It is anticipated that growth in medical facilities and service provision will occur in a similar incremental fashion to meet the medical service needs of the island's residents and visitors. Support services which may be implemented as part of the Master Plan for Alternatives 1 and 2 would include medical, social service office space, senior care, urgent care, and "age in place" housing units. As the Master Plan for Alternatives 1 and 2 proceeds through the development process, ongoing dialogue with key medical service providers will continue.

As a major regional facility, community hospitals are not constructed in every community. As stated previously, the island of Maui is served by the Maui Memorial Medical Center located in Central Maui which will continue to serve West Maui, including Olowalu. However, a privately owned and operated community hospital and medical center is planned in Kā'anapali in the Kā'anapali 2020 project by Newport Hospital Corporation. Located approximately eight (8) miles from Olowalu Town, this facility is intended to serve the West Maui region, including Olowalu Town. The planned community hospital and medical center in Kā'anapali will make it more convenient for West Maui residents who currently need to travel to Central Maui for hospital care, eliminate potential medical problems when the highway to Central Maui is closed, as well as relieve population growth induced impacts on Maui Memorial Medical Center. The West Maui Hospital and Medical Center is targeted to open in 2017 (West Maui Hospital and Medical Center, 2015).

~~As noted previously, the Master Plan will provide lands for a fire department and emergency services which can provide additional medical and first responder services to the West Maui region, especially the area Lāhainā side~~

of the tunnel. These services currently are provided by the Lāhainā Fire Station.

The Master Plan for Alternatives 1 and 2 is not anticipated to adversely impact medical services.

### **3. Police and Fire Protection and Emergency Services**

#### **a. Existing Conditions**

The Master Plan area is for Alternatives 1 and 2 is within the Lāhainā Police Station service area, which services all of the Lāhainā district. The Lāhainā Station is located in the Lāhainā Civic Center complex at Wahikuli, approximately 7.5 miles from the Master Plan area.

Fire prevention, suppression and protection services for the Lāhainā District are provided by the Lāhainā Fire Station, also located in the Lāhainā Civic Center and the Napili Fire Station, located in Napili. The Lāhainā Fire Station includes an engine and a ladder company. The Napili Fire Station consists of an engine company. Ambulance service is provided from the Napili Fire Station.

Information received from the State Civil Defense agency confirms that there is an existing civil defense siren located on the makai side of Honoapiʻilani Highway near Camp Olowalu.

#### **b. Potential Impacts and Mitigation Measures**

The Maui Police Department commented that OTMP at full build-out will require an additional patrol beat. A new patrol beat will require six (6) police officers to cover a 24-hour period over a seven-day work week and would operate out of the Lāhainā Police Station. The new police beat is estimated to cost \$360,000.00 annually for salaries and benefits and \$51,000.00 for a new police vehicle which is replaced every four (4) years. A new Police Station in OTMP is not required at this time. If deemed necessary in the future, a police substation can be accommodated in Olowalu Town (Hudson, 2012).

The Master Plan for Alternatives 1 and 2 includes future areas to accommodate facilities that may be necessary for police and fire protection and emergency service. Although the Lāhainā Fire Station is located just 7.5 miles away from the Master Plan area for Alternatives 1 and 2, the Maui Fire Department has indicated that 1,500 new homes would impact emergency services. The Fire Department indicated that a future facility for emergency services would help to mitigate the impact and compliment protection provided on the north (Lāhainā) side of the Honoapiʻilani Highway tunnel. The Master Plan for Alternatives 1 and 2 includes areas along the relocated and widened Honoapiʻilani Highway for future emergency facilities.

The Department of Fire and Public Safety (Fire) supports the establishment of the new fire station in OTMP. Discussion with Fire indicated that a new fire station will require a total of 15 personnel to cover three (3) shifts with five (5) personnel each. A new fire station will require a fully equipped fire engine which is estimated to cost approximately \$1 million. To operate the new fire station will cost approximately \$1.25 million annually. It is estimated that a new fire station will cost \$11 million to construct (Haake, 2012).

The West Maui area is susceptible to wildfires and the location of a new fire station in Olowalu will improve the Fire's Department's response time to such fires in the Pali to Lāhainā Town area. Through consultation with Fire, the department has indicated that although the alternatives should diminish the likelihood of such fires, the project's design should include measures that may address impacts to the project from wildfires which originate in surrounding outside areas. The department provided the example of designing greenways at the outer edge of the project that offer a defensible space against wildfires. It is noted that a significant area of the alternatives are envisioned for parks, greenways and open space.

The applicantApplicants will continue to dialogue with the police and fire departments to ensure the location and adequate area for future facilities within the Master Plan for Alternatives 1 and 2 are accommodated.

The existing siren will provide coverage of the central area of the OTMP. Additional omni-directional 121 db(c) sirens will be required to complete coverage of the proposed development for Alternatives 1 and 2. The Applicants will coordinate with the State Civil Defense Agency, the placement

of the additional sirens and the timing when installation of the sirens are warranted.

#### 4. Educational Facilities

##### a. Existing Conditions

The West Maui region is served by four (4) public schools (Lāhaināluna High School, Lāhainā Intermediate School, Princess Nahi'ena'ena Elementary School, and Kamehameha III Elementary School) operated by the State of Hawai'i, Department of Education (DOE) and two (2) smaller private schools (Sacred Hearts School and Maui Preparatory Academy). All four (4) of the public schools are located within Lāhainā town and three (3) of those schools are located along Lāhaināluna Road, mauka of Honoapi'ilani Highway. The enrollments in the four (4) schools have grown significantly in concert with the growth of residential development in the West Maui area. See **Table 1931**.

**Table 1931.** Actual and Projected Enrollments at Department of Education Schools in West Maui

School	Actual Enrollment			Rated Capacity	Projected Enrollment
	SY 09-10	SY 10-11	SY 11-12		SY 15-16
Lāhaināluna High School	969	1027	1057	969	1081
Lāhainā Intermediate	693	653	651	571	672
Kamehameha III Elementary	713	733	760	646	788
Princess Nahi'ena'ena Elementary	610	607	643	612	675
Source: Department of Education, 2011.					

	<b>Actual Enrollment *SY 2014-15</b>	<b>**Projected Enrollment (SY 2015-16)</b>
Lāhaināluna High School	1,014	1,081
Lāhainā Intermediate	635	672
Kamehameha III Elementary	773	788
Princess Nahi'ena'ena Elementary	724	675
Source: *Department of Education School Enrollment, 2014. **Analysis of the West Maui School Impact District, 2010.		

School bus transportation is currently provided to Olowalu residents to Princess Nahi'ena'ena Elementary, Lāhaina Intermediate and Lāhaināluna High School. There is one (1) route from Olowalu Town which uses a 42-passenger bus (Joseph, 2012). University of Hawai'i Maui College (UH-Maui), which is located in Kahului, is a branch of the University of Hawai'i system. In addition, there is a UH-Maui Lāhainā Education Center that opened in West Maui in Fall 2007. UH-Maui is the primary higher education institution serving Maui.

The OCR currently provides educational experiences relating to its archaeological and cultural heritage to various groups, especially school children.

**b. Potential Impacts and Mitigation Measures**

Initially, until a new educational facility is constructed in the Master Plan for Alternatives 1 and 2, students would utilize the available school bus service to Lāhainā Town. If the student enrollment increases beyond the existing 42-passenger bus, the bus can be increased to a 72-passenger bus or separate routes established to the different schools (Joseph, 2012). Ongoing dialogue with the DOE to assess the impact of the proposed Master Plan for Alternatives 1 and 2 upon regional educational facilities will continue throughout the land entitlement process and implementation of the project. Based on the DOE's student generation rates formula to determine impact fees for the West Maui Impact District, the proposed project's 600 single-family units and 900 multi-family units are anticipated to generate 462 new elementary, middle, and high school students. See **Table 2032**.

**Table 2032.** Estimated New Students at Olowalu Town Master Plan for Alternatives 1 and 2

	Single-Family Student Generation Rate	Single-Family Students <sup>(a)</sup>	Multi-Family Student Generation Rate	Multi-Family Students <sup>(b)</sup>	Total Students
<b>Elementary</b>	0.22	132	0.09	81	213
<b>Middle</b>	0.12	72	0.04	36	108
<b>High</b>	0.16	96	0.05	45	141
<b>TOTAL</b>	<b>0.5</b>	<b>300</b>	<b>0.18</b>	<b>162</b>	<b>462</b>
Notes: <sup>(a)</sup> Based on 600 single-family residences. <sup>(b)</sup> Based on 900 multi-family residences. Source: Department of Education, 2010.					

	Units	Formula	Total Students
<b>Single Family</b>	600	0.5 X 600	300
<b>Multi Family</b>	900	0.18 X 900	162
		<b>TOTAL</b>	<b>462</b>
Source: Department of Education, West Maui Impact Fee Schedule, 2014			

It is noted that the foregoing figures presented in **Table 32** provides a rough estimate of the number of students to reside in the project at maturity. As pointed out by the DOE, the proposed project may have an Olowalu Student Generation Rate (SGR), which is different from the West Maui District-wide average. The addition of approximately 462 new students to public schools in West Maui would require increased DOE resources in the district. Impacts to the DOE's resources in West Maui will be mitigated through fulfillment of school impact fees or other measures approved by the DOE. The project falls within the West Maui School Impact District. The Applicants will coordinate with the DOE to ensure that assessment policy provisions are appropriately addressed.

The proposed project alternatives also calls for the include provision of approximately 10 to 15 acres for an educational facility. The specifics of the educational (or learning) facility has not been determined. During "Olowalu Talk Story" and subsequent discussions through community outreach with

residents, nonprofit groups, government agencies and legislators, a variety of suggestions were received regarding the type of school that should be established in Olowalu. ~~It has~~The suggestions included a DOE-operated school, charter school and private school ranging from an elementary, middle, and high school, as well as a combined elementary/middle school.

On multiple occasions it has been suggested that the future educational or learning facility within the Master Plan for Alternatives 1 and 2 could potentially incorporate lessons learned within the OCR as core components of its curriculum. As the Master Plan for Alternatives 1 and 2 progresses through the entitlement process, refinement of the scope of the educational or learning facility will be ~~developed~~undertaken with the community and the DOE.

## **5. Recreational Facilities**

### **a. Existing Conditions**

West Maui is served by numerous recreational facilities offering diverse opportunities for the region's residents. There are seventeen (17) County parks and three (3) State beach parks in West Maui. Approximately one-third of the County parks are situated along the shoreline.

In addition, Kā'anapali and Kapalua Resorts operate world-class golf courses which are available for public use.

Public access is available to the Olowalu shoreline, which offers opportunities for surfing, swimming, fishing, snorkeling, and diving. However, within the Olowalu vicinity, there are no improved parking areas and no park facilities, such as restrooms, showers, or picnic tables.

### **b. Potential Impacts and Mitigation Measures**

Increased demand for recreational resources, including inland, coastal and ocean recreational resources, will be mitigated through the provision of parks and recreational-related improvements throughout the Master Plan for Alternatives 1 and 2. Such parks and recreational-related improvements, while located within the Master Plan area for the respective alternatives, will be open to and enjoyed by the public. The Master Plan for Alternatives 1 and

2 includes provisions for active and passive parks, as well as open space areas, in keeping with the sustainable planning principles employed in the plan formulation process. Recreational-related improvements call for the following:

- Enhanced access to the existing government beach reserve along the Olowalu shoreline (for Alternative 1)
- Expanded streamside parks providing mauka-makai access and related passive park experiences along the Olowalu Stream
- A comprehensive and inter-connected greenway system for walking, jogging, and biking
- A mauka community park connected to the greenway system
- Enhancement of the OCR
- ~~Provide~~ Camping facilities ~~like~~ such as those provided at Camp Olowalu
- Shoreline parks (for Alternative 1)
- Neighborhood parks

As previously noted, **Figure 1524** provides a conceptual site plan that indicates the location of parks and recreational facilities, and open space areas. The parks are envisioned to allow uses currently permitted by the County of Maui while recreational facilities may include canoe clubs, a private museum, and small commercial facilities, such as snack shops and concession stands. Alternative 1 includes the area makai of Honoapiʻilani Highway with approximately 23 acres of parks and open space and proposes enhancement of public access and development of shoreline parks. Alternative 2 excludes the makai area and retains the existing public access.

It should be noted that the proposed park space included in the Master Plan for Alternatives 1 and 2 exceeds the minimum park dedication requirements for new subdivisions established by Chapter 18.16.320 of the MCC. The park dedication requirement is 500 square feet for each lot or unit. Workforce housing lots or units have a lower park dedication requirement of 250 square feet per unit. Based on these standards and requirements for workforce

housing, the project's 750 approximately 1,125 market-rate units and 750 375 workforce housing units would be needed. This would require approximately 13 acres of park land dedication for the market units and two (2) acres for the workforce housing totaling 15 acres.

According to the National Parks and Recreation Associations' (NPARA) Recreation, Park and Open Space Standards and Guidelines, approximately 6.25 to 10.5 acres of park land and open space should be provided for every 1,000 population. The Master Plan for Alternatives 1 and 2 estimates a population of 4,239. Based on the recommended standards and guidelines approximately 25 to 42 acres of park land and open space is recommended.

The Master Plan provides for for Alternative 1 sets aside approximately 223 acres of available for park and open space use. Alternative 2 sets aside approximately 200 acres available for park and open space use.

Olowalu Town, LLC and Olowalu Ekolu, LLC will continue ongoing coordination regarding the proposed parks and recreation concepts and proposals with the County Department of Parks and Recreation (DPR) and State Department of Land and Natural Resources (DLNR).

## **D. INFRASTRUCTURE**

### **1. Roadways**

#### **a. Existing Conditions**

The only major roadway facility providing vehicular access to and from the Olowalu area is Honoapi'ilani Highway, a State-owned and maintained highway linking West Maui with the central valley of the island. Honoapi'ilani Highway primarily serves as access for vehicles traveling to and from the Lāhainā, Kā'anapali and Kapalua resort areas. Through Olowalu Village, Honoapi'ilani Highway is a two-lane major arterial highway generally aligned in an east to west direction following the coastline with turning lanes in place at intersection and access points, such as at the Olowalu General Store and former manager's house. The highway has a posted speed limit of 35 miles per hour (mph) in the vicinity of the Olowalu General Store, which

increases to 45 mph outside of this area. The highway has two (2) 12-foot-wide lanes with paved shoulders varying in widths from about 6 to 10 feet wide.

A former cane haul road also runs parallel along the mauka (inland) side of the highway. This cane haul road is generally routed near the highway but diverts inland behind the Olowalu General Store. The cane haul road formerly served as an access road for the Pioneer Mill property/cane land.

Luawai Street north of Kapa`iki is an undivided two-way paved agricultural roadway that provides access to homes in the 14-lot Olowalu Mauka subdivision. Luawai Street connects to Honoapi`ilani Highway directly across Camp Olowalu. Intersection improvements ~~are proposed~~ constructed in conjunction with the Olowalu Mauka subdivision ~~to includes~~, but are not limited to, storage lanes, deceleration lanes, and bike lanes. Construction of these improvements ~~is anticipated to be initiated by December 2011~~ have been completed.

The Pali to Puamana Parkway Master Plan, prepared for the County of Maui in 2005, identifies the long-range planning policy for lands along the shoreline. Included in this plan was the possibility of the State Department of Transportation (HDOT) widening of Honoapi`ilani Highway between Ukumehame and Launiupoko where it would connect to the proposed Lāhainā By-Pass Road. In Olowalu, the Master Plan proposes a 160-foot wide right-of-way for a by-pass highway inland from the shoreline and maintaining the existing Honoapi`ilani Highway as a landscape multi-purpose pathway. The Master Plan also identified three (3) parks in the area, Awalua Park, Olowalu Beach Park, and Hekili Point Beach Park (Planning Department, 2008).

In 2007, the HDOT prepared an Environmental Impact Statement Preparation Notice for the Honoapi`ilani Highway Realignment/Widening project (Mā`alaea to Launiupoko) in response to capacity limitations and roadway safety and reliability issues. Highway improvements may involve widening portions of the existing highway and/or constructing a new highway along a different alignment. In the Olowalu area, relocation of Honoapi`ilani Highway further inland is proposed (HDOT, 2007).