A.1 – FISHERIES CENTER
PRELIMINARY PRE-FEASIBILITY STUDY
Solomon Islands Strengthening Competitiveness, Agriculture,
Livelihoods and Environment (SCALE) Architecture and Engineering
Support (SCALE-A&E)

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I  STRATEGIC CASE

This section evaluates the strategic rationale and context for the proposed Fisheries Center. The objective is to examine the core components, location, strategic context, drivers of change, and anticipated impact of the proposed project.

1.1  DESCRIPTION

The facility is anticipated to serve as a fresh fish cold storage and distribution hub for local community fishermen operating off the coast of Malu'u. However, given the prevalence of the Overseas Fishery Cooperation Foundation (OCFC) in refurbishing a fisheries center in Malu'u, the exact location of the facility will likely need to be redefined. The facility will consist of a storage room, ice making machine, and sorting room for fresh grouper, bonita, and parrotfish. Local fish catches will be stored in a clean, safe, cool room for up to 36 hours before being sorted and transported across Malaita. Local fishermen will also be permitted to collect ice from the ice-making machine for onboard cooling.

A graphical depiction of the proposed project conceptual architecture is presented in Figure 1.

Figure 1: Project Snapshot

Subsequent sections provide a more detailed analysis of the project vision broken down into technical factors, economic dynamics, commercial options, financial projections, and management requirements.

1.2  LOCATION

The proposed Fisheries Center was proposed to be located at Malu'u in northern Malaita, about 100m away from the shoreline. This site was identified by the Malaita Provincial Infrastructure Advisory Committee as Malu'u is in the center of the North Malaita Region. The location has accessibility to water and electricity supply, telecommunication services, airport, and roads.
There is also a new wharf being proposed in Malu’u by the Solomon Islands government. However, given OFCF involvement, a new location will need to be determined. This decision is currently underway through dialogue with MPIAC.

1.3 STRATEGIC CONTEXT

The Solomon Islands economy is dominated by subsistence agriculture and fisheries related activities, which support around three-quarters of the total population, including almost the entire rural population. Community-based fisheries projects seek to reduce community poverty and improve local livelihoods considering the significant dependence of communities in Malaita on aquaculture and fisheries. The facility is anticipated to have government support as it is currently listed in the National Infrastructure Investment Plan’s prioritized pipeline of projects for development.

1.4 DRIVERS OF CHANGE

A lack of cold storage facilities paired with dilapidated equipment at existing fisheries centers points to a need for upgraded and new facilities which can ensure sustainable fish storage and distribution. Anticipated benefits include improved market access, reduced logistical costs, improved product quality, and increased community livelihoods.

The proposed project is intended to respond to identified causes and consequences of a market problem through strategic interventions that are intended to realize desired benefits. This requires careful assessment of the strategic context in which the project is planned and will be operationalized. To this end, a snapshot of the main drivers of change is illustrated in Figure 2, which is generally referred to as the Investment Logic Map.
Figure 2: Strategic Case Investment Logic Map

**PROBLEMS**

*Causes and Consequences*

- **Lack of Cold Storage**
  The closure of the past government facilities results in the lack of an alternative centralized icemaking and cold storage hub.

- **Dilapidated Facilities / Equipment**
  Deterioration of icemaking equipment and associated machinery results in the prior facility being incapable of servicing local fishing communities.

**BENEFITS**

*Desired Outcomes of Solving Problems*

- **Improved Market Access**
  Improved access to market through a centralized hub to sort and chill fresh fish for local communities.

- **Reduced Logistical Costs**
  Standardize transportation schedules and reduce costs of distributors through centralization at the hub.

- **Improved Product Quality**
  Reduce fish spoilage and waste through improved cold storage capability (both on-site and on-boat).

- **Create Community Livelihoods**
  Promote an economic cluster through a service center that promotes commercial linkages and job creation.

**SOLUTIONS**

*Necessary Interventions*

- **Rehabilitate and Expand Fisheries Cold Storage**
  Establish a cold storage center with ice making capabilities as an intermediary facility servicing local fishing communities.

- **Acquire Modern Icemaking Equipment**
  Install new equipment and machinery to produce ice blocks for sale to fisherfolks and chill fresh fish on-site before distribution.

- **Establish Commercial Linkages with Suppliers / Aggregators**
  Strengthen the fisheries value chain by creating a centralized facility to connect fishing communities with aggregators, transporters, and marketers.
1.5 **OBJECTIVE AND IMPACT**

The objective of the project is to improve sustainable fishing practices and strengthen the fresh fish value chain through providing a community-driven cold storage and distribution center which will allow farmers to more effectively cool fish onboard, store fresh fish in a centralized location, and transport fish to secondary markets.
2 TECHNICAL CASE

This section examines the technical feasibility of the Fisheries Center, with specific reference to utility and access requirements, design parameters, machinery specifications, and relevant safeguards. This section should be read in tandem with the Capstone Report (Annex A – Site Evaluation).

2.1 SITE UTILITY AND ACCESS REQUIREMENTS

The exact location of the Fisheries Center remains to be determined with various stakeholders across Malaita province. This is largely due to the fact the initial Fisheries Center proposed for Malu’u has been ruled out due to the ongoing rehabilitation of an existing fisheries center by the Overseas Fishery Cooperation Foundation of the Japanese Government in partnership with the Ministry of Commerce, Industry, Labour and Immigration. The reasons for the duplication with the originally envisioned project have been disclosed to USAID in a separate forum and addressed with the Malaita Provincial Infrastructure Advisory Committee (MPIAC). For the purposes of this assessment, important utility and access requirements will remain relatively similar for the development of a fisheries center in another strategic location of Malaita.

2.1.1 Road and Port Access

The viability of any agribusiness operation is dependent on reliable transportation to and from the site. For the Fisheries Center, careful consideration must be given to ensuring road and port accessibility so fisherfolk are able to sell and export their products to Auki and Honiara, the two primary markets for local fish. Stakeholder consultations with agribusinesses across Malaita have noted that road accessibility is often one of the greatest challenges to agribusiness operations as many roads are poorly developed and managed. This results in high transport costs and inconsistent transportation for all agricultural commodities.

As many ports and wharves in Malaita are in need of rehabilitation, few ports can engage in weekly product pick-up and exportation. In fact, stakeholders note that Auki is the only reliable port for regular maritime transportation. As such, it will be recommended that the Fisheries Center be built with viable, consistent, and close access to Auki port and markets.

2.1.2 Utilities

The facility will require full, reliable, and reasonably priced electricity which will be particularly important to maintain -5 Celsius temperatures in cold storage and produce ice blocks. It will also be imperative that the location offers a formal water supply, which must be tested for quality, pressure, and depth. Proper sanitation will also need to be considered to ensure proper hygiene for workers and products. If a greenfield development, the location of the Fisheries Center will require the installation and construction of appropriate sewerage and treatment piping. As much of Malaita province lacks proper 4G network access, the chosen site will also need to ensure viable internet coverage.

2.2 FACILITY DESIGN PARAMETERS

The facility is expected to serve primarily as a sorting and distribution hub for locally caught grouper, bonita, and parrotfish to preserve fish quality and protect against waste. The facility will
require three primary rooms – a sorting room, a cooling room, and a separate office space. It is of utmost importance that the quality of the commodity is stored and maintained in a way that limits waste. The product must therefore not be affected by physical factors such as moisture and heat so the design of the facility will need to incorporate features that will best protect its contents. Preliminary design parameters and considerations are provided below.

2.2.1 Technical Requirements

The following section highlights the specific technical requirements for the development of the Fisheries Center. First, it should be noted that the following construction-related design parameters must be considered:

- **Location**: The Fisheries Center must be on level ground, ideally slightly raised above the surrounding area, which is well-drained and not prone to flooding.
- **Foundations**: The load-bearing capacity of the soil, resistance to compaction, and drainage characteristics must be determined.
- **Drainage**: The Fisheries Center and the approaches to it must be protected from running water by a drainage system. These systems should also account for regular and rigorous cleaning.
- **Quality and Storage Loss**: The quality of the commodity to be stored must be maintained and wastage limited. The product must not be affected by physical factors such as moisture and heat. The design of the Fisheries Center should incorporate features that will protect its contents from attack by rodents and birds and facilitate the use of insecticides. Cleanliness and ease of working (worker safety) must be included in the design.

2.2.2 General Construction

The entire building is expected to be a simple, secure basic concrete with an impermeable wall, an aluminum corrugated roof, and a concrete slab base with a sloping apron. This recommendation is based on the assumption that these parameters will prevent rust, provide ample protection during times of heavy rainfall, and minimize the risk of moisture, contamination, pests, and rotting.

2.2.3 Room Specifications

Each room will need to be equipped with appropriate ventilation systems to ensure air circulation and maintain temperature control. The cold storage room will specifically be required to maintain a temperature of -5 degrees Celsius at all times. The key element for ensuring this temperature control will be through a calculation of the cooling load which can be measured through calculating the following:

- **Transmission Load**: Heat transferred from the outside (<15% of the cooling load).
- **Product load**: Heat introduced into the cold room when new products enter, estimated at about 55-75% of the cooling load.
- **Internal Load**: Heat which is given off by people working in the cold room, the lighting, and equipment which accounts for around 10-20%.
- **Refrigeration Equipment**: This will account for up to 10% of the total cooling load.
· **Infiltration:** This also adds up to 10% to the cooling load. This occurs when the door opens so there is a transfer of heat into the space through the air. The other consideration is ventilation as some food products give off carbon dioxide so some stores will require a ventilation fan.

It is also recommended that the cold storage offer some anti-corrosion treatment to ensure against rotting as well as stainless steel panels and an airtight door to ensure appropriate insulation. The sorting room and office space will also need to be equipped with high capacity ducted air conditioning units to ensure background cooling.

Each room will also require consistent electricity supply and floodlighting, primarily through renewable sources, to ensure consistent operations and maintenance. It will also be important that there is an availability of clean water to ensure fish are washed and dried and that there is available water for the ice-making machine.

## 2.3 EQUIPMENT AND MACHINERY SPECIFICATIONS

With market demand indicating a preference for fresh fish over frozen, machinery and equipment specifications will be those required for the storage and sorting of fresh fish. It should also be noted that these specifications relate only to those required for coastal and reef pole and line fishing and do not cover requirements for deep-sea tuna fishing. Specifications are provided based on the requirement that fish be chilled immediately after a catch and be kept on ice no longer than 48 hours.

### 2.3.1 Fishing Boat Equipment

Available data retrieved from stakeholder interviews and questionnaire responses indicate that most boats operating off Malaita lack proper commercial fishing equipment and ice onboard to store their catch. Given these constraints, it is recommended that upgraded equipment be provided to fishermen operating in the territory close to the chosen site. In addition, eskees would be leased and ice blocks sold to fishing boats to ensure proper storage and safe fresh fish handling onboard.

### 2.3.2 Onshore Equipment and Machinery

Fish are currently being kept cold in Malaita primarily through eskees, an insulated ice box. The Fisheries Center onshore would therefore house an ice-making machine to ensure a readily available supply of ice to fishermen who will then be able to ensure onboard cold storage. In addition to this machine, the onshore facility would have shelves and around forty (40) large, insulated ice boxes to store larger quantities of fresh fish from various fishermen. These insulated boxes would be kept in the cold storage room. The sorting room will require bins, weights, shelves, tables, and packaging equipment for workers to sort and package fish by size, type, and weight. Since dilapidated...
equipment has been noted as a reason previous fisheries centers have shut down in Malaita, the equipment provided will need to be of high quality with a long lifespan. An example of what the cold store room might look like can be seen in Figure 3.

Given the facility’s reliance on appropriate and reliable power generation, the fisheries center will also require a back-up generator. Appropriate office equipment will also be required to ensure administrative record keeping of fish, expenses, and income. An incinerator may also need to be provided to dispose of waste as well as vehicles to move fish to and from the facility.

2.4 ENVIRONMENTAL AND SOCIAL SAFEGUARDS

As unsustainable fishing practices can lead to coastal degradation, it will be important to ensure the facility does not lead to overfishing or other practices which lead to environmental degradation and harm. Before the construction of the facility, an environmental assessment will also need to be completed on the project site to ensure there are no harmful environmental byproducts that may result from its development.

Operation of this facility will require a significant amount of energy consumption due to lighting, heating, cooling, and air conditioning as well as fixed and mobile material handling equipment which may induce considerable carbon dioxide emissions and will therefore need to be appropriately measured with carbon monoxide detectors. Consideration must also, therefore, be given to ensuring a green approach whereby the facility reduces emissions through renewable energy, appropriate insulation, energy-efficient machinery, LED lighting, and temperature-controlled rooms. The facility should also consider mechanisms to reduce waste and protect the facility from flooding, perhaps by implementing a harvesting system to collect rainwater and building site compact and drainage systems.

Increasing transportation to and from a new location may also lead to increased emissions from constant car and freight movement. Long transportation times will also increase the risk of the rotting as fresh fish requires almost immediate consumption. This reinforces the need for the facility to be constructed along a strategic location and in close proximity to markets and a port to ensure food safety standards can be maintained and emissions from travel can be reduced.

Structures must adhere to appropriate national and international standards of cleanliness for the processing of food products and be physically spaced with a clear delineated of areas in order to better reduce the risk of contamination of foodstuffs. Space for packaging and for shipping must be clearly delineated. Structures also have a risk of impact from creatures such as rodents and termites, as well as from fungi and the use or storage of pesticides. Appropriate measures must be taken to safeguard against such risks—as outlined in documents such as the USAID Global Pesticide Evaluation Report and Safer Use Action Plan (PERSUAP) of Termite, Fungus, and Rodent Control in Vertical-Build Construction for the Office of American Schools and Hospitals Abroad (ASHA) and the May 2021 amendment to that document. Specific situations must be considered, including the prevalence in the Solomon Islands of rodent species including Mus musculus, Rattus exulans, Rattus norvegicus, and Rattus rattus. Local rat poisons made from the white inner flesh of Barringtonia asiatica fruits must be changed daily and kept away from pets. Local rat poisons made from the leaves of Gliricidia sepium must be handled with care as the poison is toxic to all warm-blooded animals and must be prepared daily. The SCALE A&E Environmental Mitigation and Monitoring
Plan (EMMP) must also be used as a reference in regards to environmental protection efforts for these projects.

In May, 2021, the Solomon Islands Ministry of Agriculture and Livestock published an environmental and social management framework for the SI Agriculture and Rural Transformation Project.

The report highlighted the fact that chemical fertilizers and pesticides are used only by some farmers in the periphery of Honiara—largely because of the expense of these chemicals. The overall range of pesticides in the Solomon Islands is limited, and are rarely used in the outer provinces (although crops there suffer significantly from pests) and usually only on large scale farms owned by companies. Most farmers, including subsistence farmers, use organic fertilizers and pesticides, and most pesticides that are used are insecticides. The use of pesticides is discouraged and instead integrated pest management control is encouraged by the ministry.

The report also outlined the need for extension services and training of farmers to include the safe use and handling of all agrochemicals—including pesticides—and acknowledged the human health and environmental hazards posed by the inappropriate use of pesticides.

At present, the Solomon Islands Ministry of Agriculture and Livestock sources insecticides and pesticides from two licensed vendors. These, and the products they import, are as follows:

Island Enterprises—imports Multi Guard insecticides from Fiji, and Stealth from Australia. Multi Guard is an iron-based product that controls snails and slugs in gardens and is used as an alternative to imidacloprid pesticides (which were banned in Fiji as of January, 2020—partially because they contaminated pollen and nectar, killing bees and contaminating honey). The active ingredient is iron chelate.

Stealth is a miticide and insecticide used to control mites and insect pests on crops such as garden fruits and vegetables and includes the active ingredient Abamectin. It can be dangerous to fish and aquatic organisms, as well as to bees.

Farmset Ltd.—imports Orthene insecticide from Papua New Guinea, and Chloropyrifos insecticide from Papua New Guinea. Orthene is a soluble insecticide containing 97.4% Acephate and is sprayed to control pests such as ants, aphids and weevils on high value vegetable crops. It is absorbed by plant roots and foliage and paralyzes the nervous system of insects. It has low dermal and oral toxicity.

Chloropyrifos, also known as Chloropyrifos ethyl, is an organophosphate pesticide used on crops, animals and buildings to kill pests that include insects and worms. It is considered moderately hazardous to humans due to acute toxicity, according to the World Health Organization. (It was banned in California in the US on the last day of 2020.)
3 ECONOMIC CASE

3.1 SUMMARY

The Solomon Islands economy base is narrow and largely natural resource-dependent, with forestry, mining, agriculture, and fisheries being the major sectors. Main export commodities are logs, fish, palm oil and kernels, copra, and coconut oil. Agriculture is a major contributor to Solomon Islands’ economy, making up 34% of Gross Domestic Product (GDP) in 2017, with logging being the dominant agricultural industry.

More than 75% of the labor force is engaged in subsistence agriculture and fishing. Agricultural production systems in the Solomon Islands are largely characterized by subsistence farming of traditional food. Livestock are held by 64% of rural and 15% of urban households. Only 3.9% of the area of the islands is used for agriculture, which is mostly confined to coastal areas. The main subsistence crops are sweet potato (kumara), cassava, banana, taro, yam, beans, cabbage, watercress, and watermelon. Other important staples include breadfruit, nuts, and edible leaves.

Agricultural commercialization in the Solomon Islands is challenging because of the lack of infrastructure. Difficulties with transporting foods and lack of storage facilities represent a major challenge for farmers, significantly driving up post-harvest losses and limiting their economic benefits. Market access also differs significantly for domestic versus export-oriented production in the Solomon Islands.

Fisheries and marine resources play a critical role in the national economy, being the second largest source of export income after forestry. The Solomon Islands’ fisheries are divided into four major sectors: offshore, inshore (coastal), inland freshwater and aquaculture.

Inshore (coastal) small-scale fisheries are an important source of food security and household income in the Solomon Islands. In rural areas, where most Solomon Islanders live, nearly half of all women and 90% of men fish or collect aquatic resources for food and income (Solomon Islands Government 2009), subsistence fishing is of great importance for nutrition. Fishing, and collection, is done with a wide range of gears and techniques and the fisheries themselves are diverse and composed of multiple species.

The fisheries situation of the country is characterized by the importance of both subsistence fisheries and offshore industrial fisheries. The offshore fisheries are responsible for a large percentage of formal jobs in the country, while both processed and raw tuna are major export commodities. The license fee for foreign vessels to fish in the Solomon Islands Exclusive Economic Zone (EEZ) is a source of revenue for the government.

Inshore fisheries management and development is the domain of local communities, provincial governments, and the national government. Community-Based Resource Management (CBRM) is most suited to the land and sea tenure context of the Solomon Islands and the relatively weak central government capacity. Over the last 15 or so years the number of communities known to have carried out some sort of CBRM has increased from a handful to more than 300 (Govan 2015), and much has been learned in terms of best practice in facilitating community processes.
The government has made commitments through the UN Ocean Conference to strengthen CBRM initiatives to contribute to fulfilling SDG 14 (Life Below Water).

Economic analysis is often used to appraise the economic desirability of a given policy. It is an analysis of the expected balance of benefits and costs, including an account of any alternatives and the status quo. It helps predict whether the benefits of a policy outweigh its costs (and with enough data by how much), relative to other alternatives.

For proposed new investments, the costs and benefits relate to changes that are compared to what would have happened in the absence of the proposal. In other words, the incremental costs and benefits are measured using the status quo of the ‘no action’ option. It is inappropriate to merely calculate incremental costs and benefits compared with the ‘status quo’ unless no further changes would have resulted in the absence of the proposal.

The value of economic analysis depends on the accuracy of the individual cost and benefit estimates, but the absence of useful data limits the analysis. The following analysis has sought to identify some of the significant costs and benefits that will influence the outcome. The assumptions underlying these estimates have been conservative and linked to existing analysis and studies when available.

The development of new facilities in Malaita will be critical to the delivery of improved productivity, livelihoods, and revenue, which are the basis of the economic analysis. The three main means of seeing economic benefits and costs from the proposed projects are:

- Changes in productivity (through improvements in technology, new techniques and improvements in training and knowledge).
- Changes in income (through employment and business activity).
- Economies / diseconomies of scale (through changes in the necessary inputs required to achieve changes in production).

There has been a lack of useful economic data which has limited the viability of a quantitative analysis, further details on the qualitative issues of the analysis is provided in subsequent sections. The last column in Tables 2 and 3 dealing with the Impact Quantum seek to explain the reason for the suggested effect. In identifying a net benefit as positive it is likely that this project will positively affect net welfare by changes either in the economic, social and/or environmental aspects in Malaita and the Solomon Islands. Similarly, in identifying a net benefit as negative it is likely that this project will negatively affect net welfare by changes either in the economic, social and/or environmental aspects in Malaita and the Solomon Islands. In identifying a net benefit as mixed it is likely that this project will result in both positive and negative net welfare changes either in the economic, social and/or environmental aspects in Malaita and the Solomon Islands.

3.2 SOCIO-ECONOMIC CONTEXT

The Solomon Islands economy base is narrow and largely natural resource-dependent, with forestry, mining, agriculture, and fisheries being the major sectors. Main export commodities are logs, fish, palm oil and kernels, copra, and coconut oil. Agriculture is a major contributor to
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3.3 ASSUMPTIONS

The objective of this project is to expand the number community-based, small-scale fisheries processing centers across Malaita. These facilities are intended to connect coastal communities dependent on fishing for livelihoods with small-scale facilities to weigh, clean, grade, and portion
specific fish. These facilities could have a significant impact on strengthening the fisheries value chain in Malaita and other provinces from harvest to processing, transport, wholesale, and retail marketing.

Key assumptions for the success of the Fisheries Center are detailed in Table 1.

**Table 1: Economic Assumptions**

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market Potential</td>
<td>There is enough demand for fish in the Solomon Islands but there is an opportunity to create improved margins from the development of new products. However, with an uncertain amount of production it may be difficult to reach a minimum amount to reach a sustainable level of throughput in the facility. As a possible approach, it appears the combination of identification, cleaning, cooling/freezing, and packaging may be a way to add value to the product that would reduce the costs of transportation and improve the local community’s ability to export to markets in Auki and elsewhere.</td>
</tr>
<tr>
<td>Fisheries Access</td>
<td>Waters around Malaita are managed by communities through traditional arrangements on access but not all communities acknowledge or recognize these traditional rights. The development of a fisheries center must consider the ownership and rights to fishing areas in the local area and access to some grounds may need to be negotiated. Issues such as the development of Fishery Aggregation Devices (FADs) will also need to be a part of any management plan to ensure that the community is able to meet current and future demands in fish catches to meet local demand and additional sales.</td>
</tr>
<tr>
<td>Community Buy-In</td>
<td>Costs of the facility need to be calculated to enable market surveys to be undertaken to see if fishermen and wholesalers are willing to use such a facility in terms of the costs of processing and whether they will yield increased margins. Also surveys of consumers (local) on whether they are willing to purchase the products produced (whole fish or fileted fish). Fishermen are also needed to agree to catch a more consistent product to enable the facility to reduce costs and improve operating efficiency. The development of processing facilities will be dependent on the regular supply of fish that is of a consistent quality. This may favor larger fishermen and the development of new arrangements that see greater use of new fishing approaches and equipment required to raise output. The facility will also need to charge a fee that will enable the coverage of variable costs to support the operation of an ice machine, staff, equipment repair and any other services provided by the facility.</td>
</tr>
<tr>
<td>Fisherman, wholesalers, and fisheries officials</td>
<td></td>
</tr>
<tr>
<td>Trained staff / Workers</td>
<td>The availability of local labor that are trained or able to be trained has not been assessed. Skilled assessors, operators and maintenance staff will need to be able to travel to the site(s) to work and this will need support from both the national and provincial government to assign staff. Local facilities and additional resources may be necessary to ensure that training can be undertaken on site and that other services are nearby.</td>
</tr>
<tr>
<td>Reliable Transport Connection</td>
<td>To function the facility will have to be reachable and to allow the movement of goods and able to cope with the coming and going of transport to the facility. The local wharf/jetty will need to have space for boats and a place for transshipment and storage. If there is going to be a storage space in the facility, then there should</td>
</tr>
</tbody>
</table>
3.4 ECONOMIC COSTS

In considering the economic costs, Table 2 examines relevant economic, social, and environmental factors that could affect the Financial Case and also overall project sustainability.

**Table 2: Economic Costs**

<table>
<thead>
<tr>
<th>Identified Cost</th>
<th>Calculation</th>
<th>Comment</th>
<th>Impact Quantum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market Lacks a Strong Price Signal</td>
<td>Price of fish in higher-value markets in Auki and Honiara. Prices are paid by consumers outside of Auki. Differences in prices of fish in Auki and Honiara must support the cost of processing and transport from these centers.</td>
<td>Most fishing is for household consumption might mean there is a low level of willingness to catch additional amounts as there is a lack of a market for their products. Easy entry and exit for fishermen make predictable supply difficult.</td>
<td>Neutral (incentives to fishermen must change as a large number of subsistence producers support local food security).</td>
</tr>
<tr>
<td>Security/protection costs</td>
<td>Cost of security, possible damage to products and losses from pests during transport and storage.</td>
<td>Stored produce may bring pests to the facility. Processed items and equipment stored on site may encourage break ins and theft.</td>
<td>Negative (investment in storage facilities, cold room, freezer, and security to mitigate the impacts).</td>
</tr>
<tr>
<td><strong>Environment impacts</strong></td>
<td><strong>Equipment needs to be maintained and serviced.</strong></td>
<td><strong>Storage and Distribution Recovery Charges</strong></td>
<td></td>
</tr>
<tr>
<td>------------------------</td>
<td>-------------------------------------------------</td>
<td>-----------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Construction and operation of the facility.</td>
<td>Many fishermen will probably seek to not use or bypass the facility if margin for their items is reduced.</td>
<td>New cost center borne by fisherman, wholesalers, and consumers</td>
<td></td>
</tr>
<tr>
<td>Construction debris, hazardous materials, and land disturbances.</td>
<td>Malaita has a high cost of freight and electricity, and this will affect storage and processing costs at the facility (especially if freezing is included in the process and cold storage is required).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Changes to local drainage patterns due to loss of vegetation new concrete structures and parking lots.</td>
<td>Costs from compliance associated with regulatory requirements (food handling).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increased fishing in the local area of the processing center.</td>
<td>Utilization rates of the processing by fisherman and wholesalers.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amount of solid waste and gray / black water generated and discharged by the facility.</td>
<td>Cost of freighting from the facility, storage costs, costs of ice/freezing and costs of processing.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impact of noise, dust, and pollution from the facility (community impacts).</td>
<td>Costs from compliance associated with regulatory requirements (food handling).</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Environment impacts**

- Construction and operation of the facility.
- Construction debris, hazardous materials, and land disturbances.
- Changes to local drainage patterns due to loss of vegetation new concrete structures and parking lots.
- Increased fishing in the local area of the processing center.
- Amount of solid waste and gray / black water generated and discharged by the facility.
- Impact of noise, dust, and pollution from the facility (community impacts).

**Storage and Distribution Recovery Charges**

New cost center borne by fisherman, wholesalers, and consumers

- Utilization rates of the processing by fisherman and wholesalers.
- Cost of freighting from the facility, storage costs, costs of ice/freezing and costs of processing.
- Costs from compliance associated with regulatory requirements (food handling).

**Equipment needs to be maintained and serviced.**

- Many fishermen will probably seek to not use or bypass the facility if margin for their items is reduced.
- Malaita has a high cost of freight and electricity, and this will affect storage and processing costs at the facility (especially if freezing is included in the process and cold storage is required).

**Negative** (lower margin for fisherman and communities as feedback indicates that they are likely to bear the cost of transport, storage, and processing).
<table>
<thead>
<tr>
<th>Social Dynamics</th>
<th>Impact of social disturbances to local schools and communities.</th>
<th>Survey of local facilities and cultural sites. \ Boating accidents from increased transport and fishing.</th>
<th>Neutral (no local cultural place has been identified).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processing</td>
<td>Each stage of the processing of fish will require different equipment and inputs into the process.</td>
<td>Specific steps can include simple treatment, cleaning and storage, refrigeration and/or freezing, and packing and storing.</td>
<td>Negative (assessment of the cost and price charged may require large investments in capital that exceed the small-scale project investment ceiling).</td>
</tr>
<tr>
<td>Climate Change</td>
<td>Additional emissions arising from construction and operation of the processing facilities.</td>
<td>Ongoing changes in carbon absorption by oceans may increase acidity and may reduce ocean productivity, especially in areas dealing with coral reefs. \ Excess heat from machinery may be released in the immediate area causing local temperatures to rise around the facility—may have an adverse impact on animals and plants.</td>
<td>Negative (with conditions (damage to infrastructure directly and reduced productivity of fishing)).</td>
</tr>
</tbody>
</table>

3.5 ECONOMIC BENEFITS

In considering the economic benefits, Table 3 examines relevant economic, social, and environmental factors that could affect the Financial Case and also overall project sustainability.

Table 3: Economic Benefits

<table>
<thead>
<tr>
<th>Identified Benefit</th>
<th>Calculation</th>
<th>Comment</th>
<th>Impact Quantum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved Revenue</td>
<td>Revenue (average revenue per fisherman).</td>
<td>Revenue would depend on improved prices for fish</td>
<td>Positive but cases will need to be assessed for different varieties</td>
</tr>
<tr>
<td><strong>Fisherman and wholesalers</strong></td>
<td>Wholesaler revenue (average revenue per wholesaler).</td>
<td>minus the cost of storage and processing.</td>
<td>of fish and the distances they may be transported.</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>---------------------------------------------------</td>
<td>------------------------------------------</td>
<td>------------------------------------------------</td>
</tr>
<tr>
<td><strong>Reduced Distribution Costs</strong></td>
<td>Improved storage to allow for longer transport times (from ocean to market).</td>
<td>There should be more Malaita-produced fish products in markets in Auki and Honiara.</td>
<td>Positive but depends on its connectivity to ICT and logistics.</td>
</tr>
<tr>
<td><strong>Tighter supply chain with fewer stops and changes</strong></td>
<td>Reduced wastage and spoilage of products. Improved quality/biosecurity rating (higher price).</td>
<td>Product safety inspections or certification at the center may be necessary. Adoption of FAO codes, MSC fisheries standards, GAA, fish processing standards, HACCP and SPS measures will require funding.</td>
<td>Neutral – possibly negative (cost of meeting standards). Costs of production of ice and/or cool rooms will be expensive.</td>
</tr>
<tr>
<td><strong>Improved Quality of Products</strong></td>
<td>New investment by fisherman, supporting sectors and wholesalers.</td>
<td>Investment in transport, wholesaling and fishing may increase.</td>
<td>Positive – marginal (most fishing is not commercial and is used for consumption by families with the excess being sold.)</td>
</tr>
<tr>
<td><strong>The faster movement to market/processor and improved quality assessments</strong></td>
<td>The number of jobs in fisheries facilities and those linked to transport services.</td>
<td>Assume wage at $[ ] per hour.</td>
<td>Positive (local villages with a center are likely to benefit from local employment opportunities and associated businesses. The development of work opportunities may slow the drift of people to the towns).</td>
</tr>
</tbody>
</table>

### 3.6 AFFORDABILITY

Presented in Table 4 are relevant factors that would affect the affordability of the project.

**Table 4: Economic Affordability Considerations**

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Economies of Scale</strong></td>
<td>There are expected to be benefits to the project if several of the processing projects are co-located and able to pool the electricity, water, and waste facilities. For example, a solar/hybrid system could be included in the proposal, and similar proposals would have to be considered for water and waste. For example, a small hybrid facility in Malu’u that was constructed by SoiPower (financed by the ADB) provides 167kW of electricity and costs $[ ] per month. The size of the panels was about half the size of a football field. Clean water will be a necessary input for several of the processing of fish and the production of</td>
</tr>
</tbody>
</table>

---

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ice. If groundwater or river water is going to be sourced some type of filtration and treatment will be required. Waste management and disposal will be an important element as the storage and processing of fish will generate waste. Auki has a basic waste management option that is not sustainable as it does not process to reduce the environmental impacts of solid waste.

<table>
<thead>
<tr>
<th>Improved connectivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>The processing facility will benefit greatly from building and improving contacts and coordination amongst fishermen, transport/distributors, and wholesalers. If these groups can improve supply chains through improved fishing choices, training on identifying specific breeds, handling to improve product quality, improved transport and storage and value adding to the product then margins are likely to increase and possibly improve the market share of Malaita produced products in Honiara and other SI markets.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Product Quality and Food Handling Issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>The outputs from the facility will require careful handling and storage to ensure that its quality remains high and meets consumer expectations.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Community Livelihoods</th>
</tr>
</thead>
<tbody>
<tr>
<td>While the specific facility might struggle to meet costs, if the center is part of a wider engagement in the community to support improved local livelihoods (such as supporting women) then there will be broad community benefits from the associated work on training, resource management and associated programs such as financial education and inclusion.</td>
</tr>
</tbody>
</table>

### 3.7 EVALUATION

Due to the need for further due diligence and analysis as a result of the implementation challenges outlined in the Capstone Report, it is not possible to calculate an accurate Economic Rate of Return (ERR) at this stage. However, it can be concluded that the economic impact of the project is likely to be marginally positive.

Most fisheries projects require some type of subsidy to enable the facility to operate as local payments from the community are usually insufficient. As a result, the development of a Fisheries Center that is distant from markets in Auki and Honiara would find it difficult to operate effectively if they are not supported by government and/or development partners. The nature of fisheries and their importance to subsistence production means there are some benefits from including aspects of training, resource management and environmental protection to ensure the sustainability of local fisheries. However, the project as it stands is not feasible as a commercial venture and would not be successful unless there is some specific community-based support and strengthening attached to the project. Case studies in other jurisdictions on community projects identify that there is some value in considering a range of supporting programs such as infrastructure, environmental protection, training, new equipment, and supporting livelihoods (especially for women and youth) to ensure that the project is successful in supporting long-term increases in income and production for the community.

The target ERR for this project is in the range of 17-23% to be an impactful and desirable investment for USAID and the Solomon Islands Government.
4 COMMERCIAL CASE

This section evaluates the viability and suitability of available models for project delivery through a commercial engagement between the Solomon Islands Government and private enterprise. This requires careful evaluation of the anticipated business model, procurement strategy, contract options, and payment mechanisms.

4.1 PROJECT DELIVERY OPTIONS

Every infrastructure investment project is faced with an array of implementation options that vary by financing structure, payment mechanism, revenue generation strategy, and risk allocation. In the case of the SCALE A&E Project, the scope of eligible project delivery options has narrowed as a result of responsibility for facility design, construction, and financing being assumed (at least in part) by USAID. Considering that USAID will be funding most if not all upfront capital costs, the Project Team has assumed that a facility operator / manager will be engaged with one of three standard contract models, which are illustrated in Figure 4.

Figure 4: Possible Contract Models

<table>
<thead>
<tr>
<th>MANAGEMENT CONTRACT</th>
<th>CONCESSION CONTRACT</th>
<th>LEASE CONTRACT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government responsible for capital investment</td>
<td>Contractor responsible for additional capital investment</td>
<td>Government responsible for capital investment</td>
</tr>
<tr>
<td>Contractor responsible for operation and maintenance</td>
<td>Contractor responsible for operation and maintenance</td>
<td>Contractor responsible for operation and maintenance</td>
</tr>
<tr>
<td>Contractor compensated for management services through management fees</td>
<td>Contractor generates profit through facility management</td>
<td>Contractor Generates revenue and profit from facility management</td>
</tr>
<tr>
<td>Government receives revenue transfer from Contractor</td>
<td>Government receives revenue share / concession fee payment from Contractor</td>
<td>Government receives lease payment from Contractor</td>
</tr>
</tbody>
</table>

Determination of the optimal contract model or delivery mechanism is dependent on several decision-making factors, which include:

- Preferred payment / cost recovery mechanism.
- Commercial viability and need for public subsidy.
- The extent of risk transfer between the parties.
- Availability of capable and qualified contractors.
• Legal constraints on public asset management.

Nomination of the contract mechanism is a responsibility of MPIAC or the Infrastructure Trust (see Management Case), depending on who is responsible for procurement oversight. Selection of the contract model will determine how bids are evaluated, such as with reference to the percentage of revenue share in a management contract or the total sum and annual escalation rate in a concession fee / lease payment. These financial considerations must also be balanced against the relevant experience and management experience of bidders to maximize the likelihood of successful project outcomes.

4.2 IMPLEMENTATION STRATEGY

The recent disclosure of a competing project by the Ministry of Commerce, Industry, Labour and Immigration and OFCF has rendered the proposed project in Malu'u obsolete. Once a new project site is selected then further due diligence will need to be undertaken to identify potential facility operators.
5  FINANCIAL CASE

This section evaluates the financial feasibility of the proposed Fisheries Center. Specific consideration has been given to whether the project may be successfully constructed within the maximum Capital Expenditure (CAPEX) ceiling of [blank]. More important, however, is analysis of whether the envisioned business is capable of generating positive cash flow and return on investment as this will ultimately determine whether the project is viable or not.

5.1  ASSUMPTIONS

The Financial Case is based on estimates for costs and revenue from operating and maintaining an ice-making machine, cold storage room, sorting room, and office space. It does not take into consideration costs for further fish processing or freezing. It also assumes that catch is based on coastal and reef pole fishing for bonita, grouper, and parrotfish. It does not calculate expected expenditure or revenue from deep-sea fishing or the catch of other fish types. The estimates provided also relate to those which would be in Malu’u, the initial site recommended for the Fisheries Center and the site with which initial stakeholder consultations and surveys were conducted. These estimates are also based on costs for whole fresh fish, as this was highlighted as the most common and preferred method by buyers.

The financial case assumes that there are about 200 boats operating near the site, but this number will need further validation once the site is confirmed. The supply of fish in the region is based on estimates using the number of boats as well as stakeholder consultation and survey data which estimates the number of trips made every year per boat as well as the average catch per boat. It is important to understand that supply is variable, depending on the weather, and the time of year and that there is little data about the actual number, type, or use of boats in or around Malu’u.

While demand is high for fish worldwide, this estimate avoids claims that any fish can be sold at premium prices. It should also be noted that international markets would likely require a scale and skill level beyond the scope of the proposed Fisheries Center, so estimates are based on demand and export estimations for local markets.

The price of fish has been estimated using data collected during stakeholder consultations and questionnaires. Indicative fish species and prices in SBD/Kg can be seen in Table 5.
It is understood that the quantum for investment in capital goods is provided by USAID as a no-cost grant. It is assumed that USAID does not want the amount repaid by the owner or operator of the facility.

5.2 CAPITAL / OPERATIONAL EXPENDITURE

Provisional capital investment is provided below in Table 6. This estimate will need to be further refined once the exact site is selected to ensure accuracy in the calculation. These costs were developed as an estimate based on stakeholder due diligence, data collection, and general industry standards in the region. The estimates are based on basic infrastructure, not the more expansive foundation referenced above.
Table 6: Estimated CAPEX

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SBD</td>
</tr>
<tr>
<td>Process</td>
<td>USD</td>
</tr>
<tr>
<td>Ice block machine</td>
<td></td>
</tr>
<tr>
<td>Freezer</td>
<td></td>
</tr>
<tr>
<td>Fish sorting/packing equipment</td>
<td></td>
</tr>
<tr>
<td>Support</td>
<td></td>
</tr>
<tr>
<td>Generator</td>
<td></td>
</tr>
<tr>
<td>Office equipment</td>
<td></td>
</tr>
<tr>
<td>Incinerator</td>
<td></td>
</tr>
<tr>
<td>Vehicles</td>
<td></td>
</tr>
<tr>
<td>Sub-total</td>
<td></td>
</tr>
<tr>
<td>Structure</td>
<td></td>
</tr>
<tr>
<td>Site preparation</td>
<td>Detail to be provided</td>
</tr>
<tr>
<td>Cold store</td>
<td></td>
</tr>
<tr>
<td>Fish preparation area</td>
<td></td>
</tr>
<tr>
<td>Office</td>
<td></td>
</tr>
<tr>
<td>Accommodation</td>
<td></td>
</tr>
<tr>
<td>Security fencing</td>
<td></td>
</tr>
<tr>
<td>Waste and drainage</td>
<td></td>
</tr>
<tr>
<td>Subtotal</td>
<td></td>
</tr>
<tr>
<td>TOTAL CAPEX</td>
<td></td>
</tr>
</tbody>
</table>

Operating expenditure requirements will need to be calculated once the specific site location has been determined. However, an initial estimation has been provided in Table 7. In this case, the Fixed Recurring Costs (FRC) are estimated at about [XXX] based on a best guess estimate. This would include salaries, wages of staff, office supplies, and administration.

The variable consumables and operating items cost would usually consist of the raw material used for processing plus the production-based utilities plus casual labor. As there is no data related to the volume or type of catch at the new site, it is challenging to calculate how much casual labor is required nor what the utility demand would be, especially for potable water required for cleaning and ice-making. As a result, this section includes N/A references for figures which cannot feasibly be estimated at this stage.
Table 7: Estimated OPEX

<table>
<thead>
<tr>
<th>Fish Processing Center</th>
<th>Item</th>
<th>Detail</th>
<th>Unit USD value</th>
<th>Units</th>
<th>Total USD amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed Recurrent Costs</td>
<td>Salaries and wages</td>
<td>Manager</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(monthly)</td>
<td>Technical</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Clerical and stores</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Driver, unskilled and security</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sub-total fixed staff</td>
<td>Recurrent admin (all estimated)</td>
<td>Office supplies and ICT</td>
<td>One</td>
<td>Lump sum</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Legal, insurance, licenses, travel</td>
<td>One</td>
<td>Lump sum</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Replacement incidental tools (l)</td>
<td>One</td>
<td>Lump sum</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Recurrent building maintenance</td>
<td>One</td>
<td>Lump sum</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Office and general water supply</td>
<td>One</td>
<td>Lump sum</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fuel for vehicle</td>
<td>One</td>
<td>Lump sum</td>
<td></td>
</tr>
<tr>
<td>Sub-total General Admin</td>
<td>Ancillary</td>
<td>Waste disposal</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Total Recurrent Costs (General, Salaries, Admin)

Variable Operating Costs

<table>
<thead>
<tr>
<th>Labor</th>
<th>Consumables</th>
<th>Ancillary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Casual for fish handling and cleaning</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Water m³ for ice making</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Electricity kWh for ice-making</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>PPE (Gloves, masks, aprons)</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Packaging</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Total Variable Operating Costs</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

TOTAL OPERATING EXPENSES N/A

Contingency @10% N/A

TOTAL OPEX N/A

Note: the OPEX is incomplete because the volume of fish is unknown. We do not know the size of the building, the fish catch, the required casual labor.

5.3 REVENUE

The revenue for the Fisheries Center is derived from three elements:

1. The cost of the catch.
2. The market prices.
3. The mechanism for charging a fee for the service.

Estimating revenue is demand-driven, which means that the foundational input is the demand for fresh fish in the local market and other locations across the Solomon Islands. Surprisingly fish consumption in the Solomon Islands is not as high as the access to the sea might suggest. A survey by FAO in 2017 put the per capita consumption of fish at 30.14 kg/head. This is above the world average of 20kg but well behind Southeast Asia where it is around 60 kg per head. Using this per capita value, the model calculates local total fish consumption in the north of Malaita (the Malu’u area) of 1,108 tons, something that will need to be verified with future studies. The main alternative markets are in Auki and Honiara. Both are population centers, but equally, both may be supplied from other locations within the Solomon Islands. In this case, Malu’u sourced fish must accept the going market price.

The supply of fish in the region is once again based on estimates for number of boats, number of trips per year per boat, and average catch per boat. Table 8 highlights the estimated supply-demand balance and therefore the total expected volume of fish available for export.
Table 8: Estimated Supply-Demand Balance

<table>
<thead>
<tr>
<th>Fishing fleet</th>
<th>Total catch</th>
<th></th>
<th>OBM</th>
<th>200</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of boats</td>
<td></td>
<td>Kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total catch per year</td>
<td></td>
<td>Kg</td>
<td>1,408,000</td>
<td></td>
</tr>
<tr>
<td>Annual value of the total catch</td>
<td></td>
<td>SBD</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Local Consumption      |             | Kg        | 1,107,705 |   |
| Northern "Malu'u" region |           |           |        |    |

| Supply-Demand Balance  |             | Kg        | 300,295 |   |
| Excess of local supply over local demand | | | | |

| Ex-Malaita sales       |             | Kg        | 300,295 |   |
| Available volume for export | | | | |
| Value of SI export market | | | | |

While 300 tons is an initial estimate at this preliminary stage, it is a cautious number as most fisheries centers are only said to handle no more than 60 tons of fish per year. As a result, it will not be possible to simply assume that 300 tons of surplus fish will be available at the facility. Nonetheless, it does provide some initial estimations that the likely supply of fish provided by fishermen should be able to meet demand.

5.4 EVALUATION

The financial analysis for the Fisheries Center was not finalized given the emergence of new information regarding the engagement between OFCF, the private business, and the Ministry of Commerce, Industry, Labour and Immigration, which was previously not disclosed to the Project Team. Nevertheless, on the basis of the preceding assessment it can be concluded that the proposed project can be built within the monetary ceiling. In addition, there is clear revenue potential associated with the supply of target fish species. However, due diligence regarding market conditions and demand will need to be restarted once a new location for the Fisheries Center is selected to ensure the project appraisal and eventual design are fit for purpose and contextually customized. This will inform a more detailed financial analysis of CAPEX, OPEX, and revenue potential.
6 MANAGEMENT CASE

This section examines the governance system that must be established to safeguard successful project operationalization, as well as the functions that must be assumed by the facility manager to realize the implementation vision. Also considered are the factors and risks that determine whether the project will be successful or susceptible to failure.

6.1 GOVERNANCE STRUCTURE

Strong governance is critical for successful project management and effective oversight in the execution of operational functions. This depends on a clear implementation model that defines the roles and responsibilities of all involved parties, operational standards, reporting requirements, and expected outputs. Effective governance enables the realization of several core project management principles. This includes the following five (5) core pillars of good project governance:

1. **Transparency** – compliance with defined procedures and management standards.
2. **Visibility** – measurable progress and operational trajectory against key milestones.
3. **Consistency** – alignment with strategies and plans at both the project and policy levels.
4. **Adaptability** – responsive to new challenges and emerging opportunities.
5. **Accountability** – adherence to regulatory standards and contractual agreements.

While these governance principles should both guide and inform all project activities, they must be operationalized within an effective organizational system. Unlike the Commercial Case which examines how the project could be delivered and successfully implemented, this section is focused on the management of the project (or business) itself. This must also include consideration for the role of the Solomon Islands Government in ultimate project governance.

As a result of several consultations with MPIAC, a consensus has emerged regarding the need to establish an Infrastructure Trust as a quasi-independent entity that will function as the institutional custodian of the SCALE A&E projects. The intention of MPIAC is to limit the scope for politically motivated interference in project governance that could result from changing political administrations.

Although there was initially discussion of operationalizing the Infrastructure Trust through the Charitable Trust Act 1996, there are several constraints to that approach. These include:

- The definition of a ‘charitable purpose’ does not include infrastructure projects or economic facilities, and a profit motive is expressly excluded.
- There is no mandatory system for reporting, accounting, or auditing of financial accounts by charitable trusts.
- No fiduciary system of duties and standards is established for trustees, which creates concern over funds are managed.
- There is no authorization for a charitable trust to carry out procurement functions for assets for which it functions as a trustee.
- No explicit authorization is provided for a public institution (either national or sub-national) to assign ownership rights over state property to a charitable trust.
As a result of these factors, MPIAC has sought legal counsel from Pacific Horizons Consulting Group regarding the optimal governance model through which to operationalize the Infrastructure Trust. The Project Team has advised that the governance structure must be determined in accordance with three (3) core requirements (although these should not be considered exhaustive nor exclusionary of other considerations):

1. **Authority** – the legal authority to own and/or act as the institutional trustee for public land and assets that have been transferred to it.
2. **Procurement** – the power to launch and manage procurement proceedings to appoint a manager for public assets in line with defined procedures.
3. **Compliance** – adherence to legally defined systems and standards for financial administration and project revenue accounting.

In light of this, it is anticipated that the Infrastructure Trust will need to have some form of government affiliation, although the exact form that this takes remains to be determined. A quasi-independent public institution under the auspices of the Malaita Provincial Government could provide for private sector participation through a Steering Committee or Advisory Panel, which might also feature involvement from supportive development agencies like USAID. This mixed composition governance system would enable the Infrastructure Trust to maintain a measure of operational autonomy for the reasons stated above, while also ensuring it is capable of meeting the three core requirements outlined above. A simplified graphical illustration of a standard project implementation and governance structure is provided in Figure 5.

*Figure 5: Illustrative Project Governance and Implementation System*

Ultimately, the governance structure will be guided by local legal and regulatory frameworks. However, a central recommendation to note is that the Infrastructure Trust should be accompanied by the establishment of a ring-fenced and earmarked fund that will ensure project revenue is not siphoned off to the national government. Instead, project revenue may only be
disbursed from the fund for eligible purposes, such as for payments to facility managers (dependent on contractual conditions), to meet shared maintenance costs, launch capacity building programs, community outreach initiatives, and equipment / spare parts acquisition.

6.2 SCOPE OF OPERATIONS

The Fisheries Center will be owned by the Infrastructure Trust, with operational management delegated to a private entity that is appointed through a competitive procurement process. In the case of a partnership with private enterprise, possible delivery models include concession, lease, and management contract, as addressed in the Commercial Case.

The proposed Fisheries Hub **includes** the operational components detailed in Table 9.

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ice Making Machinery</td>
<td>Provide equipment and capability for making ice to freeze fish from around minus-5 deg C down to – minus-20 deg C,</td>
</tr>
<tr>
<td>Cooling Room</td>
<td>Provide equipment and capability for a cooling room to keep fish</td>
</tr>
<tr>
<td>Sorting Room</td>
<td>Provide equipment and capability for a clean area for processing (fileting) fish and packing</td>
</tr>
<tr>
<td>Selling Ice Blocks and Leasing Eskies</td>
<td>Marketing and selling bags of ice or ice blocks and leasing eskies or ‘coolers’ to fisherfolks</td>
</tr>
<tr>
<td>Living Accommodation</td>
<td>Separate living accommodation for the facility manager.</td>
</tr>
</tbody>
</table>

The proposed Fisheries Center **excludes** the operational components detailed in Table 10.

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fish Processing</td>
<td>Equipment and capability to weigh, grade, filet, portion, and package processed fish in sanitary conditions.</td>
</tr>
</tbody>
</table>

Detailed facility requirements are specified in the Technical Case.
6.3 INDICATIVE IMPLEMENTATION PLAN

The indicative plan for the proposed Fisheries Center is illustrated in Figure 6.

**Figure 6: Illustrative Work Schedule**

**Design**
Detailed design of the Fisheries Center based on the requirements specified in the Technical Case. This includes the spatial plan, utility requirements and business processes for the operation of the Fisheries Center. It will require subject matter expertise in efficient design and input from potential users.

**Procurement**
This involves two separate procurement exercises for the Fisheries Center construction and operation. This includes the tender documentation, supplier proposals, evaluation, and contractual negotiations. Effective procurement exercises involve ‘warming up the market’ prior to tender documents being released.

**Construction**
The construction of the facility by the selected supplier including site preparation, sourcing materials, building work and relevant quality control processes. It will require specialist knowledge and continued engagement with potential users for clarification of requirements.

**Worker Recruitment/Training**
The recruitment of managerial and technical personnel from the local community where possible. Training includes formal training courses, mentoring etc. and may be provided by donors
experienced in capacity building. Expected roles for the facility include manager, clerk, machinery operators, packaging operators, security, and drivers. There will be a need for unskilled laborers such as janitorial, fish handlers and general laborers. Maintenance can be contracted if desired.

**Facility Operation**

The ongoing activities carried out by the selected operator to manage the Fisheries Center as per their contract, managing equipment, processes, technology, and people. The operator needs to monitor supply chains through ongoing engagement with a range of potential users (farmers, cooperatives etc.) and adjust operating activities accordingly.

**Project Governance and Stakeholder Consultation**

All the above activities are overseen by the Infrastructure Trust with effective governance processes in place with suppliers that include regular status reports and meetings. It is also critical throughout the project and ongoing operations that key stakeholders are continually engaged including government, communities, and donors.

### 6.4 CRITICAL SUCCESS FACTORS

Critical Success Factors (CSF) are the aspects of a project that are critical to the project achieving its desired outcomes. Specific desired outcomes identified for the proposed facility in the strategic Case are:

1. Improved access to market through a centralized hub to sort and chill fresh fish for local communities.
2. Standardized transportation schedules and reduce costs of distributors through centralization at the hub.
3. Reduced fish spoilage and waste through improved cold storage capability (both on-site and on-boat).
4. Promoted economic cluster through a service center that promotes commercial linkages and job creation.

Particularly important CSF for the proposed Fisheries Center to operate sustainably include:

**CSF 1: Understanding Market Demand**

The facility design and scale is reliant on a good understanding of the market demand. Consideration needs to be given to whether the market is mainly domestic or international. International markets typically demand fresh fish, whole or gutted whilst domestic markets demand whole fish.

**CSF 2: Understanding of Fish Supply Chain**

The design needs to consider the end to end supply chain from fishing communities through to aggregators, transporters, and marketers. The operator needs to monitor supply chains through ongoing engagement with stakeholders (i.e., fishermen, co-operatives, associations, etc.).

**CSF 3: Locate Close to Main Fishing Wharfs**

Original location being considered was Malu’u. Due to the intended renovation of the existing facility at Malu’u by the Overseas Fishery Cooperation Foundation of Japan (OFCF) this needs to
be revisited. To achieve the stated desired outcomes and given the current connectivity issues within Malaita it would be highly advantageous to locate the Fisheries Center close to main usable fishing wharfs.

**CSF 4: Sustainable Business Model**
The business model for operating the Fisheries Center needs to be clearly understood and sustainable. For example, whether the model includes selling ice blocks / leasing eskies to fishing communities. Further analysis needs to be completed at the new site in order to ensure the facility is fit for purpose.

**CSF 5: Strong Operator Capability**
The facility will need an operator with relevant capability to adopt the business model and successfully manage the facility. There will also be a need for some specialist technical skill in respect of running ice machines, hygiene standards and pest control. There is an opportunity for donors to provide specialist capacity building through training and mentoring.

**CSF 6: Robust Quality Control Processes Across Supply Chain**
The center will need robust quality control processes to satisfy food quality standards. For example, local fishing communities will need to develop the required skillsets for weighing, cleaning, grading, and portioning specific fish for processing. The facility manager is likely to require an HACCP certificate for exports.

**CSF 7: Operator Access to Finance**
The Infrastructure Trust needs to consider ring fenced funding for reinvestment in the facility rather than revenue being redirected for SIG purposes. There is an opportunity for international finance institutions to assist with enabling access to finance through technical assistance/capacity building.

### 6.5 RISKS
Key risks for the proposed Fisheries Center are detailed in Table 11, which includes a simplified categorization by anticipated impact and likelihood.

A definition of what constitutes the determination of high, medium, and low risks for both likelihood and impact can be seen below:

- **Assessed Impact**
  - Low: Identified risk anticipated to have little impact on the project outcomes if the risk materializes.
  - Medium: Identified risk anticipated to have some impact on the project outcomes if the risk materializes.
  - High: Identified risk anticipated to have a significant impact on the project outcomes if the risk materializes.

- **Assessed Likelihood**
  - Low: Identified risk anticipated to be unlikely to materialize.
  - Medium: Identified risk anticipated to be somewhat likely to materialize.
  - High: Identified risk anticipated to be very likely to materialize.
<table>
<thead>
<tr>
<th>Risk</th>
<th>Impact</th>
<th>Likelihood</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impact of renovation of fisheries center at Malu’u by Overseas Fishery Cooperation Foundation of Japan (OFCF)</td>
<td>High</td>
<td>High</td>
<td>Engage early with the government to identify land for the processing facility.</td>
</tr>
<tr>
<td>Poor quality of existing wharfs</td>
<td>High</td>
<td>High</td>
<td>Identify good quality wharfs to help inform location decision</td>
</tr>
<tr>
<td>Insufficient access to required water for making ice and waste water disposal facilities.</td>
<td>High</td>
<td>High</td>
<td>Identify water requirements to help inform location decision</td>
</tr>
<tr>
<td>Lack of available land and access</td>
<td>High</td>
<td>High</td>
<td>Engage early with the government to identify land for the processing facility.</td>
</tr>
<tr>
<td>Insufficient access to power and high energy costs.</td>
<td>High</td>
<td>High</td>
<td>Identify energy requirements and investigate options of extending power, diesel backups and solar power.</td>
</tr>
<tr>
<td>Lack of reliable transport connectivity on Malaita</td>
<td>High</td>
<td>High</td>
<td>Locate the Fisheries Center close to other processing facilities. The project should consider the cost of maintaining accessibility to the project location.</td>
</tr>
<tr>
<td>Lack of operator access to finance</td>
<td>High</td>
<td>High</td>
<td>Infrastructure Trust to consider ringfenced funding for reinvestment in the facility</td>
</tr>
<tr>
<td>Lack of local capable operators</td>
<td>High</td>
<td>High</td>
<td>Run a thorough procurement exercise to assess capability and support successful suppliers to fill any capability gaps.</td>
</tr>
<tr>
<td>Lack of availability of locally skilled staff in Malaita</td>
<td>High</td>
<td>High</td>
<td>Identify managerial and technical skills as part of the detailed design activity for inclusion in the procurement process.</td>
</tr>
<tr>
<td>Lack of community buy-in</td>
<td>High</td>
<td>Medium</td>
<td>Develop a project communications plan and engage early with the community.</td>
</tr>
</tbody>
</table>