**Concept Narrative**

Our design is inspired by the outrigger structure used on traditional and contemporary Fijian watercraft. An outrigger increases the stability of a boat in the same way that the collection of renewable resources (solar rays and rainwater) extends the stability of a community.

The forms in our design are intended to make a visually coherent whole in the landscape. They also create a variety of experiences for the community and visitors to enjoy: shaded gathering spaces, seating, play, gardening, and accentuated views including toward Vatu Rua. The plan indicates a connection to the existing path to the north. Other connections between the project site and the village could be added if desired by the community.

The design includes native vegetated windbreaks that shelter and define the proposed project area within a larger clearing. Only minimal re-grading would be needed in this area to improve surface drainage and prevent standing water. We imagined portions of this newly sheltered area might be well-utilized for gardening space. The boundaries of the proposed garden areas are dashed on the plan and two yard hydrants are proposed that could serve these two areas. Otherwise the village may choose to manage these areas as mowed grass or leave them as tall grass.

The use of poles at angles evokes masts, sails and boats in motion. The pole material will need to be stable in the weather for the lifespan of the project. The poles could be either treated wood poles, likely lag-bolted together, or an industrial fiber-reinforced plastic (FRP) pipe product (if locally available) with custom cuts and caps. In our opinion, the poles should be light in color for visibility. They could be painted / decorated or not, according to the village. All the other structural members are painted or powder coated steel.

**Technical Narrative**

The design was oriented to optimize solar power collection and reduce vulnerability to strong winds. It incorporates 185 monocrystalline PV panels with a total nameplate capacity of 83,000 kwH. A standard panel size is used, and the optimum sun angle for the site is held constant. Two lockable cabinets are located in the plan to house batteries and inverters.

Rainwater is collected from the surface of the solar module assemblies (approximately 409 sq meters total) and piped to underground cisterns. Two 10,000 L cisterns are shown in the base plan for a total capacity of 20,000 liters. To provide an illustration of scale, it would take about 50 mm of precipitation onto the solar modules to fill the two proposed cisterns. Each cistern will be equipped with an overflow. Two powered yard hydrants are proposed adjacent to the cisterns. Collected water could be used in the immediate vicinity for gardening. Water treatment and/or conveyance to the village could be added to the design, depending on community priorities.

**Prototyping and Pilot Implementation Statement**

Initially we would like to set up a virtual meeting with the local community, to introduce ourselves and hear more about their priorities for the project. At this meeting we would explain our general approach to developing a prototype of the design. We would ask if the community would like to assist with the development of the prototype, especially developing an approach to painting/decorating the poles if desired.

In developing the prototype, we would identify and engage a metal fabricator in Fiji with knowledge of material availability, as well as a structural engineer licensed in Fiji. The structural engineer will make the final selection of the pole material, design the steel, the steel-pole connections, and footings as required. The structural design should endeavor to avoid the use of deep concrete footings.

According to the competition T&C, following development of a comprehensive prototyping plan, a budget of $30,000 has been allocated for fabrication and implementation of the prototype in Fiji, including all expenses.

We anticipate that our prototype would consist of one “segment” of the overall solar assembly shown in the plan, similar to what is shown in the section-elevations on the third board of our submission. Only a few solar panels may be installed on the prototypical “segment” for demonstration. We anticipate that the steel would be shop-welded and powder-coated, and brought to the assembly location for attachment to the other elements. Since the intention is to move the prototype from place to place, the pole elements of the prototype would not be set in the ground, but cut off flush and supported with blocks or another method.

If time allows during the pilot implementation we would stake out the entire design with the community on site. This would give us an opportunity to engage with them on questions pertinent to the overall design, eg. desirability of proposed gardens in the project area; best use for rainwater collected in the project area; community experience transplanting trees, etc.

**Operations and Maintenance Statement**

We anticipate that all materials in the project would have a projected 25-year lifespan, and all applicable codes would be followed for inspections and repairs. The design has almost no moving parts. Housing for the solar equipment, gate valves in the rainwater collection system, and similar elements, would be lockable, with the village managing access to these.

The landscape will require regular maintenance by the village. Our plan shows a speculative layout of mown grass, garden (dashed), tall grass and windbreak. For operations, it is important that no tall vegetation will be allowed to grow up around the solar panels. Otherwise, we imagine that the community will develop a pattern of mowing and gardening over time based on their use.

When deciding whether to apply paint or decoration to the poles, one consideration is that the poles would need to be repainted to maintain their appearance perhaps every 5-10 years.

**Environmental Impact Assessment**

The project is located in an area that is generally open, vegetated with tall grasses, however some trees and large shrubs would likely need to be removed for full implementation of the design. Proposed planting would be transplanted plants (all native species) from the immediate vicinity.

Earthwork required for the design is minimal; silt socks or an improvised equivalent will be used for sediment control.

Steel, solar panels and equipment, plastic pipes and cisterns, and concrete (if needed) all have a significant carbon footprint. Renewable energy generated by the project will compensate for this over time.