**LAGI 2025 Fiji Narrative**

1. **Concept Narrative**

Ligavatuvuce is an architectural sculpture that embodies Fiji’s philosophy of giving, resilience, and sustainability, inspired by the sacred act of offering *yaqona* (kava) and the gesture of open palms. Rooted in Marou Village’s cultural heritage, it reimagines the *tanoa* (kava bowl) and traditional thatching as a functional, regenerative structure that harvests solar energy and rainwater. The design features two timber-framed hands rising from a compacted earth base, reinforced by gabion walls, and finished with Soga palm thatch, a material symbolizing community and ecological harmony. These hands cradle a steel or timber half-bowl, its underside thatched, tilting north to capture sunlight and funnel water.

The visitor and community experience is central: Ligavatuvuce invites gathering, reflection, and engagement with Fijian values, fostering social cohesion and cultural pride. Co-benefits include education in sustainability and crafts, plus tourism potential, boosting the local economy. Shared land uses are optimized; the minimal footprint preserves space for agriculture, supported by irrigation from harvested water, and the structure doubles as a communal venue.

This design bridges past and future, blending indigenous materiality with modern utility. The *tanoa*-inspired bowl reflects unity and respect, while the open hands signify generosity, offering clean energy and water to a community facing climate challenges. Ligavatuvuce stands as a testament to architecture’s ability to honour tradition while addressing contemporary needs, offering a replicable model for island sustainability.

1. **Technical Narrative**

Ligavatuvuce integrates solar photovoltaic and rainwater harvesting technologies to deliver clean energy and water, using products already available in Fiji’s local market to ensure sustainability, cost-efficiency, and reliable supply chains. The design employs 181 solar panels, each with approx. a 430 W output and 22.8% efficiency, selected for their heat tolerance and suitability for Fiji’s tropical climate, yielding a 77.83 kW capacity. Annual energy output is 119,308 kWh, calculated using Fiji’s average solar insolation of 5.25 kWh/m²/day, adjusted for a 9.1% heat loss (due to cell temperatures reaching 60°C) and 12% system losses (from inverter efficiency, dust, humidity, and wiring).

The rainwater harvesting system collects water from a 2,827.48 m² catchment area, including the bowl’s concave surface, assuming 2,500 mm annual rainfall and 85% collection efficiency, yielding 6,008,150 litres yearly. An additional 1,000 m² runoff area contributes 525,000 litres, totalling 6,533,150 litres annually. Water is purified through a multi-stage process: gravel-sand pre-filtration removes debris, a charcoal-sand-gravel bio-filtration layer further cleanses, and sedimentation in an open well ensures potable quality. The purified water is stored in three 100,000-liter underground tanks for gravity-fed distribution, minimizing mechanical energy use.

System inputs are solar radiation and rainfall; outputs are electricity for 67 households and potable water for drinking and irrigation. These locally sourced technologies prioritize durability and scalability, aligning with Marou Village’s rural context and long-term resilience goals.

1. **Prototyping and Pilot Implementation Statement**

Prototyping and pilot implementation of Ligavatuvuce will be a collaborative effort with Marou Village. Initial prototyping involves site assessments and community workshops to refine the design, followed by small-scale models testing solar panel integration, water filtration, and thatching durability. These tests ensure structural integrity and functionality in Fiji’s climate.

Full-scale implementation follows a phased approach: constructing the earth base and gabion walls, erecting the timber-framed hands with thatching, and installing the bowl with solar and water systems. Local artisans will lead thatching, preserving traditional skills, while residents participate in construction and training for maintenance, fostering ownership.

Community collaboration is key, regular meetings will gather feedback, ensuring the design meets cultural and practical needs. This co-creation process empowers Marou residents, blending their expertise with innovative technology for a sustainable, culturally resonant outcome.

1. **Operations and Maintenance Statement**

Ligavatuvuce is designed for low-maintenance operation, leveraging natural processes and community involvement. The solar system requires periodic panel cleaning and annual electrical checks, while the water system needs filter layer maintenance and tank inspections. Three underground tanks and gravity-fed distribution minimize mechanical reliance.

Marou residents will manage operations through training in cleaning panels, replacing filters, and monitoring water quality. A community committee will oversee tasks, ensuring accountability. Partnerships with Solar Fiji, NGOs, and the University of Fiji provide technical support, with remote monitoring for rapid issue detection.

Using local materials and simple technologies reduces external dependency, promoting self-sufficiency and ensuring long-term access to energy and water.

1. **Environmental Impact Assessment**

Ligavatuvuce harmonizes with Marou’s ecosystems, minimizing land use and integrating with natural water flows via gabion walls and runoff streams. Thatch and timber lower the carbon footprint, while solar energy cuts emissions. Water harvesting supports aquifers, mitigating scarcity.

Potential impacts like altered water patterns are mitigated by a small footprint and native plant landscaping to preserve biodiversity. The open well avoids chemical use, maintaining water quality. Regular monitoring and community stewardship will address unforeseen effects, ensuring ecological resilience.

This design enhances sustainability, aligning cultural heritage with environmental care, and serves as a model for regenerative infrastructure.