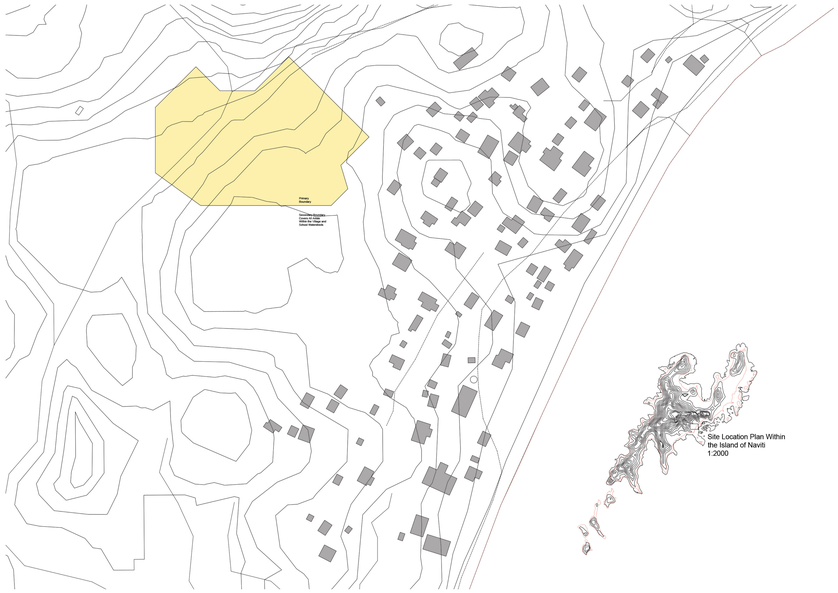
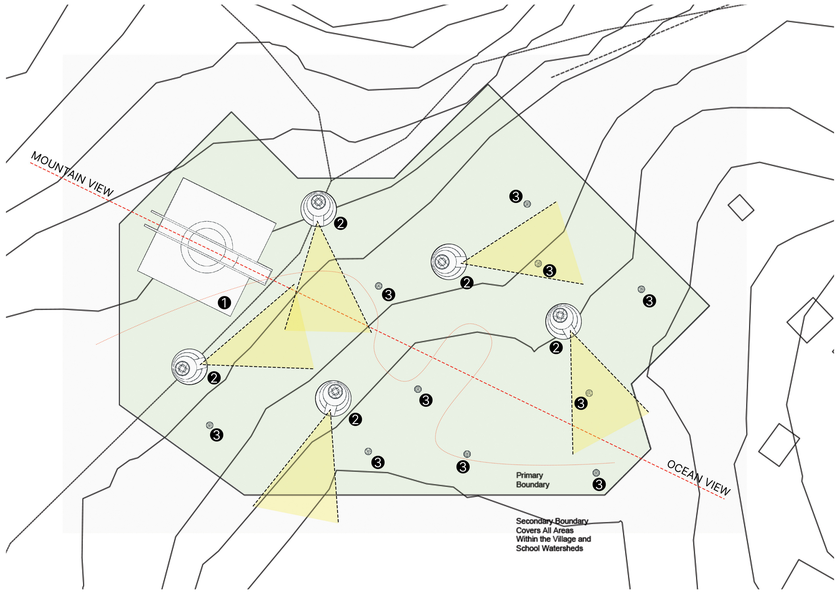
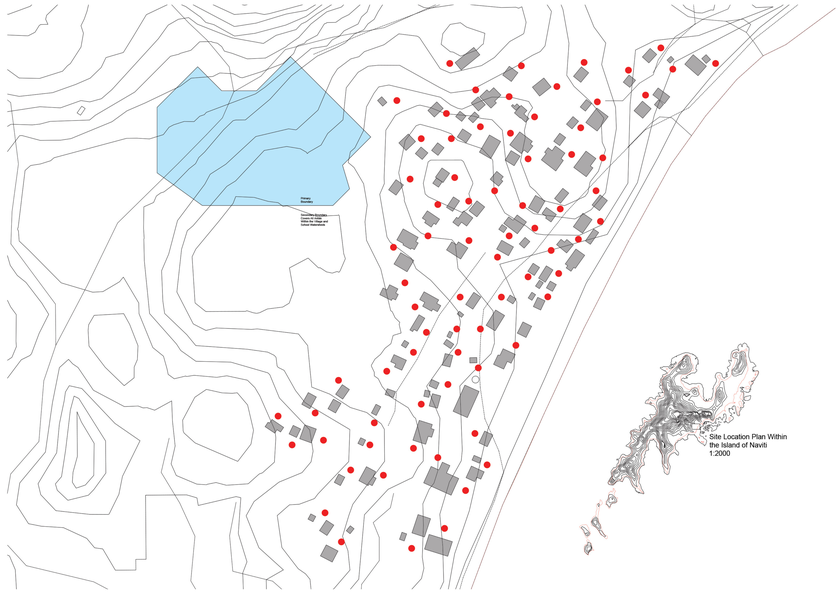






Site Existing

Identified Needs in Fiji Pointing Toward Key Sustainable Technologies

Fiji's unique position as a remote island nation presents both challenges and opportunities in achieving sustainable development. The country must generate its own electricity, secure reliable freshwater, and protect limited land resources—all while facing the escalating impacts of climate change. These conditions reveal a strong need for integrated, renewable-based infrastructure. The following key needs align with the application of four specific sustainable technologies:

Fiji's Needs Leading to Sustainable Technology Solutions

Freshwater Security
→ Water Treatment Plant
Ensures clean water access amid droughts and erratic rainfall.

Efficient Land Use for Solar Energy
→ Curved Photovoltaic Tower
Generates power vertically, saving space and blending with landscapes.

Low-Impact Wind Power
→ Bladeless Wind Turbine
Quiet, aesthetic, and low-maintenance energy for sensitive environments.

Seawater as a Water Source
→ Seawater Converter (Desalination)
Uses renewable energy to turn ocean water into fresh water.

Site Plan

Based on site-specific conditions in Marou Village, an integrated design approach is proposed to address local needs through sustainable technologies. A **water treatment plant (WTP)** is designed to purify low-quality mountain water identified in the area, ensuring safe water distribution while also serving as a community hub where residents can gather and engage.

To harness the village's high solar potential, **a photovoltaic tower** is introduced not only as a renewable energy source but also as a public recreational space offering panoramic views and serving as a habitat for endemic bird species, promoting both sustainability and ecotourism.

Complementing this, **bladeless wind turbines** are proposed to generate additional electricity using local wind data. Their slim, modular form allows for widespread deployment without occupying significant land, preserving the natural and cultural landscape of the village.

Legend

1. Water Treatment Plant (WTP)
2. Photovoltaic (PV-Tower)
3. Bladeless Wind Turbines

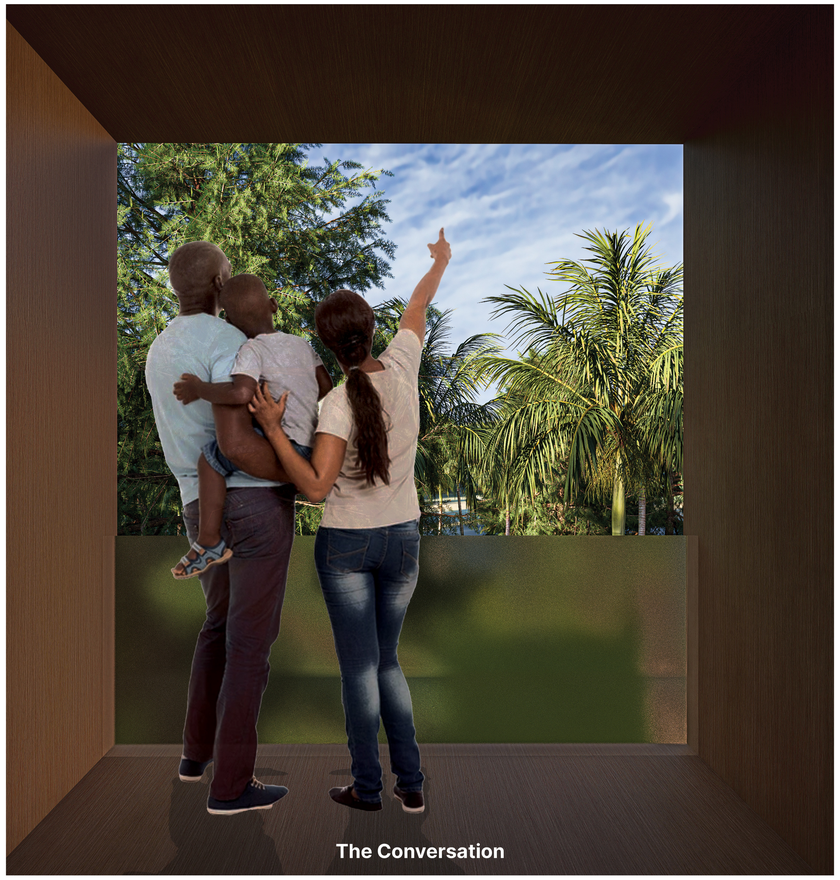
Site Development

Seawater Converter to Fresh Water

To support coastal communities in Marou Village, where seawater is abundant but unusable in its raw form, a decentralized seawater converter system is proposed. Although the region appears water-rich, the lack of accessible freshwater remains a critical issue.

This technology will convert seawater into drinkable water directly at the household level, ensuring daily water needs are met sustainably. Designed to be compact and energy-efficient, each unit can be installed individually and powered by renewable sources such as solar energy. Its modular nature allows easy replication across the village, fostering water independence, reducing reliance on central infrastructure, and enhancing community resilience in the face of climate variability.

The Conservation


The Conversation

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