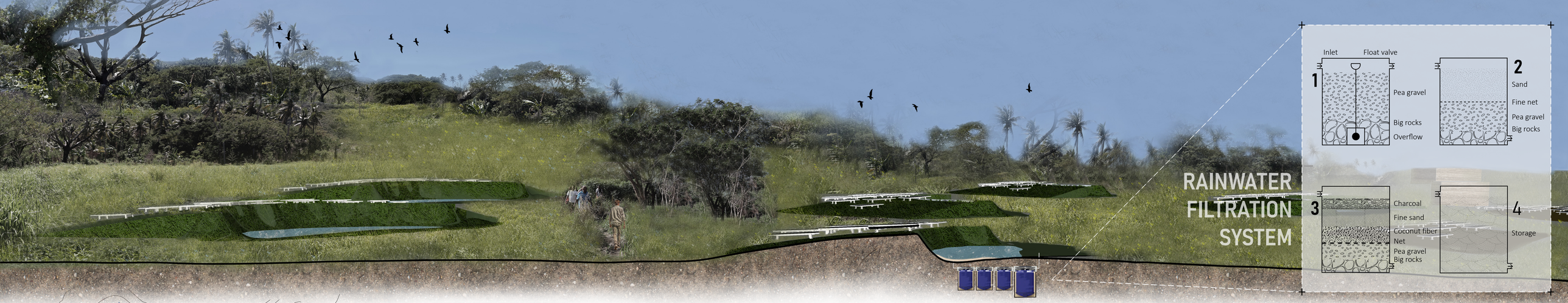
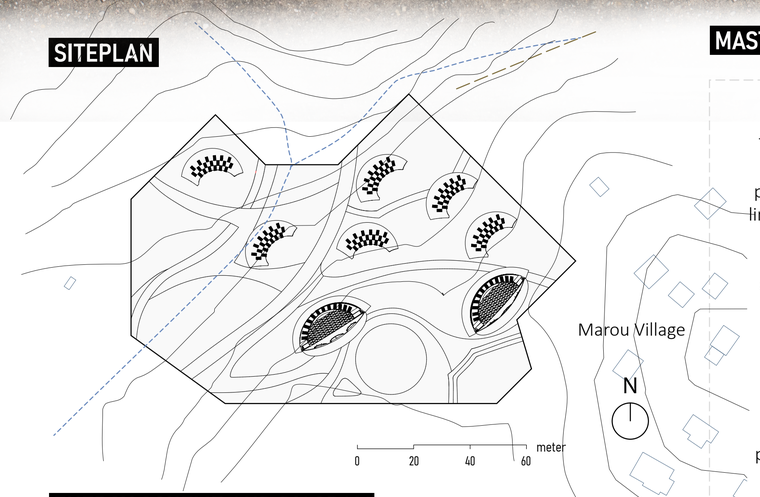
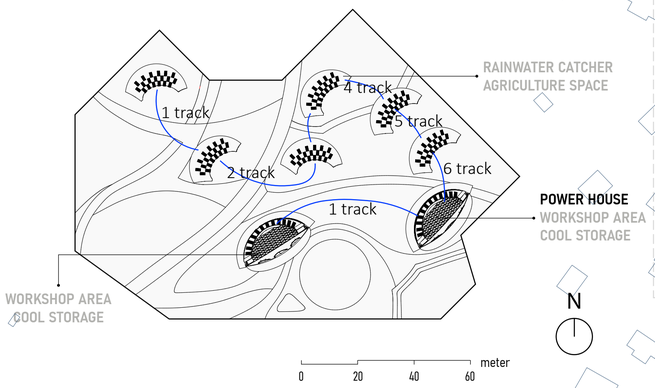


SITEPLAN



ENERGY SCHEME AND DIAGRAM

The image below illustrates the wiring system, showing how the network is distributed across the site. For safety, the wires will be buried underground following standardized depth requirements.



We will install 138 × 550 Wp photovoltaic modules (50 V DC, 11 A Isc), organized into eight discrete arrays. Six arrays will employ a 3 in series × 6 in parallel configuration (3S6P, 66 A per string), and two arrays will utilize a 3 in series × 5 in parallel configuration (3S5P, 55 A per string), achieving a total DC capacity of 75.9 kW.

Each array will be connected to a dedicated 10.2 kW hybrid inverter, accepting up to 150 V DC input and delivering 230 V AC to the grid while simultaneously providing a 48V DC output for battery charging.

Applying the site's average irradiance yield of 4.8 kWh/kWp a day also considering the performance factor (0.75) of PV Array, the estimated average energy generation will be up to 273 kWh daily.

- Raw Generation
  - Daily: 75.9 kWp × 4.8 kWh/kWp = 364 kWh
- Estimated Generation (Performance Efficiency = 0.75):
  - Daily: 364 kWh × 0.75 = 273 kWh
  - Weekly: 273 kWh × 7 = 1911 kWh
  - Monthly: 273 kWh × 30 = 8190 kWh
  - Annual: 273 kWh × 365 = 99645 kWh

MASTERPLAN THEME

ENERGY FIELD

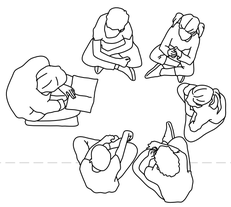
The main goals of this design is to produce electricity through solar panel. the area is designed to be in line with the already existing activity (as kids playing area, part of agriculture, and water retention area). we accommodate previous activity.

ELECTRICITY

Our goal is to produce 75 kW of energy using the solar panel. It is positioned facing north, where the sun mostly shines optimally.

ACTIVITY

We proposed several activities that are already present at the site, along with new activities. These include a children's play area, agricultural farming, a workshop space, a shelter, and a storage facility to help preserve fish at relatively low temperatures.

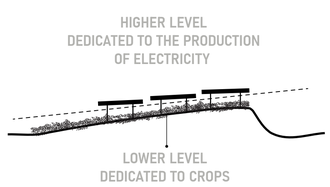


PRODUCTIVE LANDSCAPE

The landform is integrated with agriculture, specifically cassava farming. This technique is also effective for supporting the solar panel system.

CASSAVA FARMING

Marou Village is known for its cassava and taro farming. The design provides space for this agriculture in a more delightful and spatially aesthetic way.



Ground plants transpiration helps cool the solar panel, which allows it to operate more efficiently and conserve more energy.

DISASTER ADAPTIVE DESIGN

Since cyclones are a major threat in the site location—Fiji—our proposal includes designing and positioning the panels low to the ground to minimize cyclone impact.

RAINWATER CATCHER

Flooding is also a threat to Marou Village. The design addresses this challenge by incorporating a stormwater mitigation system, where a concave area functions as a bioretention garden to collect and store excess water.

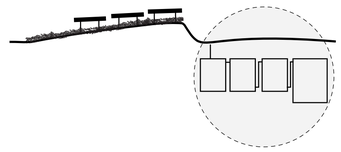
GROUND LEVEL ELEVATION

The solar panel system is modular, making it easily adjustable in terms of location. It is also positioned low to the ground to reduce the impact of cyclones.

CLEAN WATER SUPPLY

One of the major issues in Marou Village is the availability of clean water. This becomes a secondary goal of the project. Our landform is shaped in a way that helps collect rainwater.

WATER FILTRATION SYSTEM



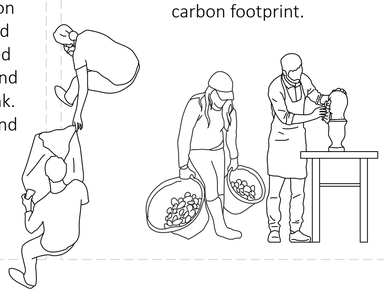
We propose a natural water filtration system that utilizes rocks, sand, and coconut fiber. Rainwater is collected through concave-shaped features and then filtered in an underground tank. The clean, filtered water is stored and distributed to the village using pump-powered energy.

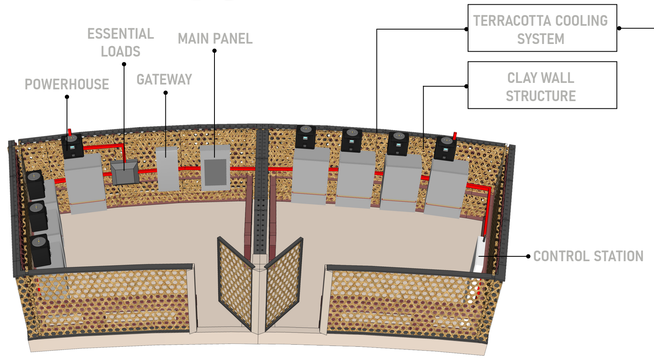
LOCAL PARTICIPATION

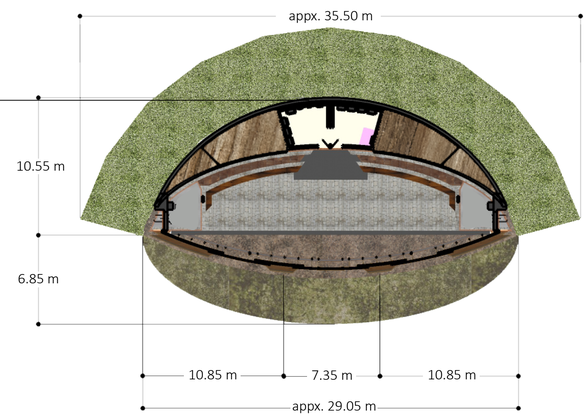
Our design includes knowledge transfer to local communities so they can maintain the system themselves and develop a sense of ownership. We also aim to celebrate Fijian art and culture, particularly pottery and weaving. These skills are integrated into the design to create a unique identity for Fiji.

LOCAL RESOURCE

We tries to use local materials such as local stone, clay, coconut's wood-fiber-leaves, bamboo, and rocks, lime, and beach sand to minimize carbon footprint.







The design utilizes contour adjustments through a cut-and-fill system, aiming to minimize land modification. The dimensions and quantity of the undulating mound installations are flexible and can be adjusted based on the condition on the site.