1. Concept Narrative

The idea behind the design is to provide as many of the materials required for the project on-site, to limit importation and thereby empower the community to build with its own resources.

The decision was taken to create a masterplan to connect the three main areas of the study area: the Harbour, Terrace Park and Marou Village. The existing path network was expanded slightly throughout Marou, so as to better link the new areas proposed as a part of the masterplan.

The Design Site boundary is the location of the main project, which comprises a new community centre and surrounding public space:

* A Community Centre structure made from materials produced principally within the Terrace Park.
* Gallery and office space would be incorporated, as well as a multi-purpose hall for gatherings.
* An interior courtyard and terrace water gardens designed to showcase in miniature the overall function of the masterplan: to manage and collect rainwater, produce renewable energy and provide valuable amenity spaces.

The Terrace Park would be a large new public space for Marou, intended to meet many of its needs. The main areas included within the masterplan for the Terrace Park are:

* The Water Terraces. This large large area would utilise the existing storm drain channels to feed a system of tanks which would be built on site. The existing contours were carefully considered, and the features are closely linked to the current form of the hillside. The Water Terraces would attenuate rainfall in extreme events, as part of a SuDS chain, with the lowest area constituting a large depression which can be filled in case of emergencies. The terraces would feature hemp production in a shallow trench at the base of each new water retention dyke, as well as new allotment garden spaces.
* The Bamboo Grove. Here, all the bamboo required to construct the Community Centre would be grown and harvested. A suitable location would need to be found for the preparation of a boric acid / borax treatment trench, so as to treat the material against pests.

The Harbour area features two main changes within the masterplan:

* a pontoon bridge extending out into the bay, to facilitate access and logistics.
* Shellfish production tanks, with mussels being a possible option. The benefits of this would be threefold:
	+ A sustainable food source
	+ A supply of shells for firing in a small purpose-built kiln (see Panel 02). The lime produced would provide the binder necessary for hempcrete manufacture.
	+ Natural filtration of the water in the harbour.
1. Technical Narrative

Technologies

The technologies which have been employed are intended to be applicable to the whole of Naviti island and beyond. The Design Site (see Panel 01) features a new structure built principally from bamboo grown within the Bamboo Grove of the Terrace Park. As per the Q&A document, *Schizostachyum glaucifolium* was specified, as it is native to Fiji. Testing would be required with this species; were it found to be inadequate, a suitable alternative would need to be carefully managed so as to not become invasive.

Energy and Water production

The rammed earth system outlined here could also be used to repair / replace the existing dam to the northwest of the Design Site. The design, however, intends to capture the required water from the storm drains immediately north of the Main Energy Production Site.

It is difficult to calculate the exact volume of water which could be stored within the Terrace Park, but the five main areas would provide 0.31ha (hectares) of new water retention area. The SuDS collection pool to the southeast would provide a further surface area of 0.30ha of peak rainfall overflow from the terraces to the northwest.

Similarly, the Design Site has incorporated three sites for the location of Photovoltaic panels (see Panel 01)

* The primary solar installation would be located on the roof of the Community Centre. These have been angled at 20º in accordance with the guidance provided for the location.
	+ These two areas would provide 336m² and 608m², respectively.
* The secondary solar installation would provide 212m² of installation space atop the pergola, directly above the proposed café space.
1. Prototyping and Pilot Implementation Statement

Our proposal has been designed with the intention of it being constructed entirely with the community. The budget of $100,000 would not provide for any other approach in reality, as the construction of the Energy Design structure alone would most likely consume this. With the active collaboration of the village, the construction team assembled would be able to undertake community consultations and establish to what extent volunteers would be prepared to participate in works.

1. Operations and Maintenance Statement

The technologies proposed are robust and reliable, but will require regular maintenance. Rammed earth is an ancient technology, having been in continuous use since Antiquity. It is durable, but it is not reinforced concrete (which has a massive energy and water footprint, unlike rammed earth). Regular checking of the rammed earth structures around the terraces will have to be performed by workers or volunteers who understand the technology. The appearance of rammed earth can be unsettling for anyone more familiar with the homogenity of concrete or preformed materials. It would also be of interest to explore the fabrication of hemp-based fibreglass panels to act as liners for the water terraces.

In the case of the Energy Production area, the bamboo elements will require occasional repair or replacement; bamboo sections are prone to cracking. The carpentry of bamboo structures is unlike that of wood panels or conventional joinery based more on orthogonal sections and planes. Workers, ideally trained up during the construction phases, will have to take responsibility for the process of scheduling maintenance. The logic of the structure is that it is permanent, but its component members are not. Much as we shed skin and it regenerates without us realising, regular replacement of parts will maintain the structure for as long as it serves the community.

Rather than being a burden, these tasks are intended to bolster community spirit and provide opportunities for shared learning. How do you cut bamboo and dry it? How is it processed into usable sections? When are chemical treatments needed? These questions will be asked, and will provide learning opportunities. Ideally, high school students would be involved in these tasks, managing the bamboo cultivation, learning how to fell them and use carpentry tools.

We have no interest in imposing anything on this community; if we win we will have a lot to learn, but our grain of sand will be the will to produce a working solution.

1. Environmental Impact Assessment

This proposal has been designed specifically to reduce the environmental footprint of Marou; the reduced need for imported materials will have a positive impact on climate crisis goals. Similarly, the regrading and planting associated with the masterplan aim to capture rainwater, reduce erosion and associated damage. The terrace water retention dykes will provide habitat for amphibians and freshwater-breeding insects species, as well as drinking water for wild animals in the area.

The water derived from these terraces is unlikely to be viable as potable water, although the many applications for it would reduce the strain on the water supply system. In parallel with this proposal, an ecological sewage processing system could be designed and specified to further alleviate this strain. Given the costs associated with said systems and the necessary deviation from the brief, no provision was made for this in the masterplan. Similarly, it would be advisable to retrofit all suitable structures within the village to equip them with green-blue roofs. The insulation/cooling and rainwater harvesting benefits of this would offset the initial cost, but no provision has been made for this at present.

**3D Asset credits**

Panel 01

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	+ Photo by <a href="[https://unsplash.com/@brewbottle?utm\_content=creditCopyText&utm\_medium=referral&utm\_source=unsplash](https://unsplash.com/%40brewbottle?utm_content=creditCopyText&utm_medium=referral&utm_source=unsplash)">Bob Brewer</a> on <a href="<https://unsplash.com/photos/white-and-silver-round-coins-on-blue-surface-udVjzhI9gXs?utm_content=creditCopyText&utm_medium=referral&utm_source=unsplash>">Unsplash</a>
* Cooked mussels

Photo by Dima Valkov: <https://www.pexels.com/photo/cooked-food-on-the-plate-11960541/>

* Café
	+ Photo by Quang Nguyen Vinh: <https://www.pexels.com/photo/wooden-table-on-terrace-of-cafeteria-6130072/>
* Meeting hall
	+ Photo by cottonbro studio: <https://www.pexels.com/photo/wooden-chairs-lined-up-on-a-wooden-floor-in-a-room-6344448/>
* Lime Kiln
	+ https://www.visitgibraltar.gi/see-and-do/the-lime-kiln
* Hempcrete block
	+ https://commons.wikimedia.org/wiki/File:Mauer\_66.jpg
* Outdoor lighting
	+ https://outdoorlights.store/blogs/lights/how-far-apart-do-you-space-pathway-lights
* Bamboo pathway
	+ Photo by Tia Irhazi: https://www.pexels.com/photo/a-concrete-stairs-between-bamboo-trees-6369614/

Panel 03

* Play equipment
	+ Photo by Magda Ehlers: <https://www.pexels.com/photo/outdoor-playground-with-wooden-climbing-structure-30413801/>
* Rustic play equipment
	+ Photo by Norma Mortenson: <https://www.pexels.com/photo/man-wearing-checkered-shirt-holding-on-ropes-8457739/>
* Tomatoes
	+ Photo by Markus Spiske: <https://www.pexels.com/photo/green-and-red-oval-fruits-965740/>
* Carrots
	+ Photo by Hana Mara: <https://www.pexels.com/photo/orange-carrots-on-brown-woven-basket-3650647/>
* Pineapples
	+ Photo by Carlo Martin Alcordo: <https://www.pexels.com/photo/yellow-pineapples-on-focus-photography-2469772/>
* Hemp
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* Sculpture
	+ Photo by Jan van der Wolf: <https://www.pexels.com/photo/photo-of-a-multicolor-sculpture-14756754/>
* Bronze Sculpture
	+ Photo by Jefferson Maban: <https://www.pexels.com/photo/close-up-of-a-pinto-art-museum-human-statue-in-antipolo-rizal-philippines-14763830/>