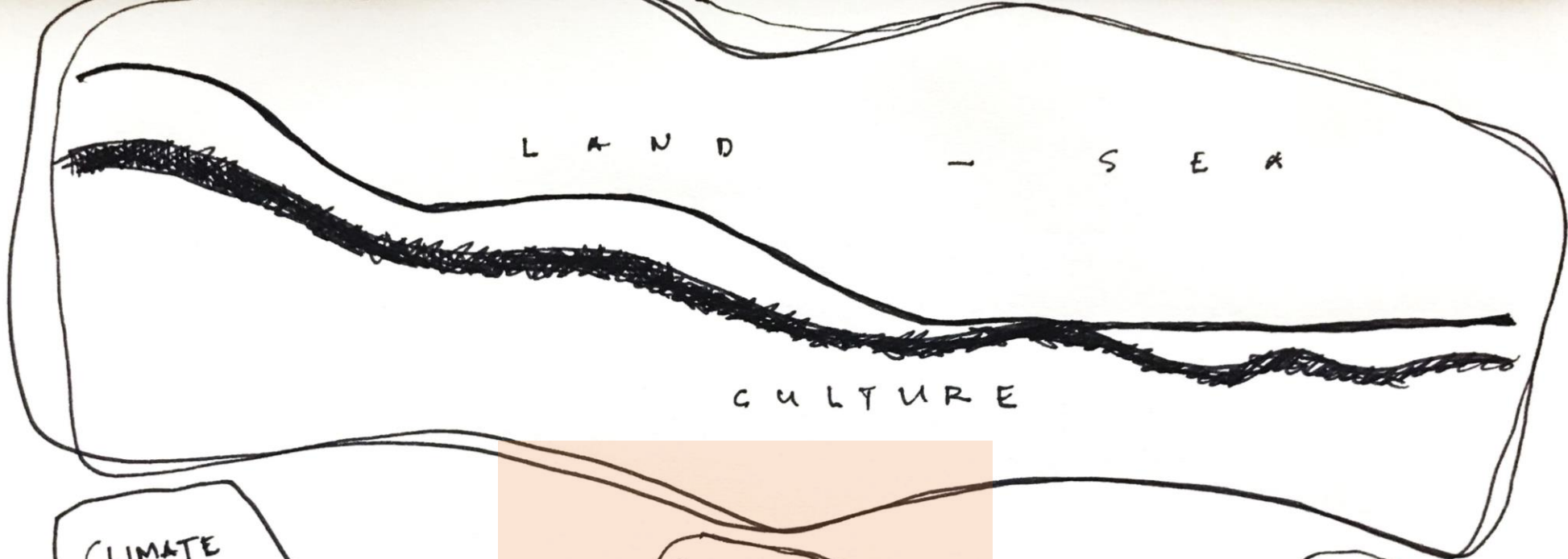


CONSERVATION AND RESILIENCE

Landscape as Middle Ground

- Prof Penny Allan, Lizzie Yarina, Prof Martin Bryant
- ICOMOS Culture: Conserving it Together Conference
- Suva, Fiji, October 2018
- Theme 4: Heritage at Risk: Climate Change and Disasters



CLIMATE
CHANGE
MIGRATION

NEW PLACES

OLD
CULTURES

CONSERVATION

RESILIENCE

INDIGINOUS
WORLD
VIEWS

CLIMATE
CHANGE
SCIENCE

HAVING
IMPACT

SYNTHESISING THROUGH LOCAL STUDIES

1. TRANSLATING SPACE

2. LANDSCAPE AS MIDDLE GROUND

3. INDIGENOUS ECOLOGIES



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Washed away

Village loses burial site, houses to rising sea level

By SIKELI QOUNADOVU

ABOUT 100 square metres of land at Lovu Village on Gau Island, including part of the village's burial ground, have disappeared as a result of the rising sea level.

The washed away land was also known as Yalikogau.

According to village elder Walsale Veitogavi, one could stand on Yalikogau point more than 20 years ago and on their right could not see Muana point in Sawaieke, which sits next to Cakauwaiwai, and could not see Ucuivatu on the left, where the airstrip and Narocake District School are located.

Mr Veitogavi, 60, said the rise in sea level had also taken away some houses.

In the 1990s, the church used to be in the centre of the village.

Now it is nearest to the beach that is littered by fallen tree trunks and washed up coconut trees.

Less than 10 years ago the tide only reached the sea wall, but today the tide goes up to the village which is about five metres from the seashore.

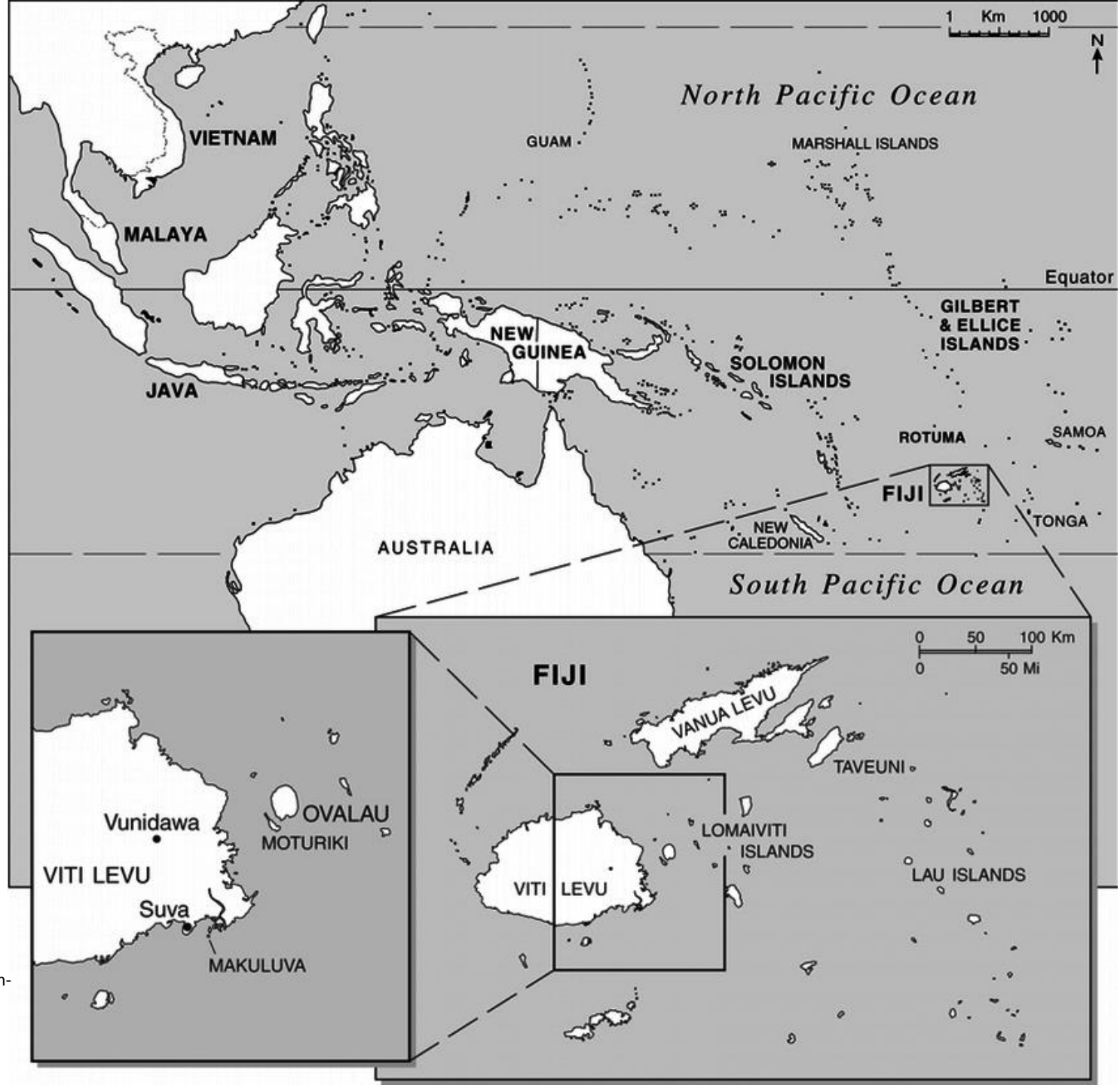
According to village headman Jome Vakaloloma half of the village ground, which is at sea level, is usually flooded when it is spring tide.

The rise in sea level has also washed away the land that used to be the burial site for the people of Lovu.

"We have taken our grievances up to the Government, we have had government officials visiting the village, but nothing has been done," Mr Veitogavi claims.

Continued on PAGE 3

discipline the force important,



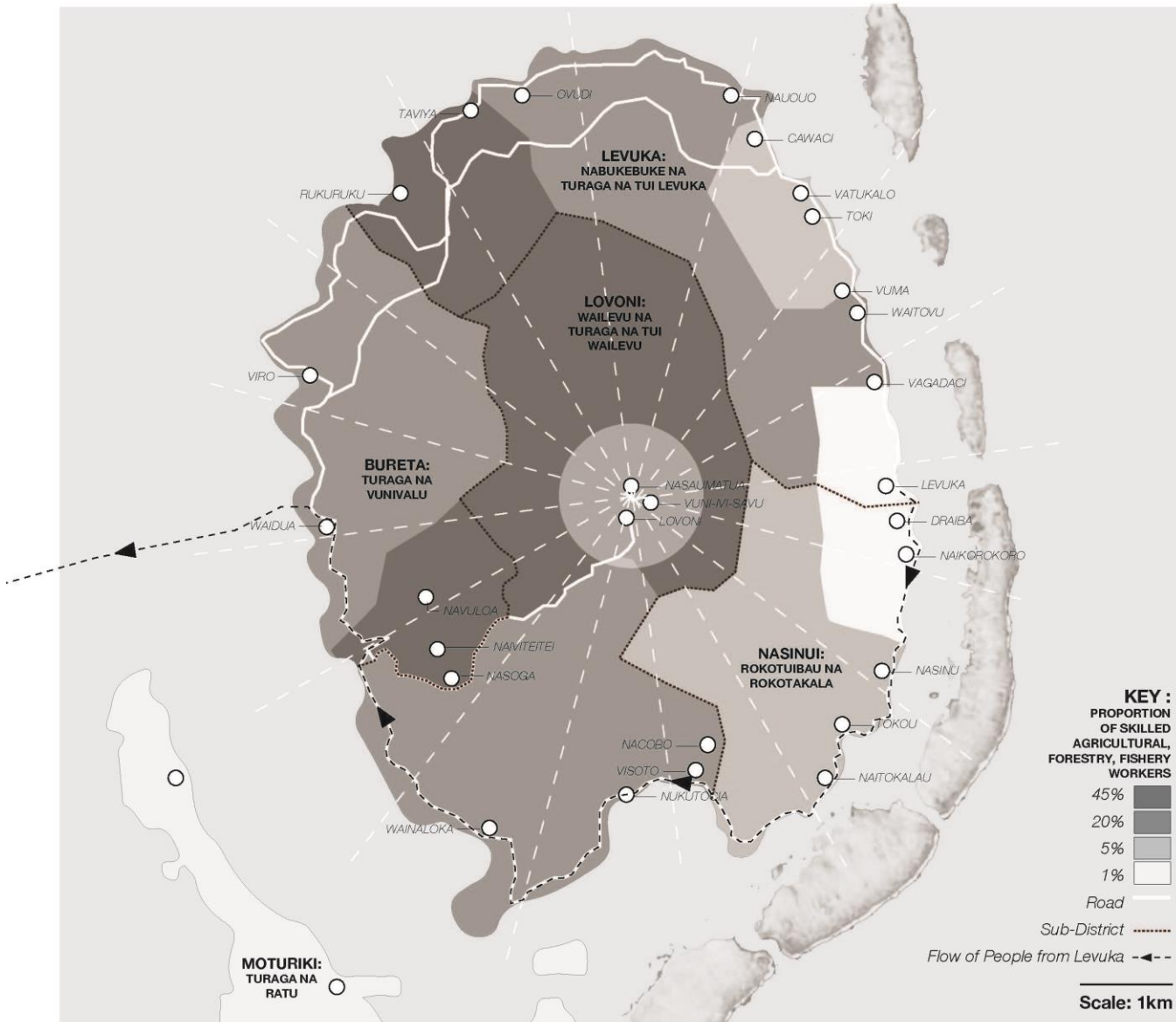
https://www.researchgate.net/figure/Places-named-in-text-are-shown-with-historic-names-on-a-map-of-the-Western-Pacific-with_fig2_226004283



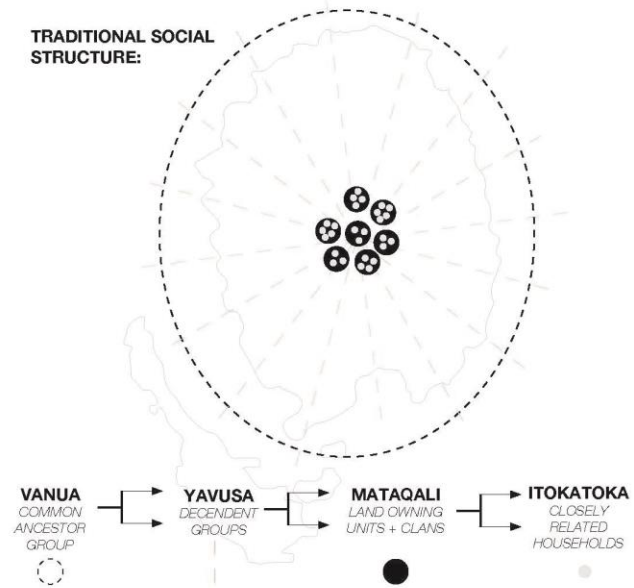
FIJI IN-SITU | OVALAU | Settlements / Land Division + Harvesting Occupations

Chelsea Kershaw, Katherine Hailstone, Anna Soby

Sources: Map of Ovalau Showing the Location of Levuka - Found at Royal Hotel + PopGIS 2.0 Fiji. (2007). Fiji.popgis.spc.int. Retrieved 12 March 2017, from <http://fiji.popgis.spc.int> + Fisher, D. (2000). The Socio-Economic Consequences of Tourism in Levuka, Fiji. Christchurch: Lincoln University.



TRADITIONAL SOCIAL STRUCTURE:



PLACES WITH LESS TRADITIONAL SOCIAL STRUCTURES HAVE LOWER PROPORTIONS OF SKILLED HARVESTERS = CULTURAL SHIFT AWAY FROM TRADITIONAL SKILLS AND PRACTICES



KEY MAP



<http://fijisun.com.fj/2016/02/24/winston-hammers-levuka-heritage/>



<https://www.dailymail.co.uk/news/article-3457789/Horrific-devastation-caused-Cyclone-Winston-tore-Fiji-wiping-villages-killing-17.html>



Photos: Lizzie Yarina

The Conservation Paradox

Resilience

*...the capacity of a system to absorb disturbance and reorganize while undergoing change so as **to still retain essentially the same function, structure, identity, and feedbacks***

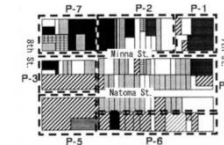
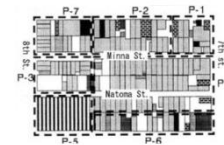
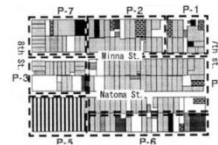
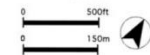
Conservation

*...all the processes of looking after a place **so as to retain its cultural significance** (Australia Burra Charter).*

Cultural significance means aesthetic, historic, scientific, social or spiritual value for past, present or future generations. Cultural significance is embodied in the place itself, its fabric, setting, use, associations, meanings, records, related places and related objects. Places may have a range of values for different individuals or groups. (Australia Burra Charter)

San Francisco

'Hard edge soft centre'



LANDSCAPE ARCHITECTURE STUDIO

cultural identity, economic diversity, infrastructure



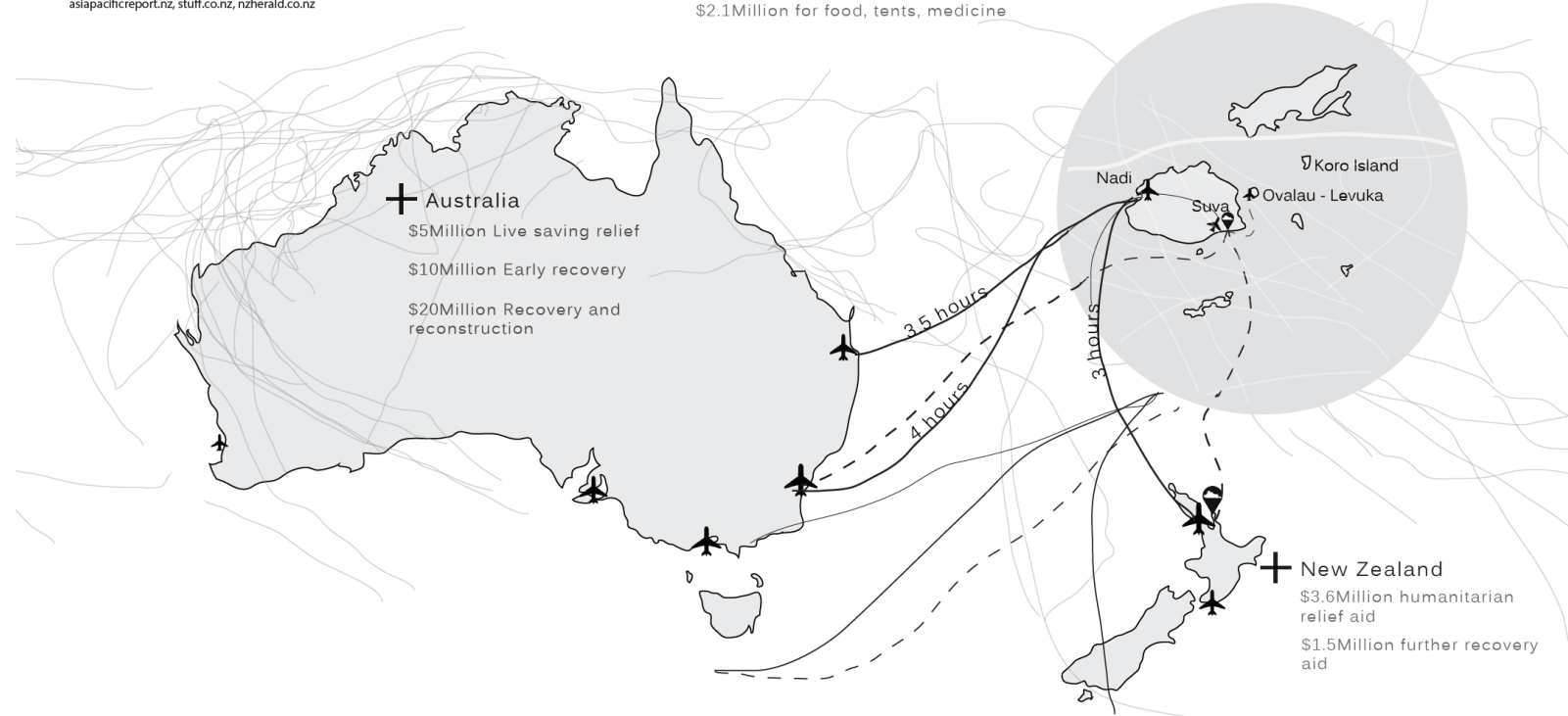
Multi-Scalar Mapping

FIJI IN-SITU Australia/NZ - Fiji | Cyclone Winston response | Drawing 1 of 2
 Sources: maristbrothers.org.nz, aljazeera.com, asiapacificreport.nz, dfat.gov.au, asiapacificreport.nz, stuff.co.nz, nzherald.co.nz

+ India

\$2.1 Million for food, tents, medicine

Rebecca Freeman - Caitlin Lambert - Léocadie Pelbois



DAY 1

- Cyclone Winston hit Ovalau and continued over night.
- Communication off island was completely lost.
- Electricity and drinking water were cut.

DAY 2

- No possibility of communication outside of Ovalau,
- The first fatality was laid to rest in Nauouo village

DAY 3

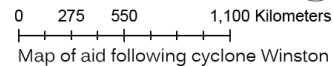
- Australian government announced initial \$5 million of immediate humanitarian aid.

DAY 4

- First trip from Suva with passengers and soldiers.
- NZ Defence force Hercules arrived in Fiji carrying 12 tonnes of relief equipment
- Prepositioned aid equipment from NZ was deployed to the worst hit areas including Ovalau

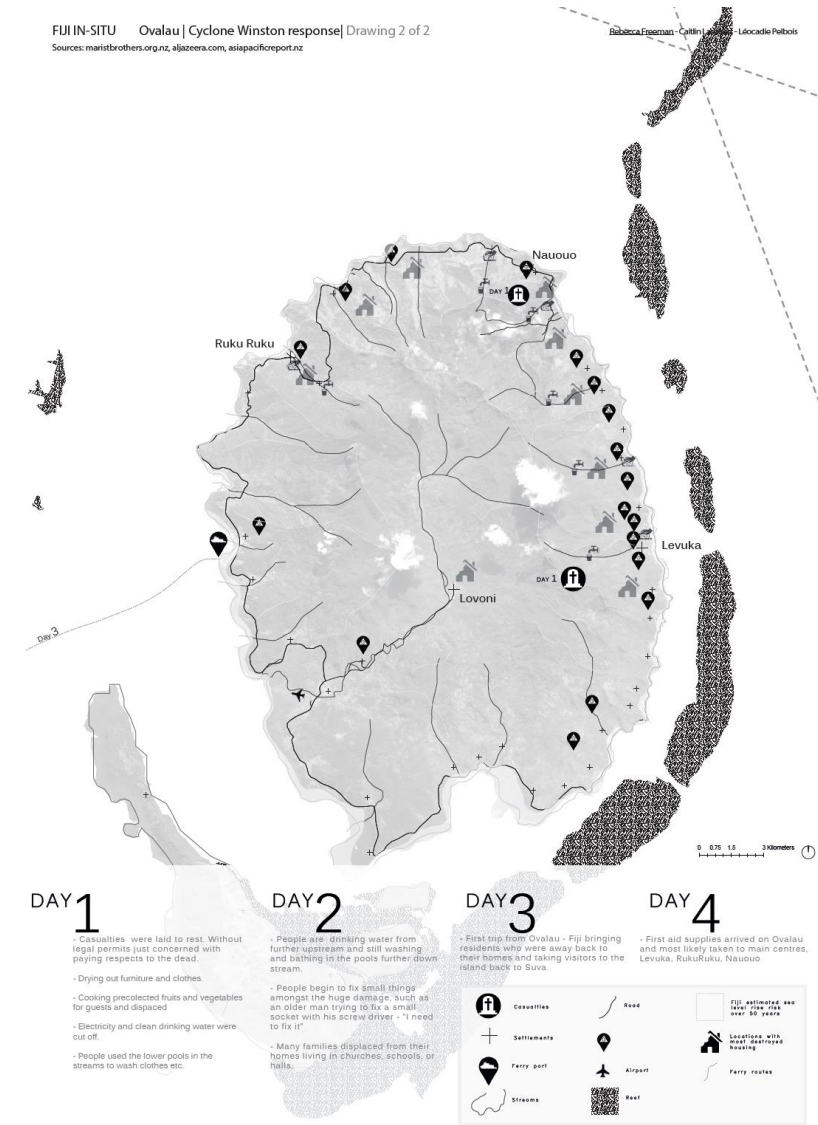
DAY 5

- Australian defence team deployed to Fiji including medical assistants who travelled to Ovalau.



FIJI IN-SITU Ovalau | Cyclone Winston response | Drawing 2 of 2
 Sources: maristbrothers.org.nz, aljazeera.com, asiapacificreport.nz

Rebecca Freeman - Caitlin Lambert - Léocadie Pelbois



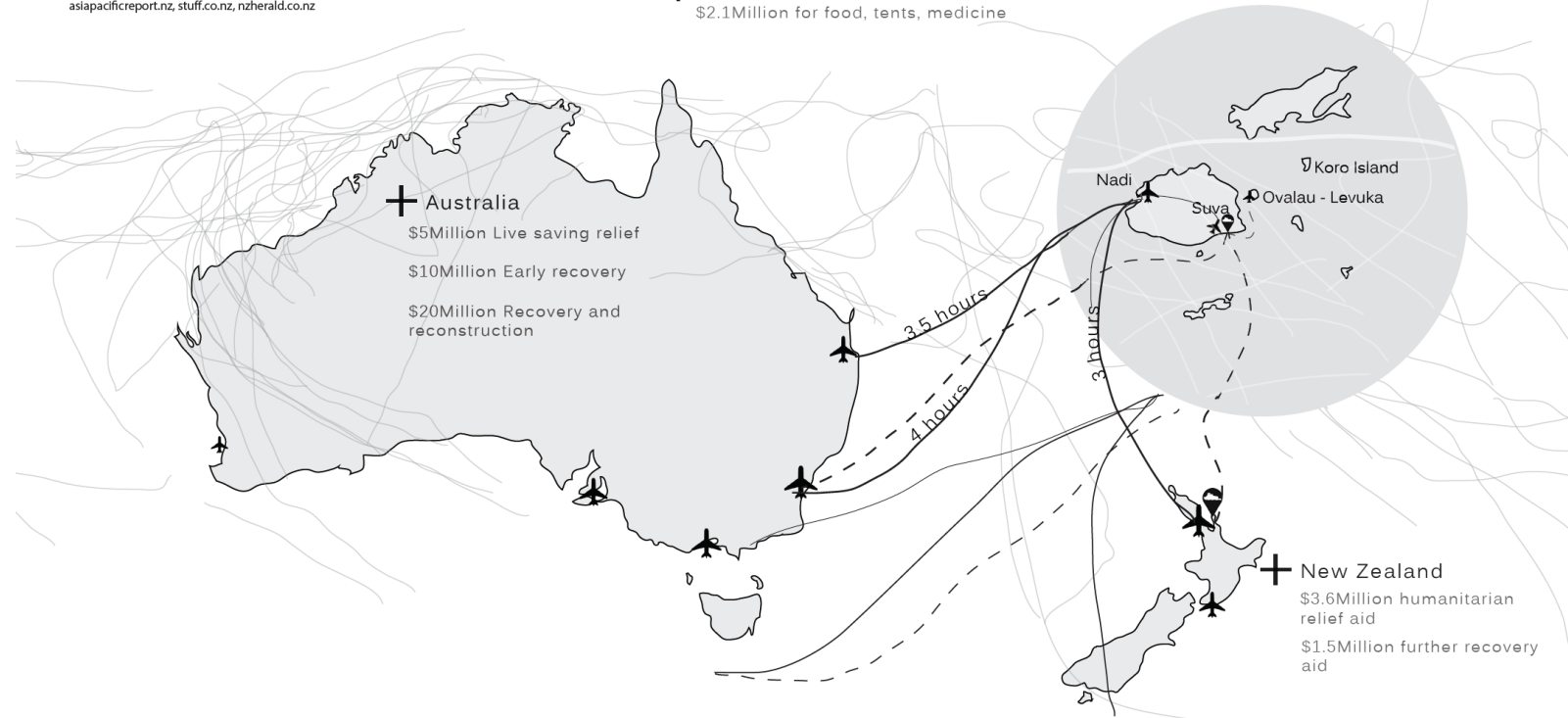
Multi-Scalar Mapping

FIJI IN-SITU Australia/NZ - Fiji | Cyclone Winston response | Drawing 1 of 2
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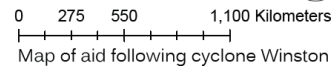
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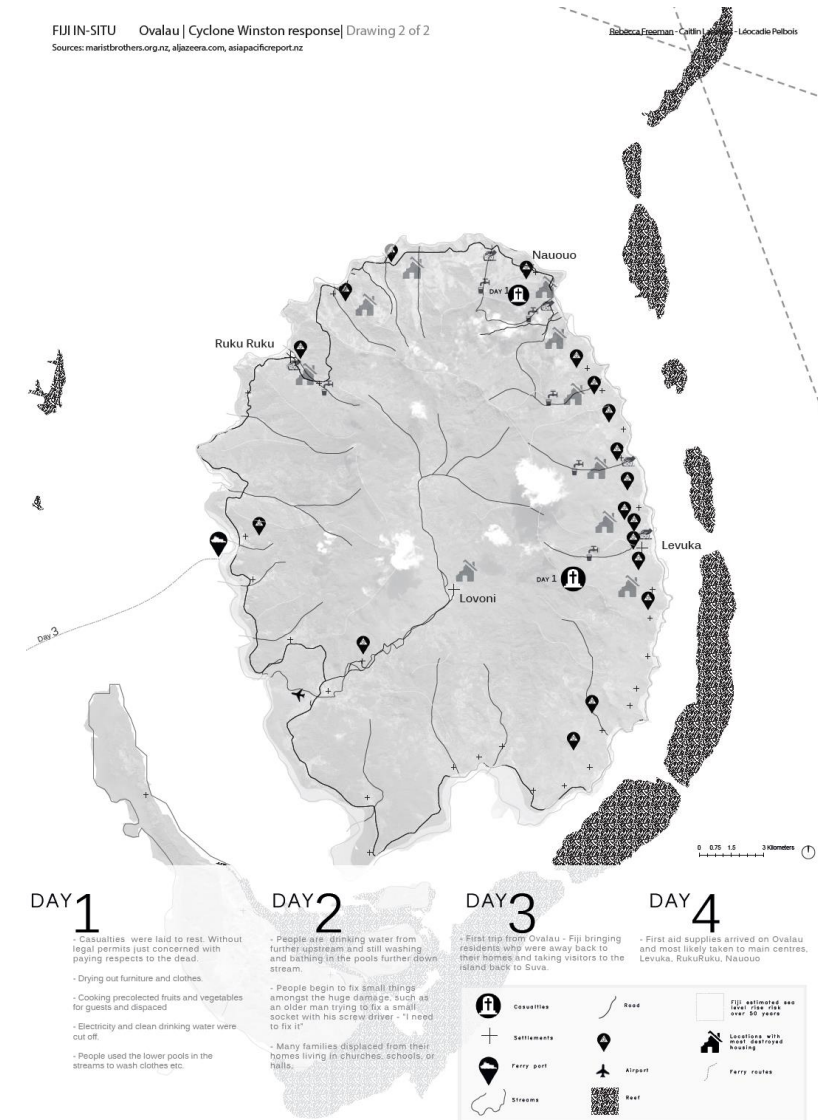
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FIJI IN-SITU Ovalau | Cyclone Winston response | Drawing 2 of 2
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Rebecca Freeman - Caitlin Lambert - Léocadie Pelbois



DESIGN OUTCOMES



cultural life

REFOCUS: PRIORITISING LANDSCAPE

Levuka, Fiji

Rebecca Freeman

Currently UNESCO recognises Levuka as a world heritage site for its colonial port town of 1820. This port town is unique as it has gone largely undisturbed since the capital of Fiji was moved to Suva in 1877[1]. What UNESCO fails to recognise is the cultural hybrid and strong cultural landscape existing in Levuka. Despite this, Levuka's cultural landscape could be seen to fall under the 3 categories which UNESCO use to identify significant cultural landscapes.

- The landscape has been clearly crafted by man, the colonial buildings and port in Levuka demonstrating this.
- A landscape which remains to have an active role in society, strongly related to the traditional way of life, therefore the evolution process is still in progress. This can simply be seen by the social and physical structures around the rivers and how they have adapted to crowding in the hills and growing their food around them.
- The associative cultural landscape. A Landscape which has powerful virtue and associations rather than material cultural evidence. Displayed in the cultures strong reliance on the land and associations around the water for example in the passing of a chief or significant community member.[2]

This design proposal speaks primarily to the second category in displaying and giving aid to the cultural landscape which still plays an active role in Levuka's day to day life. The design aims to continue the recognised significance of Levuka from the colonial town into the cultural landscape. To tell a more accurate story of the place.

The Burra Charter is a document which sets guidelines for dealing with important places. Specifically also for significant places which are still apart of daily life.

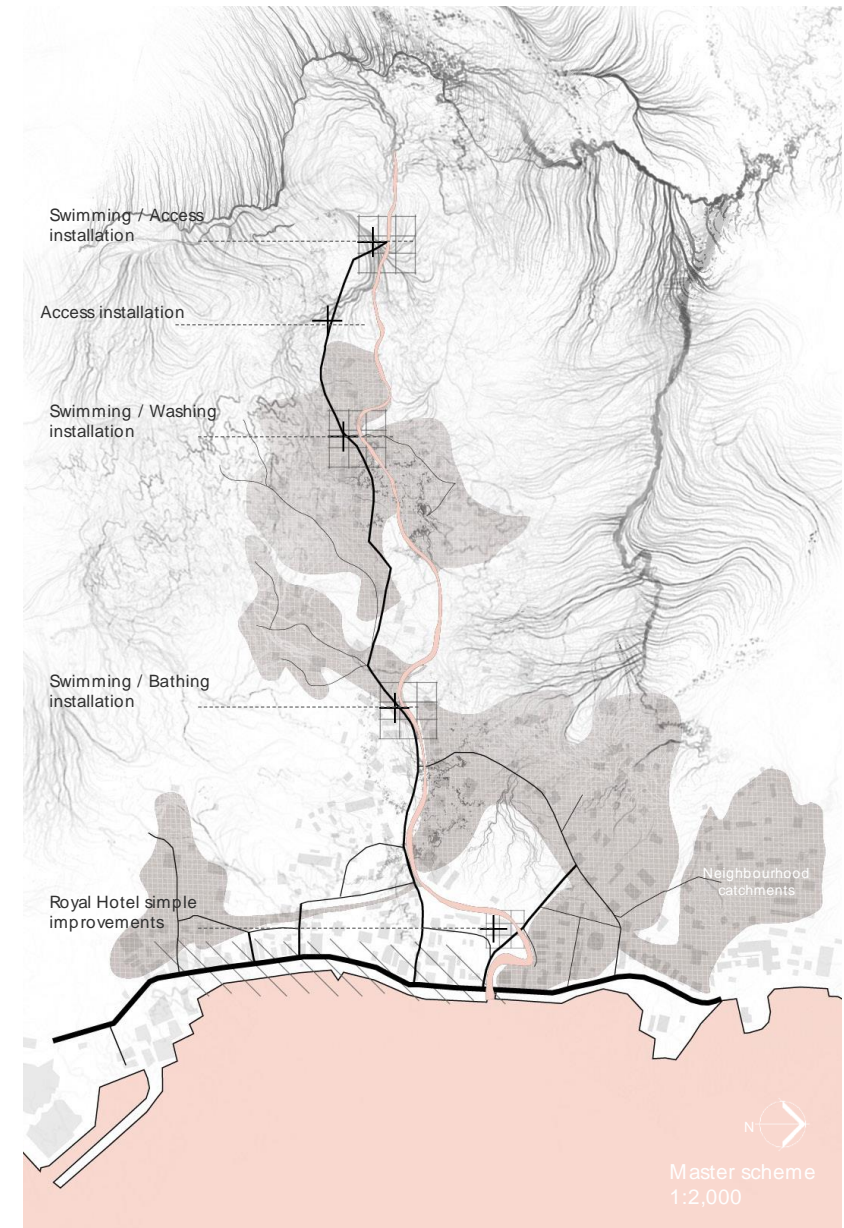
The Burra Charter carries several main ideas which have highly contributed to this project:



Levuka, Ovalau Fiji

[1] UNESCO, "Levuka historical port town"

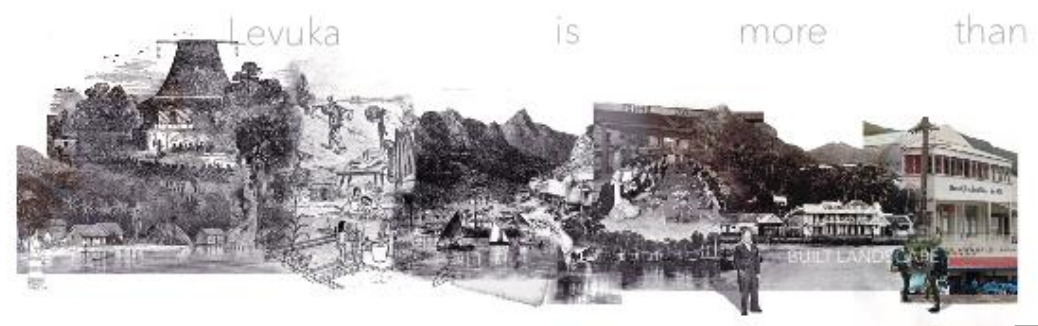
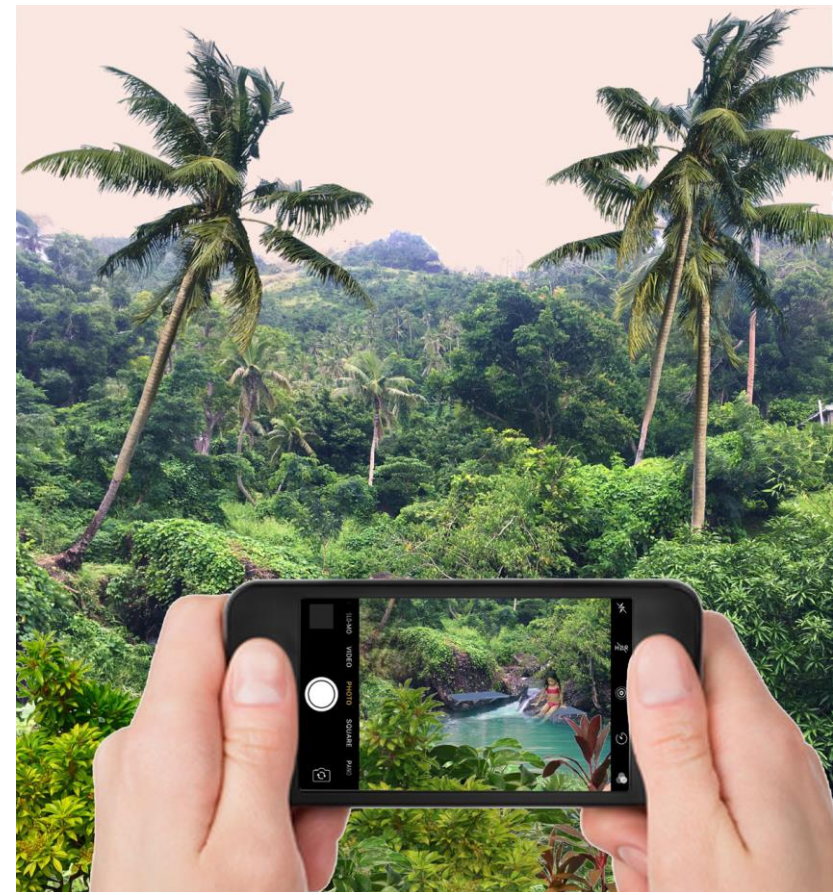
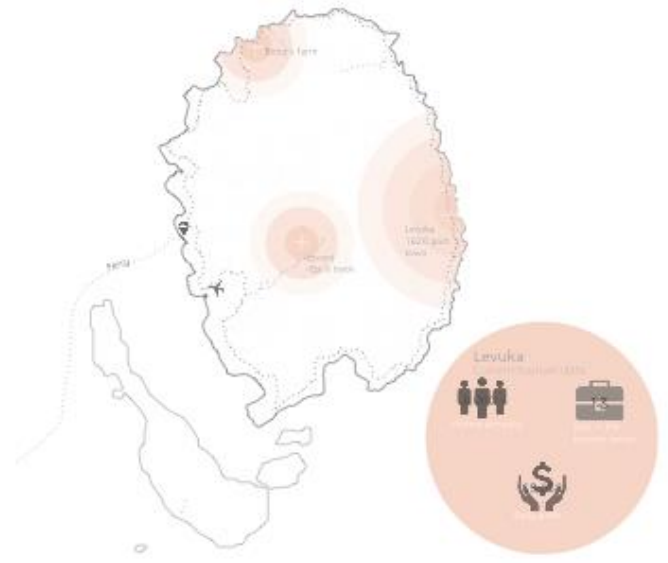
[2] UNESCO "Cultural Landscapes"



[3] Marquis Kyle, Peter & Walker, Meredith. "The Illustrated Burma Charter".

- The place itself is important
- Do as much as necessary, as little as possible
- Work to protect the fabric of the place
- Work to reveal and or explain the significance
- Work to make the place useful. [3]

This proposal aims to meet these five values doing so in a way which will benefit Levuka socially, functionally, in an everyday sense, and also economically. By expanding the recognised significance further into Levuka's cultural landscape and the place itself. It begins to reveal the picturesque and singular qualities which draw travellers back to Ovalau and Levuka.



TRAVEL

Levuka, Fiji

✦ Come and explore this UNESCO World Heritage town of colonial buildings and a natural town.



Levuka is an old port town, the biggest of 24 settlements on the Fijian island of Ovalau. Levuka was the first colonial capital of Fiji. Recognised by UNESCO as a world heritage site in 2013, this small town of only about 1,300 residents has a well-preserved character.

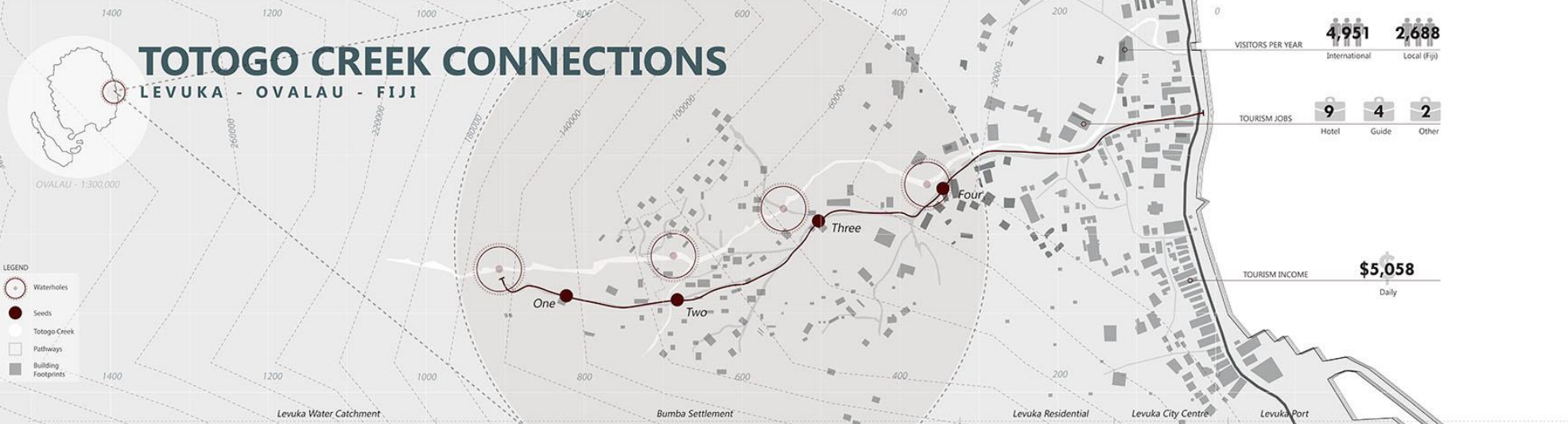
Levuka town is a trip into the past. It developed in the early 19th century as the centre of commercial activities for both Americans and Europeans who built the conventional style buildings over the indigenous population. The indigenous population continues to thrive here, the European settlers there are in a unique situation where both have played a large part in its town development.

The colonial seaport landscape of Ovalau has created dramatic forested slopes and a strong network of stunning waterfalls and rivers to explore.



TOTOGO CREEK CONNECTIONS

LEVUKA - OVALAU - FIJI



Improving the **pathway** while maintaining the sense of **adventuring**.



Creating a **tranquil** space to allow people to **rest**.



Enhancing the **gardens** and increase **community engagement**.



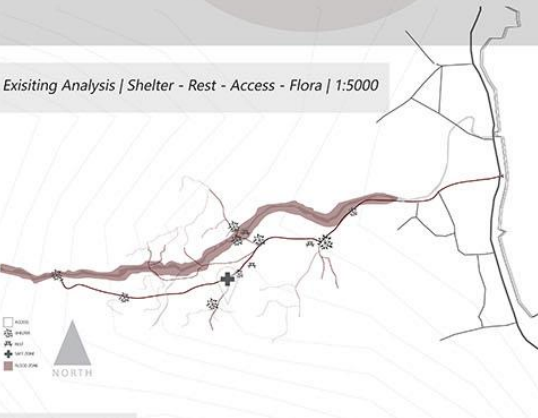
Safe environments for children who want to have **fun**.



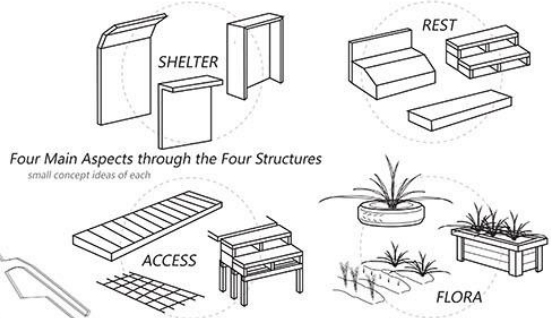
NORTH
1:2,500



Existing Analysis | Shelter - Rest - Access - Flora | 1:5000



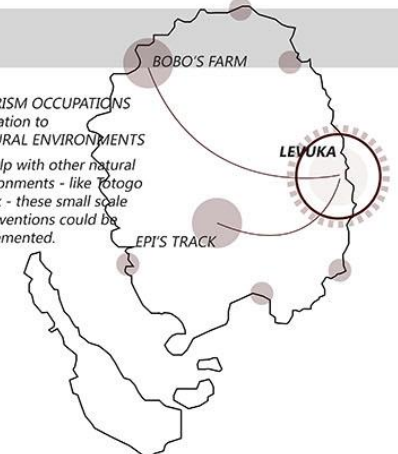
Site Zooms | 1:200



Building these structures will not only help the locals of Bumba Settlement **now** but it will help them in the **future**.

These structures will give people, especially the unemployed, the opportunity to learn how to re-build in case of a natural disaster.

TOURISM OCCUPATIONS in relation to **NATURAL ENVIRONMENTS**
To help with other natural environments - like Totogo Creek - these small scale interventions could be implemented.



Natalie Buhler

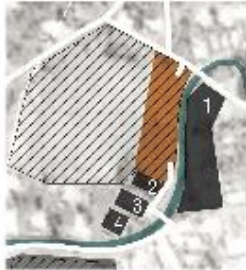
alternative economies



LEVUKA COOPERATIVE GARDEN

Merging Fijian traditional life and Tourism

Clara Choi



Locator Map
Centre of Levuka Town

1. Royal Hotel
2. Masonic Lodge
3. Levuka Town Hall
4. OvWau Club



01 Type and amount of imported goods used for tourism industry in Fiji

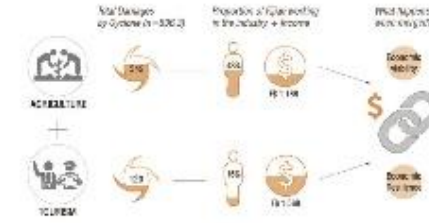
Living off the land is a traditional Fijian way of life. Today more than half of the Fijian people work in the agriculture industry and Fiji's top exports are primarily sourced from their land. Meanwhile, tourism has been one of the largest foreign exchange earners over the years in Fiji and has been more resilient to natural disasters as opposed to agriculture.

Even though Fiji has a high level agricultural production, more than 80% of the food products used for the tourism industry are imported from other countries such as Australia, China, India, and New Zealand [01]. Fiji received over 600,000 tourists in 2010 and the number of tourists grow over the years, which equates to 17 million meals consumed from the average stay of 9.4 days per tourist. The present context provides the potential in merging agriculture with tourism (i.e. agri-tourism) that has the potential to strengthen the economic viability and protect their cultural significance [2].

The majority of the tourists visiting Levuka in fact indicate that the authentic food is a key aspect of their travel experience, as they believe that it is essential in understanding the culture of the region. It provides a basis for implementing the Cooperative Garden in Levuka to become more self-sufficient, which in turn brings the benefits for the local agriculture and tourism.

The Cooperative Garden, consisting of a range of agricultural plants, will supply the ingredients for local restaurants and shops as well as being used for cultural (e.g. Lovo) and educational events (e.g. school field trip) [3]. Furthermore, the proposed swale makes the site more resilient to sea level rise or flooding by promoting the conveyance of stormwater at a slower and controlled rate as a filter medium.

The proposed design will reveal the potential of the site that can expand over time along the streets and ultimately shift the focus of the town from the coastline (i.e. foreign) to the centre of Levuka (i.e. local).

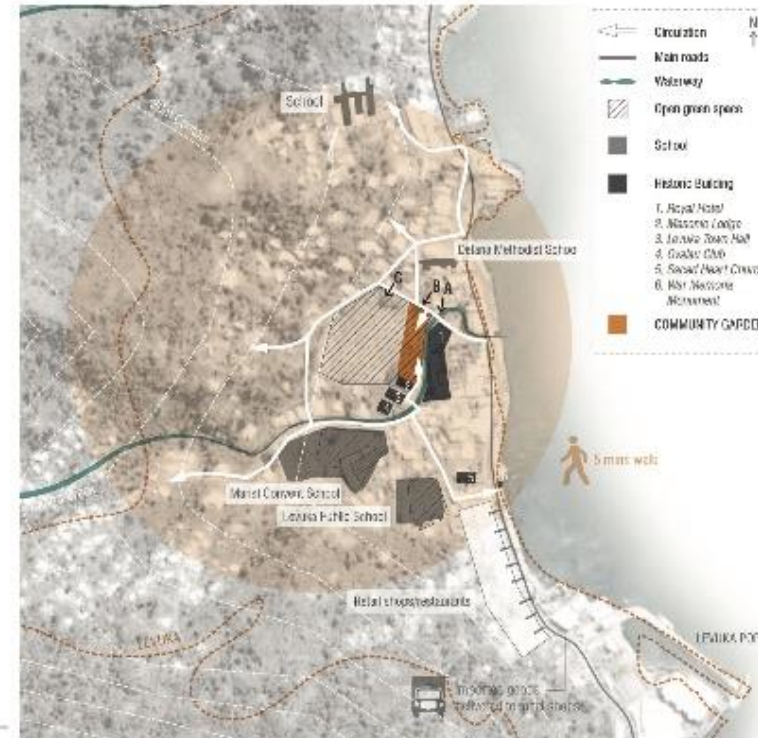


02 Benefits of Agritourism Diagram
How Agritourism will fit into Fiji Context and bring benefits for local

80% of goods imported for tourism industry = \$2.25B → 434 meals = 600,000 tourists = 9.4 days = 77M meals



03 System Diagram of Cooperative Garden.
- Bring local and tourist benefits
- Revitalize the traditional way of Fijian Life



SITE SELECTION

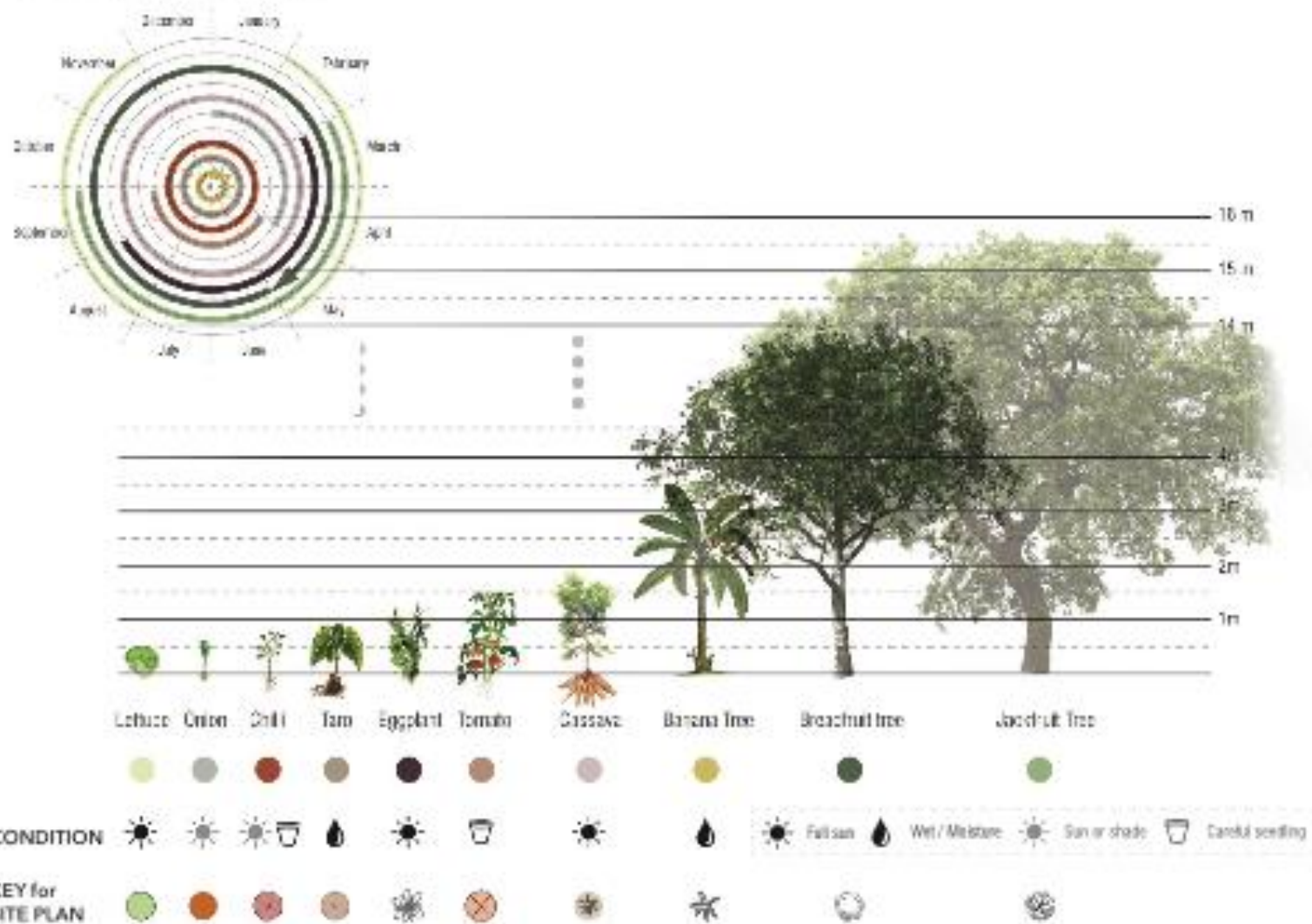


A SHIFT IN FOCUS

Levuka Context Map
Site Analysis / Site Selection / Potential Expansion

Seasonality chart

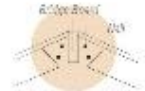
Production throughout the year



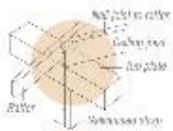
A | Levuka Cooperative Garden | Levuka, Fiji

Long Section + Construction details for Timber shelter
 Strengthened connections are key for Cyclone Proof Construction

Thatched roof lies down to wooden framing & is made to rest on supports in diagonal pattern. Maximum 45cm spacing.



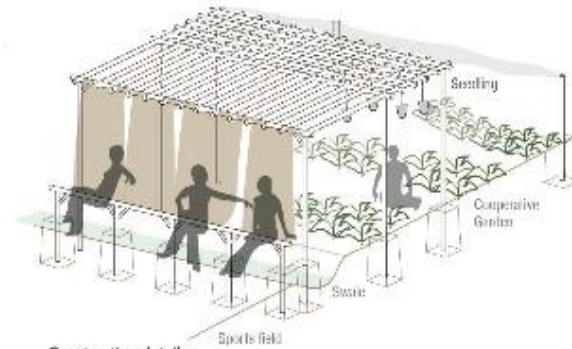
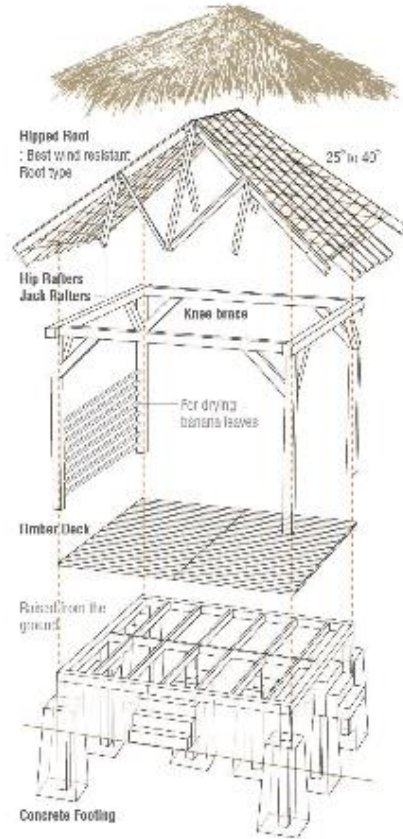
COLLAR TIES
 Securing the roof from being blown away



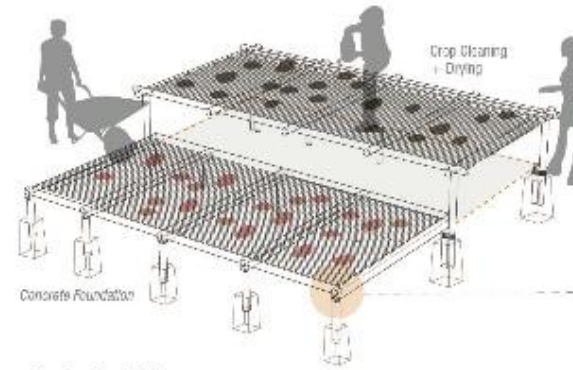
ANCHORING OF ROOF FRAMING TO POST
 - Input and output of wind stability of the roof



TIMBER POST secured to **CONCRETE FOOTING**
 - Fixed 60cm from the ground and fixed to height of footing and concrete used for post seats



Construction details
 Seating/Garden structure (Bamboo)



Construction details
 Movable Cleaning/Drying Tray



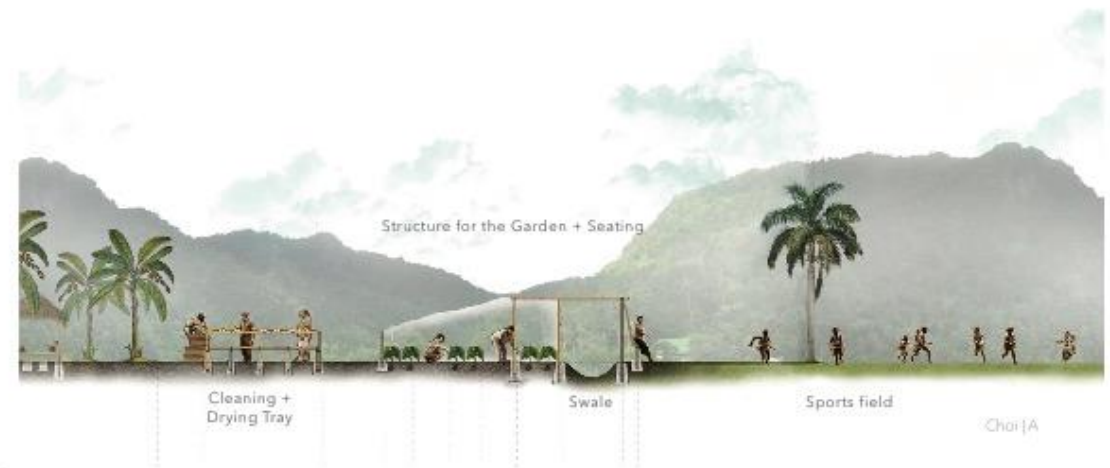
BAMBOO DIAGONAL BRACES
 - Easy to construct
 - Locally sourced



NET - CLEANING + DRYING
 - Feasibility
 - Multi function

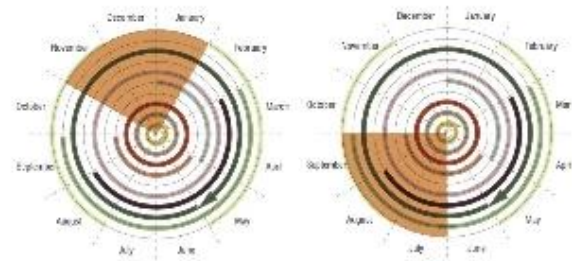


TRADITIONAL BAMBOO JOINERY TECHNIQUE
 - joining horizontal with vertical bamboo. Makes the tray movable





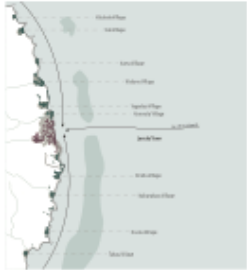
Perspectives
Lovo (cooking pit) as cultural event /
tourism attraction



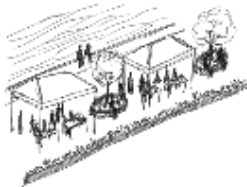
THE BEACH STREET MARKET

Levuka, Ovalau

Paige Boyd



Locator Map
Levuka is located in the centre of the eastern side of Ovalau



01 Current market space on Beach Street

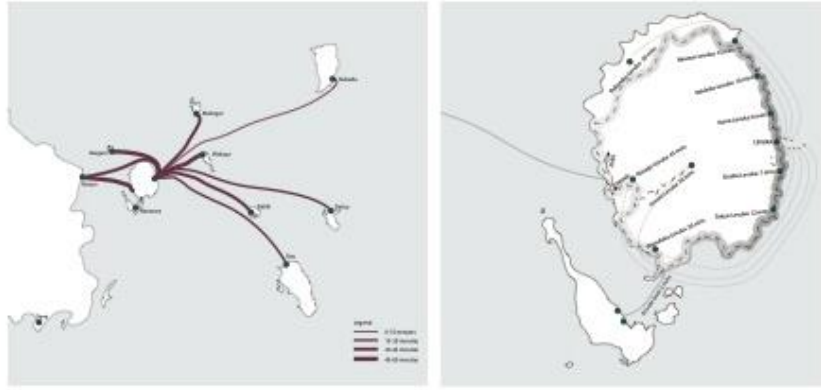
The community of Levuka lost their market tree and much of their waterfront shade during Cyclone Winston in 2016, since then they gather under the verandahs of stores and set up a temporary marquee for the morning market. The community's relationship with the water has been diminished by the barrier that is the sea wall and the lack of shade by the water.

This proposal for the main street of Levuka will create a gathering point for the community that gives them the ability to reconnect with the sea by guiding them over the sea wall and down towards the water's surface. A permanent market structure will allow for a bigger market that, as it grows, will draw attention from villages around Ovalau and surrounding islands. The proposed wharf, along with bringing people down to the water, allows for people travelling from other islands in boats to also make that transition over the sea wall and be part of the market and community of Levuka, and the greater region. The increase in large plants suggested in this proposal will create more areas of shade and bring more people from under the verandahs over to a more natural surrounding, while still allowing a view of the shopfronts, directs their attention towards the sea through planting and the visual attraction of the wharf. Improving the planting and seating along the entire waterfront will attract the community to use the whole space. With more shaded seating available along the waterfront, the movement of people to and from these spaces along the sea wall will increase, the movement of people right next to the sea will draw people's gaze in this direction.

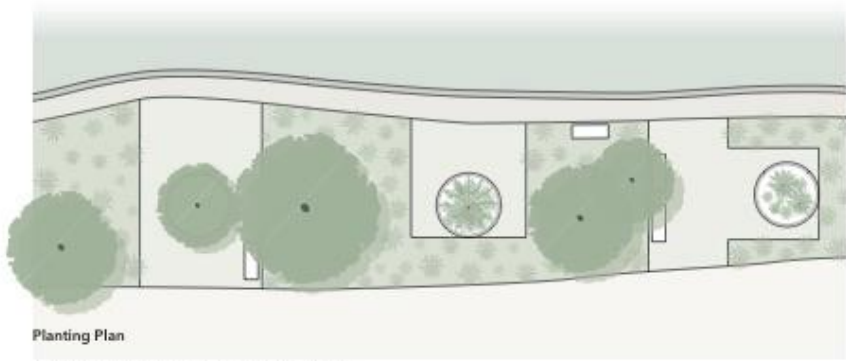
The proposal creates an opportunity along Beach Street for larger community gatherings, it is about repairing what was lost in Cyclone Winston and adding something more that allows for the community of Levuka to enjoy themselves, each other and the water.



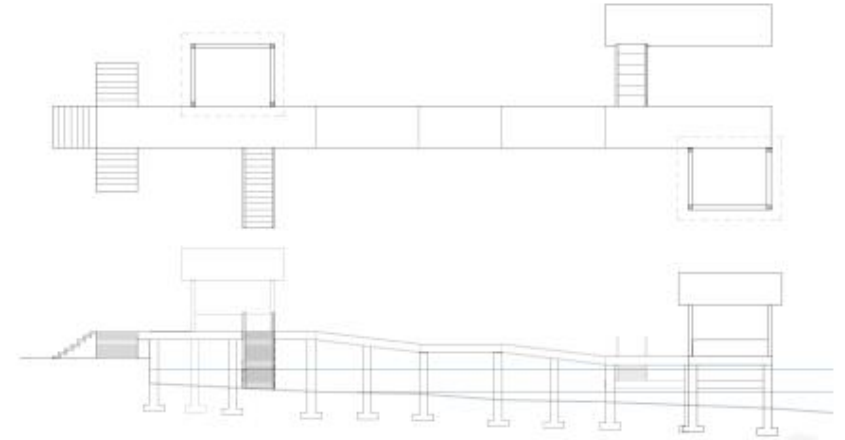
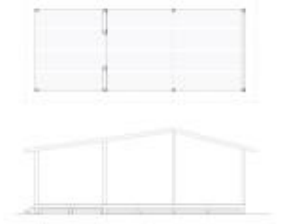
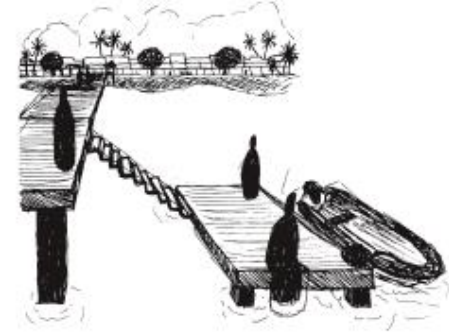
Context Map



Travel times around Ovalau and to Levuka from surrounding islands, as the market grows, people can travel from this villages to participate in the market



Planting Plan



Plans and Sections



infrastructure

SALA SEED

A new path acting as a seed for Ovalau

Hannah Carson



[01] Locator Map
Ovalau located in the centre of Fiji's islands

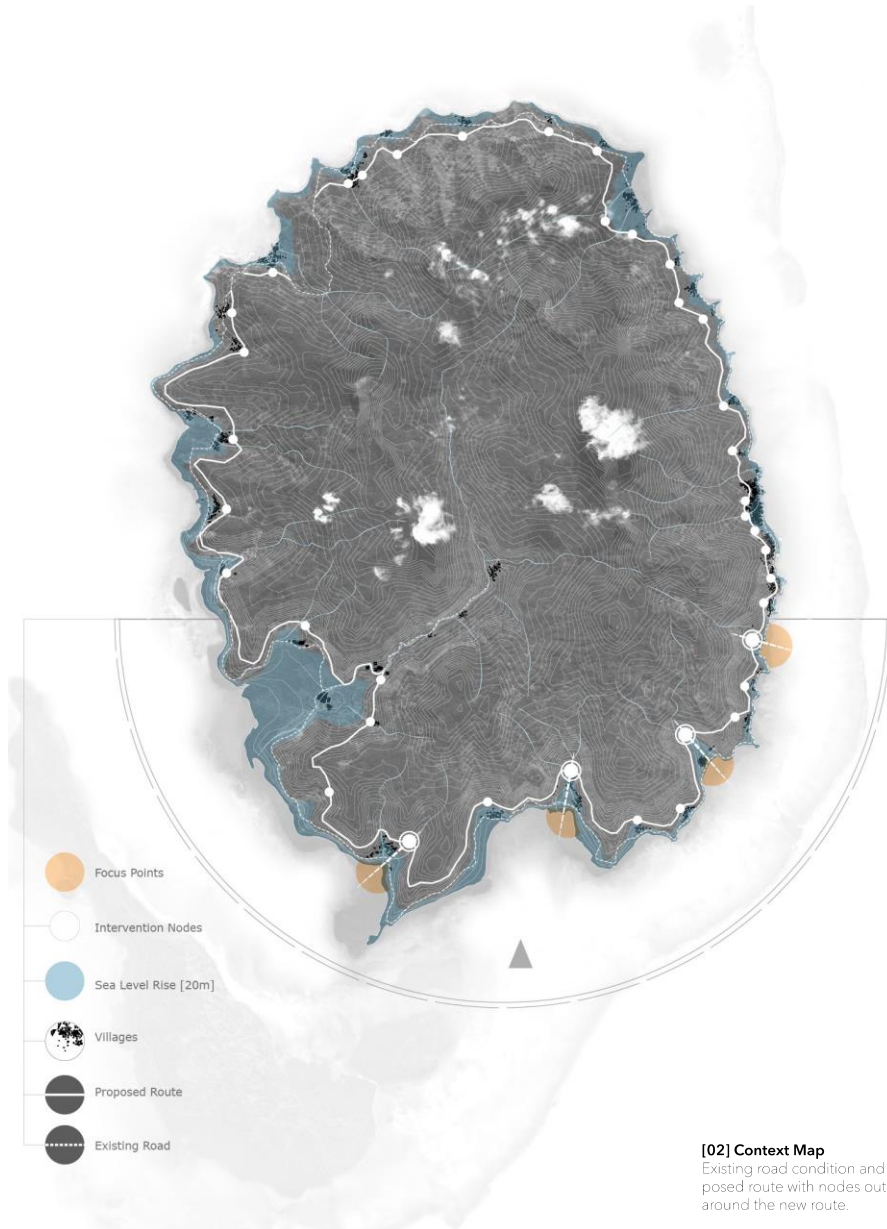
The island of Ovalau, in heart of Fiji, is at risk due to sea level rise [01]. The main road follows the shoreline of the island and in parts has already begun to erode away presenting a problem when sea level rises. The loss of connection between villages will be a large issue therefore this proposal aims to provide a solution that will benefit for short term and long term effects.

The proposal includes a shift of 'life' from the waterfront to allowing a movement of the villages inland to adapt to the changing sea levels. This will be achieved through a walking cycle track that follows the form of the island but moves further inland [02]. The vision, is over time the path will become more dominant and when the sea level begins to rise substantially, there is already a network in place to deal with any loss of connection that occurs between villages.

This route will also provide new social spaces for communal and recreational use through interventions along the path located at the 'back' of the villages using the topography and moving up into the hills. The structures will be seating, shelters, recreational activities and for domestic use. As the inland topography get steeper the further inland you go, these structures will aim to be designed with the landscape therefore making use of the steep topography creating levels, shelter and recreation to use the space without changing the landform.

[03] The materiality of these spaces will use local materials such as bamboo and timber. To construct the forms that make up and define these areas a single joining element will be used to connect the materials. This element will essentially be the only thing required to allow construction of the interventions using local materials, acting as a small seed element that will work in conjunction with the path to allow adaptation of the islands access route and its people.

This new route will act as a catalyst for potential changes that will be necessary with the current situation in Ovalau providing a resilience within the community through forward thinking and adaptation.



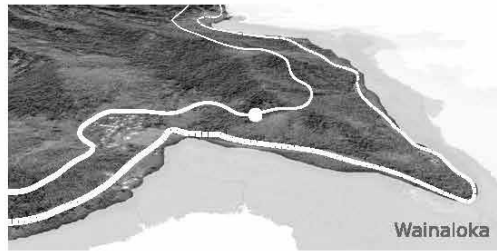
[02] Context Map
Existing road condition and proposed route with nodes outlined around the new route.

Perspectives

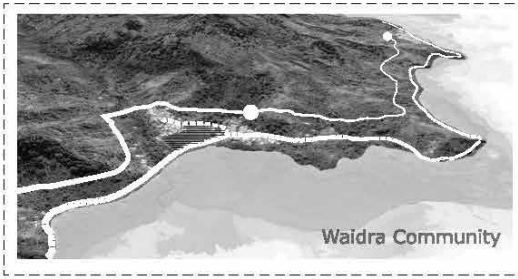
Relationship between existing road and shown at key vulnerable edges of the island, looking in detail at the Waidra Community



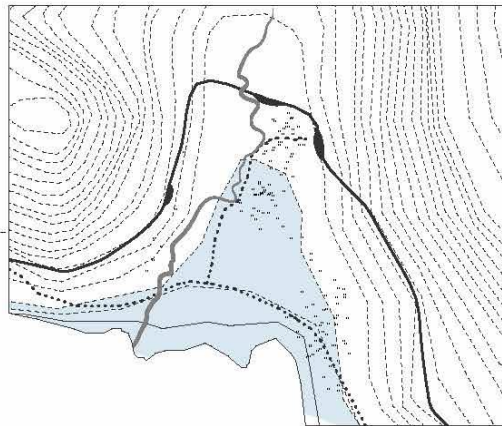
Tokuo



Wainaloka



Waidra Community



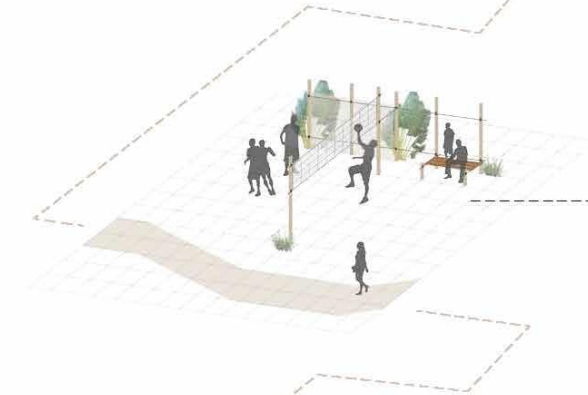
Site Plan

Relationship between existing road and proposed route with a zoom of focus site Waidra Community



Typology One

Simple structures with the ability to be added to and evolve to create different space typologies. For example beginning with a simple shelter or sitting structure



Typology Two

Recreational elements can be formed through the series of structures



Typology Three

Structures can be added to and developed to create networks of public space along the new route with the potential for more concrete structures for bus stops in the future

1.



2.



3.



Perspectives

1,2: Beginning from a simple sitting or shelter structures to becoming more developed introducing other elements such as recreational activities

3: Potential future result with structures becoming bus stops, shops etc. and therefore becoming a main route

SHORELINE SYNERGY

Enhancing the waters edge | Levuka, Fiji

Caitlin Lambert



Locator Map
The coastline of Levuka, specifically the waterfront strip.

Many islands within the Pacific are severely affected by coastal erosion and environmental issues. In the Fijian Island of Ovalau, specifically Levuka, the increased urban infra structural developments have left the coasts vulnerable to significant damage such as coastal erosion, flooding and damage to road infrastructure.

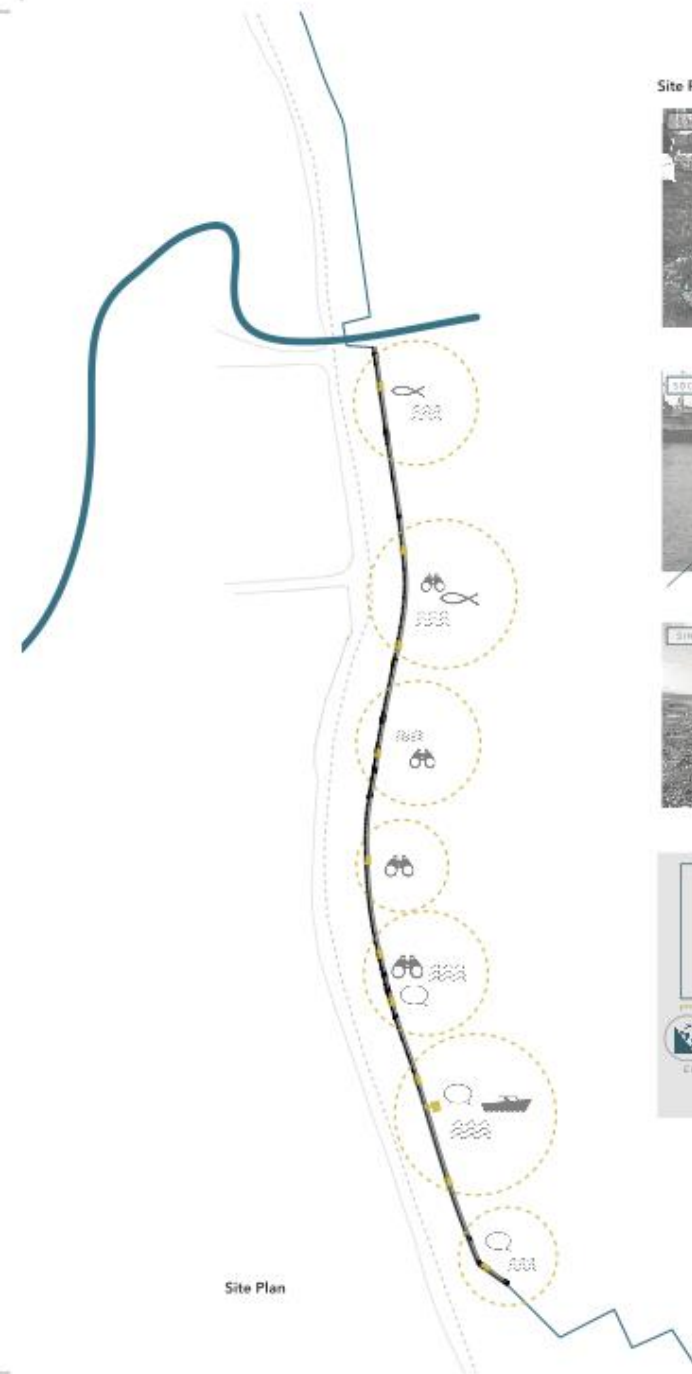
Through the combination of infra structural and social functions, this project proposes an approach aiming to address the increasing problem of coastal destruction. This will happen by playing with the current sea walls form and function whilst also considering both current and future problems such as the predicted sea level rise of 44cm by 2070.

Focusing on the central role of the coastline, by strengthening the current sea wall to deal with the current issues around water. Implementing a second wall would improve the current attempts at preventing coastal erosion that can then act as a social catalyst.

Following this alteration to the sea wall, encourages new social activities by creating flexible spaces that may be interpreted into new and innovative uses will occur. Embracing the current successful spaces along the waterfront whilst implementing new social spaces that would then make the waterfront a place for the locals to further enjoy.

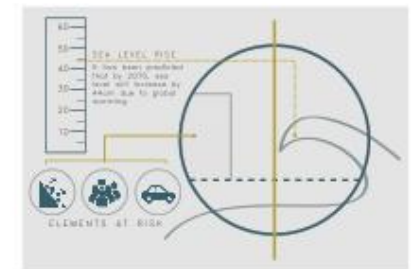
Through implementing the second wall there is extra support to the current wall which would lessen the physical impact and therefore have less damage through repetitive waves and tidal change. Although sea level rise is not preventable, this creation of a second wall will slow the impacts and damage that would occur.

As the wall strengthens road infrastructure and connections within Levuka and the town as a whole it can then in future, provide better access to boost the town and encourage future tourism strengthening the town itself.



Site Plan

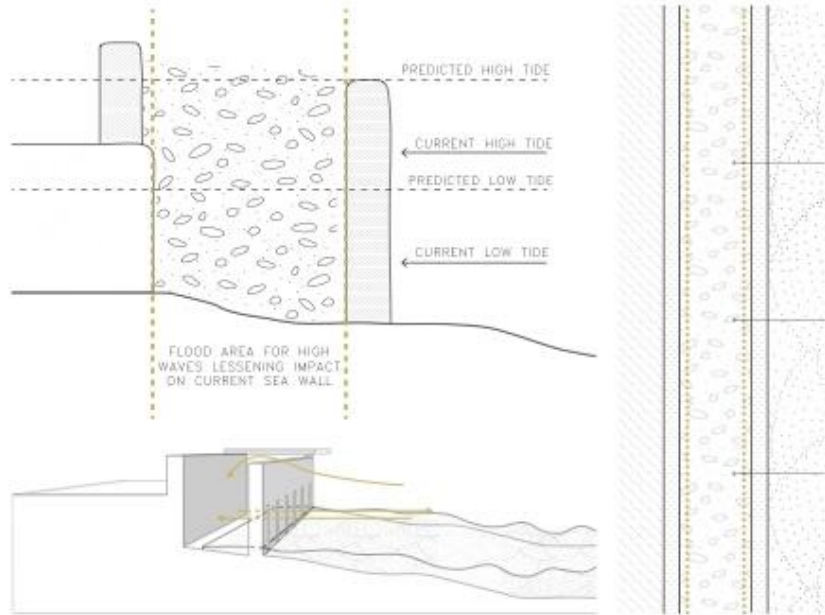
Site Photos



Sea Level Rise Assumption

Plans and Sections

02 Drawings showing the wall in both plan and section with how it functions through tide levels and water movement.

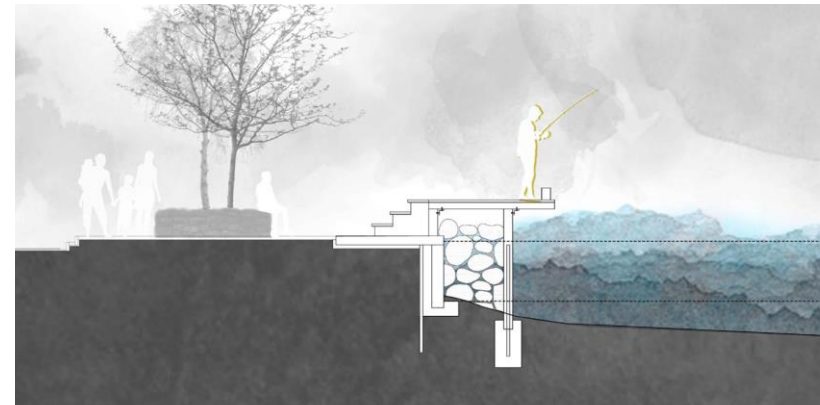
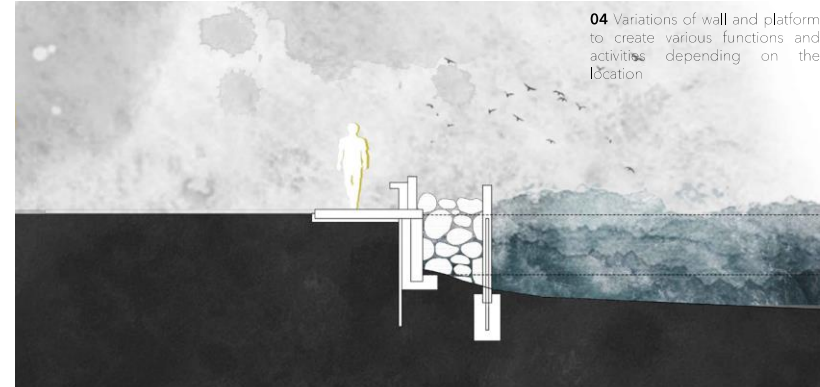


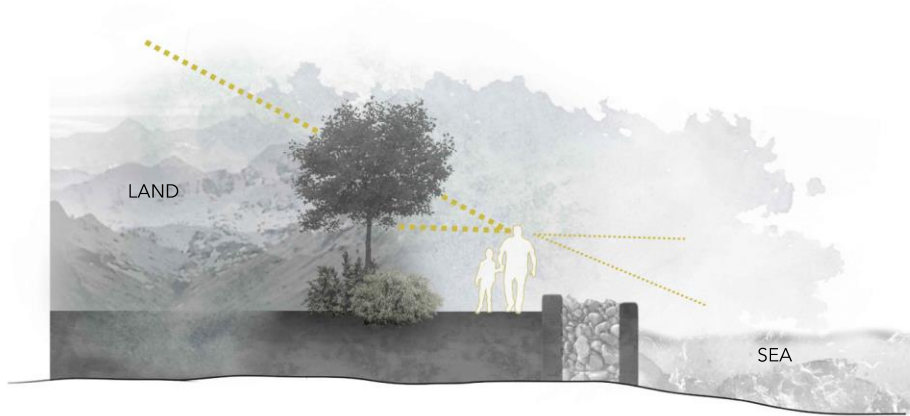
STAGES OF TIDAL CHANGES

03 Sections demonstrating the wall functions through tidal changes.

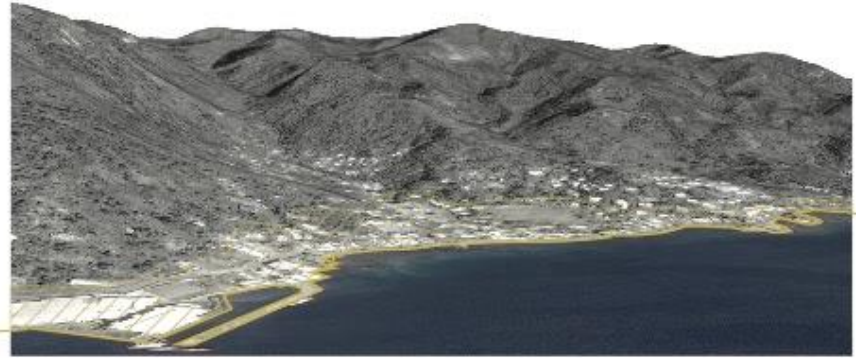
82 | Shoreline Synergy | Levuka, Fiji

04 Variations of wall and platform to create various functions and activities depending on the location.

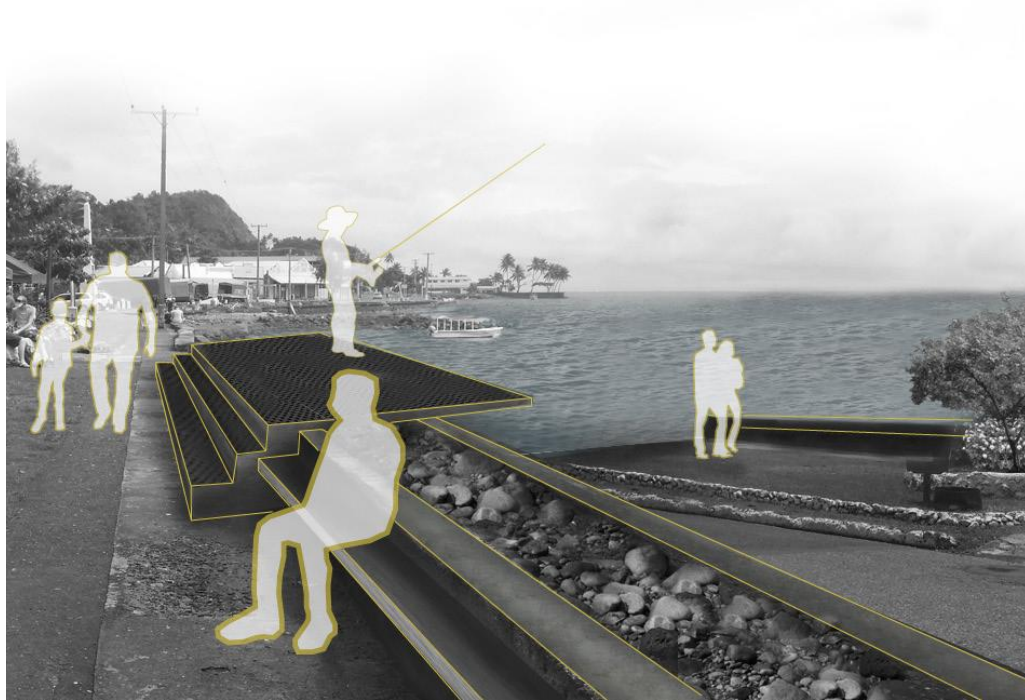




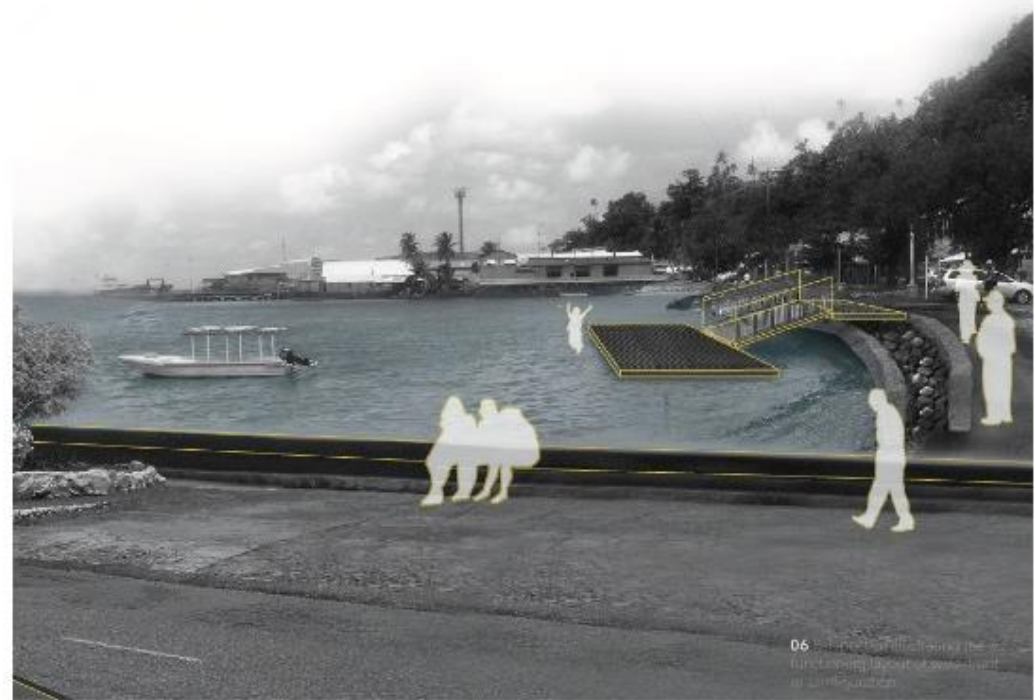
05 Emphasising the fijian values of living, the land and sea. Creating a unique moment in space and time.



Context View
Levuka Town



84 | Shoreline Synergy | Levuka, Fiji



06 The promenade links the town's existing layout of a paved waterfront promenade.

Lambert | 85

CYCLONE & COMMUNITY SHELTERS

Strengthening Ovalau and Levuka

Adam Jepson



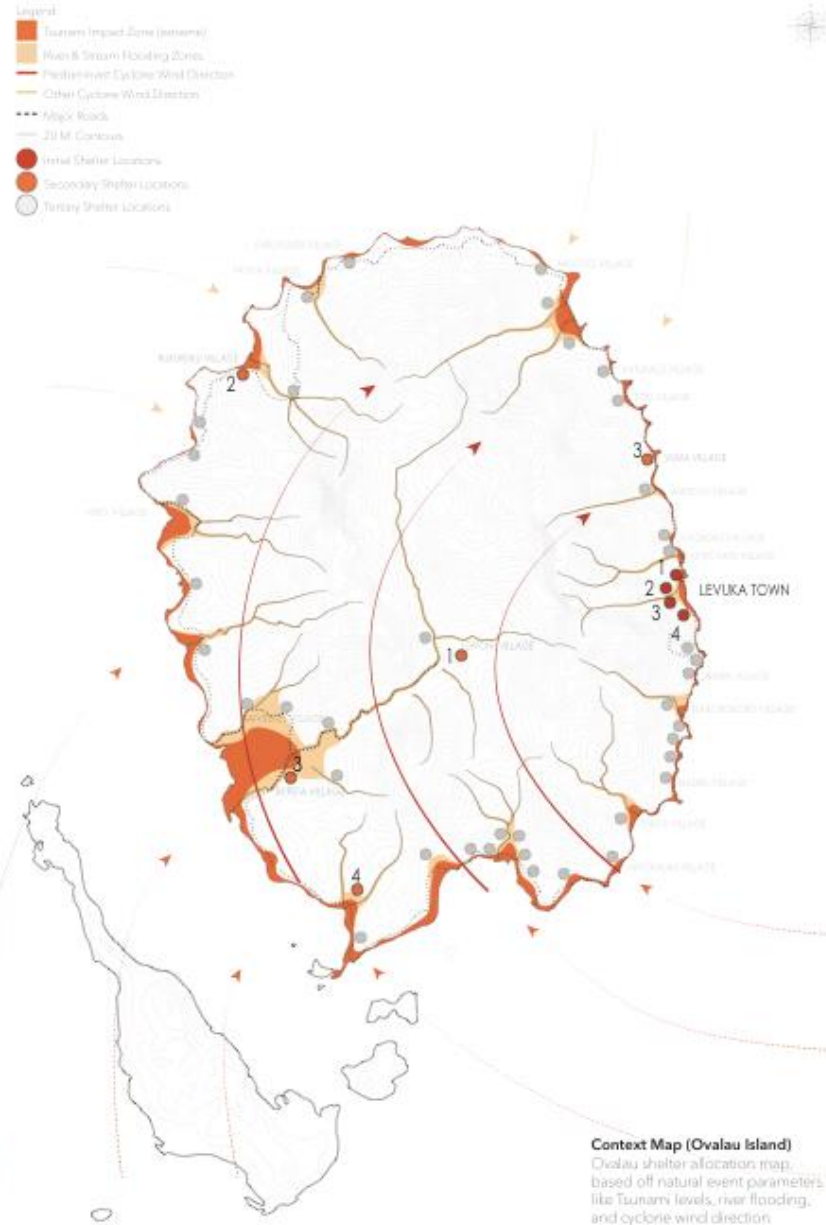
Locator Map
The Island of Ovalau in the centre of the Fijian Islands.

This design project deals with issues of making the community more resilient within Ovalau & Levuka in Fiji. It will help the resilience of the people on the island in two ways, the first for community & culture and the second, natural events like tsunamis and flooding.

This design project looks into designing interventions for Ovalau & Levuka, it first of all will provide two strengthening qualities for the people of the island. The first being a design that will help build up community interaction to help with social & mental resilience. The second being a design that will allow protection from natural events, mainly cyclones. This will be done through a network design of individual interventions over the Island, starting in the Levuka town. But then to expand out to other sites all over the whole Ovalau Island through to steps.

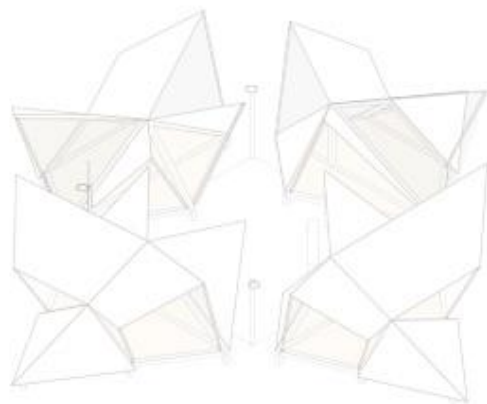
The design will be a multi-functional seating-shelter that can be articulated by the users to become a safe structure to bunker down in. The intervention will act as a seating space most of the time and allow people to meet up and interact through an activity. Thus helping bring the community closer and more connected to each other. Plus the structure can be transformed into a closed shelter that can be used to protect a small groups of people and also have space for emergency & survival equipment inside too. The designs shape will be formed to provide protection from the weather elements and withstand it as well. It is done with the use of triangular forms to allow the wind to pass over it and not pick it up off the ground.

The interventions will be paired with the schools for them to use for learning about Fijian cultural activities. The location of the interventions over the island have been chosen initially in the first to steps of application, but the others will be chosen by the settlements and villages for which of the 4 typologies they would need in their location.



Context Map (Ovalau Island)
Ovalau shelter allocation map, based off natural event parameters like tsunami levels, river flooding, and cyclone wind direction.

1



Axonometric of Sports Shelter Typology

Typology

This shelter typology is focused on providing a communal space for people wanting a space to prepare for sports game.

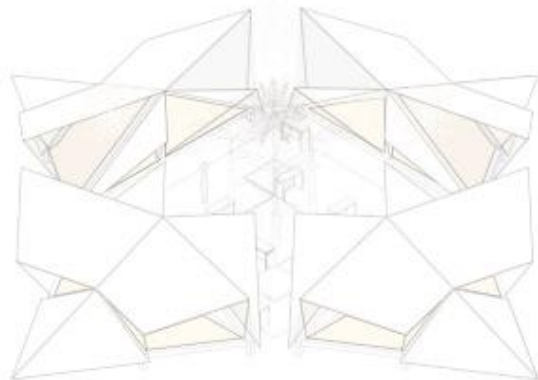


Everyday Situation



Cyclone Situation

2



Axonometric of Crop Shelter Typology

Typology

This shelter typology is focused on providing a community garden that can be used for production and propagation with groups of people.



Everyday Situation

2

Crop Shelter Typology

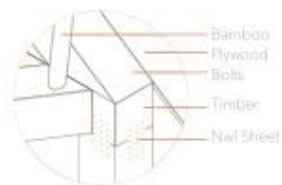
Site Plan for Shelter Typology 2

Located in an open space, west of the main field of Lavaka for the crop / farming shelter to be built. It sits above the predicted tsunami boundary of 20m high, and is accessed easily by an existing pathway.



Axonometric Detail of the Wooden Joints

Showing the wooden timber frame meeting into an intersection and held with bolts and nails sheets to ensure a strong joint.



LARGER IMPLICATIONS

- Design as a methodology to negotiate complexity
- Enlarge the area of focus using multiscalar mapping
- Landscape is a useful site for alternative adaptation
- Accommodate quick and slow adaptive cycles

Questions ?