# *Talia na Vanua*

Reweaving with Land – Indigenous Frameworks for Resilient Architecture in Fiji

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A thesis submitted to Auckland University of Technology in partial fulfilment of the requirements for the degree of Master of Architecture (Professional)

13/11/2025

School of Future Environments

# Abstract

The Pacific Islands is unique in its combination of ecological and cultural diversity and ecological sensitivity (Secretariat of the Pacific Regional Environment Programme, 1999). While the Pacific Islands contribute little towards global issues like climate change, they stand to suffer the greatest impact from them. Rising sea levels, cyclones, and flooding pose constant challenges to infrastructure, livelihoods, and cultural continuity. Fiji is a small island that is deeply rooted in cultural resilience and adaptive potential. Despite limited economic resources, Fiji demonstrates a strong commitment to climate action through disaster preparedness activities and community-led building. Nonetheless, a large number of rural areas remain disproportionately impacted, particularly in Vanua Levu's northern region, where the people heavily rely on informal and subsistence economies for recovery.

This thesis situates itself in the Fijian town of Labasa, a town rooted in agriculture, forestry, and the foundational values of land, people, and spiritual connection. Flooding and cyclones damage houses, crops, and access to essential services yearly, underscoring the need for adaptable and regenerative design solutions. Talia na Vanua proposes a primary relief hub, with modular housing kitsets and support for food security, addressing both shelter and food shortages. Through the fusion of Indigenous Fijian architectural principles, material knowledge, and community-based practices, the project reimagines architecture as a living system that nurtures both people and place.

Guided by the foundation of iTaukei design principles – developed by a Fijian designer, Ratu Epener, during his thesis project at Unitec in 2021 to support local design responsiveness - this research develops a culturally grounded methodology for climate-responsive design. Talia na Vanua contributes to a broader Pacific architectural discourse that honours tradition while advancing innovation to create resilient, self-sustaining, and interconnected communities.

# Glossary of Key Terms

| | |
|---|---|
| Bure Kalou | - Spirit temple |
| iSevusevu | - Service and shared responsibilities |
| iTaukei | - Indigenous people of Fiji |
| Kalou Ou (God) | - God |
| Lovo | - Earth cooking |
| Mareqeti ni yau Vakavanua | - Cultural landmarks and sacred sites |
| Maroroi ni Veikabula | - Protection of the natural environment |
| Mataqali | - Clan |
| Nabu | - Cultural narratives and storytelling |
| Qoliqoli | - Fish or customary fishing grounds |
| Rara | - Green space |
| Solesolevaki | - Collective action |
| Talanoa | - Story |
| Tokatoka | - Extended family |
| Tubutubu | - Ancestors or origin |
| Vale Leka | - Short house |
| Vanua | - Land |
| Veirokorokovi | - Respect |
| Veivakaturagataki | - Social Order and hierarchical principles |
| Veiwekani | - Kinship/relationship |
| Yaqona/kava | - Fijian traditional drink |
| Yavusa | - Tribe |
| Yavutu | - Ancestral village/Family/Ancestral village |

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# Attestation of Authorship

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor used artificial intelligence tools or generative artificial intelligence tools (unless it is clearly stated, and referenced, along with the purpose of use), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.

# Positionality statements

This positionality statement reflects how my background and values inform my design-led research. Understanding my positionality allows me to be accountable to the people, places, and systems the project responds to. Positionality is essential to architecture because it reflects one's worldview and values, based on personal experience. Acknowledging my own identity, I can approach this research not only as a designer and educator but also as a cultural participant engaged with regeneration, equity, and belonging.

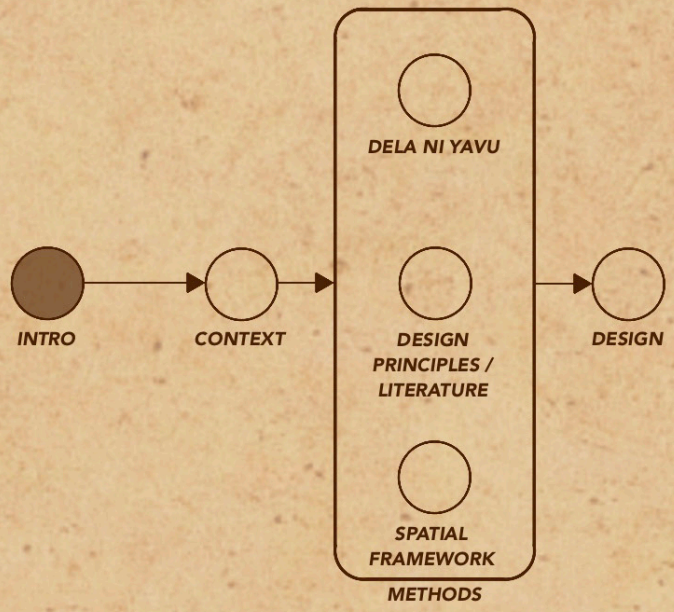
I was born and raised in New Zealand and am of Indo-Fijian descent, with most of my family still living in Labasa, Fiji. My (paternal) grandfather's timber mill and my maternal family's farmland have deeply connected me to the land and the realities of rural livelihoods. I grew up in Aotearoa, but my sense of identity is firmly grounded in Fiji's cultural rhythms and communal values. I understand space and place as relational, where land, community, and spirituality are closely intertwined. Witnessing the struggles of my family, and many others in Fiji, who face poverty, natural disasters, and climate change, has fuelled my desire to design systems of care, resilience, and regenerative relationships.

My architecture education has shown me the value of systems thinking, sustainability, and understanding materials. Still, I also acknowledge that Indigenous and Pacific knowledges are often overlooked in mainstream architectural views. This has motivated me to combine iTaukei design ideas and Fijian values of space with regenerative design to explore the continuum between traditional and contemporary styles. These actions in imagined projects like Dela ni Yavu have further inspired my conception of design as culturally respectful and reciprocal.

I have a personal connection to my site in Labasa and consider myself an educated individual within Western ideas. I come to this project with respect, intending to listen and learn from local knowledge holders, and not to impose ideas. My practice aims to intervene as an educator to support the development of social infrastructure that builds local economies and cultural identity through architecture.

In my design practice, I work within a framework of ecological regeneration, cultural acknowledgement, and collective wellness. Architecture has the potential to connect people to their place and to help address the significant challenges of climate resilience and urbanisation. Through this process, I have gained a greater understanding of how my education, privilege, and cultural hybridity inform my design worldview. This has been an ongoing reflective process that continues to shape how I design and engage with communities. As I move into the practice, I wish to carry an attitude of humility, empathy, and accountability, beyond creating for people, but creating with them, for a more connected and regenerative Pacific.

# 1 – INTRODUCTION



# 1- Introduction

Fiji faces recurring natural disasters, including cyclones, floods, and rising sea levels, which continue to threaten the stability of housing and the well-being of its communities (Financial Inclusion Unlocked Podcast: How Parametric Insurance Is Protecting Communities in Fiji against Cyclones and Flooding, 2025). These events not only damage infrastructure but also disrupt livelihoods, food systems, and access to essential resources. Over time, the rise of Western architectural influence has further disconnected many communities from traditional building practices that once ensured harmony with the environment. As a result, Fijian villages and communities face physical and cultural vulnerability, emphasising the need for a resilient architectural solution that works to revitalise Indigenous knowledge and combat disaster events.

This research focuses on the development of a resilience hub integrated with modular housing kitsets and vertical food markets. *Talia na Vanua* seeks to improve resilience, food security, and economic stability through a self-sustaining system that supports local livelihoods before, during, and after natural disasters. By combining housing, agriculture, and community space, the design challenges imported Western models of living that often neglect local identity and environmental context.

This research builds on vernacular architectural values to generate a developed version of the iTaukei design principles, which informs the development of the iTaukei spatial framework as a discrete outcome. Thus, guiding a design process, striking a balance between cultural continuity and innovation, positioning architecture as both a cultural and an ecological response to crisis. Key iTaukei cultural design principles include: Nabu - Fijian cultural identity within architecture, iSevusevu - The recognition of land, people, and shared responsibilities, Yavutu - values of kinship and ancestry connectivity, Mareqeti ni Yau Vakavanua - Sacred Landscapes principle highlighting stories and spiritual depth, Maroroi ni Veikabula - equality within land and living organisms, Solesolevaki - Collective spirit and support, Veivakaturagataki - Respect for Social Order and hierarchical principles.

The outcome of this research is a proposed regenerative hub that includes a resilience hub, modular housing kitsets, and community space kitsets. The research proposes a circular local economy designed to suit local land use practices and economies. The local timber mill is the locus of the design as it is transformed to mill, and add value through kitset outputs for the local market. The three different kitsets support community connection, learning, food security, habitation and act as an infrastructure of care for both community resilience and shelter.

The housing and community space kits are conceptualised as seeds for future environments. When sent to local disaster zones, they are intended to provide initial support, which is then enhanced through community resilience hubs. From the seeds of disaster, vibrant locally designed communities can be formed that can seed economies based on local food and resources.
The project serves as a circular and regenerative system for living, growing, learning, and rebuilding. In so doing it transforms and performs architecture as a living system that fosters social, cultural, economic and environmental well-being. Ultimately, the project envisions a future where architecture in the Pacific not only withstands disaster but thrives through its connection to people and place.


Figure 1.1. Map of the globe highlighting Fiji (image created by the author)

## 1.1. Research Aims

- Provide a relief support hub for natural disaster events.
- Promote self-sufficiency, education, and collective growth, particularly within rural and underserved regions of Fiji.
- Work to build a circular economic system helping job creation and stability within communities.
- Revitalise cultural and Indigenous knowledge through retention.
- Develop iTaukei design principles/spatial framework.

## 1.2. Research Questions

Primary Research Question

- How can iTaukei design principles – including Nabu, iSevusevu, Yavutu, Mareqeti ni Yau Vakavanua, Maroroi ni Veikabula, Solesolevaki and Veivakaturagataki - inform a regenerative architectural framework that integrates housing and food systems to improve resilience in disaster-prone communities in Fiji?

Secondary Research Questions

- How can iTaukei cultural design principles guide the design development of built environments in Fiji?
- How can traditional and Indigenous knowledge present a more resilient architecture towards natural disasters?

## 1.3. Scope and limitations

The primary scope of this research is to explore how regenerative and culturally grounded architecture can strengthen resilience within disaster-prone regions and communities of Fiji. The research platform involves designing a regenerative resilience hub equipped with external housing or community kitsets, integrated with systems that provide resilience and support. The project aims to promote circular economic resilience, food security, and cultural preservation in communities while enabling adaptation to increased cyclone and flood frequency. The project focuses on developing a design that inherits iTaukei cultural values and spatial systems, integrating these with local materials such as pine and bamboo to form an adaptable and transportable structure.

The secondary scope of the research involves developing an architectural framework informed by iTaukei design principles. These principles are examined and reinterpreted to guide spatial organisation, material use, and community interaction within the proposed design. The framework will serve as a tool to translate cultural knowledge into contemporary architectural practice, which can then also inform broader Pacific design discourses on resilience and regeneration.

This study is limited to the conceptual and design-led exploration of these systems rather than their full technical or policy implementation. Larger-scale infrastructure planning, land tenure systems, long-term governance, and economic policy are recognised but are outside the scope of this study. The design serves as a guide for further research and discussion on how culturally specific design frameworks can inform climate adaptation plans in Fiji and the Pacific.

# 1.4. Methods

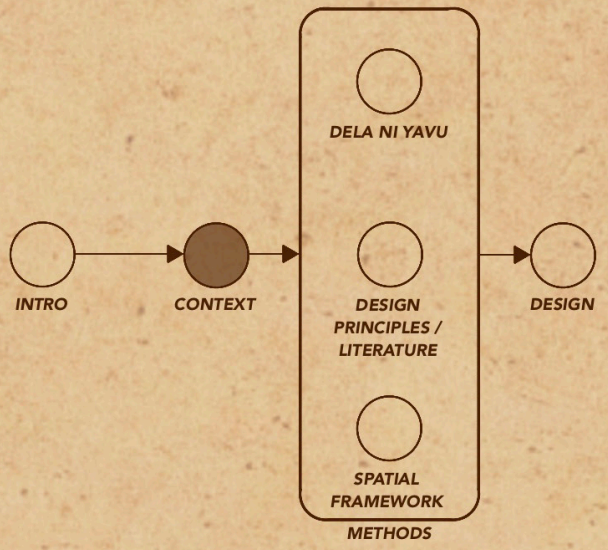
This research adopts a practice-led methodology combining theoretical and design-based approaches to explore how culturally grounded architecture can enhance resilience in Fiji's disaster-prone regions. Three key methods are used: mapping research, literature review/methodologies, and design-led exploration.

Mapping research analyses land use, settlement patterns, and the regions most affected by natural disasters. This spatial and social mapping helps uncover underlying issues, such as vulnerability, displacement, and infrastructure inequality, and forms the foundation for informed design decisions.

The literature review/methodologies investigate Fijian vernacular architecture, Indigenous knowledge, and regenerative design practices to establish a foundation for understanding how traditional values inform resilience and cultural continuity.

The design-led exploration involves mapping, diagramming, creative modelling, and reflective writing to test and refine spatial ideas. This process maps vulnerability, community relationships, and environmental conditions to develop a regenerative spatial framework informed by iTaukei design principles.

# 2 - CONTEXT


DELA NI YAVU
INTRO
CONTEXT
DESIGN PRINCIPLES / LITERATURE
DESIGN
SPATIAL FRAMEWORK
METHODS

# 2 - Context

## 2.1. Geography

The Pacific Island nation of Fiji is located in the middle of the South Pacific Ocean, east of Australia and northeast of New Zealand, as shown in Figure 2.1.1. More than 330 islands make up the nation, but only about one-third of them are inhabited. Most people in Fiji live in coastal urban and rural settlements on the two largest islands, Viti Levu and Vanua Levu. (Our Shared Ocean, 2025). The island's natural environments are as varied as its cultures and communities. Particularly on the larger islands, Fiji's soils are rich and fertile due to their volcanic origins (Landcare Research, 2024), and there is a rugged, mountainous topography that covers roughly 80% of iTaukei land (PeakVisor, n.d.).

## 2.2. The Three Matanitu and The Fourteen Yasanua of Fiji

Fiji is divided into three traditional confederacies (Matanitu Vanua): Burebasaga, Kubuna, and Tovata, as shown in Figure 2.2.2b. Each represents networks of chiefs and land, shaping Fiji's traditional governance (GoFiji, 2023). Together, they form the foundation of Fiji's social, political, and cultural connections. The three Matanitu are differentiated into the fourteen Yasanua, as shown in Figure 2.2.2a, which indicates the origin of each iTaukei individual or group. Additionally, each Yasanua presents different ecologies, landscapes and cultural groups (Jupiter et al., 2011), which play a role in my 5-, 10-, and 15-year planning for the distribution of housing kitsets.


Figure 2.1.1. Map of the Pacific Islands divided into three major island groups. Adapted from Pacific Islands, by S. Foster & F. J. West, 2025, Britannica (https://www.britannica.com/place/Pacific-Islands).

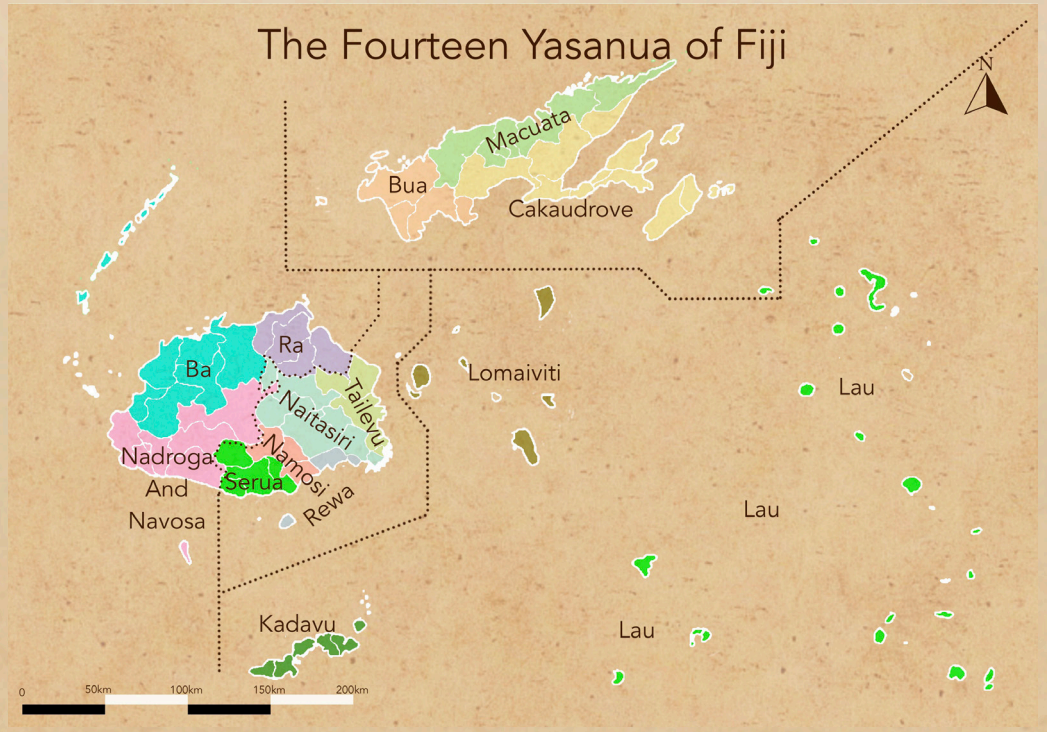



Figure 2.2.2a. Map of the fourteen Yasanua of Fiji (image created by the author).

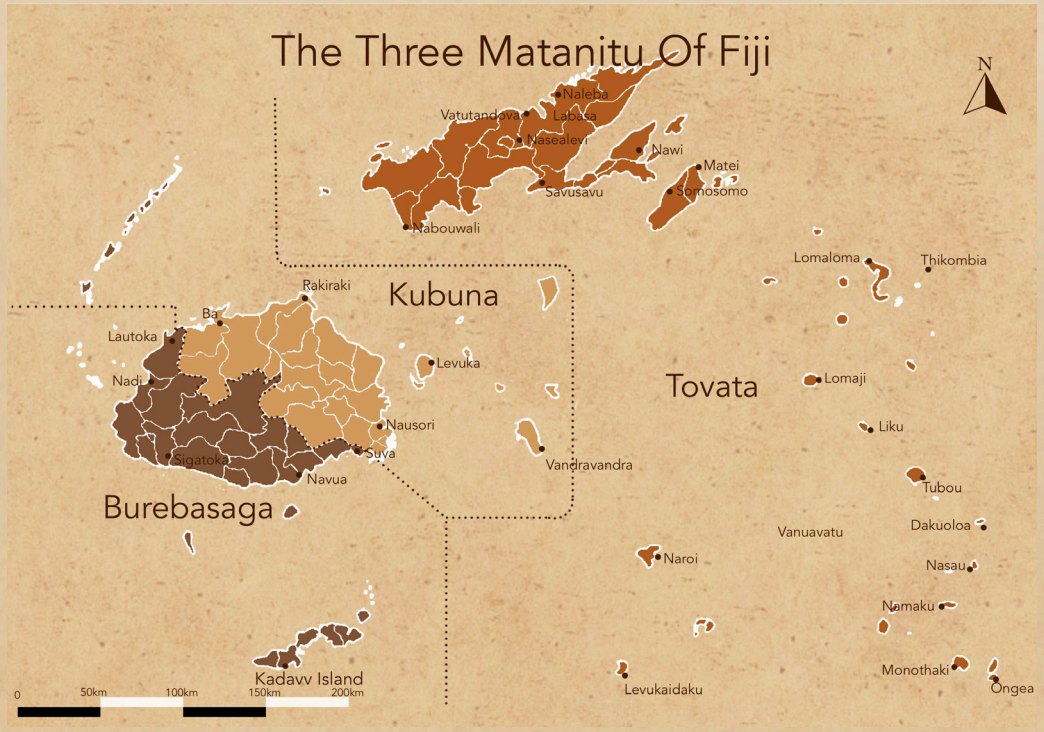



Figure 2.2.2b. Map of the three Matanitu (image created by the author).


Figure 2.3.1. Map of past cyclones from 1980 to 2016 (image created by the author).

## 2.3. Climate

Fiji experiences tropical climates, which can be divided into two main seasons: the wet summer season (November to April) and the dry winter season (May to October) (Fiji, 2024). Tropical cyclones pose a significant threat during the wet season, where Fiji faces two cyclones per year (Hossain, 2019).

The cyclone map, Figure 2.3.1, showing past cyclones from 1980 to 2016, communicate cyclone size and their pathways relative to the islands' scale. Rainfall patterns further reinforce these seasonal variations, peaking in March with an average of 234 millimetres and dropping to 64 millimetres in July (Weather Spark, n.d.). The likelihood of precipitation is highest during February, with wet days exceeding 37% (Weather Spark, n.d.). Alongside the supporting data presented in Appendix A, a topographic map is presented in Figure 2.3.2 and a map of flood-prone areas is shown in Figure 2.3.3, indicating areas that directly communicate with one another, and highlighting the lower-lying regions on Fiji's outskirts that are affected by flooding.

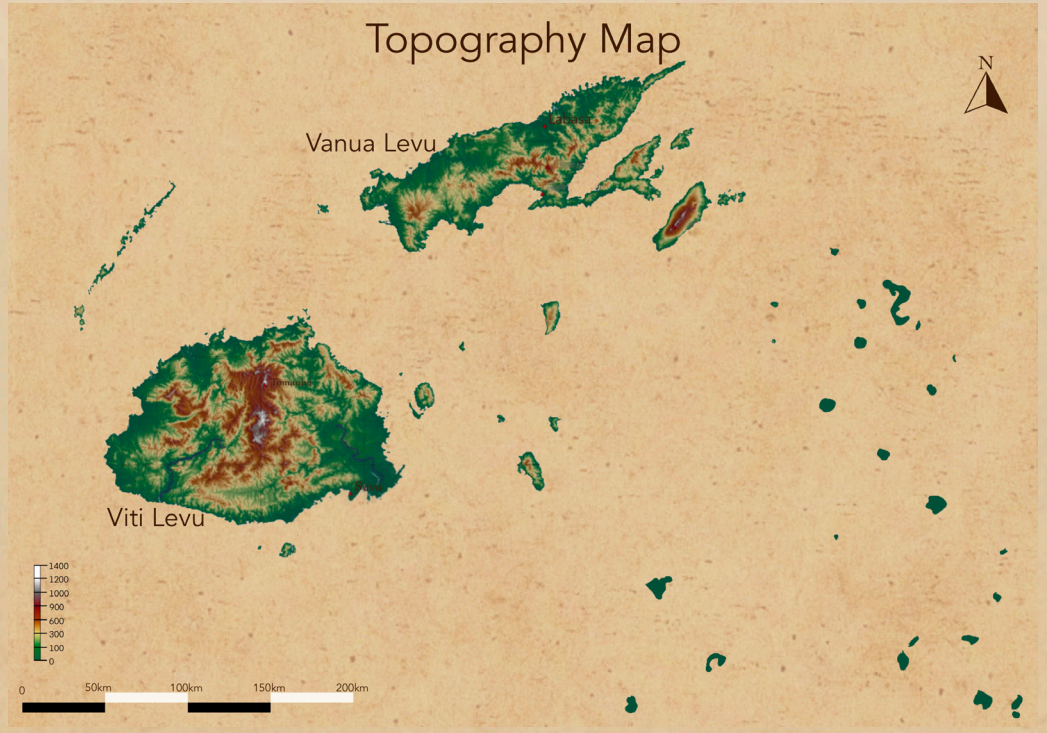



Figure 2.3.2. Map showing the topography of Fiji (image created by the author).

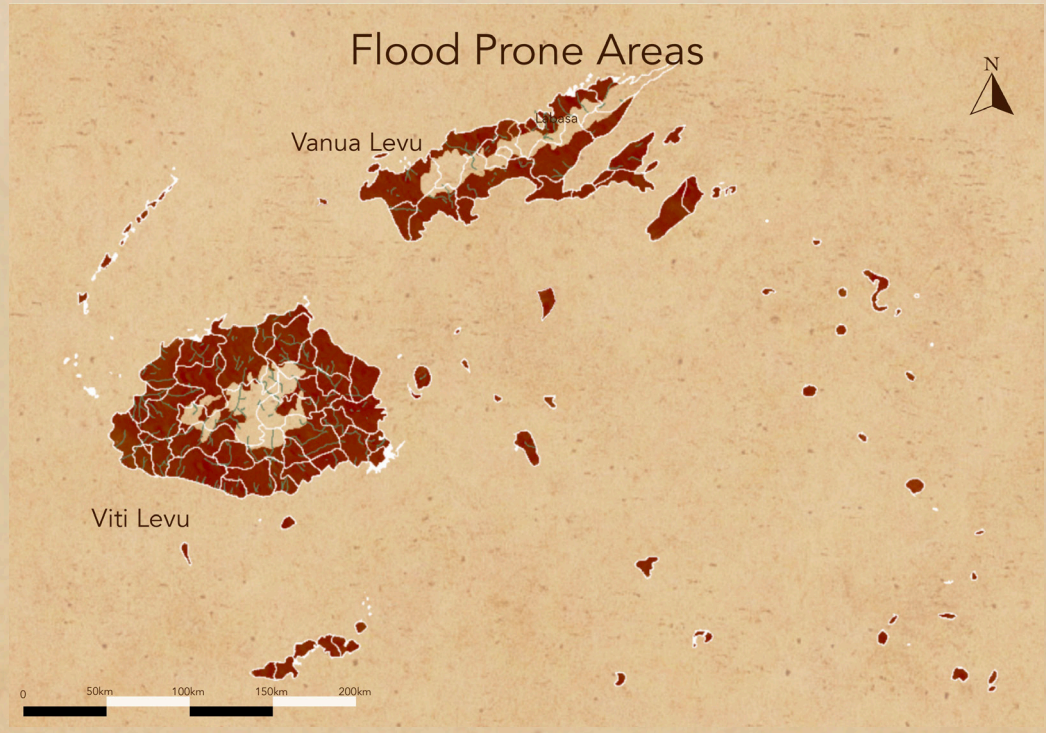



Figure 2.3.3. Map showing flood-prone areas within Fiji (image created by the author).

# 2.4. Population and Demographics

Fiji's total population is approximately 934,000, with the majority residing on Viti Levu (around 600,000 people), while Vanua Levu, the second-largest island, hosts between 136,000 and 160,000 inhabitants (Fiji Guide, n.d.b). A population map can be seen in Figure 2.4.1.

Viti Levu spans 10,389 km² and Vanua Levu 5,538 km², with Suva as the capital of Viti Levu and Labasa serving as the main administrative and population centre of Vanua Levu (Fiji Guide, n.d.a, n.d.b). Fiji's population continues to grow slowly, with an estimated annual growth rate of 0.47–0.5% in 2025 (Worldometer, 2019). However, projections suggest it will not reach one million by 2035, due to high emigration rates as locals pursue overseas employment opportunities and more stable economic conditions ("Fiji Population," 2025).

The age demographics primarily reflect a youthful population: 29.2% are aged 0–14, 65.3% are 15–64, and only 5.5% are 65 and above (Economic and Social Commission for Asian and the Pacific, n.d.). While infant mortality rates have improved, life expectancy remains low, averaging in the mid- to late 60s. This is due to non-communicable diseases such as cardiovascular conditions and diabetes (Carter et al., 2011). Additionally, workers are migrating due to low levels of healthcare, and limited rural services further constrain overall well-being and infrastructure development.

Poverty and unemployment represent key socio-economic challenges. Approximately 24–30% of the population lives below the national poverty line (Gupta, 2024), with rural poverty (41.5%) double that of urban areas (20.4%) (World Bank Group, 2021). Youth unemployment remains high at 15.25% despite a national unemployment rate of 4.2% (Statista, n.d.). The minimum wage of FJ$5.00 per hour, equivalent to NZ$3.75, highlights a significant income gap, particularly between urban centres and rural villages.

Economically, Fiji depends mainly on agriculture and tourism, with many rural households engaging in subsistence farming or small-scale market trading to supplement income (Foster & Macdonald, 2025). While the sugar industry once contributed 20–30% of GDP and supported livelihoods across both major islands (Dean, 2022), its influence has declined sharply following trade losses, rising production costs, and recurring cyclone damage (Medina Hidalgo et al., 2024). Sugar now represents about 1% of GDP (Gunathilake et al., 2020).

This demographic profile reveals how economic vulnerability, rural poverty, and health differences interconnect with climate pressures, particularly in regions like Labasa, where residents heavily rely on agriculture and small-scale trade. Figures 2.4.6 and 2.4.7 illustrate the growing divide between income groups, dependence on roadside markets, and the damaging effects of floods and cyclones on housing and livelihoods. Together, these patterns highlight the close links between poverty, economic instability, and environmental challenges within Fiji's society.

This evidence supports the need for regenerative and resilient design solutions for long-term community well-being and cultural continuity. Additional data and details are provided in Appendix B-C.

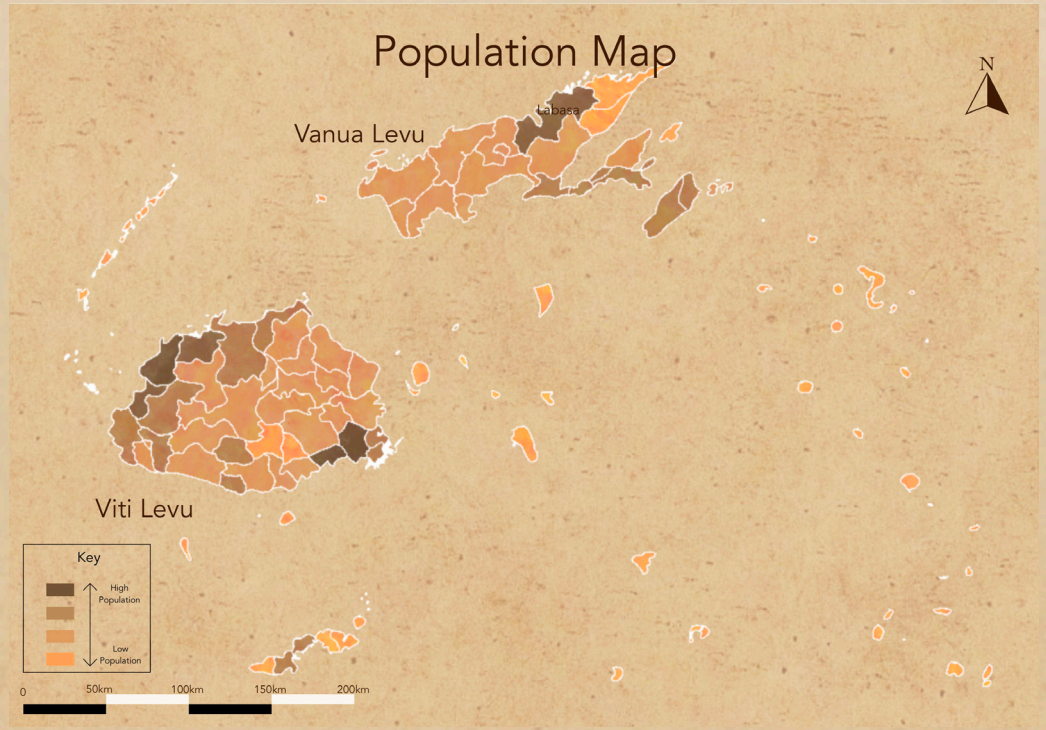



Figure 2.4.1. Map showing heavily to minimally populated areas in Fiji (image created by the author).

Figure 2.4.2. Sugar cane being delivered to the FCS sugar mill in Labasa (photo by the author).


Figure 2.4.3. The entrance of the FCS sugar mill in Labasa (photo by the author).

Figure 2.4.4. Roadside market in Labasa (photo by the author).

Figure 2.4.5. My family at a roadside market in Labasa (photo by the author).

Figure 2.4.6. Collage highlighting the effect of floods and natural disaster impacts within Fiji (image created by the author).

Figure 2.4.7. Collage highlighting the roadside markets and the gaps between higher-class and lower-class individuals (image created by the author).

## 2.5. History

Three significant periods can be examined to understand Fiji's history. The first is its early cultural underpinnings and settlement, where Austronesian and Melanesian immigrants influenced the customs, chiefly structures, and regional trade networks that still shape iTaukei identity today (Center for Excellence in Disaster Management and Humanitarian Assistance, 2023). The second is the colonial period, which began with cession to Britain in 1874, the introduction of Indian indentured labour, and the reform of land and government structures (Leckie, 2024). In addition to causing significant political and cultural divisions, this era prepared the ground for the independence movement.

The third stage is post-independence, marked by political uprisings and ethnic divisions between Indigenous Fijians and Indo-Fijians. The 1970 Constitution reinforced communal politics. Despite the rise of the multi-ethnic Fiji Labour Party, Rabuka's 1987 coups restored Indigenous dominance, and later reforms failed to end ethnic tensions (Durutalo, 2008). These incidents illustrate Fiji's hardships and tenacity in navigating political stability, ethnic diversity, and contemporary issues such as climate change.

An expanded text is available in Appendix D, and a visual timeline is shown in Figure 2.5.1.

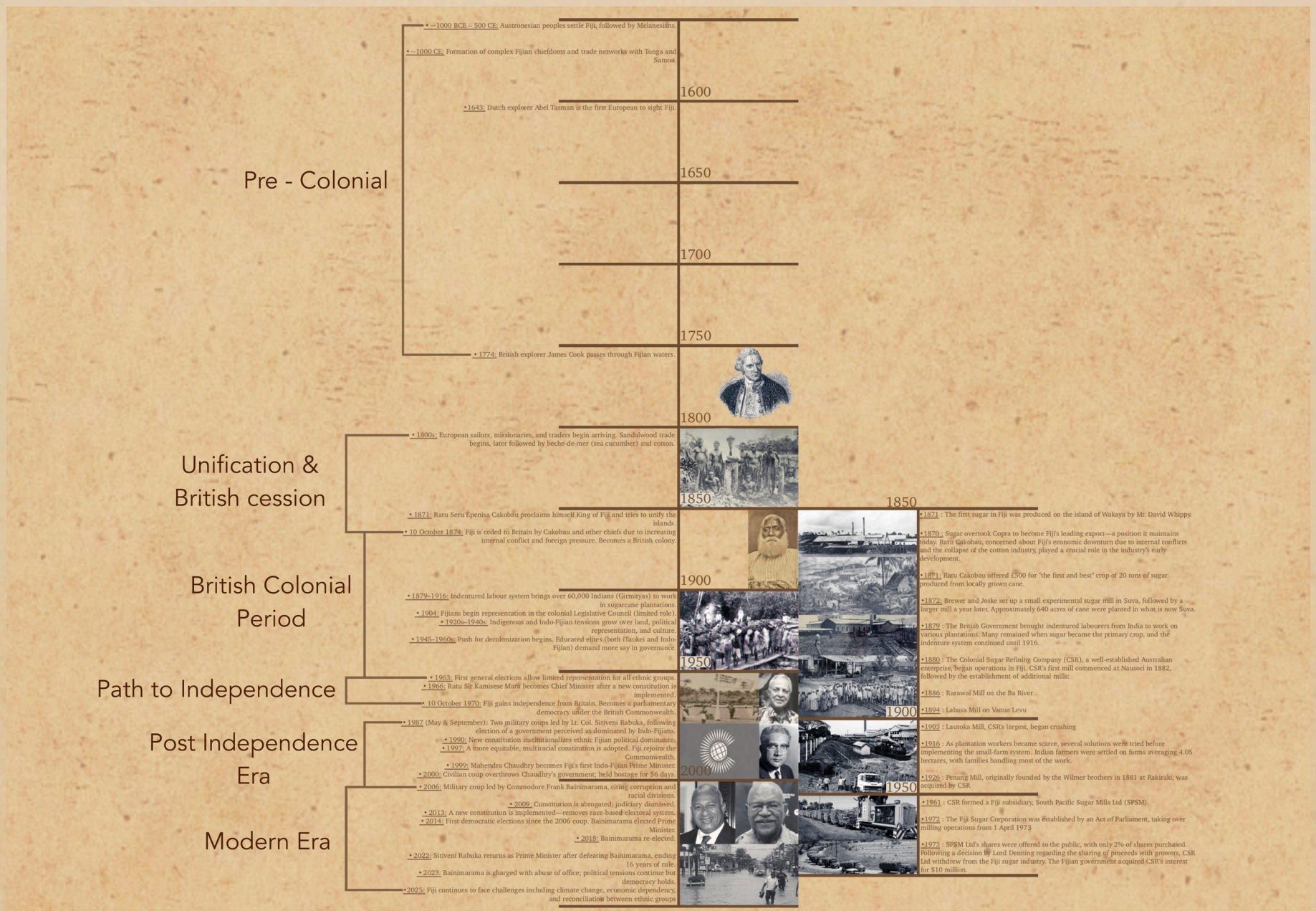



Figure 2.5.1. A timeline of key events from pre-colonial to the modern era (image created by the author).

## 2.6. Design Precedents

Design precedents relevant to this research are Nest We Grow, Naidi Community Hall, Khudi Bari, and the Cardboard Cathedral. Together, they share common objectives of community resilience, cultural grounding, and adaptability. These examples portray architecture as a dynamic system influenced by social, environmental, and spiritual relationships rather than as a static product. This way of thinking aligns with *Talia na Vanua*, which investigates regenerative, culturally based design as a means of addressing social disconnection and disaster vulnerability in Fiji.

Nest We Grow is designed by the College of Environmental Design at UC Berkeley in collaboration with Kengo Kuma. It is located in Takinoue, Hokkaido, Japan. Its programme includes growing, harvesting, storing, cooking, and composting. Naidi Community Hall, by CAUKIN Studio, is sited in Naidi Village, on the island of Vanua Levu, Fiji. Khudi Bari, Designed by Marina Tabassum, supports the community through an architecture that is lightweight, modular, and climate-responsive, developed to combat flood-prone areas. Shigeru Ban's Cardboard Cathedral is a disaster-response architecture project located in Christchurch, New Zealand.

Each project redefines the relationship between architecture and community. Nest We Grow integrates agriculture and architecture, creating a living cycle of growing, preparing, and sharing food that sustains both people and the environment (Valenzuela, 2024). Similarly, Naidi Community Hall embodies collective authorship, where design and construction become acts of cultural participation. Built through local collaboration, it reflects the Fijian value of solesolevaki, in which working and living together demonstrate how design can empower rather than impose. Both precedents reveal how architecture can nurture a sense of belonging and strengthen identity through shared processes.

Material strategies also play a key role in the dialogue. In flood-prone areas, Khudi Bari demonstrates how modular bamboo-and-steel construction can provide resilience and mobility with minimal resources (Divisare, 2025). By transforming ordinary materials into symbols of rebirth, Cardboard Cathedral demonstrates that lightness and temporality can coexist with structural strength and spiritual significance. These projects oppose Western ideas of permanence by embracing change as a chance for renewal, a key component of my own design philosophy.

Across all four precedents, the lines between internal and external connections are blurred through local materials, openness, and passive design, promoting environmental empathy. These techniques inform my goal of designing flexible spaces that blend into their environments while maintaining a strong social and cultural foundation. Ultimately, these precedents inform my understanding that architecture's regenerative capacity lies in its ability to care, adapt, and connect. Together, they reinforce the need for Fiji's resilient design to be grounded in tradition yet flexible enough to foster ecological and cultural renewal. Supporting additional information for each precedent can be found in Appendix E.


Figure 2.6.1. Naidi Community Hall. Photograph by Katie Edwards (2021). Source: "Naidi Community Hall / CAUKIN Studio," by P. Pintos, 2019, November 8, ArchDaily (https://www.archdaily.com/927976/naidi-community-hall-caukin-studio).


Figure 2.6.2. Nest We Grow. Photograph by Shinkenchiku Sha (2014). Source: "Nest We Grow," by UC Berkeley CED graduate team, n.d., Archello (https://archello.com/project/nest-we-grow).


Figure 2.6.3. Cardboard Cathedral (Christchurch, NZ). Source: "Cardboard Cathedral," by Shigeru Ban Architects, 2013 (https://shigerubanarchitects.com/works/cultural/cardboard-cathedral/).


Figure 2.6.4. Khudi Bari / Marina Tabassum Architects (https://marinatabassumarchitects.com/khudi-bari/)

# 2.7. iTaukei Vernacular Architecture

Fijian vernacular architecture expresses a living relationship between people, land, and spirituality. Core values such as veirokorokovi (respect), veiwekani (kinship), solesolevaki (collective action), and vanua (connection to land) express both cultural life and spatial organisation. These principles link social order with ecological awareness, guiding how buildings are sited, built, and lived in. This framework is illustrated in Figure 2.7.1, where the sphere of Influencers presents a structured system for designing outcomes in response to external factors.

Traditional bure forms embody a design suited to the island environment. An example of this is the Vale Leka (short house) seen in Figure 2.7.5, which uses a low triangular roof to deflect cyclone winds. At the same time, raised mounds in chiefly or spiritual buildings symbolise hierarchy and protect from flooding (Zámolyi, 2015).

Fijian design reflects ecological awareness. Traditional buildings used lashings of magimagi (coconut sinnet) and interlocking joinery instead of nails (Elkharboutly & Wilkinson, 2022). Thatching, mat weaving, and fumigation were communal and ritual acts rooted in solesolevaki, blending technical skill with cultural meaning. These traditional bure and structural designs are not just physical processes but also social, spiritual, and environmental ones that extend to earlier examples of natural disaster-resilient designs.

In contrast, Western forces have broken these ties by introducing rigid, compartmentalised structural systems and materials from outside (Ruggiero, 2023). Within the Sphere of Influencers, vernacular architecture serves as the fundamental layer for translating cultural knowledge and the adaptive design process to building future regenerative systems, and for centring the project around the traditional understanding of material and spatial organisation and iTaukei vernacular architecture.


Figure 2.7.1. Diagram of Sphere of Influencers, illustrating three stages that look at a broader scope of community and place, who, where, and why, narrowing down to the project (image created by the author).


Figure 2.7.2. Different types of traditional Fijian bures. From Reviving Fijis [sic] Traditional Architecture, by thecoconet.tv, n.d. (https://www.thecoconet.tv/coco-talanoa/pacific-blog/reviving-fijis-traditional-architecture/).


Figure 2.7.3. Bure ni Kalou. The spirit houses or temples could be recognized by their high platform and their high roof structure. From Williams, 1858, as cited in Architecture of Fiji, by F. Zamolyi, 2015, in Encyclopaedia of the History of Science, Technology, and Medicine in Non-Western Cultures (https://doi.org/10.1007/978-94-007-3934-5_10215-1).


Figure 2.7.4. Pencil sketch showing Chiefs' house (right), the standard Bure house (left) and size comparison. From Low, n.d. (https://awa.auckland.ac.nz/index.php?p=custom-browse&textid=1473).

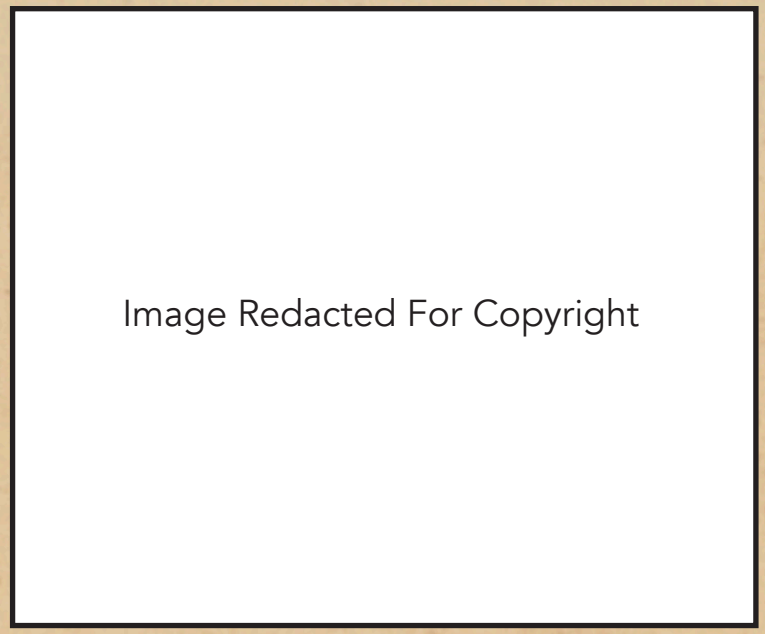



Figure 2.7.5. Vale Leka (short house) on Ra island. From Architecture of Fiji, by F. Zamolyi, 2015, in Encyclopaedia of the History of Science, Technology, and Medicine in Non-Western Cultures (https://doi.org/10.1007/978-94-007-3934-5_10215-1).

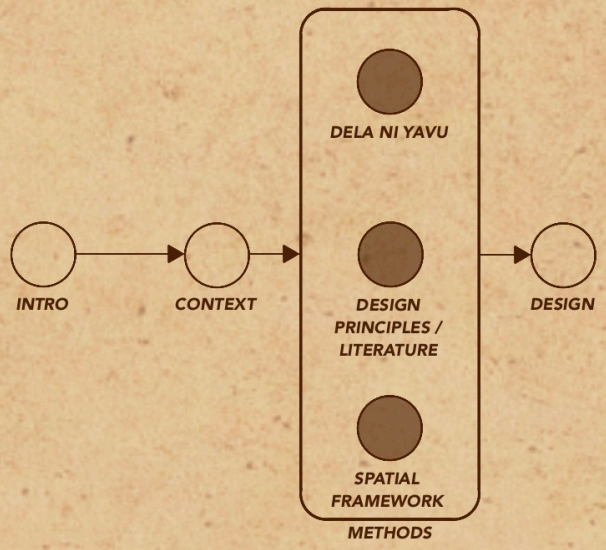
## 2.9. Summary

Chapter 2 – Context provides the project's framework, connecting Fiji's geography, climate, and culture to the need for disaster-resilient architecture, which is emerging as a primary concern. The chapter presents Fiji as a scattered Pacific nation of volcanic islands, where a large population lives in fertile lowlands, which are vulnerable to flooding. Topographic and flood zone maps illustrate how cyclones, rainfall, and climate change are regularly damaging settlements, crops, and infrastructure. This project also notes that poverty, migration, and restricted access to constructive resources elevate these issues.

In the past, colonial and Western influences transformed Indigenous relationships to land and community, replacing their adaptive and communal systems with external models that are not suited to Fiji's environment. This disconnection has led to increased exposure and vulnerability to natural disasters. On the other hand, iTaukei vernacular architecture, as expressed in their bures and spatial layout, shows resilience through lightweight design, the use of elevated structures with local materials, and a spiritual relationship to the land.

When considered together, these contextual investigations reveal the intertwined relationships among geography, history, culture, and architectural identity. They inform my research aim to redefine iTaukei design values of respect, kinship, and collective care, and to develop frameworks for new resilience principles. This realisation informs the delivery of a modular resilience hub encompassing housing, food systems, and education, increasing agency to rebuild culture and developing practical solutions for communities projected to be under threat from climate change. Architecture and space ultimately act as catalysts for recovery, self-sufficiency, and belonging.

# 3 – METHODS


DELA NI YAVU
INTRO
CONTEXT
DESIGN PRINCIPLES / LITERATURE
DESIGN
SPATIAL FRAMEWORK
METHODS

# 3 – Methods

This chapter outlines the methodological approach that guides this research. It begins by exploring *Dela ni Yavu* (The Foundation), a precedent project that created the iTaukei Design principles and provides both the cultural and theoretical underpinning of this work. In this exploration, I examine whether and how Indigenous Fijian knowledge and spatial value can inform contemporary architectural practice.

As a result, I further develop and reinterpret the iTaukei Design Principles, using them as the basis for an iTaukei Spatial Framework. This tool provides guidance and serves as a rulebook. The iTaukei Spatial Framework informs spatial arrangement, material use, and relationships with communities.

The methods developed are direct experience, reflection, evaluation through collages and experimentation with supporting/contrasting literature. Testing comes to mean observing the outcomes and implications of these activities and, collectively, this contributes to a framework developed by practice, culture, and environment.

# 3.1. Dela ni Yavu

*Dela ni Yavu* (The Foundation) is a design research project by Ratu Epeneri, conducted within Unitec in New Zealand. The project aims to reconnect iTaukei urban communities with their cultural roots. The project addresses the growing concern about the erosion of traditional values and practices in Fiji's urban areas. The project is situated in Suva and aims to create a cultural centre that revitalises iTaukei identity through education and design (Korovakaturaga, 2021).

To achieve a culturally grounded design, the project developed a design framework influenced by the exploration of the Te Aranga design principles, a set of values rooted in Māori identity and history (Paul, 2017). Evaluating and exploring the origins of the Te Aranga design principles, a cultural design framework for Fiji, the iTaukei Design Principles were developed. These principles emerged from researching the sociocultural challenges faced by iTaukei communities through, for example, interviews and literature reviews that highlighted shared concerns about cultural decline and identified key iTaukei values (Korovakaturaga, 2021).

The values that emerged were Veirokorokovi (respect), Veiwekani (kinship), and Solesolevaki (collective action). These were then embedded in principles such as iSevusevu (Service), Yavutu (Ancestral village/Family/Ancestral village), Mareqeti ni yau Vakavanua (cultural landmarks and sacred sites), Maroroi ni Veikabula (protection of the natural environment), Nabu (storytelling), Veivakaturagataki (status or historical structures) Each principle anchored an architectural approach to cultural protocols, ancestral belonging, environmental stewardship, and social order. The framework then guided the design of the cultural centre, providing spaces for cultural learning, practice, and community gathering, ultimately aiming to preserve and strengthen iTaukei identity within Fiji's urban landscapes.

The significance of the project lies in its ability to ground architecture in cultural identity. Just as *Dela ni Yavu* (the foundation) signifies genealogy, history, and belonging, the project symbolises the base upon which future design frameworks for Fiji can be built. It provides a platform for intangible cultural values to become tangible through spatial strategies, and for architecture to transcend form and function, serving as a vessel of memory, identity, and continuity. This sense of grounding serves as a reminder that the built environment can act as a living archive of tradition, ensuring that future developments reflect the essence of iTaukei culture and ways of being.

For *Talia na Vanua*, these principles are crucial. The project Dela ni Yavu presents the iTaukei Design Principles and their application, as illustrated in Table 3.1.1.

I have drawn upon these principles and communicated my understanding of how these values are visually represented, as shown in Figures 3.2.1-3.8.1. The cultural principles are then derived into either spatial or process-related design principles. iSevusevu is concerned with vanua as a space of relation and sets an expectation for community engagement that is collaborative. Yavutu is grounded in origin, anchoring identity, belonging, and the connection between people and land, and Veivakaturagataki respects cultural social order and hierarchical principles.

The framework enables me to situate *Talia na Vanua* within a lineage of Indigenous design thinking, ensuring that my architectural outcomes resonate with both contemporary needs and traditional wisdom. It provides a foundation for how I interpret spatial hierarchies, environmental relationships, and communal connections within my design. Ultimately, the significance of Dela ni Yavu to my project lies in its ability to provide direction, depth, and cultural integrity, guiding my work to stand as a continuation of the dialogue between identity, architecture, and regeneration.


Table 3.1.1. List of iTaukei Design Principles, outcomes and what it looks like to successfully integrate these principles from applications (Korovakaturaga, 2021, p. 123).

# 3.2. Nabu

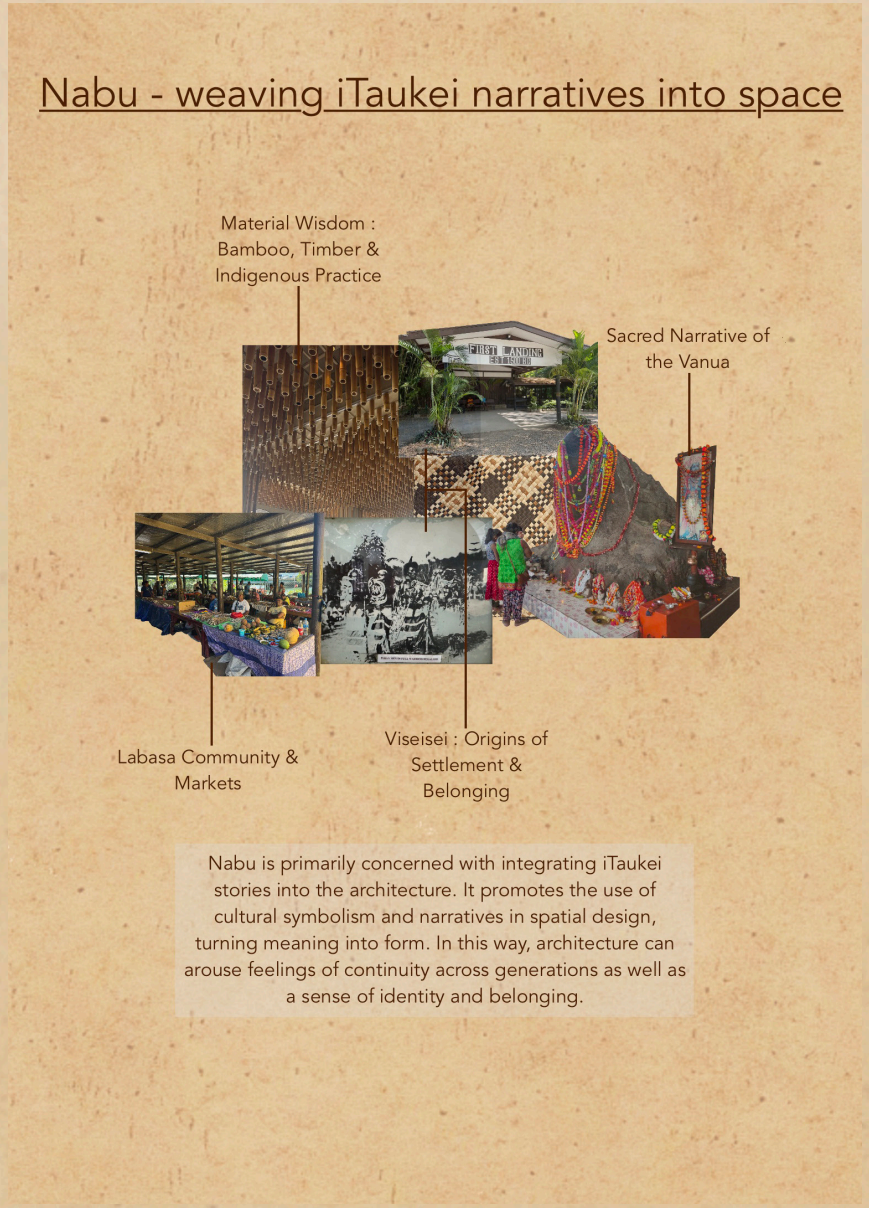



Figure 3.2.1. Visual collage illustrating the design principle Nabu (image created by the author).

Nabu presents the value of interconnecting iTaukei narratives into space. The principle guides design approaches that embed Fijian cultural identity within architecture. The collage communicates the headings - Sacred Narratives of the Vanua, Viseisei: Origins of Settlement and Belonging, Labasa Community & Markets, and Material Wisdom: Bamboo, Timber & Indigenous Practice. Each of these topics in the collage plays a role in encapsulating the historical knowledge and customs of its local community, thereby embodying Nabu as one of the many core values.

The heading Sacred Narratives of the Vanua within the college features the Naag Mandir in Labasa, a site deeply rooted in local mythology and everyday spirituality. It reflects how stories shape architecture and vice versa. This temple sits as a layered space, respected and shared by the Fijian Indian community, and is believed to be a living organism continuously growing (Jacobsen, 2023, p. 334).

Viseisei: Origins of Settlement and Belonging showcases Vuda (Viseisei), where the first Fijians arrived around 1500 BCE (Simmons, 2017). This historical narrative is essential to iTaukei identity, creating a strong spiritual and ancestral bond with the land (vanua), a place of origin where the stories begin. Additionally, a picture of Fijians dressed traditionally emphasises the generational continuity of their culture. These are not just visual references but embody the physical manifestation of values and identity in a particular place.

The Labasa Community & Markets is not just a location or a business hub; it has expanded into a social and cultural hub where relationships are built. Local markets are also a symbol of resilience and serve as an anchor during social unrest, economic downturns, or natural disasters. Markets help people recover and re-establish their daily lives by providing access to necessities and generating revenue (Faisal, 2024). Community is at the heart of iTaukei life, and markets are the pulse of a town.

The section on Material Wisdom: Bamboo, Timber & Indigenous Practice highlights traditional bamboo integrated into architecture. Bamboo is sustainable, locally available, and connected to Indigenous practices, embedding identity into its structure.

## Architectural Application/ Implications

The application of nabu positions design as a cultural act that interweaves iTaukei narratives, memory, and identity into lived space. Nabu frames buildings as collections of social values and ancestral stories that maintain continuity between people and the vanua, rather than treating them as neutral structures.

The Naag Mandir in Labasa exemplifies how architecture embodies sacred narratives, evolving as a living organism and shaped by the community's beliefs and traditions. This highlights that designs should not be static but layered, allowing form, orientation, and thresholds to hold meaning beyond function. This is further reinforced through connections to traditional Fijian villages, where the vale (house) follows a system of respect and spatial order expressed through intentional placement and organisation rather than random arrangement.
Even though it is just one large open space, Turner (1988) points out that the inside of a Fijian home has an internal distinction of "upper" (colo) and "lower" (ra), where the lower is connected to daily, feminine activities and the upper is associated with the sacred, chiefly, and male domain (Turner, 1988, p. 424). This division closely represents the human body, where the feet in contact with the ground reflect a lower, less sacred position, and the head is elevated, signifying a higher, more sacred position (Turner, 1988, pp. 424-425), thereby infusing meaning into each space.

Markets in Labasa further illustrate the concept of nabu as a form of resilience. Beyond business, they serve as social pillars in times of disaster, representing unity within the community. This resilience is critical when set against the backdrop of Fiji's rural and village lifestyle, where the precarious nature of the habitat plays a significant role. Precarious habitats are homes, often built by low-income families without legal land titles, that are vulnerable to poverty, natural disasters, and climate change. Typically, light, temporary structures are built in clusters on the outskirts of towns (Caimi et al., 2017), allowing families to relocate and adapt as needed. In fragile conditions, markets operate as stabilising anchors, providing access to essential goods and a sense of continuity when housing is uncertain. Designing shared spaces, such as gardens, kitchens, or courtyards, within housing models can extend this dual resilience to social and spatial everyday life, thereby strengthening the bond between shelter and livelihood.

Finally, the use of cultural materials like bamboo and timber situates buildings within ecological rhythms, embedding identity in the structure itself. Through these applications, nabu becomes a design principle that cultivates meaningful, resilient, and culturally embedded spaces.

## Project Application

Nabu will be expressed through the spatial and spiritual layering of my proposed central hub, which unfolds across different structured levels. The first level, dedicated to healthcare, is grounded directly to the earth. This connection represents stability and care, acknowledging the body as the foundation of well-being. Above this, the second level is reserved for education and knowledge, positioned between the ground and the sky. This middle layer symbolises balance, a bridge where learning braces the community and prepares it for growth. Finally, the third level opens into a green space. Elevated above, it embodies spiritual and cultural connections. Together, these zones are not only stacked vertically but woven into a holistic system where body, mind, and spirit are interlinked.

*Talia na Vanua* will also incorporate a market, serving as a living symbol of resilience that reinforces community bonds and presents strength in times of crisis, while supporting one another through exchange. By embedding a market into the architecture, the building extends beyond service provision. It becomes a platform for resilience, where healthcare, knowledge, and food systems are reinforced through everyday social and economic activity.

# 3.3. iSevusevu


Figure 3.3.1. Visual collage illustrating the design principle iSevusevu (image created by the author).

The recognition of land, people, and shared responsibilities is reflected in iSevusevu, which means building together and living together. Using concepts of group gathering, collective action, and cultural celebrations, the collage effectively illustrates key aspects of this idea, guiding my architectural response to be founded on belonging, reciprocity, and co-creation.

Binding to Vanua: Land, Identity and Responsibility is portrayed through the image of a Fijian village, showing bure structures and a landscape that reflects hierarchy, spatial organisation, and intergenerational knowledge systems. The height difference in structures represents respect and social hierarchy, while traditional farming practices demonstrate a sustainable relationship with the land. This further emphasises the value of vanua, which extends beyond physical boundaries to encompass people, environment, culture, and spirituality.

Everyday Exchange: Talanoa, Trade and Togetherness is captured in the yaqona (kava ceremony) image. Yaqona is also closely tied to the welcoming ceremony, which holds significance and acknowledges the distance visitors have travelled, followed by speeches and a celebratory feast (New Zealand Ministry for Pacific Peoples, n.d.). This is a space of dialogue, decision-making, and connection. This collage highlights the significance of talanoa and is a key aspect that informs iSevusevu as a design methodology. It involves more than just telling stories; it consists of developing mutual trust, paying close attention, and collaborating to create.

Designing with the Community: Listening, Co-Creating, Belonging is reflected in the image of communal earth cooking using the lovo. The importance lies within the process rather than the outcome; it is a process that brings people together through shared labour and time. Traditionally, the significance of a lovo was as part of a victory ceremony introducing collaborative cooking and feasting. The main principles that are drawn out of a lovo are veiwasei (sharing), duavata (oneness), semati ni veiwekani (strengthening relationships), veinanumi (being considerate), veikauwaitaki (caring) and veivukei (helpfulness) (Ramacake, 2022). These moments of collectivity form the social fabric of iTaukei life. The concept of working together, listening, and valuing everyone's input influences how I see the architectural process itself as a shared authorship.

Architectural Application/ Implications

iSevusevu symbolises the act of acknowledging land, people, and shared responsibilities. It is based on the idea of building and living together, and it has influenced my architectural style by promoting co-creation, collaboration, and a sense of belonging. At the heart of this concept is the idea of vanua, which encompasses culture, spirituality, and community. While farming methods demonstrate a sustainable relationship with the environment, Fijian village layouts and bure arrangements reflect hierarchy, respect, and intergenerational knowledge.

Traditionally, building layouts revolve around the rara (village green/ceremonial ground), which serves as the central hub. Surrounding the rara are the bure and other village buildings, arranged in structured layouts that symbolically represent depth and value. The closer a building is to the rara, the greater its significance. "In Fiji, the central feature of any village is the valelevu (big house/chief's house), the valenibose (meeting house) and the rara" (Igglesden, 2019, p. 146). This hierarchical layout bleeds through onto the built form where different building types are represented, each with its own shape and meaning. Social height is correlated with physical height: the higher the house platform, the higher the social status (Sakagami et al., 1998, p. 97), and therefore the closer to the centre of a village it is situated.

Inherently, it is essential to remain grounded in the cultural and historical roots of a chosen location. This entails critically confronting colonial and Westernised frameworks that have systematically undermined traditional knowledge systems and architectural forms, and opposing their dominance. It is crucial not only to re-understand but also to re-value the relevance of tradition within modern contexts, which involves recognising and honouring the country's cultural diversity while avoiding the risk of generalising the voices and customs of iTaukei people.

Project Application

iSevusevu informs *Talia na Vanua* through the creation of collaborative spaces where land, labour, and community intersect. Rara (the central green space) becomes the anchor for this principle, acting as both a communal ground and a site for shared activities. It provides space for growing, making, and gathering, ensuring that collaboration is not only symbolic but lived through everyday practices. This expression also highlights the significance of each building and plays a crucial role in the site's layout.

This value involves observing how communities and people interact with and utilise each space, creating affinity and user-friendly spaces that can be adapted for diverse groups, including younger and elderly individuals. It highlights the theory behind accessibility and cultural flow within a site.

# 3.4. Yavutu

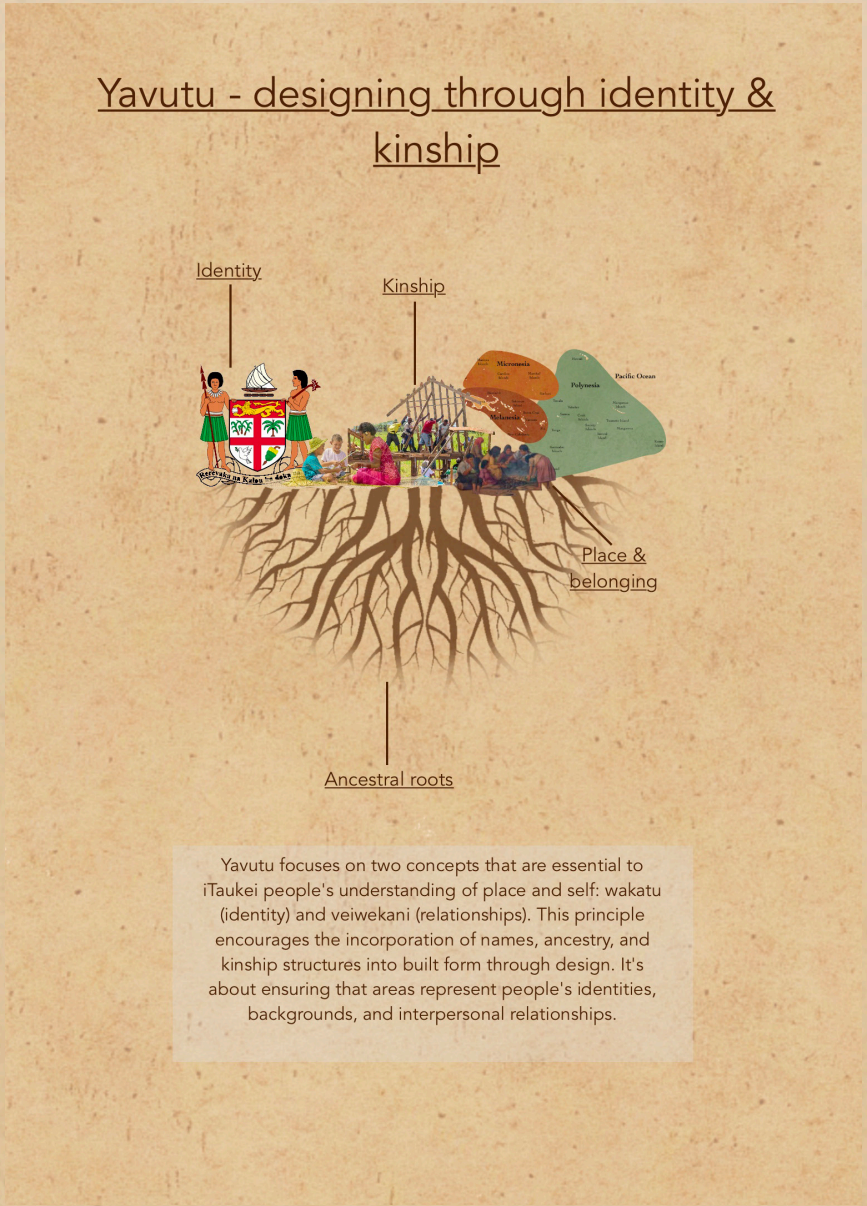



Figure 3.4.1. Visual collage illustrating the design principle Yavutu (image created by the author).

Yavutu is the expression of kinship, value, and ancestry connectivity. The collage conveys these ideas and reflects how identity, place, and community interweave to form the foundations of architecture that belong to both culture and society.

Isa Sabai ni Vakatakilakila – the Shield of Identity is represented by the shield from the Fijian flag, a powerful emblem that carries colonial traces, symbolises agricultural prosperity, and embodies peace (Johnson, 2024). This layered symbolism acknowledges Fiji's trajectory through time, as well as the struggles, strengths, and hopes. In addition to being political, this emblem serves as a reminder of the complexity of identity and of how built form can serve as a canvas for cultural storytelling. By layering past and present meanings into materials, forms, and spatial sequences, architecture becomes a narrative of who we are and where we are heading.

Veiyaloni – Interwoven Bonds of Kin and Space show people building together, reflecting the collective spirit embedded in Fijian society. Within everyday acts of working together side by side lies the important observation that it is about the journey/processes rather than the outcome. Traditionally, kinship ties, often derived from marriage or ancestral heritage, shape villages, making most of the population related. However, outsiders who adopt communal values can also be welcomed, expanding the concept of "home" and "family" from a single household to the entire village and public spaces that comprise a family (Evason, 2016). This elevates value in space and time by embedding co-creation and communal labour into the design methodology. It ensures that the architectural outcome reflects not just function, but also shared identity and purpose, tracing back to family or village. This transitions to 'Ni Yaco Mai – Where We Arrive, We Belong,' which expresses the open-hearted nature of Fijian hospitality: My home is your home. It speaks to values of shared space, trust, and emotional safety which these collectiveness and culturally rooted values are traced back to ancestors.

Echoes of the Tubutubu refer to our ancestral roots and the deep respect we hold for those who came before us. This guides how land is not seen as vacant ground but as a living entity carrying memory, spirit, and responsibility.

## Architectural Application/ Implications

By applying Yavutu in architecture, structures become both functional spaces and cultural narratives by establishing design in kinship, ancestry, and belonging. Symbolic materials and facades, such as shield-like motifs or agricultural patterns, can serve as protective layers and narrative devices, expressing identity.

Identity plays a significant role within Fiji's community and it is at risk of being lost due to colonial and Western influences. Over time, urbanisation and growth have driven the adoption of modern building practices and materials that often ignore or override traditional knowledge (Ruggiero, 2023). Retaining the identity and sense of belonging of Indigenous people is closely linked to their cultural heritage; therefore, traditional customs, ceremonies, languages, and artistic expressions are integral components of cultural identity and directly improve the well-being of the people as a whole (Alam, 2025). Furthermore, cultural practices often incorporate traditional knowledge systems related to sustainable living, environmental management, and health (Gorenflo et al., 2012, as cited in Alam, 2025).

Through rapid development in Fiji, Western influences have slowly eroded the cultural values and identity that comprise Fiji and its iTaukei people. By contrast, when housing clusters are grouped around common courtyards, kitchens, and gardens, they promote co-creation and daily acts of teamwork. This is an example of kinship in action. The site is treated as a living entity, utilising local materials to anchor the architecture in place, orientation directed by the sun and winds, and structures raised on platforms to honour natural flows. When combined, these methods produce areas that foster belonging, reflect group identity, and revitalise the land, culture and sustainable practices.

## Project Application

*Talia na Vanua* applies the principle of Yavutu by grounding the design in identity, ancestry, and a sense of belonging. It seeks to regenerate cultural and historical values while resisting the challenges posed by Western influences. The design highlights stories of place and people, making architecture a vessel of identity that reaffirms connection to land and community.

Through this approach, I draw from historical and cultural knowledge to shape the building with modern techniques, ensuring that while the form evolves, its significance is retained. Inspiration is drawn from traditional bures, which offered solutions to climate change, promoted resilience, and meet community needs that remain relevant today. By integrating local materials, collective building practices, and principles of place and belonging, the project bridges the gap between tradition and modern structure, culturally anchoring technology.

# 3.5. Mareqeti ni Yau Vakavanua

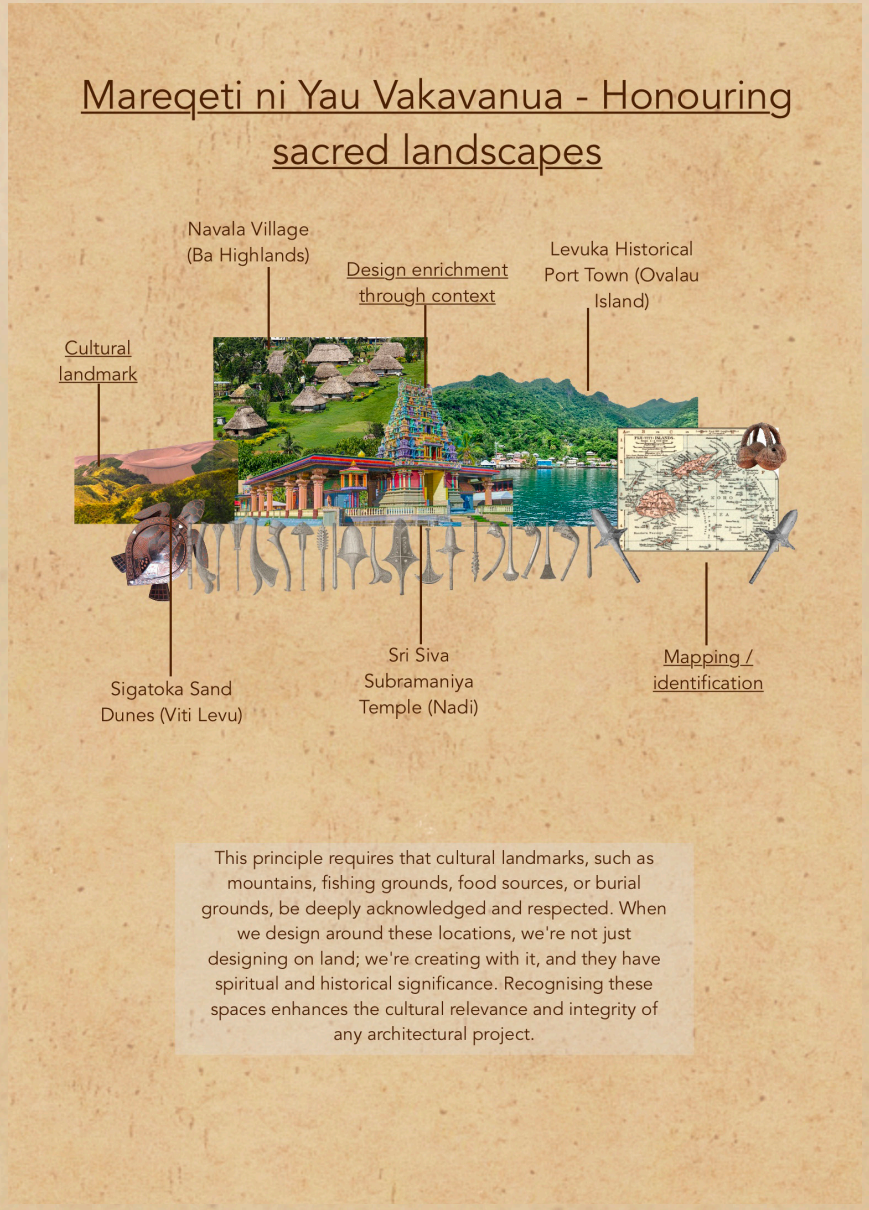



Figure 3.5.1. Visual collage illustrating the design principle Mareqeti ni Yau Vakavanua (image created by the author).

Mareqeti ni Yau Vakavanua – Honouring Sacred Landscapes is a principle that highlights stories, spiritual depth, and cultural meaning. This value extends beyond functional and site boundaries, engaging with the land through respect, recognition, and cultural sensitivity. The collage illustrates this through sacred sites and historical landmarks that symbolise the deep ties between people, place, and belief. This value presents a broader view of interconnected areas that represent the islands as one and expresses how all body parts connect to form a whole.

Spiritual Landscapes of Fiji, represented by the Sigatoka Sand Dunes, highlights how landscapes are more than physical formations that change by the day. As one of Fiji's most significant archaeological sites, these dunes hold ancestral burial grounds and cultural memory (Burley, 2005). They are reminders that we walk in history.

Embedded cultural context is evident in the Sri Siva Subramaniya Temple in Nadi. The temple is an expression of Indo-Fijian identity, visibly embedded in the urban and spiritual fabric, and is one of the largest in the southern hemisphere (Shubham, 2025). The building is a form of cultural storytelling through scale, form, and colour. The temple showcases how culture is not something to be represented abstractly. However, it is physically embedded in the architectural languages of materials, rhythms, and symbolic references that reflect the people it serves.

Tracing Belonging Through Land communicates the importance of recognising where we are, who came before us, and where we belong. This involves mapping the emotional, spiritual, and historical layers of a place. In this collage, the inclusion of Navala Village, Levuka Historical Port Town, Sigatoka Sand Dunes, and Sri Siva Temple strengthens the narrative by grounding it in real, significant places that represent different parts of Fiji's diverse identity. Each site plays a role in accomplishing an understanding of the site and community.

## Architectural Application/ Implications

Applying these values architecturally means creating with the land rather than forcing it. Planning a site becomes a listening exercise that recognises the ecological, historical, and spiritual narratives that are already there.

Examples of these can be seen in the different types and structures of traditional bure. Historically, the word bure translates to men's houses, temples, or chiefs' houses. In modern times, the term is generalised to all types of traditionally constructed dwelling houses (Zamolyi, 2015, p. 15). Both the natural and built environments deeply influenced the placement and design of the Bure Kalou (spirit temple). The land beneath was raised to increase its height and spiritual significance, strengthening its connection to Kalou Ou (God). Males frequently lived separately in Bure ni Sa (men's house), while women had their own area (Zamolyi, 2015). These bure were typically found across Fiji in small village layouts, and each was layered in respect to its location on the land.

Vale Leka, also known as the Short House, is an architectural solution designed to withstand high winds in areas prone to natural disasters. Structurally, the building features very low walls (60cm) secured with stones and the roof is built directly on the ground, resulting in a triangular shape (Zamolyi, 2015, p. 12). This enables the house to work in harmony with the surrounding terrain and context, and to withstand the tropical storms common in coastal regions and low-lying islands. These houses, commonly found on Ra Island and in several coastal areas within Fiji, are seen throughout the Pacific islands, and can also be found in Hawai'i.

These plans were an early example of disaster-resistant architecture, designed in accordance with the land and its spatial context. Through symbolic layering, spatial rhythm, and material selection, architecture becomes an extension of the land's story by mapping and embedding these narratives within it. Therefore, Mareqeti ni Yau Vakavanua is very similar to iSevusevu, offering design as a sign of respect, inclusion, and continuation of the sacred.

## Project Application

Mareqeti ni Yau Vakavanua in *Talia na Vanua*, is about respecting, protecting and acknowledging the history embedded within it, ensuring that design grows out of its cultural and ecological context. The site's connection to the timber mill is symbolic, as it speaks to the continuity between building and two industries that have historically sustained the community, forestry and the sugar industry. By weaving these narratives into the design, the building acknowledges the complex histories of labour, trade, and cultural identity, while reinforcing the community's role in shaping its future.

Looking beyond the site, my proposed kitset system is intended to be distributed across Fiji and potentially to other islands in the Pacific. Each kit is designed with adaptability at its core, allowing it to be formed around the different sites while respecting their cultural and ecological significance. This ensures that the architecture is not a fixed solution, but a flexible framework that can protect, regenerate, and empower communities across diverse island contexts.

# 3.6. Maroroi ni Veikabula


Figure 3.6.1. Visual collage illustrating the design principle Maroroi ni Veikabula (image created by the author).

Maroroi ni Veikabula – Design with the Life of the Land is the principle of understanding that humans and the environment are one. The value promotes exchange, care, and respect for the land. The collage illustrates this through highlights of environmental awareness, traditional knowledge, and regenerative design, which shape and direct a project toward a positive environment.

The natural environment reflects the importance of protecting flora and fauna, highlighting that our ecological assets are a part of our living organism. By understanding and respecting our environment, we can uncover its rhythms and systems, whether to protect or enhance it, and work in harmony with one another.

iTaukei Environmental Practices demonstrate conventional gardening and farming practices grounded in balance, observation, and seasonality. Traditional farming is about uncovering our roots and representing systematic farming methods that work in harmony with the surrounding contexts.

Cultural Integration represents materials and systems that align with place, such as bamboo, coconut fibre, or clay. Incorporating locally available materials with Indigenous significance embeds cultural and traditional techniques within the built form. Using what is already part of the land also reduces environmental impact and honours knowledge passed through generations. Sustainable Architectural Strategies are highlighted through the concept of zero-waste systems, such as utilising wood chips (Chaudhary, 2016) and hog fuel (Singh, 2009) for FSC-certified boilers. This approach supports circular economies, reduces environmental strain, and aligns with Fijian principles of not wasting what nature provides. It is an opportunity to embed systems that cycle materials, water, and energy within the architecture itself.

Architectural Application/ Implications

The application can be seen in the embedding of regenerative systems that both protect and replenish the environment. Prioritising local ecological foundations calls for restorative land use, resource efficiency, and cultural regeneration. These three main topics help transform closed, defined areas into multifunctional spaces that harmonise aesthetics, functionality, and efficiency (Akintuyi, 2024, p. 4). This bleeds into layering crops, helping to reduce water usage. Implementing hydroponic and aeroponic systems that circulate water enriched with nutrients directly to plant roots can also save up to 95% of water (Kalantari et al., 2018, p. 43). Lastly, *Talia na Vanua* presents applications for traditional foods and plants that are tied to growing, holding, and cultural and religious beliefs.

Traditional Fijian agriculture centres around crops like tavioka (cassava), dalo (taro), and yams, grown through "multi-cropping [that] ensured that a variety of crops was simultaneously grown at any one time to allow continuous food availability" (Veitayaki, 2002, p. 396). This way of farming is closely connected to the qoliqoli system, which is a traditional way of managing land and sea. It illustrates how Fijians view the land, ocean, and community as interconnected and interdependent. Farming is not just a means of survival; it encompasses broader ecological and cultural systems:

> Indigenous Fijians lived in villages in defined social units that were the basis of all social groupings and activities. "Sharing with relatives ensured that the resources were efficiently used and that people looked after each other in times of need. (Veitayaki, 2002, p. 399)

Practices such as solesolevaki (communal labour) demonstrate how food production is closely tied to collective responsibility, reinforcing community ties and sustaining both people and place.

A good example of how organic materials are utilised in construction is the traditional bure, which was built entirely without nails or modern carpenter joints. Therefore, it relied on timber pieces, natural lashings, and simple grooves or V-shaped cuts to connect structural elements. Construction began by placing wooden posts either directly into the ground, called yavu. The framework was then assembled with wall plates (often made from bundles of reeds tied and threaded onto a bamboo frame or woven bamboo mats), ridge beams and posts, all securely lashed together using strong lianas (forest vines) and magimagi (coconut sinnet) (Zamolyi, 2015, pp. 21–25).

Lastly, fumigation was performed by burning wood inside the house for approximately five to seven days, serving both as a pesticide retirement method and a spiritual cleansing ritual. The dual action of both the technical and the spiritual reveals how traditional practices embed holistic worldviews that are often absent in contemporary construction.

Project Application

Maroroi ni Veikabula is evident in both the way the building is constructed and how it interacts with its surrounding environment. The structure utilises bamboo, pine timber beams, timber lashings, and masi weaving which are natural materials, locally available, and tied back to traditional knowledge. These choices reduce environmental impact while preserving cultural practices. A modular building kitset is designed for disassembly and reconstruction, enabling the architecture to adapt to future needs and be rebuilt with minimal waste. This approach enhances the value of land and resources, securing resilience and sustainability, while working in harmony with the land rather than opposing it.

I have also thought about how the building supports life year-round. Vertical gardens will grow food and create habitats for pollinators, while indigenous plants will be protected and showcased on site. The design also incorporates zero-energy conservation systems such as composting bathrooms, rainwater collection, natural ventilation, and water tanks, ensuring resources are cycled and reused within the community.

# 3.7. Solesolevaki


Figure 3.7.1. Visual collage illustrating the design principle Solesolevaki (image created by the author).

Solesolevaki – Building Together, Living Together is the value of collective spirit and support, where the strength of the group lies in unity, shared labour, and mutual care. It is a way of living and working that ensures no one is left behind. The collage captures this through cultural expressions of gathering together.

Communal Gathering represents multi-functional spaces where all are welcome, and events like eating, sleeping, making, and exchanging ideas can occur. A single function does not define these spaces but, instead, they adapt to the community's needs. The aim is to embed these adaptable communal spaces into housing and community layouts, fostering connection, growth, and inclusivity.

Collective Action is about working in harmony, creating and developing together toward common goals, rather than just working side by side. It reflects the iTaukei ethic of incorporation (Fiji Office of the Prime Minister, 2025), where the process is as important as the outcome for overall growth and development. This principle involves design processes that engage community members in decision-making and construction, fostering a sense of ownership and shared responsibility over the built environment.

Cultural Celebrations showcase traditional dances, ceremonies, and rituals. These expressions carry a rich history, identity, and a sense of belonging (Hansen, 2020). These events are not only cultural performances but also active acts of continuity, reinforcing shared values and social bonds. Taking inspiration from the rhythms, spatial arrangements, and visual languages of these celebrations helps create culturally significant spaces throughout space and time. This also helps to reinforce ancestral ties and values from the past into the present, and acknowledging our descendants showcases a form of belonging.

## Architectural Application/ Implications

Solesolevaki aligns with iSevusevu, acknowledging and respecting the people and relationships that shape a place by integrating spaces for gathering, encouraging collective participation, and designing for cultural expression. The aim is to create environments that strengthen community resilience, foster unity, and reflect the living culture of those who inhabit them. This principle informs us that designs should not only apply to people but also be built with them, reinforcing the interconnectedness of space, identity, and shared purpose.

## Project Application

Solesolevaki informs Talia na Vanua through inviting spaces that cultivate cultural celebration and Indigenous practice. Functions such as kava ceremonies and earth cooking will be situated within the exterior context of rara. They will be located centrally at the site's entrance, where participants can engage in traditional welcoming ceremonies, followed by shared dining. This reflects the collective, cultural and open-handed nature of Fiji's community.

On my site, which sits on the grounds of a local timber mill, Solesolevaki extends into the community's economic and material life. The mill becomes more than just an industrial site and is reframed as part of a circular economy, where local resources and skills are combined into collective building. Through this approach, the project not only sustains livelihoods but also embodies the ethic of building together and living together.

# 3.8. Veivakaturagataki

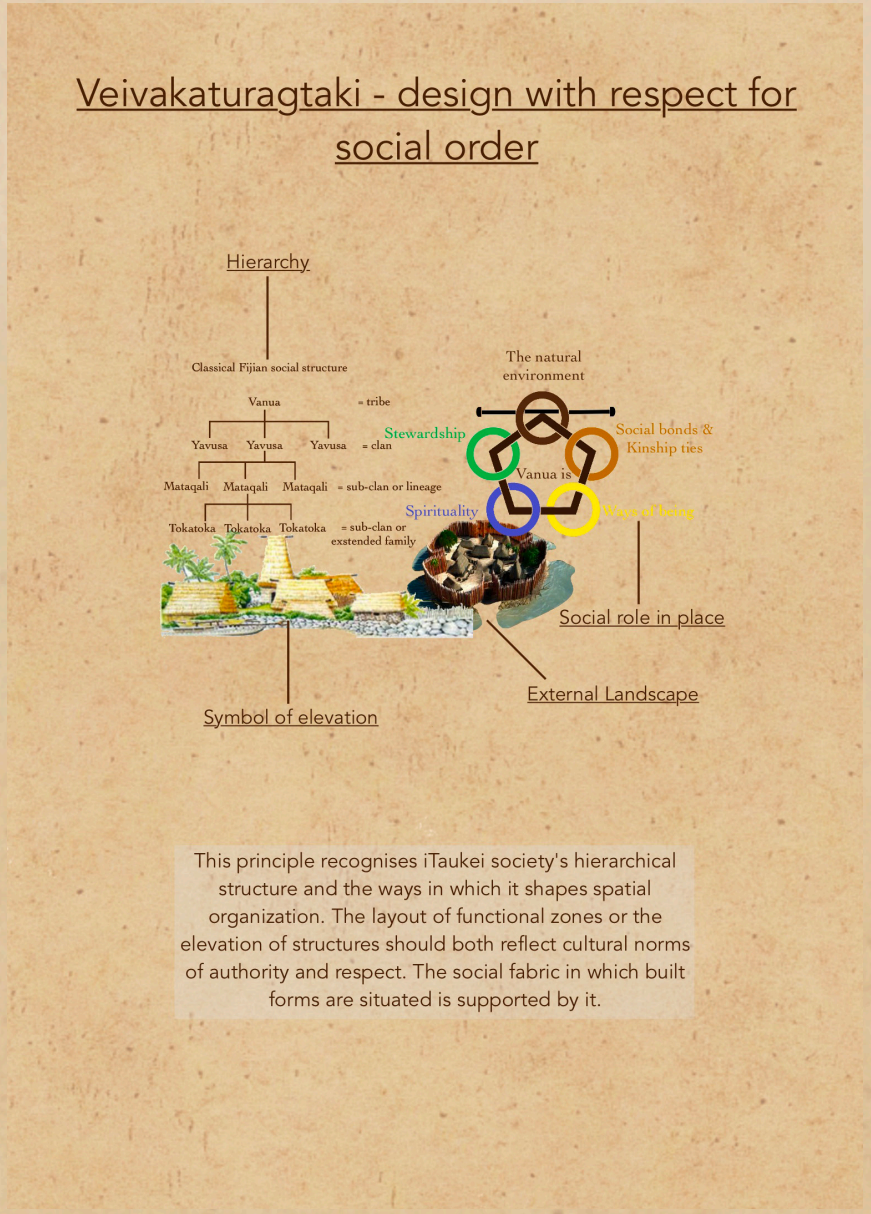



Figure 3.8.1. Visual collage illustrating the design principle Veivakaturagataki (image created by the author).

Veivakaturagataki: Design with Respect for Social Order is a principle that helps ground my design process in the social, cultural, and spiritual foundations of iTaukei life. The principle focuses on the importance of hierarchy, not as a system of inequality, but as a structure that organises relationships, responsibilities, and spatial arrangements. The collage reflects this by mapping the traditional Fijian social structure and how it shapes how space is understood and occupied.

Hierarchy is illustrated through the breakdown of the vanua, from yavusa (tribe) to mataqali (clan) to tokatoka (extended family) (Narayan et al., 2019). This family-based system reflects social ties, obligations, and respect. Seen through an architectural lens, this translates into how spaces are arranged, who occupies them, and how they are utilised. This principle influences the spatial zoning of any design, ensuring spaces are both freely connected and in line with cultural boundaries.

The Symbol of Elevation is presented in the collage through the traditional bure and village layouts, where the chief's houses and significant structures are raised or centred. These forms symbolise respect and leadership, not domination. This informs my approach to massing and form, ensuring that elevations and spatial importance have both cultural significance and aesthetic value.

Social Role in Place recognises the responsibilities people carry within community life and how these are reflected in space. Indigenous views are based on an understanding of the land, sea, animals, plants, and spiritual beings. This highlights the connective value of everything complementing each other. Community is usually highlighted as a belief and is dependent on the physical, social or spiritual nature of a place. Additionally, Indigenous communities are recognised as groups that have cultural and historical continuity (Raisele, 2021).

The circular Vanua diagram also links kinship, stewardship, environment, spirituality, and ways of being, highlighting that architecture does not stand alone; it lives within a system of interconnections. Veivakaturagataki supports this by offering a cultural framework for how design can reflect values such as balance, respect, and harmony.

## Architectural Application/ Implications

The application of Veivakaturagataki guides the design process by embedding respect for social order into spatial planning. Rather than seeing hierarchy as inequality, it applies it as an organising principle that shapes relationships, responsibilities, and movement through space. The arrangement of public, private, and ceremonial spaces in zoning plans reflects cultural institutions such as the vanua, yavusa, mataqali, and tokatoka. The approach to form and massing is informed by elevation and positioning, which are influenced by traditional bure layouts and the centre placement of central areas. This ensures that architectural gestures honour leadership, protection, and communal duties with both cultural meaning and modern relevance.

## Project Application

Within *Talia na Vanua*, Veivakaturagataki serves as a guide for shaping space and respecting traditional social order while acknowledging Fiji's diverse cultural context. I aim to translate the values of hierarchy, respect, and kinship into spatial arrangements that honour both customary structures and the lived realities of modern communities.

This idea is carried out through the design of layered areas with both symbolic and functional meanings. Some buildings are positioned high and centrally to symbolise leadership or group gatherings, while other areas are set up for more private, family-focused uses. Whether for ceremony, education, trade, or communal living, multipurpose spaces that can adapt to changing needs help achieve a balance between respect and flexibility. This allows the project to recognise Fiji's diversity and guarantee that every space can be used and interpreted in a variety of ways while remaining rooted in the principles of respect and order. Consequently, Veivakaturagataki influences not only the building's physical layout but also how people interact with it, ensuring that the design promotes inclusive participation and cultural continuity.

# 3.9. Conclusion: Development of the iTaukei Spatial Framework

The iTaukei Spatial transforms the iTaukei Design Principles into a living system that connects culture, land, and people through space. Rooted in veikorokovi (respect), veiwekani (kinship), and solesolevaki (collective action), the framework moves beyond Western architectural notions, grounding design in the iTaukei worldview, where vanua (land), people, and identity exist as one.

Each principle contributes a unique dimension. iSevusevu anchors design in acknowledgment and exchange, ensuring that spaces grow from community collaboration. Yavutu reconnects architecture with ancestry and belonging, allowing identity to guide spatial order. Nabu weaves storytelling and memory into form, creating buildings that carry history and resilience. Mareqeti ni Yau Vakavanua and Maroroi ni Veikabula reinforce environmental stewardship, calling for harmony between the built and natural worlds. Solesolevaki celebrates collective labour and inclusivity, while Veivakaturagataki ensures social order and respect are embedded in spatial hierarchy.

Together, these principles create a culturally grounded framework that balances tradition with innovation. The iTaukei Spatial Framework combines these values and showcases how they are all interconnected, working in harmony to retain the cultural and traditional ethics of the iTaukei people and the values of life. It also represents an act of regeneration, in which buildings sustain identity, nurture ecology, and strengthen community ties. It stands as a guide for designing spaces that embody humanity, belonging, and continuity, ensuring that architecture can serve as a vessel for culture, memory, and resilience.

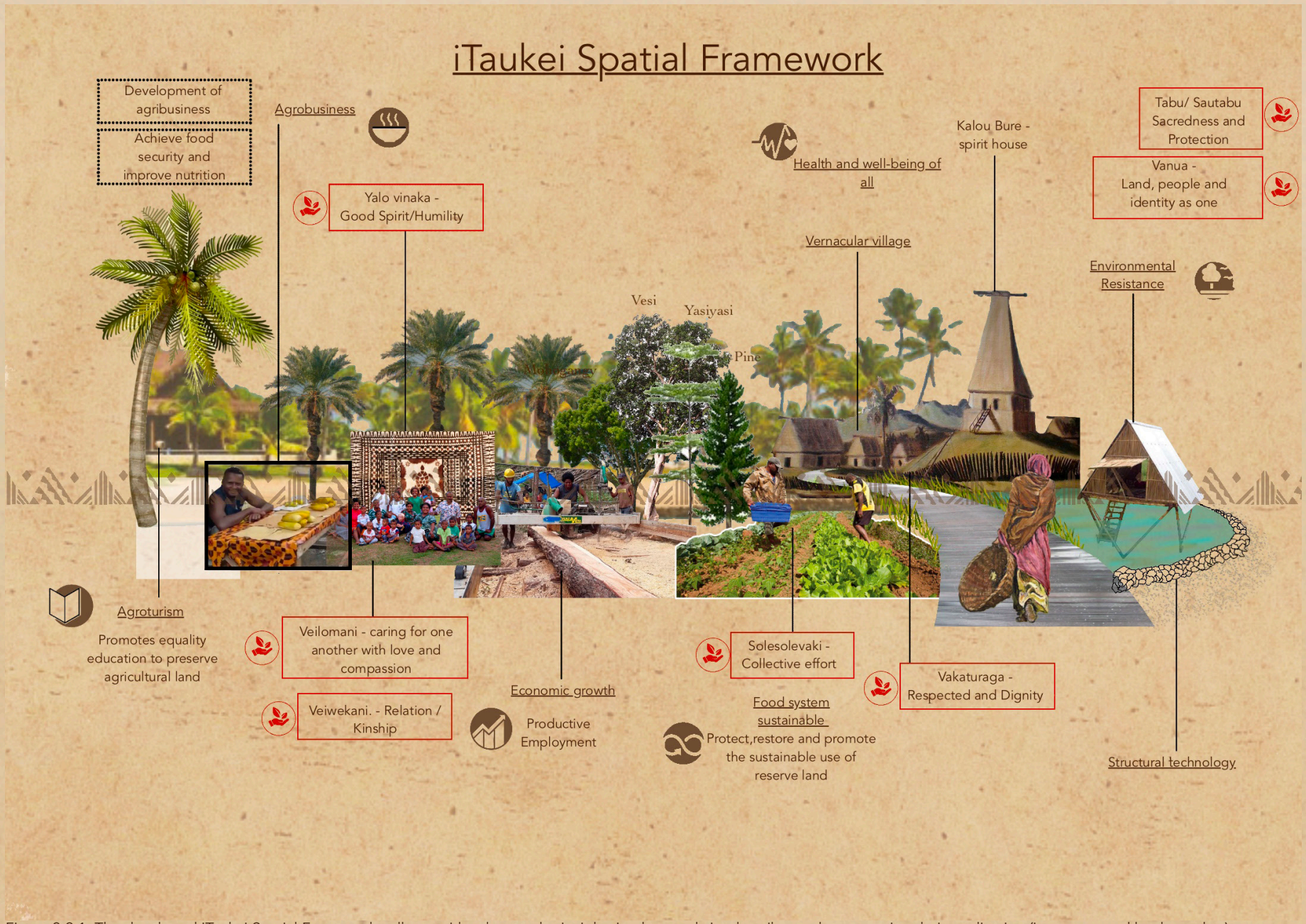
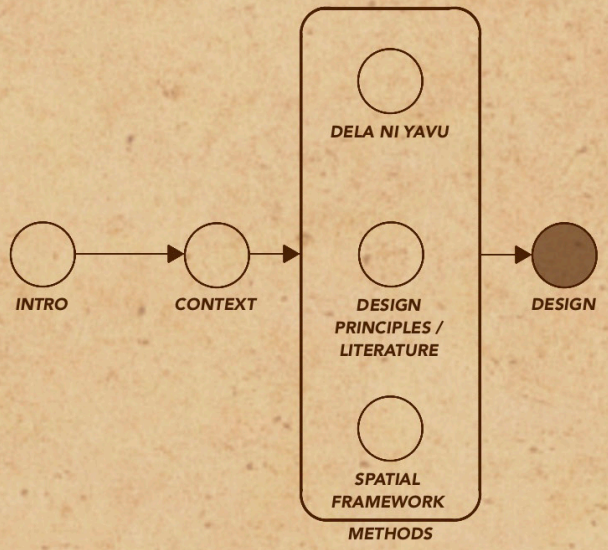



Figure 3.9.1. The developed iTaukei Spatial Framework collage, with values and principles in place and visual attributes demonstrating their application (image created by the author).

# 4 – DESIGN


DELA NI YAVU
INTRO
CONTEXT
DESIGN PRINCIPLES / LITERATURE
DESIGN
SPATIAL FRAMEWORK
METHODS

# 4 - Design

The chapter begins by exploring how local values, activities, and accessibility inform the project and the surrounding context. We start with the broader context of Labasa Town, then identify the site and planning. The plan branches into three main spaces: a timber mill, a treatment plant, and a core relief space surrounded by modular housing kitsets. The layering of spatial organisation implements iTaukei cultural systems that create a clear hierarchy and open, flexible spatial flow.

Following this, the chapter discusses materiality, focusing on local pine and bamboo. It also examines the ecological systems in place to support environmental sustainability, including energy-saving technologies and local flora and fauna. Finally, the distribution strategy of the housing kitsets supports expansion beyond a single site and extends to regional regeneration in Vanua Levu and neighbouring Pacific islands. Overall, this chapter demonstrates how cultural, environmental and technological systems are mobilized and integrated to create a resilient and regenerative design outcome.

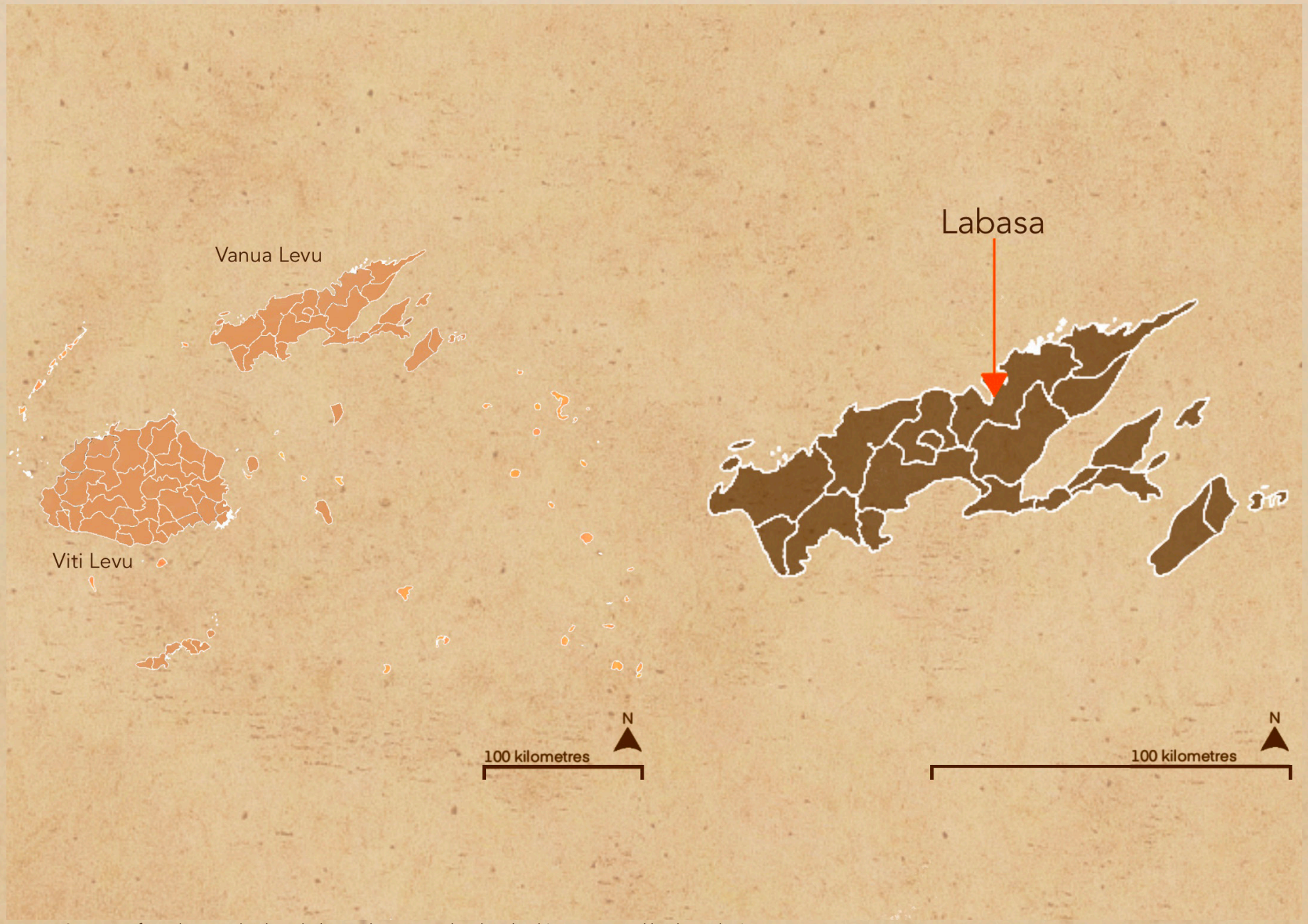



Figure 4.0.1. Map of Fiji, the two islands and where Labasa sits within the island (image created by the author).

# 4.1. Site Selection

The site selection was determined very early in the project and drove the focus on local timber circular economy and a related architectural strategy. The site  carries deep personal and cultural connections to both sides of my family, from Wailevu and Bulileka. My family background is rooted in agriculture and timber production, with farming activities based in Bulileka and a timber mill operation and distribution network in Wailevu. Given these strong ties, it was clear that Labasa would be the most appropriate location for this project. The aim was to work with the systems already in place, enhancing them through a regenerative approach that builds upon the existing social and economic landscape.

Labasa's historical development is closely intertwined with the sugar industry. The town began to grow following the establishment of the Colonial Sugar Refining Company (CSR) Mill, now known as the Fiji Sugar Corporation (FSC), which opened in 1894 (Fiji Sugar Corporation Ltd, 2025; Kate, 2024). The mill played a central role in Fiji's economic and infrastructural development, and Labasa itself was formally declared a town in 1922 (Kate, 2024).

The FSC sugar mill remains an integral part of Labasa's energy system today. Bagasse, a by-product of sugarcane processing, is used by FSC to generate electricity, which is then exported to the Fiji Electricity Authority (FEA) grid (Fiji Development Bank, 2015; Wilmar Sugar, 2023). Complementing this process, local timber mills contribute wood chips and sawdust to the sugar mills for biomass fuel production (Chandra & Hemstock, 2015). Together, these industries form a circular system in which each sector supports the others, creating an interconnected network that sustains the local community.

For this reason, the chosen site for my project is located within my (paternal) grandfather's timber mill, seen in Figures 4.1.1. to 4.1.4. The concept is to establish a localised economic system that operates in stages, linking the timber mill and treatment plant with the nearby sugar mill. This strategy enables the project to function symbiotically with the region's existing industries, promoting job creation, skill development, and community resilience. Ultimately, the site becomes more than a place of production; it becomes a catalyst for sustainable growth and regeneration in Labasa.


Figure 4.1.1. My (paternal) grandfather's timber mill, Local Timber Distribution (LTD) in Wailevu, Labasa (photo by the author).

Figure 4.1.2. Timber stored on the site of local timber distribution in Wailevu, Labasa (photo by the author).

Figure 4.1.3. A timber moulder used to make different profiles, as well as excess sawdust being gathered (photo by the author).

Figure 4.1.4. A timber treatment plan at LTD Wailevu, Labasa (photo by the author).

Figure 4.1.5. My (maternal) grandfather's house located in Buleleka, Labasa (photo by the author).

Figure 4.1.6. My (maternal) grandfather's farm land, situated next to the house, Labasa, (photo by the author).

Figure 4.1.7. A livestock house on top and a goat breeding room underneath, with a water tank (photo by the author).

Figure 4.1.8. A chicken farm, with a water tank (photo by the author).


Figure 4.1.9. Map of Labasa town with extended access to the FCS sugar mill and the local timber mill, with context to government buildings, shops, schools, and healthcare facilities. Included is a 600m radius to Labasa Town showing walkability (image created by the author).

# 4.2. Labasa Town

Labasa town is the main commercial and social centre of Vanua Levu, located on the Labasa Qawa River and surrounded by agricultural and industrial areas. The town functions as a central connector between surrounding settlements such as Wailevu and Bulileka, both of which hold cultural and familial significance to this project.

The project site is proposed approximately 10 minutes from the town centre and is located next to Local Timber Distribution (LTD). This location enables access to timber manufacturing and distribution channels in the region, and furthers a regenerative process and connection to local economies.

Accessibility and Amenities

Essential amenities such as Labasa Market, the bus station, the hospital, and schools are located in close proximity to one another, creating a walkable area. The Labasa bus station is the home of the primary form of public transportation that connects nearby villages and communities across Vanua Levu and plays a significant role in local movement and interaction in the town centre, providing easy access and movement around the town and markets (Silaitoga, 2023). Additionally, the town has one major road, Nesakula Road, which serves as a highway and a central spine that branches out into its surrounding context.

Key landmarks, including the FSC Mill, the Court House, and the Ministry of Agriculture, are all situated within a short radius, supporting both employment and trade. The market area remains a focal point of daily activity, serving as the community's social and economic lifeline.

Cultural and Environmental Richness

Labasa presents a multi-cultural community with Hindu temples, mosques, and churches all standing in proximity. The combination of spiritual, social, and economic activities is a major contributor to the town's identity and shared values, which are foundational to unity, coexistence, and interdependence among people. These concepts are firmly rooted in Fijian society and are a living display of my iTaukei Spatial Framework.

The spatial organisation and layout of the town reflect the values of nabu and solesolevaki, where spaces are shared and activities overlap across religious, economic, and cultural lines. These values underpin this project's vision of regenerating community-led design by embodying spatial and ecological connectedness.


Figure 4.2.1. Labasa market, stalls selling fruit and vegetables (photo by the author).

Figure 4.2.2. Labasa market, stalls selling fruit and vegetables (photo by the author).

Figure 4.2.3. Labasa market, cold beverage stalls (photo taken by the author).

Figure 4.2.4. Labasa bus station next to the market (photo by the author).

# 4.3. Site and Master Plan

The site sits on slightly elevated terrain, surrounded by vegetation and trees that provide both shelter and a natural buffer from the main road. Its position takes advantage of the prevailing wind direction, allowing for natural ventilation throughout the site while maintaining a strong visual and ecological connection to the surrounding landscape.

Spatially, the organisation of the site follows the Veivakaturagataki principle, a hierarchical spatial order that reflects respect, balance, and collective harmony. At the centre lies the main hub structure, the focal point for gathering, learning, and exchange. Radiating from this are housing units that sit along the outer circular layout, forming layers of activity that move from communal to semi-private spaces. A diagram of this structure is shown in Figure 4.4.1.

Between these zones sits a middle-ground building, designed to host small functions and traditional ceremonies, creating a transition between daily community life and moments of cultural ritual. This spatial layering reinforces social structure and interaction, shaping how people move, gather, and relate to one another. Additionally, it is placed near the site's entrance to respect rara and to enable activities such as welcoming ceremonies and earth cooking.

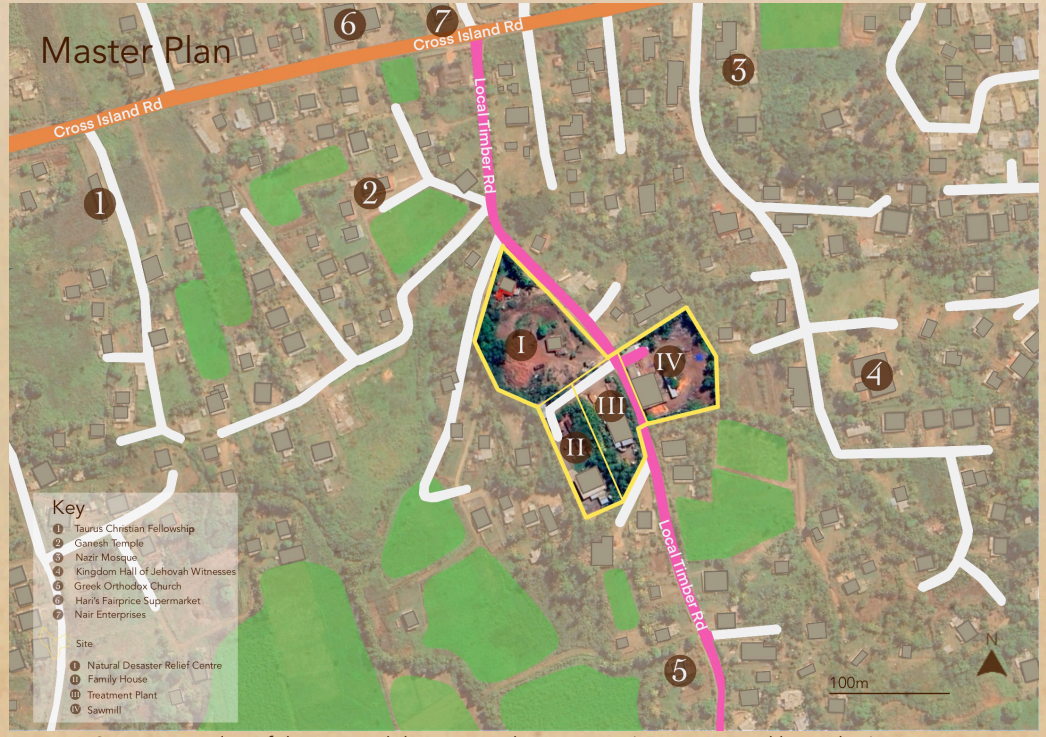


Figure 4.3.1. Master plan of the site and the surrounding context (image created by author).

# 4.4. Site and Spatial Layout

The site sits on slightly elevated terrain, surrounded by vegetation and trees that provide both shelter and a natural buffer from the main road. Its position takes advantage of the prevailing wind direction, allowing for natural ventilation throughout the site while maintaining a strong visual and ecological connection to the surrounding landscape.

Spatially, the organisation of the site follows the Veivakaturagataki principle, a hierarchical spatial order that reflects respect, balance, and collective harmony. At the centre lies the main hub structure, the focal point for gathering, learning, and exchange. Radiating from this are housing units that sit along the outer circular layout, forming layers of activity that move from communal to semi-private spaces. A diagram of this structure is shown in Figure 4.4.1.

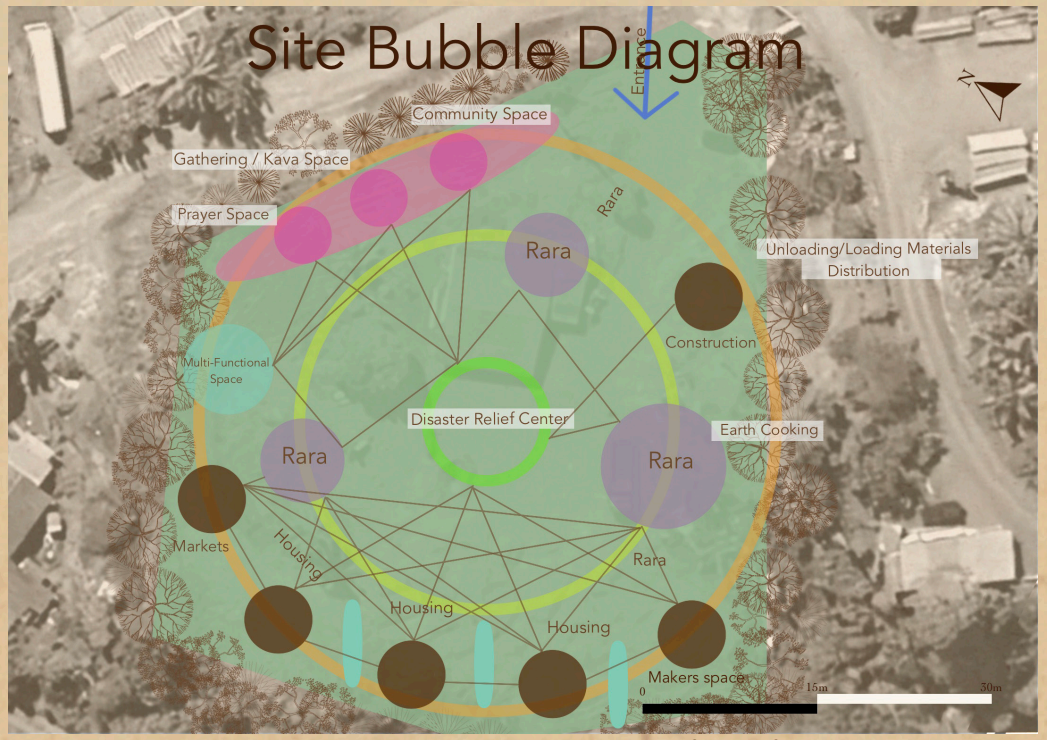



Figure 4.4.1. Bubble diagram programming and presenting a structural format of exterior spatial layout (image created by the author).

Between these zones sits a middle-ground building, designed to host small functions and traditional ceremonies, creating a transition between daily community life and moments of cultural ritual. This spatial layering reinforces social structure and interaction, shaping how people move, gather, and relate to one another. Additionally, it is placed near the site's entrance to respect rara and to enable activities such as welcoming ceremonies and earth cooking.


Figure 4.4.2. Site map with contour lines, wind flow direction and current site format with entry and exit roads to the site (image created by the author).

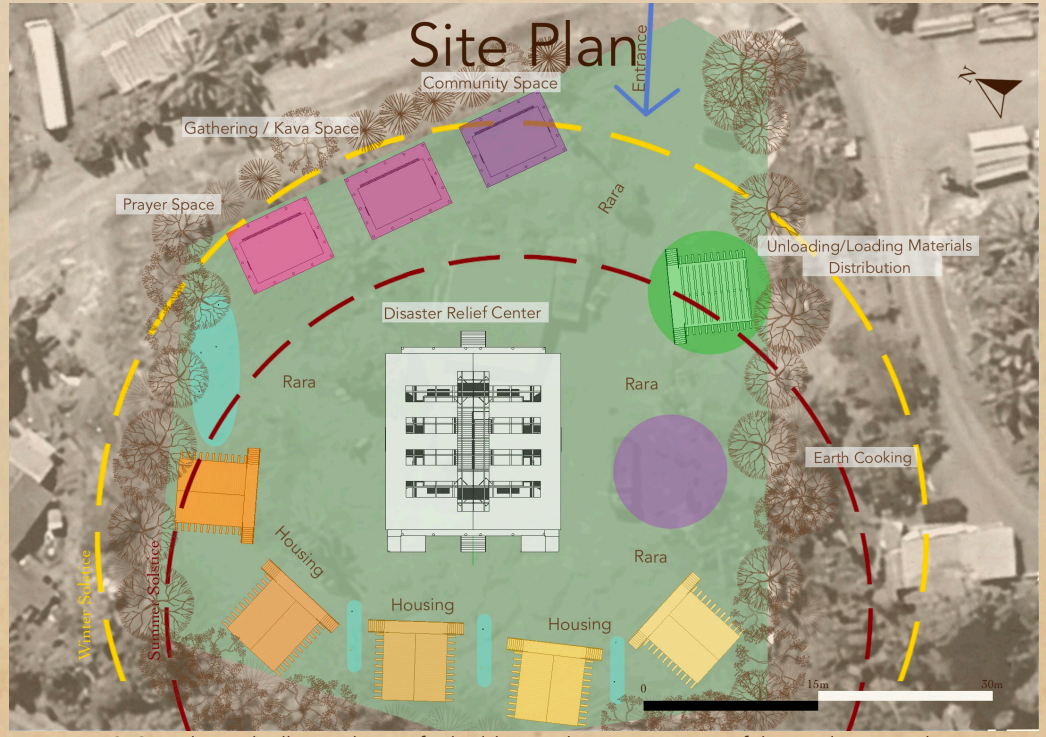



Figure 4.4.3. Site plan with allocated areas for building and communication of the site layout and systems (image created by the author).

# 4.5. Hub Programme & Spatial Layout

Internal Spatial Layout and Veivakaturagataki

The internal layout of the hub building corresponds to the value of Veivakaturagataki, which signifies the order, hierarchy, and relational structure of a community. This value determines how the internal spaces are arranged according to levels of importance, function, and service to people in the vertical social hierarchy.

Ground Floor – Health and Well-being (Foundation of Care)

The healthcare and emergency services are located on the ground floor, signifying the foundation of communal life. The base level represents the collective body, where care, protection, and healing begin, with a focus on urgent needs. This setup focuses on rescue efforts, with medical assistance readily available and serving as the initial point of refuge in the event of a disaster. The idea is that a community's strength begins with the physical and mental well-being of its members, which reflects the positioning of health and care facilities at the base, ensuring access to the hub.

Second Floor – Knowledge, Gathering, and Food Systems

The second floor is dedicated to educational spaces, along with the communal kitchen, which serves as the building's intellectual and social centre. In Fijian traditions, this area represents solesolevaki (sharing with each other, respecting and sharing knowledge). It becomes a place for education, training, and shared preparation. It is where disaster preparedness workshops and community meetings take place, and where the kitchen serves as a symbolic glue, fostering communal bonding.

Third Floor – Disaster Coordination and Regenerative Systems

The third floor combines disaster coordination and a regeneration platform. This level holds operational and communication areas for emergency response and seed banks. Additionally, it incorporates small green spaces for vertical gardens that spill down to the bottom floor. The presence of green spaces and seed banks represents the connection to the environment.

The top floor symbolises Vakayalo, the transition from ground to spiritual connections. This honours both traditional and contemporary needs for resilience and sustainability, where higher levels connect more closely to ancestry and cultural customs in knowledge and belief.

Even though each level is defined by its programmatic purpose, the spatial character remains open and free-flowing, allowing users to move between spaces and interact. This openness encourages communal use and user-defined adaptability, reflecting the Fijian way of inhabiting space, where boundaries are soft, and collective needs inform function.

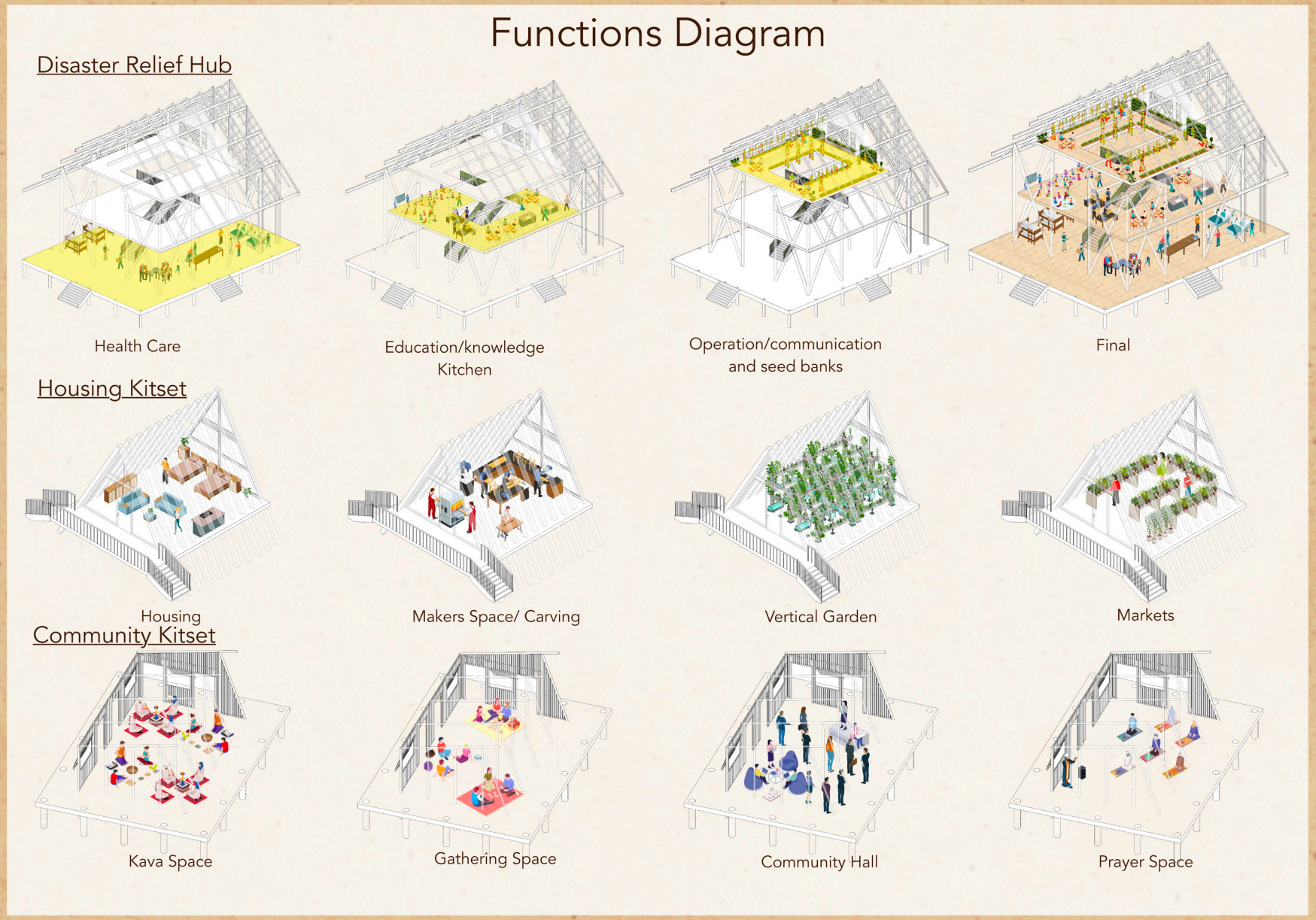



Figure 4.5.1. Function diagram highlighting different potential uses within the housing kitsets, community kitsets, as well as showing the functions for each floor in the relief hub (image created by the author)

# 4.6. Materiality & Construction Strategy

Pine has become the dominant building material in Fiji due to government restrictions on harvesting indigenous timbers such as vesi, dakua, and kauvula, which are now protected for conservation (Worldwide Fund for Nature, 2005). Pine is readily available and can be harvested rapidly in the short term (Farm Forestry New Zealand, n.d.a), offering a renewable, manageable supply chain that aligns with the project's regenerative values and circular economy goals. Additionally, it enhances compatibility between my project and the proposed prefabricated housing kits.

Bamboo is also widely available in Fiji and is known for its low weight, strength, and flexibility. It has been implemented within *Talia na Vanua*, with the facades of my buildings and roofing connected using traditional lashing techniques. By substituting heavy fasteners with lashings, which have their roots in Indigenous Fijian handicraft, the structure preserves cultural continuity.

The construction system follows a modular and prefabricated approach, allowing the kitset components to function like a Lego set. This method enables adaptability and disassembly, where individual parts, such as wall panels and roofing frames, can be replaced, expanded, or relocated as needed. Examples of this can be seen in Figure 4.6.1. The ability to provide flexibility within the building's structural components is essential in disaster recovery situations, where resilience, rapidity, and efficiency are more critical than permanence. Additionally, presenting prefabricated housing reduces waste and empowers communities through participatory assembly processes, linking back to iSevusevu and Solesolevaki principles within the methodologies chapter.

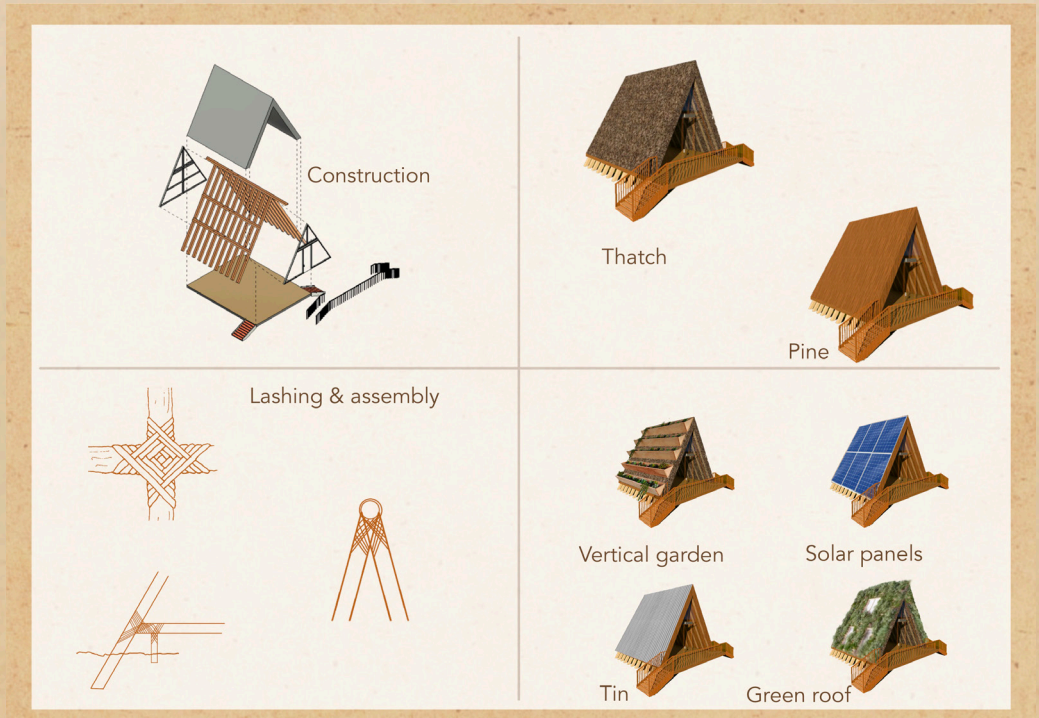


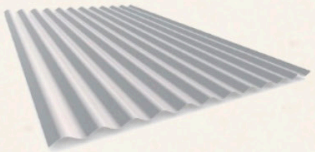

Figure 4.6.1. Interchangeable modular roof system on the housing kitsets and its potential functions (image created by the author).

# Materials

## Roof

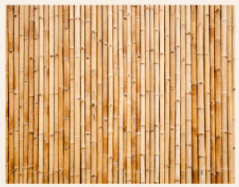
Thatch

Bamboo resin



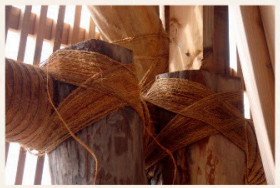
Tin

## Wall



Bamboo

Pine



Coconut fibre lashing

## Foundation

Recycled aggregate

## Structural

Pine

Figure 4.6.2. The different materials that will be used in the project (image created by the author).

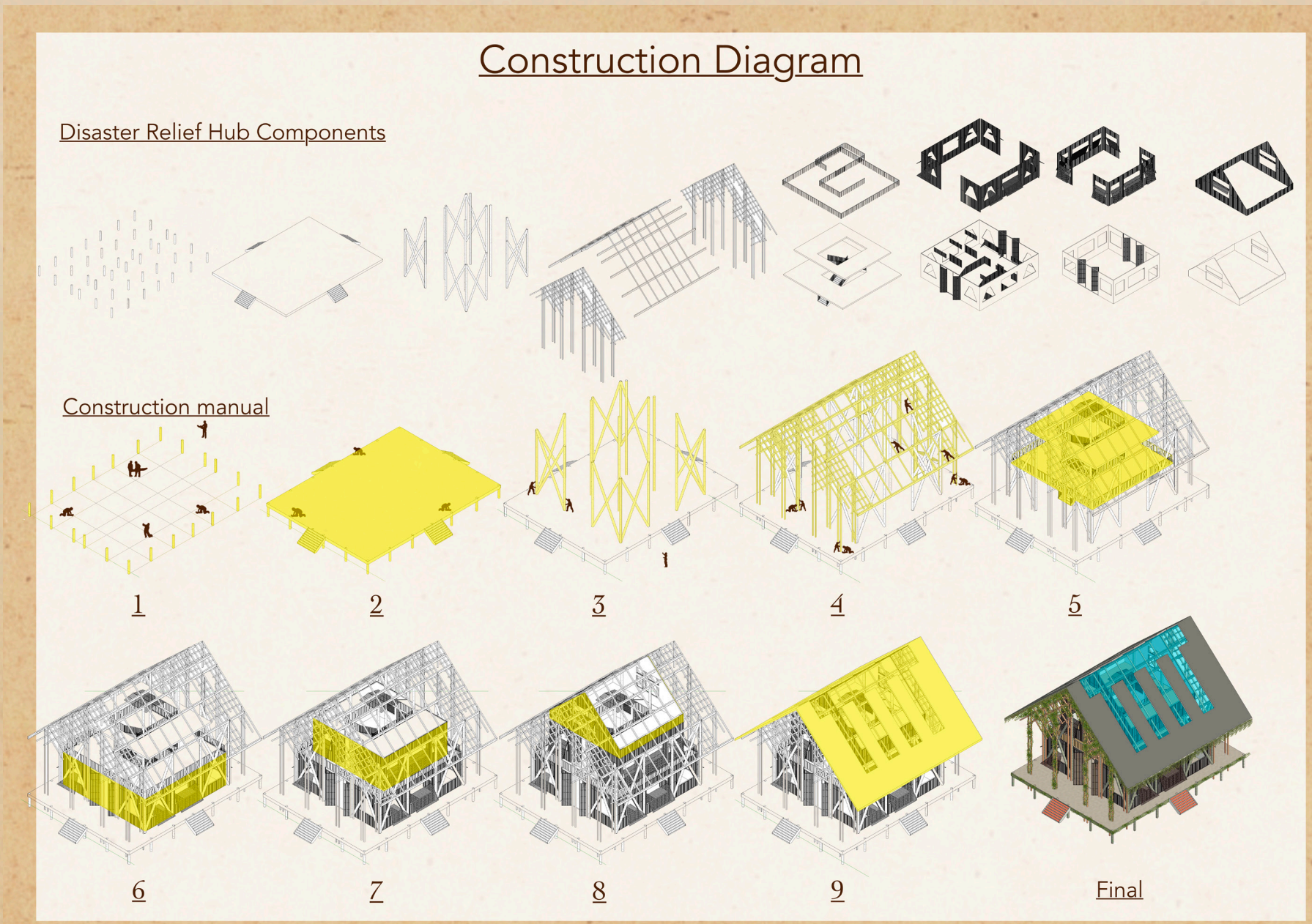
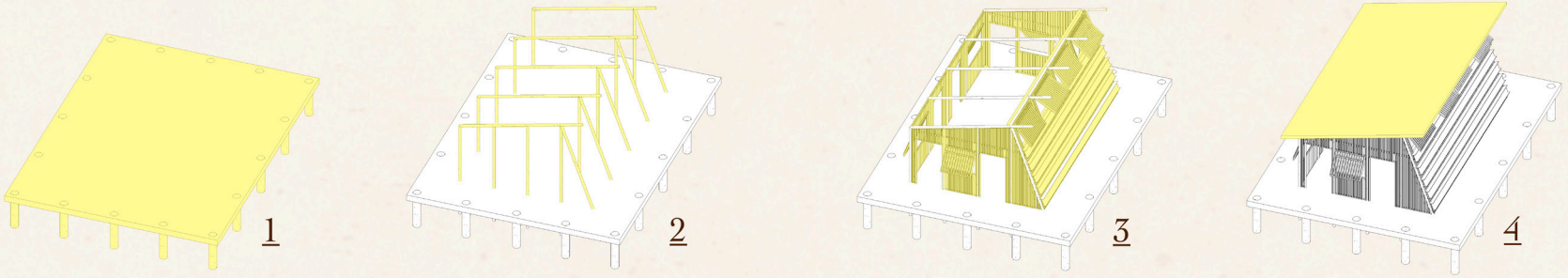



Figure 4.6.3. The construction assembly of the natural disaster relief hub and the different stages (image created by the author).

# Construction Manual & Materials

Community Kitset




Housing Kitset

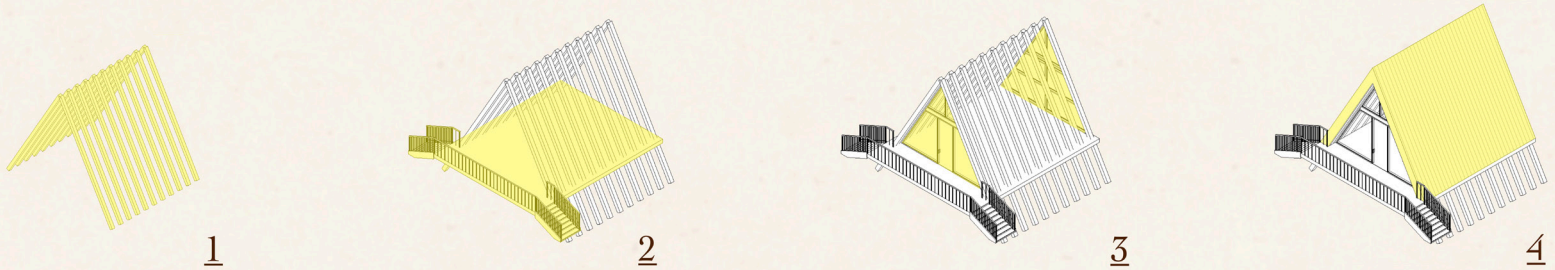



Figure 4.6.4. Construction assembly of the housing kitset and community kitset (image created by the author).

# 4.7. Environmental & Technological Systems

## 4.7.1 Vertical gardens

Vertical gardens embody a system that extends to a cultural and regenerative act, restoring the relationship between people, land, and food, and reflecting Indigenous values of vanua. Integrating vertical gardens within Pacific contexts restores ancestral agricultural knowledge and principles of Solesolevaki, fostering collaboration, shared responsibility, and food sovereignty (Veitayaki, 2002). These systems act as living archives where traditional crops, indigenous plants, and communal growing practices are preserved within modern structures, enabling intergenerational learning and continuity.

Integrating vertical gardens within a site or built structure turns unutilised spaces or degraded spaces into productive ecosystems that harmonise aesthetics, functionality, and efficiency (Akintuyi, 2024). Through hydroponic and aeroponic technologies, they minimise resource consumption while maximising biodiversity and cultural expression (Brears, 2024). Food production thus becomes an act of cultural regeneration, nourishing both people and the land, reinforcing community resilience, and embodying the principle that food is the link between all living organisms (Geneva Environment Network, 2022).

## 4.7.2 Composting bathrooms

Within Talia na Vanua, composting bathrooms are a valuable feature. This is due to Fiji's location and site. Many areas lack access to electricity or clean water, and only a few can afford a proper bathroom system. 28 per cent of the population has access to the central sewerage system (United States International Trade Administration, 2024).

Composting toilets use natural bacteria and fungi to break down waste, with or without water, to create dry compost. That means air, heat, and moisture management are critical, and fans can help manage them. Liquid waste is drained away (or urine can be diverted) to use as compost for plants (Zing Bokashi, n.d.).

## 4.7.3. Solar power

Fiji's climate presents the perfect foundation for the implementation of solar power as Fiji receives large amounts of sunshine, averaging from six to eight hours a day (Powell, n.d.). Adding to this is the focus area of my project where only 14% of the rural population had access to distributed electricity (Prasad et al., 2017). Supporting this idea is the implementation of solar power seen in Fiji's solar-powered street lamps ("Solar-powered lights for Fiji," 2018).

## 4.7.4. Water and waste management

Fiji experiences high annual rainfall, with March being the wettest month (260–321mm) and July the driest (around 63mm) (Weather Spark, n.d.). This pattern supports a small-scale rainwater harvesting system to ensure year-round water access. A 5,000–10,000L tank connected to a 100 $m^2$ roof with 0.85 runoff efficiency can collect 22,000–27,000L in March, filling the tank within a week, and about 5,400L in July, refilling it within a month.

This provides a sustainable, low-cost water source for small households, reducing reliance on external water provision. It also provides an assurance of clean water for daily household needs (cooking, washing, cleaning) through filtration and water-saving measures. This makes it ideal to have on-site and supplied, where needed, with my proposed housing kitset.

## 4.7.5. Alternative timber treatment

Currently, across Fiji, my grandfather's timber mill (local timber distribution) uses the ACC H1-H6 hazard system for timber treatment, with varying chemical levels to increase resistance to termites, decay, and fungal growth. Levels H1 to H6 correspond to the chemical levels, with H1 being the lowest (Patel, n.d.).

Issues presented within this treatment system include the afterlife of the timber sawdust or chips. Once treated, the timber becomes toxic. It can no longer be used for regenerative systems, circulated for biofuels, or used as compost for gardening or animal litter. It is advised to be disposed of properly in local landfills (New Zealand Environmental Protection Authority, 2020). Although not hazardous to humans, it affects the timber's sustainability and the surrounding environment.

As an alternative, *Talia na Vanua* proposes engaging directly with the treatment plant in implementing more sustainable timber treatment methods, such as salt-based preservation techniques. Salt treatment, also commonly known as borate treatment, is a water-based treatment that makes the wood resistant to termite attacks and fungal decay (Tanzer Pest Control, 2025). Additionally, it is also colourless and odourless, offering long-lasting protection for wood that is kept dry or sealed. As the timber treatment is water-based, it is recommended to use it only in dry conditions to prevent the treatment from leaching out (Farm Forestry New Zealand, n.d.b).

While salt treatment is a sustainable advancement from the conventional ACC timber treatment process, it still lacks the durability required for exterior applications. Therefore, this project adopts salt-treated timber as a first step toward more sustainable material use, applying it for interior walls, while retaining conventional chemical treatments for exterior elements exposed to weathering. Additionally, timber treatments such as MCA can be an alternative to ACC, as they are more sustainable and less toxic to the environment (Fencing Contractors Association NZ, 2025).

## 4.7.6. Critique

This section has drawn heavily on the values presented in the methodology chapter, particularly Maroroi ni Veikabula, the act of protecting and nurturing all living things. It reinforces the idea that design should exist in relationship with the environment to maintain ecological balance and the cultural relationships between people and land. While it is clear that regenerative intentions are strong, action should be informed by the site's conditions.

Certain regenerative technologies, though conceptually aligned with Maroroi ni Veikabula, may not always function effectively within the given conditions. For instance, vertical gardens symbolise being powerful in reconnecting people with food systems but may not perform efficiently in every context. Factors such as soil quality, humidity, and available maintenance resources could limit their success. In such cases, rather than forcing these systems into a multifunctional building that attempts to "do everything," a more site-responsive approach would be to develop dedicated structures for vertical farming. This allows for adaptation, flexibility, and incremental growth.

The project, therefore, recognises that regeneration does not require immediate completion or perfection. Temporary or lightweight structures can serve as testing grounds for systems such as vertical farming, water harvesting, or composting, gradually evolving into permanent solutions as the community adapts. The project aims to establish a foundation for communities in need after natural disasters, and these features can be progressively implemented once the housing kitsets have been distributed. This connects back to Maroroi ni Veikabula, regeneration as a living, ongoing relationship between land, people, and architecture, rather than a fixed, idealised model. It acknowledges that life care emerges through control and responsive design that grows and transforms alongside its environment.

# 4.8. Local flora and fauna

The flora and fauna of Fiji reflect a living harmony between people, land, and nature. Surrounded by coconut, flame, and pandanus trees, as well as vibrant plants like hibiscus and frangipani, the project honours the ecological cycle that sustains life. Insects, bats, and birds are recognised as essential to pollination and renewal (United States Geological Survey, 2025).

The design integrates these systems through native planting, shaded courtyards, and vertical gardens, encouraging coexistence. Guided by Vanua, the project supports and sustains the interconnected cycle of life, creating balance.

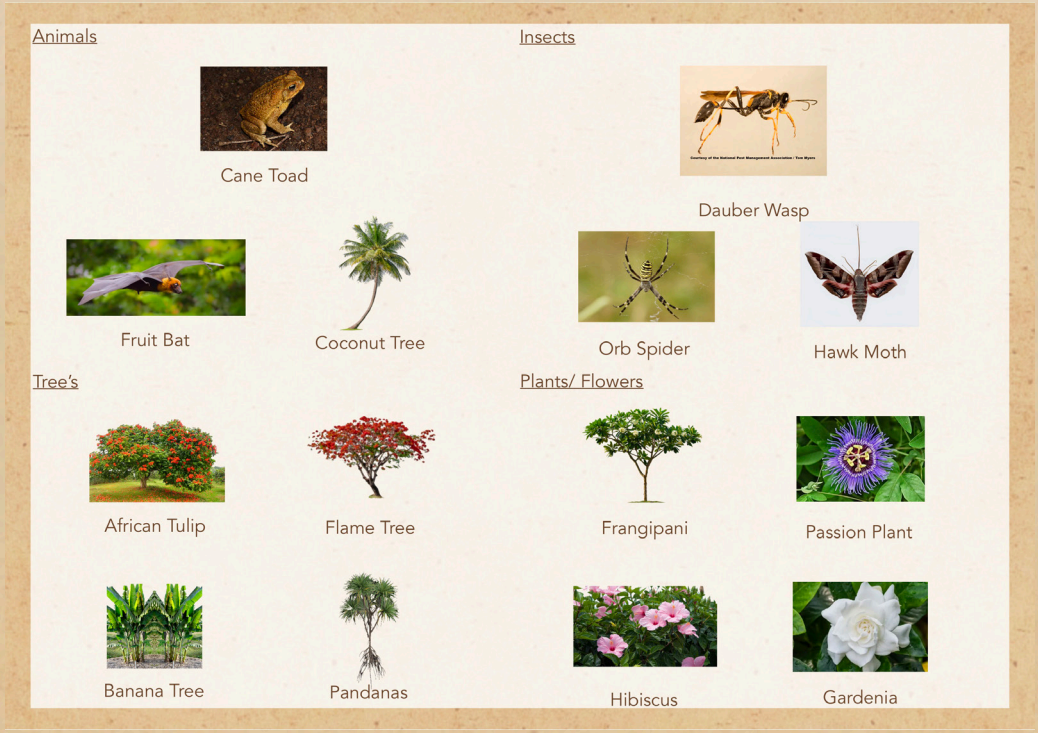



Figure 4.8.1. Image showing different flora and fauna around the site and indigenous use in Fiji (image created by the author).

# 4.9. Current Plan and Distribution Plan

The current plan shows the movement and sourcing of materials around Vanua Levu, and how local materials will connect to the timber yard and the proposed project site. Figure 4.9.1 provides a closer look at the island-specific materials.

These materials are readily available throughout Vanua Levu and serve as a basis for construction activities associated with the project. Similarly, growing sugarcane, represented in orange, illustrates how agriculture supports the local economy and highlights potential by-products, such as bagasse, for renewable energy production. Thatch and bark, shown in blue, demonstrate traditional material systems, such as roofing and tapa or masi fibre, which continue to sustain local craft processes and cultural practices.

The distribution plan illustrated in Figures 4.9.2 to 4.9.5. visualises how the relief centre hub and timber-based kitset system grows from being a local network to a Pacific-wide reacting exchange system. The plan begins with a five-year stage and subsequent 10- and 15-year stages build upon the earlier stage, aligning with the cultural and political geography of Fiji through the Three Matanitu and the Fourteen Yasanua.

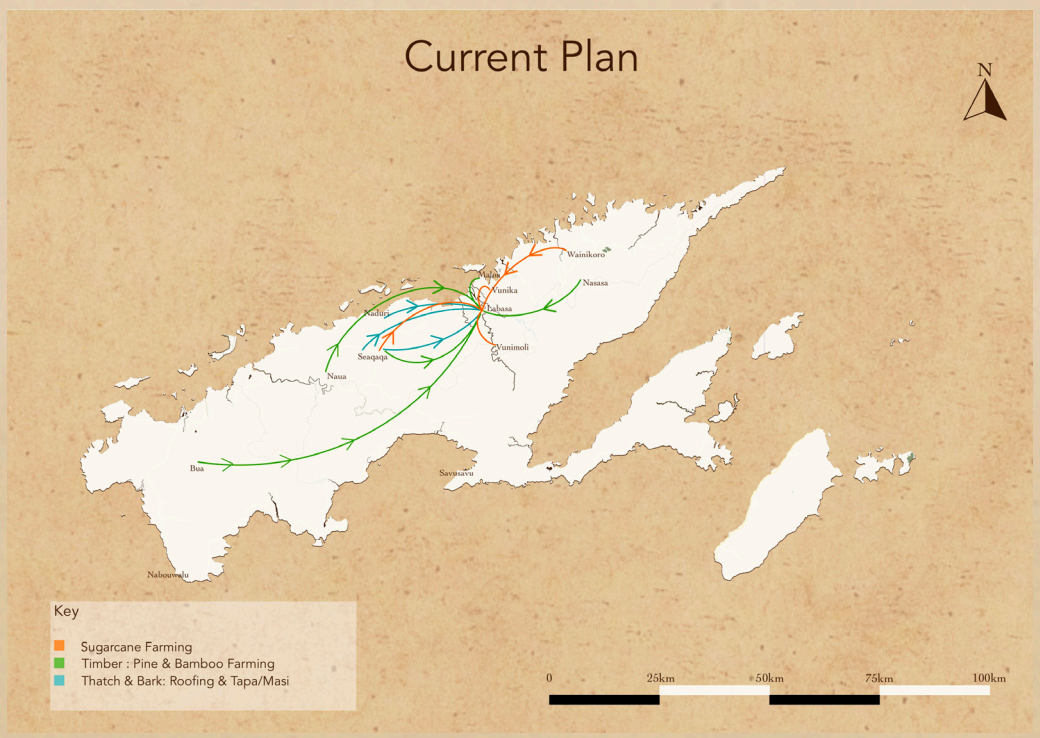



Figure 4.9.1. Current plan, with materials brought into my site and local distribution in Labasa (image created by the author).

### 4.9.1. 5-Year Plan — Local Vanua Levu Network

The first five years focus on Vanua Levu, seen in Figure 4.9.3, where the project originates. As shown in the Distribution Master Plan, this phase connects resource-rich regions such as Bua, Nabouwalu, Savusavu, and Seaqaqa, creating a network of local supply and knowledge-sharing routes.

The first five years of the project are purely focused on building and establishing a foundation for a circular economy. It highlights the shipping ports that enable these key locations (Nabouwalu and Savusavu) to distribute to rural areas. Bua is known for its unforgiving terrain and rural sites.

### 4.9.2. 10-Year Plan — National Expansion (Viti Levu & Maritime Islands)

With the 10-year plan, the aim is to extend across Viti Levu and neighbouring islands in Fiji. Suva, Nadi, Lautoka, and Labasa will serve as the central development locations, paving the way for further expansion under the 15-year plan. This expansion integrates parallel timber yards and new manufacturing sites, reinforcing resilience across Fiji's 14 provinces.

Each province has different environmental and social conditions, from flood-prone coastal areas to densely populated urban centres. Acknowledging these differences ensures that design and material systems respond to diverse needs.

### 4.9.3. 15-Year Plan — Regional Integration (Pacific Exchange Network)

The last phase goes beyond Fiji to create a regional Pacific network that connects the Cook Islands, Samoa, Tuvalu, Tonga, and even Hawai'i and Easter Island. This, therefore, makes Fiji a central hub for timber-based kitsets and indigenous regenerative design, exporting both materials and expertise to the larger Polynesian and Melanesian regions.

### 4.9.4. Summary

By integrating these distribution locations with the Fourteen Yasanua, the plan ensures equitable participation and cultural recognition across all provinces, while promoting shared prosperity and resilience.

Across all distribution phases, the system reflects Solesolevaki and Veivakaturagataki. Each local, regional and national centre presents a new layer to the circular economy, strengthening social, material, and ecological bonds.

The distribution maps collectively demonstrate how architecture serves as a connector between land and sea, uniting tradition and innovation to strengthen the community and region while building upon existing systems of production and distribution. Over time, this project transforms from a localised hub in Vanua Levu into a Pacific model for cultural regeneration, circular economies, and environmental stewardship.

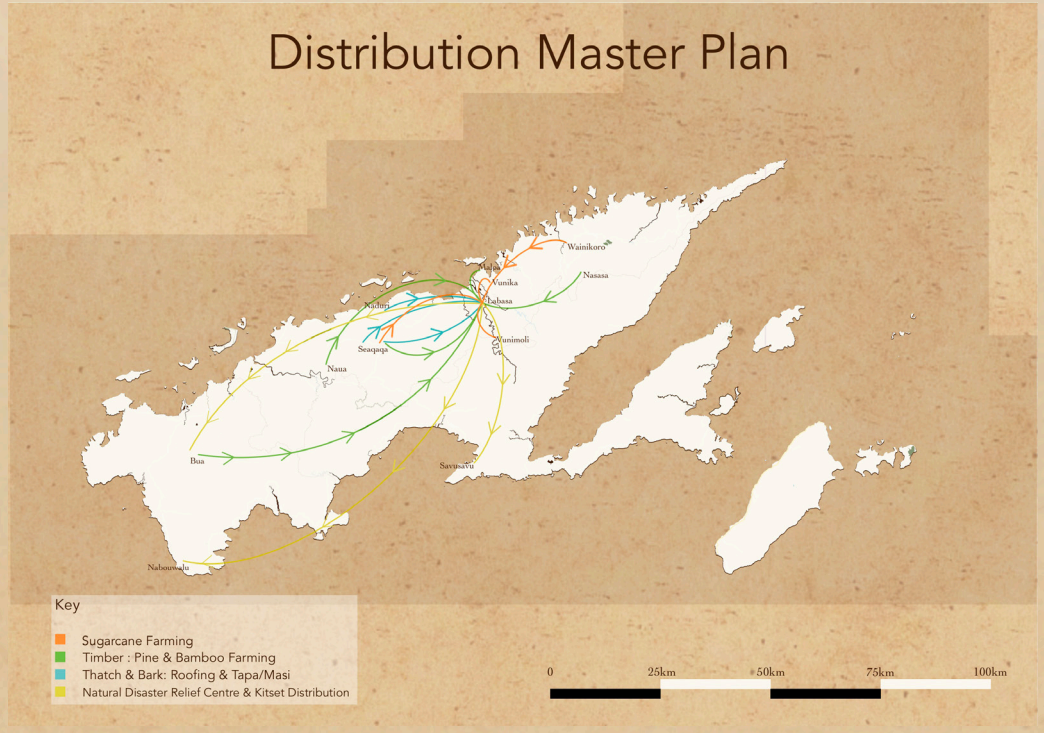



Figure 4.9.2. Distribution master plan, highlighting materials coming into the site and the first stages of kitsets being exported within Vanua Levu (image created by the author).

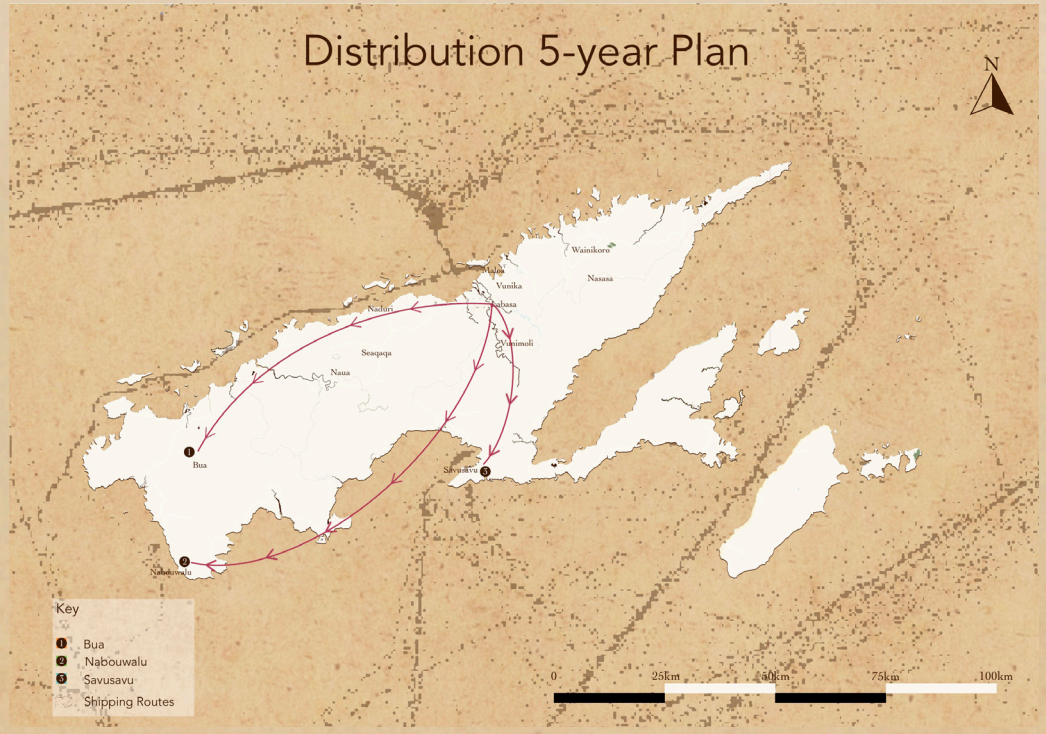



Figure 4.9.3. 5-year distribution plan, highlighting the kitsets being exported within Vanua Levu to the main ports (image created by the author).

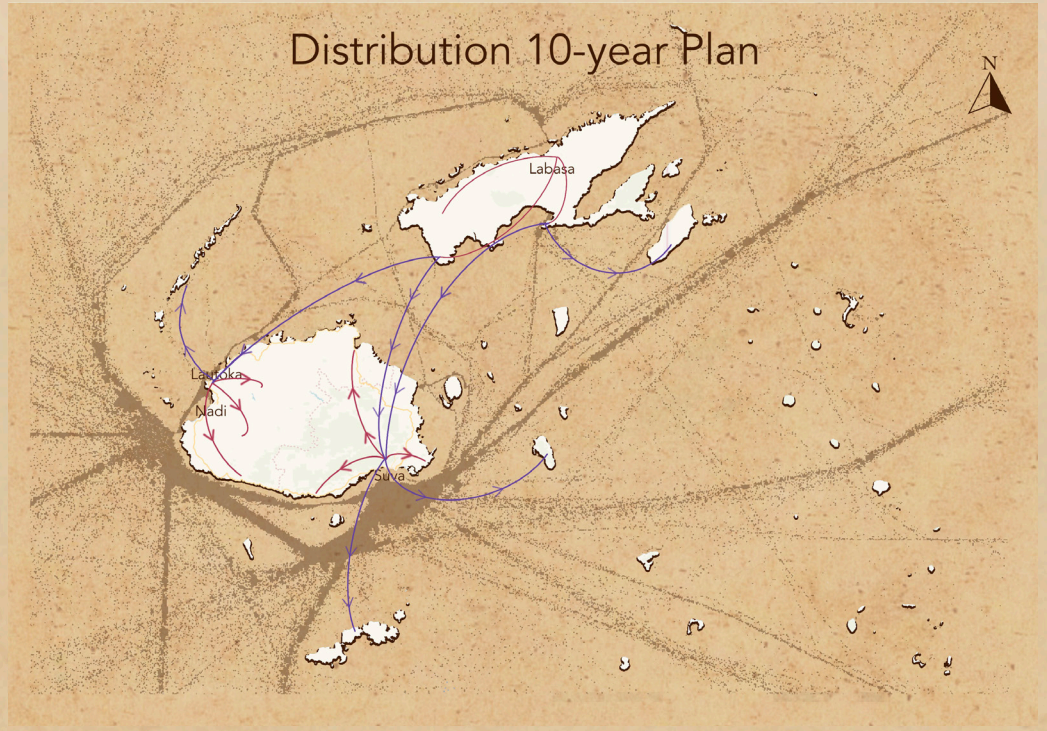



Figure 4.9.4. 10-year distribution plan, highlighting the kits being exported across Fiji and showing the shipping routes (image created by the author).

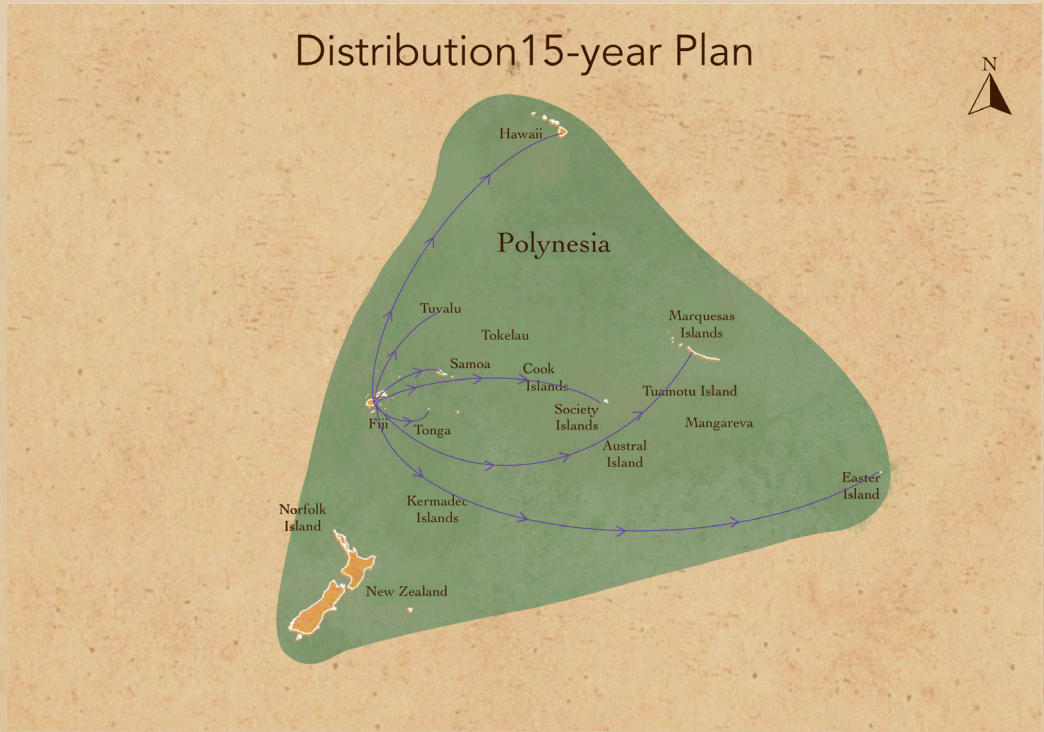



Figure 4.9.5. Image showing the 15-year distribution plan, highlighting the kitsets being exported across the Pacific islands, supporting neighbouring islands and the local economy (image created by the author).

# 4.10. Final Design Proposal

During the design stages, the images communicate how the Relief Hub operates across three key levels: health care, education and knowledge, and operations and communication, supported by seed banks that sustain food and foster cultural and spiritual connections. Together, they form a regenerative network that provides both emergency relief and long-term community support.

The kit-set is designed to be multi-functional and adaptable for homes, maker spaces, or markets. This flexibility reflects local building practices and Fijian vernacular values, as seen in open gathering areas, shared thresholds, and spaces of exchange.

The images also showcase the housing kit-set, as both a living and working space for wood carving and making. The community kit-set caters towards prayer, kava space and welcoming ceremonies, strengthening cultural identity and connection. The perspective section illustrates the circular layout, in which each level supports specific functions such as healing, learning, and coordination while encouraging community interaction.

Two seasonal images compare the site in wet and dry conditions, showing its resilience across changing climates. Additionally, the kitsets are distributed by ship or truck to disaster-affected areas, serving as seeds for new communities that can grow into self-sufficient and connected settlements over time.

Each image showcases how the Itauki special framework is in effect and relates. The images visually communicate how these principles can be applied to bring forward cultural and traditional values.

Figure 4.10.1. Sectional perspective of the Relief Hub illustrating its three levels, their functions, and the surrounding context (image created by the author).

Figure 4.10.2. Wider visual of the site showing the central hub and surrounding local activities (image created by the author).

Figure 4.10.3. Close visual of the central hub and surroundings (image created by the author).

Figure 4.10.4. Close visual of the open Rara space, illustrating earth cooking practices and local movement patterns (image created by the author).

Figure 4.10.5. Sectional perspective of the community kitsets illustrating the kava programme (image created by the author).

Figure 4.10.6. Sectional perspective of the community kitsets illustrating the prayer space (image created by the author).

Figure 4.10.7. Sectional perspective of the housing kitsets (image created by the author).

Figure 4.10.8. Sectional perspective of the housing kitsets being used as a maker and carving space (image created by the author).

Figure 4.10.9. Isometric view of the site during wet conditions, showing examples of pre-built kitsets (image created by the author).

Figure 4.10.10. Isometric view of the site during dry conditions, showing examples of pre-built kitset layouts and local activity (image created by the author).

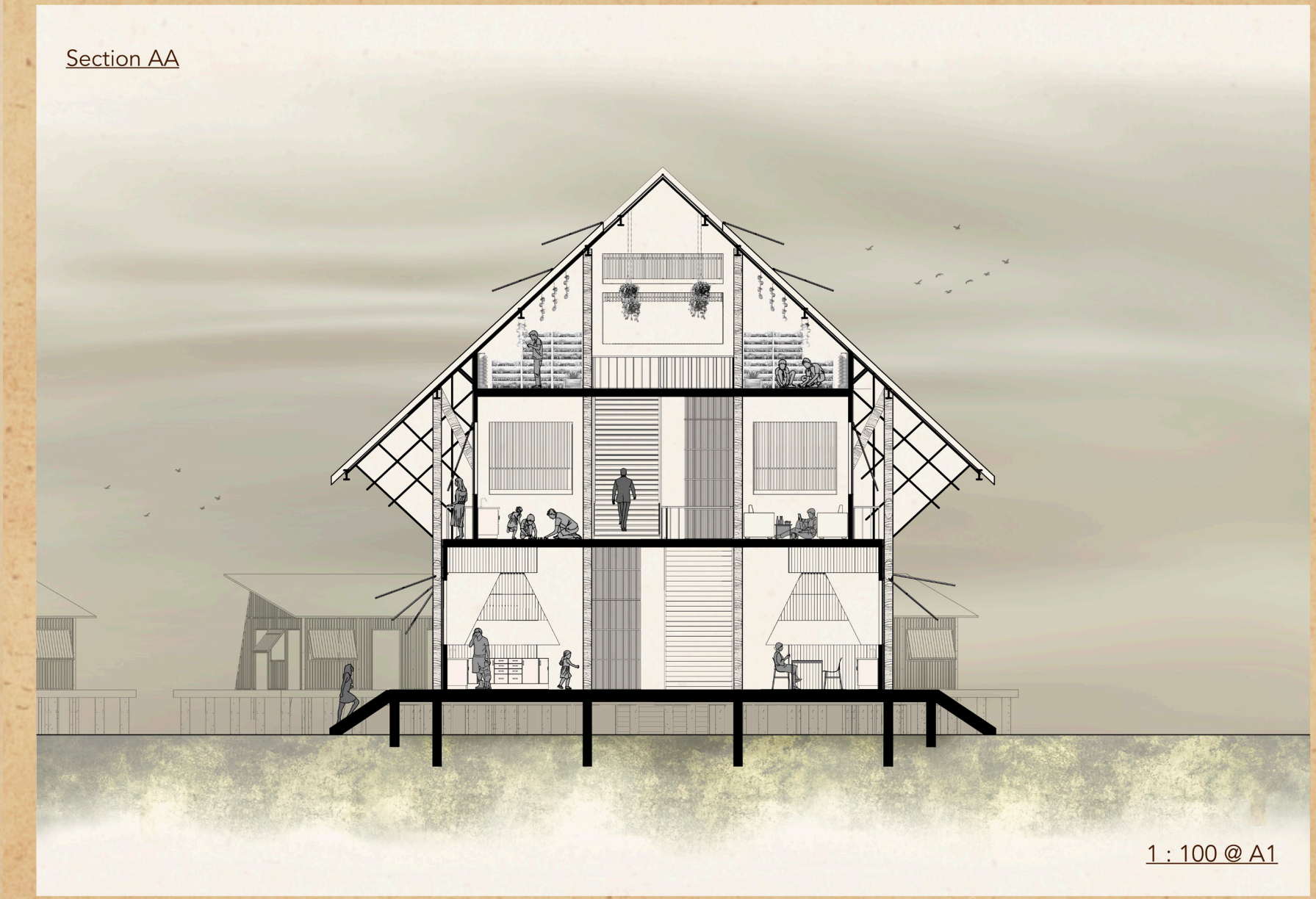



Figure 4.10.11. Section AA (image created by the author).


Figure 4.10.12. Section BB (image created by the author).

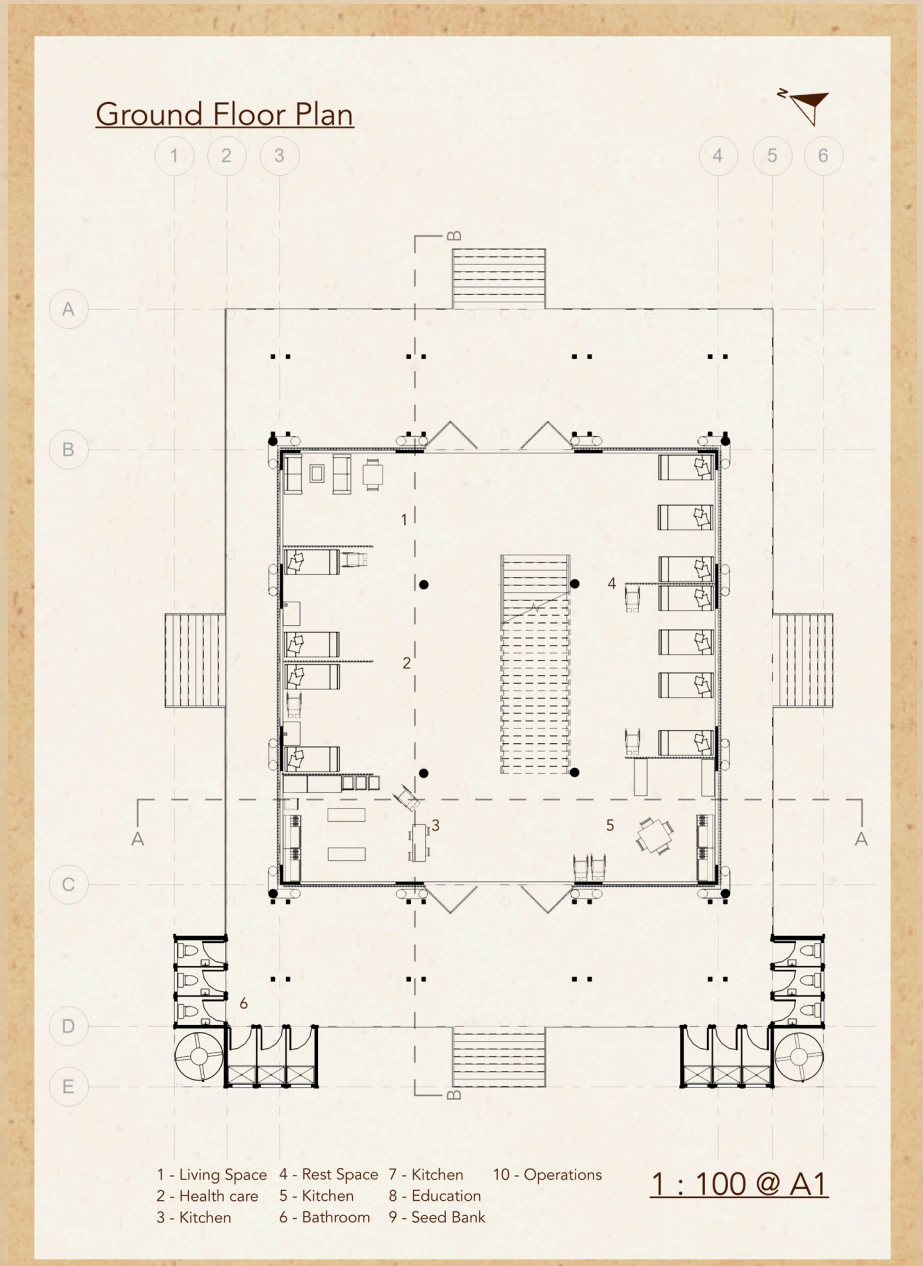



Figure 4.10.13. Ground Floor Plan (image created by the author).

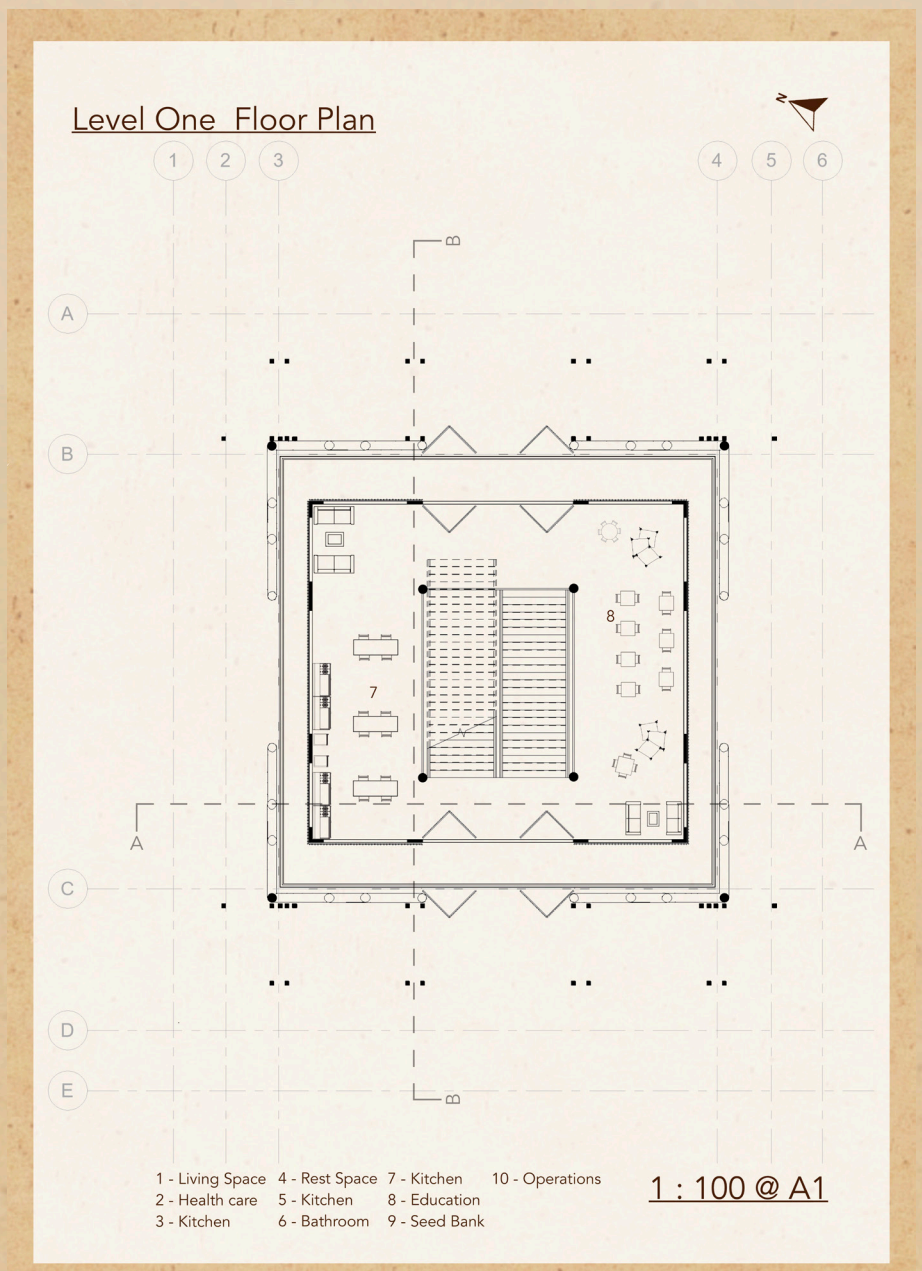



Figure 4.10.14. Level One Floor Plan (image created by the author).

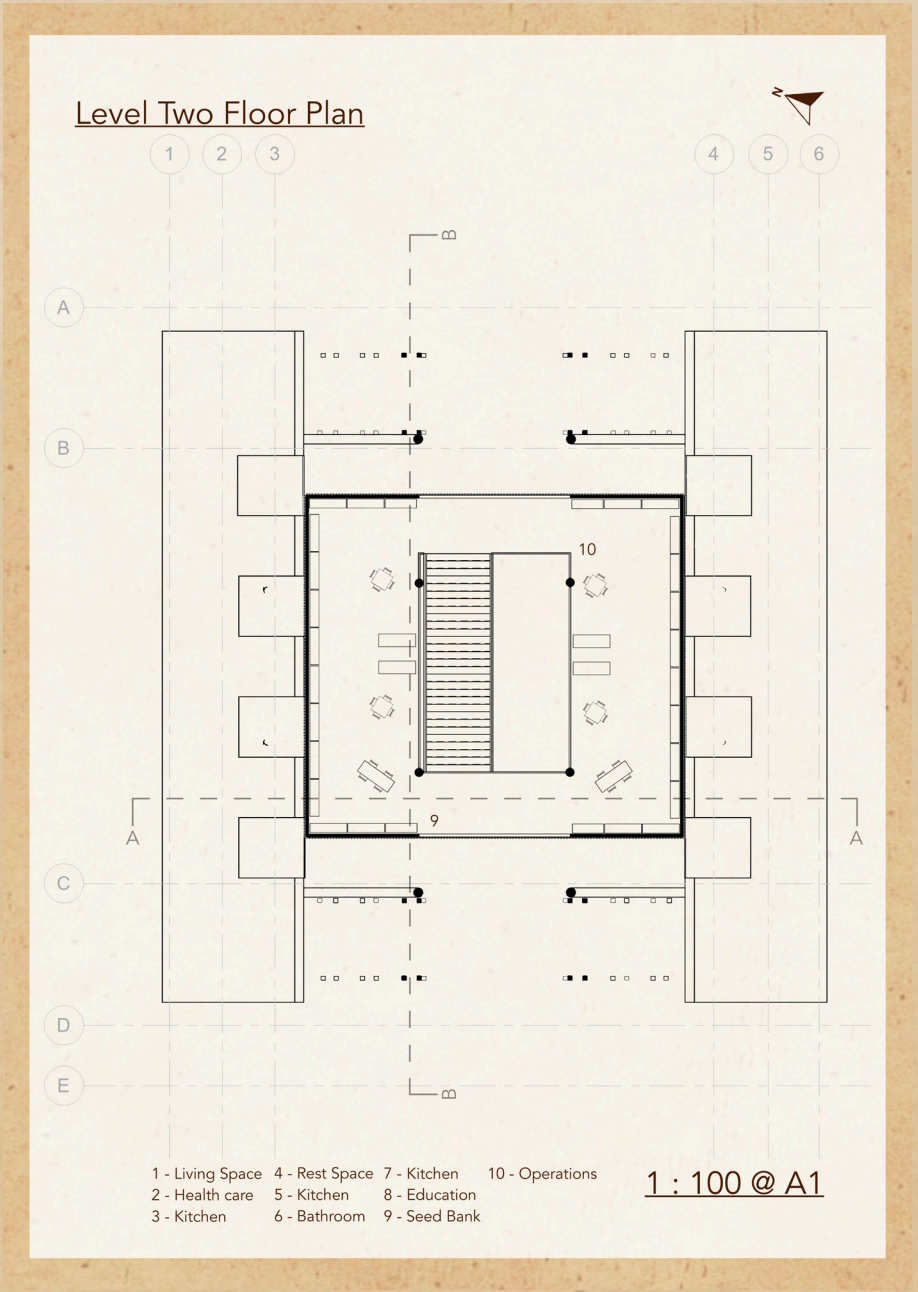



Figure 4.10.15. Level Two Floor Plan (image created by the author).

# 5 - Conclusion

## 5.1. *Talia na Vanua*

The Pacific region is one of the world's most culturally diverse and ecologically vulnerable areas. Despite having small population and carbon footprints, the island nations of the Pacific Ocean are among those most severely affected by climate change (Climate Adaptation and Protected Areas Initiative, 2025). Changing sea levels, tropical cyclones, and environmental degradation have changed how communities live, rebuild and relate to their ancestral lands. Within this frame, the Pacific peoples are exemplars of deep resilience and knowledge systems that continue to inform sustainable relations to the environment. This thesis recognises that the smallest populations are the most susceptible, but also the most capable of redefining what it means to live in harmony with the land and sea.

The greater influences that frame this project are therefore not only architectural but ecological, cultural, and ethical. *Talia na Vanua* positions architecture as a living system that interacts with climate, culture, and economy, operating as a regenerative act rather than a static object. Through a Fijian lens, it examines the necessity of environmental restoration and re-establishes Indigenous links with the land, demanding reciprocity, kinship, and respect in modern architecture. The strategy shows how the developed iTaukei values inform and guide various climate adaptations and social change across the Pacific.

## 5.2. From the Pacific to Place

Fiji is a nation of over 330 islands, of which one-third are inhabited. Fiji is home to roughly 934,000 people and reflects larger Pacific issues (Macdonald & Foster, 2025a). Despite having a little carbon impact, it is highly vulnerable to climate-change-induced. Housing and livelihoods are constantly disrupted by cyclones, seasonal flooding, and changing rainfall patterns. Rural communities relying on subsistence farming remain vulnerable to both economic and environmental shocks.

The Fijian Government has made strides in disaster preparedness. However, much of its planning remains detached from Indigenous values. Western systems generally emphasise permanence and efficiency over cultural continuity. Traditional Fijian architecture integrates adaptive and communal logic, which does not appear in Western values alongside ideas of permanence.

The project's site in Labasa, Vanua Levu, was chosen for its personal significance and strategic location beside my grandfather's timber mill, a place that connects production, labour, and community. The mill becomes a metaphor for community, continuity and regeneration, linking ecological cycles of forestry and agriculture with the social cycles of living, learning, and rebuilding.

## 5.3. Responding to the Research Aims and Questions

The outcomes of this project are incorporated in a design that enforces resilience as both cultural and ecological continuity. The project provides a Community Resilience Hub integrated with modular housing, community and food market systems. The design promotes self-sufficiency, education, and collective growth, particularly within rural regions of Fiji where access to infrastructure and economic opportunity remains limited. It also works toward a circular economic system by connecting the timber mill to kitset production and local job creation, ensuring that materials and skills remain within the community.

Through this process, the project articulates iTaukei Design Principles that inform the development of an iTaukei Spatial Framework. The research translates intangible cultural values into spatial strategies that guide planning, material use, and community interaction. Each principle within this framework contributes to the overall architectural language and ethical stance of the project:

- iSevusevu grounds the design in acknowledgment and reciprocity, shaping the ceremonial and gathering spaces at the heart of the site.
- Yavutu re-establishes ancestry and belonging, respecting the land that came before the site, capturing and respecting identity and the foundation of the project.
- Nabu weaves stories and narratives into the vertical spatial order of the Relief Hub, symbolising body, mind, and spirit through its three levels — health, education, and regeneration.
- Mareqeti ni Yau Vakavanua and Maroroi ni Veikabula embed ecological respect, ensuring that design grows with the land rather than against it.
- Solesolevaki reinforces collective labour, cultural celebrations and the role of exterior spaces.
- Veivakaturagataki provides the principle of social order and respect that shapes the layout and movement through the site.

Together, these values transform architecture into a dialogue between culture and environment, ensuring that every space reflects Fijian identity and its ongoing relationship with vanua, land, people, and spirit as one.

## 5.4. The Design as a Living Framework

The Relief Hub is the focal point of the project. It functions as a system of care and education, arranged in vertical layers. The ground floor is dedicated to health services and emergency response, connecting directly to the earth and ground, embodying physical stability and communal safety. The second level, focused on education and knowledge exchange, acts as a bridge between the tangible and the spiritual, representing growth and balance. The upper level introduces small green spaces, seed banks, and operational and communication areas that connect to the protection of indigenous plants and seeds, which hold cultural and significant spiritual values.

Building on the central relief hub, the housing kitsets expand the project's scope. Designed for adaptability, they can be assembled and disassembled, allowing for relocation and reuse across various islands. Constructed primarily from locally sourced pine and bamboo, the kitsets reflect a low-carbon, culturally grounded model of construction that can operate within the economic constraints of rural Fiji. The distribution strategy outlined in the 5-, 10-, and 15-year plans visualises the network growing from Vanua Levu to Viti Levu and eventually across the wider Pacific, forming a circular economy of knowledge, material, and care. A diagram of the circular economy can be seen in Appendix K.

## 5.5. Limitations and Opportunities

While *Talia na Vanua* achieves its conceptual goals, there are several limitations. The research remains a design-led exploration; therefore, the full implementation of the iTaukei Spatial Framework would require further technical development, community consultation, and policy integration. The complexities associated with land tenure, dealing with limited funding, and the lack of building capacity in rural areas will require further investigation and collaboration across the disciplines of architecture, local government, and traditional leadership.

However, these limitations also reveal opportunities. The framework presents a transferable model that could influence architectural education and community-driven planning across the Pacific. By connecting traditional knowledge systems with modern regenerative technologies, the framework draws on cultural continuity, sustainability, and circular economies. This approach may inspire collaborations between government, academia, and industry to inform Fiji's role in climate adaptation.

## 5.6. Greater Impact and Reflection

Ultimately, *Talia na Vanua* is more than a proposal for resilience in an increasingly unstable world; it is a statement about the role of architecture in restoring balance between humans and their environment, reflecting traditional and cultural regeneration as a responsibility of resilience and physical protection. The project demonstrates that Fijian architecture can be grounded in Indigenous knowledge systems and move beyond Western constructs.
The broader significance of this project is its capacity to change the way we think about small island, big ocean nations. Instead of being seen as vulnerable, they can be leaders in regenerative thinking and in designing with the rhythms of the land and the ocean rather than against them.

On a local level, the project provides dignity and agency to the people of Labasa. It acknowledges the legacy of those who have worked the land and timber, initiating a framework that will carry through generations. The Resilience Hub and housing and communing system becomes a vessel of memory, work, and identity, underscoring the notion that living together with land is as much of a spiritual commitment as a practical one.

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# Appendices

## Appendix A: Climate

### Summer in Fiji

Fiji's tropical climate differs from that of other countries; its summer months, from November to April, are also known as the wet season. Temperatures during this time typically range between "21°C and 31°C" (My Fiji, 2024), often bringing heavy afternoon rains.
Winter in Fiji

The winter season in Fiji lasts from May to October and is known as the dry season. In these months, Fiji often sees temperatures ranging between "16°C and 28°C" (My Fiji, 2024) with reduced humidity, and unlike colder winters elsewhere, it remains warm and comfortable.

### Tropical cyclones

Fiji is known to be affected by tropical cyclones, which can occur between November and mid-May, with the highest likelihood from late December to early April. The El Niño Southern Oscillation climate cycle also affects the islands; Fiji saw much less rainfall during years with strong El Niño events, such as 1983 and 1998 (Climates To Travel, 2019). While less common outside this period, notable events such as Cyclone Bebe in October 1972 have occurred. Cyclones present a major threat, as Fiji experiences two or three each year (Hossain, 2019).

These storms frequently cause significant damage to housing, agriculture, and infrastructure because they bring powerful rainfall, destructive winds, storm surges, and flooding.

### Precipitation

Fiji shows substantial seasonal differences in rainfall. The peak occurs in March, when the average rainfall is 234 millimetres. In contrast, July is the driest month, with an average of just 64 millimetres (Weather Spark, n.d.).

In Fiji, a wet day is defined by having at least 1 millimetre of precipitation. The wetter season lasts from 21 November to 30 April, when the chance of rain exceeds 37%, with February averaging the most wet days at 15.4. The drier season extends from 30 April to 21 November, with July recording the fewest wet days at 6.2. Rainfall is the dominant form of precipitation throughout the year, peaking at 57% in February (Weather Spark, n.d.).

# Appendix B: Demographics

## Population profile

Fiji's total population is approximately 934,000, with Vanua Levu at 136,000 to 160,000 and Viti Levu, where the majority of the population resides, at around 600,000. Viti Levu is 146 kilometres long and 106 kilometres wide, with an area of 10,389 square kilometres, while Vanua Levu has an area of 5,538 square kilometres (Fiji Guide, n.d.b). The capital of Viti Levu is Suva and although Vanua Levu does not have a capital, Labasa is the main population and administrative centre (Fiji Guide, n.d.a).

## Age population and life expectancy

Fiji's median age is considered low compared to other countries. The age distribution in 2020 showed that those aged 0-14 years make up 29.2% of the population, those aged 15-64 years make up the majority at 65.3%, and those aged 65 years plus make up only 5.5% (Economic and Social Commission for Asian and the Pacific, n.d.). This indicates that Fiji's life expectancy is very low. Despite improvements in infant mortality, Fiji's life expectancy remains unchanged. The high rates of cardiovascular disease mortality and related risk factors emphasise the significance of noncommunicable diseases in preventing additional health benefits (Carter et al., 2011). Additionally, factors such as skilled-worker migration, social disruptions, reduced health spending, and unemployment are contributing to poor infrastructure in Fiji, as evidenced by its low life expectancy.

## Employment & Poverty

Fiji has a moderate level of poverty compared to global standards. Around 24%-30% of the population lived below the national poverty line (Gupta, 2024), with rural areas experiencing higher poverty rates than urban centres. Economic inequality is present, with factors like reliance on agriculture, vulnerability to climate change, and limited job opportunities contributing to hardship. Fiji experiences a moderate to high level of deprivation, particularly in rural areas and informal settlements:

- Housing - many people live in informal settlements with poor infrastructure (Kiddle, 2011).
- Employment - a significant portion of the population relies on subsistence farming or informal work with low wages and job insecurity (EBSCO, 2025).
- Healthcare and education—while available, access to quality services can be limited, especially in outer islands and rural regions.
- Water & sanitation - some areas struggle with access to clean water and proper sanitation facilities (UNICEF, 2018).

Fiji has a 4.2% unemployment rate, which is considered low to moderate by global standards. (Trading Economics, 2019) For Fiji, a 4.2% rate is relatively low, especially compared to past peaks (9.4% in 1988). However, youth unemployment (15-24 years old) is much higher at 15.25% (Statista, n.d.), suggesting challenges in transitioning younger people into the workforce.
As of April first, 2025, the minimum wage in Fiji is 5.00 per hour, converting to 3.75 New Zealand dollars.

Fiji's poverty rate can be analysed as follows:

- 29.9% of Fijians lived below the basic needs poverty line (2019-2020).
- The poverty rate is higher in rural areas (41.5%) than urban areas (20.4%).
- 52.6% lived on less than FJ$5.00 per day in 2019 (World Bank Group, 2021).

According to this data, poverty in Fiji is a prominent issue that is influenced by social and economic factors. Youth unemployment is significantly higher than the general unemployment rate, reflecting challenges in regard to stable employment. Many families continue to live below the poverty line, especially in rural areas where access to clean water, housing, healthcare, and education is limited, and families have to rely heavily on local food crop growth and roadside markets for income and stability. Overall, the data shows that deprivation is still fuelled nationwide by economic inequality, reliance on agriculture, and climate change vulnerability.

## Appendix C: Economics

Fiji's economy is shaped by both tourism and agriculture, with many Fijians engaging in subsistence farming. Alongside growing food for their own use, most Fijians also grow extra crops like copra, cocoa, kava, taro (dalo), pineapples, cassava, and bananas to sell at the roadside for additional income. On the commercial side, the economy relies heavily on sugarcane, cultivated mainly by independent farmers, and on garment production (Foster & Macdonald, 2025).

Fiji's economy has been significantly shaped by sugar mills, mainly because of their long-standing support of exports, rural livelihoods, and infrastructure development. In the past, the sugar industry has been a major contributor to Fiji's agricultural GDP, accounting for 20% to 30% of total GDP. In 1998, the mills supported rural communities (Dean, 2022). They shaped land-use patterns in cane-growing areas such as northern Vanua Levu and western Viti Levu by providing thousands of farmers and labourers with jobs. In addition to generating direct revenue, sugar had a direct impact on shipping, transportation, and other supply chain sectors, enabling the export of byproducts like molasses. However, the sector's role has decreased in recent decades. This is due to the loss of preferential trade agreements, declining yields, rising input costs, and frequent damage from cyclones and floods (Medina Hidalgo et al., 2024). Sugar now accounts for only about 1% of Fiji's GDP (Gunathilake et al., 2020). Additionally, while sugar prices remain the same in Fiji, labour, farming, fertiliser, and chemical costs have increased, accompanied by land-lease issues. The rugged terrain of Fiji has contributed to the decline of the country's sugar industry. These challenges showcase how Fiji's economy is shrinking and people have raised concerns about rural poverty, migration, and over-reliance on government subsidies. Additionally, this decline in the sugar industry highlights the need for alternative crops, biofuel production, or other rural industries, ensuring that the legacy of sugar continues to support Fiji's economy in new, more resilient ways.

## Appendix D: History

### Early settlement and colonial beginnings

Fiji's history dates back thousands of years, beginning with the arrival of Austronesian peoples around 1000 BCE, followed by the later arrival of Melanesian settlers. These communities shaped the foundations of iTaukei society, developing agricultural practices and strong ties to the land. By 1000 CE, tribes had emerged, establishing extensive trading networks with Tonga and Samoa (Center for Excellence in Disaster Management and Humanitarian Assistance, 2023), which influenced Fijian culture, governance, and ritual life.

European encounters began in the 17th century, when Dutch explorer Abel Tasman sighted the islands in 1643, followed by British explorer James Cook in 1774. Between the late 1700s and the 1800s (Ministry of Foreign Affairs, 2024), traders and missionaries arrived, initiating the sandalwood and sea cucumber trades. These new exchanges brought both opportunities and challenges, shifting Fiji's economy and culture and marking the beginning of external influence on Fijian leadership structures (Wikipedia, 2025).

### British colonial rule and the path to independence

By the mid-19th century, Fiji faced internal rivalries and growing foreign involvement. In 1871, Ratu Seru Epenisa Cakobau declared himself King of Fiji in an attempt to unify the islands (Robin, 2025), but increasing pressure led to Fiji's cession to Britain on 10 October 1874 (Macdonald & Foster, 2025b). Colonial governance undermined traditional chiefly authority while reshaping society and instituting new land management and administrative structures.

A defining feature of the colonial era was the introduction of over 60,000 indentured labourers from India (the Girmityas) between 1879 and 1916 to work on sugar plantations (Leckie, 2024). This dramatically changed Fiji's demographics and cultural makeup, resulting in long-lasting conflicts over identity, political engagement, and land ownership. From 1960, Fiji saw major reforms: in 1963, general elections were introduced, and in 1966 Ratu Sir Kamisese Mara became Chief Minister. Finally, on 10 October 1970, Fiji achieved independence, transitioning into a parliamentary democracy within the Commonwealth (Robin, 2025).

### Post-independence challenges and political transformation

Politics in Fiji became ethnically divided between Indigenous Fijians and Indo-Fijians following the country's independence in 1970. Through communal voting, the 1970 Constitution reaffirmed this, with the National Federation Party (NFP) standing in for Indo-Fijians and the Alliance Party representing Indigenous and European interests. As Indigenous Fijians sought to protect their land and paramount authority, and Indo-Fijians demanded equal rights, tensions

increased, leading to the rise of nationalist parties like Sakeasi Butadroka's Fijian Nationalist Party (Durutalo et al., n.d.).

This division was contested in 1985 with the establishment of the multiethnic Fiji Labour Party (FLP). However, Sitiveni Rabuka's coups in 1987 restored Indigenous power and brought about the 1990 Constitution that favoured Fijians. Despite the 1997 Constitution's emphasis on inclusivity, Fiji's post-independence politics were nonetheless shaped by ethnic and regional divisions, as evidenced by the 2000 and 2006 coups (Durutalo et al., n.d.).

# Appendix E: Design Case Studies

**Naidi Community Hall**

The community halls in Fiji is a project produced by CAUKIN Studio. One of these is the Naidi Community Hall gathering space. The hall directly reflects the studio's emphasis on creating place-based architecture that incorporates the cultural and environmental context of Pacific Island communities. This emphasis is evident in the construction of the hall and in the discussions that led to its design and material choices. Local and cultural knowledge led CAUKIN to work with locals, helping ground the project in local traditions (Tellisi, 2021).

The project features an open-air design that enhances ventilation and fosters a strong connection to the surrounding environment. A key design move within the studio is the ability to create a project that reflects a place's cultural background. Features such as traditional construction techniques, like using pine beams spanning from the ground to the roof, achieve a more continuous construction method, reducing weak points within the structure (Tellisi, 2021).The challenge posed by natural disasters supported the inspirational design idea, as it aimed to create safe, resilient infrastructure for the local community (Tellisi, 2021).

Additionally, the community halls were built to "provide space for the community to come together for meetings, celebrations, funerals, and weddings. In Fijian culture, the community hall is the cultural and operational heart of a village" (Pintos, 2019, p. 1).

In this research, the Naidi Community Hall provides insights into sustainable, culturally rooted, and flexible architecture for low-tech settings, and serves as a case study of the fusion of traditional design principles with contemporary demands (CAUKIN Studio, n.d.). This project exemplifies how architecture can prioritise both function and cultural identity, thereby empowering communities in vulnerable settings. The hall is a prime example of how architecture can be both economically viable and foster a strong sense of community through its collaborative design and construction process.

### Nest We Grow: Open-air public food market and communal space

Nest We Grow is a structure built in collaboration with Kengo Kuma & Associates and the College of Environmental Design at UC Berkeley. It was created to serve the Hokkaido community in Japan, with a focus on inclusivity and building relationships with locals. The open-air, timber-framed building facilitates group activities, including farming, cooking, and gatherings. Each of the building's four levels has its purpose, such as storing, preparing, dining, and storing food. The project's focus is on sustainability and environmental awareness. This is supported by the use of timber, a locally available and renewable resource (UC Berkeley CED Graduate Team, n.d.). The design features a timber framework that combines traditional and modern architectural techniques. By acting as a greenhouse, the central atrium improves passive heating and natural ventilation. The structure can adapt to seasonal variations thanks to its semi-open design, which also keeps it closely connected to the environment. The approach to food sustainability and social interaction is promoted by the addition of edible plants and shared dining areas (Valenzuela, 2024). Nest We Grow addresses global issues such as social disconnection, sustainability, and the increasing demand for community-focused spaces. The project highlights the value of environmental stewardship and community resilience by providing a space for people to gather, share meals, and participate in food production.

### Cardboard Cathedral in New Zealand

The Cathedral in New Zealand was built in response to the 2011 Christchurch earthquake, which destroyed much of the city and the historic cathedral. Architect Shigeru Ban created a Transitional Cardboard Cathedral as a place of prayer for locals. Based on his prior experience creating emergency architecture in Kobe, Japan, Ban built a temporary yet sturdy structure out of cardboard tubes, local steel, and lumber (Scottgurian, 2024). The structure features an A-frame silhouette, formed from 98 cardboard tubes filled with wooden structural beams. At the base, the pillars are grounded upon shipping containers, and the roof is crowned by polycarbonate (Crook, 2025).

The form was built to withstand future earthquakes and to use sustainable materials. The project was completed within two years and provided a cost-effective solution that met 130% of New Zealand's seismic requirements. The cathedral ultimately conveys the idea of adaptability and recovery, demonstrating how creative, resource-conscious design can effectively address disasters and community needs (Scottgurian, 2024).

### Khudi Bari

Khudi Bari, also known as the small house, is a modular structure developed during the 2020 pandemic lockdown as a temporary shelter. The structure can be quickly constructed and disassembled, allowing for mobility. This is due to its simple and efficient construction using steel joints and bamboo, metal roofing, and locally available wooden planks, which reduce transport costs and support the local economy (Vitra, 2019). Keeping the price low at just US$400 allows the project to be built by three people (AKT II, n.d.).

The structure is built to be lightweight and resilient, designed to withstand strong winds and water pressure, while requiring only a shallow foundation. The form provides both living space and a flood refuge, allowing safety during rising waters. The design draws from local traditional architecture, using locally sourced materials for flexibility and easy maintenance. Beyond housing, it has been adapted for use in community and women's centres, with Marina Tabassum Architects collaborating closely with local communities to share construction knowledge and promote scalable, community-led resilience (Divisare, 2025).

# Appendix F: Layout

## Place, space, and hierarchy

Spatial layouts play a significant role within traditional Fijian architecture. According to Turner (1988), a place only gains meaning when people give it significance or value, making it a place. A space becomes a social space when people share and define it together. "A place is a social construct; a location only becomes a place when significance is conferred on it" (Turner, 1988, p.421). Additionally, placement, or the arrangement of locations in relation to one another, also has symbolic significance. These symbolic connections vary across communities, revealing how culture shapes people's perceptions of place and space (Turner, 1988). Turner (1998) then further elaborates on the symbolic aspect of spatial organisations, insisting that places are not a single entity, highlighting relationships and social identity. In traditional Fijian settings, spatial organization encodes social identity and hierarchy beyond defined physical boundaries. The vale (house) follows a system of respect and order, which is expressed in a layout of placement, rather than random placement and areas. Even though it is just one large open space, Turner (1998, p. 424) points out that the inside of a Fijian home has an internal distinction of "upper" (colo) and "lower" (ra), where the lower is connected to daily, feminine activities and the upper is associated with the sacred, chiefly, and male domain. This division creates a spatial metaphor for hierarchy: chiefs and senior men occupy higher positions, while women and younger members occupy lower positions. This is further reinforced by the symbolic connection with the human body and the home space, where the feet in contact with the ground reflect a lower, less sacred position, and the head is holy and elevated. (Turner, 1988, pp. 424-425).

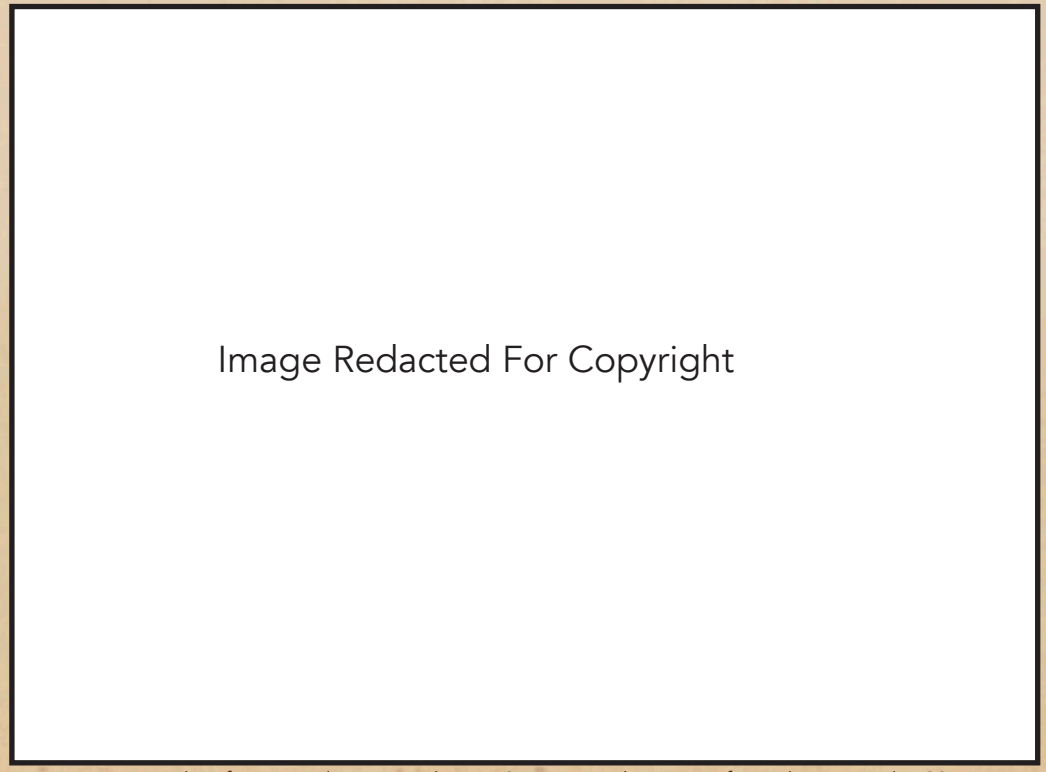


Figure A1. Hierarchy of space within a Fijian house. Source: "Architecture of Fiji," by F. Zamolyi, 2015, in Encyclopaedia of the history of science, technology, and medicine in non-Western cultures (https://doi.org/10.1007/978-94-007-3934-5_10215-1).

### Exterior spatial order and the rara

Additionally, hierarchical spatial layouts not only exist within the building layout but also extend further into the exterior context. Placement and building layouts revolve heavily around the rara (village green/ceremonial ground), which serves as the central hub. Surrounding the rara are the bure and other village buildings, arranged in structured layouts that symbolically represent depth and value. The closer a building is to the rara, the greater its significance. "In Fiji, the central feature of any village is the valelevu (big house/chief's house), the valenibose (meeting house) and the rara" (Igglesden, 2019, p. 146).

Furthermore, traditional Fijian bures present different building types, each with its own shape and meaning. Social height is correlated with physical height. A higher house platform, for example, may be held by someone in a higher position (Sakagami et al., 1998, p. 97) Collectively, these spatial hierarchies form a triangular or mountain-like composition, with significance intensifying toward the village centre.

Cultural meanings are embedded in traditional Fijian spatial arrangements by associating space with social order, such as hierarchy, respect, and identity. In a village's configuration, the rara is the heart of the village, as the placement and height of a building signal authority. At the same time, the vale has sections known as "upper" and "lower" which signify chiefly roles, the sacred, and gender. These spatial arrangements constantly reinforce cultural values and relationships in the built environment, thereby establishing architecture as a dynamic representation of the social structure.

### Western influence on contemporary Fijian Architecture

In contrast to traditional Fijian spatial arrangements, contemporary architecture in Fiji is heavily influenced by Western practices, prioritising efficiency, durability, and urban standards over cultural symbolism. Modern homes and public structures often adopt compartmentalised, standardised forms without encoded meaning for communal layouts. Within Fijian culture, the identity and sense of belonging of its Indigenous people are closely linked to their cultural heritage; therefore, traditional customs, ceremonies, languages, and artistic expressions are components of cultural identity and directly improve the well-being of the people as a whole (Alam, 2025). Preserving cultural and historical heritage is essential for maintaining identity and cultural connectivity. However, rapid urbanisation and growth have driven the adoption of modern building practices and materials that often ignore or override traditional knowledge (Ruggiero, 2023), resulting in design approaches that prioritise individual users over collective needs.

Contemporary forces such as globalisation, urbanisation, environmental degradation, and social transformation pose significant threats to ancient practices (Alam, 2025). The dominance of Western-influenced built environments, which degrade cultural customs, can lead to feelings of displacement, confusion, and low self-esteem. Furthermore, cultural practices usually incorporate traditional knowledge systems about sustainable living, environmental management, and health (Gorenflo et al., 2012, as cited in Alam, 2025).

### Colonial influence on food and social interaction

Not only has the rapid growth of Western influence impacted Fiji's built environment, but it has also altered patterns of eating and social interaction within communities. These influences began during the colonial period, following the Second World War, leading to changes in Fiji's local diet. This shift encouraged dependency on imported food, such as deep-fried fish, which would traditionally have been eaten raw. Experts argue that the Pacific Islands' adoption of Western diets has contributed significantly to rising obesity rates, with research linking the replacement of traditional foods with Western foods to this issue (Pacific Farmer Organisations, 2019). Notably, 32.1% of Fijian adults are classified as obese (Ministry of Health and Medical Services, n.d.).

In conclusion, placement, hierarchy, and symbolism control both the internal and external layouts of the built environment in traditional Fijian architecture, which directly incorporates cultural values into spatial organisation. Through spatial order, the vale and rara serve as key frameworks for expressing authority, identity, and respect. On the other hand, the popularity of modern architecture with Western influences has moved the focus away from these cultural meanings and toward efficiency and standardisation. In addition to changing the built environment, this change also weakens cultural continuity, leading to more significant social and lifestyle shifts that affect Fijian communities' identity and overall well-being.

# Appendix G: Materiality and Construction

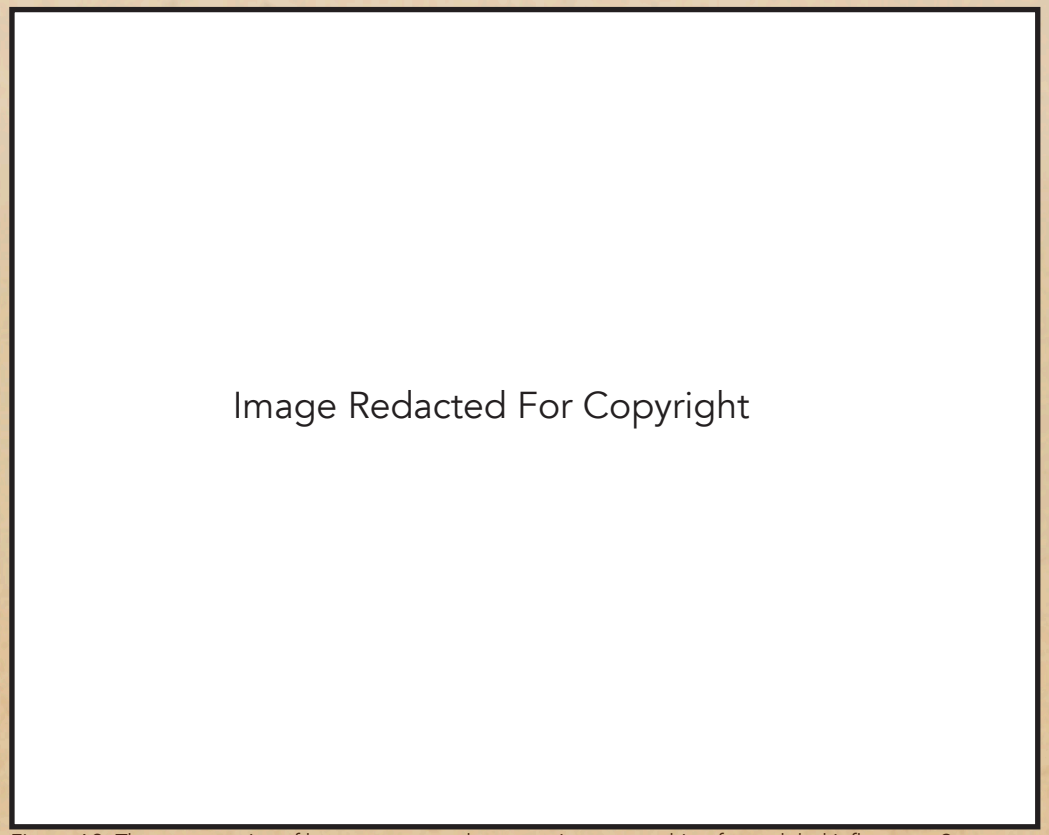


Figure A2. Three categories of houses - vernacular, precarious or resulting from global influences. Source: "Detailed country profile Fiji: Local building cultures for sustainable and resilient habitats," by A. Caimi, E. Crété, T. Joffroy, O. Moles, M. Serlet & E. Gutierrez, 2017, CRAterre, LabEx, AE&CC/ENSAG/Université Grenoble-Alpes, & International Federation of Red Cross and Red Crescent Societies (https://hal.science/hal-02888146).

Functions of bure types (bure kalou, bure ni sa, vale leka)
Historically, the name bure in traditional Fijian contexts referred either to men's houses, temples, or chiefs' houses. In modern times, the term is more and more commonly used for all types of traditionally constructed dwelling houses (Zamolyi, 2016, p. 15).

Both the natural and built environments deeply influenced the placement and design of the bure kalou (spirit temple). The land beneath was frequently raised using natural hills or artificial earthworks to increase its height and spiritual significance, strengthening its connection to Kalou Ou (God). Its primary function was to serve as a spiritual link between the spirit world and the living, with its height signifying the strength of this connection. However, structural limitations determined how tall it could be built (Zamolyi, 2016, pp. 16-17), demonstrating the compromise between material constraints and cultural symbolism.

Fijian bure/homes typically had a single entrance, with more doors added throughout time. During the colonial era (1874 to 1970), windows were first introduced. In wealthy residences, the floors were covered with vodra (screwpine) mats or dried grass, and the interiors were minimalist, with little to no furniture. Although cooking was initially done indoors, colonial and missionary influences led to the construction of separate kitchens for health reasons (Zamolyi, 2015). Additionally, these subtle changes indicate a shift from prioritising native designs to Western comfort and hygiene standards, illustrating how colonial authority reshaped a space's identity.

Bure ni sa (men's house)/bure ni cauravou (house for bachelors)

Traditionally, in pre-Christian Fiji, primary families were disregarded as separate entities while living together, and extended families were considered as other clans/villages. Traditionally, villages were known as one big family. As a reflection of a gender-segregated social system, males frequently lived apart in the bure ni sa (men's house). At the same time, women had their own area (Zamolyi, 2015). After the introduction of Christianity, missionaries removed these communal dwellings. The loss of these places demonstrates how missionaries fractured social unity by dismantling traditional village structures that once enabled people to live together.

Vale leka (short house)

Vale leka, also known as the short house, is an architectural solution for combating high wind areas and natural disaster-prone areas/islands. Structurally, the building has very low (60cm) walls, secured with stones, or none at all, and the roof is built directly on the ground, giving it a triangular shape (Zamolyi, 2015, p. 12). This enables the house to work with the surrounding terrain and context, and to withstand strong winds and tropical storms that can occur in coastal regions or low-lying islands, by guiding the wind around and over without obstruction. These houses are

commonly found in several coastal areas within Fiji, extend throughout the Pacific islands, and can also be found in Hawai'i. This plan is an early example of disaster-resistant architecture and may be better at addressing climate risks than contemporary architectural designs.

### Building technology, materials

Traditional Fijian houses (bure or vale) were built entirely without nails or modern carpentry joints. Instead, they relied on round timber pieces, natural lashings, and simple groove or V-shaped cuts to connect structural elements. Construction began with placing wooden posts either directly into the ground or into an earthen platform called a yavu. The framework was then assembled with wall plates, ridge beams, and posts, all securely lashed together using strong lianas (forest vines) and magimagi (coconut sinnet) (Zamolyi, 2015, pp. 21–25). Construction methods were straightforward, utilising basic tools such as bone and stone to shape the timber. Once materials were gathered and prepared, the construction process was quick. After European contact, iron tools became common, but the traditional lashing techniques remained central to Fijian architecture. The simplicity reflected a sophisticated ecological understanding, in which resilience was achieved without the use of industrialised tools or nails, acknowledging that architecture is both technological and cultural.

### Walls

Traditionally, there were two main ways of building walls. One method used bundles of reeds tied and threaded onto a bamboo frame, similar to thatched roofs (Elkharboutly & Wilkinson, 2022). The other used woven bamboo mats. These walls were either woven directly onto the house structure or were made by the women in the village before being installed during construction.

### Thatches

An essential part of the structural design aspect of traditional Fijian homes is the iconic thatched roof; this is one of the building's most time-consuming and labour-intensive parts. Thatching is typically constructed from dry bamboo reeds which must be dried, tied into small bundles, and then threaded with coconut husk into a bamboo net (Elkharboutly & Wilkinson, 2022). Assembly typically starts from the bottom, working up to the roof; this technique is essential, and layering the thatches in this way prevents water from seeping into the roof. Thatching is a labour-intensive process that highlights communal systems and ties into solesolevaki, making construction a social as well as a technical activity.

### Fumigation

Once the bure is entirely constructed and assembled, the last and final step is fumigation, which is done inside. Fumigation is usually done by burning wood in a small fireplace inside the house for roughly five to seven days. Vesi, or sandalwood, was typically chosen alongside tavola tree leaves and coconut husks and leaves to produce the most smoke and ensure proper treatment (Elkharboutly & Wilkinson, 2022). It is also considered a spiritual cleansing, preparing the space for human occupation. The dual action of both the technical and the spiritual reveals how traditional practices embed holistic worldviews that are often absent in contemporary construction.

### Structural connections

An essential component of the design of traditional buildings is the structural elements that ensure resistance against natural disasters. There are usually three types of structural connections in building design: "(1) the connection between prominent members, (2) the connection between primary and secondary members, and (3) the connection between secondary members" (Elkharboutly & Wilkinson, 2022, pp. 12-13).


Figure A3. Interlocking connection (left), lashed connection between rafters and purlins (middle), central post connection to ground (right). Source: "Cyclone resistant housing in Fiji: The forgotten features of traditional housing. International Journal of Disaster Risk Reduction, 82, 103301," by https://doi.org/10.1016/j.ijdrr.2022.103301

These structural connections were made solely with lashings and interlocking timber wall posts, with horisontal beams. It was also observed that buildings with a central post connecting the roof to the ground were more resistant to damage during cyclones and other poor weather conditions (Elkharboutly & Wilkinson, 2022), as this structure helps distribute the roof load and mitigate its impact. This shows how traditional engineering solutions addressed environmental resilience long before formal disaster codes, yet this knowledge is rarely acknowledged in mainstream architectural practices.

# Appendix H: Relief Centres

Disaster relief in Fiji

Fiji's frequent exposure to natural disasters, such as cyclones and floods, underscores the urgent need for resilient, rapidly deployable housing solutions. In Fiji, there are no large-scale, permanent natural disaster relief centres like those in other countries. Instead, relief efforts are often managed through a network of temporary shelters and community spaces such as schools, churches, and community halls (Narayan et al., 2019, p. 43). These facilities are commonly used during cyclones, floods and other natural disasters because they are easily accessible to local communities.

When it comes to organising an emergency response and allocating resources like food, water, and basic medical assistance, government groups like the Fiji Red Cross Society, non-governmental organisations, and international organisations like the United Nations Development Programme help construct temporary housing solutions and supply aid to help families in their post-disaster reconstruction (Fiji Red Cross & International Federation of Red Cross and Red Crescent Societies, 2016).

Furthermore, a community-based disaster response is often established at the village level to ensure rapid action and communication between affected individuals and government agencies. However, financial constraints, isolated islands and logistical difficulties can occasionally cause delays or gaps in relief efforts. Despite these challenges, the reliance on strong community networks, faith-based organisations, and international partners demonstrates the presence of positive social structures within local communities, showcasing how the bonds of resilient Pacific communities make a positive impact on the lives and livelihoods of Pacific people (Pacific Community, n.d.).

## Appendix I: Timber Mills and Community Rebuilding After Cyclone Winston

Timber has long played a significant role in housing, from the building of traditional bures to the timber-framed homes typical of rural communities. Local timber mills have consistently supplied processed wood, which is frequently used for other purposes after disasters. This wood is provided by the nation's pine and hardwood industries, especially in places like Labasa.

A notable instance of timber mill engagement occurred following Cyclone Winston in 2016, when non-governmental organisations like Youth With A Mission (YWAM) collaborated with volunteers from Montana, Alabama, Tennessee, Iowa, Oregon, and California. They came up with an idea of producing portable sawmills, which proved to be quite effective and helped in reconstructing over 600 homes (Timberline, 2021). The use of Wood-Mizer sawmills enabled on-site timber processing, supporting rapid housing construction and the training of locals in the use of milling equipment. To enhance reliability and reconstruction, these transportable sawmills were first built in garages as kitsets, ready for export to Fiji when needed.

## Appendix J: Precarious Habitats and Informal Housing

Additionally, because of Fiji's rural and village lifestyle, the habitat's precarious nature plays a significant role. A precarious habitat depends on an area's location and other factors, such as poverty, natural disasters, climate change, or conflict. In many cases, it refers to homes or shelters built by low-income families who may not hold legal land titles. Because of these insecurities/struggles, families tend to develop light, temporary structures that can be moved if needed. These housing clusters typically form on the outskirts of cities, where access to water, electricity, and sanitation varies significantly (Caimi et al., 2017).

These homes typically lack adequate health and safety standards because they are frequently constructed outside of official rules and regulations, and they can be viewed negatively by some because they occupy space that could be used for other purposes. Despite these difficulties, locals often form a deep emotional connection with these locations. This is because the homes are constructed using locally available resources and draw on the ingenuity of the residents in meeting their basic needs. Additionally, the cultural and community bond is not lacking; families also add their own touches of comfort, income-generating activities, or shared outdoor areas for social life and spaces that otherwise would be lost in more formal housing models.

## Appendix K: Circular Economy

Talia na Vanua works as a circular economy that begins with collaboration with local timber mills and the collection of natural materials. From these, modular housing kit-sets are developed, creating new jobs and training opportunities for local workers. Over the next 10 to 15 years, the goal is to distribute these kit-sets across other Pacific Islands,  supporting job creation within timber mills, providing shelter and safe living environments for rural communities, and strengthening the local economy through trade and regional recovery.


Figure A4. Circular economy diagram (image created by the author).

## Appendix L: Process Work and Concepts


Figure A5. Fijian patterns and meanings (image created by the author).


Figure A6. Diagram of living with nature (image created by the author).

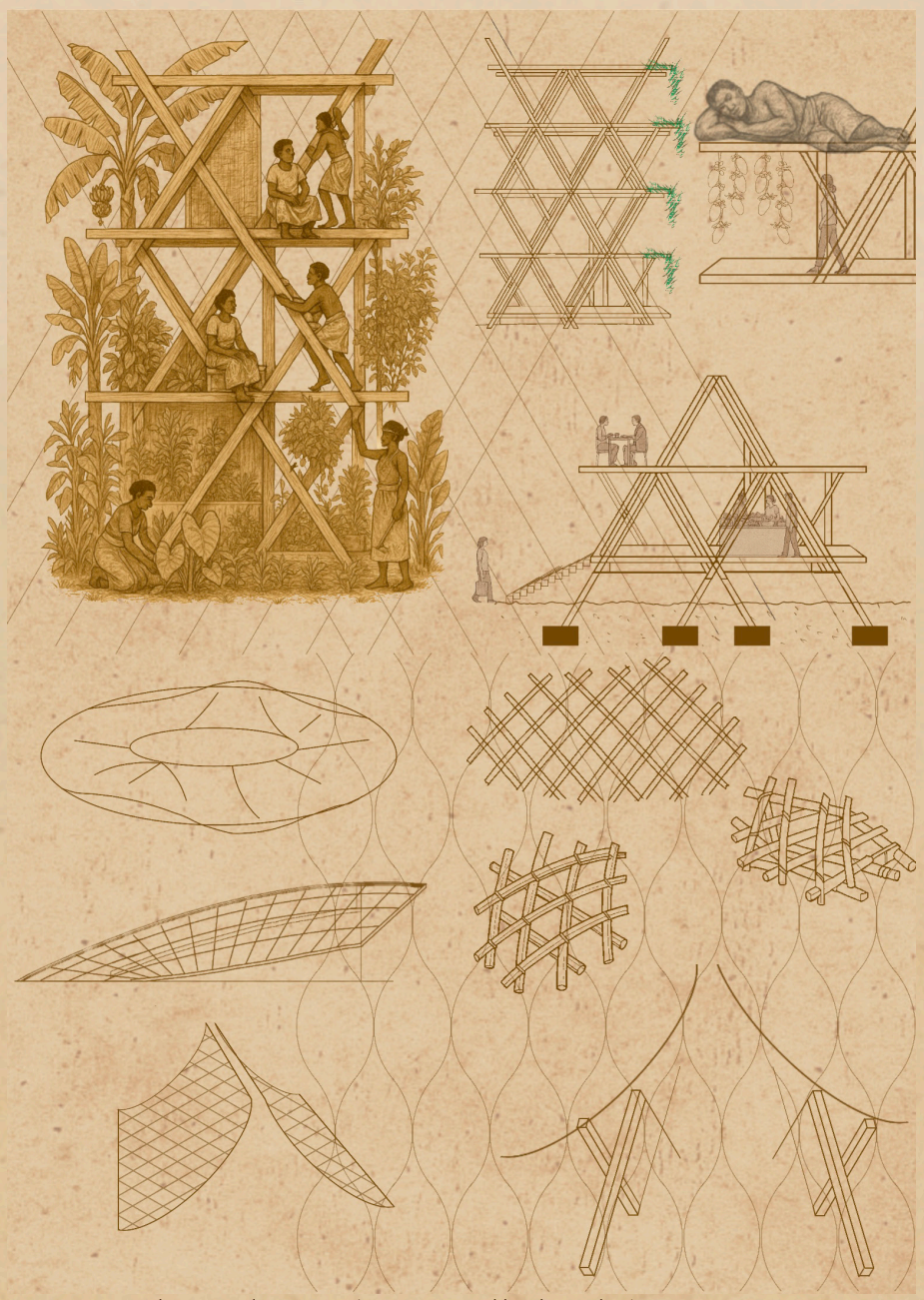

Figure A7. Initial structural concepts (image created by the author).

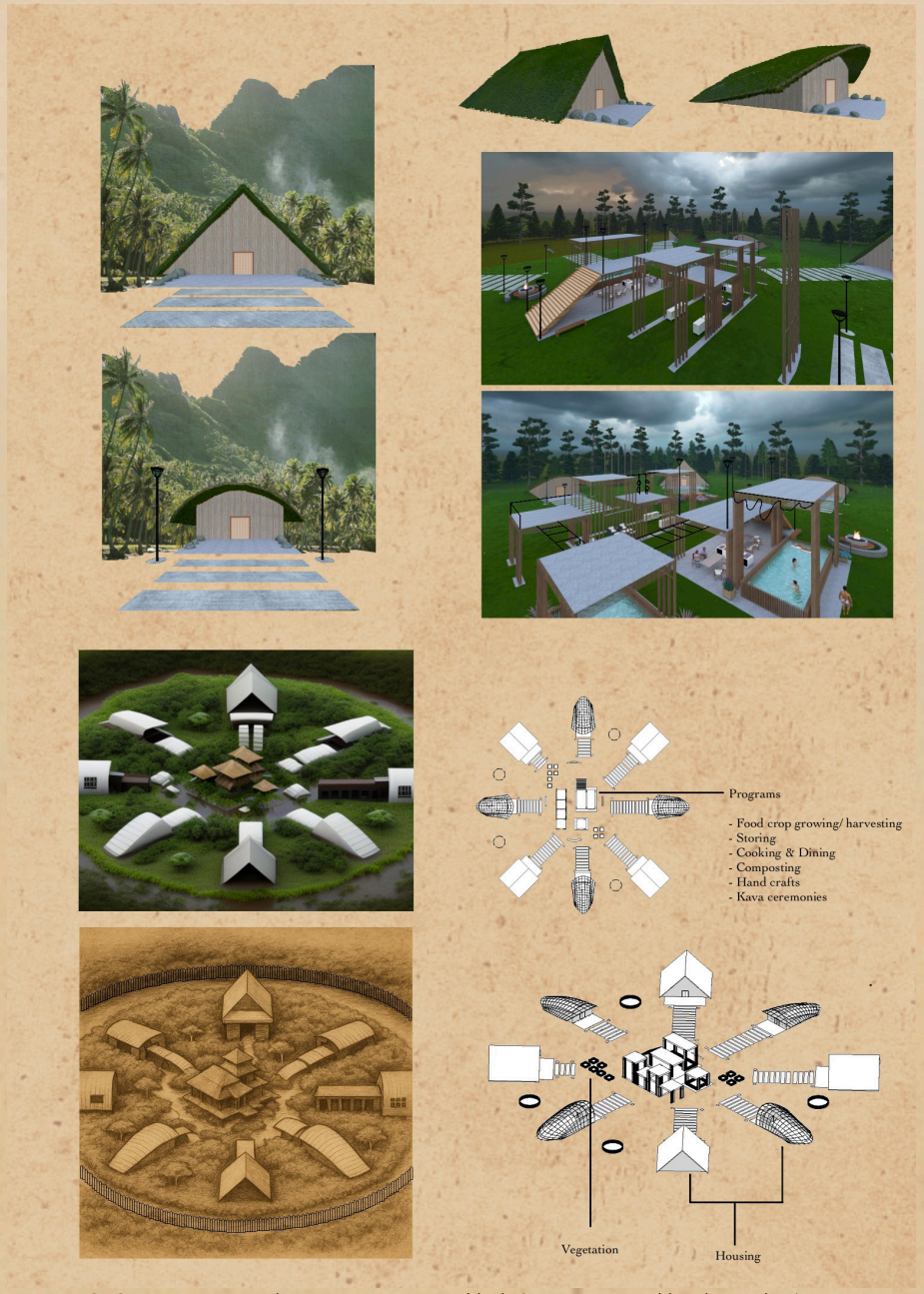


Figure A8. Concept one, with an open air central hub (image created by the author).


Figure A9. Concept two, layout with closed central hub (image created by the author).

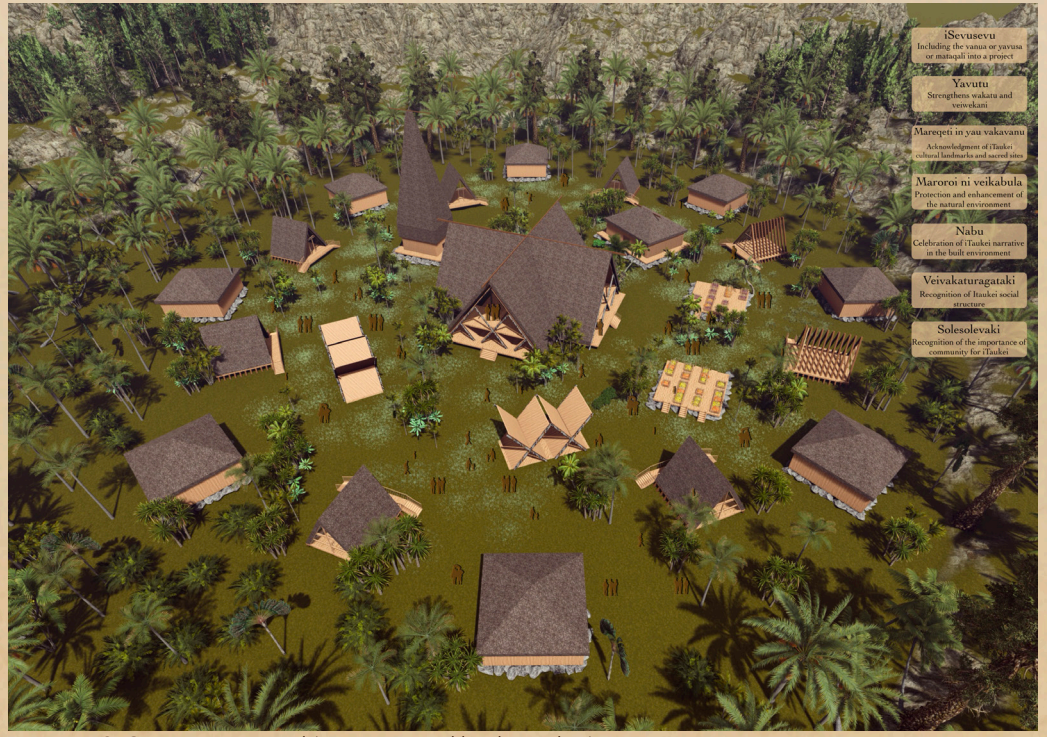

Figure A10. Concept two visual (image created by the author).


Figure A11. Concept two visual two (image created by the author).

Figure A12. Concept three, sectional visual of relief hub, open/closed hub (image created by the author).

Figure A13. Concept tree visual (image created by the author).

Figure A14. Design visual of site, wet season (image created by the author).

Figure A15. Design visual of site, dry season (image created by the author).