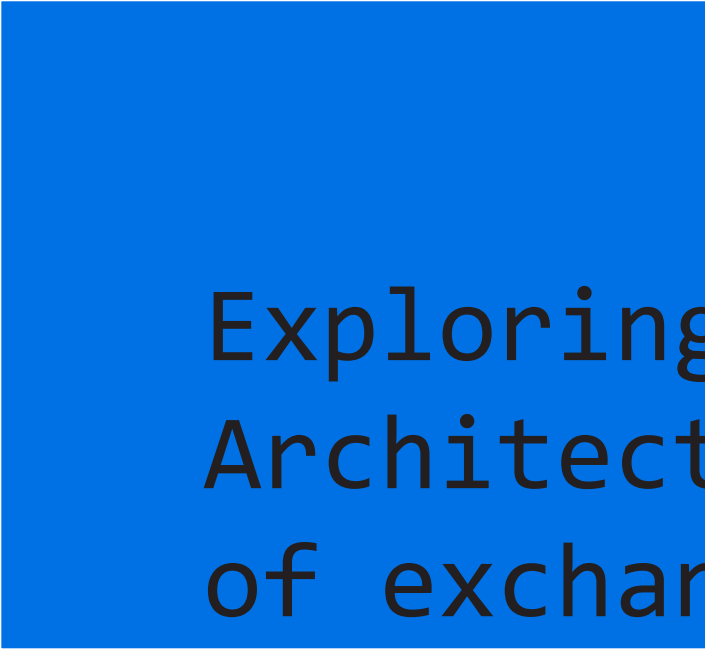


**K A S -**

**. . . T A M**



Exploring the  
Architectural principles  
of exchange and  
resilience.

**By Ruwarashe Saunyama**

A 120-point thesis submitted to the Victoria University of Wellington in partial  
fulfilment of the requirements for the degree of Master of Architecture  
(Professional)

Victoria University of Wellington  
School of Architecture

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Fig. A. Migrants wait to be rescued in the Mediterranean Sea off the coast of Libya.

# A b s t r a c t

The Refugee Resettlement situation on Manus Island in Papua New Guinea is in dire need of a humane intervention. The Manus Island Detention Centre was officially permanently closed on the 31st of October 2017 (Commonwealth Parliament & Parliament House, 2017), leaving 600 men with three options; moving back to their countries of origin, relocating to the East Lorengau Refugee Transit Centre or moving and resettling in the United States of America on the basis that they get granted refugee status.

The option of relocating to the East Lorengau Refugee Transit Centre may seem like a viable option to the Australian state but to the 600 men it's a move that would render them vulnerable and in danger. Relocating to the transit centre will only cause more

overcrowding and depletion of the already scarce resources. The living conditions of the Manus Island Detention Centre for refugees and asylum seekers was deemed harsh and inhumane. The conditions of East Lorengau Refugee Transit Centre are no different.

The lack of bare essentials in these refugee camps such as a constant source of clean water, food, healthcare and accommodation has led to health and psych-social problems amongst its inmates and if left unaddressed it will worsen further. This has resulted in the refugees becoming increasingly dependent on the Australian and Papua New Guinean states – which treats the centre as

a state of exemption. This situation and their isolation from society has also contributed to disempowering the refugees who are increasingly unable to function in day to day life and experience difficulty integrating into the Manusian society.

This thesis will address this crisis architecturally; its intention is to explore architecture as a medium that will orchestrate the development of better and empowering living opportunities for the refugees and facilitate a sense of community within the Manusian society via a holistic community model.

The objective of the model is to firstly enable the refugees to become self-sufficient where they don't

have to rely on the resources provided from external sources as the Papua New Guinean and Australian state.

Secondly the intention is to facilitate community integration by creating opportunities for the refugees and the locals to interact through shared and mutually beneficial opportunities. By developing a sense of community and reliability between the locals and refugees; both parties engage in the traditional Papua New Guinean practice of Kastam (Otto T.), based on exchange, supportiveness, respect and honour.

The thesis aims to test and readdress, through an exploration of architectural principals related to exchange

and resilience, the stigma and ideology of refugee resettlement by moving away from the idea of refugees as reliant on the states that govern them, to the refugees becoming self-sufficient and thereby becoming less of a burden and more of an asset to the host community.



# A c k n o w l e d g e m e n t s

To all those that have supported me through my years at Architecture School, I was blessed to have you around and thank you.

To my family - Dad, Mum, Bessie, Ruvimbo and Tino; thanks for the support, love and wisdom you imparted on me. Thanks for tolerating me throughout these years. You know it hasn't always been the easiest of times; your patience is out of this world.

To all my friends that have flooded me with endless support in Wellington and Melbourne, thank you! Your texts, calls and catch ups have not gone unappreciated.

To Shenuka, thanks for being ever so patient with me, your passion and vast knowledge of this topic is admirable.

And Gogo Bessie, I did it!

Lastly, God for giving me the courage to stay disciplined and consistent during this course of time and season of study. And giving this girl from Zimbabwe the courage to fulfil her dreams.



Fig. B. My family and I as Refugees back in 2003; with Dad behind the camera.

Dedicated to all the current refugees. My journey is a testament to how if refugees are provided with the right resources, they can successfully integrate into our host communities.

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01



**HAVE DEFINED  
AS STATE-SANCTIONED  
HOSTAGE TAKING.”**

- Behrouz Boochani  
Manus Island Refugee

**“WE ARE VICTIMS  
OF WHAT I  
HAVE DEEINED**

# 01.01 Problem

We are currently experiencing the largest displacement of people due to the increasing rate of conflict, persecution, violence and human rights violations worldwide.

The UNHCR has reported that by the end of 2017, 68.5 million individuals were forcibly displaced worldwide. That figure includes 25.4 million refugees, 40 million internally displaced people, 3.1 million asylum-seekers and an increase of 2.9 million people over the last year (UNHCR, 2018) (Figure 01.01). The rate of displacement continues to propagate. According to the UNHCR a new displacement occurs every 2 seconds, this equates to 30 new displacements per minute - an unprecedented amount. These statistics illustrate the

magnitude of displacement resulting from man-made, cultural, political and environmentally catastrophic events that are ongoing or have taken place worldwide.

The countries with the largest rate of displacements are currently Syria, Afghanistan, South Sudan, Myanmar and Somalia (UNHCR, 2018).

Syria has been the subject of a civil war for the last seven years, a war that began on March 15, 2011. The war was a result of a conflict between the Syrian Government and the rebel forces. In a nonsensical effort to get rid of the rebel forces by the Syrian Government, innocent Syrian civilians have unwillingly subjected

subjected to the crossfire, chemical attacks and bombings occurring during this conflict. The war has ravaged the country, leaving behind in its trail damaged and destroyed healthcare centres, hospitals, schools, utilities, water and sanitation systems (Vision 2018). Deeming the country unliveable.

Because of the Syrian civil war, millions have become scattered, creating the largest refugee and displacement crisis to date. According to the organisation World Vision, 5.6 million Syrians have fled the country as refugees, and 6.1 million are displaced within Syria as internally displaced people (Vision 2018) (Figure 01.02).

The second largest population of displaced people internationally is Afghanistan. Similarly, to the Syrian refugees, millions of Afghan refugees are being forced to flee from generalized conflict or persecution. The United Nations Assistance Mission to Afghanistan have recently reported that civilian injuries and deaths caused by government forces have increased (Watch, 2018).

South Sudan a country that was once beaming with hope after gaining independence in July 2011, is now a country ridden with war. A war compounded by economic crisis and drought that has caused massive displacement, violence and a food famine. More than 60 percent of the country's population are

victims of this massive displacement (Corps, 2018).

Myanmar has been the subject of armed conflict between ethnic groups and the government military forces – a conflict that has gone on for decades in Myanmar.

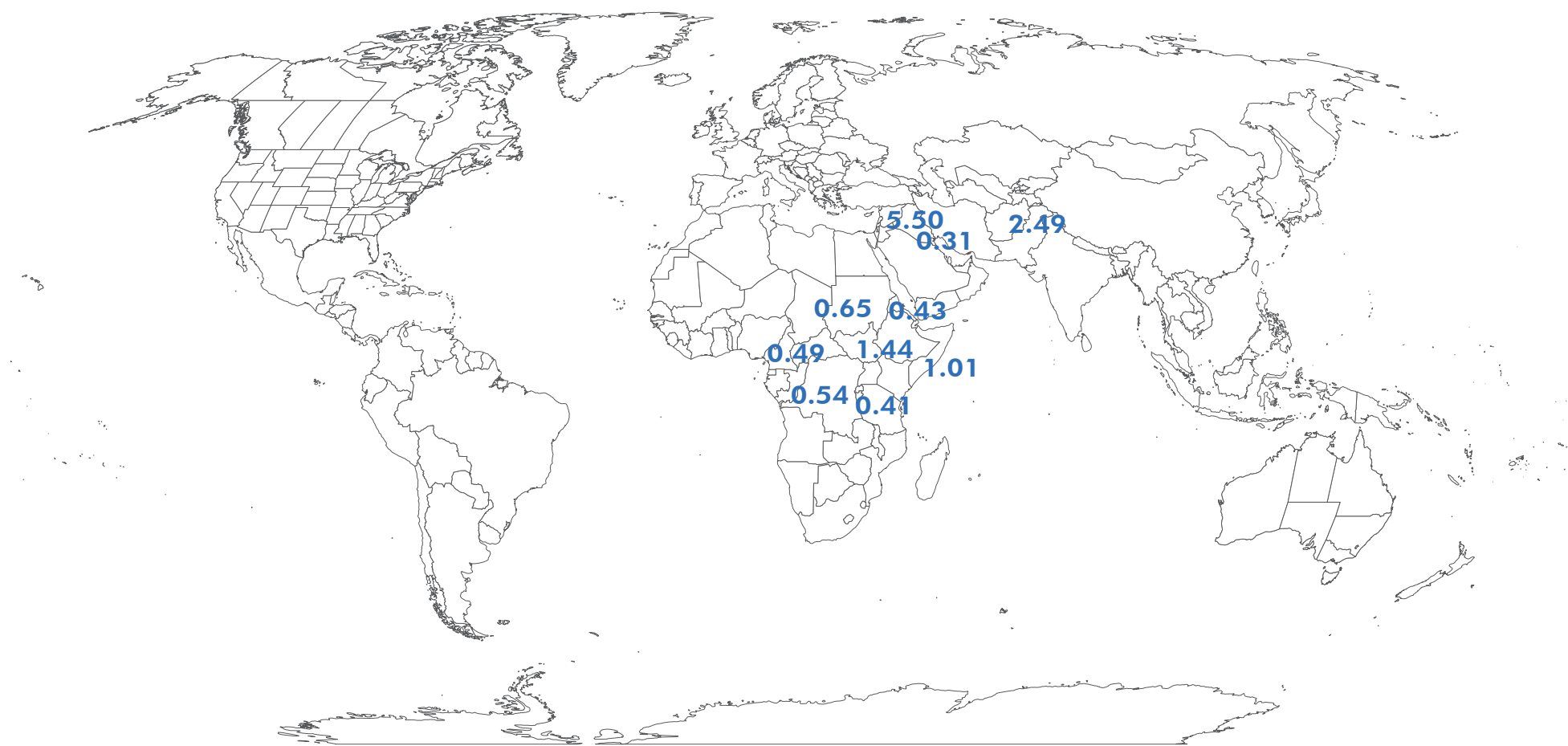
The conflict increased greatly in August 2017 causing Myanmar people to exile to Bangladesh – a country already fathomed with its own humanitarian crisis and unsafe climatic conditions (Vision, 2018).

Somalia tells a similar tale to South Sudan – a country that was once prosperous and independent in the 1960s became a country riddled with war and chaos as a result of the military dictatorship

dictatorship birthed in the 1970s.

Left with no choice, these individuals are forced to exile their homeland in search of a safe haven and future. This search encompasses voyages across unsafe and unpredictable charters and landscapes.

For the asylum seekers and refugees, departure and arrival is imagined to be more or less a singular act in which they're able to integrated cleanly from their old home to their new home. Departure is now rarely met with a symmetrical point of arrival [Cairns, 2004, p.6]. The waiting period between arriving to the safe haven and starting a new life as refugee - if granted the status to be one, is spent in processing centres and makeshift refugee camps.



**ORIGIN**

**NO. OF REFUGEES**

SYRIA	5,500,586
AFGHANISTAN	2,488,701
SOUTH SUDAN	1,436,651
SOMALIA	1,012,326
SUDAN	646,053
DEM. REP. OF CONGO	537,265
CENTRAL AFRICAN REP.	490,892
ERITREA	431,782
BURUNDI	408,085
IRAQ	308,019

Fig, 01.01 - Refugee Origins and Number of Refugees



The refugee camps and processing centres for some is perceived as humanitarian spaces where lives are saved and restored. Others perceive them as spaces of control and lastly perceived as spaces of misery and destitution. The three contrasting descriptions, are not independent of each other but often coexist within the same space [Reference].

What defines refugee camps as humanitarian spaces are they're abilities to protect refugees and save lives. They're defined as efficient spaces, spaces made efficient by organisations like the UNHCR who provide accommodation, clean water, food, healthcare and basic education.

Although refugees are given clean water, food and health care, they are also kept in one place, without the freedom to

move or settle elsewhere. Most often than not, refugees spend decades living in the same camps with limited resources, often located in isolated areas removed from any social, economical and cultural exchange (Figure 01.03).

For most these camps become places of exile, the camps become place of misery where refugees are reduced to beings of wretchedness, with no claim for identity or individuality.

This thesis aims to raise the question; can we not understand camps in an different way?



Fig, 01.02 - UNHCR Statistics

# Duration of Refugee Camps Since 1900s

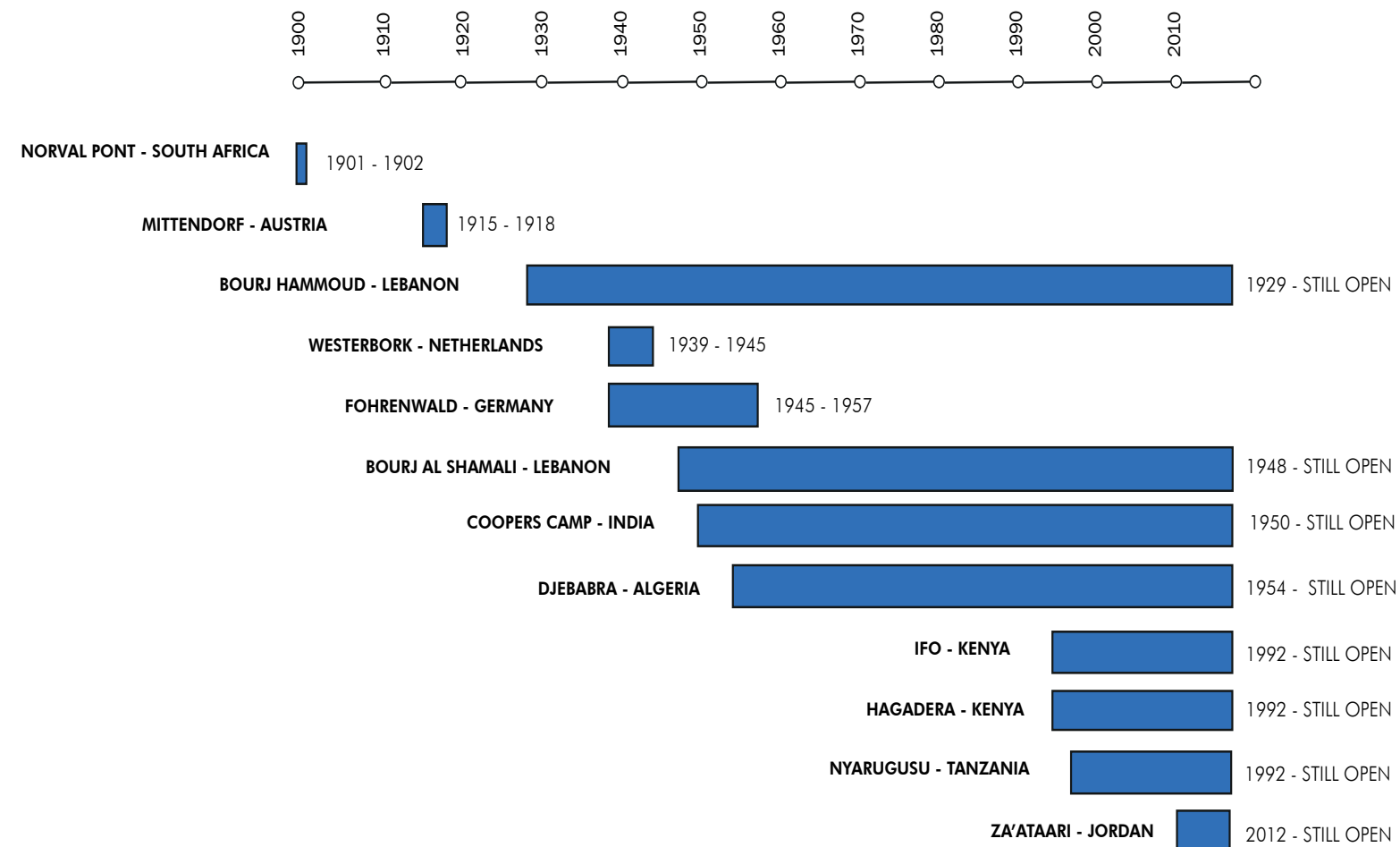


Fig. 01.03 - Duration of Refugee Camps



# Research Question

**How might architecture facilitate self-sufficiency and resilience of the Manusian refugees and become a catalyst for establishing and strengthening relations with the Manusian locals?**

01.02

# 01.03

## Aims and Objectives

- Understand the refugees and the cultural, environment and social needs of the locals, use these findings to drive the architectural solution that will enable the refugees to effectively resettle in the Manusian society.
- Creating a safe architectural environment for exchange- educate the refugees on the traditions of the Papua New Guinean people and likewise educate the locals on the way of the refugees; minimising the fear of the unknown and clashing of cultures.
- Design for resilience through exchange with the intention of promoting a sense of certainty and empowerment for the refugees and the Manusian's by integrating best practices and continuing traditional and vernacular practices
- Design for resilience by including the refugees in the whole process – from sourcing materials to construction and occupancy. The centre will serve an educational facility, the purpose is to educate the refugees on how to be self-sufficient and independent and of service to the local communities.
- Design community living environment that enable the integration of the locals and refugees; engaging the locals and refugees in an act of Kastam – a Papua New Guinean tradition.

# 01.04

## Method - ology

- The thesis will start off with an analysis of the architecture principles of exchange and resilience. It will be followed by an overview of the demographics, political, cultural backgrounds of the refugees and the Manusian locals and will include a study of the building traditions of the dominant refugee groups and the locals. This overview will be a collation and summary of the literature reviewed.
- Research and analysis will be done on case studies of refugee camps and those that have evolved into established communities over time as well as community hubs and markets in both developed and developing countries. This research and analysis will enable the creation of a frameworks for the designs.
- A site analysis on the East Lorengau Refugee Transit Centre, a study on the vernacular architecture and local materials will also be completed. The findings will be presented through diagramming, mapping and sketches.
- The findings from the literature reviews, case studies, site analysis, research on materials and construction techniques will drive the design iterations and development.
- Throughout the design development and refinement. I'll revisit the literature reviews, case studies, concepts and feedback leading up to the final design.





# 01.05

## Role of Design

- To create humane living spaces; not prison like spaces that include the bare necessities such as water, food and shelter are provided but needs are not addressed beyond these items. The role of my design is to create spaces for refugees that not only protect and save lives but also rehabilitate, strengthen and empower them. Good design becoming a gateway from the past they've escaped from to a future they long for.
- Design facilitates the spaces and programs required to rehabilitate and minimise psychosocial problems that stem from past traumas experienced by refugees and new traumas emerging due to confinement in basic and inhumane facilities.
- Another role of design is to create holistic opportunities, practices and spaces that positively influence society and the environment.
- The notion of what refugee housing embodies will be challenged. The challenge is to create places and spaces that will facilitate a stronger understanding of who the refugees are and increase the opportunity for empowerment and resilience through the exchange and sharing of knowledge and skills.

# 01.06 Structure

## 02

### EXCHANGE AND RESILIENCE

---

This chapter introduces the theoretical aspect of the thesis - the principles of exchange and resilience. The objectives of the project is to use architecture as facilitator of exchange between the locals and the refugees; and to also construct a resilient model for the host community. To be able to achieve these objectives both principles need to be studied and understood. The literature by Brian Walker and David Salt titled, 'Resilience Thinking: Sustaining Ecosystems and People in a Changing World' and The Resilient Design Institute 'Resilient Design Principles' will be studied to understand these principles.

## 03

### THE REFUGEES

---

This chapter examines the stories and backgrounds of six refugees with different genders, ages and skills. The reason behind the vast selection is to illustrate the diverse profiles of refugees. The sole purpose of this examination is to put an identity and to put a face to a few of the refugees amidst the millions of other refugees in the world.

In this chapter we take a closer look at their stories, to gain a better understanding for the reasons of their forced migrations and to understand their intentions and requirements to successfully integrate into the host countries. To mitigate the stigma of refugees being burdens but to illustrate that they are human beings with rich and diverse cultures and skills who deserve a second chance at building a healthy and successful life regardless of their new residence.

Refugees are more than just a statistic.

# 04

## THE LOCALS

---

This chapter discusses the local's perspective on the presence of the Manus Island Refugees and Detention Centre. It discusses the development and economic benefits that were promised to them as a result of them hosting a detention on the island. It also introduces the Papua New Guinean tradition and social obligation of 'kastam'.

# 05

## THE SITE

---

The chosen site for my design proposal is on Manus Island in Papua New Guinea - the location of one of Australia's offshore detention centres. A centre that has been recently closed and has been marked by a lot of controversy.

A new resettlement centre in East Lorengau has been built as replacement for the detention centre but according to the refugee resident is no different or better than the latter. This site will be a testing ground for my design proposal, the reason behind this is to show that if provided with the right architectural programs and parameters, refugees in turn can successfully become self sufficient.

This chapter will explore and analysis the culture, conditions and constraints of the site to mitigate the results of a design proposal alien to the well established Papua New Guinean surroundings. Hoping for a strategy that will successfully amalgamate both the local and refugees' cultures and needs.

A brief insight into the political context will be presented in this chapter as it's one of the driving factors of the thesis.

# 06

## CASE STUDIES

---

This chapter looks at the existing refugee camps assesses their suitability and efficiency as refugee resettlement camps. It assesses the good and the bad with the intention of using these findings to inform the programs of the proposed design outcome.

The case studies to be analysed are the Al Zaatari, Ifo and Nyarugusu camps. Drawings will be presented to show the layout of the programs.

# 07

## VERNACULAR STUDIES

---

Papua New Guinea is a country deeply engrossed with a rich architectural history and a vast range of architectural styles. The nation's architecture has a strong correlation to its tradition, culture and religion and varies significantly between regions - from the Haus Tambaran in the Sepik to the Yam Houses of the Trobriand Islands (International Organization for Migration, 2012). The vernacular architecture stems from traditions, techniques and styles that have been passed down within communities from the Papua New Guinean ancestors. As of late new materials and building styles are gradually being introduced to the Papua New Guinean architectural landscape.

This chapter will provide a summary of Papua New Guinea's vernacular architecture. It will examine a range of different building typologies ranging from ceremonial, religious, cultural and residential structures. The purpose of this exploration is to understand the existing vernacular architecture with the intention of adapting some of the traditions, techniques and styles into my proposed design of the East Lorengau Refugee Resettlement Centre.

# 08

## THE PROGRAMME

---

This chapter establishes an architectural programme using the UNHCR's Emergency Handbook as a reference. Chapter 12 of the book which discusses Site Selection, Planning and Shelter will be used as a programme guideline to develop the East Lorengau Refugee Resettlement Centre. UNHCR's criteria will also be tested and not taken as verbatim in the hope of creating a hybrid refugee resettlement centre. There's a need to move away from the temporal restrictive nature of existing refugee resettlement centres which aren't conducive to a healthy and successful resettlement of a refugee. The aim is to take away some positive elements of the UNHCR's criteria and combine them with elements that enable a holistic resettlement and successful integration of the refugee into the host society using the right architectural programs to facilitate this transition.

# 09

## PRECEDENT ANALYSIS

---

This chapter will explore architectural projects that have successfully facilitated exchange and have resilient design solutions appropriate within their context. The precedents to be analysed are the Paper Log House and Kirinda House by architect, Shigeru Ban; The Vietnam Flood Proof Bamboo Housing by H & P Architects. This chapter will discuss the exchange and resilient characteristics of these precedents that will be adapted into the design solutions.

This chapter will discuss the exchange and resilient characteristics of these precedents that will be adapted into the design solutions.

# 10

## PRELIMINARY DESIGNS

---

This chapter will present conceptual design iterations that are a cumulation of the refugee and local's needs; exchange and resilient design characteristics, the site's needs, Papua New Guinea's vernacular practices and effective program requirements derived from the UNHCR Emergency Handbook. At the end of the chapter a reflection on the strengths and weaknesses of the iterations will be presented. This reflection will set the direction of what's to come in the design development stage.

# 11

## DEVELOPED DESIGN

---

This chapter will present the final design outcome - the product of all the research and design iterations that have taken place in the earlier stages of this thesis.

# 12

## CONCLUSION AND REFLECTION

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This chapter concludes the thesis. It discusses if the aim, objectives and design intentions of the thesis were achieved and also discuss any unanswered or unresolved aspects of the project.

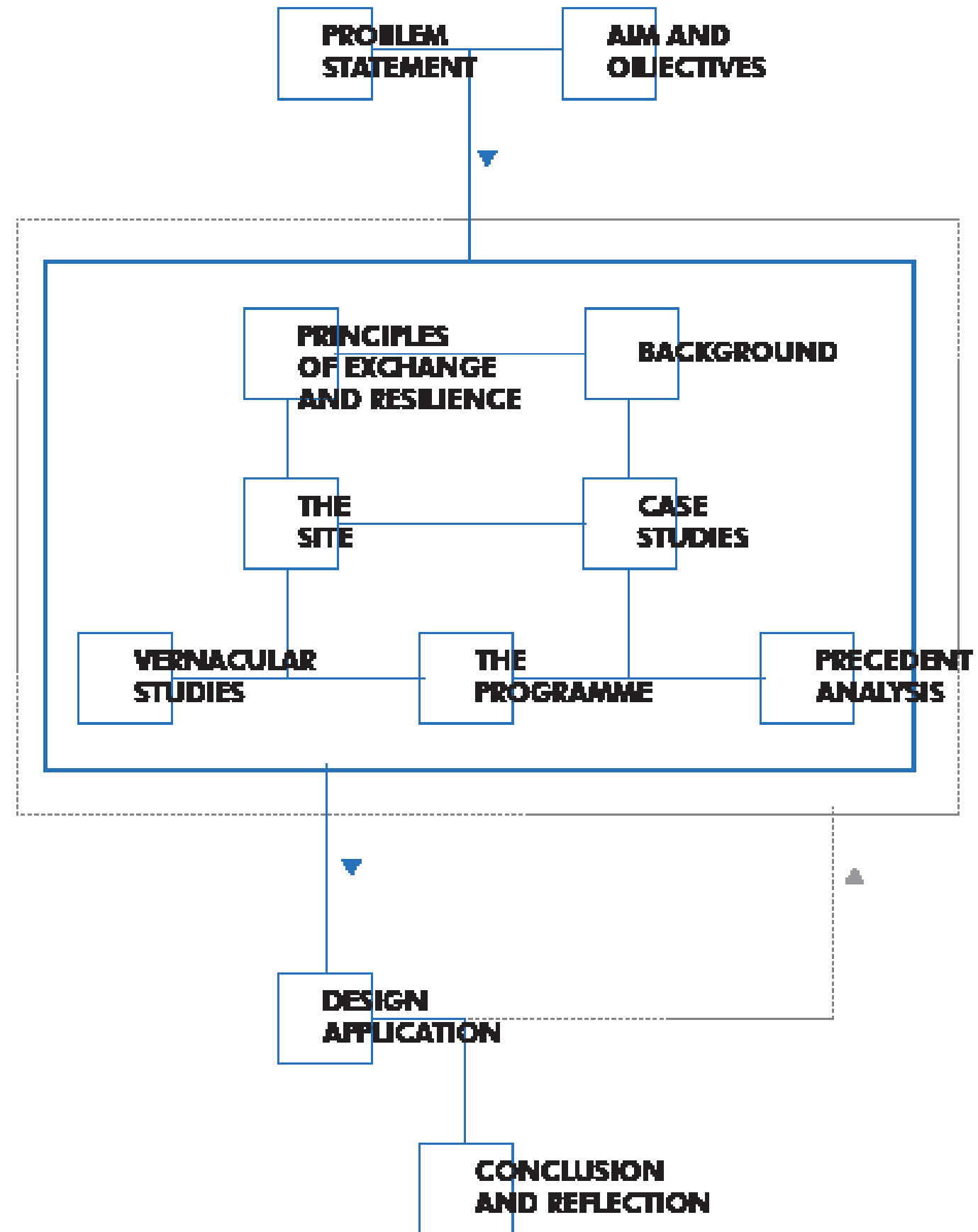


Fig. 01.04 - Thesis Structure





02

# 02.01

## Introduction

The literature review aims to address the research problem of inadequate refugee housing and resettlement centres. It looks into the writings and oral presentations of theorists such as Brian Walker, David, Kilian Kleinschmidt and the Resilient Design Institute. A study has been done into their theories on how refugees can become self sufficient, how architecture can facilitate exchange and facilitate integration between the locals and refugees; and the successful resettlement of the refugees being the results of their theories turned into reality.

The design criteria required to design healthy refugee camps / resettlement centres are foreign to most government agencies and aid organisations. You'll find that their main objectives are to house the refugees on a temporary basis with no intentions for permanent solutions. Their priorities and needs differs to those of a refugee. The government agencies and aid organisations create the refugee camps with a temporal mind-set, with little investment into designing healthy spaces that are conducive to the successful resettlement of a refugee. It is the lack of investment into positive design solutions that has led to the creation of haphazard refugee camps and

resettlement centres with poor infrastructures and seclusion of the refugees camps from the existing urban fabrics of the hosting countries. Psychosocial issues amongst refugees are also caused as a result of this causing the refugees to feel isolated from their host communities; hindering their resettlement process.

There is now an increasing desire to recreate the standards of refugee camps; moving away from the idea of refugee camps as temporary places but as the cities of tomorrow as stated by Kilian Kleinschmidt (Radford, 2016). Camps need to be recognised as permanent fixtures as the average stay of a refugee in a camp could last up to 17 years.

It is evident that the architectural output of the current refugee camps are insufficient. The insufficiency is a result of the lack of understanding cultural and psychosocial needs of the refugees.

To enable the mitigation of creating mediocre refugee camps its best to educated and equip the refugees with the right knowledge and resources to enable them to be self sufficient and to facilitate a successful integration into the host community. Secondly, a study will be done into the principles of designing resilient spaces; principles collated by the Resilient Design institute.

To do so, firstly a study will be done into the Papua New Guinean cultural concept of Kastam; a term that translates to exchange. Understanding this concept will enable us to set up create the right parameter for architecture that will help facilitate exchange between the local and refugees.

Secondly, a study will be done into the principles of designing resilient spaces; principles collated by the Resilient Design institute.

These studies will enable the creation of the design criteria that will lead to the right selection of precedents to analysis prior to the design process and also ensure that the design process addresses and tests the research question.

**KASTAM (*EXCHANGE*).**

# 02.02

## Kastam

### ( *Exchange* )

To be able to strengthen the relationship between the refugees and locals, it's important that the host community's cultural traditions are understood and upheld. Understanding the cultural traditions of Manus Island will enable the creation of culturally sensitive architectural program and reduces the risks of creating architecture alien to the host community.

On Manus Island one of the most valued heritage concept is the concept of Kastam; which translates to exchange. This tradition is commonly practiced at a village level. Within the village context, kastam refers to a wide range of practices which involves traditional leadership, conflict mediation, ceremonial exchange, transition rituals, traditional rights to

land and sea and beliefs about illness and spirits (reference). The kastam practice that is to be facilitated by the proposed design outcome is the practice of ceremonial exchange. The locals and refugees will participate in this exchange, with the hope of establishing and strengthening their relations.

Ceremonial exchanges are known to involve kastam goods - both of tangible and intangible nature, that are owned by a particular group (Otto, 2014, p.122). These goods can be given to other Manusians groups to strengthen existing exchange relationships. The only limitation to this concept is that kastam cannot be invented or changed according to the Manusians; this might hinder an effective exchange between the

locals and refugees. By creating architectural programs that can give the refugees the opportunity to showcase their skills, this could demonstrate to the locals that the refugees are a useful asset to their community and could benefit from their construction, agricultural and other skills they hold.

**RESILIENCE.**

Resilient systems

provide

for basic

Resilience transcends scales.

Resilient systems provide for basic human needs.

Diverse and redundant systems are inherently more resilient.

Simple, passive and flexible systems are more resilient.

Durability strengthens resilience.

Locally available, renewable, or reclaimed resources are more resilient.

Resilience anticipates interruptions and a dynamic future.

Find and promote resilience in nature.

Social equity and community contribute to resilience.

Resilience is not absolute.

human

needs.

Fig. 02.01 - Principles of Resilience

# 02.03

## Resilience

One of the objectives that has driven the design process and outcome is to design for resilience. To achieve this objective the principles of resilience had to be studied and understood. In ‘Resilience Thinking: Sustaining Ecosystems and People in a Changing World’, authors - Brian Walker and David Salt have written an account on what resilience is; in the hope that we may be able to understand how communities can absorb disturbance and maintain function.

Walker and Salt state that resilience thinking offers a different way of understanding the world around us and of managing our natural resources (Walker & Salt, 2006). The authors share their perspectives and accounts in detailed chapters,

discuss how to create a mind space for resilience thinking, the phases, cycles and scales and how systems change.

The Resilient Design Institute summarises resilient design with the following ten principles which also resonate with Walker and Salt’s findings and perspectives of the subject (Resilient Design Institute, 2013):

1. Resilience transcends scales.
2. Resilient systems provide for basic human needs.
3. Diverse and redundant systems are inherently more resilient.
4. Simple, passive and flexible systems are more resilient.
5. Durability strengthens resilience.

6. Locally available, renewable, or reclaimed resources are more resilient.
7. Resilience anticipates interruptions and a dynamic future.
8. Find and promote resilience in nature.
9. Social equity and community contribute to resilience.
10. Resilience is not absolute.

Resilience is multifaceted and cannot be understood on one scale. To achieve a resilient solution, the problem must be addressed from a micro to a macro scale - from individual buildings to large regional [or in context with this thesis a global] scale. Walker and Salt’s noted that to achieve a



successful return in a system, you can't isolate and regulate portions of the system. It's best to address the problem with a broader and holistic approach; addressing all scales and components of the system.

Modus Operandi is a notion also discussed which means to break down the things we manage or in context with this research, things we design to design into component parts and understand how each part functions and what inputs will yield the greatest output (Walker & Salt, 2006, p.28).

Self sufficiency is one of the key drivers of this research. For this key idea to come to fruition the resilient principle of designing

simple, passive and flexible systems needs to be applied. The research is being tested in a developing country where complex design solutions can't be afforded as they require ongoing maintenance and advanced building technologies for their upkeep. The refugee crisis is indefinite and to address this reality, flexible solutions need to be implemented to be able to adapt to the short and long term.

Resilience is also achieved by sourcing local, renewable and reclaimed resources. As stated by the Resilient Design Institute, reliance on abundant local resources such as solar energy, annually replenished groundwater and local food provides greater resilience than dependence on nonrenewable

or resources from far-away (Resilient Design Institute, 2013).

To strengthen the relationships between the refugees and their host community, resilience needs to be achieved at a community scale. For this to be achieved, program needs to be built that will facilitate social structures that will strengthen the fabric of the community. Programs that will serve the entire community such as community hubs and schools. According to the Resilient Design Institute, strong and culturally diverse communities in which people know, respect and care for each other will fare better during times of stress and disturbance (Resilient Design Institute, 2013).

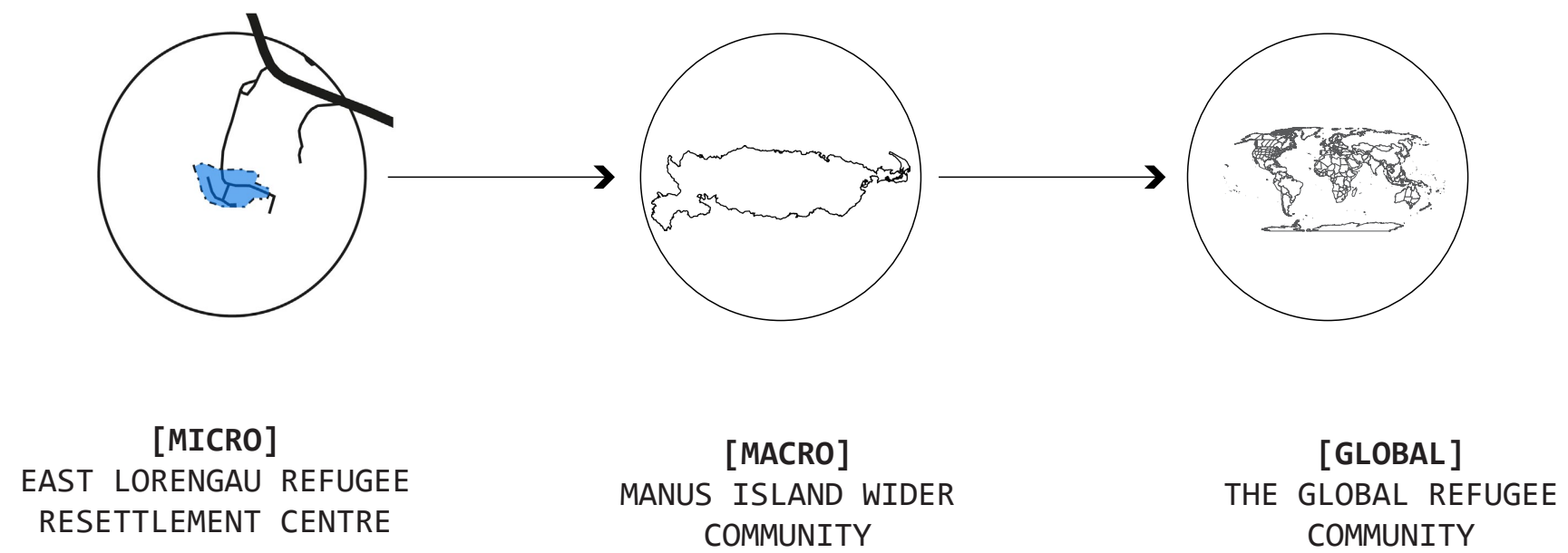
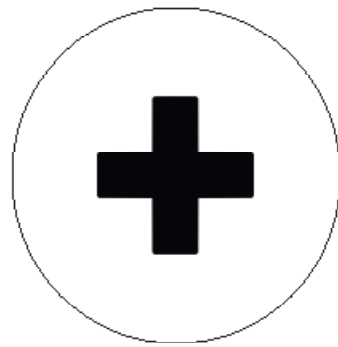


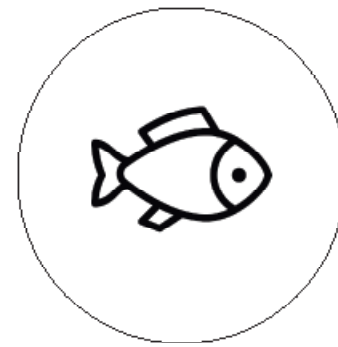
Fig. 02.02 - Resilience Transcends Scale



[HOUSING]



[HEALTH CARE]



[FOOD AND CLEAN WATER]



[EDUCATION]

Fig. 02.03 - Refugee's Priorities



# 02.04 Critical Reflection

The findings of the literature review have enabled the establishment of a strategic set of design principles that will drive the design process and enable the refugees to be well integrated into the host communities.

The design principles identified from the literature review that also align with the aim and objectives will inform the design solutions and be the framework for the refugee resettlement centre strategies:

1. Design simple and flexible systems that can be replicated by the refugees enabling them to be self sufficient.

2. Sourcing local and renewable resources; not having to rely on external resources.

The design will take into consideration that refugees are human beings that require a sense of community and self sufficiency to mitigate any psychosocial issues and successfully rebuild their lives. By creating environments that positively influence the refugees at micro and macro scale - individual housing, wider community and global scale it will enable the creation of a new positive standard of a refugee resettlement experience.



03

# 03.01

## Introduction

To be able to successfully to get the results set out by the aim and objectives to achieve architectural solutions that effectively facilitate self sufficiency, resilience and the establishment of strong relations between the Manusian refugees and locals, the refugees stories need to be told and understood. Acknowledging and understanding their stories will help attain resilient design outcomes as strong communities play a major role when it comes to resilience; as previously mentioned in the literature review. A strong communities engages with all its people; locals and refugees.

In a TED talk that I recently listened to by an activist Chimamanda Ngozi, she stated that it's, 'impossible to engage properly with a place and person without engaging with all the stories of the place and person'. And 'single stories create stereotypes and the problems with stereotypes is not that they are untrue but that they are incomplete' (TED Talk, 2009). I believe this to be true and applicable to all refugees. By understanding their stories, we'll be able to uncover what skills they carry, most likely skills in the education, construction sector and so forth. Society often forget that refugees are human beings who carry vast and lucrative skills that if honed in their host community could greatly contribute to the resilience and progression of a community.

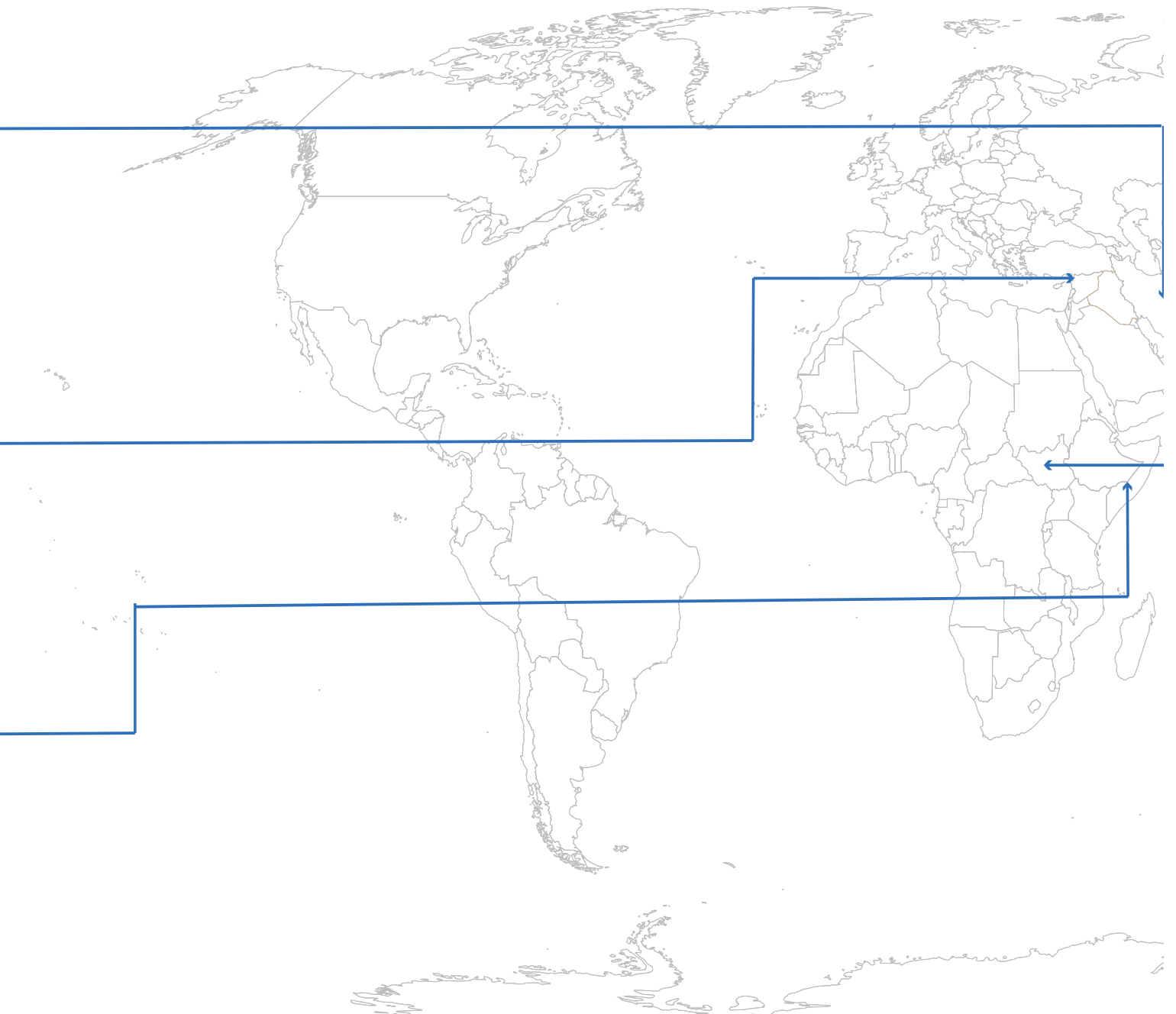
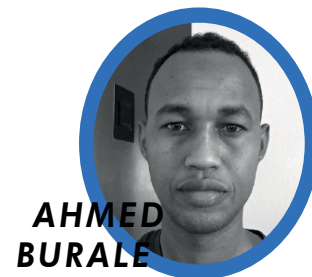
This chapter will focus on looking into the refugees stories, first by giving a brief insight into the refugees stories through figure ? A decision was made to specifically look into one refugee stories - the story of Behrouz Boochani; a Kurdish refugee. There are many of refugee stories to be told but for the sake of the thesis, Behrouz's story was chosen as he is the primary source for any information on Manus Island Detention Centre. He provides in depth information on the going ons of the detention centre and has gone on to write a book titled, 'No Friend but the Mountains' and has also created a documentary titled, 'Chauka, Please Tell Us The Time'; all based on his experiences in the detention centre. He is also present on most social media platforms such as



Twitter and Facebook; he posts about the detention centre on a regular basis.

Further into the chapter, an insight into the locals, UNHCR, Papua New Guinean and Australian government's stance on the Manus Island Detention Centre situation will be presented. It's important that this is presented and understood so that the design solutions will successfully amalgamate their needs and create spaces where they can integrate, strengthen their relations and engage in cultural exchanges.

# 03.02 Refugee Profiles





BEHROUZ  
BOUCHANI

**Origin:** Iran  
**Skill:** Journalist

- Ran an English Language Centre in Syria.
- Volunteers as an English teacher for the refugees.
- Believes giving refugees access to education is an essential part of helping them integrate and participate in the host society.



AMINA

**Origin:** Syria  
**Skill:** English Teacher

- Ran an English Language Centre in Syria.
- Volunteers as an English teacher for the refugees.
- Believes giving refugees access to education is an essential part of helping them integrate and participate in the host society.



AHME D  
BURAL E

**Origin:** Somalia  
**Skill:** IT

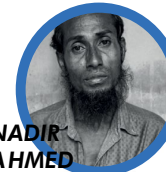
- Ahmed completed a degree in Computer Science while he was in a refugee camp in Kenya.
- Encourages other to continue in higher education to help communities and humanity as a whole.
- Education helps refugees navigate and rebuild their home countries upon return.



NAJA F  
MAZARI

**Origin:** Afghanistan  
**Skill:** Rug Maker

- He learnt how to weave as a child in Afghanistan.
- The work of weaving rugs gave him time to think about the prospect of a better life; a life filled with hope and prosperity.
- He started an Afghan Rug Retail business in Melbourne.



NADIR  
AHMED

**Origin:** Myanmar  
**Skill:** Farmer

- Nadir was a farmer in a village outside of the Maungdaw Township.
- He grew up in Maungdaw and owned three acres of land which he cultivated to grow rice.



MICHAEL

**Origin:** South Sudan  
**Skill:** Maths and Physics Teacher

- He taught at a secondary school, after completing a Bachelor of Education Course in Mathematics and Physics.

Fig. 03.01 - Refugee Profiles

**“It is a prison”.**  
**“Even war is not**  
**a prison because prisoners**  
**around the world aren’t**  
**tortured”.**

- Behrouz Boochani

# 03 . 03

## Behrouz

## Boochani's

## Story

There's a lack of coverage on the going on's of the Manus Island Detention Centre; majority of all news and media was primarily sourced from the resident refugee, Behrouz Boochani - a Kurdish journalist. Over the past four years, Behrouz has been able to shed a light on the realities of living within the detention centre on Manus Island. This chapter will provide an insight on the inhumane living conditions. The chapter will provide an overview of the refugees needs and will enable the design outcome to be well attuned to the refugees' needs. Behrouz Boochani's is amongst one of the many refugee stories, I've chosen to tell his story as he's perceived by the other refugees present on the island as a significant voice.

Prior to seeking asylum, Behrouz Boochani was a journalist in Iran and had co founded a Kurdish magazine that promoted the Kurdish culture (Al Jazeera, 2018). His office became a subject to one of the military raids, which resulted in some of his colleagues being arrested and being accused of undermining the Iranian state. This drove behrouz to flee the country for his safety.

His journey to seeking asylum in Australia entailed travelling to Indonesia then to Australia's Christmas Island by boat. During his voyage to Christmas Island, the Australian state introduced a new radical immigration policy which refused asylum to people that illegally arrived by boat.

Unfortunately for Behrouz, he was amongst the many that were denied entry onto Christmas Island and deported to the offshore Manus Island Processing Centre. Papua New Guinea and Australia had created an agreement that involved temporarily housing the asylum seekers in exchange of billions of dollars and infrastructure development on Manus Island.

Behrouz compares the detention centre to a prison. He stated, "For us, it's a prison, it's even worse than a prison". He describes the processes of the centre as "systematic torture" and believes that the immigration policy was created to evoke hate towards the Australian state (Al Jazeera, 2018).

**“I fell into trouble with the government...I hid myself for more than a month in Tehran in a friend’s house’, says Boochani.**

**“After that, I received some information that they were going to arrest me too and they had some plan...I decided to leave Iran”.  
(Al Jazeera, 2018)**

The detention centre has been criticised by many human rights groups such as Amnesty International for its inhumane living conditions. They described the Australian immigration policy as one of “cruelty and neglect” (Amnesty International, 2018).

In October 2017, the Supreme Court of Papua New Guinea ruled against the existence of the camp and ordered it to be closed (Tlozek, 2016). Power and water supplies, medical themselves. Most refugees remained at the abandoned camp with the fear of integrating into the local Manusian community as the locals were retaliating against the presence of the refugees.

The refugees survived on rainwater and food smuggled onto

the camp by the locals who were willing to help during the first weeks of the camp’s closure. Overtime the refugees have been forcibly removed by the local authorities and relocated to other areas of the island such as the East Lorengau Resettlement Centre.

Recounting Behrouz Boochani’s story has enabled an understanding of what basic needs are required by the refugees. Basic needs such as clean water, food and adequate housing. Another issue that needs to be addressed and resolved is the tension between the locals and refugees. There’s a strong need for an intervention that can mitigate the fear between the locals and refugees; an architectural

intervention that can enable lucrative integration between the two parties.

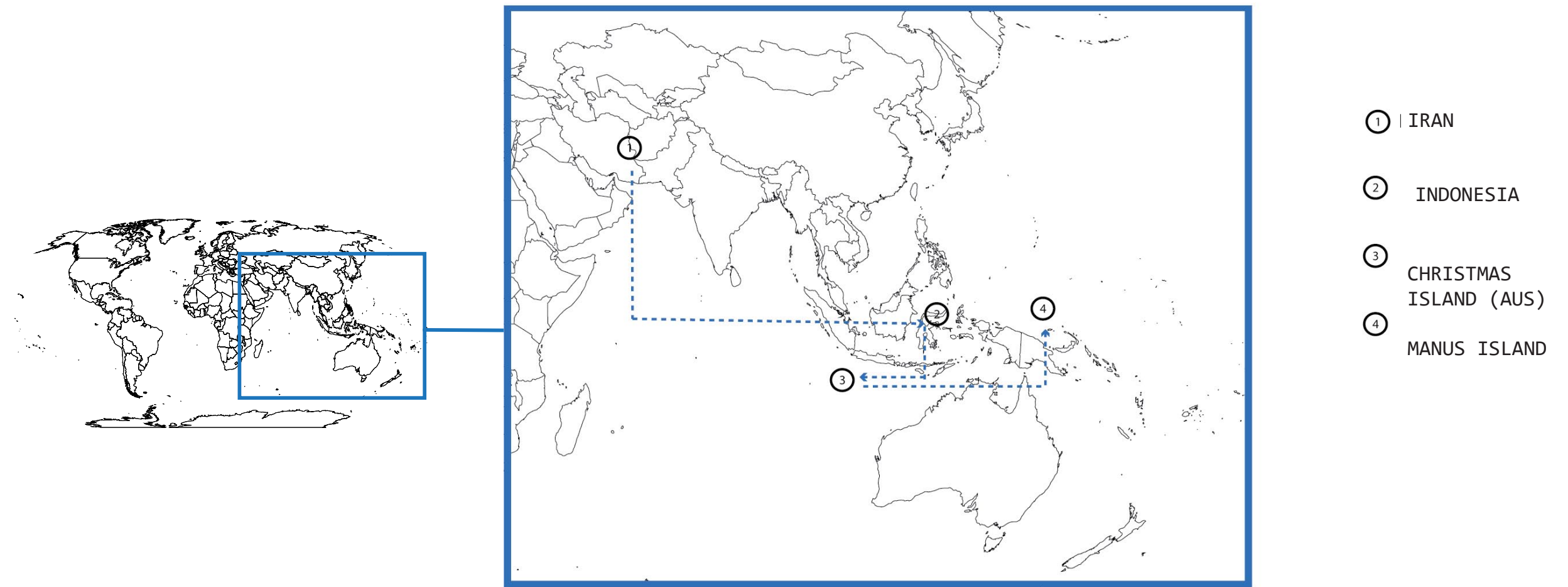


Fig. 03.02 - Behrouz Boochani's Journey to Manus Island



Fig. 03.03 - Behrouz Boochani's Twitter Status' in Regards to the Conditions on Manus Island Detention Centre





03.03

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# History of Manus Island Detention Centre

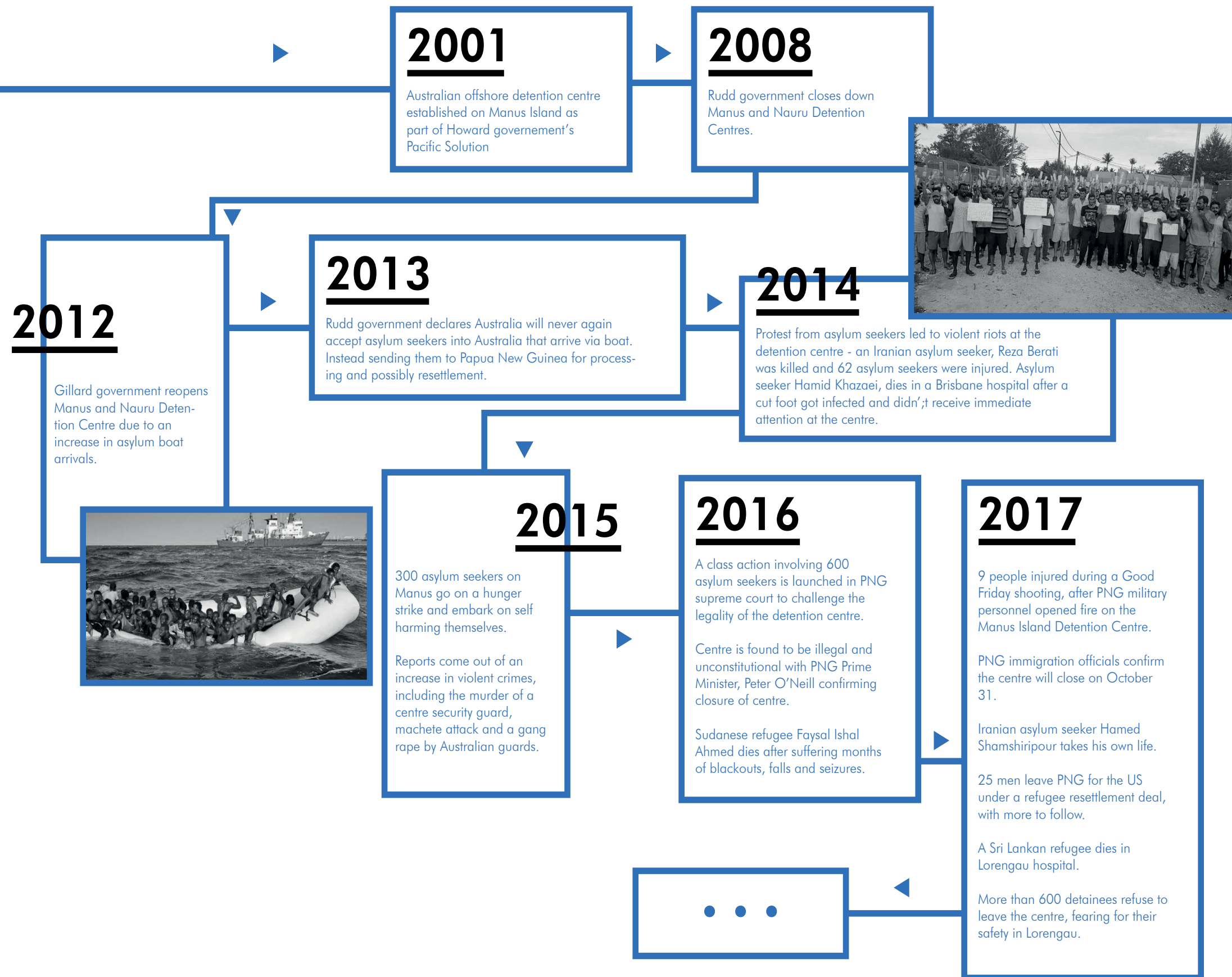


Fig. 03.04 - Flowchart of Manus Island Detention Centre History



Figure 03.05 - Satellite Map of Lorengau, Manus Island.



Figure 03.06 - Site Plan of Manus Island Detention Centre

# 03 . 04 The Locals

‘Anguish is inflicted by the authorities not by the locals or the refugees’.

‘Tensions rising between some of the local population and the transplanted refugees. Longerau is small mono cultural and close knit. It is a conservative place’.

‘Everyone is linked by familial bonds of Wantok - ‘One Language’. The imposition of several hundred young men is perceived as a threat to their familial bond’.

‘At the same time, there are some manusians who are supportive of the refugees and empathetic to their situations’.

‘When the detention centre became an open faculty, Manus locals showed sympathy and smuggled food to the refugees’.

‘Concerned the refugees would be a terror threat’.

‘On the back of Papua New Guinea and Australia’s government deal, Manus Islanders were led to expect significant local development - a promise that was left unkept’.

‘The Australian Government played their ‘Kastam’ - customary gift exchange, social obligation and tradition. A custom that’s integral to the way of life on Manus Island and much of Papua New Guinea’.

‘The detention centre has generated some benefits for Manus. In Lorengau, gravel road from the airport to town is now sealed, new markets and new police station is under construction’.

# The Refugees

‘They feel like stateless people - unable to exercise their basic rights associated with citizenship’.

‘Psychosocial problems - difficulty integrating into the host society, dependent on the state’.

‘Threat, uncertainty, deprivation, oppression and suffering’.

Behrouz (a refugee) describes it as a prison which contradicts Article 14 of the Universal Declaration of Human Rights.

Refugees believe Australian immigration orchestrated this kind of response to anger the refugees and the locals. As a result there is unrest between the locals and refugees.

Australia’s objective was to make the refugees return back to their countries. Refugees see there’s no intention for the Australian state to improve their living conditions.

Anguish is inflicted by the authorities not the locals or refugees.

‘If the right infrastructure is provided for both locals and refugees they’d be harmony.

A Kurdish refugee whom declined to give his name said,  
“safety is all I want and we are not safe here”.

Safety is the main reason the men aren’t relocating to East Lorengau.

Refugees think Australian policies create hate and ran it according to it.

Papua New Guinea locals are kind but they can’t accept how the government aren’t helping them let alone refugees.

Asylum seekers increasingly interact and engage with Manus locals; no longer as transitory detainees but as local actors.

# Papua New Guinea vs Australian Government

Open countries need to know and need to control their borders.

If the refugees were genuine they would accept the offer of  
refuge in Papua New Guinea.

Justin Tkatchenko (Papua New Guinea Minister) - Life on Papua  
New Guinea is possible to who try to make it work but if they  
don't the Papua New Guinea government can't force them.

Papua New Guinean minister stated they don't want the  
refugees and don't need them.

Australian state view Manus Island as a state of exception;  
blurring distinction between legal and illegal, humane and  
inhumane.

Former Prime Minister, Kevin Rudd stated people that come by  
boat aren't allowed into Australia.

Asylum seekers and refugees will be sent to Papua New Guinea  
in exchange for local developments and billions of dollars.

The Australian state see the refugees as economic refugees.

Refugees lie and exaggerate about the conditions of the  
detention centre in the hope of them moving to Australia.

Peter Dutton (Immigration Minister) doesn't want to give up  
the migration process of detaining the asylum seekers and  
refugees and humanitarian programme because of people  
smugglers.



# UNHCR / HRLC

A durable solution is to successfully integrate the refugees in the country of asylum and resettlement to another country.

The purpose is to safe guard the rights and well being of refugees and seek lasting solutions to their plights.

Provide basic necessities - water, food, shelter and basic health care. Refugees currently don't have the above. UNHCR recognises basic needs need to be met for psychosocial and social problems to be dealt with properly.

Refugees need to have permission for them to live freely, providing support for them to live normal lives.

David Webb stated, the government has been imprisoning people fleeing from these very atrocities.

Australia are on a three year term on the HRLC council at the same time not upholding the international human rights standard.

# 03.05 Critical Reflection

The brief insight into the refugee profiles illustrate their rich and diverse backgrounds and how they are well equipped with endless skills such as teaching, farming, computer and journalism. These skills seem to be unrecognised and neglected by their host communities. By addressing and using their skills a beautiful amalgamation could take place, recreating the negative narratives of the refugees into positive narratives and reforming their dignity, enabling them to be contributors to the progression of their host community.

Recounting Behrouz's story illustrated how important it is that healthy spaces are created for all refugees. And a big shift needs to be made from designing temporal spaces which

inevitably turn into prison like spaces, which get likened to systems of torture. All refugees are entitled to good architecture and should not be subjected to inhumane living conditions.

This chapter has illustrated the lack of investment by the Papua New Guinean and Australian government into the basic infrastructure of a healthy refugee centre. The results of this disinterest is evidently the tension between the locals and the refugees. This need will inform the programs incorporated in the design outcome and prior to the design process, create criteria for the right precedences to be chosen that have successfully incorporated the needs of the refugees, host community and the findings derived from the literature review.





04

# 04.01

## The Site

As previously mentioned in the introduction of this thesis, the design methodology can be applied to any context but for the purpose of the research a site had to be selected. The chosen location is on Manus Island, Papua New Guinea in the South Western Pacific Ocean. The chosen site being the existing East Lorengau Refugee Resettlement Centre. For the purpose of this thesis, a single site had to be selected as the testing ground. The site on Manus Island is in need of an architectural intervention that can facilitate cultural exchanges between the locals and refugees as well as being an architectural solution that will enable the refugees to be self sufficient.

The island is rich in history and resources. It was once the

site of a large World War 2 US Naval Base in 1944 on the Northeast Coast - Seeadler Harbour (Britannica, 2013). Its history shows that the site has an ongoing migration history; the township - Lorengau being the principal settlements on the island. Copra, cocoa and coffee are amongst some of the island's resources that are still being produced and exported via the Seeadler Harbour.

The population in the Manus Province currently sits at 60,000 people and an estimated 9,000 people in the Lorengau region.

Prior to the Manus Island Detention Centre being opened in

October 2001, the island heavily relied on their agriculture and fishing sector as their bread and butter. Grants from the national government are provided to support service delivery, primarily in health, education and infrastructure and inflows of financial support from Manusians working in other areas of Papua New Guinea or abroad (Britannica, 2013).

According to the government the centre was meant to bring Australia's investments for economic gain and developments of Manus Island's infrastructure which included (re)building classroom, health facilities and roads. The developments have not come to fruition as promised and the presence

of the refugees is a reminder to the locals of an unfulfilled agreement by the government. In the eyes of the local, this is a breach of the cultural practice of Kastam.

The site was chosen to hopefully rectify Kastam and implement a design methodology that will provide the development that was once agreed on and also facilitate through architecture a positive engagement between the locals and the refugees; an engagement where both parties can rely on each other and together become a self sufficient collective.

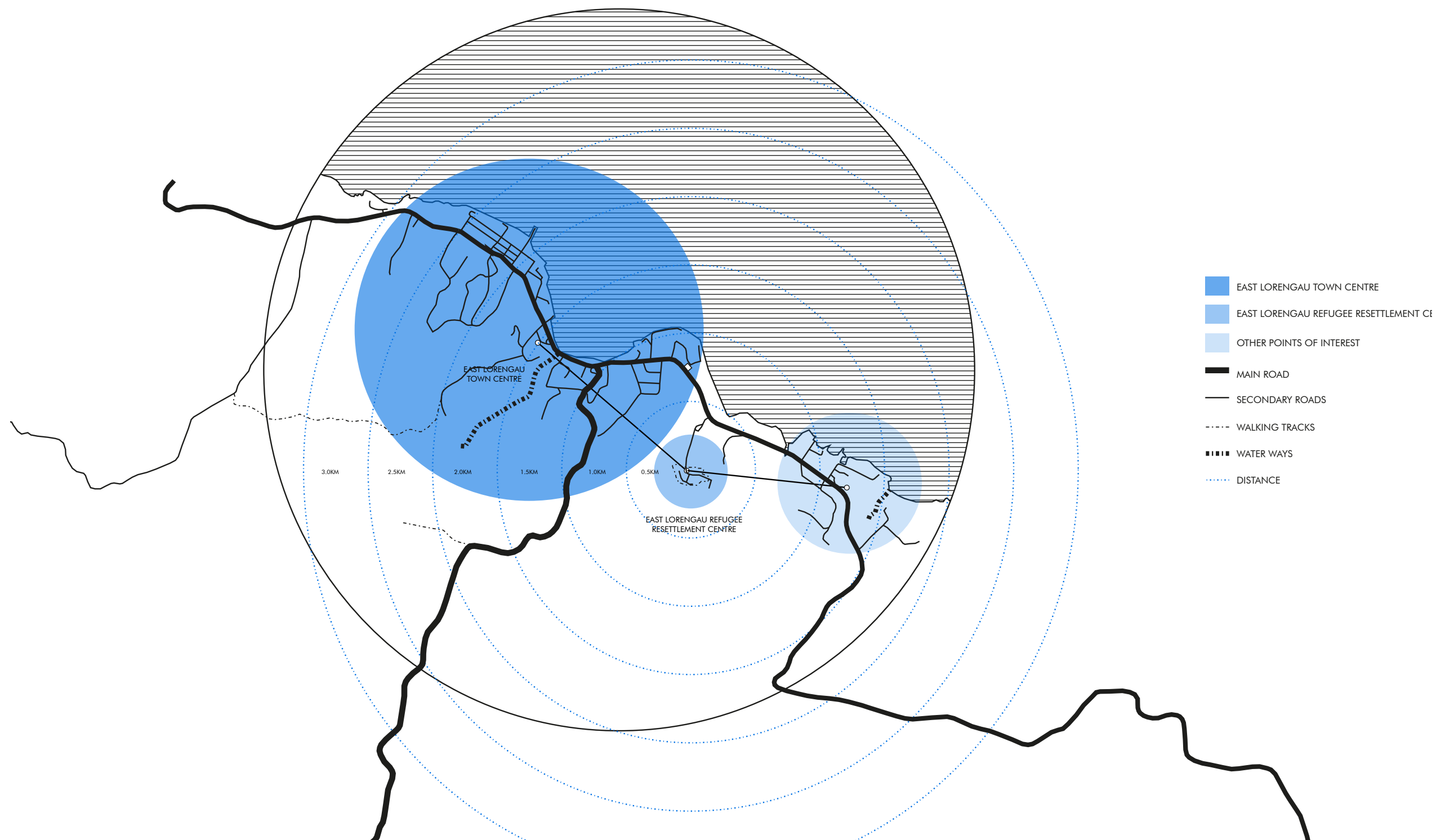


Fig. 04.01 - Proximity of Amenities to East Lorengau Refugee Resettlement Centre.



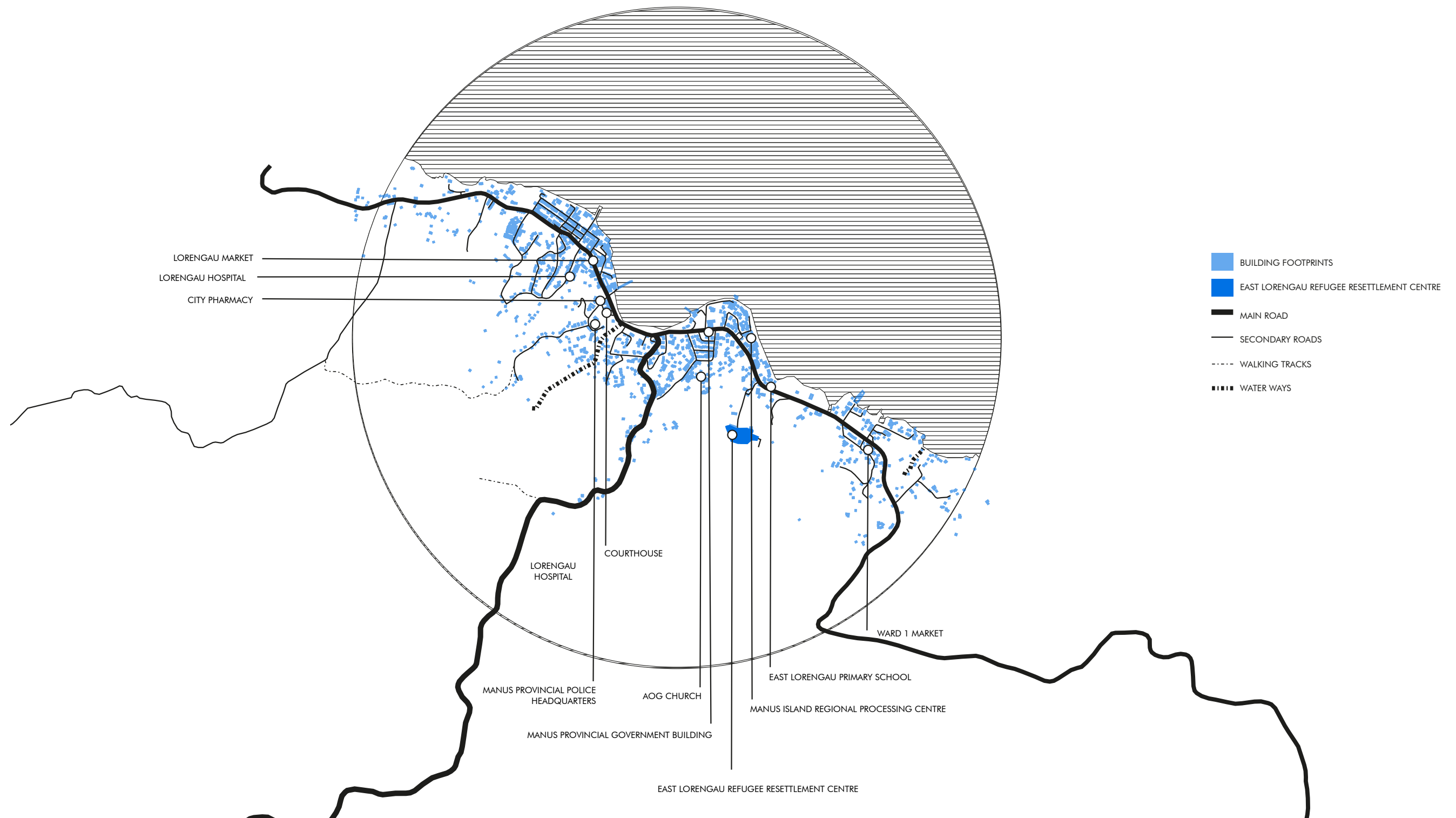


Fig. 04.02 - Existing Lorengau Amenities

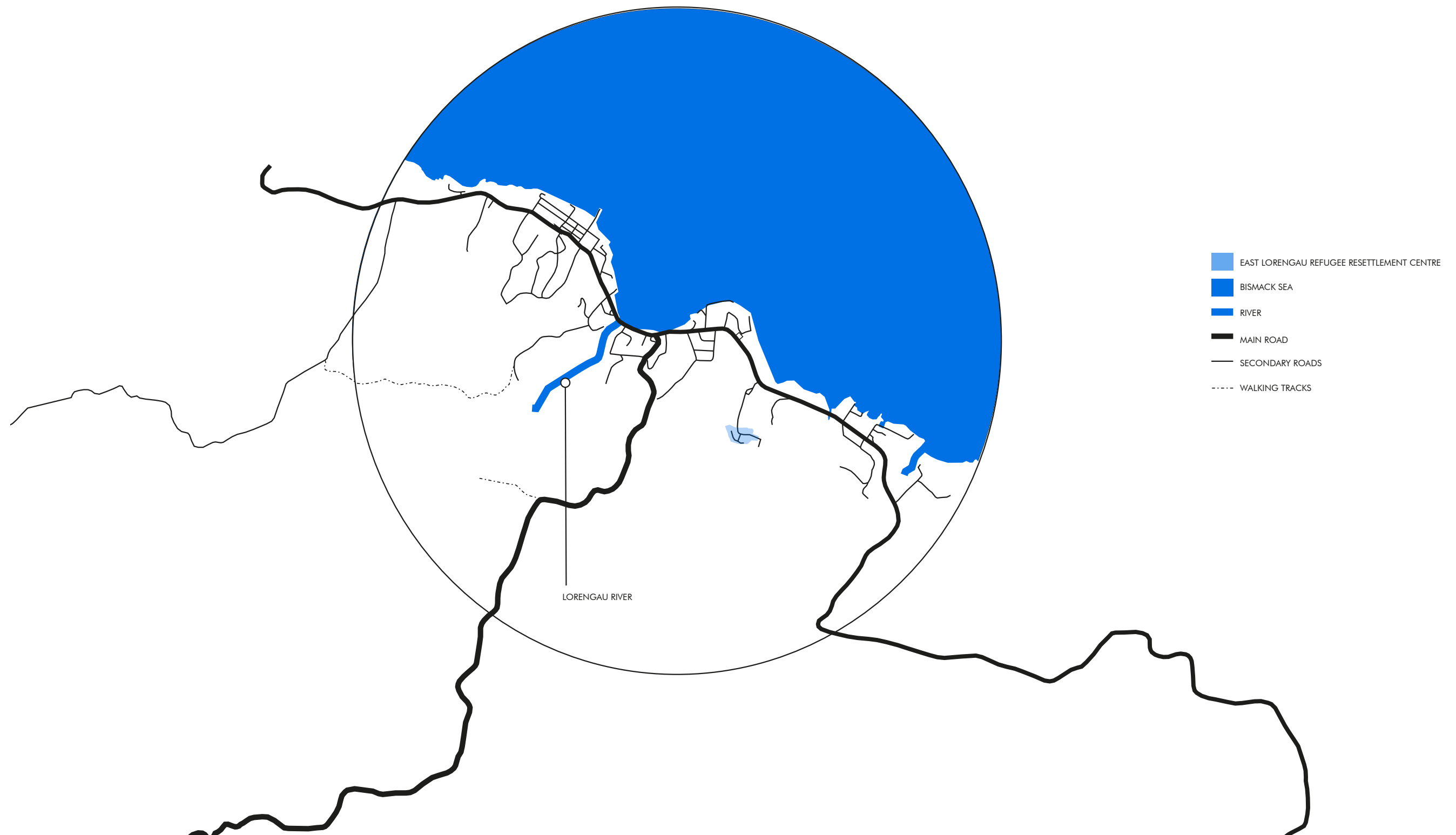


Fig. 04.03 - Lorengau Ecology



Fig. 04.04 - Manus Island Sunny Days

Fig. 04.05 - Manus Island Partly Cloudy Days



Fig. 04.06 - Manus Island Overcast Days

Fig. 04.07 - Manus Island Precipitation Days



Fig. 04.07 - Manus Island Wind Speeds

# 04.02 Critical Reflection

The resettlement centre is isolated from the town centre which hinders the refugees' ability to be integrated into the existing Lorengau community. Majority of all the healthcare, school and food facilities are a fair distance from the resettlement centre. The distance is a challenge for the refugees as there are risks of locals attacking refugees out of retaliation.

As Figure 04.01 illustrates its at least 1.5km from the refugee resettlement centre to the Lorengau Town Centre. Figure 04.02 illustrates how decentralized the refugee resettlement centre is and majority of all the buildings are located along the coast line. The area inland is left unused and has potential for development to take place. The only ecological features

close to the refugee resettlement centre are the Lorengau River and the Bismack Sea; this features give the refugees with fishery backgrounds to utilise their skills.

The climate analysis on figure 04.04, 04.05, 04.06 and 04.07 illustrate the tropical weather conditions of the site.

The design intention in relation to the site, is to maximise the visibility of the refugees using architecture as the medium. Providing amenities that are required to create an effective refugee resettlement centre that can also be accessible to the rest of the community. The centre can bridge the gap between the existing fabric of the Lorengau community and

the resettlement centre, and build a relationship between the locals and the refugees.





05



# 05.01 Intro - duction

The following case studies outline the successes and downfalls of the refugee camps using the design criteria derived from the literature review and background information to assess whether or not they meet the desired resilient and exchange facilitating requirements.



Fig. 05.01 - Ifo Camp Satellite Map

# 05.02 IFO

Location: Kenya  
Established: 1991  
Population: 84,181 Persons of Concern  
[42,189 Females and 41,1992 Males]  
Households: 20,677  
Camp Size: 12,300sqm  
Camp Type: Planned

The camp was established in 1991 and is the oldest of the five camps in Dadaab Kenya. The camp hosts ten different refugee groups from ten African countries: Somalia, Ethiopia, South Sudan, DRC, Burundi, Uganda, Rwanda, Sudan, Tanzania and Eritrea (Relief Web, 2015).

The camp overtime has become well established due to UNHCR's assistance. The UNHCR implemented programs that offer protection, education, health, food security, water and sanitation; all the basic necessities required to run an efficient refugee camp. Partnerships have been established with the relevant aid organisations to ensure the refugees safety and well being is taken care of.

The overpopulation of the camp has cause environmental degradation. To mitigate this issue, greenbelts have been established to encourage natural regeneration of trees. Ifo Camp 2 had to be established due to the influx of refugees fleeing the famine and war in Somalia in 2010 and 2011.

centre.



Fig. 05.02 Ifo Camp Green Belts



Fig. 05.03 - Ifo Camp Amenities

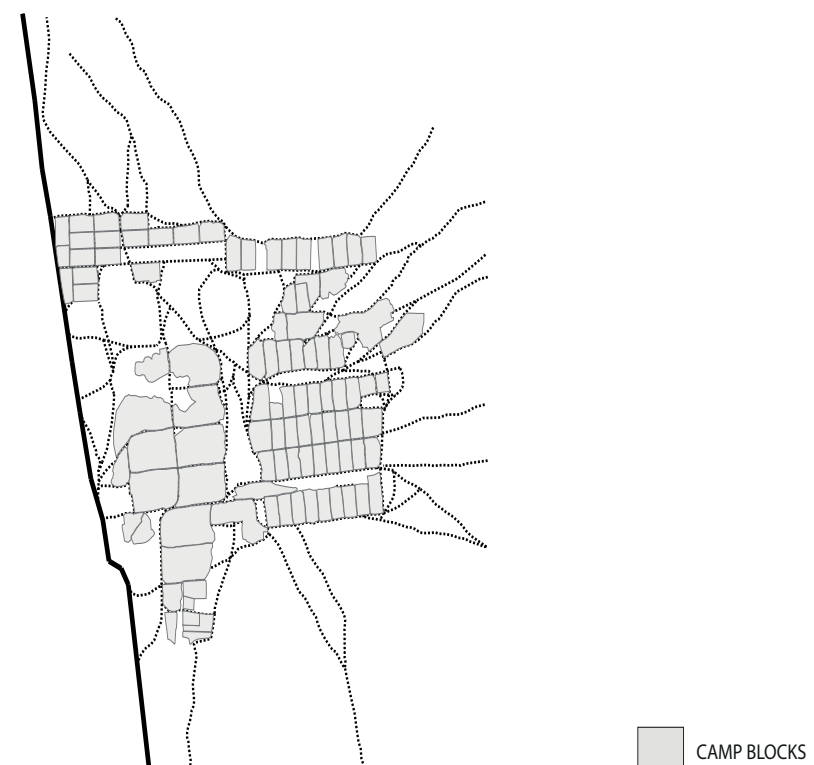


Fig. 05.04 - Ifo Camp Blocks

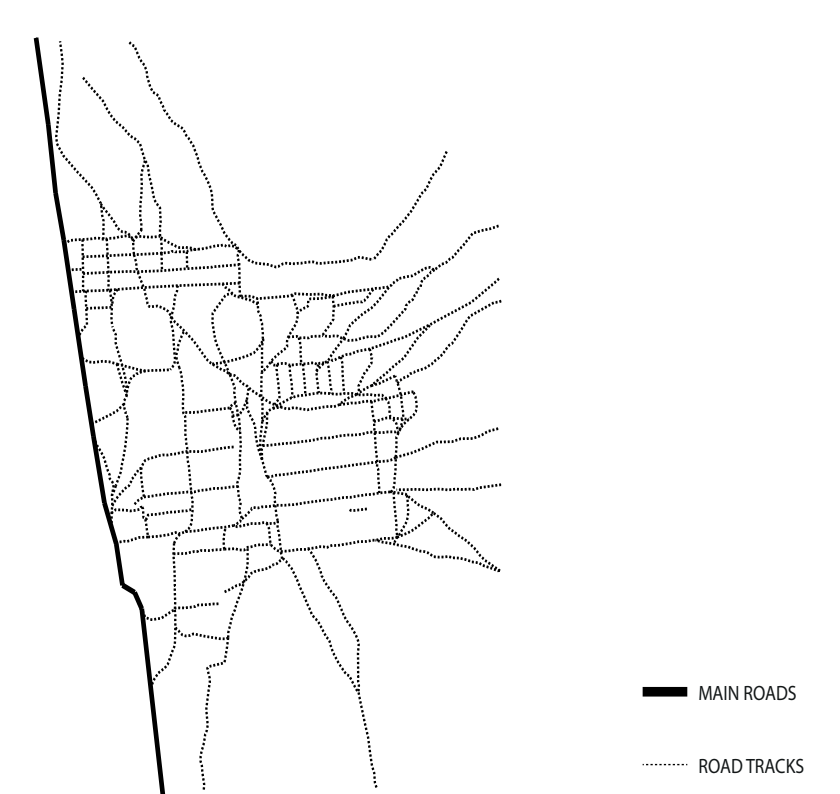


Fig. 05.05 - Ifo Camp Road Layouts

# Critical Reflection:

Using the design criteria derived from the literature review and background research on the refugees; the camp has not successfully implemented the right solutions to ensure that resilience and exchange is facilitated between the Kenyan refugees and locals. To achieve resilient designs, local, renewable resources need to be used. The chose to construct the temporary shelters / tents out of timber framing and canvas covering is a poor choice of materials; as both materials are not local and easily accessible to the refugees.

The choice in materials also highlights the neglect of any architectural intervention and a reflection of the Kenyan government not allowing agencies to construct permanent shelters.

The distance between the camp and main city is 407km, the distance isolates the camp from the existing urban fabric. Resilient designs transcend scale, for the camp to be resilient and be of benefit to the host country it needs to be integrated into the existing Kenyan urban fabric. The distance prevents any cultural exchange to occur between the refugees and the locals. Resilience can only be achieved if community outside of the camp integrates with them.



Fig. 05.06 - Residents of Ifo Camp



Fig. 05.07 - Al Za'ataari Satellite Map



# 05.03 AL ZA'ATAARI

Location: Jordan  
Established: 2012  
Population: 78,552 Persons of Interest  
Camp Size: 5,300sqm  
Camp Type: Planned

The camp was established in 2010 as a result of the displacement caused by the Syrian war. The camp hosts refugees that originate from Dar'a, Damascus, rural Damascus and Homs (Relief Web, 2018).

The camp has drastically evolved from a small camp comprised of tents into an urban settlement of 78,552 refugees. The refugees' needs and aspiration to rebuild their lives and become self sufficient have achieved and created an urban refugee city.

The camp has successfully integrated into the host community. An informal exchange has been established and is facilitated by the markets present in the camp. There are approximately

3000 informal shops and businesses running within the camp. The markets are a reflection of the thriving trade relationships established between the locals and refugees of Jordan.

Similarly to Ifo Camp in Kenya, the UNHCR have implemented programs that offer protection, education, health, clean water, sanitation, community, ability to be self reliant and access to energy. The UNHCR has also established partnerships with government and humanitarian partners to assist with the refugees resettlement process to ensure their well being and safety is maintained.

The refugees have also proven that if they're provided with their right resources, they can use the skills they have to create innovate shelter ideas and create organic communities that reflect their values and cultures; creating homes away from their countries of origin. The refugees in Al Za'ataari have challenged the way that the humanitarian agencies provide aid and create the camps.

The humanitarian aids would erect tents and place caravans in layouts which separated some refugees from their families. But the refugees would end up moving the tents and caravans in close proximity to their families, creating an organic movement of the plots. The refugees use their creative skills to adapt their caravans to make them homely. An unnamed humanitarian aid stated that, "People will always find creative ways to use the resources available to them, to beat the system

and to change the system to address their own priorities. It might be against our assumptions, but we have to embrace it, and acknowledge it'.

The refugees in Jordan have proven to be resilient amongst all the external pressure of resettling into another country outside of theirs and the political pressure from the government and humanitarian agencies.

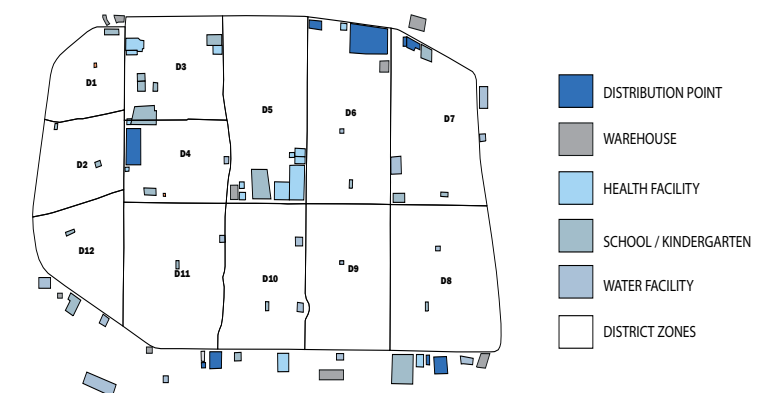


Fig. 05.08 - Al Za'ataari Camp Amenities



Fig. 05.09 - Al Za'ataari Camp - Community Programs

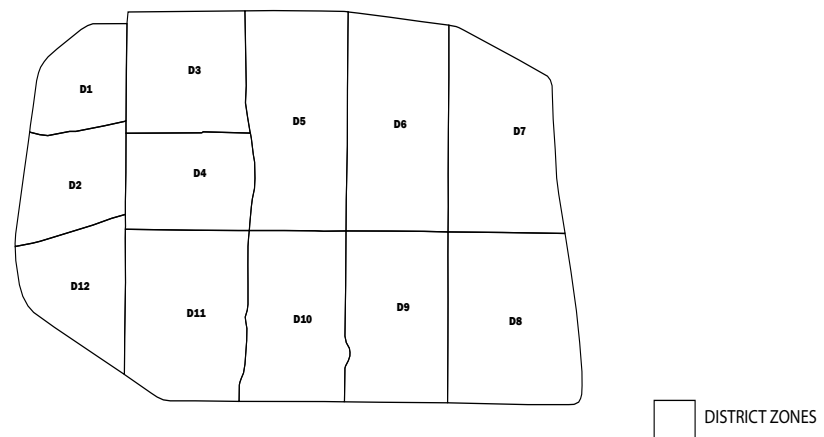


Fig. 05.10 - Al Za'ataari Camp - District Zones



Fig. 05.11 - Al Za'ataari Camp - Refugee Housing

# Critical Reflection:

Al Za'aatari camp has met most of the design criteria previously discussed. The markets have been become a catalyst that has facilitated exchange and created relationships between the locals and refugees. It's illustrated how the markets can be an important program that can help answer the research question and achieve the aim and objectives.

Self sufficiency has been achieved by the choice of implementing solar systems to generate energy; utilising the climate of the Jordan to create electricity-easing the living conditions, improving the safety and security of the refugees. The refugees of Jordan have proven that if they're provided with the right resources they can couple them with their creative skills and create spaces that can have a positive impact on their resettlement.



Fig. 05.12 - Inside Al Za'ataari Camp



06

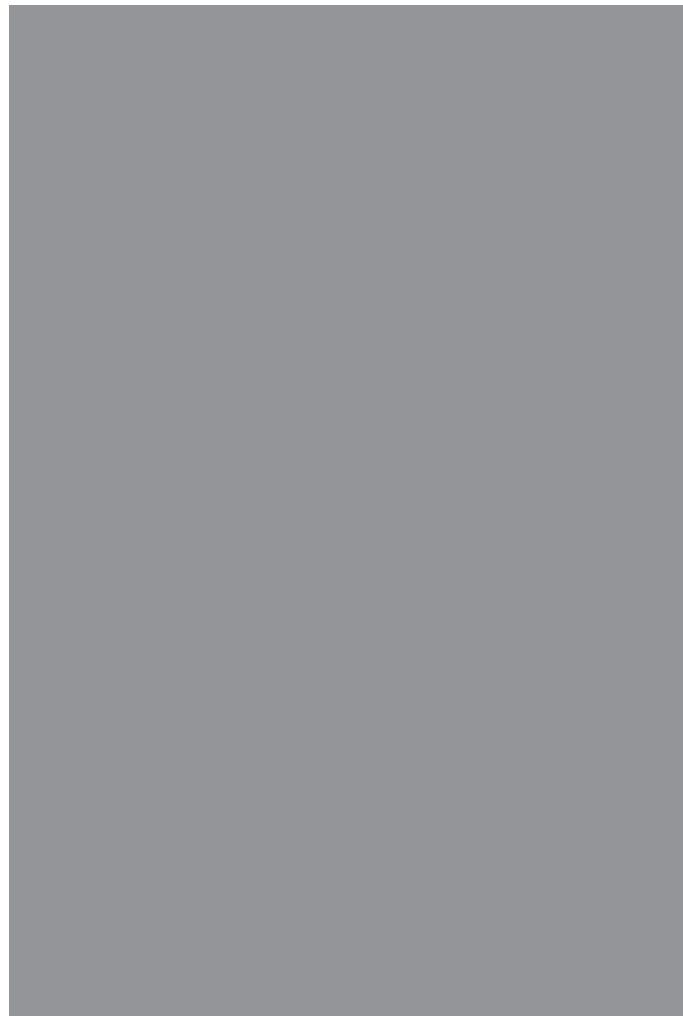


Fig. 06.01 - Yam House



Fig. 06.02 - Yam House Beam Connections

# 06.01

## CEREMONIAL AND CULTURAL BUILDINGS

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Ceremonial, spiritual and cultural buildings in Papua New Guinea are held to a high esteem. Their esteem are demonstrated in the high complexity of their construction techniques compared to the standard Papua New Guinean housing. Elements of symbolism, structural properties and cultural ideologies drive the selection of the building materials (International Organization for Migration, 5).

The Yam Houses are considered to one of the most important building typologies within the New Guinean cultures. The significance of this building type is illustrated through the high level of detailing evident in its adornments and architectural elements. Extensive attention and labour is invested into the Yam House's craftsmanship to convey its cultural significance.

The high level of detail and prominence of the Yam House is supposedly a reflection of the owner's wealth and societal status. The Yam House as its name suggests functions as a storehouse for Papua New Guinea's staple root vegetable, Yams. The yam house is used as a program that displays the best yams that have been harvested by its owner. The less desirable yams are stored in alternative yam houses that aren't as visible and not in the eyes of the community.

Within the Sepik province the Haus Tambaran or the 'Spirit House' is classified as a cultural and spiritual meeting area (International Organization for Migration, 7). This building program is commonly distinguished by the presence of large trusses at the entrance. You'll find most Haus Tambaran are

Haus Tambaran are windowless as their spaces are meant to be private and only accessible to men who have been initiated and allowed to participate in the private ceremonial activities.

Ceremonial spaces are the central programs of Papua New Guinean villages (layout of village). The layouts of the villages are determined and organised around the ceremonial spaces. The spaces are usually temporal or semi permanent as they're only erected for significant occasions such as pig-killing and bride-price ceremonies. Ceremonies are an important aspect of the Papua New Guinean society. The scale of the structure is a reflection of the importance of the event. To aid with the temporary nature of the building, materials such as bamboo, bush materials and sago roofing are used due to their ability to

to allow for prompt construction of the structures.



Fig. 06.03 - Community Church



Fig. 06.04 - Community Church Madang Province

# 06.02

## CHURCHES

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Christianity was adopted and introduced in Papua New Guinea in the late 19th Century (International Organization for Migration, 9). According to the 2011 census, the statistics for locals that identified them as Christians set at 96% (reference). Alongside Christianity, Papua New Guineans also practice other local customs, traditions and spiritual beliefs.





Fig. 06.05 - Family House



Fig. 06.06 - Men's House

# 06.03

## HOUSES

-----

The programs - sleeping areas, kitchens and living spaces within a traditional house are commonly separated (International Organization for Migration, 10). It's common for men and women to have separate sleeping areas, this tradition is slowly being phased out and mixed gender housing is gradually becoming a norm for the locals.

Each mixed household holds capacity for a single family and the square meterage is determined by the number of persons within the family. The housing style is a reflection of the region that it resides in.



Fig. 06.07 - Kitchen.



Fig. 06.08 - House with outdoor kitchen.

# 06.04

## KITCHENS

-----

Kitchens where usually located in the main household but this practice is slowly become redundant and most kitchens are now located separately from the house. (International Organization for Migration, 13) One kitchen usually serves one single family. The kitchen is constructed in an outdoor space, detached from the house or either a covered area attached to the main house.



Fig. 06.09 - Haus Win (Communal Area)

# 06.05

## COMMUNAL AREA

---

The communal space - the Haus Win is an open structure where the locals commune together, sit and catch the wind in the daytime (International Organization for Migration, 10) This spaces functions as the indoor living area. The structure includes a raised platform and a thatched roof for shade. The Haus Win is regarded as a shared space and allows the houses to be private spaces allocated for only sleeping purposes.



Fig. 06.10 - Garden House

# 06.06

## GARDEN HOUSES

-----

All households have a garden house which functions primarily as a household's storage space for their food crops during the harvesting time (International Organization for Migration, 12). The garden house also serves as a secondary sleeping space and a place of refuge when there are strong winds or when their main houses are damaged and under construction.

# 06.07

## Key Drivers of the Vernacular

The architectural landscape of Papua New Guinea is heavily influenced by the importance of security and privacy - commonly in locations where there is tribal conflict (International Organization for Migration, 11). Most houses are constructed without windows to prevent unwanted visitors; in turn increases privacy and acts as wind and rain barrier.

Architectural relics such as tall stilted houses with concealed entrances and narrow corridors control unwanted entry by uninvited visitors. These relics are still commonly found in most traditional houses.

In certain regions such as the Trobriand Islands, houses are a

a representation of your societal status and a hierarchy of a house is depicted and evident in the specific decorations associated with the owner's ranking. In a village you'll find that the Chief would have the most detailed and adorned house. Within a specific area the Chief has the last say over the style, sizes and shapes of the buildings within the community.

The climate and weather plays a huge role in the way that the buildings are designed and constructed. Buildings are semi-permanent and are constructed not to withstand the harsh weathers of Papua New Guinea. Certain building elements and materials are employed as sacrificial components. The thatched roofing materials are easily blown away by the

winds induced by the storms but the primary roofing structure will stay in place. The roofing materials can be easily sourced and constructed due to their local availability and lightness in weight without having to rebuilt or interrupt the remaining primary structure.

The posts of the building are usually the strongest component due to the high quality of termite resistant hardwood, with footings embedded deep to stiffen the structure. Buildings of high esteem such as the Yam Houses, Ceremonial and Cultural buildings are built as permanent structures and have sturdy structures. More attention is paid to the construction techniques with strong jointing and complex architectural

detailing. The purpose behind the increased attention to detail is to enable these particular buildings to withstand the severe weathers of Papua New Guinea.



Fig. 06.11 - Primary Structure.







07

# 07.01 UNHCR Emergency Handbook Objectives

1. In addition to meeting the immediate needs, planning should take into consideration the long-term provision of services even if the situation is expected to be temporary (UNHCR, 2017, p.206).
2. Decisions on site selection and camp planning are very difficult to reverse, therefore seek technical support (UNHCR, 2017, p.206)..
3. Avoid high population density congestion in settlements and in accommodation; avoid very large settlements; refugee camps should normally be considered as the last option (UNHCR, 2017, p.206)..
4. Involve refugees in all phases of settlement layout, shelter design and construction (UNHCR, 2017, p.206)..
5. Use a bottom-up planning approach, beginning with the smallest social units, preserving traditional social arrangements and structures as far as possible (UNHCR, 2017, p.206)..
6. Develop a comprehensive master plan with a layout based on open community forms and community services, such as water points, latrines, showers, cloth washing facilities and garbage collection to promote ownership and maintenance of the services (UNHCR, 2017, p.206).

# Critical Reflection:

- A prediction cannot be made on whether a certain circumstance that has led the refugees to exile is temporal or permanent. Most circumstances such as famines, natural disasters and wars aren't predictable and can escalate at any time. The best solution is to design the refugee resettlement centres with a semi-permanent mind-set for those that will return to their home countries after the famine, natural disasters and wars have subsided and to also design the centres with a permanent mind-set for those that wish to make their asylum country their new home.
- As previously examined earlier on in this thesis most refugees come with skills and qualifications in fields such as engineering, construction etc. Therefore instead of seeking external technical support, it's better to seek technical support internally from the refugees. By utilising their skills this will enable them to have a sense of responsibility and ownership over the resettlement centre - which would positively influence their well being. They'll feel wanted and helpful as opposed to being a burden.
- Medium density is encouraged so that each refugee and their resettlement journey can easily be accounted for. From an administrative point of view, the centres would be easier to manage, which will result in running a successful resettlement centre. It's better to have communities of small numbers to enable better lifestyles; quality over quantity.
- Participatory design is an excellent tool in involving refugees. By involving the refugees in all phases of the settlement layout, shelter design and construction is a positive move towards integrating them into the host community. This move encourages a sense of ownership and belonging; especially during a time where the refugees are desolate and have no ownership over anything.
- Using a bottom-up approach to designing the resettlement centres mitigates the risk of any details being missed. It enables certain design solutions to be tried and tested before replicating them on a bigger scale. By integrating traditional social arrangements into the design solution, it gives the refugees a sense of identity and increases their visibility in the host community.
- By developing a comprehensive master plan is important as it's the deciding factor of whether or not the resettlement centre can be self-sufficient and run independent from any external government help. With a layout based on open community forms and services, the integration of the locals and refugees can easily be facilitated and relationships can be established between them.

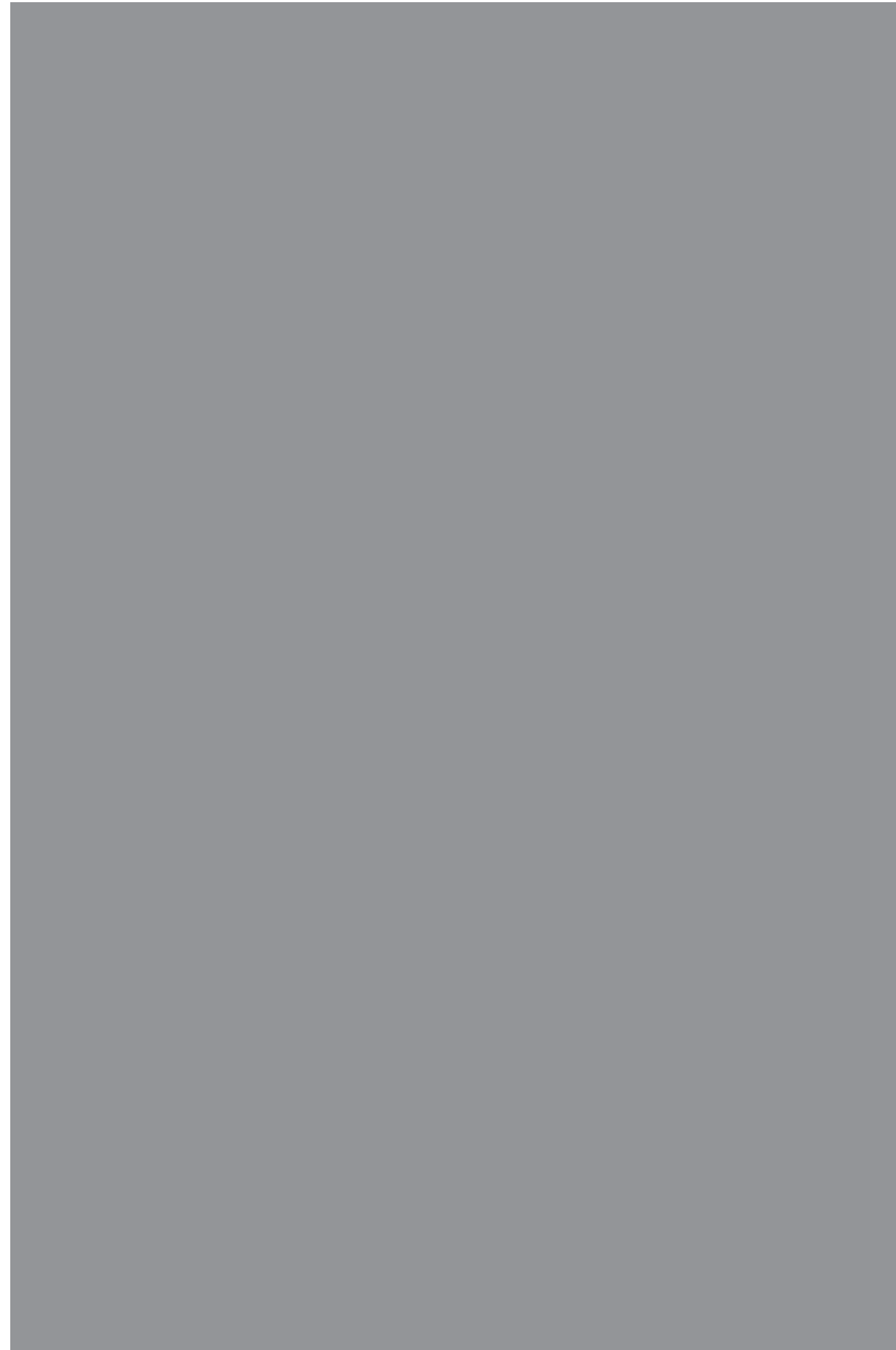


Fig. 07.01 - UNHCR Modular Design Concept.

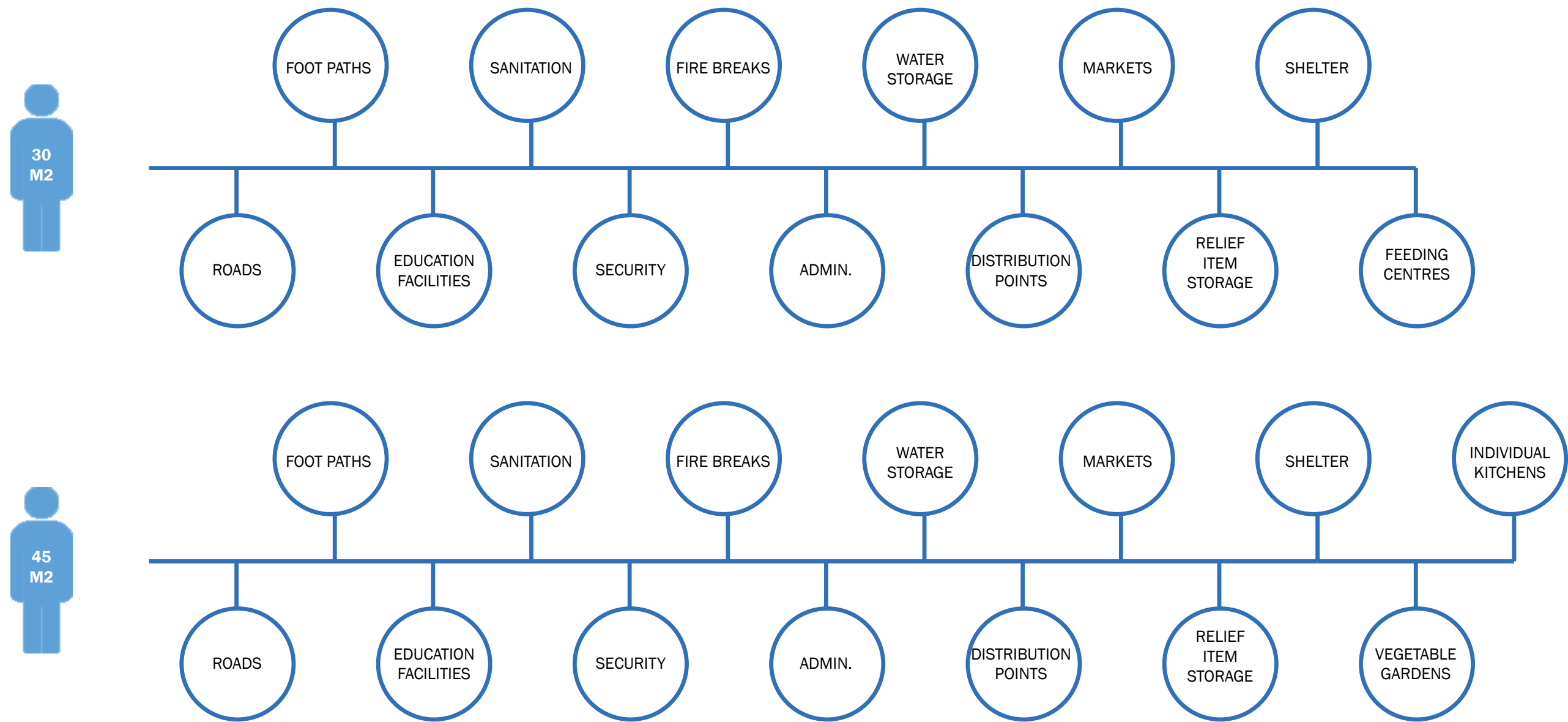


Fig. 07.02 - Programs and area (sqm) required for each refugee according to the UNHCR

# 07.02 UNHCR'S Stance

The UNHCR states that the overall physical layout of the site should reflect a decentralized community based approach, focusing on family and community (UNHCR, 2017, p.213). The process of the site planning should use the 'bottom up' approach; which is to firstly understand the characteristics and needs of the individuals, and reflect the wishes of the community as much as possible by involving the community in the design process (UNHCR, 2017, p.213).

The programs that need to be included in the community should include easily accessible services, such as toilets, showers, water points, garbage collection and cloth washing facilities. In warm, tropical climates like Papua New Guinea,

each refugee needs a minimum of 3.5sqm (UNHCR, 2017, p.221).

The forms and layouts of the refugee camps play a big role in better interaction with other communities. The UNHCR suggests designing the camps in a modular manner; starting from the smallest module, a family household and then building up larger units. Modular planning does not necessarily mean using a grid layout for the site and should be avoided as rigid grid layouts; although figure 07.01 is a concept the UNHCR constructed which is gridded. Rigid layouts do not accommodate community layouts and interaction. The layout should address the identity of the refugee community. The key drivers of the layout should be the cultural background and social organization of the refugees and host community (diagram 1.00

It's been recommended by the UNHCR to involve the refugees and to get them to build or assist in building their own shelters (UNHCR, 2017, p.221). And provide them with the right technical, organisational and material support to start off and eventually they'll be able to replicate the shelters without any assistance from any aid organisations or governments. To ensure that the shelters can be easily replicated, the simplest structures and building methods need to be implemented.

# 07.03

## Critical Reflection

Key ideas from this chapter that will be implemented into the design outcome will be the idea of creating simplest structures. Simple and flexible systems are resilient and easily manageable. The concept of using the identity of community to inform the layout will also be implemented. In context with the site, the Papua New Guineans organic village layout will be used as precedent. The programs detailed previously will be incorporated to ensure that the basic requirements of a refugee camp are met.

The findings of the UNHCR's program analysis and the vernacular studies will be juxtaposed to create programs that not only meet the basic requirements but also have a layer

of cultural richness that's unique to the refugees and the host community.

The amalgamation of the UNHCR's program analysis and the vernacular studies will enable the advancement of the aim and objectives - creating resilient architectural programs that provide for the refugees' basic human needs using resources and using resilient local construction techniques. The findings from the program analysis will be developed to inform solutions to the research question.





08



# 08.01

## Intro - duction

To understand the programming requirements for a refugee resettlement centre, analysis of precedents are required. The precedents chosen embody the key ideas of self sufficiency, successful use of architecture to integrate the refugees into the host communities and innovative use of local resources.

Key ideas used to analyse precedents:

1. Self Sufficiency
2. Integration of Refugees
3. Use of Local Resources

# 08.02

## VIETNAM FLOOD PROOF BAMBOO HOUSING

**Architects: H & P Architects**  
**Location: Ha Noi, Vietnam**  
**Completion Date: September,**  
**2013**

Vietnam's flood-proof bamboo houses designed by H & P Architects was a design that stemmed from the need to have affordable flood proof housing of Vietnam's flood stricken regions. H & P described it as the new type of terrestrial dwelling that floats above the flood (Phaidon, 2013).

The homes are primarily constructed out of bamboo—a material that is local to the South East Asian region and available in abundance. Traditional thatching methods have been implemented into the roof. The roof acts as a ventilation system - H & D Architects have designed the corners of the roof to be able to move up like triangular shutters. This allows for the air to flow inside to aid with humid days. The roof corners can be shut during heavy storms

Fig. 08.01 - Exterior of Bamboo Housing by H & P Architects

and the hatches can be battened down (Figure 10.021).

Oil drums act like a buoyancy mechanism that allows for the houses to stay afloat during the events of a flood. The drums are installed as the base of the house to prevent the houses from drifting away. The houses are anchored in the ground using four steel rods (drawing).

H & D Architects have incorporated green walls onto the facades; which encourages great aesthetics. Bamboo plant holders are embedded into the facade, allowing and giving the owners a piece of mind to plant vegetables and flowers, knowing that their garden won't be disrupted or destroyed by the floods (Figure 10.023).

The houses are made up of modular elements which allows for quick construction and reduction in cost. The architects have designed these modular dwellings in a simple manner that enables the owners to easily assemble the houses by themselves.

Elements that can be derived from this precedent study that fall in line with the idea of self sufficiency and use of local resources are elements such like the use of bamboo - a local material and how the architects designed modular system that enable the owner to construct their own houses and not have to rely on external parties.

The bamboo plant holders contributes to the idea of refugees being self sufficient. As it enables them to produce their own crops to have for themselves and to share / sell to the locals. The

The vertical placement of the plant holders also provides reassurance that the crop life won't be interrupted by the storms and floods.

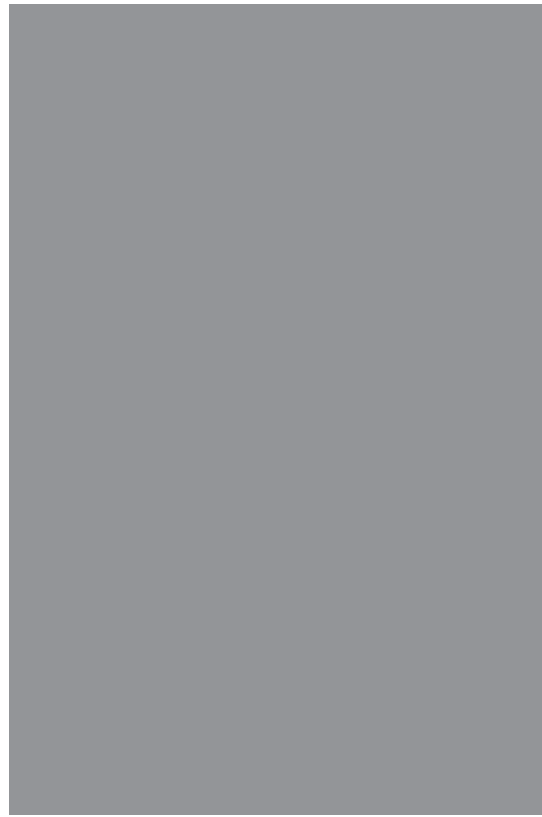


Fig. 08.02 - Triangular Roof Panels.

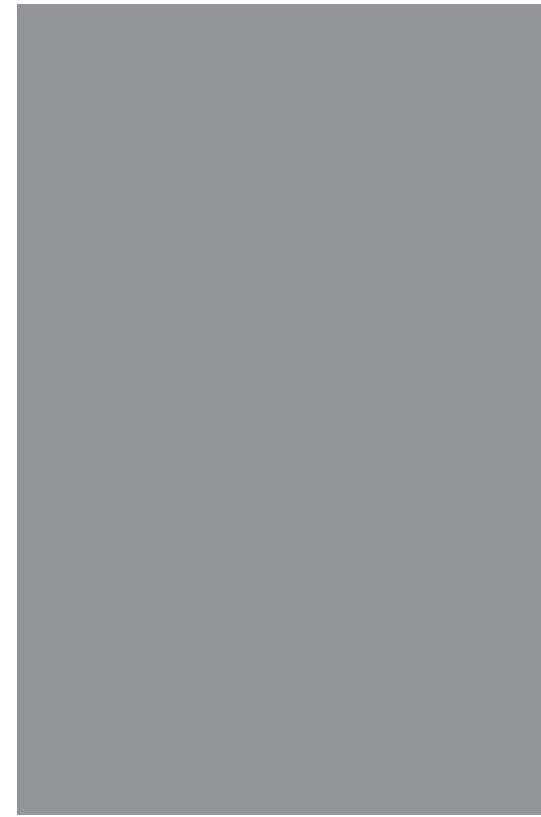


Fig. 08.03 - Bamboo Plant Holders on Facade.

# CHARACTERISTICS

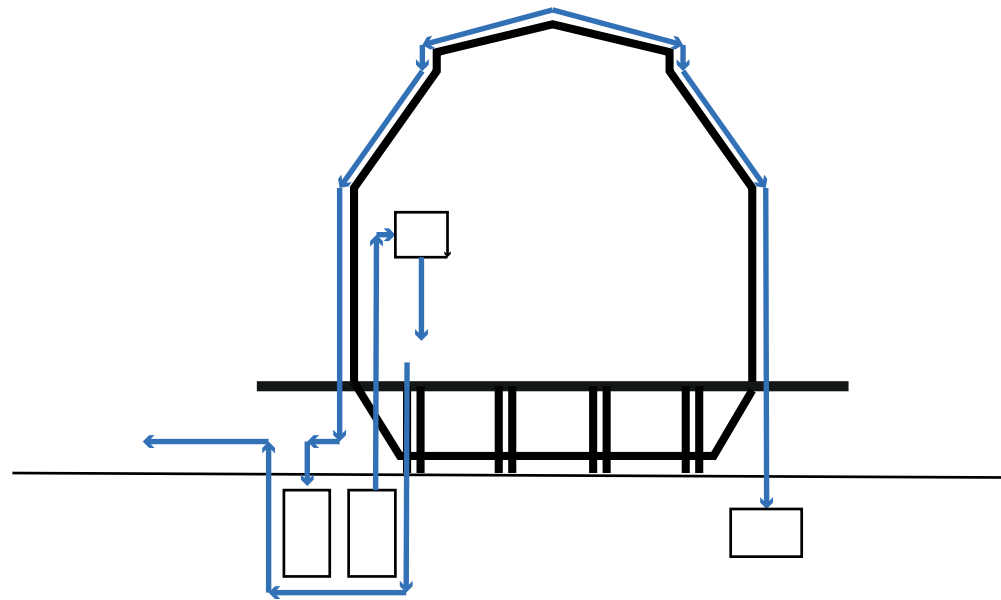


Fig. 08.04 - Rain Water Collection System

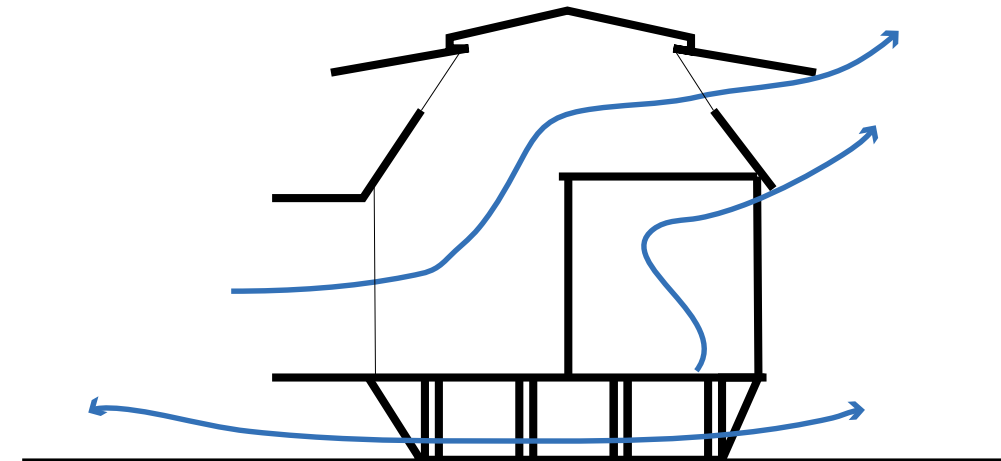


Fig. 08.05 - Air flow when triangular roof panels are opened.

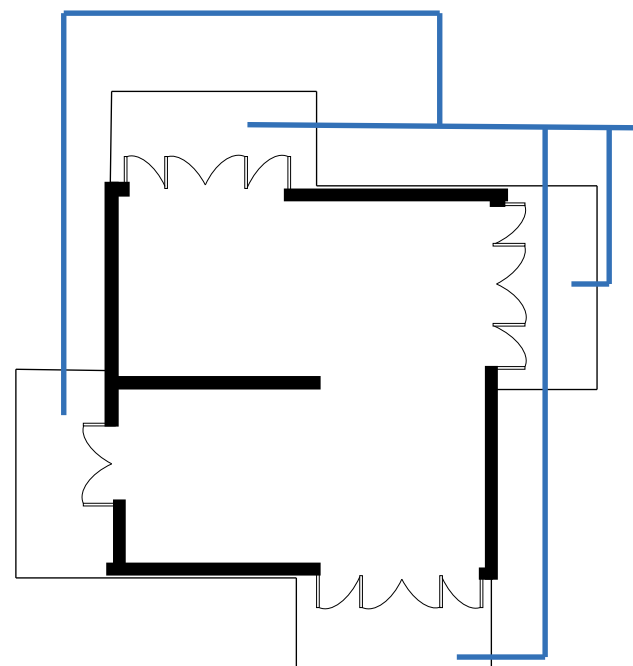


Fig. 08.06 - Outdoor Areas.

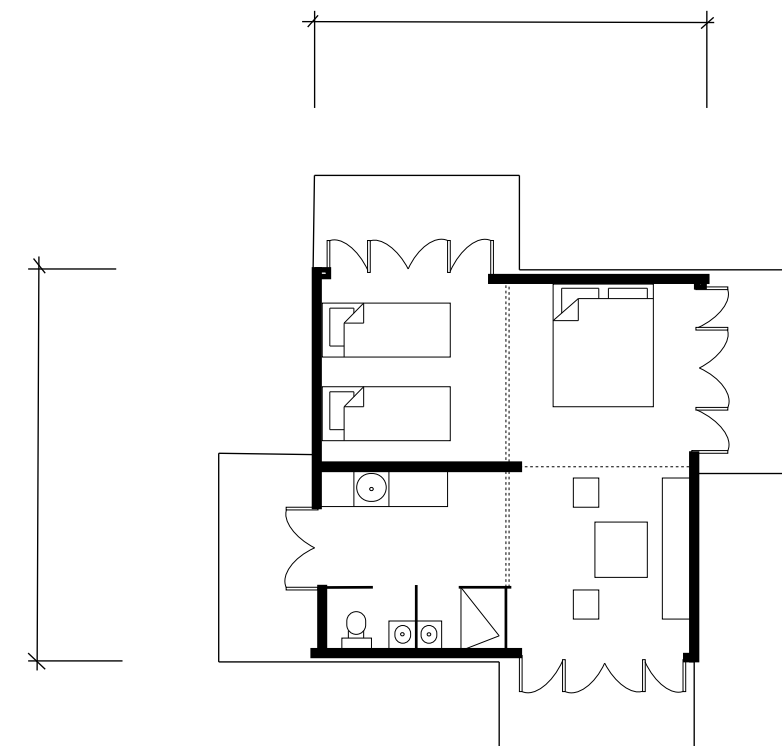


Fig. 08.07 - Spaces.





# 08.03

## PAPER LOG HOUSE

**Architects: Shigeru Ban**  
**Location: Dhaneti, Gujarat, India**  
**Completion Year: 2001**

The Paper Log House is housing designed by architect, Shigeru Ban as housing solution for low-income societies in the event of a disaster (Shigeru Ban Architects, 2001). The design is adaptable and can be constructed in any context. The design employs simple construction techniques using local and readily available materials; a method that supports the ideology of resilience. The simplicity of the construction allows the locals to easily replicate the construction elsewhere.

Fig. 08.08 - Residents gathering outside of a Paper Log House.



Fig. 08.09 - The interiors of a Kirinda House.

# CHARACTERISTICS

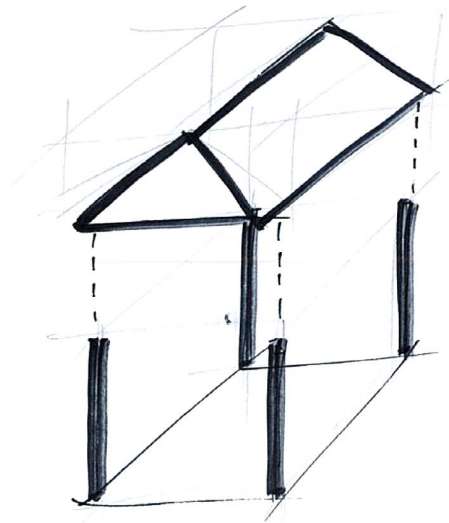


Fig. 08.10 - Simplicity of Structure.

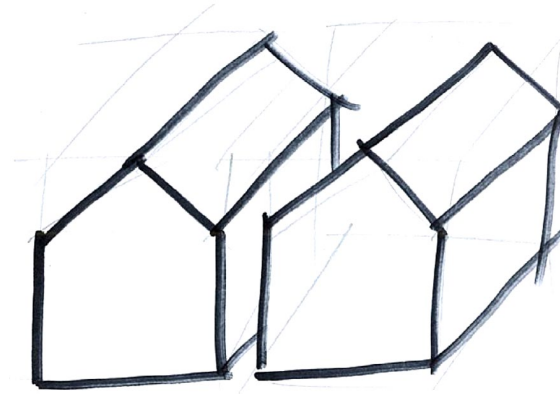


Fig. 08.11 - Flexibility and ability to easily construct multiple housing units.

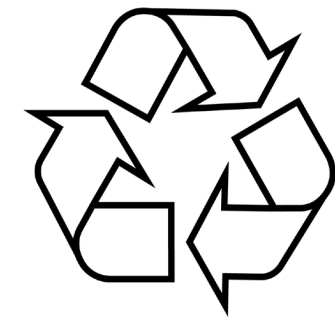


Fig. 08.12 - Local and recyclable materials used.



# 08.04

## KIRINDA HOUSE

**Architects: Shigeru Ban**  
**Location: Kirinda, Sri Lanka**  
**Completion Year: 2006**



To be able to successfully design spaces that can facilitate exchange between locals and refugees; an understanding of the community needs to be obtained. Simplicity and communal spaces are imperative to ensure that resilient design outcomes can be achieved. The Kirinda Houses embody and reflect the design objectives the people of Kirinda desired. Their desire is to use local labour and materials to bring profit to the region. The sense of involvement of the Kirinda locals throughout the design development and construction is a key player to them achieving self sufficiency.

Fig. 08.13 - Exterior of a Kirinda House

# CHARACTERISTICS



Fig. 08.14 - The Courtyard / Main Living Space

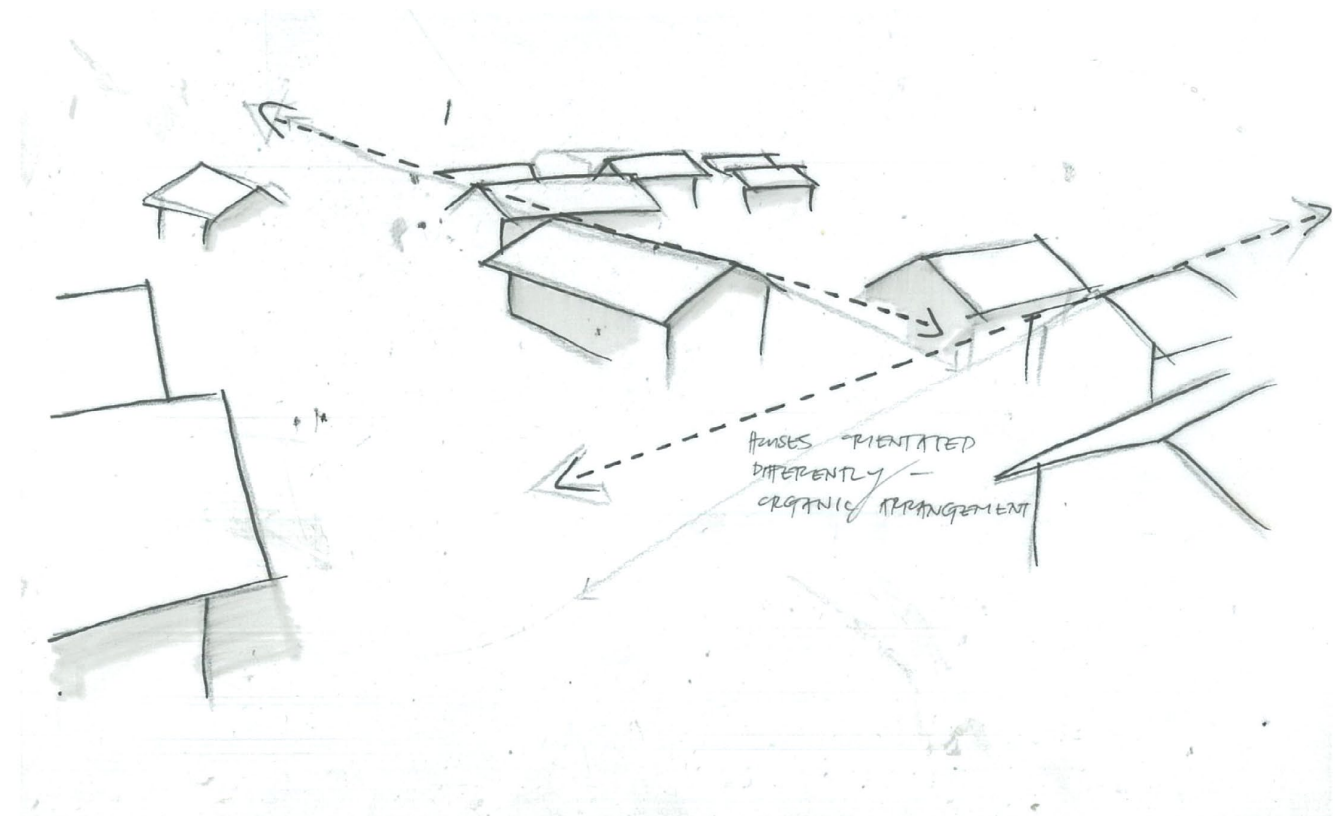


Fig. 08.15 - Organic Layout of Kirinda Houses

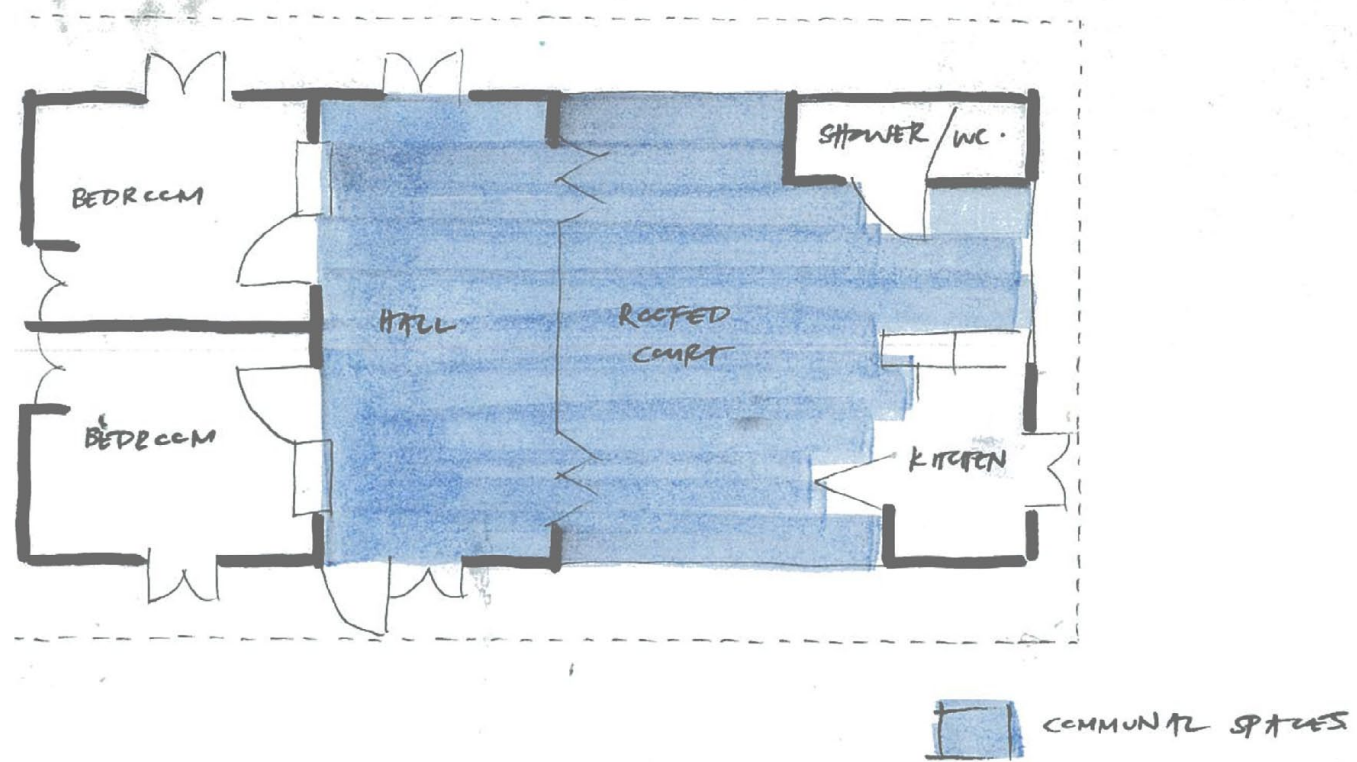


Fig. 08.16 - Communal vs Private Spaces

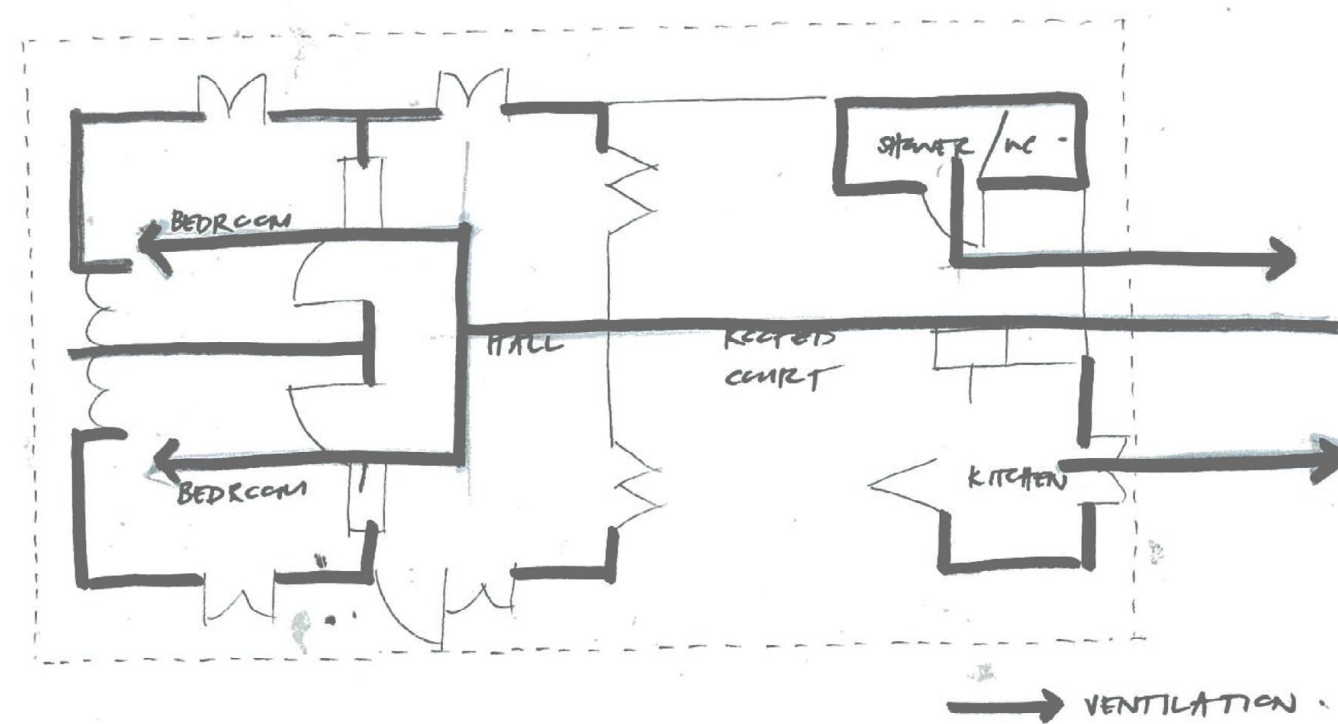


Fig. 08.17 - Ventilation





# 08.05

## Critical Reflection

The three precedences analysed embody key ideas that each address the refugee housing requirements at an architectural level as opposed to an aid organisation or government level. The key ideas derived from the analysis are:

1. Locally sourcing materials.
2. Using local labour.
3. Simple and flexible structural systems.
4. Involvement of locals in the design development stage.

These key ideas will inform the design process and be the key drivers for the design developments.



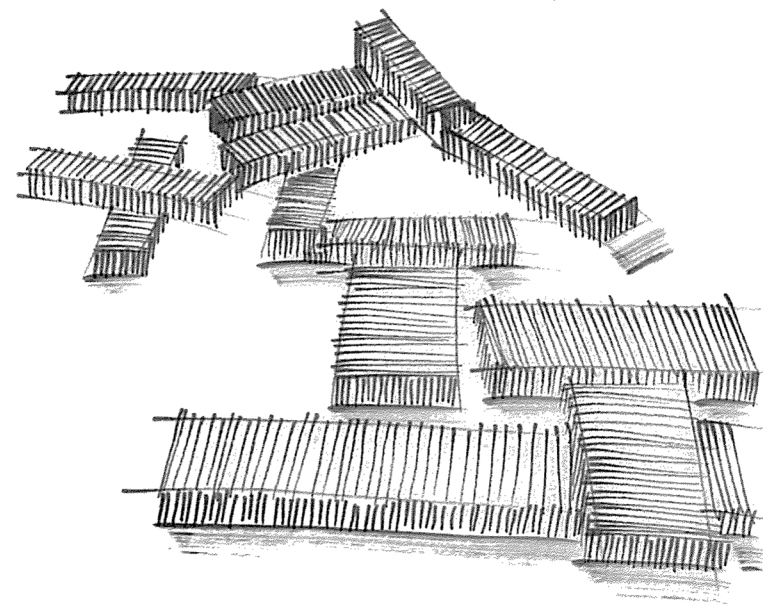
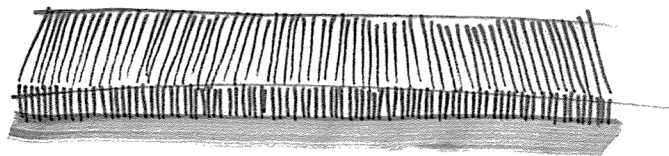
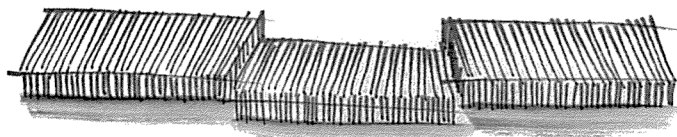
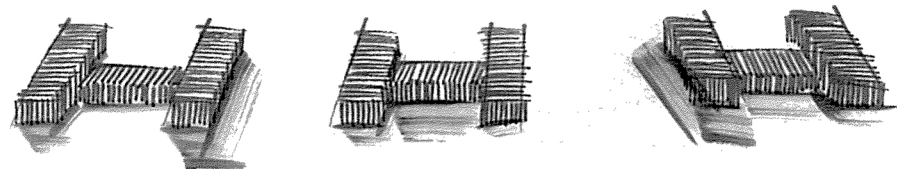
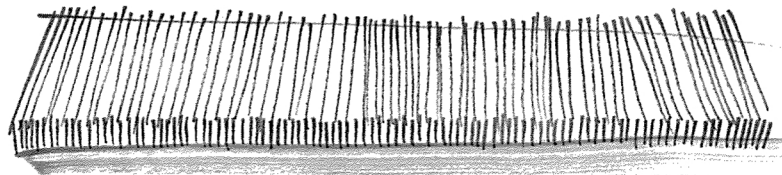
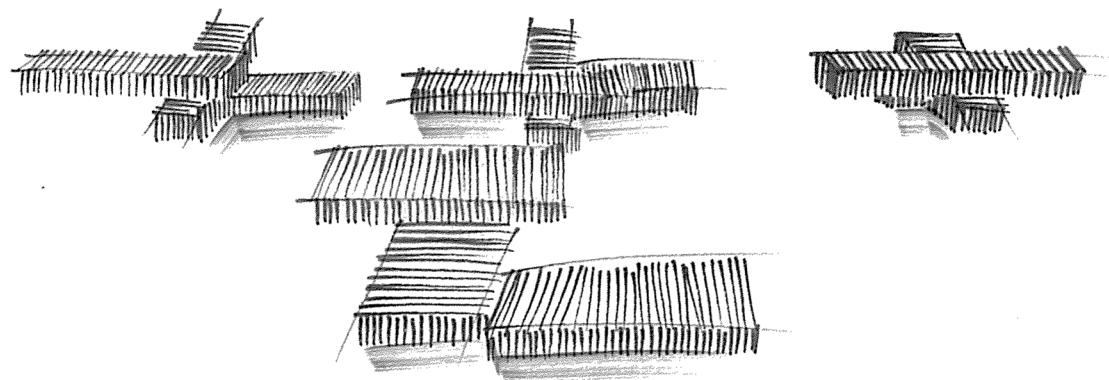
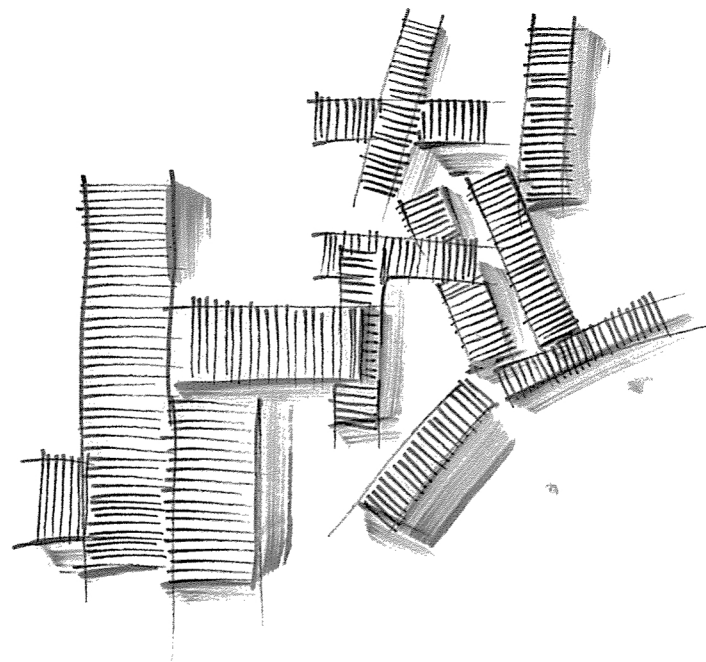
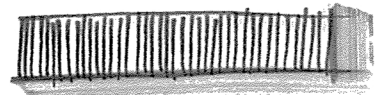
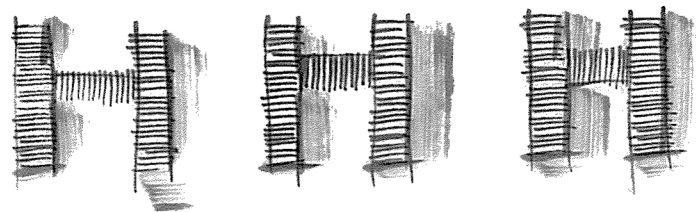
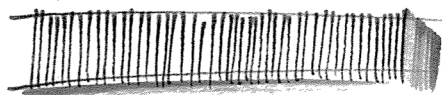
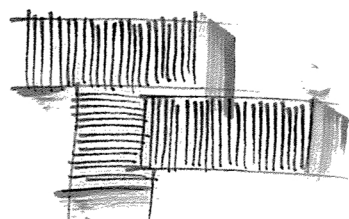
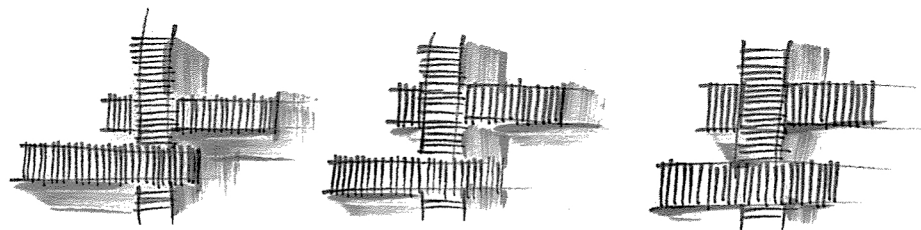
09



# 09.01

# Intro - duction

The preliminary designs are a cumulation of the exchange and resilient principles, case studies, programme and precedent analysis previously examined. Acknowledging and adapting aspects of these studies to create a design solution that achieves the design objectives to create safe architectural environments for exchange, facilitate integration between refugees and the host community and enable them to be self sufficient.





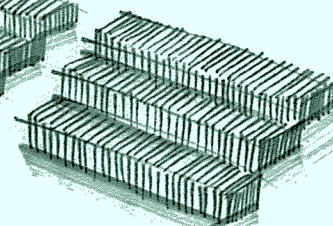
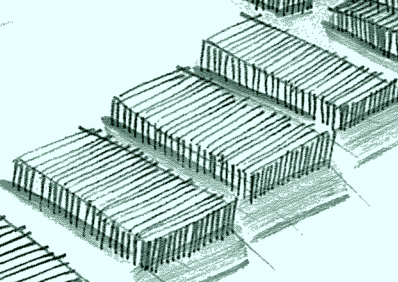
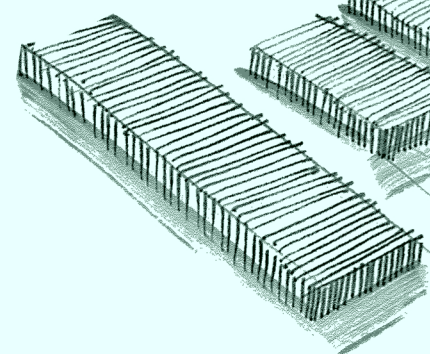
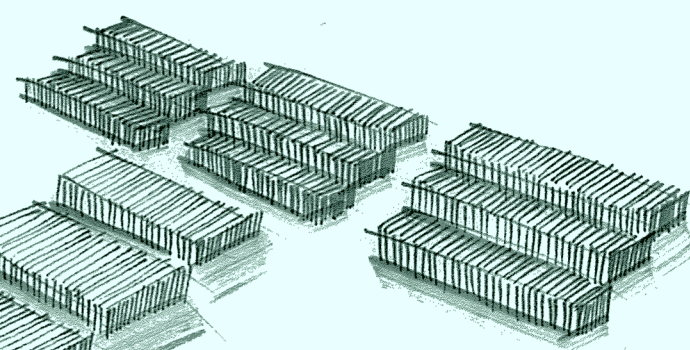
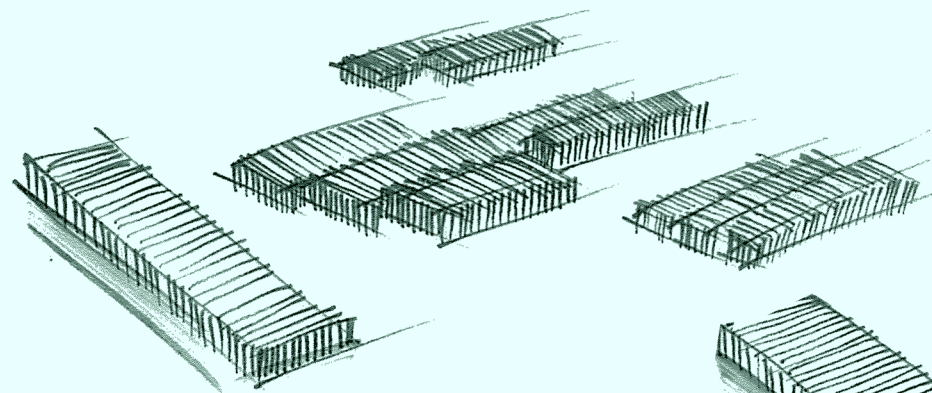
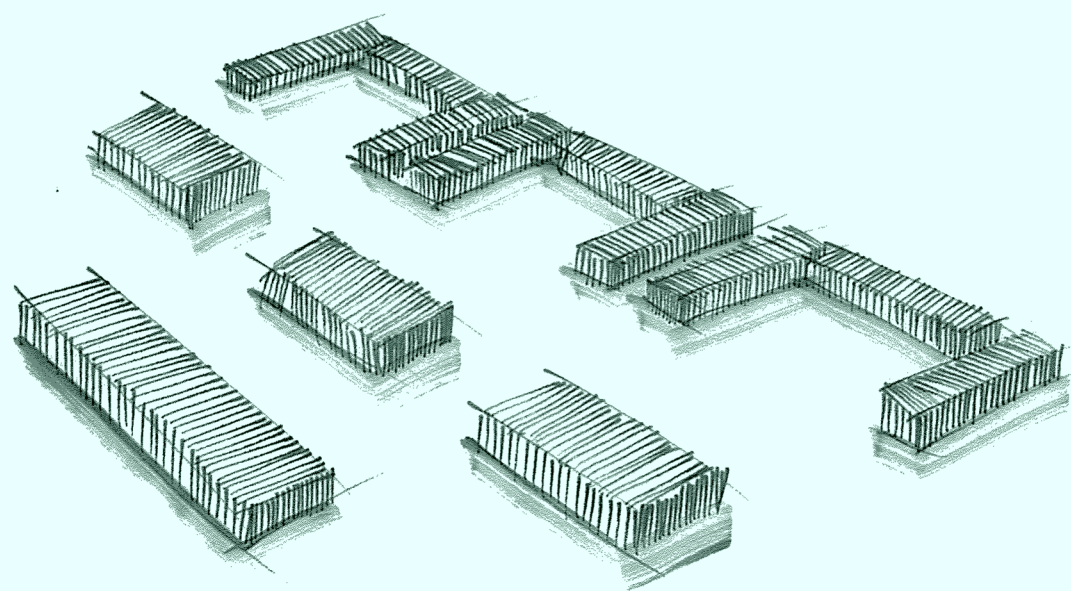
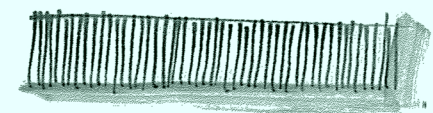
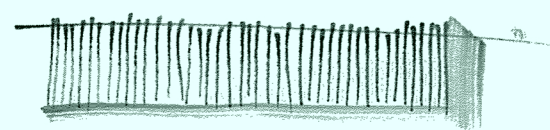
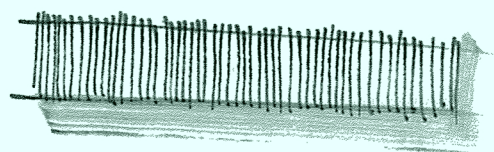
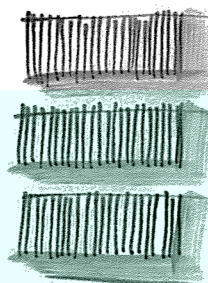
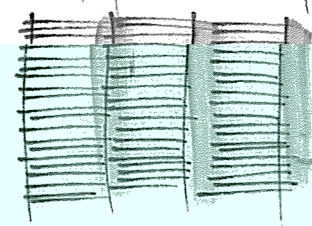
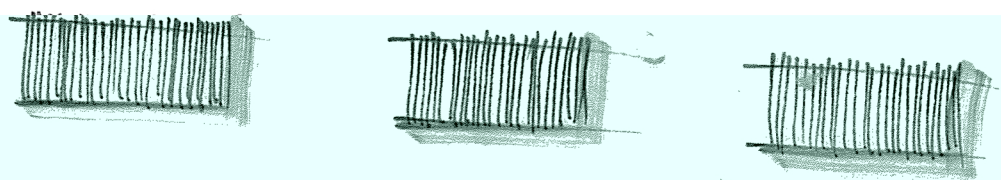
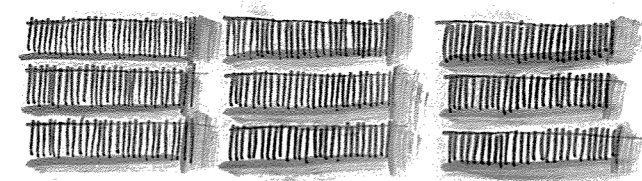
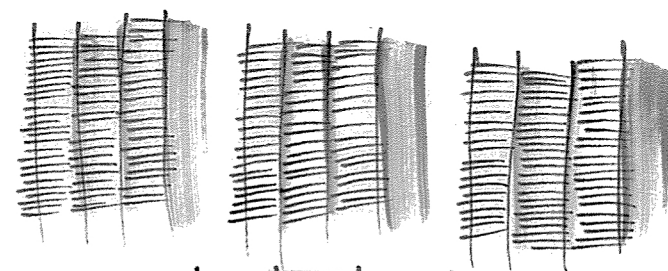
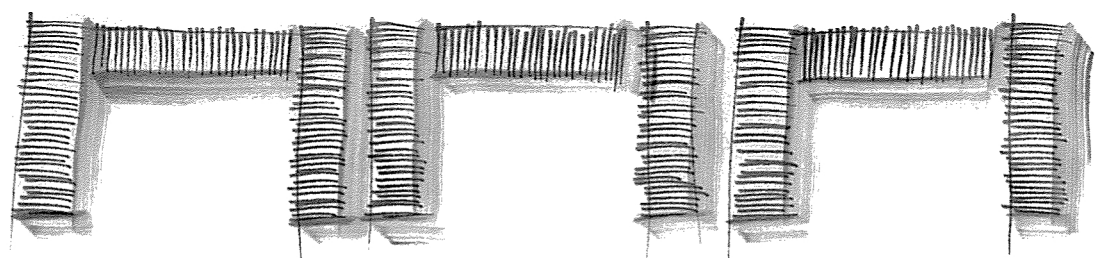


Fig. 09.01 - Experimental Massing Sketch Iterations



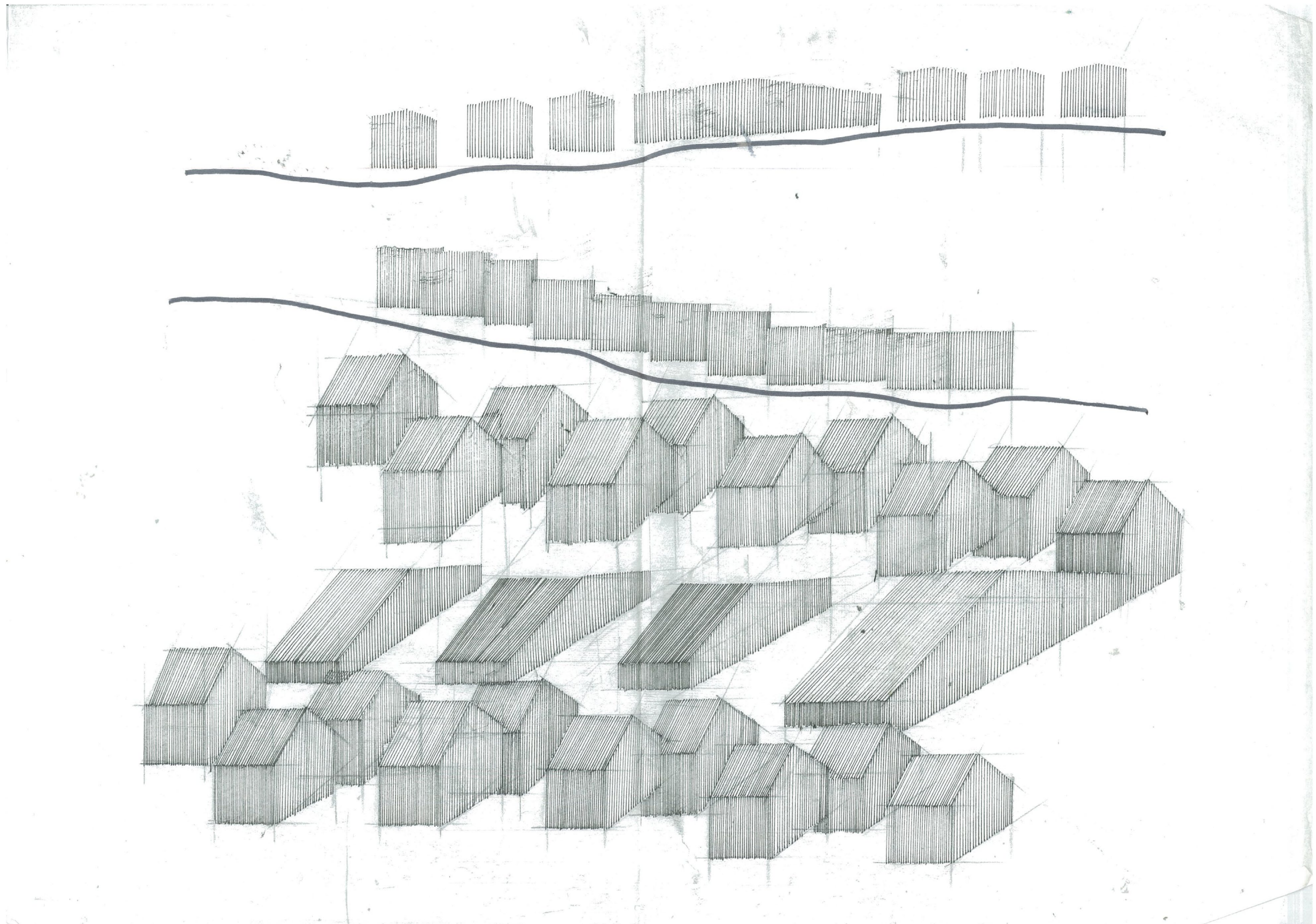


Fig. 09.02 - Experimental Mass Line Drawing 1



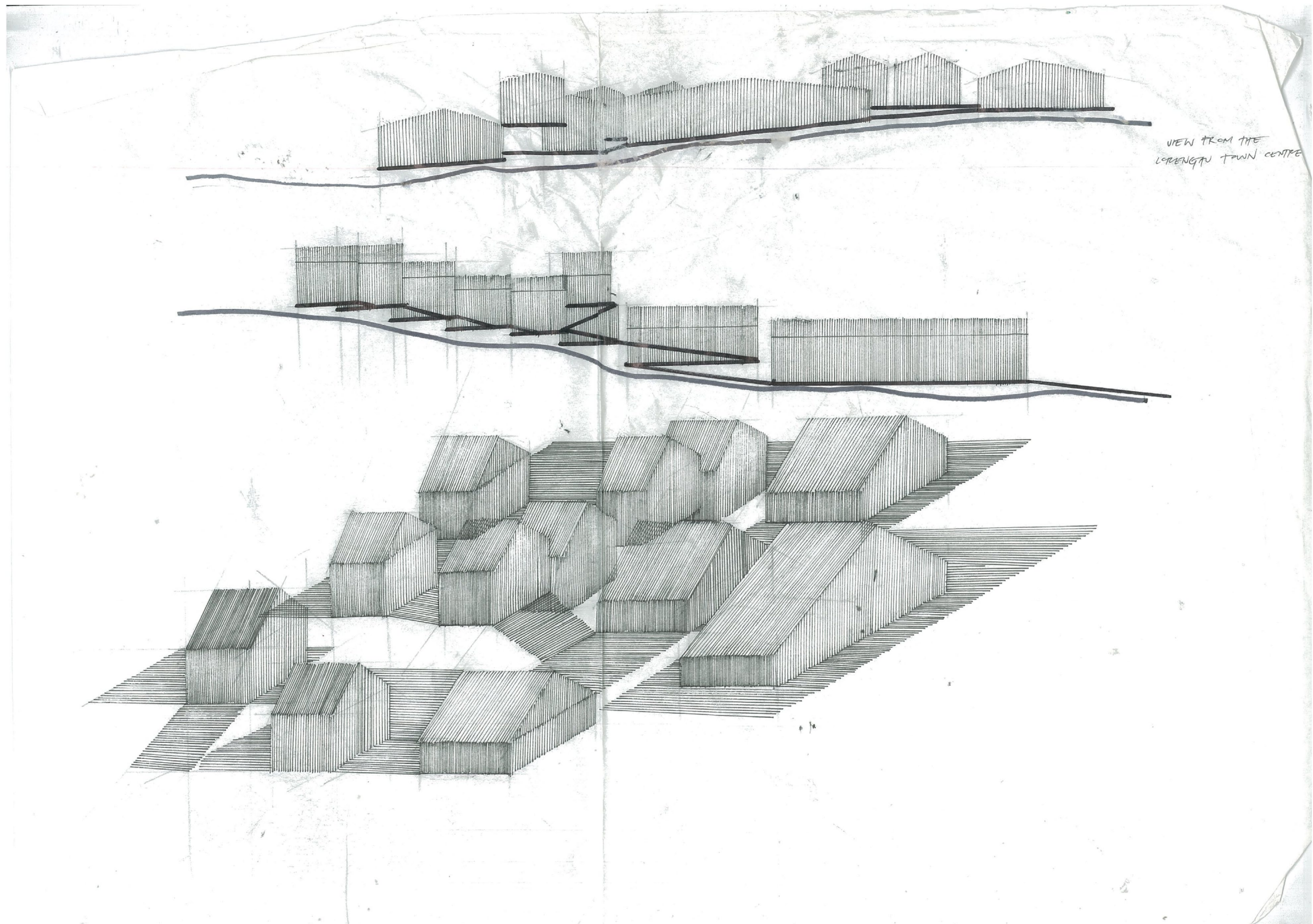


Fig. 09.03 - Experimental Mass Line Drawing 2

# 09.02 Program Iterations



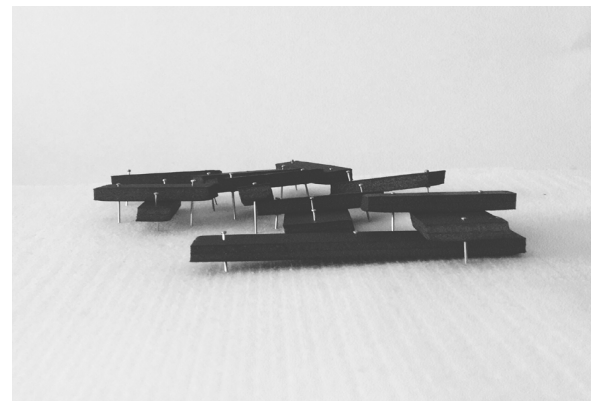
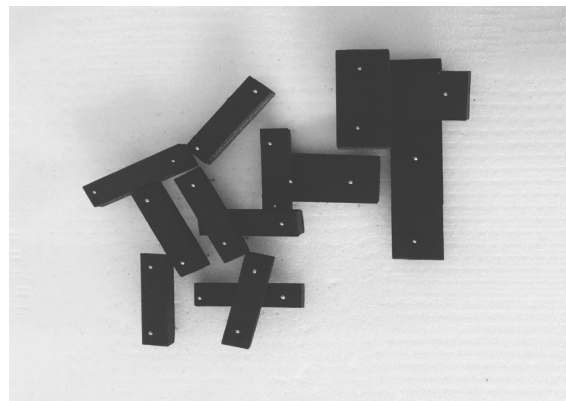
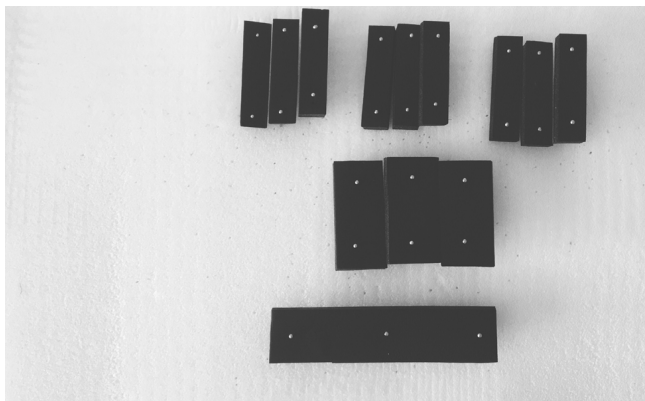
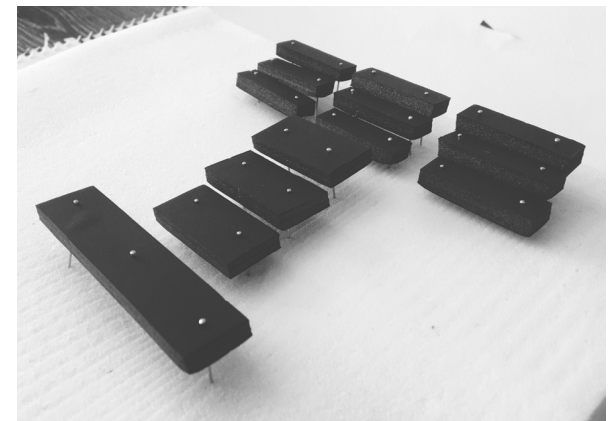
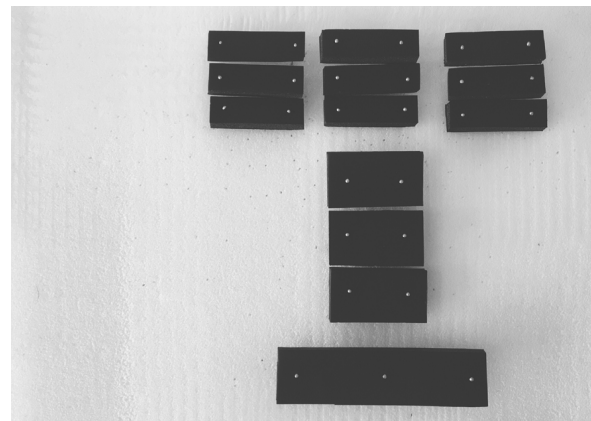
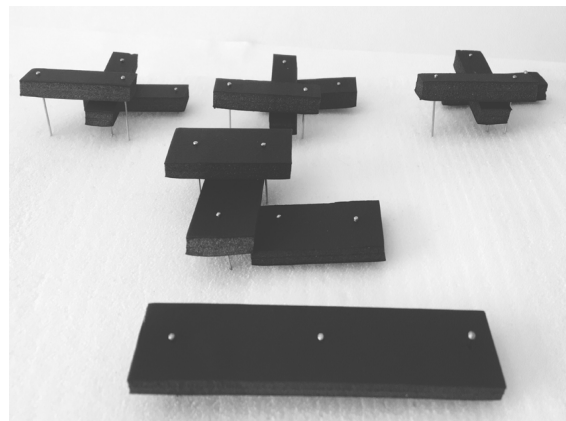
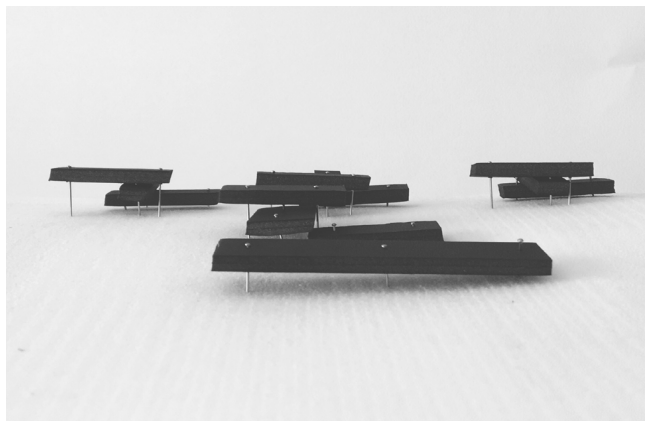
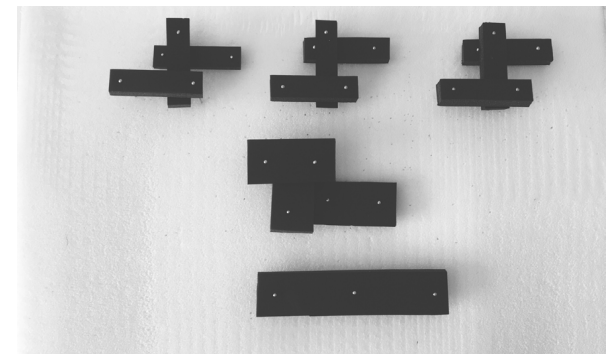
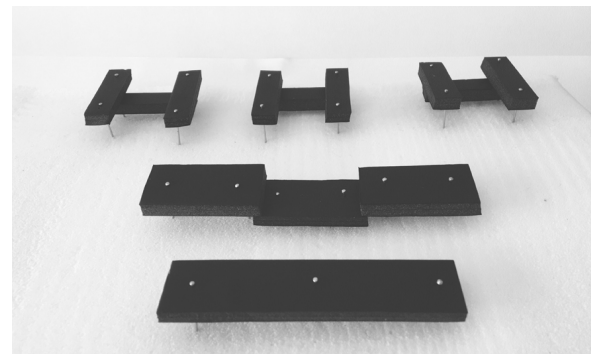
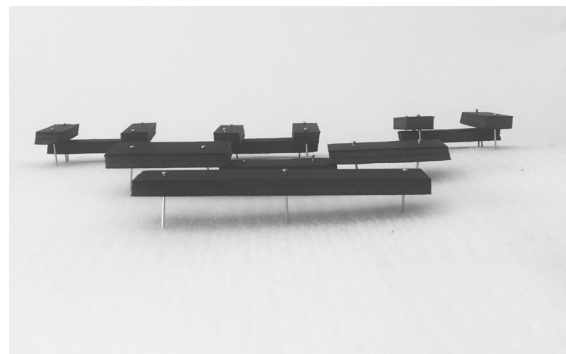
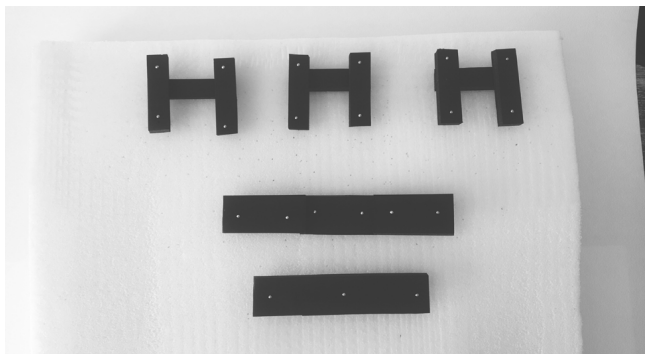
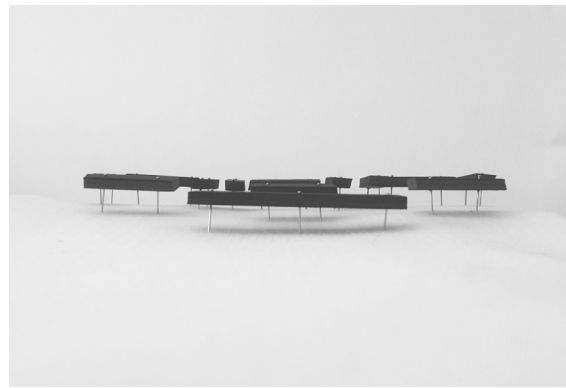
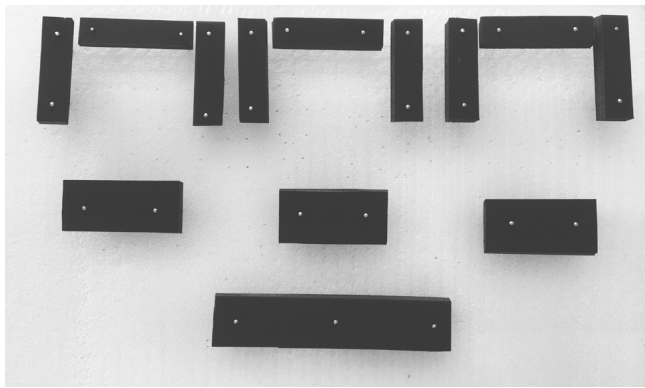
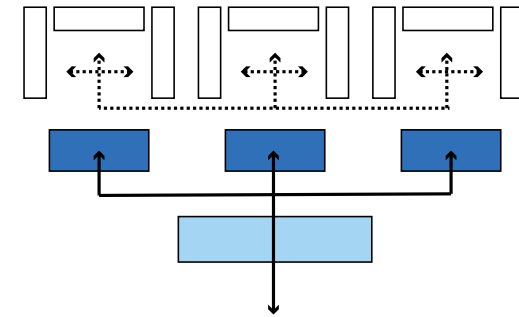
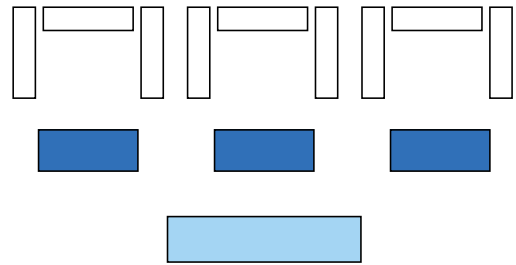
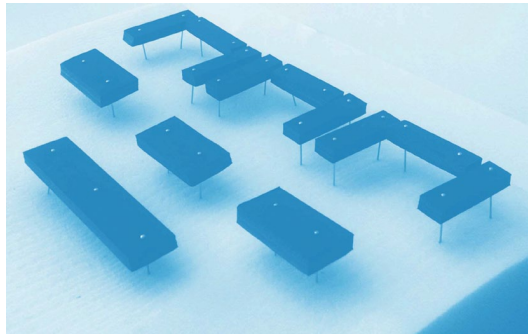


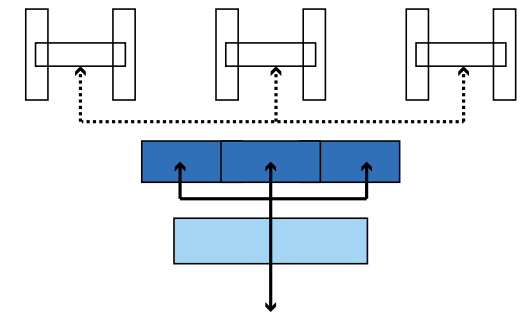
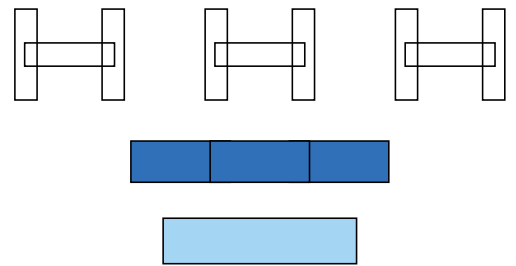
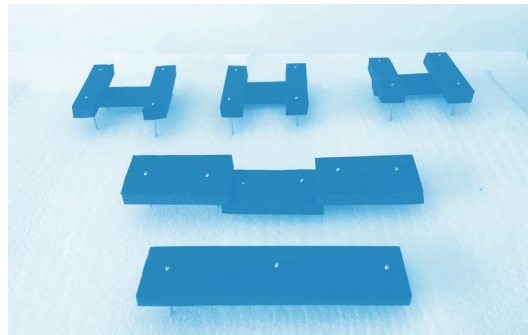
Fig. 09.04 - Massing Model Iterations



..... PUBLIC ACCESS  
 — REFUGEE ONLY ACCESS

Fig. 09.05 - Program Iteration 1

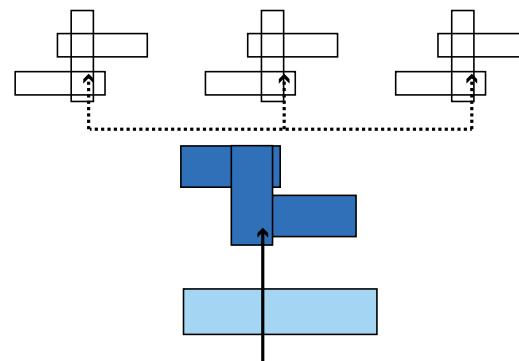
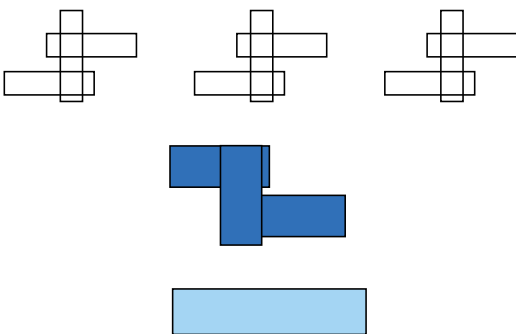
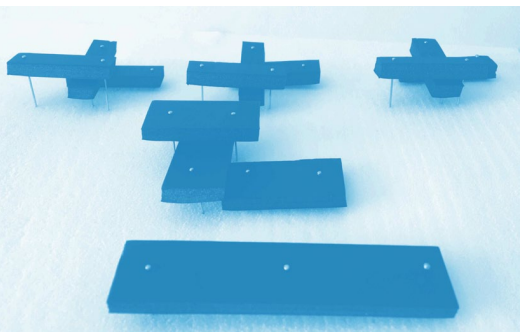
## ITERATION 01



..... PUBLIC ACCESS  
 — REFUGEE ONLY ACCESS

Fig. 09.06 - Program Iteration 2

## ITERATION 02



..... PUBLIC ACCESS  
 — REFUGEE ONLY ACCESS

Fig. 09.07 - Program Iteration 3

## ITERATION 03

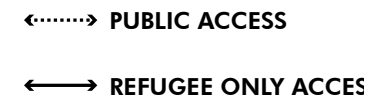
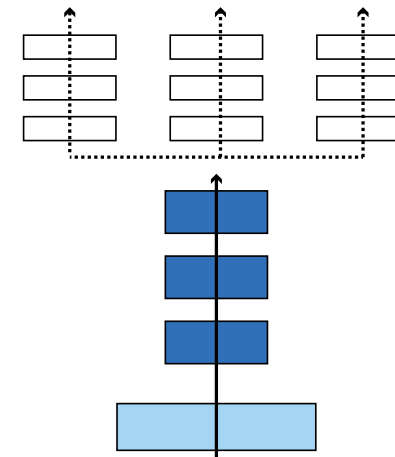
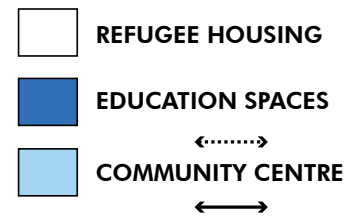
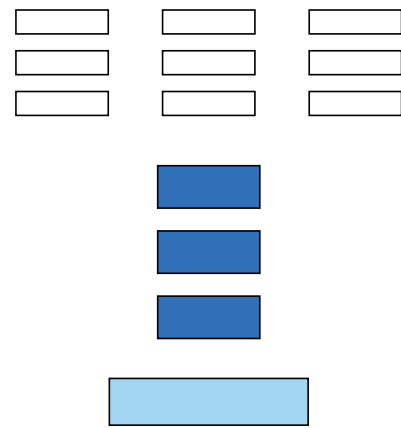
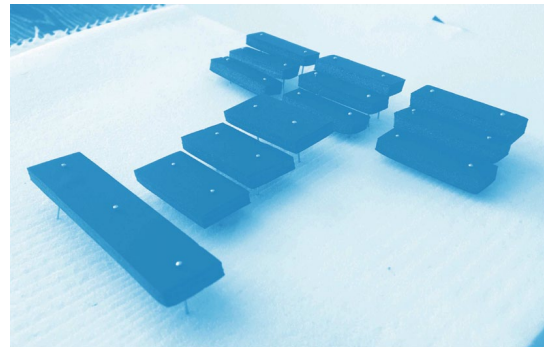
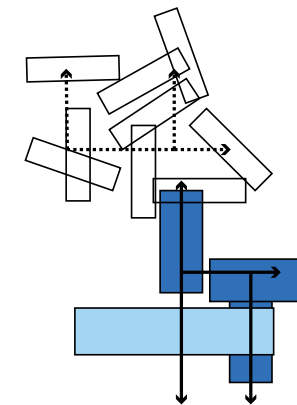
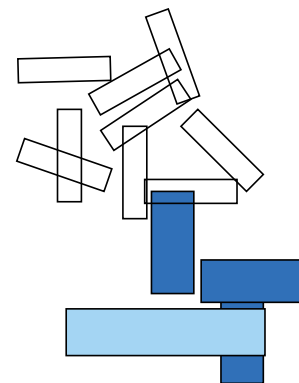
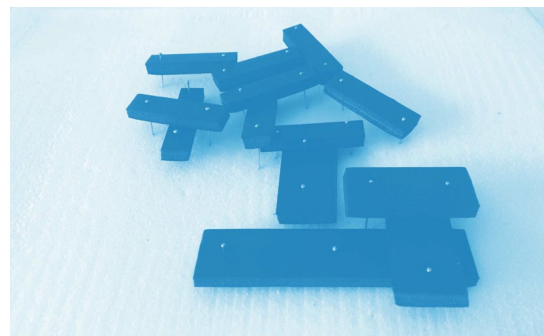


Fig. 09.08 - Program Iteration 4

## ITERATION 04



PUBLIC ACCESS

REFUGEE ONLY ACCES

Fig. 09.09 - Program Iteration 5

## ITERATION 05

# 09.03

## Structure

### Configurations

This chapter will convey how flexible the structural system is. It's flexibility is conveyed through the iterations of structural configurations. The iterations show how the structure can be flipped, rotated and elevated. This allows the refugees / house owners to configure their housing units whatever way they like to be able to adapt to any changes eg. family expansion, an increase in household occupiers.

The bamboo structure runs on a 1.2m x 1.2m structural grid (Figure 09.07). The structure can be adjusted into any form and layout using the structural grid. For instance, the structure can be constructed into a double storey for refugees that want to minimise their building footprint on the site. Minimising

the building footprint allows for the land to be used for agricultural purposes.

The small dimensions of the grid allow for the refugees to reconfigure their structures and building components without requiring any external assistance; enabling the refugees to be self sufficient.

The primary material is bamboo; a material that is local and renewable. The proposed plan is to produce and treat bamboo on site. This will be discussed further into the design application chapter.



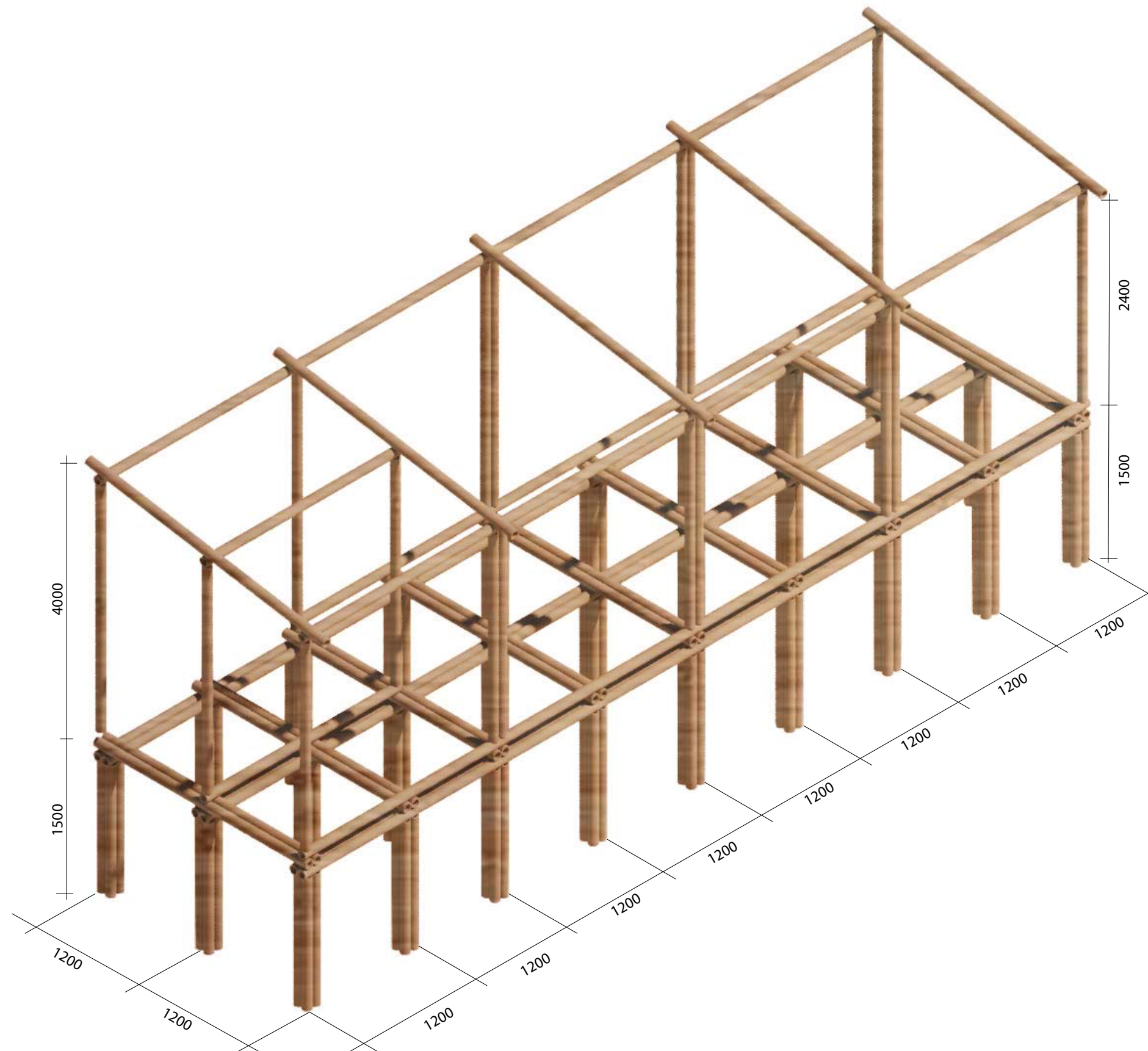


Fig. 09.10 - Housing Unit Structural Grid

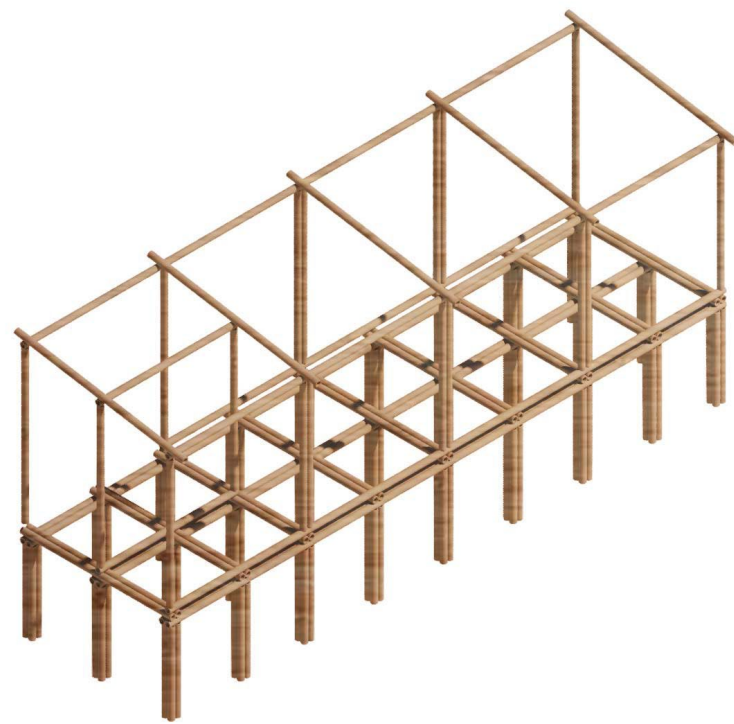


Fig. 09.11 - Basic Housing Bamboo Structure

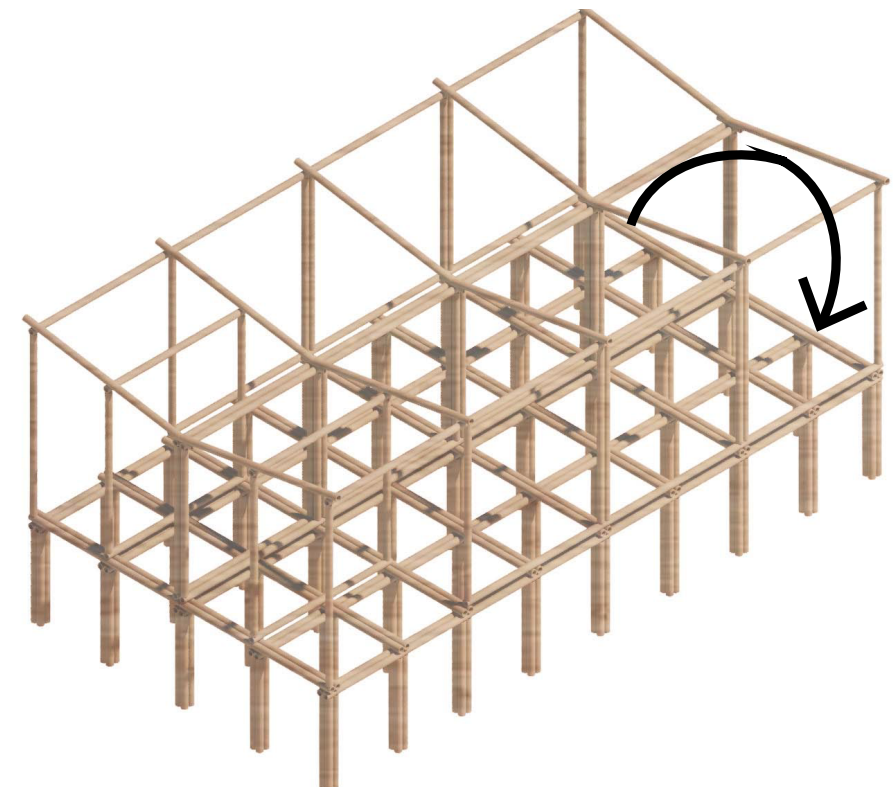


Fig. 09.12 - Structural Configuration 1



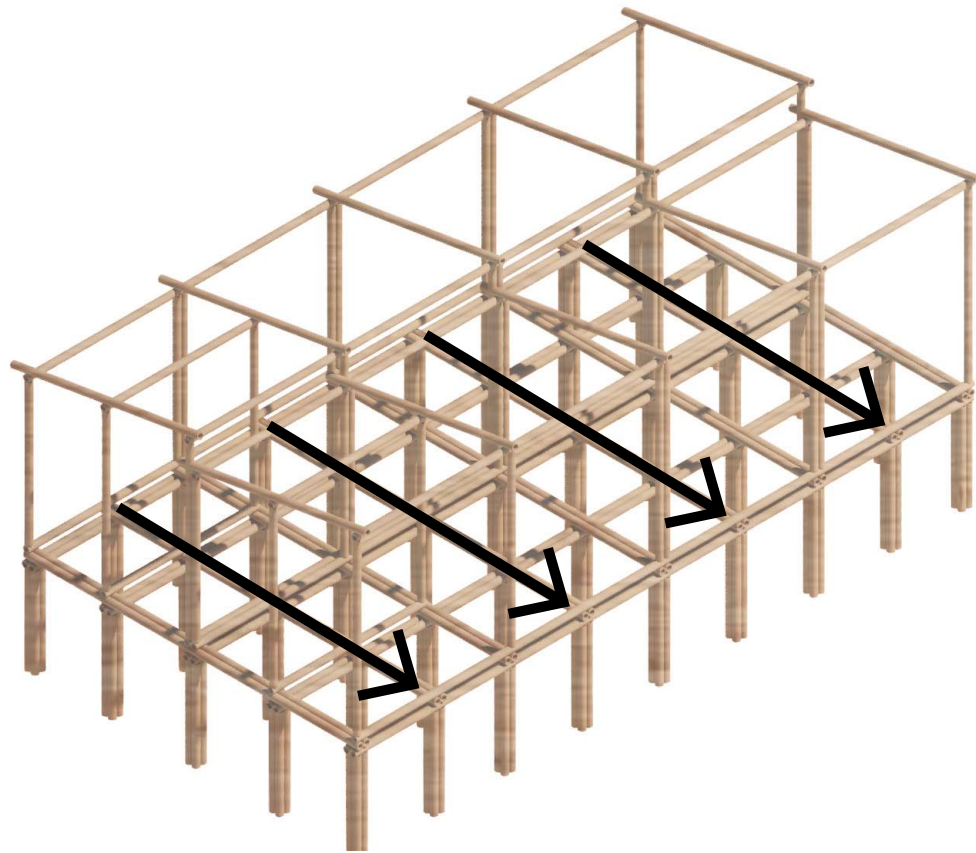


Fig. 09.13 - Structural Configuration 2

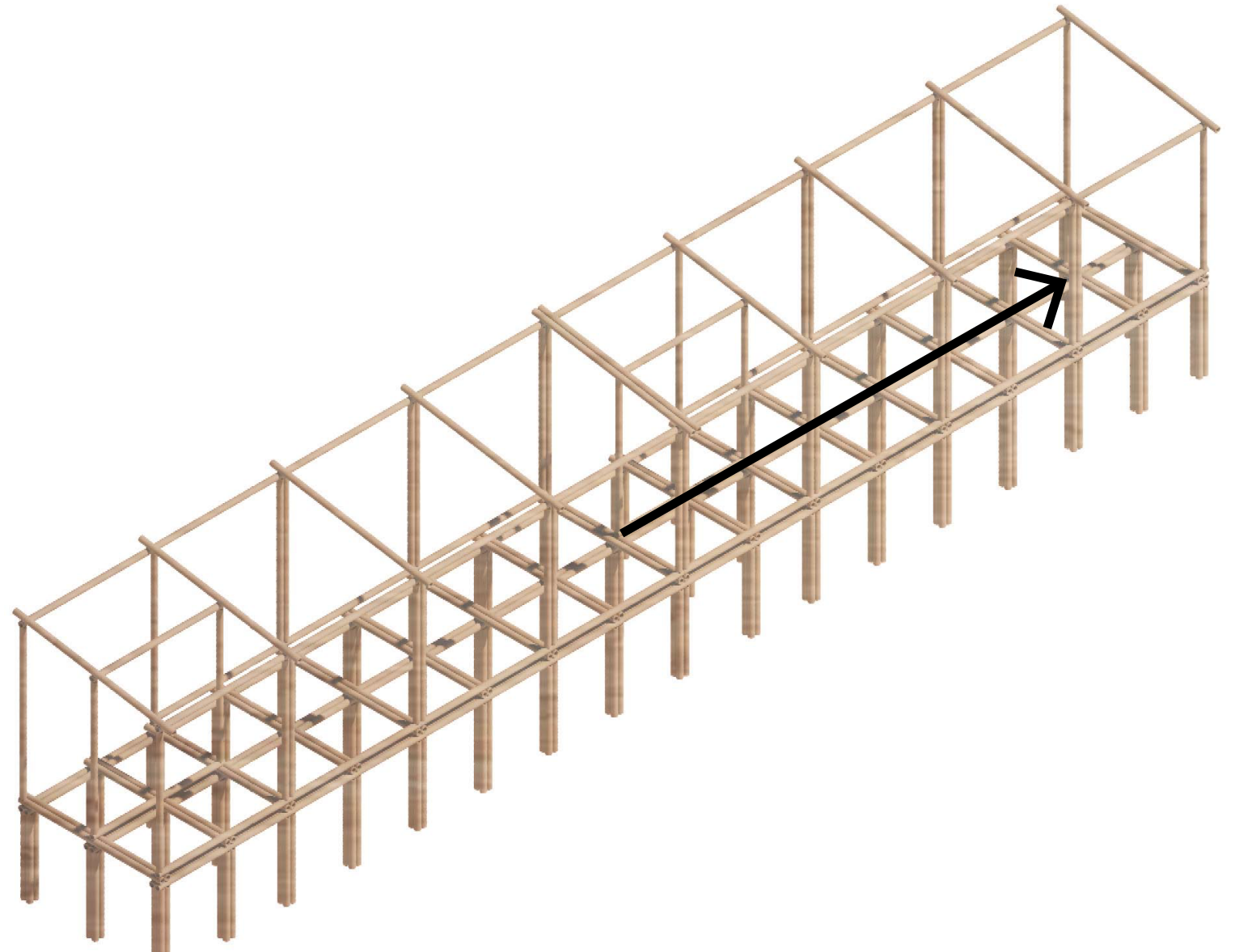


Fig. 09.14 - Structural Configuration 3

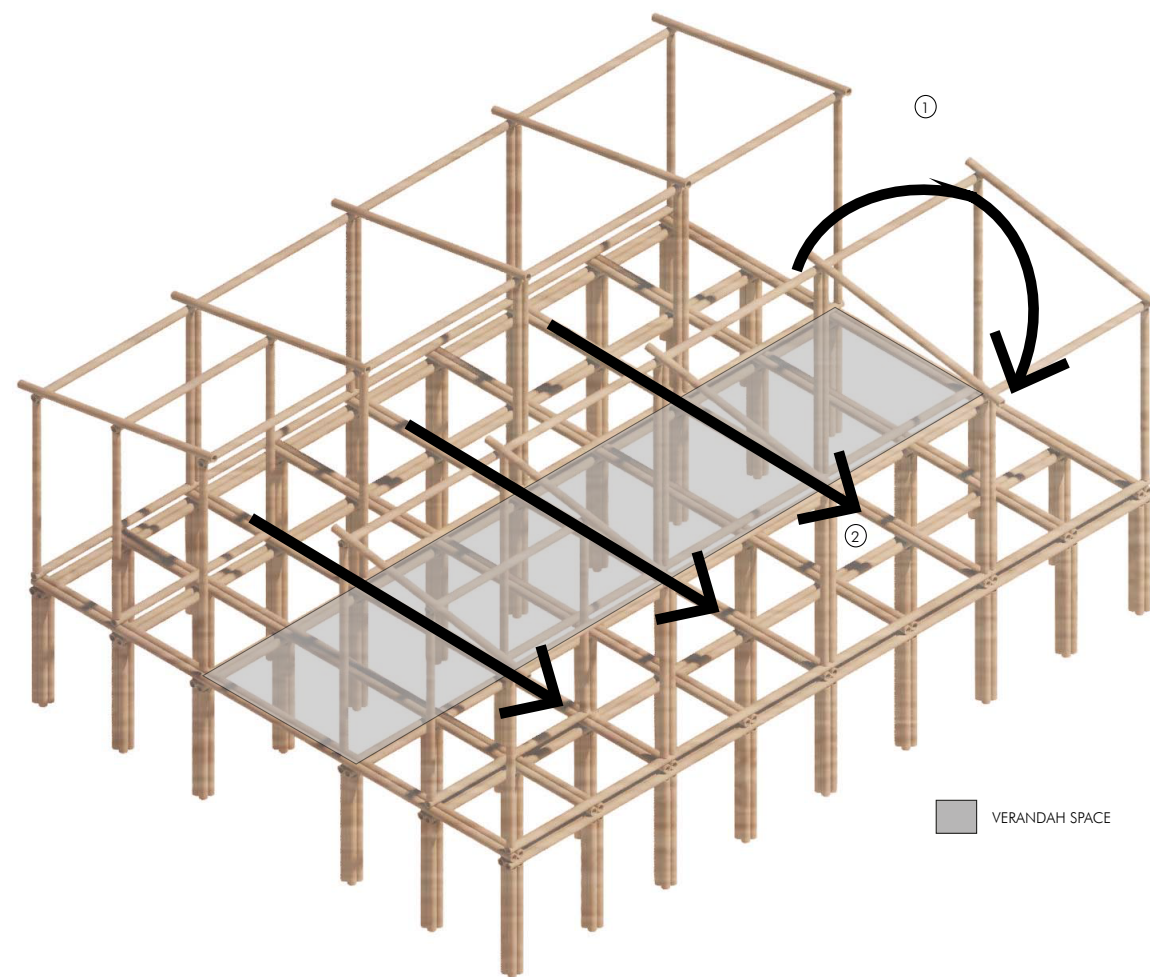


Fig. 09.15 - Structural Configuration 4

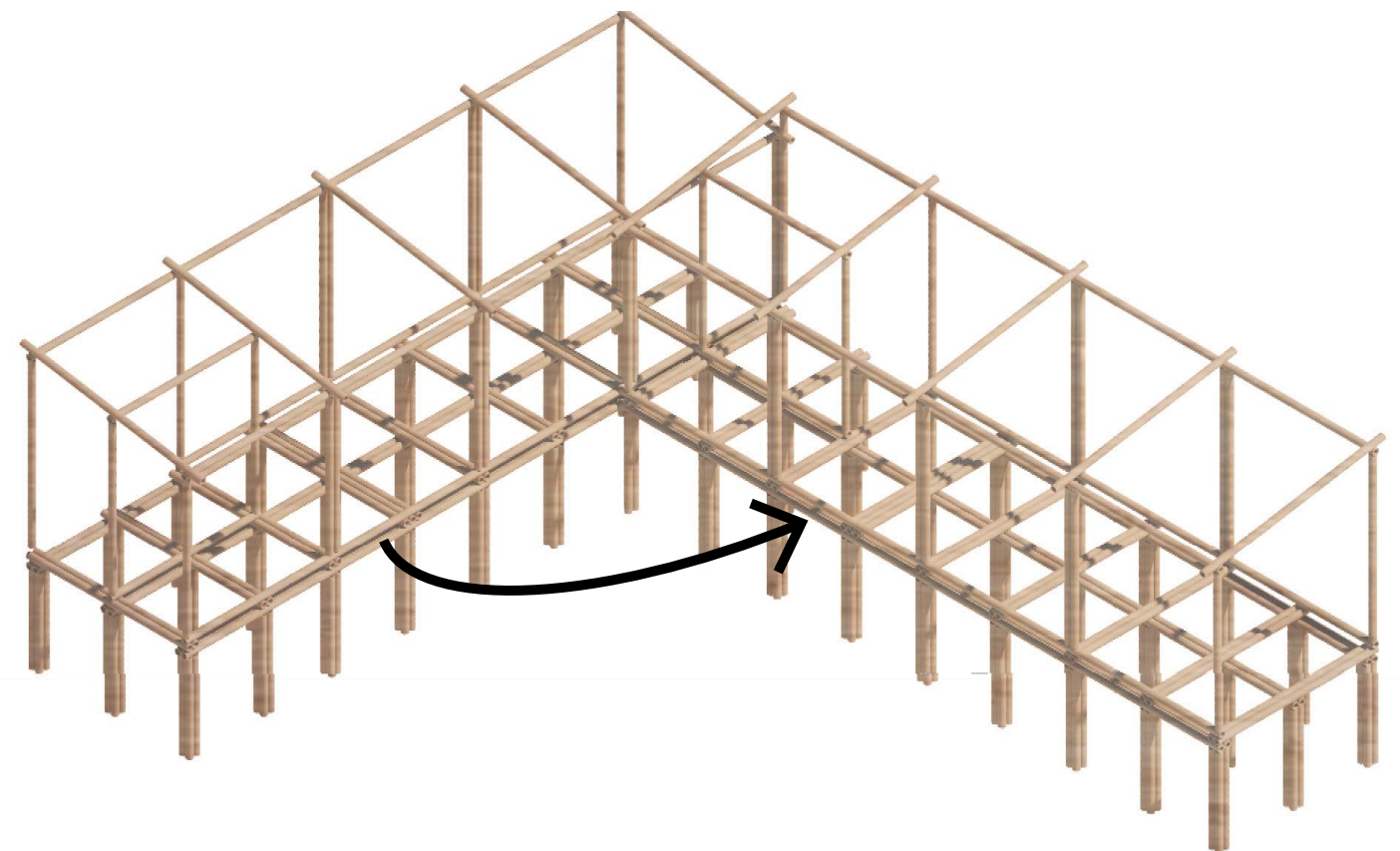


Fig. 09.16 - Structural Configuration 5



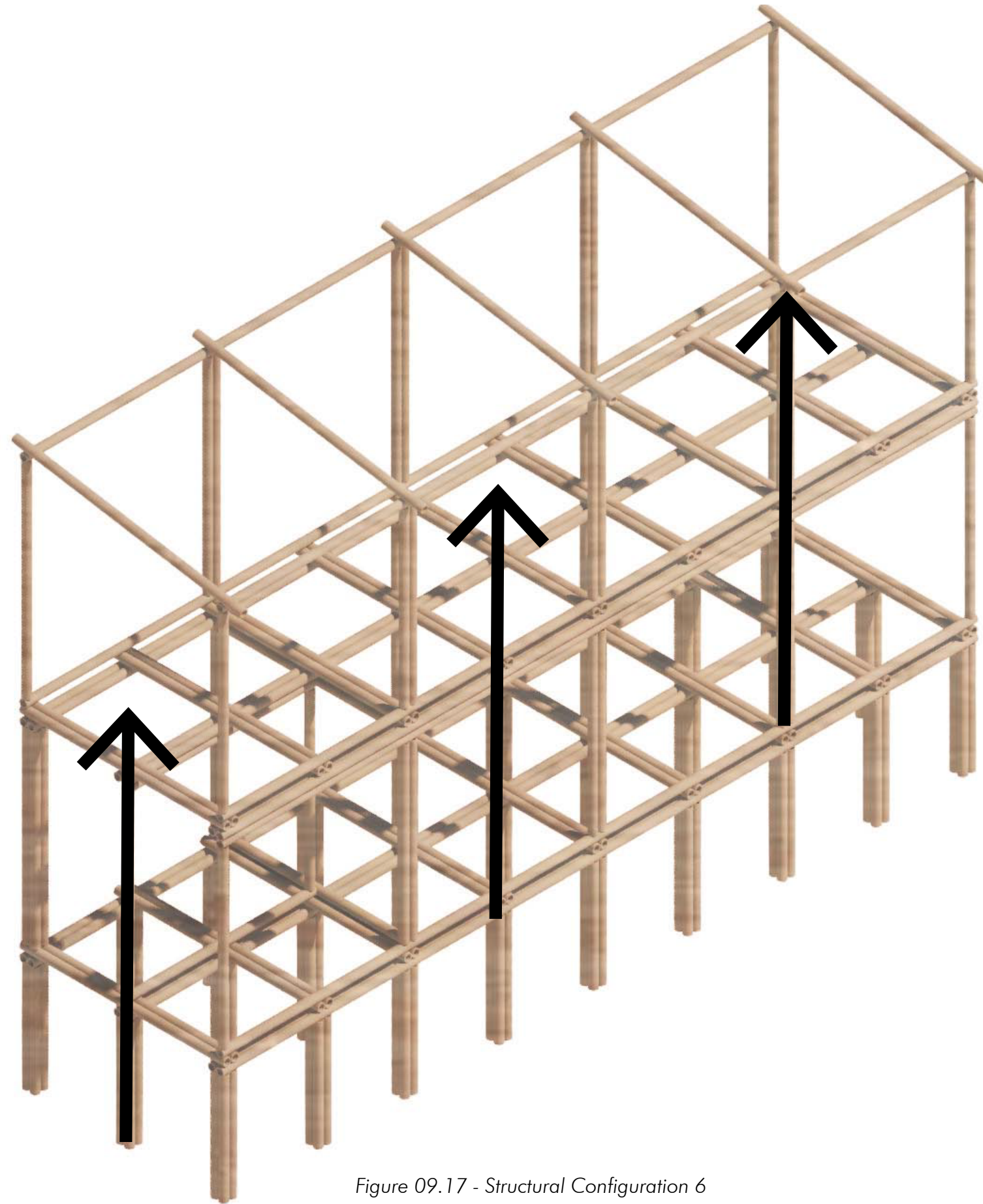


Figure 09.17 - Structural Configuration 6

**09.04**  
**Housing**  
**Unit**  
**Design**

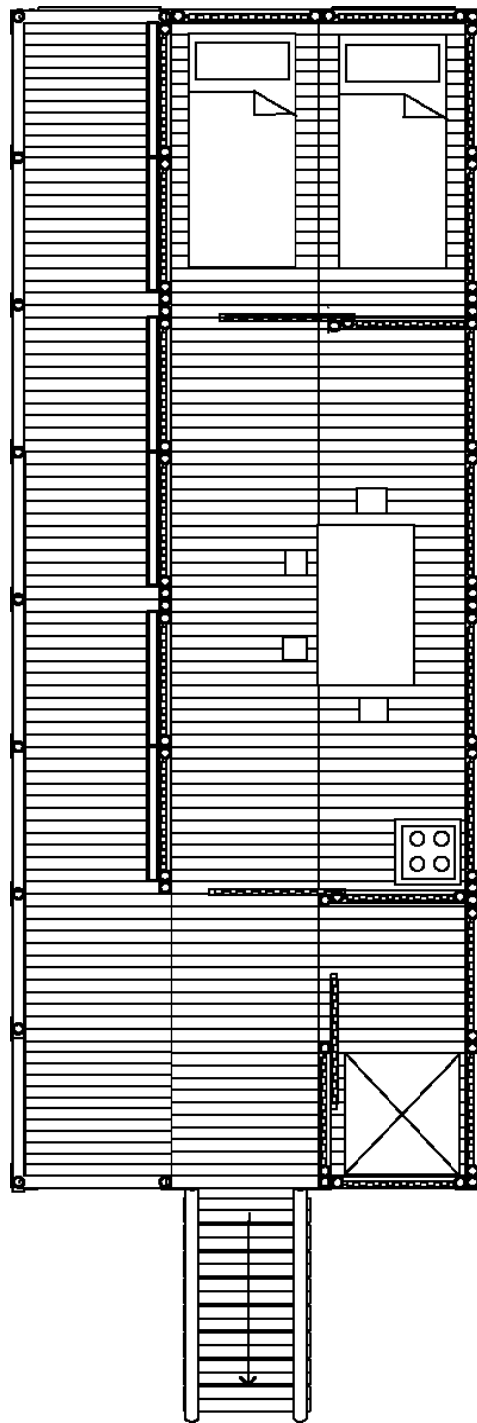


Fig. 09.18 - Housing Unit Floor Plan (Not to scale).



Fig. 09.19 - Housing Unit

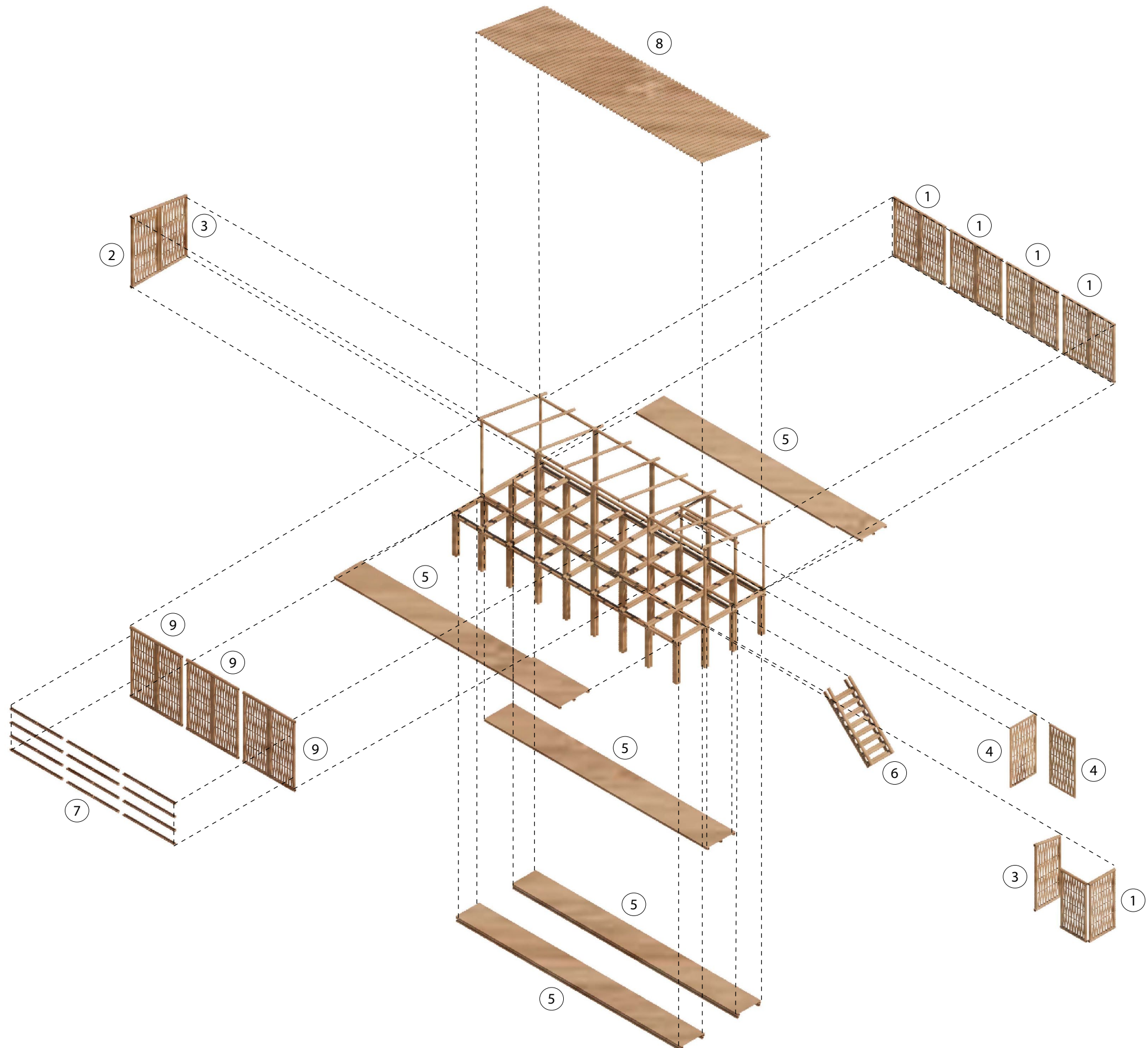
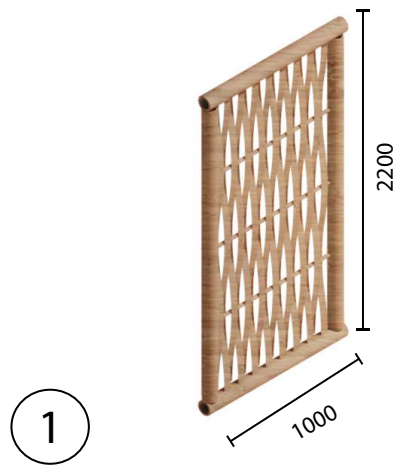
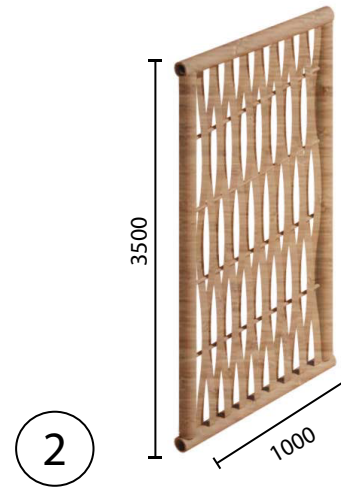


Fig. 09.20 - Housing Unit Exploded Axonometric

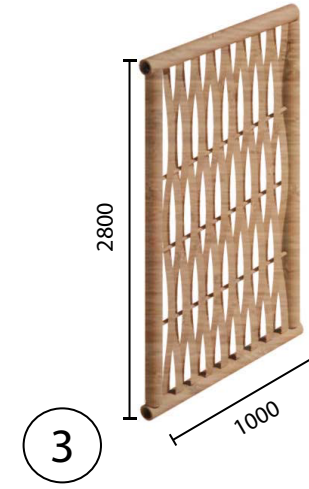




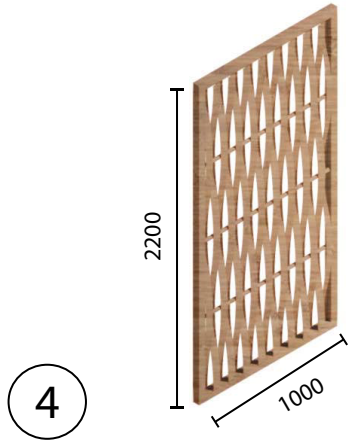
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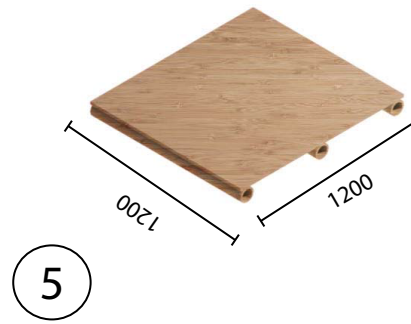
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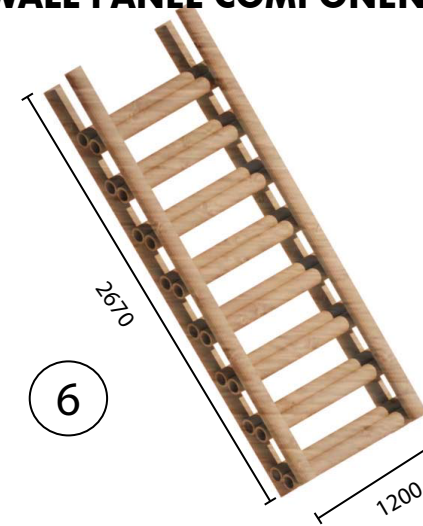
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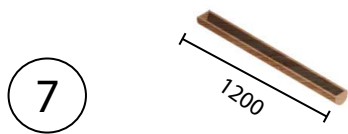
**[WALL PANEL COMPONENT 4]**



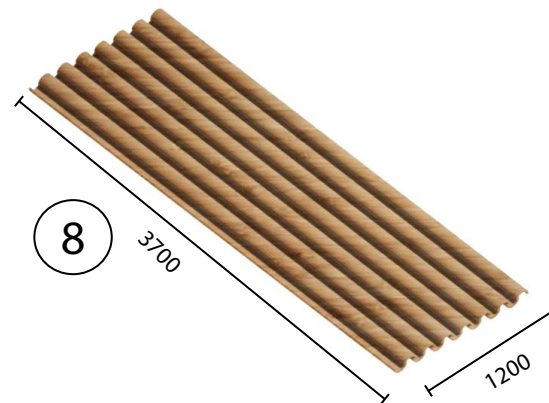
**[FLOOR PANEL COMPONENT]**



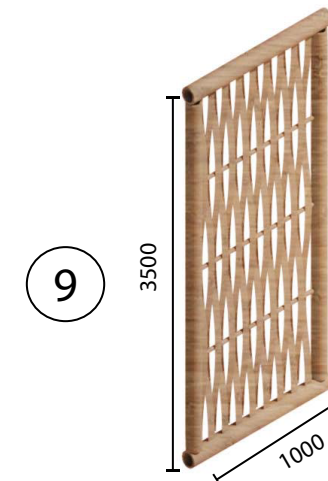
**[STAIR COMPONENT]**



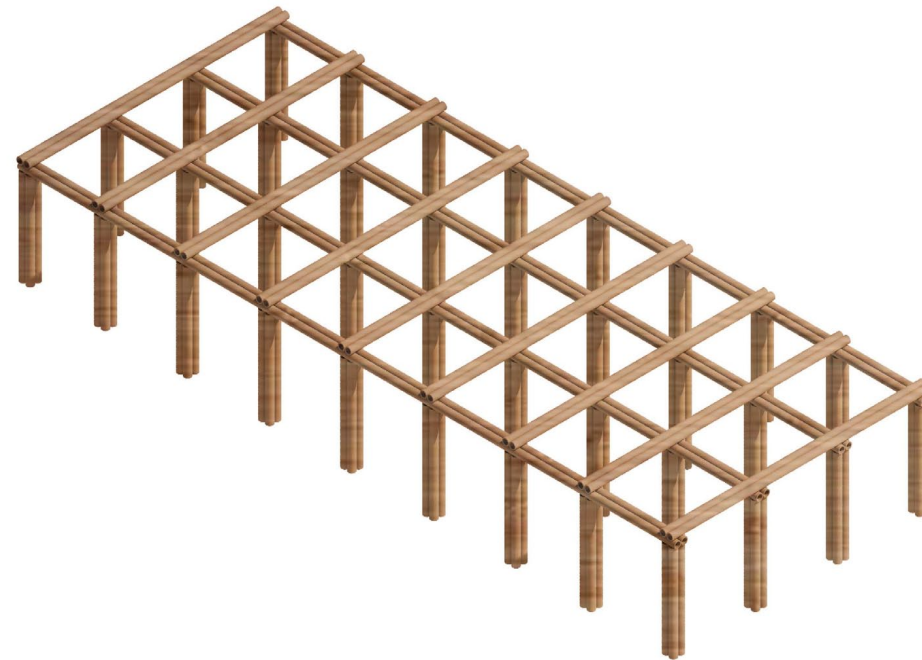
**[PLANT HOLDER COMPONENT]**



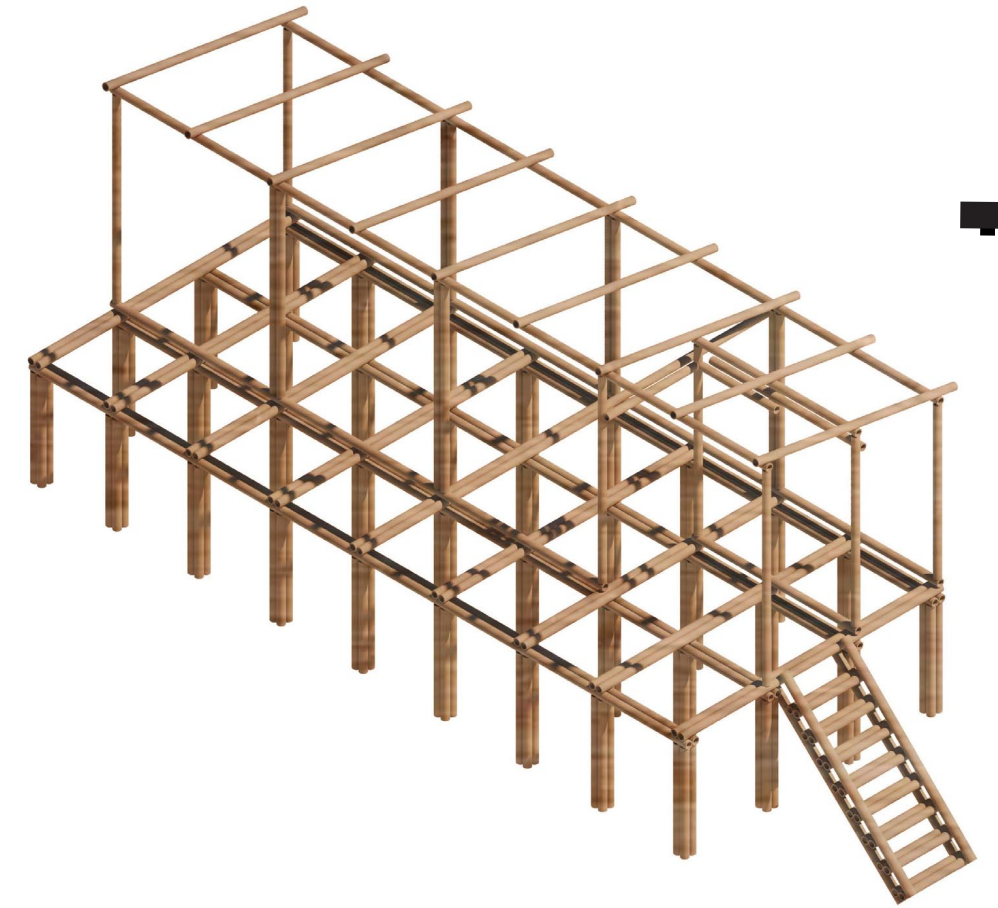
**[ROOF PANEL COMPONENT]**



**[WALL PANEL COMPONENT 5]**



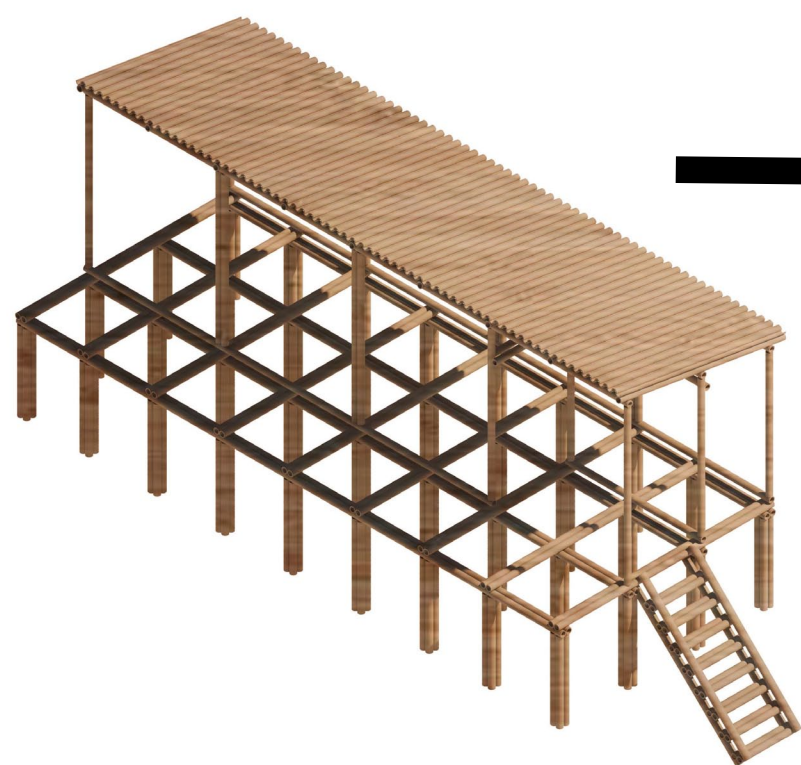
**[STAGE 1]**  
Bamboo Footings and  
Floor Joists.



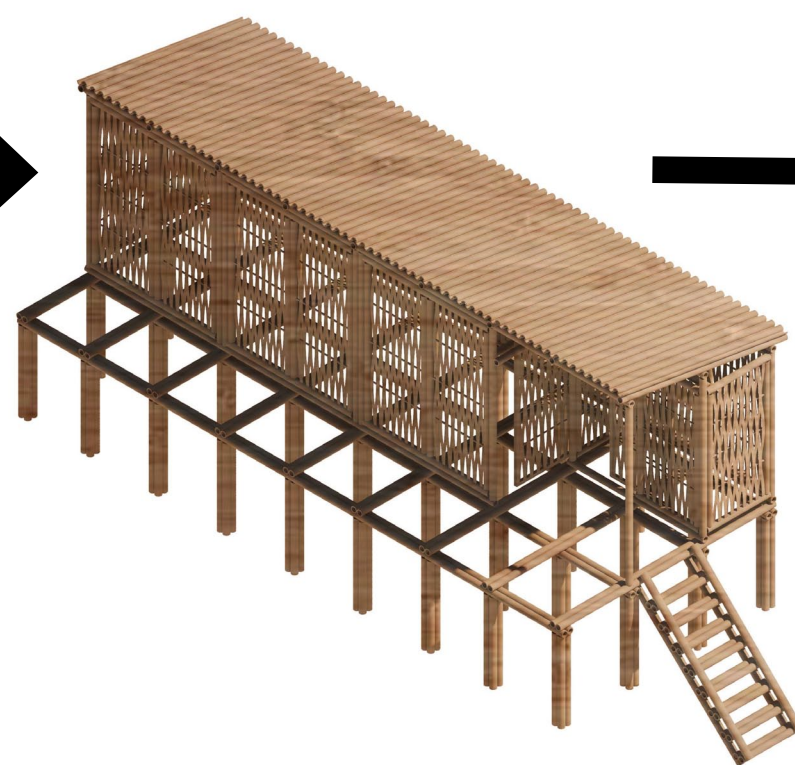
**[STAGE 2]**  
Bamboo Stairs, Wall  
and Roof Framing.

Fig. 09.22 - Housing Unit Construction Process





**[STAGE 3]**  
Bamboo Roof Panels.



**[STAGE 4]**  
Bamboo Woven Wall  
Panels



**[STAGE 5]**  
Bamboo Floor Panels  
and Completion.

**09.05**  
**Classroom**  
**Design**

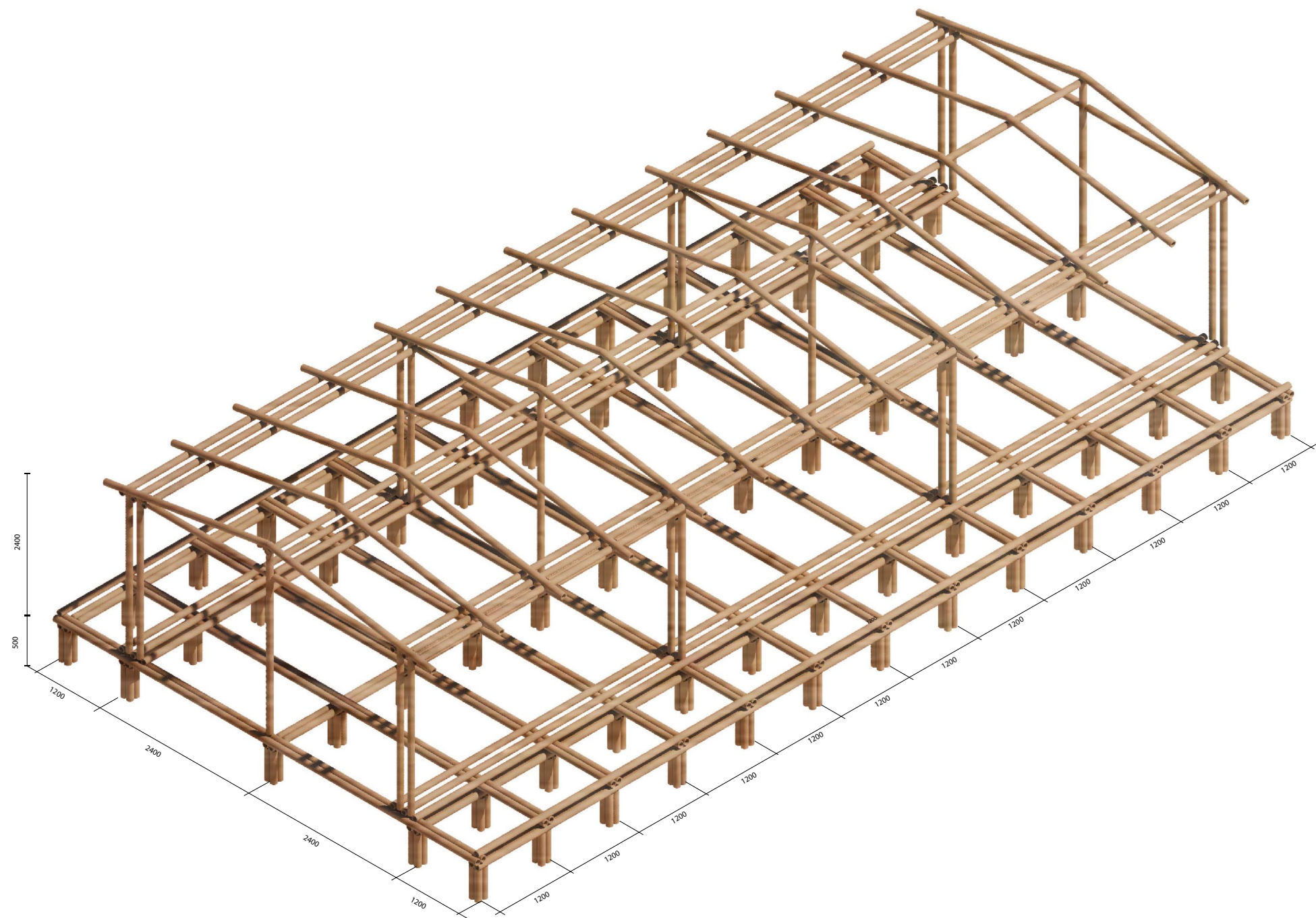


Fig. 09.23 - Classroom Structural Grid



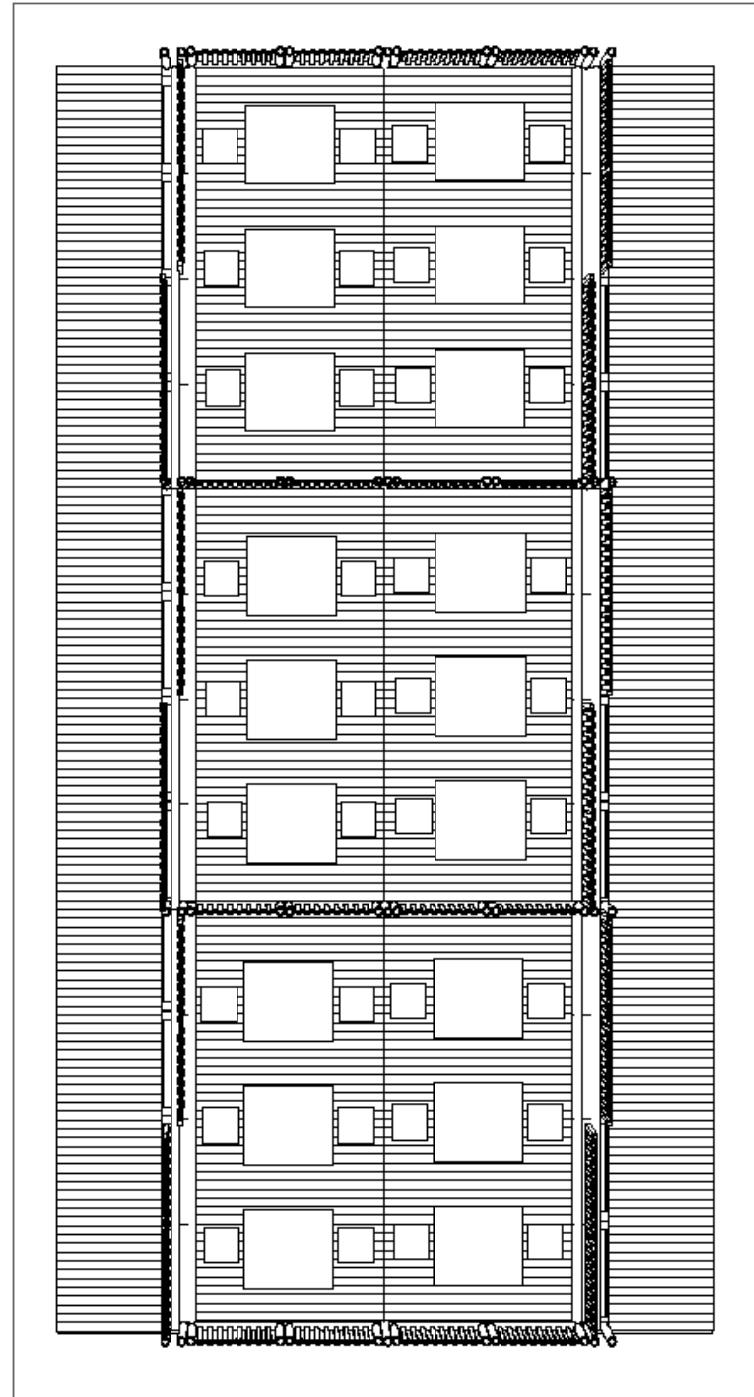


Fig. 09.24 - Classroom Floor Plan (Not to scale)



Fig. 09.25 - Classroom

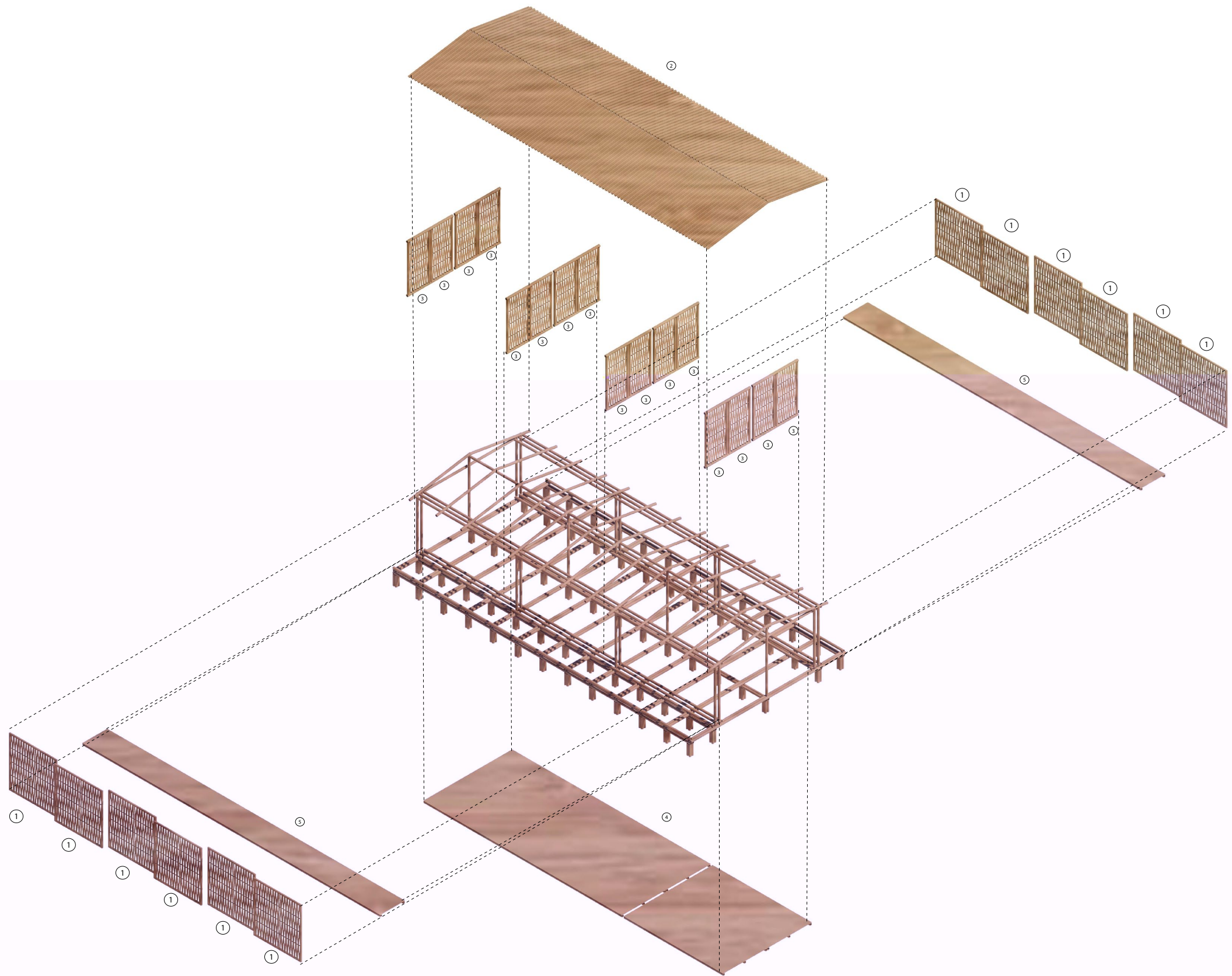


Fig. 09.26 - Classroom Exploded Axonometric

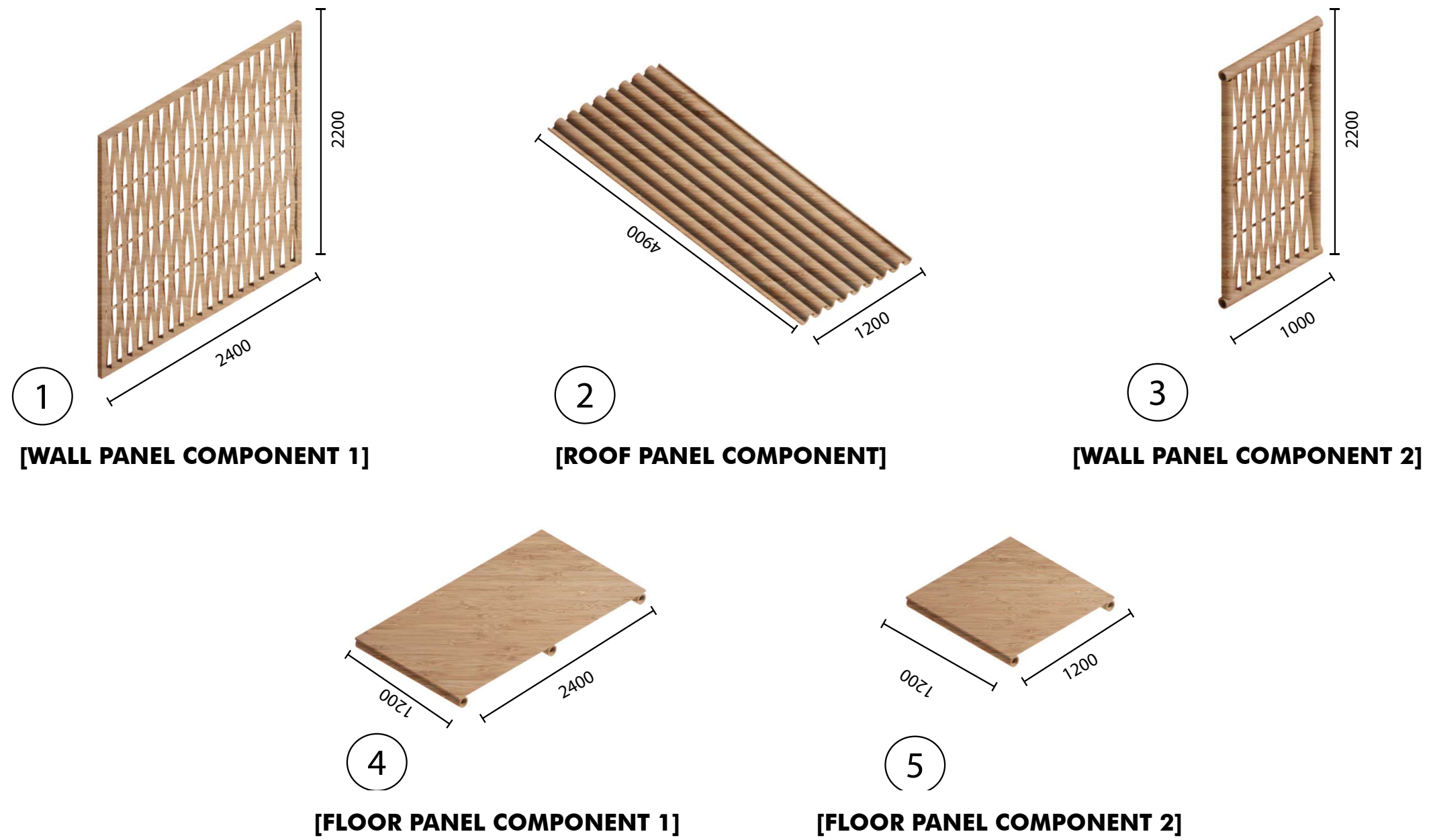
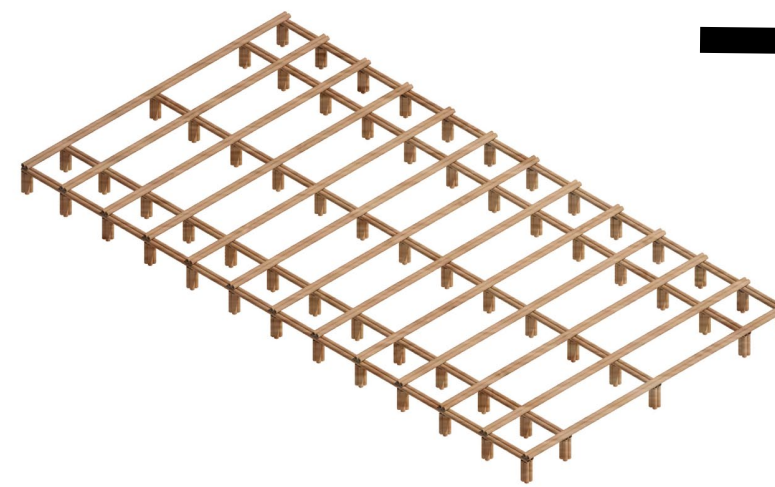


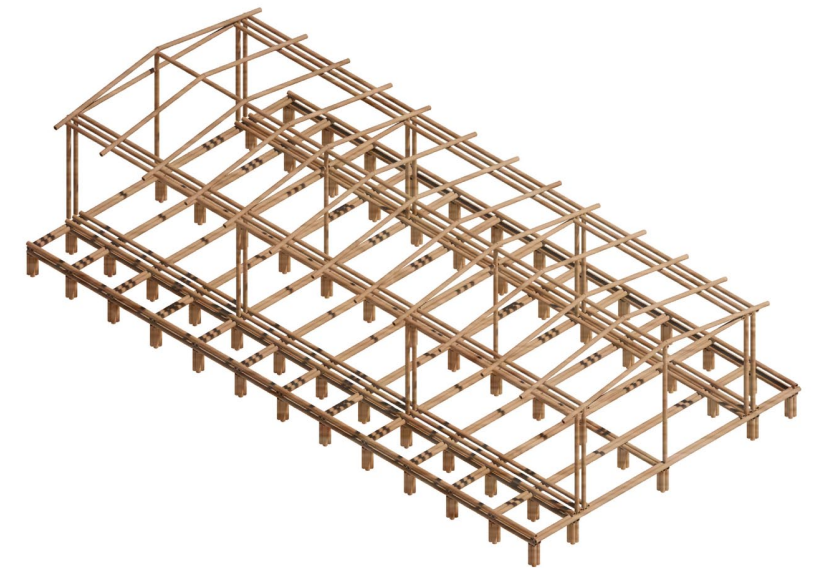
Fig. 09.27 - Classroom Components







**[STAGE 1]**  
Bamboo Footings and  
Floor Joists.



**[STAGE 2]**  
Bamboo Wall and Roof  
Framing.

Fig. 09.28 - Classroom Construction Process







09.06  
Community  
Centre Design

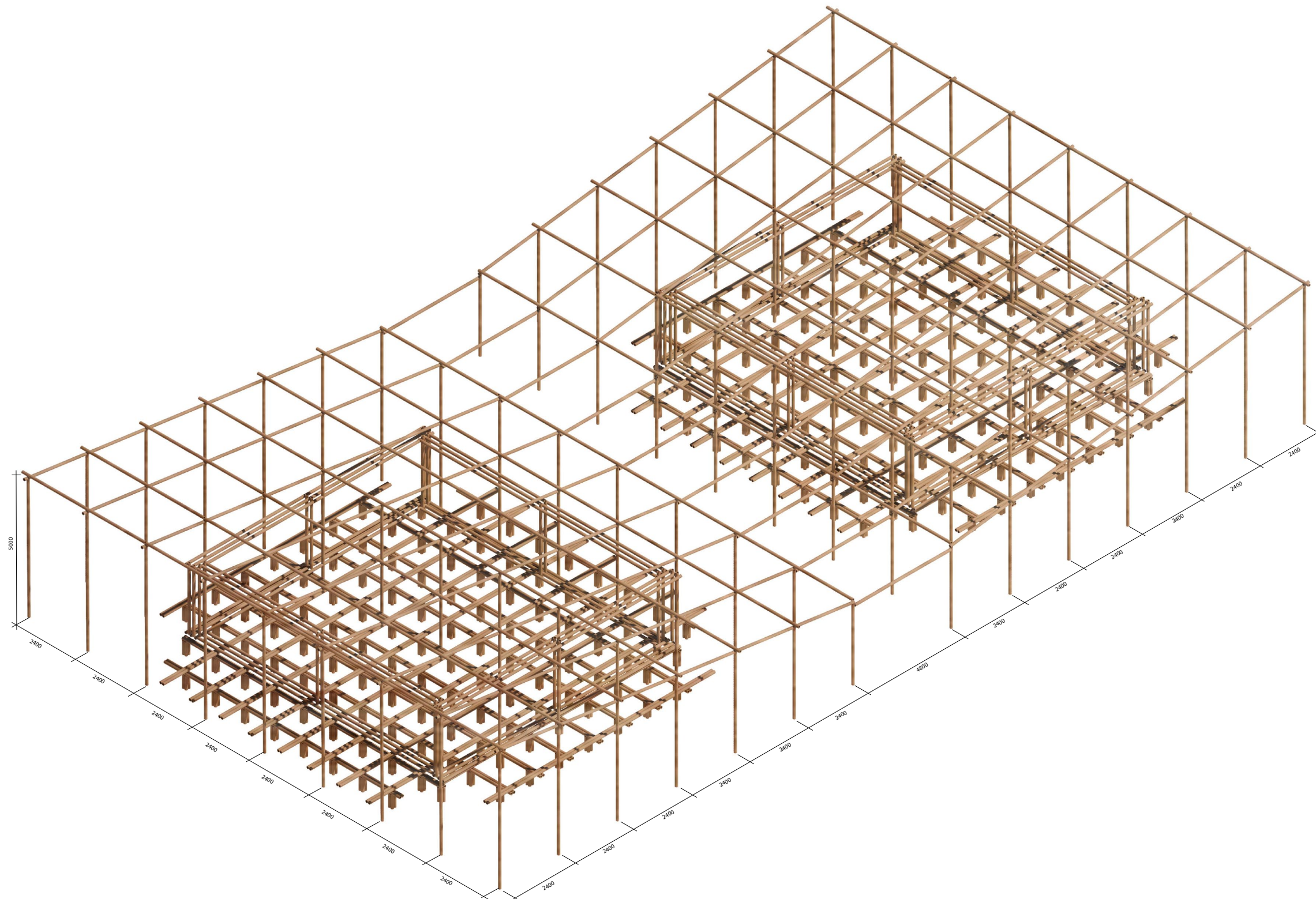


Fig. 09.29 - Community Centre Structural Grid



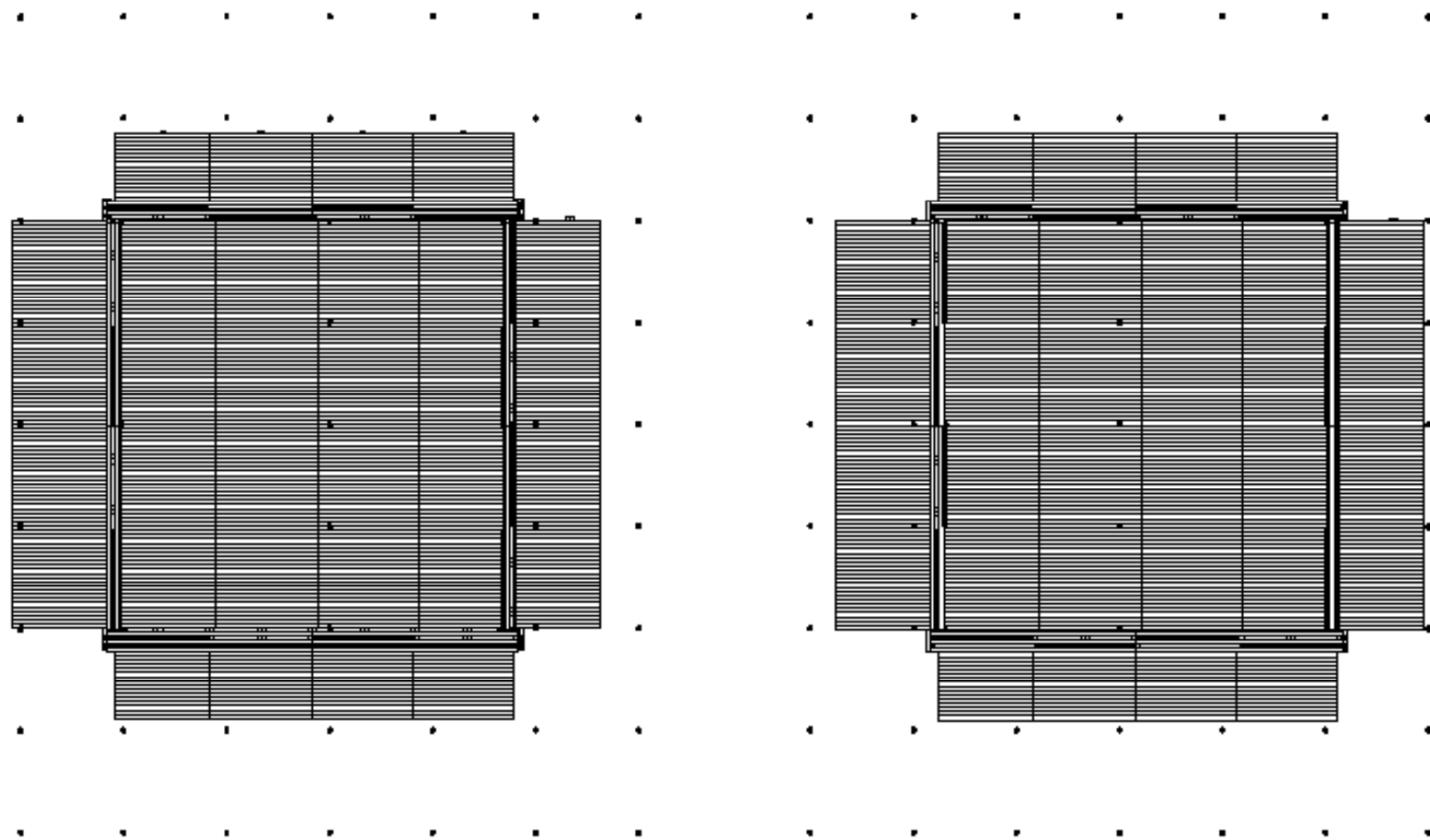


Fig. 09.30 - Community Centre Floor Plan (Not to scale).



Fig. 09.31 - Community Centre

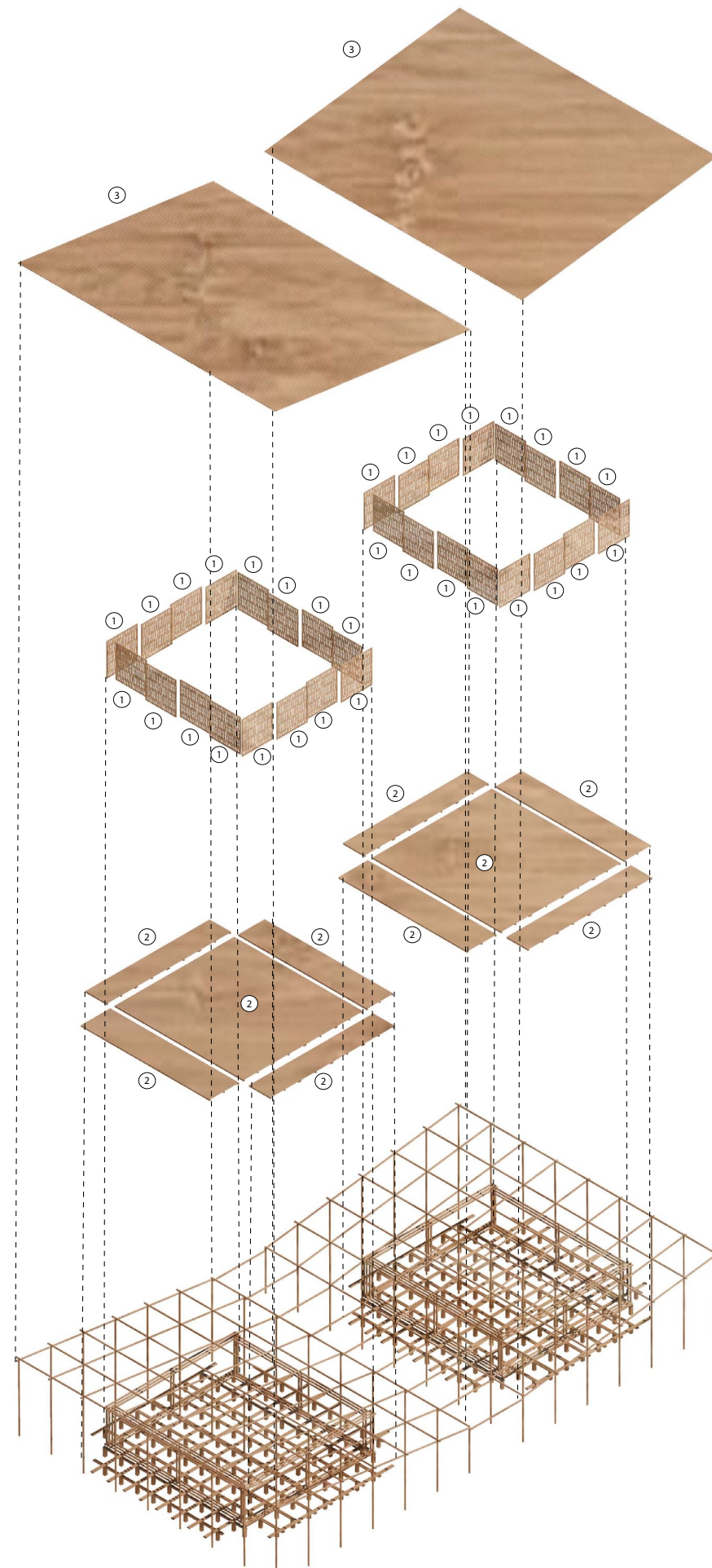
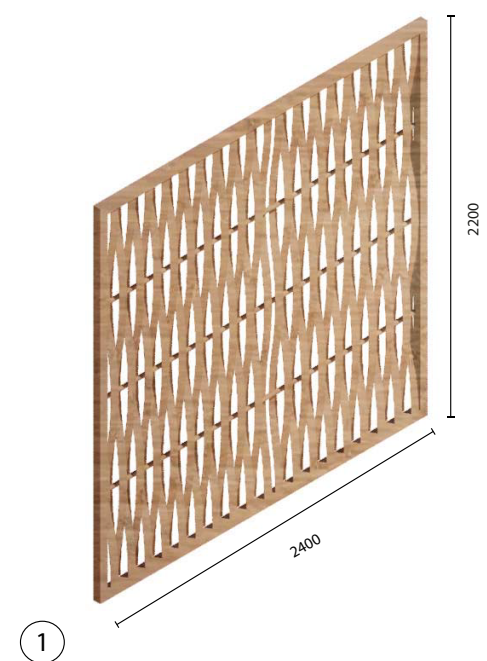


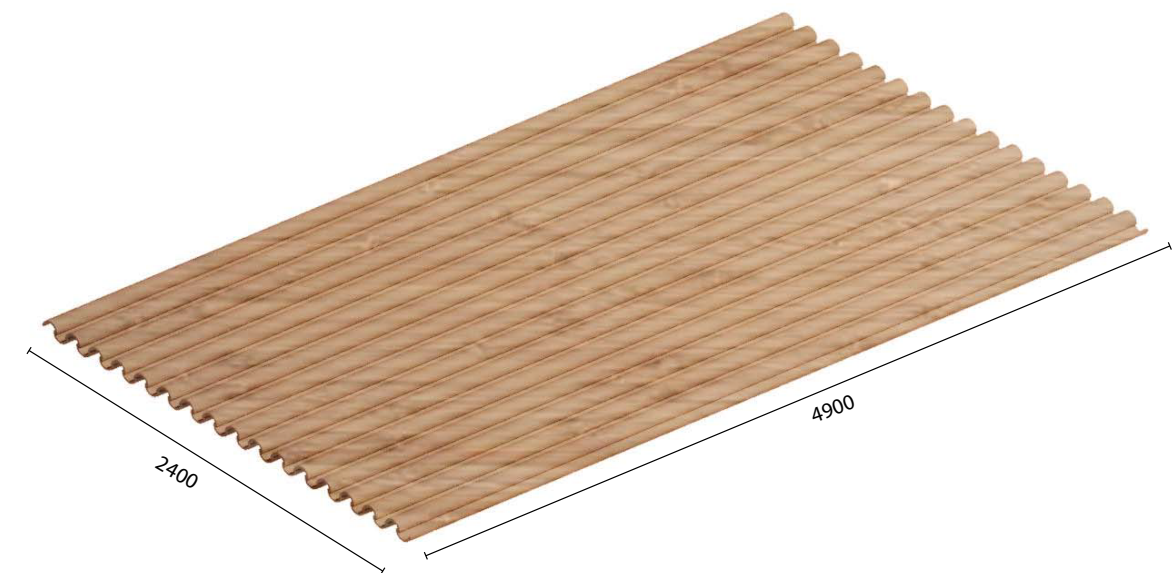
Fig. 09.31 - Community Centre Exploded Axonometric



①  
[WALL PANEL COMPONENT 1]



②  
[FLOOR PANEL COMPONENT ]



③  
[ROOF PANEL COMPONENT]

Fig. 09.32 - Community Centre Components



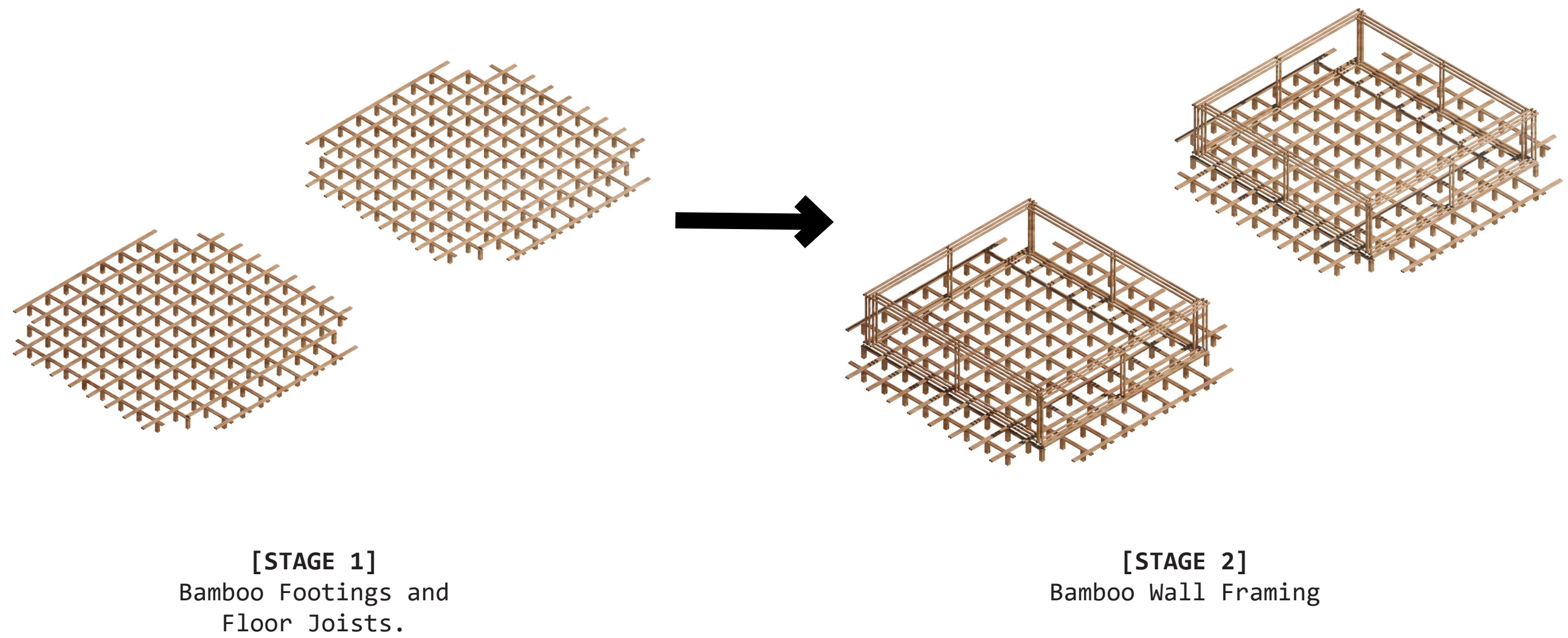
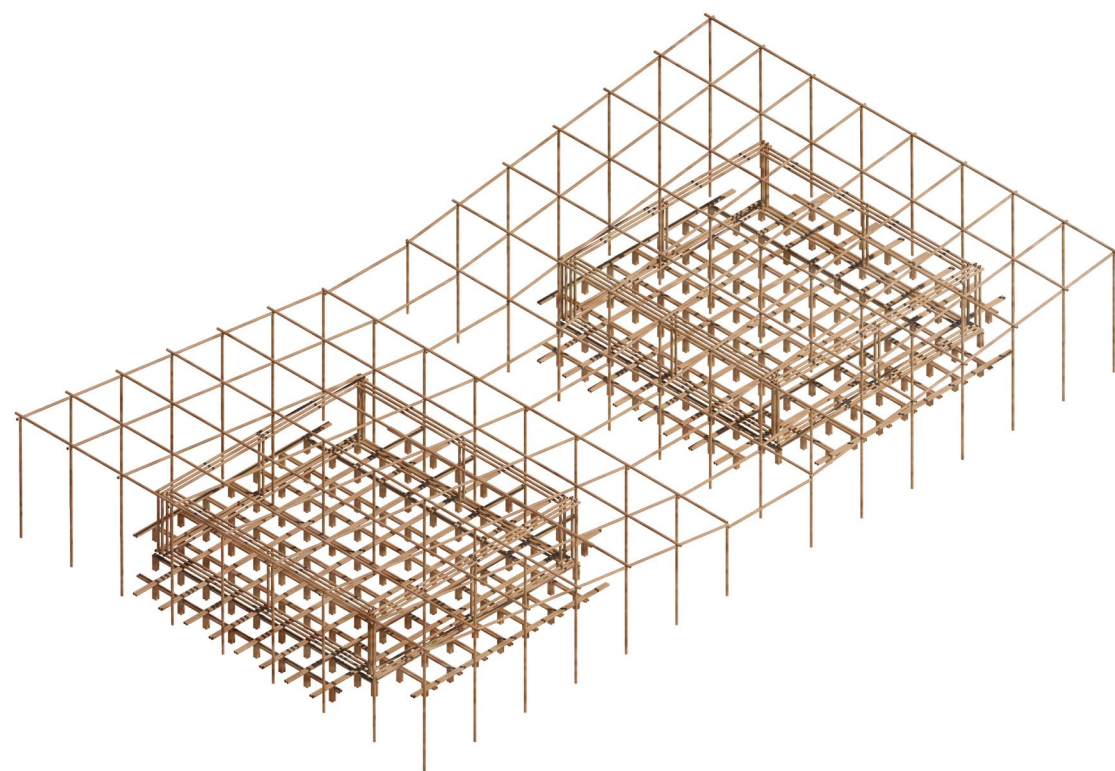


Fig. 09.33 - Community Centre Construction Process





**[STAGE 3]**  
Bamboo Roof Framing



**[STAGE 4]**  
Bamboo Roof Panels.



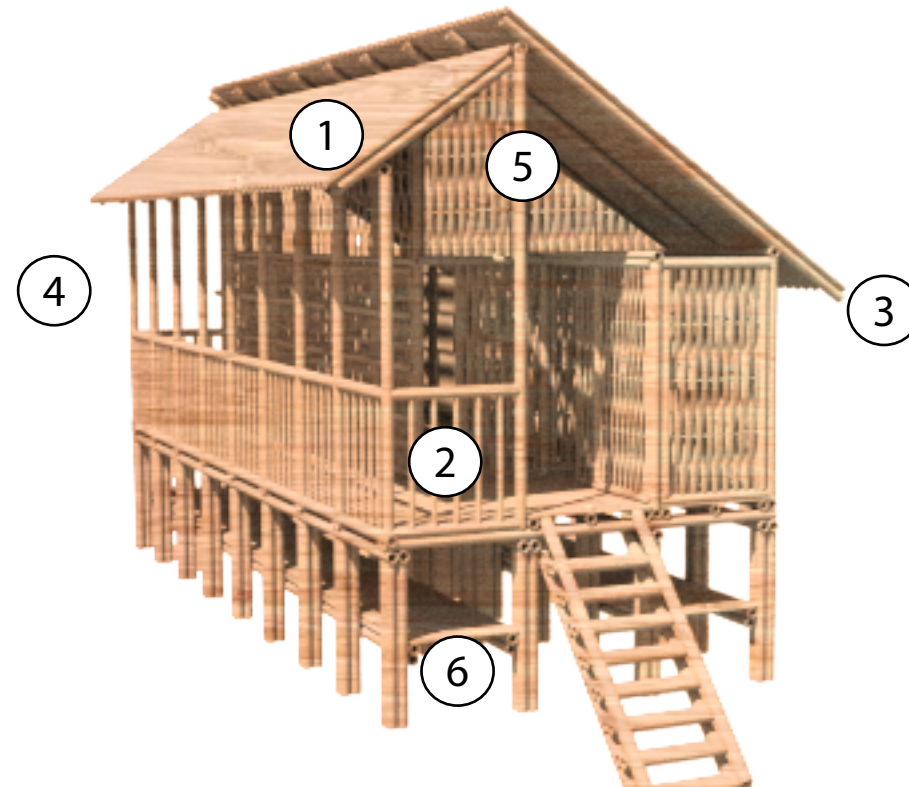
**[STAGE\_5]**  
Woven Bamboo Wall  
Panels.



**[STAGE\_6]**  
Bamboo Floor Panels  
and Completion.

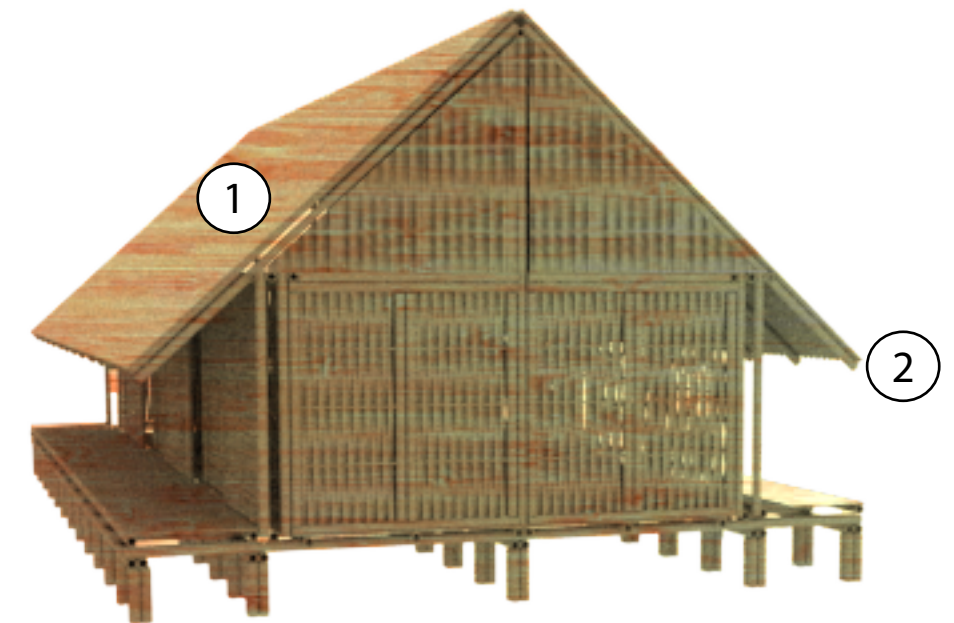
# 09.07

## Revised Structures



### HOUSING UNIT :

1. Roof over verandah to prevent rainwater from entering the unit.
2. Balustrades were added for safety reasons as the unit is raised 1500m off the ground.
3. Eaves were extended to prevent rainwater from entering the unit.
4. The height of the columns on the verandah was increased to maximise on the view and to allow sun to fall on the plants growing on the facade.
5. The roof pitch was changed to 33 degrees from 10 degrees as recommended for bamboo roofs.
6. Storage shelves were added under the unit. Any produce and treated bamboo is stored on these

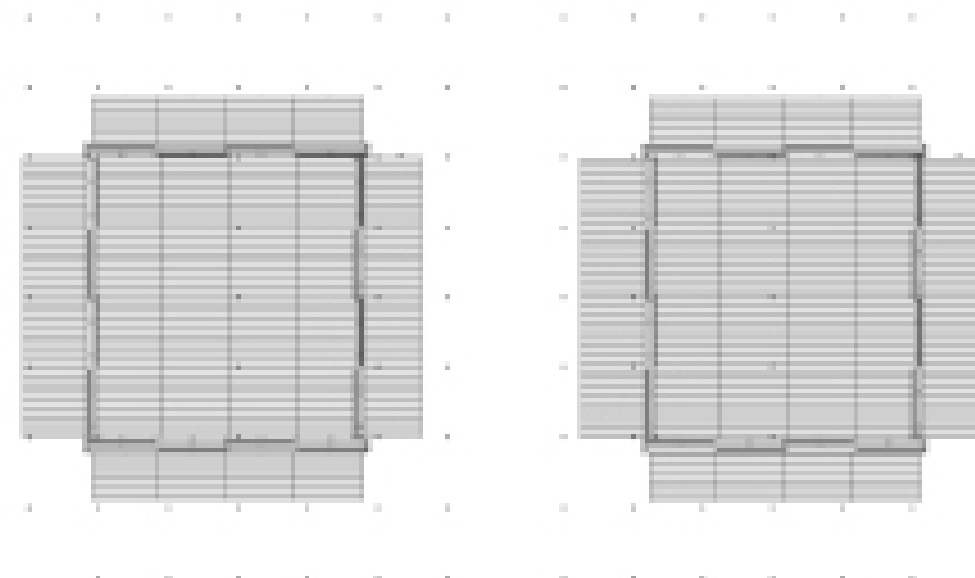
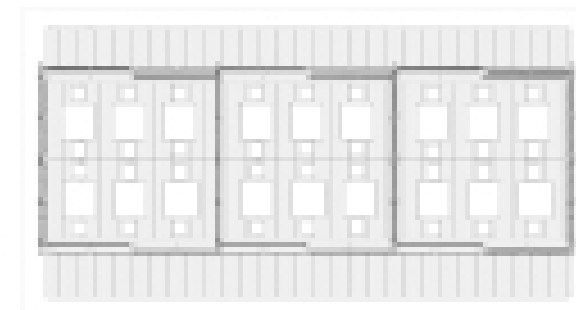
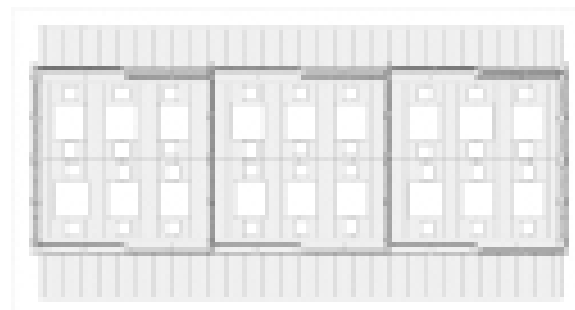
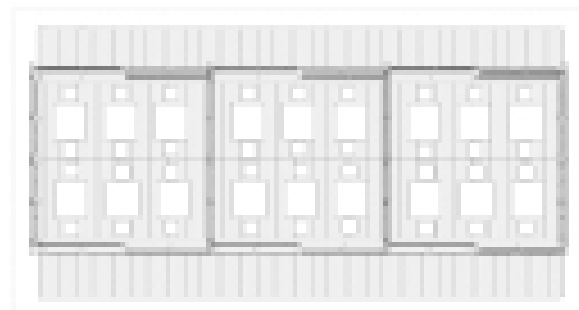


### CLASSROOM :

1. The roof pitch was changed to 33 degrees from 10 degrees as recommended for bamboo roofs.
2. Eaves were extended over the verandah to prevent rainwater from entering the classroom.

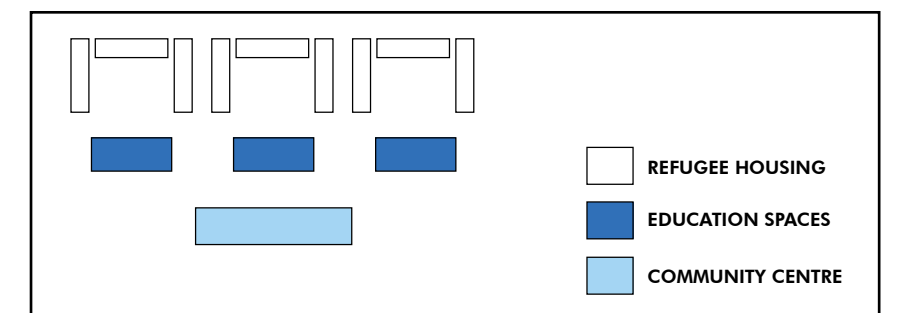
**09.08**  
**Revised**  
**Iterations**

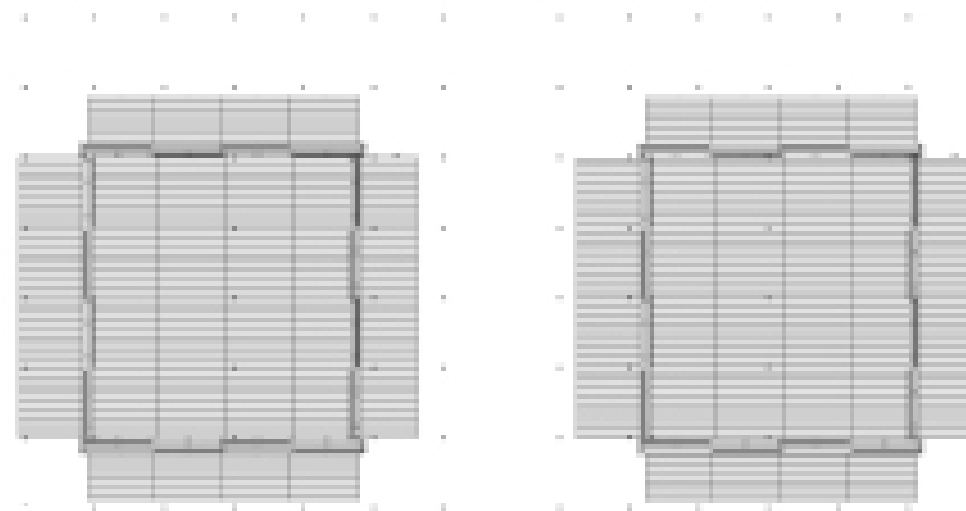
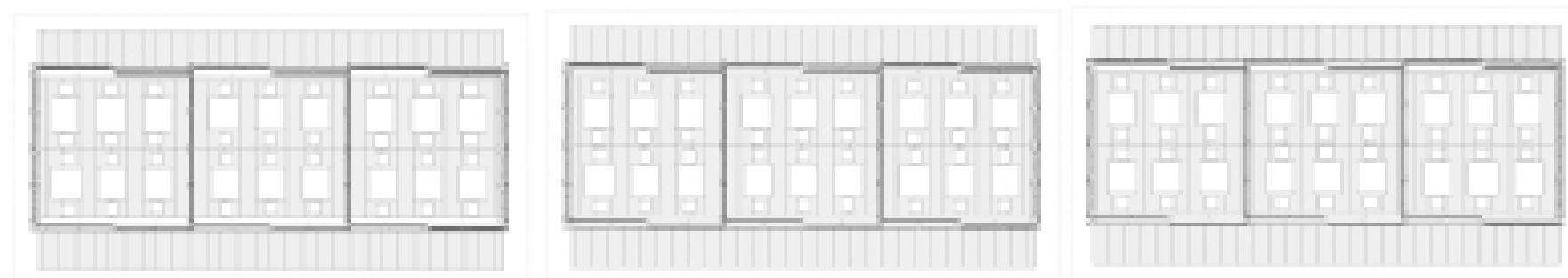
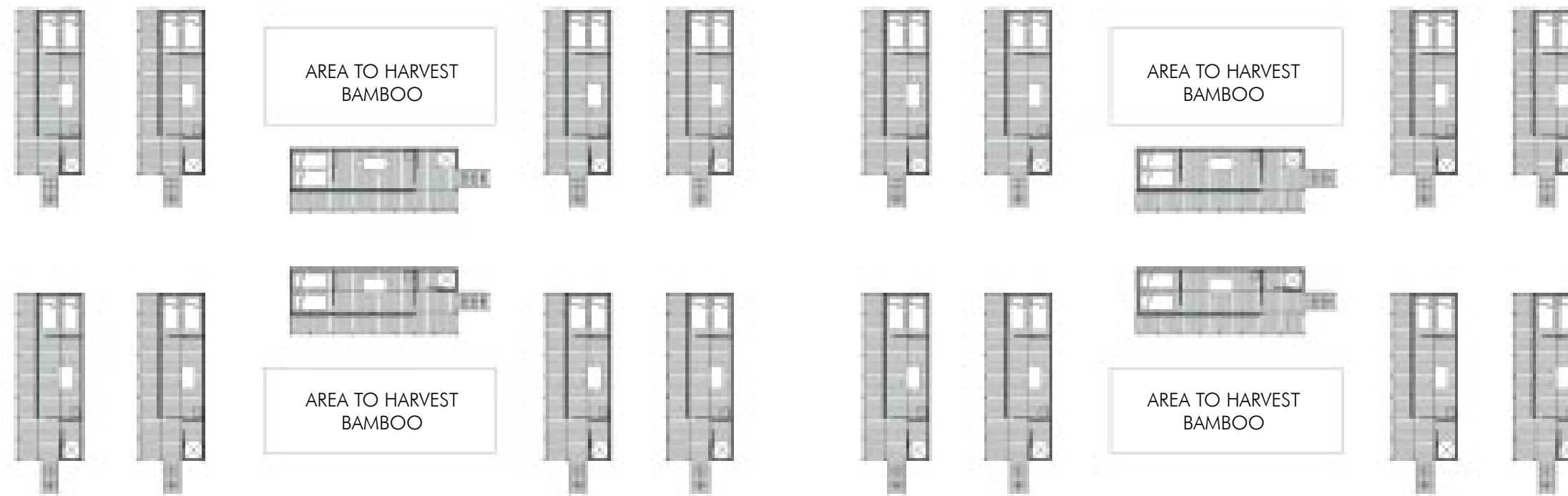




# ITERATION 01

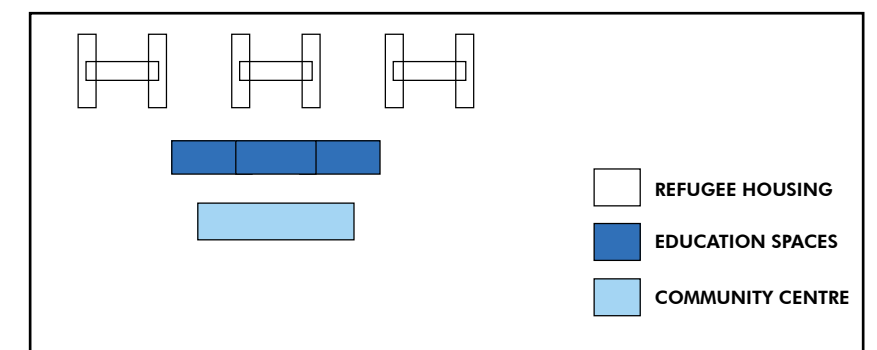
Figure 09.35 - Refugee Centre Iteration 1

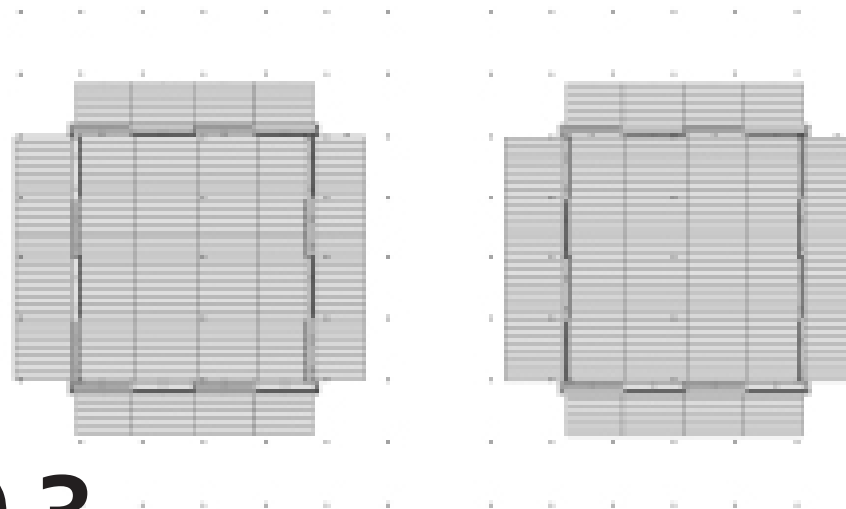
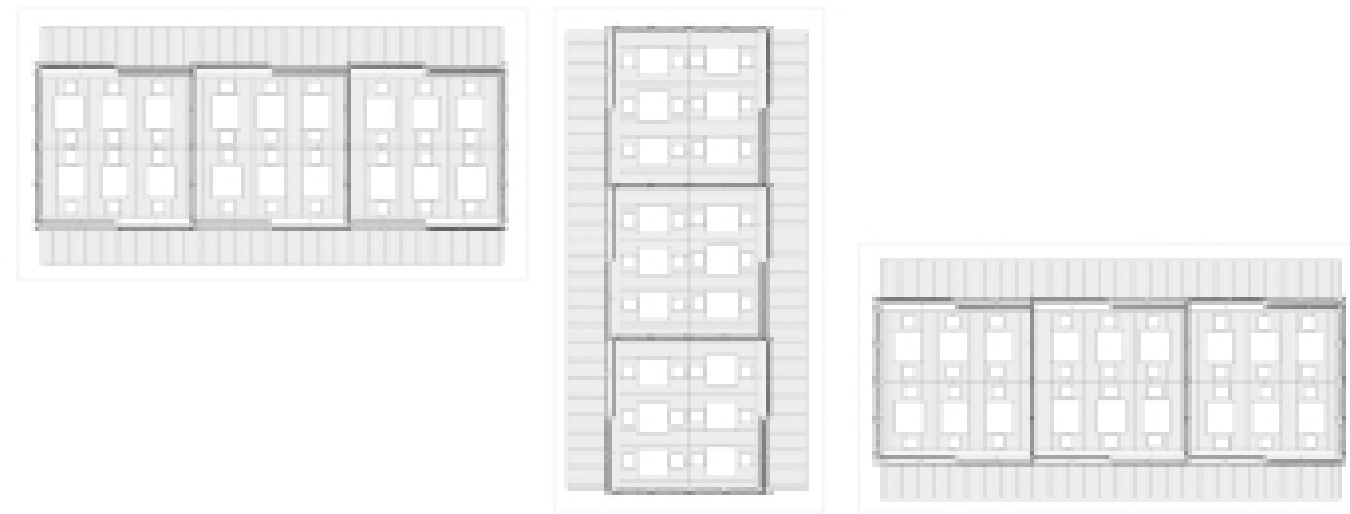




# ITERATION 02

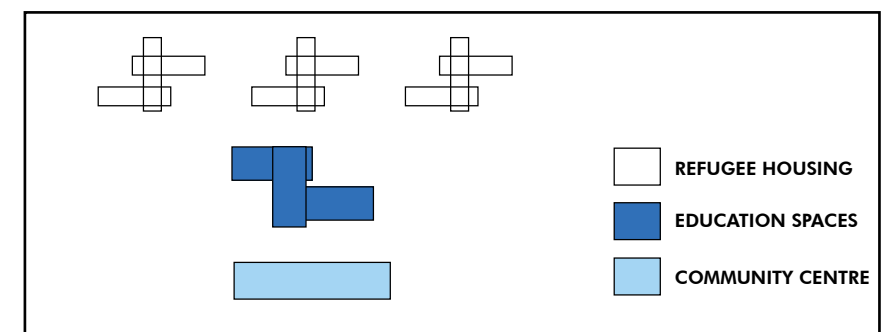
Figure 09.36 - Refugee Centre Iteration 2

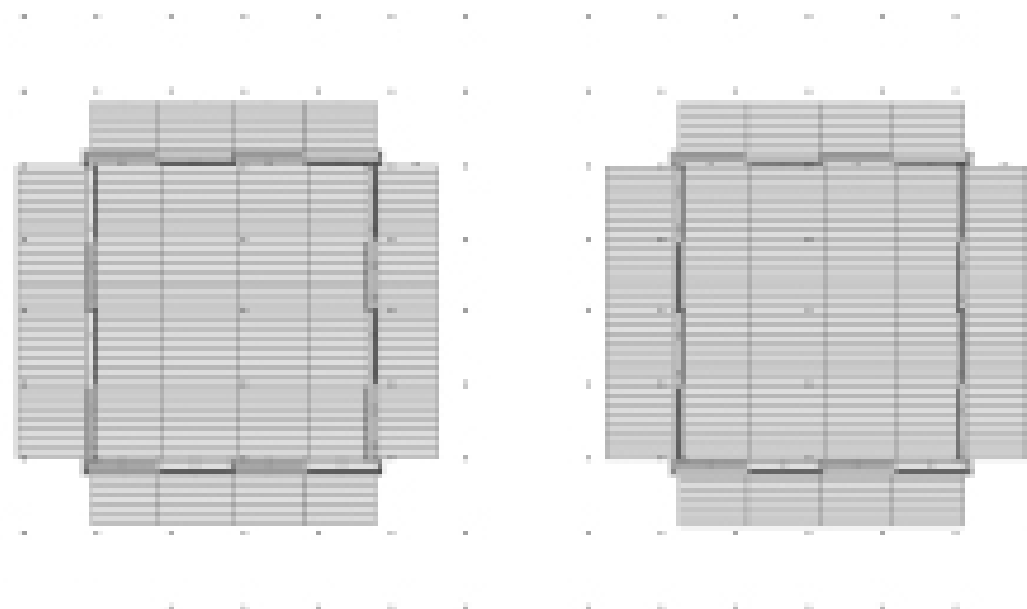
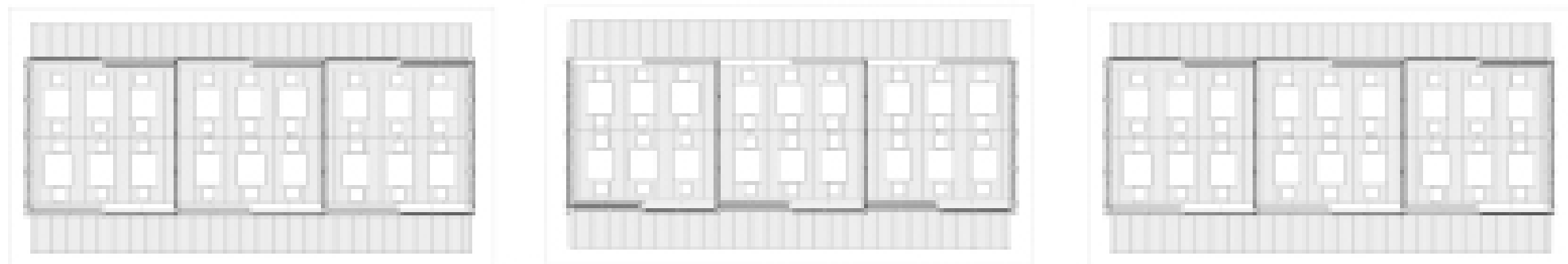




# ITERATION 03

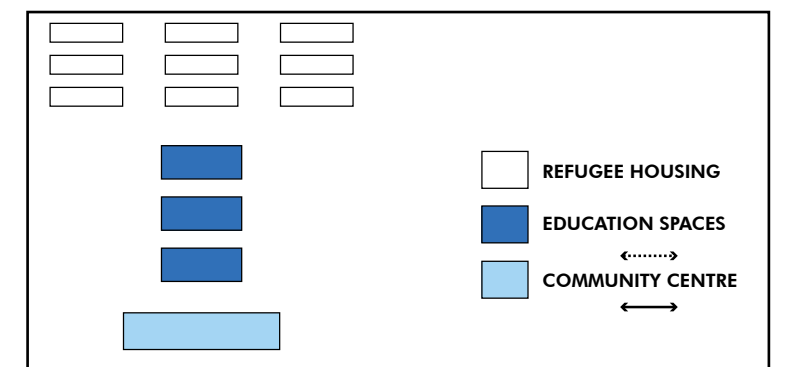
Figure 09.37 - Refugee Centre Iteration 3



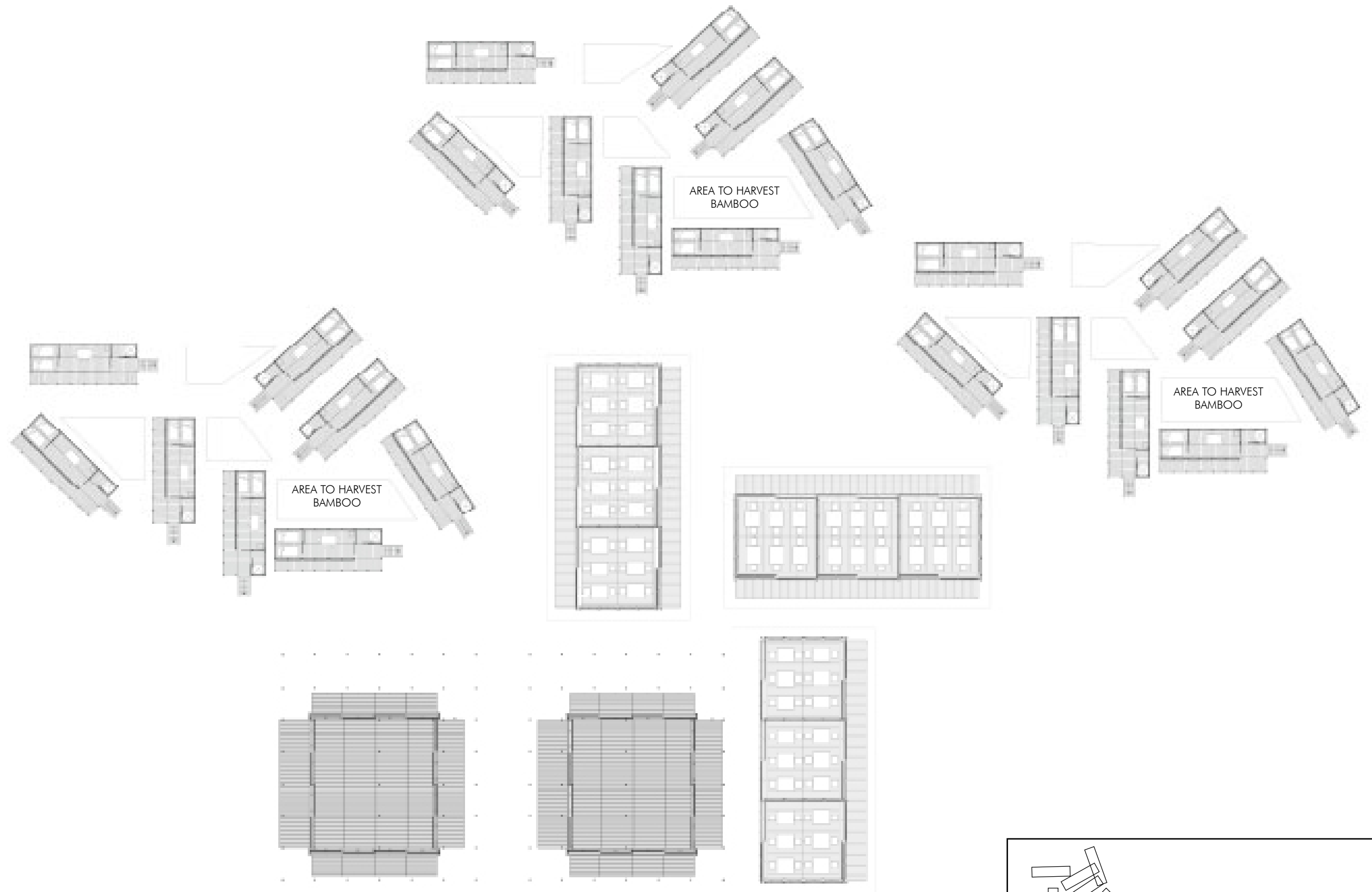


# ITERATION 04

Figure 09.38 - Refugee Centre Iteration 4







# ITERATION 05

Figure 09.39 - Refugee Centre Iteration 5

# Critical Reflection

Out of all the iterations, iteration 5 would be the most appropriate as it follows one of UNHCR's objectives to refrain from designing rigid layouts for refugee resettlement centres / camps. This layout also mirrors Papua New Guinea village organic layouts.

The layouts also mitigates the sense of a prison like and institutionalised environment. It promotes an organic and vernacular environment; environments the refugees would be accustomed to.



09.09  
Proposed  
Refugee  
Resettlement  
Centre

# COMMUNITY.



Fig. 09.39 - Sense of Community.



## SELF SUFFICIENCY.



Fig. 09.40 - Housing unit green wall with produce growing.



## FLEXIBILITY.



Fig. 09.41 - Floor Panel.



## RESOURCEFUL.



Fig. 09.42 - Bamboo being stored under the housing unit.



## EXCHANGE [KASTAM].

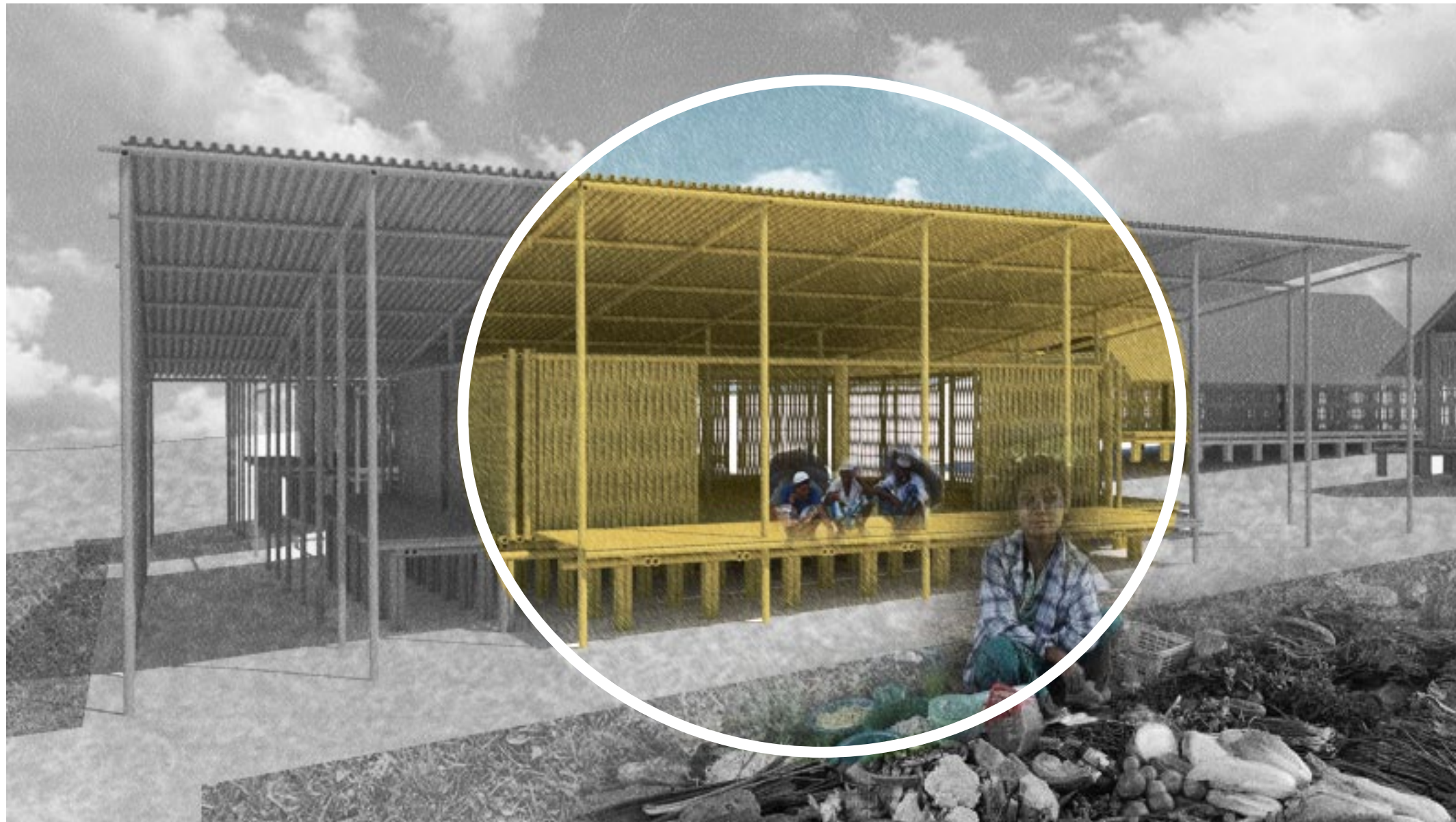


Fig. 09.43 - Locals and refugees at the markets; facilitated in the community centre.



## SECURITY.



Fig. 09.44 - Locals and refugees at the markets; facilitated in the community centre.



## EDUCATION.



Fig. 09.45 - Teacher interacting with student outside of the classroom.



10

# 10.01

## Conclusion and Reflection

The nature of the problem is the inadequacy of the current refugee camps, despite the efforts of government agencies and aid organisations. The lack of recognition of the refugees needs and well-being has hindered the refugees from integrating effectively with their host communities.

Psych-social problems have occurred amongst refugees. Particularly amongst the Manusian refugees; the subjects studied in this research. Architecture is able to address this problem by acting as a built medium that facilitates exchange amongst the locals and the refugees. By designing architectural systems that are system and flexible this gives the refugees the ability to configure their own spaces and

housing without requiring any assistance from any external parties ie. Government agencies and aid organisations. Such external parties have already failed to provide adequate and rich housing solutions. Simple and flexible systems will allow refugees to be self sufficient.

Architecture will provide hybrid design solutions; which combine the host communities vernacular methods with the refugees' vernacular. This combination will enable the creation of environments that are familiar and safe for both parties; reducing the risk of creating environments that are unfamiliar to the refugees and the host community.

To achieve a successful hybrid design solutions, studies were done into the refugees and Manusian local's backgrounds; studying their vernacular practices. By doing so, this created assurance that the design outcome met their housing and cultural needs.

The key findings of the thesis are as follow...

It's important to understand the people whom we're designing for. Refugees are human beings and are entitled to safe and healthy architectural environments.

sufficient communities. The vernacular creates a sense of familiarity.

If refugees are provided with the right resources and have access to healthy environments, they can thrive, create a new life for themselves and positively contribute to the host community. The case study of Al Za'ataari's camp is perfect example of how it has become a thriving camp known for its trading and markets. This is a result of refugees being provided with the right resources to create environments that can facilitate trading programs.

The early stages of this thesis successfully delivered an

insight into the cultural environment and social needs of the locals and refugees. The choice to focus on one refugee - Behrouz Boochani's story was a good decision to make the background chapter more personable. People tend to forget that refugees are not statistics but actual humans with real needs and experiences.

Creating vernacular forms encouraged and achieved one of the objectives to create safe architectural environments. The vernacular spaces are familiar to the locals and mitigates the fear of the unknown. By engaging the refugees in the construction process it allows them to become familiar with the ways of the locals. Engaging in the vernacular practices

and involving the refugees in the whole process cultivates resilience.

The programs implemented into the refugee resettlement centre such as the community centre encourages a sense of community and allows the locals and refugees to engage in an act of exchange (kastam).

#### LIMITATION:

A limitation in the thesis, was the inability to study all the cultures of the refugees due to the scope and time restraint. This limitation may run the risk of some refugees not fully understanding or relating to the architectural; feeling like

their cultures weren't recognised.

#### MOVING FORWARD:

The design process and outcome can be implemented beyond Manus Island. The outcome can be adapted into any context; it has a global scope. The problem of inadequate refugee resettlement camps is not a problem unique to Manus Island but one that is present in Africa, Asia, the Middle East and other developing continents.

This design outcome involving self sufficient methods can be implemented into any host community where vernacular

practices are common. The forms developed is a suggestion; which can be reconfigured and adapted to suit any vernacular style and material local to the host community.

There is an increase in the interest for this particular subject of refugee housing amongst the design community. With further research into the vernacular, simple and flexible architectural systems a solution can be found where refugee camps are no longer perceived as temporal lackluster environments but the cities of tomorrow.





# 11.01

## Figures

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# 11.02

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