CULTURAL HABITAT FOR THE ELDERLY

An aged care facility in a multicultural Fijian society

Explanatory Document

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A Research Project submitted in partial fulfillment of the requirements for the degree of Master of Architecture (Professional)
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Authenticity

This explanatory document has been prepared by myself, Shableet Chandra as partial fulfillment of the requirements for the degree of Master of Architecture (Professional) Unitec Institute of Technology.

I declare that all the work included in this document is my own, unless stated otherwise in accordance with Chicago Manual of Style (16th edition).

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Abstract

This research project is a response to concern about a lack of aged care facilities in Fiji. There has been a rise in the numbers of elderly individuals in Fiji, with population growth in the sector associated with healthier lifestyles and advances in medical practice. The increasing numbers of elderly people has a direct impact on existing social welfare and health care policies. Poverty, land lease issues, natural disasters and rising sea levels due to climate change are some of the issues affecting Fijians. These factors have influenced families migrating from rural to urban centres in order to earn a living. This urban drift is also likely to have a negative effect on rural communities especially if elderly people are left behind with no family members to take care of them.

This research explores architectural solutions to the problems faced by elderly Fijians living in urban centres by developing alternative living arrangements to house the elderly who require accommodation and care. The research explored existing traditional living arrangements of Fijians in a multi-generational, multicultural and multi-racial society. The architectural technique adapted by contemporary Fijians has also influenced the design outcome. Modern materials and technology were employed to ensure effective use of resources and sustainable design to enhance the comfort of care environment required.

To develop the architectural proposition a number of architectural precedents were examined in relation to different care environments. These included a culturally informed designed aged care facility, a multi-generational community designed with the idea of ageing in place, a designed environment specific for a dementia care provisions and a care environment which successfully employed a village typology in New Zealand.

Based on these processes an aged care facility was designed for Lautoka city, which both reflects and celebrates the local cultures. It provides communal living in an urban environment, which incorporates the concept of ageing in place. Overall the design proposition offers an example for future developments for aged care facility design in a multicultural Pacific context and represents a major step forward in addressing the lack of appropriate aged care facilities in Fiji.
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Introduction 1.0
Introduction

The Fijian elderly population is projected to increase from 69,300 in 2010 to 170,500 by 2050. The growth in the population will see a major shift in Fiji’s social welfare and health care policy. This increase in the numbers of elderly people aged 65 and over will have major implications for caregiving. The existing aged care facilities will not be able to accommodate the increase. Currently, elderly Fijians live within their communities and are mostly taken care of by their family members as per cultural and traditional obligations. Although many elderly people live independently, they usually require family assistance to support them financially and are dependent on a certain level of informal (family) care.

Fijian society is also facing a rising number of people moving from rural settlements to urban areas. These changes will place more pressure on traditional modes of family assistance to the elderly and more of this group may face difficulty and feel neglected as they age. A major reason for this shift to urban areas for some sectors of society is due to the expiration of native land leases (refer context 2.04), meaning many younger Fijians no longer have the option to earn a living from farming. Younger people are also getting educated to a higher level and adapting to western cultural norms. This results in the desire to move to cities for work, lifestyle and increased urbanized amenities. Figures from the Fiji Bureau of Statistics indicate that from 1996 to 2007, the urban population has risen to 51 percent of the total Fijian population. It is estimated that this will increase to 61 percent by 2030, an increase that will be largely based on rural to urban migration. The urban drift will also have a negative effect on rural communities especially if elderly people are left behind with no family members to take care of them. This research is focused on looking for an alternative solution, one that caters to the specific needs of elderly Fijians in an urban environment.

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2 David A.M. Lea, *Property rights, indigenous people and the developing world: issues from aboriginal entitlement to intellectual ownership rights* (Leiden: Nijhoff, 2008), pg 158
4 Ibid.
1.01 Background

Fiji Elderly Population

Two main contributing factors that are changing the global demographics of the elderly population are decreasing fertility and increasing longevity. The population of elderly people is set to rapidly increase globally. The United Nations Population Fund (UNPF) indicates Fiji has the highest number of elderly people in the South Pacific.

Figure 1. Projected ageing population in different counties.

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7 Figure 1. Projected ageing population in different counties. http://www.helpage.org/globalagewatch/population-ageing-data/population-ageing-map/ Accessed July 20, 2017
The Fijian elderly population is projected to increase from 69,300 in 2010 to 170,500 in 2050. This increase will have a direct consequence on the family, government policy regarding the social welfare assistance programme and the labour market.

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8 Figure 2. Population Pyramids estimates Fiji’s future projections. [https://www.populationpyramid.net/fiji/2017/](https://www.populationpyramid.net/fiji/2017/)


Shortage of Care Facilities

Due to the rising population, Fiji faces a shortage of caregivers and aged care facilities. There are more than 170 residents living in the three existing state owned aged care homes, which was built between 1950 and 1960. These facilities are running on maximum occupancy leaving no room for the increase in numbers and are located in Suva and Lautoka city on Viti Levu and Labasa town on Vanua Levu.

The state facilities were initially run by charitable organizations with the government providing grants and medical professionals to look after residents, but because of overcrowding and poor conditions the current government intervened and took full ownership in 2010. For the past 50 years, there has not been any development strategy for new aged care facilities but the establishment of the Fiji Council of Social Services (FCOSS) in 2015 provides hope that the government at least recognizes that there is a problem to be addressed.

Suva has three privately owned facilities, two of which are privately funded and one is funded by charities. Lautoka city the second largest population has only one state owned aged care facility.

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Figure 3. Aged Care Facilities in Fiji

Figure 4. Golden Age Home Lautoka

https://www.facebook.com/Fijiangovernment/photos/a.1276962289003370.1073744167.207532522613024/1277017145664551/?type=3&theater
1.02 Research Question

How can Fiji’s multicultural traditions inform an architectural response to the needs of elderly citizens living in urban Fijian communities?
1.03 Aims and Objectives

The central aim of this research is to address the lack of appropriate care facilities for the rapidly rising elderly population in an increasingly urbanized Fijian society. There is a need for a new caregiving environment, which honours traditional Fijian ways of living for all ethnic groups. The design is also focused on providing independent living options and promotes multi-generational living in an urban Fijian community. The design will create an aged care facility, which will provide a place for elders to stay comfortably and allow them to live meaningful lives. The design is intended to help elderly Fijians live longer and remain connected to their families and community.

A key objective of this design is to ensure that different levels of care are available within the facility to avoid relocation. The design needs to promote psychological and physical comfort to the elderly and also their families. It will also incorporate traditional and contemporary Fijian architectural traditions with the focus of ensuring cultural ways of living and cultural activities can exist within the design by providing facilities for elderly people to advocate and teach the traditional skills they have gained and to pass them on to future generations.

The facility will provide an example to future designers in terms of how culture can strongly inform an aged care facility design. The key objectives of the research are:

- Sufficient healthy living environment suitable for high level of care
- Incorporate traditional, cultural and religion into the scheme
- Providing a place of belonging
- Providing a place for activity
1.04 Scope and Limitations

The scope of this research excludes elderly people living in rural Fijian society where they are able to continue to live in the traditional manner with their families. The focus is on the elderly living in urban centres, specifically those living alone who will require assistance. As a result of changes in the traditional social structure now seen in urban living patterns in Fijian society, most of the urban ageing population would prefer formal (facility-based) care than informal (family) care.\textsuperscript{14}

There has been limited study in the field of architecture propositions for care environments specifically for the Fijian elderly community. Further research will be needed in this area, as there is limited statistical data available on the elderly population, rural to urban migration and how this affects the cultural and traditional living patterns. The most recent information is from Fiji’s last census statistic, conducted in 2007, now ten years old. The retirement age for those employed in the public service in Fiji is set at 55. In other more developed countries, the retirement age is set at 60 or 65 making it difficult to analyze cross-country studies.

The structural integrity of the design requires engineering input if it were to become a reality, particularly with regard to its resilience to cyclone and earthquake loading. Other relevant council rules and regulations have not been considered; environmental impact, fire and occupational health and safety regulations.

1.05 Methodology

A number of methods were employed to carry out this research project. Firstly, a literature review was undertaken that investigated the existing aged care architecture methodologies. Ageing theory was analyzed in order to inform the design decisions for the elderly environment requirements. The review also included analysis of current research on Fijian society and appropriate designs for traditional Fijian communities. Books, journal research papers, and government websites were used to understand how other countries have explored ways to deal with their ageing society. This review provided insights into how a facility can be best designed to address different programmes, the different types of care provisions and cultural needs of a diverse community living together in an aged care facility.

Secondly, the precedent study analysis investigated existing aged care facilities in different parts of the world and climate conditions. It looked at their effectiveness and functionality in order to establish an understanding of the care facility organization layout. The analysis looked at individual design layout, circulation, spatial qualities, structure techniques, use of sustainability and scale of the development required for appropriate care needs. In particular, it sought answers as to how the facilities have incorporated the culture and tradition within their community. These different design features and programs will provide methods and technics used in formulating my final design.

Finally, the research extracted information found through literature and precedent study and integrated this in an iterative design process of an aged care facility. A series of sketches, diagrams, drawings including three-dimensional modeling and physical modeling, space planning, and site analysis were incorporated to test out each building program in its surrounding context. The design also explored ways of incorporating sustainable architectural use of passive strategies, energy efficiency and durability of materials in order to keep maintenance costs down and provide resilience to natural disasters.
Context 2.0
2.01 The Fiji Islands

Fiji is part of the Melanesian group in the South Pacific Ocean and has a total land area of 18,274 km². It consists of 332 small islands, of which 106 islands are inhabited and 500 islets. The two bigger islands are Viti Levu and Vanua Levu, which are the most populated. Set in an equatorial climate with a warm tropical climate year round with temperature ranging from 26 to 31 degrees. The wet season occurs during November to April and it is normal for tropical cyclones to form in the Pacific during this time. The average rainfall is between 2000mm and 3000mm in low-lying areas and 6000mm in the mountains ranges. Viti Levu has the largest population with Suva being the capital city and Lautoka the second largest city.

Figure 5. Pacific Map  
Fiji island group

2.02 The Fijian People

According to iTaukei (Indigenous Fijians) legend, the first settlers arrived at Fiji approximately 3,600 years ago. The indigenous people were also known as the Lapita. They arrived from Southeast Asia, travelling by canoes into the Polynesian and Melanesian islands. The Lapita people brought with them culture, skills and religion.

The Dutch explorer, Abel Tasman first discovered the Fiji group of islands in 1643. The second arrival to Fiji was in 1806 by the Europeans who landed in Fiji by accident-shipwrecked sailors. In 1874 Fiji became a British colony, which brought an end to civil war amongst the iTaukei fighting over land. The British made a combined decision with the chiefs to introduce sugar cane farming to support Fiji’s economy by getting indentured labourers from India to work on farms.

Chinese arrived in Fiji in the 1850s to trade sandalwood and sea cucumber. The Japanese invasion in 1937 prevented them from returning to their country, encouraging them to stay permanently in Fiji. They also started up small businesses like bakeries, small grocery shops and became importers.

Figure 6. Fijian Canoe known as 'Waqa Ni Viti'

Figure 7. First Chinese settle

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17 Catherine Spicer and Rondo B B Me, Fiji masi: an ancient art in the new millenium (Australia: Rondo B B Me and Catherine Spicer, 2008), pg6
18 Derrick, A history of Fiji, pg37
19 Figure 7. First Chinese settle http://lisadorenfest.com/wp-content/uploads/2015/09/Suva/
Fiji’s second biggest population group is the Indians who were brought to Fiji from India during the British colonial period. The first group of Indians arrived in 1879 during the Indentured system (also known as Girmitiyas). Over sixty thousand labourers came to Fiji to work on a five-year contract between 1879 and 1916.²⁰

These labourers were forced to work on sugar cane farms and were punished if they did not finish a day’s assigned duty. They were also forced to share single rooms, food and to work together with Indians from different castes. Women were low in number and tended to marry across castes, which resulted in abolishing the caste system. A commonly spoken language was introduced to unite all the Indians known as Fiji Hindi, which is widely spoken by Fijian Indians to this day.

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²¹Figure 8. Fiji Indentured Labourers (Girmitiyas)
2.03 Fijian Cultures

In traditional Fijian culture, the family is expected to take care of their elderly family members with the extended family living together in a communal arrangement. Traditionally, both ethnic iTaukei and Fiji Indians have lived in multi-generational settings. Traditional building structures from the iTaukei have influenced how the different cultural groups accommodated multi-generational living. They acquired the skills to construct traditionally and this is still evident in the contemporary architectural forms. The Fijians have continued living in multi-generational communities while upholding their culture and traditions. To better understand this, this section will focus on the traditional iTaukei village arrangement. It will explore social and physical iTaukei building structures and how tradition and culture plays an important role in people’s lives. The last part of this section will discuss how changes in Fijian society have occurred over time, which has directly affected the traditional model Fijians now live in.

iTaukei Culture

Cultural values have been passed down to contemporary iTaukei, many of who still live in traditional iTaukei villages. Traditional protocols determine how people address their Chief, the elderly and ‘common’ people so that each person knows his and her place in the village clan system. Most of Fiji’s villages are arranged in a similar way where the village Chief and the elderly are the most respected in their community.

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iTaukei Village Structure

The typical iTaukei village has an entry and a focal point, which is mostly open green space (*Rara*). This area is used for functions and ceremonies. Around this green space, you will find a community hall for larger meetings and gatherings known as the Bure (*Vale ni Bose*), a church and the chief’s house. The upper end of the village is where the Chief’s house is normally located with the ‘common’ houses arranged on both sides of the *Rara*. The chief’s house is elevated from all the other houses representing his or her position at the top of the social hierarchy. This signifies the ranks of an individual in the village organization. Bigger villages have schools, health centres and small shops. The iTaukei people are considered to be extremely welcoming as part of their tradition and culture, and the interior of their houses reflects this by providing a generous volume for receiving guests with decorative and elaborate structural connections.

![Traditional iTaukei 'MangiMangi' lashing connection joint](image-url)

Figure 9. Traditional iTaukei 'MangiMangi' lashing connection joint
Three different scales of traditional iTaukei village layout indicate the social arrangement.

![Image of iTaukei village layouts](image)

Figure 10. Traditional iTaukei village social arrangement

**iTaukei Stilt house**

The tribal war between villages was common in the past over land ownership. This led to houses being built on high stilts (*Vale ni Moce* meaning sleeping house), to provide greater security for families to sleep in times of tribal war. The construction was deliberately made flexible to allow movement if an intruder climbed, the house shook and alert the inhabitance. This required timber post to support the structure and bush timber was used to cross brace structural member and ladder to climb to upper level.

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Another reason given was to keep the building well ventilated also keeping mosquitoes away. The stilt house construction is not built anymore due to the impact of the colonial system of government, which ended tribal war amongst iTaukeis. However, this study indicates that traditionally iTaukei families were accommodated above ground level.

iTaukei Canoe House

The canoe house was a workshop area for building large canoes (Waga drua), which took three to seven years to build. The construction required a wide unobstructed span to house the canoe with three walls to enclose the structure. The building structure was symmetrical in proportion, with a curved thatched roof. Located near to the sea this structure would have been the first building seen as one approached or arrived from the sea. The canoe house construction is not built anymore, as traditional canoes are no longer in use. However, this canoe house architecture has evolved in many Fijian contemporary resorts designs as an entry structure with the wide span and high ceiling creating a welcoming approach and providing cross-ventilation.

Figure 11. "Vale ni Moce" Sleeping house

Elevation view

[25 Figure 11. "Vale ni Moce "Sleeping house Michael Adas, "Western Dominance," Encyclopaedia of the History of Science, Technology, and Medicine in Non-Western Cultures: , doi:10.1007/978-1-4020-4425-0_8941.pg2]
Figure 12. Mana Island Resort arrival  Likuliku Resort Fiji Arrival

Figure 13. The Canoe House
Spatial Organization of iTaukei houses

The iTaukei house (known as the Vale refer 10.01 Appendix 1) is rectangular in shape with a steeply pitched gable roof. Internally the spatial/social arrangement has a top and a bottom end with specific door entries for iTaukei family members. The house has three entry doors having ceremonial and cultural meaning, two on the longer sides facing each other and a third on the shorter side. The two doors facing each other from the Rara end is where the visitor normally enters.

The top end of the house is always reserved for the top hierarchy or the elderly, as one needs to sit lower than the elderly person. This arrangement is traditionally followed during the ceremonies like Kava drinking where one has to pass the yaqona bowl to the elderly first. Although there are the top and bottom ends of spatial/social arrangement additional axis of directing visitors (known as Vulagi) entering in a house is also established.

iTaukei Ceremonies

This spatial arrangement has a high significance to iTaukei ceremonies like marriages, births, and funerals. A Kava ceremony is conducted to commemorate the occasion were the spatial arrangement is very important. The house of the elderly (vale levu) is where all the village wealth is collected and stored. The building is larger in size and also made stronger to secure the wealth collected.

For similar ceremonies to be performed outside the village one has to seek permission from the elderly in order to release the wealth and offer their blessing.

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27 Ibid, pg218.
Figure 14. Spatial Organization inside an iTaukei house (Vale)

Figure 15. iTaukei Traditional house (Vale)²⁸

²⁸ Figure 15. iTaukei Traditional house (Vale) http://thefamilywithoutborders.com/wp-content/uploads/2014/09/13_Fiji-holidays-bure-traditional-house.jpg
Fiji Indian Culture

The Girmityas who came to Fiji did not forget their culture and traditions. Their living arrangements created an extended family with unique religious ceremonies and rituals still relevant in contemporary Fiji Indian society.

When it comes to religious prayer, there are specific areas in the house and outdoors for Hindus. Placement of the bath and toilet area in a Hindu house is culturally important. Toilets should not face in the direction of worship due east and should always point north and south.²⁹

Fiji Muslims following Islam orientate themselves northwest to the Mecca direction also known as the Qibla direction. The toilet orientation also according to Islamic laws should not face towards or face ones back in the direction of Mecca.  

Figure 17. Muslim Residence

Cultural Changes

Both major ethnic groups iTaukeis and Fiji Indians have adapted to westernized culture due to the rapid urbanization shift in Fijian society. The communal village way of life, where extended families cared for each other is being undermined because people are unable to financially support the large extended family in an urban setting (refer context 2.07). The family unit is slowly changing as people move into urban centres and live as nuclear families in order to sustain the cost of living. The younger generations are becoming disconnected with their traditional skills based knowledge, customary ceremonies and culture. Refer 10.02 Appendix 2 for other Fijian cultural ceremonies.
2.04 Rural to Urban Migration

Fijian society is experiencing a rising number of people drifting from rural settlements to urban areas. The drift is driven by urban employment opportunities were people are moving to urban centres in order to financially support their families.31

A major reason for the rural to urban drift is the result of the expiration of iTaukei land leases, which has seen many rural communities having to relocate and resettle as their leases expire. Close to 87 percent of Fiji’s land is native owned leasehold of 30, 50 and 99-year terms.32 The native lease is legislated by the iTaukei Land Trust Board (TLTB).

The current situation, where many leases are not being renewed, began after the first coup in 1987 when the iTaukei led group did not accept the multi-racial elected government and its policies. The iTaukei group feared that their land ownership was at risk and would be taken from them. The coup and subsequent expiry of leases have had a major impact on the Fijian society mostly in the sugar industry as Fiji Indian farmers on leasehold land grew most of the sugar cane. The coup had a negative impact on the growing economy, with a large number of Fiji Indian leaving farming and resettling in urban areas. Many Indian businessmen emigrated because of racial tensions.33

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32 Vijay Naidu, Alta and expiring land leases: Fijian farmers perceptions of their future: Na ghar ke na ghat ke (Suva: University of the South Pacific, 2002).
Almost 47 percent of Fijians reside on the 87 percent iTaukei leasehold land, which cannot be sold. The expiry of these land leases has impacted many rural families being displaced and have had to deal with the associated financial and emotional stress. These families have no option but to move to urban centres for employment in order to support their families. In the process, some families have had to leave their elderly behind to be taken care by their extended family due to the high cost of living in urban centres. Others, who do not have anyone to look after their elderly, have no choice but to leave their village and migrate with their entire family.

With limited resources to pay for accommodation in urban centres, many families resort to living in illegal squatter settlements. There are currently more than 77,500 people living in close to 200 settlements in Fiji. These squatter settlements are temporary built shelters of substandard construction.

Figure 18. Muanivatu Squatter Settlement

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34 Ibid.
38 Figure 18. Muanivatu Squatter Settlement http://4.bp.blogspot.com/_tEwpA8nFTxw/S7wmoDAB_NI/AAAAAAAAtM/3Bqo0MrEhDY/s1600/muanivat u.JPG
2.05 Relocation Due to Climate Change

Another factor that is leading to more people leaving rural areas and moving to urban centres is climate change. According to the Pacific Climate Change Science Program, sea level is rising due to global warming. In the Lautoka coastal region, the sea levels have increased by 6mm per decade since 1993. 39 The large populations living in foreshore villages on bigger island groups like the Yasawas and Mamanuca groups are extremely vulnerable to the impact of rising sea levels. Vunidogoloa village, located on Vanua Levu, is the first village in the world to be relocated to higher ground due to rising sea level.40

Figure 19. Vunidogoloa Village Resettlement Site 41


41 Figure 19. Vunidogoloa Village Resettlement Site
https://i2.wp.com/www.unocha.org/sites/default/files/0CHA_Category/Top_Stories/vunidogoloa1.jpg
Climate change has also resulted in a significant increase in the number and intensity of natural disasters and they are predicted to further intensify in the future.\textsuperscript{42} The most recent tropical cyclone, a category five Cyclone Winston hit parts of western Viti Levu in February 2016 damaging property and affecting 40 percent of Fiji's population who lived in the path of the cyclone.\textsuperscript{43}

![Cyclone Winston damaged an entire village on Koro Island.](http://www.abc.net.au/news/image/7188054-3x2-940x627.jpg)

Older people who have spent all their lives in their community and have retired will be most vulnerable to climate change, as they are unlikely to have the resources to finance a rebuild. These facts highlight the need to construct resilient buildings and make provision for resettlement.


\textsuperscript{43} Ibid.

\textsuperscript{44} Figure 20. Cyclone Winston damaged an entire village on Koro Island. http://www.abc.net.au/news/image/7188054-3x2-940x627.jpg
2.06 Medical Facilities and Transportation

There are three major hospitals in Fiji, located in Suva, Lautoka and Labasa. These hospitals provide 24-hour emergency and accident services. There are also smaller sub-divisional Health Centres where immediate emergency care is provided for patients to be transported to these major hospitals as per their medical care needs. Emergency transportation by land is normally done by ambulance service. Helicopter, boats and airplanes provide the medical evacuation services in remote inner and outer islands. It is expensive and at times the patients are not lucky due to delay in getting to the nearest hospital and the wait in transportation services.

Figure 21. Medical Facilities in Fiji
2.07. Financial impacts for elderly people in 21st century Fiji

In Fijian culture, the family is expected to take care of their elderly family members at home but due to the high cost of living, westernization and urbanization being adopted by the younger generation, the needs of the elderly are often neglected.\textsuperscript{45} Due to insufficient government assistances and financial constraint, most Fijians suffer due to not being able to financially support the medical costs for chronic diseases and old age disability.\textsuperscript{46}

Twenty eight percent of the population live below the national poverty line as per statistics gathered by Asian development bank.\textsuperscript{47} This means more than 250,000 people live in poverty and much more live just above the poverty line. The life expectancy in Fiji is 70 years and a third of the Fijian population is made of elderly people.\textsuperscript{48}

The pension system in Fiji consists largely of the superannuation fund, the Fiji National Provident Fund (FNPF). The retirement age in Fiji is 55 years and this is when the superannuation contribution deductions stop. Statistics show that almost two thirds of the population aged 60 years and over are not covered by the FNPF pension.\textsuperscript{49}

The social welfare benefit scheme, amounting to FJ$100 (NZ$67) per month, targets those aged 65 years and above who have no source of income.\textsuperscript{50} An average unskilled worker earns an average of $90 to $100 per week. This may be just sufficient for day to day living but will never be able to save for future or old age retirement fund. The eight percent superannuation contribution by employees plus employers based on the wages or salary is not sufficient to live on for the full retirement period (retirement at 55 with a life expectancy of 70, therefore 15 years of dependency). The majority of the population are likely to have withdrawn a substantial share of their superannuation fund for housing repair due to natural disaster damage, family funerals, and education leaving very little for their retirement.

Higher healthcare costs (despite free medicines) have a significant impact on elderly people’s behavior. They are reluctant to go to the hospitals and medical centres until it becomes serious. Some sacrifice electricity and water because they can’t afford it, which has a negative impact on their hygiene and wellbeing.

The Fiji Government has recently shown interest in addressing the problems facing elderly Fijians. In 2016, at the official opening of the National Council for Older Persons (NCOP), Fiji’s Minister for Women, Children and Poverty Alleviation, the Honorable Ms. Rosy Akbar stated that the government is committed to providing an increase in assistance in aged care service for senior citizens.\textsuperscript{51} Ms. Akbar pleaded to the Fijian society to take care of their elderly so that they remain living longer in their own homes and communities.\textsuperscript{52}

The Fiji Council of Social Services (FCOSS) was therefore established to raise awareness of the issues facing senior citizens, and to provide home care for elderly Fijian society.\textsuperscript{53}

Some recommended strategies discussed in the policy are:

- Develop awareness on employment making use of skills and experience
- Educating younger generation in healthy ageing
- Reviewing pension and state benefits
- Educating on financial literacy as one retires
- Health-care service support to encourage independent living
- Accessibility to public transportation and public amenities
- Institutional care and care providers for elderly Fijian society in developing better standards.\textsuperscript{54}


Literature Study
3.01. Aged Care

Ageing

Gerontologists define ageing as the perception of progressive break down of physiological function leading to increase in isolation, loss of independence and decline in mobility.55

Almshouses associated with the church and have been around, in western societies, for centuries.56 During the twentieth century as many cultures have gravitated towards nuclear rather than multi-generational families; care for the aged has developed accordingly.57 As the trend of living as nuclear families increased, the elderly were left alone, as their children left home and moved to settle with their own younger families. Sometimes one child remained to look after their parents in old age.58

Ageing in Place

The term ageing in place is commonly used in retirement village schemes, where residents remain in a residential setup within their community and receive the required care. Ageing in place allows the various interrelated dimensions formed over a person's lifetime and which form a historic memory for each individual to remain intact and assist them in coping with the ageing process. The psychological and emotional attachments expressed through the social dimension provide a sense of belonging. The physical dimension is more to do with contact and physical touch, for instance, the home or its surrounding neighborhood.

55 Sharyn Hunter and Carol A. Miller, *Millers Nursing for wellness in older adults* (Sydney, N.S.W.: Lippincott Williams & Wilkins, 2012).pg3
57 Ibid.
Cultural dimensions also play an important role in an older person’s beliefs, traditional values and ethnic background. Many elderly people are affiliated closely with their religion and beliefs and these give them a sense of purpose and also provide a community network which means they have less chance of neglecting themselves.59 A home becomes the physical collection of the cultural, social, emotional, and psychological dimensions that enable someone’s identity to remain intact even if that person is ageing, disabled or chronically ill.60

3.02. Problems Associated with Ageing

The desire and ability to learn for elderly people slow as they age and at a certain stage it totally stops. In old age some people start experiencing memory loss, they forget names they were told ten minutes ago a condition known as short-term memory loss. This happens as your brain shifts information received to the less efficient part of the brain. Researchers Smith and Jones concluded that to improve short-term memory loss in aged persons there should be an improving quality of visual information they are presented with.61

Ageing is associated with problems of disability. Anatomical changes in people over 65 results in the progressive decline in physiological and psychological functions: physical strength, dexterity and tactile sensation affecting the mobility of a person.

People with these disabilities will have difficulty living independently in their community and home. These are the people who will need institutionalized care in an aged care facility or nursing home.62

With ageing, anatomical changes mean that humans lose the sense of touch, for example feeling the full effect of hot water. This becomes very important while designing when it comes to the tactile sensation for a person to experience in a space.63 The skin and its primary function have to transfer sensory information to the brain, becomes critical where a person has a reduction of vision and tactile sensation. Textural application on the surface with contrasting color can indicate changes in surface and form, which can be favorable for someone with poor visibility. The sense of touch can be an important consideration in the design process when it comes to designing the environment for the elderly. As people age, they commonly lose the ability to hear leaving them feeling isolated from the community and family.

61 Alfred H. Baucom, Hospitality design for the graying generation: meeting the needs of a growing market (New York: J. Wiley & Sons, 1996).pg34.
62 Ibid.pg46.
63 Ibid.pg49.
3.03. Architectural Design Recommendations

The main goal would be to design a space that elderly people feel confident in functioning independently. The design of the facility should consider their diminishing upper and lower strength in carrying out tasks, their posture, their reduced vision, mobility and balance. These physical factors cannot be altered but design environmental design factors can be implemented, like taking specific care while designing for effective lighting, safe furniture, and non-slippery surfaces. Interior space should be designed to limit hazards and promote self-efficacy meaning a person’s ability to being active on their own and to live independently.

Figure 22. Furniture Arrangement diagram from Hospitality design for the graying generation. Alfred H. Baucom, Hospitality design for the graying generation: meeting the needs of a growing market (New York: J. Wiley & Sons, 1996). pg 54,55
The perception of space can be factored into the design by considering individual items like furniture and its arrangement, which can both signal how a person would enter a space and how it feels for those who are already in the space. The distance between individual furniture items and separation distances indicate a passageway depending on its separation and placement to create circulation in the space. Seat arrangement can also enhance interaction and promote conversation between people. The distance and the angle of seating for someone seated in a public space becomes very important and should be considered to avoid them feeling isolated. Eye contact without obstruction should be promoted. The physical and physiological changes affecting a person's hearing ability cannot be changed but their living environments can be designed to improve sound quality.

Choice of building materials and the layout of services and window openings should be considered while planning. Sound absorption materials should be installed on walls, ceilings and floors to reduce sound transfer from one room to another. Carpet reduces 70 percent of the ambient sound transfer from room to room. Background sound should be absorbed to reduce the low frequency sound transfer inside a room to improve the speech quality of elderly people.
3.04. Types of Care Facilities

There are three different categories of healthcare model for the elderly. The first model is the social model also known as the traditional model, where an individual normally lives in their own home and receives informal care from family. The second is the medical model where an individual is taken care of by medical professionals in an institutional care environment. Here they receive formal care and treatment for illness and injuries. The last model looks at creating awareness by preventative measures and is focused on an individual remaining independent for a longer period of their active health.

Social Model

The social model is currently practiced in Fijian communities were individuals live in their homes. This also includes family members living with the elderly individuals and supporting them. In *Ageing, housing and urban development*, the authors conclude that traditional “institutional” care, is not a desirable option for elderly people.

Looking at Canada, America and Europe there are examples of healthcare provision where there is a general distribution of institutional care facilities and a growing elderly population. Through research and study, Canadian Healthcare professionals suggest shifting the medical model to a social model as per their community setting. This model focuses on providing care to the elderly in their homes rather than in an institutional setup. Friends and family members provide social and informal support.

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This social model incorporated family and also personal counseling, day and home care with meals on wheel programs. Medical teams of professionals attend as per individual needs at their home, which normally would have been at an institutional care facility. Researchers found that the social model helped individual psychologically those who stayed in home living independently having more positive self-image than others who were in institutional care.\footnote{Mark, Campbell, and Novak. "Aging(sic) and society: a Canadian perspective."}
3.05. Institutional Care

Institutional care, also known as assisted living facilities, is designed specifically for elderly people who need assistance in their daily activities but do not require nursing care. A widely accepted definition of assisted living comes from the American Assisted Living Federation (ALFA): designed housing, which provides personalized assistance to individuals with supportive health care services. Twenty-four-hour supportive services are needed for a resident in order to promote independence and dignity.

The main aspect of care that all facilities should focus on is the philosophy and environment in which the care is provided. The facility requires large numbers of staff in order to take care of individual needs like monitoring medication, diet for specific diseases like diabetes, and employing people who speak different languages in a multicultural facility. These attributes have a major impact on enhancing the quality of a resident’s life in their community.

Scott Ball in his book Livable Communities for Aging(sic) Populations talks about the challenges presented by the increased longevity the percentage of older adults and an area of neglect for decades. He argues in his report that the community should address to make its social structure more livable for an older person. Scott also talks about incorporating traditional planning which makes a community more livable. The areas of activity within a facility should be in close proximity to the aged physically and socially.

Regnier in his book Design for assisted living: a guideline for housing the physically and mentally frail explores ideas suitable for designing physical environments that extend the independence of individuals living in a nursing home. He also extends his ideas on services and building designs, which can contribute to emotional, physical, and looks at residents’ health care needs.

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70 Regnier, Design for assisted living.pq 3.
3.06. Requirements for An Aged Care Facility in Fiji

These ten features demonstrate weaknesses and strengths of a care environment design features.

1. Having a residential appearance

The facility appearance should have the characteristics of residential housing. The wall cladding and the roof pitch should match the surrounding context of the neighbourhood it is set into. These elements would determine the scale and proportion of a building and also its different functional spaces like an entry from the porch to the house. Regnier also suggests that larger spaces should be broken up to reflect residential scale examples. For instance the larger dining hall can be designed as a series of smaller private eating spaces for more intimate or family size groups. The building typology should look like a residence rather than a hospital facility to encourage homeliness.

There are different variations of residential types in Fiji. Most houses use corrugated metal cladding with timber framed structure, timber weatherboard with timber structure, or concrete block with reinforced steel structure. The use of textured material with tactile qualities should be used. Materials with smooth and non-textured qualities should be ignored. Paint colour to the interior wall should be soft and warm to allow even distribution of lighting in a room. Hanging of personal photographs art or traditional artifacts, treasured in one's life should be installed to the interior wall space to evoke the sense of feeling at home and can be unique for each resident’s unit. These qualities would provide a home-like environment.

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72 Regnier, Design for assisted living pg 4.
Figure 23. RSL Care Fairview, Providing feeling of residential scale so resident feel at home.  

Figure 24. Southwood Nursing Home, purpose built dementia care environment. The design has a small household cottage look with domestic scale kitchen and laundry. Units have their own front door.  

73 Figure 23. RSL Care Fairview, Providing feeling of residential scale so resident feel at home  

74 Figure 24. Southwood Nursing Home, purpose built dementia care environment. The design has a small household cottage look with domestic scale kitchen and laundry. Units have their own front door.  
2. Smaller Scale

Small groups of six to ten can be considered as being a second “family” so having a small number of residents living together and getting to know each other well is preferred rather than having a larger number living together. Fewer units can reduce the scale to achieve economic viability and also allow residents to develop the feeling of familiarity with their administrator and neighbouring residents. The smaller group also creates a positive interactive social space that is required in promoting mental health. Garden and courtyard spaces become communal areas for interaction for the small groups to socialize and also provide transition zone from public to private spaces.

Peter Zumthor’s project Serpentine Gallery Pavilion was designed as a meeting point and demonstrates at a small scale how the central courtyard space can create a relaxing place for people.

Figure 25. Peter Zumthor’s project Serpentine Gallery Pavilion

75 Regnier, Design for assisted living pg 4.
78 Figure 25. Peter Zumthor’s project Serpentine Gallery Pavilion
https://www.architectsjournal.co.uk/pictures/420x280fitpad[31]/6/5/6/1262656_ZUM_SER_015.jpg
A nursing care facility in United States Foulkeway at Gwynedd also displays interactive and visual perspective for residents looking out of their rooms. The building design encloses the garden space and creates a sense of secured space for the resident and community. The units are of residential scale with small communal spaces for social engagement.
3. Residential Privacy and Completeness

Resident’s having their own lockable room provides privacy, and providing a small kitchenette and bathroom gives a sense of safety and homeliness. The room size should also be flexible to allow personalized collectable items to be placed without compromising the ability to provide care. Some residents like to live with another person to make them feel secure. There should be enough room in a unit to allow sharing to occur and to allow for couples to have a separate larger room of their own within a larger shared common facility.

4. Persons Unique Individuality

Each resident has unique experiences gathered through their lives and this should be respected. Personalized items like furnishings should be displayed for easy identification on approaching a person's room thus displaying the unique qualities of every individual's life. In “A Pattern Language,” Christopher Alexander discusses how important it is to have a spacious room, which can be decorated with personal items signifying each individual's personal history. Gerontologist, James E. Birren argues that a person's life experience defines one's uniqueness must be considered rather than imposing a uniform understanding of everyday lives. These personalized belongings are an expression of the qualities that make every person unique. Birren also suggests that the living environment possible with a diverse group of people needs to provide for a mixture of activities to accommodate the needs of each individual.

81 Regnier, Design for assisted living pg5
84 Victor, Design for assisted living pg5
5. Promote Independence and Interdependence

In order to promote independence amongst residents, groups of elderly people living in the same area should include those who are independent and those who require more assistance. In this way the more disabled residents can learn and be comforted by the strength and behavior of their peers. Location of communal spaces and toilets should be located to encourage independence amongst residents and allow them to access these spaces without needing staff assistance.

6. Public and Private

The design needs to address changes in the experience one gets moving from a private space to a public space. Allowing a gradual approach that can be controlled by the change in scale as one makes a journey would assist this transition. Public space should be more open, and private spaces should be more contained promoting the feeling of enclosure.

7. Promote Mental and Physical health

Residents can enjoy a healthy living style by having their medication monitored, a good diet, and being physically healthy. Living within a community also creates positive social interactions, which contribute towards the positive mental health of residents. The surrounding environment, courtyards, gardens and multi-sensory environments, also contribute to physical and mental wellbeing. The use of familiar regional materials in the facility design would also help promote overall wellbeing within the care environment.
8. Family Connection

Family involvement in the support of caregiving should not stop once people are institutionalized. The facility should cater for the family to stay and take part in the facility activities to encourage the family connection by assisting other residents in social participation. Researchers Jones, Jeffrey, and Joyce suggest, that promoting family relationships and increasing friendships can decrease the cause of loneliness and assist in a person’s mental health. The lack of family and friend attachment can cause depression and symptoms of anxiety.\(^\text{85}\) There should be spaces within the care facility for larger family gathering for events and social gathering spaces. This will provide residents with the opportunity to be part of the family and vice versa. A need for short stay accommodation for visiting families should be included in the planning process. This would create a home-like feeling as opposed to being in a hospital or other institution where visiting hours are limited to family members.

9. Connected to Surrounding Community

The residents should be connected to the neighbourhood and surrounding community. Intergenerational programs should be introduced which assist families living close together; like schools were grandparents could interact with their grandchildren through the organized programs. The facility should also have the capability to incorporate social activities, which draw other people in. Activities like recreational sports, cafeteria, sports bar, hair salon, cultural centre and conference centre.

\(^{85}\) Jeffrey, Fitzpatrick, and Rogers. *Psychiatric-mental health nursing: an interpersonal approach*. pg 508
10. Accessibility for the Frail

Movement for frail elderly people should not be restricted or limited within the care environment.\textsuperscript{86} Change in levels and door openings should be designed for disabled access and provisions for an elevator should be made to avoid the use of stairs all the time. Ramps and grab rails should be installed within the facility, and the heights of room furniture and fittings should accommodate wheelchair accessibility creating a barrier-free care environment. Breakout rest areas along walkways and corridors should be provided allowing residents to relax and rest before continuing their journey.

4.01. Walumba Elders Centre

Architect: Iredale Pedersen Hook Architects
Development: Aged Care based on cultural and social needs

This project is located in Warmun, south of Kununurra, Australia. The facility was designed for the social and cultural needs of the Gija community. It is located close to a school and town centre ensuring that the Gija community elderly people continue their role as leaders promoting educational and cultural knowledge.87

Located in a tropical environment were heat is always an issue, the architects designed the building incorporating passively cooling strategy. The roof of the building has larger overhangs; corrugated roofing with reflective building foil lamination materials is used to deflect and reducing heat gain. The building structure lifts off the ground allowing circulation of air and allows cool shaded area under the structure for all ages to feel comfortable on a hot day. Nighttime activities are common and very important for the community. The facility is brightly lit up which helps to reduce crime and provides safety and security for the community and residents.

The facility maximizes the use of shading device and by use of white translucent polycarbonate cladding. This provides natural lighting to most covered areas and helping residents with poor eyesight to see well. The planning of the complex two wings is carefully orientated to gain maximum cool breeze throughout the facility. The rooms have separation creating communal spaces allowing both views and cross ventilation.

The planning addresses Aboriginal culture through the design of the two wings. They provide separation between male and female spaces, which help in avoiding inter-family conflict issues and provide larger communal space for family support. The staircases and ramp act as bridges that provide a link between the upper levels to the ground courtyard activity areas. Cultural activities like dancing performance, bushfire cooking and smoking addressing the Lore and Aboriginal culture, are performed at the communal area.\textsuperscript{89}

\textsuperscript{88} ibid.
\textsuperscript{89} ibid.
Figure 30. Open Courtyard with fire and smoke pit. 90

Figure 31. Main Entry of the facility with evening lighting. 91

90 ibid.
91 ibid.
4.02. **Im Der Wiesen Multi Generation Housing**

*Architect: Peter Ebner and Franziska Ullmann*

*Developers Motto: “We are taking our parents with us”*\(^92\)

This building is located in the central business district environment of southern Vienna, Austria. This building has a mixed-use development project with a multi-generational vertical living option. Amenities include medical facilities, retail, cafés, and offices with apartment living option. The apartments provide various rental options suitable for different age groups with a variety of dwelling types. Im Der Wiesen multi-generational living incorporates creating the concept of integrated shopping, working and housing within an urban community living. This design concept creates a focal point around a large courtyard space where there are daily activities like youth exercise classes, a daycare, and healthy living promotions through an awareness program. There is a Red Cross medical centre available to the general community. The centre is convenient for the elderly living in the community to age in place independently as per the mixed use of activities and assistance provided as per individual needs. There are various apartment types to suit the different family unit size and accommodate individual preference. There are thirty units, which are specifically designed for assisted living. The apartment is specifically designed for disabled people with a barrier-free layout with lower windows sill to allow better visibility to the central courtyard space. There are other various apartment layouts to accommodate temporary students, family and friends. These programs allow different ages to commune with different cultures and create a good example of a multicultural living arrangement. The buildings circulation is controlled by public access. There is a medical facility located on the second floor, which is at the same level as the apartment. To access the apartment on the opposite side, one has to go down the stair and walk across to the other side. There is no continuous central courtyard corridor. This circulation route is designed deliberately to allow security and privacy from unwanted public traffic.

Figure 32. Overall Floor Plans and Programatic Analysis\textsuperscript{93}

\textsuperscript{93} ibid, pg 38
The floor slab by the verandah is cut out to allow air circulation and light penetration. Specific cabinetry design allows the beds to slide under the raised kitchen floor whereby converting it into a living space during the day and a sleeping place at night.

94 Schittich, Christian, *Housing for people of all ages*, pg 39-41
All four corners of the development have accessible stairs to all levels with elevators on both ends. The separation between the stairs and the building allows cross ventilation into the courtyard space. Basement allows storage space and car parking for residences.
4.03. Senior Centre, Lich, Hesse, Germany

Architect: Pfeifer Kuhn Architects

The Senior Centre designed in Lich was built to improve the elderly living standard. It was an initiation taken by the state of Hesse, in Germany. The architect's design intent was to create an interactive domestic units type accommodation to achieve normality for residents with dementia. Eight dementia units are grouped together to create a residential community. Every individual unit has their own bedroom and bathroom with a small waiting room. This as per Regnier in my previous text states having a smaller scale unit where resident get familiar with their administrator and neighbouring resident creates a second 'family'.

The building layout is divided into three different parts. The central core of the building has two u-shaped wings with elderly assisted living units. Both u-shaped buildings create an enclosed central courtyard space with a communal space and a cafeteria. The two courtyards are closed with the independent living apartment located on the south wing. The independent living two-room unit is oriented to gain thermal heating from the southern direction. The living and the bedroom have a door that opens out to the balcony looking out at the views of palace gardens. All interior fitting and room design have a barrier-free design allowing uninterrupted access for a disabled person. All heights and dimensions of furniture and bathroom are designed for wheelchair accessible person.

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Figure 35. Different Accommodation options

97 Figure 35. Different Accommodation options
https://image.isu.pub/121223110629-c4741571ac674d2c9e28fda50c9b52ee/jpg/page_18.jpg
Figure 36. Internal courtyard 98

Figure 37. Room interior with lower windows 99

99 https://image.isu.pub/121223110629-e4741571ac674d2c9e28fda50c9b52ee/jpg/page_18.jpg
4.04. Selwyn Village

Archimedia 2012-2013.
Klein Architects: New residential care facility under construction.

The aim of the village: “To promote community living and companionship with residents and staff.”

Selwyn Village is located in Point Chevalier, Auckland. This development echoes traditional village structure set in a suburban community overlooking Waite Mata Harbour. Selwyn has a site area of 105,000sqm with 249 apartments, 23 rental cottages, 48 independent apartments and 16 dementia units. There are numerous residential options an individual can choose from, either a one to three bedrooms layout. The facility provides different levels of care within a community setting and avoiding the need for relocation to another facility. Includes a hospital, physiotherapy, medical centre, rest home and dementia unit that promote ageing in place. Additional specialized facilities like podiatrists, beauty therapists, acupuncturist and dental service are also available within the facility. Registered doctors and nurses are on site at all times providing medical service and encouraging independent living.

The facility operator constantly carries out development and upgrades to ensure the required standards are maintained. Currently, a new residential care facility is being constructed. To provide safety and security of resident the facility has a gated community with night security patrol. The facility has a variety of amenities to keep the residents physically and mentally active. Amenities consist of art and Craft Centre, games room, gymnasium, library, a licensed bar, spa pool, swimming pool and gardens. There also is a medical Centre, beauty therapist, hairdressing salon, mini market and a carpentry workshop for the resident.

Connection with the community is promoted by link bus to Auckland city and across-town, which can be accessed frequently from the facility. A buggy service is provided within the facility to ease the walking distance within the site. There is also a Neighbourhood drop-in centre that promotes residents remain active, by eating healthy and live independently in their homes longer. This centre runs the programme in conjunction with New Zealand Nutrition Foundation that aims to improve the health and quality of life. In addition the centre promotes a supportive environment for social interaction for the residents who live alone.

Figure 38. Mini Golf putting

Figure 39. Apartment Living with underground carpark

Figure 40. Coughlan Court
Figure 41. Community garden

Figure 42. Chapel

Figure 43. Village layout

Figure 44. Neighbourhood Drop-in Centre

101 Ghttps://earth.google.com/web/@-36.86593327,174.69936459,26.06360766a,515.73417346d,35y,-0h,0t,0r
Analysis

The Walumba Elders Centre provides a communal activity area, which is used for hosting different ceremoniial functions, and to promote interactive communal activities. Careful planning has been demonstrated in the placing of the fire pits within the courtyard to ensure large communal space for the ceremony to be observed and also ensuring fire protection for the building. The buildings overall design uses a robust material in response to the tropical climate and adds an aesthetic quality to the complex.

The Im Der Wiesen offers a multi-generation housing scheme to all age group. This facility gives a good example of intergenerational living and how the integrated program within the building can create a hub for community development on a particular site. This project of integrating people could be applied where people of different cultures and religions are living within the same facility, and hence breaks away from the social segregation within our societies.

The Senior Centre in Lich Hesse Germany provides an interactive domestic type unit to achieve normality for residents with dementia. Having a small group creates a family setting and also creates a positive interactive social space that is required in promoting mental health for dementia patients.

In the Selwyn village, there are various residential unit options, which individuals can choose from one, two or a three bedrooms unit. This development provides various levels of care within a community setting. These are the likes of a hospital, physiotherapy, and medical centre, rest home and dementia unit. A neighbourhood drop-in-centre aims to improve the health and quality of life while assisting elderly to live independently in their homes longer.
5.01. Site Selection Process

The proposed site is located in Lautoka on the western side of Viti Levu in the Fiji Island groups. Lautoka is the second largest urban centre of Fiji. During the last census, Lautoka’s population totaled over 50,000 residents.103 There are major manufacturing factories, a large sugar mill, an international seaport, a fisheries wharf, the second biggest hospital in the country, a bus terminal and an established retail area, a market, corporate offices, tertiary institutes, public library, cinemas, sports facilities and restaurants. The Lautoka fisheries wharf links the city to a number of smaller outer islands groups scattered in the Yasawas and Mamanuca group. The smaller island groups rely on food and medical supplies from Lautoka city. The elderly from these smaller islands get evacuated to Lautoka Hospital as per their individual health needs.

Figure 45. Define site within Lautoka city.104

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104 Figure 45. Define site within Lautoka city https://earth.google.com/web/@-17.61220975,177.45428937,33.42299951a,2921.11846083d,35y,-0h,0t,0r
Three potential sites were selected A, B and C as indicated in Figure 46. Each option was checked for its legal status, whether it was freehold, state-owned or native lease land. It was found that these sites have already been identified for future development by the Fiji local government. Finally, Site C was chosen because there was sufficient land required for the project and it can accommodate future extension.

The chosen site is within five minutes walking distance to all urban amenities, such as shops, public transport, recreational facilities, hospital, botanical gardens, aquatic centre (under construction), church, temple, mosque, and is surrounded by a residential community. The site is ideal for buildings that can be integrated with nature by providing breakout zones for family recreational activities, healing, and

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105 Figure 46. Site selection

https://earth.google.com/web/@-17.61220975,177.45428937,33.42299951a,2921.11846083d,35y,-0h,0t,0r
enjoyment of the environment. These would encourage social interaction between the resident living together within the proposed community.

The topography of the site has a gradual slope towards the city with pedestrian footpaths running on both sides of the road providing elderly people easy access to the city. There are public footpaths on both sides of the road leading into the city centre. These public footpaths are wide enough to accommodate disabled access, unlike most roads in Lautoka, which do not have continuous footpaths. The site has a natural creek flowing across with dense native trees either side that provides natural shading on really hot and sunny days.

The remaining two sites A and B were not chosen. Site A was too close to the sea with associated high risks of a tsunami and tidal surge during a tropical cyclone, which usually occurs during the months of November to April. Site B did not have sufficient land required for the project and was too close to the busy highway. The heavy traffic noise and pollution from motor vehicles would not provide a suitable living condition for elderly people, especially with respiratory problems. A major railway link to Lautoka sugar mill runs across the entry of the site. These issues mean neither site A nor B was suitable for the program to create an elderly care and rest home facility.

Figure 47. Site A
Figure 48. Site B

Figure 49. Mass model indicate site topography

Figure 50. Site cross section
5.02. Site Analysis

The proposed site is located adjacent to the Lautoka Hospital. The facilities for emergency and lifesaving equipment are only located in the divisional hospitals around Fiji. This hospital is located at the highest point in Lautoka city, which has been set as the evacuation point in times of possible Tsunami warning. There are two access roads connecting this site to the hospital, which is Hospital road and Thomson Crescent. It has been observed that traffic through Thomson Crescent usually gets busy during peak hour between the hours of 7 am - 9 am and 4 pm- 6 pm. The primary entry for the project site has therefore been located from Hospital road where there is less traffic. The secondary access is from Thomson Crescent and will be for visitors and the general public coming during the daytime. The secondary access will also provide a shorter access route for pedestrians who have travelled by bus or 10 minutes walk from the city centre.

Figure 51. Site photo corner of Hospital road and Thomson Crescent
The total site area is 26,613sqm. Fenner Creek runs across the site from the western end of the site which gradually slopes toward the northern boundary. There are lots of large native trees surrounding the site and also room for future expansion.

The creek creates a buffer zone and is an advantage in the design to create privacy and protection. The landscape creates a defensive barrier for privacy and security while keeping the environment oxygenated and the air temperature cool.

Figure 52. Fenner Creek
Figure 53.
Site Context

Engagement Diagram

Environmental Conditions

Figure 53.
Site Context
Figure 54.
Site Context

Greenscape and Gardens
Adjacent to the site is a children's park and playground, a kindergarten, primary school, high school, botanical gardens, aquatic centre, a special school for disabled children, and residential areas. The close proximity to medical facilities and doctors will be an advantage in the response time for emergency medical needs required by elderly.
Figure 57. Site Context and amenities
5.03. Programme

The proposed programme is to design a caring environment for a multi-generational living community with supportive care for the elderly to transit within a community as per their care needs while being connected to their families. The proposal will include different layouts of multi-generational living apartments that will be for destitute families and also promote independent living for the elderly. Some apartments will also be serviced with 24-hour support as per individual care needs and promoting home care. The aged care facility will have full time registered nurses and doctors to provide regular check-ups as per individual needs and will offer full time assisted residential care, respite, dementia care and end-of-life hospice palliative care.

Interactive communal activity spaces will be incorporated into the design to promote and showcase Fijian culture. The facility will have an activities area to showcase Fijian cultures and requires a large outdoor performance space for yaqona and fire walking ceremonies. To promote the Fijian community with elderly people recognized as leaders, the facility is located close to a school and town centre. The buildings overall design will use robust materials to respond to the tropical climate and add aesthetic qualities.

**Brief**

**Multi-generational apartment**

**Ground floor**

- Child care
- Short-stay / single bedroom apartment x 3 units
- Long –stay two bedroom apartment x 4 units
- Long –stay three bedroom apartment x 2 units
- Parking
- Activities area
- Security booth
- Bus shelter
1st, 2nd and 3rd level

- Short-stay / single bedroom apartment x 9 units
- Long-stay two bedroom apartment x 12 units
- Long-stay three bedroom apartment x 6 units
- Elevator
- Stair

Aged care facility

- Aged care units for 96 residents
- Respite units for 8 residents
- Dementia unit for 6 residents
- Hospice unit for 4 residents
- Resting huts

Nurses station

- Staff room
- Cleaners utility
- Sluice
- Shower
- Toilet
- Equipment and drug Storage
- Elevator

Central facility

Basement Floor

- 21 car parking
- Kitchen storage
- Plant room
- Generator/battery room
- Laundry
- Water storage tanks/pump room.
Ground floor

- Reception
- Waiting area
- Family rooms x 3
- Manager’s office
- Dining hall - 115 seats
- Bar
- Kitchen with open pre-kitchen area
- Toilets

First floor

- Large family room
- Prayer room
- Library
- Hair Salon
- Small meeting rooms x 2
- Conference room
- Administration offices
- TV room
- Toilets

Cultural centre

- Handicraft retail space
- Work space for onsite fabrication of handicraft
- Artifacts display area

Fenner Park Development

The development will also involve beautification of the natural creek with big river boulders to prevent soil erosion, and retain water during dry season. Small permanent market kiosks will provide covered secured shelter for families living in the multi-generational apartments to sell pot plants, traditional wedding clothes made out of tapa, and fresh vegetables are grown in the community garden as not everyone will be working in the city.
5.04. Initial Design Concepts

The proposed initial design programme was to create an aged care facility for displaced elderly people and also to provide the family connection through multi-generational living. The aged care facility will be divided into three different care options: low, mid and high.

These options will assist the elderly to live longer independently with support from their family while getting adjusted to the new community. This will provide a transition to a later stage of care, as they grow older. Getting used to the care environment will help in providing a therapeutic support and mental health, which can comfort the transition period.

Spaces for residents to have their own public and private spaces within the care environment will provide safety and security. The design would also incorporate traditional elements, which can be introduced to honour a multicultural and multi-racial society. The room layout will have communal spaces for both residents and families to interact with each other.

Figure 58. Initial Master Plan Concepts Options
Figure 59. Development sketches
Figure 6.0. Axonometric view of mass model
Figure 6.1. Mass Model Ground Floor
Figure 6.2. Mass Model First Floor
5.05. Design Response

Multi-generational Housing Facility

The multi-generational housing facility will provide low cost housing for a variety of family sizes. The scheme creates accommodation for families who have been displaced from their land, victims of natural disaster or for those who have moved to the city in order to financially support their family. Elderly people who have retired and do not own houses will have the option to move into this facility at an earlier stage. The close family connection with their grandchildren or spouse will make an easy adaptation to the aged care facility, as they get older. This will provide a platform for them to get familiarized with the community they live in and also to mix with the aged care residents during the day. It will allow them to keep active and socially involved keeping them independent for longer.

The ground floor will consist of a mix of single, two and three bedroom apartment units. People with disabilities will have the option to live on the ground floor but this will not limit them to other levels access by elevator. A child-care centre will provide families living within the community the convenience of having their children taken care of while they work in the urban centres.

The first, second and third levels will have various types of rental housing options for small or larger families to be accommodated. There are 21 one bedroom, 16 two bedroom, and 8 three bedroom apartments. Some one-bedroom apartments are allocated for temporary stay for families visiting residents in the aged care facility. Other apartments can be rented out to student doctors being within a close proximity to hospital and universities. This will be an advantage in case of medical emergency and natural disasters were a quick response would be required. The layouts and planning were researched according to Fijian living arrangements refer Appendix 10.03 case study.
Figure 6.3. Developed floor plans of multi-generational living apartment
Aged Care Facility

The aged care facility will provide each person with the monitoring and medical-based care on his or her individual needs. Generally, the facility is divided into low, mid and high level of care. The low care units are located on the southern end of the facility with the courtyard designed to keep residents active by providing space for recreational facilities like lawn bowling and mini golf putting. The mid care is located on the northern end taking into account the increased care requirements. Parts of the ground floor have zones, which can only be accessed within the units and which open out to private green spaces. This control will allow free and secure movement of residents with disabilities to access these zones on their own. The rooms are also within close distance to the nurse’s station for easy monitoring and response to care needs. The units on the first floor have access to the open courtyard and outdoor balconies positioned to focus on extensive views out to the activity areas. Each unit will have their own stair and elevators provided on each side of the corridor. The surrounding environment of existing and new landscape will be rejuvenating providing comfortable outdoor environments on hot days with small resting huts located around the site.

Each facility comprises a modular unit of two levels, each level has a cluster accommodating four residents and having two bathrooms. Each resident has their own lockable room opening onto a shared living area. Residents have a shared communal area where the family can also be temporarily accommodated. The open communal space can also be used as a prayer and social area. To provide specific orientation for Muslims’ prayer direction, the overall floor plan is oriented in the direction of Mecca. Rooms allow generous space for personalized furniture to be installed. The two rooms on both sides allow a shared option for couples. The toilet position is in accordance with both Hindu and Islam requirements with the orientation being north and south.
Figure 64. Process Sketches

Figure 65. Space planning and wind orientation
Figure 6. Developed floor plans for modular unit.
Dementia Unit

The dementia unit, a more secure care facility, has been designed to allow a higher level of care and control for residents, to prevent them from wandering all over the facility. This will not limit them from having their own courtyard, designed to be accessed internally within the facility. More specific multi-sensory gardens will provide dementia patients with a comfortable healing environment through a textured wandering path, a water feature and outdoor seating. Flower smells provide sensory stimulation. The location of the dementia facility is designed close to the children’s park and overlooks the school located on the opposite side of the road. The location of the dementia facility is placed away from the much busy and noisy central facility area to reduce disorientation.106 Excessive noise can be disruptive and can cause distress to a dementia patient. The internal courtyard will have a covered roof over, providing shelter from the intense sunlight and protection on rainy days, keeping the space usable at all times.

Hospice Unit

The hospice unit will provide 24-hour palliative care for end-of-life. The facility will provide families with a comforting environment that will assist them through the last stage of their loved one’s life. The unit will have spacious rooms with a larger breakout space for visiting family. There is room for sofa beds to allow a sleep over for families. The hospice is located close to the central facility make it easy for the family to visit loved ones regularly. The location also allows ample car parking for visitors arriving and a shorter walk to the unit.

Figure 67. Developed floor plan of Dementia Care environment

Figure 68. Developed floor plan of Hospice Care environment
Cultural Centre and Central Facility

The central facility is designed with a cultural centre at the entrance to facilitate multicultural activities. This entry also addresses the approach one makes as a visitor through the facility, where the iTaukei axis is represented as the traditional spatial arrangement. The doors symbolize the three main access points. The main entry door is for the visitor (Vulagi); the other for the house elders living within the facility and the third one is for the family, which acts as the secondary entry door. The cultural centre advocates educational and cultural knowledge through the care environment. The elderly and families living within the multi-generational and aged care facilities can use this space to demonstrate the skills they have gained during their lifetime. This will create a space to showcase and promote education to the young generation and financially support them through selling traditional artifacts to visitors and tourists who will come to the facility on a daily basis.

The central facility has a basement, ground and first floor. The ground floor has a larger dining facility, a large kitchen with an open preparation kitchen, which can be used by residents to promote activities, by learning healthily eating. The dining facility is located close to the activities and performance area, which makes it easy to observe cultural functions. This accommodates small and large communal gatherings and will have unobstructed views out to Fenner Park and the botanical gardens. There are small and large-scale family function and meeting rooms where families can be involved in encouraging and promoting social connection for other neglected residents as well.
KEY
1. MAIN ENTRY DOOR
2. CULTURAL CENTRE
3. DINING HALL
4. TOILET
5. PORTECOCHERE
6. STAIR
7. LIFT
8. REST HUT
9. MANAGERS OFFICE
10. RECEPTION
11. KITCHEN
12. PREP KITCHEN
13. BAR
14. FAMILY ROOM
15. DECK
16. WALKWAY
17. BASEMENT ENTRY
18. ACTIVITIES AREA
19. TV ROOM
20. HAIR SALON
21. MEETING ROOMS
22. ADMINISTRATION
23. STAFF MONITORING
24. LAUNDRY
25. STORAGE
26. PLANR ROOM
27. BATTERY GENERATOR ROOM
28. LIBRARY

Figure 70. Developed floor plans of Central facility and Cultural centre
Figure 7.1. Developed sketches illustrating Central facility interior spaces
The two entry points provide easy accessibility to the facility by visitors and also provide security to residents after hours. Residents also have a larger break out areas on the first floor with computer learning and a library area. A hair salon, administration office, conference centre and small meeting room can be hired by business organizations. The idea is to encourage businesses to use the facilities for conferences, which will generate income for the facility and promote social interactions amongst surrounding communities.

The basement floor will provide covered car parking for visitors and integrate pump and laundry rooms. A battery room for solar energy harvested during the day will be utilized for low voltage outdoor and indoor lighting. The facility will have emergency backup generators with automatic switchover in an event of power outage and natural disaster. The power supply will be very crucial since most of the facility will rely on it 24-7 for the operation of medical equipment and patient monitoring surveillances. The basement floor will also be used as a refuge shelter area in case of a severe tropical cyclone, should the ground and first floor structures fail.

![Figure 7.2. Developed Basement floor plans of Central facility](image-url)
Structure and Material

The exploration of the structural idea began while looking at the canoe house architecture used by iTaukei. They were built traditionally using local materials and a curved arch form of the roof to allow large span and protection from weather. These architectural forms are represented in contemporary resort designs located in western parts of Fiji. The design demands the need to sustain the impact of natural disasters for the safety of occupants, therefore the structure and the material choice was very important.

The building will also have cultural significance by the use of traditional techniques and modern materials to give the aesthetics of a contemporary Polynesian architecture. The fusion of both traditional Vale and canoe house structure was developed in the structural scheme as per diagram below. The roof is clad with timber shingles to have resemblance of a traditional thatched roof, having an advantage of longer lifespan requiring less maintenance, provides a good thermal insulation and can resist cyclone debris impact. The curved arch shape used in the roof design can easily be achieved with the timber shingle material compared to other materials like corrugated roofing. The Western Red Cedar shingles originate from North America but will be sourced from New Zealand. They are naturally durable and do not require preservatives making them a suitable product to use when harvesting rainwater.

The robust glue-laminated timber arched structure would be imported from Australia or New Zealand due to the technology needed in the fabrication process. Although the form of the curved portal frame structure can easily be substituted by steel without altering the design concept, the preference is for the glue-laminated timber arch, which will have a high level of aesthetics and ductility. The structure allows flexibility in resisting seismic forces as the glue laminations allow ductility when the tension force is applied.107

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107 Paulo J. S. Cruz, Structures and architecture: concepts, applications and challenges (London: Taylor & Francis, 2013). pg80
Further structural engineering will require looking into the connection joints in order to design a structurally sound building.
The buildings in this project will be constructed with locally sourced materials. The exterior wall cladding will be a combination of treated weatherboard and colour bond corrugated profiled steel, locally manufactured and crafted to suit the design intent. The walls will be built with treated and structurally graded timber frames. The ground floor comprises a concrete slab along the interior habitable space and corridor and the mid-floor will be framed with timber with timber strip flooring. Non-slip vinyl flooring will be laid on the floors of the corridor. Structural columns will be clad with natural river stones similar to the walls of the aged care exterior bathroom. This aesthetic will represent the traditional techniques used in the foundation of the iTaukei house.

The central facility interior flooring will have non-slip tiles and timber textured vinyl flooring to break the large floor space into smaller communal spaces. The basement, ground and first floor will have reinforced concrete block walls with a circular column structure to support curved glue laminated timber columns. The multi-generational building tectonics use reinforced concrete block walls with concrete column and beam skeleton. This design is driven by the demand for high structural integrity due to the height of the building and its large floor areas. Overall window systems of the facility will be cyclone proof aluminium louvres and high wind resisting clear structural glazing systems to provide unobstructed exterior views. The wide roof overhangs and aluminium louvre blind systems will provide shading from the intense heat of the sun.

The durability of all the materials will be tested within the local environment to ensure they suit the climatic conditions of the Fiji Islands.
Figure 74. Exploring collage of structures and materials
Sustainable Design

The design incorporates passive strategies to naturally ventilate the building in order to keep the running cost down. The facility will not be limited to mechanical ventilation, as Fiji's average year-round temperature is between 26 to 31 degrees with a maximum of 35 degrees. All the buildings are orientated to take advantage of the southeasterly prevailing wind and building separation allows cross ventilation to occur. The roof form allows cool air to be collected and funnelled down to the lower levels by mechanically controlled louvres to open and close. These controls also allow air sealed lock mechanism during a cyclone. Fixed cyclone rated glazed windows installed throughout the south face of the roofs allow natural daylight keeping the room well light by reducing glare. Big bi-folding window openings allow the free flow of air and unobstructed views.

The facility's orientation on the site with all its roofs designed facing north will gain year round solar energy, which will be harvested and stored for night lighting and for emergency, keeping the running cost down. Rainwater harvesting can be used in an emergency as Lautoka has a below average rainfall compared to other part of Fiji. Grey water tanks installed underground located close to each building will provide enough water for surrounding trees, gardens and lawn during dry seasons.

109 Ibid.
Figure 75. Developed ventilation through passive strategy added by actively controlled louver blades

Figure 76. Developed sketches illustrating final scheme
Conclusion
Conclusion

There is a rapidly raising elderly population in Fiji, which will have a major impact on the country’s social welfare system. There are a number of reports about the issue and how to deal with it but there has not yet been any physical architectural implementation. Fiji urgently needs to address the issues and this research has concluded with a possible solution through providing a care facility that encourages ageing in place while having provision for a higher level of care.

A number of methodologies were used in this research including literature study, precedent study and an analysis of the site context. This informed the design process for a multicultural, multi-generational aged care facility in Lautoka city on Fiji’s largest island, Viti Levu. Traditional forms are integrated within a contemporary architecture, which responds to the climate, site context, building function and construction techniques to create a place of belonging.

The architecture programme incorporated multicultural and multi-generational living arrangements to enable social and physical support conducive to a care environment, which promotes ageing in place while honouring cultural and traditional values. The outcome of this research has provided a model to accommodate the future increase in the elderly population. It also creates awareness within Fijian society by providing an alternative care environment designed for elderly Fijians.

There needs to be further programmes investigated in terms of providing appropriate architecture based research to accommodate the elderly in a variety of Fijian settings including semi-urban contexts and smaller rural solutions. Additional study is required in the care environment for aged care, which surrounds the community, and looks at providing sufficient high-level care and support to the wider Fijian society. Social pension and public funding need to be implemented to providing progressive ageing in a place while also providing options for individual care needs to encourage independent living within a society.
The design response to the needs of elderly citizens living in an urban Fijian society is not offered as the only solution for the needs of the individual however it proposes a care environment for the elderly that is strongly informed by the social and cultural as well as physical needs of the elderly living in a multicultural society.
Multi-generational Housing Facility
One Bedroom Apartment

Diagram of a One Bedroom Apartment showing rooms such as Bedroom, Kitchen, Storage, Prayer Study, Dining, Living, WC, and Laundry.
Two Bedroom Apartment
Three Bedroom Apartment
Aged Care Room Layout
### Aged Care room layout

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<td>STORAGE</td>
<td>DRESSER</td>
<td>TV</td>
<td>SHOWER</td>
<td>WC</td>
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</table>

- **Storage**: 6
- **Dresser**: 7
- **TV**: 8
- **Shower**: 9
- **WC**: 10
- **HB**: 11
Exterior Perspective Aged Care Wing

Interior Perspective Aged Care room
Dementia Care Facility

KEY
1. BEDROOM     9. NURSE STATION
2. KITCHENETTE 10. SLIJICE
3. LOUNGE       11. CLEANERS
4. TOILET       12. STORAGE
5. MAIN ENTRY DOOR 13. SHOWER ROOM
6. STAIR       14. BRIDGE
7. OUTDOOR SEATING 15. WATER FEATURE
8. REST HUT    16. FENCE
Hospice Unit
Central Facility and Cultural Centre
Exterior Perspective Central Facility

Interior Perspective Central Facility
Exterior Perspective View - Multi-generational Housing

Courtyard Activity Area
Aged Care Corridor

Multi-sensory courtyard
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7. First Chinese settle

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11. “Vale ni Moce” sleeping house/elevation view
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12. Mana island resort arrival /Likuliku resort fiji arrival

13. The canoe house
14. Spatial organization inside an iTaukei house (Vale)

15. iTaukei traditional house (Vale)

16. Hindu residence

17. Muslim residence

18. Muanivatu Squatter Settlement
http://4.bp.blogspot.com/_tEwpA8nFTxw/S7wmoDAB_NI/AAAAAAAAAtM/3Bqo0MrEhDY/s1600/muanivatu.jpg

19. Vunidogola village resettlement site

20. Cyclone Winston damaged an entire village on Koro Island.
http://www.abc.net.au/news/image/7188054-3x2-940x627.jpg

21. Medical facilities in Fiji.

22. Furniture arrangement diagram from Hospitality design for the graying generation
Alfred, Hospitality design for the graying generation, pg34.

23. RSL Care Fairview, Providing feeling of residential scale so resident feel at home

24. Southwood Nursing Home, Designed purpose built for dementia people care environment.
The design has a small household cottage look with domestic scale kitchen and laundry. Units have their own front door.

25. Peter Zumthor’s project Serpentine Gallery Pavilion
https://www.architectsjournal.co.uk/pictures/420x280fitpad[31]/6/5/6/1262656_ZUM_SER_015.jpg
26. Foulkeway nursing care facility, Gwynedd, United States

27. Foulkeway nursing care facility, Gwynedd, United States

28. Cross section showing communal space under structure

29. Ground floor plan adapted from Pedersen Hook drawings

30. Open Courtyard with fire and smoke pit.

31. Main Entry of the facility with evening lighting
https://images.adsttc.com/media/images/5540/66b0/e58e/ce70/6c00/0235/large.jpg?1430283933

32. Overall Floor Plans and Programatic Analysis
Schittich, Christian, Housing for people of all ages. pg 38

33. Different accommodation layouts
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34. Cross section
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35. Different accommodation options
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Appendix 10.0
10.01 Appendix 1 Author’s case study on three common iTaukei house types

Type 1: Straight walls with ends rounded
Type 2. Rectangular wall without centre-post
Type 3. Rectangular wall with centre-post
10.02 Appendix 2  Cultural Ceremonies in Fijian Society

iTaukei Ceremonies

Various traditional iTaukei ceremonies including Tabua (sperm whales tooth), Yagona (Kava or grog), Meke and fire walking as still being practiced by them. Tabua a traditional ceremonial ritual presented to a distinguished guest as the highest token of respect of a favor being requested. The ceremonies are still observed for marriages, births and funerals. Other cultures have also adapted yagona drinking as more socially then traditionally.

Yagona Ceremony
https://userscontent2.emaze.com/images/66c1c02d-13a9-4476-9aea-5fedae4de13b/8eb434946928e8719f1f08b97635463.jpg

Meke is a communal dance performed on special occasions. This signifies the historic events, culture and legends and through performance becomes a medium that is handed down to the younger generation.

Itaukei women perform ceremonial dance (Meke)
Firewalking

An ancient ritual performed by the island tribe of Beqa, an island south cost of Viti Levu. Males normally perform this ceremony. Circular pit with stones are lit up by placing fire wood hours before the ceremony is performed. Devotees take turn to walk across the pit several times on red-hot stones unharmed.

Fiji Indian Culture

The Girmitiyas that came to Fiji did not forget their culture and tradition. They were forced to share single room, food and worked together with different cast of indians breaking down the caste system. The living arrangement created an extended family with unique religious ceremonies and rituals still relevant in contemporary Fiji Indian society. There are some religious ceremonies performed outdoors like firewalking (Trenial), Ganpati Utsav, and some religious rituals are performed indoors called Havan. Attain blessing through prayers to God by purification of their homes and touching the feet of elders and priests. Touching of feet has been traditionally and customarily essential showing respect to the elderly, those who have accomplished and attained spirituality.110

Fiji Indian Firewalking Ceremony
http://photos1.blogger.com/blogger/977/3125/1600/DSC01238.jpg

Fiji Indian Ganpati Utsav
The author conducted this case study to better understand the living arrangements of Fijians.
RURAL LIVING
RESEARCH VITOOGO VILLAGE HOUSE
MAGA RESIDENCE
ETHNIC: FULANI
RELIGION: CHRISTIAN
AGRICULTURE: YANK WAXO LAND
TOTAL LIVING AREA: 1000 sqm

HOUSE A
MAIN FARM HOUSE

ANALYSIS
Total Occupants: 15
- Male: 13
- Female: 2
- Adult: 2
- Children: 13
Total Floor area: 133 sqm
Total Livable area: 100 sqm

FLOOR PLAN

SCALE: 1:200

Private
Semi Private
Bank Public
SUBURBAN LIVING
RESEARCH DELAI SAWENI SETTLEMENT

ALI RESIDENCE
ETHNIC - INDIAN
RELIGION - MUSLIM(SUNNI)
SUBDIVISION LEASE LAND
TOTAL LOT AREA 294 sqm

HOUSE A OWNERS HOUSE

ANALYSIS
Total Occupants 4
Elderly People 1
Adult 1 1
Children 1
Total Floor area 85 sqm
Total Livable area 65 sqm

FLOOR PLAN

SCALE 1:200

PRIVATE

Semi Private

Semi Public

Public
SUBURBAN LIVING
RESEARCH DELAI SAWENI SETTLEMENT

RATU ISUWA RESIDENCE
ETHNIC - ITAUKEI
RELIGION - CHRISTIAN
SUBDIVISION LEASE LAND
TOTAL LOT AREA 524 sqm

HOUSE A
OWNERS HOUSE

ANALYSIS
Total Occupants 9
Male 3
Female 6
Elderly People 1
Adult 1
Children 7

Total Floor area 160 sqm
Total Livable area 130 sqm

HOUSE B
SON HOUSE

ANALYSIS
Total Occupants 3
Male 1
Female 2
Elderly People 1
Adult 1
Children 1

Total Floor area 27 sqm
Total Livable area 20 sqm

FLOOR PLAN
SCALE 1:200
SUBURBAN LIVING
RESEARCH DELAI SAWENI SETTLEMENT

DHUP RESIDENCE
ETHNIC - INDIAN
RELIGION - HINDU
SUBDIVISION LEASE LAND
TOTAL LOT AREA 292sqm

HOUSE A
OWNERS HOUSE

ANALYSIS
Total Occupants 4
Elderly People 1
Adult 2
Children 1
Total Floor area 60 sqm
Total Livable area 50 sqm

HOUSE B
RENTED HOUSE

ANALYSIS
Total Occupants 3
Elderly People Male
Adult 1
Children 1
Total Floor area 40 sqm
Total Livable area 30 sqm

HOUSE B

FLOOR PLAN
SCALE 1:200 m

PRIVATE
Semi Private
Semi Public
Public
Full name of author: Shableet Chandra

ORCID number (Optional): ..........................................................

Full title of thesis/dissertation/research project ('the work'):
CULTURAL HABITAT FOR THE ELDERLY: AN AGED CARE FACILITY IN A MULTI-CULTURAL FIJIAN SOCIETY

Practice Pathway: ARCHITECTURE

Degree: M.ARCH (PROOF)

Year of presentation: 2017

Principal Supervisor: Minty Hill

Associate Supervisor: Chris Murphy

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is submitted in partial fulfillment for the requirements for the Unitec degree of Master of Architecture (Professional)

Principal Supervisor: MIN HALL

Associate Supervisor(s): CHRIS MURRAY

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I confirm that:

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• The contribution of supervisors and others to this work was consistent with the Unitec Regulations and Policies.
• Research for this work has been conducted in accordance with the Unitec Research Ethics Committee Policy and Procedures, and has fulfilled any requirements set for this project by the Unitec Research Ethics Committee.

Research Ethics Committee Approval Number: N/A

Candidate Signature: _______________________________ Date: 11/10/17

Student number: 1409732.