Climate Resilient Honiara

Wind Valley Community Profile

December 2019

ADAPTATION FUND

UN HABITAT
FOR A BETTER URBAN FUTURE

RMIT UNIVERSITY

Acknowledgements

Funding

This project is funded by the United Nations Framework Convention on Climate Change (UNFCCC) Adaptation Fund and administered by the United Nations Human Settlement Program (UN-Habitat).

Local partners are the Ministry of Land, Housing and Survey, the Ministry of Environment, Climate Change and Disaster Management, and Honiara City Council.

Scientific advice to the project is provided by RMIT University, Australia.

Geospatial data

The geospatial data used in this report is derived from a LIDAR dataset provided by the Ministry of Health and Medical Services (MHMS) and is subject to copyright.

AAM completed a LiDAR and aerial imagery survey commissioned by the Ministry of Health and Medical Services (MHMS) between 24 May and 7 June 2017.

Spatial data in the household survey was collected using the Survey123 app with a GARMIN GLO2 GNSS receiver. This provided the spatial data with an accuracy of between 2-5 metres.

Technical support

The household survey was conducted in partnership with Cadasta Foundation (USA) as a pilot of its suite of technologies. The project received technical support from Cadasta Foundation and the development team at Esri Australia.

Authorship

This report is authored by Serene Ho, Mariana Dias Baptista and Tarsilla Lehmann, with geospatial analysis support provided by Anne Lam, all from RMIT University.

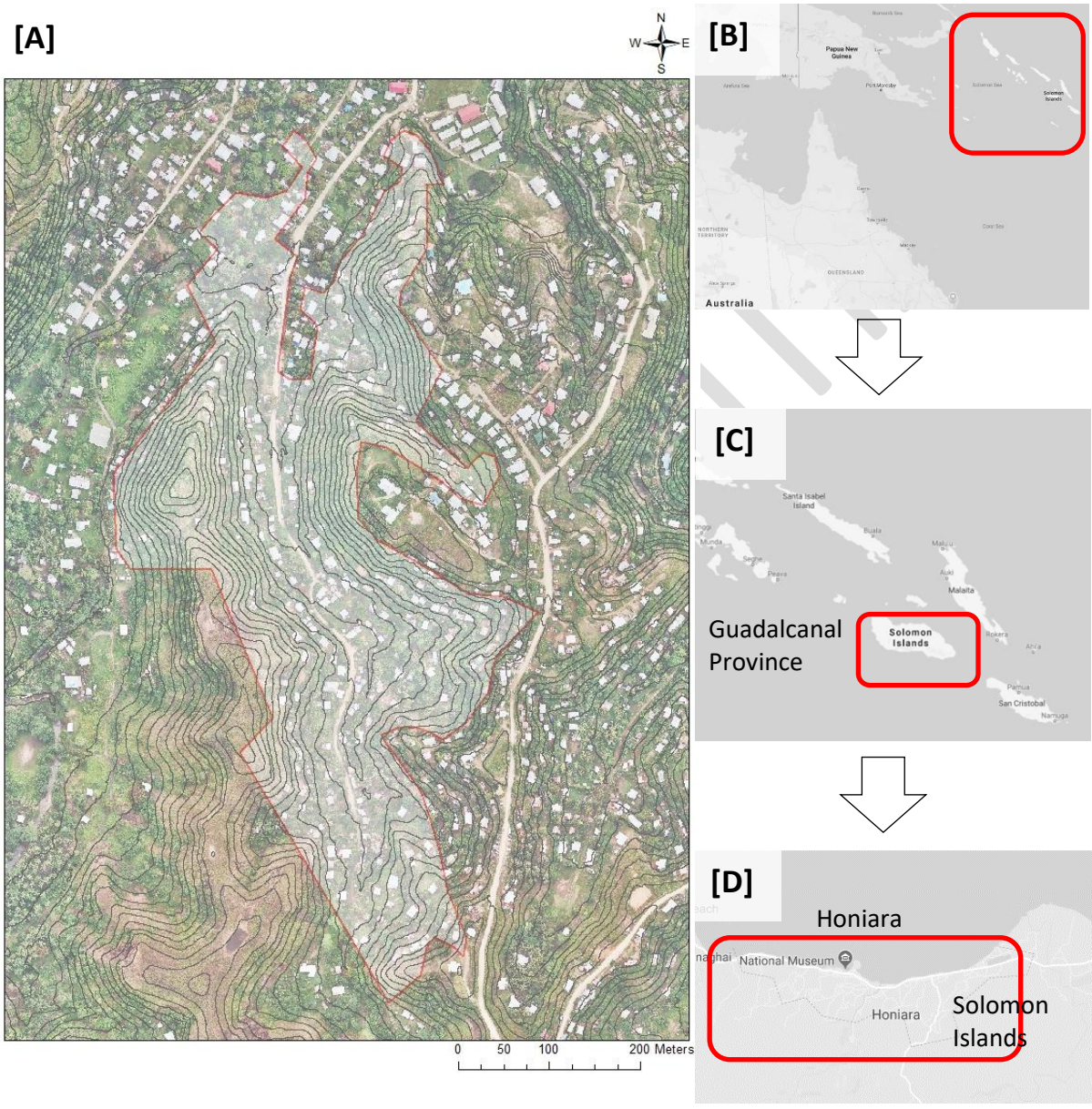
This work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License

http://creativecommons.org/licenses/by-sa/4.0/

CONFIDENTIAL

Map of Wind Valley

A map of Wind Valley is shown below and its situation in Honiara and Solomon Islands. Maps (A): Wind Valley settlement with 5-metre contour lines (copyright MHMS LIDAR data); (B) Solomon Islands; (C) Guadalcanal Province; (D) the capital city of Honiara.



Summary of Wind Valley Profile

A total of 220 buildings were approached during the household survey, with 102 buildings having households able to participate in the survey (46% response rate based on buildings). This resulted in 108 household responses, with almost half (45%) of the respondents being female. This profile of Wind Valley has been developed from the data collected from those households, integrated with details from a settlement survey and LiDAR data.

Statistical snapshot (based on 108 households)

POLITICAL	**Ward**	Nggosi Ward
PHYSICAL	**Estimated settlement area (m^2)**	0.5m^2
PEOPLE	**Estimated settlement population**	691 persons
	No. of males	333 persons
	No. of females	358 persons
	Age distribution	
FAMILY	**Average size**	6.5 persons
	Average sex composition	3 males, 3 females
	Religion	Church of Melanesia, South Sea Evangelical or Catholic Church
	Most common duration of residence	More than 10 years
DWELLINGS	**Median size of a house (m^2)**	50 m^2
	Median number of rooms in a house	3 rooms
	Median number of rooms used for sleeping in a household	2 bedrooms
	Main garden type	Home garden
TENURE	**Main tenure type**	TOL (41%)
	Perception of tenure security	Yes (77%); No (23%)
MAIN SOURCES OF HELP	**Top three sources of help to respond/prepare for hazards**	Neighbours, Wantoks, Family
	Main method of communication in adverse times	Mobile phone (65%)

CONFIDENTIAL

Physical profile

Wind Valley is an inland urban settlement located in West Honiara, in the White River suburb of Nggosi ward. It is serviced by three roads: two on the eastern and western ridges, and one road leading from Mendana Avenue. Wind Valley measures approximately one kilometre in length and half a kilometre in width and is characterised by steep slopes. The population density of the settlement appears to have doubled over the last 10 years, with many houses built on the steep slopes or valley floor. Known climate hazards for Wind Valley are flood risks, especially along the local stream (up to three metres in some areas) and landslides.

Socio-demographic profile

The survey recorded 691 persons in the 108 participating households, with an almost equal split between males (48%) and females (52%).

Persons aged 15-49 years of age comprised the largest age group (60%), followed by youth (under 15 years) (35%). Elderly persons (50 years and over) only constituted 0.05% of the population. 7.5% of the population (eight persons) were recorded as having a disability. The average size of a household is 6.5 persons.

A typical household in Wind Valley is composed of six people: three females and three males. Four persons will fall in the age group 15-49 year and two of them will be younger than 15 years old.

Most households have origins in Malaita Province and would have lived on average in Wind Valley for a period of five to nine years. The top three reasons for moving to Wind Valley are to access greater opportunities (work, education), to be with family, and because of social or economic problems in their home Province.

The dominant language spoken and used is Pijin, followed by a range of Malaitan languages. Most of the community belong to either the Church of Melanesia (27%), South Sea Evangelical (27%) or the Catholic Church (21%). Most attend a church that is located outside the settlement (85%).

Economic profile

On average, 1.6 persons per household are employed in work that provides a cash income. This is primarily through employment outside the settlement with the average regular monthly income per household lying in the range of SBD$1501 - $2000.

18% of households reported irregular income, commonly attributed to work instability and daily variability of income from selling household produce at markets.

37% of households reported an inability to save. High expenditures appear to be the main reason for this, particularly on rent, utilities and school fees.

To supplement livelihood and food security, 48% of households grew crops for subsistence purposes. This is mostly in home gardens, although some have bush/forest gardens located less than a 20-minute walk from their house. 12% of households (13 households) raised livestock which is typically sold. These production activities are undertaken predominantly by men and women between 15-49 years old.

CONFIDENTIAL

Housing profile

Most of the houses in Wind Valley have been built in the last 10 years, with 35% (37 households) being less than five years old. The oldest house recorded was 30 years old. The median size of a house is 50m^2, with three rooms, of which two are used for sleeping.

48% of households (52 households) reported that they did not consider their houses to be structurally safe, although there did not appear to be a link between perception of safety with the age of the house.

31% of households (34 households) reported making improvements/extensions to their houses. The main reasons were for space and structural upgrades. These improvements/extensions were mainly financed by household savings (19%).

The reason for households not being able to make improvements to their houses was mainly attributed to finances – either lack of money or lack of access to financial assistance or support. Other reasons provided included lack of space, tenure security, materials and health. If households had capacity and resources, main desired improvements/extensions focused on increasing liveable space (29 households), a new and better house (15 households), and making repairs or renovations.

Utilities profile

Water

49% of households have water on their premises, of which 41% reported their water quality as being good (i.e. no need for treatment before drinking). The main source of water in Wind Valley comes from pipes in the yard/plot of households, followed by pipes into the house, and public tap/standpipe.

Of the 59% (64 households) that reported their water quality as being average or poor (i.e. requiring treatment before drinking), almost half do not treat the water before consumption (31 households), and less than half boil the water (30 households).

86% (93 households) have access to water on their premises or within less than 30 minutes from their houses; 15 households spend more than 30 minutes every day getting water. The people involved in this activity are commonly men and women between 15-49 years old.

Sanitation

47% of households (51 households) have improved toilet facilities. Of these, 39 households have toilets located within the household and 12 have toilets shared with other households. The rest of the households (53%) have unimproved toilets.

67% of households (72 households) reported having a drainage system on their property. The effectiveness of the system was reported as average in 28 households and poor in 24 households, with only 20 households having a good drainage system.

33% of households (36 households) did not have drainage within the house. Of these, 21 households identified that they took no action regarding their drainage situation mainly due to the presence of slopes that provided natural drainage. Two households reported being limited in their ability to manage drainage due to restrictions of space within the community.

CONFIDENTIAL

Household waste

64% of households (69 households) burn the rubbish they produce, while 30% of households (32 of households) dispose it into the river.

Power

31%) of households (33 of households) are connected to a metered power source. 91% of the connected households have a cash power connection and 9% have a kilowatt power connection.

40% of the community is not connected to a metered power source and mainly use solar panels as their source of power).

In terms of utilities, better utility services (30%), water quality (22%) and sanitation (22%), were all highlighted as significant areas of concern for the households surveyed.

Land tenure profile

64% of households (69 of households) confirmed that they possess appropriate legal documents to occupy the land, with 31 households reported being the owner of the land. 20 households hold an FTE and 26 households hold a TOL. Three households who currently hold TOLs have received an offer of a grant of FTE; however, none have converted.

18.5% of households (20 households) reported experiencing disputes over land ownership. The majority of these were with a close neighbour, relative or relative of the owner of the land. Other disputes over land ownership involved other members within the community, as well as community leaders. Nine households have resolved their disputes.

23% of households (24 households) did not feel secure on their land, and a majority replied that increased security of land tenure would be key to remedying this issue.

Climate change and disaster profile

The top three most problematic natural/climate hazards identified by the community are **landslides, flooding and storms/cyclones**. When asked if they thought whether the occurrence of these events is getting worse or staying the same, most people responded that they thought flooding and extreme heat were getting worse. These hazards tended to cause damage to property, impact on physical health and impact on ability to earn income.

A large proportion of households reported proactive and reactive activities as the main way of responding to hazard events. These included working together, building and/or rebuilding infrastructure, digging/ clearing grounds, attending to crop regeneration (replanting) or clearing of damaged trees/crops. Seeking support was also a significant theme, either from family, community or government ministries. However, 7% of households reported not knowing how to respond to hazard impacts, either due to no experience or lacking local knowledge on how to respond.

Three key things were identified as most useful in helping households to be better prepared for climate change and disaster events: **improved equipment access** (e.g. mosquito nets, fans, radios and tools, etc.), **evacuation planning and evacuation centres**, and **building infrastructure** (e.g. protective/support walls, drainage and water tanks).

CONFIDENTIAL

Community strengths and weaknesses

56% of households responded that working together was the main strength of the community in times of adverse conditions. Similarly, ability and capacity to respond and deal with hazard impacts were identified as a strength (13% of households).

With regards to the challenges and weakness of households in Wind Valley, respondents identified limitations in equipment and tool access as one of the main challenges of households (Figure 52).

Financial limitations and a lack of assistance and support were also reported as key challenges for households, as well as planning (with regards to evacuations) and preparation for hazards. Households also identified weak support from family, community and NGOs. Human effort was also highlighted as a significant weakness within households.

Housing structure profile

72% of the households (78 households) in the community had roofs made of metallic materials and these tended to be of good or average condition. 26% of households (28 households) had roofs which used traditional materials (e.g. straw, thatch) but more than half these were of poor condition.

64% of households (69 households) had walls made of wooden materials which were assessed to be of good or average condition.

Floors of households were mainly constructed using wooden planks (91% of households).

93% of households lived in buildings with posts (stilts). 67.5% of households (73 households) used wood for these posts, with concrete or brick identified as the second most utilised material (22 households).

Most dwellings surveyed (88%) were identified as single-storey buildings, with 12 households assessed as double-storey buildings. One household was identified as living in a building with more than two stories. Almost 70% of the households surveyed were assessed as being situated on medium to high slope sites. The data collected did not show a strong correlation between height of household floor above ground with steepness of the site.

CONFIDENTIAL

Acronyms

CRH	Climate Resilient Honiara project
FTE	Fixed Term Estate
HCC	Honiara City Council
HCYC	Honiara City Youth Council
MECCDM	Ministry of Environment, Climate Change and Disaster Management
MLHS	Ministry of Land, Housing and Survey
MHMS	Ministry of Health and Medical Services
MOU	Memorandum of Understanding
NDMO	National Disaster Management Office
TOL	Temporary Occupancy License
UN-HABITAT	United Nations Human Settlements Program
UNFCCC	United Nations Framework Convention on Climate Change

List of Figures and Tables

Figure 1. Five 'hotspot' urban settlements targeted by CRH Project. 1
Figure 2. Settlement map with roads (Source: RMIT, adapted using Google Earth). 2
Figure 3. Change in development between 2009 (left) and 2019 (right). 3
Figure 4. Different perceptions of settlement boundary. 4
Figure 5. Map of flood risk in Wind Valley (Source: World Bank, 2019). 6
Figure 6. Top three reasons for settlement in Wind Valley. 7
Figure 7. Family origins of Wind Valley community. 8
Figure 8. Languages spoken in Wind Valley. 8
Figure 9. Provincial languages spoken in Wind Valley by number. 9
Figure 10. Household religion and location of church relative to settlement. 9
Figure 11. Distribution of age groups of Wind Valley population. 11
Figure 12. Average number of people living in a household (108 households). 11
Figure 13. Settlement resources (Copyright MHMS LIDAR data). 12
Figure 14. Main source of household income. 13
Figure 15. Regularity of monthly income. 14

CONFIDENTIAL

Figure 16: Ability to save income. 14
Figure 17. Proportion of households growing crops and/or raising livestock. 15
Figure 18. Distribution of age and sex of members of the household who are mainly involved in growing crops and or raising livestock. 15
Figure 19. Types of gardens households have. 16
Figure 20. The household perception of structural safety of house and age of the house in years. 17
Figure 21. Aspects of housing that household would like help with. 17
Figure 22. Reasons for making improvements/extensions to the house. 18
Figure 23. Type of improvements made by households. 18
Figure 24. Main sources of financing house improvements/extensions. 19
Figure 25. Types of desired improvements by households. 19
Figure 26. Main reasons for households' inability to undertake improvements. 20
Figure 27. Main source of water in the household. 21
Figure 28. Amount of time involved in getting water. 21
Figure 29. Age and sex categories of people involved in getting water. 22
Figure 30. Water quality and treatments used to improve water quality. 23
Figure 31. Types of improved toilet facilities. 23
Figure 32. Types of improved toilet facilities and whether these are private or shared. 24
Figure 33. Distribution of households with private vs. shared toilets (Copyright MHMS LIDAR data). 24
Figure 34. Type of toilet in improved or unimproved facilities. 25
Figure 35. Household drainage and efficiency. 25
Figure 36. Household drainage management. 26
Figure 37. Ways of disposing the household rubbish. 26
Figure 38. Aspects of utilities that households would like help with. 27
Figure 39. Proportion of households with legal documents to occupy the land and relationship between survey respondent and landowner. 27
Figure 40. Proportion of households with an agreement to occupy the land. 28
Figure 41. Distribution of houses with an agreement to occupy the land (Copyright MHMS LIDAR data). 29
Figure 42. Existence of ownership disputes. 30
Figure 43. Types of parties involved in land disputes. 30
Figure 44. Dispute resolution. 31
Figure 45. Perceptions of land security and aspects of tenure that would make households feel more secure. 31

CONFIDENTIAL

Figure 46. Top three most problematic natural/climatic hazards. 32
Figure 47. Household perceptions of the severity of hazard events. 32
Figure 48. The top three problems caused by the top three hazards. 33
Figure 49. What would aid households to be better prepared to respond to hazards. 34
Figure 50: Strengths of households. 35
Figure 51. Weakness and challenges of households. 36
Figure 52. Person or organisation a household would seek help from to respond to hazard impacts (blue) vs. where would they seek help from to prepare for a changing climate (orange). 37
Figure 53. Method of communication for seeking help. 38
Figure 54. Methods used by the households to be prepared for disaster or hazard events. 38
Figure 55. Type of material used and conditions of the roof. 40
Figure 56. Examples of metal (A) and traditional materials (B) roof. 40
Figure 57. Type of materials used and conditions of the walls. 41
Figure 58. Examples of wood (A) and metal (B) walls 41
Figure 59 . Type of flooring material 42
Figure 60. Type of material used on posts (stilts). 42
Figure 61. Height of the house (from the ground) and the number of stories. 43
Figure 62. Slope type that households are situated on. 43
Figure 63. Distribution of households by floor level height above ground and slope of site. 44
Figure 64. Examples of houses located on medium and high slope levels. 44
Figure 65. Distribution of houses by slope of site where house is located (Copyright MHMS LIDAR data). 45

Table 1. Percentage of the community distributed by sex, age group and disability 10
Table 2. Average characteristics of household composition. 10
Table 3. Working population and economic profile of Wind Valley settlement 13
Table 4. Median size and number of rooms in Wind Valley households 16
Table 5. Gender/age distribution in water sourcing activities. 22

CONFIDENTIAL

Table of Contents

Acknowledgements i
Map of Wind Valley ii
Summary of Wind Valley Profile iii
Acronyms viii
List of Figures and Tables viii
Table of Contents xi

1. Introduction 1
2. Socio-demographics 7
3. Livelihoods and Production 13
4. Housing 16
5. Utilities 20
6. Land Tenure 27
7. Climate Change and Disasters 32
8. Housing Stock Analysis 40

CONFIDENTIAL

1. Introduction

The 'Climate Resilient Honiara' Project (CRH) is a four-year project funded by the UNFCCC and administered by UN-Habitat. It is implemented by the Ministries of Environment, Climate Change, and Disaster Management (MECCDM) and Land, Housing and Survey (MLHS), as well as Honiara City Council (HCC). RMIT University (Melbourne, Australia) provides scientific advice to the project. The project operates on multiple spatial scales (city, ward, community) and has the following aims:

- enhance the resilience of Honiara to current and future climate impacts and natural disasters
- focus on vulnerable communities in Honiara
- emphasis on youths, women, girls, the elderly, and people with disabilities.

At the community level, the project focuses on five 'vulnerability hotspot' communities, as shown in Figure 1:

- two coastal, titled communities: Ontong Java and Kukum Fishing Village
- Aekafo-Feraladoa (focusing on three zones: Matariu – ISZ20, Jericho – ISZ21, Namoliki/Gwaimaoa - ISZ22)
- two peri-urban settlements: Wind Valley (White River) and Jabros (Gilbert Camp).

This Community Profile report is for **Wind Valley**.

Figure 1. Five 'hotspot' urban settlements targeted by CRH Project.

1.1. Wind Valley

Wind Valley is a peri-urban settlement in west Honiara located in Nggosi ward. It is inland from the main road, Mendana Avenue. The settlement measures approximately one kilometre in length between its longest points and half kilometre in width. The settlement is accessible by vehicle via one main unsealed road along the valley; alternate vehicle access is via roads along the ridge (all three roads highlighted in brown in Figure 2).

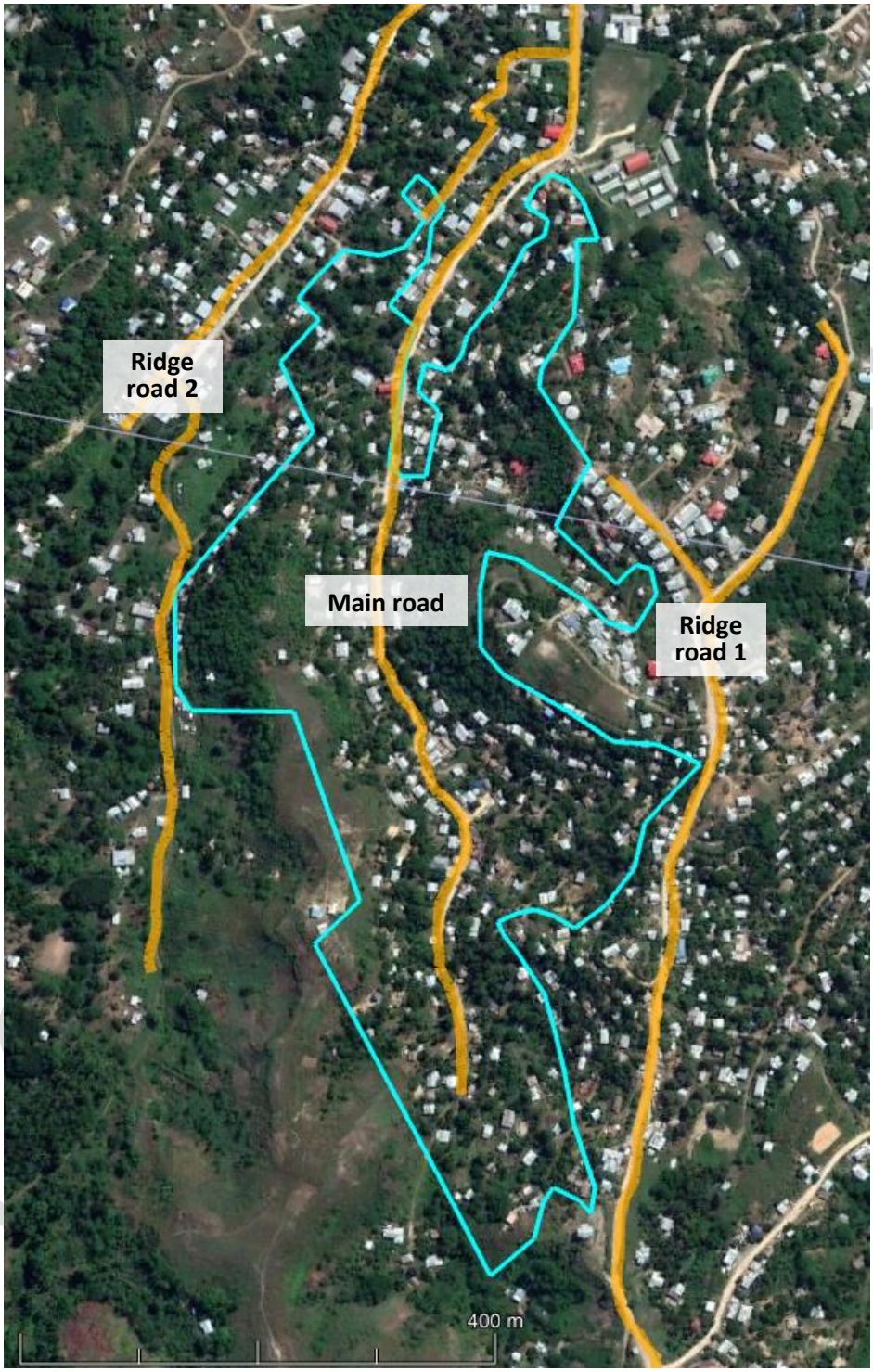


Figure 2. Settlement map with roads (Source: RMIT, adapted using Google Earth).

1.1.1 Topography

The topography of Wind Valley is steep. The five metre contour lines in Figure 2 show an approximate elevation of between 75 to 80 metres at the ridges on the outer edges of the settlement, dropping around 50 metres down to 15 metres where the road dissects the settlement.

These steep slopes do not appear to be impeding development, with many houses built where slopes are particularly steep (i.e. contour lines are close to each other).

Unlike other settlements, Wind Valley does not have sealed paths or Jacobs Ladders to facilitate accessibility by foot. Many houses have cut steps into the slope when it is particularly steep; otherwise, paths are largely informal.

There are some minor streams flowing through Wind Valley that are not visible from satellite imagery.

1.1.2 Development over time

Figure 3 shows the development changes in the settlement over time using Google Earth's historical imagery archives. Over a period of almost 10 years, it appears the settlement has more than doubled in (physical) development density.

(A) 2009 imagery **(B) 2019 imagery**

Figure 3. Change in development between 2009 (left) and 2019 (right).

CONFIDENTIAL

During pre-survey preparation, discussions with the community revealed differing perceptions of the settlement boundary (shown as the pink and orange boundaries in Figure 4) as compared to official MLHS boundaries (blue). When the survey team door-knocked through the community and spoke to various residents, many did not actually know where the boundary lay.

However, there are some topographical factors that serve as natural delimiters. For example, in area (C) in Figure 4, the houses that fall in the pink shaded area identify either as Tasai-B or Wind Valley Heights. Houses in these areas cannot be accessed via the main community from the main road due to steep slopes and access is only via ridge road 1.

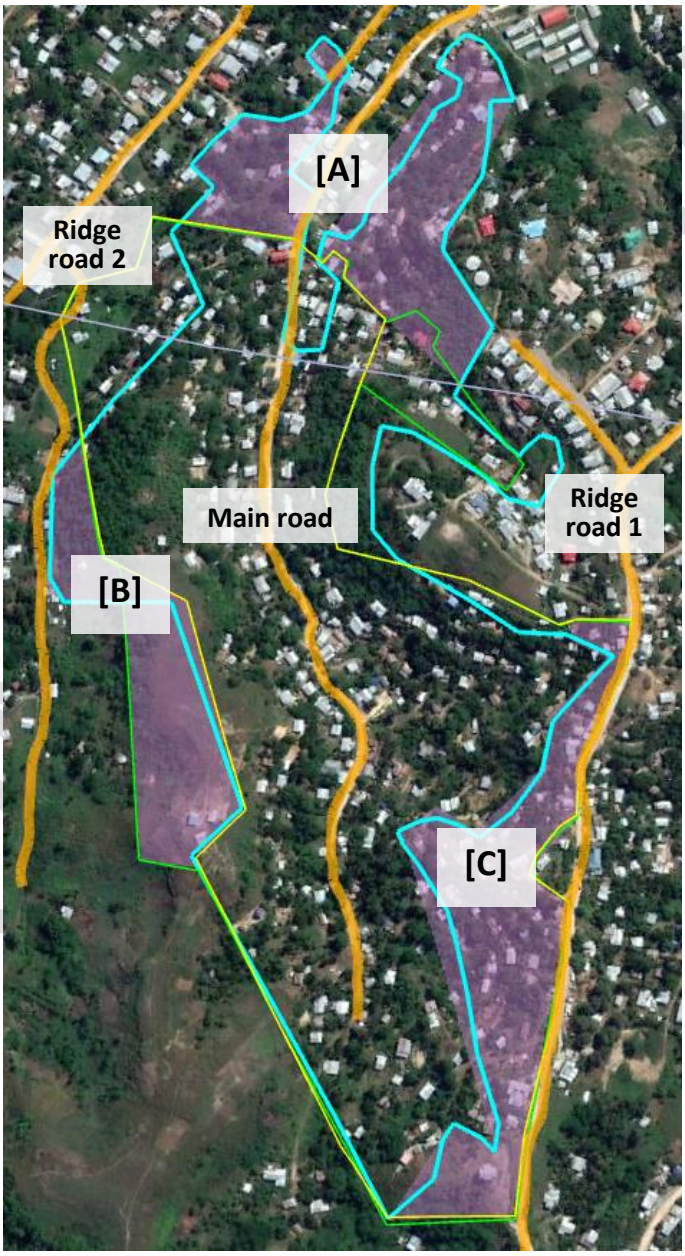


Figure 4. Different perceptions of settlement boundary.

The CRH team also undertook a map-based count of building footprints using Google Earth imagery. This indicated that the community had grown to approximately 343 buildings, likely comprising – at a minimum – the same number of households.

1.2. Data collection timeline

Enumeration surveys for the purposes of constructing the Wind Valley community profile were conducted in the period between 16 October to late November. This was a slightly longer timeline due to the collection of paper surveys left at households who were not present during enumeration. This includes:

- In-community data collection
- Checking and data entry of paper surveys.

Processing and analysis of the data took place in Melbourne in December 2019.

1.3. Survey statistics

Number of buildings approached	**220**
Number of surveyed buildings	**102**
Total number of surveyed households	**108**
Number of paper-based surveys left	**32**
Number of usable paper-based surveys	**0**
Final response rate based on buildings surveyed (%)	**46%**

Unfortunately, technical issues related to the submission of data derived from paper-based surveys resulted in a loss of data and could not be recovered in time for this report. **Of the 108 households surveyed**:

Total population	**691**
Total number of males	**333**
Total number of females	**358**
Total number of youth (under 15 years)	**242**
Total number of adults (aged 15-49 years)	**411**
Total number of seniors (aged 50 years and over)	**33**
Total number of disabled people	**8**
Proportion of respondents who were head of household	**78%**
Proportion of respondents who were women	**45%**

CONFIDENTIAL

1.4. Climate hazards

The main climate hazards in the area are predominantly landslides and floods. The closest evacuation centre is White River School. Floods happen along the main road close to the local stream (Figure 5).

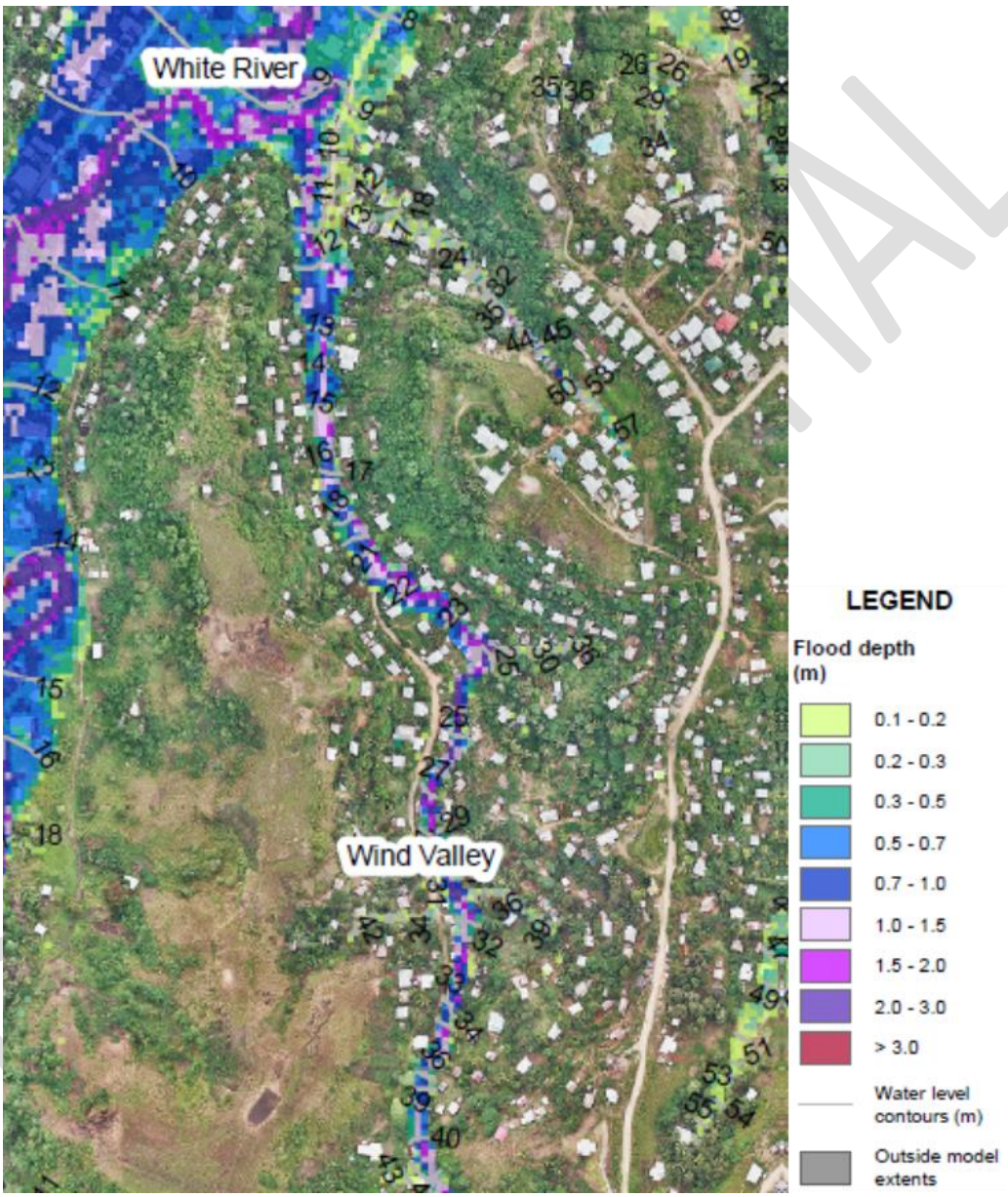


Figure 5. Map of flood risk in Wind Valley (Source: World Bank, 2019[1]).

[1] The World Bank Group (2019). Honiara Flood risk Management Study and Plan.

2. Socio-demographics

2.1. Social structure

2.1.1 Living in Wind Valley

On average, a household will have lived in Wind Valley for a period of **five to nine years**. The longest length of time a household has lived in Wind Valley was reported as 30 years.

The top three reasons cited by households for settling in Wind Valley are: **more opportunities**, including more jobs and access to education; **to be close to relatives/family**; and **access to health services** (Figure 6).

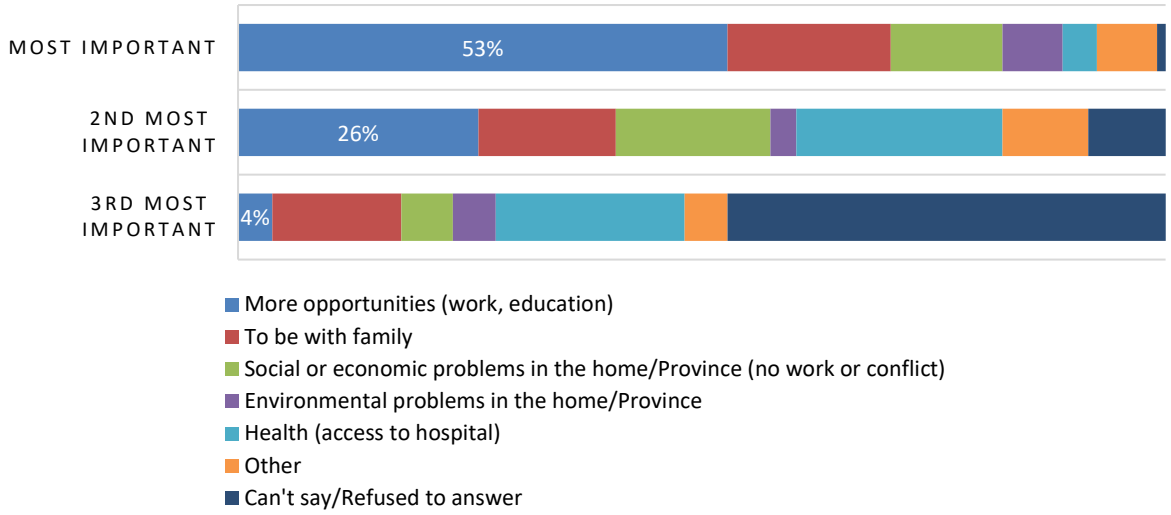


Figure 6. Top three reasons for settlement in Wind Valley.

2.1.2 Family origins

Household origins (Figure 7) indicate most of the community have come from Malaita Province, with one household identifying specifically as being from the Malaita Outer Islands (MOI). Other prominent origins within the community included the Western and Temotu Provinces.

While most of the community attributed familial origins to other provinces outside of Guadalcanal, eight households identified their household origins as being from within the Honiara municipality, specifically from neighbouring communities of White River, Banana Valley, Mbokona and Riftridge.

There were no significant family origins from Guadalcanal province.

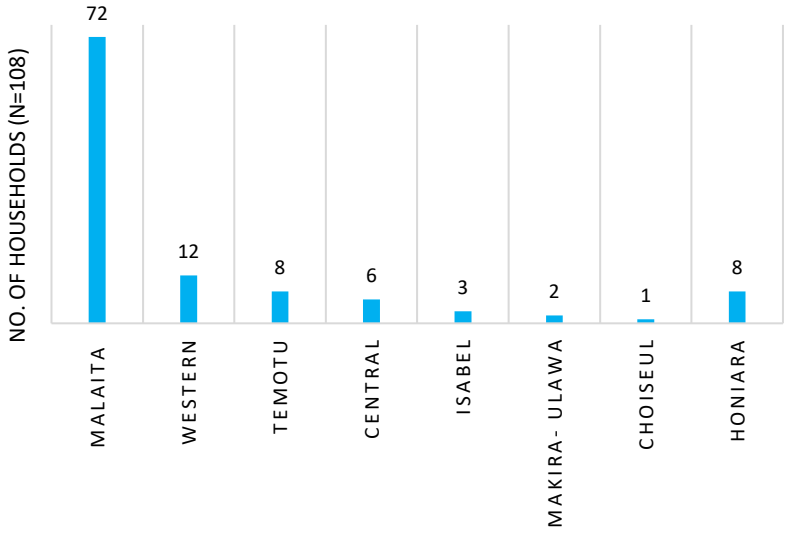


Figure 7. Family origins of Wind Valley community.

2.1.3 Language

In addition to Pijin, 15 other different spoken languages were identified (Figure 8).

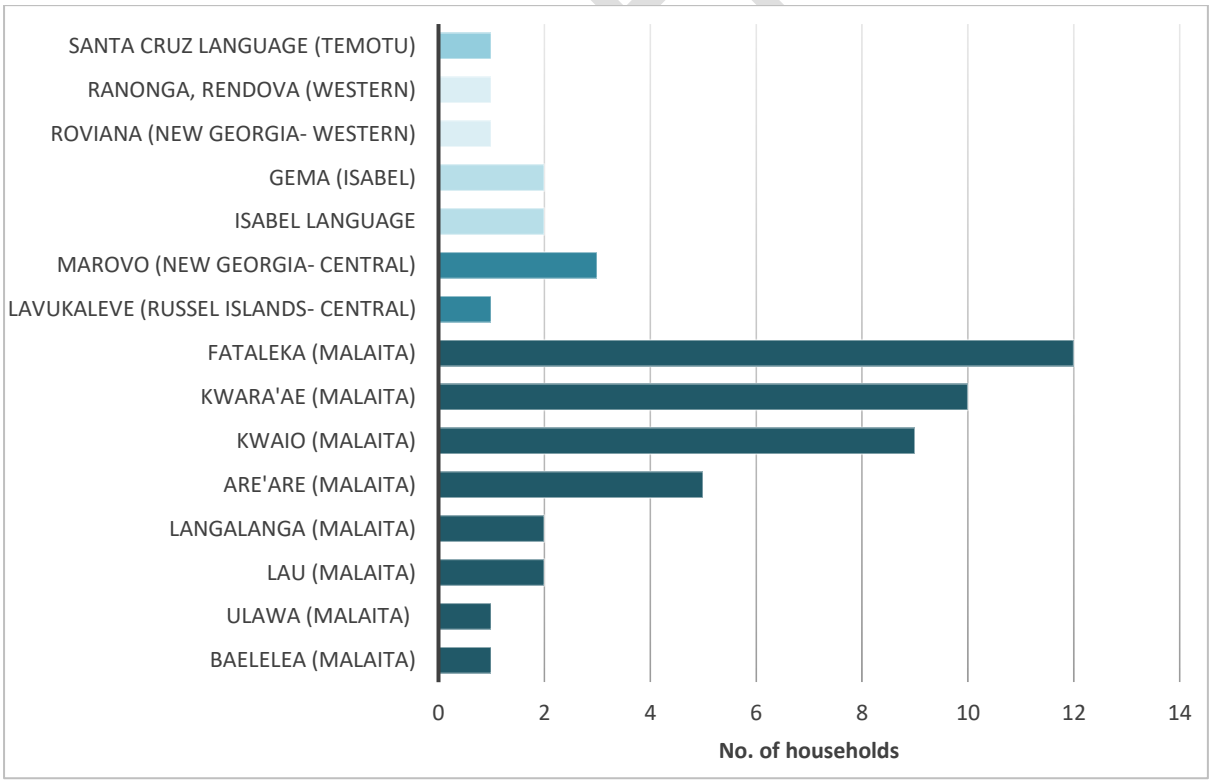


Figure 8. Languages spoken in Wind Valley.

Solomon Island Pijin (60%) is the dominant language in the community. Secondary to that, the survey data reflects up to eight different Malaitan languages being used (Figure 9); of these, Fataleka, Kwara'ae and Kwaio are the most widely spoken Malaitan languages.

Languages from Western, Central and Isabel provinces were also contributions to this community.

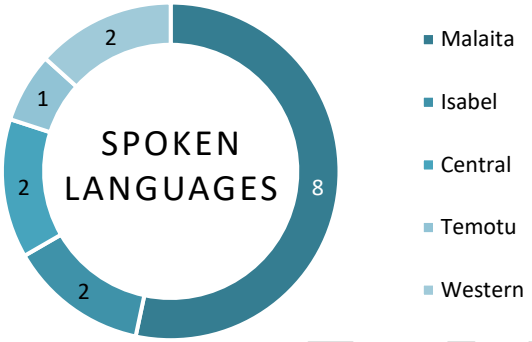


Figure 9. Provincial languages spoken in Wind Valley by number.

2.1.4 Religion

100% of households identified as belonging to a religious church. There was a relatively even distribution of households attending Church of Melanesia, South Sea Evangelicals, and Roman Catholic churches (Figure 10). Other churches included Seven Day Adventist (9%), United Church (3%) and Jehovah's Witness (1%).

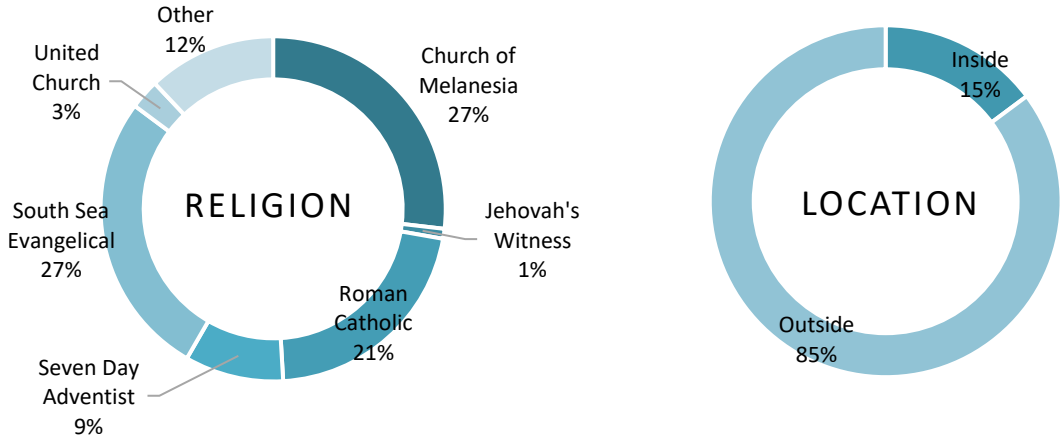


Figure 10. Household religion and location of church relative to settlement.

Of the 12% of households that identified as having other religions, this was mostly of a Pentecostal denomination: Assembly of God, Redeem Christian Church of God and Christian Life Centre making up 7 out of 13 households. Most households (85%) attend a church located outside the settlement.

2.1.5 Community composition

The 108 households participating in the survey accounted for 691 people within the settlement. Of this, 55% were females and 45% males.

Persons aged 15-49 years old comprised most of the population (60%), followed by those under 15 years old (35%). 5% of the surveyed population were seniors (50 years and over) and 7.5% of the population (eight persons) were recorded as having a disability, being one of four types: cannot walk, cannot remember/concentrate, deaf or blind.

The distribution of Wind Valley's community by sex, age group and disability is shown in Table 1.

Table 1. Percentage of the community distributed by sex, age group and disability.

Sex	Proportion of females in the community (%)	55%
	Proportion of males in the community (%)	45%
Age	Proportion of youth (under 15 years) in the community (%)	35%
	Proportion of adults (aged 15-49 years) in the community (%)	60%
	Proportion of seniors (50 years and over) in the community (%)	5%
Disability	Proportion of people in the community with a disability (%)	7%
	Types of disability	• Cannot walk 1 • Cannot remember/ concentrate 3 • Deaf 2 • Blind 2

2.1.6 Household composition

The average characteristics of households were calculated based on the number of people living in a household and classification according to sex and age group (Table 2).

A typical household in Wind Valley is composed of six people: three females and three males. Four persons will fall in the age group between 15-49 years old (greatest population category, Figure 11) and two persons will be younger than 15 years old.

Table 2. Average characteristics of household composition.

People	Average number of people living in a household	6.5
Sex	Average sex composition of the household	3.3 females 3.1 males
Age	Average number of people under 15 years of age in a household	2.3
	Average no. of people between 15-49 years of age in a household	3.8
	Average no. of people over 50 years in a household	0.3

CONFIDENTIAL

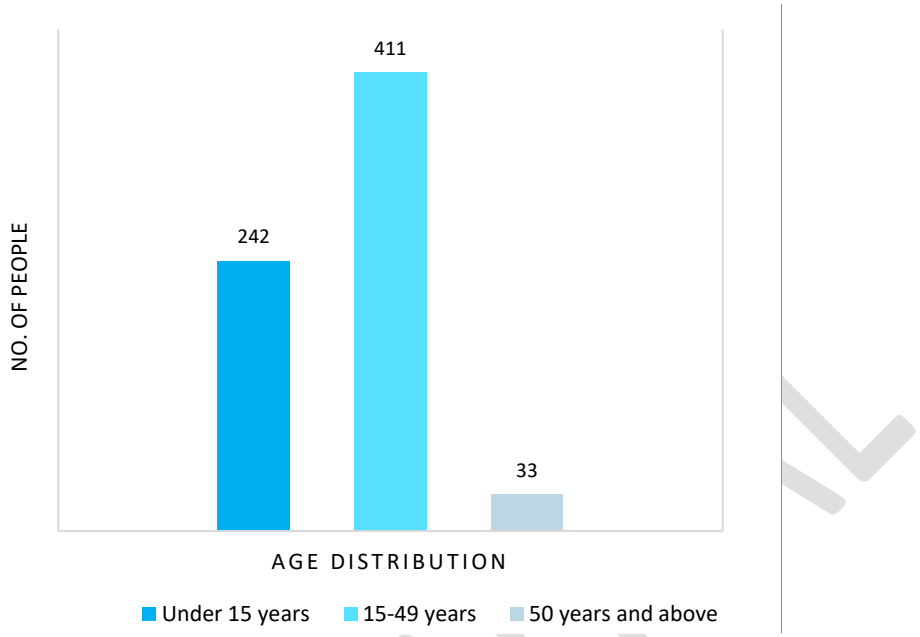


Figure 11. Distribution of age groups of Wind Valley population.

Although the size of a household in Wind Valley averages 6.5 persons, Figure 12 shows a range in household size between 3-18 persons amongst those households surveyed. There was one household that recorded 30 persons living in the household.

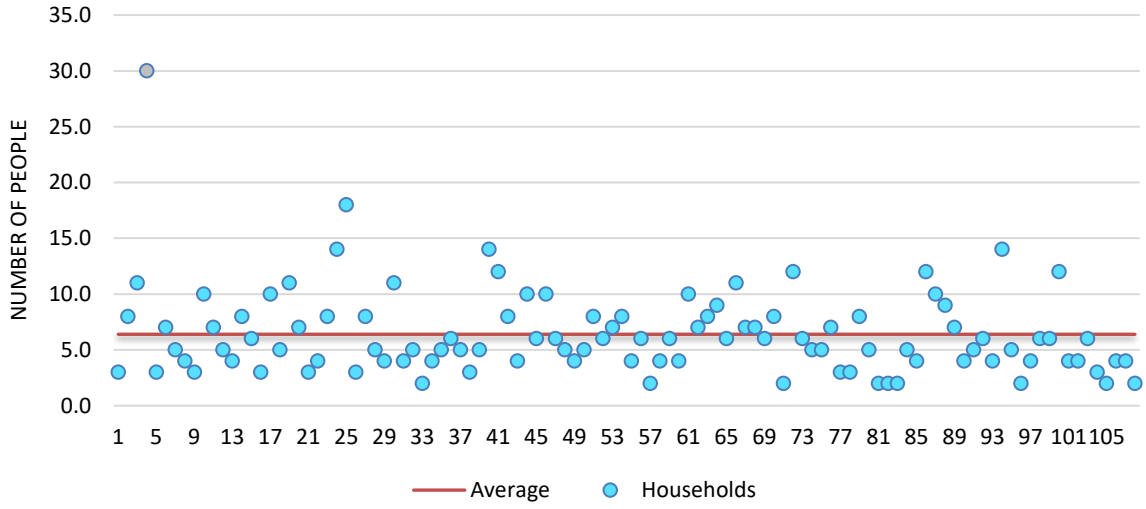


Figure 12. Average number of people living in a household (108 households).

2.2. Settlement resources

During the survey, the settlement resources were mapped. These included shops, community spaces (e.g. churches), water sources, and shared toilets (Figure 13). Most are located near the main road.

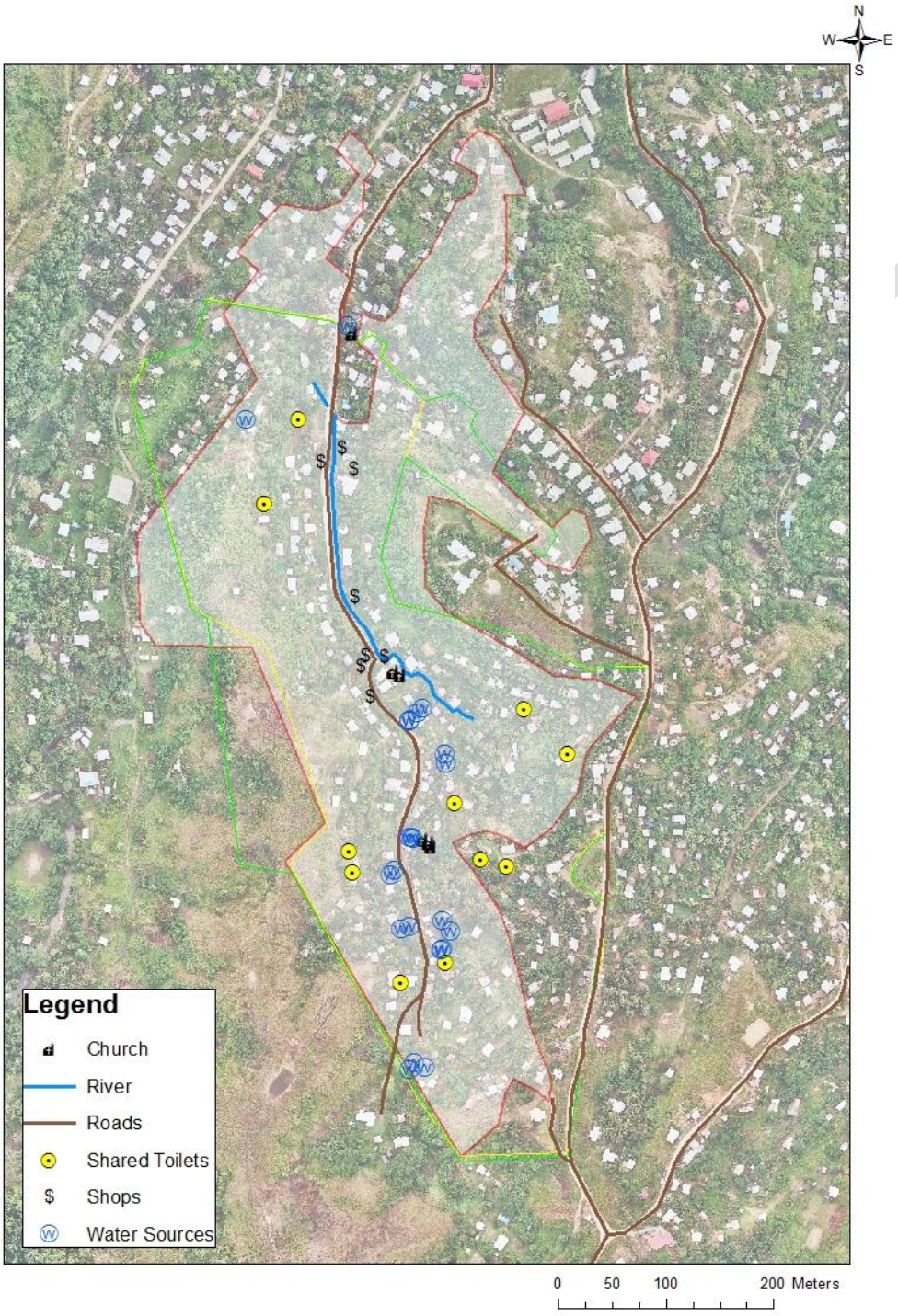


Figure 13. Settlement resources (Copyright MHMS LIDAR data).

3. Livelihoods and Production

3.1. Financial resources

The survey showed that, on average, 1.6 persons per household was employed in work that paid a cash income. This was mostly from employment outside the settlement. The average regular monthly income per household fell in the range of SBD$1501 - $2000.

Table 3. Working population and economic profile of Wind Valley settlement

Working population	Average no. of people in the household that work	1.6 persons
	Proportion of people in the community that work	24%
	Proportion of people working inside the settlement	24%
	Proportion of people working outside the settlement	76%
Income	Average total monthly income for a household	$1501- $2000
	Proportion of households with a regular monthly income	74%
	Proportion of households able to save from monthly income	52%

The main sources of household income are shown in Figure 14, with wages/salary being the dominant source.

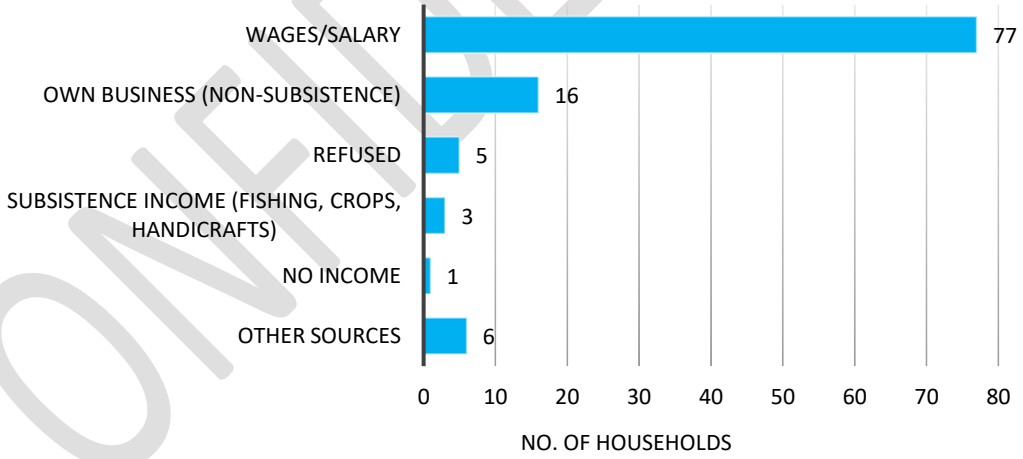


Figure 14. Main source of household income.

Most households (74%) reported that they received a regular income (Figure 15). 18% of households reported that their monthly income was irregular and the most common reasons for this was work instability (mainly identified as a contract or part-time work), and daily sales variability of household produce at markets.

CONFIDENTIAL

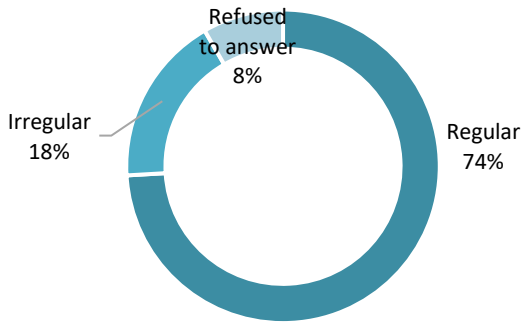


Figure 15. Regularity of monthly income.

With most households reporting regular income, most also reported the ability to save from the income.

37% of households (40 households) reported an inability to save. Of these households, 23% identified high expenditure as the main reason for their inability to save (Figure 16). Expenditure on rent, utilities and school fees were all common reasons provided in household responses.

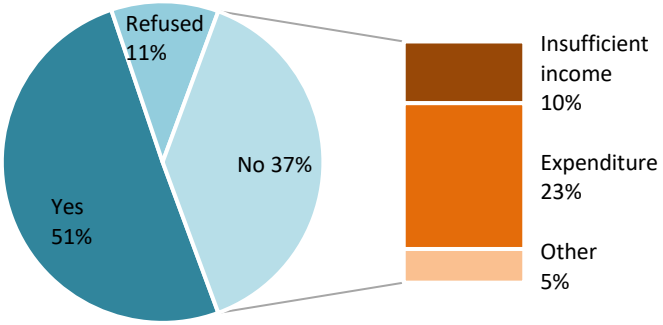


Figure 16: Ability to save income.

3.2. Production

Almost half of the surveyed households indicated that they grew crops (52 households), and this was largely for subsistence purposes (Figure 17). There are 13 households who raise livestock which is mostly sold.

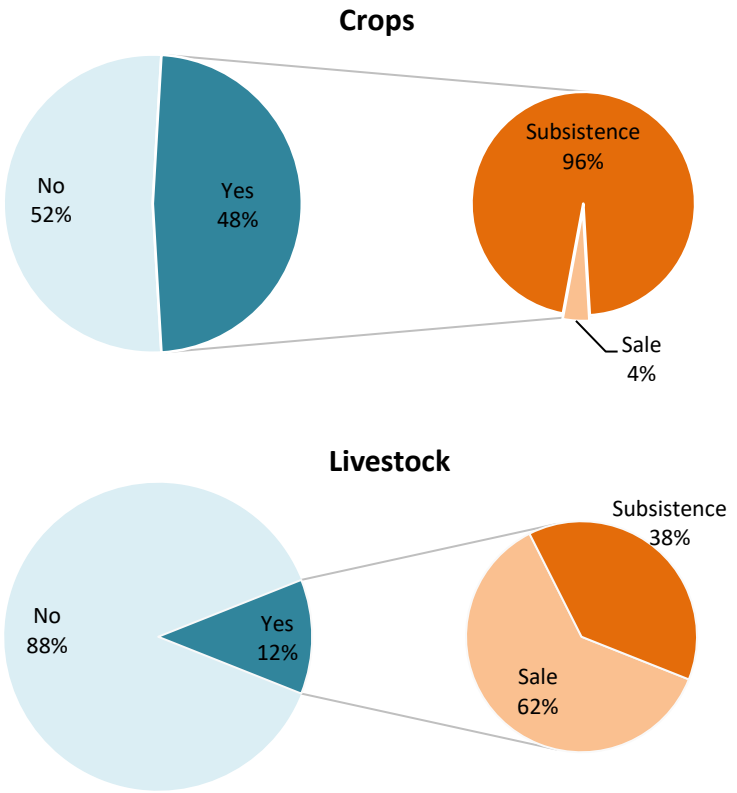


Figure 17. Proportion of households growing crops and/or raising livestock.

The survey showed that people who are involved in subsistence activities are mainly men and women between 15-49 years old (Figure 18). Youth (females and male under 15 years old) are not involved in these activities.

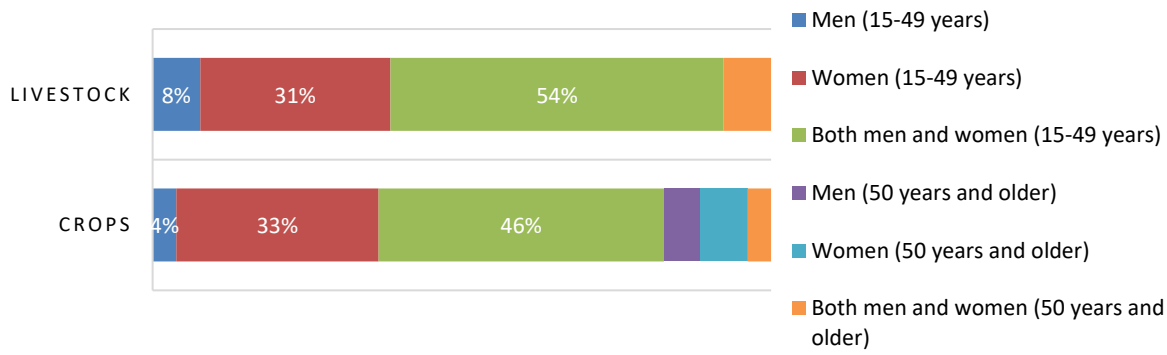


Figure 18. Distribution of age and sex of members of the household who are mainly involved in growing crops and or raising livestock.

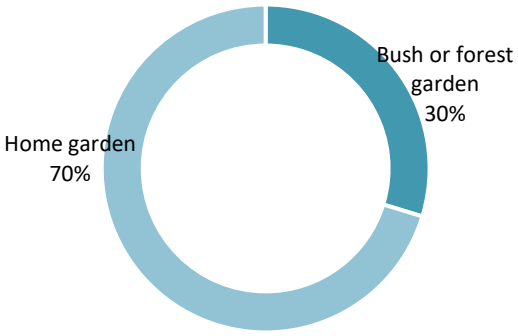


Figure 19. Types of gardens households have.

37 households (34%) maintain a garden. 26 households have home gardens and 11 have bush/forest gardens (Figure 19). Five gardens are shared between different households.

Of those households with bush/forest gardens, five gardens are located less than a 20-minute walk from the house (inside the settlement) while the other six are located outside the settlement.

4. Housing

Households tend to have a median of three rooms, with two rooms used for sleeping (Table 4). The median area of a house is 50m^2, ranging from 7 m^2 to 154 m^2.

Table 4. Median size and number of rooms in Wind Valley households.

Median size of a house (area)	50 m^2
Median number of rooms in a house	3
Median number of rooms used for sleeping in a household	2

Most of households reported that their house has been built in the last 10 years, with 37 households (34%) reporting houses of less than five years old.

When questioned about their house's structural safety, 52 households (48%) did not consider their houses to be safe (Figure 20).

The survey also showed that there was no relationship between perception of structural safety with the age of house.

CONFIDENTIAL

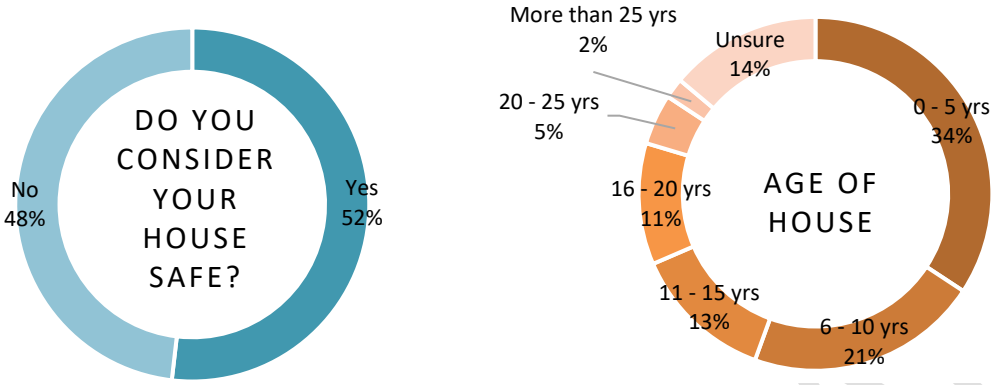


Figure 20. The household perception of structural safety of house and age of the house in years.

In terms of help with regards to improving housing, 41% of households identified the need for access to finance and better-quality housing (Figure 21).

This was followed by the need for more space (21% of households). Of these, 18 households specified more rooms as their main need, with five of these households further specifying the need for additional bedrooms. Other foci within this category were kitchens (two households) and living areas (five households).

Only three households identified that they need help with better skills and access to building materials.

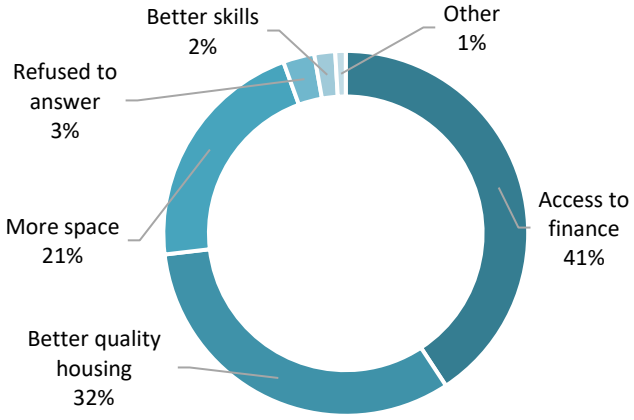


Figure 21. Aspects of housing that household would like help with.

4.1. Improvements

4.1.1 Positive

31% of households (34 households) reported making improvements/extensions to their houses. The main reason for doing so was to make the house safer (Figure 22).

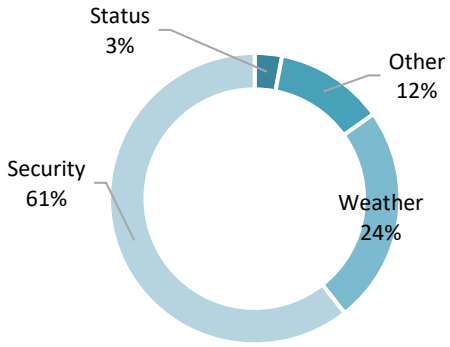


Figure 22. Reasons for making improvements/extensions to the house.

Of the households who made improvements or extensions to their house, 17 households reported that their main driver was to extend the habitable space in their homes (Figure 23). This was reflected in extensions to rooms, balconies and living areas.

Eight households identified upgrades to their home such as improving roofing material (from bush material to copper), strengthening and painting walls and repairing/replacing wiring and foundation posts (stilts).

Other households stated that the living room was the focus of their improvement/extension (four households) while others simply stated improvements included the building of a new and permanent house (three households).

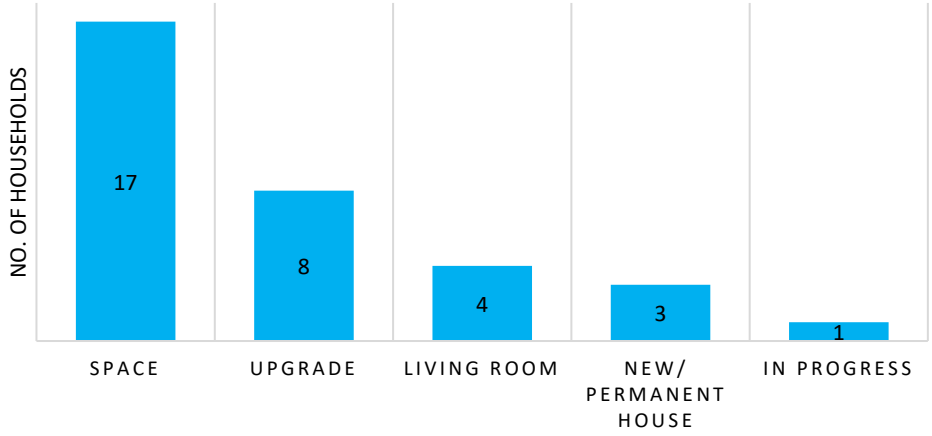


Figure 23. Type of improvements made by households.

In terms of financing improvements or extensions, the main source of money was derived from household savings, followed by family loans and remittances (Figure 24).

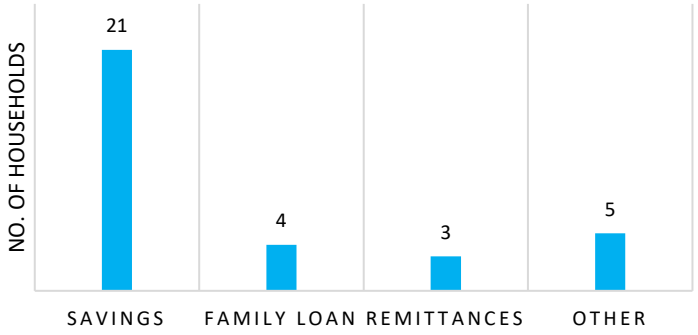


Figure 24. Main sources of financing house improvements/extensions.

4.1.2. Negative

69% of households did not make improvements to their houses. Of these, an analysis of responses showed three key areas that households would like to improve if they had the ability or capacity, as shown in Figure 25:

i. Increase space within their home, with majority of feedback reflecting the desire for more living space and rooms and balcony extensions (28 households).
ii. Build new and stronger houses and specific recognition for permanent housing.
iii. Repair or renovate the house, with a specific focus on improving foundations and walls for stability.

Five households indicated that they did not see a need for improvements/extensions.

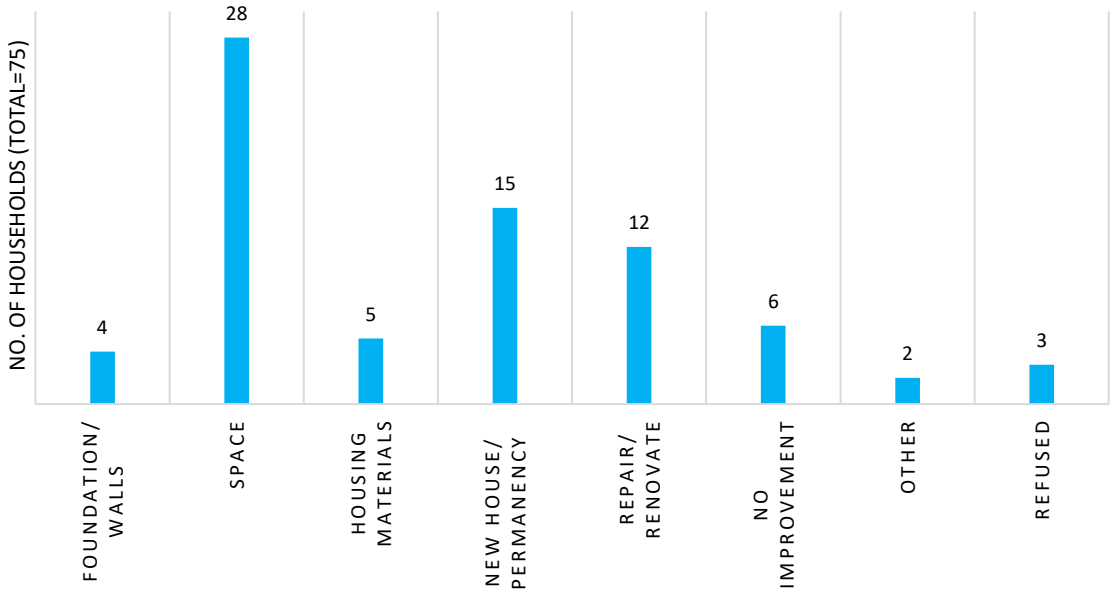


Figure 25. Types of desired improvements by households.

CONFIDENTIAL

The main limitation reported that prevents households from making improvements or extensions was money (Figure 26). Similarly, a lack of financial assistance and support was also highlighted as constraints.

Households also identified a lack of available space, insufficient health, and lack of land title (six households attributed their status as tenants as the reason for their inability to make improvements).

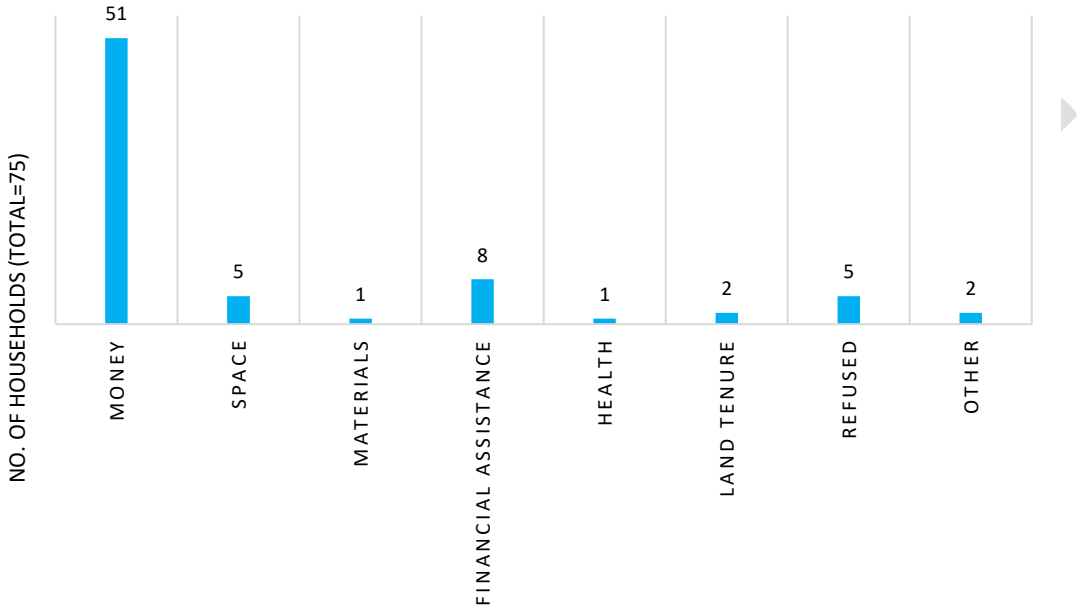


Figure 26. Main reasons for households' inability to undertake improvements.

5. Utilities

49% of households have water on their premises.

41% of households reported their water quality as being good (i.e. no need for treatment before drinking).

67% of households have a drainage system.

40% of households are not connected to a metered power source.

5.1. Water

The main source of water in households come from pipes on the yard/plot of households, followed by pipes into the house, public tap/standpipe (Figure 27).

Other water sources mentioned in the survey were: borehole (unregistered), unprotected well, rainwater, tube well or borehole, own well, protected well, tapped water from mains connection

(not approved), unprotected spring, surface water, borehole (registered), protected spring, bottled water, tanker truck/cart with small tank , and water collected from their neighbours.

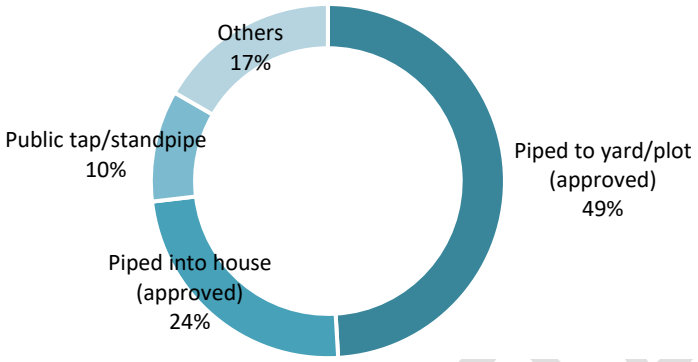


Figure 27. Main source of water in the household.

Most households have access to water on premises or within 30 minutes from their houses (Figure 28). However, 15 households spend more than 30 minutes every day getting water. The people involved in this activity are commonly men and women between 15-49 years old (Figure 29).

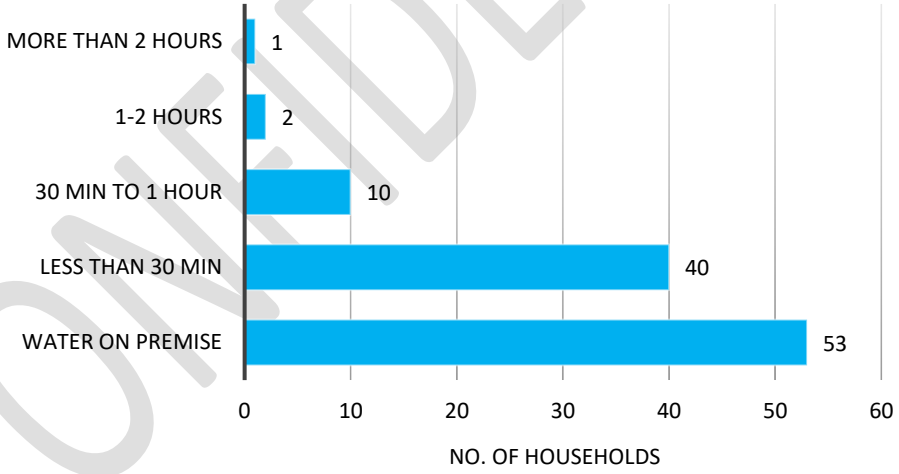


Figure 28. Amount of time involved in getting water.

CONFIDENTIAL

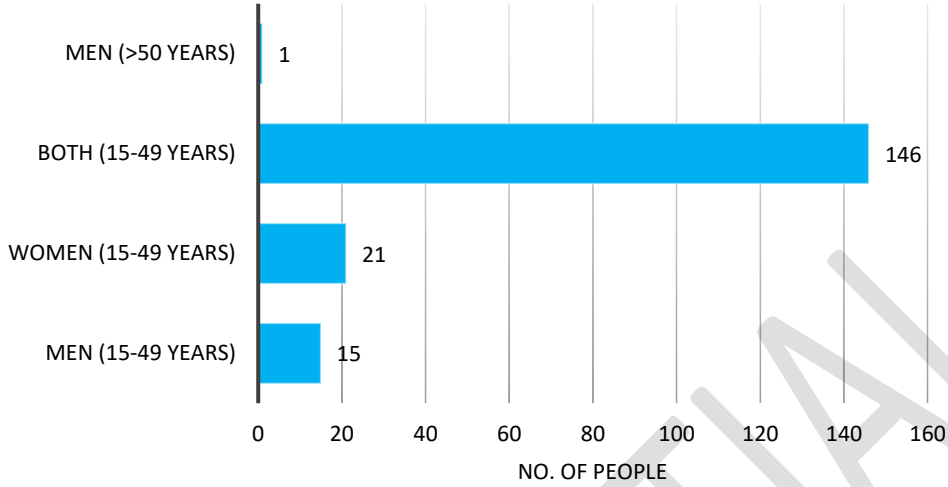


Figure 29. Age and sex categories of people involved in getting water.

Table 5. Gender/age distribution in water sourcing activities.

	GENDER DISTRIBUTION	YOUTH (>15 YEARS)	WOMEN (15-49 YEARS)	MEN (15-49 YEARS)	BOTH (15-49 YEARS)	MEN (>50 YEARS)	BOTH (>50 YEARS)	**TOTAL**
WATER SOURCE	LESS THAN 30 MINUTES	7	19	12	124	1		**163**
	30 MINUTES – 1 HOUR		1	2	20		20	**43**
	1-2 HOURS		1	1				**2**
	MORE THAN 2 HOURS				2			**2**
	TOTAL	**7**	**21**	**15**	**146**	**1**	**20**	**210**

The survey also showed that overall, both men and women were collectively involved in sourcing water for households (Table 5).

Most of the households rated the water quality as good and average (Figure 30).

64 households (55%) reported their water quality as being average or poor (i.e. needing treatment before drinking). Of these, 30 households boil their water before consumption while 31 households do not treat their water at all.

CONFIDENTIAL

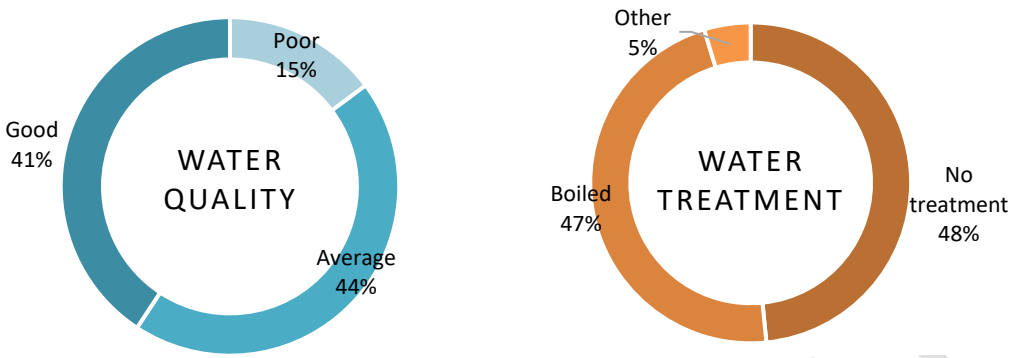


Figure 30. Water quality and treatments used to improve water quality.

5.2. Sanitation

5.2.1 Toilets

47% of households (51 households) have improved toilets facilities. Of these, 18 households flush to a piped sewer system and 13 households have a flush to pit system (Figure 31).

Of those households with improved toilets, 39 households have toilets located within their property and 12 households share the toilets with other households (Figure 32). The distribution of households with private and shared improved toilets are shown Figure 33.

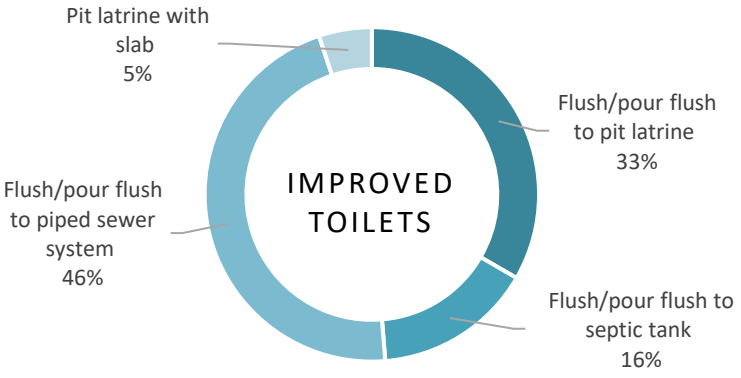


Figure 31. Types of improved toilet facilities.

CONFIDENTIAL

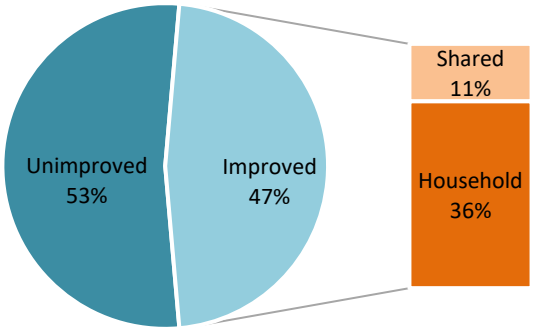


Figure 32. Types of improved toilet facilities and whether these are private or shared.

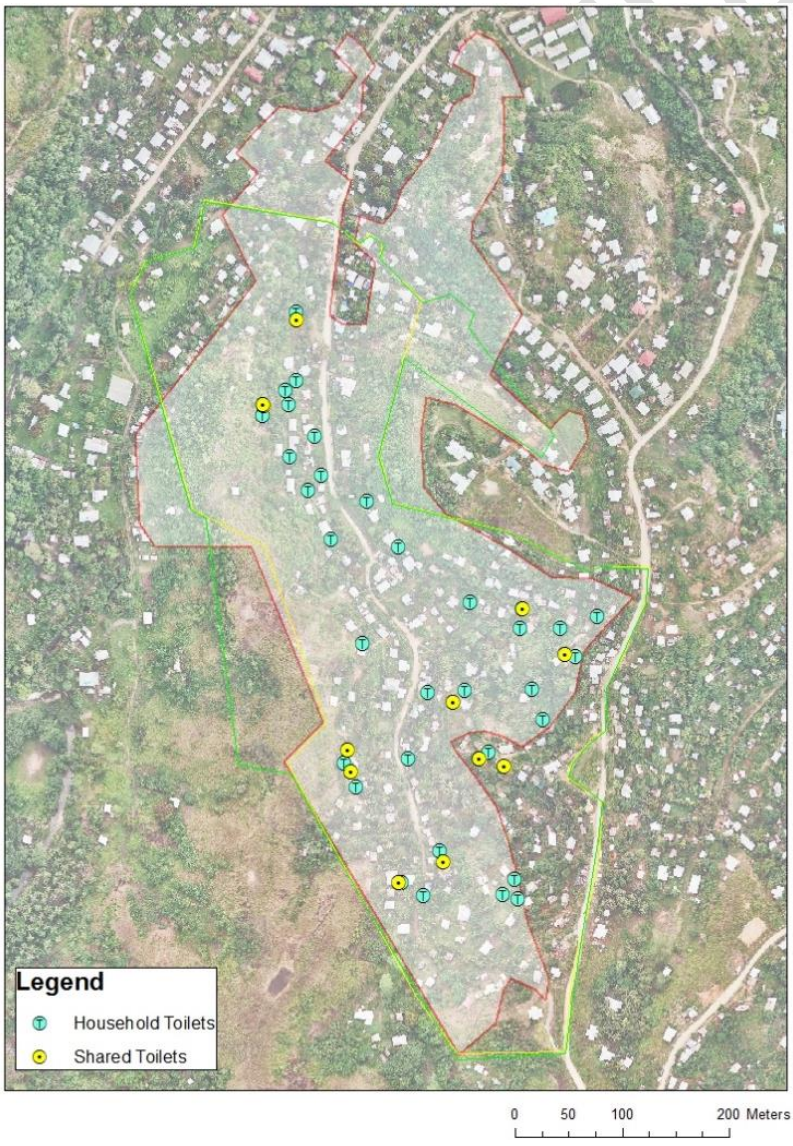


Figure 33. Distribution of households with private vs. shared toilets (Copyright MHMS LIDAR data).

53% of households' toilets are unimproved. These toilets are mostly pit latrines without slabs or open pits, or are commonly flushed elsewhere (not sewer, septic tank or pit) slab (open pit) (Figure 34).

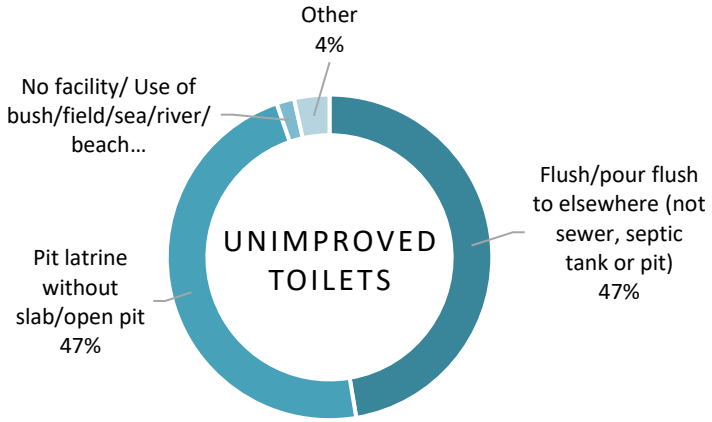


Figure 34. Type of toilet in improved or unimproved facilities.

5.2.2 Drainage

67% of households (72 households) have drainage systems in their properties (Figure 35).

Of these households, 28 households reported that the effectiveness of the system was mostly average and poor in 24 households; only 20 of the households had a good drainage system.

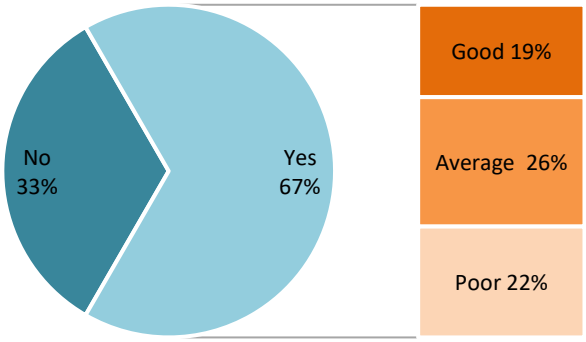


Figure 35. Household drainage and efficiency.

33% of households identified that they did not have drainage within the house. Of these, 21 households identified that they took no action regarding their drainage situation (Figure 36). This was mainly due to the house being located on a slope, enabling drainage to be managed naturally.

Other households did nothing or reported feeling no need to act due to proximity to main drains. Six households indicated that they allowed waste to pour on the ground, whilst four households took active action to manage drainage by digging. Three households stated that proximity of water

sources such as a stream or river aided their drainage effectiveness, while two households identified limitations in managing drainage due to restrictions in space.

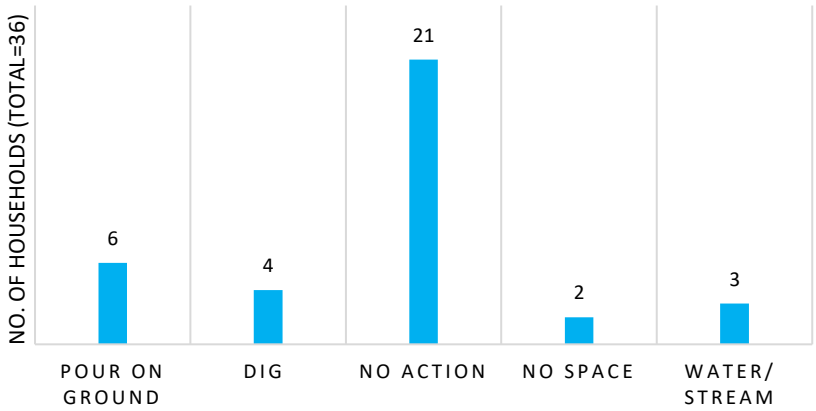


Figure 36. Household drainage management.

5.3. Household waste

64% of households (69 households) stated they burned household rubbish. 30% of households (32 households) disposed their rubbish into the river (Figure 37).

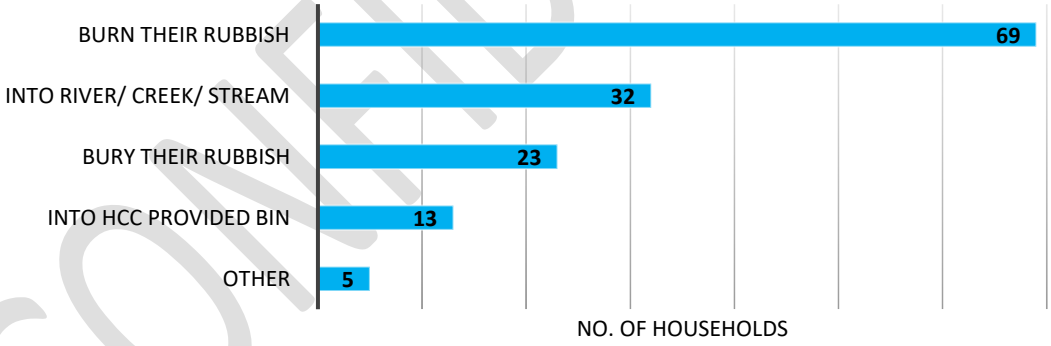


Figure 37. Ways of disposing the household rubbish.

5.4. Energy

5.4.1. Metered power

40% of households (43 households) reported being connected to a power source, with 80% of these households (34 households) having a metered connection.

91% of households with a metered connection (34 households) used a cash power connection and 9% used a kilowatt power connection.

5.4.2. Unmetered power

60% of the community (65 households) was not connected to a power source. Of these, the main source of power used by households was solar panels (63 households).

5.5. Improvements to utilities

In terms of improvements to utilities, better utility services (30%), water quality (22%) and sanitation (22%), were all highlighted as significant areas of concern for the households surveyed (Figure 38).

For the 5% of households that responded with 'other', the need to address all categories was a common feedback.

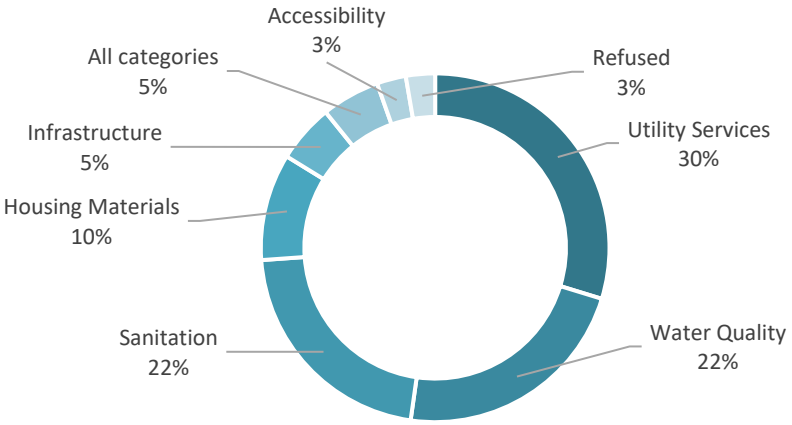


Figure 38. Aspects of utilities that households would like help with.

6. Land Tenure

64% of respondents (69 households) confirmed they possessed appropriate legal documents to occupy the land. Of these, 31 households reported being the owner of the land (Figure 39).

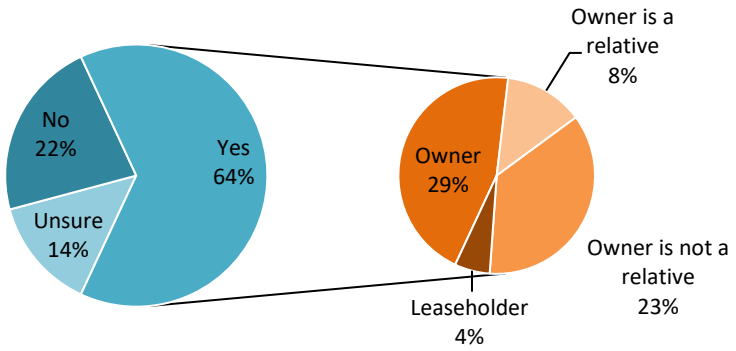


Figure 39. Proportion of households with legal documents to occupy the land and relationship between survey respondent and landowner.

6.1. Households with title

60% of households (65 households) reported possessing some agreement to occupy the land they live on. 32% of households (21 households) hold an FTE (Figure 40).

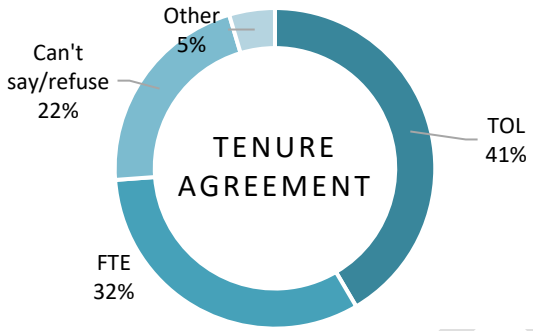


Figure 40. Proportion of households with an agreement to occupy the land.

6.2. Households without title

42% of households (27 households) hold a TOL. The distribution of houses with FTE and TOL are shown on the map (Figure 41). Other categories of agreements mentioned were family agreements and agreement with the Chief.

6.2.1. Offer of FTE

Three households who currently hold TOLs received an offer of a grant of FTE; however, this has not been taken up the offer, Ironically, the reason for not converting was because the household possessed a TOL.

CONFIDENTIAL

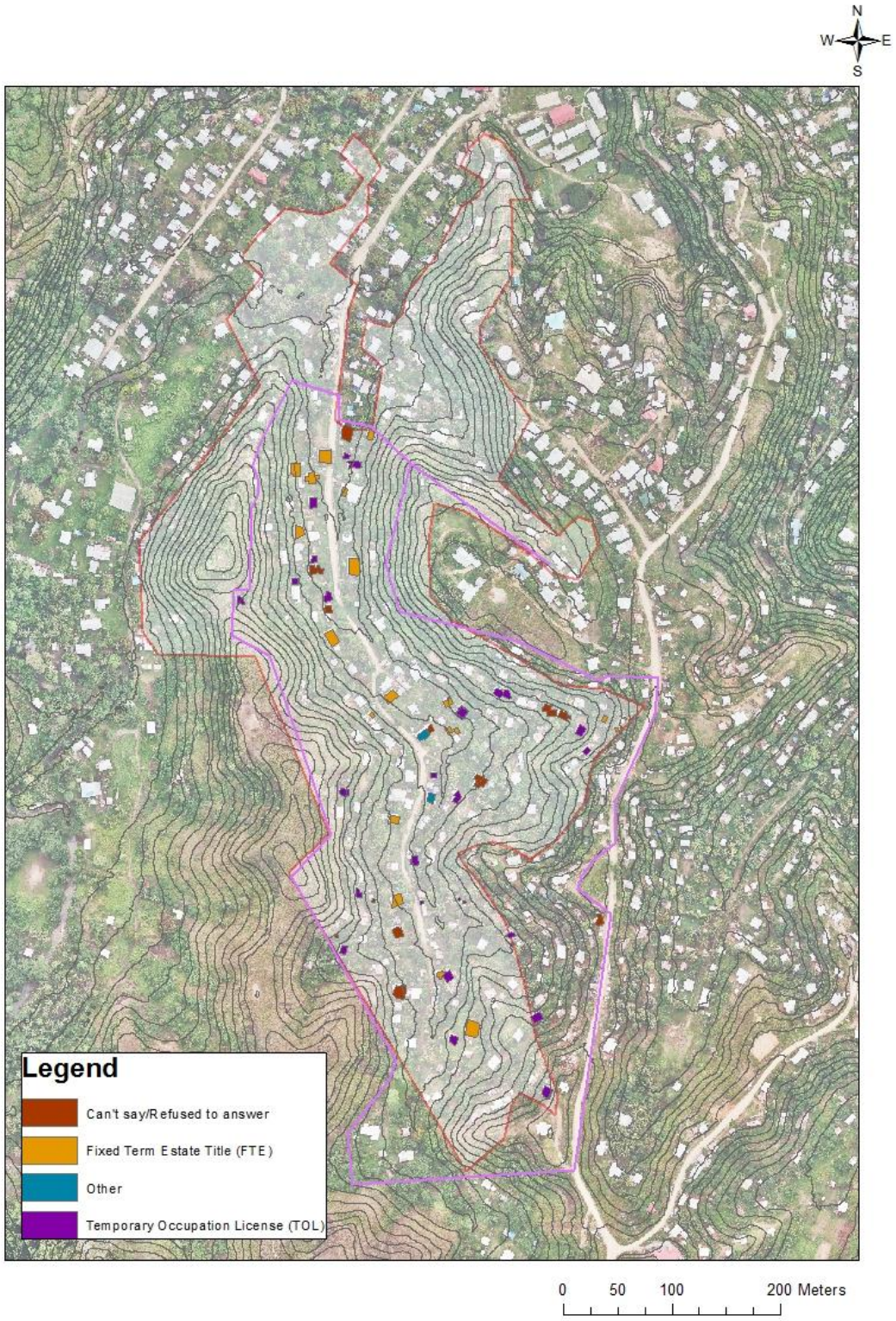


Figure 41. Distribution of houses with an agreement to occupy the land (Copyright MHMS LIDAR data).

6.3. Disputes

20 households reported experiencing disputes over land ownership (Figure 42). Most of these claims related to disputes were with a close neighbour, relative or relative of the owner of the land.

Other disputes over land ownership were said to involve other members within the community, as well as community leaders (Figure 43).

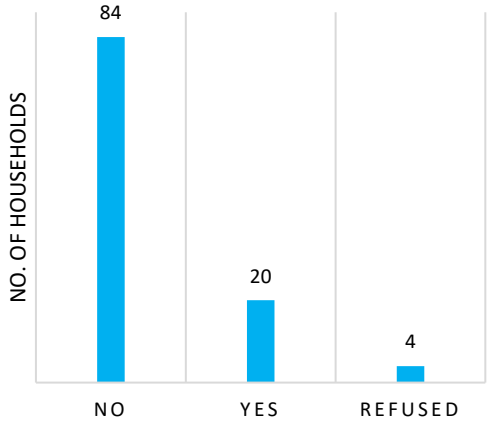


Figure 42. Existence of ownership disputes.

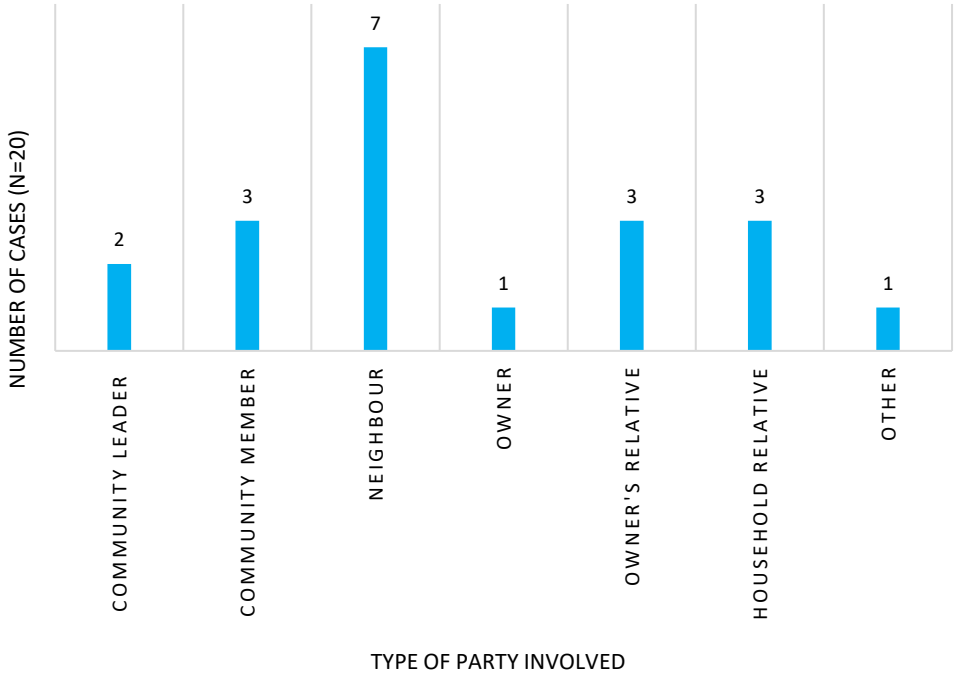


Figure 43. Types of parties involved in land disputes.

Of the 20 disputes existing within the community, only nine have been resolved (Figure 44). The resolution came via general agreement or an organised MOU, involvement by the MLHS, or just stopped due to lack of evidence or death.

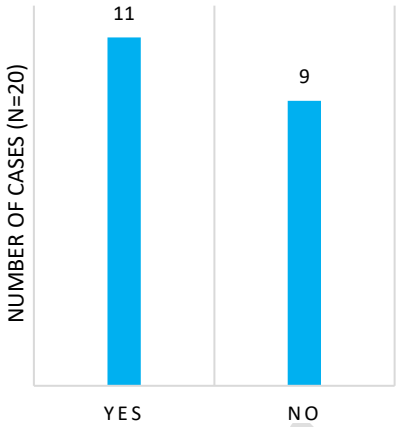


Figure 44. Dispute resolution.

6.4. Tenure security

22% of households (24 households) did not feel secure on their land, and when asked about the aspects of tenure that would make them feel more secure, a majority of them replied that they would like to hold secure land tenure (Figure 45).

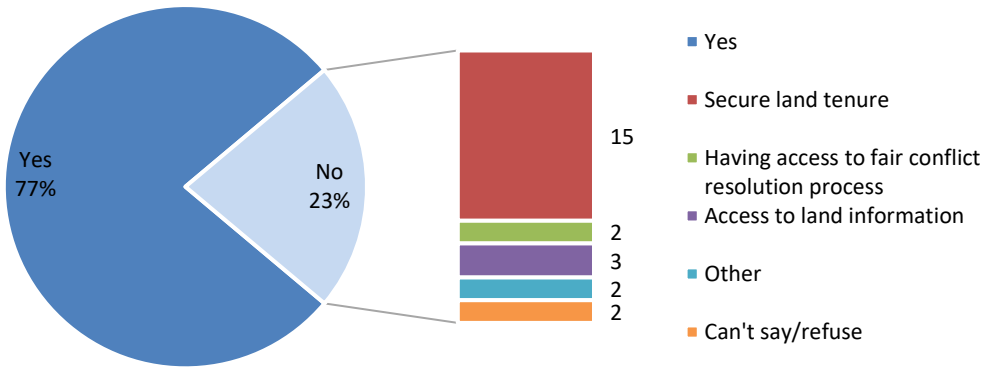


Figure 45. Perceptions of land security and aspects of tenure that would make households feel more secure.

7. Climate Change and Disasters

7.1. Hazard experiences

The top three most problematic natural/climate hazards identified by the community are landslides, flooding and storms/cyclones (Figure 46).

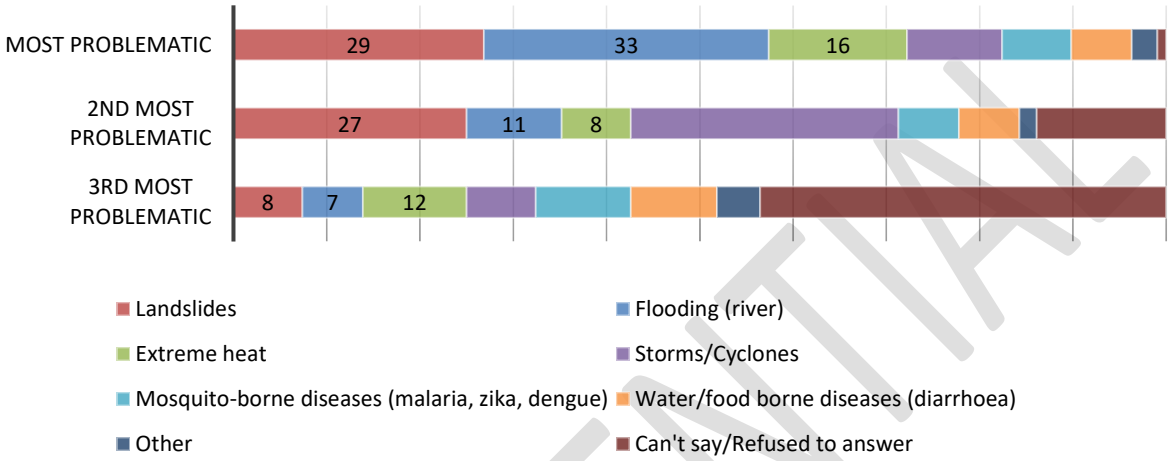


Figure 46. Top three most problematic natural/climatic hazards.

When asked if they thought whether the severity of these events was getting worse or staying the same, the majority of people responded that they thought that the severity of flooding and extreme events were getting worse (Figure 47).

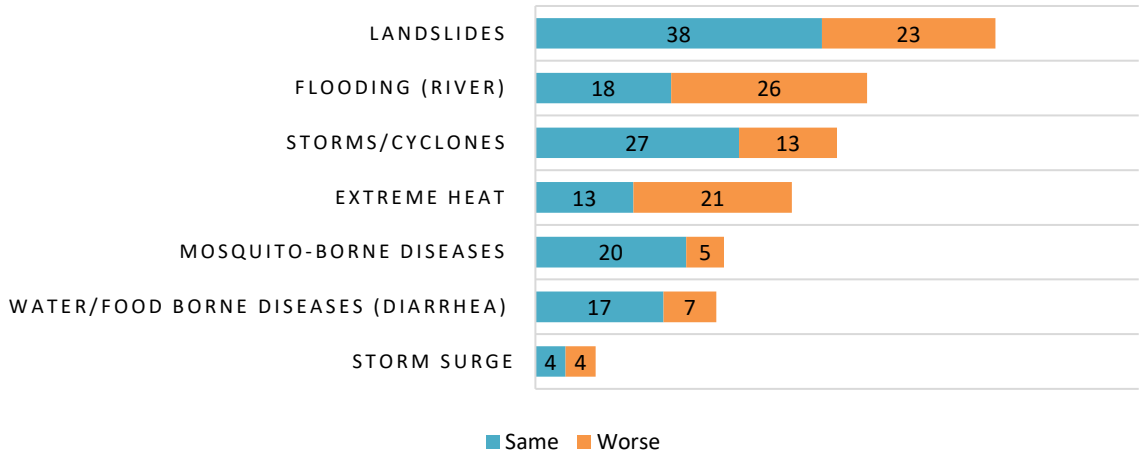


Figure 47. Household perceptions of the severity of hazard events.

Households were also questioned about the top three problems caused by these hazards. 76% of households (82 households) reported that damage to their properties was the most problematic

consequence, followed by impact on physical health (as injuries, diseases or death), and impact on their ability to earn income (Figure 48).

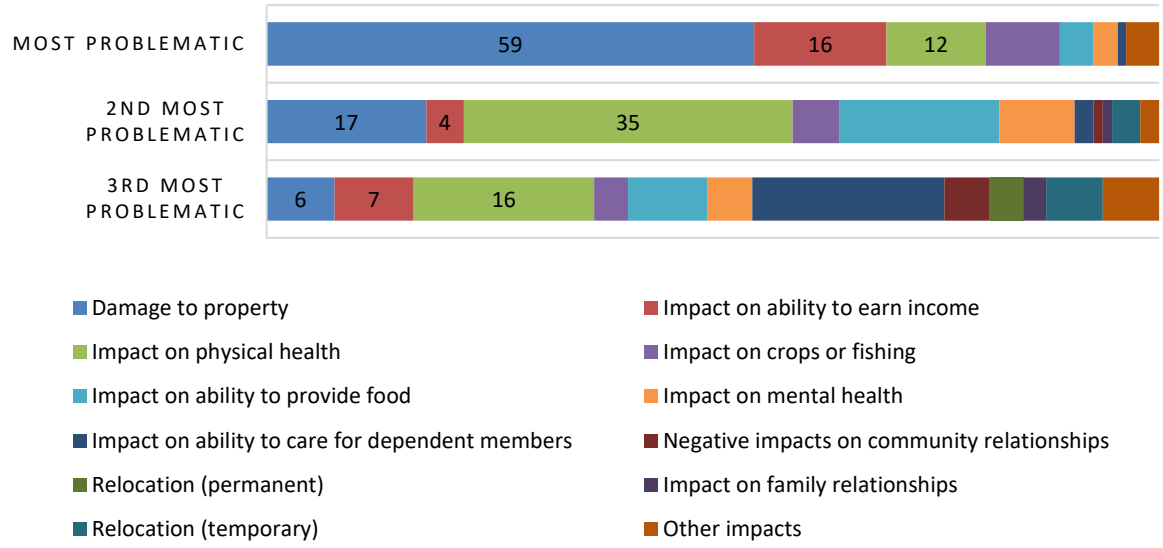


Figure 48. The top three problems caused by the top three hazards.

7.2. Responding to hazards

7.2.1 Main ways of responding to problems

A large proportion of households reported proactive and reactive activities as the main way of responding to hazard events. These included working together, building and/or rebuilding infrastructure, digging/ clearing grounds, attending to crop regeneration (replanting) or clearing of damaged trees/crops.

Seeking support was also a significant theme, either from family, community or government ministries. When it came to health, most households reported seeking assistance from medical clinics and services rather than home remedies.

When it came to water issues, buying bottled water or finding alternative sources of water to what is regularly available was a common strategy in response to hazards.

However, 7% of households stated that they did not know how to respond to hazard impacts, either due to no experience or because they were lacking local knowledge on how to respond.

When asked what would assist households to be better prepared, three main categories were identified (Figure 49):

1. Improved equipment access, i.e. mosquito nets, fans, radios and tools were all recognised as equipment or tools that would aid and support preparation for hazards and associated impacts.
2. Evacuation planning for households and community, as well as established evacuation centres, were identified as a predominant issue requiring attention.

CONFIDEN

3. Building infrastructure; of protective/support walls, drainage and water tanks. Secondary to these three categories, a request for increased information leading to knowledge and awareness of hazards and risks and mitigation/ adaption measures were highlighted, as well as the need for increased financial saving capacity, assistance and support.

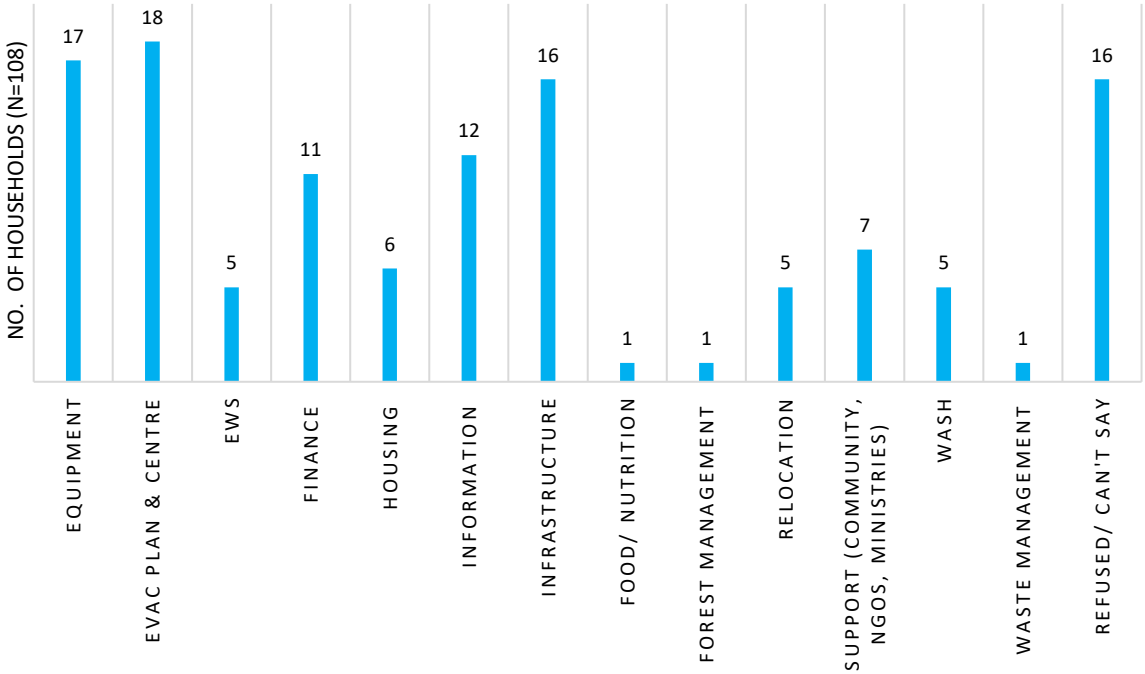


Figure 49. What would aid households to be better prepared to respond to hazards.

7.2.2 Key strengths of households

When asked to describe what households believed they did particularly well in response to hazard impacts, 56% of households responded that their ability to work together was their main strength in times of adverse conditions (Figure 50).

Similarly, having the ability and capacity to respond and deal with hazards impacts was also identified as a strength by 13% of the households. Ability and capacity were highlighted as aspects of knowledge, resource access, and financial ability and support.

However, five households felt that they did not do anything well, of which two households attributed a lack of human effort[2] to their lack of capacity.

[2] Human effort is often referred to locally as 'man-power', but is interpreted here as a non-binary (gender) construct.

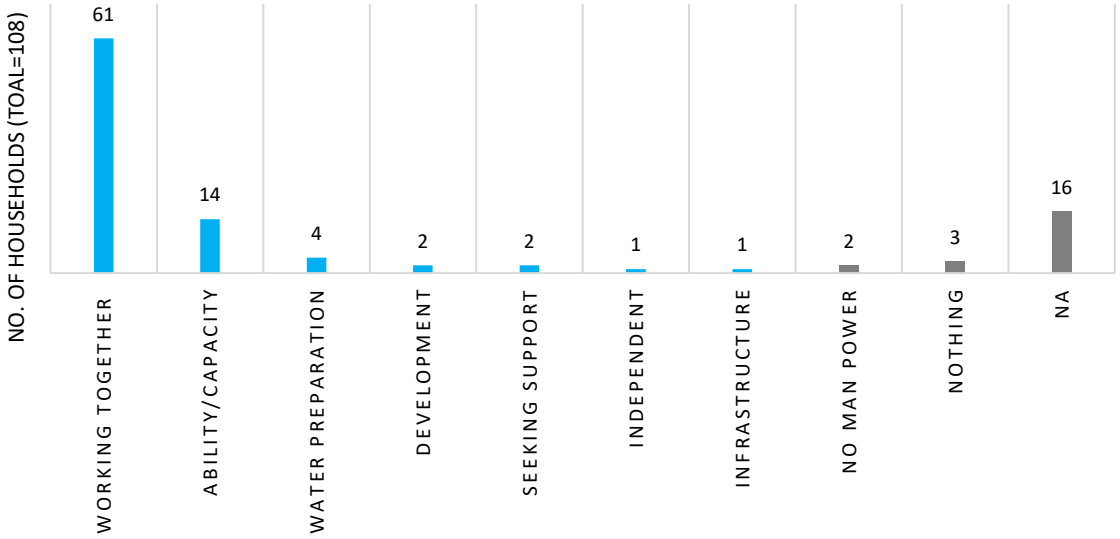


Figure 50: Strengths of households.

7.2.2 Key challenges of households

With regards to the challenges and weakness of households, respondents identified limitations in equipment and access to tools as a key challenge (Figure 51).

Secondary to this, financial limitations and a lack of assistance and support were also put forward as a key challenge, as well as planning with regards to evacuations and preparation for hazards.

Households also interpreted lack of overall support from family, community and NGOs as a contributing factor to household weakness in responding to climate and disaster events.

Human resources were highlighted as a significant weakness within households, referencing also the adult/children ratio within households and the related capacity of such ratios.

CONFIDENTIAL

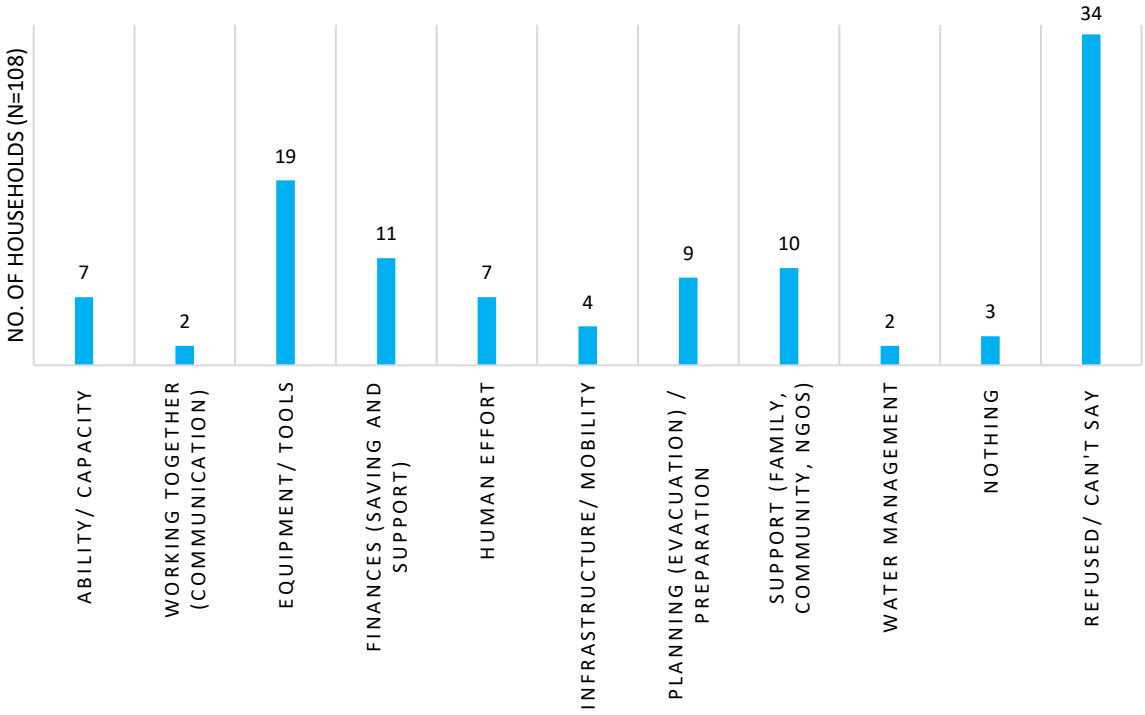


Figure 51. Weakness and challenges of households.

7.2.3 Main sources of help

When asked about other sources of help households relied on, 10 households reported that they tended to rely on themselves or an elder member of the family when responding to impacts.

Secondary to this was accessing help from the National Disasters Office (NDMO) (eight households) and a member of parliament (four households).

Other sources included the Ministry of Health (two households) and NGOs (two households). Figure 52 provides an overview.

CONFIDE

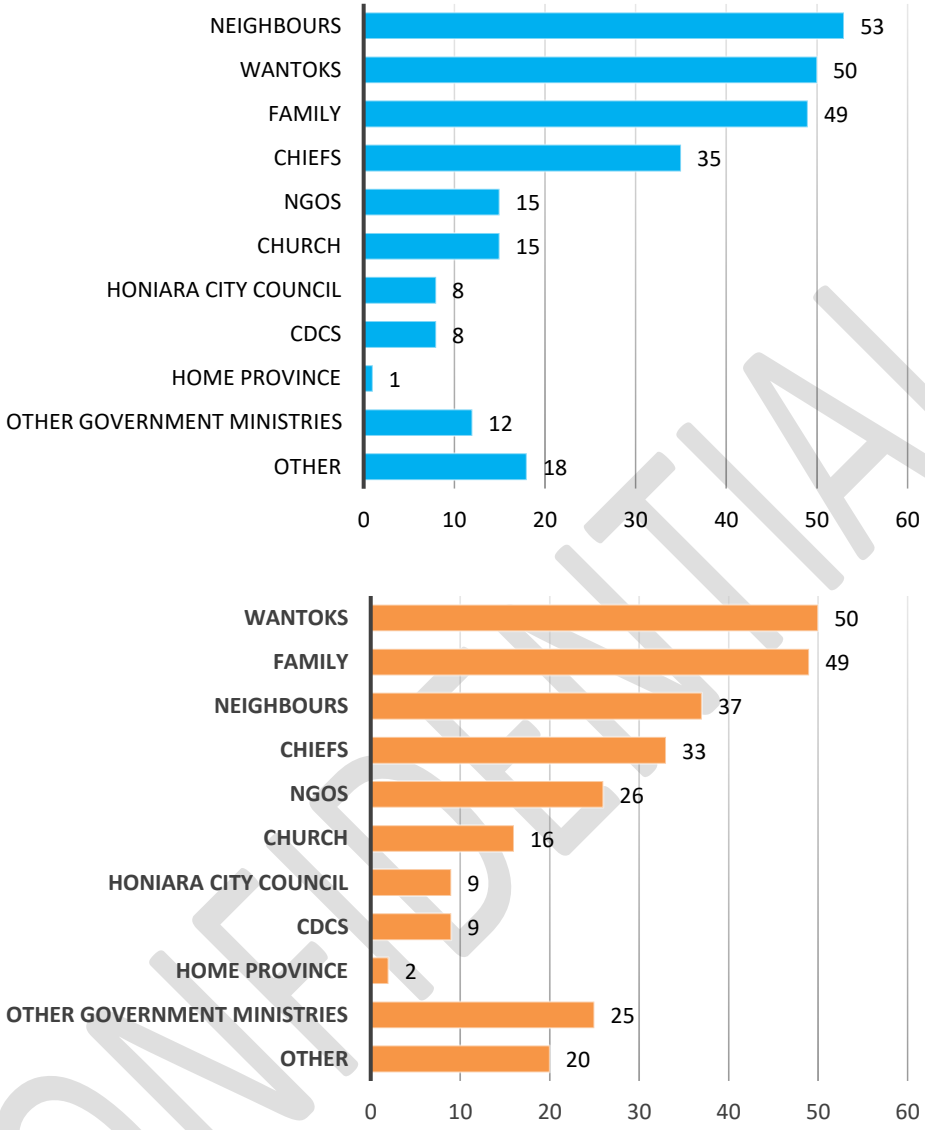


Figure 52. Person or organisation a household would seek help from to respond to hazard impacts (blue) vs. where would they seek help from to prepare for a changing climate (orange).

65% of respondents (70 households) identified the mobile phone as the main method of communication during adverse times in comparison to in-person communication represented by 35% of households (Figure 53).

To prepare for disasters, 64% of respondents (69 households) reported having access to early warning systems while 12% of households (13 households) indicated that they had an evacuation plan (Figure 54).

16% of respondents (17 households) did not have any preparation in place to respond to disaster or hazard events.

CONFIDENTIAL

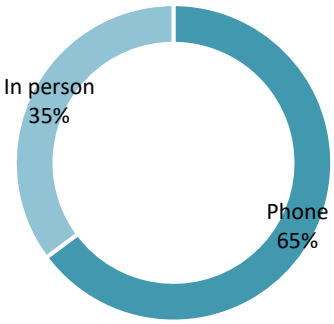


Figure 53. Method of communication for seeking help.

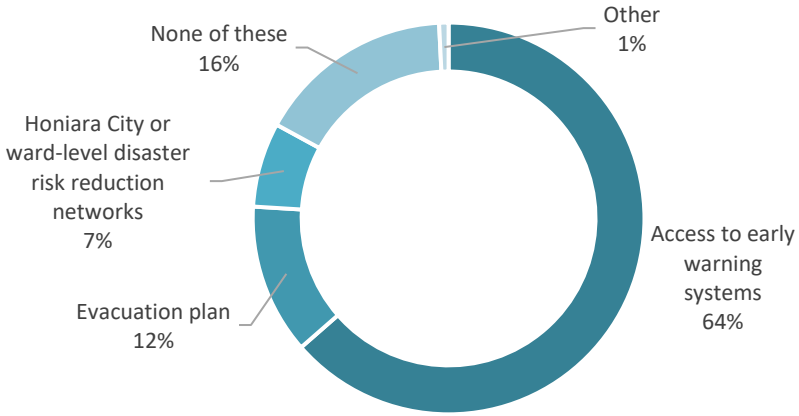


Figure 54. Methods used by the households to be prepared for disaster or hazard events.

7.3. Climate resilience

Households were provided an opportunity to make other final comments about strengths and challenges of Wind Valley's capacity to deal with climate change as a community. 68 households provided comments.

7.3.1 Strengths of living in Wind Valley

As a community Wind Valley presents as a tightly bound network, with strong social cohesion, cooperation and support. One of its main strengths is the ability to work together in adverse conditions both pre and post disasters.

35% of households reported that they enjoyed the community cohesion that existed in the community.

Statements regarding 'working together' in times of disasters and hard times were common, as well as feelings of safety (law and order), friendliness and support.

CONFIDENTIAL

10% of respondents reported that they felt safe from extreme weather events, such as cyclones and strong winds, and 7% indicated that easy accessibility to roads and utilities was a positive characteristic of the settlement.

13% of households simply said they feel good about living in Wind Valley.

7.3.2 Challenges about living in Wind Valley

Of the 59 households that responded to the question regarding the challenges of living in Wind Valley, 25% identified that environmental hazards such as landslides, flooding heavy rains and cyclones were all considerable challenges impacting the community of wind valley.

19% of respondent highlighted lawlessness, disrespect and alcoholism as a significant factor contributing to the community challenges.

In contrast to reported strengths, 12% felt that there was a lack of support and community cohesion that led to isolation, lack of communication, and awareness.

Economic status, while low for this community, is relatively stable with households able to provide basic needs for their families, however, a limited ability to save contributed to a lack of livelihood uplift and investment potential for mitigation and adaptation strategies in response to hazards and risks.

7.3.3 Other remarks

Only 20 households responded to this section with a variety of statements.

Some were eager to know the outcome of this project and shared that they are tired of volunteers coming into communities.

Others stated that the area is prone to experiencing hazards such as landslides and extreme heat and fear for their safety.

Some simply would like more education and awareness to help prepare for climate change and others would like to be recognised by Honiara City Council and have more support.

CONFIDENTIAL

8. Housing Stock Analysis

8.1. Roofs

72% of respondents (78 households) had roofs made of metallic materials which are in good or average condition (Figure 55).

26% of households (28 households) had roofs which used traditional materials (e.g. straw, thatch); however, more than half these households' roofs were in poor condition. Examples are shown in Figure 56.

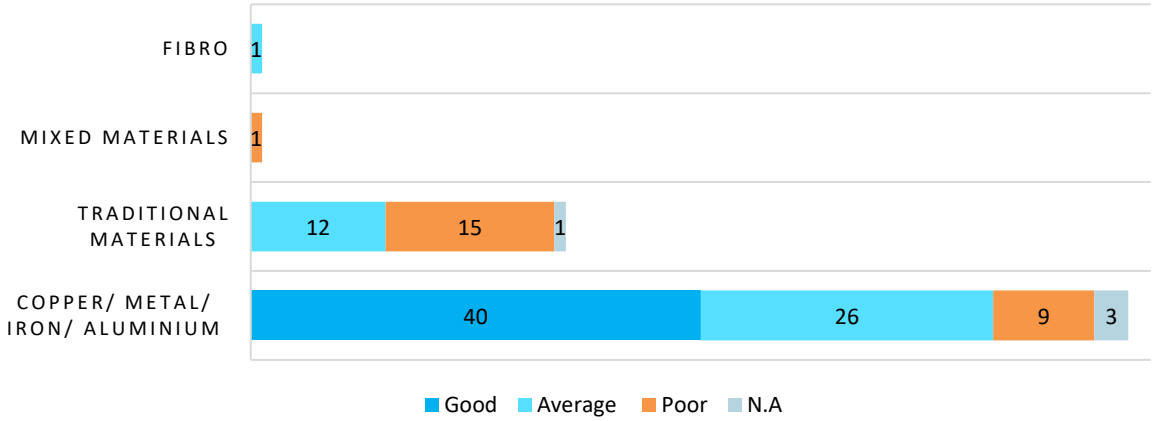


Figure 55. Type of material used and conditions of the roof.

Figure 56. Examples of metal (A) and traditional materials (B) roof.

8.2. Walls

64% of households (69 households) had walls made of wooden materials which was mostly assessed to be in good or average condition (Figure 57).

The second most common material for walls was any sort of metal, which was found in 15 houses, and these walls tended to be mostly of good or average condition. Examples are shown in Figure 58.

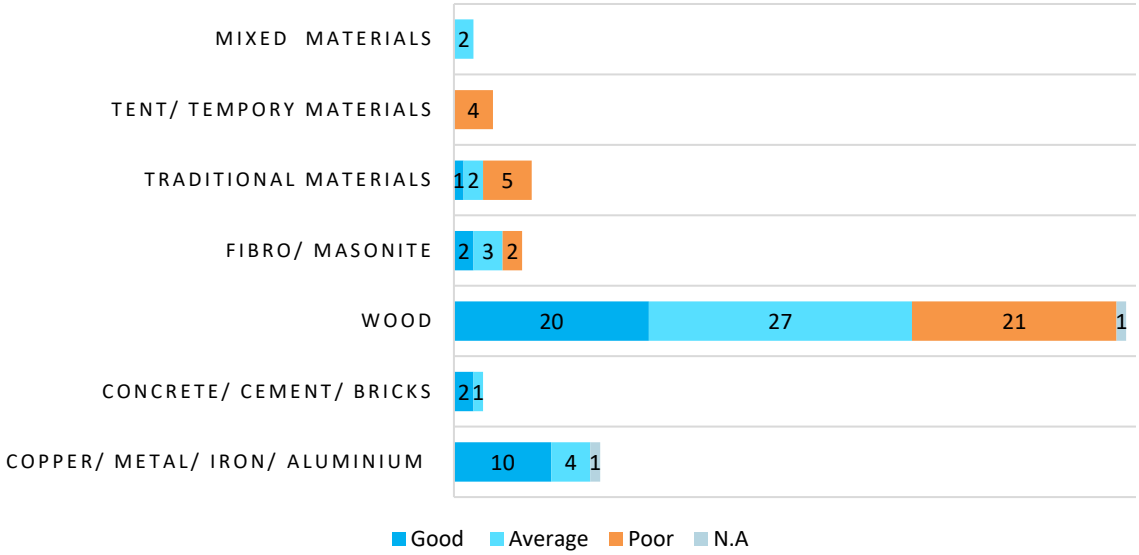


Figure 57. Type of materials used and conditions of the walls.

Figure 58. Examples of wood (A) and metal (B) walls.

8.3. Floors

Wooden planks were the most commonly used material for household flooring (Figure 59).

Other materials identified included carpet, coral or pebbles, and parquet or polished wood; however, all of these were used in less than 10% of households.

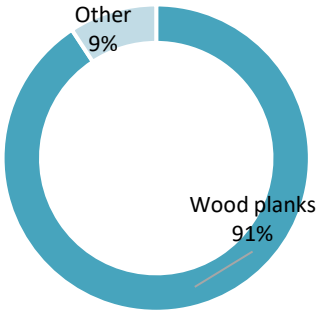


Figure 59 . Type of flooring material.

8.4. Posts

67.5% of households (73 households) used wood for their housing posts (stilts), with concrete or brick identified as the second most utilised material (22 households) (Figure 60). The use of mixed materials was only identified in one household (combination of metal and wood).

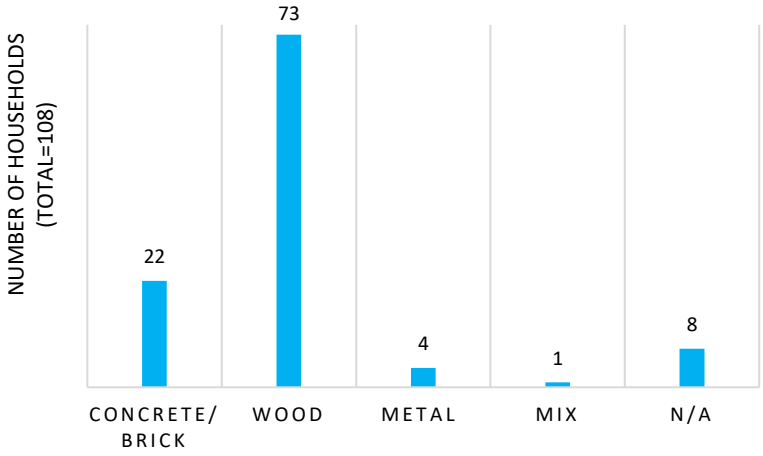


Figure 60. Type of material used on posts (stilts).

8.5. Elevation (house and site)

Of the 93% of households with posts (stilts), 80% of households had their floor levels situated above one meter in height, 40% of which were above two meters or more.

Most dwellings surveyed (88%) were identified as single-storey buildings, with 12 households assessed as double-storey buildings. One household was identified as living in a building with more than two stories (Figure 61).

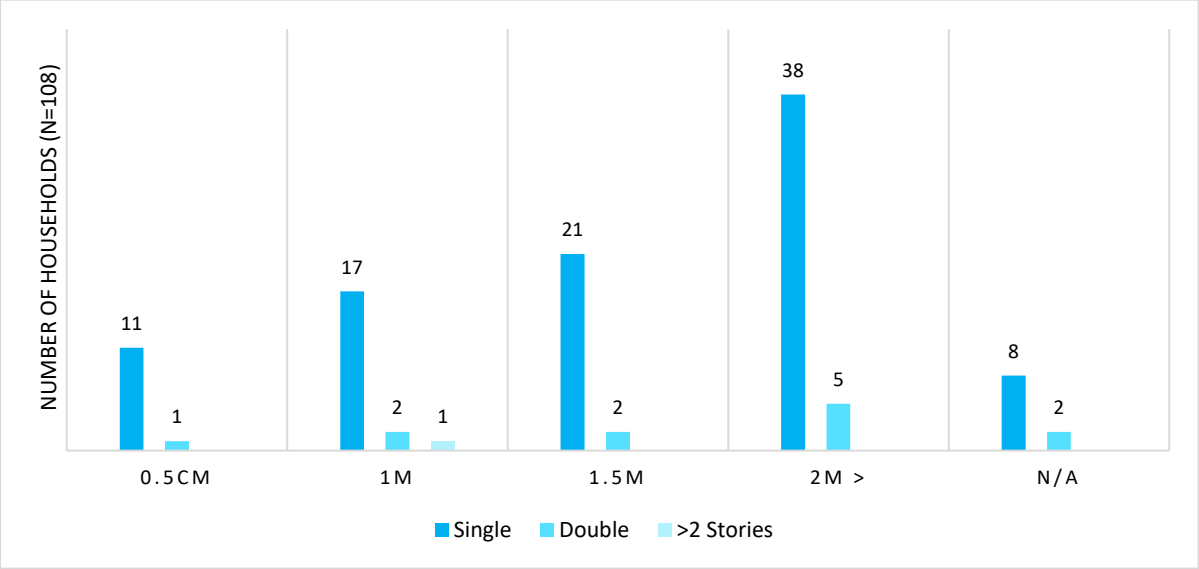


Figure 61. Height of the house (from the ground) and the number of stories.

Almost 70% of the households surveyed were assessed as being situated on medium to high slope sites (Figure 62).

The distribution of houses according to slope classification is shown in the map (Figure 66).

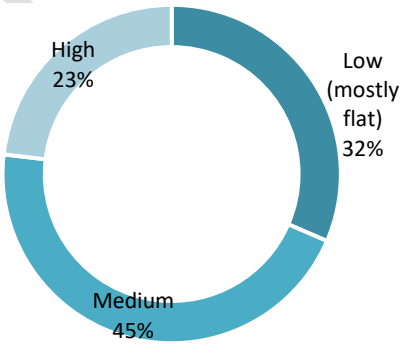


Figure 62. Slope type that households are situated on.

Figure 63 shows the distribution of households according to the steepness of the slope of the site the house is located on together with the height of the house's floor from ground level. Height of household floor does not appear strongly correlated to the steepness of the site. Examples of slope

types of housing sites are shown in Figure 64 and the distribution of houses by slope type of site throughout the community is shown in Figure 65.

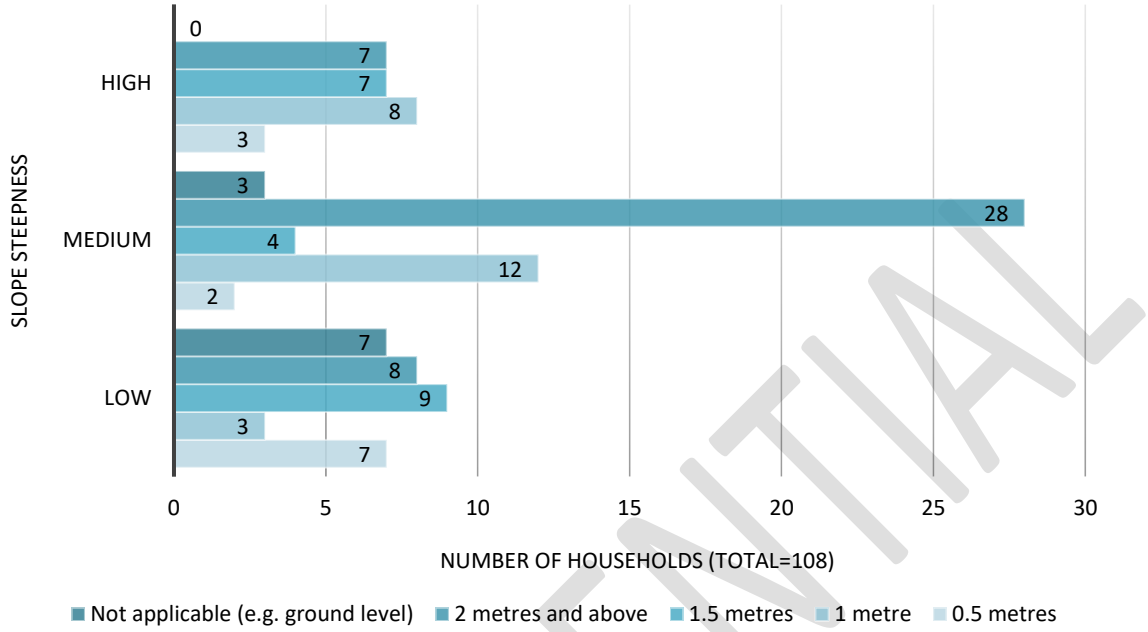


Figure 63. Distribution of households by floor level height above ground and slope of site.

Figure 64. Examples of houses located on medium and high slope levels.

CONFIDENTIAL

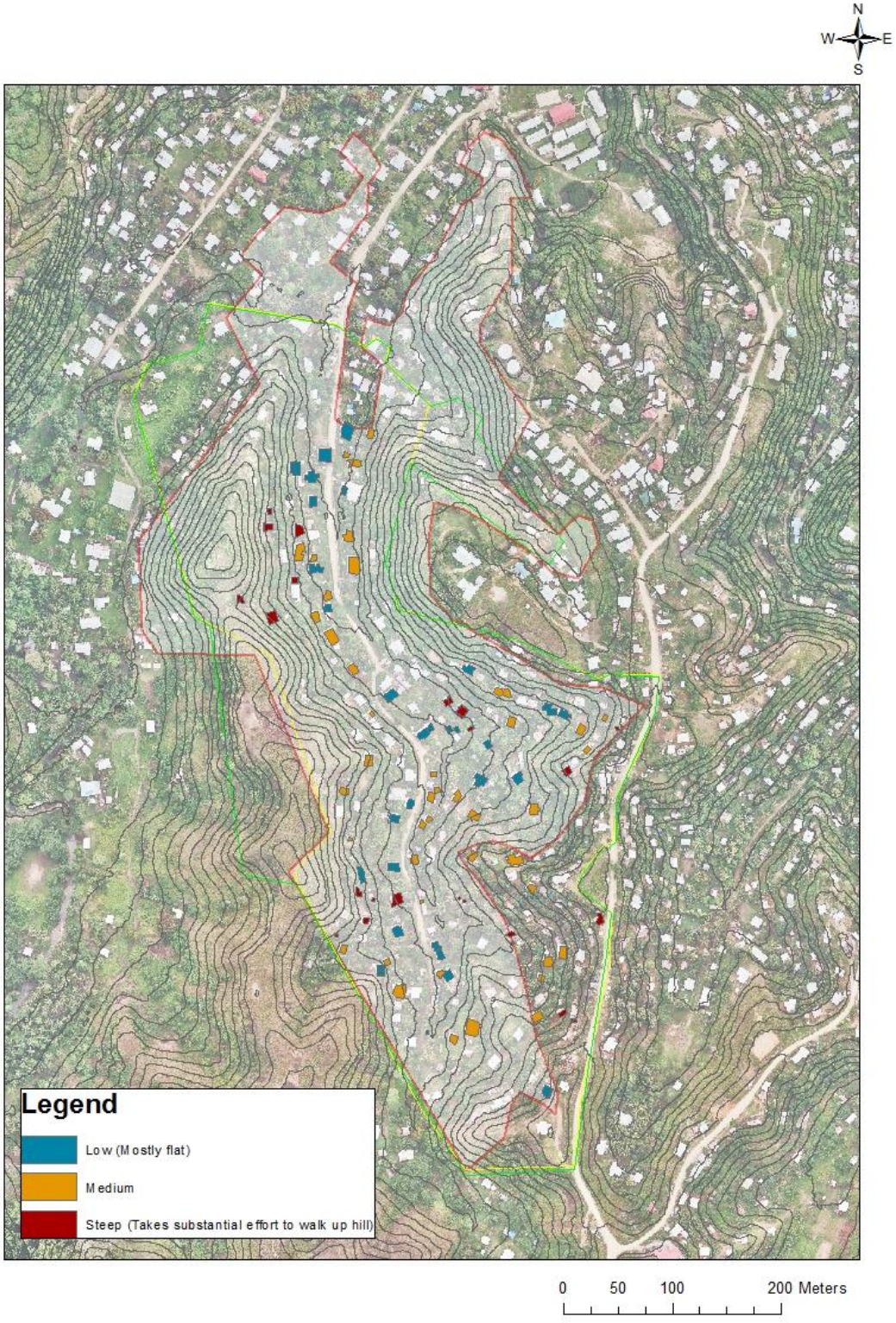


Figure 65. Distribution of houses by slope of site where house is located (Copyright MHMS LIDAR data).