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Building Ethiopia Since 1954

The Spatial Characteristics of Awra Amba

MASTER'S THESIS

This thesis is submitted to the Ethiopian Institute of Architecture, Building Construction and City Development (EiABC) for partial fulfillment of all requirements of the Master of Science in Architectural Engineering.

By

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This Thesis is submitted to the Ethiopian Institute of Architecture, Building Construction and City Development (EiABC) of Addis Ababa University in partial fulfillment of requirements for the degree of Master of Science in Architectural Engineering.

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Declaration

I declare that this thesis, prepared for the partial fulfillment of the requirements for the degree of Masters of Science in Architectural Engineering entitled “The Spatial Characteristics of Awra Amba,” is my original work prepared by my effort with the close advice and guidance of my advisor. I also declare that this thesis has not been presented at any university, and all sources that I have used or quoted have been indicated and acknowledged using complete references. I also declare that all research participants were fully informed before their involvement in the research about the purpose of the research, the use of the collected data from them, the use of their identifying photos, names, and addresses, the management of the collected data and any risk involved. Accordingly, they gave informed consent to participate in the research.

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Confirmation

The thesis can be submitted for examination with my approval as an institute’s advisor.

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Abstract

Urbanization is a decisive phenomenon of the 21st century across the entire planet. The government of Ethiopia plans to develop thousands of new urban centers all over the country rather than densifying the current big cities. During this rural-urban transformation in Ethiopia, the new housing and village layouts associated with the design of newly settled lands have often been designed without the proper detailed study of the traditional living pattern. In this case, the main objective of this research was to document the spatial characteristics of the Awra Amba community at settlement, compound, and house levels. To achieve these objectives, the case study method is selected as a research strategy since it is by far the best method for a descriptive, causal, or explanatory question. The case was conducted on 18 households based on stratified random sampling. A review of the literature, questionnaires, interviews, maps, QGIS, and photographs were used to collect data. The collected data were analyzed using activity time tables, a spatial configuration map, and a J graph. The analysis result shows that the settlement was formed on the plateau in 1972 in the form of a dense and urban pattern out of a desire to defend itself from neighborhood enemies. The road hierarchies within the settlement create an organic grid pattern. The domain of private-public space has no lock, which reflects the social cohesion of the community. There are two types of houses: row houses and detached houses, arranged around a rectangular, narrow, confined courtyard as a semi-public open space. The house is modified based on materials, defense, economy, and topography. But the major factor is the socio-cultural makeup of the community. Finally, the study recommends that all bodies concerned should take immediate action to preserve the site for tourist attraction by creating awareness among the Awra Amba people about the spatial heritage and the social benefit.

Keywords: Awra Amba, spatial characteristics, house, compound, settlement

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Table of Contents

Declaration.....	ii
Abstract.....	iii
Acknowledgments.....	iv
Table of Contents	v
List of figures.....	x
List of tables.....	xxii
Local terminologies	xxiii
Shortenings	xxiv
Acronyms and general notes	xxiv
Chapter one	1
Introduction.....	1
1.1 Background.....	1
1.2 Problem statement.....	3
1.3 Objective	4
A. General objective: -.....	4
B. Specific objective.....	4
1.4 Research question	5
1.5 Scope of the study.....	5
1.6 Significance of the study.....	5
1.7 The motivation for the study.....	6
1.8 Justification of the study	6
1.9 Limitation of the study.....	7
1.10 Organization of the study.....	8
Chapter Two.....	9
Literature.....	9
2.1 Introduction.....	9
2.2 Basic definition and Terminology	9
2.2.1 Spatial.....	9
2.2.2 Culture	9
2.2.3 Form	10

2.3	The construction of the place	10
2.4	Culture relating its expression to the built environment.....	12
2.5	The Relation of House and settlement:.....	14
2.6	Spatial organization in designed environment	16
2.7	Factors affecting House Form.....	20
2.7.1	Climate and the Need for Shelter	20
2.7.2	Materials, Construction, and Technology	21
2.7.3	Site.....	23
2.7.4	Defense	24
2.7.5	Economy.....	25
2.7.6	Religion	26
2.8	General Criticism of the Physical Determinist View.....	26
2.9	Socio-cultural factors:.....	27
2.9.1	Basic needs:	27
2.9.2	Family:.....	28
2.9.3	Position of Women:.....	29
2.9.4	Need for privacy:.....	29
2.9.5	Social interaction:	30
2.10	Contextual Background	31
2.10.1	Ethiopian Profile.....	31
2.10.2	Amhara Profile	35
2.11	Summary of literature review	38
Chapter three		39
Research Method		39
3.1	Introduction.....	39
3.2	Study area.....	39
3.3	Research design	39
3.4	Data Type.....	42
3.5	Source of Data.....	42
3.6	Selection of case and sampling.....	43
3.7	Method of Data Collection.....	51
3.7.1	Semi-structured, unstructured, and focused Interviews	51

3.7.2 Observations	52
3.7.3 Audio and Video Recording:.....	52
3.7.4 Photographing and Sketching.....	53
3.7.5 Mapping:	53
3.7.6 Measuring	53
3.8 Research Tools	53
3.9 Method of Data Analysis	53
3.9.1 The Time Diary	54
3.9.2 Spatial Mapping	54
3.9.3 Spatial Configuration Diagrams	55
3.10 Validity of Data.....	55
3.11 Summary of Research Method.....	55
Chapter four	57
Case study	57
4.1 Introduction.....	57
4.2 Awra Amba profile	57
4.1.1 Geographical Location of Awra Amba community	57
4.1.2 The origin of the Awra Amba community	59
4.1.3 Composition of the population per sex.....	61
4.2 Zumra's five principles	63
4.3 The structural organization of the community	64
4.4 Awra Amba community topography	66
4.4.1 Land Coverage and Topography, Landscape of Woji-Arba Amba Kebele	66
4.5 Formation of Settlement of Awra Amba	68
4.6 Industry in Awra Amba	70
4.7 Road network of Awra Amba.	72
4.8 Services at Awra Amba	75
A. Education	76
B. Eldercare center	79
C. Source of water	80
D. Distribution point.....	81
E. Health post	83

F. Market	84
4.9 Burial place	85
4.10 Ceremonies in the Settlement	87
A. Holiday ceremony	87
B. Marriage ceremony	88
4.11 Meeting	89
4.12 Family discussion for peace.....	90
4.13 Open space	91
4.13.1 The first open space.....	92
4.13.2 The second open space	93
4.13.3 The third open space.....	95
4.13.4 The fourth open space	97
4.14 Selected homesteads in Awra Amba (Other homesteads in appendix)	98
4.14.1 Ato Meniber Ahmed.....	98
4.14.2 Ato Kinidachew Kibiret	104
4.14.3 W/ro Marishet Kindachew's Compound.....	112
4.14.4 Ato Legesse Fenite's Compound	117
4.14.5 W/ro Birtukan Kibiret Siyraj's Compound	124
4.14.6 W/ro Fenita Getasew's Compound	131
4.14.7 Ato Belachew Nuru's Compound	138
4.15 Homestead Analysis.....	147
4.15.1 Origin of the member	147
4.15.2 Compound land tenure	150
4.15.3 Compound spatial elements.....	151
4.15.4 Compound Activities.....	165
4.15.5 The Meaning.....	166
4.15.6 The house spatial elements.....	166
4.15.7 The Activity	186
4.15.8 The Meaning.....	186
4.15.9 Material and construction.....	186
4.15.10 Space and activity at the settlement level.....	189
4.15.11 The relationship between house and settlement	191

4.15.12 Factors affecting the house form	193
Chapter five.....	198
Summary of the Findings, Conclusion, and Recommendation.....	198
5.1 Introduction	198
5.2 Summary of the Findings.....	198
5.2.1 The settlement.....	198
5.2.2 The compound spatial elements.....	201
5.2.3 The house spatial elements	205
5.2.4 The relationship between house and settlement	208
5.2.5 Factors affecting the house form	208
5.2.6 Material and construction technique.....	209
5.2.7 Culture expresses through Fixed, semi-fixed, and non-fixed elements of the built environment	209
5.3 Discussion	210
5.3 Conclusion.....	215
5.4 Recommendations	216
References.....	219
APPENDIXES	223
AP. A1: Publishable manuscript	223
AP. A2: Awra Amba community founder Aba Zumura Nuru	246
AP. A3: Awra Amba community working together	246
AP. A4: Awra Amba community waste disposal.....	247
AP. A5: Awra Amba community poultry	247
AP. A6: Awra Amba settlement land use	248
AP. A7: Awra Amba settlement vegetation cover	249
AP. A8: Awra Amba settlement activity-time table.....	250
AP. A9: Types of Awra Amba house based on internal space arrangement	251
AP. A10: types of Awra Amba compound	252
AP. A11: Awra Amba community “sekela” house	253
AP. A12: W/ro Melkenesh Ahmed’s Compound.....	254
AP. A13: W/ro Nuromer Hassen’s Compound	268
AP. A14: W/ro Mulunesh’s Compound.....	280

AP. A15: Ato Nureahmed Yesuf 's Compound	292
AP. A16: W/ro Tirusew Fenite's Compound.....	305
AP. A17: W/ro Temalsa Yemar's Compound	316
AP. A18: W/ro Kidija Ayenew's Compound.....	329
AP. A19: W/ro Melike Zumura's Compound.....	337
AP. A20: Ato Mershas' Compound	345
AP. A21: W/ro Kidane Muhammed's Compound	359
AP. A22: W/ro Yemiserach Mohammed	372

List of figures

Figure 2.1. Sense of place (source: Matthew and others (2003) cited Montgomery, 1998).....	12
Figure 2.2. Dismantling culture, relating its expressions to the built environment (source: (Asquith, 2006) cited Rapoport (2006)).....	13
Figure 2.3. The house setting is for life and the settlement is waste space (source: (Rapoport, 1969, p. 71)).	15
Figure 2.4. The house is enclosed private & settlement is a setting for life (source: (Rapoport, 1969, p. 71)).	15
Figure 2.5. Spatial organization more fundamental aspect of the designed environment than	17
Figure 2.6. Public-private domain (source: (Rapoport, 1977, p. 10)).....	18
Figure 2.7. The five-element ethological space model (source: (Rapoport, 1977) cited Rapoport 1972(b), (d)).	19
Figure 2.8. Dwellings are made of one material (reeds). Left: Uru dwelling, Lake Titicaca, Peru. Right: marsh Arab dwelling, Iraq-Iran border (source: (Rapoport, 1969)).	22
Figure 2.9. Dwellings are made of one material (mud). Left: Iran. Right: pueblos, southwestern united states (source: (Rapoport, 1969)).	22
Figure 2.10. Portable tents of sticks and felt. Left: Arab tent. Right: Mongol yurt (source: (Rapoport, 1969)).	23

Figure 2.11. Two examples from the great range of house forms using thatch and wood as materials. Left: Masai dwelling (Africa). Right: yagua dwelling (amazon) (source: (Rapoport, 1969)).	23
Figure 2.12. Part of a row of courtyard houses (Latin America). Left: flat site. Right: hilly site (source: (Rapoport, 1969)).	24
Figure 2.13. Foul be farmhouse Cameroon (source: (Rapoport, 1969)).	28
Figure 2.14. Masai compound (approximate diameter 40mt) (source: (Rapoport, 1969)).	29
Figure 2.15. Administrative map of Ethiopia.	31
Figure 2.16. Some traditional houses of Ethiopians (source: (Gebremedhin, 1971)).	32
Figure 2.17. Map of Ethiopia showing the distribution of ethnic groups (source: shelter in Africa (Oliver Paul, p. 106)).	34
Figure 2.18. Ethiopia vernacular house type based on characteristics of the supporting frameworks, source: (Gebremedhin, 1971).	35
Figure 2.19. Location of Amhara.....	36
Figure 2.20. Settlement in Amhara (source: (EthiopianTourismcommission)).	37
Figure 2.21. Vernacular house of Amhara (Oliver P. , 1997).....	37
Figure 2.22. Summary of literature review.	38
Figure 3.1. Awra Amba house type: row and detached.	48
Figure 3.2. Awra Amba settlement area.	49
Figure 3.3. Selection of case and sampling household location.	50
Figure 3.4. Summary of research design.	56
Figure 4.1. Location of Awra Amba (source: author and (Joumard, 2012)).....	58
Figure 4.2. Founder of Awra Amba (source: http://visitawraamba.com).	59
Figure 4.3. Some of the members of the Awra Amba community when the community was established (source: (Awra Amba community, 2015)).	60
Figure 4.4. Population of Awra Amba from 1970-2010 (source: (Joumard, 2012)).	62
Figure 4.5. The population of Awra Amba from 2001-2011E.c.	62
Figure 4.6. Five principles of Awra Amba.	63
Figure 4.7. A subcommittee of the development committee in Awra Amba.	64
Figure 4.8. Topography of Wenji-Amba (source: global mapper).	67
Figure 4.9. Topography of Awra-Amba (source: global mapper).	67

Figure 4.10. Formation of the settlement.....	69
Figure 4.11. Transformation of the settlement due to small-scale industry.....	70
Figure 4.12. Awra Amba settlement in 2011(source: (Awra Amba community, 2015)).	71
Figure 4.13. Awra Amba current settlement (Awra Amba community, 2015).	71
Figure 4.14. Main, secondary, and linkage road of the settlement.	73
Figure 4.15. Main, secondary, and linkage roads of the settlement.....	73
Figure 4.16. Main, secondary, and linkage roads of the settlement.....	74
Figure 4.17. Services location of Awra Amba settlement.	75
Figure 4.18. Location of schools of Awra Amba.....	76
Figure 4.19. Kinder garden (left), elementary (middle), high school (right) of Awra Amba.	76
Figure 4.20. Location of kinder garden of Awra Amba.	77
Figure 4.21. Interior of the kinder garden of Awra Amba (source: (Joumard, 2012)).	77
Figure 4.22. Location of Adiss Ra'y primary school of Awra Amba.....	78
Figure 4.23. The eldercare center of Awra Amba.	79
Figure 4.24. Elders care center in Awra Amba community (Awra Amba community, 2015).	79
Figure 4.25. Water source reservoir in Awra Amba.	80
Figure 4.26. Water source reservoir, and bono in Awra Amba.	81
Figure 4.27. Water distribution points in Awra Amba.	82
Figure 4.28. Health station in awra amba.	83
Figure 4.29. Awra Amba community open market.	84
Figure 4.30. Wonji-amba kebele open market.....	85
Figure 4.31. Member of the community accomplishes burial process(left): a member of the community stayed in the family of the deceased (right) (source: (Awra Amba community, 2015)).	86
Figure 4.32. Member of the community celebrating Ethiopian new year's holiday, playing children. Members of the community participate “lewgen derash” charity.	87
Figure 4.33. Meeting place in Awra Amba community.	89
Figure 4.34. Semipublic open space.	90
Figure 4.35. Location of open space in Awra Amba community.....	91
Figure 4.36. First, open space in Awra Amba community.	92
Figure 4.37. The second open space in the Awra Amba community is used for dairy farming..	93

Figure 4.38. Second open space in Awra Amba community.....	94
Figure 4.39. Central open space in Awra Amba community.....	95
Figure 4.40. Central open space in Awra Amba community.....	96
Figure 4.41. Open space in Awra Amba community used for youth playground.	97
Figure 4.42. Ato Meniber Ahmed and his daughter, and compound site plan.	98
Figure 4.43. Ato Meniber Ahmed compound 3d.....	100
Figure 4.44. Ato Meniber Ahmed compound location.	100
Figure 4.45. Ato Meniber Ahmed compound site plan.	100
Figure 4.46. Ato Meniber Ahmed house site floor plan.	101
Figure 4.47. Ato Meniber Ahmed house furniture and activity.....	101
Figure 4.48. Ato Meniber Ahmed front yard activity.	102
Figure 4.49. J-graph of Ato Meniber Ahmed's family.	102
Figure 4.50. Activity time graph of Ato Meniber Ahmed's family.....	103
Figure 4.51. Activity time graph of Ato Meniber Ahmed's family.....	103
Figure 4.52. Ato Kinidachew Kibiret's family.	104
Figure 4.53. Ato Kinidachew Kibiret's compound.....	106
Figure 4.54. Ato Kinidachew Kibiret's house site plan.....	106
Figure 4.55. Ato Kinidachew Kibiret's house floor plan.....	107
Figure 4.56. Ato Kinidachew Kibiret's house furniture and activity.	108
Figure 4.57. Ato Kinidachew Kibiret's compound front and back yard activity.	109
Figure 4.58. Ato Kinidachew Kibiret's house section.....	109
Figure 4.59. J graph of Ato Kinidachew Kibiret's house.	110
Figure 4.60. Activity time graph of Ato Kinidachew Kibiret's family.	111
Figure 4.61. W/ro Marishet Kindachew's family.	112
Figure 4.62. W/ro Marishet Kindachew's compound.....	113
Figure 4.63. W/ro Marishet Kindachew's.....	113
Figure 4.64. W/ro Marishet Kindachew's house site floor plan.	114
Figure 4.65. W/ro Marishet Kindachew's house furniture and activity.	114
Figure 4.66. W/ro Marishet Kindachew's front yard.....	115
Figure 4.67. W/ro Marishet Kindachew's house section.....	115
Figure 4.68. J graph of W/ro Marishet Kindachew's house.	116

Figure 4.69. Activity time graph of W/ro Marishet Kindachew's family.	116
Figure 4.70. Ato Legesse Fenite's family.	117
Figure 4.71. Ato Legesse Fenite's compound.	118
Figure 4.72. Ato Legesse Fenite's house site plan.....	119
Figure 4.73. Ato Legesse Fenite's house site floor plan.....	120
Figure 4.74. Ato Legesse Fenite's traditional fuel saving stove at E.	121
Figure 4.75. Ato Legesse Fenite's house front yard.	121
Figure 4.76. Ato Legesse Fenite's house back yard.	122
Figure 4.77. J graph of Ato Legesse Fenite's house.	123
Figure 4.78. Activity time graph of Ato Legesse Fenite's family.	123
Figure 4.79. W/ro Birtukan Kibiret's family.	124
Figure 4.80. W/ro Birtukan Kibiret's compound.....	126
Figure 4.81. W/ro Birtukan Kibiret's house floor plan.....	127
Figure 4.82. A shelf made of eucalyptus plaster with mud (mesikot).	128
Figure 4.83. W/ro Birtukan living activity.....	128
Figure 4.84. Cereal store (Gushigusha).	128
Figure 4.85. W/ro Birtukan Kibiret's house section.	129
Figure 4.86. J graph W/ro Birtukan Kibiret's house.....	130
Figure 4.87. Activity time graph of W/ro Birtukan Kibiret's family.....	130
Figure 4.88. W/ro Fenita Getasew's family.....	131
Figure 4.89. W/ro Fenita Getasew's compound.	133
Figure 4.90. W/ro Fenita Getasew's compound plan.	133
Figure 4.91. W/ro Fenita Getasew's house site floor plan.....	134
Figure 4.92. W/ro Fenita Getasew's compound front and back yard activity.	135
Figure 4.93. W/ro Fenita Getasew's house section.....	136
Figure 4.94. J graph of W/ro Fenita Getasew's house.....	136
Figure 4.95. Activity time graph of W/ro Fenita Getasew's family.	137
Figure 4.96. Ato Belachew Nuru.	138
Figure 4.97. Ato Belachew Nuru's compound.	141
Figure 4.98. Ato Belachew Nuru's site plan.....	141
Figure 4.99. Ato Belachew Nuru's site floor plan.	142

Figure 4.100. Ato Belachew Nuru's compound honey harvesting.	143
Figure 4.101. Ato Belachew Nuru's front elevation.	144
Figure 4.102. Ato Belachew Nuru's right-side elevation.	144
Figure 4.103. Ato Belachew Nuru's house section.	145
Figure 4.104. J graph of Ato Belachew Nuru's house.	145
Figure 4.105. Activity Time graph of Ato Belachew Nuru's family.	146
Figure 4.106. Origin of the member.	147
Figure 4.107. The man passes through the collector road of the settlement.	151
Figure 4.108. Access to w/ro Mulunesh's house: linkage road between the house.	151
Figure 4.109. Fence in Awra Amba.	152
Figure 4.110. Compound location in Awra Amba settlement.	154
Figure 4.111. Activity zone in Awra Amba settlement.	155
Figure 4.112. Types of Awra Amba compound arrangement.	156
Figure 4.113. Ato Meniber's compound.	157
Figure 4.114. W/ro Mulunesh's compound.	158
Figure 4.115. Basic need factor for compound layout at Awra Amba, (W/ro Mulunesh's house site plan).	159
Figure 4.116. Topography factor on the layout of the compound at Awra Amba, (Ato Legesse Fenite house section).	160
Figure 4.117. The economy factor for compound layout at Awra Amba, (W/ro Kidane and w/ro Tirusew row house).	161
Figure 4.118. Social interaction factor for compound layout at Awra Amba (sharing the front and backyard of W/ro Nuromer and Ato Legesse compound).	161
Figure 4.119. Transform the compound by the expansion of the house for renting dormitory (W/ro Yemisirach's house site floor plan).	162
Figure 4.120. Transform the compound by the expansion of the house for renting dormitory (W/ro Birtukan Kibiret's house site floor plan).	163
Figure 4.121. Collector and linkage road defined the house.	163
Figure 4.122. Front and back yard as semi-public space.	164
Figure 4.123. Semi-private space in the backyard.	165
Figure 4.124. Activity at the front and back yard.	166

Figure 4.125. Transformation of Awra Amba house.....	167
Figure 4.126. Housing land use at the settlement.	169
Figure 4.127. Awra Amba house type: detached and row house.....	170
Figure 4.128. Awra Amba compound row house-sharing wall (gib a'af).	170
Figure 4.129. Type 1 interior arrangement of Awra Amba house.....	172
Figure 4.130. Type 2 interior arrangement of Awra Amba house.....	173
Figure 4.131. Type 3 interior arrangement of Awra Amba house.....	173
Figure 4.132. Type 4 interior arrangement of Awra Amba house.....	174
Figure 4.133. Type 5 interior arrangement of Awra Amba house.....	174
Figure 4.134. Site factor in interior arrangement of Awra Amba house.	175
Figure 4.135. Sharing wall arrangement of Awra Amba house.	176
Figure 4.136. Economy factor in interior arrangement of Awra Amba house.	176
Figure 4.137. Defense factor in interior arrangement of Awra Amba house.	177
Figure 4.138. Basic need factor in interior arrangement of Awra Amba house.	177
Figure 4.139. Family structure factor in interior arrangement of Awra Amba house.	178
Figure 4.140. Position of women factors in interior arrangement of Awra Amba house.....	179
Figure 4.141. Social interaction factor in interior arrangement of Awra Amba house.	179
Figure 4.142. Living furniture 'Medeb' local sofa.	180
Figure 4.143. Living furniture 'Mesikot' local shelf.	181
Figure 4.144. Pantry furniture 'Goushigusha' flour storage.....	182
Figure 4.145. The traditional fuel-saving stove of the Awra Amba community.....	184
Figure 4.146. Service furniture weaving machine.	185
Figure 4.147. Spinning machine 'Madawerya'.....	185
Figure 4.148. Site furniture 'Gota' grain store & traditional hives.	186
Figure 4.149. Section of typical Awra Amba house.....	188
Figure 4.150. Awra Amba house partition wall.....	189
Figure 4.151. Percentage of space used at dwelling, compound, and out of compound level. ..	190
Figure 4.152. Percentage of space used at dwelling level.	191
Figure 4.153. The relationship of house and settlement.	192
Figure 4.154. Defense factor for house form.....	194
Figure 4.155. Family structure factor for house form.....	195

Figure 4.156. Position of women factor for house form.....	196
Figure 4.157. Need for privacy factor for house form.....	196
Figure 4.158. Social interaction factor for house form.....	197
Figure 5.1. Types of Awra Amba compound arrangement.	203
Figure 5.2. Activity at the compound.	205
Figure 5.3. Traditional fuel-saving stove.....	207
Figure 5.4. Fixed, semi-fixed, and non-fixed elements of the built environment.....	210
Figure A.1. Founder of the community aba Zumra Nuru.	246
Figure A.2. Awra Amba community working together.....	246
Figure A.3. Awra Amba community waste disposal.	247
Figure A.4. Awra Amba community poultry.....	247
Figure A.5. Awra Amba settlement land use.....	248
Figure A.6. Awra Amba settlement vegetation cover.....	249
Figure A.7. Sekelea house of the first settlement (source: arihibu tv program).	253
Figure A.8 W/ro Melkenesh Ahmed.....	254
Figure A.9 W/ro Melkenesh Ahmed compound.....	257
Figure A.10 W/ro Melkenesh Ahmed compound.....	258
Figure A.11 W/ro Melkenesh Ahmed front yard.....	259
Figure A.12 W/ro Melkenesh Ahmed traditional kitchen and weaving area	260
Figure A.13 W/ro Melkenesh Ahmed main house 3d and floor plan	262
Figure A.14 W/ro Melkenesh Ahmed Front elevation of the house.....	263
Figure A.15 W/ro Melkenesh Ahmed East side elevation of the house	263
Figure A.16 W/ro Melkenesh Ahmed living room furniture.....	264
Figure A.17 W/ro Melkenesh Ahmed fuel-saving stove chimney exit for smoke	265
Figure A.18 J graph of W/ro Melkenesh Ahmed.....	267
Figure A.19 Activity time graph of W/ro Melkenesh Ahmed.....	267
Figure A.20 W/ro Nuromer Hassen house.....	268
Figure A.21 W/ro Nuromer Hassen compound	270
Figure A.22 W/ro Nuromer Hassen compound 3d	271
Figure A.23 W/ro Nuromer Hassen house front yard.....	272
Figure A.24 W/ro Nuromer Hassen house front elevation	273

Figure A.25 W/ro Nuromer Hassen house East and west elevation	273
Figure A.26 W/ro Nuromer Hassen house backyard	274
Figure A.27 W/ro Nuromer Hassen house floor plan	275
Figure A.28 W/ro Nuromer Hassen living room furniture	276
Figure A.29 W/ro Nuromer Hassen bedroom furniture.....	277
Figure A.30 J graph of W/ro Nuromer Hassen house.....	278
Figure A.31 Activity time graph of W/ro Nuromer Hassen's family	279
Figure A.32 W/ro Mulunesh's family.....	280
Figure A.33 W/ro Mulunesh's compound	283
Figure A.34 Access to W/ro Mulunesh's house	283
Figure A.35 W/ro Mulunesh's house site plan	284
Figure A.36 W/ro Mulunesh's house site floor plan.....	285
Figure A.37 W/ro Mulunesh's house front elevation	286
Figure A.38 W/ro Mulunesh's house front yard.....	286
Figure A.39 W/ro Mulunesh's house backyard	287
Figure A.40 W/ro Mulunesh's house section	288
Figure A.41 W/ro Mulunesh's living room furniture	289
Figure A.42 W/ro Mulunesh's traditional kitchen furniture	290
Figure A.43 W/ro Mulunesh's bedroom furniture.....	290
Figure A.44 J graph of W/ro Mulunesh house.....	291
Figure A.45 Activity Time graph of W/ro Mulunesh's family.....	291
Figure A.46 Ato Nureahmed Yesuf	292
Figure A.47 Ato Nureahmed Yesuf	293
Figure A.48 Ato Nureahmed Yesuf compound	295
Figure A.49 Ato Nureahmed Yesuf house site plan	296
Figure A.50 Ato Nureahmed Yesuf house site floor plan	297
Figure A.51 Ato Nureahmed Yesuf house floor plan	298
Figure A.52 Ato Nureahmed Yesuf house section	299
Figure A.53 Ato Nureahmed Yesuf's house front yard.....	299
Figure A.54 Ato Nureahmed Yesuf house backyard	300
Figure A.55 Ato Nureahmed Yesuf house front elevation	300

Figure A.56 Ato Nureahmed Yesuf house section	301
Figure A.57 Ato Nureahmed Yesuf sanitary system	302
Figure A.58 Ato Nureahmed Yesuf living furniture.....	303
Figure A.59 J graph of Ato Nureahmed Yesuf's house	303
Figure A.60 Activity time graph of Ato Nureahmed Yesuf family	304
Figure A.61 Wro Tirusew Fenite's	305
Figure A.62 Wro Tirusew Fenite's compound	308
Figure A.63 Wro Tirusew Fenite site plan.....	309
Figure A.64 Wro Tirusew Fenite house site floor plan	310
Figure A.65 Wro Tirusew Fenite house front yard.....	311
Figure A.66 Wro Tirusew Fenite house backyard	312
Figure A.67 Wro Tirusew Fenite house section	313
Figure A.68 Wro Tirusew Fenite house 3d.....	313
Figure A.69 Wro Tirusew Fenite living room furniture	314
Figure A.70 Wro Tirusew Fenite kitchen furniture	314
Figure A.71 J graph of Wro Tirusew Fenite house.....	315
Figure A.72 Activity time graph of Wro Tirusew Fenite house	315
Figure A.73 Wro Temalsa Yemar's family	316
Figure A.74 Wro Temalsa Yemar's house living room.....	319
Figure A.75 Wro Temalsa Yemar's house floor plan.....	321
Figure A.76 Wro Temalsa Yemar's house backyard.....	322
Figure A.77 Wro Temalsa Yemar's house and furniture.....	323
Figure A.78 Wro Temalsa Yemar's house front yard.....	324
Figure A.79 Wro Temalsa Yemar's compound 3d	324
Figure A.80 Wro Temalsa Yemar's living room furniture	326
Figure A.81 Wro Temalsa Yemar's kitchen furniture	326
Figure A.82 Wro Temalsa Yemar's weaving furniture	327
Figure A.83 Wro Temalsa Yemar's bedroom furniture.....	327
Figure A.84 J graph W/ro Temalsa Yemar's house.....	328
Figure A.85 Activity time graph of Wro Temalsa Yemar's family.....	328
Figure A.86 W/ro Kidija Ayenew's Compound	331

Figure A.87 W/ro Kidija Ayenew's site plan	332
Figure A.88 W/ro Kidija Ayenew's house site floor plan	333
Figure A.89 W/ro Kidija Ayenew's house front elevation	334
Figure A.90 W/ro Kidija Ayenew's house section	334
Figure A.91 W/ro Kidija Ayenew's living room furniture	335
Figure A.92 J graph of W/ro Kidija Ayenew's house	336
Figure A.93 Activity time graph of W/ro Kidija Ayenew's family	336
Figure A.94 W/ro Melike Zumura's Compound	339
Figure A.95 W/ro Melike Zumura's house site plan	340
Figure A.96 W/ro Melike Zumura's house front yard	341
Figure A.97 W/ro Melike Zumura's house backyard	341
Figure A.98 W/ro Melike Zumura's house site floor plan	342
Figure A.99 W/ro Melike Zumura's house section	343
Figure A.100 W/ro Melike Zumura's living room furniture	343
Figure A.101 J graph of W/ro Melike Zumura's house	344
Figure A.102 Activity time graph of W/ro Melike Zumura's family	344
Figure A.103 Ato Mershas' house	345
Figure A.104 Ato Mershas' compound	348
Figure A.105 Ato Mershas' house site plan	349
Figure A.106 Ato Mershas' house living room	350
Figure A.107 Ato Mershas' house site floor plan	351
Figure A.108 Ato Mershas' house front yard	352
Figure A.109 Ato Mershas' house backyard	353
Figure A.110 Ato Mershas's house section	354
Figure A.111 Ato Mershas's living room furniture	355
Figure A.112 Ato Mershas's bedroom furniture	355
Figure A.113 Ato Mershas's kitchen and weaving room furniture	356
Figure A.114 Ato Mershas's compound furniture	357
Figure A.115 Ato Mershas's traditional fuel-saving stove	357
Figure A.116 J graph of Ato Mershas's house	358
Figure A.117 Activity time graph of Ato Mershas's family	358

Figure A.118 W/ro Kidane Muhammed	359
Figure A.119 W/ro Kidane Muhammed's compound	362
Figure A.120 W/ro Kidane Muhammed's site floor plan	363
Figure A.121 W/ro Kidane Muhammed's front yard	364
Figure A.122 W/ro Kidane Muhammed's floor plan.....	365
Figure A.123 W/ro Kidane Muhammed's elevation.....	366
Figure A.124 W/ro Kidane Muhammed's section.....	366
Figure A.125 W/ro Kidane Muhammed's backyard.....	367
Figure A.126 W/ro Kidane Muhammed's living room furniture	368
Figure A.127 W/ro Kidane Muhammed's pantry furniture	369
Figure A.128 W/ro Kidane Muhammed's bedroom furniture	369
Figure A.129 W/ro Kidane Muhammed's traditional kitchen furniture	370
Figure A.130 W/ro Kidane Muhammed's compound furniture	370
Figure A.131 J graph of W/ro Kidane Muhammed's	371
Figure A.132 Activity time graph of W/ro Kidane Muhammed's.....	371
Figure A.133 W/ro Yemisrach's compound.....	374
Figure A.134 W/ro Yemisrach's house site plan.....	375
Figure A.135 W/ro Yemisrach's house front elevation	376
Figure A.136 W/ro Yemisrach's house right side elevation.....	377
Figure A.137 W/ro Yemisrach's house site floor plan	378
Figure A.138 W/ro Yemisrach's house section	379
Figure A.139 W/ro Yemisirach Mohammed's traditional kitchen furniture	380
Figure A.140 W/ro Yemisirach Mohammed's living furniture	381
Figure A.141 W/ro Yemisirach Mohammed's bedroom furniture	381
Figure A.142 W/ro Yemisirach Mohammed's kitchen furniture.....	381
Figure A.143 J graph of W/ro Yemisrach's house	382
Figure A.144 Activity time graph of W/ro Yemisrach's family.....	382

List of tables

Table 3.1. Relevant Situations for Different Research Methods. Source: (Yin R. K., Case Study Research and Applications: Design and Methods Sixth Edition, 2018)cited COSMOS Corporation.	40
Table 3.2. The selection summary of the case study.	44
Table 3.3. Selection of case and sampling.	45
Table 4.1 Average spatial mapping of all samplings within the settlement	189
Table A.1 Spaces –Time Dairy of W/ro Melkenesh Ahmed’s Family.	255
Table A.2 W/ro Melkenesh Ahmed house construction material.	258
Table A.3 W/ro Melkenesh Ahmed house unit.	261
Table A.4 W/ro Melkenesh Ahmed house construction material local name.	265
Table A.5 W/ro Melkenesh Ahmed material tools.	266
Table A.6 Spaces –Time Dairy of W/ro Nuromer Hassen’s Family.	269
Table A.7 W/ro Nuromer compound unit.	272
Table A.8 W/ro Nuromer house construction material.	277
Table A.9 W/ro Nuromer materials.	278
Table A.10 Spaces –Time Dairy of W/ro Mulunesh’s Family.	281
Table A.11 Spaces –Time Dairy of Ato Nureahmed Yesuf ’s Family.	294
Table A.12 Spaces –Time Dairy of W/ro Tirusew Fenite’s Family.	306
Table A.13 Spaces –Time Dairy of W/ro Temalsa Yemar’s Family.	317
Table A.14 W/ro Temalsa Yemar’s compound unit.	319
Table A.15 W/ro Temalsa Yemar’s Housing unit location and activities.	320
Table A.16 Spaces –Time Dairy of W/ro Kidija Ayenew’s Family.	329
Table A.17 Spaces –Time Dairy of W/ro Melike Zumura’s Family.	337
Table A.18 Spaces –Time Dairy of Ato Merisha’s Family.	346
Table A.19 Ato Merisha’s compound unit.	350
Table A.20 Ato Merisha’s house construction material.	353
Table A.21 Spaces –Time Dairy of W/ro Kidane Muhammed’s Family.	360
Table A.22 W/ro Kidane Muhammed house compound unit.	362

Table A.23 Spaces –Time Dairy of W/ro Yemiserach Mohammed’s Family.....	373
Table A.24 W/ro Yemiserach Mohammed’s compound unit.	376
Table A.25 W/ro Yemiserach Mohammed’s house spatial parts	379

Local terminologies

Abba (Amharic word) -----	Elder.
Afer-----	Soil.
Akafa-----	Shovel
Atir -----	Fence
Ato (Amharic word) -----	Mr.
Balitina -----	Spice preparing
Chika -----	Mud
Denibel -----	Wooden post at the center of the house.
Derig -----	Military Government of Ethiopia, from 1974 to 1987.
Doma-----	Pickax
Ebet-----	Animal dung
Eka bet-----	Pantry
Gib Af-----	Common partition wall share between neighbors.
Gota -----	Crop storage
Gotera -----	Crop storage
Gushigusha -----	Flour storage
Kaba dingay-----	Masonry rotates the perimeter of the house to support the structure
Kilil -----	Region
Korikoro-----	Corrugated iron sheet
Madaweriya -----	instrument used to convert cotton to thread
Medeb-----	Sitting furniture made with stone or wood and plaster with mud

Medosha	-----	Hammer
Megaz	-----	Saw
Meketa	-----	Partition wall
Meseret timihirt	-----	Basic education for all during Derig regime
Mesikot	-----	Shelf
Metirebiya	-----	Ax
Midija	-----	Traditional stove
Salone	-----	Living room
Sar	-----	Grass
Sekela	-----	Traditional Awra Amba house
Shimena	-----	Weaving
Teffe	-----	the most common cereal crop used to make enjera
Warka	-----	Ficus vasta is a fig plant found in Ethiopia
W/ro (Amharic word)	-----	Mis.

Shortenings

W/ro (Amharic word)	-----	Weyzero.
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Acronyms and general notes

Acronyms

AAU	Addis Ababa University
CSA	Central Statistical Agency of Ethiopia
ECL-AA	Emerging Cities Lab at EiABC AAU on Academia.edu.
EiABC	Ethiopian Institute of Architecture, Building construction and City development
EMA	Ethiopian Map Authority

GTP II	Global transformation plan of Ethiopia
ANRS	Amhara National Regional State
EELPA	Ethiopian Electric Light and Power Authority
MASL	Meter above sea level

General notes

- According to the Ethiopian naming system, for Ethiopians, first names are given in the citations of the text; while first names followed by the father's name are given in the reference.
- All calendar is based on Gregorian unless specified as Ethiopian Calendar (EC)
- Unless specified all the pictures, maps, sketches, and graphs are taken/done by the researcher
- All measurements are in SI unit.
- No drawings are scaled so use dimensions indicated
- All research participants were fully informed before their involvement in the research about the purpose of the research, the use of the collected data from them, the use of their identifying photos, names, and addresses, the management of the collected data and any risk involved. Accordingly, they gave informed consent to participate in the research.

Chapter one

Introduction

1.1 Background

Urbanization is a decisive phenomenon of the 21st century across the entire planet. The United Nations projects that by 2050, almost 68% of the world's population will call urban areas their home. This expected urbanization rate in Africa will be extraordinary. “African cities have growth rates of up to 5% per year, which makes them the fastest-growing cities in the world today. The reason for this urban population growth is that the continent seems late in the process and there are high internal rural-urban migration rates, which are a major driver of urbanization into African cities” (Herbel, 2012).

Especially in Ethiopia, rapid rural-urban transformation is expected because the country has 80% rural settlement and population growth in urban as well as rural areas (ECSA, 2007). “In rural Ethiopia, where the annual population growth rate is 7%, congested cities increasingly cannot absorb the high rate of urban migration, and rural land is at capacity for subsistence farming, innovative methods are urgently needed to provide housing and encourage the growth of medium-scale towns” (Lara & Philippe, 2012) cited (Läpple, 2011). According to (National Planning Commission, 2016) the government of Ethiopia plans to develop thousands of new urban centers all over the country rather than densifying the current big cities, as elucidate in (National Planning Commission, 2011).

This phenomenon presents a great opportunity for the expansion of human capabilities in every direction, economic growth, and poverty reduction, but also carries potential threats, particularly losing a socio-cultural aspect of the historical settlement patterns of the rural community. “During the urbanization phenomena, the rural communities had been forced to adopt other’s culture (Oliver, P, 2003a). “The rule which guides the organization of space, time, meaning, and communication shows regularity because they are linked systematically to culture” (Rapoport, 1977).

According to (Rapoport, 1977) among people, social and cultural characteristics are often expressed in spatial terms. Spatial is the relationship and transaction between people and physical elements of the world. Objects and people are related through separation in and by space. Space is experienced as the three-dimensional extension of the world which is around us the intervals, relationships, and distances between people and people, people and things and things and things, and space are at the heart of the built environment.

Housing is a major built environment to understand the culture and traditional patterns. It has become an important public issue in almost all societies. The housing condition of a nation manifests the identity of the people and the country's socio-economic development level. It also bears upon the normal community living conditions and the culture of the community. Housing is recognized as a place of cultural representation and cultural development. Through housing, communities and people express not only a need for protection from the environment but also traditions, customs, and beliefs. Developing housing is developing spaces for cultural transference, like teaching, healing, learning, expressing, self-realizing, etc. (Norberg-Schultz, 1968).

The same is true in rural Ethiopia, where there is no building code, regulation, law, or norms. This pushes the community to rely more on their knowledge of housing and village layouts, which is determined by the socio-cultural aspect of the community and evolves in layers as a testimony to a different period, yet very well reflects the interwoven social fabric. This traditional architecture¹ is based on society's needs, local construction materials, and social traditions developed through time. However, these traditional buildings are decreasing due to rapid urbanization. This shows that existing traditional dwellings need great attention to document and study before they lose their rich socio-cultural and spatial characteristics due to rapid urbanization. Among these, there are some trials by students, the community, and the researchers, but those studies are insufficient to fill the gap. So, the core idea behind this research is to dig into the spatial characteristics of rural communities through documenting that can be used as a keystone for the housing development of new urban centers or Rurbanization².

¹ Traditional architecture: is that way of building which makes serious use of the familiar symbolic forms of a particular culture of a particular people in a particular place.

² Rurbanization- is the mixture of "rural" and "urban" feature in rural settlement

Specifically, Awra Amba is a well-established community with a truly extraordinary lifestyle, especially in terms of equality between men and women, community spirit, absence of religion, honesty, hard work, and democracy (Joumard, 2012). The Awra Amba community is founded on five major values: respecting the right to equality of women, respecting children's rights, helping people who are unable to work due to old age and health problems, accepting all human beings as brothers and sisters, regardless of their differences, avoiding bad speech and bad deeds, instead of improving practices of cooperation, peace, love, and good deeds.

There is some trial by students, the community, and the researchers to document this exceptional socio-cultural activity concerning social and behavioral sciences. But this study mainly focuses on spatial characteristics, which differ from them by their stress on the relation and transaction between people and the physical environment. However, the housing process in the community relies more on their knowledge, which reflects their way of life and socio-cultural needs. Their spatial characteristics had not been documented adequately. This shows that existing house forms and settlement layouts need great attention to document and study before they lose their rich socio-cultural characteristics due to urbanization. Therefore, this research, entitled "Spatial Characteristics of Awra Amba," aims to fill the gap there is in studies of the traditional architecture of the Awra Amba community. Moreover, the research can be used as the main source of information on the Awra Amba community house form and settlement layout.

1.2 Problem statement

In Ethiopia, there is rapid rural-urban transformation because the country has "80% rural settlement and population growth in urban as well as rural areas" (ECSA, 2007). The government plans to develop thousands of small towns rather than densify the current big cities. According to (Oliver 2003a) during the urbanization phenomena, the rural communities had been forced to adopt other's cultures. One of the major reasons is that during this rural-urban transformation, the settlement pattern and housing form were determined without a detailed survey of the traditional pattern.

"In Ethiopia, the new housing and village layouts associated with the design of newly settled lands have often been designed without the proper detailed study of the traditional

living pattern and its relation to the establishment of new agricultural activities (Konno, 2014)cited (Andersen, 1978).

Most of the rural people in Ethiopia live in the traditional house were performing daily activities and rituals in this house, compound, and settlement. This traditional settlement, compound, and the house form they live in are not well documented and studied. Besides, the country is losing a lot of rich traditional knowledge that can help to solve problems of how to develop housing forms for those thousands of new urban centers. One of the reasons is a lack of interest and specialists in the field of traditional architecture.

“The built forms of housing, food, storage, shops, school, clinics, and churches, temples, or mosques, as well as the overall pattern of the typical rural settlement are not equipped with a detailed survey of the traditional typical rural settlement”. (Oliver P. , 2006b)

Similarly, the Awra Amba community settlement pattern, compound, and housing form had never been adequately explored, documented, and studied. As a result, the community had been forced to adopt other’s cultures because of the rapid pressure of urbanization. Therefore, this study focuses on documenting the spatial characteristics of settlement patterns, compound, and house forms of the Awra Amba community.

1.3 Objective

A. General objective: -

The main objective of this research is to find out and document Awra Amba community spatial characteristics at the house, compound, and settlement level.

B. Specific objective

The specific objectives of the research are as follows:

- a. To explore and document the spatial elements of the house, compound, and settlement of the Awra Amba community.
- b. To understand and document how the people use the space at the house, compound, and settlement level.
- c. To investigate and document the meaning of the space they use at home, compound, and settlement levels.

1.4 Research question

Based on the above statement of the problem and objective of the research, the following research questions were formulated: The main research questions are:

- a. What are the spatial elements of the house, compound, and settlement in Awra Amba?
- b. How do the people use the space at the house, compound, and settlement level?
- c. What are the meanings of the spaces they use at home, compound, and settlement levels?

1.5 Scope of the study

The thematic scope of this research is to document the spatial characteristics of Awra Amba community settlement patterns, compound layout, and house form, including the activities, space usage, time range, and meaning of elements of the house, compound, and settlement.

Geographically, this research focuses on the Awra Amba community. The community is selected because they are unique in their socio-cultural activity and have the potential to grow into a small town. This study will be a platform for the community's new urban center development.

Timely, the study will be limited to four weeks of summer (rainy season). Therefore, the activities during other seasons like autumn, winter, and spring will be beyond the scope of the study.

1.6 Significance of the study

The study will provide evidence to convince decision-makers, economists, environmentalists, urban planners, architects, and engineers to rethink the traditional pattern of village layout and house form. The study of such traditional architecture will be able to contribute valuable learning opportunities for socio-cultural aspects of house form, compound layout, and settlement patterns.

It will also help to find out good experiences, methodologies, and techniques from traditional architecture that were developed over time and to use them as an alternative strategy input for the housing development of the country's small-town urbanization. In addition, it will provide information about the Ethiopian traditional architecture before it is destroyed by urbanization, socio-economic pressures, or other natural or manmade factors.

The findings of the study are expected to document the Awra Amba community's spatial characteristics. It will also serve as a starting document to conduct further study on the Awra Amba community's socio-cultural aspect of traditional architecture.

1.7 The motivation for the study

When I was a 4th-year student, AFesol Engineering invited me to develop a new settlement pattern and housing prototype for the Awra Amba community. At that time, I was passionate and tried to develop a preliminary sketch and present it to Aba Zumra Nuru, the founder of the community, and the representative committee of the community. They raise some meaningful questions and suggestions that are an indicator of my deficiencies. Even though I wanted to understand in detail the emerging city I studied my BSc thesis on the title “*Transformation and its effect on the vernacular architecture of Amhara, in the case of Awra Amba*”. At that time, I realized the issue needed further study.

On January 18, 2018, when I was a 1st-year MSc in Architectural Engineering student at EiABC³ I got the chance to participate seminar on the title “Guiding Rapid Urbanization envisioning emerge cities of Ethiopia” organized by ECL-AA⁴ and Bauhaus school of Architecture to plan a town proposal for Awra Amba community. At this time, we propose a new town plan and get a certificate.

Finally, after all this experience, I realize that to develop a new settlement pattern and a house prototype for the emerging urban center of the community, rather than a top-down approach, bottom-up is more acceptable. Therefore, I decide primarily to study the community sense of place so that my research focuses on “the spatial characteristics of Awra Amba community”.

1.8 Justification of the study

According to (Lara & Philippe, 2012), Ethiopian cities will be confronted with overcrowding, a housing deficit, urban slums, urban poverty, and an environmental crisis due to migration, 83% of the population is living in rural areas, creating their income from agriculture and relying on a

³ EiABC: Ethiopia Institute of Architecture, Building construction, and City development.

⁴ ECL-AA: Emerging city lab at Ethiopia Institute of Architecture, Building construction and City development. Addis Ababa.

limited resource- land. Because of the limitation of this income source, a major shift from the rural to the urban is likely to happen. This also increasing the cities' size, which is an already known problem: overstressed, unplanned urban settlements. Therefore, it is time to start preventing migration and tackle the problem before it becomes a major issue in urban areas. An important way to prevent migration to urban centers is to improve rural living conditions through urbanization. Ethiopia has to invent contextual modes of urbanization rather than relying on outdated models from the so-called 'developed world', and housing, in particular, is a key factor. To develop contextual modes of urbanization and housing development, it is essential to conduct a detailed study of the spatial characteristics of the rural community. Therefore, this study mainly focuses on one of the rural communities, which is the Awra Amba community's spatial characteristics.

1.9 Limitation of the study

The major limitation of the study was time constraints. For the first month, it was so difficult to collect the primary data from the household that time and energy were wasted familiarizing the settlement and the household. After that, for the next six months, due to the global pandemic coronavirus, there was a proclamation by the government to restrict traveling from place to place, which is forcing people to stay at home. Besides, in the Awra Amba community, there was a lockdown; it was not allowed to enter inter the settlement. This makes it difficult to collect primary data from the household. After a month, a financial constraint to rent a car made extra money for transportation and accommodation necessary. Awra Amba is 560 km northwest of Addis Ababa. Moreover, the cost of the fieldwork was higher than anticipated. Besides, it was difficult to collect primary data from households since the respondents spent most of their time at the workplace, which is difficult and time-consuming to convince people when conducting interviews, photographing their dwellings, and some activities within the house, compound, and settlement. Data like old photographs, sketches, literature, videos, and recordings did not exist. These vested barriers make it difficult for the researcher to compare the spatial characteristics of the old with current trends. Despite this, the thesis was conducted in the existence of the above limitations. Therefore, handling such constraints was also an additional burden. But no limitation affects the research out commenters during spatial and thematic data collection.

1.10 Organization of the study

This thesis comprises five chapters. Chapter one is the introduction part, which covers an introduction to the problem statement, the research question's objective of the study, the scope of the study, the significance of the study, the limitations of the study, and its organization. Chapter two contains a review of literature related to concepts, ideas, and methods mentioned by different scholars regarding spatial architecture, form deterministic factors, natural and human dimensions, and arguments on domestic architecture. It also explores the contextual background provides an overview of Ethiopia and the Amhara regional state. The chapter emphasizes issues related to the sense of place and culminates in heated debates over the natural and human dimensions of domestic architecture. Chapter three focuses on research methodology. It presents the theoretical definition and the study application technique. Chapter four explores case analysis and describes location, topography, cultural settings, space usage through time within the settlement, compound and house levels, formation and transformation of the settlement, housing typologies, construction processes and techniques, and life stories, are among the issues mentioned in the discourse. Moreover, in this chapter, the collected data is analyzed. Finally, chapter five is a summary of the findings, and the conclusion and recommendations are also presented.

Chapter Two

Literature

2.1 Introduction

This chapter discusses literature related to concepts, ideas, and methods mentioned by different scholars regarding spatial characteristics, form determinates factors, natural and human dimensions, and arguments on Domestic architecture. Contextual background examines the overview of Ethiopia and the Amhara regional state. The chapter emphasizes issues related to the sense of place and culminates the heated debates over the natural and human dimensions of domestic architecture.

2.2 Basic definition and Terminology

2.2.1 Spatial

According to (Rapoport, 1977) an environment can be defined as any condition or influence outside the organism, group, or whatever system is being studied. The environment is a series of relationships among elements and people and these relationships are orderly - they have a pattern. The environment has a structure and is not a random assemblage of things. It both reflects and facilitates relations and transactions between people and the physical elements of the world. These relationships in the physical environment are primarily spatial objects and people are related through separation in and by space. Among people, psychological, social, and cultural characteristics are often expressed in spatial terms.

“Space is experienced as the three-dimensional extension of the world which is around us the intervals, relationships, and distances between people and people, people and things and things and things, and space is at the heart of the built environment. Spatial organization is, in fact, a more fundamental aspect of the designed environment than shape, materials, and the like.” (Rapoport, 1977)

2.2.2 Culture

The term “culture” can still be defined more inclusively as: “It is about a group of people who share a set of values, beliefs, a world view and symbol system which are learned and transmitted.

these create a system of rules and which reflect ideals and create a lifestyle, guiding behavior, roles, meanings as well as built environment". (Rapoport, 1977) cited (Kroeber & Kluckhohn, 1952). Culture is the total equipment of ideas and institutions and conventionalized activities of a people. (Rapoport, 1969). In this definition and else, the most important aspect of the term is that it is shared by a society, transferred from generation to generation, and loaded with that society's value systems. It becomes through these shared meanings that culture enables people to 'make sense of things around them; let them communicate and formulate a built environment.

2.2.3 Form

According to (Alexander, 1973) the diagram or patterns, are the key to the process of creating form. "Form is an abstract pattern of physical relationships which resolves a small system of interacting and conflicting forces, and is independent of all other forces, and all other possible diagrams".

According to (Rapoport, 1969) It is implicitly accepted that there is a link between behavior and form in two senses: first, in the sense that an understanding of behavior patterns, including desires, motivations, and feelings, is essential to the understanding of built form since the built form is the physical embodiment of these patterns; and second, in the sense that forms, once built, affect behavior and the way of life. Each of these two aspects forms a vast topic in itself, and both are of great interest to the architect and all those concerned with man's habitat. The question, in effect, is concerned with how changes in culture, expressed in behavior, relate to changes in the environment, as shown by physical form. the pattern of urbanization, in turn, influences the approach to housing development.

2.3 The construction of the place

According to Matthew and others (2003), Personal or group engagement with space gives it meaning as 'place', at least to the extent of differentiating it from other places through the sense of place. "Sense of place is, often discussed in terms of the Latin concept of 'genius loci', which suggests that people experience something beyond the physical or sensory properties of places, and can feel an attachment to a spirit of place" Matthew and others (2003) cited (Jackson, 1994, p. 157). Defines 'identity of place' simply as that which provides 'individuality or distinction from other places' Matthew and others (2003) cited (Lynch, 1960, p. 6). Each place has a 'unique

address', without explaining how it becomes identifiable. The 'physical setting', 'activities', and 'meanings' constitute the three basic elements of the identity of places Matthew and others (2003)cited (Relph, 1976, p. 45). Sense of place does not, however, reside in these elements but the human interaction with these elements. 'Whatever space and time mean, place and occasion mean more. For space in the image of man is placed, and time in the image of man is occasion.' The impact of an occasion on a place is dramatically demonstrated. The significance of the physicality of places is often overstated: activities and meanings may be as, or more, important in creating a sense of place. Matthew and others (2003) cited (Jackson, 1994, pp. 158-159).

According to (Relph E. C., 1976)Place in terms of its specific content, the remarkable diversity. The identity of place refers to a persistent sameness and unity which is a basic feature of our experience of places that both influences and is influenced by those experiences, allowing that place to be differentiated from others. The three components of place are physical setting, the activities, and the meanings constitute the three basic elements of the identity of places. The physical setting and the activity elements can probably be easily appreciated, but the component of significance and meaning is much more difficult to grasp. The meanings of places are property of human intentions and experiences. It can change and be transferred from one set of objects to another, and they possess their qualities of complexity, obscurity, clarity, or whatever.

The three fundamental components of place are irreducible one to the other, yet are inseparably interwoven in our experiences of places. There is another important aspect or dimension of identity that is less tangible than these components and dialectics, yet serves to link and embrace them. This is the attribute of identity that has been variously termed “spirit of place”, sense of place' or “genius of the place” (genius terms which refer to character or personality. “Spirit of place can persist despite profound changes in the basic components of identity” (Relph E. C., 1976).

(Relph, 1976) discussed the identity of a place was comprised of three interrelated components, each irreducible to the other physical features or appearance, observable activities and functions, and meanings or symbols. There was an infinite range of content within each of these and numberless ways in which they can combine. Hence, there was no discernible limit to the diversity of identities of places, and every identifiable place has unique content and patterns of relationships that were expressed and endured in the spirit of that place. Matthew and others (2003) cited (Montgomery, 1998) gave a sense of place as activity, image, and form.

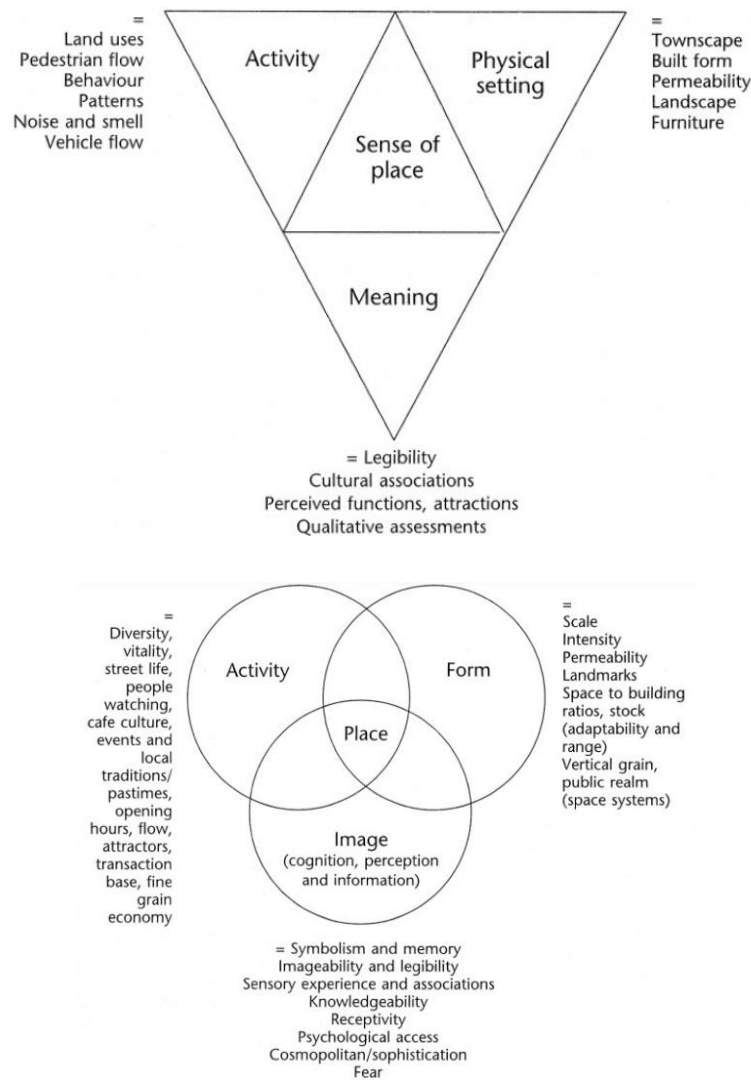


Figure 2.1. Sense of place (source: Matthew and others (2003) cited Montgomery, 1998).

2.4 Culture relating its expression to the built environment

According to (Rapoport, 1977) The environment is a series of relationships among elements and people, and these relationships are orderly they have patterns. It has a structure and is not a random assemblage of things. “The organization of the environment is a mental act before it is a physical one” (Rapoport, 1977) cited (Rapoport, 1972(e)). The physical environment both reflects and facilitates relations and transactions between people and the physical elements of the world.

The concept of ‘culture’ is both too general and too abstract, it needs to be dismantled, to be usable, at least in its expression of the environment (Asquith, 2006)cited (e.g (Rapoport, 1998) (2000(a)), (2000(b)), (2002(c)), (2004(b)). The cultural landscape has more to do with relationships among

elements than with the nature of the elements. The cultural landscape dismantles ‘culture’ into aspects and excretions that can be studied, but also studying how these aspects and expressions become visible in the tangible physical environment is one of the important aspects. However, “It is not sufficient to study just a building or physical entity; one needs to study the process of vernacular architecture” (Rapoport, 1969). Based on the above, fixed, semi-fixed, and non-fixed features of vernacular architecture should be studied together to form a cultural background. Fixed features such as dwellings; semi-fixed features such as plants, or landscapes, objects, colors, art, statues, furnishing, etc. They do not have to be part of material culture, and non-fixed such as language, music, behavior, manners, heredities, food, religion, rituals, cloth, the use of customs, dance, and others (Rapoport, 2006). The above-mentioned elements of vernacular architecture help to form an idea to understand the organization of space, time, meaning, and communication. See figure 2.2 dismantling of culture relating its excretions to the built environment.

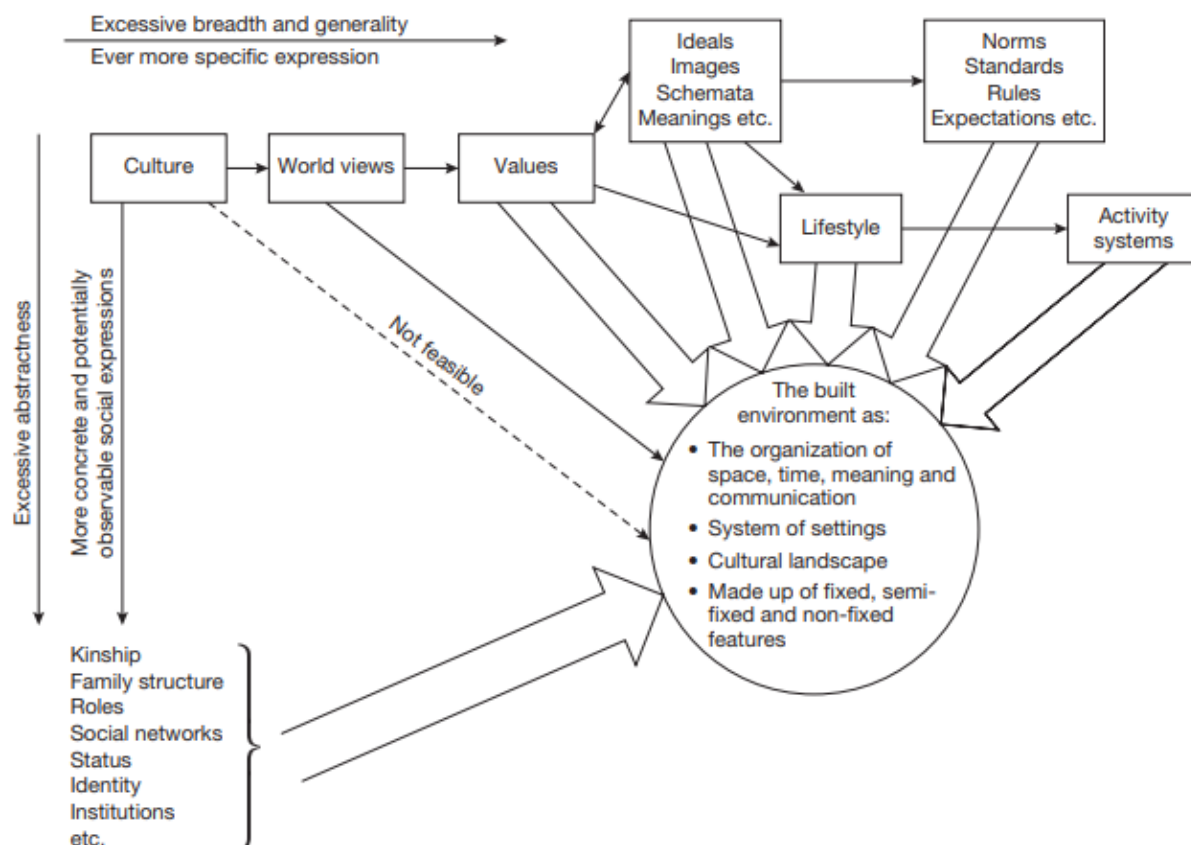


Figure 2.2. Dismantling culture, relating its expressions to the built environment (source: (Asquith, 2006) cited Rapoport (2006)).

2.5 The Relation of House and settlement:

According to (Rapoport, 1969) the house cannot be seen in isolation from the settlement but must be viewed as part of a total social and spatial system that relates the house, way of life, settlement, and even landscape. A single house cannot create a settlement, but it can be part of a settlement. Therefore, the relation between a house and a settlement cannot be perceived separately.

“Man lives in the whole settlement of which the house is only apart, and how he uses the settlement affects house form for example, in areas where the meeting place is the house and the other where the meeting place is a part of the settlement, such as a street, or plaza. Geography, as well as architecture, has usually separated the study of the house from the settlement, yet the need to look at the house as part of a large system.” (Rapoport, 1969, p. 69)

According to (Rapoport, 1969) Because the living pattern always extends beyond the house to some degree, the form of the house is affected by the extent to which one lives in it and the range of activities that take place in it. The settlement pattern affects the house. There have been many types of classifications proposed for settlements, and most writers have commented on the difficulty of definition and the fact that most forms are not pure but mixed. Dispersed and concentrated settlements are the common classification that will undoubtedly affect house form because activities that need to take place in the house in the dispersed case could, possibly, occur within the settlement in the concentrated case. But even in the concentrated settlement a distinction, which is of great importance to the understanding of the relation of settlement and dwelling and its effect on house form, needs to be made.

“There have generally been two traditions of concentrated settlement. In the first one, the whole settlement has been considered as the setting for life, and the dwelling is merely a more private, enclosed, and sheltered part of the living realm. On the other, the dwelling has essentially been regarded as the total set for life, and the settlement, whether village or city, as connective tissue, almost “waste” space to be traversed, and secondary. This distinction is stated here in extreme form and is greatly simplified.” (Rapoport, 1969, p. 70)

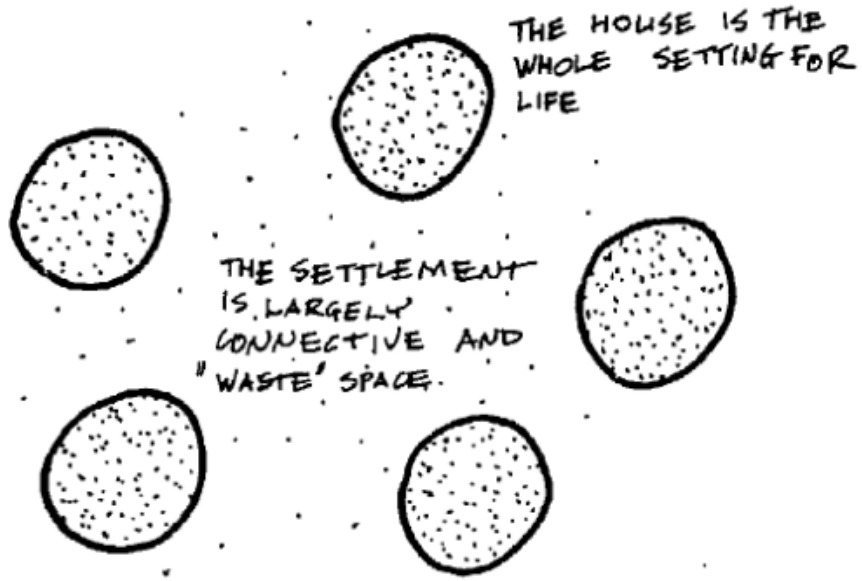


Figure 2.3. The house setting is for life and the settlement is waste space (source: (Rapoport, 1969, p. 71)).

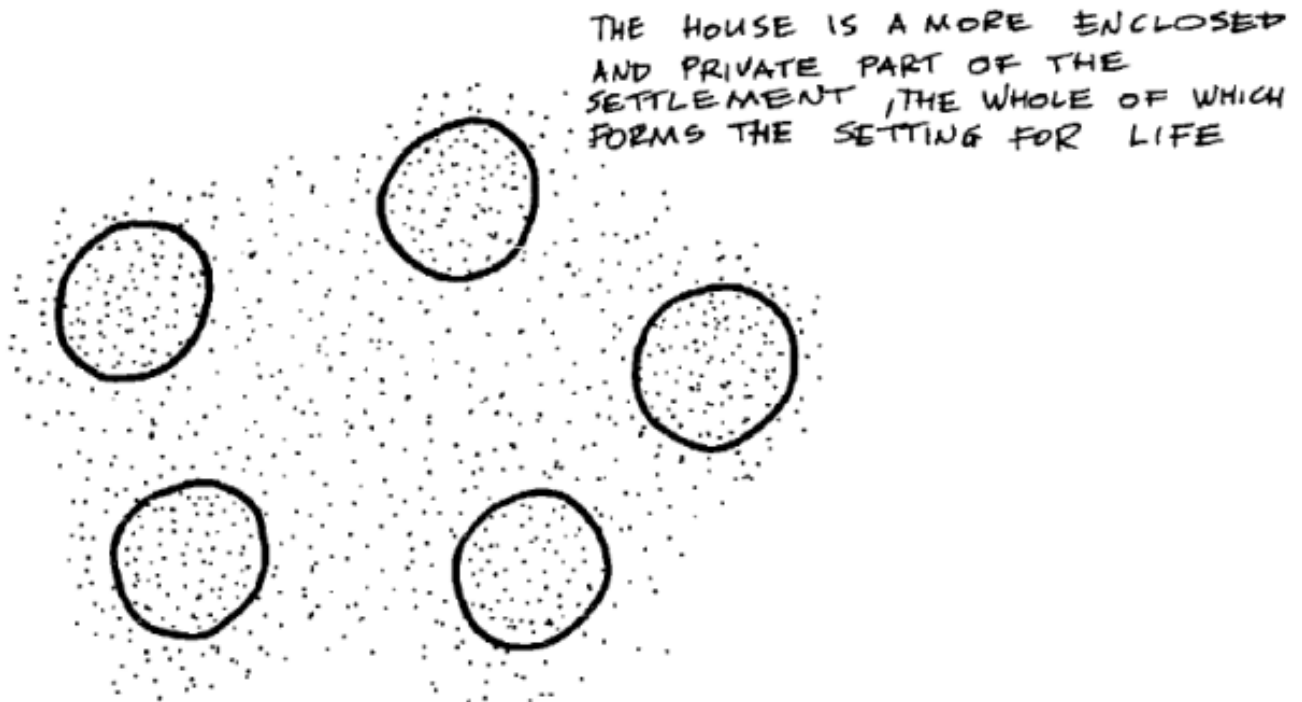


Figure 2.4. The house is enclosed private & settlement is a setting for life (source: (Rapoport, 1969, p. 71)).

According to (Rapoport, 1969) the form of settlement affects the way of life and house. Each of the settlement patterns which are compact, semi-compact, and semi-vacant has different relations between a man and a woman. This variation is reflected in the house, their forms, and space allocations the settlement pattern can also improve attitude toward innovation as in the case of the dispersed living pattern were able to accept innovation because it affected only the single household and did not disrupt the community. The settlement pattern is compact any innovation would have affected the whole community.

“House, settlement and landscapes are a product of the same cultural system and world view, and are therefore parts of a single system.” (Rapoport, 1969, p. 73)

Therefore, it is important to see the house not only concerning the basic separation that exists between settlement types and their variants along the total space-use scale but also as part of the specific system to which it belongs. It also needs to be viewed concerning the town, its monumental parts non-domestic areas, social meeting places, and the way these and the urban spaces are used. We need only think of the different ways in which the dwelling is used. We must consider the movement from the house, through the various transitions to the street, and then to the other parts of the settlement.

2.6 Spatial organization in a designed environment

According to (Rapoport, 1977) among people, social and cultural characteristics are often expressed in spatial terms. Spatial is the relation and transaction between people and physical elements of the world. Primarily objects and people are related through separation in and by space.

“Space is experienced as the three-dimensional extension of the world which is around us the intervals, relationships, and distances between people and people, people and things and things and things, and space are at the heart of the built environment. the rule which guides the organization of space, time, meaning and communication show regularity because they are linked systematically to culture.” (Rapoport, 1977)

Spatial organization is in fact, a more fundamental aspect of the designed environment than shape, materials, and the like.” (Rapoport, 1977) see figure 2.5 Without basically changing the nature of

the spatial organization the shape and materials of the houses and even the shape of the central space might be changed.

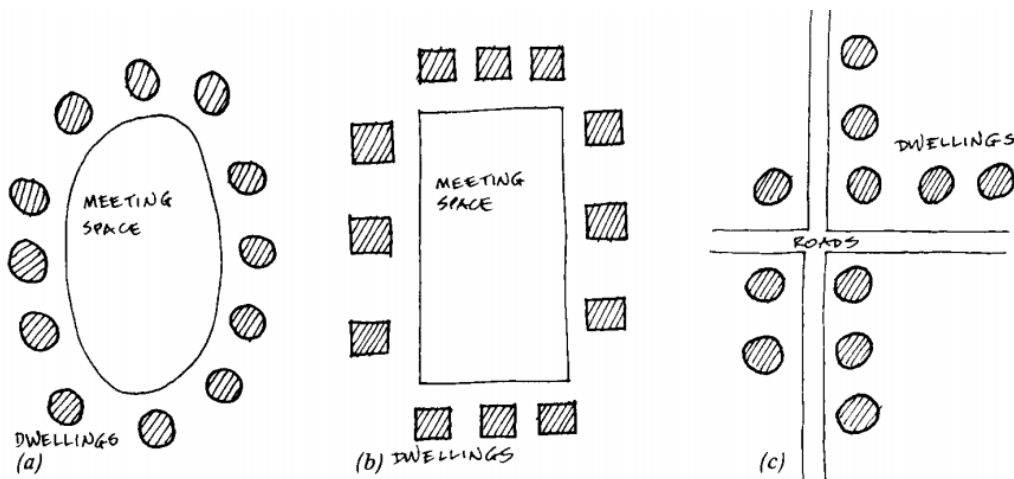
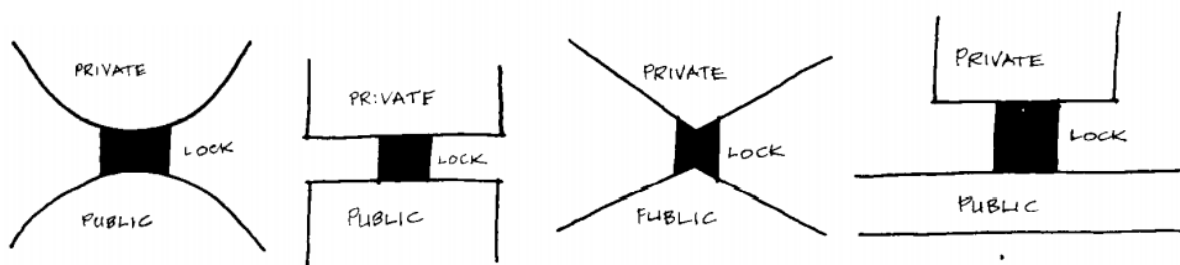


Figure 2.5. Spatial organization more fundamental aspect of the designed environment than shape, materials, and the like (source: (Rapoport, 1977, p. 9)).

This difference reflects a division into domains of private and public. space organization is hence the key element and the most useful for comparing environments and studying the rules of their organization.

“The distinction between the types may be due to partly unwritten or written laws which limits the behavior patterns in the different domains, public or private-by prohibiting some and allowing others. This is an expression of world view, attitudes, and is one way in which culture is linked to the way people use space.” (Rapoport, 1969, p. 70)



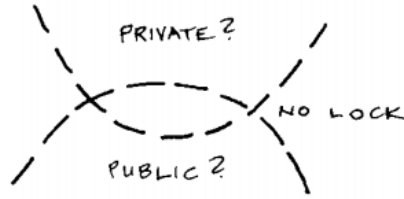


Figure 2.6. Public-private domain (source: (Rapoport, 1977, p. 10)).

According to (Rapoport, 1977, p. 277) Ethology has influenced man-environment studies in terms of methodology; in terms of conceptualizations of density, crowding, behavioral sinks, the role of social organization, hierarchy, and ritualized behavior; and, in terms of the effects of social overload, of a set of spatial concepts which are partly related to crowding and density through spacing. These spatial concepts are extremely useful in understanding man - environment interaction generally and specifically understanding the city as a behavioral system. Regardless of the many disagreements about the relevance of ethological data to humans, ethological thinking has forced a reexamination of human behavior generally. Space is a major mechanism for regulating social interaction (Wynne-Edwards, 1962); (McBride, 1964); (Kummer, 1971). The distance among individuals and groups emerges as a compromise between attraction and repulsion although ecological factors play a role and, clearly, in the case of people various complicating factors of cultural and physical defenses and modifications play a role.

There is a different model of a conceptual scheme based on ethological concepts that have been proposed. One particular model is composed of five elements. (Rapoport, 1977) cited (Rapoport, 1972(b),(d)) : these are:

- 1) **Home range:** this is the usual limit of regular movement and activities which can be defined as a set of locals and other linking parts. Each individual has a typical shape and extent of a home range which differs for daily, weekly or monthly movement as a special signature. Members of a particular group will tend to have a home range more likely than those of other groups. i.e., the individual variability can be generalized and there are cultural, age, sex, and class differences. This concept of home range partly corresponds to behavioral space, living space, activity space, and similar concepts, and is also related to the spatial nature of networks.
- 2) **Core area(s):** These are those areas within the home range that are the most commonly inherited and used possibly daily and best known. These are a limited number of spaces such

as around dwellings, local shops employment, or regular reactions; core areas also vary with culture, sex, and age and change over time.

- 3) **Territory:** This is a particular area or areas which are owned and defined—whether physically or through rules and symbols. It is identifying an area belonging to an individual or group, and one important way in which people territories is through personalization, walls, fence, posts, change in texture, change in color, or landscape treatment symbols. To define the territory symbols and rules are the most important ways for humans although rights do exist for physical defenses.
- 4) **Jurisdictions:** It can be defined as "ownership" or control of territory for a limited time and with some agreed-upon rules.
- 5) **Personal distance or personal pace:** This is the space among individuals in face-to-face interaction, the bubble of space surrounding individuals which have been studied. It is a micro-scale rather than a mesoscale phenomenon.

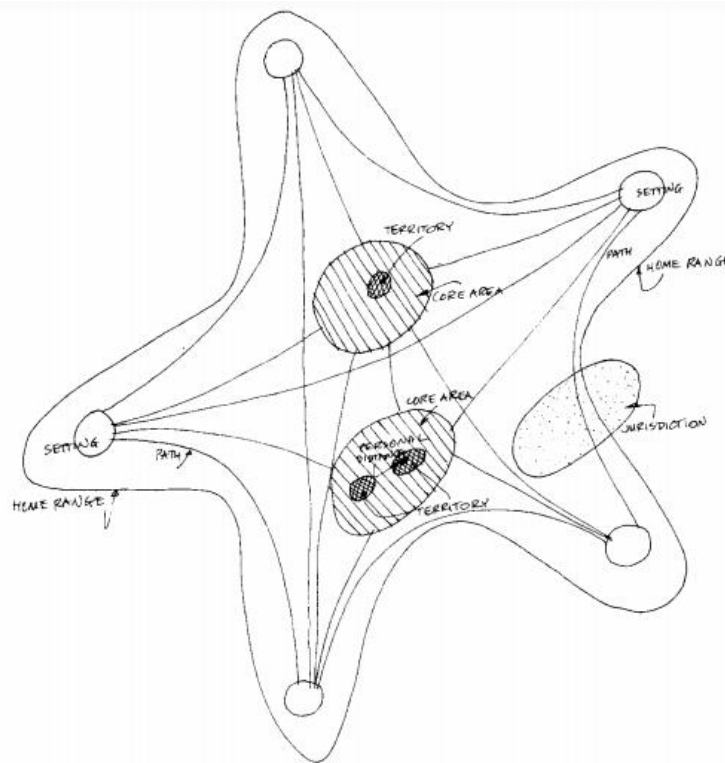


Figure 2.7. The five-element ethological space model (source: (Rapoport, 1977) cited Rapoport 1972(b), (d)).

2.7 Factors affecting House Form

There are different systems of ideas and practices that influence the habitat of man. The houses reflect the physical conditions of their environments, as well as cultural preferences and capabilities, in a wide variety of solutions to basic problems of house design.

Some forces shape primitive and vernacular buildings and settlements and give them identifiable characteristics. (Rapoport, 1969) tries to propose a conceptual framework for looking at the great variety of house types and forms and the forces that affect them. It attempts to bring some order to this complex field and thus create a better understanding of the form determinants of dwellings. To confine for discussion classified theories that force to create house form into the principal types of explanations, including physical ones-involving climate and the need for shelter, materials and technology, and site-and social ones-relating to economics, defense, and religion.

The house form is not simply the result of physical forces or any single causal factor, but it is the consequence of a whole range of socio-cultural factors seen in their broadest term. The form is intern modified by the climatic condition (the physical environment which makes something impossible and encourages others) and by the method of construction, the material available, and the technology (the tools for achieving the desired environment). The primer factor is the socio-cultural, and the other secondary modifying. According to (Rapoport, 1969, p. 47) both the physical factor climate, need for shelter, material, and construction, and site and the socio-cultural factors are discussed as follows.

2.7.1 Climate and the Need for Shelter

From the physical force, climates have been widely accepted in architecture as well as in cultural geography its determinism role in the creation of built form. In architecture the climatic determinist view, still rather commonly held, states that primitive man is concerned primarily with shelter, and consequently the imperatives of climate determine form.

“Shelter is of supreme importance to man. It is the prime factor in his constant struggle for survival. In his efforts to shelter himself against the extremes of weather and climate he has, over the ages, evolved many types of dwellings, one of which is the courthouse.”
(Rapoport, 1969) cited (N. Schoenauer and S. Seeman, 1962, p. 3)

A more important consideration is why so many forms of the house have been developed within the limited number of climatic zones. Even the variation among micro-climatic types is relatively

smaller than the number of house types frequently found in areas of similar climates. There are cases in which the way of life may lead to almost anti-climactic solutions, with the dwelling form related to economic activity rather than climate.

2.7.2 Materials, Construction, and Technology

Material and construction and technology have been widely used in architectural theory both in the past and today as determinant factors for building character. “For thousands of years’ wood and stone have determined the character of buildings.” (Rapoport, 1969) cited (Abraham). The argument, put most simply, is that if it applies to high-style design, then these factors must become particularly strong in societies of limited technology and, hence, strong constraints.

In this view, forms develop as man learns to master more complex building techniques, and all forms are part of progressive development in a series of almost inevitable steps. The cave with no building-gives way to the windbreak, the circular hut, and finally the rectangular hut in its various forms which are, in turn, derived from the various materials and techniques available.

The determinist view neglects the idea of the house; just because man can do something does not mean that he will. The primitive and vernacular building provides examples in which knowledge of technology does not mean that it will be used.

For example, although the ancient Egyptians knew the vault, they rarely used it, and then only where it could not be seen, since it was at odds with their image or idea of the building. The primitive and vernacular building provides examples in which knowledge of technology does not mean that it will be used. In Haiti, one can see very sophisticated woven planes, perfect for walls, leaning against some very crude houses, but used only for fishing traps, never for a building.

There are also situations where social values take precedence over technological advances. This is an interesting point since we tend to equate technological advances with progress without thinking of the social consequences of adopting such advances. This is an interesting point since we tend to equate technological advances with progress without thinking of the social consequences of adopting such advances. In some areas, after thatch has been replaced by more modern materials, it becomes fashionable as an antique with status value. As we have seen, galvanized iron can also become a symbol of success.

“Materials, construction, and technology are best treated as modifying factors, rather than form determinants because they decide neither what are to be built nor its form this is decided on other grounds. They make possible the enclosure of a space organization decided upon for other reasons, and possibly modify that organization. They facilitate and make possible or impossible certain decisions, but never decide or determine form.” (Rapoport, 1969, p. 25)

Materials in themselves do not seem to determine form. A change of materials does not necessarily change the form of the house. Frequently the same materials can result in very different forms, as shown by the examples in figures 2.8-2.11. There are also situations in which climatic needs have led to structurally nonoptimal forms,



Figure 2.8. Dwellings are made of one material (reeds). Left: Uru dwelling, Lake Titicaca, Peru. Right: marsh Arab dwelling, Iraq-Iran border (source: (Rapoport, 1969)).



Figure 2.9. Dwellings are made of one material (mud). Left: Iran. Right: pueblos, southwestern United States (source: (Rapoport, 1969)).



Figure 2.10. Portable tents of sticks and felt. Left: Arab tent. Right: Mongol yurt (source: (Rapoport, 1969)).



Figure 2.11. Two examples from the great range of house forms using thatch and wood as materials. Left: Masai dwelling (Africa). Right: yagua dwelling (amazon) (source: (Rapoport, 1969)).

In other cases, the reasons for irrational structure may be religious or social. In any event, structural techniques and materials by themselves do not seem to fully explain the nature and diversity of the forms which we find.

2.7.3 Site

The importance of the site is shown by the almost mystical attachment of primitive, and even peasant, cultures to the land, testified to by the care with which land is treated and houses placed on it.

In the Gilbert and Ellice islands houses are oriented to the forces of the Universe rather than to the topography. so, buildings are placed with the consideration of this belief rather than concerning topography in the physical sense. site in the spiritual, not the physical sense.

There is physical limits-one cannot but there are many choices for any area. Similar site conditions can also result in very different house forms, and similar forms can be built on very different sites. Water, as a site, for example, can be handled by building over the water on pilotis, building on the shore, or using a floating house. The site makes some things impossible one cannot have a floating house where there is no water-but all the forms have been used and all have variants. At the same time, houses raised on pilotis have been used far from water, and in some cultures different groups of people on the same site use houses either on stilts or on the ground.

Very similar sites often show very different forms; for example, on the coast, one can aim for the view or turn away from it. Even sites as forceful as mountains, deserts, and jungles have produced great variations in house forms.

The site influences both the city and the house, but it does not determine form. Nature prepares the site and man organizes it to enable him to satisfy his desires and his needs.

In one sense, the effect of the site is cultural rather than physical, since the ideal site depends on the goals, ideals, and values of a people or period, and the choice of the “good” site—whether lake, river, mountain, or coast—depends on this cultural definition. Use or nonuse of mountains may be due not to their difficulty as sites but the attitude taken toward them. Site selection may be due to supernatural aspects or may depend partly on the political and social viewpoint, as in Islam, wherein in some periods coastal sites were sought for cities, while in others inland locations were preferred. Figure 2.12 below is the part of courtyard houses in Latin America, flat on the left and hilly on the right. The house is modified to step because of topography but does not change its form.

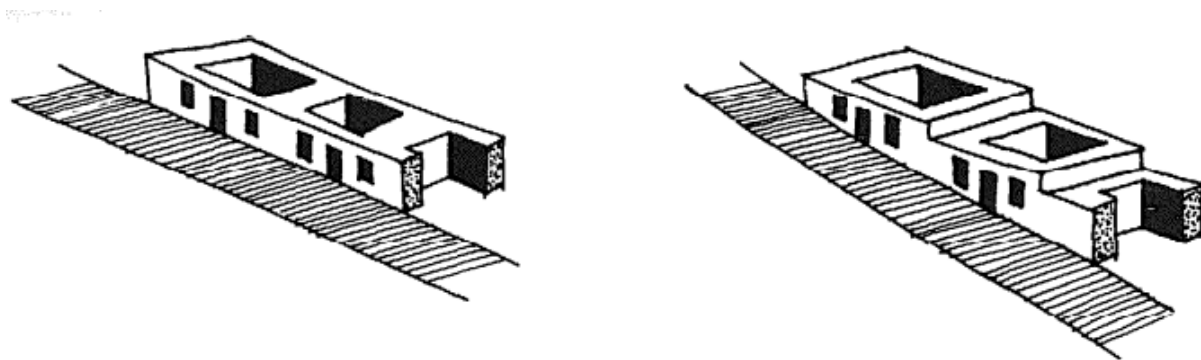


Figure 2.12. Part of a row of courtyard houses (Latin America). Left: flat site. Right: hilly site (source: (Rapoport, 1969)).

2.7.4 Defense

The defense has been cited more to account for tight urban patterns than to explain the form of dwelling. The compact town on the Greek island has been attributed to the need for defense. The defense certainly plays a role in deciding house form. The use of stockades, palisades, and fences has defensive implications like they have religious ones.

(Rapoport, 1969)) “Defense is related to the nature of the perceived danger or threat to culture. The natural force may lead to the choice of site and claiming of territory.

On other hand, the human predators lead to choosing of secured position or building structural defense. The element of choice of which methods of defense is to be used is of great importance”. (Kono, 2014) cited (Oliver P. , 1997).

(Rapoport, 1969) further explains the need for defense. For example, Cameroons handle granaries very differently because granaries are more important than cattle. The Matakana form has defensive needs, due to family monogamy; the women have great authority and control over the main granaries. On the other hand, communal dwelling is a very different solution to the mountaintop villages or the river of a palisade and pile dwelling on Lake Maracaib of Brazilian has an obvious defensive component against people, insects, animals, and snakes. To sum up many factors are neglected by accepting defense as the only determinant of form. Additionally, the choice of method of defense to be used is of great importance.

2.7.5 Economy

Economics has been widely used to explain settlement and building form, and its importance is indeed great. In an economy of scarcity, the need to survive and to use resources maximally is so great that these forces may be expected to wield tremendous power. If even under those conditions, economic forces are not dominant, then the argument for economics as a gradually determining form becomes rather suspect. Even in economies of scarcity, there are many examples of herders living among agricultural people and not only failing to accept the economy available, but despising it and the people who practice it. people with similar economies may have different moral systems and world views, and since the house is an expression of the world view, economic life has no determining effect on house form. Even lack of labor specialization, so typical of primitive, and to a lesser extent vernacular, builders, maybe socially and culturally rather than economically motivated, and specialized labor may be despised. Even collaborative building may be due not to economic needs or complexity of the task, but be socially motivated.

The major factor which might involve variations is some aspect of social organization which differs among societies with otherwise similar economic bases. Even nomads, for whom the economic base affects house form by imposing the need for mobility, use widely varying forms. Even so critical is an aspect of economic life as mobility does not suffice to account for house

form, although it exerts great constraints. people of similar economic activity, their differing house forms reflect the different ways in which they visualize the setting for life.

2.7.6 Religion

The house is much more than shelter. religious view is one thing to say that the dwelling has symbolic and cosmological aspects, that it is more than a device for “maintaining the equilibrium of the metabolism,” and another to say that it has been erected for ritual purposes and is neither shelter nor dwelling but a temple. Religion affects the form, plan, spatial arrangements, and orientation of the house, and maybe the influence that leads to the existence of round and rectangular houses. there is a choice of symbols, religion as an explanation of house form is more possibilist, and less determinist, than the physical explanations of form.

2.8 General Criticism of the Physical Determinist View

Physical setting only provides **possibilities, not imperatives**, and it is man-not site or climate that decides. The great variety of forms strongly suggests that it is not site, climate, or materials that determine either the way of life or the habitat. Many examples from almost all areas of the world could be adduced to show that dwellings and settlements are not the results of physical forces, particularly since the form often changes in areas where physical aspects have not changed.

The physical determinist view is Mumford’s argument that man was a symbol-making animal before he was a tool-making animal, that he reached specialization in myth, religion, and ritual before he did in material aspects of culture, and that ritual exactitude came before exactitude in work; man put his energy into symbolic rather than utilitarian forms even when he was barely starting. Possibly a nonphysical position needs to be taken regarding primitive house forms, since the song, dance, and ritual were more advanced than tools.

Man’s achievements have been due more to the need to utilize his internal resources than to his need for control of the physical environment or more food. the moral order over the technical order in primitive societies, Early societies, Redfield points out, are largely ethical, and their moral order is stronger than their technical one.

2.9 Socio-cultural factors:

The house is an institution of just a structure, created for a complex set of purposes. Because building a house is a cultural phenomenon, its form and organization are greatly influenced by the cultural milieu to which it belongs. Very early in recorded time, the house became more than shelter for primitive man, and almost from the beginning “function” was much more than a physical or utilitarian concept. The religious ceremony has almost always preceded and accompanied its foundation, erection, and occupation. If a provision of shelter is the passive function of the house, then its positive purpose is the creation of an environment best suited to the way of life of a people-in another word, a social unit of space.

(Rapoport, 1969)) Cited Max Sorre who said that all cultural, spiritual, material, and social aspects affect form. Therefore, it can be said that houses and settlements are the physical expiration of genre de vie and this constitutes their symbolic nature. Genre de vies according to Max Sorre is the sum of culture, Ethos, worldview, and national character.

“Culture-the total equipment of idea and instrument and conventionalized activity of a people; Ethos-the organized conception of the ought; world view-the way people characteristically look out upon the world; the natural character-the personality of people, the kind of human being which, generally occurs in the society”. (Rapoport 1969:48)

The genre de vies in Rapoport's (1969) use is refined and broad. These important aspects of the genre de vie which affects built form are a) some basic need, b) family c) position of women d) privacy e) social interaction has discoursed as the following:

2.9.1 Basic needs:

Basic needs are also one of the determinant factors for house form. Eskimos are people who live in harsh cold weather. Because of the need to maintain room temperate inside the Igloo, the Eskimos tolerate bad smells. The smell of the toilet is also acceptable in a traditional Japanese house. In Africa and Australia, the manner of sitting can affect the house forms.

“The impact of the introduction of the chair, which would revolutionize living habits and have major social consequences: the need to take off shoes, imposed by the use of mats,

would disappear, hence also the special covered space-porch or veranda-where they are taken off and left; the need for shoes which are easily taken off would be eliminated, and also the need for special floors.” (Rapoport, 1969, p. 63)

2.9.2 Family:

The family has also a significant influence on the determination of a house form. The type of family structure, the extended family group, and family groupings are the basic determinants. For example, in Mali Timbuktu, each legitimate Muslim wife and children above seven have their own house, and rich men’s houses become a vast conglomeration that is different from an Arab harem of the same size. In African traditional houses, it should be pointed out the other forces at the same time leading to different house forms among polygamy people in the case of Foulb, in Cameroons the man’s position is expressed by his place which is in the center of the compound surrounded by his wives. The situation may become rather complex, with various sub-areas having separate controlled entrances, different degrees of privacy area for guests and so on which can produce a rather labyrinthine quality. (Rapoport, 1969).

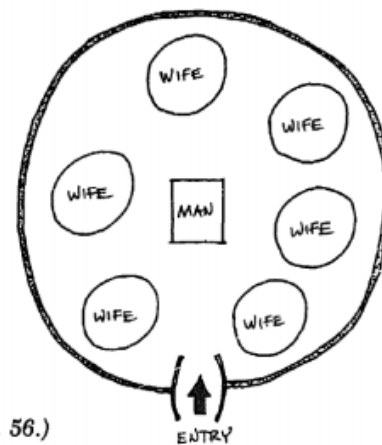


Figure 2.13. Foul be farmhouse Cameroon (source: (Rapoport, 1969)).

To the Masai, cattle are not only wealth but have mystical, religious, and ceremonial importance transcending their economic value and forming the bases of Masai culture. (Rapoport, 1969).

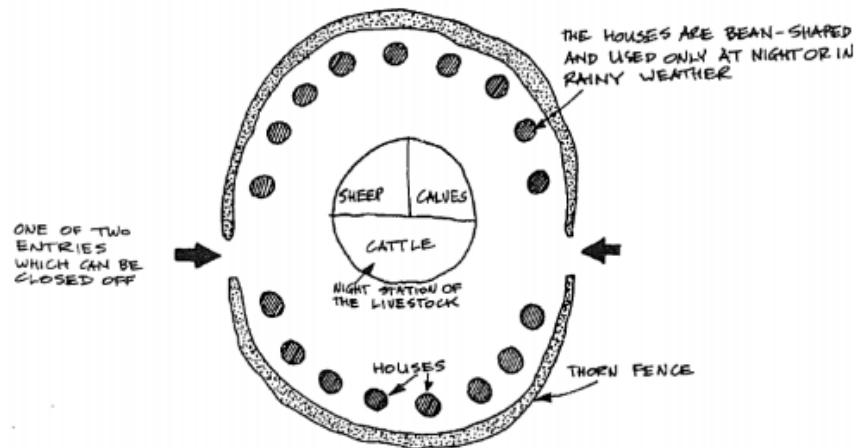


Figure 2.14. Masai compound (approximate diameter 40mt) (source: (Rapoport, 1969)).

2.9.3 Position of Women:

Because of some social factors which are extremely needed for the privacy of women windows and roofs of private courthouses are designed to prevent anyone from coming into the house. ‘The position of women may also affect the traditional Japanese house, where the kitchen is one of the few places considered a woman’s domain and is physically different from the rest of the house. (Rapoport, 1969)

“In Egypt men and women are always separated, rich people having separated rooms and poor ones using different corners of their house; this procedure is also followed in the nomad tent. The dwellings of the Ulufs of Senegal are all turned in their earth enclosure. So that house cannot be sent into a form the entry and wives are protected from views. Islamic cultures generally affect the form of house and settlement through the demand of purdah the haram; and so on, but in each case, the specific of the solution needs to be considered”. (Rapoport, 1969, p. 66)

2.9.4 Need for privacy:

There is a different culture in which privacy is given attention. For example, the Sherpas of Nepal, do not seem to regard privacy as essential at all because of their attitude towards sex. The Yagua of Amazon lives in a large open house and achieves ‘privacy’ through a social convention that allows someone to become ‘absent’ and in effect visible by turning away from the center of the house. Japan had a very different idea of modesty before westernization influenced it. During the

summer, people would be naked in public and used common baths. During the same season, one could look right through the farmhouse. Moreover, the Yoruba of West Africa who lived in a mud-walled thatched house in an extended family group of four or more to enclose a square compound reached through a single gateway. Therefore, in every culture privacy is seen as a basic need, and it is a complex and varied phenomenon. (Rapoport, 1969) “Privacy should be examined concerning age and gender but also part of the study into spatial arrangement and confederation”. (Rapoport, 1969, p. 132)

2.9.5 Social interaction:

“The meeting of people is also a basic need since men have been defined as social animals. What concerns us is where people meet whether in the house, the city the bath, or the street. This is not fact meeting itself, affects the form of the habitat.” (Rapoport, 1969, p. 69)

The ease with which people can orient themselves to the city is important in helping them. Socialize. After one has found one’s way about it, the specific how and where of the meetings is important. In Chinese villages, people meet in the street wide apart from the main street; in North Africa, it may be the well for women and the café for men; in Bantu village, it is the space between the animal pens and the walls of the living compound. In Chan Kom in Yucatan, the meeting place is the steps of the little village story. This procedure is now changing, and the house is used more affecting both the house form and the city (Rapoport, 1969)

2.10 Contextual Background

2.10.1 Ethiopian Profile

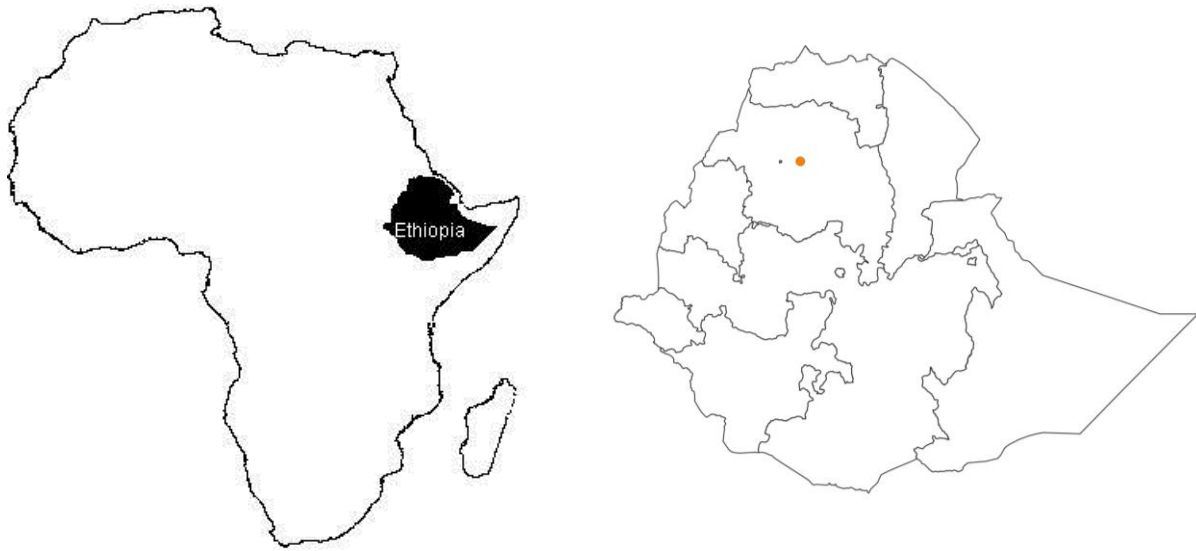


Figure 2.15. Administrative map of Ethiopia.

The study was conducted in an African country, officially known as the Federal Democratic Republic of Ethiopia, geographical location of the country is 3 degrees and 14.8 latitudes, 33 degrees and 48-degree longitude within the eastern part of Africa lying between the equator and tropic of cancer. It occupies a total area of 1,104,300-km², density is 76.4 km², and its capital city is Addis Ababa.

Since 1996, Ethiopia has been divided into nine ethnically based and politically autonomous regional states (kililoch, singular kilil) are Tigray, Afar, Amahara, Oromiya, Somali, Beni-Shangule, Southern nations, nationalities and Peoples, Gambela, and Harar, and two chartered cities (astedader akababiwoch, singular astedader akababi), the latter being Addis Ababa and Dire Dawa (subdivisions 1 and 5 within the map, respectively). The kililoch are subdivided into sixty-eight zones, then further into 550 woredas and several special woredas.

A. Vernacular Architecture and Settlements in Ethiopia

The book “Vernacular architecture of Ethiopian compressed” explains that Altitude is the most important factor regulating the tempo of life in Ethiopia: the fauna and the flora of the country vary essentially according to altitude. altitude ranges from a hundred meters below sea level to one

of the hottest spots on the planet to over four and half thousand meters, the summit of Africa's fourth highest mountain. This altitude range is divided into three zones Dega or highland, Weinadega (midland), and Kolla (lowland) corresponding to cold, temperate, and hot respectively.

Dropping from 2,500-3500 meters of Dega, we find very different cultures. At 1,500-2,500 meters lie the 'horticultural' areas where the large base is often Cushitic as opposed to the northern Semitic (Gurage is the exception).

About twenty percent of the people who live in the grass savannah and desert are nomadic or semi-nomadic. For people in Arsi, the Borena, the Afar, the Somali and the Nuer, cattle are the source of power, prestige, and security. These are broad sweeping categories intended only to give a general picture of the extraordinary diversity of the land and its people. (Tourism commission 1981).

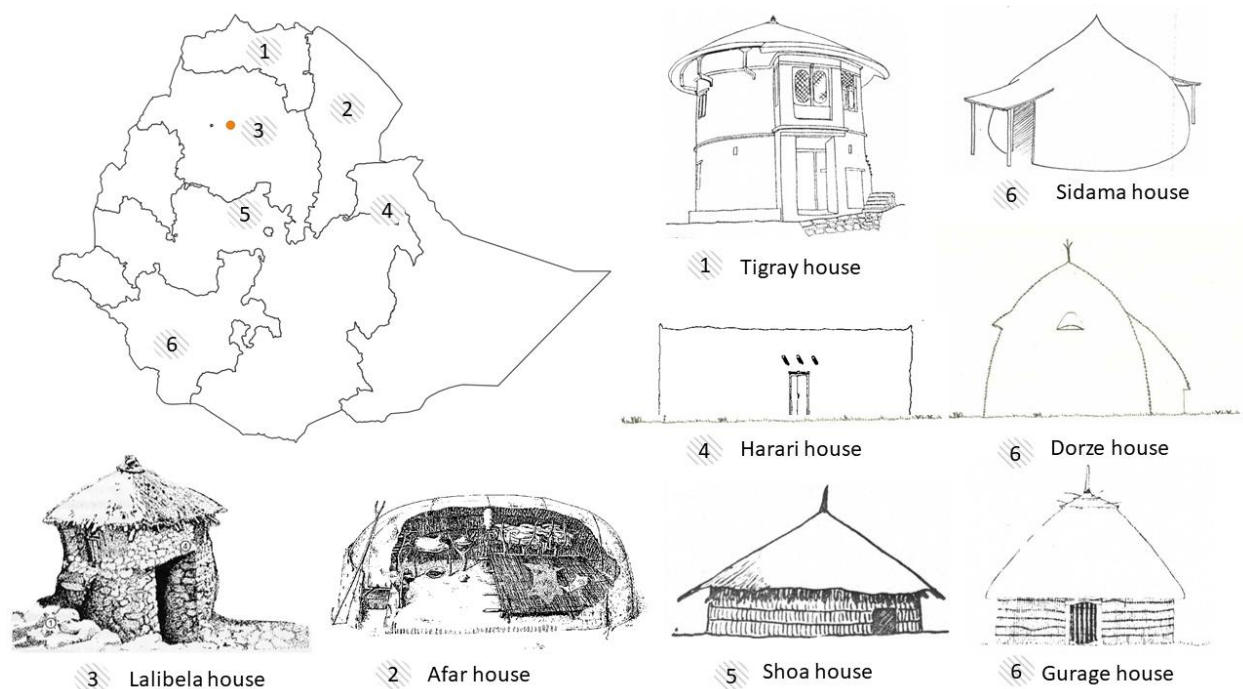


Figure 2.16. Some traditional houses of Ethiopians (source: (Gebremedhin, 1971)).

(Oliver P. , 1997) describes that the settlement in Ethiopia mainly depends on the types of agriculture, and personality traits.

“Ethiopia has been called the citadel of Africa. It is a mountainous country, where numerous people, speak various languages. Its mountains offer three advantages so far as

a human settlement is concerned. First, the mountains protect villages and large settlements; secondly, although most of the highlands in Ethiopia are situated within the tropics, they enjoy a softness of climate. Secondly, altitude provides a remarkable healthy environment. Above the middle levels in Weinadega, the tsetse fly cannot survive and as a result cattle and drought animals are found in abundance, therefore the cow dung constitutes an important element for the construction of housing, and even cattle horns are used as hooks for hanging variety of utensils. the mosquito does not breed above 1,900meter; house malaria does not exist above this level. The same is true of yellow fever and cholera above 1,500meter. (Gebremedhin, 1971)”

(Oliver P. , 1997) also described that the settlement pattern and locations in the plateau areas of the country were one of the agricultural hamlets of perhaps ten to twenty houses located near the fields. People of a single ethnic group, all of whom may be related to one another, usually occupy an agricultural hamlet. There are larger settlements, either villages or towns, where there are traders, government officials, police, and schools. Therefore, this fragmented nature of Ethiopia’s highlands played an important part in the country’s political and cultural history. Isolated and mountainous plateau massifs had proven to be almost insurmountable obstacles to political leaders who had sought to unify the country, to the invaders who desired to conquer it, and to those who had sporadically attempted to develop its economic resources.

B. Overview of vernacular architecture of Ethiopia

The population of Ethiopia and the Horn is largely rural and impoverished, raising cattle and crops on eroded land. Culturally, the region is diverse, with more than 70 cultural groups and languages. (Oliver P. , 1997)

Ethiopia has a remarkable variety of people. A simple grouping. while it does not provide a clear picture of every tribal group, nevertheless at Tords an opportunity for presenting an overview. Ethiopians may be grouped into three major ethnic groupings. These three groupings and their distribution over the country are shown in the following map. (Gebremedhin, 1971)

1. Semitized Cushitic group
2. Cushitic group
3. Nilotic group

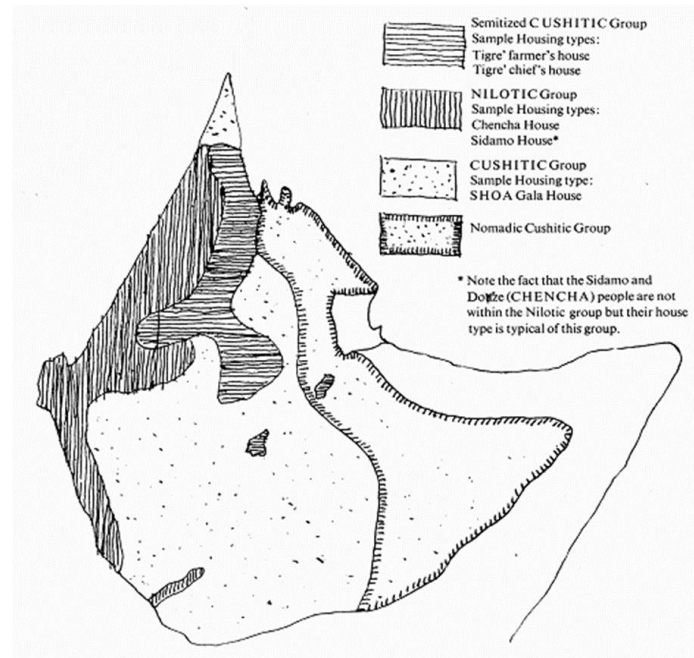


Figure 2.17. Map of Ethiopia showing the distribution of ethnic groups (source: shelter in Africa (Oliver Paul, p. 106)).

With so complicated a cultural mosaic it is not surprising that the architecture of the Ethiopian peoples is diverse. Generally, the houses built by the Ethiopian peoples beyond the Highlands share many characteristics with those of peoples in other parts of Africa. Circular plans are widely employed, with extensive use of pole and plaster walls, sometimes with surrounding verandas, as among the Konso, Gimirra, or some Agnuak. Some of these people decorate the walls of their houses and severalize tiered thatched roofs, concave or conical, with decorative or pottery finials. Undifferentiated structures are built by numerous cultures, among the most impressive being the high, egg-shaped dwellings of the Dorze, and the broad, bell-formed bamboo tukul of the Sidama. (Oliver P. , 1997)

C. Common characteristics of Ethiopian traditional houses

Most Ethiopian traditional houses represent a very refined product. House types in the northern region exhibit a remarkable continuity of characteristics, possibly as a result of continued improvement of the building process, which must be regarded in the context of an economy that has not changed for a long time. Ethiopian traditional houses are also characterized by their simplicity. Decorations are rare and the internal arrangements of houses are marked by a stark austerity, though the Tigre chief's house is an exception. Materials are used in the simplest and

most obvious ways, and the use of wood and stone natural is preferred. In nearly all traditional Ethiopian houses irrespective of the tribal and religious affiliations of the people who build them, the central area is reserved for important people and /or for especially important occasions. (Gebremedhin, 1971).

Typology of houses

Based on supporting frameworks the Ethiopian house subdivides into three fundamental types:

1. Rigid elements
2. Flexible elements planted to the ground at one end
3. Flexible elements are planted at both ends.

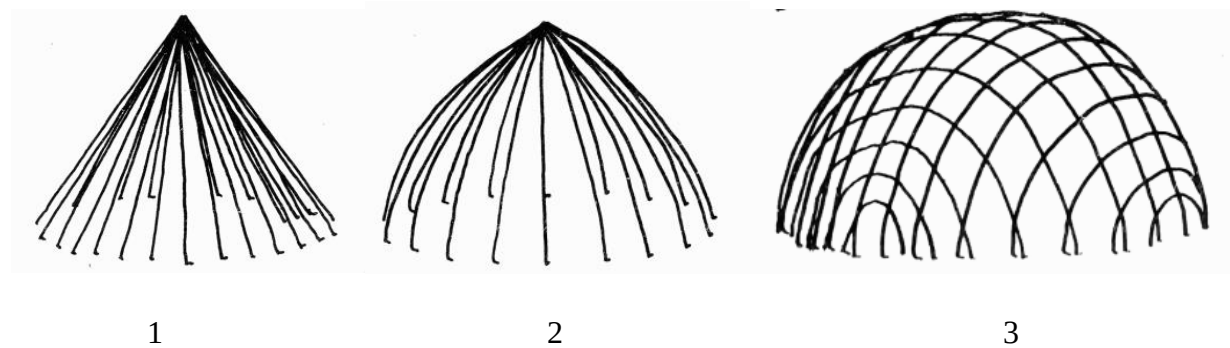


Figure 2.18. Ethiopia vernacular house type based on characteristics of the supporting frameworks, source: (Gebremedhin, 1971).

Based on the construction process, traditional Ethiopian housing types are (1) piling i.e., the process used in connection with elements such as blocks, burnt bricks, or stones (2) twining or tying i.e., the process by which building elements are tied or attached by rope, plant twigs or other suitable tying material (3) weaving i.e., bamboo and grass are two excellent examples of materials that can be woven to produce houses (Gebremedhin, 1971)

2.10.2 Amhara Profile

A. Location of the Amhara region

The Amhara regional state is located in the Northwest of Ethiopia between 9°20' North latitude and 36° 20' and 40°20' East longitude. The Amhara Regional contains much of the highland's plateaus above 1500 meters with rugged formations, gorges, and valleys, as well as millions of settlements for Amhara villages surrounded by subsistence farms and grazing fields. The world-

renowned Nile River and its source, Lake Tana, are located in this region, as well as historic sites including Gondar and Lalibela. Interspersed on the landscape are higher mountain ranges and created cones, the higher of which, at 4,620 meters, is Ras Dashen Mountain northeast of Gondar.

Amhara Regionals State is found in North West and Northcentral part of Ethiopia at Latitude 11 30'30'' N and Longitude 38 30'00' E. Its regional city is Bahir Dar. It has 11 administrative zones and 105 woredas. The Amhara Regional State covers an estimated area of 170,752 square kilometers.

According to the 1994 census the population is estimated to be 13,256,982. Ninety percent of these are rural residents while 10% are urban residents. Eighty-one-point-five percent of the total population are Orthodox, 18.1 % are Muslims and 0.1% are Protestant (ECSA 1994).

The Topography of the Amhara Regional State is divided into two main parts mainly the highland and the lowland. The highland is characterized by chains of mountains and plateaus Ras Dashen (4620 meters) the highest peak in the country, Guna (4236 meters) and AbuneYohanis (4190 meters) are the biggest mountains. The lowland mainly covers the Western and Eastern parts with an altitude of below 500-1500 above sea level. Climatic zone “Dega” is an area beyond 2,300 meters above sea level,” WoinaDega” is 1,500-2,300 meters and “Kola” area is below 1,500 meters below sea level. The annual mean temperature of the region lies between 15-21 Degree Celsius the regional state receives the highest percentage (80%) of rainfall in the country FDRE Government (2015).



Figure 2.19. Location of Amhara.

B. Vernacular architecture and settlement in Amhara.

Amhara society mostly lives in villages rather than living isolated. The common settlement pattern is one of the agricultural hamlets of ten to twenty houses located near the fields (J.Simoons, 1960). The distance between the houses can be from 18m to 800m. The agricultural hamlets are usually occupied by people of a single ethnic group. The houses are clustered together with a pathway between which is wide enough for ox and cart to pass through. Settlement on high lands and low land is different. Settlements on the high land region of Amhara are usually located on hilltops on well-drained slopes, and rarely along streams or in low-lying areas. Though, in some lowland places, such as the area of south Gondar and on the Lake Tana plains, there is scattered settlement among the agricultural hamlet. One of the factors that lead to settlement on the highland is the prevalence of malaria in the low-lying area. There are also larger settlements, either villages or towns, where there are traders, government officials, police, and schools (J.Simoons, 1960).

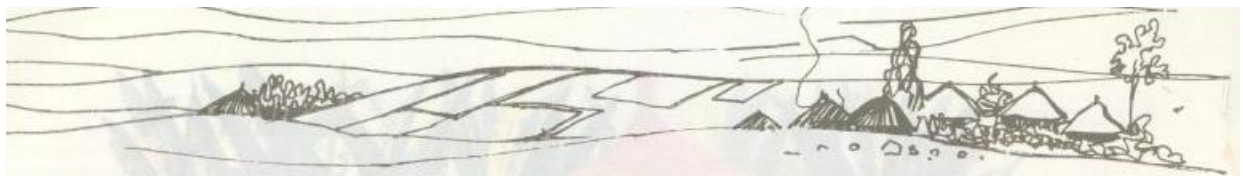


Figure 2.20. Settlement in Amhara (source: (EthiopianTourismcommission)).

According to (Oliver P. , 1997) The Amhara inhabit the temperate highland massif in the northern and central regions of Ethiopia. The people depend for their living on farming. The mountainous region they occupy and the farming economy greatly govern their pattern of settlement. Houses are placed on elevated stony sites and on land less suitable for farming, to protect the neighborhood from a flood.



An Amhara two-story
watch tower, Edimo,
showing

1. stone steps
2. stone fence
3. brush fence
4. grain store

Figure 2.21. Vernacular house of Amhara (Oliver P. , 1997).

2.11 Summary of literature review

The literature review started by giving the conceptual definition of spatial, urban center, and the relation of culture and the built environment. The theories of house form are classified as Climate and the Need for Shelter, Materials, Construction, Technology, Site, and defense. This total seating also includes social and special systems, settlement, and the house which is a fixed element of domestic architecture, way of life, culture, world view, value, and landscape.

The socio-cultural factor which is the primary form modifier, the genre de vie which affects built form: some basic needs, family, the position of women, privacy, and social interaction are also raised. Moreover, behavior, the individual connection within the family, and defined territory are examined in the literature review.

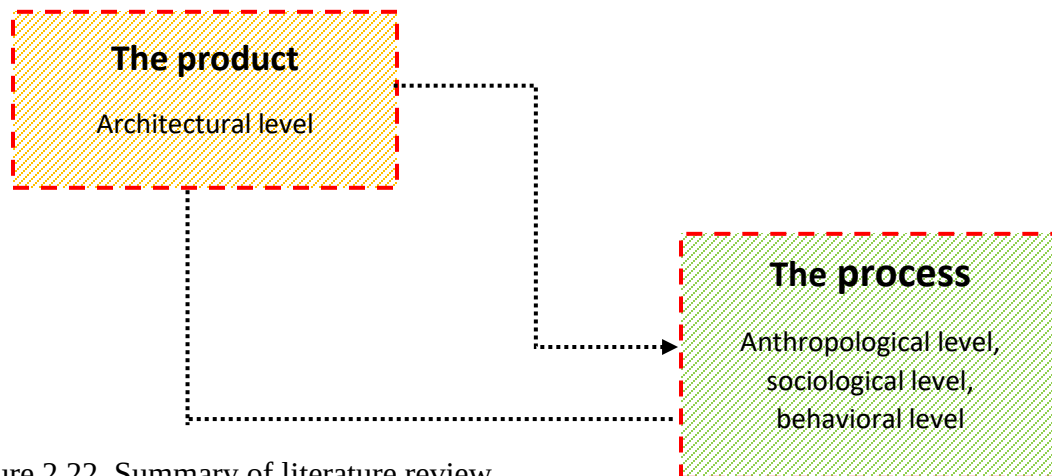


Figure 2.22. Summary of literature review.

Chapter three

Research Method

3.1 Introduction

This chapter mainly contains the method chosen for the study, source, and type of data, selection of the case, and sampling. Moreover, it presents the theoretical definition and analysis techniques of the research together with a reflection on the method used.

3.2 Study area

Specifically, Awra Amba is selected because the community is well-established with a truly extraordinary lifestyle, especially in terms of equality between men and women, community spirit, absence of religion, honesty, hard work, and democracy (Joumard, 2012). The Awra Amba community is founded on five major values: respecting the right to equality for women, respecting children's rights, helping people who are unable to work due to old age and health problems, accepting all human beings as brothers and sisters, regardless of their differences, and avoiding bad speech and bad deeds. Therefore, this research entitled "The spatial characteristics of Awra Amba" aims to fill the gap there is in studies of the traditional architecture of the Awra Amba community.

3.3 Research design

The major objective of this study is to document the spatial characteristics of the Awra Amba community. Selecting an appropriate research methodology that adequately addresses the objective of the research is the most critical task for any research to get the desired fact-based outcome. So, the researcher should take care in selecting a research methodology that is responsive to the objective of the research to make sure that the research does not fail to fulfill the basic concepts and intentions of researching with an empirical approach or framework.

According to (Yin R. K., 2018), there are five types of research methodologies: experiments, surveys, archival analysis, histories, and case studies. Each strategy has peculiar advantages and disadvantages, depending on three conditions: the type of research question, the control an

investigator has over actual behavioral events, and the focus on contemporary as opposed to historical phenomena.

Table 3.1. Relevant Situations for Different Research Methods. Source: (Yin R. K., Case Study Research and Applications: Design and Methods Sixth Edition, 2018)cited COSMOS Corporation.

Method	Form of Research question	Require control over behavioral events?	Focus on contemporary events?
Experiment	How, why	Yes	yes
Survey	Who, what, where, how many, how much	No	yes
Archival analysis	Who, what, where, how many, how much	No	Yes/No
History	Who, what, where, how many, how much	No	No
Case study	How, why	No	yes

Based on the above criteria, coming to this specific research, the main research question of the study is: what are the spatial characteristics of the Awra Amba community? Which is concerned about the underlying issues, operational links or the deeper meaning of a subject matter. So that to investigate and document the spatial characteristics that require the experiences of residents, the process, consequences, and the interrelationship of people and the built environment. “The case study places more emphasis on the full analysis of a limited number of events or conditions and their interrelations. The case study deals with the processes that take place and their interrelationships. Thus, a case study is essentially an intensive investigation of the particular unit under consideration” (Kothari, 2004). Based on this, the case study method has been chosen to explore, describe, and explain the experiences of the participants and how they perceived their settlement pattern and house form. “Case study approaches facilitate in-depth investigation of particular instances of a phenomenon” (Richard & Anita, 2015).

Another major issue is the required control over behavioral events. The type of data to be collected for this research deals with the life stories of people in the community that are related to a personal sense of life or experience and are difficult to control. The case study allows an investigation to retain the holistic and meaningful characteristics of real-life events (Woodside, 2010) cited (Yin, 1994). “Case study research frequently includes collecting and interpreting stories individuals tell about their lives and events that they believe that they know about” (Woodside, 2010). These factors are beyond the control of the researcher and instead are more interwoven with the contextual conditions. So, to understand the spatial characteristics of the actors, a case study research method is selected. A case study research methodology is used when there is a need to study phenomena within their context. “The object of the case study method is to locate the factors that account for the behavior patterns of the given unit as an integrated totality” (Kothari, 2004). “case study is a description of a situation which is sensitive to the context in which the research occurs” (Richard & Anita, 2015) cited Harris and Ogbonna (2002:p. 36). “Case study research focus on the interrelationships that constitute the context of a specific entity (such as an organization, event, phenomenon, or person)” (Mills, Durepos, & Wiebe, 2010)

Also, the degree of focus is on contemporary as opposed to historical events. The research explored and describe not only the historical event of the settlement, compound, and housing but also the current situation of how the community uses the space in their day-to-day activity. “Case study research can draw from a range of historical and contemporary data resources” (Mills, Durepos, & Wiebe, 2010).

Finally, the major objective of this study is to document the spatial characteristics of the Awra Amba community. So, the case study design is appropriate for the investigation of the case when it is necessary to understand parts of a case within the context of the whole (De Vaus, 2001) The case study allows an investigation to retain the holistic and meaningful characteristics of real-life events (Woodside, 2010) cited (Yin, 1994). It is by far more relevant than other methods of research addressing a descriptive, causal, or explanatory question. The other methods are not likely to provide rich descriptions or insightful explanations that might arise as compared to a case study for this particular title. Also, it emphasizes the study of a phenomenon within its real-world context; the case study method favors the collection of data in natural settings compared with relying on derived data (Yin R. K., 2009). “The case study is the method of choice when the

phenomenon under study is not readily distinguishable from its context” (Yin R. K., 2003). “Analysis of the relationship between the contextual factors and the entity being studied, and” (Mills, Durepos, & Wiebe, 2010) “the explicit purpose of using those insights (of the interactions between contextual relationships and the entity in question) to generate theory and/or contribute to the extant theory” (Mills, Durepos, & Wiebe, 2010). The case study method was selected as the research strategy to provide such an objective truth. The case study research method is the proper way of conducting such type of research, as spatial is an activity and time-dependent.

3.4 Data Type

The study used a combination of primary and secondary data to fulfill the indicated objectives. The primary data were collected from the field, including the pilot and main field study. During the pilot studies, the data was collected through unstructured interviews; after that, by selecting intensive case study interviews followed by the questionnaire, the data was tabulated and tested to make the data more concrete and valuable, such as the life histories of individuals, the formation of the settlement, and the space they used were collected. The secondary data was collected from literature written on the Awra Amba community culture, settlement, compound, and house.

3.5 Source of Data

According to (Mills, Durepos, & Wiebe, 2010), “Case study research multiple sources of evidence are generally considered essential because of the need for extended descriptions to understand a given case.” The data required for this research were collected from primary and secondary sources. For the case of this research, the primary source of data were the founder of the community, eleven committees, elders with a good memory of the oldest settlements, and questionnaires for selected compounds of the community. And through conducting frequent personal observation sessions, measuring the physical dimensions of the building, preparing descriptive drawings, and photographing the main building together with its surroundings.

The main sources of secondary data included both published and unpublished sources with topics and notes related to the area of research, which are books, reports, newspapers, magazines, documentaries, videos, articles, research papers, and expertise written about the Awra Amba community. This data was useful to complement primary sources of statistics and to compare results with global trends. And help to support the primary data with a more general and wider

perspective about the issues that supplement the findings of the study. It is made possible during the pre-field and on-site investigations.

3.6 Selection of case and sampling

Even though the case study method was selected and the source of data was known, it was quite difficult to select an appropriate sample size and sampling technique. The method for the selection of individuals on which information is to be made has been finding out the main objective of the study, which is the spatial characteristics of the Awra Amba community at the house, compound, and settlement level. “In case study research, which investigates phenomena within context, often the contextual variables are so numerous and qualitatively different that no single survey or data collection approach can be used appropriately to collect information about those variables” (Richard & Anita, 2015). As a result, a stratified random sampling technique will be employed. The stratified random sampling technique guarantees each subgroup within the population receives proper representation within the sample. It provides better coverage of the population since the researchers have control over the subgroups to ensure all of them are represented in the sampling. It also provides a reasonable variable, by selecting proper samples from the population frame, which would address the research questions.

During the first site tour, through intensive observation and interviewing the key informants, such as Aba Zumra Nuru, W/ro Enaney Zumra, the leader of the committee, and local people, they guide the search for and listing of variables to ensure a subgroup that is a proper representation of the community. Variables like age, sex, housing variety, economic activity, and site. The major filters used in this thesis were the following:

- Housing variety: -there are two types of houses in the community which are row and detached houses.
- The site on hill and flat: - site conditions can also result in very different house forms, and consequence different spatial characteristics.
- Economic activity: - The activity they perform for income sources will alter the activity and space they use.
- Age and sex: -To select the people who have different ages and sex because the study investigates space claims by all age and sex groups.

Table 3.2. The selection summary of the case study.

The variable	Reason	Number of houses
Housing variety	There are two types of houses in the community which are row and detached houses.	9-row house & 9 detached houses
The site is on a hill and flat	Site conditions can also result in very different house forms, consequently different spatial characteristics. The site of Awra Amba is on a range of hills and a flat site.	9 on the hill and 9 on the flat
Economic activity	The duty's given by the community are oil factory, eldercare center, milling, shop, committee, cafe, ICT centers, weaving, Tourist guide, Cloth sales, Teacher, Diary farming, Spice preparation, Farmer, and Poultry. These determine the space ad activity in the settlement.	Select at least one representative in each sector.
Age and sex	Age determines the number of years becoming a community member and indicates the difference in settlement layout through different years and the activity. And the space utilization in the settlement varies based on age and sex.	Select at least one representative from each year.
Educational background, family member	Educational background deferent perspectives of understanding the settlement and family members differentiate the space utilization inside the house and the compound.	Select at least one representative from each family member.

Table 3.3. Selection of case and sampling.

Name	Age	sex	Education level	Family member	Membership year	Housing type	Economic activity	Compound location
Meniber Ahmed	M	33	Meserete timihirt	5	2007	Detached	Oil factory	On the flat
Maritu Ahmed	F	29						
Melikenesh Ahmed	F	49		5	1979	Detached	Eldercare center	On the flat
Nurumar Hussen	F	32	Meserete timihirt	9	1988	Row attached with Gebiya	spice preparing	On the hill
Zeru alemu	M	36	6 th grade		1988		Milling	
Mulunesh Seid	F	38	Meserete timihirt	6	1983	Detached	Shop	On the hill
Engidaw Agiz	M	45	9 th grade		1984		Committee	
Kindachew Kibiret	M	46	Meserete timihirt	7	1978	Row	Caffe	On the hill
Etalemahu Gebeyehu	F	43	Meserete timihirt		1984			
Marishet Kindachew	F	23	10 th grade	2	2007	Detached L-shape	Ict center	On the flat
Nurbegna Hafiz	M	29	10+3		1996			

Legesse Fenite	M	33	10 th grade	5	1992	Row	Weaving	On the hill
Gebiya mekonen	F	33	6 th grade		1992		Tourist guider	
Birtukan Kibiret	F	37	6 th grade	5	1985	Detached	Tourist guider	On the flat
Muluneh Alemu	M	45	5 th grade		1985		Milling	
Fenita Getasew	F	39	9 th grade	7	1984	Row	Cloth sells	On the hill
Selamu zewidu	M	62	8 th grade		1978		Teacher	
Nuruahmed Yesuf	M	70	Meserete timihirt	3	1979	Row	Diary faming	On the flat
Aminet Mohamed	F	55					Spice preparing	
Tirusew Fenite	F	33	6 th grade	6	1993	Row attached with kedija	Tourist guider	On the flat
Hybayache w Jemal	M	36	8 th grade		1992			
Temalisa Yimer	F	46	Meserete timihirt	7	1984	Detached	Weaving	On the hill
Mohamed Ayenew	M	49	Meserete timihirt		1979		Farmer	
Kedija Ayenew	F	56		4	1982	Row	Poultry	On the hill

Jemal Mohamed	M	65	Meserete timihirt		1982		Dairy farming	
Melike Zumura	F	37	9 th grade	7	1987	Row	Shop	On the hill
Wasse abidela	M	39	6 th grade				Shop	
Merisha Gebeyehu	M	52	Meserete timihirt		1979	Detached	Committee	On the flat
Zewiditu							Weaving	
Kidane muhamed	F	51	Meserete timihirt	5	1982	Detached	Caffe	On the flat
Hafiz Mohamed	M	75	Meserete timihirt				Guard	
Belachew Nuru	M	52	8 th grade	1	1999	Detached	Clinic	On the flat
Yemisirach Mohamed	F	50		5	2004	Detached	Eldercare center	On the hill
Firew Alemu	M	64	Meserete timihirt				Poultry	

Awra Amba _ Housing Types

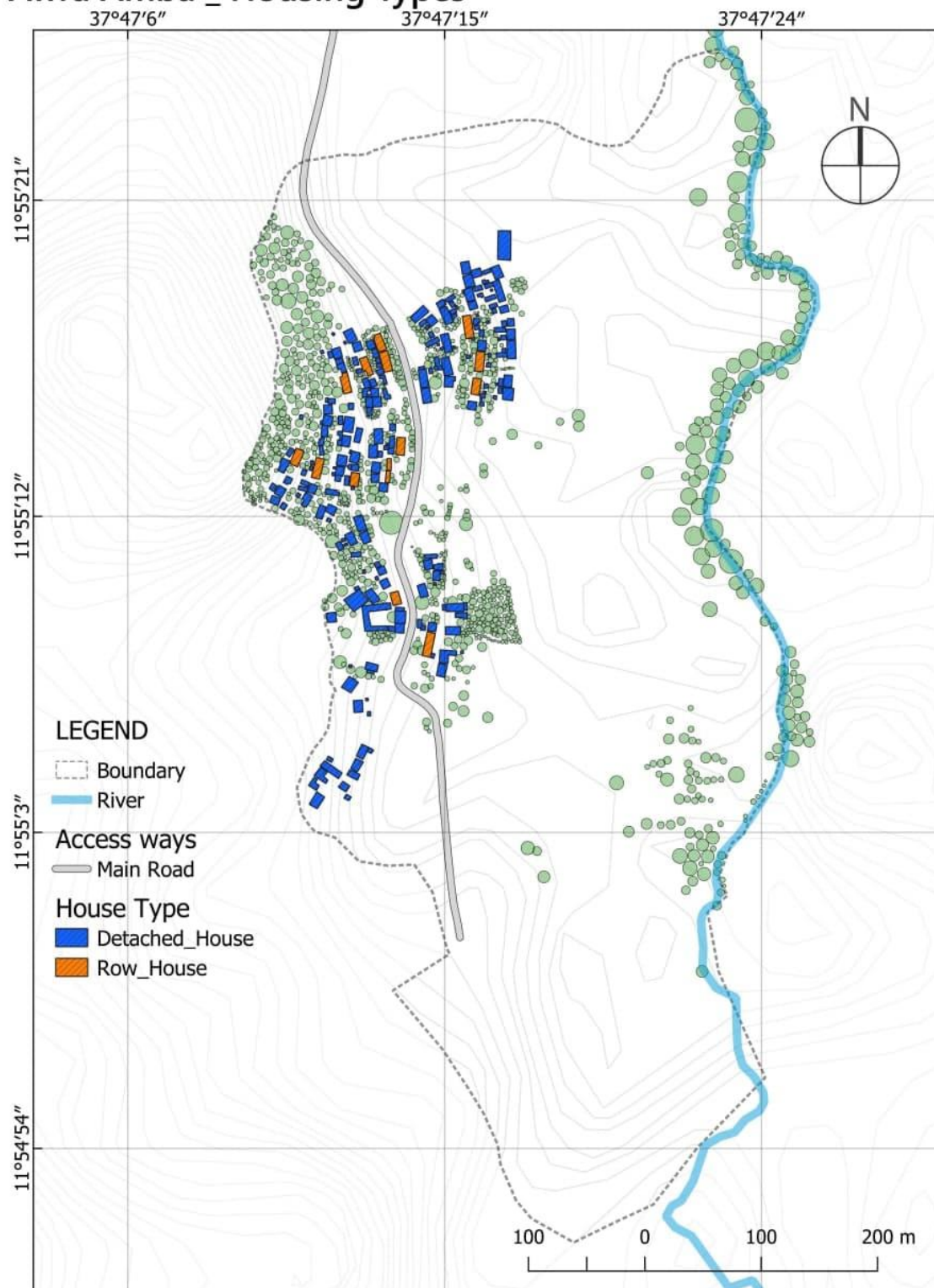


Figure 3.1. Awra Amba house type: row and detached.

Awra Amba _ Settlement Area

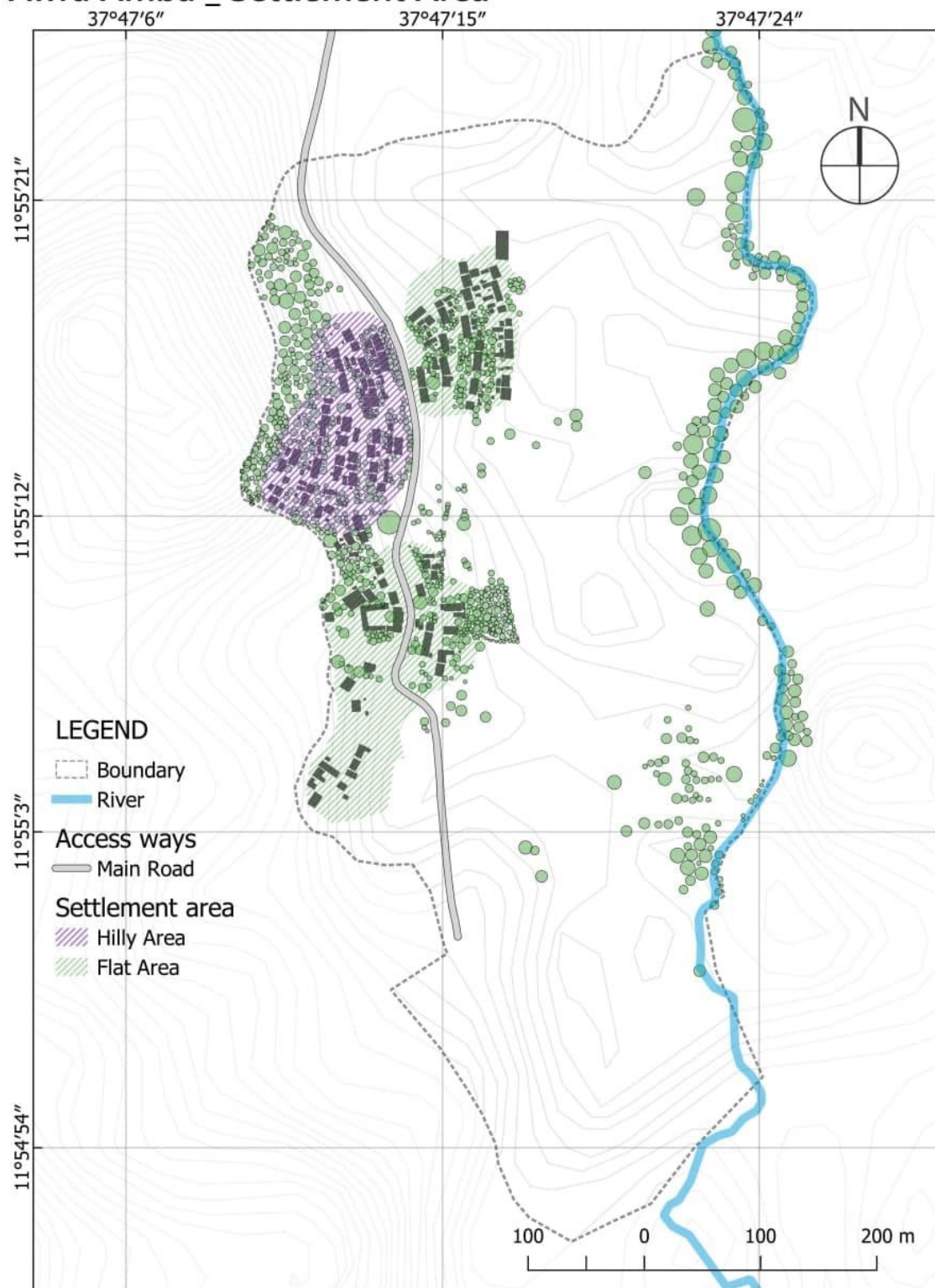


Figure 3.2. Awra Amba settlement area.

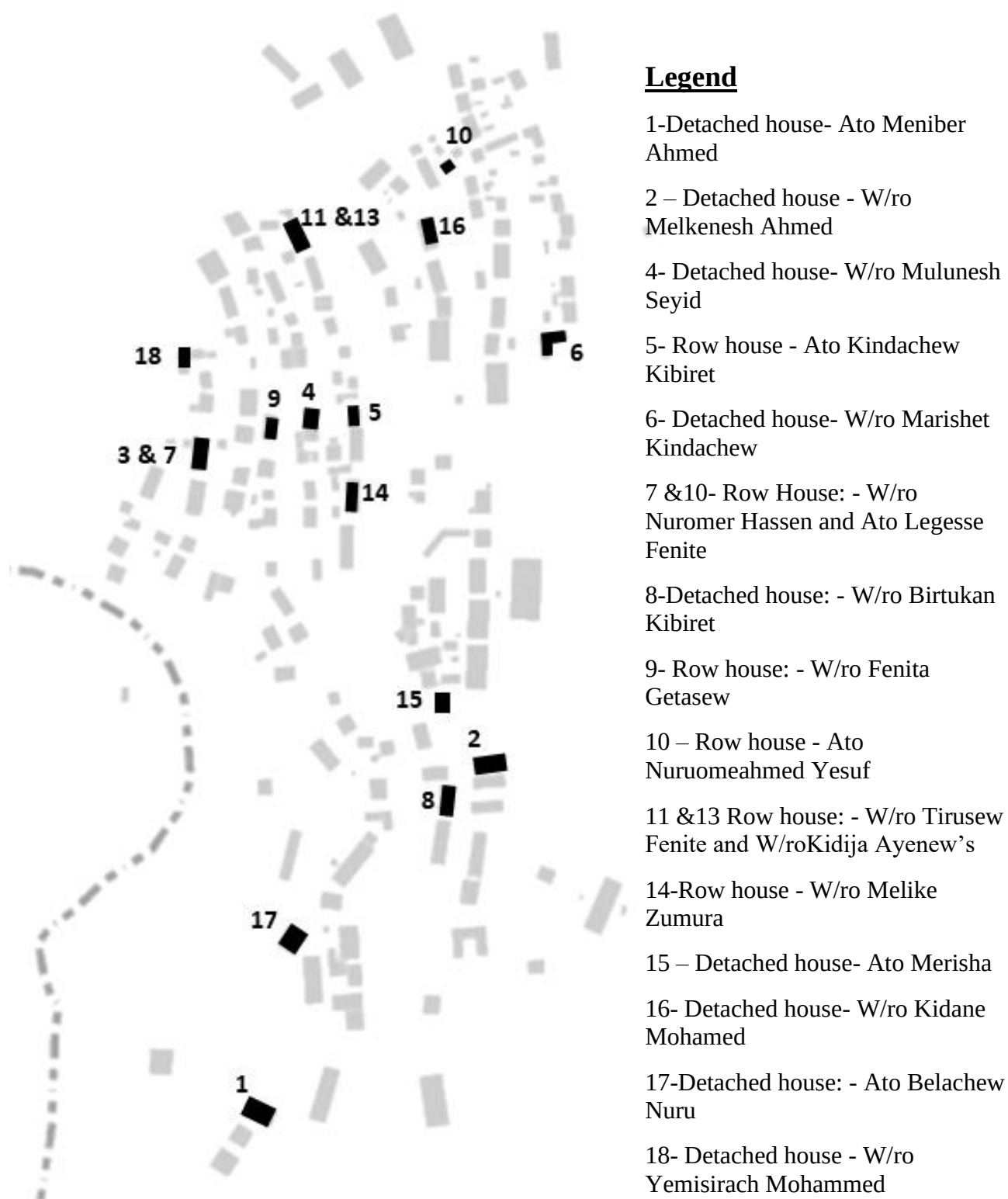


Figure 3.3. Selection of case and sampling household location.

3.7 Method of Data Collection

According to (Richard & Anita, 2015), the data for case studies can come from a variety of sources, including observation, interviews, questionnaires, reports, and archival records (such as minutes of meetings)”. Since different cases consist of different elements, different methods of data collection techniques are required for different elements. Based on this data collection technique, it has been differentiated. The data were collected using an interview, questionnaire, voice recording, and video camera, photographs, maps, sketches, and Q-GIS. The data collection techniques that were conducted on the main fieldwork are explained below.

3.7.1 Semi-structured, unstructured, and focused Interviews

According to (Yin R. K., 2018), an interview is one of the most used sources of data for case study information. “Personal interviews vary in their nature into structured, semi-structured, and unstructured” (Richard & Anita, 2015). “Case study interviews will resemble guided conversations rather than structured queries. Although you will be pursuing a consistent line of inquiry, your actual stream of questions in a case study interview is likely to be fluid rather than rigid (Yin R. K., 2014)cited (Rubin & Rubin, 2011). “Semi-structured and unstructured flexibility of approach to questioning than structured” (Kothari, 2004). This allowed much greater freedom to ask, in case of need, supplementary questions or at times. So that in this study, the interview forwarded to the informants are intended in two forms; semi-structured and unstructured. For semi-structured interviews, the questionnaire was designed and used to collect both qualitative, and quantitative data and unstructured interviews were used to collect qualitative data. To do this, the same questions need to be asked in each interview. However, the researcher also wants the interview to remain flexible so that other important information can still arise.

To dig out sound information and to have a deep understanding of the spatial characteristics of the community. The interviews were focused on the following themes:

- **First for government office;** for Key informants such as rural land administration and Amhara national regional state bureau of urban development housing and construction bureau. This helps to understand what kind of proclamation, laws, and trends have government officials to determine the settlement.

- **Second for community founder;** the settlement history and the process, the construction techniques, meaning of spaces and materials.
- **Last for dwellers;** Life story questionnaire for settlement, compound layout and construction materials, activity, space, and time usage with its meanings.
- **Focus Group interview:** - This was intended for cross-examining and used in reminding the participant's various information that could be very useful. The discussion group was the committees of the community which has three or five members. The discussion points were the construction techniques and steps of Awra Amba's house, rituals in the settlement, and the historical background of the community.

3.7.2 Observations

“Case studies tend to focus on cases as they occur in natural, real-world settings” (Mills, Durepos, & Wiebe, 2010). “Because a case study will likely take place in the real-world setting of the case, you are creating the opportunity for direct observations” (Yin R. K., 2018). In conducting this study, personal observation provided critical information by applying my educational and work experiences as one means of generating primary data. In doing so, it was intended to engage the use of cameras and other similar gadgets to strengthen and reinforce the qualitative information obtained by interviews and questionnaires. Accordingly, with the help of participatory observation of the Awra Amba settlement, compound, and dwelling the spatial characteristics were investigated clearly and separately. A deep understanding of the anthropological part was the output of participant observation. The researcher had adapted quickly to the socio-cultural setting of the settlement. To record the natural behavior of the group, gather the information that could not easily be obtained such meaning of the space, and verify the truth of statements made by informants in the context of a questionnaire. It has two parts which are structured through the checklist and unstructured.

3.7.3 Audio and Video Recording:

Due to the complexity of the settlement in addition to the mapping of the settlement, audio and video recording are very important. So, they were used to document the study area in detail as much as possible. This section considers three features of video data that underpin its distinctive

potential for the research: its character as a real-time sequential record; a fine-grained multimodal record; and its durability, malleability, and shareability.

3.7.4 Photographing and Sketching

The sketch was intended to produce compound layouts, plans, critical sections, and elevations, exploring and understanding interlocking building elements. The sketch was important where spaces and photographs could not capture details, such as the connection of building elements. Indeed, it helped the researcher to focus on probing questions like, does this, and that happen?

The photograph helped to capture the realities of life inside and outside the houses, compound, and settlement, which were difficult to recall, by any other means. It can play a great role in documenting details, facades, spaces, and activities within the settlement.

3.7.5 Mapping:

Maps and drawings are worth a book because they are self-explanatory, and a few lines can explain more than pages of descriptions. Therefore, aerial photography, a topographic map from the Ethiopian Mapping Authority (EMA), and geo-referenced Google Earth were used to map all the dwelling typology, road network, open spaces, land use, and topography of Awra Amba.

3.7.6 Measuring

Technological and scientific advancement, measurement with various appropriate gadgets and tools has become a vital aspect of conducting architectural documentation of buildings. Hence, this research engaged the use of measurement in collecting physical descriptions such as length, width, coordinates, and volume of the house in focus.

3.8 Research Tools

A digital camera, tape measure, laser meter, and tape recorder-to conduct interviews and collect physical data of the building were employed during the onsite investigation.

3.9 Method of Data Analysis

The methods used to analyze the collected data through the above technique were charts, tables, Google Earth, mapping, and qualitative and quantitative interpretation of data were used. Mapping was chosen to illustrate the multi-faceted nature of domestic space use and claim. A mapping

which was used to show the multifunction of the layers of the settlement, domestic space used and claimed, and perception map about space claim was supported by an Arial photo, Google Earth, and a topographic map of the study area. These include; the time diary, spatial mapping, and spatial configuration diagram, or J graph. Graphs and tables were used to analyze data comparatively. Qualitative data were interpreted in the form of mapping and description. Moreover, the spatial mapping of time diary records and qualitative data were analyzed in the form of tables, diagrams, descriptions, and mapping.

3.9.1 The Time Diary⁵

The time diary was applied in this thesis to analyze the essence of each individual's daily pattern of space use by recording, activities, time, and spaces concerning each individual. Moreover, qualitative methods, interviews, questionnaires, and time diaries were employed, and then the data were evaluated using quantitative analysis to represent findings. Though the method was time-consuming,

3.9.2 Spatial Mapping⁶

In this thesis, spatial mapping was recorded to analyze the perception of the space claims of each individual. Therefore, rooms were shaded to identify the perception of the space claim of each individual. This is to illustrate both individual space claims and how individuals see the space claims of others, which could highlight any associations with gender, age, or status. What space each associates with or claims is an important aspect in the structuring of space within the home, which can be hierarchical depending on age, gender, or status outside of the home.

⁵ Time diary record activity, time and space use about each individual, which can then be examined with respect age and gender, a time diary can be used. Diaries recording actual time have been used in housing studies to effectively record household routines and space use in homes. (Asquith, 2006),

⁶ Spatial mapping is What space individual associate with or claim is an important aspect in the structuring of space within the home, which can be hierarchical depending on age, gender, or status outside of the home. To record space claims from the perspective of individual household members, a simple plan of each home with all rooms drown were shaded in to identify the perception of the space claim of each individual. (Asquith, 2006),

3.9.3 Spatial Configuration Diagrams⁷

The spatial configuration diagrams or j-graph are used to relate the findings that formed the basis of the anthropological, sociological, and behavioral conceptual framework to an architectural approach, a tool that can identify how spaces within the home relate to each other.

3.10 Validity of Data

The validity and reliability data relied on direct observations, therefore cross-checked through multiple sources of evidence like anticipated literature reviews, documentation, measurements, interviews, direct observations, FGDs, sketches, and photographs. Also, the data were cross-checked with the information collected from community founders, committees, and elders. In some of the cases, the researcher modified the interview questions after an observation was completed get data directly related to the research questions. Engaging in daily activities, playing, and relaxing with people during their free time were some of the methods employed to develop trust and to get valid information. Trust is, of course, important scheme to get valid information; therefore, using a mediator, such as a tourist guide in the community, was also very helpful. In addition, direct observation was conducted while the process was happening on the site. Then triangulating or establishing converging lines of evidence made the findings as robust as possible.

3.11 Summary of Research Method

Due to the need for additional evidence, the data collection and analysis method was modified and rechecked several times. Therefore, this research method was not the first attempt; rather, it was modified several times.

⁷ The spatial configuration diagrams are a tool that can identify how spaces within the home relate to each other spatially, needs to be adopted. This tool commonly known as j-graph can map the potential connection and movements between spaces more radially than the frequently used architectural. It was used to relate the findings that formed the basis of the anthropological, sociological, and behavioral conceptual framework to an architectural approach.

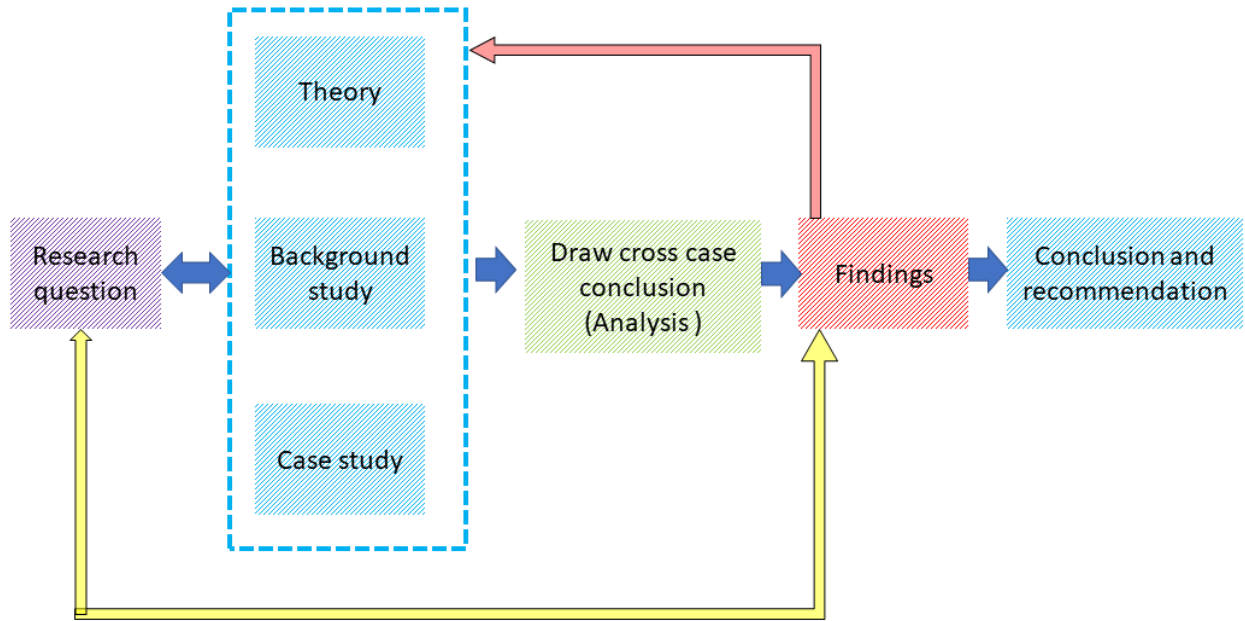


Figure 3.4. Summary of research design.

Chapter four

Case study

4.1 Introduction

This chapter includes the Awra Amba profile (discuss in detail the location, history, religion, population, and cultural aspects of Awra Amba), the origin and formation of the settlement of the Awra Amba community, and details of life history, settlement, compound, and cultural aspects, and selected homestead was presented intensively in the case study section.

4.2 Awra Amba profile

4.1.1 Geographical Location of Awra Amba community

According to (Joumard, 2012) one of the eleven administrative zones of Amhara Regional State is South Gondar (Debub Gondar). It is located along Lake Tana, on the eastern shore. Its capital city is Debre Tabor. The South Gondar zone is divided into 12 woredas (districts), including Fogera woreda. The geographical coordinates of Fogera are 11°57'0'' North and 37°35'0'' East. It covers an area of 1174 km², and is made of 76 % plains, 11 % hills, and 13 % undulated lands. According to the 2007 census (ECSA, 2007), this woreda had 228 000 inhabitants, of whome 89 % were living in rural areas and were farmers; they were Orthodox at 95.8 % and Muslim at 3.6 %. The administrative center of Fogera woreda is Woreta. Fogera woreda is divided into kebeles. One of the kebeles of the Fogera woreda is Woji-Arba-Amba, which administers Awra Amba as well as the villages of Tizaba, Dej Mesk, and Jib Gudguad. This kebele had 8 908 inhabitants in 2007 (ECSA, 2007).

The Awra Amba community is located in Woji-Arba Amba Kebele. To get to the Awra Amba community, 560.8 km from Addis Ababa, travel 12km from the town of the Woreta, on Woreta-Debre Tabor main road, and see the sign for Awra Amba, turn right onto a dirt track south, reaching the village after 2km.

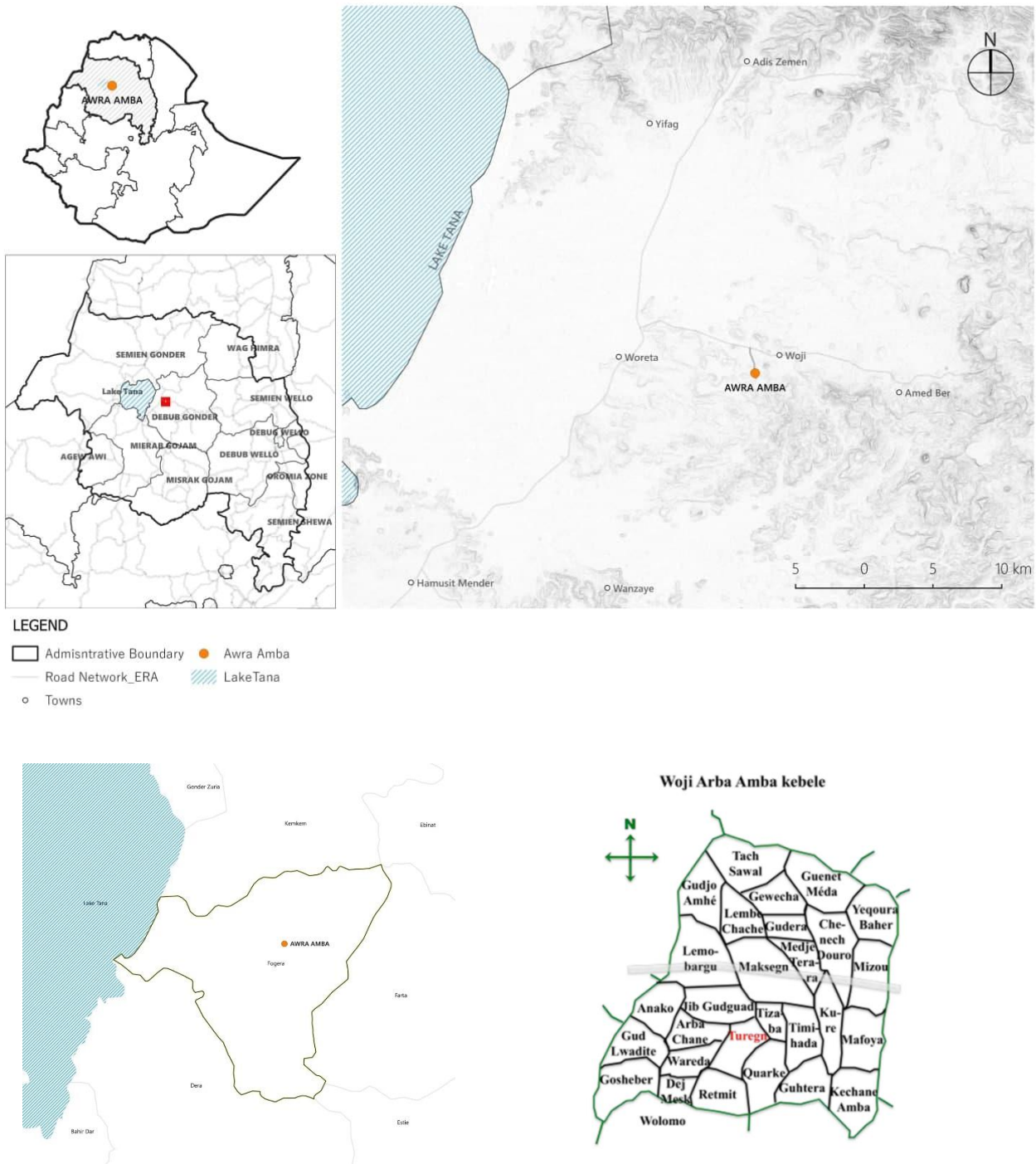


Figure 4.1. Location of Awra Amba (source: author and (Joumard, 2012)).

4.1.2 The origin of the Awra Amba community



Figure 4.2. Founder of Awra Amba (source: <http://visitawraamba.com>).

The origin of the Awra Amba community was strictly linked to the life story of its founder, honorable doctor Abba Zumra Nuru. On August 23, 1946, he was born in the South Gondar zone, Simada woreda, from a family of the Muslim religion. His mother, Tirusew Kasaye, was also born in Simada, where his parents met and got married. His father, Nuru Muhammad, was born in Ambaa Mariam, in Tenta woreda, in the South Wollo zone (Debub Wollo in Amharic) of the Amhara region (Joumard, 2012) cited (Atnafu, 2005).

Aba Zumra Nuru, when he was a child, perceived the inequality of women, the maltreatment of the elderly, labor exploitation, cruel punishment of children, and dishonest dealings among people. By that time, he started to pose questions and started talking about issues such as equality of women, the right of children to care for the elderly, avoiding bad speech, and bad deeds. However, his family and the surrounding society didn't accept his ideas. His family and his neighbors do not answer his question; rather, they consider this extraordinary behavior to be considered abnormal and mentally ill, not only because he supported the equality between men and women but also because of his opposition to institutionalized religion in a very religious, traditional, and patriarchal Ethiopian society (Habtamu, 2009).

According to the information obtained from Aba Zumra Nuru, “because his family and neighbors didn’t accept his idea, he traveled from place to place in the winter to find those who would share his ideas. At a young age, he suffered a lot because he had no food to eat and no place to sleep; he was sleeping in the jungle, and nobody sought advice from him; he didn’t succeed in finding like-minded people. In the summer, he returned to his family and became a farmer, like everyone else, and shared his harvest with those who were unable to work due to old age or health problems. As well as sharing his harvest with those in need, he continued trying to find people who would share his ideas during the dry season. Finally, after spending several years in this situation, Zumra met a pair of individuals in a nearby district, Fogera woreda, who were accepting of his ideas. As a result, he left his former community and visited these like-minded people. Together, the Awra Amba community was established in 1972.”.

Zumra dreamed of setting up this unique community in 1972. He then convinced a small group of men and women of 66 individuals. Eventually, after some defections, 19 families had established a community on about fifty hectares, none of whom were able to read or write (Joumard, 2010).



Figure 4.3. Some of the members of the Awra Amba community when the community was established (source: (Awra Amba community, 2015)).

The members of the community initially came to change the harmful traditional practices exercised in Ethiopia and different parts of the world. In 1972, they established a new and progressive way of life that they began to practice. They created a good system by living and working collaboratively, peacefully, and cheerfully. They treat each other as brothers and sisters. This idea was established for all the people in the world.

There is no religious activity or institute in Awra Amba. They believe in the existence of one Creator, who created the sky and the earth, night and day, female and male, air and sun, and all the creatures that exist on earth, and their belief is conveyed by good deeds. Therefore, the members of the community live by doing good deeds for others and avoiding bad deeds from being done to others.

In the Awra Amba, there are two levels of membership. These are community members and cooperative members. In both cases, the member should be putting the values, principles, rules, and regulations of the community into practice; the only difference is that community members may live either in Awra Amba or other places, but cooperative members work together and share profit equally. Muslims and Christians can be members unless they work based on the community schedule.

4.1.3 Composition of the population per sex

Any person from all religions can join the community if they share and respect the values and principles of the community. Due to the scarcity of space to work, the community was not able to welcome those who would have liked to join. Therefore, some community members live in other locations. (Habtamu, 2009)

The population had 19 households and 66 individuals during the establishment of the community; at the beginning of 2011, there were 121 households, or 439 people (Crespo, 2011). According to data recorded by the different authors, it has been hardly increasing since 2006, after a large increase since its re-foundation in 1993-94. See the figure below.

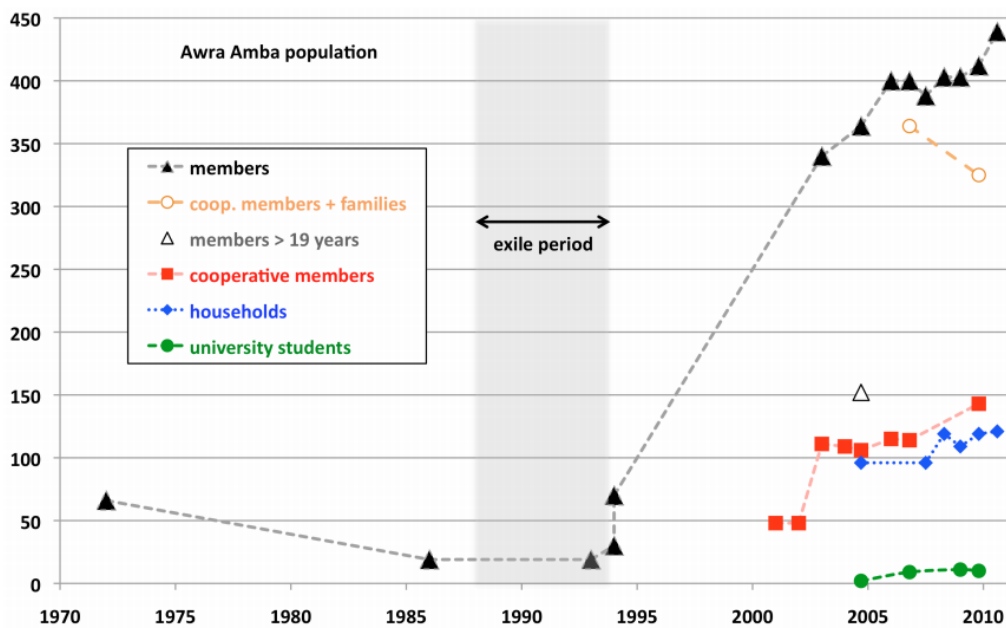


Figure 4.4. Population of Awra Amba from 1970-2010 (source: (Joumard, 2012)).

The composition of the population per sex, marital status, and the number of children per household. In 2001, with a population of 403 people, there were slightly more women than men (51.36% women): The community had 412 inhabitants in 2002, 432 in 2003, 519 in 2009, and 535 inhabitants and 119 households in 2011 E.C.

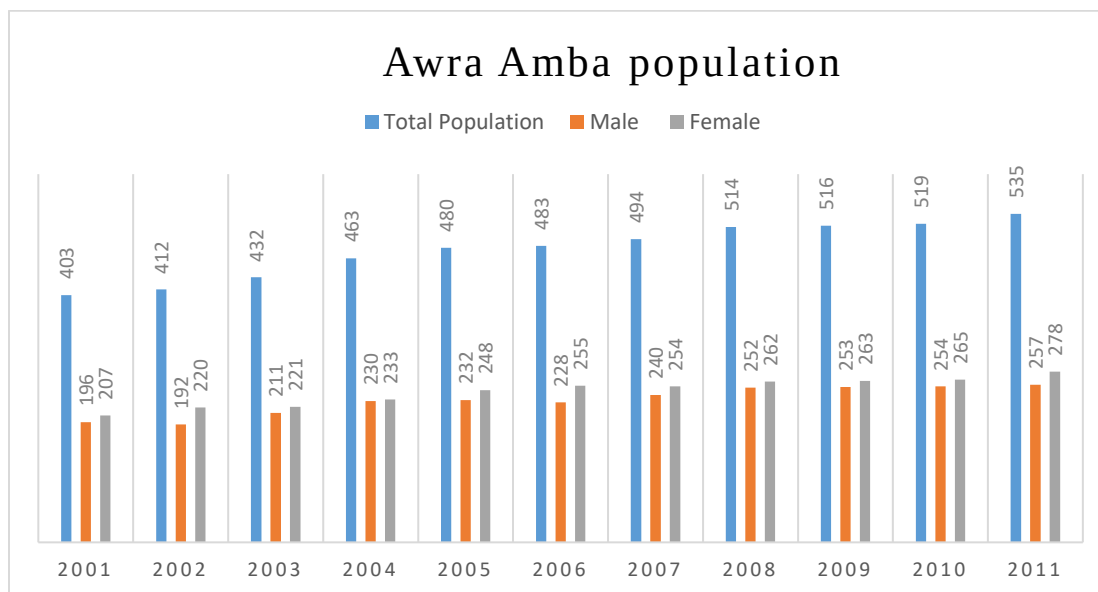


Figure 4.5. The population of Awra Amba from 2001-2011E.c.

4.2 Zumra's five principles

According to the information obtained from members of the community, the social and cultural lives of the Awra Amba community are founded on five major values. The five principles make the community strong in social interaction, unique in culture and ideals, and different from the Ethiopian Amhara, even though surrounding villages.

The five principles are as follows:

1. Respecting the right to equality for women
2. Respecting children's rights
3. Taking care of people who are unable to work
4. Eradicating bad speech and bad deeds
5. Accepting that all human beings as brother and sister regardless of their differences



Figure 4.6. Five principles of Awra Amba.

4.3 The structural organization of the community

The Awra Amba community has a unique structure, which is led by twelve committees in Awra Amba to simplify realizing the five principal goals. Each committee has its own responsibility to carry out. The community member selects the executive member in the meeting.

1. Development committee

One of the twelve committees, the development committee, has fifteen council members. The responsibility of the committee is to make the rules and regulations governing the community, reform those rules, if necessary, control their implementation, and coordinate and oversee all activities performed by subcommittees.

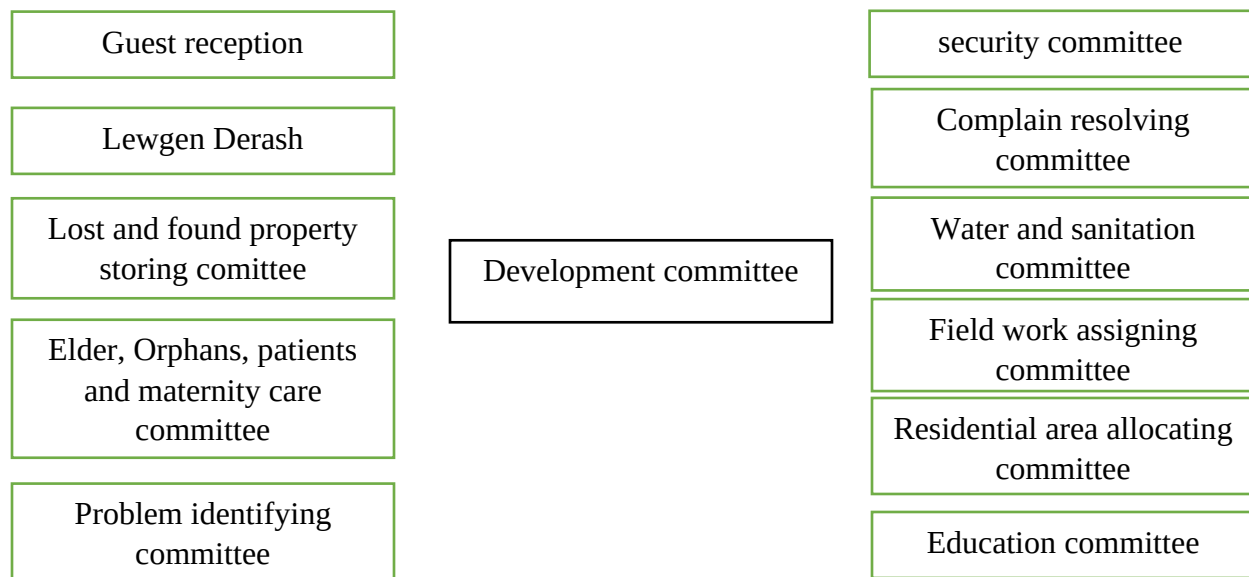


Figure 4.7. A subcommittee of the development committee in Awra Amba.

2. ‘Lewegen Derash’ charity committee

According to (Awra Amba community, 2015) The responsibility of the committee is to coordinate and manage the work (weaving) that all the members of the community participate in once a week, on Tuesdays, in a central place at the Warka tree, and funds generated from this day, as well as the entrance fee collected from visitors, make up a fund called ‘Lewgen Derash’. The committee manages and allocates this fund to people who are unable to work due to aging and health problems. The committee has seven executive members and three auditors.

3. Guest reception committee

According to (Awra Amba community, 2015) The responsibility of the committee is to receive the guests who came to visit Amba, show them around, and tell them about the lifestyle and practices of the community. It has seven executive members.

4. Lost and found property storing committee

According to (Awra Amba community, 2015) The responsibility of the committee is to store the properties lost by somebody that have been found by a member of the community. The committee receives the property by recording who found it and where reasonable information was found from the owner. If the committee can't find the owner of the property, the property will be donated to the 'Legen Derash' fund. The committee has three executive members.

5. Elderly, orphans, patients, and maternity care committee

The committee has three executive members. The duties of the committee are to care for the elderly, orphans, patients, and women who have given birth (new mothers). The committee assigns someone to care for the sick and the new mothers.

6. Problem identifying committee

According to (Awra Amba community, 2015) The responsibility of the committee is to identify people who are in trouble and report the case to the 'Lewgen Derash' committee to solve the problem. It has three executive members.

7. Complaint resolving committee

According to (Awra Amba community, 2015) The responsibility of the committee is to resolve complaints when a disagreement occurs among the community members through discussion as the disagreement occurs. If the committee can't resolve the complaints, they will be brought to the general assembly, where the problem will be solved. It has three executive members.

8. Security committee

According to (Awra Amba community, 2015) The responsibility of the committee is to maintain the peaceful life of the community by assigning community member to guard the village. The committee also safeguards the community from robbery. It has three executive members.

9. Education committee

According to (Awra Amba community, 2015) The responsibility of the committee is to provide educational materials, keep the kindergarten school safe, and make sure children and adults have access to education. It has five executive members.

10. Water and sanitation committee

According to (Awra Amba community, 2015) The responsibility of the committee is to supply clean water to the community without interruption and collect service fees from the users. In addition, the committee is given the responsibility to keep the village clean by coordinating sanitation duties done by members of the community. It has five executive members and three auditors.

11. Fieldwork assigning committee

According to (Awra Amba community, 2015) The responsibility of the committee is to assign the members their respective tasks, according to their capabilities and the plan provided by the development committee. It has three executive members.

12. Residential area allocating committee

According to (Awra Amba community, 2015) The responsibility of the committee is to allocate a 150m² residential area for the cooperative members who have no other residential area and are ages 18 and older.

4.4 Awra Amba community topography

4.4.1 Land Coverage and Topography, Landscape of Woji-Arba Amba Kebele

According to (Joumard, 2012) the landscape of Woji-Arba Amba Kebele is 30% plain area, 40% mountainous terrain, and 30% hilly terrain. The kebele is 2000m above sea level, and its soil is mainly composed of clay. The climatic condition of the Kebele is temperate. The average annual temperature is 25⁰c and the average rainfall is 4500mm. Awra Amba is located in the hilly land of Woji Arba Amba Kebele. It is mountainous and has very interesting terrain to live in. Mountainous characteristics are used for many purposes, including strategic location for defending enemies and a favorable climate.

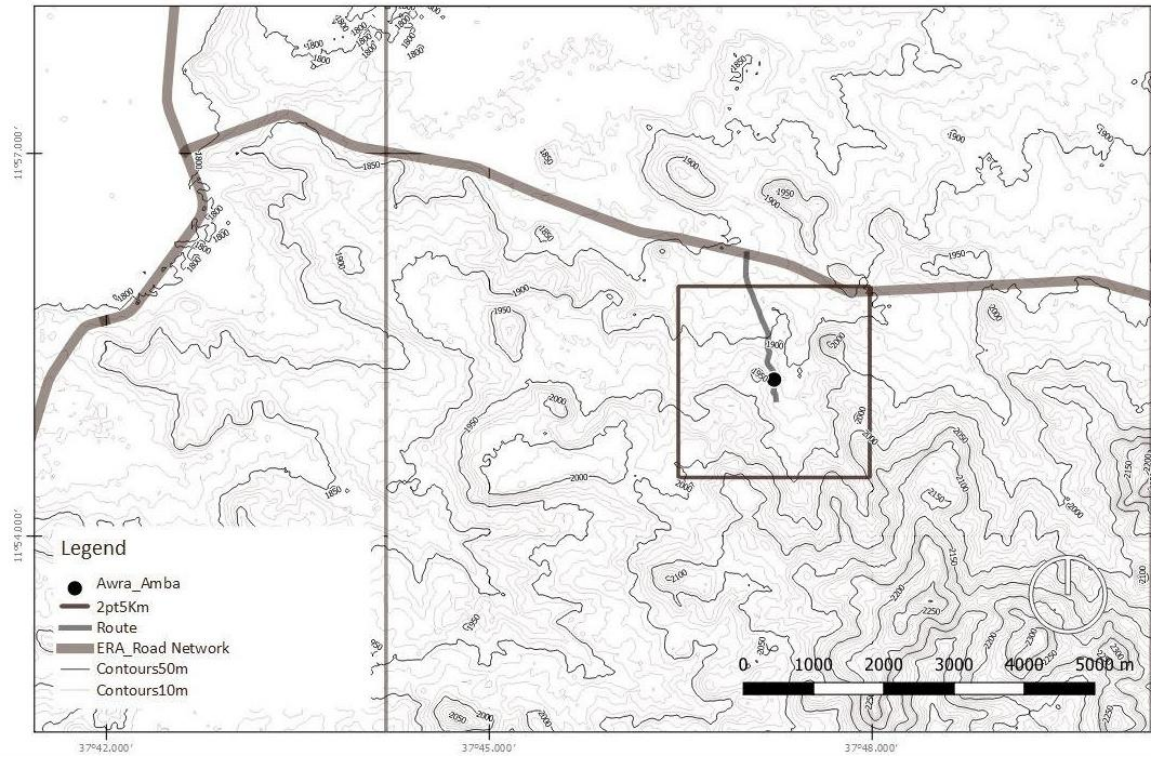


Figure 4.8. Topography of Wenji-Amba (source: global mapper).

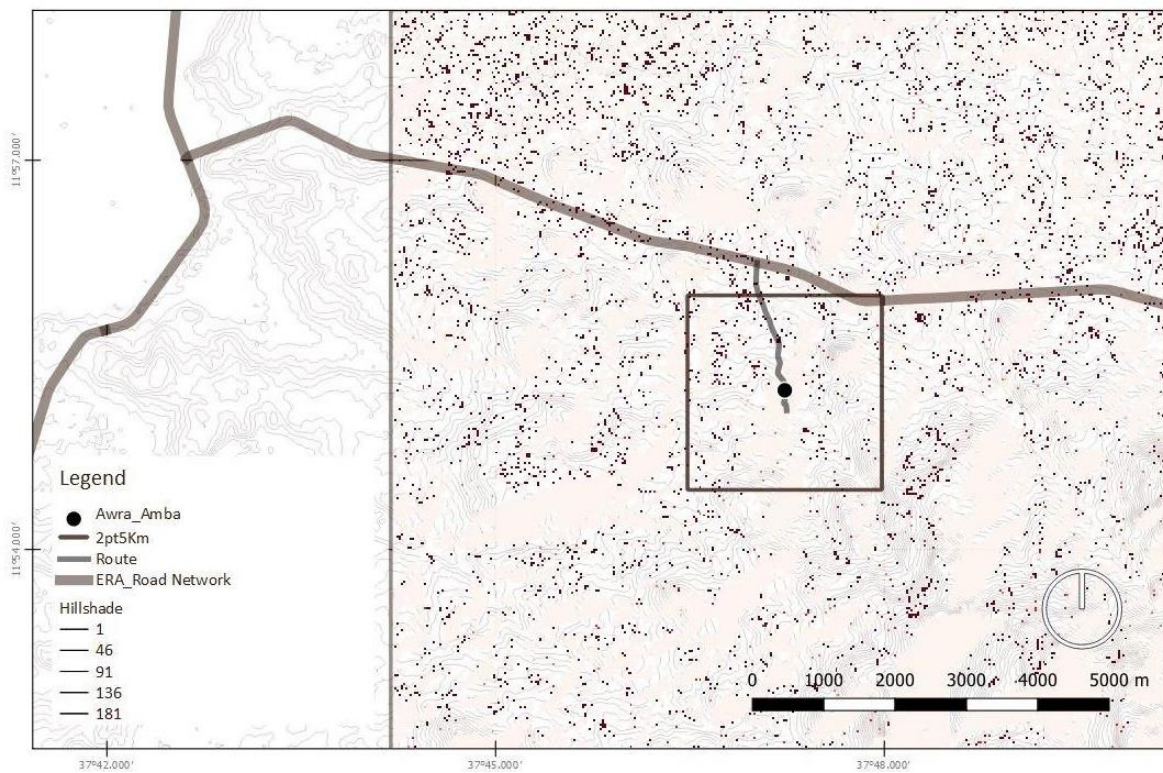


Figure 4.9. Topography of Awra-Amba (source: global mapper).

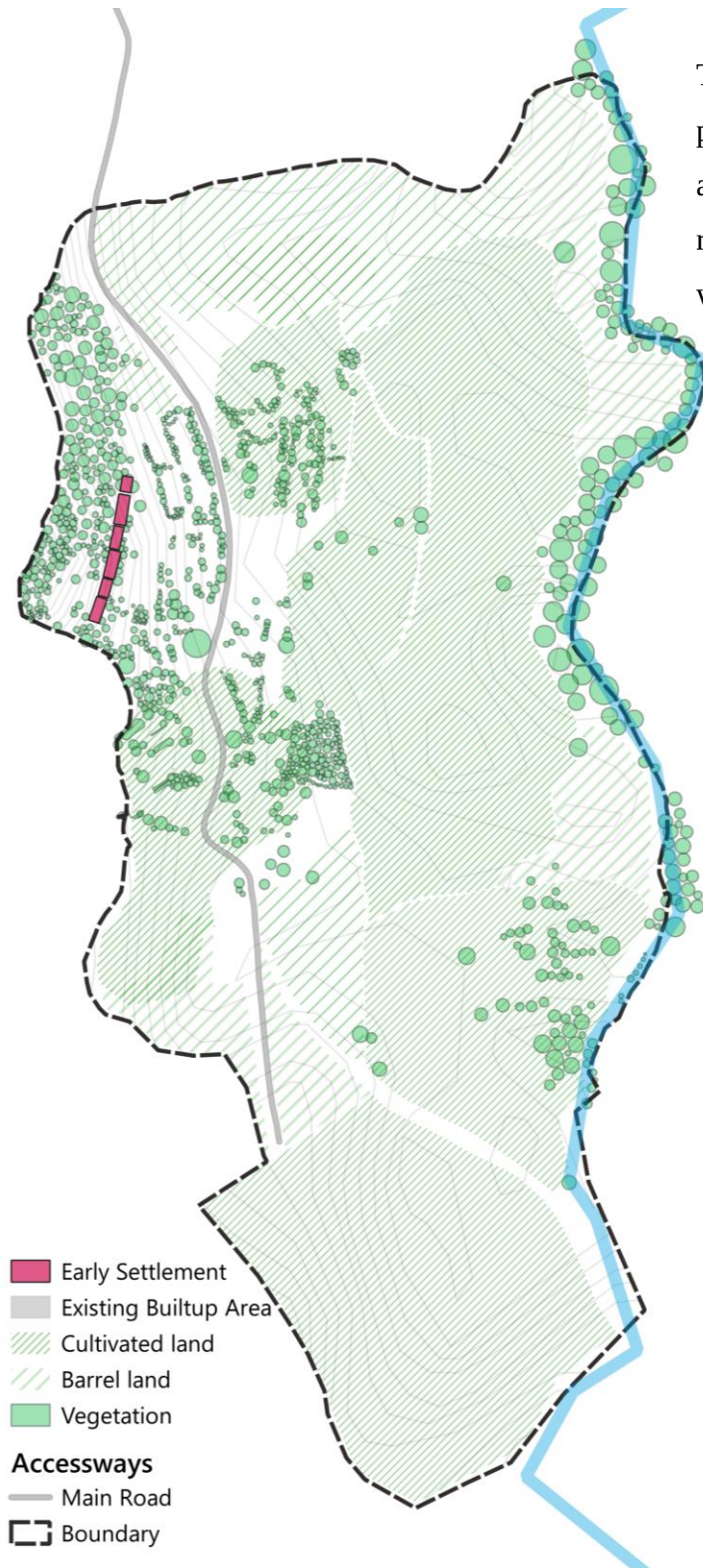
4.5 Formation of Settlement of Awra Amba

Before Aba Zumra established this unique community in 1972, the members lived in a dispersed manner, similar to a settlement with the neighborhood peasants. Once they establish the community practice of their principally educated people, academic intellectuals or religious leaders accept them when the neighboring people continue their antagonistic hostility towards them, and they report to the Derg regime, the government of Ethiopia at the time, as members of ‘Woyanie’, the rival front of the Derg regime. Thus, the Derg regime decided to eliminate them.

Due to this reason, they left their homes in February 1988 and escaped to the southern part of Ethiopia, Bonga. At that time, they had nothing to eat or drink, and they had no money for medicines or medical treatment when they were sick. During this time, they lost most of the community members and buried their bodies in the soil near some bushes. Having lived through such a situation, they were determined to continue their goal of reaching educated people with their ideas.

In August 1993, they returned to their original place of residence. They found their farmland occupied by nearby farmers. They applied to get the farmland back, but they couldn’t find a solution. During the reallocation of farmland, the regional government proclaimed equal farmland reallocation among the farmers. However, the group appointed to do this task negotiated with the nearby farmers and refused to give them enough land.

As a result, they had no source of revenue, and they suffered from starvation and disease. During this time, a large number of community members died. The Woreda administration approved only 17.5 hectares of land, which the community gets from a generous person, Ato Kindachew, to reside on.



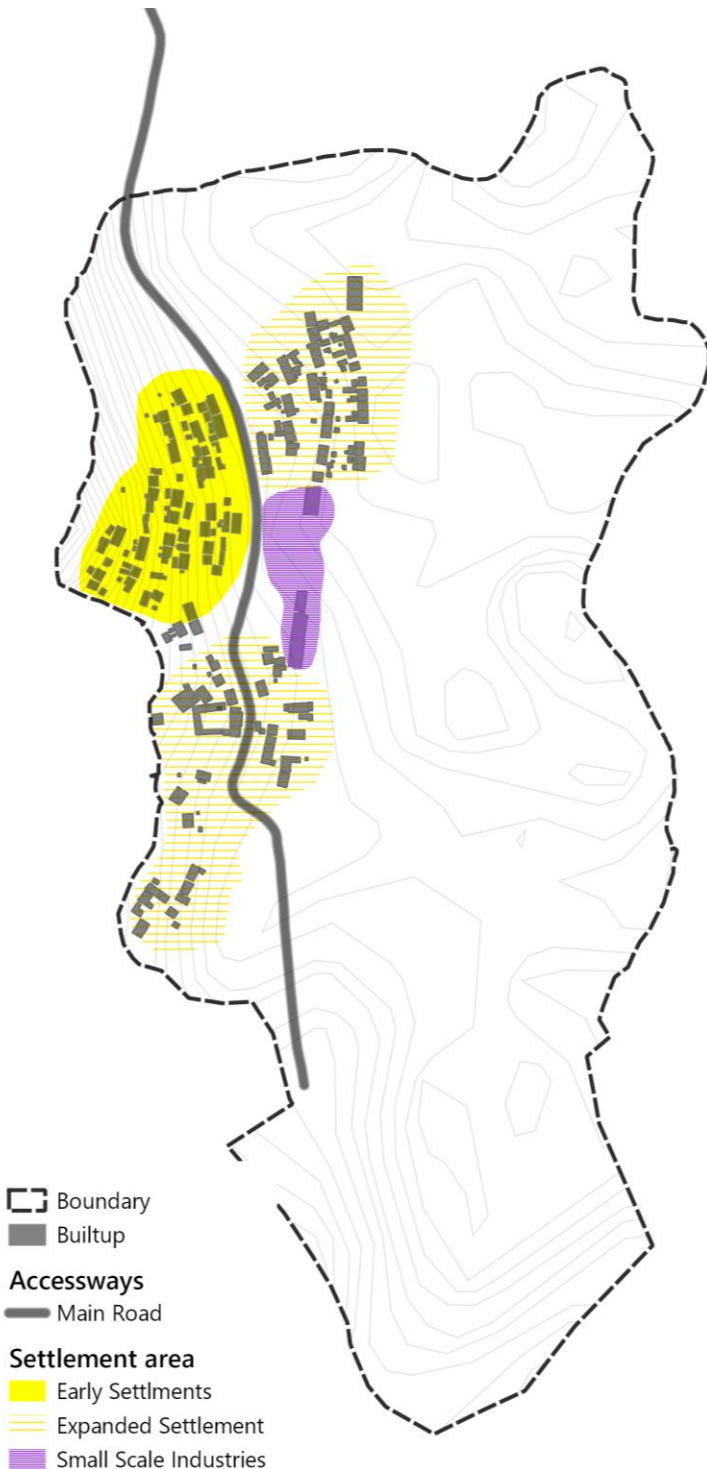
The first settlement is formed on the plateau, which has 1928 masl with a linear arrangement of housing units. The main reason for the selection of the plateau site was a desire:

- to defend the community from neighborhood enemies,
- to manage the fortunate flat land and “Ginde River” for agricultural activities,
- the favorable climate for living, and
- availability of trees.

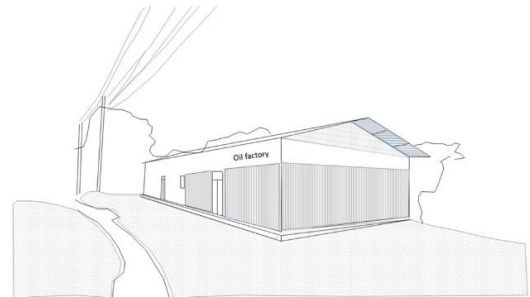


Figure 4.10. Formation of the settlement.

4.6 Industry in Awra Amba



Due to the scarcity of land for farming, the community had no source of revenue, and they suffered from starvation and disease. During this time, a large number of community members died. At last, they thought that life is not only possible through farming but can also be achieved through an industry. They decided to shift their focus to cottage industry and urban agriculture. The industry expanded the settlement into fertile flat land.



They establish the textile, oil, and milling industries on some parts of the farmland. The product is the main source of income, and they sell it to neighborhood farmers. It creates a platform to live in peace with the neighborhood community.

Figure 4.11. Transformation of the settlement due to small-scale industry.



Figure 4.12. Awra Amba settlement in 2011(source: (Awra Amba community, 2015)).



Figure 4.13. Awra Amba current settlement (Awra Amba community, 2015).

4.7 Road network of Awra Amba.

The roads at Awra Amba are categorized based on their function and size into three groups. These are the main road, the secondary (collector) road, and the local (linkage) road. In Awra Amba, there is one main road that parcels the community into two, which starts along the bottom of the plateau land from the NE (North West) direction to the SW (South West) direction. It connects the community with the asphalt road that goes from Debire Tabor to Woreta. It is the wider road in the settlement, which is the only access to the community with the vehicle, used to transport the people to a nearby city, the tourists, and to transport raw materials and byproducts for the industry.

The secondary road (collector road) connects every corner of the community residents to the ‘Warka’ tree (center of the settlement), the meeting place before they go to work. Which increases the social cohesion of the community. The collector road on the hillside parallels the main road and is adjacent to the contour.

The third is the linkage road, which connects every house with the secondary road and main road. The majority of collector and linkage roads overlap and pass through the front and back yards of the compound. The linkage road is used like roads that lead to the toilet, back yard, front yard, and dry waste disposal. From the Awra Amba road network, one can easily understand that the Awra Amba residents are the ones who made and used an organic grid road network and an organic grid urban pattern for their dwellings.



Main road



Collector road



Linkage Road

Figure 4.15. Main, secondary, and linkage roads of the settlement.

The roads at Awra Amba are categorized based on their function: main, collector, and linkage roads.

The main road is the only vehicle access to the community. It has a weaved outline because of the topography and the central 'Warka' tree.

The linkage and collector road network follow the topography of the settlement. It passes through the front and back yards of the compounds. It intensifies the social cohesion of the community.

The overlay of these three-road types generates an organic grid road network and an organic grid urban pattern for their dwellings.

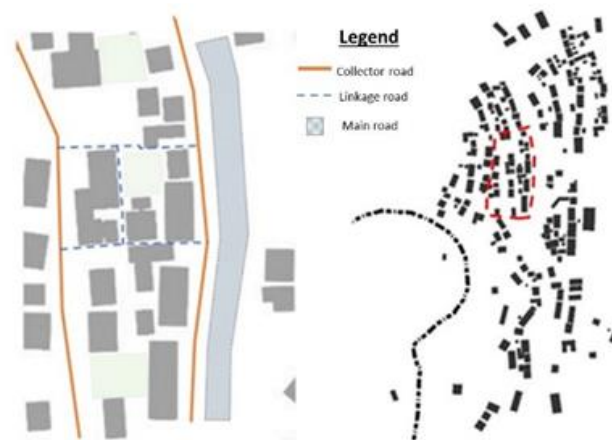


Figure 4.14. Main, secondary, and linkage road of the settlement.

Awra Amba _ Road Network

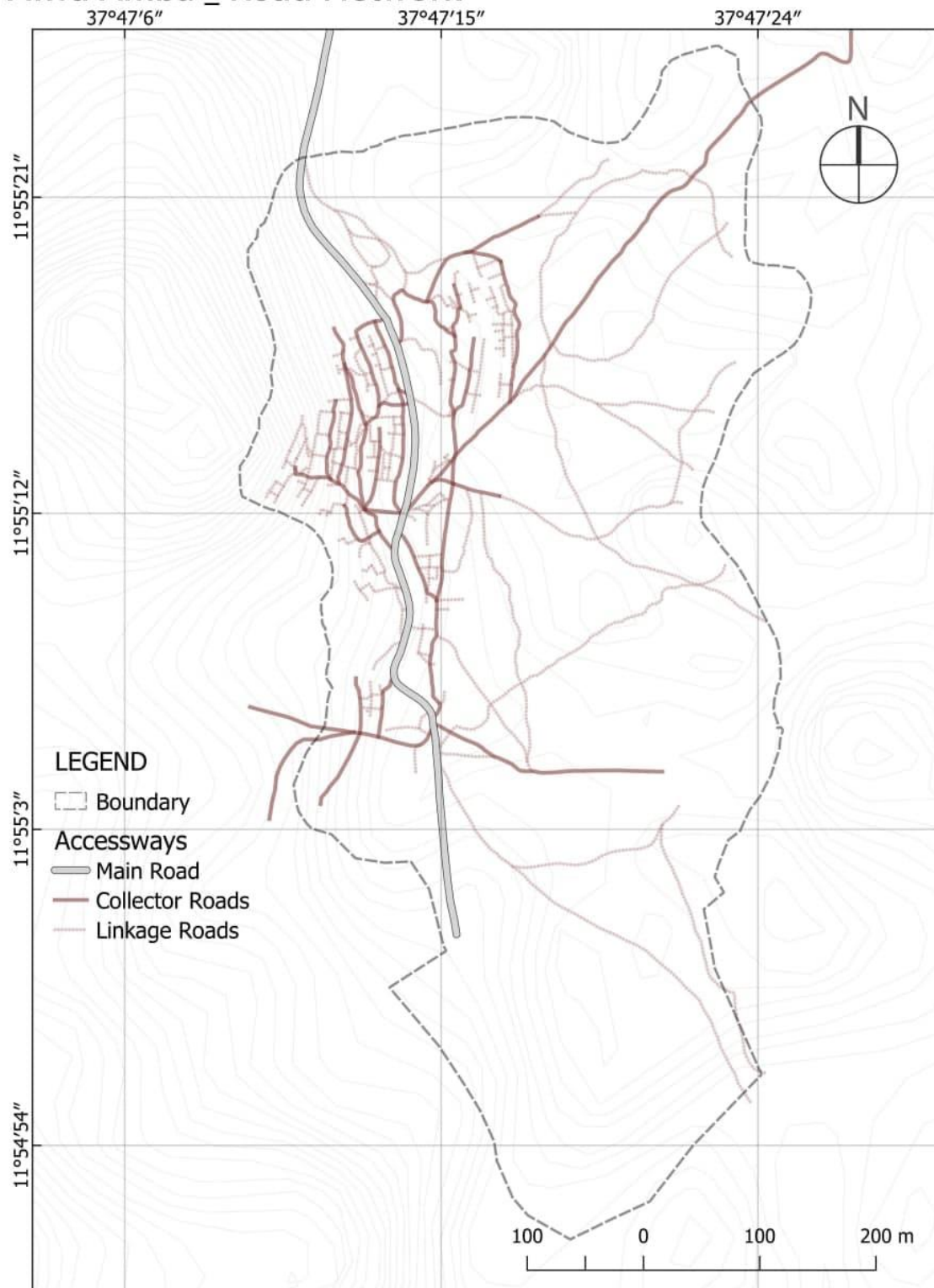


Figure 4.16. Main, secondary, and linkage roads of the settlement.

4.8 Services at Awra Amba

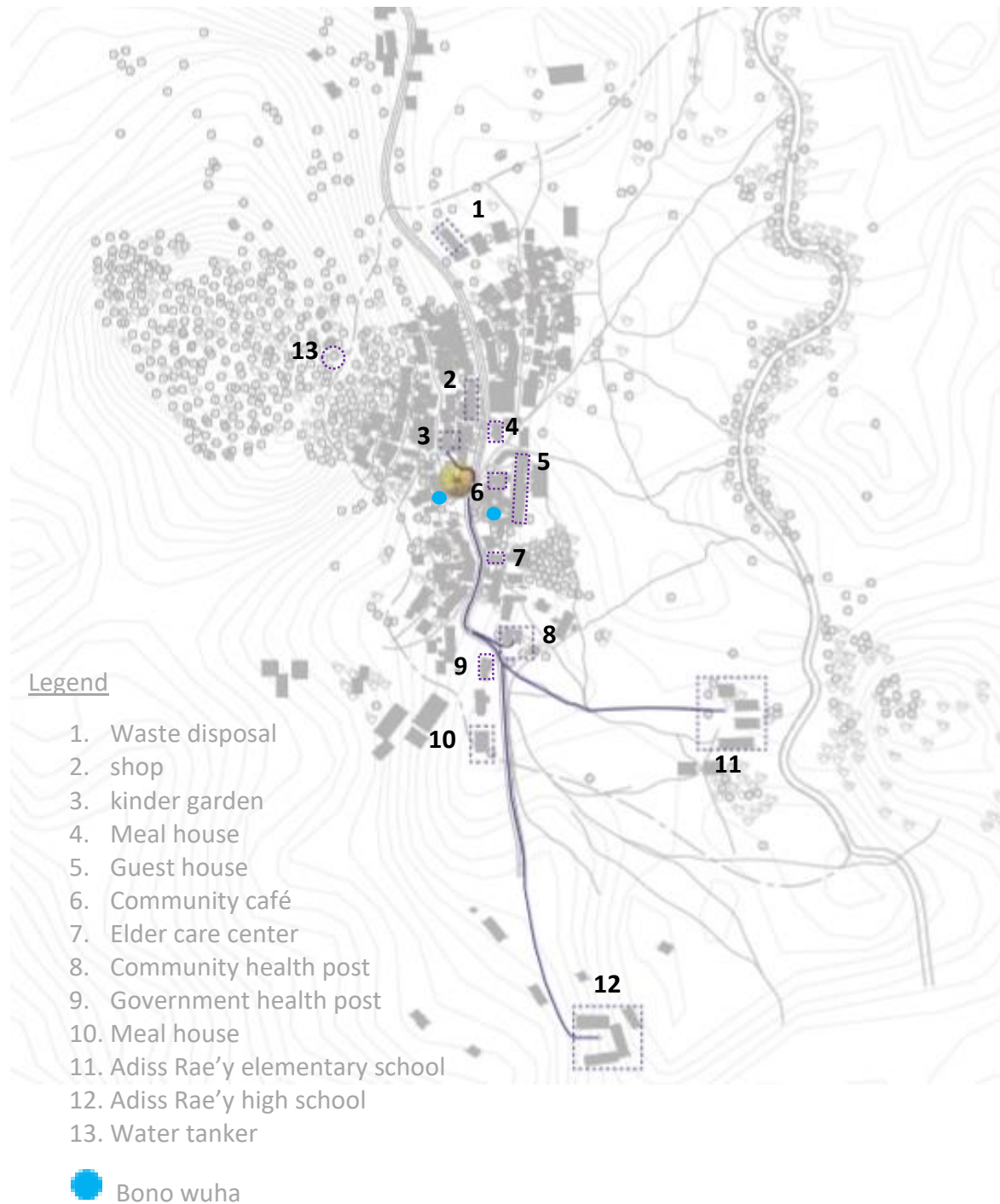


Figure 4.17. Services location of Awra Amba settlement.

A. Education

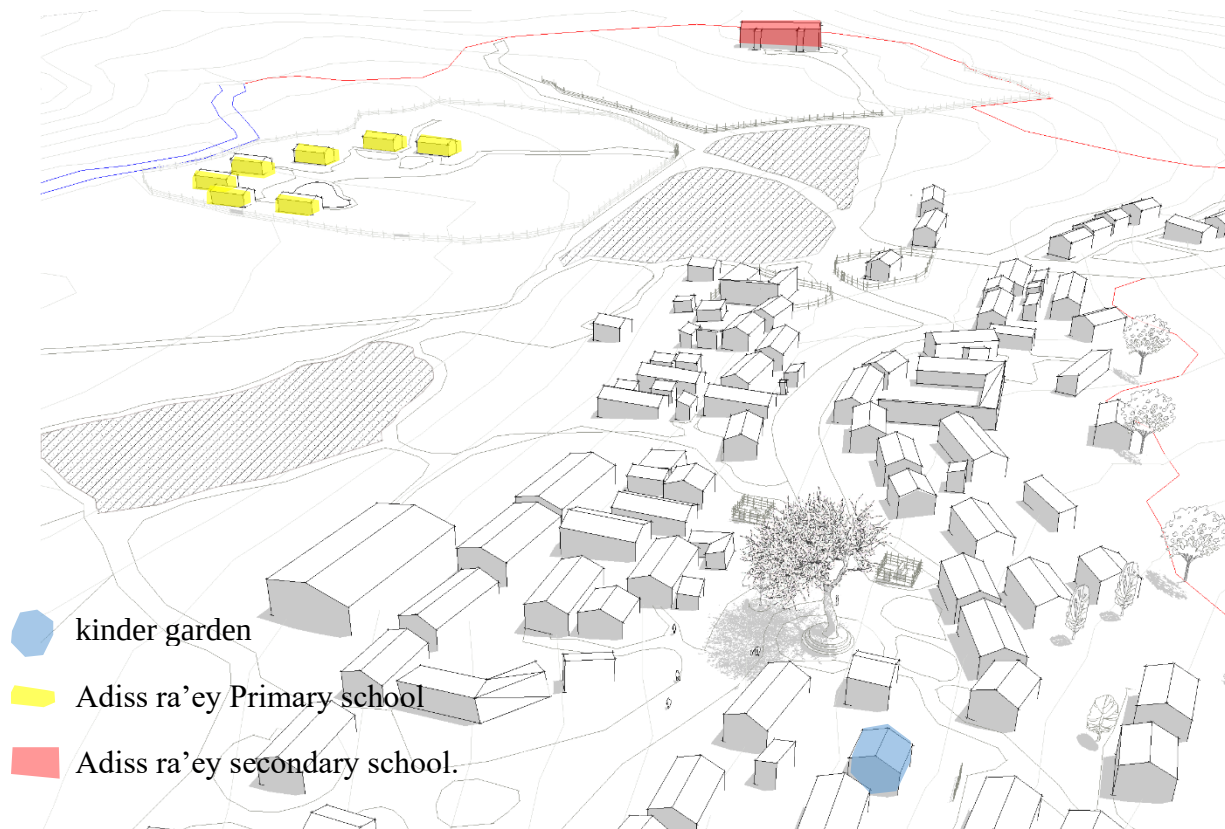


Figure 4.18. Location of schools of Awra Amba.

Even though the people who established a community were unable to read or write, they believe education is a strong instrument to transmit the principles easily. *"To be educated means respecting and helping each other to establish a brotherhood,"* says Zumra. All children have the right to attain education for as long as possible, according to their ability.

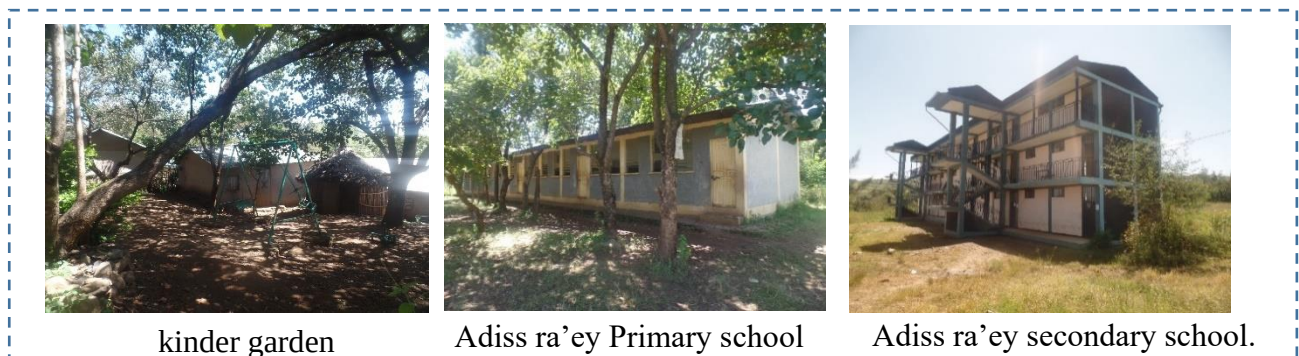


Figure 4.19. Kinder garden (left), elementary (middle), high school (right) of Awra Amba.

Adiss Ra'ey Primary School, Adiss Ra'ey Secondary School, and a kindergarten are located in Awra Amba. The village erected a kindergarten in the middle of the village, where a member of the community works as a teacher, caring for children aged three to seven, every day from 8 to 9 a.m. and 2 to 3 p.m. In addition to the fundamental education, a significant amount of time is dedicated to studying the values of the Awra Amba community, including respect for others, women's rights, and the nature of humanity. Singing both within the school and outside (at the Warka tree, the community's focal point, in front of the school) is one of the teaching methods.



Figure 4.20. Location of kinder garden of Awra Amba.



Figure 4.21. Interior of the kinder garden of Awra Amba (source: (Joumard, 2012)).

Adiss Ra'ey Primary School is situated close to the "Warka Tree" in the settlement's center. In addition to providing services to the local community, the elementary school has turned into a source of revenue by renting out its housing to students from the nearby peasant community. Additionally, it makes the neighborhood community more peaceful and modifies their mindset. Following their elementary education, children will attend Adiss Ra'ey Secondary School, which is attached to the community-built primary school. They attend a university or college in a different country city after finishing high school.

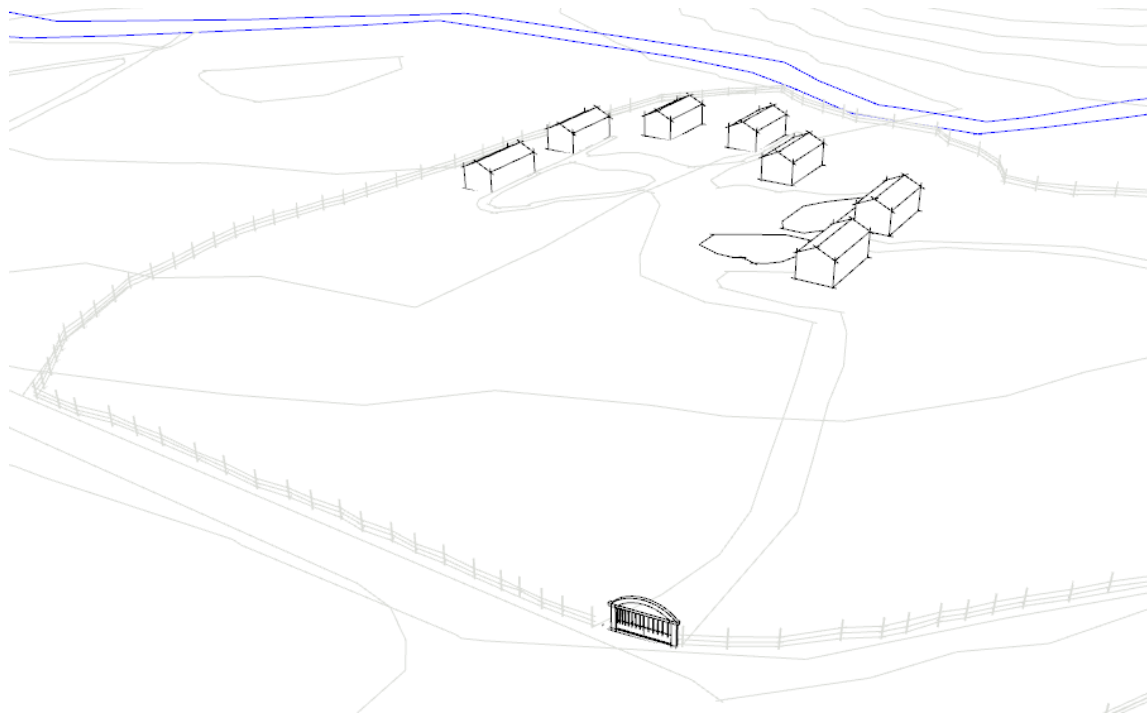


Figure 4.22. Location of Adiss Ra'y primary school of Awra Amba.

B. Eldercare center

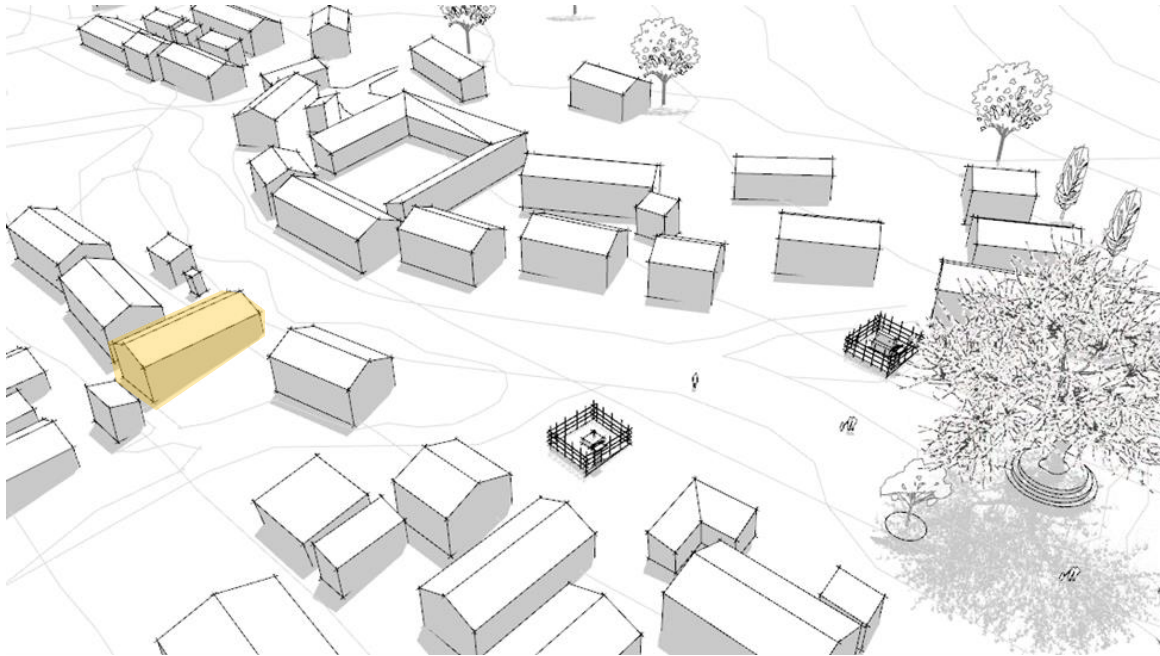


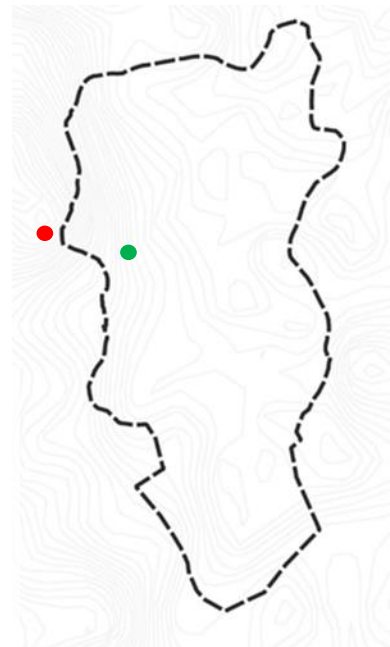
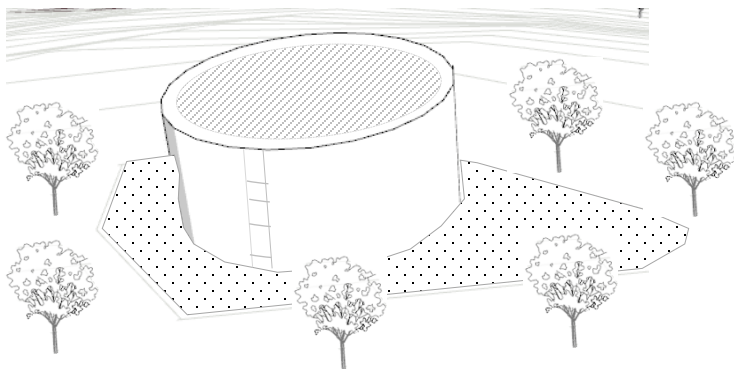
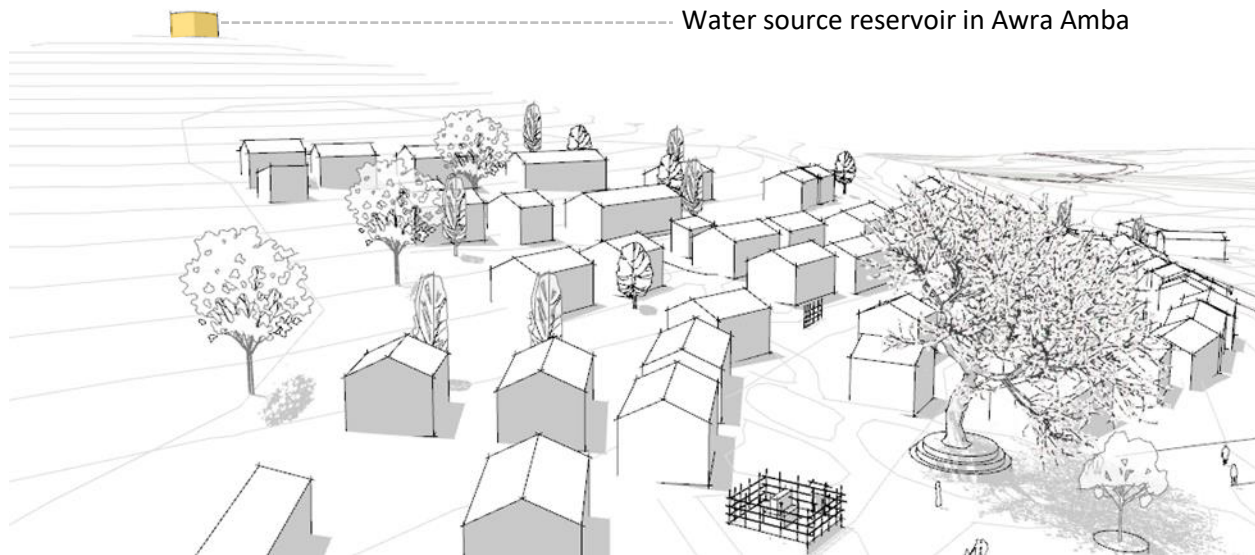
Figure 4.23. The eldercare center of Awra Amba.

In the middle, close to the "Warka tree," is the community elder care center. People who are too old or sick to work are served by the elder care facility. The member is tasked by the committee with providing a place to sleep, feeding themselves three times a day, and cleaning their body and clothes once a week. Every community member weaves once a week on Tuesdays at the center under the Warka tree. This work, along with the money collected from visitors' fees, goes toward funding a fund known as "Lewgen Derash." This fund is managed and distributed by the committee to individuals who are incapable of working because of age or health issues.



Figure 4.24. Elders care center in Awra Amba community (Awra Amba community, 2015).

C. Source of water



The source of water is a reservoir situated on a hill in the eastern part of the settlement 1952masl. Which is situated 60 meters above the bottom ground of Awra Amba. The water that is pumped up from the deep wells is kept there. A pipeline mini-network transports water from the reservoir to distribution terminals and a few homes. Each of the reservoirs is constructed from concrete blocks and resembles a cylinder a few meters in height. It is reachable for maintenance via a ladder. The reservoir can hold roughly 50,000 liters.

Figure 4.25. Water source reservoir in Awra Amba.

D. Distribution point

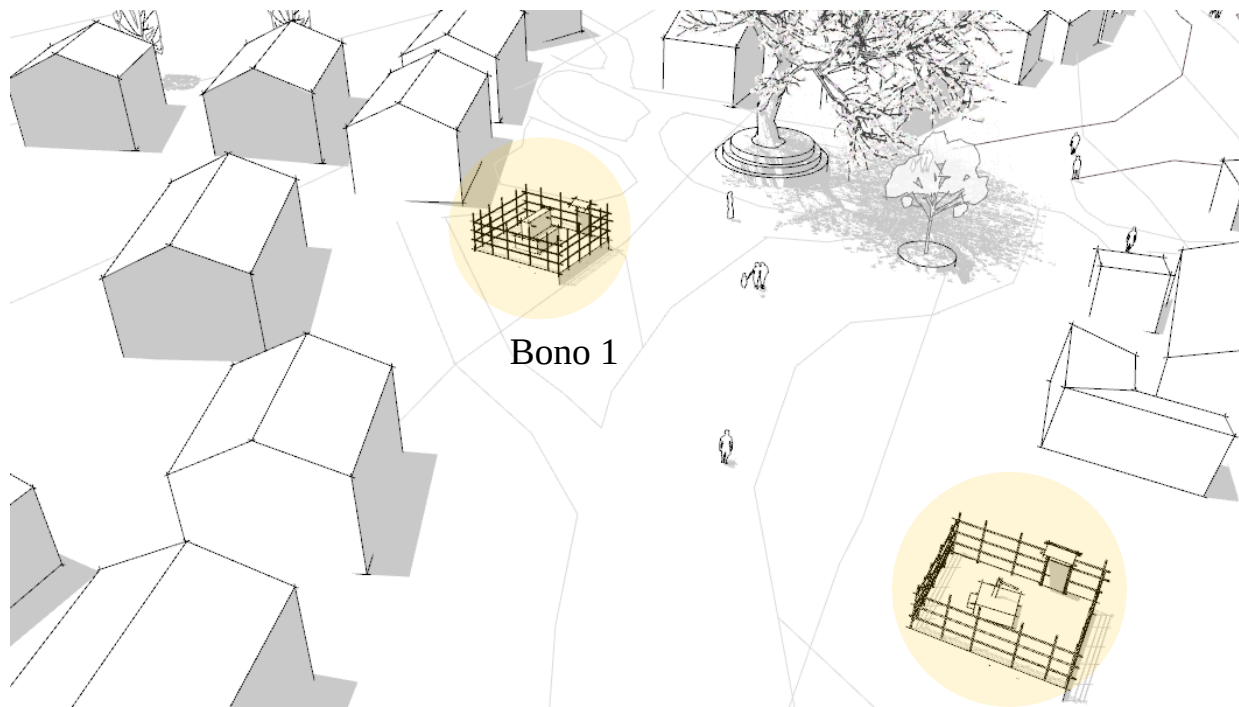
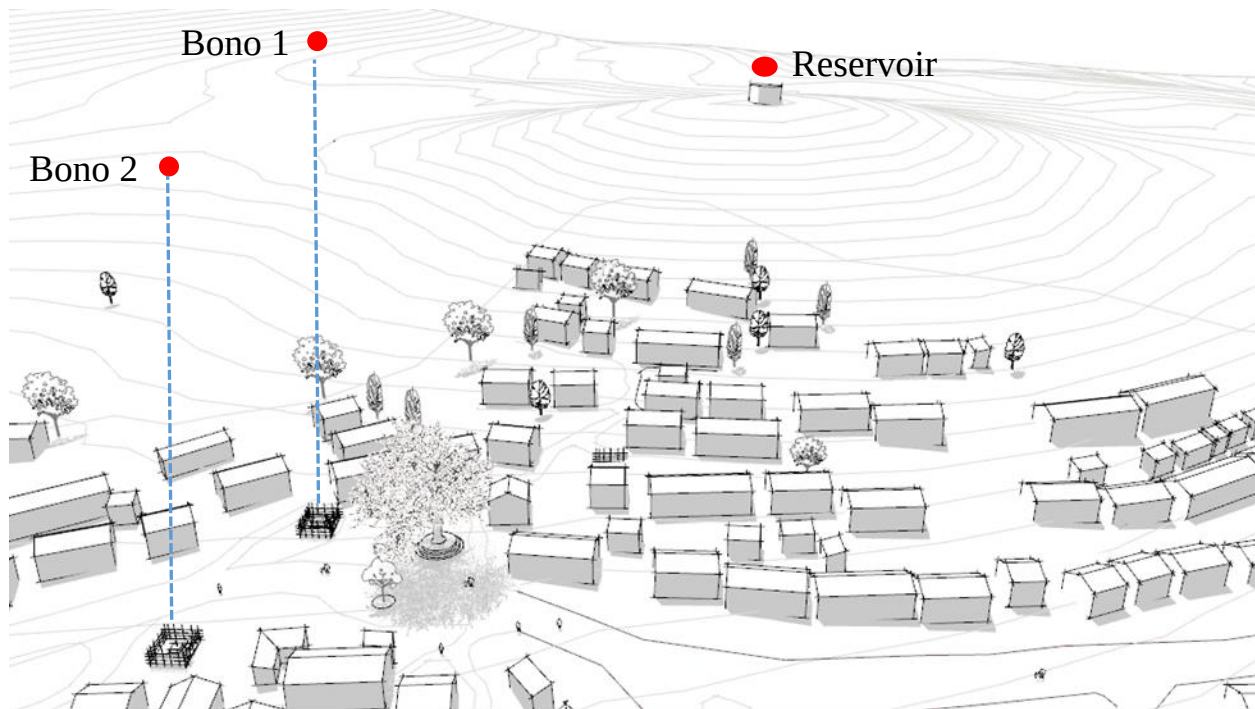
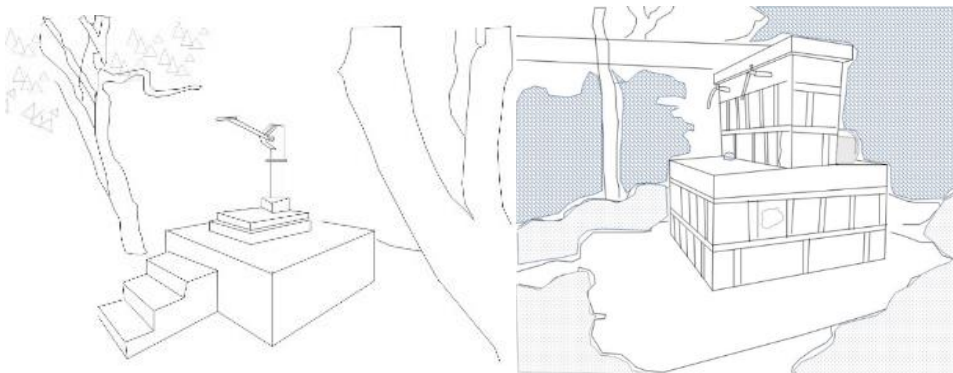
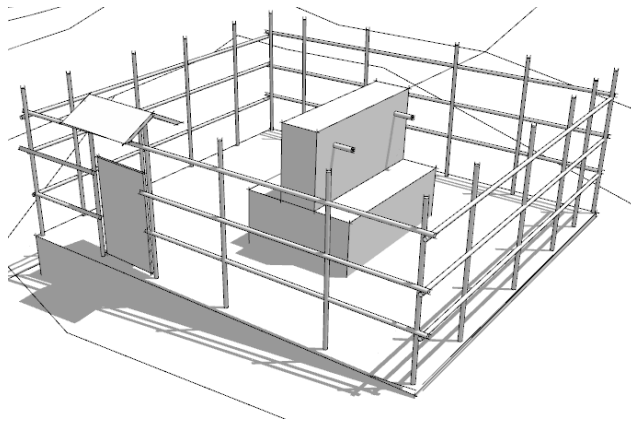
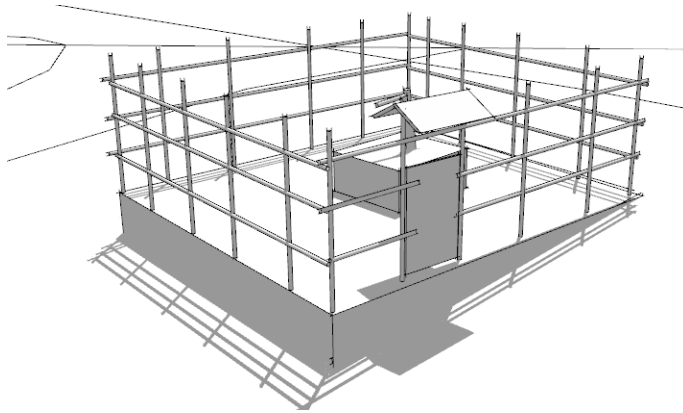


Figure 4.26. Water source reservoir, and bono in Awra Amba.



There are two water distribution points in Awra Amba, known as "Bono Wuha." The actual locations are next to the "Warka" tree, which is the equivalent distance from houses to fetch water. The first is a square wooden fence with four taps at the top of a rectangular concrete podium, and the second is a single tap pumped up from the deep wells. The concrete structure is surrounded by vegetation, and people can move around it. A gate controls access.

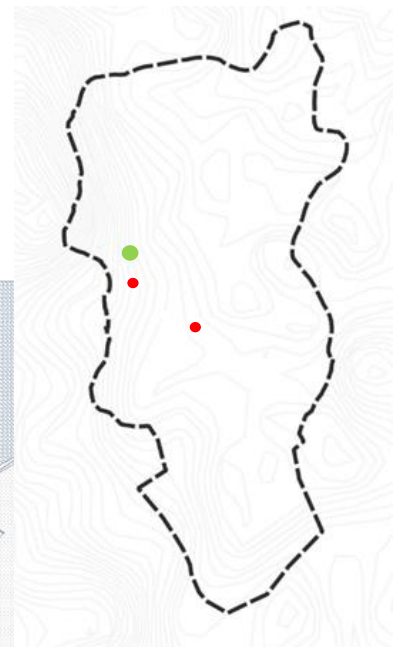
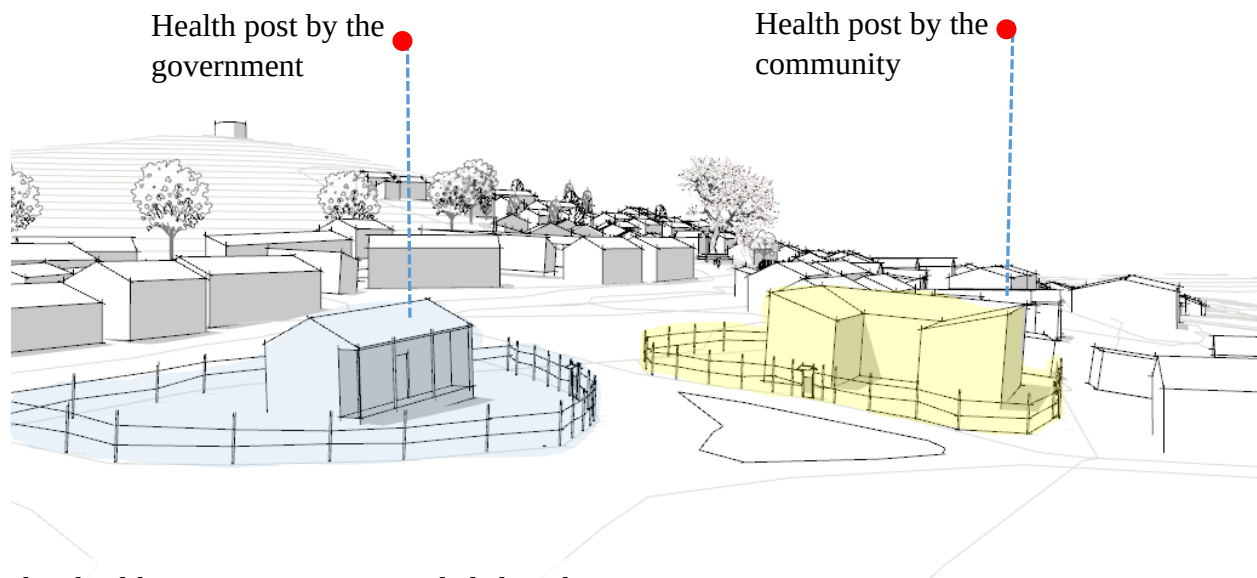


Figure 4.27. Water distribution points in Awra Amba.

E. Health post



The health post service provided by the government is geographically located at NW (Northwest), which is a 5-minute walk from the central “Warka tree” of Awra Amba. There is also a community clinic for the household to get medical treatment.

The inhabitants travel to Debre Tabor, the capital of South Gonder, Woreta, the capital of the woreda, and Bahir Dar, the regional capital of Amhara, which is 70 km from Awra Amba, in order to receive better medical care. To get to Woreta, they take a tuk-tuk, but to get to Bahir Dar and Debire Tabor, they take a car.

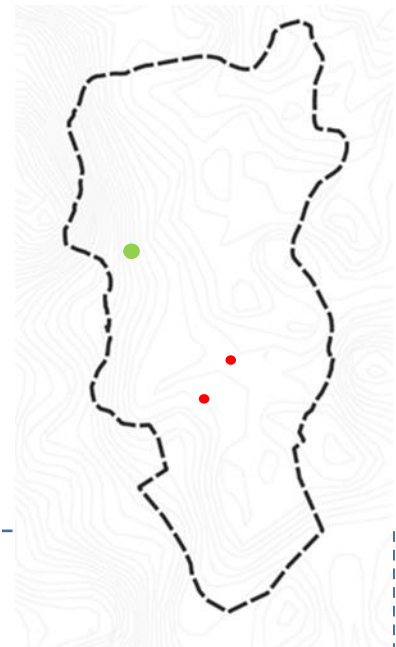


Figure 4.28. Health station in awra amba.

F. Market

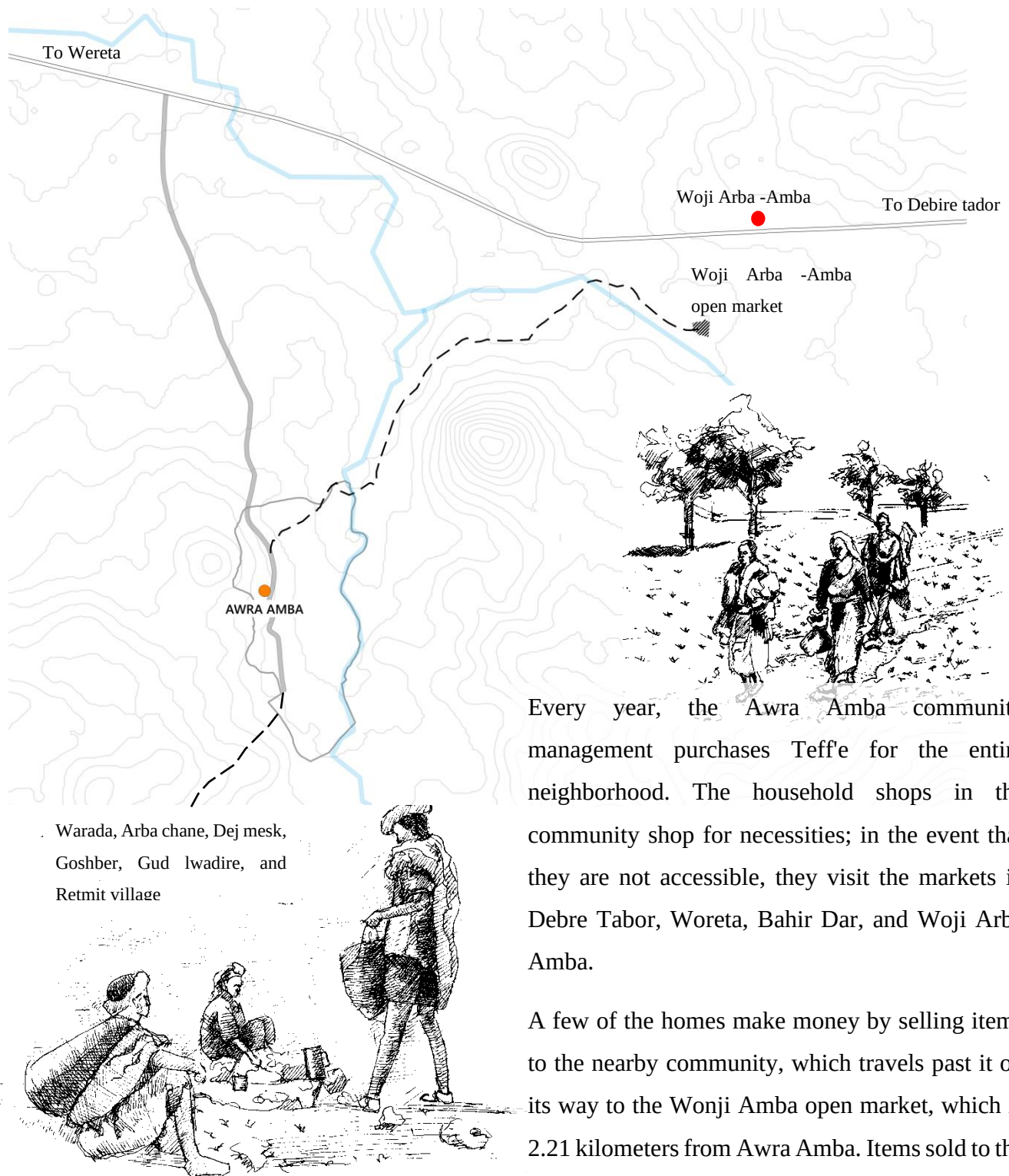


Figure 4.29. Awra Amba community open market.

Every year, the Awra Amba community management purchases Teffe for the entire neighborhood. The household shops in the community shop for necessities; in the event that they are not accessible, they visit the markets in Debre Tabor, Woreta, Bahir Dar, and Woji Arba Amba.

A few of the homes make money by selling items to the nearby community, which travels past it on its way to the Wonji Amba open market, which is 2.21 kilometers from Awra Amba. Items sold to the community include pills, candies, salt, and other items.



Figure 4.30. Wonji-amba kebele open market.

4.9 Burial place

Every member of the community supports each other in both grief and the happiness of any other individual. They firmly believe and put into practice that it is beneficial to assist someone in recovering from disease. If he or she passes away, people may burst into tears. But there shouldn't be any extreme grief because they believe it is beyond the capability of human beings to bring him or her back to life.

The mourning ritual in the Awra Amba community is not like that of their neighbor; mourners are not subjected to financial pressure, and families are not required to provide financial support for the ceremony the only exception being that the community will accommodate a person who travels from a far location. The community takes care of the children and the family. If they do not have money, the funeral ceremony in the community consists of a few community members accomplishing the burial procedure. To help the family of the deceased forget their grief, some members of the community will stay at the family house. After the burial ceremony has been completed, the family goes to work. This is to make them forget their grief.

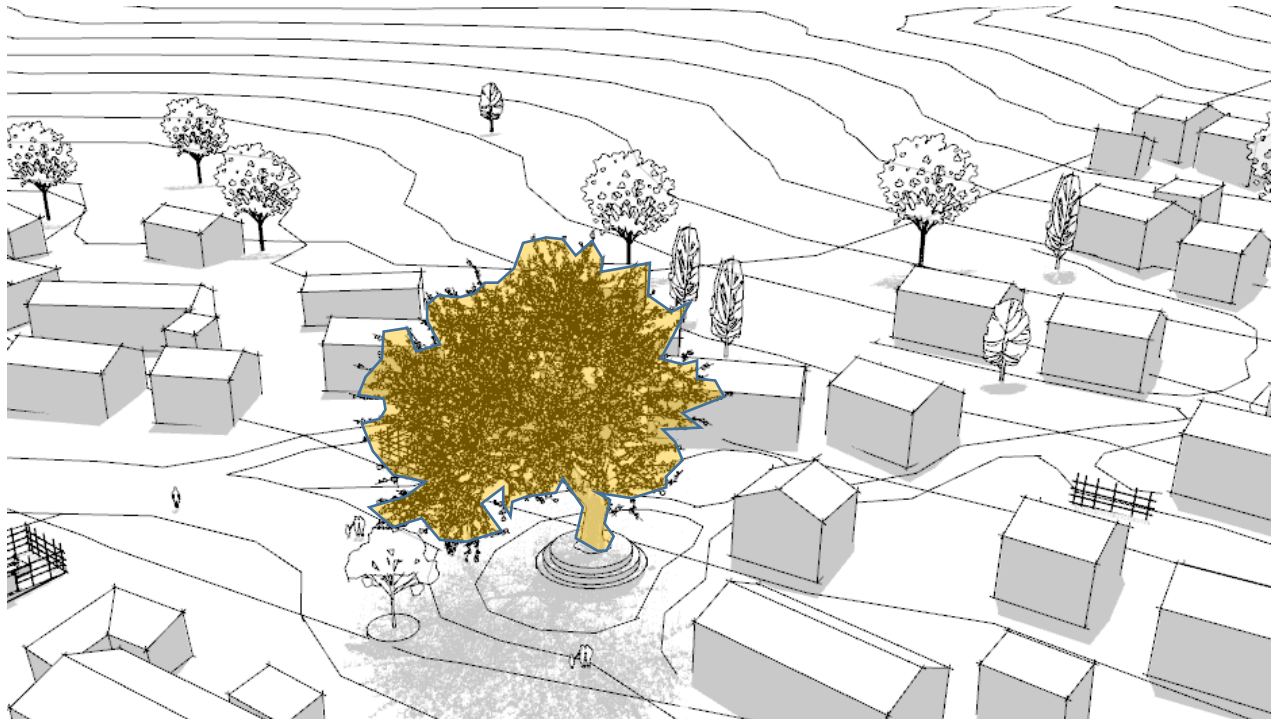
The burial place, situated around the community secondary school, is utilized by the Awra Amba community and nearby Muslim neighbors, taking 10-20 minutes' walk from the settlement center.



Figure 4.31. Member of the community accomplishes burial process(left): a member of the community stayed in the family of the deceased (right) (source: (Awra Amba community, 2015)).

4.10 Ceremonies in the Settlement

A. Holiday ceremony



The only holiday in Awra Amba settlement was ‘Ethiopian New Year’. The major ceremony is held under the big tree (Warka), rooted in the heart of the village, through dancing, music, poetry, etc. After they eat breakfast at home, it starts at 2:00 a.m. and continues until 2:00 p.m. local time the next night. The only break in the celebration is to eat lunch at home or at the Warka tree.

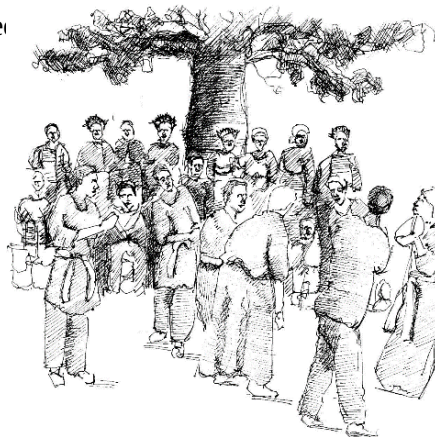


Figure 4.32. Member of the community celebrating Ethiopian new year's holiday, playing children. Members of the community participate “lewgen derash” charity.

B. Marriage ceremony

In the Awra Amba community, marriage is supreme (respectable). It's entered by the couple at the age of 19 for females and 20 for males with their full consent; these will lay a powerful foundation for the wedding. During the wedding, the couple put their signatures on a document in the presence of eyewitnesses (anyone found in a nearby area). There's no special program apart from guests coming for the occasion from a faraway place; the couple may prepare lunch. After marriage, it's not allowed to own a sexual partner for both couples.

In the community, divorce isn't allowed except for problems that will cause divorce, which are:

- If there's an incurable illness, particularly one that prohibits sexual intercourse,
- If uninterrupted nagging between the couple is manifested,
- If sterility is manifested in one of the partners,
- If one of the couples violates the bylaws of the community,

The procedure for the divorce is that the Complaint Resolving Committee identifies the matter of the couple and tries to resolve it. If not, the couple investigates within the meeting of the community at the central space (the Warka tree). They're going to divorce if the matter is listed above; if not, their marriage will continue. But the divorced couple will share their properties equally.

4.11 Meeting



The meeting is always held in a place physically visible to all the members of the locality. The meeting place in Awra Amba is at the center of the community settlement, under the shed of the Warka tree. These are the first places they meet for the formation of the community.



Figure 4.33. Meeting place in Awra Amba community.

4.12 Family discussion for peace

Using family discussions to promote peace and development is a crucial use of the Awra Amba community focus. This is held every two weeks and involves the gathering of three to four neighboring families, or just one, at a house or in the vicinity of a semi-public open space that is between private plots and is rectangular, narrow, and constrained. Every family member, regardless of age, is entitled to choose or propose the chairperson. Two months before the election. The person who chairs earlier may also be re-elected by the members if they so want. Family members advising and criticizing one another, acting badly and speaking poorly, etc., was the activity. Children and adults participate and have equal rights in family talks.



Figure 4.34. Semipublic open space.

4.13 Open space

Awra Amba _ Open Spaces

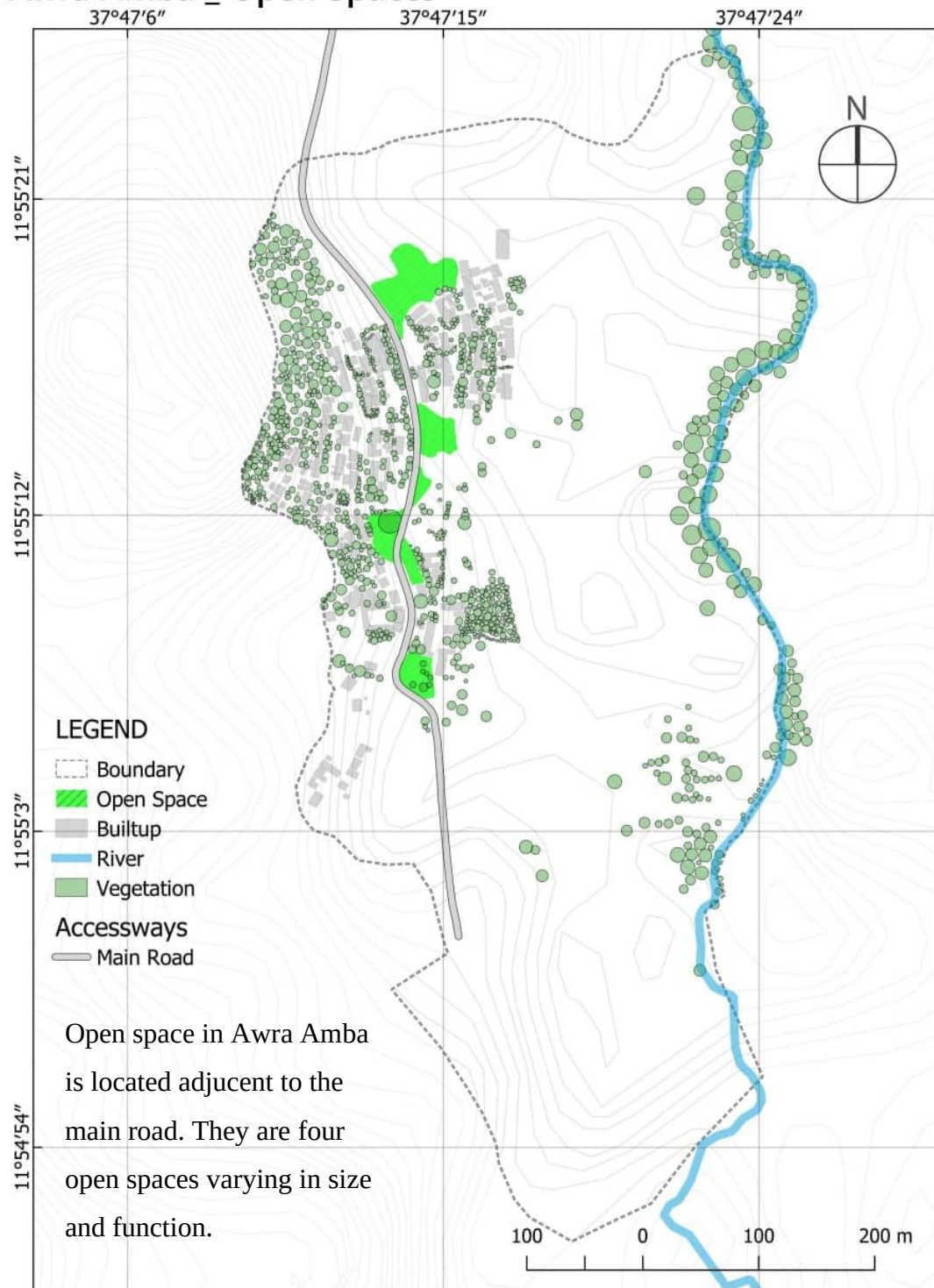


Figure 4.35. Location of open space in Awra Amba community.

4.13.1 The first open space

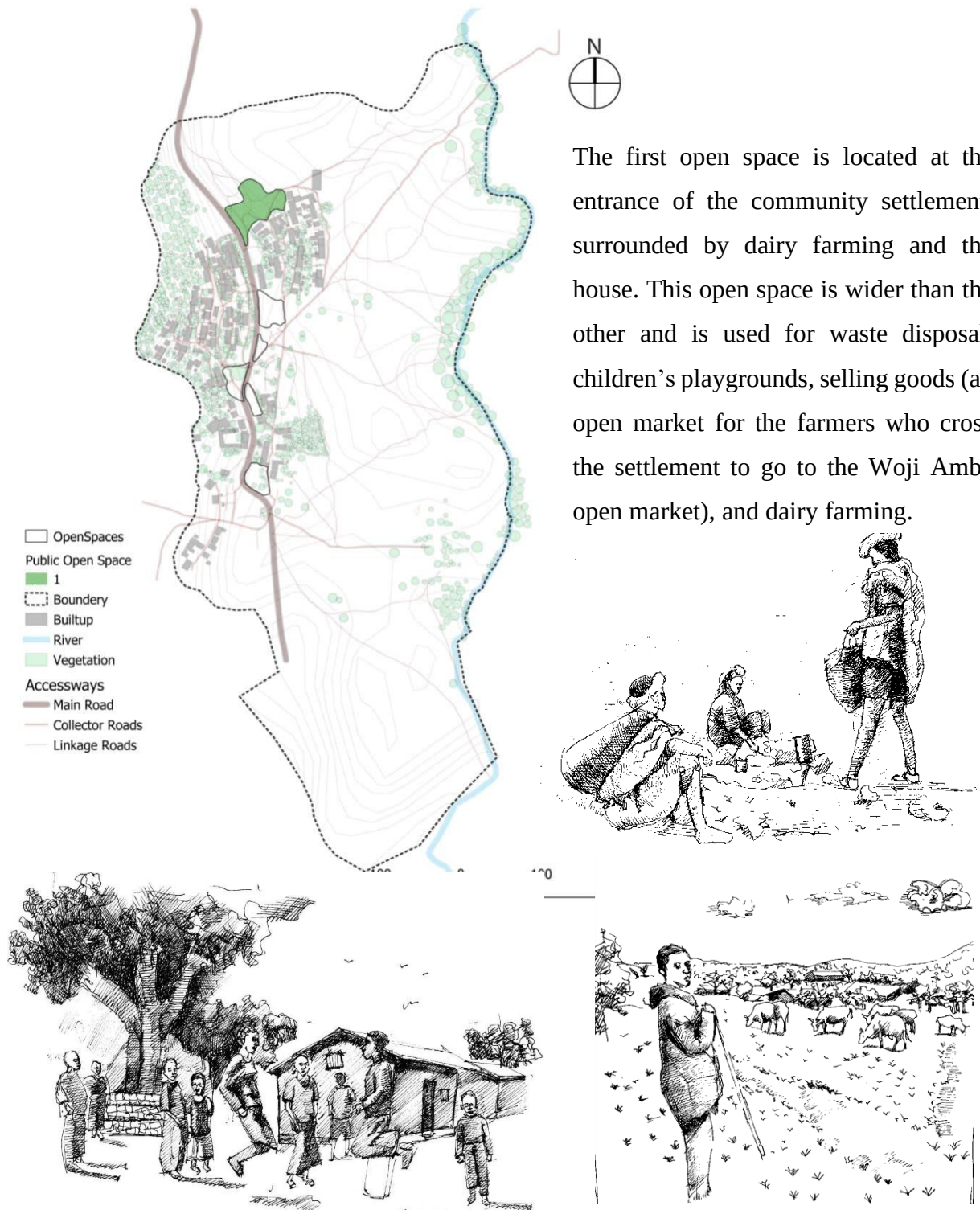


Figure 4.36. First, open space in Awra Amba community.

4.13.2 The second open space

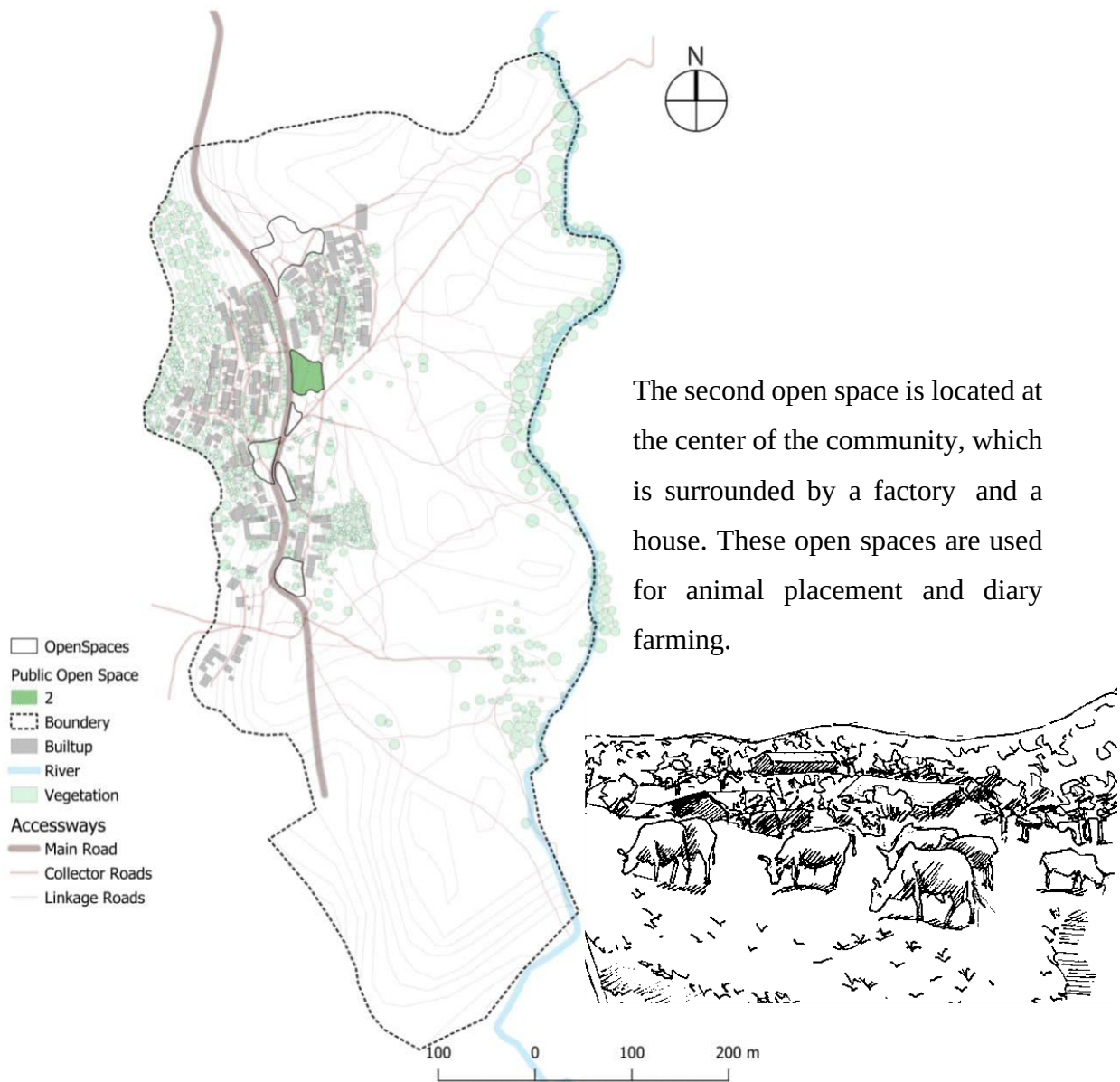


Figure 4.37. The second open space in the Awra Amba community is used for dairy farming.

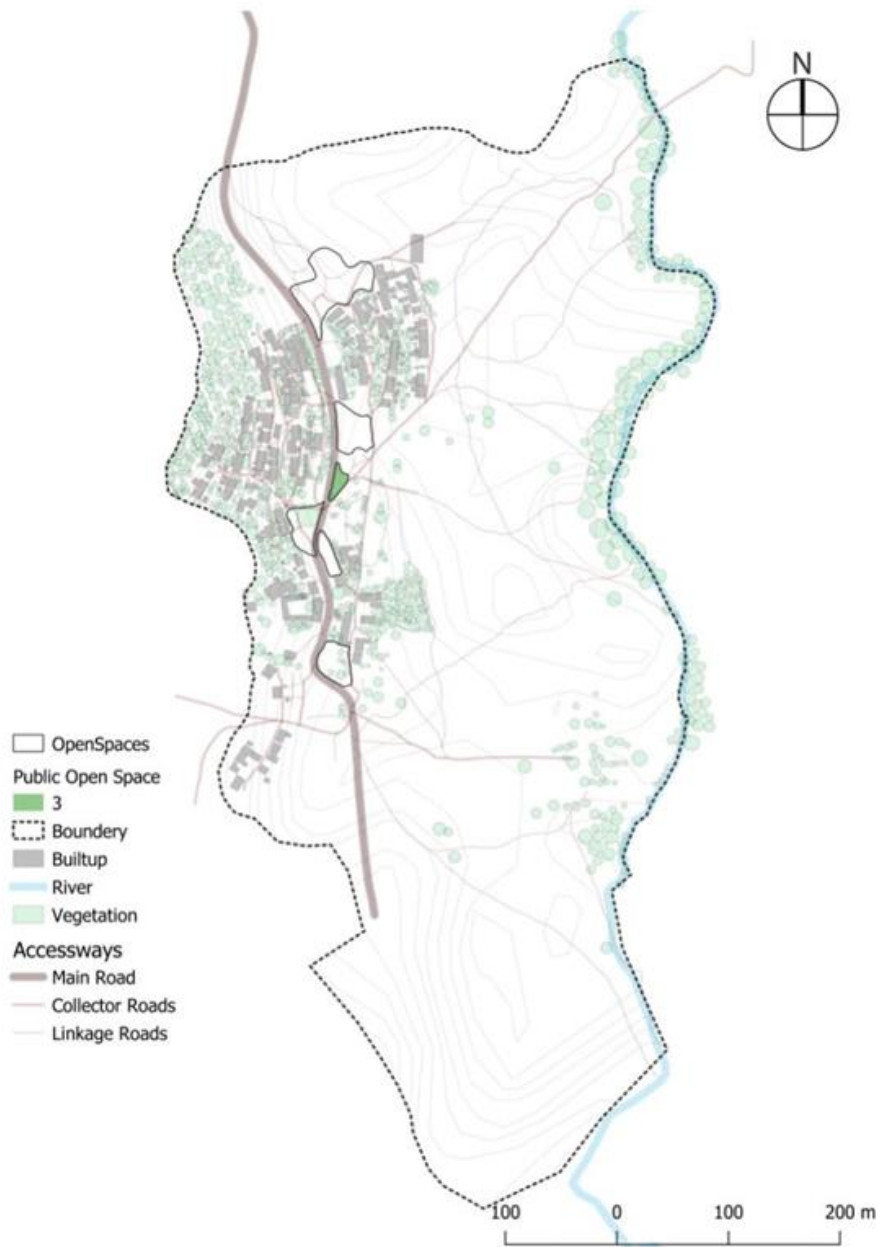


Figure 4.38. Second open space in Awra Amba community.

4.13.3 The third open space

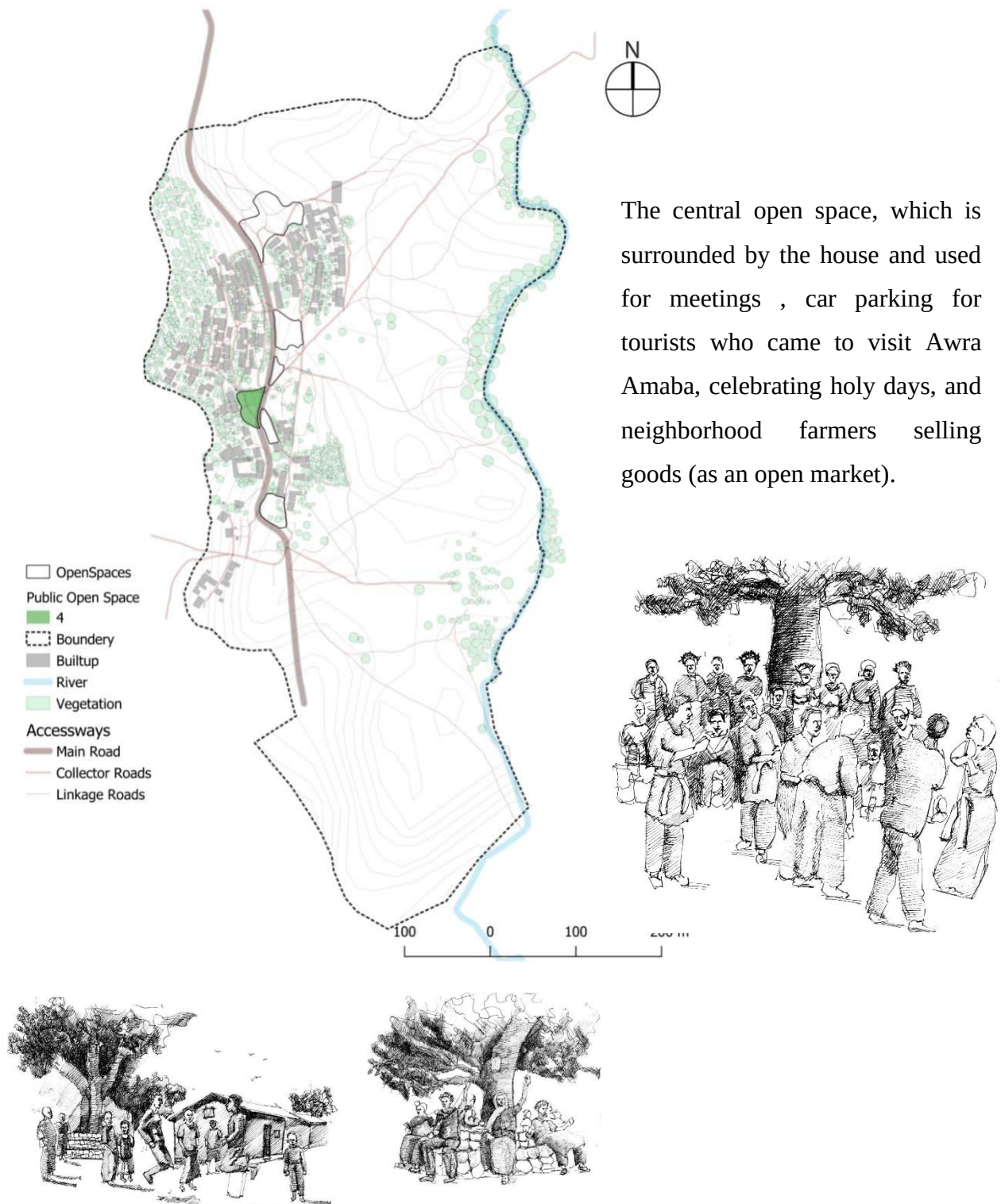
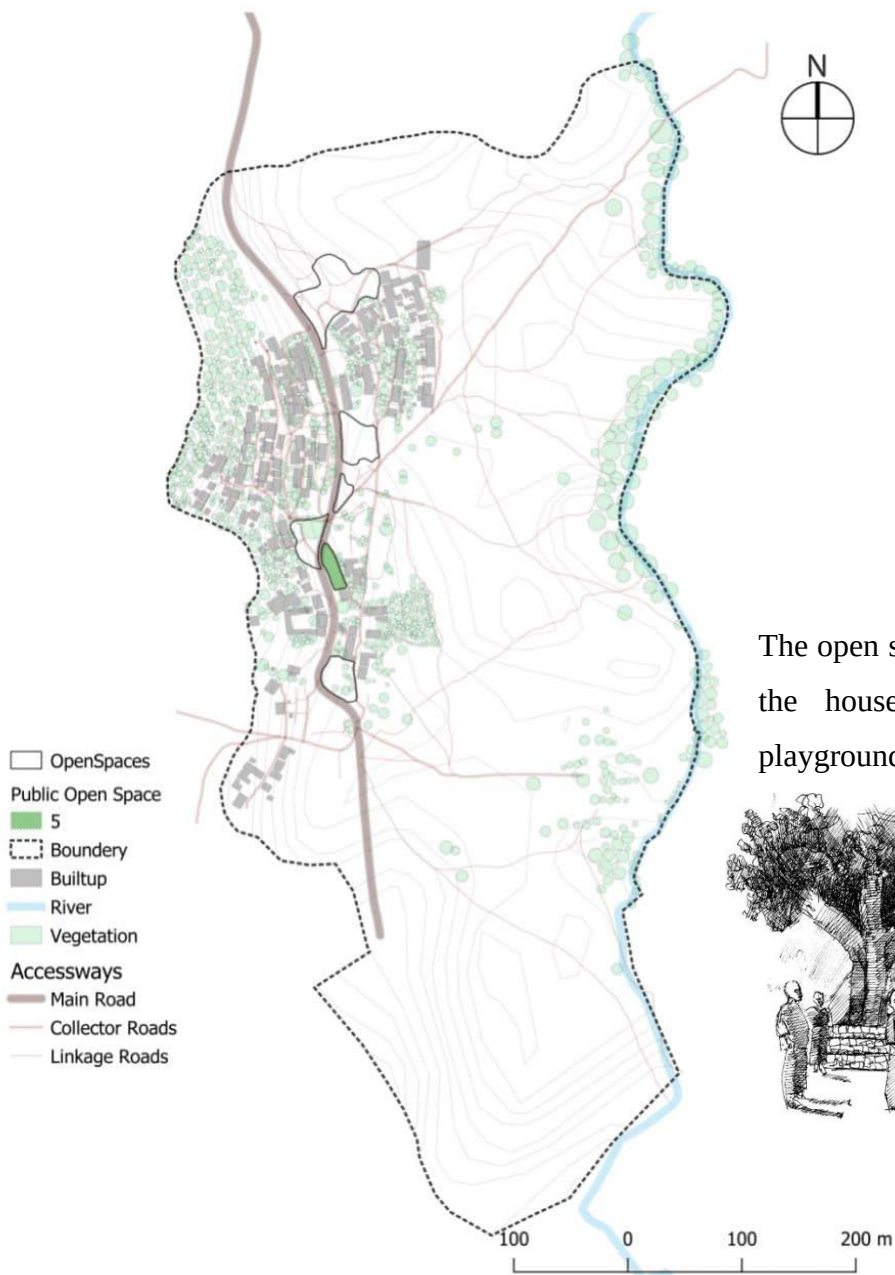


Figure 4.39. Central open space in Awra Amba community.



The open space, which is surrounded by the house and used for children's playgrounds and walks.



Figure 4.40. Central open space in Awra Amba community.

4.13.4 The fourth open space

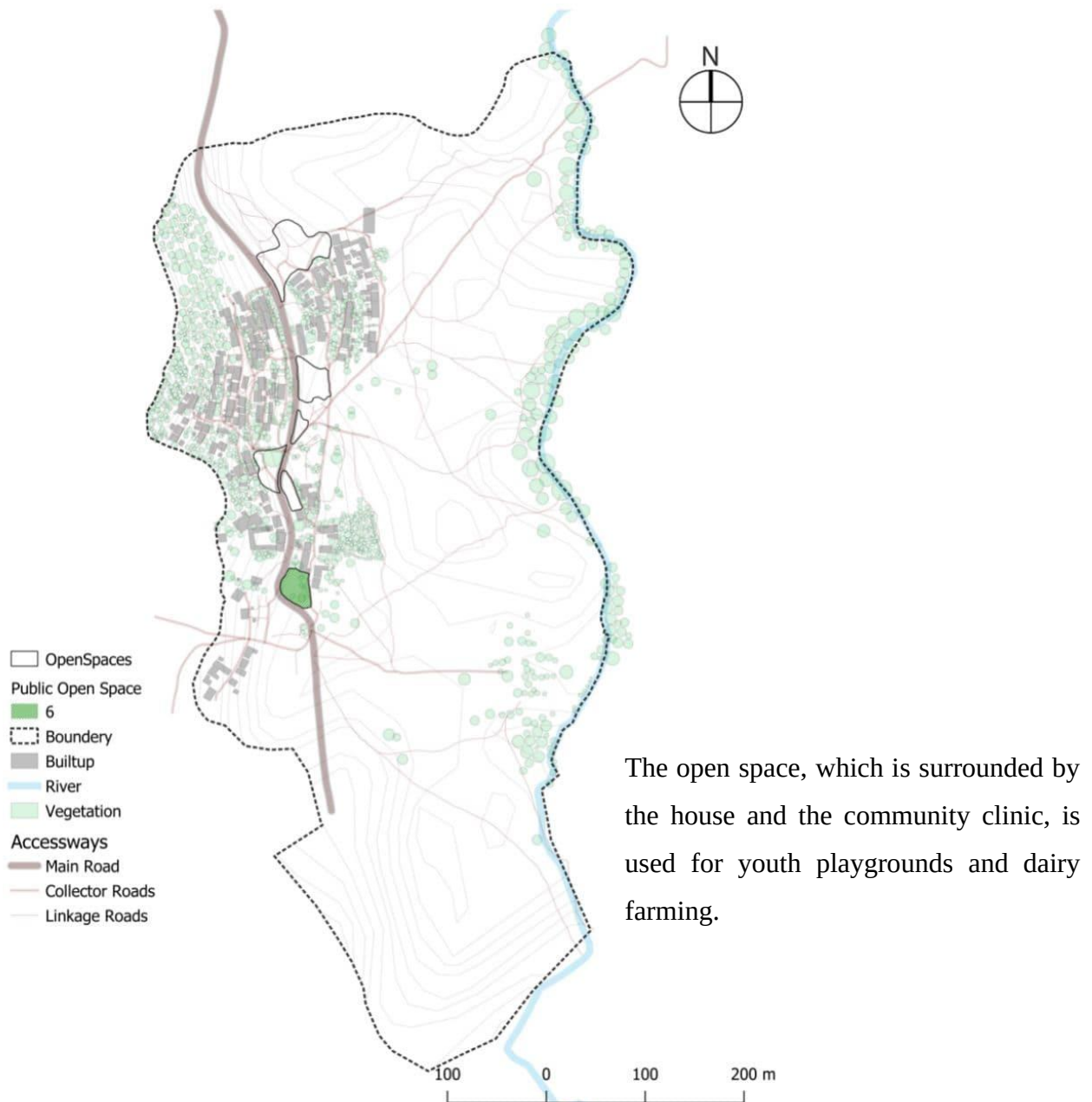


Figure 4.41. Open space in Awra Amba community used for youth playground.

4.14 Selected homesteads⁸ in Awra Amba (Other homesteads in appendix)

4.14.1 Ato Meniber Ahmed

A. The life story of Ato Meniber Ahmed: Life History, Activity, and services:

Ato Meniber Ahmed is one of the residents of the Awra Amba community, born in 1979 E.c at a nearby place called Amide Ber, Delidalit hamlet, at Diba Kebele 30min walk from Awra Amba. He is 33 years old. His parents lived in Delidalit and accepted and approved the lifestyles of the ‘Alahim’ religion. Ato Meniber Ahmed narrates his life history as follows:



"I grow up in the community of 'Alahim' found in Amide Ber, Delidalit hamlet, at Diba Kebele. This religious activity is originated from Muslims but there is a major difference which is there is no salat and fasting in Alahim. They are a small community, with not more than 15 households. Aba Zumira also a member of the community before he found the Awra Amba community. He left Alahim because he wants to found his community, they have the same religious ideology. But in Awra Amba the respect of women, education, and respect of people each other force me to join the community in 2005 E.c."

Figure 4.42. Ato Meniber Ahmed and his daughter, and compound site plan.

⁸ any dwelling with its land and buildings where a family makes its home. In this study homestead means compound

Since 1999 E.c Ato Meniber Ahmed lives in the Oromia region Jimma 352km far from Addis Ababa for two years and works on farming then he goes back to “Delidalit” in 2001 E.c. He married his wife Maritu Ahmed at Delidalit. He has two daughters. His eldest Tadila Meniber is nine years old and grade three studies at the community school Adiss ray and the second daughter Wubete Meniber is two years old.

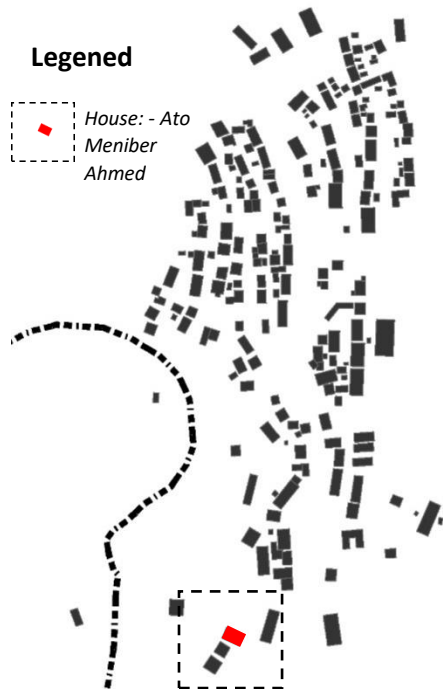
Ato Meniber Ahmed is not educated. He is a cooperative member of the community since 2007 E.c. His life as an Awra Amba community member begins when he joins the community in 2005 E.c. He serves the community by working in a small-scale oil factory in the Awra Amba community and to increase his income source he works on weaving in his home. He buys the raw material for weaving from the community shop. He buys the weaving machine by renting from his uncle it is about 20,000 birr he pays back annually. His annual income in 2012 E.c from the community finance allocation for each cooperative member was 13,000 birrs, and from a private business which is waiving in his home when he works hard, he gets an additional 17,000birr⁹. Ato Meniber Ahmed's total annual income was 30,000 Birr.

B. The life story of Ato Meniber Ahmed's wife (Maritu Ahmed)

W/ro Maritu Ahmed was born in 1983 E.c in Amide Ber behind Wonji Amba at Delidalit Kebele to her father Ahmed Belay and her mother Tiruwork Deme. At the age of 12, she goes to southern Ethiopia Bonga with her mother then they go to Jimma, in the Oromia region because her mother married another person and was born with two children, after staying for 10 years she divorces comeback with her daughter W/ro Maritu Ahmed to Awra Amba. W/ro Maritu Ahmed gets married to Ato Meniber Ahmed at Delidalt and then they come back to Awra Amba.

⁹ This is an approximately assumption the information which received from several community members. (It needs further reconicenses survey).

C. The Compound



Ato Menber Ahmed's compound is located in the South West periphery of the Awra Amba settlement, near the community meal house and clinic. He acquires the land from the housing committee. The committee selects the block then by lot system he inherited the corner plot from the committee.

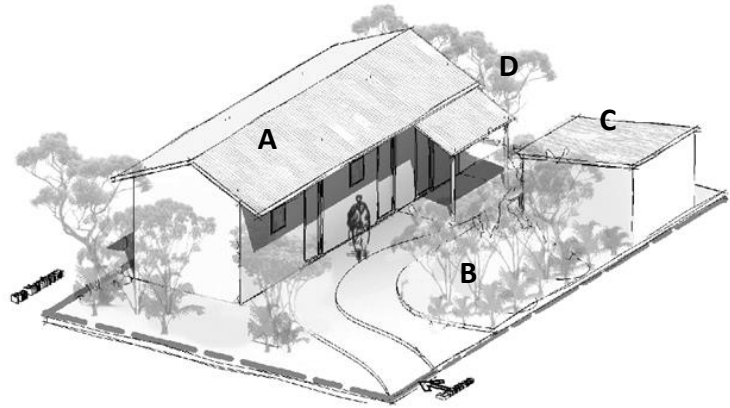
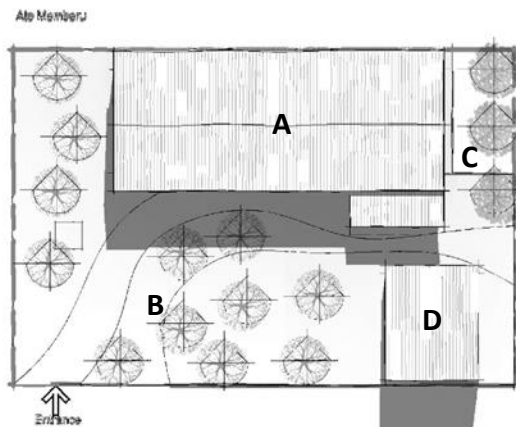


Figure 4.44. Ato Meniber Ahmed compound location.

Figure 4.43. Ato Meniber Ahmed compound 3d.



Compound

- A** Main house: Living, Bed room, and Weaving room
- B** Grain: crop
- C** Fruits: papaya and mango
- D** Toilet + store:

Figure 4.45. Ato Meniber Ahmed compound site plan.

The compound is accessed through a narrow footpath and there is free land in the front. The compound is rectangular an urban form parcel and the total compound area is 150 m² with 15x10meters in size. The perimeter of the compound is fenced with a eucalyptus base on a 30 cm height stone cover with shrubs with an average height of 2.5 meters.

The house was constructed on the Southern boundary line this was done for two reasons the first one is to maximize the frontage space and to distribute the limited space of the compound for formation farmland in the front yard. The other reason is to preserve the land for future construction and to use the current house as a service.

D. The House:

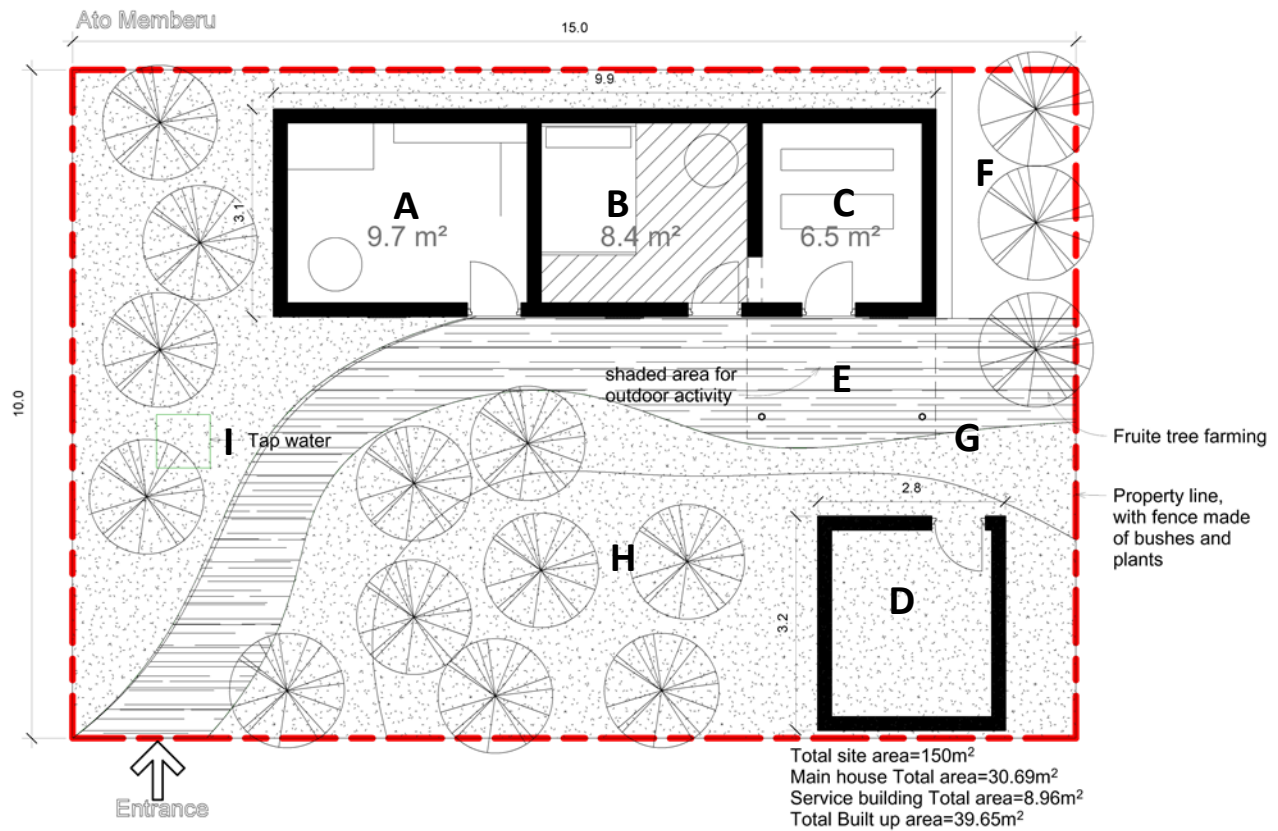


Figure 4.46. Ato Meniber Ahmed house site floor plan.

House

31m² with 3.1x10m

- A. Multipurpose room serve as living, dinning, & cooking,
- B. Bed room and grain store
- C. Weaving room
- D. Toilet and store
- E. Spinning and washing cloth
- F. Fruit tree farming
- G. Drying cloth
- H. Crop farming
- I. Tap water



Eating together A

Grain store at B

Figure 4.47. Ato Meniber Ahmed house furniture and activity.

E. Front yard:

The area of the front yard is 70m². In the front yard, farmland, daily activities like socializing, playing, clothes drying and spice drying are taking place.



Figure 4.48. Ato Meniber Ahmed front yard activity.

F. J and activity time graph:

Fig. 4.49 below shows the space used by Ato Menber Ahmed's family at the settlement, compound, and house levels. The interview was conducted with two family members within 48 hours. The family spent 45.83 % of their time within the house and 54.17% outside of the compound.

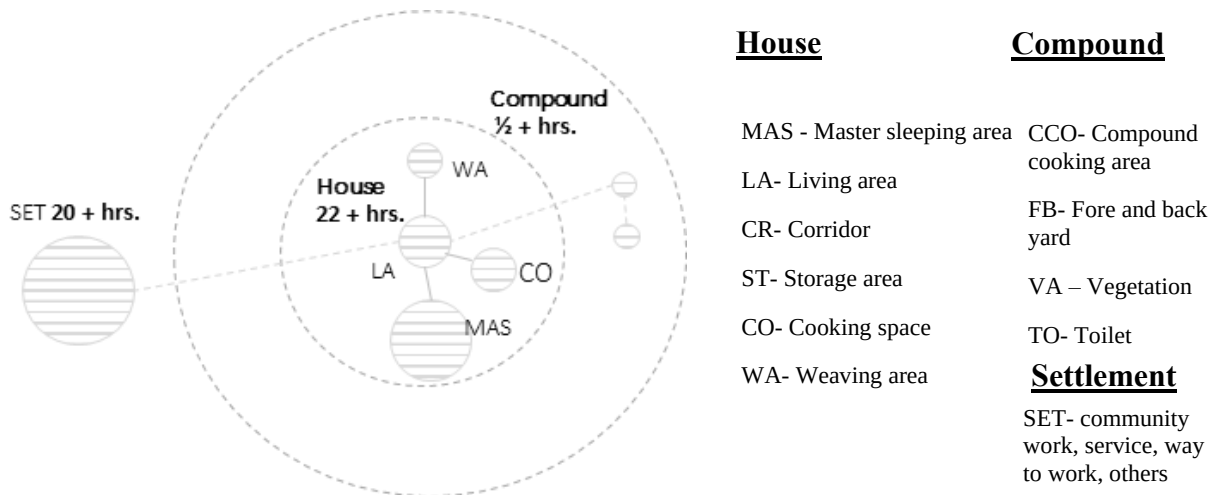


Figure 4.49. J-graph of Ato Meniber Ahmed's family.

Ato Meniber Ahmed's Family most of the time spent in outside the compound in a community oil factory. The most utilized space in the house is a bedroom which is active at the night.

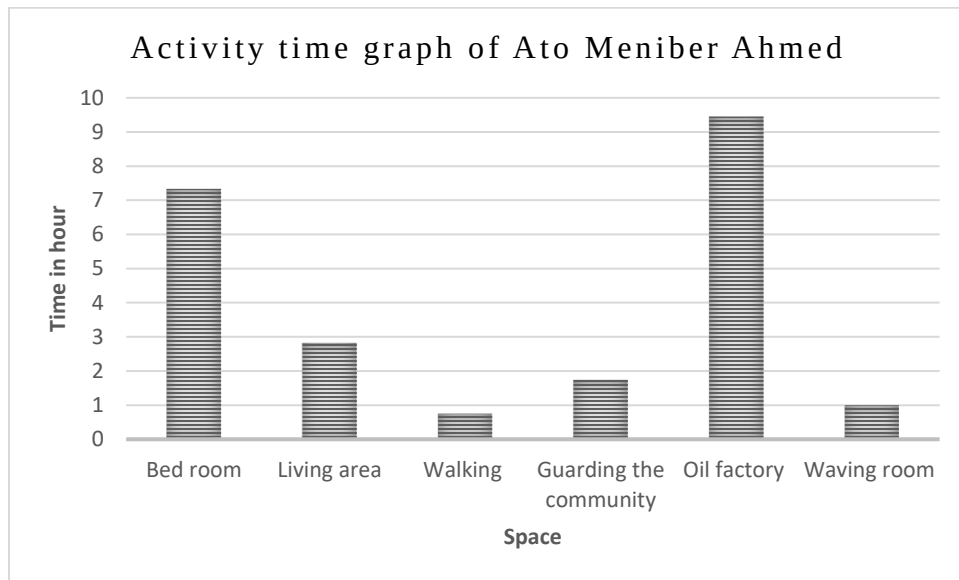


Figure 4.50. Activity time graph of Ato Meniber Ahmed's family.

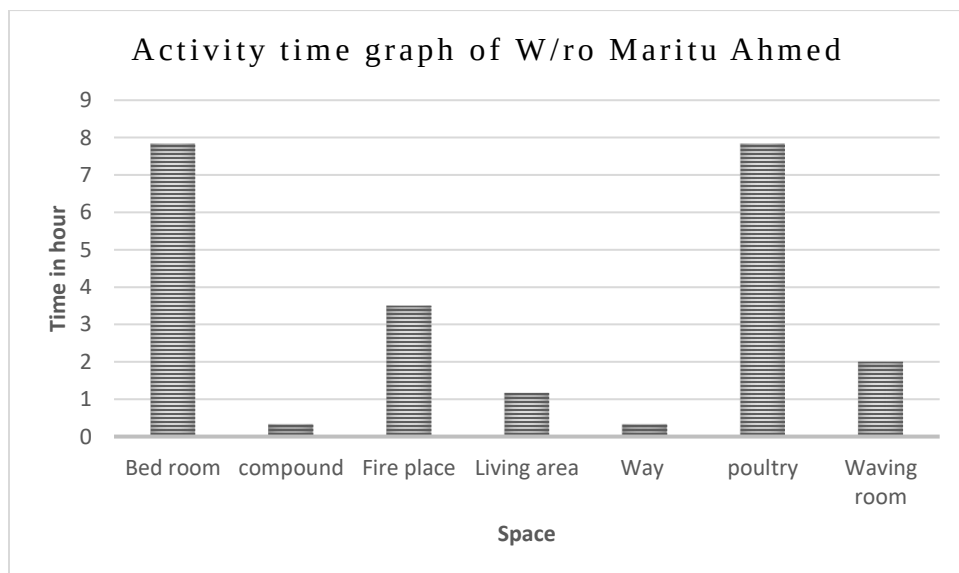


Figure 4.51. Activity time graph of Ato Meniber Ahmed's family.

4.14.2 Ato Kinidachew Kibiret

A. The life story of Ato Kinidachew Kibiret:



Ato Kinidachew Kibiret was born in 1964 in Awra Amba. He is one of the founders of the Awra Amba community and is now 48 years old. He was one of the residents who has a journey and lived in Southern Ethiopia, Bonga from the year of 1980 to 1986 E.c, and then go back and started living in Awra Amba Community in 1986 E.c.

Figure 4.52. Ato Kinidachew Kibiret's family.

Ato Kinidachew Kibiret is married to W/ro Etalemahu Gebeyehu. She is not illiterate. Ato Kinidachew Kibiret was educated “Meserete timihirt”. He has five children three sons and two daughters and one grandchild, all of them is a students and lived with him. The eldest son Muluken Kindachew is 21 years old and studying at university. The rest young children, Yemisirach (20 years old), Agerinesh (19 years old), Getamehon (17 years old), and Adinew (9 years old) are students of 9th, 12th, 8th, and 3rd grade respectively at the school built by the community. His grandchildren Muhammad Kassim lives with him, he is 12 years old and in 5th grade.

He travels to Southern Ethiopia Bonga with the community because of the conflict with the neighborhood farmers during the Derg regime the socialists assume they are intelligent of EPDRF

the community is after staying for 6 years the community comes back through two trips which are August 1985 E.c and November 1986 E.c. He comeback during the second trip to the community in November 1986 E.c. He became a cooperative community member in 1978 E.c. Previously he works farming. For the last 10 years, he has become a waiter for the community cafe.

He serves the community by working as a waiter at the Awra Amba community café and to increase his income source he works on weaving in his home. He buys the raw material for weaving from the community shop. His annual income in 2012 E.c from the community finance allocation for each cooperative member was 13,000 birrs, and from a private business that is waiving his home when he works hard, he gets an additional 17,000birr¹⁰. Ato Kinidachew Kibirettotal annual income was 30,000 Birr.

B. The life story of Ato Kindache's wife W/ro Etalemahu Gebeyehu

W/ro Etalemahu Gebeyehu was born in 1965 E.c in Toleha, which is a one-hour walk from Awra Amba. She is 47 years old. Her educational background is “meserete timihiret” during the Derg regime. W/ro Etalemahu becomes a cooperative member in 1984.

¹⁰ This is an approximately assumption the information which received from several community members. (It needs further reconicensse survey).

C. The Compound:

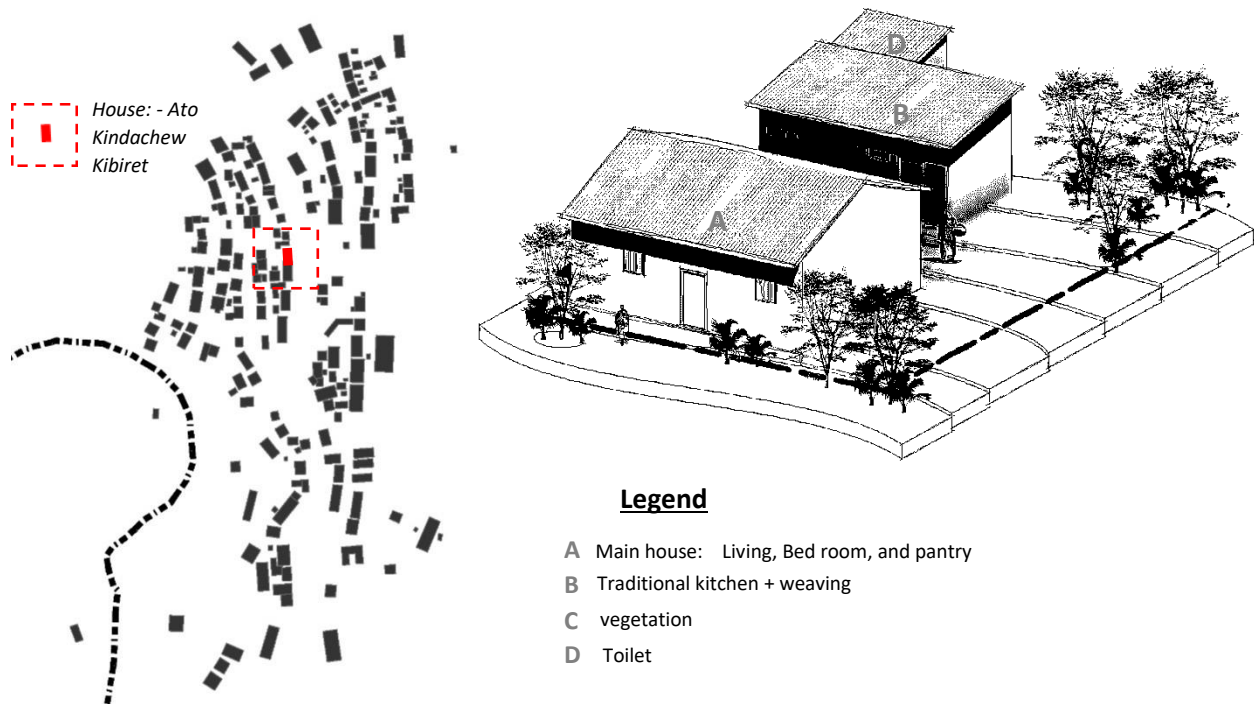
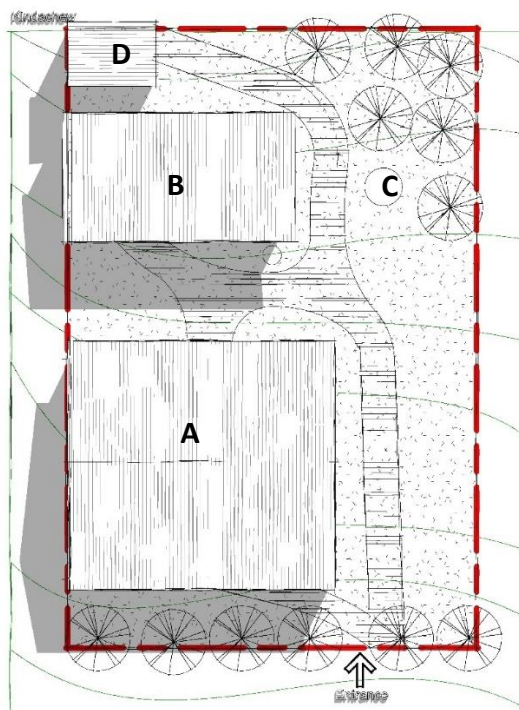


Figure 4.53. Ato Kinidachew Kibiret's compound.

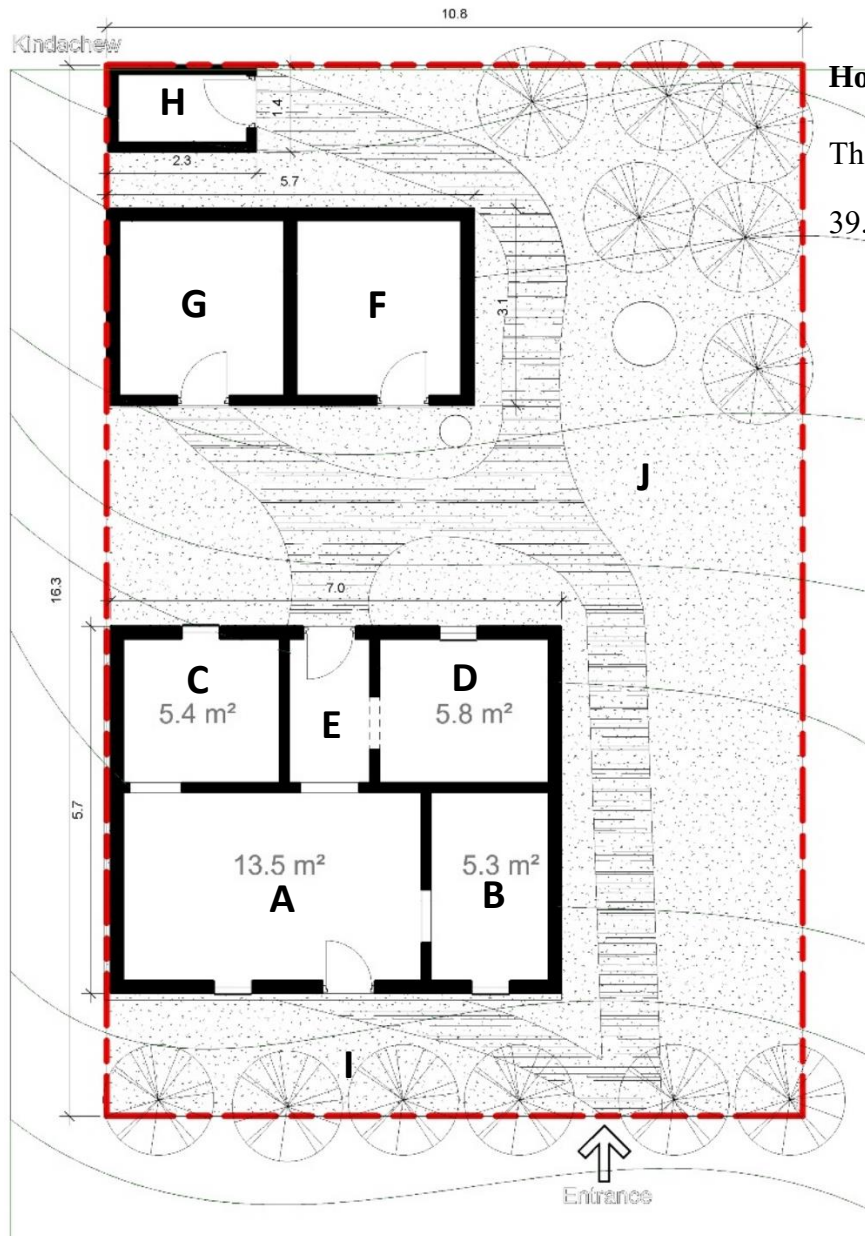


Ato Kinidachew Kibiret compound is located in the Northern direction from the central “warka tree”, near the community meal house and oil factory. the compound is accessed through the main road which crosses the community settlement. He gets the land from the housing committee.

The compound is rectangular, more of an urban form parcel and the total compound area is 176.1m² with 16.3x10.8meters in size. The perimeter of the compound is fenced with trees

Figure 4.54. Ato Kinidachew Kibiret's house site plan.

D. The House:



House

The total area of the house is 39.9m² with 7x5.70meters in size.

A. Multipurpose room serve as living, dinning, & cooking.

Mattress on the floor

B. Pantry, cooking and storage

C. Master bed + dressing room

D. Child bed room

E. Corridor

F. Traditional kitchen + store

G. Weaving room

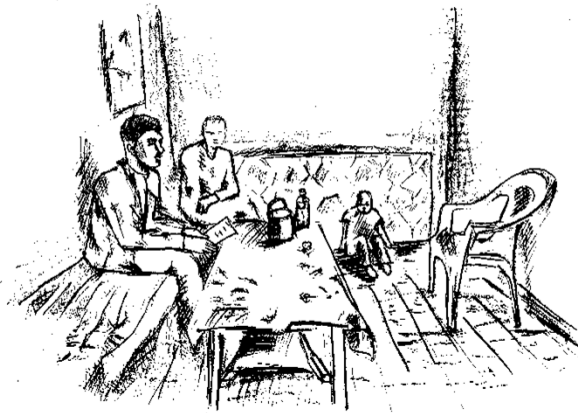
H. Toilet

I. Front yard

J. Back yard

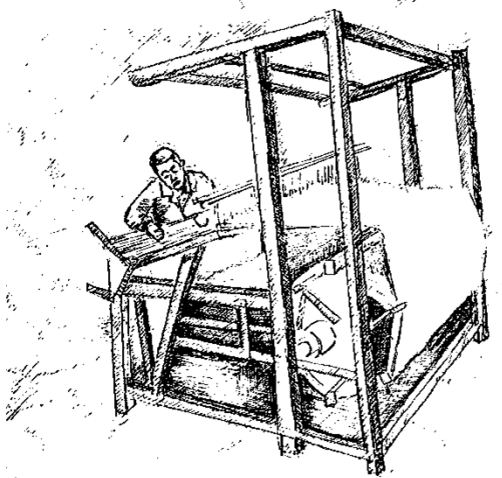
Figure 4.55. Ato Kinidachew Kibiret's house floor plan.

E. Furniture and activity



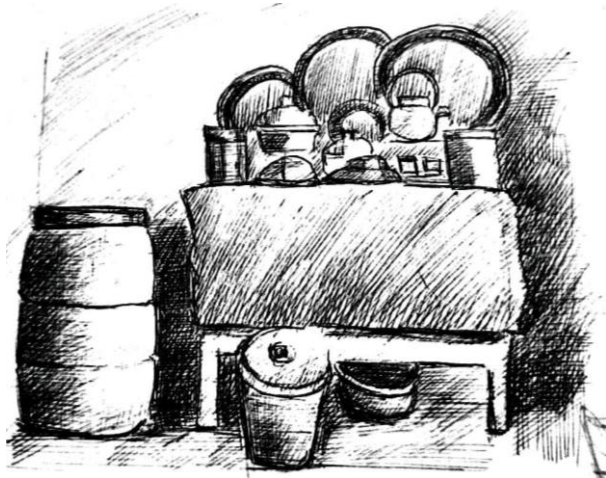
Eating together A

The living area accommodates a shelf made of eucalyptus plaster with mud (mesikot), Medeb furniture (grinding stone with chika) cover with plastic, the space for eating and playing with family.



Weaving at F

The living area accommodates a shelf made of eucalyptus plaster with mud (mesikot), Medeb furniture (grinding stone with chika) cover with plastic, the space for eating and playing with family.



Pantry at B

The living area accommodates a shelf made of eucalyptus plaster with mud (mesikot), Medeb furniture (grinding stone with chika) cover with plastic, the space for eating and playing with family.

Figure 4.56. Ato Kinidachew Kibiret's house furniture and activity.

F. Front and back yard

The backyard is located at the highest point of the compound. The total area of the backyard is 46.8 m². It is used to plant vegetables during the rainy season, weaving, clothes drying, and spice drying are taking place.

The Front Yard: In the front yard, daily activities like socializing, playing, and spice drying are taking place.



Grain store at I



Figure 4.57. Ato Kinidachew Kibiret's compound front and back yard activity.



Figure 4.58. Ato Kinidachew Kibiret's house section.

Fig. 4.59 below shows the space used by Ato Kindachew Kiberet's family at settlement, compound, and house levels. The interview was conducted with two family members within 48 hours. The family spent 54.16 % of their time within the house and 45.84% outside of the compound.

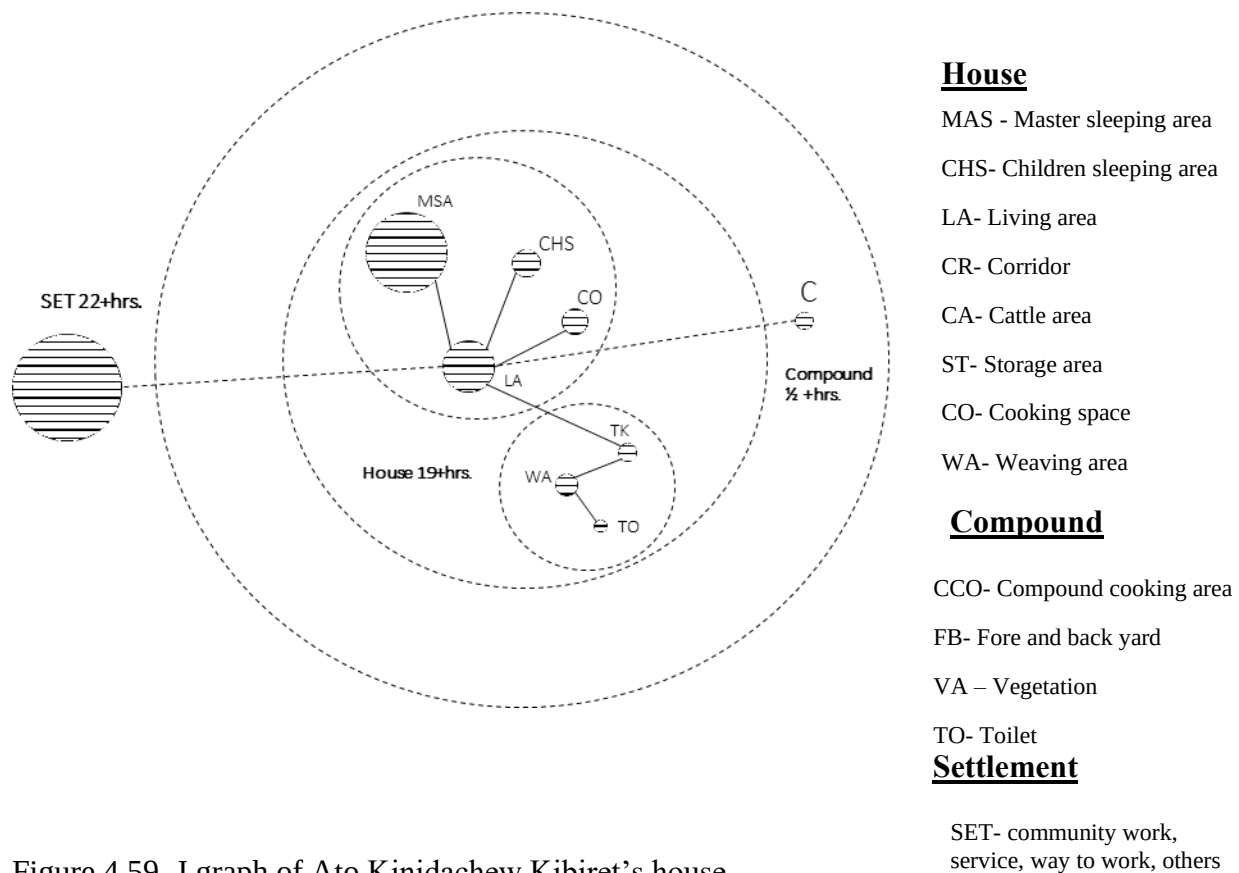


Figure 4.59. J graph of Ato Kinidachew Kibiret's house.

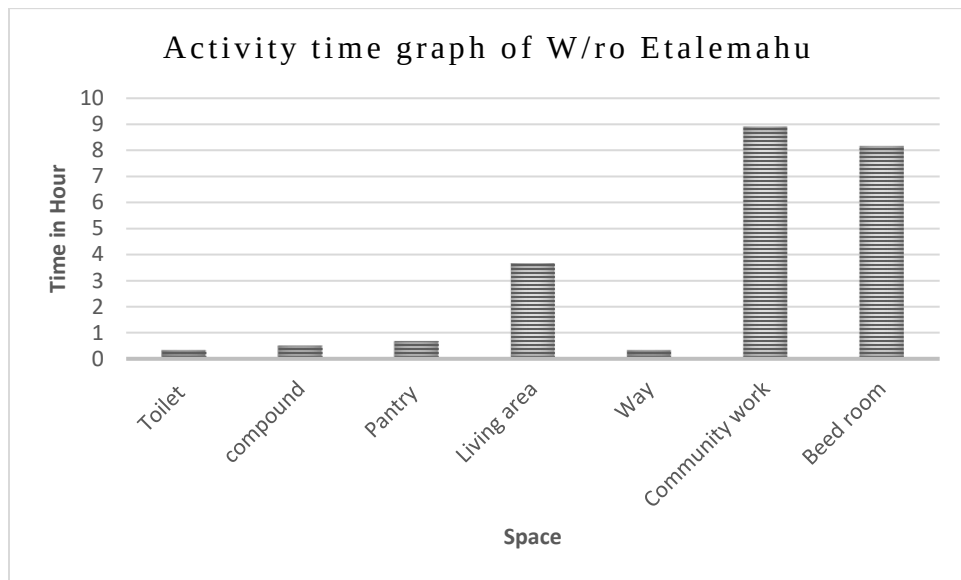
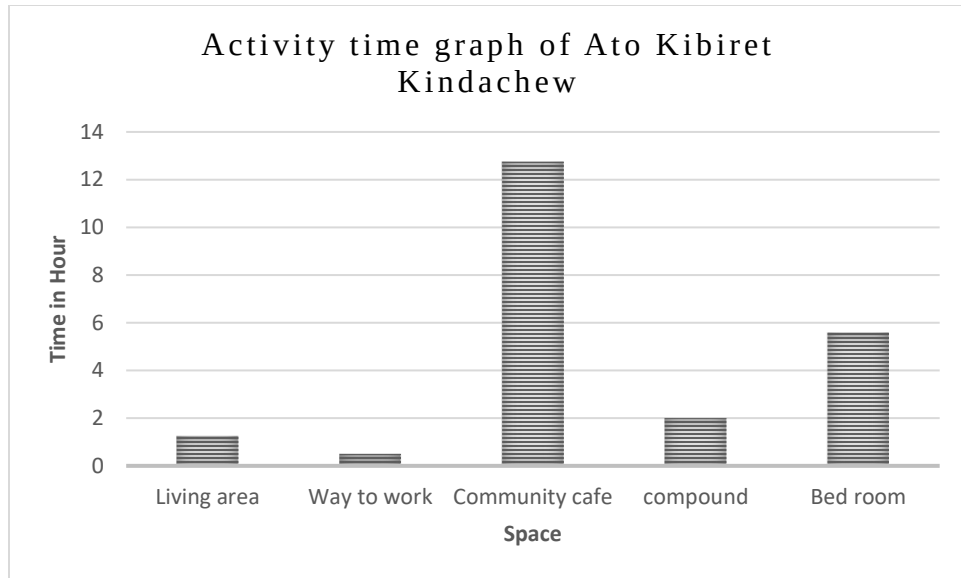


Figure 4.60. Activity time graph of Ato Kinidachew Kibiret's family.

4.14.3 W/ro Marishet Kindachew's Compound

A. The life story of Marishet Kindachew:



W/ro Marishet Ahmed was born in 1986 E.c in Awra Amba. She is now 26 years old. She was born and grown up in Awra Amba. Her parents are the founder of the community her life as a community member begins. Her husband Ato Maru Zegeye lives in Bahir Dar for higher education. She has a two-year-old son.

Figure 4.61. W/ro Marishet Kindachew's family.

W/ro Marishet's formal educational background is surprising considering we found her duties at the computer center. she attended class until the 10th grade, she became a cooperative community member in 2007 E.c because her parents live in Awra Amba and the community respect humanity. She serves the community in different jobs first weaving, finance in the clinic, selling cloth, and now computer. To increase her income source, she works on weaving in her home. she buys the raw material for weaving from the community shop. Her annual income in 2012 E.c from the community finance allocation for each cooperative member was 13,000 birrs, and from a private business which is waiving in her home when she works hard, she gets an additional 17,000birr. W/ro Marishet's total annual income was 30,000 Birr.

B. The Compound

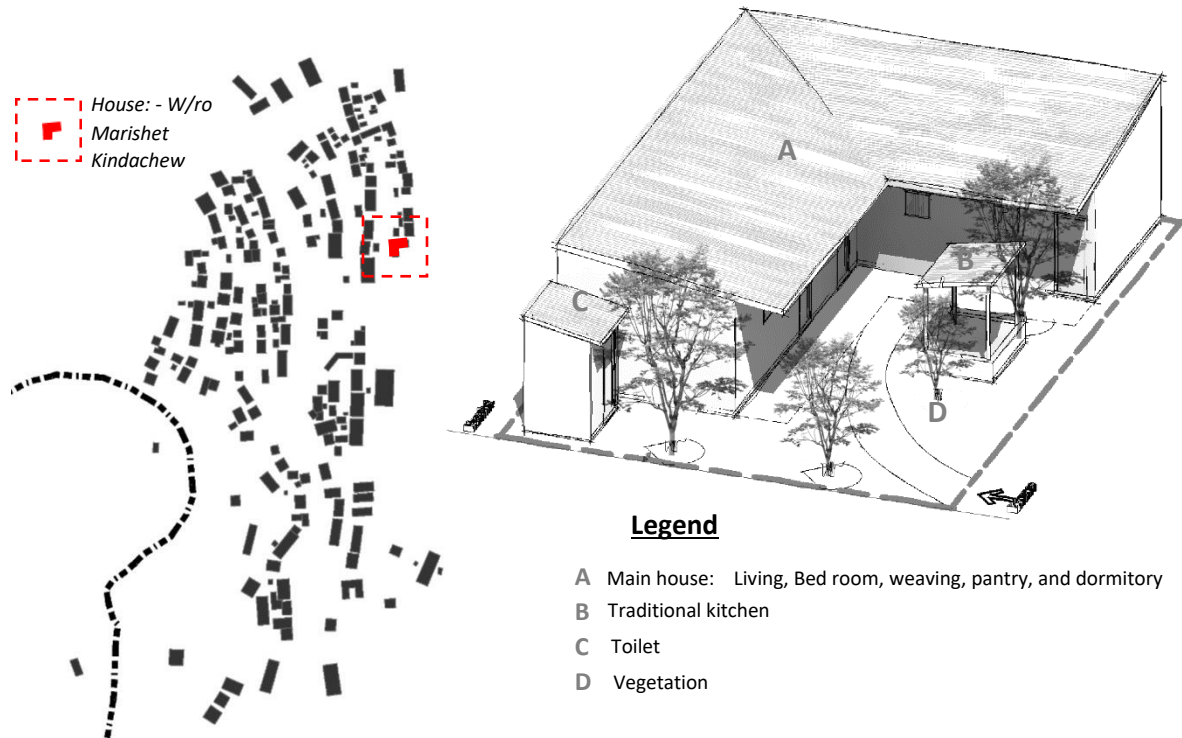


Figure 4.62. W/ro Marishet Kindachew's compound

The compound is rectangular form an urban form parcel and the total compound area is 164.8m² with 16x10.3meters in size.

W/ro Marishet Kindachew's get the land from the housing committee. The compound is located at the flat land of the community in the North-East direction of the Awra Amba settlement, near the community farmland. The compound is accessed through a narrow unpaved footpath.

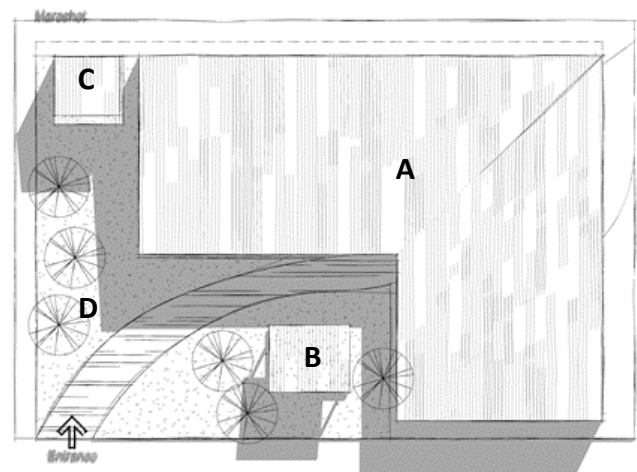


Figure 4.63. W/ro Marishet Kindachew's site plan.

C. The House:

W/ro Marishet's house is a detached house. The house is an L-shape constructed at the two-side periphery of the compound. The total area of the house is 78.6m². The internal functional space (living, bedroom, and dormitory) of the house has a linear arrangement. The living area

accommodates chairs, a modern weaving machine, and the bedroom sleeping zone which is also used for cooking, and traditional weaving. The remaining rooms are rented.

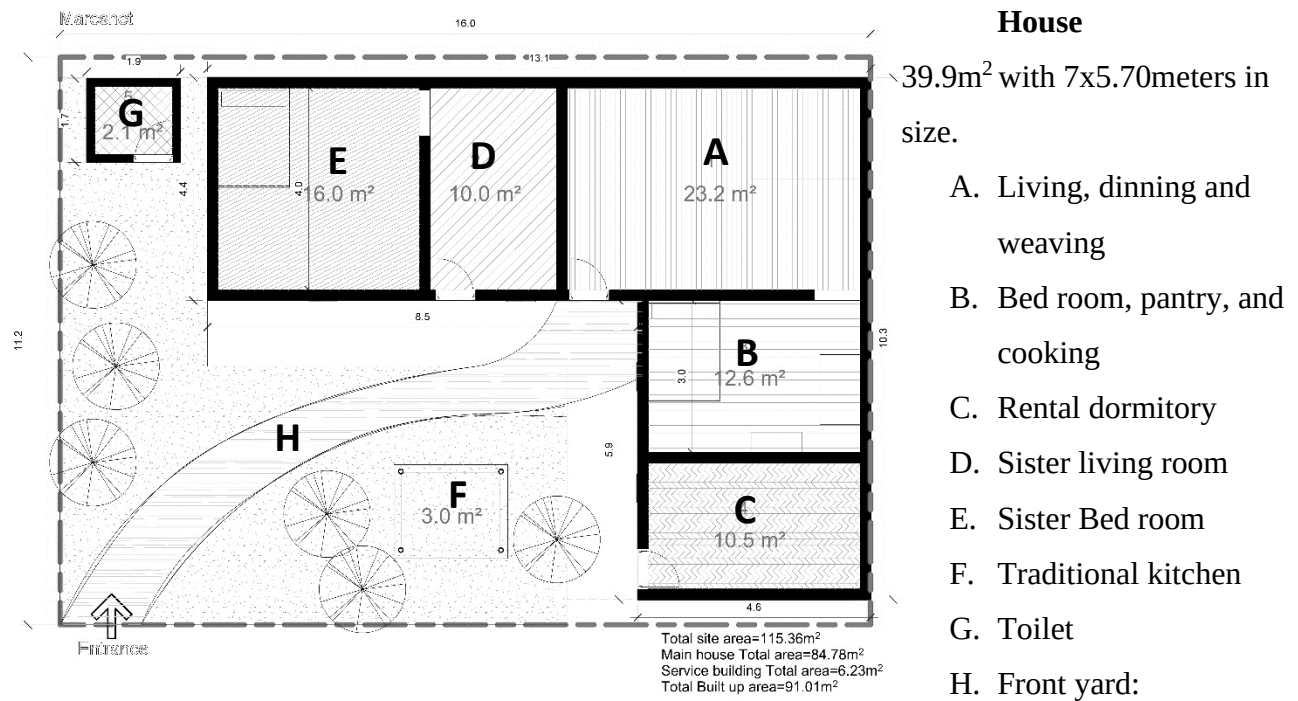


Figure 4.64. W/ro Marishet Kindachew's house site floor plan.

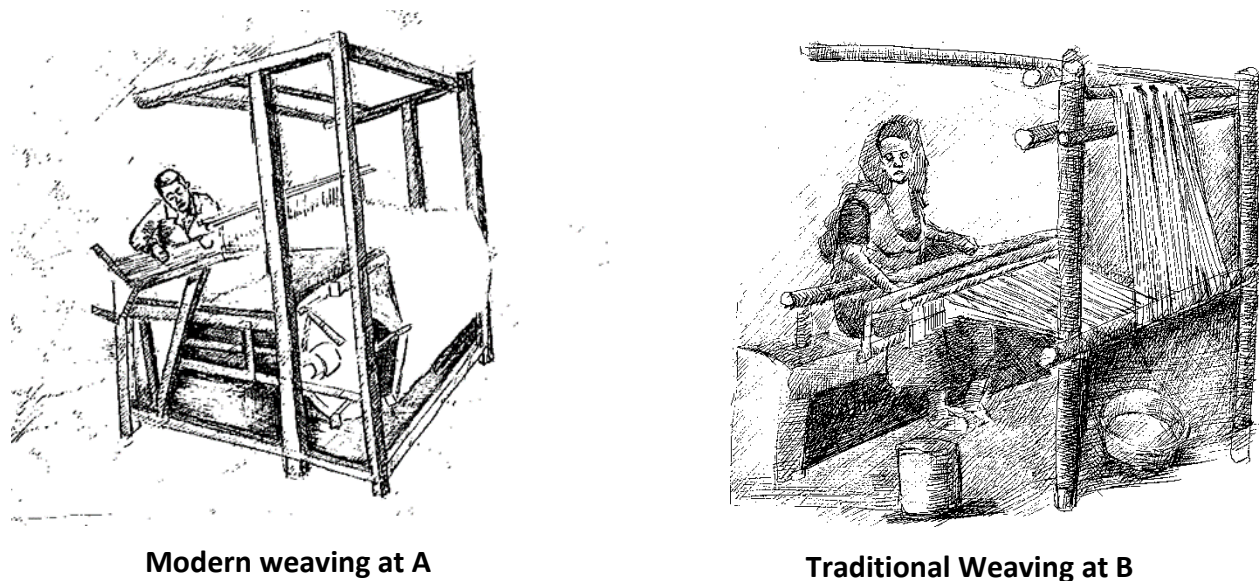


Figure 4.65. W/ro Marishet Kindachew's house furniture and activity.

A. Front

The area of the front yard is 84m². In the front yard, daily activities like traditional kitchen, socializing, playing, clothes drying, spice drying are taking place, and plant vegetables during the rainy season. socializing,

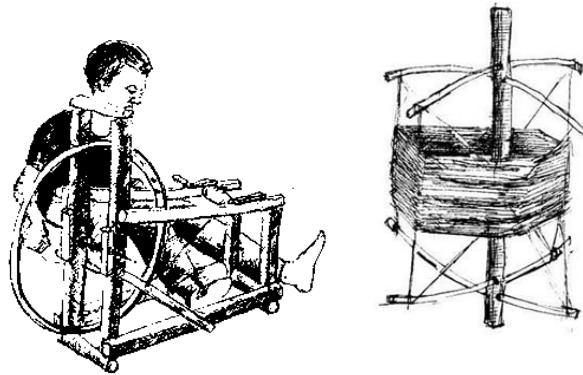


Figure 4.66. W/ro Marishet Kindachew's front yard.



Figure 4.67. W/ro Marishet Kindachew's house section.

Fig. 4.68 below shows the space used by W/ro Marishet Kindachew's family at settlement, compound, and house levels. The interview was conducted with one family member within 24 hours. The family spent 58.33 % of their time within the house and 41.67% outside of the compound.

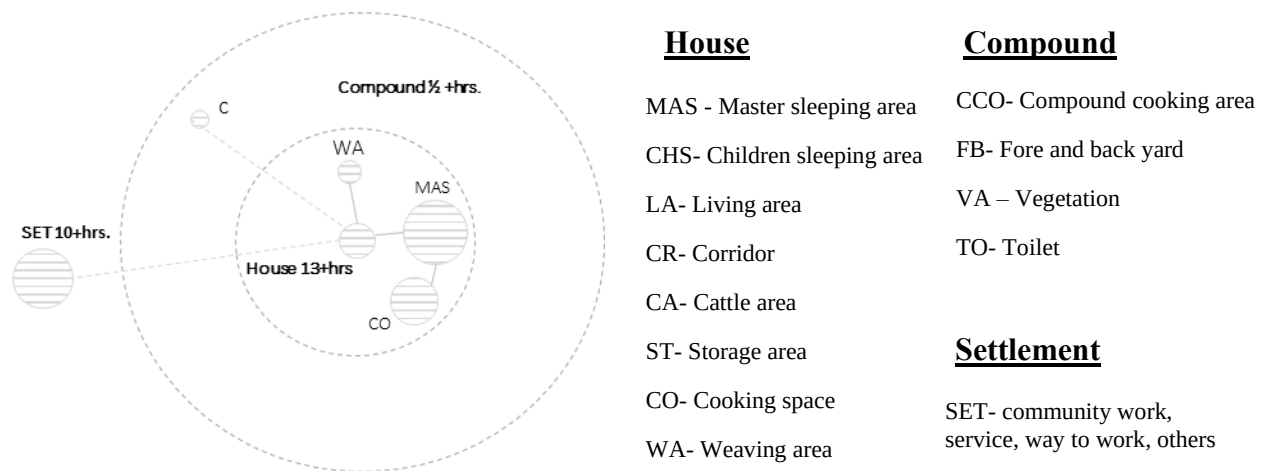


Figure 4.68. J graph of W/ro Marishet Kindachew's house.

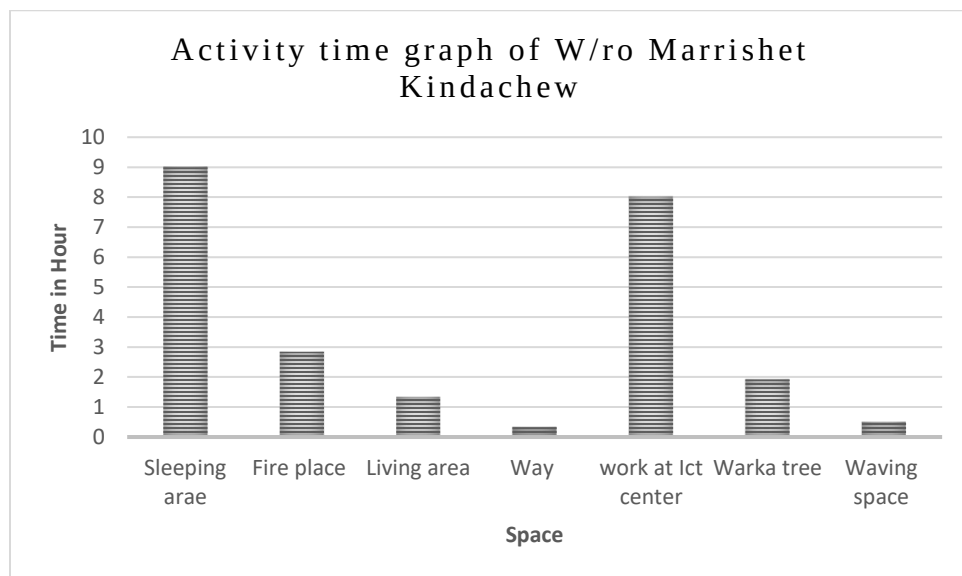


Figure 4.69. Activity time graph of W/ro Marishet Kindachew's family.

4.14.4 Ato Legesse Fenite's Compound

A. The life story of Ato Legesse Fenite: Life History, Activity, and Services

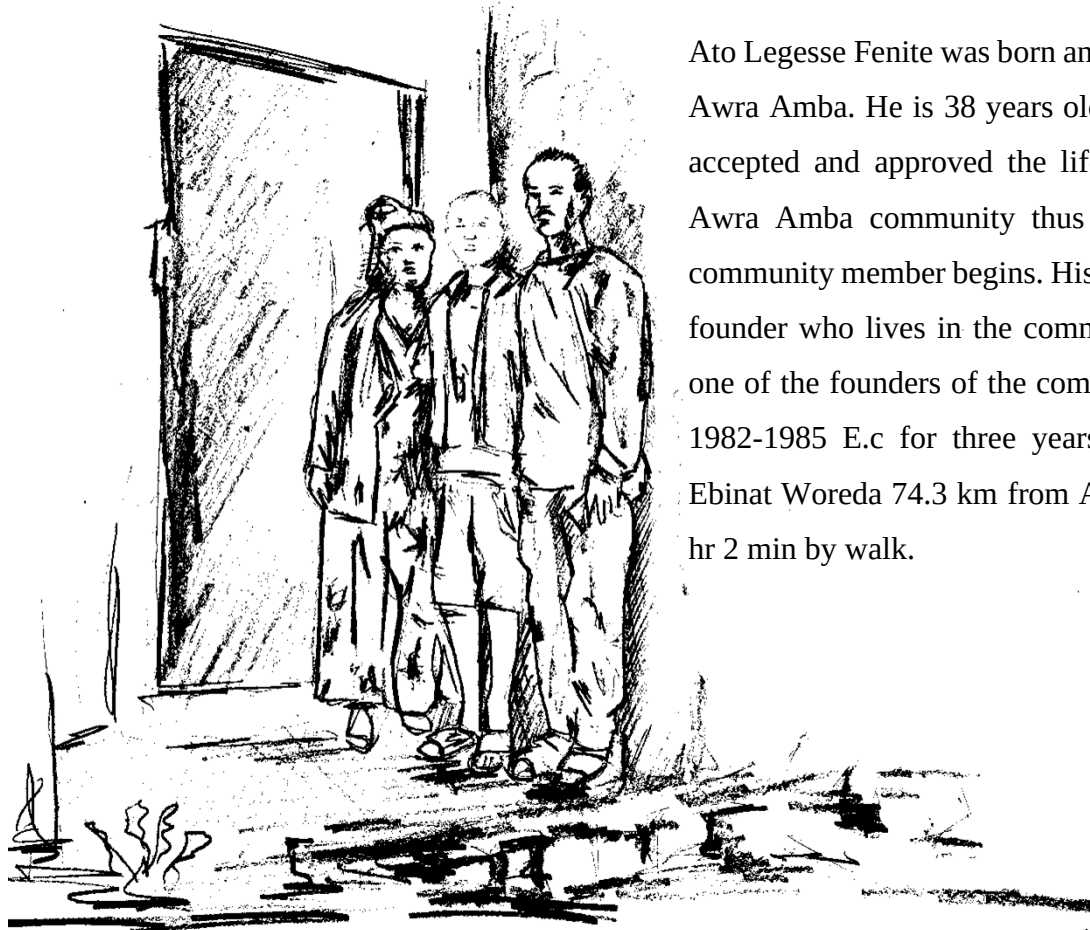


Figure 4.70. Ato Legesse Fenite's family.

Ato Legesse Fenite was born and grown up in Awra Amba. He is 38 years old. His parents accepted and approved the lifestyles of the Awra Amba community thus his life as a community member begins. His mother was a founder who lives in the community. She is one of the founders of the community. From 1982-1985 E.c for three years, he lives in Ebinat Woreda 74.3 km from Awra Amba 15 hr 2 min by walk.

He was one of the residents who has a journey and lived in Southern Ethiopia, Bonga from the year 1980 to 1986 E.c, and then go back and started living in Awra Amba Community in 1986. Ato Legesse Fenite narrates his life history as follows:

"Perception of space I was grown up, playing in Awra Amba everything I do when I was a child is in mind, I am very happy living with this community I can't live with the community when I left the community for a day or two days, I will feel depression. I don't want to live next to the main road the sound disturbs me."

He married Gebaynesh Chekol her age was 25 years old and she is illiterate. They have three sons all of whom live with him his eldest son Chalachew Legesse is 17 years old and a 12th-grade student who studied at Adiss Ra'y secondary school. The second eldest son who is 11 years old and a 6th-grade student studied at Adiss Ra'y primary school. The youngest son, Getenet Legesse and studied kinder Garten at the school built by the community. His elder brother's son Sewaleih Tesifa also lives with them, Sewaleih is a 10th-grade student and he works weaving in the house.

Ato Legesse's formal educational background is attended class until the 10th grade, now he studies garments in college at Debre Tabor. He became a community member and started living in his hut in 1993E.C. He is currently serving on the committee in almost everything it depends on what the committee assignment he works on weaving, Cafe waiter, milling now he was in education.

B. The Compound

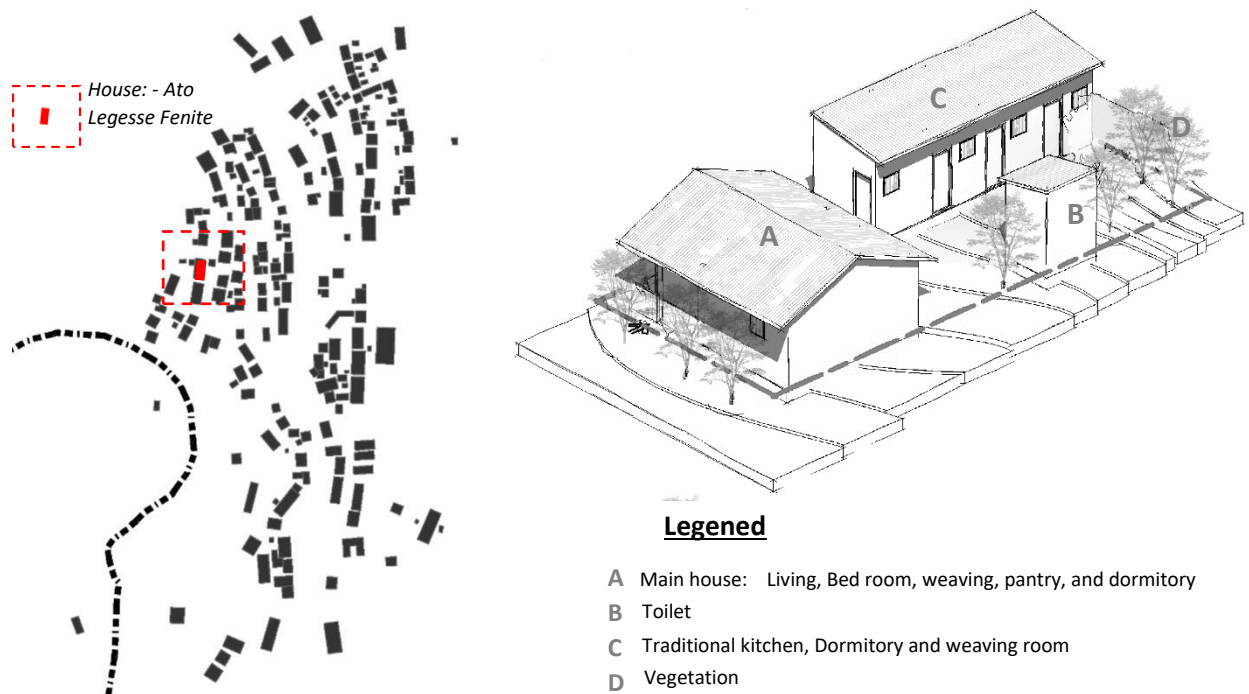
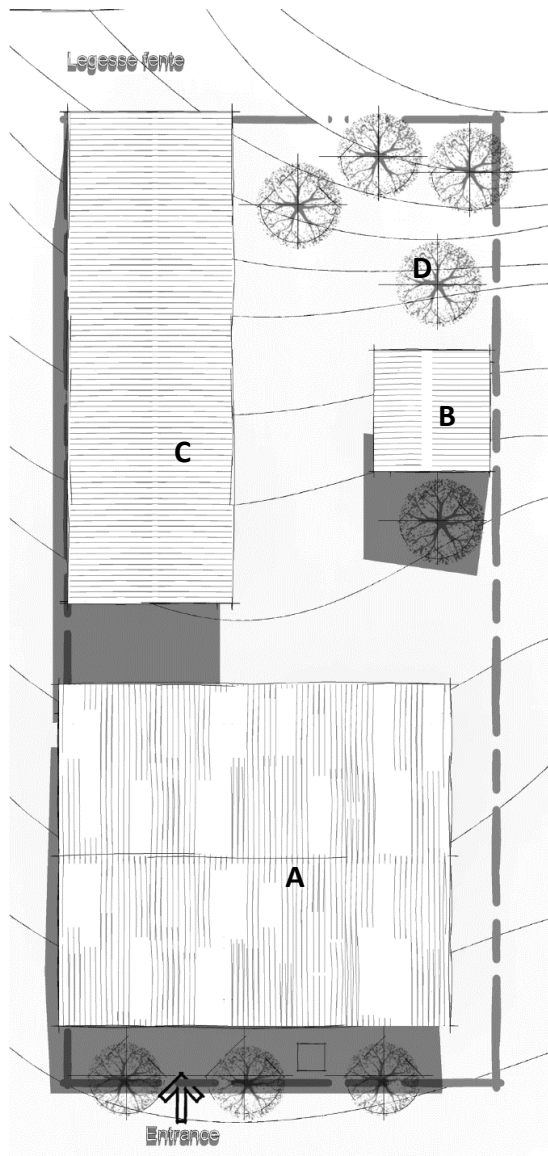


Figure 4.71. Ato Legesse Fenite's compound.



Legend

The main house is built on 35.4m² if the shared space is added to the plot area of the house it will be 38.4m².

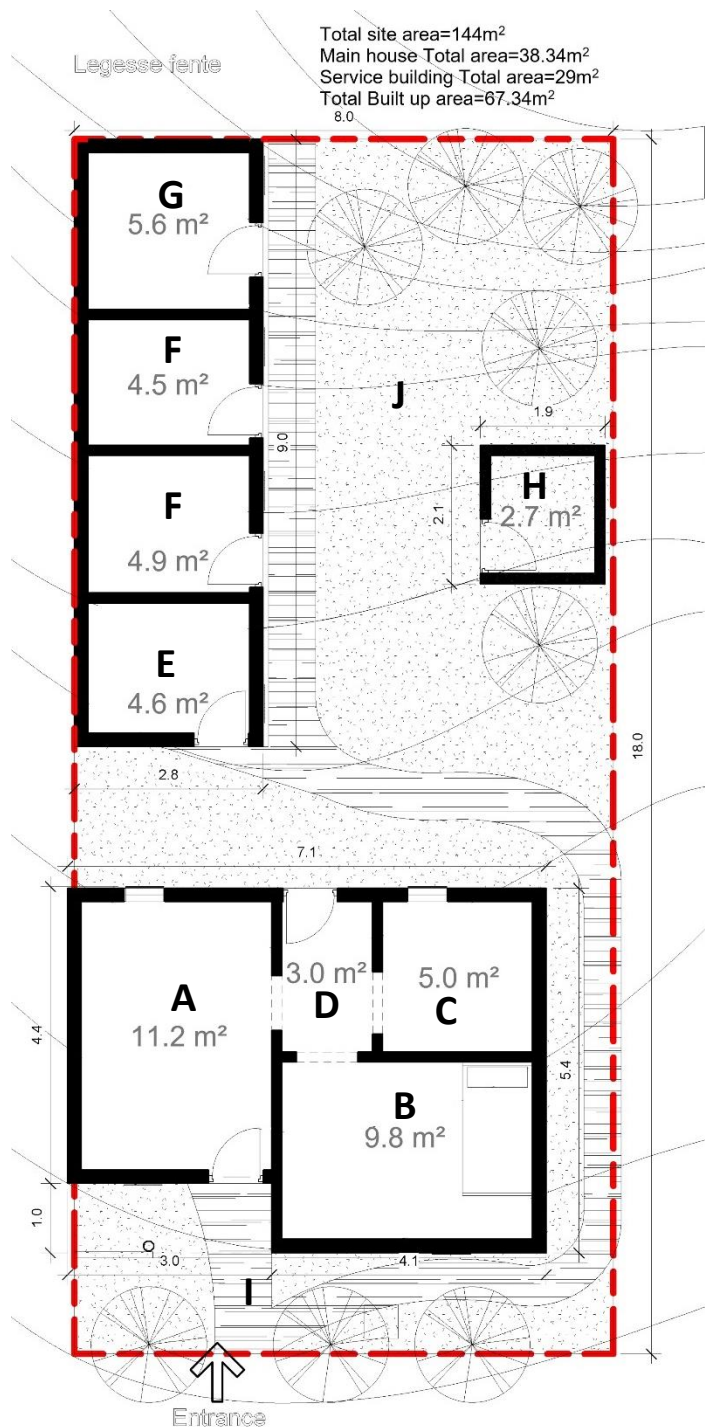
- A. Main house
- B. Toilet
- C. Traditional kitchen, dormitory and weaving
- D. Vegetation

Ato Legesse Fenite's get the land from the housing committee. The compound is located at the very steeped slop at the North West periphery of the Awra Amba settlement, near the community water tanker. The compound is accessed through a narrow unpaved footpath and it is steeped. Ato Legesse compound is a shared one with the neighborhood's and it also only act as passing through space (it is not even sufficient).

The compound is rectangular form. It is more of an urban form parcel and the total compound area is 144 m² with 18x8meters in size.

Figure 4.72. Ato Legesse Fenite's house site plan.

C. The House:



House

The main house is built on 35.4m² if the shared space is added to the plot area of the house it will be 38.4m².

- A. Living and weaving
- B. Master bed, child bed, and dressing room
- C. Pantry + store
- D. Corridor
- E. Traditional kitchen + store
- F. Dormitory
- G. Modern weaving room
- H. Toilet
- I. Front yard
- J. Back yard

Figure 4.73. Ato Legesse Fenite's house site floor plan.

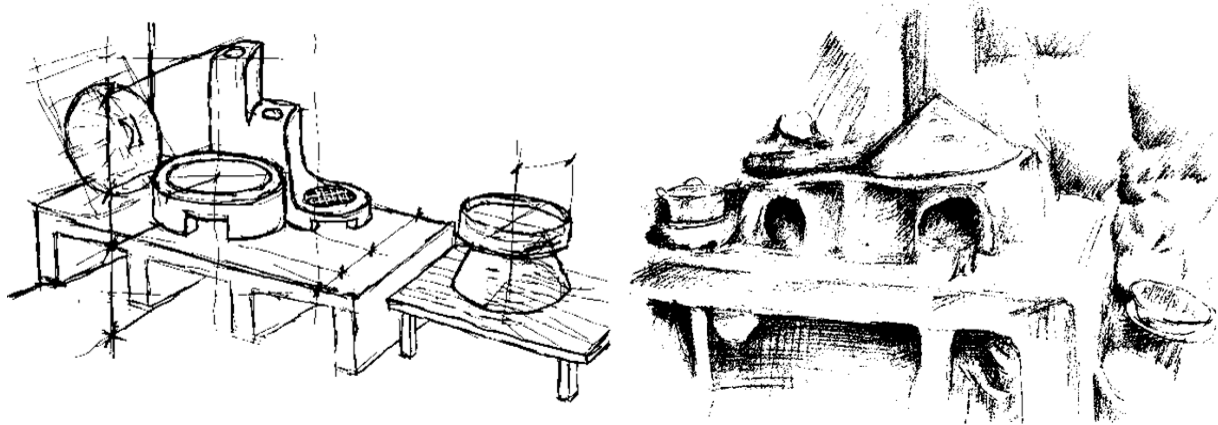


Figure 4.74. Ato Legesse Fenite's traditional fuel saving stove at E.

D. Front and back yard

The front yard of the compound is the main pass way for all the residents. After a 3m walk, Ato Legesse Fenite's entrance will be visible on the left. On the left side the same as the front it's a shared space for the entrance of the other neighborhoods. Because of the topography of the site and since the houses are built on a steep slope, on the right side, there are trees that act as a boundary for the compound to prevent from falling the cliff.

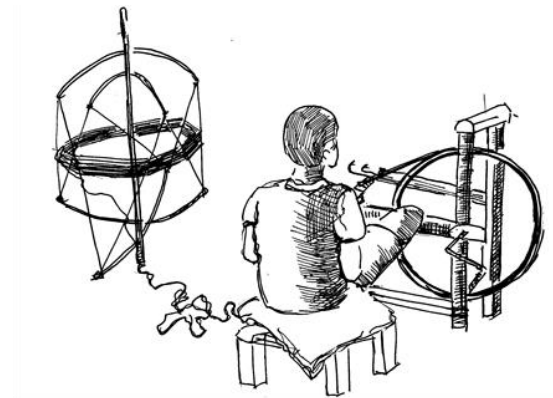


Figure 4.75. Ato Legesse Fenite's house front yard.

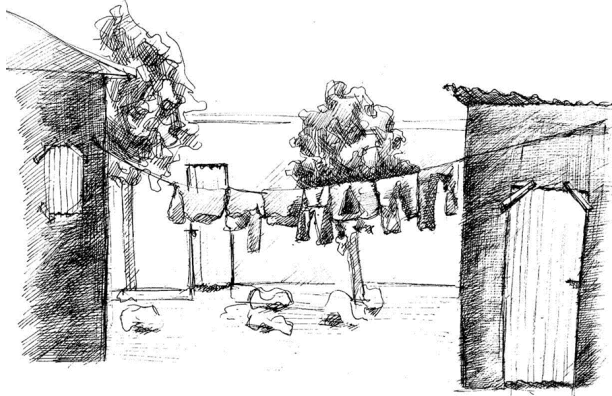


Figure 4.76. Ato Legesse Fenite's house back yard.

The backyard space is connected to the service road which is used for waste disposal. The total area of the backyard is 60.4 m², which is used to plant vegetables during the rainy season. The backyard space can be directly accessed from the house. The cooking area, rental houses, weaving room, and the toilet are found in the back yard. The cooking space is covered with wood, plastic, and rest corrugated roof sheet. The waste management is very poor and the layout of the houses in the back is very close to one another which is 1meter for all the tenants, neighbors, and residents to pass through every day.

E. Orientation of the House:

The orientation of Ato Legesse Fenite's house is towards the east. This was done because of the settlement pattern not on a studied analysis or Ms. Nouromer's needs. With regarding that the living room and the bedroom get the morning sunshine in the east and only the kitchen gets the afternoon sunray in the west. In addition to this, all of the houses on this slope are oriented to the east.

Fig. 4.77 below shows the space used by Ato Legesse Fenite's family at settlement, compound, and house levels. The interview was conducted with one family member within 24 hours. The family spent 62.5 % of their time within the house and 37.5% outside of the compound.

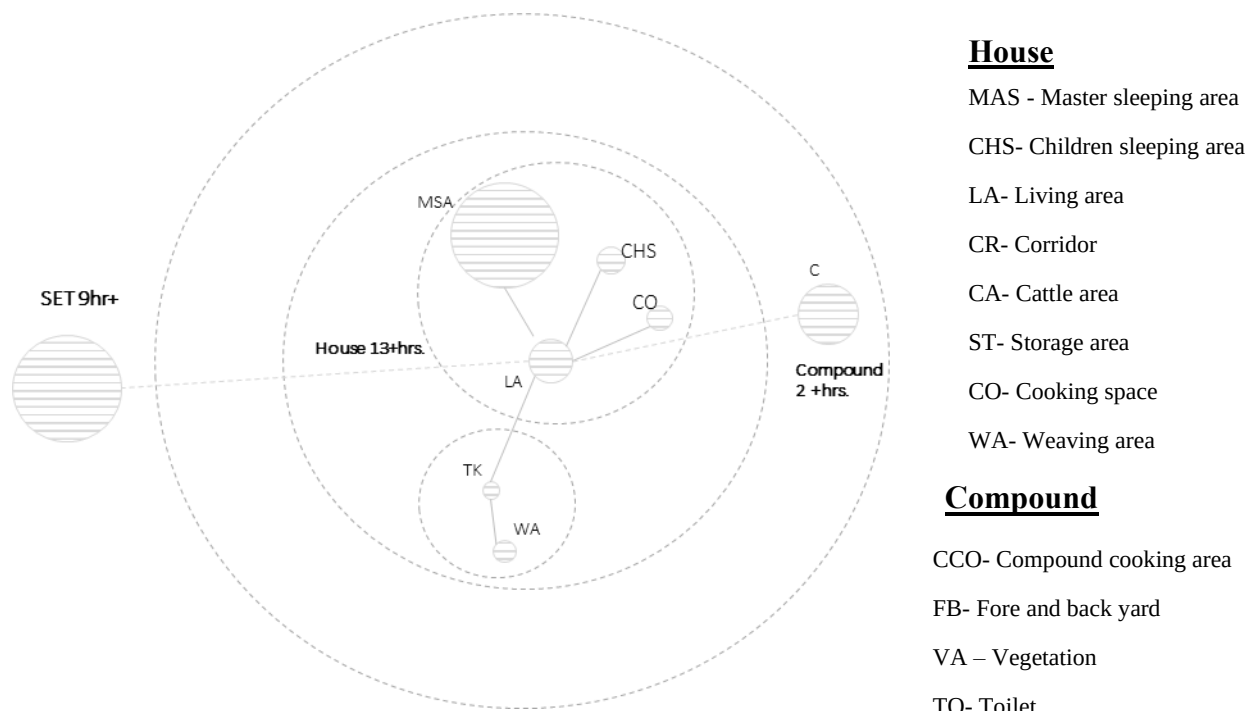


Figure 4.77. J graph of Ato Legesse Fenite's house.

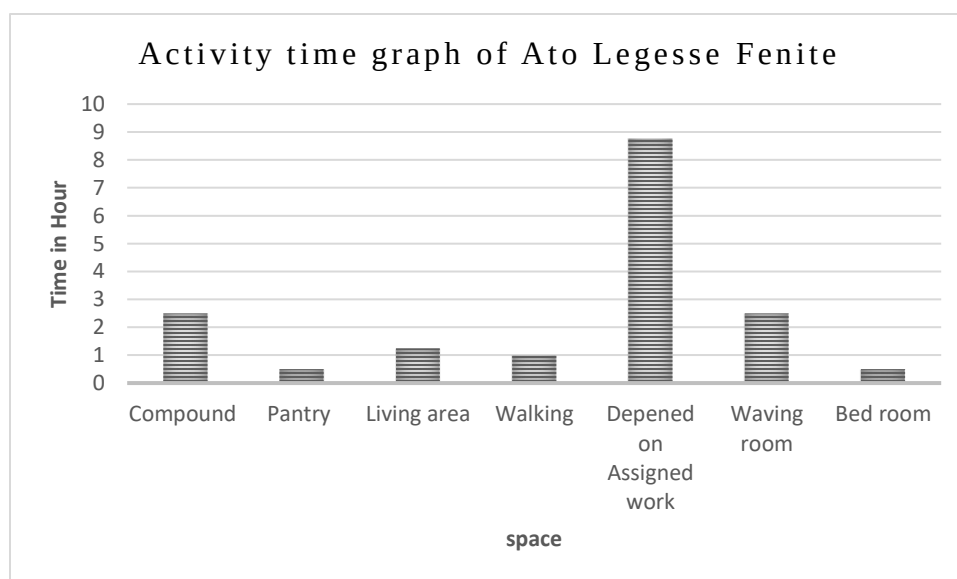


Figure 4.78. Activity time graph of Ato Legesse Fenite's family.

4.14.5 W/ro Birtukan Kibiret Siyraj's Compound

The life story of W/ro Birtukan Kibiret Siyraj: Life History, Activity, and services



Figure 4.79. W/ro Birtukan Kibiret's family.

Wro Birtukan Kibiret Siyraj is 37 years old. She was born, grew up, and married in Awra Amba. When the Awra Amba community conflicted with the neighborhood community they journey and lived in Southern Ethiopia, Bonga from the year 1980 to 1986 E.c. when they come back from the journey their land was occupied by the neighborhood community. W/ro Birtukan's father Ato Kibiret Siyraj is the one who gives his land to the community.

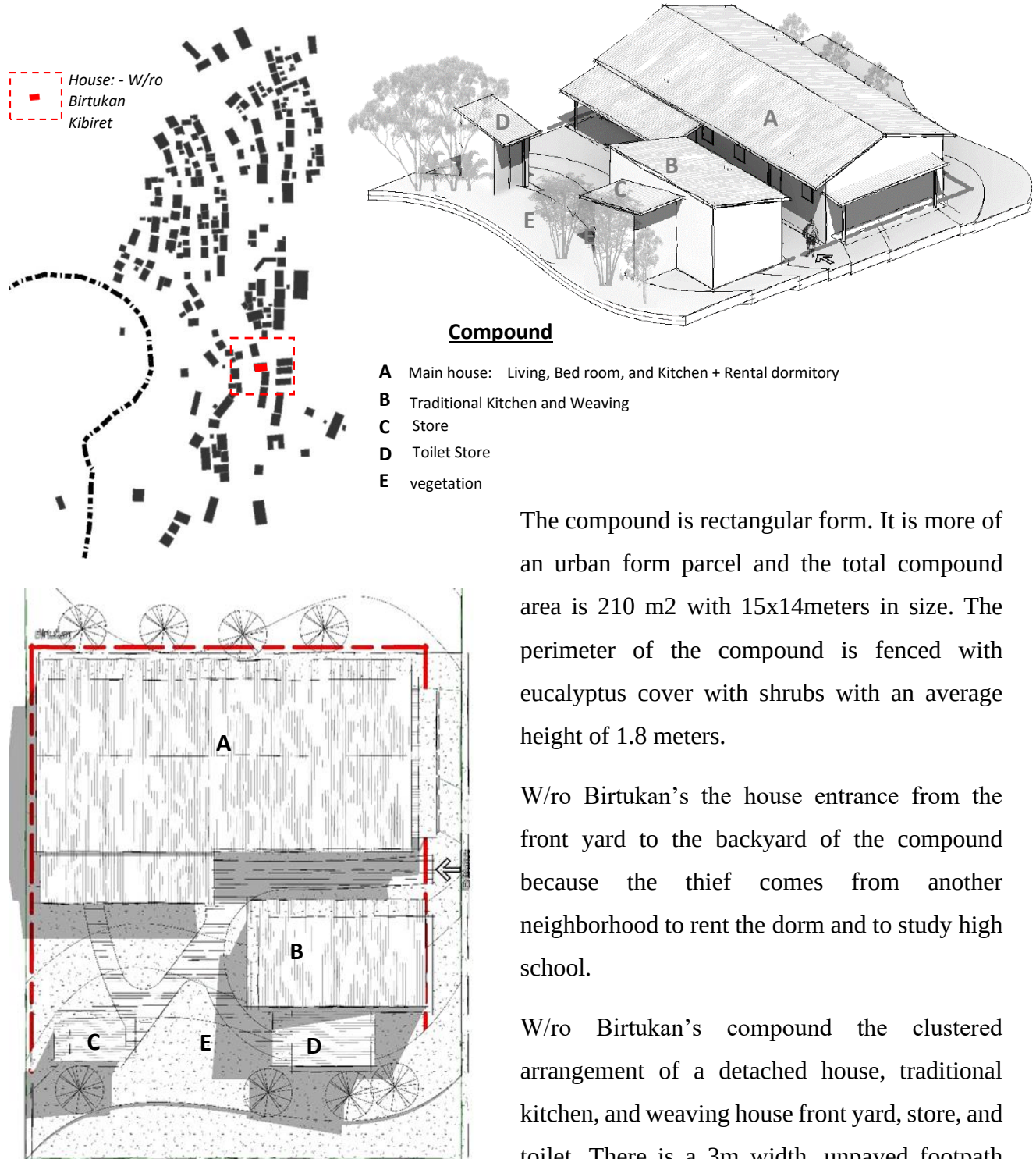
Wro Birtukan Kibiret Siyraj has mothered three children, one son, and the rest daughters, all of whom live with her. Birtukan's eldest son Tegegne Muluneh is 22 years old and graduated from university he doesn't have work. The second eldest daughter Asimarech Muluneh lives within the community and is 18 years old, and she is in grade 12th studying at Adissra'y the community school. The young child, Mulumebet Muluneh is 11 years old and in grade 7th studied at the school built by the community.

Wro Birtukan Kibiret's formal educational background is only attended class until the 6th grade. She became a cooperative community member in 1985 E.c. She serves the community based on her ability to weave, and milling, since 2002 E.c she serves the community as a guide for local and international tourists. To increase her income sources, he works on weaving in her home. she buys the raw material for weaving from the community shop. Her annual income in 2012 E.c from the community finance allocation for each cooperative member was 13,000 birrs, and from a private business that is weaving in her home when she works hard, she gets an additional 17,000birr. W/ro Birtukan's total annual income was 30,000 Birr.

The water source is located in the compound when there is no water, they bring it to form the community groundwater pump which is located at the center of the community next to the Warka tree taking a 15minute walk. For washing cloth, they go to the Ginde river which takes a 10minute walk. Health and other service facilities were located inside the community. The health post took about 15 minutes of walking. Their burial ceremony took place in Quarqe South West direction next to the community Adiss Ra'ey secondary school taking 30 minutes to walk. Both Awra Amba and the neighborhood Muslim community use this common land for the burial ceremony. W/ro Birtukan's working space the community computer center is located at the center of the community taking 5 minutes to walk from home.

Her perception about space *'I am interested in the mountain it has cool air and vegetation am respect vegetation.'*

The Compound



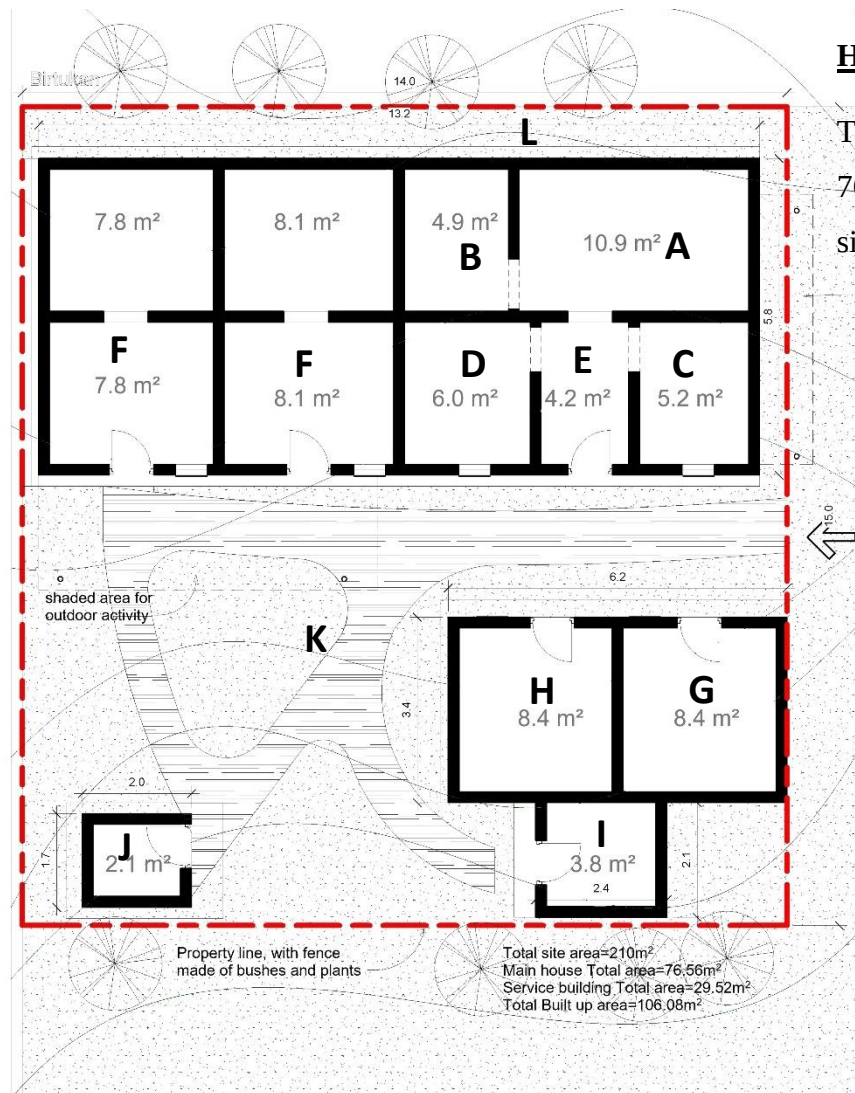
The compound is rectangular form. It is more of an urban form parcel and the total compound area is 210 m² with 15x14meters in size. The perimeter of the compound is fenced with eucalyptus cover with shrubs with an average height of 1.8 meters.

W/ro Birtukan's the house entrance from the front yard to the backyard of the compound because the thief comes from another neighborhood to rent the dorm and to study high school.

W/ro Birtukan's compound the clustered arrangement of a detached house, traditional kitchen, and weaving house front yard, store, and toilet. There is a 3m width, unpaved footpath between the main house and the traditional kitchen.

Figure 4.80. W/ro Birtukan Kibiret's compound.

The House:



House

The total area of the house is 76.6m² with 13.2mx5.8 meters in size.

Shaded area used as outdoor storage space for fire wood

- A. Living and Dinning
- B. Cooking and pantry
- C. Master bed room
- D. Child bed room + storage
- E. Corridor
- F. Rentable dormitory
- G. Traditional kitchen
- H. Weaving room +storage
- I. Store
- J. Toilet
- K. Back yard
- L. Front yard

Figure 4.81. W/ro Birtukan Kibiret's house floor plan.



Figure 4.83. W/ro Birtukan living activity.

The living area accommodates a shelf made of eucalyptus plaster with mud (mesikot), Medeb furniture (grinding stone with chika) cover with plastic, the space for eating and playing with family. The second is a sleeping zone that accommodates beds, the third is a children's bedroom and the last is a pantry cooking space. the remaining four rooms are for rental.

The house's traditional stove space for cooking, cereal store (Gushigusha), and modern weaving room are separate from the main house.

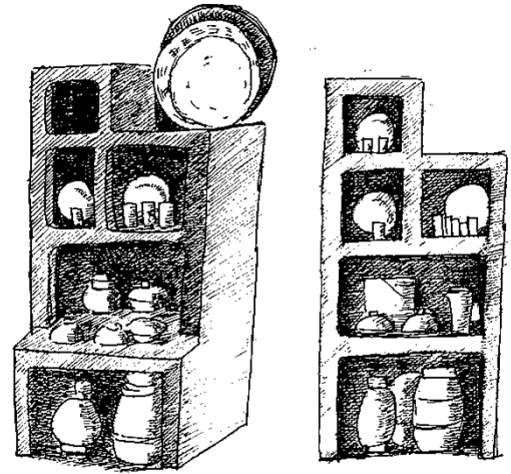


Figure 4.82. A shelf made of eucalyptus plaster with mud (mesikot).

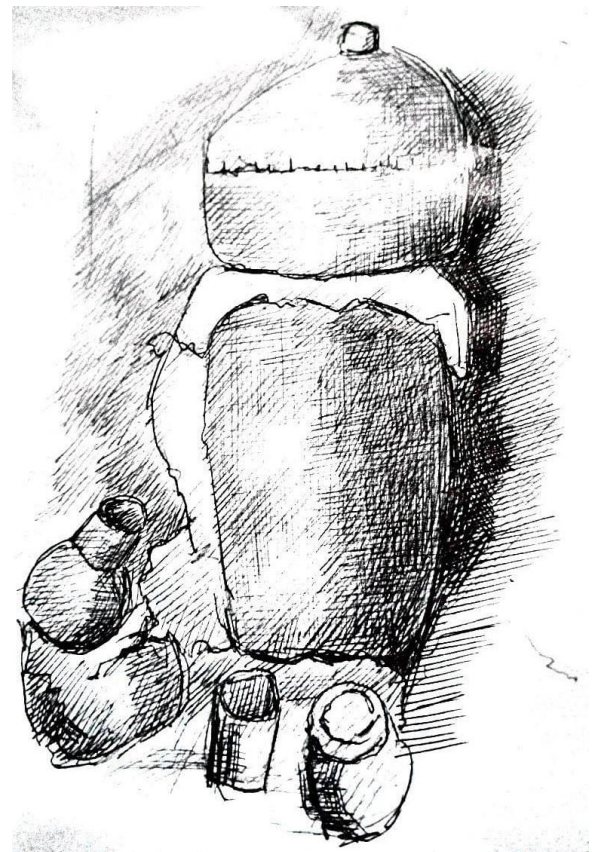


Figure 4.84. Cereal store (Gushigusha).

The Front Yard:

W/ro Birtukan compound has front yard. The area of the front yard is 28m^2 . Due to the fear of the thief, they change the front access of the house and now they used it for vegetation.

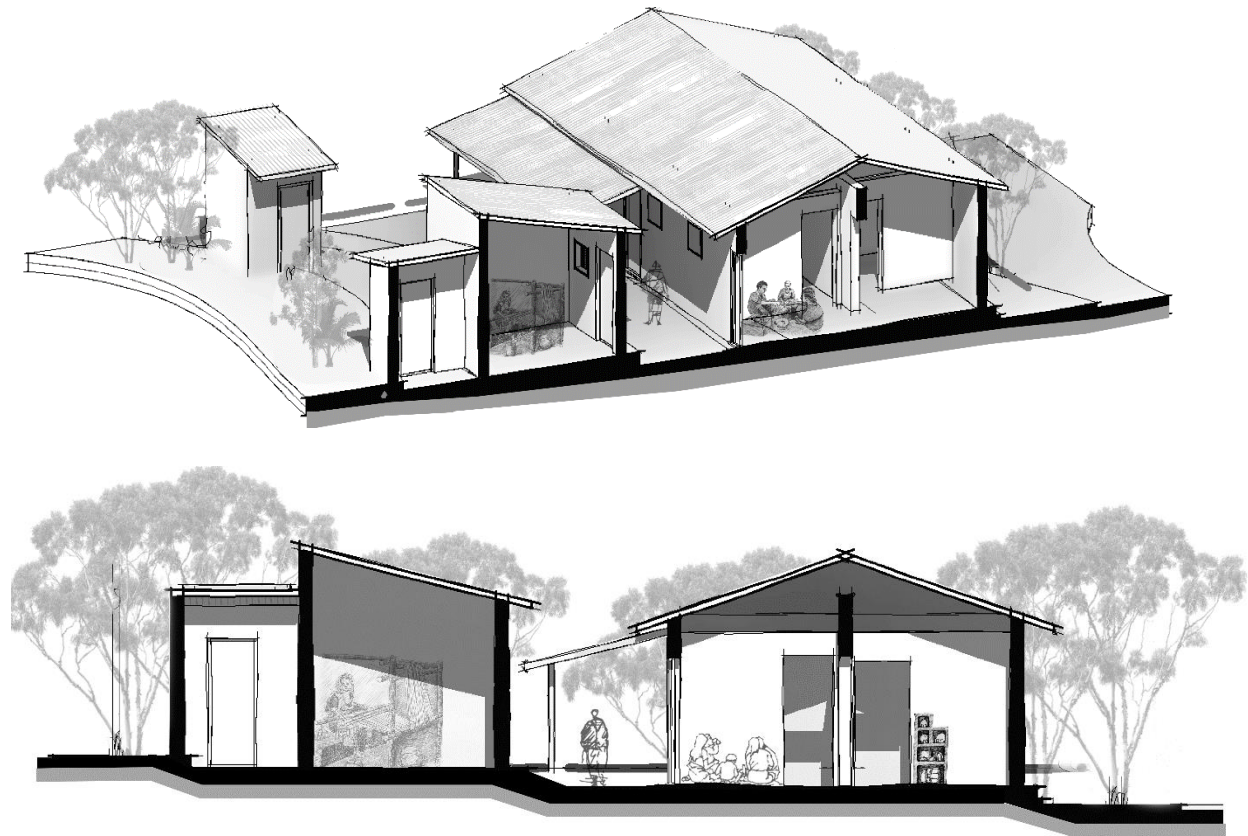
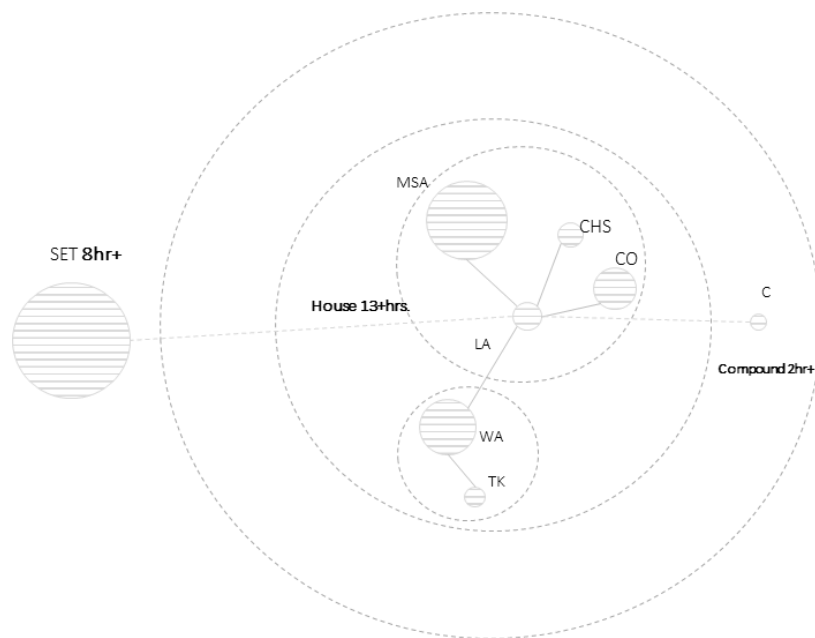


Figure 4.85. W/ro Birtukan Kibiret's house section.

Furniture's in each room:

Fig. 4.86 below shows the space used by W/ro Birtukan Kibiret's family at settlement, compound, and house levels. The interview was conducted with one family member within 24 hours. The family spent 66.66 % of their time in the house and 33.34% outside of the compound.



House

MAS - Master sleeping area

CHS- Children sleeping area

LA- Living area

CR- Corridor

CA- Cattle area

ST- Storage area

CO- Cooking space

WA- Weaving area

Compound

CCO- Compound cooking area

FB- Fore and back yard

VA – Vegetation

TO- Toilet

Settlement

SET- community work,
service, way to work, others

Figure 4.86. J graph W/ro Birtukan Kibiret's house.

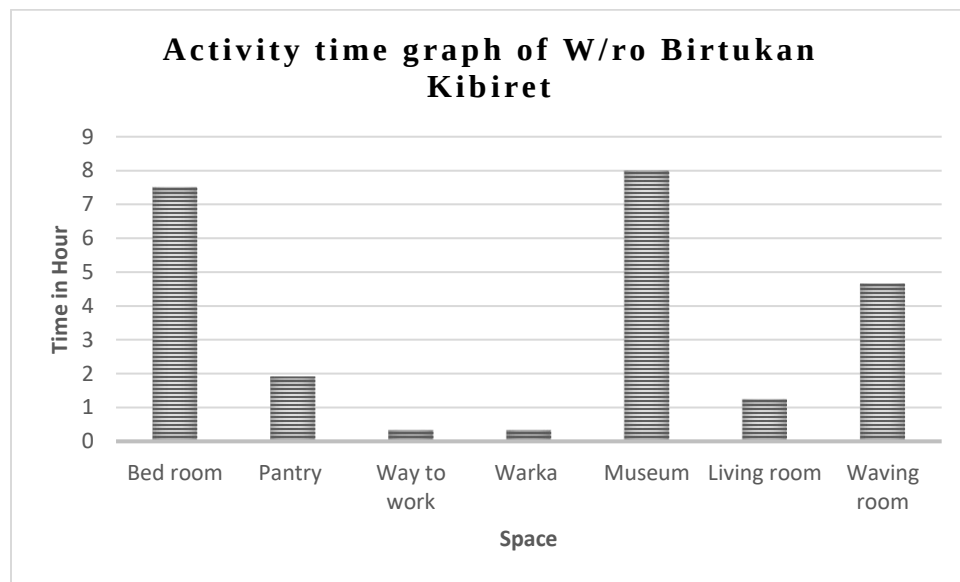


Figure 4.87. Activity time graph of W/ro Birtukan Kibiret's family.

4.14.6 W/ro Fenita Getasew's Compound

The life story of Wro Fenita Getasew: The life story of Fenita Getasew



W/ro Fenita Getasew was born in 1976 E.c at a nearby place called Sinko Medihaniyalm, which is in Woji Amba Kebele a 30-minute walk from Awra Amba. Her parents are the founder of the Awra Amba community. When she is nine years old, she went to Finoteselam a town located in West Gojjam 386.3km from Addis Ababa her father is lives there. After staying for 10 years at Finoteselam. When the Awra Amba community journey to Southern Ethiopia Bonga she meets them at Finoteselam. After staying for 5 years with the community in Bonga in October 1985 E.c she went back to Awra Amba.

Figure 4.88. W/ro Fenita Getasew's family.

W/ro Fenita married Ato Selamu Zewdu. she has mothered five children, two sons, and the rest of her daughters, all of whom live with her. W/ro Fenita's eldest son Yibelital Selamu, who is 18 years old and is in grade 12th studied at Adissra'ey community school. The second eldest son Abayinew Selamu, who is 16 years old, and is in grade 11th studied at Adissra'ey the community school. The young children, Tafira (13 years old), Hiywet (11 years old), and Amelework (5 years old) are students of 7th, 4th, and Kindergarten grades respectively at the school built by the community.

W/ro Fenita Getasew's formal educational background is only attended class until the 8th grade. She became a cooperative member Awra Amba community in 1984. She serves the community in different works previously by farming, now she works on selling clothes manufactured by the community. To increase her income source, she works on weaving in her home. she buys the raw material for weaving from the community shop. Her annual income in 2012 E.c from the community finance allocation for each cooperative member was 13,000 birrs, and from a private business that is weaving in her home when she works hard, she gets an additional 17,000birr. W/ro Fenita's total annual income was 30,000 Birr.

The water source is located in the compound when there is no water, they bring it to form the community groundwater pump which is located at the center of the community next to the Warka tree taking a 15minute walk. For washing cloth, they go to the Ginde river which takes a 10minute walk. Health and other service facilities were located inside the community. The health post took about 15 minutes of walking. Their burial ceremony took place in Quarqe South West direction next to the community Adiss Ra'ey secondary school taking 30 minutes to walk. Both Awra Amba and the neighborhood Muslim community use this common land for the burial ceremony. W/ro Fenita's working space the community computer center is located at the center of the community taking 5 minutes to walk from home.

The life story of W/ro Fenita's husband Ato Selamu Zewdu

Ato Selamu Zewdu is 64years old, He was born in Adiszemen 32.4km which is a 6-hour 34min walk from Awra Amba, and he is the founder of the community. He attended primary school at Abbila primary school until 8th grade. He is working as a kinder garden teacher. He gets sick with Diabetes ¹¹ . His body exercises every day to recover.

11 Diabetes- is a disease that occurs when your blood glucose, also called blood sugar, is too high. Blood glucose is your main source of energy and comes from the food you eat. Insulin, a hormone made by the pancreas, helps glucose from food get into your cells to be used for energy. Source <https://www.niddk.nih.gov/health-information/diabetes/overview/>.

The Compound

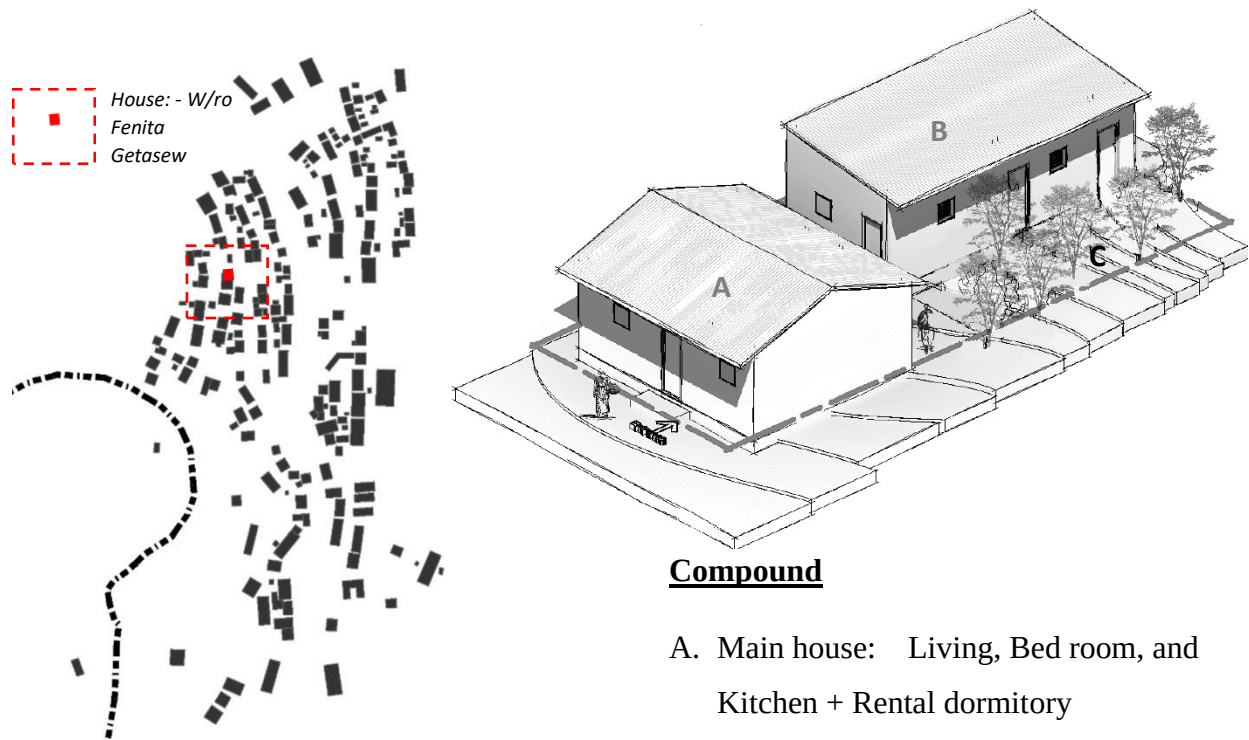


Figure 4.89. W/ro Fenita Getasew's compound.

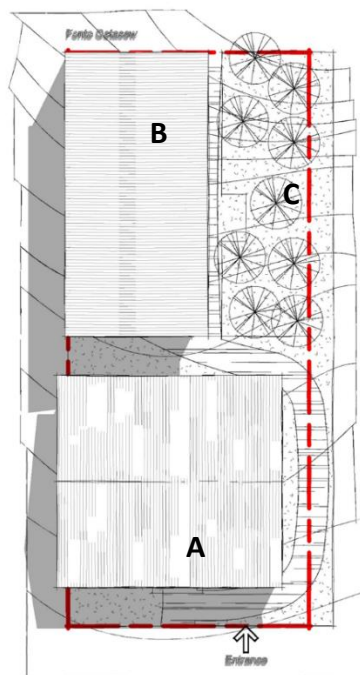


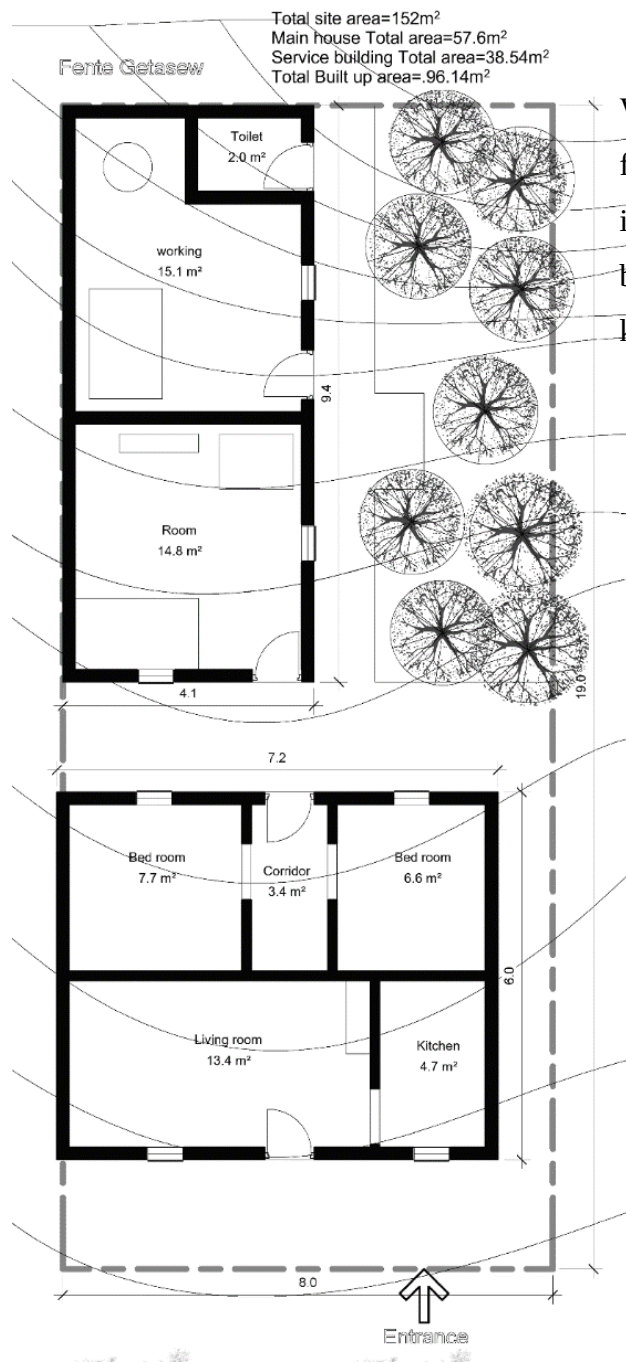
Figure 4.90. W/ro Fenita Getasew's compound plan.

W/ro Fenita Getasew's get the land from the housing committee. The compound is located at the very steeped slop at the North West periphery of the Awra Amba settlement, near the community water tanker. The roads taking into the house are narrow unpaved steep footpath and need proper repair.

The compound is rectangular form. It is more of an urban form parcel and the total compound area is 152 m² with 19x8meters in size.

The house was constructed on the Eastern boundary of the compound this was done for the reasons to adapt to the steeped slop. W/ro Fenita's compound has a central arrangement row house. Other elements in the compound are front yard, back yard, traditional kitchen, traditional and modern weaving room, store, and toilet.

The house



W/ro Fenita's house is a row house. The total footprint of the main house is 43.2m². Which includes a 13.4m² living room, 7.7m² master bedroom, 6.6m² children bedroom, 4.7m² kitchen, and 3.4m² corridor.

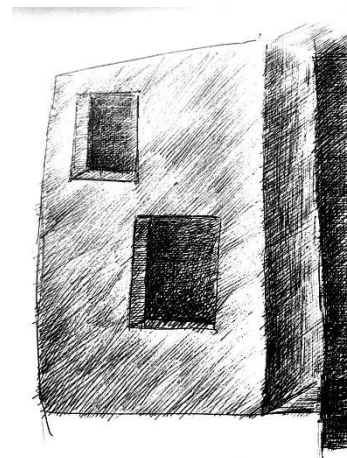
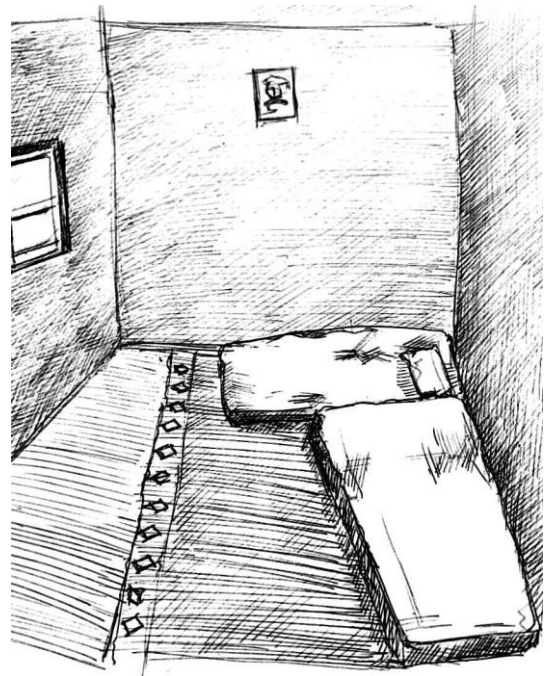


Figure 4.91. W/ro Fenita Getasew's house site floor plan.

The Front and Back Yard:

The front yard

W/ro Fenita's compound has a front yard. The front yard of the compound is on the lower level of the compound cover with a corrugated iron sheet. The area of the front yard is 16m². In the front yard, daily activities like socializing, playing, clothes drying, spice drying are taking place, and plant vegetables during the rainy season.

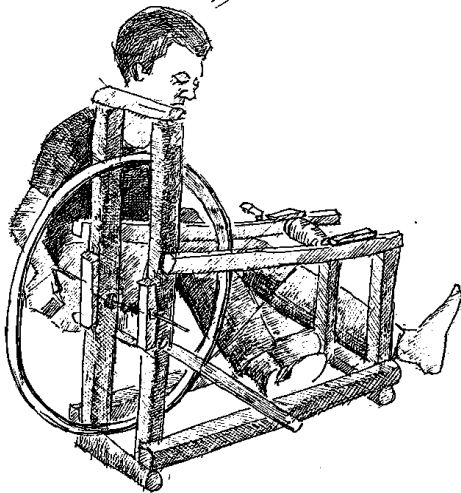
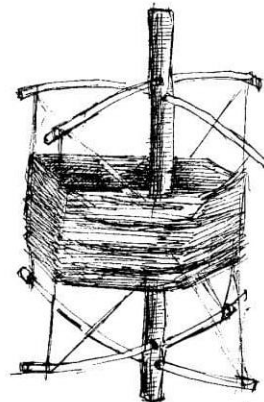


Figure 4.92. W/ro Fenita Getasew's compound front and back yard activity.

The backyard

The back-yard space is on the higher points of the clop which is tough for movement. The total area of the backyard is 52.7 m², which is used to plant vegetation. The backyard space can be directly accessed from the main house and the traditional kitchen, traditional modern weaving, and the toilet. The waste management is local "madea" which is excavating the 50cm diameter hole within 1m height fill with gravel to clear the west.



Material and construction technique:

The houses are constructed from wood and mud for the wall, masonry floors, and corrugated iron sheet roofs. The walls both in the interior and exterior act as load-bearing for the support of the roof trusses. Other than that, there are no columns in the house. The walls have 20 cm thickness the woods act as structural support and the mud plastering is used to cover the cracks of the wood and also it has an aesthetic value, above that it's either paint finish or paper finish.

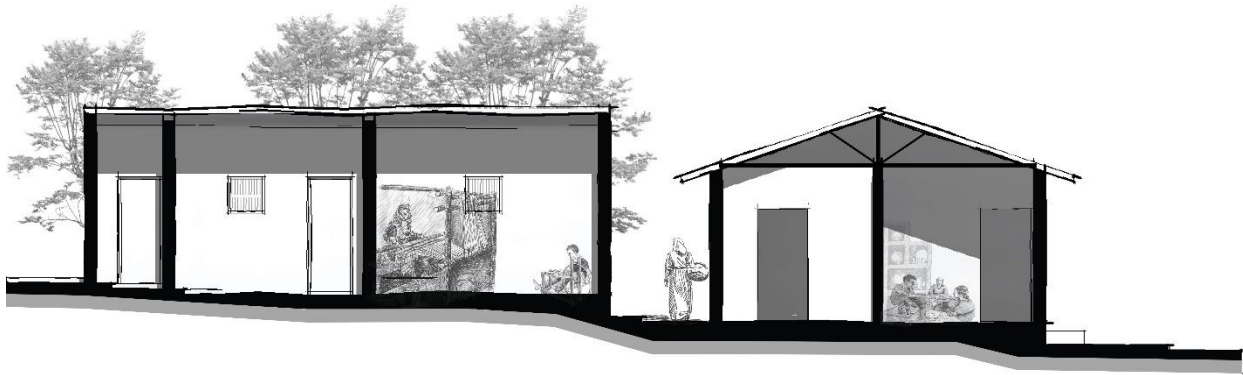


Figure 4.93. W/ro Fenita Getasew's house section.

Fig. 4.94 below shows the space used by W/ro Fenita Getasew's family at settlement, compound, and house levels. The interview was conducted with two family members within 48 hours. The family spent 64.58 % of their time within the house and 35.42% outside of the compound.

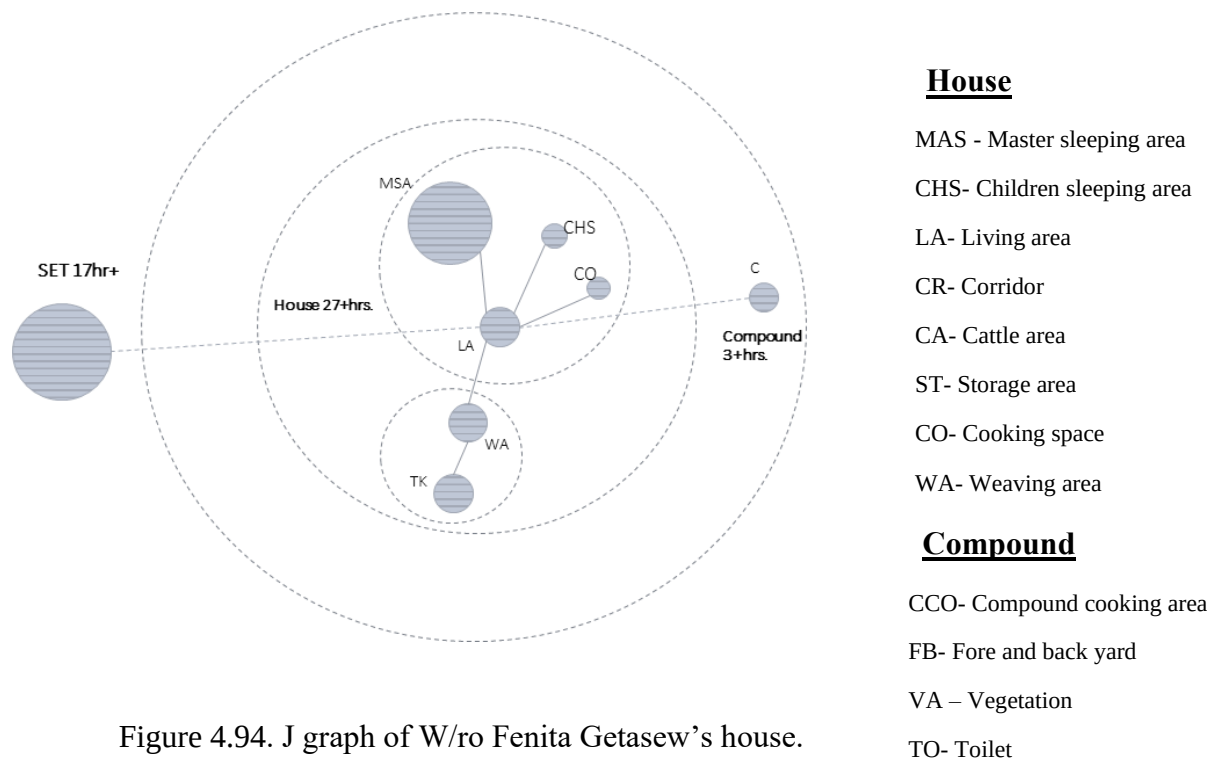


Figure 4.94. J graph of W/ro Fenita Getasew's house.

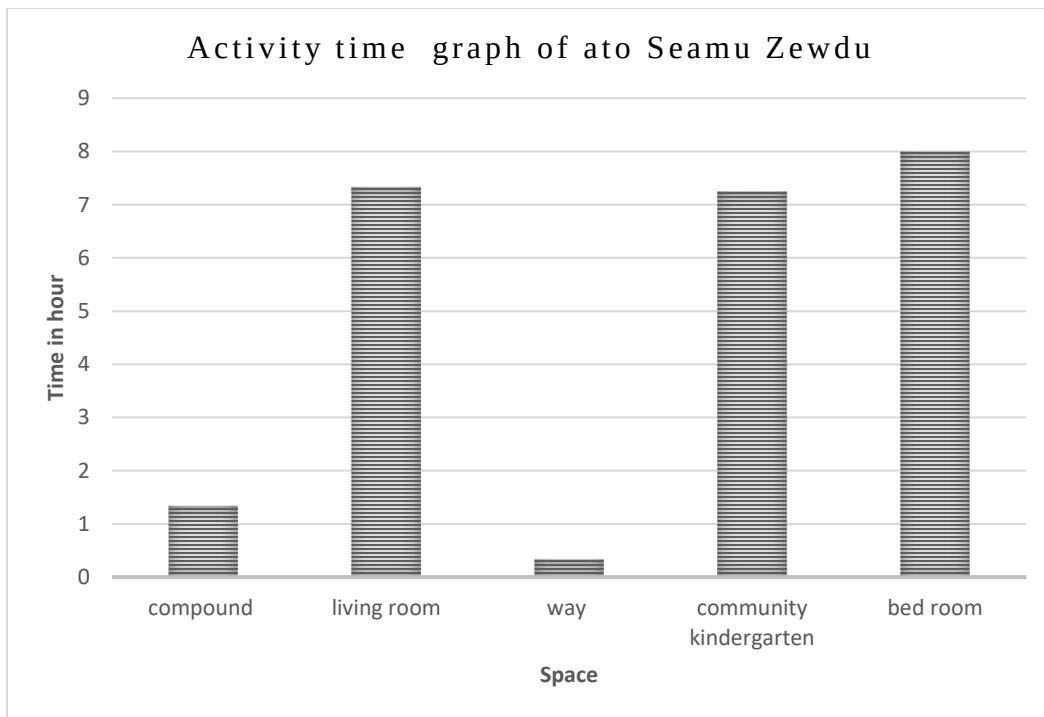
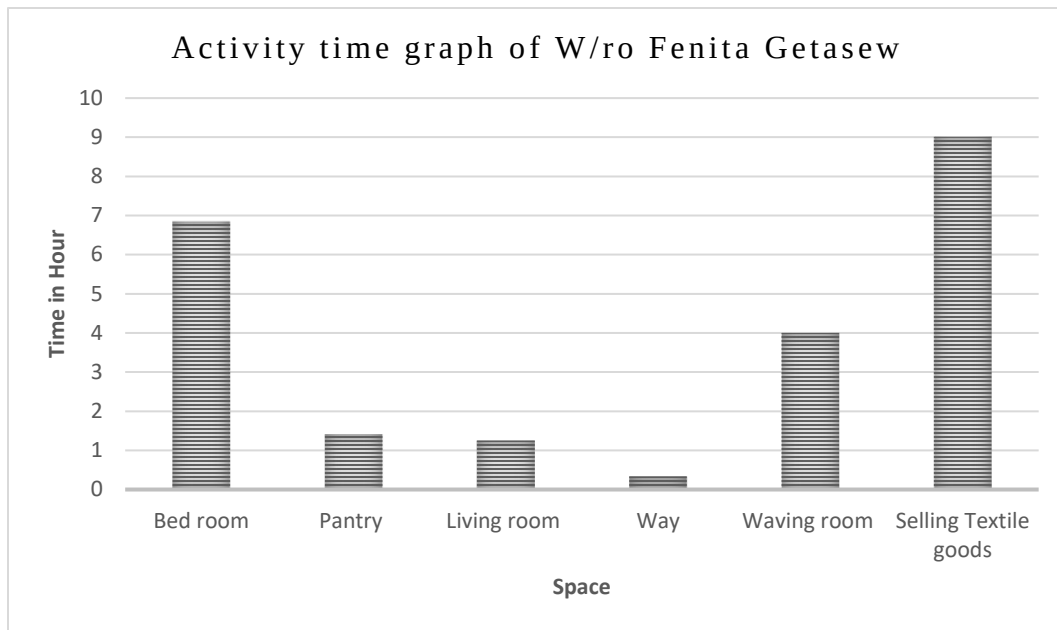


Figure 4.95. Activity time graph of W/ro Fenita Getasew's family.

4.14.7 Ato Belachew Nuru's Compound

The life story of Ato Belachew Nuru's: Life History, Activity, and services



Figure 4.96. Ato Belachew Nuru.

Ato Belachew Nuru is one of the residents of the Awra Amba community, born at a nearby place called Shinko Medahnaalem 1 hour walk from Awra Amba at the time of the interview, he was 50 years old. According to Ato Belachew, he has a faint memory of arriving at the territory of the community. His only memory is that his parents carried him on their shoulders as he was merely a child at that time. His parents accepted and approved the lifestyles of the Awra Amba community thus His life as a community member begins.

Before his divorce, Ato Belachew has fathered five children one daughter and the rest sons, all of whom live with their mother except for his eldest son Muluneh Belachew, who is 32 years old and

lives in another region working for “wuha limat”. Ato Belachew’s second eldest daughter who is 20 years old, Alemzuriash Belachew lives within the community and works at the community café. The rest young children, Huneligne (17 years old), Eshetu (10 years old), and Bereket (9 years old) are students of 11th, 4th, and 3rd grade respectively at the school built by the community.

Ato Belachew’s formal educational background is surprising considering we found him during his duties at the local clinic. He says he only attended class until the 8th grade, but he is seasoned in practical experiences. Areas he has worked in his life include farming which he learned from his family and the military experience that exposed him to the health sector as a laboratory technician makes him a humble and disciplined gentleman. His military background shows in his appearance as he is dressed neatly and also spoke with clarity and calmness. His responsibilities in the army before he deserted, were as a laboratory technician but due to his eyes’ vision decline in sharpness, he says he is not as involved as before.

In his primes Ato Belachew was recruited for mandatory military service, the year was 1978 and he stayed in the military for 2 years in Aseb, Eretria. Since the cause that took him, the military camp was not what he believed, he defected from the army and surrendered to the opposite side which was the “EPRDF” army. Since 1981 he traveled the deserts to reach the capital. After the “EPRDF” army overthrew the Derge regime in 1999 E.c he decided to rejoin his family in Awra Amba. As he did so he took the route via Gambela. When asked why he moved back from city life to a life that was in a typical rural life at that time, Ato Belachew answered

“The work was exhausting and it didn’t settle well in my consciousness, that is why I deserted the army. Also, I had started a family and wanted to rejoin them and lead a simple life.”

He states that what attracted him in the first place and what kept him in the community is their ideology which is acceptable to his conscience. Even during the times while he was away from the community he longed for his return and dreamed of living a simple life. Ato Belchew says that “he doesn’t think he can live anywhere but in Awra Amba as he finds the life elsewhere not conforming to his ideology of how life should be.

“The decisive factor is your conscious, and distance doesn’t keep you either, the main thing is the heart-to-heart connection you have with your community.”

As Ato Belachew describes his living condition at the current time, anyone could read the gratitude and satisfaction in his face. When he reunited with his family after the revolution, he was given his parents' home, but due to the road construction, he was forced to be relocated. He says his house was around the center of the community before the construction of the main road that intersects the settlement. During the time he lost his house he stayed at the clinic for a year, but the magnanimous leader of the community saw his humble gestures toward the development of infrastructure, he was allowed to pick a place for settlement which is an exceptional privilege in the community. Commonly, the committee responsible for the allocation of members assigns a plot of land, and the residents have no say in the location of their settlements. But since the circumstances of Ato Belachew's displacement is for the betterment of the community, he was asked to pick a location. His choice was a location that is on the hills of the boundaries of the settlement, he justifies his choice by saying "I always longed for such a land, it is on a higher level so it gets a good breath of fresh air, and it is spacious for my cow, bees and small farming activities he attends in my spare time. And also, the secluded nature of the location was a plus since I like the silence." He says he concluded easily because he wished in his heart that the committee would give him such a place as a replacement, and surely the leader of the community took into account his patience which paid off in the end. Before his settlement, the place was a farming ground, but now he says he is blessed with neighbors all around. Now it has been 4 years since he moved to his new house and started living his life anew.

Even though Ato Belachew is satisfied with his conditions, he puts his opinion on the condition of the community settlement as "it is small land with many people and there are threats from the nearby villages that do not accept their way of living so often there is no sleeping as people need to guard the community". Aside from the small area and now rare conflicts with their neighboring settlements he sees no problem with the community settlement.

Perception

The activities are consistent weekly throughout the year due to the lifestyle of the Awra Amba people. Since they don't have as much holiday as the rest of the county, times invested in the celebration are dedicated to working as a community and individual.

The Compound

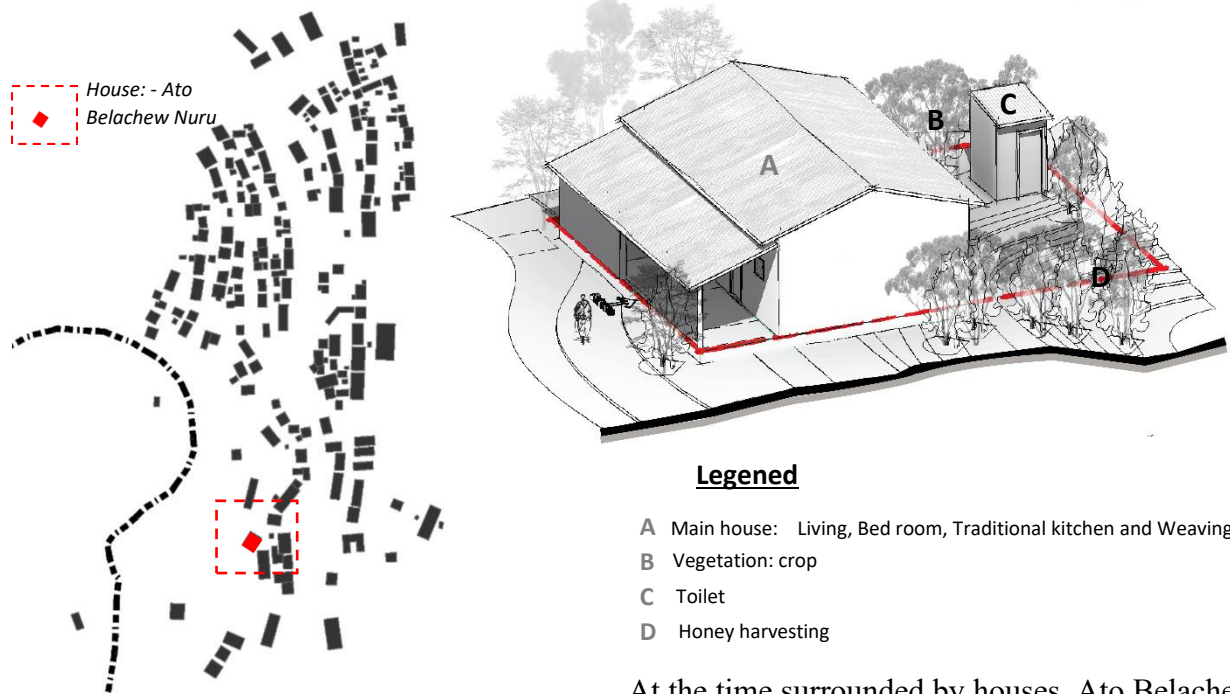


Figure 4.97. Ato Belachew Nuru's compound.

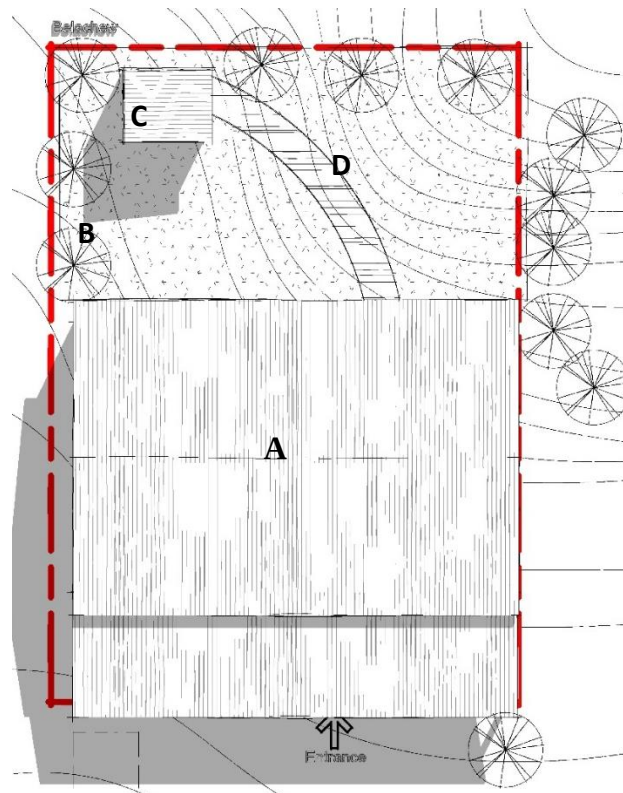


Figure 4.98. Ato Belachew Nuru's site plan.

At the time surrounded by houses, Ato Belachew's house is at the edge of the community compound. He selected the site himself unlike the custom of plot allocation for the community members and until recent years he didn't have any neighbors around. As he selected the site considering his desires it is higher on the hill and has an open space behind the compound to allow his habit of beekeeping and farming. The area which now the house is built used to be a farming ground, but as the community expands the area is claimed as a residence.

The compound accommodates a modest front yard, the main house, a back yard which is used for farming and beekeeping ground, and also a toilet. He said that he decided the arrangement of the house on the plot chosen by himself.

The house

The house on the site is a detached house and Ato Belachew said that the house he built is different from the usual trend in Awra Amba. He claims he saw a design when visiting a relative in a nearby town called Woji-Arba Amba and liked the layout which was very different from the houses in Awra Amba. As a result, the building rests closer to the front boundary leaving a bigger space for the backyard.

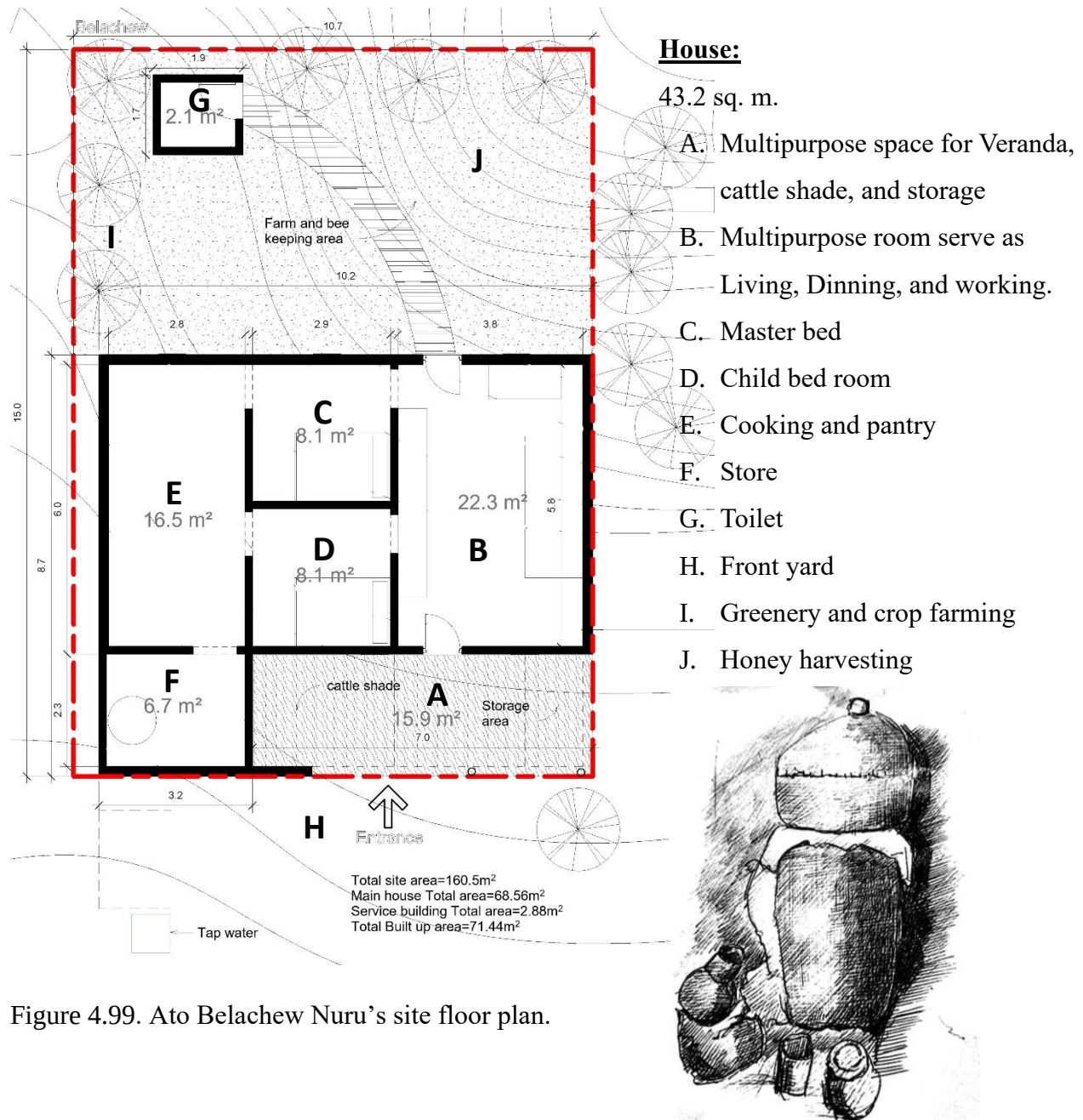


Figure 4.99. Ato Belachew Nuru's site floor plan.

The Front and Back Yard:

The Front Yard

Unlike most of the Awra Amba houses, Ato Belachew's house has a front verandah that is the main entrance for the house. The verandah has a corner space where his cow stays along with its food storage. This decision allowed him to keep the dwelling area clear from animals.

The Back Yard

Similar to the front yard Ato Belachew decided to make the back yard a place where he can conduct his habits which are farming and beekeeping. The layout of the building also contributes by making the backyard directly accessible from the living area.



Figure 4.100. Ato Belachew Nuru's compound honey harvesting.



Figure 4.101. Ato Belachew Nuru's front elevation.

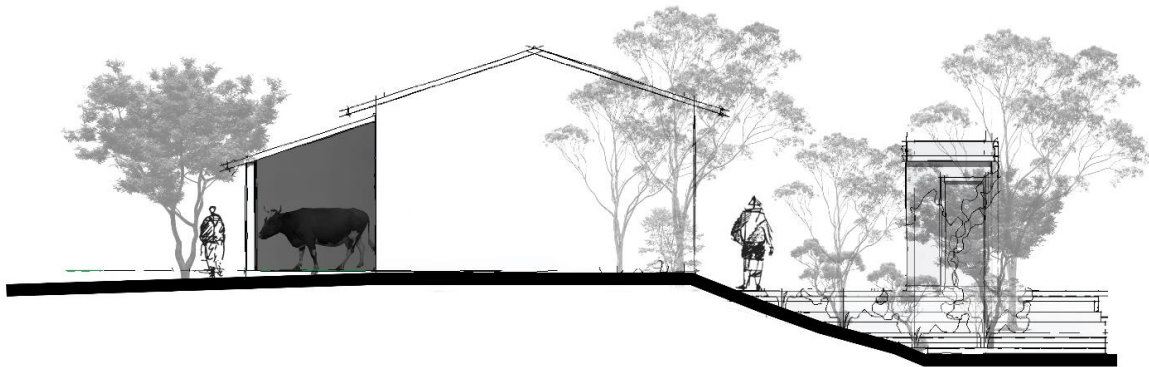


Figure 4.102. Ato Belachew Nuru's right-side elevation.

Material and construction technique:

The construction materials used for the house are the same as the rest of the village. Most of the construction material is sourced locally, the wood required was provided by the committee with a payment plan arranged. Stone was found in the area and now in decline abundance. Other materials such as corrugated sheets were bought and transported from the town of Debire Tabor.

When asked about the spaces in the house, Ato Belachew said that he likes the house, and his favorite space to spend time in the living room because it's wide, and the verandah is where he likes to seat due to the view and wind breath. During his break time, Ato Belachew avoids noise and his house and the site location provide a good opportunity to have a calming atmosphere.

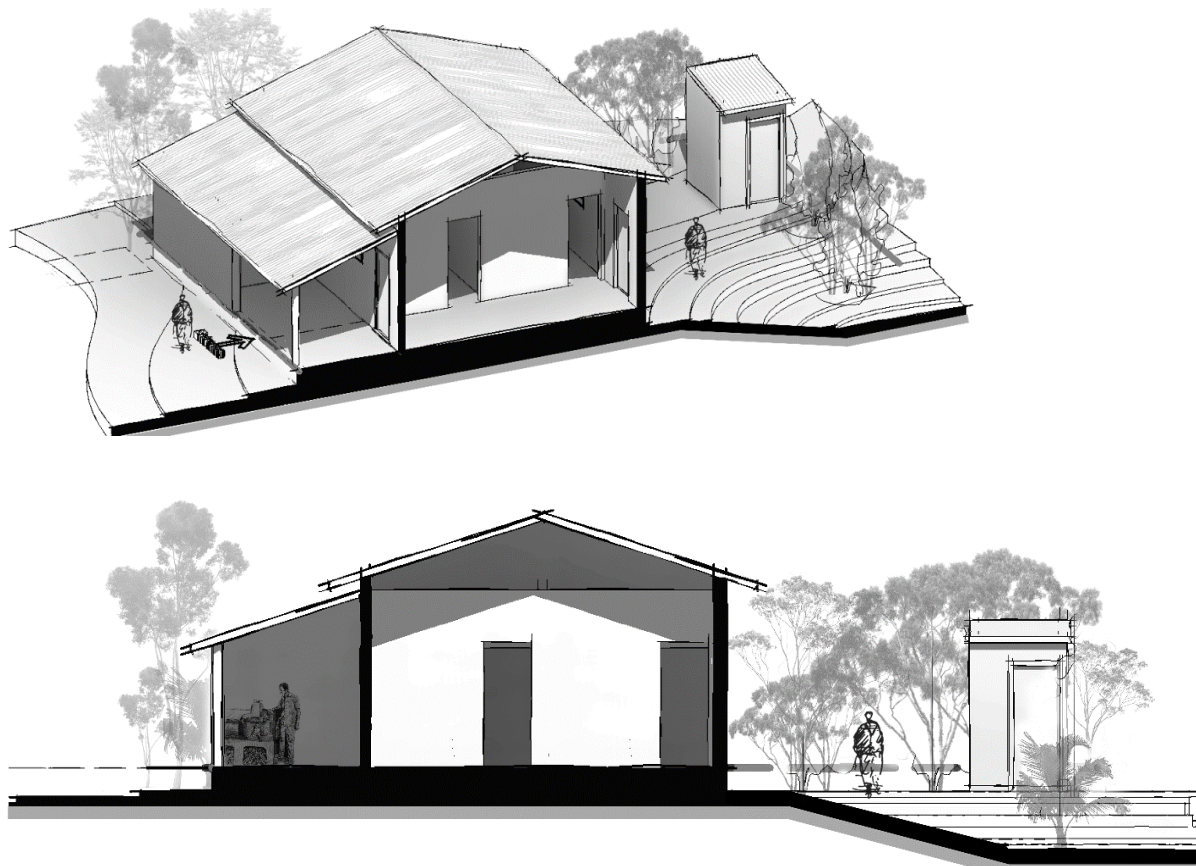


Figure 4.103. Ato Belachew Nuru's house section.

Fig.4.104 below shows the space used by Ato Belachew Nuru's family at settlement, compound, and house levels. The interview was conducted with one family member within 24 hours. The family spent 50 % of their time within the house and 50% outside of the compound.

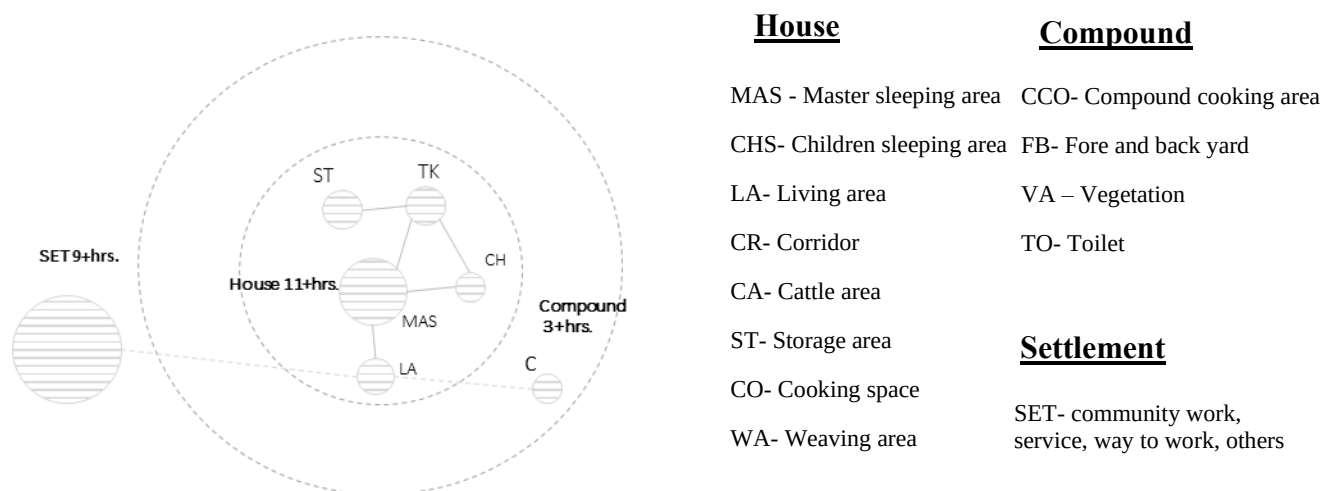


Figure 4.104. J graph of Ato Belachew Nuru's house.

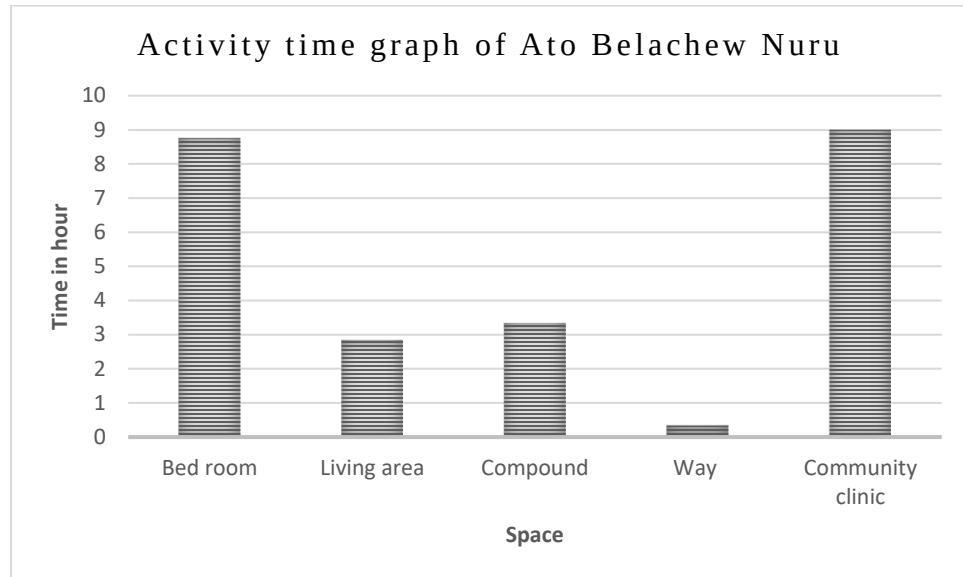


Figure 4.105. Activity Time graph of Ato Belachew Nuru's family.

4.15 Homestead Analysis

4.15.1 Origin of the member

The majority of the founders were originally born, grew up, and lived in Awra Amba and around Woji-Arba-Amba kebele. The Awra Amba population comes mainly from different peasant communities of the Amhara region, a nearby place within a radius of 2.21km-63.58km. Some of the places are Woji, Sinko Medihaniyalm, Amide Ber, Delidalit hamlet at Diba Kebele, Addis Zemen, Imfranz (Guzara kebele), and Gayint. Which is 50min, 2hr 50min, 6hr 23min, 12hr 49min, and 18hr 17min walk from Awra Amba sequentially. It is from various cultural backgrounds, although the majority are similar religions of Muslim origin and Amhara ethnicity, which have the potential to understand each other and implement the principles of the community. According to Zumra, “people want to join, but there is not enough land; some community members also live in other locations.”

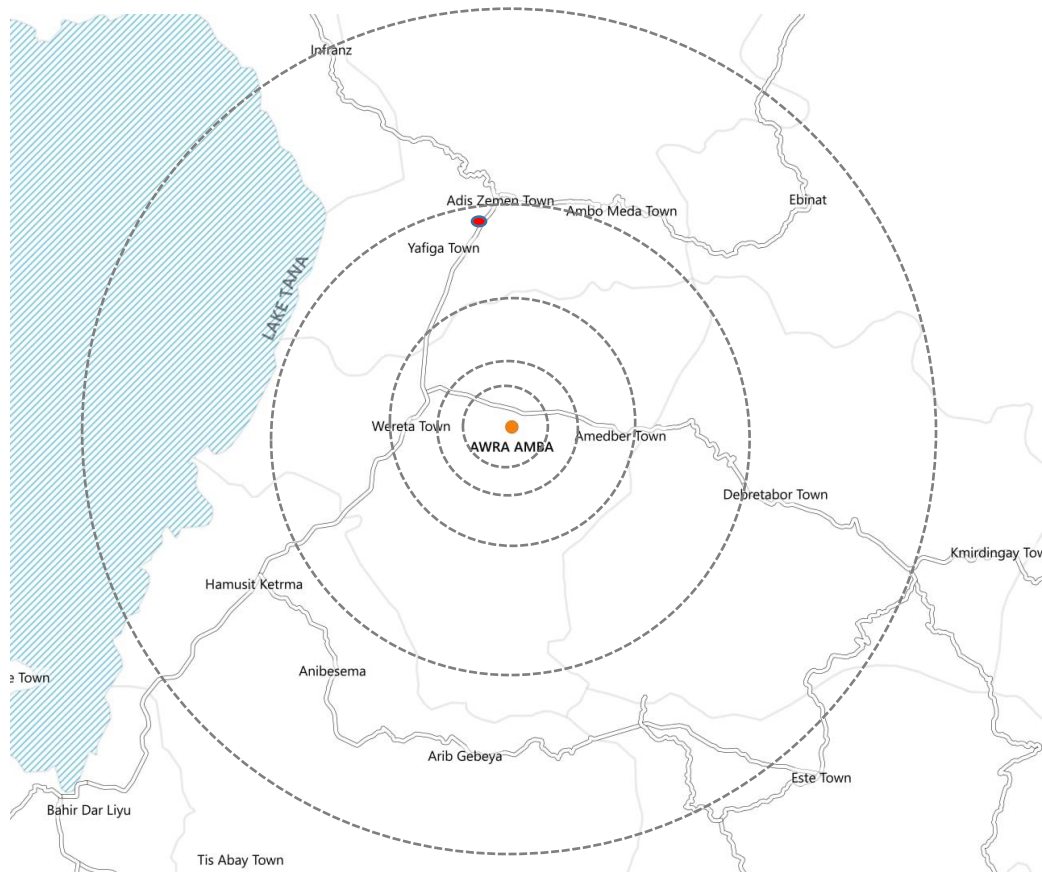


Figure 4.106. Origin of the member.

Some of the members come from a similar community and are accepted and approve of the lifestyles of the **Alahim religion**. Ato Meniber Ahmed narrates his life history as follows:

“I grew up in the community of Alahim, found in Amide Ber, Delidalit, at Diba Kebele. This religious activity originated with Muslims, but there is a major difference: there is no salat or fasting in Alahim. They are a small community, with no more than 15 households. Aba Zumira was also a member of the community before he founded the Awra Amba community. He left Alahim because he wanted to find his community; for me, they have the same religious ideology. But in Awra Amba, the respect of women, education, and respect of people each other forced me to join the community in 2005 E.c.”

Most of the residents are happy in Awra Amba by applying the principles of the community. Ato Legesse Fenite narrates his life history as follows:

“Perception of space I was grown up, playing in Awra Amba. Everything I did when I was a child is in my mind. I am very happy to live in this community. I can’t live with the community. When I leave the community for a day or two, I will feel depression. I don’t want to live next to the main road; the sound disturbs me.”

Some of the residents don’t think they can live anywhere but in Awra Amba, as they find life elsewhere not conforming to the ideology of how life should be.

“The decisive factor is your consciousness, and distance doesn’t keep you either; the main thing is the heart-to-heart connection you have with your community.” Ato Belchew

There are two types of membership in Awra Amba: community and cooperative. Both of them apply the principle of the community everywhere. The only difference is that community members serve the community from 2 pm-6 pm and 7 pm-11 pm, 8hr/24hr, 33.33% of the day, based on their abilities allocated by the committees.

“I used to work in the community weaving; now I work as a dairy farmer because I get sick of my eyes from the dust that comes from the cotton during weaving, starting six years early.” Ato Nuromer Hassen

Even though they have experienced a job in agriculture and weaving since childhood, which is inherited from their elders, some of them have a background in sales and the military. The

community member is flexible enough to work on the task assigned by the committee. Most of them work on weaving at the community textile factory, the remaining on a small-scale oil factory, taking care of the elderly at the eldercare center, poultry farm, a laboratory technician at a community clinic, working in the kitchen of the community café, human resource management of the community, shop, urban agriculture, guiding tourists who visit Awra Amba, selling clothing manufactured by the community, milling, ICT center, waiter at the café, preparing spice (Balitina), feeding elders at the community eldercare center, etc.

Even though there is no gender specification for the work, the man especially works on guarding against the neighborhood enemy. Nowadays, their founder and leader still need round-the-clock protection by an armed guard due to decades of hatred and death threats. During the night, the village is guarded by a man by rotation in four guardhouses, with three programs: 12 pm-4 pm, 4 pm-8 am and 8 am-12 am.

“It is small land with many people, and there are threats from the nearby villages that do not accept their way of life so often there is no sleeping as people need to guard the community.” Ato Belachew

Almost all members of the community work at home to increase income sources such as weaving, poultry, renting dorms, and honey harvesting. They buy the raw materials for weaving from the community shop. The annual income in 2012 E.c from the community finance allocation for each cooperative member was 13,000 birr, and from a private business, they get an additional 17,000-20000birr. The total annual income of each community member was 30,000 Birr.

The household's main energy source is electric power from EELPA (Ethiopian Electric Light and Power Authority). Most of the households have direct access to tap water; the rest of the community fetch at a water point (Bono wuha) pumping from groundwater, which is located at the center of the community next to the “Warka tree.” For washing clothes, they go to the “Ginde” river, which takes 15 minutes from the central “Warka tree.” Health and other service facilities were located inside the community. The health post took about 5 minutes of walking. Their burial ceremony took place in the “Quarqe” South-West direction, next to the community of Adiss Ra’ey secondary school, which took 30 minutes to walk. Both Awra Amba and the neighborhood Muslim community use this common land for the burial ceremony.

4.15.2 Compound land tenure

In the analysis of the compound study, the compound was inherited from the residential area allocating committee. Since anyone gets their property from the committee when they become a cooperative member, the committee allocates 150m² (10m*15m) of residential area to those who have no other residential area. But due to the member taking over the land without surveys, the compound size ranges from 142.4 m² to 248.5 m². Moreover, in Awra Amba, a wise use of the compound is observed. The compound is characterized by an urban-form regular polygon with a defined boundary and is fenced by shrubs and vegetation.

Even though mostly the housing allocation committee is choosing the site, there are also different mechanisms that are inherited from the family, by choice of the household, and through the loan system. For example,

Ato Meniber Ahmed acquires the land from the housing committee. The committee selects the block, and by lot system, he gets the corner plot from the committee.

Some of the members inherited from the family and are approved by the committee, and the others get the land of their own choice.

At the time, surrounded by houses, Ato Belachew's house was at the edge of the community compound. He selected the site himself, unlike the custom of plot allocation for community members, and until recent years, he didn't have any neighbors around. He selected the site considering his desires; it is higher on the hill and has an open space behind the compound to allow his habit of beekeeping and farming. The area in which the house is now built used to be a farming ground, but as the community expands, the area is claimed as a residence.

Most of the compound is accessed through a narrow average width of 1.3m of unpaved footpath, the linkage road in between the house, the front yard, and the backyard which has great potential for social interaction. and need proper repair. The front compound is accessed through the main road that crosses the settlement.



Legend

- Collector road
- Linkage road
- Main road

Figure 4.107. The man passes through the collector road of the settlement.



Figure 4.108. Access to w/ro Mulunesh's house: linkage road between the house.

4.15.3 Compound spatial elements

A. Fence

The perimeter of the compound is fenced with eucalyptus, trees, shrubs, and an eucalyptus base cover with shrubs with an average height of 1.9 meters. Most of the compound has a fence at the front and back yards of the compound. Access to the compound is based on household interest from the front yard or the side. fenced by shrubs and vegetation.

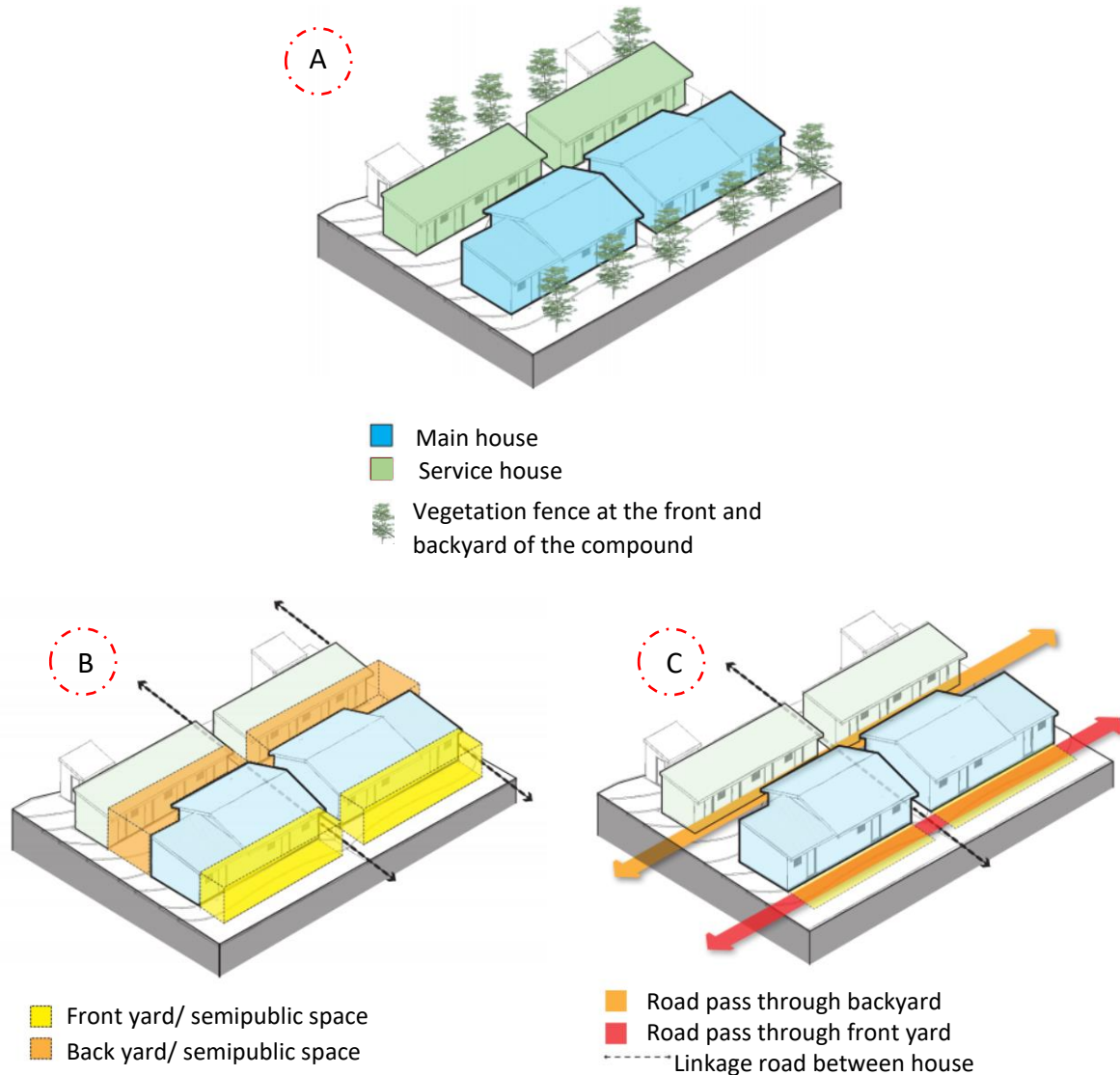


Figure 4.109. Fence in Awra Amba.

Picture A shows the vegetation fence in the front and backyard of the house, and pictures B and C show the access to the neighborhood compound, which shows there is no closed fence between neighbors. The spatial relation between the neighborhood compound is linear, and it also shows there is strong social interaction among the members of the community. Some of the households put a closed fence in every direction and changed the access to the compound at the back due to the student who came from the neighborhood community. W/ro Birtukan's said:

“I change the house entrance from the front yard to the backyard of the compound and make a fence in all directions because the student who came from a neighborhood community rents a dorm to study high school stolen goods.”.

B. Location of compounds

Most of the compound of Awra Amba is located at the top of the hill settlement, with very steep slop at the north-west periphery around the “Warka tree.” The others are located on the flat land of the community in the north-east direction of the Awra Amba settlement, next to the dairy farming. The other is located on the lower level of the central settlement, near the community eldercare center and clinic. The other is located on the higher level of the south-west settlement, near the community meal and high school.

Awra Amba _ Settlement Area

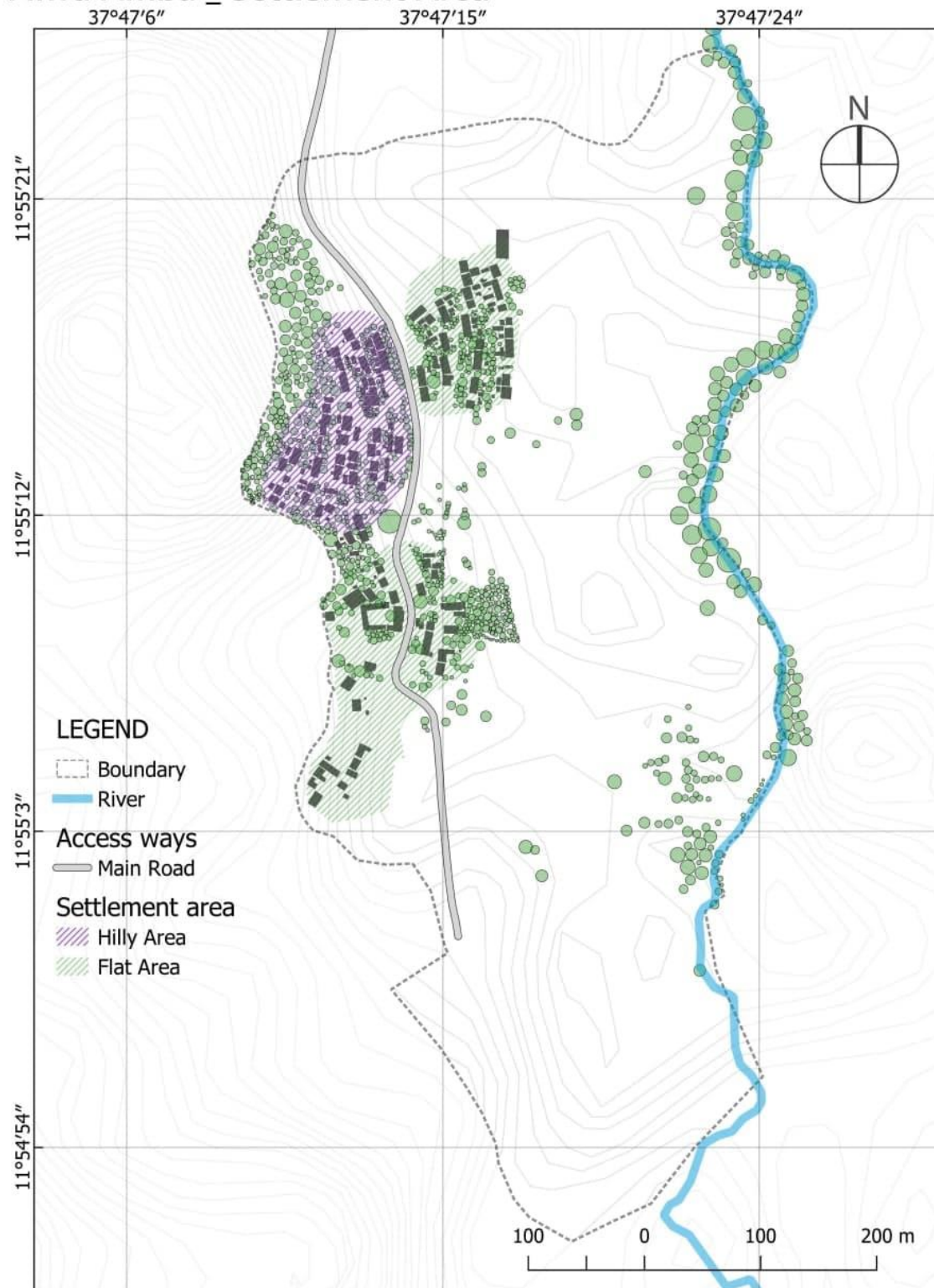


Figure 4.110. Compound location in Awra Amba settlement.

Awra Amba _ Activity Zone

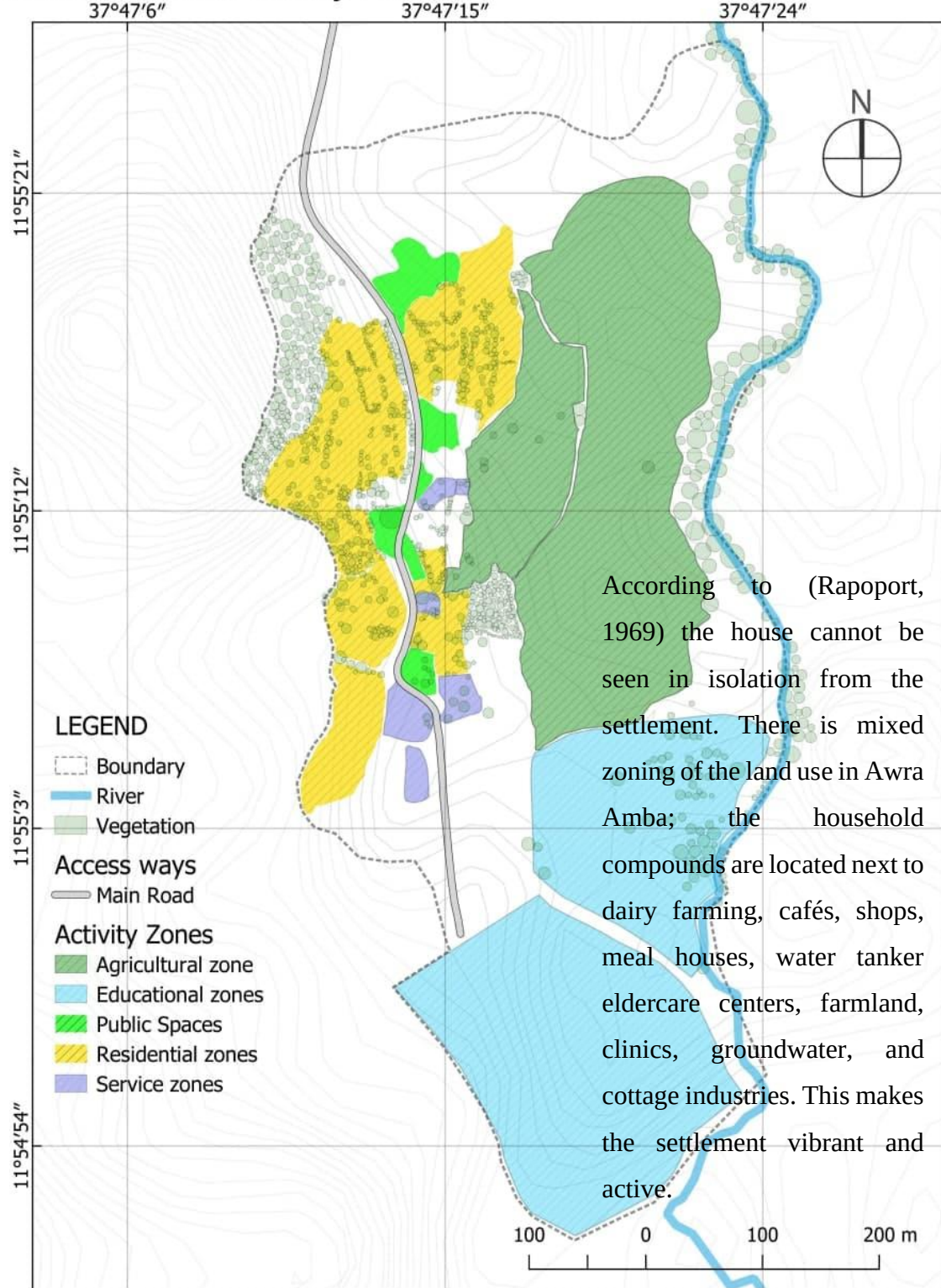


Figure 4.111. Activity zone in Awra Amba settlement.

C. Compound arrangement

Most dwellings are constructed at the boundary line of the neighbor to maximize the backyard space for activities such as traditional kitchen, fuel-saving stove weaving, and related activities such as dry spice and cloth, children's playground, firewood storage, honeycomb, vegetation area, etc. 72.22% of the Awra Amba compound has more than two huts in linear, grid, and clustered arrangements. The remaining 27.78% are two huts. All compounds have a private toilet and a traditional kitchen that is separate from the main house. Based on the collected and analyzed data, the compound of Awra Amba interaction of the main house with the front yard, back yard, and service huts can be categorized into five main groups:



Figure 4.112. Types of Awra Amba compound arrangement.

1. The compound has a minimum front yard, a maximum back yard, and one service hut at the back of the main house.
2. The compound has a minimum front yard, a maximum back yard, and two service huts at the back of the main house.
3. The compound in the front yard is located between the service house and the main house.
4. The compound in the back yard is located between the service house and the main house.
5. The compound, which has an L shape main house, doesn't have a back yard or a maximum front yard.

The possible factors to determine the layout of the Awra Amba community compound are topography, economy, need for privacy, social interaction, and basic needs.

Basic need

Basic needs are also one of the possible factors for compound arrangements. Members of the community have different activities that alter the compound arrangement, such as honey harvesting, vegetation, rental dormitories, poultry, etc. For example, Ato Menber Ahmed's compound was arranged to use the space efficiently. He decided on the arrangement of the house on the plot chosen by himself. This is illustrated as follows:

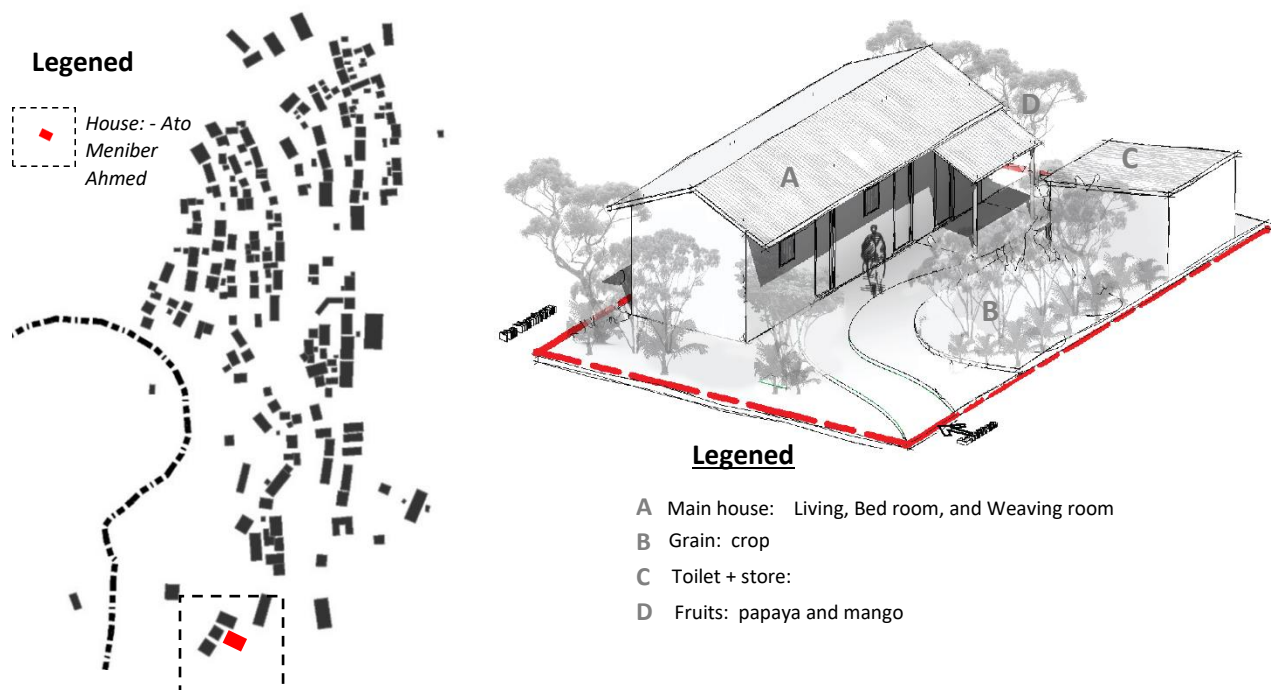


Figure 4.113. Ato Menber's compound.

“The house was constructed on the Southern boundary line this was done for two reasons the first one is to maximize the frontage space and to distribute the limited space of the compound for the formation of farmland in the front yard. The other reason is to preserve the land for future construction and to use the current house as a service.”

W/ro Melikenesh arrange the compound based on the interest to have a wide backyard for fruit and honey harvesting. She organizes service block weaving and a traditional kitchen in the front.

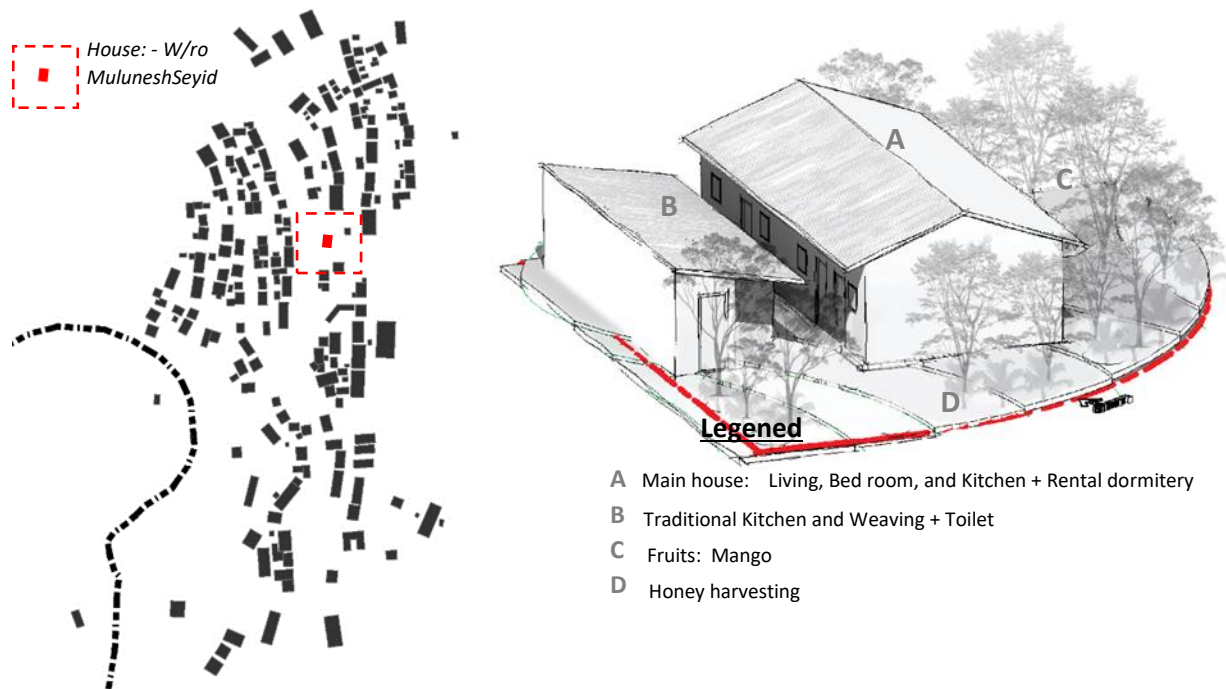


Figure 4.114. W/ro Mulunesh's compound.

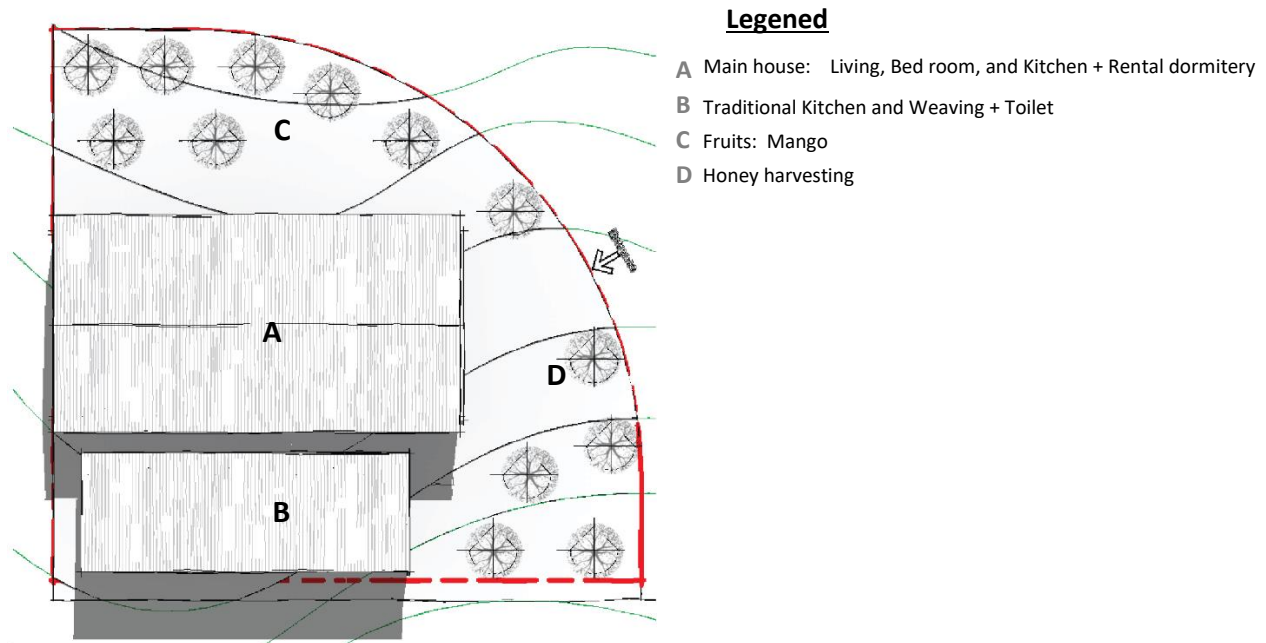


Figure 4.115. Basic need factor for compound layout at Awra Amba, (W/ro Mulunesh's house site plan).

Topography

The compound arrangement is modified to step because of topography. Based on what nature prepares the site, the community members organize it to enable them to satisfy their desires and needs.

"The house was constructed on the eastern boundary of the compound; this was done for the reasons of adapting to the steep slop." Ato Legesse Fenite

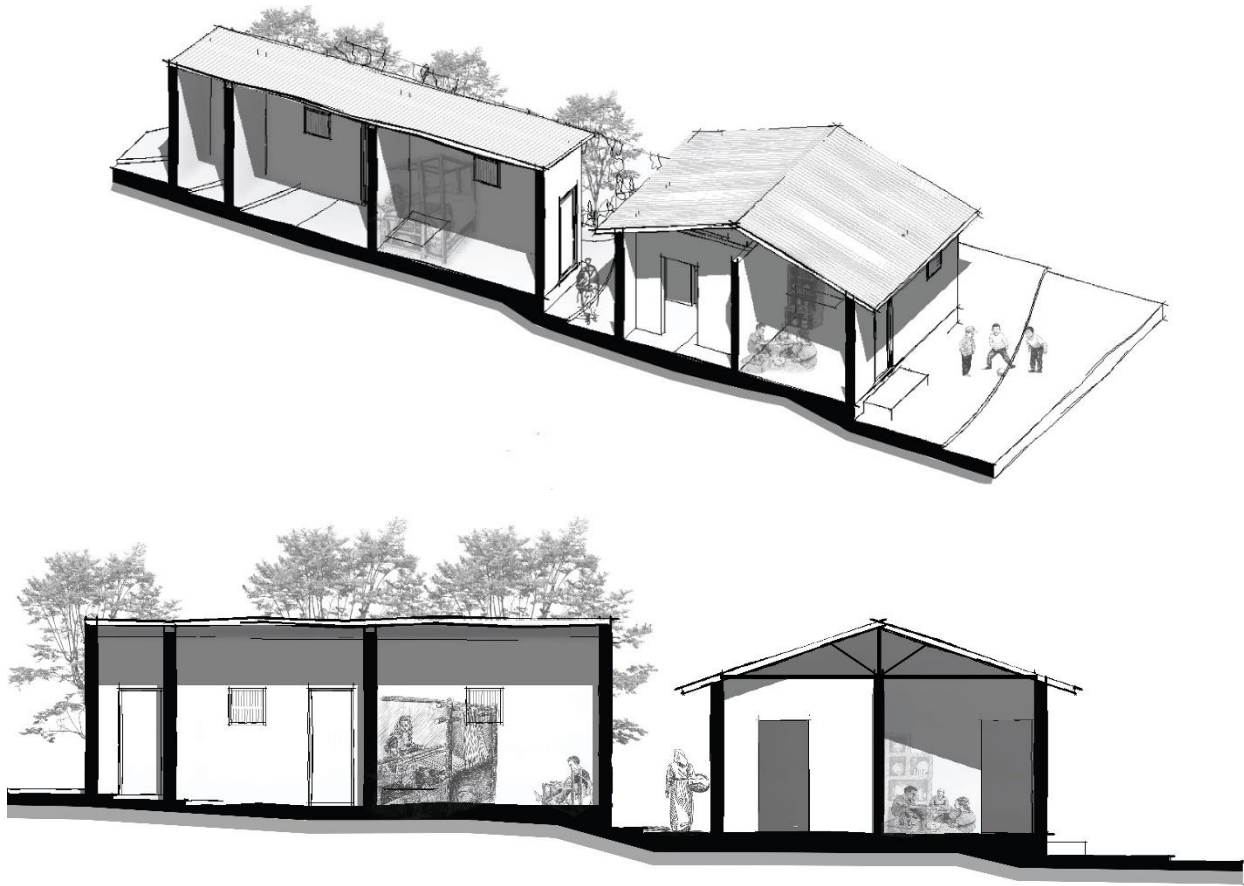


Figure 4.116. Topography factor on the layout of the compound at Awra Amba, (Ato Legesse Fenite house section).

Economy

According to (Rapoport, House Form Culture, 1969), economics has been widely used to explain settlement and building form, and its importance is indeed great. In an economy of scarcity, the need to survive and to use resources maximally is so great that these forces may be expected to wield tremendous power. In Awra Amba, there is a row house that shares the common wall, which minimizes the cost of the material attached to their house with the neighboring compound, which regulates the compound arrangement. Such as

“The row house was constructed on the eastern boundary of the compound; this was done for the reason of sharing the partition wall with W/ro Kedija’s house.” W/ro Tirusew.

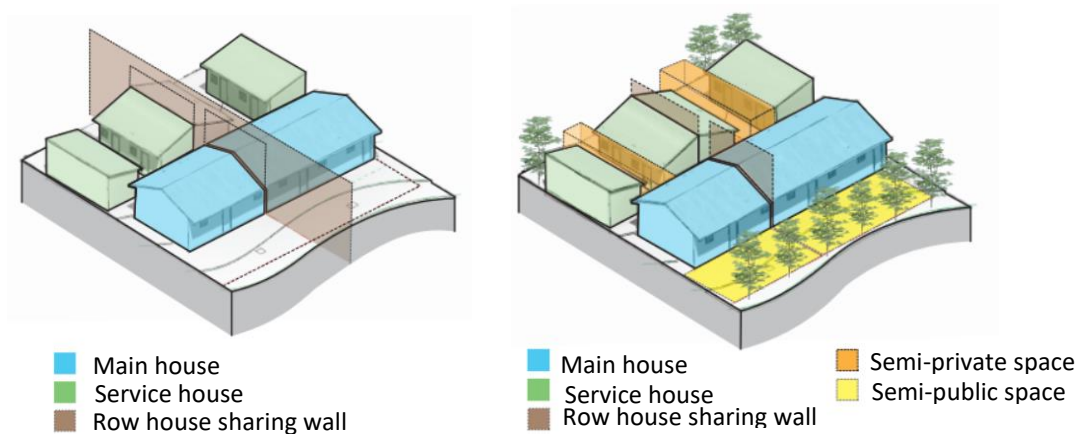


Figure 4.117. The economy factor for compound layout at Awra Amba, (W/ro Kidane and w/ro Tirusew row house).

Social interaction

According to (Rapoport, 1969, p. 69) people are social animals meeting others. The concern is where people meet, whether in the house, the city, the bath, or the street. In the case of the Awra Amba household, they want to share the front and back yards. Such as the arrangement of W/ro Nuromer and Ato Legesse to share the front yard and backyard.



Figure 4.118. Social interaction factor for compound layout at Awra Amba (sharing the front and backyard of W/ro Nuromer and Ato Legesse compound).

D. Transformation of the compound

The common elements of the compound are the main house, traditional kitchen, weaving, outdoor kitchen, vegetation, toilet, store, front yard, and back yard. Due to the school being built by the community, recently the community has been hosting students from the nearby villages to attend

the school, hence providing an opportunity to generate additional income for the families by renting rooms for the students.

W/ro. Yemisrach's family seems to realize this opportunity and has decided to rent two rooms on their property.

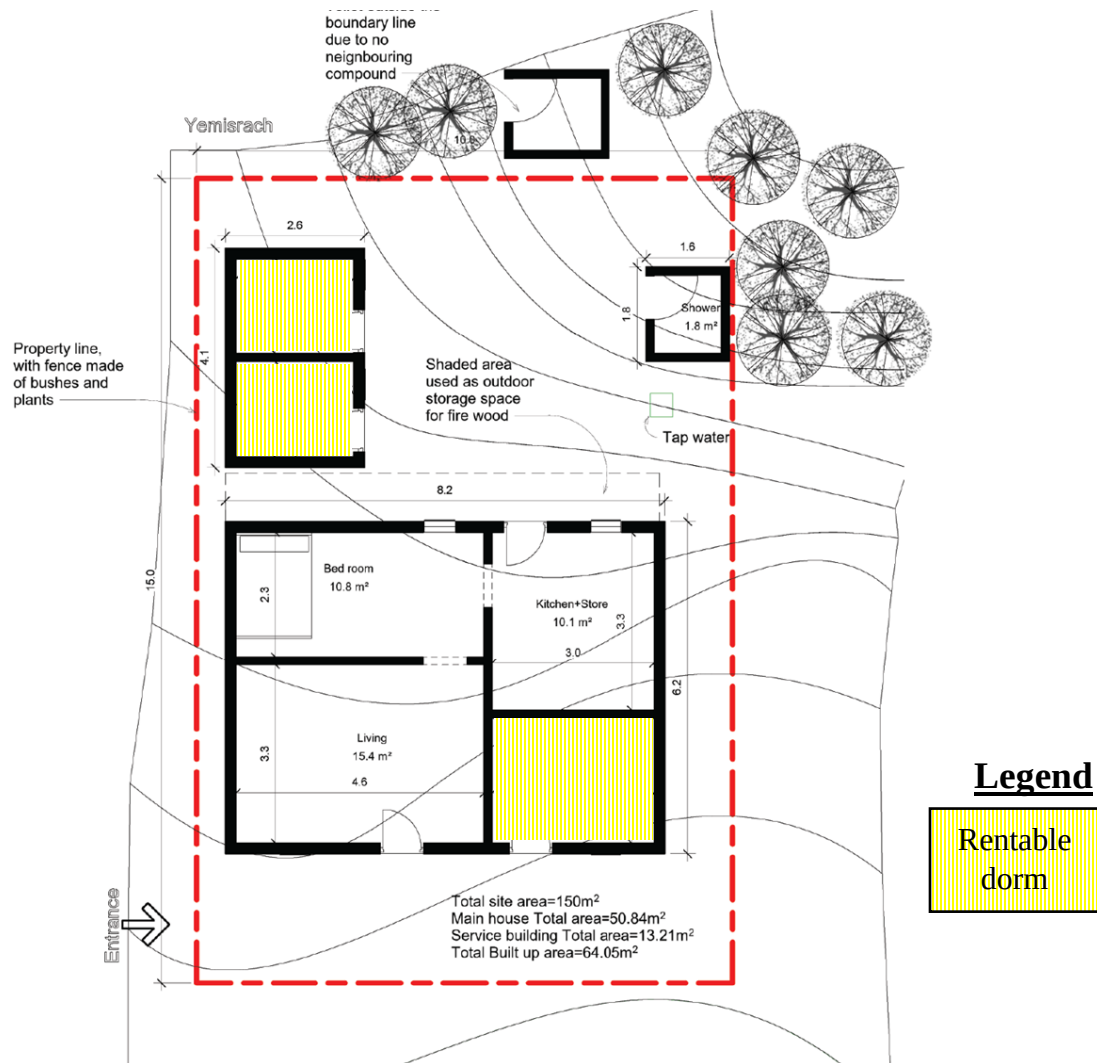


Figure 4.119. Transform the compound by the expansion of the house for renting dormitory (W/ro Yemisrach's house site floor plan).

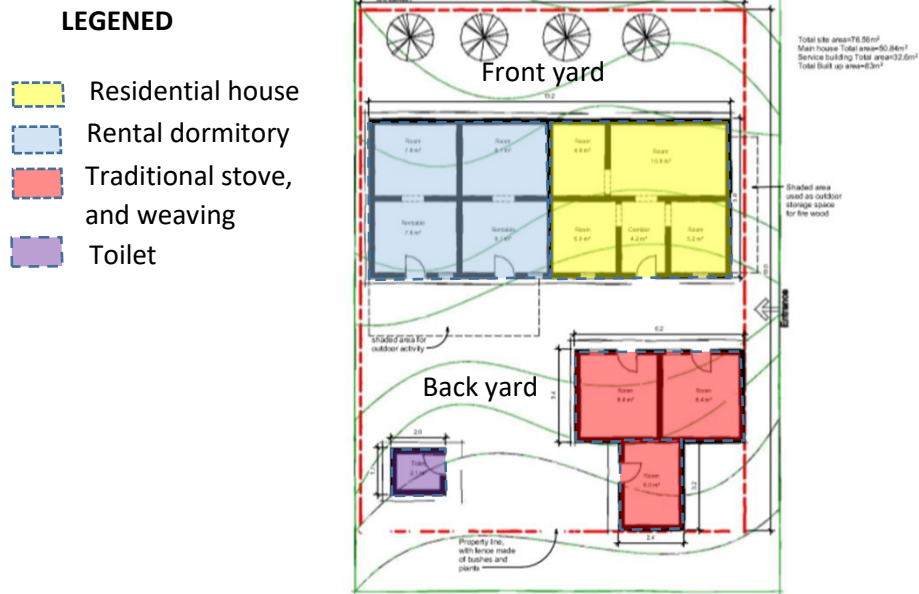


Figure 4.120. Transform the compound by the expansion of the house for renting dormitory (W/ro Birtukan Kibiret's house site floor plan).

E. Size and shape

Most of the compounds in the Awra Amba settlement had the main space, which is the house, the front yard, the back yard, the compound cooking area, and the weaving room. The house is located on a hillside, which has a linear arrangement in that the front and back yards are used as a linkage road to access the next house. The figure below shows the secondary road and linkage road that defined the organic grid pattern of the compound and delineated the property of the household.

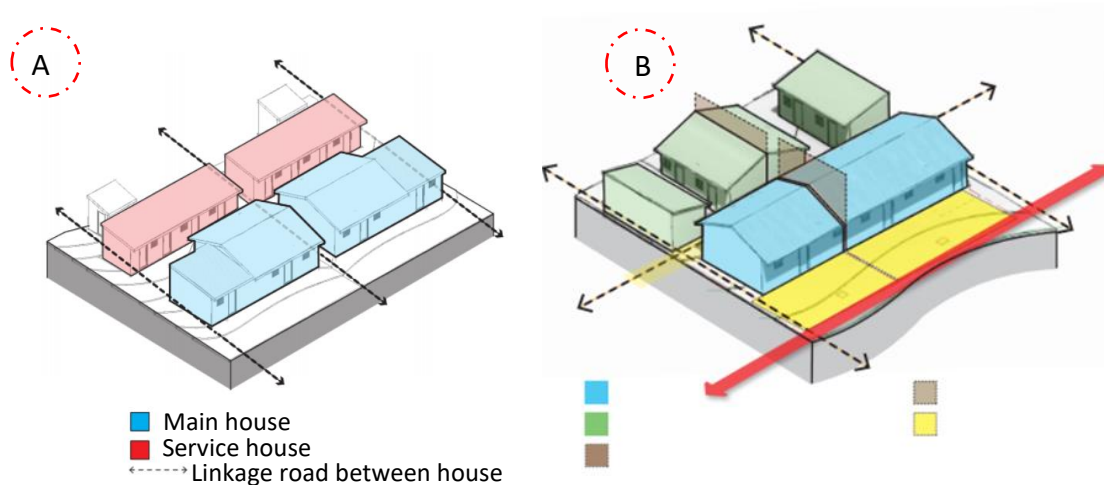


Figure 4.121. Collector and linkage road defined the house.

The front yard is bounded by an average road width of 1.2 meter, including the main, collector, or linkage road. The narrow road access is made because the limited space on the top of the plateau makes it easy to defend the settlement, comfortable on the slope, and difficult to attack.

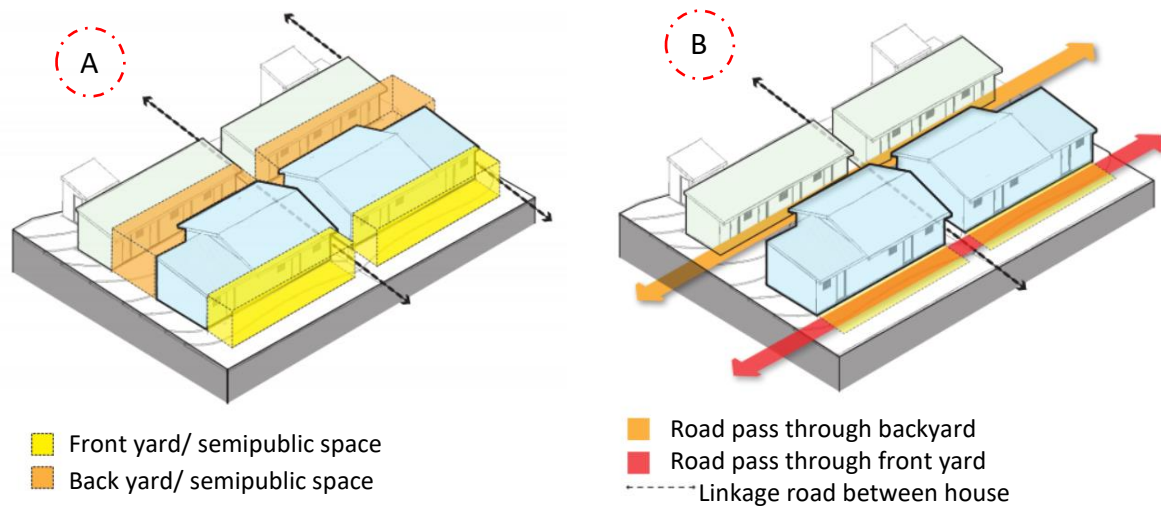
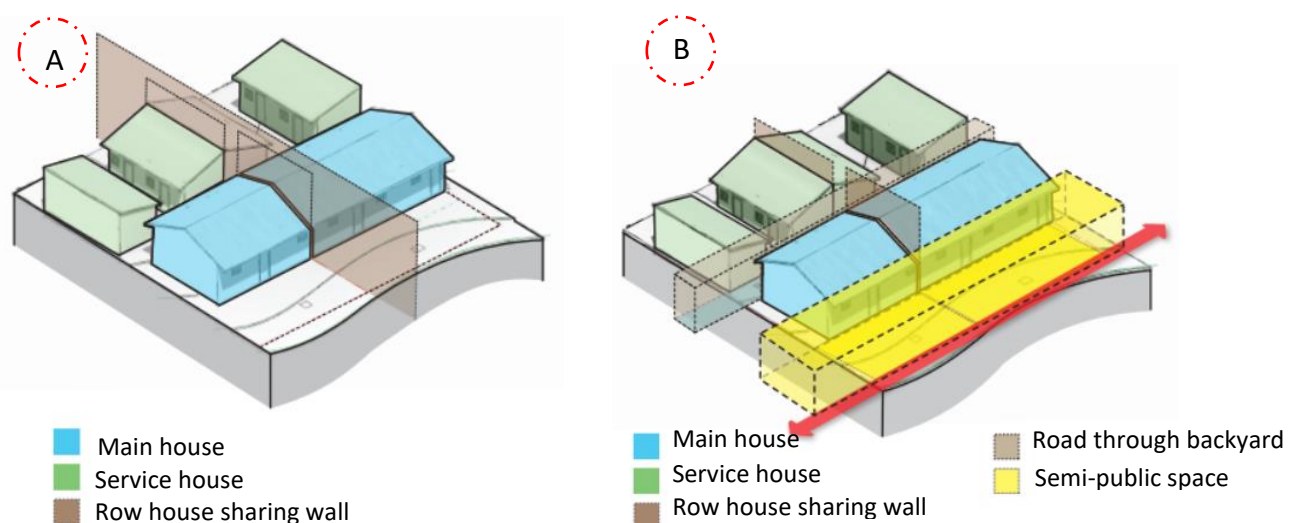


Figure 4.122. Front and back yard as semi-public space.

Picture A and B show, that most of the front yard and back yard of the compound are semi-public spaces because of the narrow road access. Because of the limited space on the top of the plateau, both the linkage and collector road pass through the front and back yards.



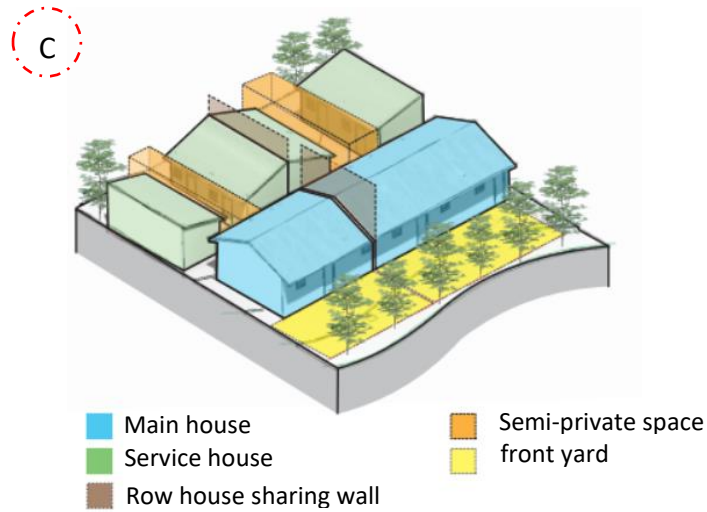
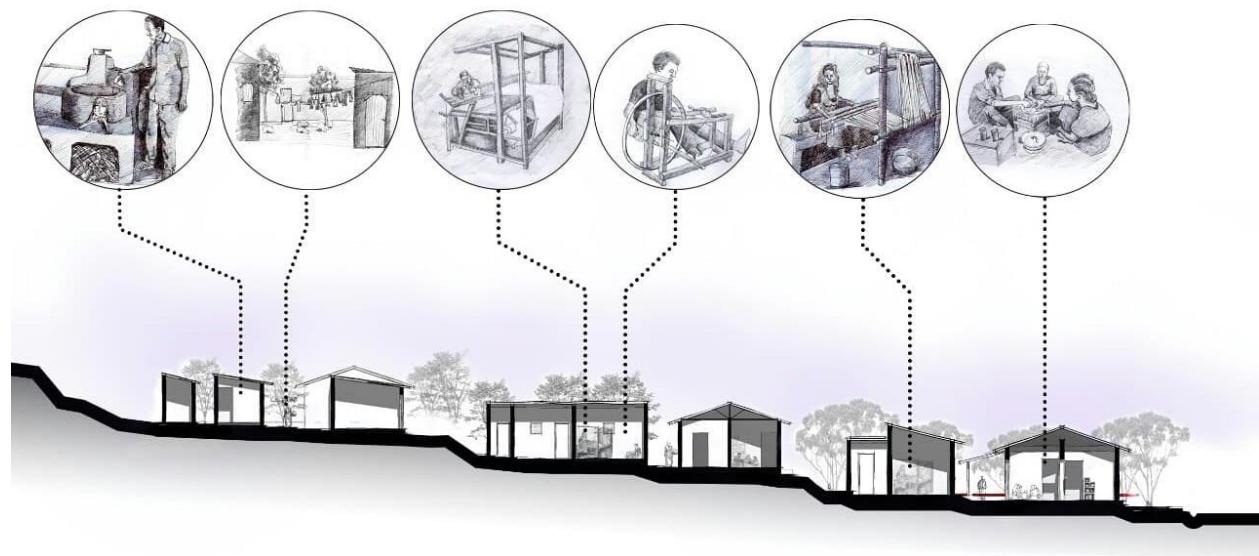


Figure 4.123. Semi-private space in the backyard.

Figures A, B, and C show, that some of the compounds, due to the arrangement of the main and service house, create an open space, which is a semi-private backyard space.

4.15.4 Compound Activities

The major activities that take place in the compounds are cooking, planting vegetation and fruits, animal feeding, playing, washing, drying grains, washing clothes, and sitting spaces. There is no sex segregation; everyone uses the compound space.



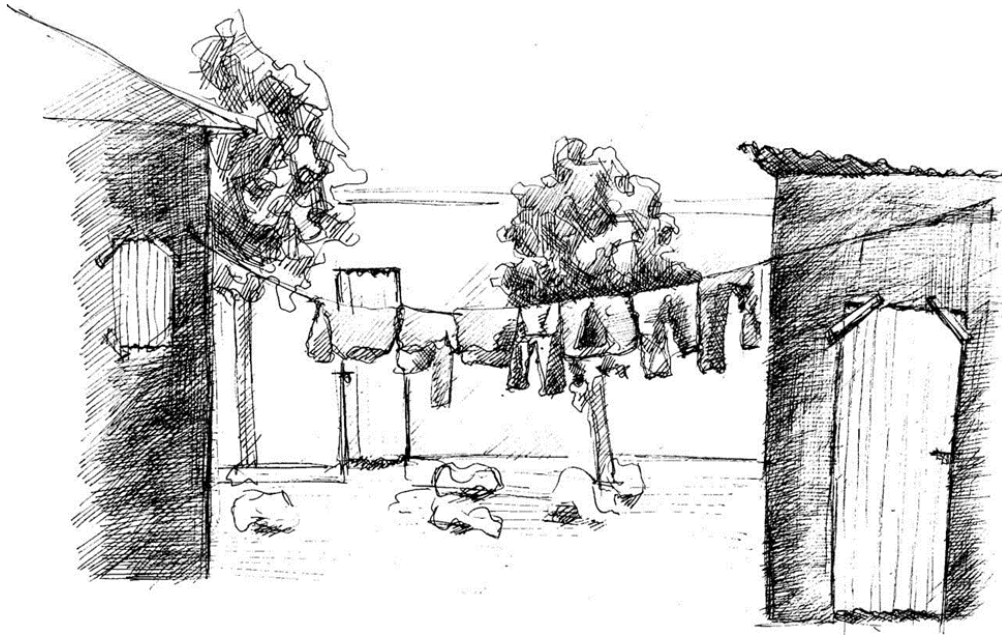


Figure 4.124. Activity at the front and back yard.

4.15.5 The Meaning

The orientation of the compound is towards the east. If the site does not allow the house to be oriented to the east, the second most preferable direction which is the west, will be the orientation of the site. This orientation of the house is mainly influenced by the Warka Tree and the main road, which parcel the settlement into two.

4.15.6 The house spatial elements

A. Transformation of house

The community members lived in a dispersed way before the community was established in 1972 with a similar vernacular house to the neighborhood peasants, which has a circular floor plan and is conical roof-shaped. The material used for the roof was made of wood and grass, and the walls were made of wood plastered with mud. After they establish a community, to minimize the raw materials needed for building the house, to make it look more aesthetic, and to reduce deforestation, they originate their own houses, which is 'Sekela bet'. 'Sekela bet' is a house with a rectangular, which is larger than previous huts. A 'Sekela bet' interior part is attractive; it is divided into several rooms, and each room is reserved for one family. Inside, there is a separate bedroom

with shelves and a living room. The bedroom has a handmade bed, built with locally available materials and covered with fabric made by a community weaving workshop.

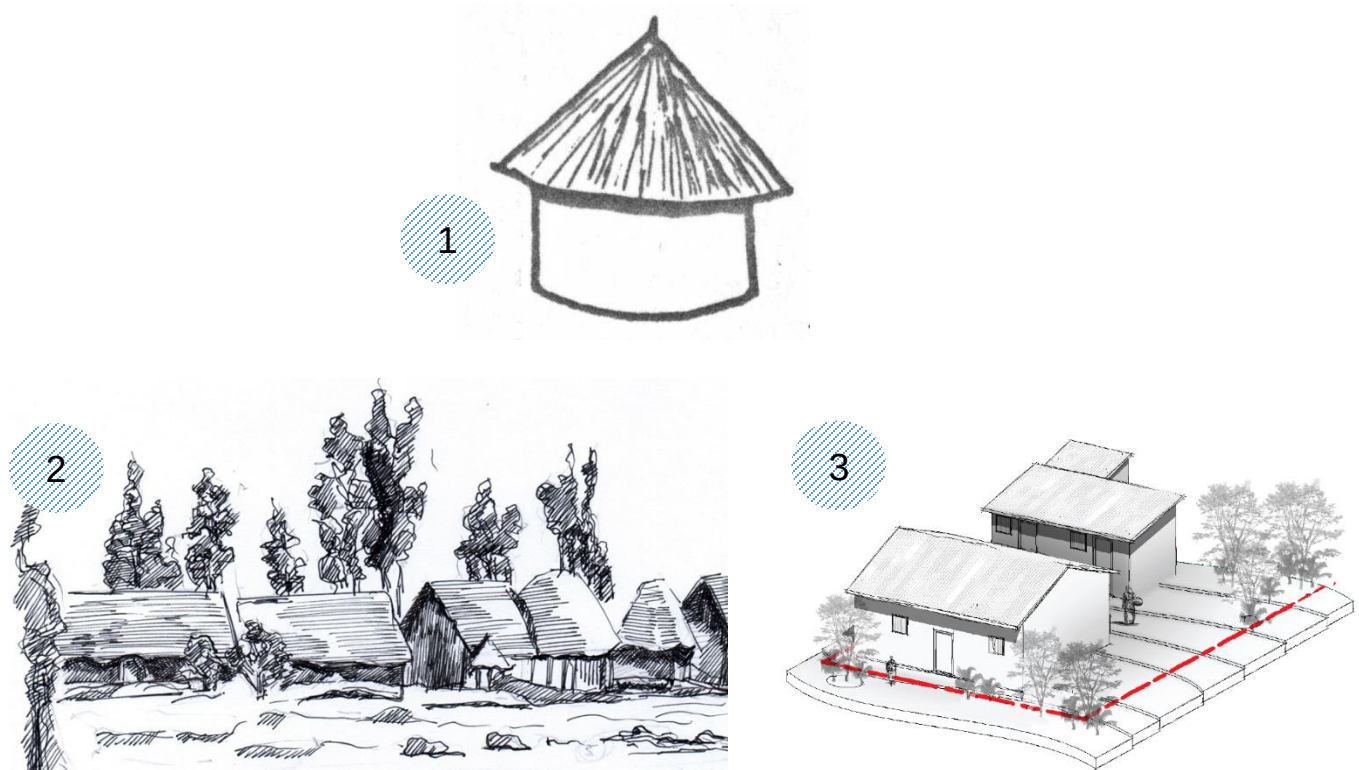


Figure 4.125. Transformation of Awra Amba house.

Due to the conflict with the neighborhood community, they exiled to southern Ethiopia, Bonga. They don't have a place to sleep, they live under a tree. After they returned to their original land, the neighborhood community took their land. They didn't have any land to live on; they slept under a tree. After spending 4-5 months in such a condition, the generous person, Ato Kindachew, gave 1.5 hectares of the current land for a residential area. Due to the economic impact, they made a simple hut to protect themselves from rain and sun. They lived in such a way for 3 years. In the hut, the whole family allocates the space, which is the living room, the kitchen, and the bedroom, all in the same space. After a decade, they continued building houses in the style of 'Sekela bet'.

Due to the scarcity of "Sirsira," the special grass used for roof cover, which grown-ups own common land nowadays population growth and every land occupied by the farmers there is no place to grow these grasses before the community gets electricity the dust collects on the grass

roof fall on the dish and during 2001 the community gets electricity the residence fear fire for these grasses roofs the community transforms the grass roof into a corrugated iron sheet.

As technology advances, their way of building and maintaining houses will also be change. Right now, all the houses are built with wood, mud, and corrugated iron sheets, and the kitchen is separate from the main house.

The dwelling's roof was made of straw, which should be renewed within a period of two or three years. They told us it is a bit expensive because it needs careful maintenance throughout the year. Because of this, they decided to construct the roof with CIS (corrugated iron sheet) buying from Debre Birhan and Bahir Dar. Even though it's expensive, it lasts longer.

According to (Joumard, 2012) This small surface area gives a population density around four times higher than in the surroundings: 930 inh. /km² in 2007, while it is 247 inh. /km² in Fogera woreda according to the census of the same year (CSA, 2007) – these densities being in 2005 respectively 847 and 181 inh. /km² according to At05/39. The density of the community would be even 2286 inh./km² if we accept a surface area of 17.5 ha.

Awra Amba _ Housing

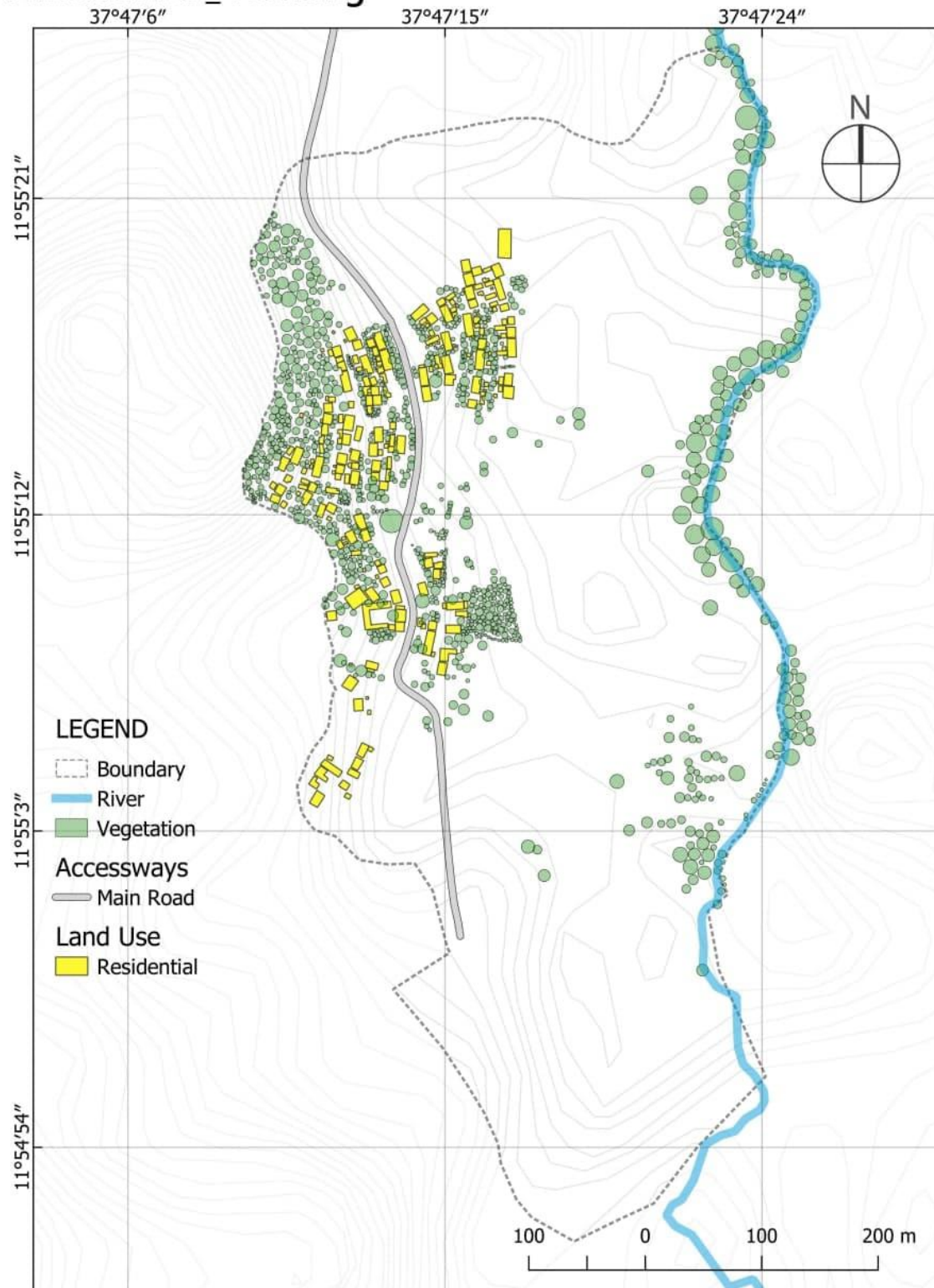


Figure 4.126. Housing land use at the settlement.

B. Types of Awra Amba houses

There are two types of houses in Awra Amba: row houses and detached houses. Both of the house types of internal space are more similar, having a linear, central, and a grid arrangement. The only difference is that in a row house, two consecutive houses share the partition wall “Gib af.” To minimize the housing cost by sharing the central wall, a detached house stands alone. The figure below shows the types of Awra Amba houses.

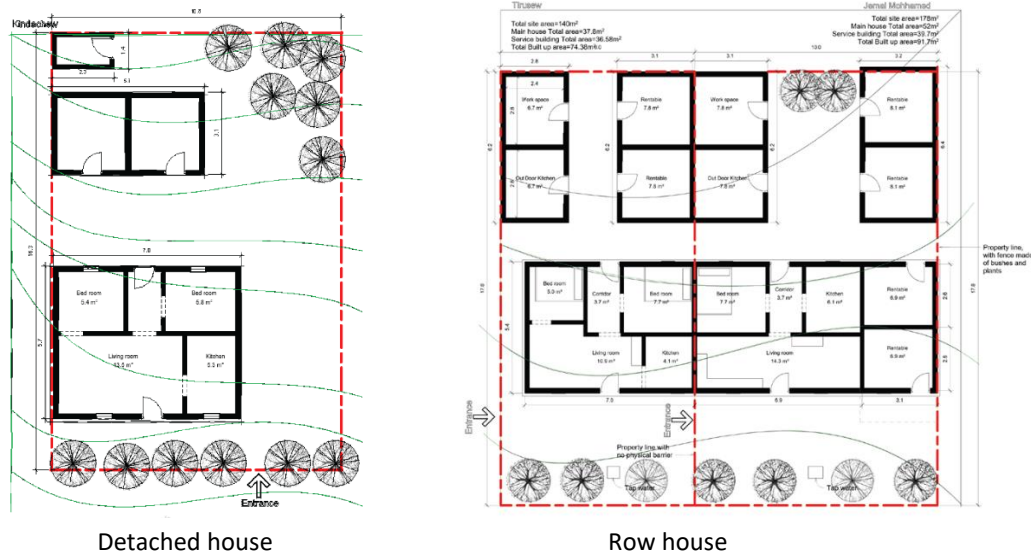


Figure 4.127. Awra Amba house type: detached and row house.

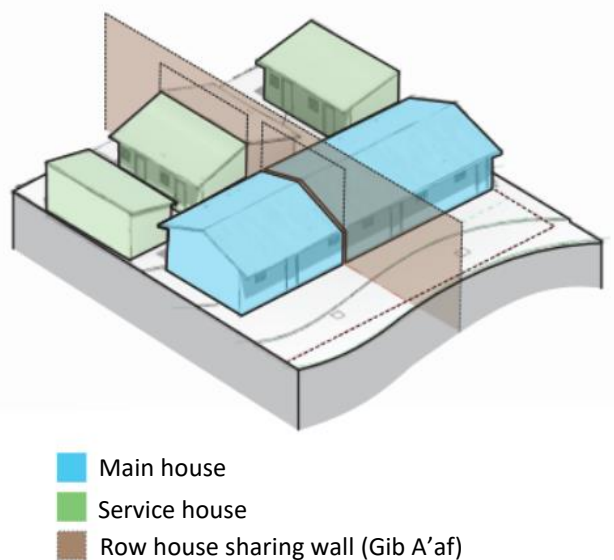


Figure 4.128. Awra Amba compound row house-sharing wall (gib a'af).

C. Interior arrangement (Space, and size)

Most of the house plot in Awra Amba is in the range of 30m²-60m². In some cases, it covers 90m². The average plot of the Awra Amba house is 52.62m².

The characteristics of the Awra Amba community interior arrangement can be designed according to personal requirements. Yet there are shared and individual needs. The needs that are shared by the majority of people are the main internal space of the house in Awra Amba, which is the living room, master bedroom, children's bedroom, and modern kitchen, and the internal space of the service house, which is used for cooking and weaving. They have only a few openings that are small or difficult to light from the inside and are usually placed on the left and right sides of the entrance door rather than in the living rooms. Mostly, the front door is the main source of light and ventilation systems. On the other hand, opening the door means opening the route of communication to the surroundings.

The house on the site is a detached house, and Ato Belachew said that the house he built is different from the usual trend in Awra Amba. He claims he saw a design when visiting a relative in a nearby town called Woji-Arba Amba and liked the layout, which was very different from the houses in Awra Amba. As a result, the building rests closer to the front boundary, leaving a bigger space for the backyard.

The house of Awra Amba's interior arrangement is determined by the economy, social interaction, basic needs, position of women, family structure, defense, and material and construction technique. Based on the interior arrangement of functional space, the house of Awra Amba is categorized into five.

1. In Awra Amba, 77.78% of the main house is similar. Which is

Interior arrangement the plan layout of the Awra Amba main house has four distinct areas separated by a eucalyptus frame mud plaster partition approximately 3 m high. The back portion of the hut appears to serve as a kind of master and children's bedroom. The bedroom is at the front of the living room, closed with curtains; on the right side is the children's bedroom; and there is a corridor to access the kitchen and the backyard. Whereas all other activities, living, and the modern kitchen and pantry are carried out in the front area. A wall-mounted small shelf consisting essentially of a kit and TV is located almost in the partition of

living and pantry in front of the corridor. The house is completely watertight and has no opening except for the front and back doors and the small window on the right and left sides of the main entrance door. The door height is 2m determined by the size of the corrugated iron sheet. The 20cm eucalyptus frame mud plaster wall is load bring. In addition to the usual earthen utensils found in nearly all Ethiopian huts, there is a chair made of four wooden legs and a plain space elevated from the ground. The average length and width of the huts are about 5.7m- 7m. This space provides accommodation for the family, it appears that more space is allocated to living space.”

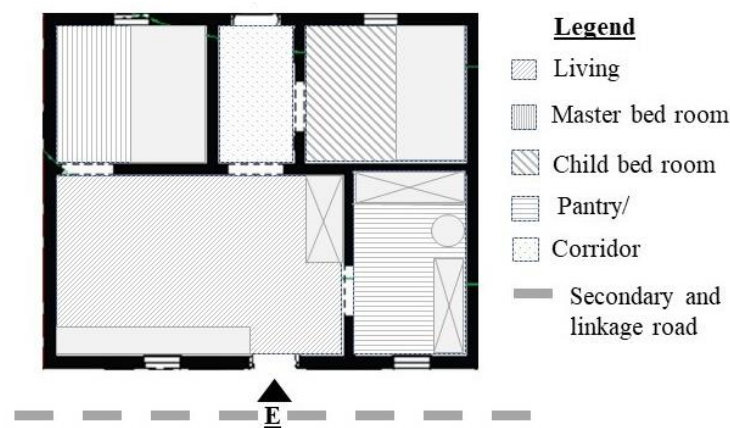


Figure 4.129. Type 1 interior arrangement of Awra Amba house.

- The internal space of the house is subdivided into three main functional spaces. The first is the living area, which accommodates Medeb (a grinding stone with Chika), space for eating and playing with family, traditional stove space for cooking, and a cereal store (Gushigusha). The second is a sleeping zone that accommodates a bed and grain store (Gota), and the last is a weaving working space that accommodates a modern weaving machine, Madawerya.

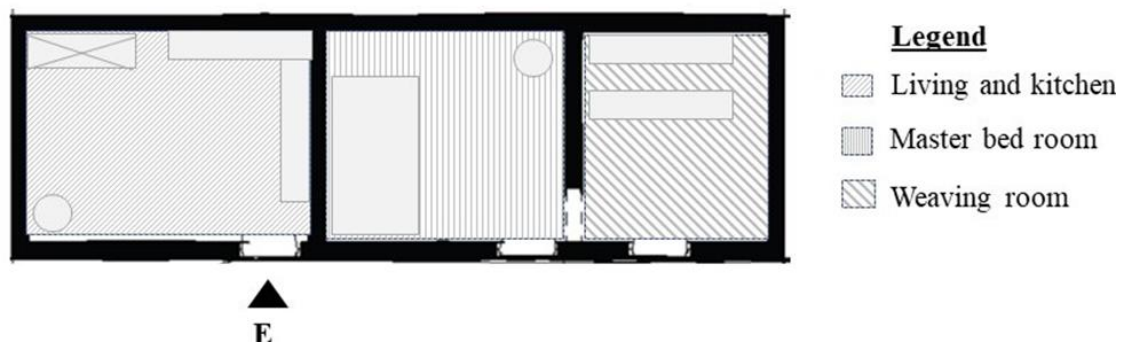


Figure 4.130. Type 2 interior arrangement of Awra Amba house.

3. The house is an L-shape constructed at the two-side periphery of the compound. It has a linear arrangement of a living room, bedroom, pantry, and rental dormitory.

W/ro Marishet's house is a detached house.

The total area of the house is 78.6m². The internal functional space (living, bedroom, and dormitory) of the house has a linear arrangement. The living area accommodates chairs, a modern weaving machine, and the bedroom sleeping zone, which is also used for cooking, and traditional weaving. The remaining rooms are for her sister's and her rental.

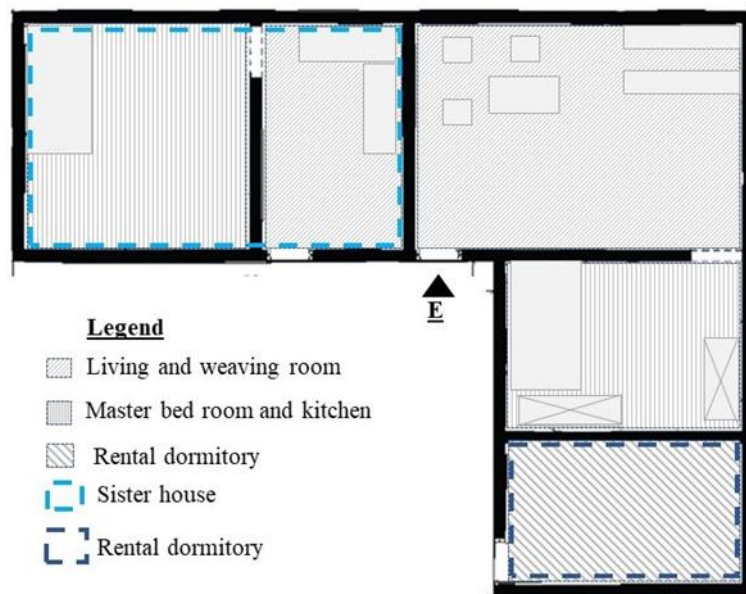


Figure 4.131. Type 3 interior arrangement of Awra Amba house.

4. The fourth type is a central arrangement of living, master bedroom, corridor, and kitchen.
- The house of Ato Legesse. The total footprint of the main house is 38.4m². 3m² verandah, 11.2m² living room, 9.8m² bedroom, 5m² kitchen, and 3m²corridor. Other than this house, there are rental houses in the backyard with the same structural and wall finishes.

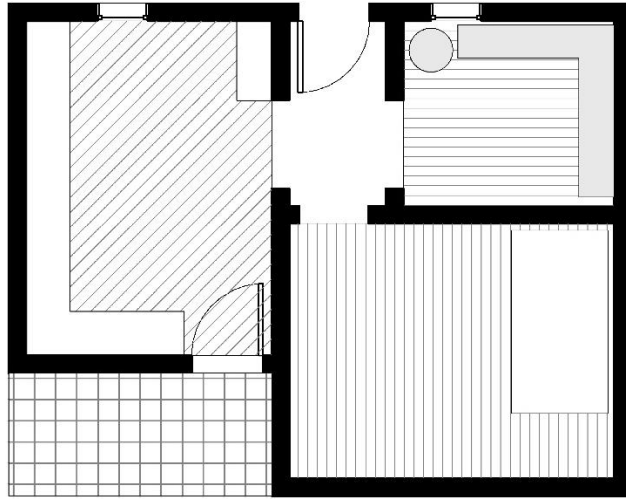


Figure 4.132. Type 4 interior arrangement of Awra Amba house.

5. The fifth type is the grid arrangement of living, master bedroom, children's bedroom, kitchen, and store.

The house on the site is a detached house, and Ato Belachew said that the house he built is different from the usual trend in Awra Amba. He claims he saw a design when visiting a relative in a nearby town called Woji-Arba Amba and liked the layout, which was very different from the houses in Awra Amba. As a result, the building rests closer to the front boundary, leaving a bigger space for the backyard.

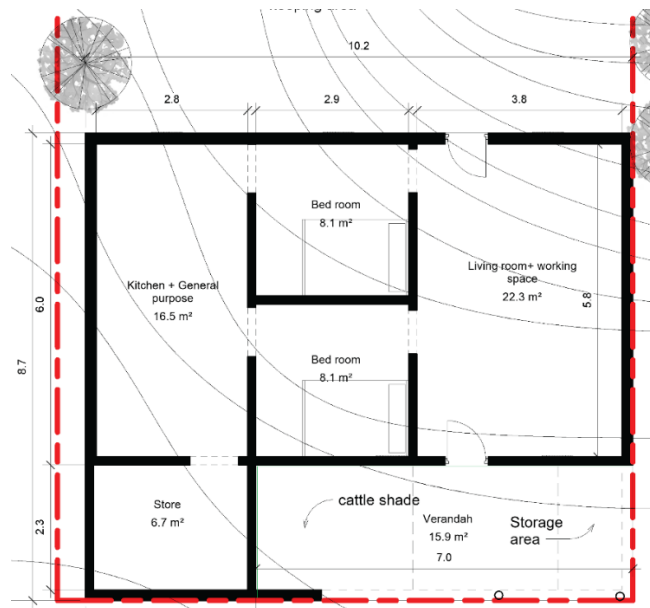


Figure 4.133. Type 5 interior arrangement of Awra Amba house.

D. Factors that determine the interior arrangement

The house of Awra Amba's interior arrangement is determined by the economy, social interaction, basic needs, position of women, family structure, defense, and material and construction technique.

The interior arrangement of the house of the Awra Amba community reflects the physical condition of the environment. Some of the physical forces that modify the internal arrangement are

Site: - The house on the plateau topography of Awra Amba settlement has a minimum plot area, and the corridor is stepped to access the backyard. The house is modified to step because of the topography.



Figure 4.134. Site factor in interior arrangement of Awra Amba house.

Economy: The Awra Amba house interior arrangement is also affected by the economy. For example, the row house, which shares to minimize the cost of the sharing wall, creates proximity to their neighbors. The primary cause of this is acoustic privacy. To address this, they arrange functional space within a development to minimize noise transmission between neighbors.

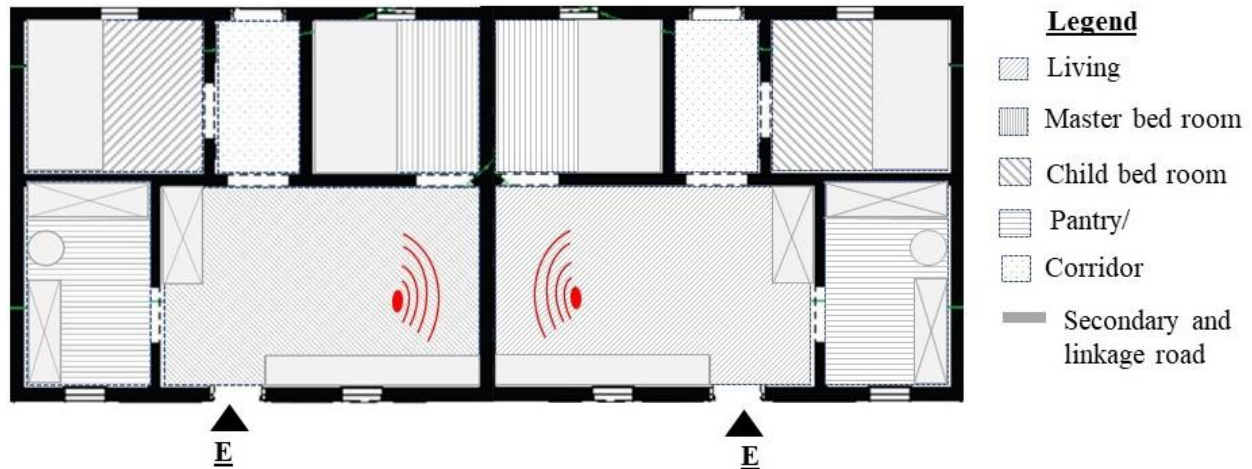


Figure 4.135. Sharing wall arrangement of Awra Amba house.

Ato Meniber constructs a linear arrangement small house because he doesn't have enough money,

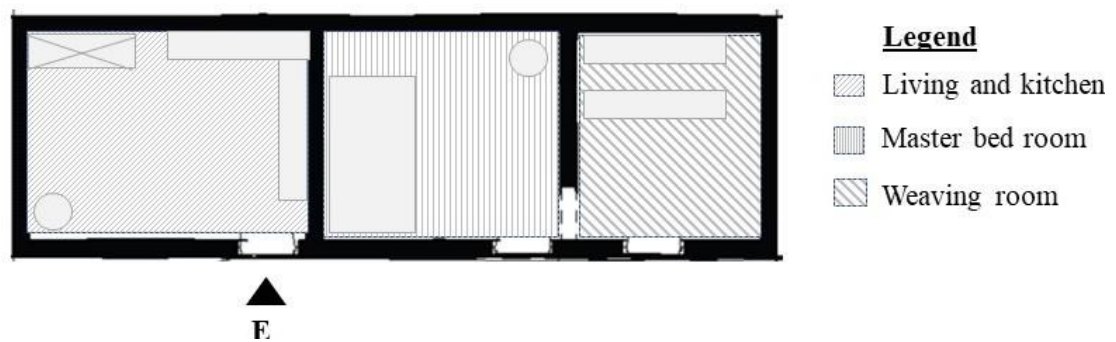


Figure 4.136. Economy factor in interior arrangement of Awra Amba house.

Defense: In the Awra Amba house interior arrangement regard defense socializing is essential. Because of the linkage and secondary road passing through the front and back yards, the entrance into the main house is in both directions. There is semi-private space in the front and backyard, which are the corridor and living room. The neighbor can enter the house in both directions. Nowadays, they rent a dormitory for students and teachers who come from the neighborhood of kebele to study at the high school. Some of them beside the community change the entrance from the living room into a backside corridor.

Need for privacy:

In the Awra Amba community, they don't give strong attention to privacy between neighboring houses; they share the front and back yards as linkage roads; there is no link between semi-private space and semi-public space. The entrance into the main house is in both directions. There is semi-

private space in the front and backyard, which are the corridor and living room. The neighbor can enter the house in both directions.

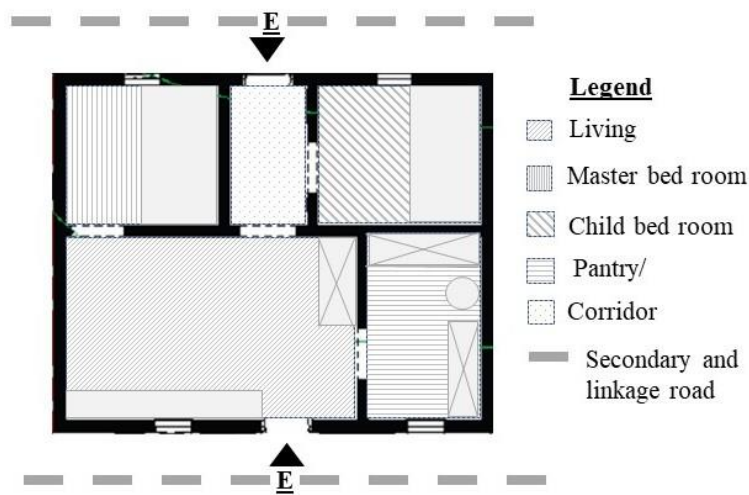


Figure 4.137. Defense factor in interior arrangement of Awra Amba house.

Basic needs: Basic needs are also one of the determinant factors for Awra Amba house interior arrangement. The internal space arrangement is based on a private income source. The cooperative members of the community work together and share the profit equally so that the community member provides a private income source for weaving rooms, poultry, and honey harvesting inside the compound. W/ro Marishet house is L-shaped. It has a linear arrangement of a living room, bedroom, sister house, and rental dormitory. To increase her income source, synergize living and working space (weaving) and rent a dorm.

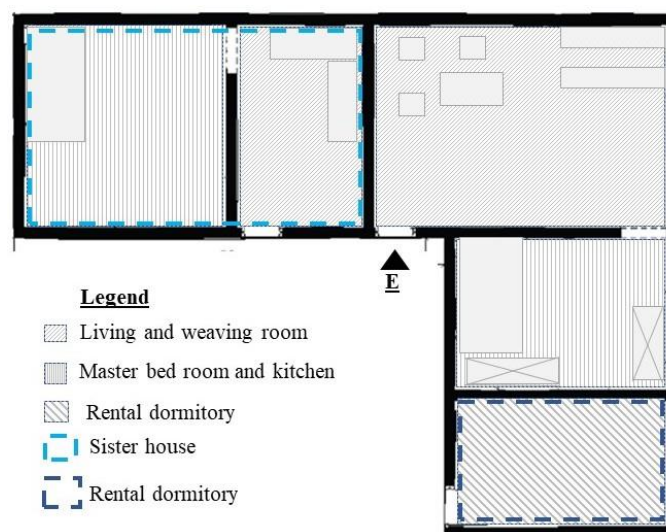


Figure 4.138. Basic need factor in interior arrangement of Awra Amba house.

Family: There is family discussion in the Awra Amba community; they believe it is a key tool to bring about peace and development throughout the world through discussing and solving problems at the family level. The discussion was held for two weeks by gathering three to four nearby neighbors or only a single family. The family member criticizes and advises each other about the occurrence of bad speech and bad deeds, etc. Children and adults have equal rights and participation in the discussion. The family discussion allows the problem to be resolved immediately without having to bring the problem before the discussion. Family size and structure determine the layout of the house plan. In Awra Amba, the family that has adult children and younger children has a different layout.



Figure 4.139. Family structure factor in interior arrangement of Awra Amba house.

Position of women: Because of Awra Amba's social factors, which are gender equality, Therefore, the community's highly needed work division is not based on personal capability. The position of women in gender equality also affects the interior arrangement of the house; all functional spaces can be accessed by men and women. A special pantry or kitchen is one of the few places considered a woman's and man's domain, and it is physically adjacent to the rest of the interior space. The spatial arrangement of the house in Awra Amba is based on basic needs and age. In Awra Amba, there is no sex segregation. In the houses, the women and the men dine in the living area together. The cooking area is used by man and women, depending on who arrives and has the time and ability to cook a wet spouse and make injera.

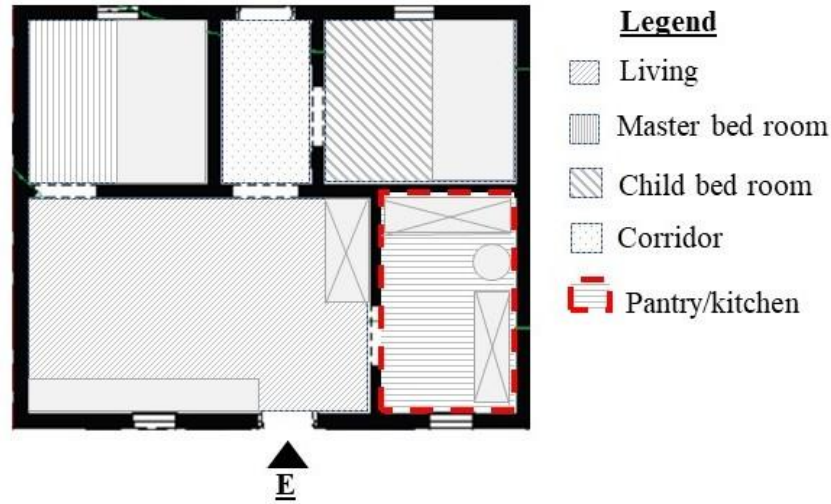


Figure 4.140. Position of women factors in interior arrangement of Awra Amba house.

Social interaction: The community social interaction is also reflected in the internal arrangement of the main house, where Ato Legesse and W/ro Nuromer share a verandah at the entrance.

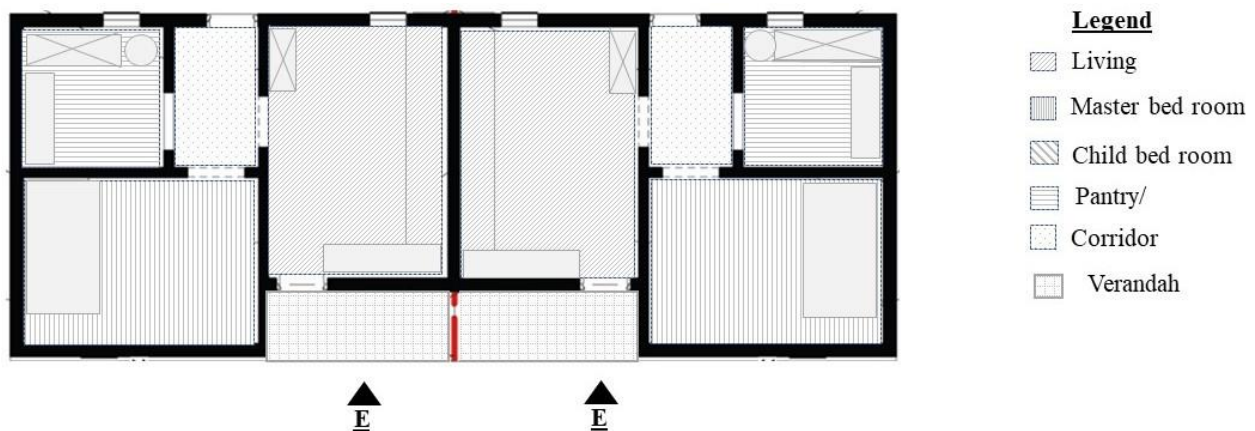


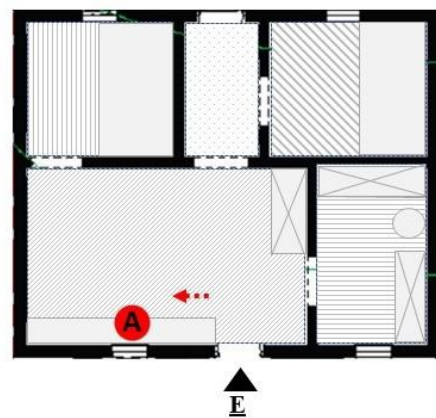
Figure 4.141. Social interaction factor in interior arrangement of Awra Amba house.

E. Furniture

According to (Rapoport, 2006). The concept of ‘culture’ is both too general and too abstract; it needs to be dismantled into fixed, semi-fixed, and non-fixed features of vernacular architecture that should be studied together to form a cultural background.

Semi-fixed features of the Awra Amba house, such as furniture are built from the same material, which is mud. They are built attractively, with whitish color, fine texture, and energy savings. The furniture inside the living room has these “Medeb” local-made sofas, mostly L-shaped and made

with wood and mud (a mixture of soil, water, animal dung, and ash) covered with plastic and community fabric.



Legend

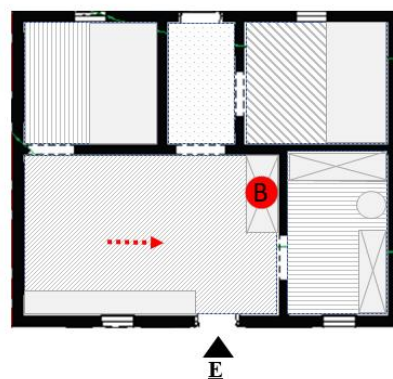
- Living
- Master bed room
- Child bed room
- Pantry/
- Corridor
- E** Entry



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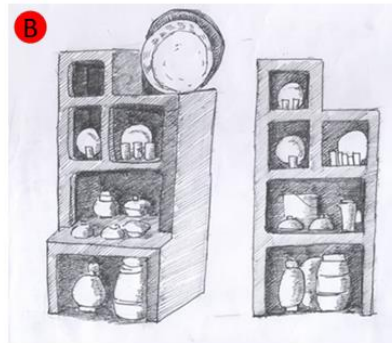
Figure 4.142. Living furniture ‘Medeb’ local sofa.

Each living room is also equipped with a shelf with the local name “Mesikot,” made of eucalyptus frame plaster with mud (a mixture of three parts ash and one part soil, animal dung), and then adding water to the mixture. It is fine and fire-resistant with a cinder



Legend

- Living
- Master bed room
- Child bed room
- Pantry/
- Corridor
- E** Entry



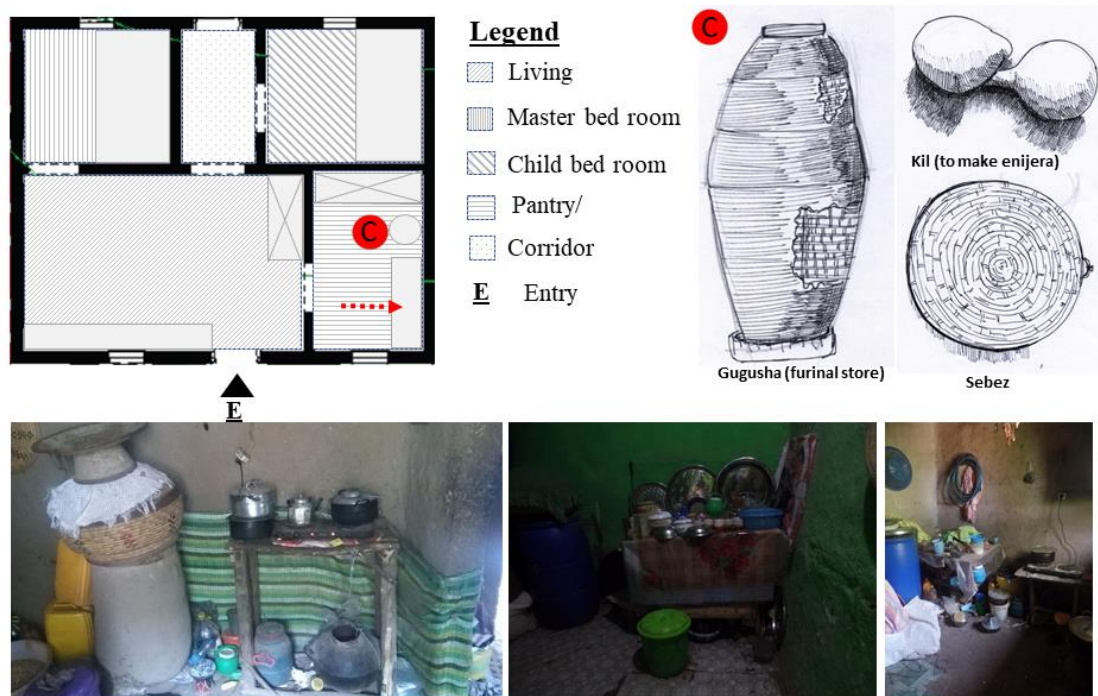
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Figure 4.143. Living furniture ‘Mesikot’ local shelf.

In cooking and storage, they have “Goushigusha,” which is flour storage, made from split bamboo weave and plaster with a mixture of water, mud, animal dung, and sole. Nowadays, they convert “Gushigusha” into plastic barrels. There is additional furniture inside it, including a modern stove. In bedrooms, they have the bed made with wood, mud (a mixture of soil, water, animal dung, and ash), stone, and also wood in carpentry. In both cases, they use locally made canvas to cover it.



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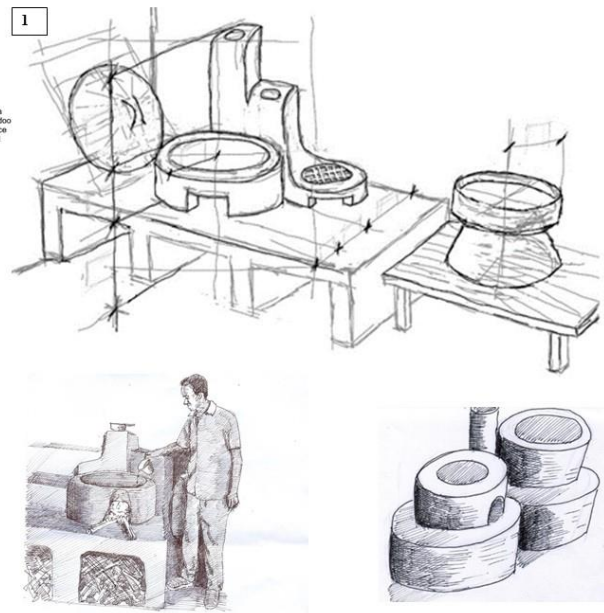
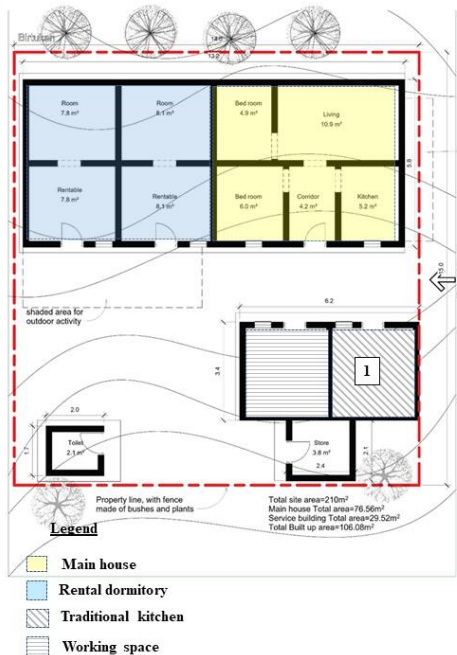


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Figure 4.144. Pantry furniture 'Goushigusha' flour storage.

At the service quarter, there is a traditional stove space for cooking, a grain store (Gota), and a modern weaving room, which are separate from the main house.

The basic characteristics of Awra Amba community house furniture are weaving and fuel-saving stoves. The fuel-saving stove was designed by Aba Zumra to solve the problem of his parents cooking on the floor, which is that the ash produced during cooking dispersed and made the floor dirty; children accidentally fell into the fireplace; the smoke from the cooking polluted the house; and the use of a large amount of firewood wind blowing to decrease heat energy can lead to deforestation. Awra Amba community fuel-saving stove is started by making it on a raised platform on the floor and placing the stove on the platform made from wood, mud, and stone. Above the platform, he built a stove by mixing three parts of ash and one part of soil and then adding water to the mixture, which is the best solution to make the fuel-saving stove thermally resistant, have a fine texture, and stick together. Both cooking wat (sauce) and making injera can be done simultaneously or separately on this stove. There is a hole through which firewood could be inserted and a chimney to lead the smoke out of the house. The chimney merges two tubes from the injera pan, and the saucepan stove creates a small hole and releases the smoke outside. Most of the time, it is kept closed. There are multiple advantages to the hole, which are: an additional heat source for boiling water during cooking by putting a metallic vessel on the hole; heating the room during the cold season by opening the hole; and a gate to clean the soot when the soot blocks the chimney.



Fuel-saving stove



Chimney (exit for smoke)

Figure 4.145. The traditional fuel-saving stove of the Awra Amba community.

To increase their income source, most of the residents of Awra Amba work at home, such as weaving. There are two types of machines, which are traditional and modern.

The first is a modern weaving machine made of steel, which is wider and require less energy when compared with the traditional machine. The second is traditional, which is made of local material,

wood, and has a hole in the ground. It has a limitation on the width of the fabric, and it is difficult to work on it.

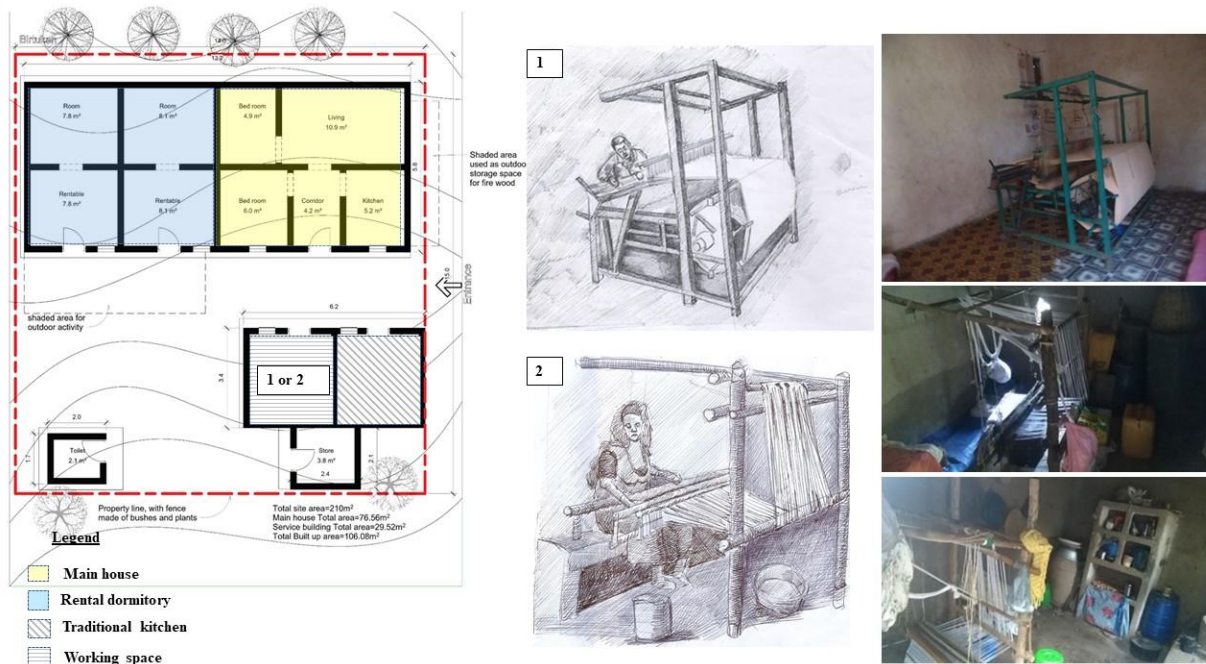


Figure 4.146. Service furniture weaving machine.

There is supportive furniture for weaving, such as a spinning machine (Madawerya), which spins cotton into thread.

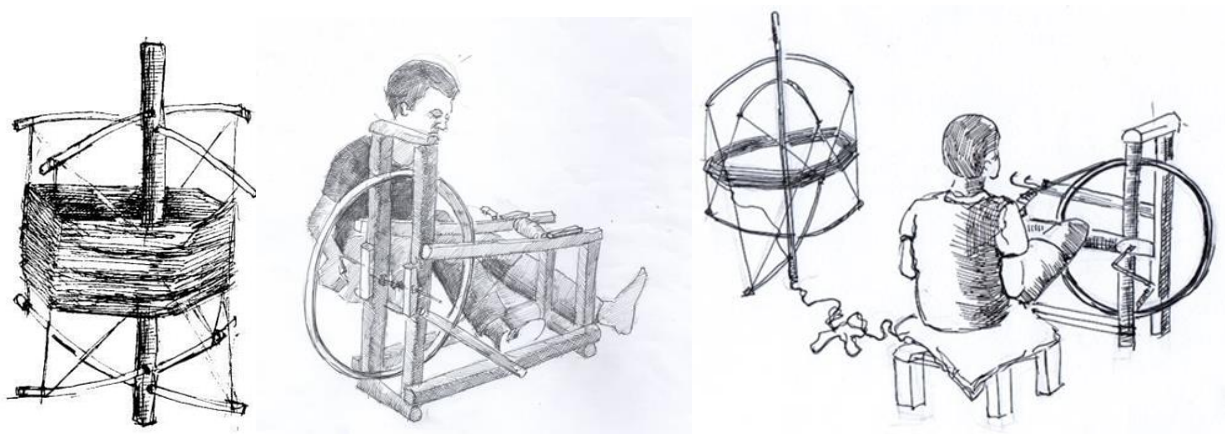


Figure 4.147. Spinning machine 'Madawerya'.

In the compound, they have semi-fixed furniture, which is a grain store (Gota) constructed from the soil, ash, animal dung, and water, straw-covered with a conical grass top. The other

is traditional hives made of locally available materials such as wood, straw, soil water, and animal dung.

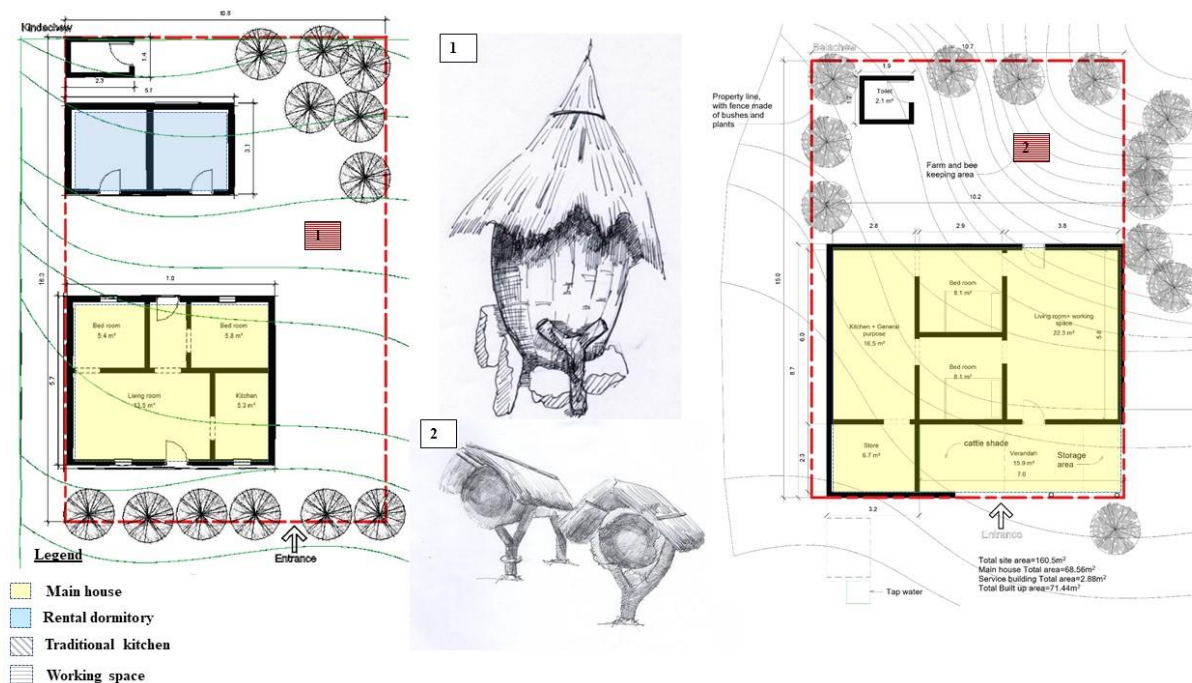


Figure 4.148. Site furniture 'Gota' grain store & traditional hives.

4.15.7 The Activity

The house in Awra Amba is also used for weaving, cooking, storage, playing with family, watching TV, sleeping, weddings, mourning, storage, nursing children, and socialization. The living space is busy in the evening. The cooking space is busy in the morning, midday, and evening hours. The weaving space is busy in the evening.

4.15.8 The Meaning

Most of the house of Awra Amba is on the hill in the direction of the Warka tree, which is the first meeting that was taken over.

4.15.9 Material and construction

Building is a major social occasion in which both men and women of the community cooperate. Without mutual obligations and a system of teamwork between various groups, it would take a

man a long time to complete the work, especially in a community where the system of paid labor is traditionally unknown.

There are many groves of trees in Awra Amba; most of the large forest woods located there belong to the hill. These trees flourish throughout most of the Awra Amba land and have great significance in rituals and house-building. The main species are eucalyptus, acacia, and warka. The Awra Amba are familiar with eucalyptus due to its availability and properties of durability, strength, resistance to termites, and other qualities.

The method of construction is a 10-15cm dim eucalyptus pole driven into the ground approximately 70 cm deep. A series of horizontal rings are then interlocked between the vertical pieces, and the split eucalyptus vertical pieces are gradually closed in every direction except the door and window. When the main framework is completed. A roof portion is started by adding the horizontal eucalyptus, sizing the covers to suit the top and middle over the vertical poles, and then adding eucalyptus purlin to the horizontal frame house. Finally, the corrugated iron sheet is covered and plastered with mud ('Chiqa' is made from a mixture of selected soil mixed with water, then selected "geleba" or straw is added to it, and the remixing process takes place again and again after two or three weeks; it will be ready for the selected construction purpose), then fined with cinder and cow manure, which makes it water and fireproof. The cost of the house is expensive because, except for soil and stone, all materials are bought from Bahir Dar or Debire Tabor. Masonry cover in all directions and a smooth floor. The construction materials used for the house are the same as those used in the rest of the village. The wood required was provided by the committee with a payment plan arranged. Stone was found in the area and is now in decline. Other materials, such as corrugated sheets, were bought and transported from the town of Debire Tabor.

Although building traditional houses is an uncomplicated process that is done alongside other daily activities, it is mostly carried out in the summer when rain starts. The length of time taken to complete a house may range from 10 days to two months, depending on the number of people engaged in its construction, and the size of the house also varies.

The walls both interior and exterior, act as load-bearing for the support of the roof trusses. Other than that, there are no columns in the house. The walls have a 20-cm thickness, the wood acts as structural support, and the mud plastering is used to cover the cracks of in the wood. It also has an

aesthetic value; above that, it's either a paint finish or a paper finish. The rental houses in the backyard have the same structural and wall finishes.

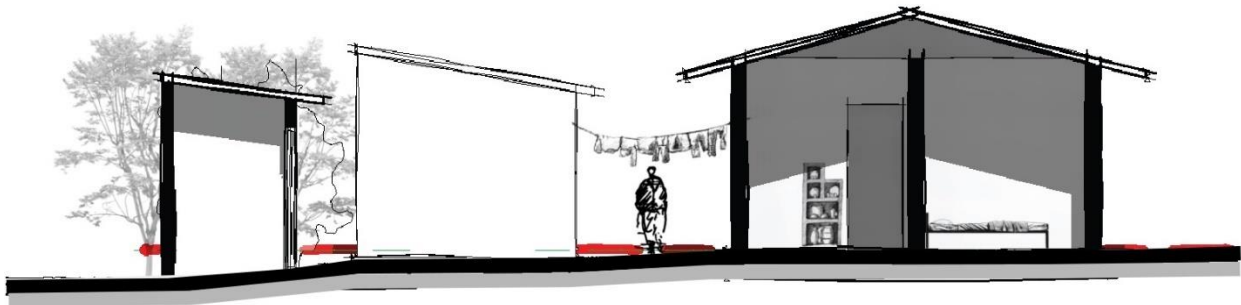


Figure 4.149. Section of typical Awra Amba house.

The house is flexible to make a partition.

Due to the divorce from the husband, they divide the house into two. So that W/ro Melike Zumura's house is half of the total footprint, which includes 11.5m² living room, 5.8m² master bedroom, and 5.2m² shop. The houses are constructed from wood and mud for the walls, masonry floors, and corrugated iron sheet roofs.

Houses are divided with the same material as the external building materials and the internal partition wall, “Meketa” They are built attractively; it is a very fine white color constructed from the soil, ash, cow manure, water, and straw. To make it a white color, they increase the proportion of ash. The minimum repair time is 2 years. Instead of plaster, only loam rendering with earth and ash colors and without color pigments was used.



Figure 4.150. Awra Amba house partition wall.

4.15.10 Space and activity at the settlement level.

The average time diary records activities and space use as they happen and are based on house, compound, and settlement level sampling. Table 40 shows the space used by the family of the case study sampling at settlement, compound, and house levels. From the interview conducted with eighteen family members within the 444 hours, the family spent 47.11% of their time within the house, 10.41% within the compound, and 42.47% outside of the compound.

Table 4.1 Average spatial mapping of all samplings within the settlement

Space used	Total hour	Average
Dwelling	208.8333333	47.11 %
Compound	46.16666667	10.41 %
Out of compound	188.2833333	42.47 %

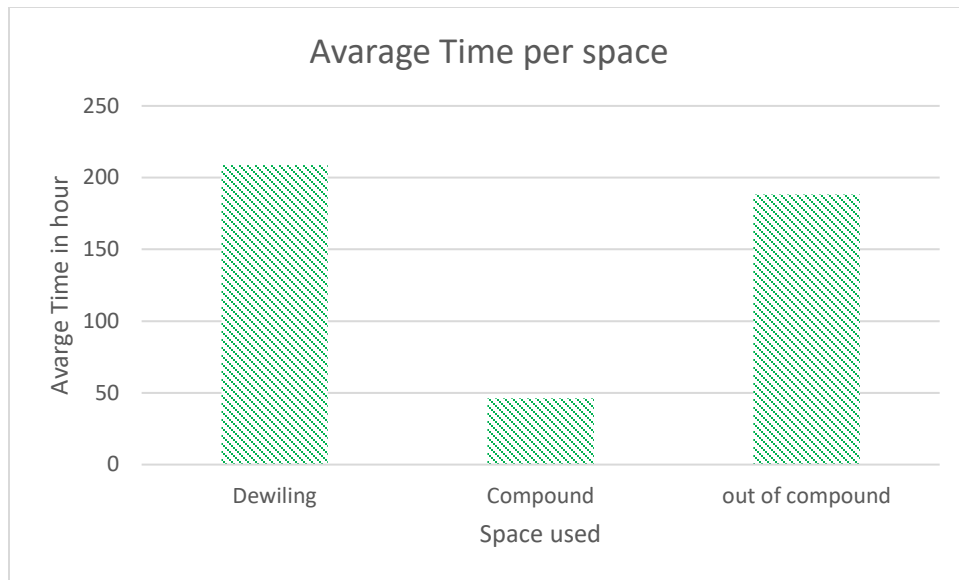


Figure 4.151. Percentage of space used at dwelling, compound, and out of compound level.

What spaces each associate with is an important aspect in the structuring of space within the home, compound, and settlement level. The most space used by the residents of Awra Amba is in dwellings. The most spaces used by residents of Awra Amba at homestead level are the bedroom, living area, and kitchen, which are used for 8, 1.8, and 1.2 hours, respectively. At the compound level, the weaving room, traditional kitchen, back, and front yard spaces are less frequently used—less than an hour. At the settlement level, the most frequently used space is the small-scale industry, which is 8.25hr. Water points, the road, schools, and relatives’ houses are the third-most-used spaces by the residents of Awra Amba. The other spaces, like the “Ginde” river, where residents wash their clothes, and the market, are the least used activities and spaces claimed by the residents of the settlement.

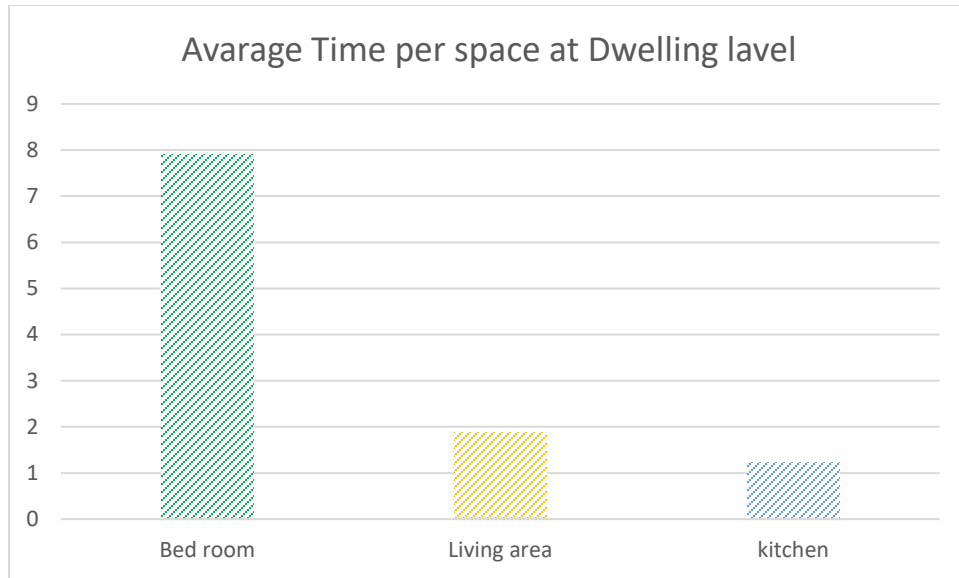
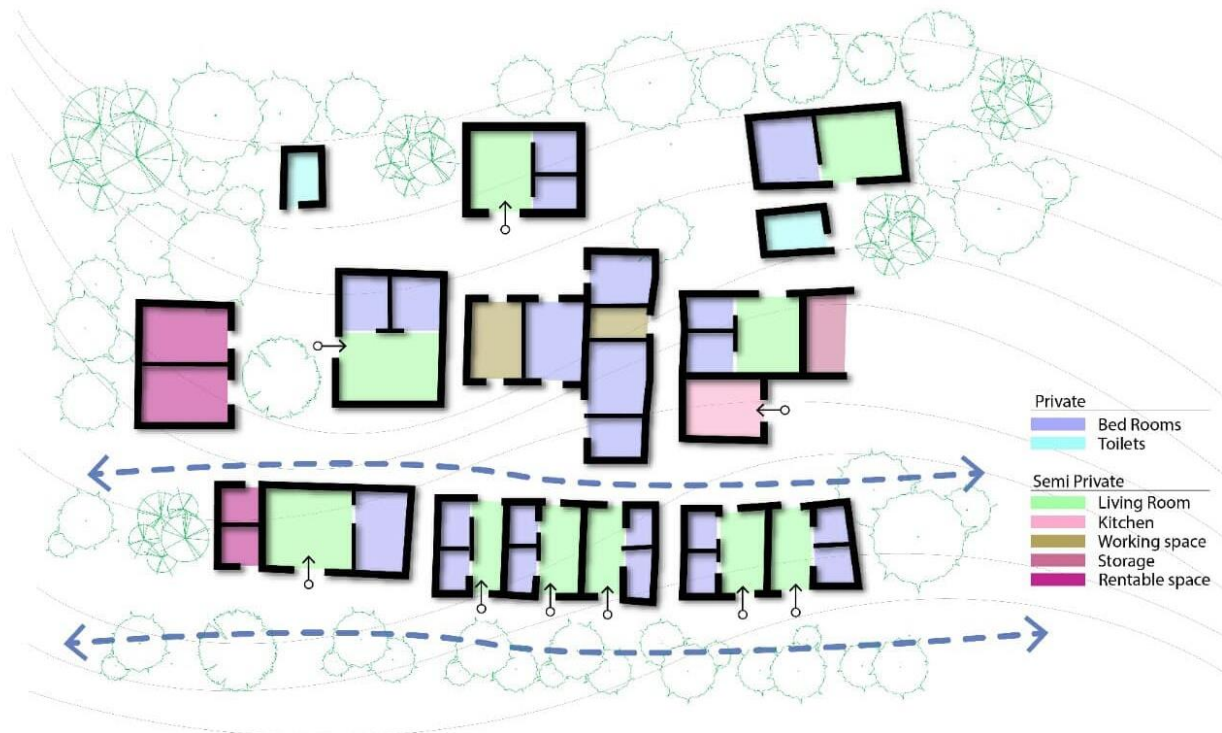


Figure 4.152. Percentage of space used at dwelling level.

Most of the residents spend more of their time in the bedroom, living room, and kitchen, making wet and additional income sources by weaving to increase their personal income.

4.15.11 The relationship between house and settlement

The space organization of Awra Amba has constituted an essential characteristic. Which is the dwelling consisting of rooms divided along personal and functional grounds arranged around a rectangular, narrow, confined courtyard with semi-public open space in between private plots. Which is defined by the individual plot and collector and linkage roads. There is no lock between private and public space; anyone passes through the front yard of the individual plot.



Narrow confined courtyard used for semi public space ,working space, and walk way.

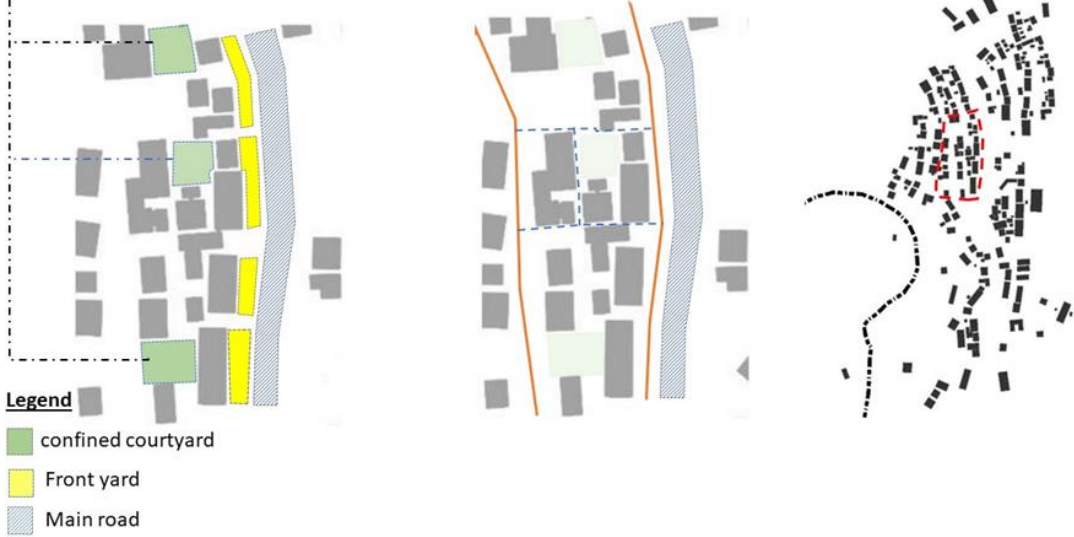


Figure 4.153. The relationship of house and settlement.

4.15.12 Factors affecting the house form

The house of the Awra Amba community reflects the physical condition of the environment. Some of the physical forces that modify the housing form and settlement of the Awra Amba community are

Site: - Based on how nature prepares the site, the community members organize it to enable them to satisfy their desires and needs. There is a flat and plateau topography in the Awra Amba settlement. The settlement on the hill, the house of the community, and the secondary road align with the contour of the hill, and the linkage road is defined in between the houses. The compound arrangement is modified to step because of topography. The house on the plateau topography of Awra Amba settlement has a minimum plot area, and the corridor stepped to access the backyard. The house is modified to step because of the topography.

Material and construction technique: the scarcity of “Sirsira,” the local grass used for the roof cover of “Sekela” house, and the supply of electricity transformed the community from grass roof cover to CIS corrugated iron sheet.

Economy: According to (Rapoport, House Form Culture, 1969) economics has been widely used to explain settlement and building form, and its importance is indeed great. In an economy of scarcity, the need to survive and to use resources maximally is so great that these forces may be expected to wield tremendous power. The Awra Amba house form is also affected by the economy. the row house type, which has a common wall called “Meketa” to minimize the cost of the house. All this has direct relations with the economy. The sharing wall creates proximity to their neighbors. The primary cause of this is acoustic privacy. To address this, they arrange functional space within a development to minimize noise transmission between neighbors.

Defense: The settlement is formed on the plateau, which is the most elevated point at the settlement in the form of linear families. The main reason for the selection of the Amba (plateau) site with dense settlement and a tight urban pattern was a desire to settle on a defensive and strategically high land to protect the neighborhood enemies.

In Awra Amba's defense, socializing is essential. In the neighborhood compound, there is no closed fence between neighbors. The spatial relationship between the neighborhood compound is linear, and it also reflects a strong social interaction between the members of the community. In Awra Amba does not seem to regard defense in-between neighbors as essential at all because of their

social structure. There is no strong fence between the two neighboring houses; one passes through the other, even though there is no lock between the road and the front and backyard. Nowadays, they rent a dormitory for students and teachers who come from the neighborhood of kebele to study at high school; some of them stole goods. Due to that, the community has changed the entrance from the living room into the back yard corridor.

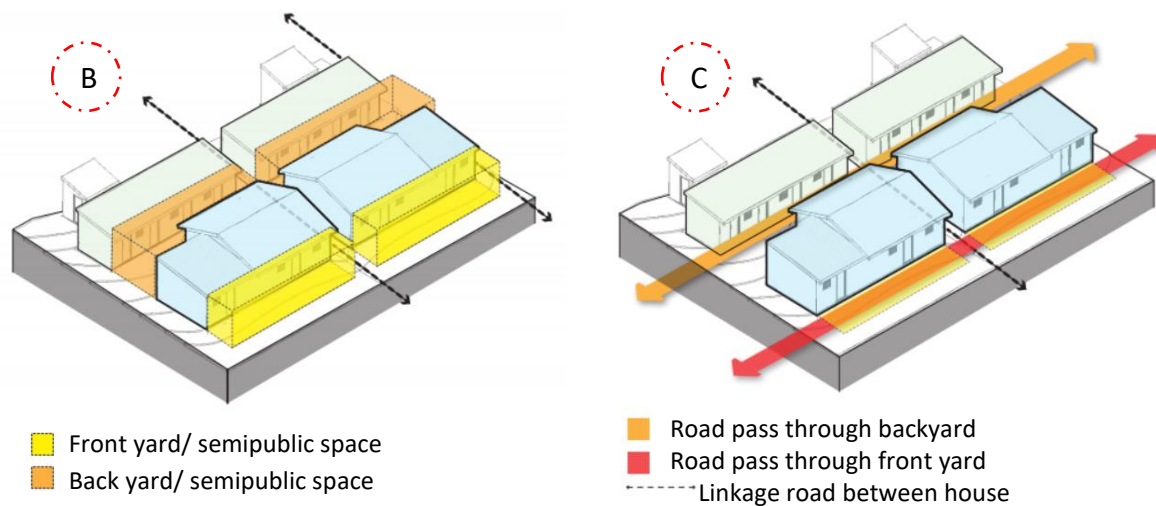


Figure 4.154. Defense factor for house form.

But the house form is not simply the result of physical forces or any single causal factor; it is the consequence of a whole range of socio-cultural factors seen in their broadest terms. The major determinant factor of Awra Amba's house is the socio-culture of the community.

Basic needs: Basic needs are also one of the determinant factors for the Awra Amba house form. The internal space arrangement is a base private income source. The cooperative members of the community work together and share the profit equally so that the community member provides private income sources such as weaving rooms, poultry, vegetation, rental dormitories, and honey harvesting that alter the house form.

Family: There is family discussion in the Awra Amba community; they believe it is a key tool to bring about peace and development throughout the world through discussing and solving problems at the family level. The discussion was held for two weeks by gathering three to four nearby neighbors or only a single family. The family member criticizes and advises each other about the occurrence of bad speech, bad deeds, etc. Children and adults have equal rights and participation in the discussion. The family discussion allows the problem to be resolved immediately without having to bring the problem before the discussion. Family size and structure determine the layout

of the house plan. In Awra Amba, the family that has adult children and younger children has a different layout.



Figure 4.155. Family structure factor for house form.

Position of Women:

Awra Amba is above all known for its principle of gender equality. The community established a new culture of work. The work division is based on personal capability. Men and women participate equally in housework, administering wealth, making decisions, and participating in committees, depending on their capabilities. Men bake injera, cook wat (local foods), fetch water, nurse children, and do all activities traditionally reserved for women. Women do farming, weaving, and other activities traditionally reserved for men. Therefore, there is no women's or men's space in the settlement, compound, or house. All functional spaces can be accessed by men and women. A special pantry or kitchen is one of the few places considered a woman's or man's domain, and it is physically adjacent to the rest of the interior space. The spatial arrangement of the house in Awra Amba is based on basic needs, and age. In Awra Amba, there is no sex segregation. In the houses, the women and the men dine in the living area together. The cooking area is used by men and women, depending on who arrives and has the time and ability to cook wet spouse and make injera.

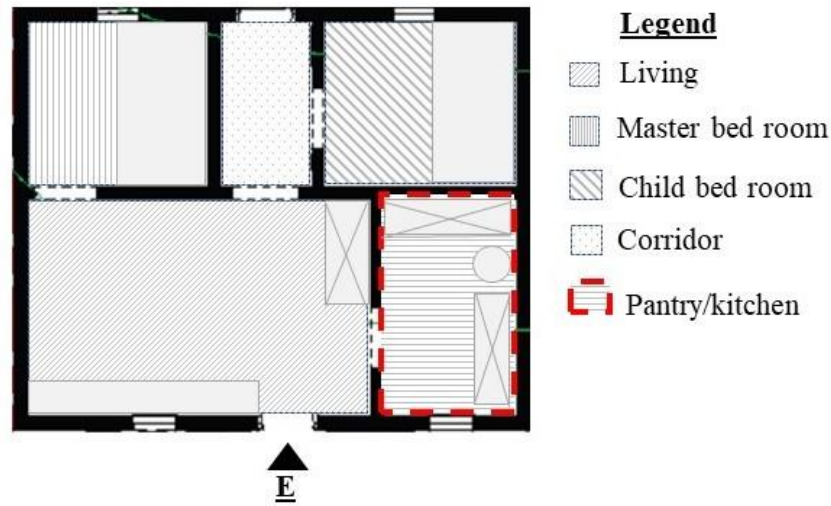


Figure 4.156. Position of women factor for house form.

Need for privacy:

In the Awra Amba community, they don't give strong attention to privacy between neighboring houses; they share the front and back yards as linkage roads; there is no link between semi-private space and semi-public space. The entrance into the main house is in both directions. There is semi-private space in the front and backyard, which are the corridor and living room. The neighbor can enter the house in both directions.

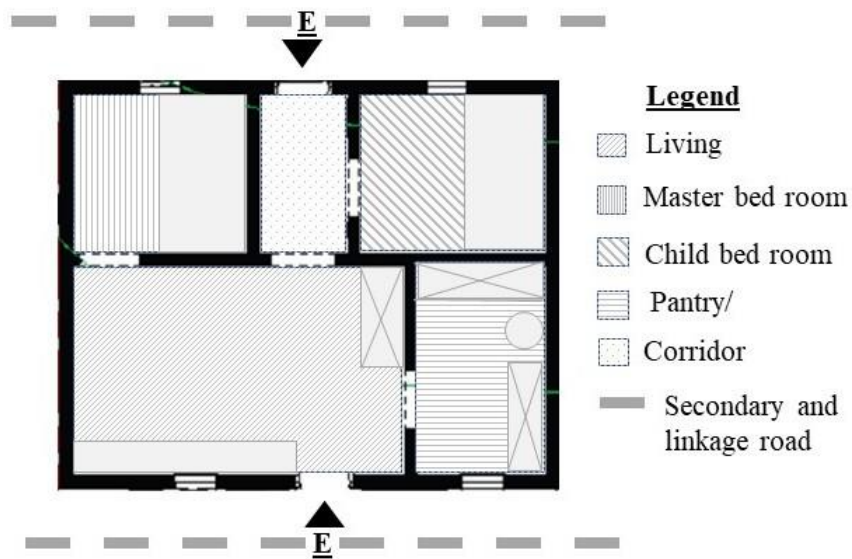


Figure 4.157. Need for privacy factor for house form.

Social Interaction:

The community is a cooperative community; they work together and share the profit equally. The working area, which is usually the most common in Awra Amba, is located at the center of the settlement. The central “Warka tree” is a meeting space and distribution of tasks before they go to work.

According to (Rapoport, 1969, p. 69) people are social animals meeting others. The concern is where people meet, whether in the house, the city, the bath, or the street. Some of Awra Amba's households want to share front and back yards.

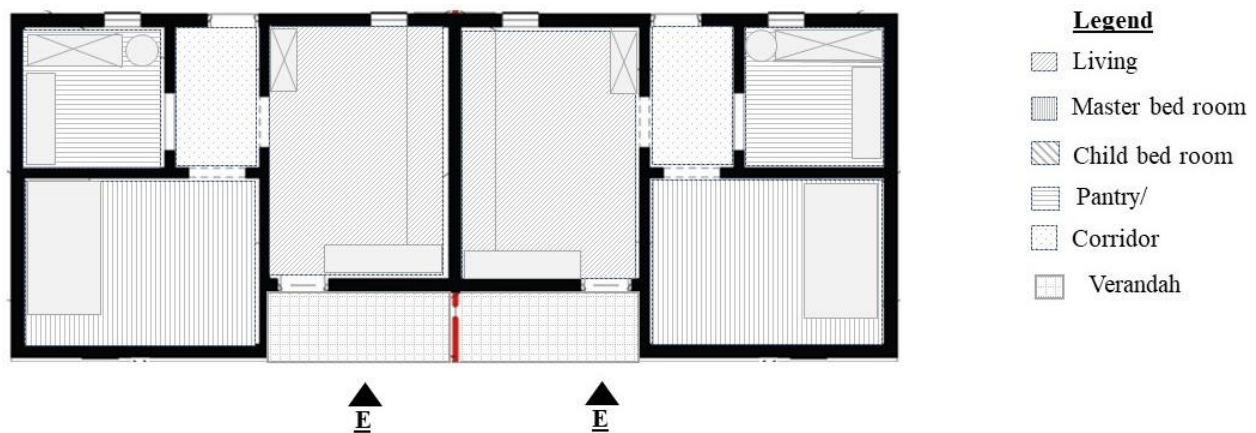


Figure 4.158. Social interaction factor for house form.

Chapter five

Summary of the Findings, Conclusion, and Recommendation

5.1 Introduction

Chapter five comprises the summary of findings, conclusion, and recommendations. The summary of findings includes settlement, compound, and house spatial elements and activity with their meanings. The conclusion is examined the finding concerning the existing literature. Finally, the recommendation forwards action that should be taken to address to preserve Awra Amba settlement's spatial characteristics.

5.2 Summary of the Findings

5.2.1 The settlement

A. The spatial features

The Awra Amba community was established in 1972 by Aba Zumra Nuru and the like-minded people (a small group of men and women of 66 individuals from 19 families) who accepted his idea. Due to the conflict with neighborhood peasants with religious differences, they were exiled and lived in southern Ethiopia, in Bonga, from the years 1980 to 1986 E.C. After a period in exile, when they returned to the original land, Awra Amba, they didn't have any land to live on. During that time, they had spent about 4-5 months sleeping rough under trees, suffering from the heat of the sun and rain, until a generous person, Ato Kindachew, gave them around 15 hectares of a residential area.

Before the establishment of the community, the local peasants were living in a dispersed way. Once the community is established, the settlement is formed on the plateau, which is the most elevated point at the settlement in the spatial organization of the linear arrangement. The main reason for the selection of the Amba (plateau) site was a desire: to settle on a defensive and strategically high land to protect the community from neighborhood enemies; to manage the fortunate flat land and “Gind River” for agricultural activities; the favorable climate was another criterion to select a living site; and the availability of trees was also another reason.

During this time, due to traditional farming methods and a scarcity of land for enough production, a large number of the community members died. At last, they thought that life is not only possible through farming but can also be achieved through an industry. They decided to shift their focus to industry. The industry expanded the settlement into fertile flat land.

The name of the settlement, Awra Amba, was raised during a meeting of the local people with government officials by the local priest. According to him, the name Awra Amba originates from the story of “there is anaconda out from the river and kills so many people until it reaches the plateau of the current settlement, then it is defeated by the community to remind them that they call it “Awra Amba,” which means “Awra” means ‘wild animal’, and Amba means “top of the hill.”

The roads at Awra Amba are categorized based on their function and size into three categories: the main road, the secondary (collector) road, and the local (linkage) road. In Awra Amba, there is one main road that parcels the community into two, which is stretched along the bottom of the plateau land from NW (North West) direction to S (South) direction. It is a 2 km aggregate paved track south of the asphalt road, which elongates from Woreta to Debire Tabor. It is the wider road in the settlement that parcels the community into two, the only access to connect the community by the vehicle used to transport the people to a nearby city and the tourist, and to transport raw materials for the industry and also a byproduct of the community to the remaining city of the country.

The secondary road connects to every corner of the settlement, and the “Warka tree” (center of the settlement) runs in all directions of the compound. The main function of this road is to connect every corner of the community to the Warka tree, the center, and the first meeting place before they go to work. Which increases the social interaction of the community. In addition to this, there are local roads on the hillside parallel to the main road that adjust with the contour. Therefore, the collector road on the hillside parallels the main road and is adjacent to the contour. They are used to access the compound, the Warka tree, the small-scale industries, clinic, meal house, Ginde River, and waste disposal near the dairy farming of the community, etc.

The third is the linkage road, which connects every house with the secondary road and main road. They are used like roads that lead to access toilets, a traditional kitchen, a back yard, a front yard,

and a weaving room in the compound. The majority of collector and linkage roads overlap and pass through the front and back yards of the compound used to access the neighborhood household compound. The overlay of these three-road types generates an organic grid road network and an organic grid urban pattern for their dwellings.

Open space in Awra Amba is located adjacent to the main road. They vary in size and function. There are four open spaces in the Awra Amba settlement. The first open space is located in the southern direction at the entrance of the community settlement, which is surrounded by dairy farming and the house. This open space is wider than the other and used for waste disposal, children's playground, dairy farming, and selling goods (the open market to sell goods for the farmers who cross the settlement to walk to Wonji Amba open market). The second open space is located at the center of the community settlement, which is surrounded by the factory and the house. These open spaces are used for animal placement and dairy farming. The third is the central open space, which is surrounded by the house and used for meetings, car parking for tourists who came to visit Awra Amaba to celebrate the holiday, and neighborhood farmers selling goods (as an open market). The fourth is the open space, which is surrounded by the house and used for the children's playground and walkway. Finally, the open space, which is surrounded by the house and the community clinic, is used for youth playgrounds and dairy farming.

The special places in the settlements are farmland, compound, Ginde River, open spaces, schools, health posts, community café, schools, dairy farming, eldercare center, museum of the community, administrative office, internet, Aba zumra house, water distribution point, Bono Wuha, Ginde river, industry, and Warka tree.

B. The Activities that show spatial elements

There are two types of membership in Awra Amba: community and cooperative member; both of them apply the principle of the community everywhere. The only difference is that the cooperative member of the community in Awra Amba settlement serves eight hours a day based on the task allocated by the committee. The allocation process considers the ability of the community member, which makes them happy and flexible to work. They work in a group on different tasks such as, at the farm to plant fruits and crops, weaving and spinning in the community textile factory, on a small-scale oil factory, taking care of the elders at the eldercare center, poultry, a laboratory

technician at a community clinic, preparing and serving at the community café, human resource management of the community, selling at the shop, urban agriculture, guiding tourists who visit Awra Amba, selling clothing manufactured from the community textile factory, milling, ICT center, preparing spice (Balitina), etc.

Even though there is no gender specification for the work, the men especially work on guarding the village, with three programs: 12 pm-4 pm, 4 pm-8 am, and 8 am-12 am.

Some activities determine the spatial marks of the Awra Amba settlement, which are the burial ceremony and holiday celebration. The burial ceremony in the community consists of a few community members accomplishing the burial procedure; the rest will stay in the family house. After the burial ceremony has been completed, the family goes to work to make them forget their grief. More than ever, the only holiday celebrated in Awra Amba settlement was ‘Ethiopian New Year’. It is held under the Warka tree (rooted in the heart of the village) by dancing, music, and poetry from 2:00 am morning until 2:00 pm local time the night.

C. The meaning

The central “Warka tree” is believed to be a sacred place due to the strong attachment of the community to the activities held on it through time, such as the first meeting held during the establishment of the community, a conflict resolution place, and an only place to celebrate the lone holiday, the Ethiopian new year. More than ever, when they returned to the original lands in Awra Amba after a period of exile, they didn’t have any land to live on during that time, and they slept under a tree for 4-5 months, which generated a strong connection between the community and vegetation. They decide to never cut down, even though it’s not allowed to sit down on the terrace of the tree. Therefore, it is one of the green spaces that turn the main road. The green cape of Aba Zumra is derived from the texture and color of the vegetation (see Appendix 2).

5.2.2 The compound spatial elements

The compound is inherited from the residential area allocating committee; the committee allocates 150m² (10m*15m) residential area to the cooperative members who have no other residential area. But due to the member taking over the land without surveys, the compound size ranges from 142.4 m² to 248.5 m². Moreover, in Awra Amba, a wise use of the compound is

observed. The compound is characterized by an urban form regular polygon with a defined boundary and is fenced by shrubs and vegetation.

Most of the time, the housing allocation committee is legally responsible for ensuring the site, but there is a different mechanism to identify the parcel, such as inherited from the family, by choice of the household, or through the loan system.

Access to the compound is based on household interest from the front yard or the right or left side of the compound. The compound is accessed through a narrow, unpaved footpath with an average width of 1.3m, which needs proper repair. The compound adjacent to the main road is accessed through the main road, which crosses the settlement.

The perimeter of the compound is fenced with eucalyptus, trees, and shrubs at an average height of 1.9 meters. Most of the compound has a fence at the front and back yards of the compound. No closed fence between linearly arranged consecutive neighborhood compounds generates strong social interaction among the members of the community. Nowadays, some of the households put a closed fence in every direction and change the access of the compound to the back yard due to the student who came from the neighborhood peasants stealing goods.

In Awra Amba, the household compounds are located next to dairy farming, cafés, shops, meal houses, water tanker eldercare centers, farmland, clinics, groundwater, cottage industries, etc. This makes the settlement a physical and functionally integrated land use that promotes community and socialization, making it a vibrant and active neighborhood.

In the compound, the main house is constructed at the boundary line of the neighbor to maximize the backyard space for activities such as the traditional kitchen, fuel-saving stove weaving, dry spice and cloth, children's playground, firewood storage, honeycomb, vegetation area, and related activities. 72.22% of the community compound has more than two huts in linear, grid, and clustered arrangements. The remaining 27.78% has two huts.

The common elements of the compound are the main house, traditional kitchen, weaving, outdoor kitchen, vegetation, toilet, store, front yard, and back yard. Due to the school being built by the community, recently the community has been hosting students from the nearby villages to attend

the school, hence providing an opportunity to generate additional income for the families by renting rooms for the students.

All compounds have a private toilet and a traditional kitchen that is separate from the main house. Based on the interaction of the elements of the compound, the main house with the front yard, back yard, and service huts can be categorized into five main groups; these are



Figure 5.1. Types of Awra Amba compound arrangement.

1. The compound which has one service hut at the back of the main house generates a minimum front yard and maximum back yard.

2. The compound which has two service huts at the back of the main house generates a minimum front yard and maximum back yard.
3. The compound which the front yard is located between the service house and the main house.
4. The compound which the back yard is located between the service house and the main house.
5. The compound which has L shape main house doesn't have a back yard and maximum front yard

The possible factors to determine the layout are topography, economy, need for privacy, social interaction, and basic needs.

The house is located on a hillside, which has a linear arrangement in which the front and back yards are used as a linkage road to access the next house. The secondary road and linkage road defined the organic grid pattern of the compound and delineated the property of the household.

The front yard or back yard is crossed by a collector, or linkage road, with an average road width of 1.20 meters because of the limited flat space on the top of the plateau and to defend the settlement easily from neighborhood enemies. When the linkage and collector road passes through the front and back yards, there is no lock between the private and public spaces; beside it, there is a semi-public space that reflects the social cohesion of the community. Some of the compounds, due to the arrangement of the main and service houses, create an open space, which is a semi-private backyard space.

The front yard space is used as weaving, transition space to the consecutive neighborhood compound, and open space for daily activities such as washing, children's playfield, linkage road, dry cloth, dry spice, and weaving. The maximum front yard space reaches 121 m². The common backyard space in the Awra Amba settlement is also used for cooking, access to the toilet, honey harvesting, and animal domains.

The fixed elements that are found in the compounds of ordinary Awra Amba settlements are the house, toilet, weaving room, and fuel-saving stove. The semi-fixed elements are seasonal crops such as maize, fruit, and vegetables in the limited backyard space, very limited indigenous trees, a grain store (Gota) constructed from the soil, ash, animal dung, and water, straw-covered with conical grass tops, and traditional hives made of locally available materials such as wood, straw, soil water, and animal dung. The non-fixed elements that were observed during the research are people, cattle, honeycombs, and weaving.

A. Activities

The major activities that take place in the compounds are cooking, planting vegetation and fruits, animal feeding, playing, washing, drying grains, washing clothes, and sitting spaces. There is no sex segregation; everyone uses the compound space.

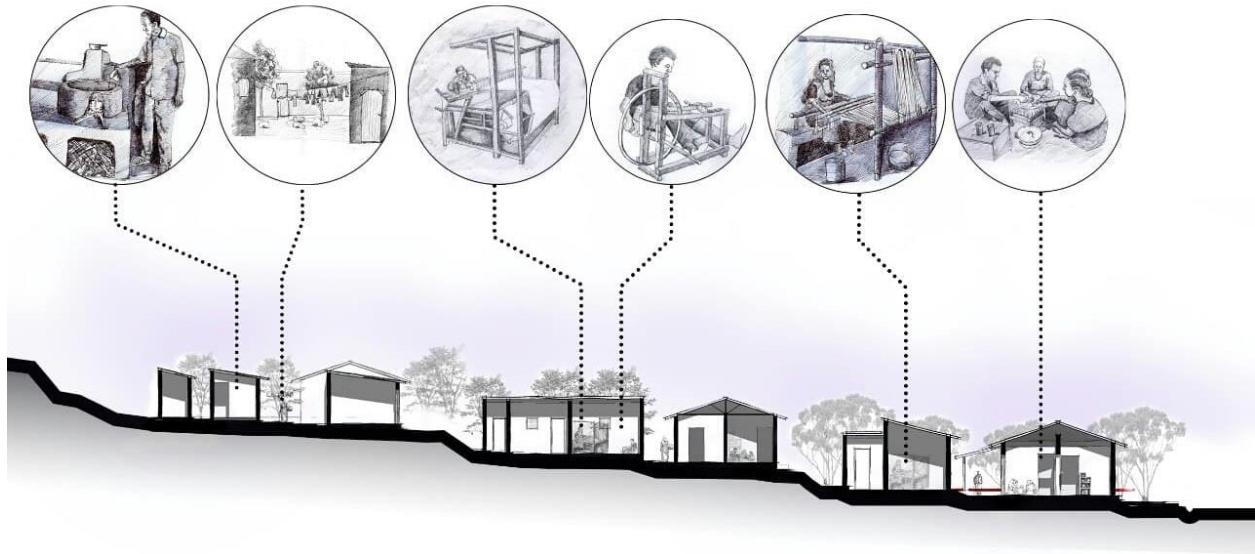


Figure 5.2. Activity at the compound.

B. The Meaning

The orientation of the compound is towards the east. If the site does not allow it to be oriented to the east, the second most preferable direction is the west. This orientation of the house is mainly influenced by the Warka Tree and the main road, which parcel the settlement into two.

5.2.3 The house spatial elements

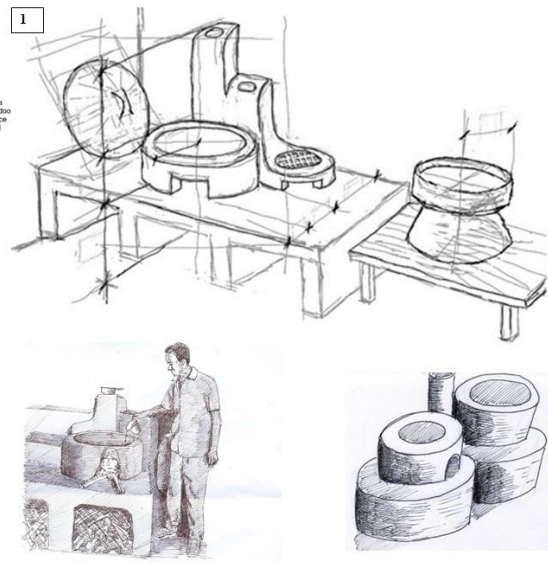
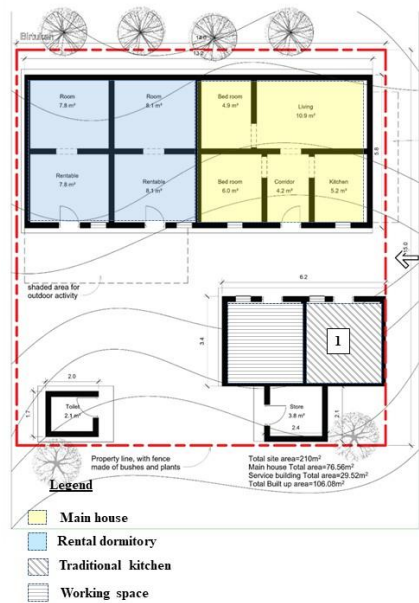
There are two types of houses in Awra Amba: row houses and detached houses. Both of the house's types of internal space are similar; they have a linear, central, and grid arrangement. The only difference is that in a row house, two consecutive houses share the partition wall “Gib af” to minimize the housing cost by sharing the central wall in a detached house that stands alone.

Most of the house plot in Awra Amba is in the range of 30m² to 60m². In some cases, it covers 90m². The average plot of the Awra Amba house is 52.62m².

The house of Awra Amba's interior arrangement is determined by the economy, social interaction, basic needs, position of women, family structure, defense, and material and construction technique. Based on the interior arrangement of functional space, the house of Awra Amba is categorized into five sees (Appendix 9).

Semi-fixed features of the Awra Amba house have furniture made from; eucalyptus frame, stone, or bamboo wave plaster with mud (a mixture of three hands of ash and one hand of soil, animal dung, and water). They are built attractively, with a whitish color and a fine texture. The furniture inside the living room is a “Medeb” locally made sofa, a shelf local name “Mesikot.” In cooking and storage space, they have “Goushigusha,” which is flour storage. Nowadays, they try to convert “Gushigusha” into plastic barrels and metal containers. In bedrooms, they have a bed made from wood or stone plaster with mud (a mixture of soil, water, animal dung, and ash) covered with locally made canvas.

At the service quarter, there is a grain store (Gota), and the basic characteristics of Awra Amba community house furniture, which are weaving and fuel-saving stoves, are available. The fuel-saving stove was designed by Aba Zumra to solve the problem of the common trade of his parents cooking on the floor, which is that the ash produced during cooking dispersed and made the floor dirty; children accidentally fell into the fireplace; the smoke from the cooking polluted the house, and the use of a large amount of firewood wind blowing to decrease heat energy can lead to deforestation. The Awra Amba community fuel-saving stove is started by making it on a raised platform on the floor and placing the stove on the platform made from wood, mud, and stone. Above the platform, he built a stove by mixing three parts of ash and one part of soil and then adding water to the mixture, which is the best solution to make it thermally resistant, have a fine texture, and stick together. Both cooking “Wet” (sauce) and making injera can be done simultaneously or separately on this stove. There is a hole through which firewood could be inserted and a chimney to lead the smoke out of the house. The chimney merges two tubes from the injera pan, and the saucepan stove creates a small hole and releases the smoke outside. Most of the time, it is kept closed. There are multiple advantages to the hole, which are: an additional heat source for boiling water during cooking by putting a metallic vessel on the hole; heating the room during the cold season by opening the hole; and a gate to clean the soot when the soot blocks the chimney.



Fuel-saving stove



Chimney (exit for smoke)

Figure 5.3. Traditional fuel-saving stove.

To increase their income source, most of the residents of Awra Amba work at home, such as weaving. There are two types of machines, which are traditional and modern. The first is a modern weaving machine made of steel, which is wider and require less energy when compared with the traditional machine. The second is traditional, which is made of local material, wood, and has a hole in the ground. It has a limitation on the width of the fabric, and it is difficult to work on it. There is supportive furniture for weaving, such as a spinning machine (Madawerya), which spins cotton into thread.

A. The Activity

The house in Awra Amba is also used for weaving, cooking, storage, playing with family, watching TV, sleeping, weddings, mourning, storage, nursing children, and socialization. The living space is busy in the evening. The cooking space is busy in the morning, midday, and evening hours. The weaving space is busy in the evening.

B. The Meaning

The spatial arrangement of the house in Awra Amba is based on basic needs, and age. In Awra Amba, there is no sex segregation. In the houses, the women and the men dine in the living area together. The cooking area is used by the men and women, depending on who arrives and has the time and ability to cook a wet spouse and make injera.

5.2.4 The relationship between house and settlement

The space organization of Awra Amba has constituted an essential characteristic. Which is the dwelling consisting of rooms divided along personal and functional grounds arranged around a rectangular, narrow, confined courtyard with semi-public open space in between private plots. Which is defined by the individual plots and collector and linkage roads. There is no lock between private and public space; anyone passes through the front yard of the individual plot.

5.2.5 Factors affecting the house form

The house of the Awra Amba community reflects the physical condition of the environment. Some of the physical forces that modify the housing form and settlement of the Awra Amba community are site, economy, material, and defense. But the house form is not simply the result of physical forces or any single causal factor; it is the consequence of a whole range of socio-cultural factors. The major determinant factor of the Awra Amba house is the socio-culture of the community, such as basic needs, family, the position of women, the need for privacy, and social interaction.

5.2.6 Material and construction technique

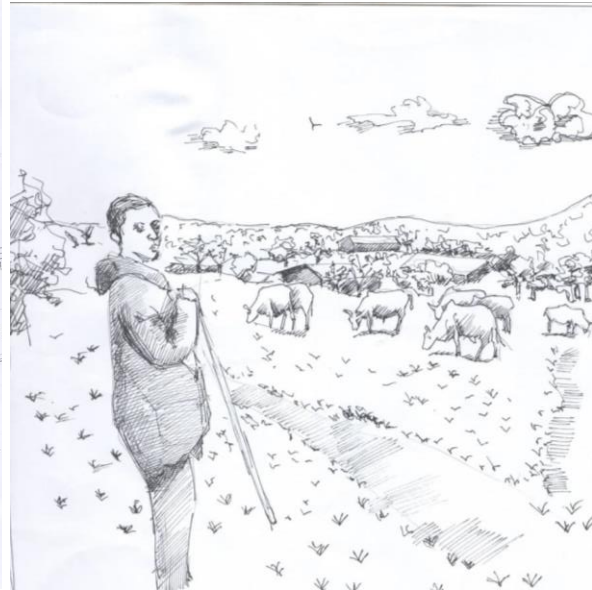
The building is a major social occasion in Awra Amba, in which both men and women of the community cooperate. The form of the Awra Amba house is four-sided regular polygons surrounded by a eucalyptus frame mud plaster load-bearing wall. The method of construction is a circle of 10-15cm dim eucalyptus poles driven into the ground approximately 70 cm apart in every corner of the plot area. A series of horizontal rings are tied together by metal nails, plant twigs, or other suitable tying materials with the vertical pieces, and then the split of the eucalyptus gradually closes in every direction except the door and window. When the main framework is completed. A roof portion starts by adding the horizontal 5cm by 7cm sizing eucalyptus purlin tied together over the vertical pole. Finally, the corrugated iron sheet is covered and the eucalyptus frame wall plaster with mud ('Chiqa' has been made from a mixture of selected soil mixed with water, then selected Geleba /Straw/ is added to it, and the remixing process takes place again and again after two or three weeks; it will be ready for the selected construction purpose), then fined with cinder and caw manure, which makes it water and fireproof. 50cm high masonry wall is covered in all directions to give strength to the structure and to protect it from flooding. The construction materials used for the house are the same as those used in the rest of the village. Most of the construction material is sourced locally, and the wood required was provided by the committee with a payment plan arranged. Stone was found in the area and is now in decline. Other materials, such as corrugated sheets, were bought and transported from the town of Debire Tabor.

5.2.7 Culture expresses through Fixed, semi-fixed, and non-fixed elements of the built environment

The fixed elements of the Awra Amba settlement are a compound, house, Warka tree, factory, dairy farming, café, milling, etc. The semi-fixed elements are farming land, the "Ginde" river, vegetation, fine and cinder furniture inside the house "Medeb," "Mesikot," "Gushigusha," a fuel-saving stove, "Gota," and traditional hives. The non-fixed elements are the Awra Amba Community Amharic language, community dance for the new year, white traditional cloth, etc.



Neighborhood farmer pass
through Awra Amba settlement



Dairy farming in Awra Amba
settlement

Figure 5.4. Fixed, semi-fixed, and non-fixed elements of the built environment.

5.3 Discussion

5.3.1 The space used in Settlement, Compound, House, and Types of Houses and Compound

According to (Gebremedhin, 1971) and (Oliver P. , 1997), the Awra Amba settlement formed on the plateau of the mountain top shares the advantages of other similar settlements in Ethiopia. The settlement is formed on the plateau, which is the most elevated point at the settlement, in the form of a linear arrangement. The main reason for the selection of the Amba (plateau) site with a dense and tight urban pattern was a desire to settle on a defensive and strategically high land to protect the community from neighborhood enemies. This is also true, as (Oliver P. , 1997) noted that defense is related to the nature of the perceived danger of a threat to culture.

The space organization of Awra Amba has constituted an essential characteristic. Which is the dwelling face to the street consisting of rooms divided along personal and functional grounds arranged around a rectangular narrow confined courtyard semi-public open space in-between private plot. Which is defined by the individual plot, collector, and linkage roads. The spatial organization of the settlement is the fundamental aspect of the design environment which reflects the social cohesion of the community. This is also true, as (Rapoport, 1977) noted that spatial

organization is, in fact, a more fundamental aspect of the designed environment than shape, materials, and the like.

According to (Rapoport, 1969, p. 70) “The behavior patterns limit in the different domains, public or private, by prohibiting some and allowing others. This is an expression of world view and attitudes and is one way in which culture is linked to the way people use space.” The spatial relationship between the neighborhood compound is linear, and there is no closed fence between neighbors. It shows they have strong social interaction among the members of the community. This strong social interaction reflects across domains. There is no lock between private and public space; anyone passes through the front yard and back yard of the individual plot.

Due to its close proximity to the compound, the factory, farmland, shops, clinic, poultry, and café, the settlement has a mixed zoning of land use, which makes the settlement vibrant and active, and the house cannot be seen in isolation from the settlement (Rapoport, 1969). In Awra Amba, a wise use of the compound is characterized by an urban-form regular polygon with a defined boundary and fenced by shrubs and vegetation only on two sides.

Based on the construction process, the type of Awra Amba house is categorized as twining or tying. The process by which building elements are tied together by rope, plant twigs, or other suitable materials (Gebremedhin, 1971). The building is a major social occasion in Awra Amba, in which both men and women of the community cooperate. The form of the Awra Amba house is four-sided regular polygons surrounded by eucalyptus frame mud plaster load-bearing wall. The method of construction is a circle of 10-15cm dim eucalyptus poles driven into the ground approximately 70 cm apart in every corner of the plot area. A series of horizontal rings are tied together by metal nails, plant twigs, or other suitable tying materials with the vertical pieces, and then the split of the eucalyptus gradually closes in every direction except the door and window. When the main framework is completed. A roof portion starts by adding the horizontal 5cm*7cm sizing eucalyptus purlin tie together over the vertical pole. Finally, the corrugated iron sheet is covered and the eucalyptus frame wall plaster with mud (‘Chiqa’ has been made from a mixture of selected soil mixed with water, then selected, Geleba /Straw/ added to it, and the remixing process takes place again and again after two or three weeks; it will be ready for the selected construction purpose), then fined with cinder and caw manure, which makes it water and fireproof. A 50cm high masonry wall is covered in all directions to give strength to the structure and to

protect it from flooding. The construction materials used for the house are the same as those used in the rest of the village. Most of the construction material is sourced locally, and the wood required was provided by the committee with a payment plan arranged. Stone was found in the area and is now in decline. Other materials, such as corrugated sheets, were bought and transported from the town of Debire Tabor.

The domestic spaces classification is based on basic needs, family structure, social interaction, the position of women, and the need for privacy. whereas men and women share “Medeb” in the living area, weaving area, and cooking area. The children's bedroom and the master bedroom are separate.

In the literature review, physical factors such as defense, economy, religion, climate, construction materials, and sites are determinant factors for the form of a house. Except for climate, this is also true for Awra Amba because:

- The house of Awra Amba transforms from sleeping under a tree to “Sekela,” a house with a rectangular base with a lengthy width and a stepped thatched roof. The community transforms the grass roof into a corrugated iron sheet due to the scarcity of “Sirsira,” the special grass used for roof cover, which grown-ups own common land nowadays population growth and every land occupied by the farmers there is no place to grow it, the dust collects on the grass roof falls on the dish, and during 2001 the community gets electricity the residence fear. The common characteristics of the Awra Amba house are the cinder and fine texture wall made with a mixture of soil, straw, animal dung, and ash mixed with water that is fire-resistant.
- The Awra Amba house form is modified by the economy, defense, site, and material. For example,
 - The row house, “Row” house type, has a common wall, “Meketa,” to minimize the cost of the house. All this has direct relations with the economy.
 - The house, which is built on a plateau surrounded by a narrow organic grid road, is to the advantage of the Awra Amba residents since it is used as a fortification.
 - The house is modified to step because of the topography. There is flat and plateau topography in the Awra Amba settlement. The settlement on the hill, the house of the community, and the

secondary road aligns with the contour of the hill, and the linkage road is defined in between the houses.

- Ethiopia's Awra Amba is located in a tropical climate zone where high temperatures are expected. Therefore, CIS-made roof is unthinkable. Therefore, the climate is not a modifier factor for the form of houses at Awra Amba.
- The major determinant factor of Awra Amba's house is the socio-culture of the community. Such as basic needs, family structure, the position of women, the need for privacy, and social structure.
 - **Basic needs:** Basic needs are also one of the determinant factors for the Awra Amba house form. The cooperative members of the community work together and share the profit equally so that the community member arranges the internal space based on a private income source such as weaving rooms, poultry, vegetation, rental dormitories, and honey harvesting, which alter the house form.
 - **Family:** The Awra Amba community believes family is a key tool for bringing about peace and development throughout the world through discussing and solving problems at the family level. The family discussion was held in a rectangular, narrow, confined courtyard with a semi-public open space in-between a private plot. Family size and structure determine the layout of the house plan. In Awra Amba, the family that has adult children and younger children has a different layout. Adult children went to a separate bedroom.
 - **Position of Women:** Awra Amba is above all known for its principle of gender equality. The community established a new culture of work. The work division is based on personal capability. Men and women participate equally in housework, administering wealth, making decision, and participating in committees, depending on their capabilities. Men bake injera, cook wat (local foods), fetch water, nurse children, and do all activities traditionally reserved for women. Women do farming, weaving, and other activities traditionally reserved for men. Therefore, there is no women's or men's space in the settlement, compound, or house. All functional spaces can be accessed by men and women. A special pantry or kitchen is one of the few places considered a women's or

men's domain, and it is physically adjacent to the rest of the interior space. The spatial arrangement of the house in Awra Amba is based on basic needs and age. In Awra Amba, there is no sex segregation. In the houses, the women and the men dine in the living area together. The cooking area is used by man and women, depending on who arrives and has the time and ability to cook a wet spouse and make injera.

- **Need for privacy:** in the Awra Amba community, they don't give strong attention to privacy between neighboring houses, they share the front and back yards as linkage roads; there is no link between semi-private space and semi-public space. The entrance into the main house is in both directions. There is semi-private space in the front and backyard, which are a corridor and living room. The neighbor can enter the house in both directions.
- **Social interaction:** The community is a cooperative community; they work together and share the profit equally. The working area, which is usually the most common space in Awra Amba, is located at the center of the settlement. The central "Warka tree" is a meeting space and distribution of tasks before they go to work. According to (Rapoport, 1969, p. 69) people are social animals meeting others. The concern is where people meet, whether in the house, the city, the bath, or the street. Some of Awra Amba's households want to share front and back yards.
- In the Awra Amba community, they don't give strong attention to privacy between neighboring houses; they share the front and back yards as linkage roads; there is no lock between semi-private space and semi-public space.
- The community is a cooperative community; they work together and share the profit equally. The working area, which is usually the most common in Awra Amba is located at the center of the settlement. The central "Warka tree" is a meeting space and distribution of tasks before they go to work.
- The spatial characteristics of the Awra Amba settlement are expressed through the organization of space, time, meaning, and communication. The dwelling consists of rectangular and square rooms divided along personal and functional ground arranged around a rectangular, narrow, confined, rammed earth-finished courtyard. The linear arrangement of the dwelling and courtyard follows the same pattern. Finally, the settlement as a whole consists of several

courtyards. It is one of the socializing spaces in the settlement, such as the children's playground, family discussions etc.

5.3 Conclusion

The findings of this research reinforce the discussion of (Gebremedhin, 1971) and (Oliver P. , 1997) which are that the settlement is formed on the plateau with the desire to settle on a defensive and strategically high land to protect the neighborhood enemies, to manage the fortunate flat land and “Gind River” for agriculture, fertile land suitable for agricultural activities, favorable climate was the other criteria to select a living site, and availability of trees was also another reason.

Due to its close proximity to the compound, the factory, farmland, shops, clinic, poultry, and café, the settlement has mixed zoning of land use, which makes the settlement vibrant and active, and the house cannot be seen in isolation from the settlement (Rapoport, 1969) . In Awra Amba, a wise use of the compound is characterized by an urban form, a regular polygon with a defined boundary and fenced by shrubs and vegetation only on two sides; they use the backyard and front yard as linkage roads to access the neighbor’s house; there is blockade between private and public space, which expresses the strong social interaction of the community; this reinforces the different domains, public or private- the express culture of the community.” (Rapoport, 1969, p. 70).

There are two types of houses in Awra Amb: row houses and detached houses. The house of Awra Amba's interior arrangement is classified into five. The house form of Awra Amba is modified by site, economy, social interaction, basic needs, position of women, family structure, defense, and material and construction technique. The physical factors, such as climate, discussed in the literature were never determined in the form of the Awra Amba hut. Though there is a corrugated iron sheet roof, which is not suitable for the local climate, they have houses with a similar form to those of similar peasants. In support of this idea, Vellinga (2006) stated that many of the vernacular builders of today are increasingly confronted with modern issues like planning regulations, climate change, resource depletion, building performance standards, population growth, technology transfer, and even, in some cases, mortgage restrictions and insurance criteria.

Awra Amba is a cooperative community. It has an extraordinary lifestyle and unique culture, expressed through the settlement pattern and housing form. The spatial characteristics of Awra Amba are expressed through the organization of space, time, meaning, and communication at

settlement, compound, and house levels. But due to scarcity of land and lack of knowledge, the spatial heritage of Awra Amba is in danger. The rural-urban transformation phenomenon has been preserving these unique cultures.

Generally, the spatial heritage of Awra Amba is in danger. The arrival of neighborhood peasants for school was the reason for the community to ignore the social integration of the early times. For example, a member of the community finds lost property and gives it to the “lost and found property storing committee,” but the student’s arrival from neighborhood peasants does not return the lost property of somebody but rather stolen goods, besides the community-built fence that changes the culture of the community by changing the private-public domain. Urbanization and the scarcity of land were also other factors in the irreversible change in cultural practices. In addition, the current generation's lack of interest in their spatial heritage and the loss of some social networks are reasons for the loss of historic continuity. Indeed, the current generation has developed misconceptions about cultural practices and spatial heritage.

Growing “Sirsira,” the special grass used for roof cover, has never gotten easier. Due to population growth and scarcity of land, farmers cultivate the common land that is suitable to grow “Sirsira.” Currently, access to these construction materials is very difficult. Because of this, the Awra Amba community preferred to construct houses with CIS (corrugated iron sheet) that came due to urbanization. Besides, the social network of the community is losing its strength because construction needs external skills outside the community. They never cooperated as usual.

5.4 Recommendations

5.4.1 The community:

- The spatial characteristics of Awra Amba are unbelievably being converted because of the new construction of a store on public space. Besides the community loss of socializing space and a lack of knowledge on heritage, they are creating huge destruction on material utilization. The grass roof of the house is replaced with CIS corrugated iron sheet roof coverings, and communal furniture like the mud plaster bamboo weave (Gushigusha) is swapped out for a metal container. Thus, there needs to be a means to teach the people of Awra Amba how to profit from the tourism sector in order to stop destroying this legacy.

- The primary cause of the lack of land is population growth. In this instance, multi-story housing would be the best option for locals looking to house a large number of people in a small space.

5.4.2 The Government and Policy Makers:

The government has to study and document the spatial characteristics of rural Ethiopia rather than construct the same house size form and grid arrangement for new rural settlements.

The Awra Amba community has to be registered for its rich cultural and architectural heritage. The following remedies have to be taken immediately to stop the demolishing of the houses and make the site a tourist destination:

- a) Create awareness among the community about the value the site has for the residents and the country so that they can preserve the heritage.
- b) Provide a proper access road to the site from Woreta town.
- c) Construct guest houses that are similar to local houses, provide water, and toilets, and use solar panels as a power source.
- d) Create appropriate access within a settlement by re-sizing natural stone steps suitable for all age groups to access any place on the site.
- e) Promote Awra Amba by using local and international media to attract both local and international tourists to the site.
- f) Create a win-win approach for the residents and the government from the tourist income, which can enhance heritage protection and improve the livelihood of the residents of Awra Amba.
- g) Create awareness to stop the rising construction of temporary houses such as “storage” on the settlement open space, which strongly blocks local activity.
- h) Constructing any governmental service buildings by analyzing and considering local material, local temperature, and local skills.

5.4.3 Architects and Structural Engineers

- Architects and structural engineers ought to recommend a research-based substitute for the musty and dirty inner wall, as well as the corrugated iron sheet roof cover on the eucalyptus hardwood purlin.

- Urban planners, architects, and legislators can learn a lot from the socio-cultural component of the settlement design, the size of each individual house plot, and the Awra Amba settlement compound about cooperative community development.

5.4.4 Further research Areas

- The fuel-saving stove, made of a mixture of mud, animal dung, water, straw, and ash, and the wall finish of the Awra Amba house are both finely textured and fire-resistant. Further research is required on this fireproof wall technology.
- Research-based solutions for alternative construction materials are needed by structural engineers and architects to replace the corrugated iron sheet roof cover on the eucalyptus hardwood purlin and the musty and unclean inside wall.
- The fireplace, which is well-liked in the Awra Amba settlement, has spread to other regions of the nation. Residents of Awra Amba are adamant that using a fireplace reduces their demand for wood, exposes them to eye conditions, and decreases global warming.
- In addition to the physical features, the following factors are essential for the development of a new urban center in rural Ethiopia: economics, infrastructure (water, energy, etc.), annual food production and consumption, etc. are further research areas.

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APPENDIXES

AP. A1: Publishable manuscript

Addis Ababa University, Ethiopian Institute of Architecture, Building Construction and City Development (EiABC)

Master of Science in Architectural Engineering.

The spatial characteristics of Awra Amba

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Abstract

Urbanization is a decisive phenomenon of the 21st century over the entire planet. The government of Ethiopia plans to develop thousands of new urban centers all over the country rather than densifying the current big cities. During this rural-urban transformation in Ethiopia, the new housing and village layouts associated with the design of newly settled lands have often been designed without the proper detailed study of the traditional living pattern. In this case, the main objective of this research was to document the spatial characteristics of the Awra Amba community at settlement, compound, and house levels. To achieve these objectives, the case study method is selected as a research strategy since it is by far the best method for a descriptive, causal, or explanatory question. The case was conducted on 18 households based on stratified random sampling. A review of the literature, questionnaires, interviews, maps, QGIS, and photographs were used to collect data. The collected data were analyzed using activity time tables, spatial configuration maps, and a J graph. The analysis result shows that the settlement was formed on the plateau in 1972 in the form of a dense and urban pattern out of a desire to defend itself from neighbourhood enemies. The road hierarchies within the settlement create an organic grid pattern. The domain of private-public space has no lock, which reflects the social cohesion of the community. There are two types of houses: row houses and detached houses, arranged around a rectangular, narrow, confined courtyard with semi-public open space. The house is modified based on materials, defense, economy, and topography. But the major factor is the socio-culture makeup of the community. Finally, the study recommends that all bodies concerned should take immediate action to preserve the site for tourist attraction by creating awareness among the Awra Amba people about the heritage and the social benefit.

Key words— *Awra Amba, spatial characteristics, house, compound, settlement*



1. Introduction

1.1 Background of the study

urbanization is a decisive phenomenon of the 21st century over the entire planet. The United Nations projects that by 2050, almost 68% of the world's population will call urban areas their home. This expected urbanization rate in Africa will be extraordinary, “African cities have growth rates of up to 5% per year; which makes them the fastest-growing cities in the world today. The reason for this urban population growth is the continent seems late in the process and there are high internal Rural-Urban migration rates which are a major driver of urbanization into African cities” (Herbel, 2012).

Especially in Ethiopia, expected rapid rural-urban transformation because the country has 80% rural settlement and population growth in urban as well as the rural area (ECSA, 2007). “In rural Ethiopia where the annual population growth rate is 7%, congested cities increasingly cannot absorb the high rate of urban migration, and rural land is at capacity for subsistence farming, innovative methods are urgently needed to provide housing and encourage the growth of medium-scale towns” (Lara & Philippe, 2012) cited (Läpple, 2011). According to (National Planning Commission, 2016) the Government of Ethiopia plans to develop

thousands of new urban centers all over the country rather than densifying the current big cities elucidate in (National Planning Commission, 2011).

According to (Oliver 2003a) During the urbanization phenomena, the rural communities had been forced to adopt other's cultures. one of the major reasons is during this rural-urban transformation the settlement pattern and housing form determine without a detailed survey of the traditional pattern.

“In Ethiopia, the new housing and village layouts associated with the design of newly settled lands have often been designed without the proper detailed study of the traditional living pattern and its relation to the establishment of new agricultural activities (Konno, The Spatial Heritage of Burji, Ethiopia: The Case of Yebebo Kebele, 2014) cited (Andersen, 1978).

Most of the rural people in Ethiopia live in the traditional house were performing daily activities and rituals in this house, compound, and settlement. This traditional settlement, compound and the house form they live in are not well documented and studied. Besides, the country is losing a lot of rich traditional knowledge that can help to solve problems of

how to develop housing forms for those thousands of the new urban centers.

“The built forms of housing, food, storage, shops, school, clinics, and churches, temples, or mosques, as well as the overall pattern of the typical rural settlement are not equipped with a detailed survey of the traditional typical rural settlement”.
(Oliver P. , 2006b)

Similarly, the Awra Amba community settlement pattern, compound, and housing form had never been adequately explored, documented, and studied. As a result, the community had been forced to adopt other's cultures because of the rapid pressure of urbanization. Therefore, this study focuses on documenting the spatial characteristics of settlement patterns, compounds, and house forms of the Awra Amba community to be used for future housing development.

The study provides answers to the questions: What are the spatial elements of the house, compound, and settlement in Awra Amba? How do the people use the space at the house, compound, and settlement level? What are the meanings of the spaces they use at home, compound, and settlement levels? The study's specific objectives are to:

- a. To explore and document the spatial elements of the house, compound, and settlement of the Awra Amba community.
- b. To understand and document how the people, use the space at the house, compound, and settlement level.
- c. To investigate and document the meaning of the space they use at home, compound, and settlement levels.

This study contributes valuable learning opportunities for the socio-cultural aspect of house form and settlement pattern of the Awra Amba community expected to document the Awra Amba community's spatial characteristics. The rest of this paper is organized as follows: literature review, methods, results, discussion and implications, conclusions, and references .

2. Literature review

2.1 Definition of spatial, culture, and form

2.1.1 Definition of spatial

According to (Rapoport, 1977) A pattern of a relationship between the physical elements of the world and people are primarily spatial. objects and people are related through separation in and by space. Among people, psychological, social, and cultural

characteristics are often expressed in spatial terms.

“Space is experienced as the three-dimensional extension of the world which is around us the intervals, relationships, and distances between people and people, people and things and things and things, and space is at the heart of the built environment. Spatial organization is, in fact, a more fundamental aspect of the designed environment than shape, materials, and the like.” (Rapoport, 1977)

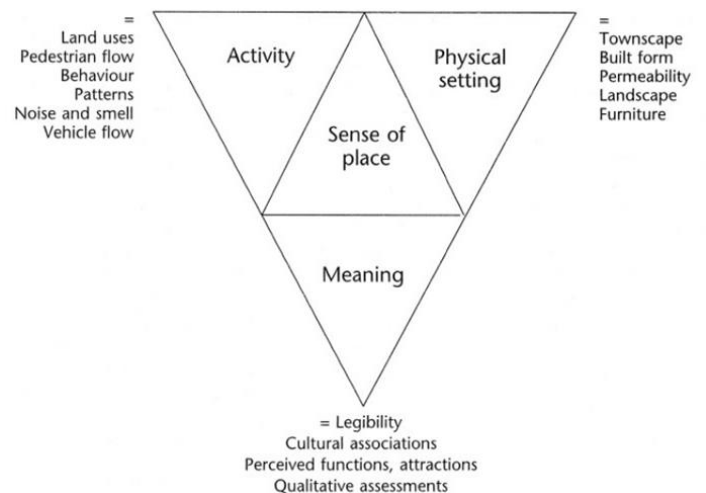
2.1.2 Definition of culture

The term “culture” can still be defined more inclusively as: “It is about a group of people who share a set of values, beliefs, a world view and symbol system which are learned and transmitted. these create a system of rules and which reflect ideals and create a lifestyle, guiding behavior, roles, meanings as well as built environment”. (Rapoport, 1977) cited Kroeber and Kluckhohn 1952). Culture is the total equipment of ideas and institutions and conventionalized activities of a people. (Rapoport, 1969). In this definition and else, the most important aspect of the term is that it is shared by a society, transferred from generation to generation, and loaded with that society’s value systems. It becomes through

these shared meanings that culture enables people to ‘make sense of things around them; let them communicate and formulate a built environment.

2.2 The construction of the place

Edward (1976) discussed the identity of a place was comprised of three interrelated components, each irreducible to the other physical features or appearance, observable activities and functions, and meanings or symbols. There was an infinite range of content within each of these and numberless ways in which they can combine. Hence, there was no discernible limit to the diversity of identities of places, and every identifiable place has unique content and patterns of relationships that were expressed and endured in the spirit of that place. Montgomery cited in Yonas (2012) gave the sense of place as activity, image, and form.



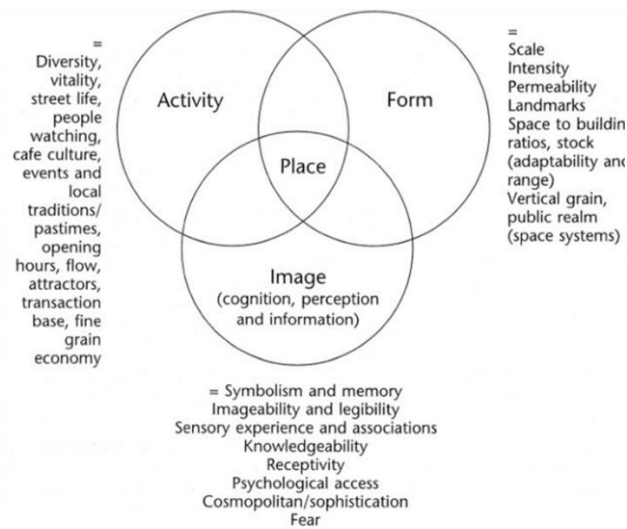


Figure 1 Sense of place (source: (Matthew, Tim, Taner, & Steve, 2003)cited Montgomery, 1998)

2.2 Culture relating its expression to the built environment

Even though people's social and cultural characteristics are often expressed in spatial terms. The concept of 'culture' is both too general and too abstract, it needs to be dismantled, to be usable, at least in its expression to the environment (Asquith, 2006)cited (e.g., Rapoport 1998, 2000a, 2000b, 2002c, 2004, in press b). The cultural landscape has more to do with relationships among elements than with the nature of the elements. Cultural landscaped is mantles 'culture' into aspects and excretions that can be studied, but also studying how these aspects and expressions become visible in the tangible physical environment is one of the important aspects. However, "It is not sufficient to study just a building or physical entity; one needs to study the process of

vernacular architecture" (Rapoport, 1969). Based on the above, fixed, semi-fixed, and non-fixed features of vernacular architecture should be studied together to form a cultural background. Fixed features such as dwellings; semi-fixed features such as plants, or landscapes, objects, colors, art, statues, furnishing, etc. They do not have to be part of material culture, and non-fixed such as language, music, behavior, manners, heredities, food, religion, rituals, cloth, the use of customs, dance, and others (Morell 2001b; Navarro2004) cited in (Rapoport, 2006)The above-mentioned elements of vernacular architecture help to form an idea to understand the organization of space, time, meaning and communication. See figure 2 dismantling of culture relating its excretions to the built environment.

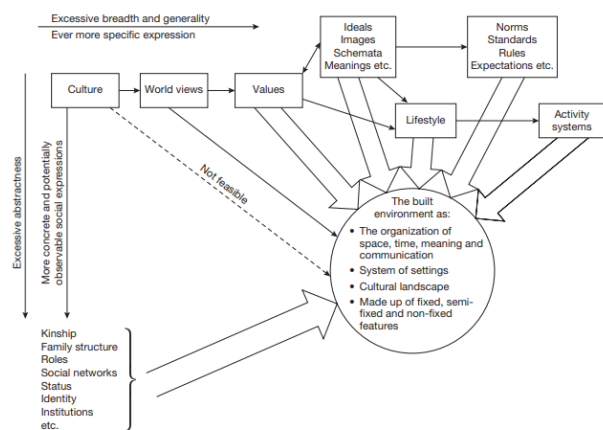


Figure 2. Dismantling culture, relating its expressions to the built environment (source: (Asquith, 2006) cited Rapoport (2006))

2.1 The Relation of House and settlement:

According to (Rapoport, 1969) the house cannot be seen in isolation from the settlement but must be viewed as part of a total social and spatial system that relates the house, way of life, settlement, and even landscape. A single house cannot create a settlement, but it can be part of a settlement. Therefore, the relation between a house and a settlement cannot be perceived separately.

“There have generally been two traditions of concentrated settlement. In the first one, the whole settlement has been considered as the setting for life, and the dwelling is merely a more private, enclosed, and sheltered part of the living realm. On the other, the dwelling has essentially been regarded as the total set for life, and the settlement, whether village or city, as connective tissue, almost “waste” space to be traversed, and secondary. This distinction is stated herein extreme form and is greatly simplified.” (Rapoport, 1969, p. 70)

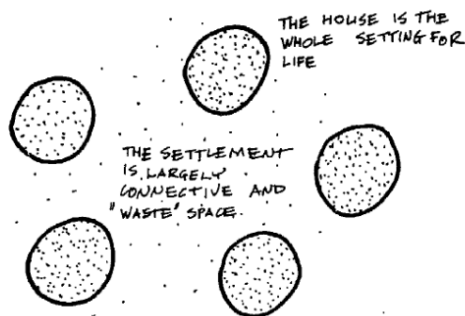


Figure 3. The house setting is for life and the settlement is waste space (source: (Rapoport, 1969, p. 71))

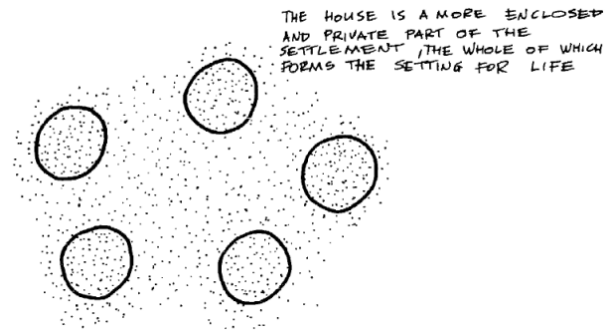


Figure 4. The house is enclosed private & settlement is a setting for life (source: (Rapoport, 1969, p. 71))

2.2 Alternative theories of House Form

There are different systems of ideas and practices that influence the habitat of man. The houses reflect the physical conditions of their environments, as well as cultural preferences and capabilities, in a wide variety of solutions to basic problems of house design.

Some forces shape primitive and vernacular buildings and settlements and give them identifiable characteristics. According to (Rapoport, 1969, p. 47) The house form is not simply the result of physical forces or any single causal factor, but it is the consequence of a whole range of socio-cultural factors seen in their broadest term. The form is modified by the climatic condition (the physical environment which makes something impossible and encourages others) and by the method of construction, the material available, and the technology (the tools for achieving the desired environment).

The primary factor is the socio-cultural, and the other secondary modifying.

3. Methodology of the study

3.1 Study Area

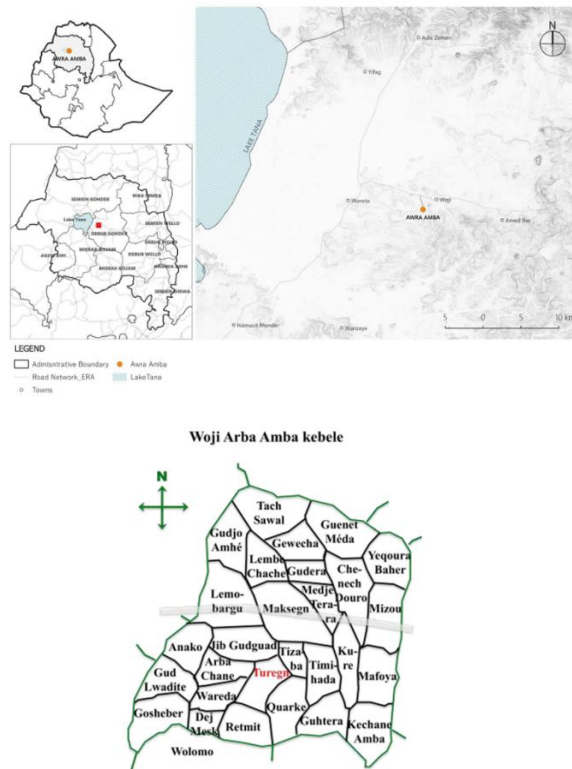


Figure 5. Location of Awra Amba. Source: (Joumard, 2012)

Figure 5 shows the location of the case area Awra Amba, which is selected because its unique traditional architecture and a community are well-established with a truly extraordinary lifestyle, especially in terms of equality between men and women, community spirit, absence of religion, honesty, hard work, and democracy (Joumard, 2012).

3.1.1 Research Design

The main research question of the study is what are the spatial characteristics of the Awra Amba community. Which is concerned to investigate and document the experiences of residents, the process, consequences, and the interrelationship of people and the built environment. So, the case study design is appropriate for the investigation of the case. The case study allows an investigation to retain the holistic and meaningful characteristics of real-life events (Woodside, 2010) cited (Yin, 1994) and when it is necessary to understand parts of a case within the context of the whole (De Vaus, 2001). It is by far more relevant than other methods for research addressing a descriptive, causal, or explanatory question.

3.1.2 Data Type and Source of Data

The study will be using a combination of primary and secondary data to fulfill the indicated objectives. The primary data will be collected from the field including the pilot and main field study. The source of the primary data will be the founder of the community, eleven committees, elders with a good memory of the oldest settlements, and questionnaires for selected households. And, through conducting frequent personal observation sessions, measuring the physical dimensions of the building preparing

descriptive drawings, and photographing the main building together with its surrounding.

The secondary data will be collected from literature written on Awra Amba community culture, settlement, compound, and house. The main sources of secondary data included both published and unpublished sources which are books, reports, newspapers, magazines, documentaries, videos, articles research papers, and expertise which wright about Awra Amba. This data will be useful to complement primary sources statistics and to compare results with global trends.

3.1.3 Sample size and criteria for Selection of case study sampling

A. Selection of the Case and Sampling

“In case study research, which investigates phenomena within context, often the contextual variables are so numerous and qualitatively different that no single survey or data collection approach can be used appropriately to collect information about those variables” (Richard & Anita, 2015). As a result, the study employed a stratified random sampling technique that guarantees each subgroup within the population receives proper representation within the sample. It provides better coverage of the population since the researchers have control over the subgroups to ensure all of them are

represented in the sampling. It also provides a reasonable variable, by selecting proper samples from the population frame, which would address the research questions.

During the first site tour through intensive observation and interviewing the key informants, such as Aba Zumra Nuru, W/ro Enaney Zumra, founder of the community, and local people guide to searching and listing variables to ensure subgroup which is a proper representation of the community. The major variables filtered in this study were the following.

Table 1. The selection summary of the case study.

The variable	Reason
Housing variety	There are two types of houses, row and detached houses.
The site is on a hill and flat	The site is on a range of hills and flat sites.
Economic activity	The duty's given by the community vary. Such as Oil factories, Eldercare canters, Milling, etc
Age and sex	Age determines the number of years becoming a community member and indicates the difference in settlement layout through

	different years, and sex.
Educational background , family member	Educational background deferent perspectives of understanding the settlement and family members differentiate the space utilization inside the house and the compound.

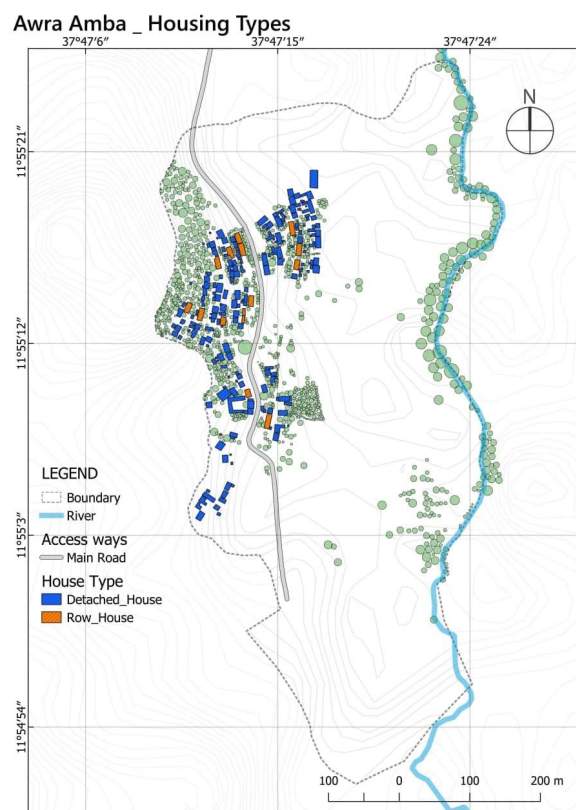


Figure 6. Awra Amba house type: row and detached.

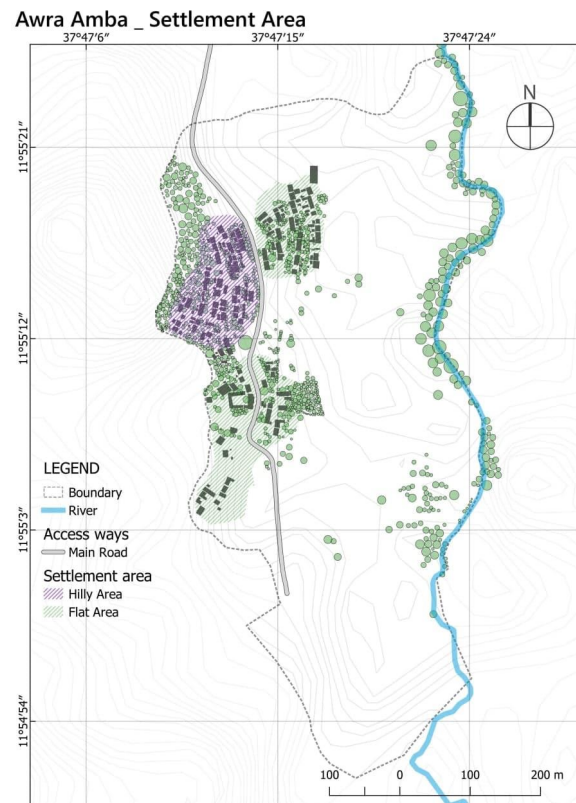


Figure 7. Awra Amba settlement on the hill and flat slop.

3.1.4 Data collection Technique

According to (Yin R. K., 2018), an interview is one of the most used collection techniques of data for case study information. “Case study interviews will resemble guided conversations rather than structured queries. “Semi-structured and unstructured flexibility of approach to questioning than structured” (Kothari, 2004). This allowed much greater freedom to ask, in case of need, supplementary questions or at times. So, the study interviews forwarded for the informants will be intended in two forms; semi-structured and unstructured. For Semi-

structured interviews, the questionnaire was designed and will be used to collect both qualitative and quantitative data and unstructured interviews will be used to collect qualitative data. To do this, the same questions need to be asked in each interview. However, the researcher also wants the interview to remain flexible so that other important information can still arise.

In conducting this study, personal observation applying as one means of generating primary data. Because “a case study will likely take place in the real-world setting of the case, you are creating the opportunity for direct observations” (Yin R. K., 2018). It has two parts which are structured through a checklist and unstructured. Also, Audio and Video Recording, Photographing and Sketching, Mapping, and Measuring are used.

3.1.5 Method of Data Analysis

The method that will be used to analyze the collected data is through time diary, spatial mapping, and spatial configuration diagram or j graph express through sketches, charts, tables, and mapping.

4. Result and summary

4.1.1 The settlement

a) The spatial features

The first settlement is formed on the plateau which has 1928 masl with a linear arrangement of the housing units. The main reason for the selection of the plateau site was a desire: to defend the community from neighborhood enemies, to manage the fortunate flat land and “Ginde river” for agricultural activities, and the favorable climate for living. Due to the community's scarcity of land for farming, the community had no source of revenue and they suffered from starvation and disease. During this time, a large number of their community members died. At last, they thought that life is not only possible by farming but can also be achieved through an industry. They decided to shift their focus to industry and urban agriculture. The industry expanded the settlement into fertile flat land.

They establish the textile, oil, and milling industry on some parts of the farmland. The product is the main source of income and they sell it to neighborhood farmers. It creates a platform to live in peace with the neighborhood community.

The roads at Awra Amba are categorized based on their function, as; main, collector, and linkage roads. The overlay of these three-road types creates an organic grid road network.

Open spaces in Awra Amba locate adjacent to the main road are varying in size and function. Which are used for waste disposal, children's playground, selling goods, dairy farming, meeting, car parking, celebrating holidays, and youth playground.

The special places in the settlements are farmland, compound, “Ginde” river, open spaces, schools, health posts, community cafe and industry, and “Warka” tree or meeting places.

b) The Activities that show spatial elements

There are two types of membership in Awra Amba, which are community and cooperative member, both of them apply the principle of the community everywhere, the only difference is the cooperative member of the community in Awra Amba settlement, they work 8hr of the day based on their ability allocated by the committees such as farm (to plant fruits and crops), weave at the community textile factory, a small-scale oil factory, take care of the elderly at the eldercare center, poultry farm, a laboratory

technician at a community clinic, preparing and serving at the community café, human resource management of the community, shop, guiding tourist who visits Awra Amba, selling cloth manufactured by the community, milling, ICT center, and preparing spice (Balitina), etc.

Even though there is no gender specification for the work, the man especially works on guarding the community, with three programs 12 pm-4 pm, 4 pm-8 am and 8 am-12 am.

c) The meaning

The central “Warka” tree believed as a sacred place the first meeting was held during the establishment of the community, a conflict resolution place, and the only place to celebrate the lone holiday in the community Ethiopian new year held under the big tree (Warka) by dancing, music, poem, etc.

4.1.2 The compound spatial elements

a) The spatial features

The compound is inherited from the residential area allocating committee, the committee is allocating a 150m² (10m*15m) residential area for the cooperative members who have no other residential area. But due to the member taking over the land without surveys the compound size ranges from 142.4

m² to 248.5 m². Moreover, in Awra Amba the compound is characterized by an urban form regular polygon with a defined boundary and fenced by shrubs and vegetation.

The common elements of the compound are the main house, traditional kitchen, weaving, outdoor kitchen, vegetation, toilet, store, front yard, and back yard. 72.22% of Awra Amba compound has more than two huts in a linear, grid, and clustered arrangements. The remaining 27.78% is two huts. All Compounds has a private toilet and traditional kitchen which is separated from the main house. The possible factor to determine the layout is topography, economy, need for privacy, social interaction, and basic need.

Based on the arrangement of the elements of the compound in Awra Amba is classified into five. The house linearly arranged on the hill site has semipublic front and back yard space due to the linkage road crossing it to access the neighborhood compound, which generates great potential for social interaction among the member of the community. Some of the compounds due to the arrangement of the main and service house create an open space which is a semi-private backyard space.

The front and back yard space is used as weaving, transition space to the house, and open space for daily activities such as washing, children's playfield, honey harvesting, linkage road, dry cloth and spice, and weaving. The maximum front yard space reaches 121 m².

The fixed elements of the ordinary Awra Amba compound are the house, toilet, weaving room, fuel-saving stove, a grain store (Gota), and traditional hives. The semi-fixed elements are seasonal crops such as maize, fruit, and vegetables in the limited backyard space, and very limited indigenous trees. The non-fixed elements that were observed during the research are; people, cattle, honeycomb, and weaving.

b) Activities

The major activities that take place in the compounds are, cooking, planting vegetation and fruits, animal feeding, playing, drying grains, and washing clothes and sitting spaces. There is no sex segregation everyone uses the compound space.

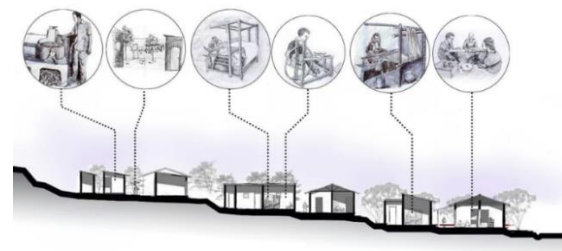


Figure 8. Activity at the compound.

c) The Meaning

The orientation of the compound is towards the East. If the site does not allow the house to be oriented to the East, the second most preferable direction which is the West will be the orientation of the site. This orientation of the house is mainly influenced by the Warka Tree and the main road which parcel the settlement into two.

4.1.3 The house

a) spatial feature

There are two types of houses in Awra Amba which are row and detached houses. They have similar internal space and arrangement, the only difference is in a row house two consecutive houses share the partition wall “Gib af”, to minimize the housing cost, in a detached house which stands alone.

Most of the house plot in Awra Amba is in the range of 30m²-60m². In some cases, it covers 90m².

The house of Awra Amba's interior arrangement is determined by the economy, social interaction, basic needs, position of women, family structure, defense, and material and construction technique.

Semi-fixed features of the Awra Amba house have furniture made from eucalyptus or bamboo wave frame plaster with mud (a

mixture of three parts ash and one part soil, animal dung, and water). They are built attractively, with whitish color, and fine texture. The furniture inside the living room is a “Medeb” locally made sofa, a shelf local name “Mesikot”. In cooking and storage, they have “Goushigusha” which is flour storage. At the service quarter, there is traditional stove space for cooking, a grain store (Gota), the fuel-saving stove which was designed by Aba Zumra, and the community member of Awra Amba to increase their income source most of the residents work weaving at home so that major furniture is weaving machine and supportive furniture for weaving such as a spinning machine (Madawerya) which is spinning cotton into thread.

b) The Activity

The house in Awra Amba is also used for weaving, cooking, storage, playing with family, watching TV, sleeping, weddings, mourning, storage, nursing children, and socialization. The living space is busy in the evening time. The cooking space is busy in the morning, mid-day, and evening time. The weaving space is busy in the evening time.

c) The Meaning

The spatial arrangement of the house in Awra Amba is based on basic needs, and age. In

Awra Amba there is no sex segregation. In the houses, the women and the men dine in the living area together. The cooking area is used by the man and women depending on the one who arrives and has time and ability to cook wet spouse and makes injera.

4.1.4 The relationship between house and settlement

The space organization of Awra Amba has constituted an essential characteristic of an urban form regular polygon with a defined and fenced by shrubs and vegetation. Which is the dwelling consisting of rooms divided along personal and functional grounds arranged around a rectangular narrow confined courtyard semi-public open space in-between private plots.

The settlement has mixed zoning of the land use makes the settlement vibrant and active, and the house cannot be seen in isolation from the settlement.

4.1.4 Discussion

a) The space used in Settlement, Compound, House, and Types of Houses and Compound

The settlement is formed on the plateau which is the most elevated point at the settlement in the form of linear families. The desire to settle on a defensive and strategically high land with dense settlements and a tight urban pattern was to protect the community from the neighborhood enemies. This is also true as (Oliver P. , 1997) noted that defense is related to the nature of perceived danger of a threat to culture.

(Rapoport, 1969) the house cannot be seen in isolation from the settlement. In Awra Amba there is no lock between private and public space anyone passes through the front yard of the individual plot which enlightens the social interaction of the community. different domains, public or private-by prohibiting some and allowing others. This is an expression of world view, attitudes, and is one way in which culture is linked to the way people use space.” (Rapoport, 1969, p. 70) The compound and working space are close to each other. The industry or working space is at the center of the settlement.

Based on the construction process, the type of Awra Amba house is categorized as Twining or tying, which uses eucalyptus walls tied

together by rope, plant twigs, or other suitable tying materials then plaster with mud (Gebremedhin, 1971) noted Twining or tying system. The form of the Awra Amba house is four-sided regular polygons because of the load-bearing mud plaster eucalyptus frame wall.

The domestic spaces classification is based on basic needs, family structure, social structure, the position of women, and the need for privacy. whereas men and women share “Medeb” in the living area, weaving, and cooking area. children's sleep and the master bedroom are separate.

In the literature review, physical factors such as defense, economy, religion, climate, construction materials, and sites are determinant factors for the form of a house. This is also true for Awra Amba because:

- The Awra Amba house form is modified by the economy, defense, site, and material. For example, the row house, “Row” house type, has a common wall “Meketa” to minimize the cost of the house. All this has direct relations with the economy.
- Ethiopia, Awra Amba is located in a tropical climatic zone high temperature is expected. Therefore, the need for a CIS-made roof is unthinkable. Therefore, the climate is not a modifier factor for the form of houses at Awra Amba.
- The house is modified to step because of topography. There is flat and plateau topography in the Awra Amba settlement. The settlement on the hill the house of the community and the secondary road aligns with the contour of the hill, and the linkage road is defined in-between the house.
- The major determinant factor of Awra Amba's house is the socio-culture of the community. Such as basic needs, family structure, the position of women, the need for privacy, and social structure.
- **Basic needs:** Basic needs are also one of the determinant factors for Awra Amba's house form. The internal space arrangement is based on a private income source. The cooperative member of the community work together and share the profit equally so that the community member provides private income source weaving room, poultry, vegetation, rental dormitory, and honey harvesting that alter the house form.
- **Family:** Family size and structure determine the layout of the house plan. In Awra Amba the family that has adult children and younger children have a different layout.

- **Position of Women:** Awra Amba is above all known for its principle of gender equality. the community established a new culture of work. Which is the work division is based on personal capability. Men and women participate equally in housework, administrating wealth, decision-making, and participating in committees depending on their capability. Men bake injera, cook wat (local foods), fetch water, nurse children, and do all activities traditionally reserved for women. Women do farming, weaving, and other activities traditionally reserved for men. Therefore, there is no women's or man's space in the settlement, compound as well as house. All functional spaces can access by men can women, special pantry/kitchen is one of the few places considered a woman's and man's domain and it is physically adjacent to the rest of the interior space. The spatial arrangement of the house in Awra Amba is based on basic needs, and age. In Awra Amba there is no sex segregation. In the houses, the women and the men dine in the living area together. The cooking area is used by the man and women depending on the one who arrives and has time and ability to cook wet spouse and makes injera.
- **Need for privacy:** Awra Amba community they don't give strong attention to privacy between neighbor houses they share the front and back yard as linkage roads there is no link between semi-private space and semipublic space. The entrance into the main house is in both directions there is semi-private space in the front and backyard which are a corridor and living room. The neighbor can enter the house in both directions.
- **Social interaction:** The community is a cooperative community they work together and share the profit equally. The working area the most usually space in Awra Amba is located at the center of the settlement. The central space "Warka tree" is a meeting space and distribution of tasks before they go to work. According to (Rapoport, 1969, p. 69) people are social animals meeting others is the concern is where people meet whether in the house, the city the bath, or the street. Some of Awra Amba's households want to share front and backyards.

4.1.5 Conclusion and Recommendation

4.1.5.1 Conclusion

A. The space used in Settlement, Compound, House, and Types of Houses, and Compound

The finding of this research reinforce the discussion of (Gebremedhin, 1971) and (Oliver P. , 1997) which are, that the settlement is formed on the plateau with the desire to settle on a defensive and strategically high land to protect the neighborhood enemies, to manage the fortunate flat land and “Gind river” for agriculture fertile land suitable for agricultural activities, the favorable climate was the other criteria to select a living site, and availability of trees was also another reason.

Due to close relation to the compound, the factory, the farmland, shops, clinic, poultry, and café, the settlement has mixed zoning of the land use makes the settlement vibrant and active, and the house cannot be seen in isolation from the settlement as (Rapoport, 1969) . In Awra Amba a wise use of the compound is characterized by an urban form regular polygon with a defined boundary and fenced by shrubs and vegetation only on two sides, they use the backyard and front yard as linkage roads to access the neighbor’s house, there is no lock between private and public space, which express the strong social interaction of the community, this reinforces the different domains, public or private- the express culture of the community.” (Rapoport, 1969, p. 70).

There are two types of houses in Awra Amba which are row and detached houses. The house of Awra Amba's interior arrangement is classified into five. The house form of Awra Amba is modified by site, economy, social interaction, basic needs, position of women, family structure, defense, and material and construction technique. The physical factors such as climate discussed in the literature were never determined in the form of the Awra Amba hut. Though there is a corrugated iron sheet roof which is not suitable for the local climate, they have houses with a similar form to similar peasants. In support of this idea, Vellinga (2006) stated that many of the vernacular builders of today are increasingly confronted with 'modern' issues like planning regulations, climate change, resources depletion, building performance standards, population growth, technology transfer, and even, in some cases, mortgage restrictions and insurance criteria.

Awra Amba has a cooperative community. It has an extraordinary lifestyle and unique culture expressed through the settlement pattern and housing form. The spatial characteristics of Awra Amba are expressed through the organization of space, time, meaning, and communication at settlement, compound, and house levels. But due to

scarcity of land, and lack of knowledge the spatial heritage of Awra Amba is in danger. The rural-urban transformation phenomena had been preserving these unique cultures.

Generally, the spatial heritages of Awra Amba are in danger. The arrival of neighborhood peasants for school was the reason for the community to ignore the social integration of the early times. For example, the member of the community found lost property gives it to the “Lost and found property storing committee”, but the student arrival from neighborhood peasants neither return the lost property of somebody, rather stolen goods, besides the community-built fence that change the culture of the community by changing the private-public domain. Urbanization and scarcity of land increase were also other factors for the irreversible change of cultural practices. In addition, the current generation's lack of interest in their spatial heritages and the loss of some social networks are reasons for the loss of historic continuity. Indeed, the current generation has developed misconceptions about cultural practices and spatial heritages.

Due to the population growth and scarcity of land, the farmers cultivate the common land which is suitable for growing “Sirsira” the special grass used for roof cover is never

gotten easier. Currently, access to these construction materials is very difficult. Because of this, the Awra Amba community preferred to construct houses with CIS (corrugated iron sheet) that came due to urbanization. Besides, a social network of the community is losing its strength because the construction needs external skills outside the community. They never cooperate as usual.

Based on the construction process, the type of Awra Amba house is categorized as Twining or tying, which uses eucalyptus walls tied together by rope, plant twigs, or other suitable tying materials then plaster with mud as Gebrermedhin (1971) noted of Twining or tying system. The form of the Awra Amba house is four-sided regular polygons because of the load-bearing mud plaster eucalyptus frame wall.

4.1.5.2 Recommendation

A. The community:

- The spatial characteristics of Awra Amba are unbelievably being converted because of the new construction of public space. Besides the community loss of socializing space. And due to a lack of knowledge on heritage they are creating huge destruction on material utilization, for the house, CIS corrugated iron sheet replaces the grass roof, and the furniture

utilized by the community such as mud plaster bamboo weave (Gushigusha) replace into a metal container. Therefore, there must be a way to stop demolishing this heritage by teaching the community of Awra Amba to benefit from the tourism industry.

- Population expansion is the main reason for the scarcity of land. In this case, the residents of the area should follow the multistorey housing to accommodate a lot of people with a minimum area.

B. The Government and Policy Makers:

The government has to study and document the spatial characteristics of rural Ethiopia rather than construct the same house size form and grid arrangement for new rural settlements.

Awra Amba community has to be registered for their rich cultural, and architectural heritage. The following remedies have to be taken immediately to stop the demolishing of the houses and make the site a tourist destination.

- a) Create awareness among the community about the value the site has for the residents and the country so that they can preserve the heritages.

- b) Provide proper access road to the site from Woreta town.
- c) Construct guest houses that are similar to local houses, and provide water, toilets, and green energy, such as using solar panels as a power source.
- d) Create appropriate access within a settlement by resizing natural stone steps suitable for all age groups to access any place on the site.
- e) Promote Awra Amba by using local and international media to attract both local and international tourists to the site.
- f) Create a win-win approach for the resident and the government from the tourist income which can enhance heritage protection and improve the livelihood of the residents of Awra Amba.
- g) Create awareness to stop the rising construction of temporary houses such as Korkoro bet and Sarbet which strongly contradict the local climate.
- h) Constructing any governmental service buildings by analyzing and considering local material, local temperature, and local skills.

C. Architects and Structural Engineers

- To replace the corrugated iron sheet and eucalyptus wooden elements

architects and structural engineers should research alternative construction materials.

- The socio-cultural aspect of the settlement pattern and the individual plot size of a house and compound can provide strong lessons for future cooperative community development by urban planners, architects, and policymakers.

D. Further research Areas

- The Awra Amba house wall finish and the fuel-saving stove, which is constructed of a mix of mud, animal dung, water, straw, and ash are fire resistant and have fine texture. This fireproof wall system needs further research.
- The Fireplace which is popular in the Awra Amba settlement and introduced to other parts of the country, and which Awra Amba residents strongly believe minimizes the consumption of wood needs, exposing to eye diseases, and global warming further research.

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AP. A2: Awra Amba community founder Aba Zumura Nuru



Figure A.1. Founder of the community aba Zumra Nuru.

AP. A3: Awra Amba community working together



Figure A.2. Awra Amba community working together.

AP. A4: Awra Amba community waste disposal



Figure A.3. Awra Amba community waste disposal.

AP. A5: Awra Amba community poultry



Figure A.4. Awra Amba community poultry.

AP. A6: Awra Amba settlement land use

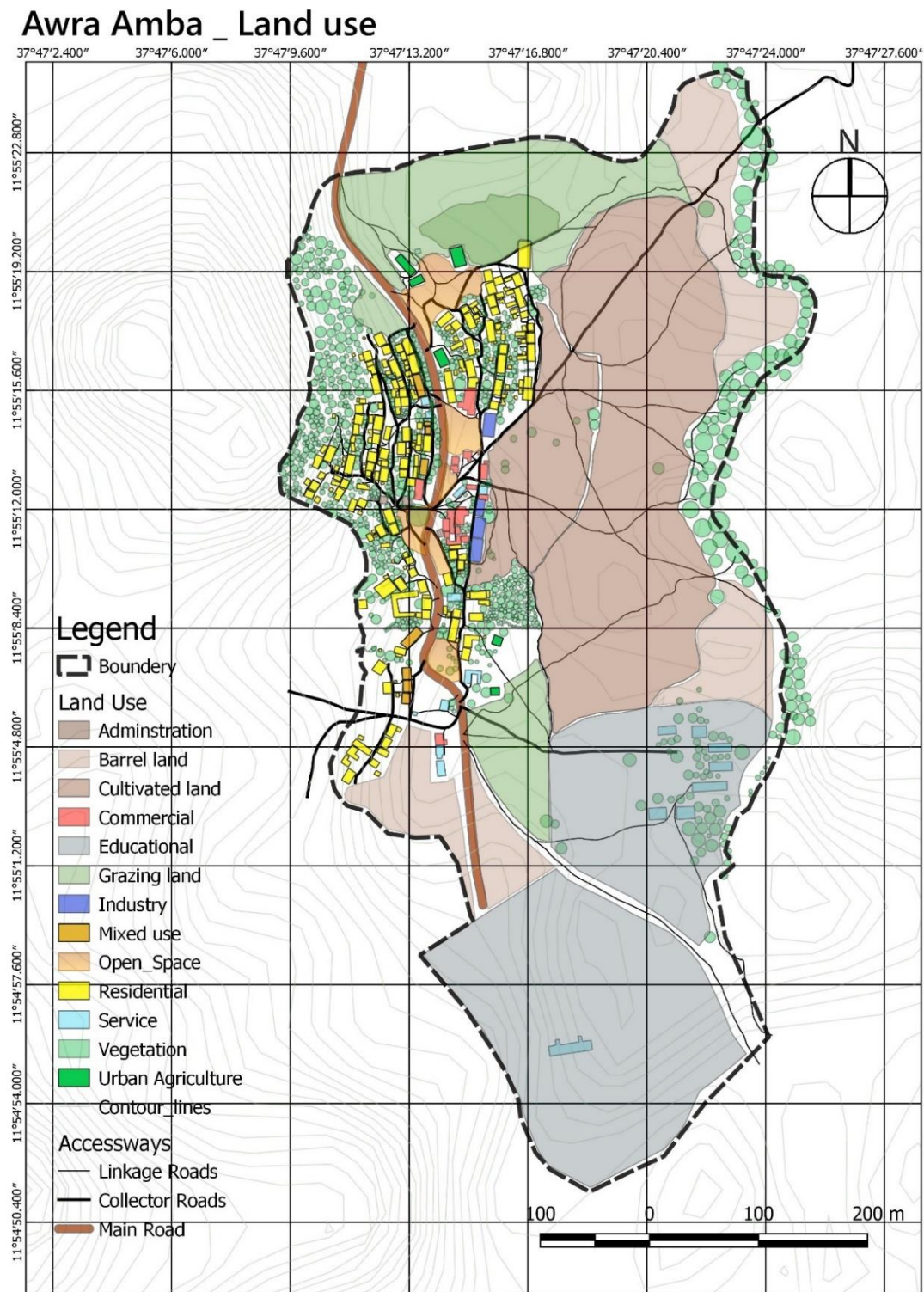


Figure A.5. Awra Amba settlement land use.

AP. A7: Awra Amba settlement vegetation cover

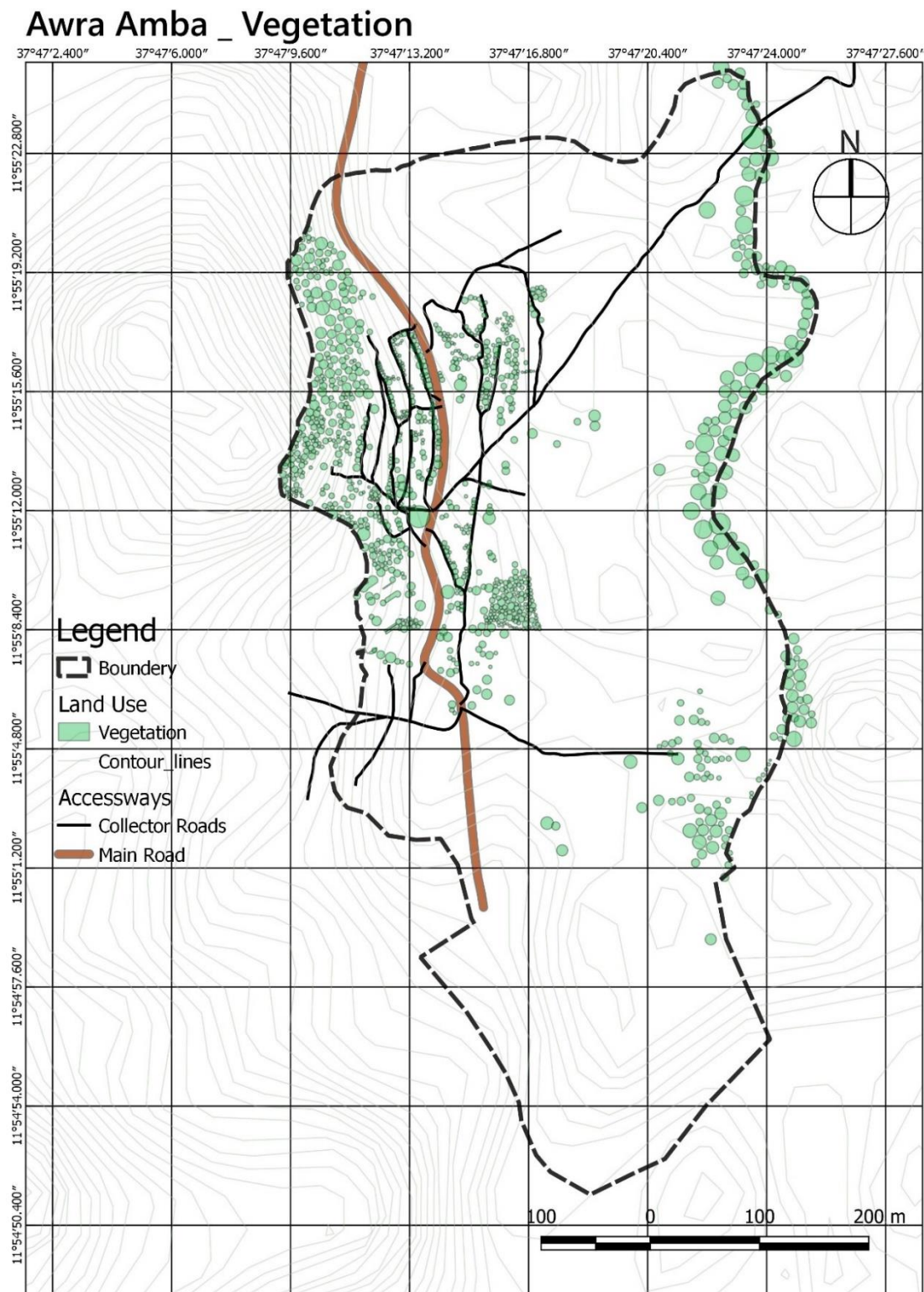


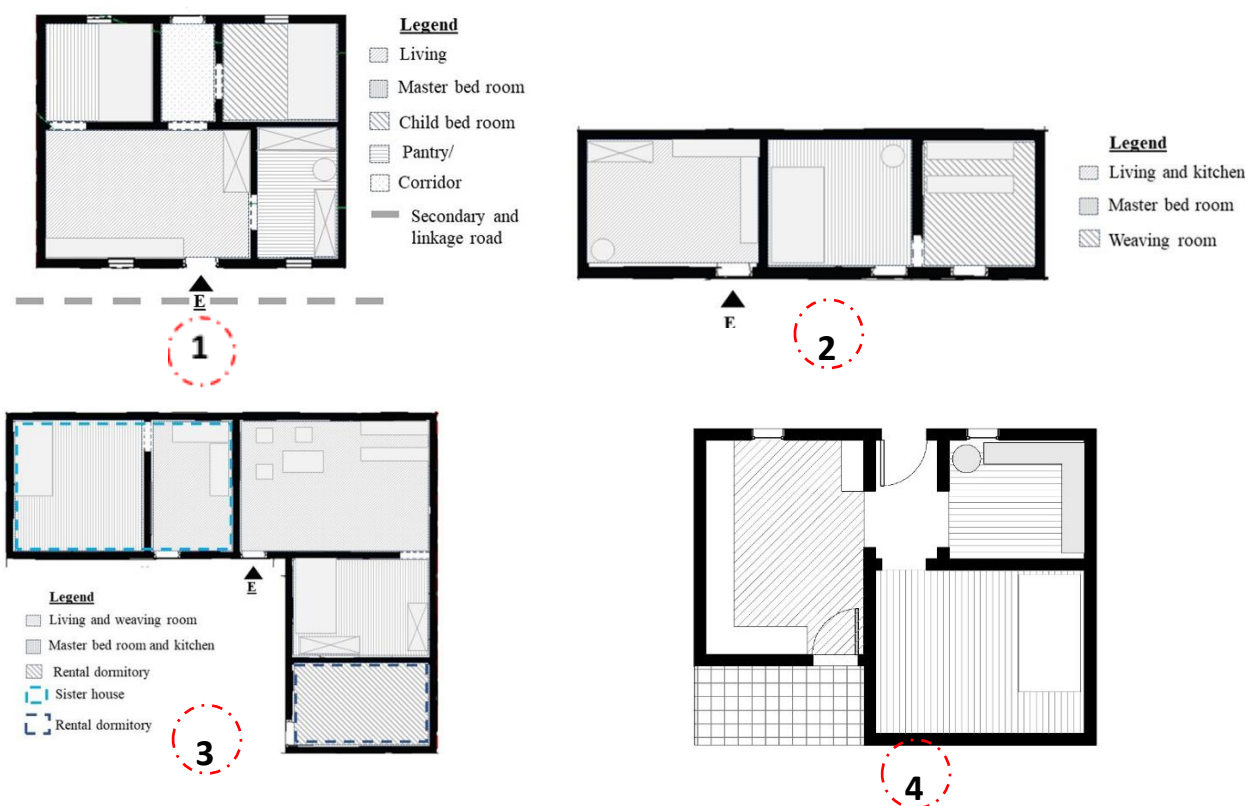
Figure A.6. Awra Amba settlement vegetation cover.

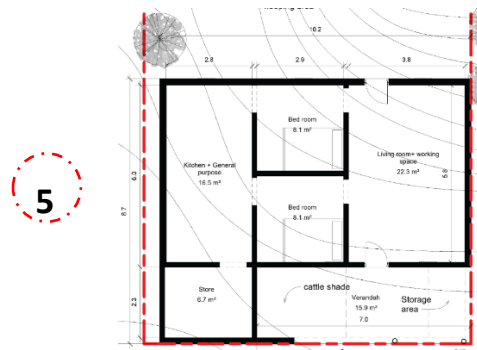
AP. A8: Awra Amba settlement activity-time table

	Functional space and time spent in hour											
	Toilet (hr)	Waving Room (hr)	Bed Room (hr)	Living Area (hr)	Fire Place (hr)	Compound (hr)	Ato Zura House	Walking (hr)	Guarding The Community	Work (hr)	War ka Tree (hr)	Elder Care Center
Ato Meniber		1	7.33	2.83				0.75	1.75	9.45		
Mariyu Ahmed		2	8.5	1.16	3.5	0.33		0.33		7.83		
W/ro Melikensh Ahmed		1	7.5	0.83	1.58		1	0.16		7		
Legesse Fenite		2.5	8.5	1.25	0.5	2.5		1		8.75		
Marrishet Kindachew		0.5	9	1.33	2.83			0.33		8	1.91	
Nurmar Hassen			8.83	2.91	1.75	0.33		0.33		8		0.91
W/ro Mulunesh			9	1.75	0.5	0.66		0.33		12.5		
Kindachew Kibiret			5.58	1.25		2		0.5		12.75		
W/ro Birtukan Kibiret		4.66	7.5	1.25	1.91			0.33		8	0.33	
Fenita Getasew		4	6.83	1.25	1.41			0.33		9		
Tirusew Fentia	0.16	2.66	8.5	1.08	1.25	0.5		1		9		
Temalisa Yimer	0.16	2.66	9.33	1.08	1.25			1		9		
Kedija Ayenew			0.85	4.25	2.25			0.33		8.5		
Melikensh Zunura		3	7.5	2.25	1.58	0.5		0.33		8.5		

Nurahn ed Yesuf			8.5	1.4 1		2.5		0.5		8.7 5		
Ato Merisha	0.1 6		6.33	3.2 5	1.5	3.5		1		8		
Ato Belache w			8.75	2.8 3		3.33		0.33		9		
Yemisira ch		3	8.5	2.2 5	1.4 1	0.5		0.33		8		
W/ro Kidane Moham ed		2	5.58	1.2 5				0.5		12. 75		

AP. A9: Types of Awra Amba house based on internal space arrangement





AP. A10: types of Awra Amba compound



AP. A11: Awra Amba community “sekela” house



Figure A.7. Sekelea house of the first settlement (source: arihibu tv program).

AP. A12: W/ro Melkenesh Ahmed's Compound

The life story of W/ro Melkenesh Ahmed's Ahmed:



Figure A.8 W/ro Melkenesh Ahmed

W/ro Melkenesh Ahmed was born in 1964 E.c in the Northern part of Ethiopia, the Amhara region, Emfranz town in Guzara kebele, which is 63.5km far from Awra Amba which takes 12hr and 5 min by walk. She is now 48 years old.

She was married to a man before and stayed with him until she joined the Awra Amba community idea movement by the time. She was inspired by Ato Zumra's idea and also supported it. She chooses to join the community by the time she was divorced from her husband. She was one of the residents who has a journey and lived in Southern Ethiopia, Bonga from the year 1980 to 1986 E.c, and then come back and started living in Awra Amba Community in 1986. After the community started living at Awra Amba she was remarried to Ato Mohammed. W/ro Melkenesh has 5 children, 3 sons, and 2 daughters. Four of her children Graduated and have a job and two of them graduated with masters. Four of her children are married.

W/ro Melkenesh Ahmed is not educated. She has experienced a job in agriculture since childhood. Her other job experience is weaving for 26 years now. She is a cooperative member of the community since 1979 E.c. Her life as an Awra Amba community member begins when she joins the community in 1979. She serves the community by working on feeding elders at the community eldercare center.

Additionally, to increase her income source she works on weaving in her home. He buys the raw material for weaving from the community shop. Her annual income in 2012 E.c from the community finance allocation for each cooperative member was 13,000 birrs, and from a private business that is weaving in her home when she works hard, she gets an additional 17,000birr¹². W/ro Melkenesh Ahmed's total annual income was 30,000 Birr.

The water source is located in the compound when there is no water, they bring it to form the community groundwater pump which is located at the center of the community next to the “Warka tree” which takes a 5minute walk. For washing cloth, she goes to “Ginde river” which takes a 10minute walk. Health and other service facilities were located inside the community. The health post took about 10 minutes of walking. Their burial ceremony took place in Quarqe South West direction next to the community AdissRa’eysecondary school taking 30 minutes’ walk. Both Awra Amba and the neighborhood Muslim community use this common land for the burial ceremony. Her working space the community eldercare center is located adjacent to her home.

The community's main Energy source is electric power from EELPA (Ethiopian Electric Light and Power Authority) W/ro Melkenesh has her breaker.

The community’s only holiday is celebrated on Ethiopian New Year’s under the big tree (Warka) rooted in the heart of the village, this happens only when their daily task has ended. It starts at 2:00 am celebrated until 2:00 pm local time the night.

W/ro Melkenesh narrates her Perception of the space

“The settlement is quite enjoyable and environmentally responding design, but lack of sufficient space for working and some spaces are difficulties.

During the years, changes in the settlement have occurred. Back then meal grinding houses were not provided like now a day. It had challenges buying a meal from somewhere else and finding another place to grind the meals”. W/ro Melkenesh

Table A.1 Spaces –Time Dairy of W/ro Melkenesh Ahmed’s Family.

S.No	Date	Activities (Daily)	Room /place	From/at	To
1		Waking		11:40 AM	

12 This is an apprximatly assumption the information which recived from several community members. (It needs further reconicense survey).

2		Get dressed	Bed room	11:40 AM	12:00 AM
3		Making breakfast	Traditional kitchen	12:00 AM	12:35 AM
4		Eating breakfast	Living area	12:35 AM	12:55 AM
5		Walking	Way to work	12:55 AM	1:00 AM
6		Meeting for work to do distribution	AtoZumra house	1:00 AM	2:00 AM
7		Work	Elder care center		
8		Cleaning the house	Traditional kitchen	2:00 AM	4:00 AM
9		Making lunch	kitchen	4:00 AM	6:00 PM
10		Feeding the elderly	Elderly center house	6:00 PM	7:00 PM
11		Washing clothes and taking a bath	Shower room	7:00 PM	8:00 PM
12		Preparing dinner	Kitchen	8:00 PM	10:00 PM
13		Washing dishes	Kitchen	10:00 PM	11:00 PM
14		Serving dinner for the elderly	Elderly support house	11:00 PM	1:00 PM
15		Making dinner	Traditional kitchen	1:00 PM	2:00 PM
16		Making waving	Waving space	2:00 PM	3:00 PM
17		Eating dinner	Living area	3:00 PM	3:30 PM
18		Sleeping	Bed room	3:30 PM	11:40 AM
Weekly activity					
1		Marketing			
2		Cleaning the compound			
3		Washing clothes			
4		Asking relatives			
5		Bringing firewood			
Monthly Activities					
1		Preparing spice (Balitina) for eating			

The Compound

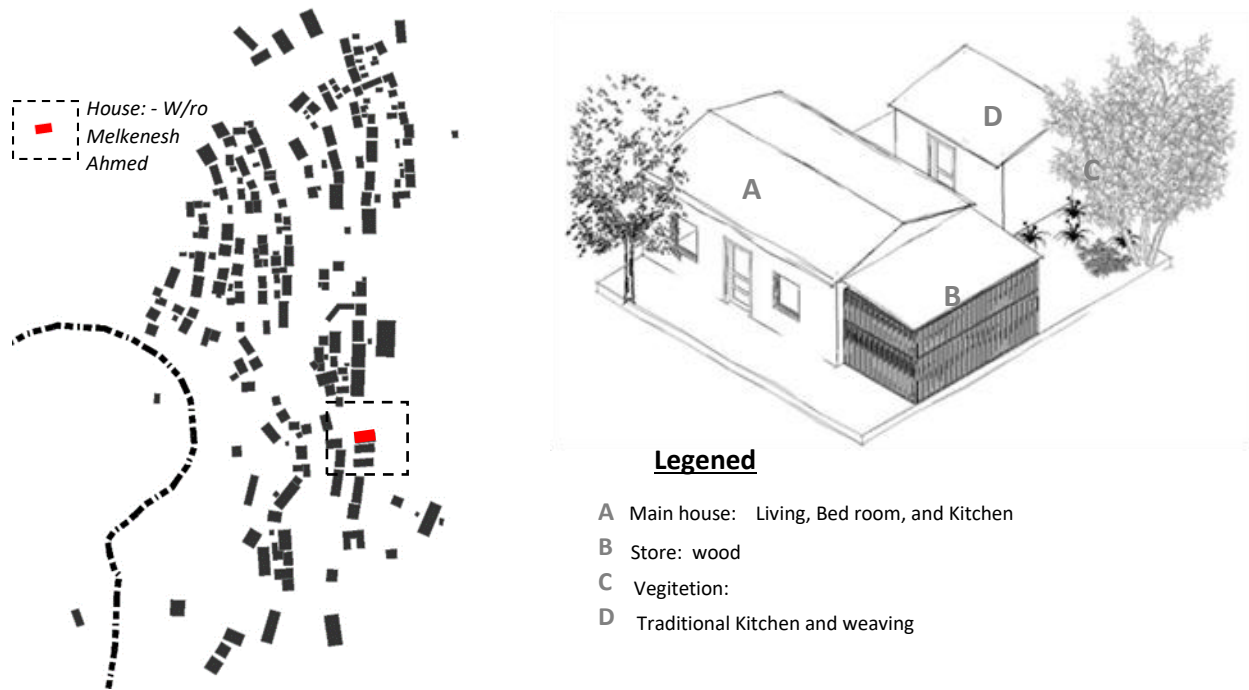


Figure A.9 W/ro Melkenesh Ahmed compound

W/ro Melkenesh gets the land from the housing committee. W/ro Melkenesh compound is located in the center of the Awra Amba settlement, near the community eldercare center to the West and the farmland to the East direction. The compound is accessed through a narrow footpath.

The compound is rectangular form. It is more of an urban form parcel and the total compound area is 150 m² with 15x10meters in size. Only the front perimeter of the compound is fenced with eucalyptus the front with an average height of 1.5 meters. The spatial relation between the neighborhood settlement and the W/ro Melkenesh compound is linear and it also shows the interaction and flow of her activity and social interaction.

W/ro Melkenesh's compound has two huts. The main house includes a living, bedroom, and store and in the backyard, there is one hut that includes a traditional kitchen and weaving space. Other elements in the compound are the front yard, traditional kitchen, store, and toilet.

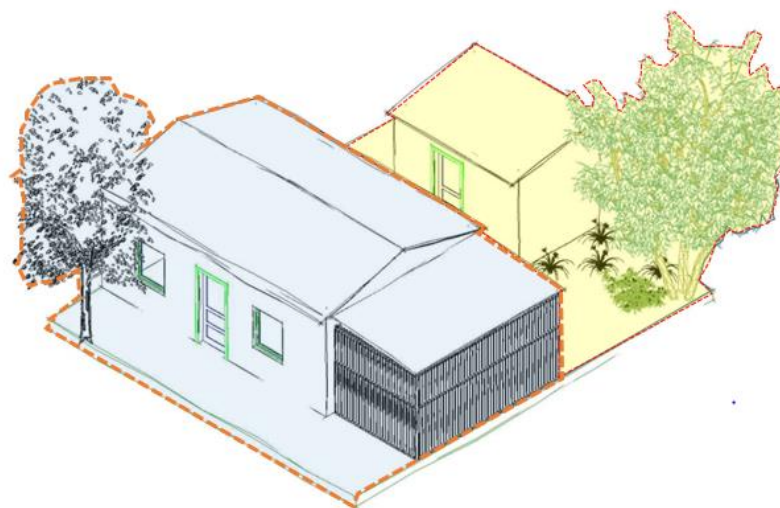


Figure A.10 W/ro Melkenesh Ahmed compound

Table A.2 W/ro Melkenesh Ahmed house construction material.

No	Compound unit	Location	Activities
1	Living Room	Front	Watching Tv, Dining, welcoming Guests
2	Kitchen	Left to corridor	Food preparing
3	Bedroom	Left	Sleeping
4	Weaving Room	Right	Producing traditional clothing items
5	Traditional Kitchen	Back of the main house	Baking injera, producing traditional beverages.
6	Rental Houses	In front and back of the main house	Living places for most students.

The Front Yard:

W/ro Melkenesh's compound has a front yard. The front yard parcel from the main house by narrow footpath access to the rental house. The area of the front yard is 20m². The front yard of the compound consists of the main entrance gate to the house, an underground water ditch for the sanitary system, and some tree-planted space.



Figure A.11 W/ro Melkenesh Ahmed front yard

The Back Yard:

W/ro Melkenesh's compound has a backyard. The area of the back yard is 30m². The back yard of the house consists of the kitchen + store and weaving area. She spent most of her time in this room while weaving, cooking, baking, or doing any of her activities. W/ro Melkensh does her weaving work within the backyard house which consists of a kitchen, store, and injera baking area, she can do her daily activities side by side as the weaving and the kitchen is in the same unit. In the backyard of the compound, there is an open green area space used for daily activities like socializing, playing, clothes drying, traditional stove space for preparing foods for elderlies, and spice drying is taking place.



Figure A.12 W/ro Melkenesh Ahmed traditional kitchen and weaving area

The House:

W/ro Melkenesh's house is built on 150 m² of land given to them by the community, the housing typology in the village is almost the same in form, functionality, arrangement, and organizational layout. When she is defining the changes in the private compound, the house was at first a shack. Traditional housing is commonly seen in Ethiopia. In the year 2000 E.c, it was changed to single detached housing made from mud reinforced with raw wood covered by corrugated sheet roofing. Observing the layout of the compound its elongated rectangular form.

W/ro Melkenesh's house is a type of detached house which have a grid arrangement. The total area of the house is 35.8m² with 6.5mx5.5 meters in size. The internal space of the house is subdivided into four functional spaces through a 3m height partition (Meketa). Which are Living space, master bed space, children's bedroom, and pantry. The living area accommodates Medeb furniture (grinding stone with Chika) covered with plastic, the space for eating and playing with family. The second is the sleeping zone which accommodates the bed, the third is the children's bedroom and the last is the weaving working space which accommodates the traditional weaving machine, Madawerya. traditional stove space for cooking, cereal store (Gushigusha) traditional

stove space for cooking, and a traditional shelf (Mesikot) made with wood and mud. The residence room consists of the living room on the left side of the entrance, a built-in bedroom on the right side, a kitchen(storage), and a bedroom for children with a corridor passing the house through the center of the house.

Table A.3 W/ro Melkenesh Ahmed house unit.

No	House unit	Local Name	Quantity
1	Living Room	Salon	1
2	Bedroom	Megnta bet	1
3	Children Bedroom	Megnta bet	1
4	Weaving Room	Shmena Kifl	1
5	Traditional Kitchen	Madbet	1
6	Store	Eka bet	1

W/ro Melkenesh's residence has a Living room mixed with a sitting area and a master bed couch mounted (built-in) with the wall element when approaching from the exterior. She mostly enjoys spending her free time in this room with her family. The front door is always opened for light source purposes and ventilation systems. On the other way, opening the door means opening the route of communication to the surroundings.

W/ro Melkenesh spends more of her time at her workplace making her income means by weaving, and supporting and feeding the elderly group. When she got a break, she enjoys spending time with her family in the living room; this is the place she loves to spend her free time.

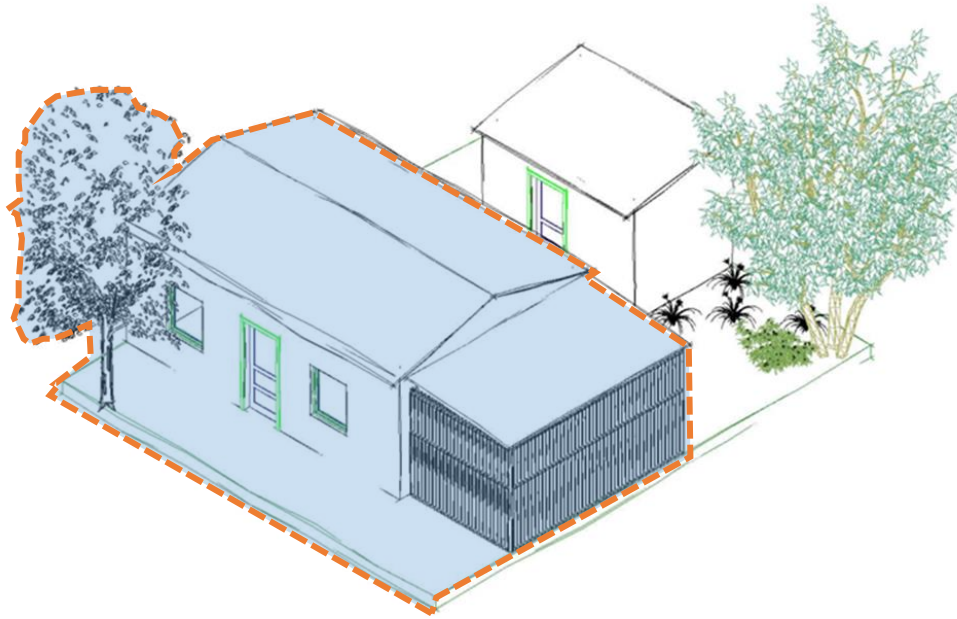


Figure A.13 W/ro Melkenesh Ahmed main house 3d and floor plan

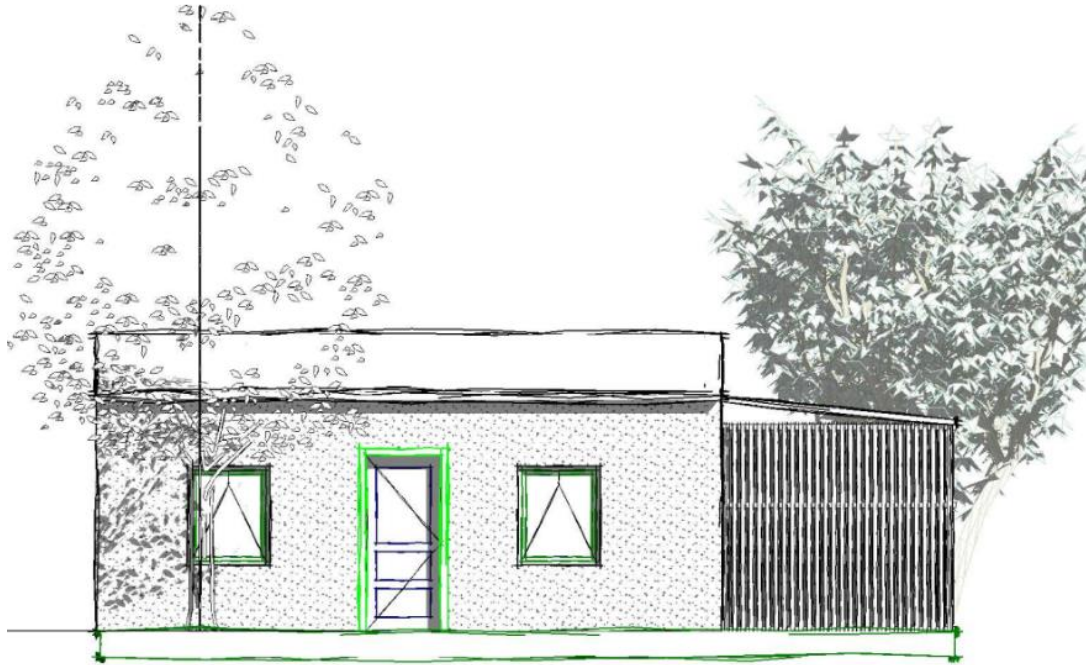


Figure A.14 W/ro Melkenesh Ahmed Front elevation of the house

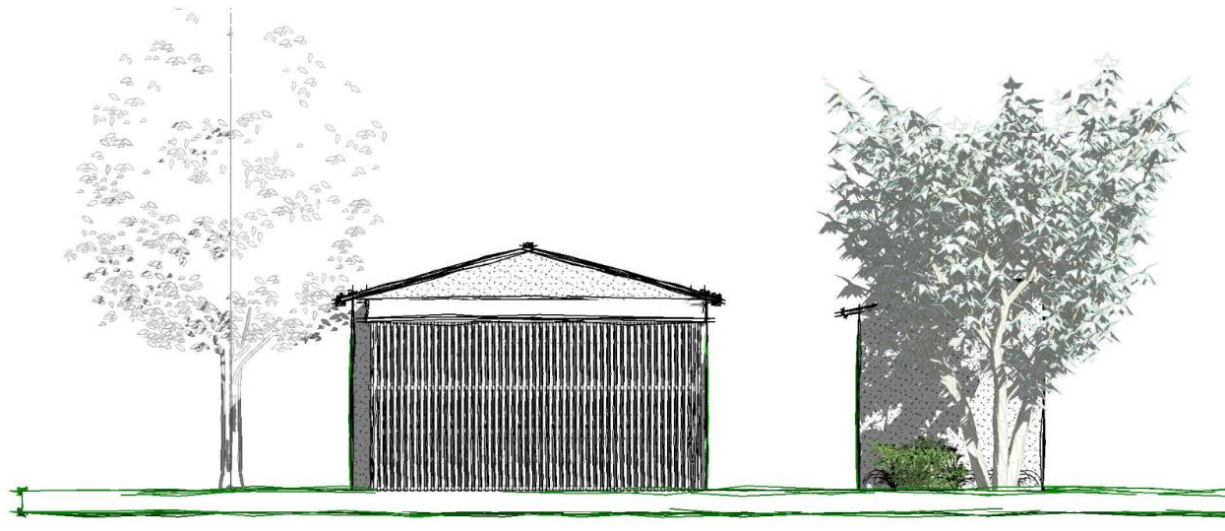


Figure A.15 W/ro Melkenesh Ahmed East side elevation of the house

Furniture's in each room:

a) Living area

- Mede Medeb furniture (grinding stone with Chika) covered with plastic, bed



Livingroom



Bedroom

Figure A.16 W/ro Melkenesh Ahmed living room furniture

B) Traditional kitchen and Weaving room



Fuel-saving stove



Traditional weaving



Figure A.17 W/ro Melkenesh Ahmed fuel-saving stove chimney exit for smoke

Table A.4 W/ro Melkenesh Ahmed house construction material local name.

No	Units of material	The local name of the materials	Remark
1	Wooden post	Denbil	
2	masonry	Kabadingay	
3	soil	Afer	
4	ash	Amed	
5	Animal dung	Ebet/chika/	
6	Strawbale	Chid	
7	Corrugated sheets	Korkoro	
8	thatch	Sar	
9	fence	Atir	

The source of material for the construction of the house is mostly collected from the local surrounding like “weraj and mager” which is the post and purlin, the soil, the only thing they buy is the corrugated sheets from the city (Woreta, Debre Tabor or Bahir Dar) and straw bale from neighborhood farmers. The transportation means to carry out to the site is a car.

Table A.5 W/ro Melkenesh Ahmed material tools.

No	Materials/tools/	The local name of the materials	Remark
1	Hammer	Medosha	
2	Shovel	Akafa	
3	Ax	Metrebia	
4	Saw	Megaz	
5	Pickax	Doma	

Construction process: steps

1. Leveling of the plot area
2. Marking of the layout of the built shape area, with ropes and wood
3. Digging holes for wooden posts to be placed at each corner and between the longest side of the house
4. Placing of the wooden post at each corner of the plot shape which is locally named “Tsid or Denbil” and has a high strength quality and durable
5. backfill of soil and rock to strengthen it, and the vertical stands of sliced wood type are placed as a walling envelope material
6. Placing of horizontal strides of the eucalyptus tree to strength sliced wooden stands.
7. Placing internal partition wall stands
8. Roof work continues, the roofing can be two types the 1st one is by using thatches and other is by using corrugated sheets if they can afford it,
9. mixing soil with water and strawbale and ram it until it becomes thick mud mortar
10. After the structural and roofing work is done, the plastering of the wall with mud mortar mixed with strawbale continues, most of the houses are only plastered from the inside because they can’t afford both sides.
11. Applying the final internal wall with ash, animal dung, and water.

Fig. A.18 below shows the space used by W/ro Melikenesh Ahmed’s family at settlement, compound, and house levels. The interview was conducted with one family member within 24 hours. The family spent 70.83 % of their time within the house and 29.17% outside of the compound.

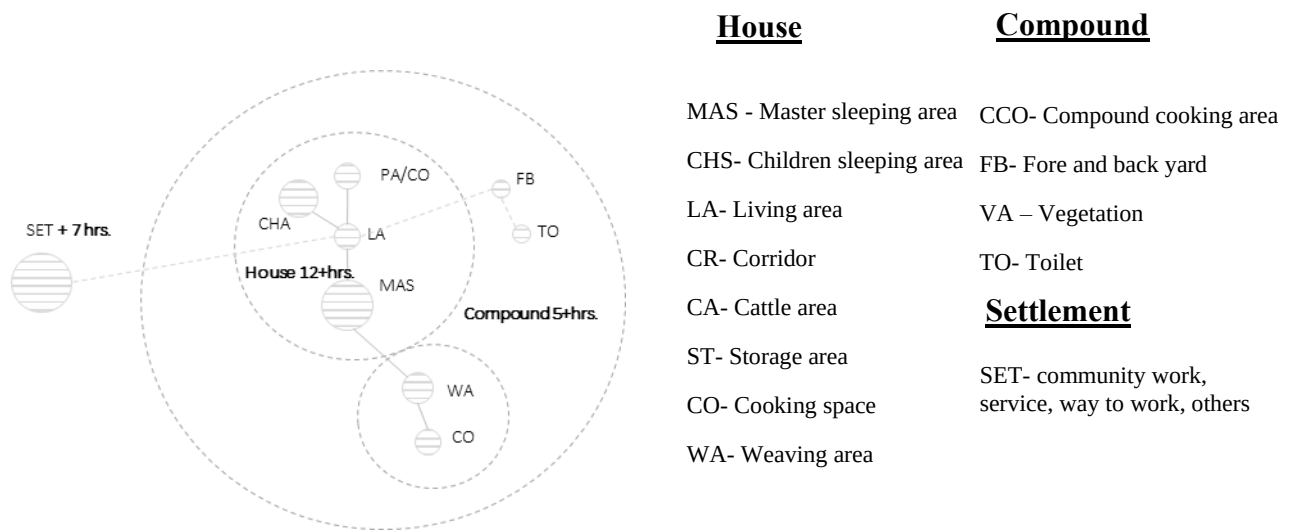


Figure A.18 J graph of W/ro Melkenesh Ahmed

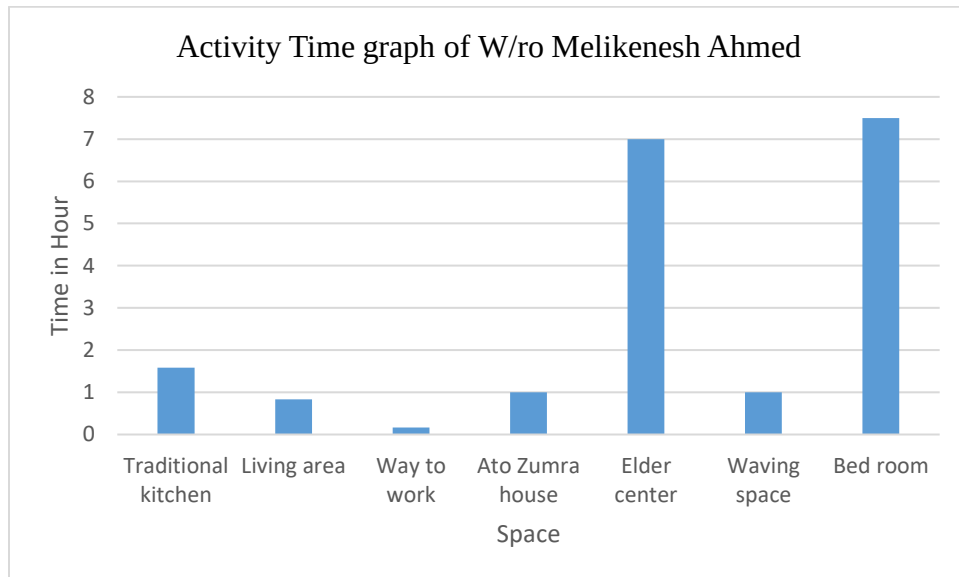


Figure A.19 Activity time graph of W/ro Melkenesh Ahmed

AP. A13: W/ro Nuromer Hassen's Compound

The life story of W/ro Nuromer Hassen's:

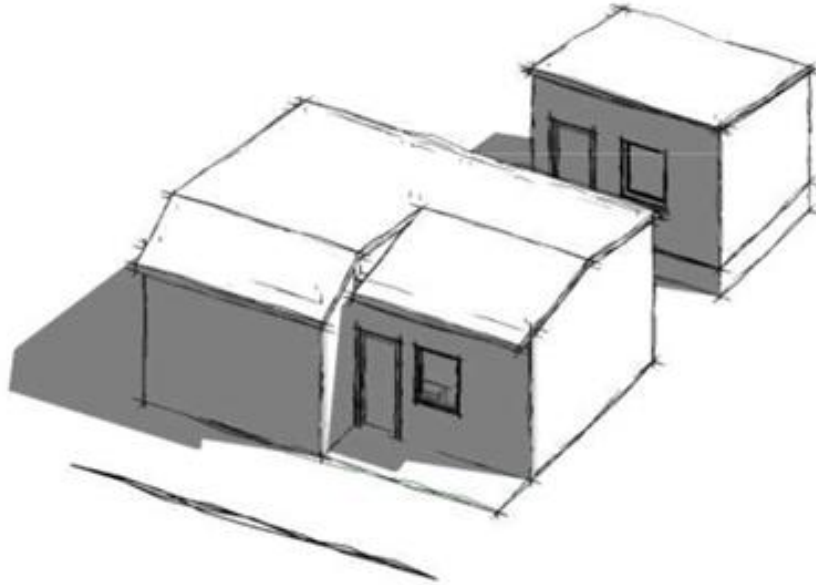


Figure A.20 W/ro Nuromer Hassen house

W/ro Nuromer Hassen was born in 1980 E.c in the Northern part of Ethiopia, the Amhara region, Adiss Zemen city 32km and 6hr 34min walk from Awra Amba. She is now 32 years old.

W/ro Nuromer was raised in Adiss Zemen city and she was inspired and impressed by the lifestyle of the Awra Amba community and traveled to Awra Amba in 1986 E.C. She became a member of the Awra Amba community. Her life as an Awra Amba community member begins when she joins the community.

W/ro Nuromer Hassen got married to Ato Zeru Alemu and started a family in 1986 E.C. She has seven children, four sons, and three daughters named Atalelew, Alemtsehay, Getachew, Eyayu, Yeshiwork, Beretukan, and Selam. Only Selam is attending the university the others are under the age of 18.

W/ro Nuromer's educational background has attended primary school until 4th Grade. she is a cooperative member of the community since 1988 E.c. Her life as an Awra Amba community member begins when she joins the community in 1988 E.c. she serves the community by working on preparing spice (Balitina) for the Awra Amba community and increasing the income source she works on weaving at home. Nuromer spends more of her time at her workplace making her income

means by weaving, and supporting and feeding the elderly group. When she got a break, she comes back to her house, feeds the children, and again. Her annual income from the community is 13 000 birrs.

The community's only holiday is celebrated on Ethiopian New Year's under the big tree (Warka) rooted in the heart of the village, this happens only when their daily task has ended. It starts at 2:00 am celebrated until 2:00 pm local time the night.

Table A.6 Spaces –Time Dairy of W/ro Nuromer Hassen's Family.

S.No	Date	Activities (Daily)	Room /place	From/at	To
1		Waking		12:00 AM	
2		Get dressed	Sleeping area	12:00 AM	12:20 AM
3		Cleaning the house	Compound	12:20 AM	12:40 AM
4		Making breakfast	Pantry	12:40 AM	1:30 AM
5		Eating breakfast	Living area	1:30 AM	1:55AM
6		Walking	Way to work	1:55AM	2:00AM
7		Work	Spice preparing/Balitina	2:00AM	6:00PM
8		Walking	Way to home	6:00PM	6:05PM
9		Making lunch	Pantry	6:05PM	6:35PM
10		Eating lunch	Living area	6:35PM	6:55PM
11		Walking	Way to work	6:55PM	7:00PM
12		Work	Spice preparing/Balitina	7:00PM	11:00PM
13		Walking	Way to elder center	11:00PM	11:05PM
14		Feeding elder	Elder center	11:05PM	12:00PM
15		Walking	Way to home	12:00PM	12:05PM
16		Making dinner	Pantry	12:05PM	1:00PM
17		Feeding children	Living raea	1:00PM	1:30PM
18		Making weaving	Living area	1:30PM	3:00PM

19		Eating (dinner)	Living area	3:00PM	3:30 PM
20		Sleeping	Sleeping area	3:30 PM	12:00 AM
Weekly activity					
1		Marketing			
2		Cleaning the compound			
3		Washing clothes			
4		Asking relatives			
5		Bringing firewood			
Monthly Activities					
1		Preparing spice (Balitina) for eating			

The compound

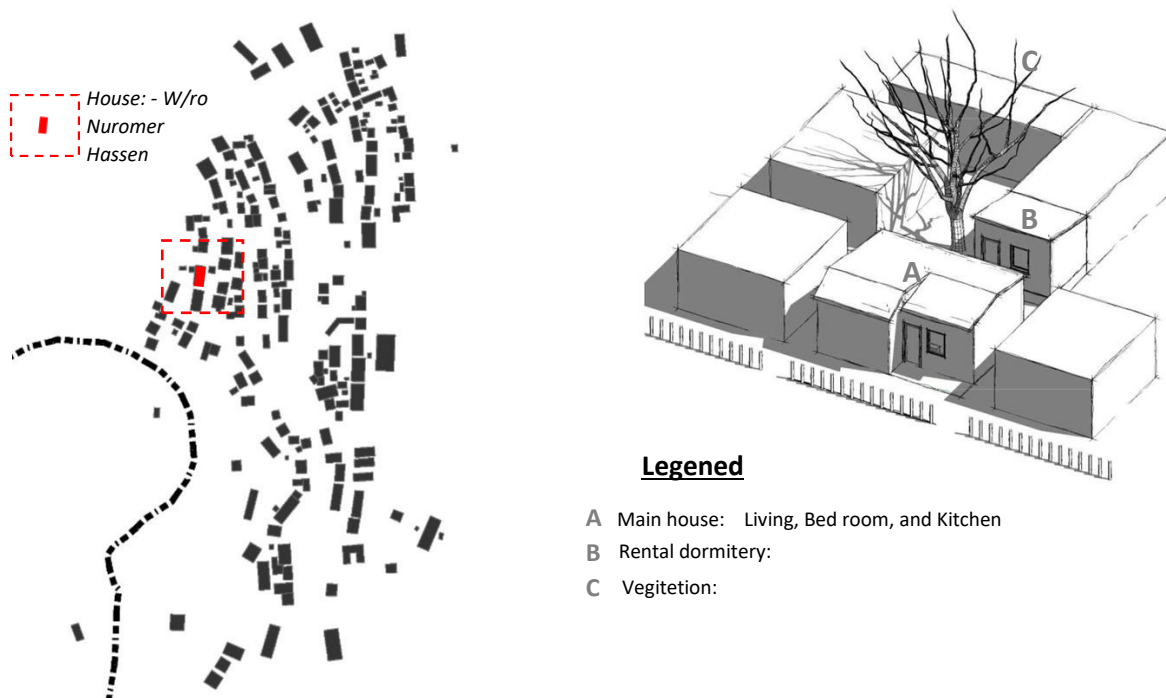


Figure A.21 W/ro Nuromer Hassen compound

W/ro Nuromer Hassen's get the land from the housing committee. The compound is located at the very steeped slop at the North West periphery of the Awra Amba settlement, near the community

water tanker. The compound is accessed through a narrow unpaved footpath and it is steeped. Nuromer Hassen's compound is a shared one with the neighborhood and it also only acts as passing through space (it is not even sufficient).

The compound is rectangular form. It is more of an urban form parcel and the total compound area is 150 m² with 15x10meters in size.

As it is indicated in the compound plan, W/ro Nuromer Hassen's house was constructed in row type shared with Ato Legesse Fenite. The house was constructed on the Eastern boundary of the compound this was done for the reasons of adapting to the steeped slop.

W/ro Nuromer Hassen's compound has a central arrangement row house. Other elements in the compound are the front yard, store, and toilet.

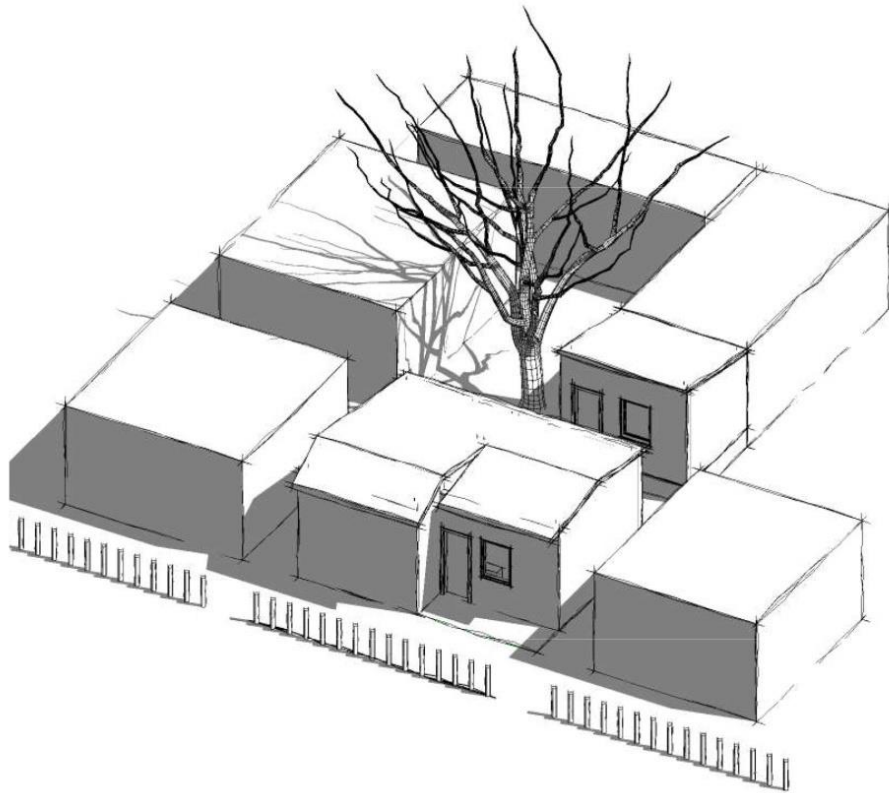


Figure A.22 W/ro Nuromer Hassen compound 3d

Table A.7 W/ro Nuomer compound unit.

No	Compound unit	Local Name	Quantity
1	Living Room	Salon	1
2	Bedroom	Megneta bet	1
3	Children Bedroom	Megneta bet	1
5	Traditional Kitchen	Madbet	1
6	Store	Eka bet	1

The Front yard

W/ro Nuomer's compound has a front yard. The front yard of the compound is the main passway for all the residents. After a 3m walk, W/ro Nuomer's entrance will be visible on the left. On the left side the same as the front it's a shared space for the entrance of the other neighborhoods. Because of the topography of the site and since the houses are built on a steep slope, on the right side, some trees act as a boundary for the compound to prevent from falling the cliff.



Figure A.23 W/ro Nuomer Hassen house front yard

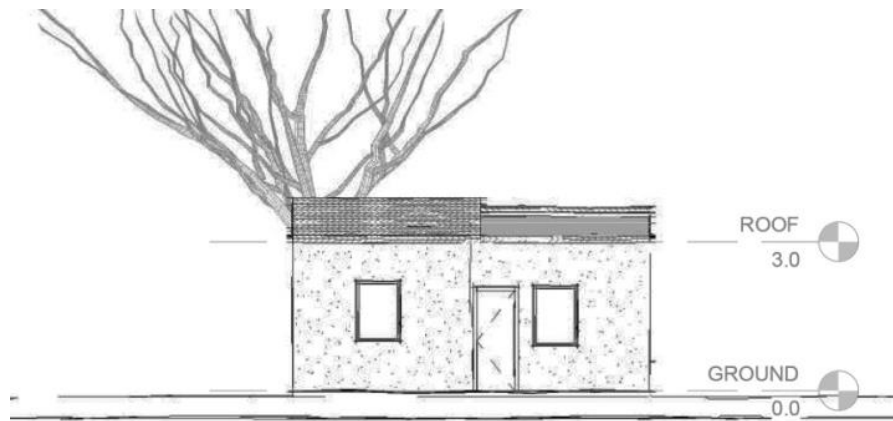


Figure A.24 W/ro Nuromer Hassen house front elevation

The Backyard

The backyard space is connected to the service road which is used for waste disposal. The total area of the backyard is 37.28 m², which is used to plant vegetables during the rainy season. The backyard space can be directly accessed from the house. The backyard is accessed through the main frontal road and the side spaces. The cooking area, rental houses, and the toilet are found in the backyard. The cooking space is covered with wood, plastic, and rest corrugated roof sheet. The waste management is very poor and the layout of the houses in the back is very close to one another which is two meters for all the tenants, neighbors, and residents to pass through every day.

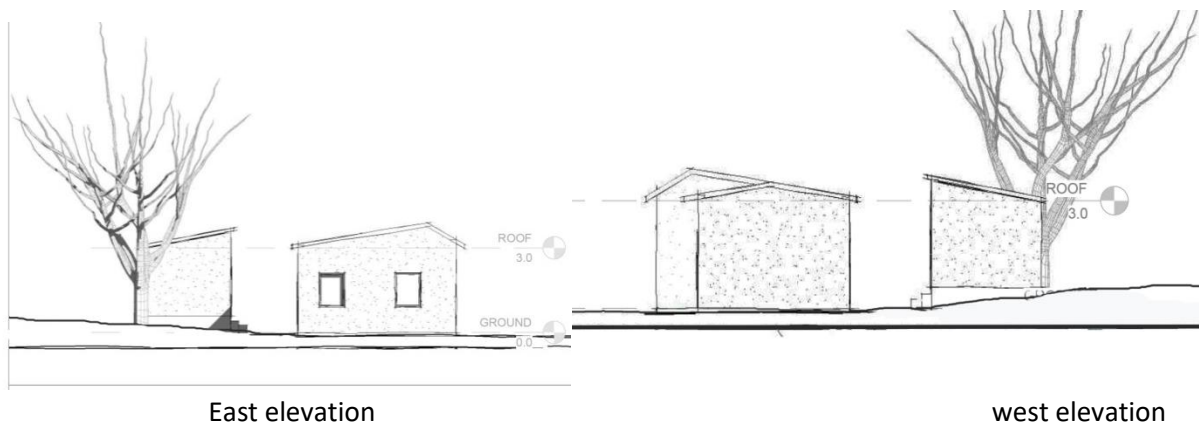


Figure A.25 W/ro Nuromer Hassen house East and west elevation



Figure A.26 W/ro Nuromer Hassen house backyard

The House:

W/ro Nuromer Hassen's compound is a shared one with the neighborhood and it also only acts as passing through space (it is not even sufficient). The compound has a grid arrangement row house attached with Ato Legesse Fenite. The main house is built on 30m² if the shared space is added to the plot area of the house it will be 40m². The roads taking into the house are very steep and need proper repair.

The houses are constructed from wood and mud for the wall, masonry floors, and corrugated iron sheet roofs.

The walls both in the interior and exterior act as load-bearing for the support of the roof trusses. Other than that, there are no columns in the house. The walls have 20 cm thickness the woods act as structural support and the mud plastering is used to cover the cracks of the wood also it has an aesthetic value, above that, it's either paint finish or paper finish.

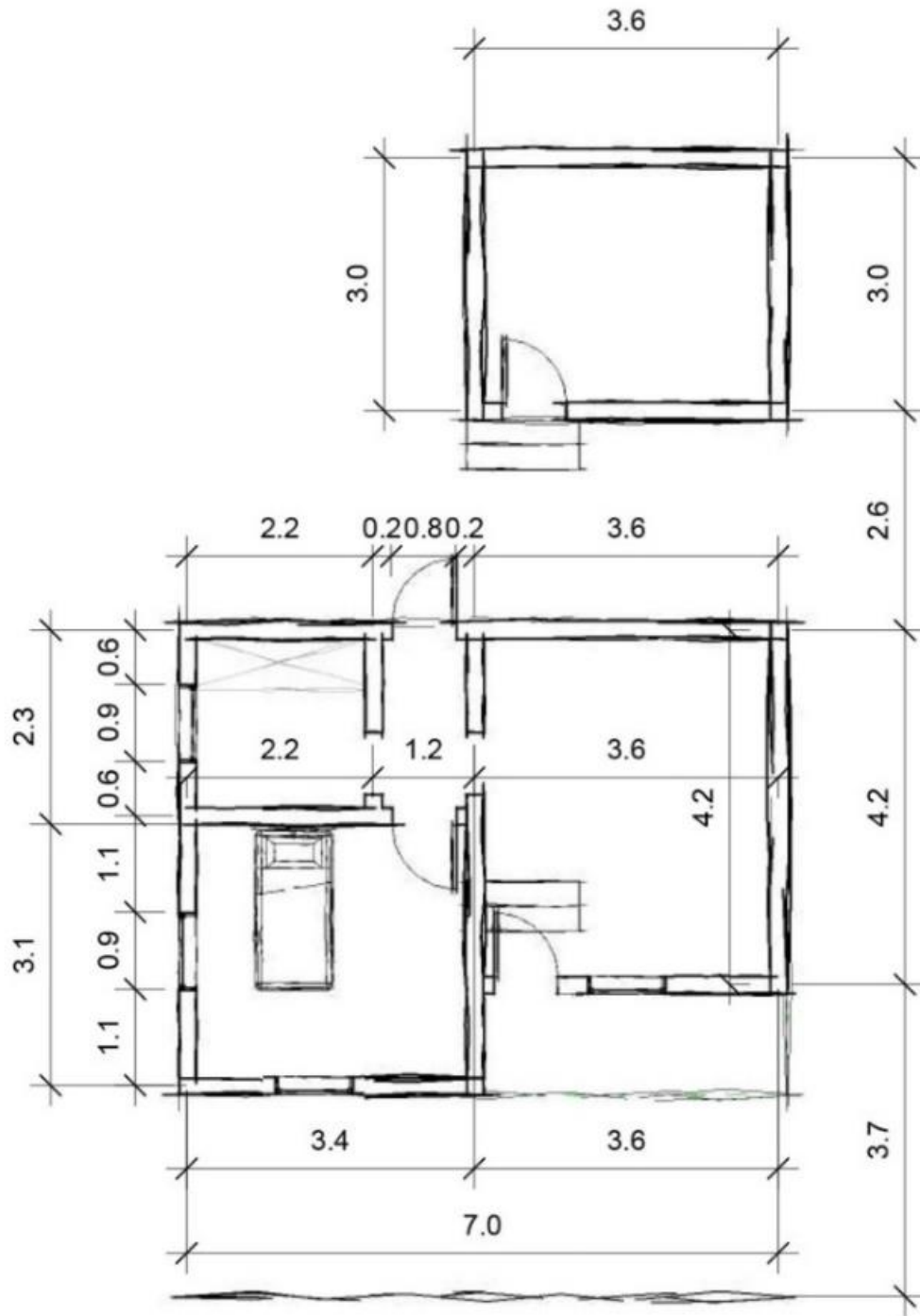


Figure A.27 W/ro Nuromer Hassen house floor plan

The total footprint of the main house is 30m². Which is a 2m² verandah, 12m² living room, 9m² bedroom, 4m² kitchen, and 2m² corridor. Other than this house there are rental houses in the backyard with the same structural and wall finishes.

Furniture of the house

a) Living room



Figure A.28 W/ro Nuromer Hassen living room furniture

b) bedroom



Figure A.29 W/ro Nuromer Hassen bedroom furniture

Orientation of the House:

The orientation of W/ro Nouromer's house is towards the east. This was done because of the settlement pattern not on a studied analysis or W/ro Nouromer's needs. With regarding that the living room and the bedroom get the morning sunshine in the east and only the kitchen gets the afternoon sunray in the west. In addition to this, all of the houses on this slope are oriented to the east.

Construction Materials of the house

Table A.8 W/ro Nuromer house construction material.

No	Units of material	The local name of the materials	Remark
1	Wooden post	Denbil	
2	masonry	Kabadingay	
3	soil	Afer	
4	ash	Amed	
5	Animal dung	Ebet/chika/	

6	Strawbale	Chid	
7	Corrugated sheets	Korkoro	
8	thatch	Sar	
9	fence	Atir	

Table A.9 W/ro Nuromer materials.

No	Materials/tools/	Local name of the materials	Remark
1	Hammer	Medosha	
2	Shovel	Akafa	
3	Ax	Metrebia	
4	Saw	Megaz	
5	Pickaxe	Doma	

Fig. A.30 below shows the space used by W/ro Nuromer Hassen's family at settlement, compound, and house levels. The interview was conducted with one family member within 24 hours. The family spent 62.5 % of their time in the house and 37.5% outside of the compound.

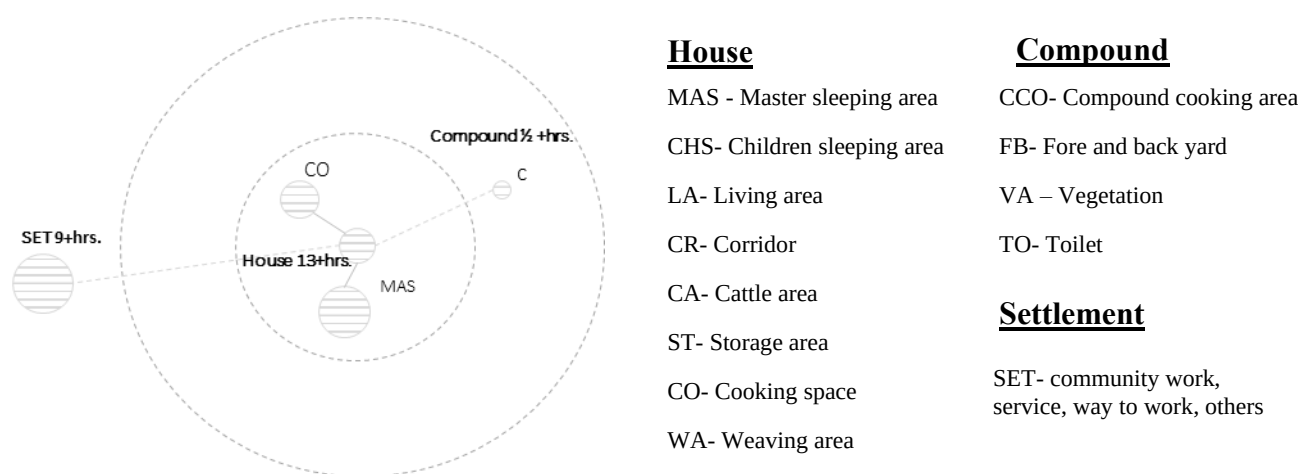


Figure A.30 J graph of W/ro Nuromer Hassen house

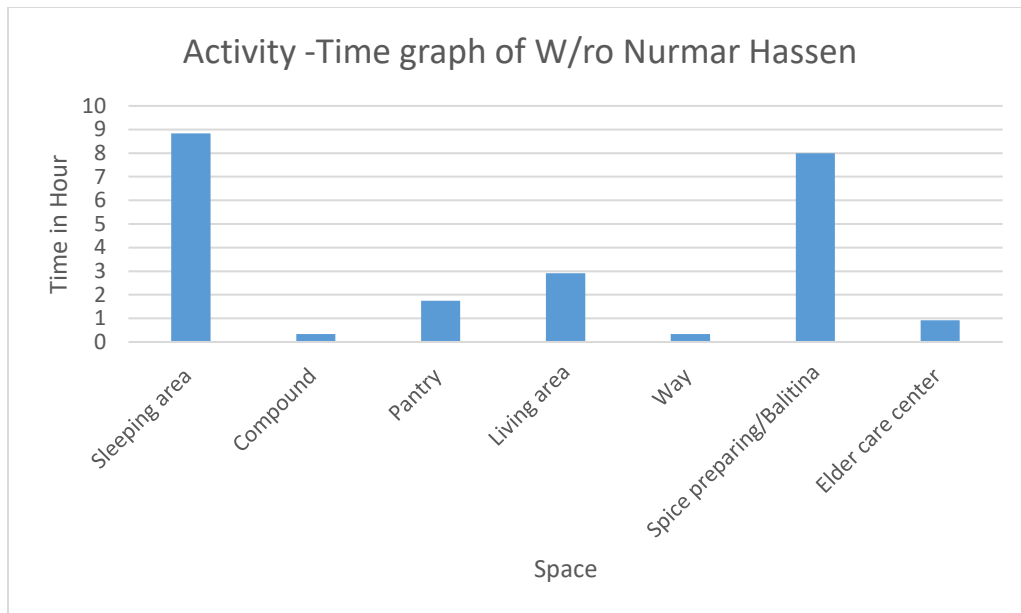


Figure A.31 Activity time graph of W/ro Nuromer Hassen's family

AP. A14: W/ro Mulunesh's Compound

The life story of W/ro Mulunesh: Life History, Activity, and Services



Figure A.32 W/ro Mulunesh's family

W/ro Mulunesh was born in 1946 E.c in Awra Amba. She is one of the founders of the Awra Amba community and she is now 38 years old. She was one of the residents who has a journey and lived in Southern Ethiopia, Bonga from the year 1980 to 1986 E.c, and then go back and started living in Awra Amba Community in 1986 E.c by accepting the lifestyle of the community.

W/ro Mulunesh was married to Ato Engidaw Agez and they have five sons all of whom live with them. Their eldest son named Aberew Engidew, who is 24 years old and a 4th-year university student, the second eldest son who is 20 years old, and a 1st-year university student, Alemzuriash Belachew lives within the community and works at the community café. The rest young children, Mulat, (18 years old), Bisirat (10 years old), and Fikadu (7 years old) are students of 11th, 5th, and 2nd grade respectively at the school built by the community Adisra'y Primary School.

“When I was a child, I went with my mother to southern Ethiopia, Bonga and we stay for six years and we come back in the second trip of the community which is on 12 January 1986. Since this day I settle in Awra Amba and construct my own house on the current spot in 2000e.c.”

W/ro Mulunesh attended formal education until “Mesrete timihirt” during the Derg regime. she has experienced a job in agriculture since childhood. Her other job experience is weaving and selling. Her life as an Awra Amba community member begins when she was born in Awra Amba. She is a cooperative member of the community since 1983. She serves the community by working as a seller in the Awra Amba community shop. Her annual income in 2012 E.c from the community finance allocation for each cooperative member was 13,000 birrs, and from a private business which is waiving in his home when he works hard, she gets an additional 17,000birr¹³. W/ro Mulunesh Ahmed's total annual income was 30,000 Birr.

The water source is located in the compound when there is no water, they bring it to form the community groundwater pump which is located at the center of the community next to the “Warka tree” which takes a 10-minute walk. For washing cloth, they go to the “Ginde river” which takes a 15minute walk. Health and other service facilities were located inside the community. The health post took about 15 minutes of walking. Their burial ceremony took place in “Quarqe” South West direction next to the community Adiss Ra’ey secondary school taking 30 minutes walk. Both Awra Amba and the neighborhood Muslim community use this common land for the burial ceremony. Her working space the community shop is located at the center of the community taking 5 minutes to walk from home.

Table A.10 Spaces –Time Dairy of W/ro Mulunesh’s Family.

S.No	Date	Activities (Daily)	Room /place	From/at	To
1		Waking		12:00 AM	
2		Get dressed	Bed room	12:00 AM	12:30 AM
3		Making breakfast then and eating	Pantry	12:30 AM	1:00 AM

13 This is an approximately assumption the information which received from several community members. (It needs further reconicenses survey).

4		Cleaning the house	compound	1:00 AM	1:40 AM
5		Walking	Way to work	1:55 AM	2:00 AM
6		Work	Community shop	2:00 AM	6:00 PM
7		Walking	Way to home	6:00 PM	6:05 PM
8		Making lunch then and eating	Living area	6:05 PM	6:55 PM
9		Walking	Way to work	6:55 PM	7:00 PM
10		Work	Community shop	7:00 PM	12:00 PM
11		Walking	Way to home	12:00 PM	12:05 PM
12		Making dinner then and eating	Living area	12:05 PM	1:00 PM
13		Making weaving	Waving room	1:00 PM	3:00 PM
14		Sleeping	Bed room	9:30 PM	12:00 AM
Weekly activity					
1		Marketing			
2		Cleaning the compound			
3		Washing clothes			
4		Asking relatives			
5		Bringing firewood			
Monthly Activities					
1		Preparing spice (Balitina) for eating			

The Compound

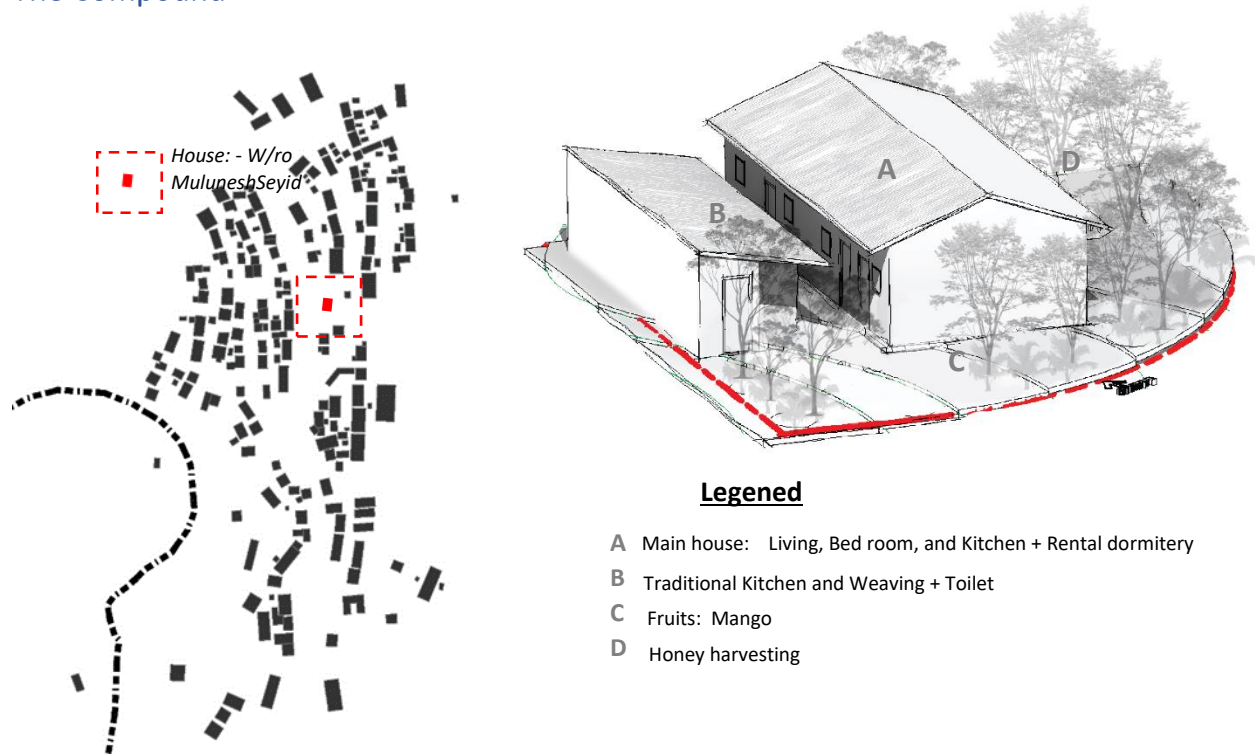


Figure A.33 W/ro Mulunesh's compound

W/ro Mulunesh Seyid gets the land from the housing committee. W/ro Mulunesh Seyid compound is located at the center of the Awra Amba settlement on the steeped slope. The compound is accessed through a narrow unpaved footpath between the neighborhood house with steeped slope.



Figure A.34 Access to W/ro Mulunesh's house

The compound is in irregular form. It is more of an urban form parcel and the total compound area is 248.5 m². The perimeter of the compound is fenced with eucalyptus covered with shrubs with an average height of 2 meters.

As it is indicated in the compound plan, W/ro Mulunesh's house was constructed on the Eastern boundary line this was done to adapt the house to the site's steeped slope. W/ro Mulunesh's compound has a linear arrangement of detached houses. Other elements in the compound are the front yard, back yard, store, and toilet.

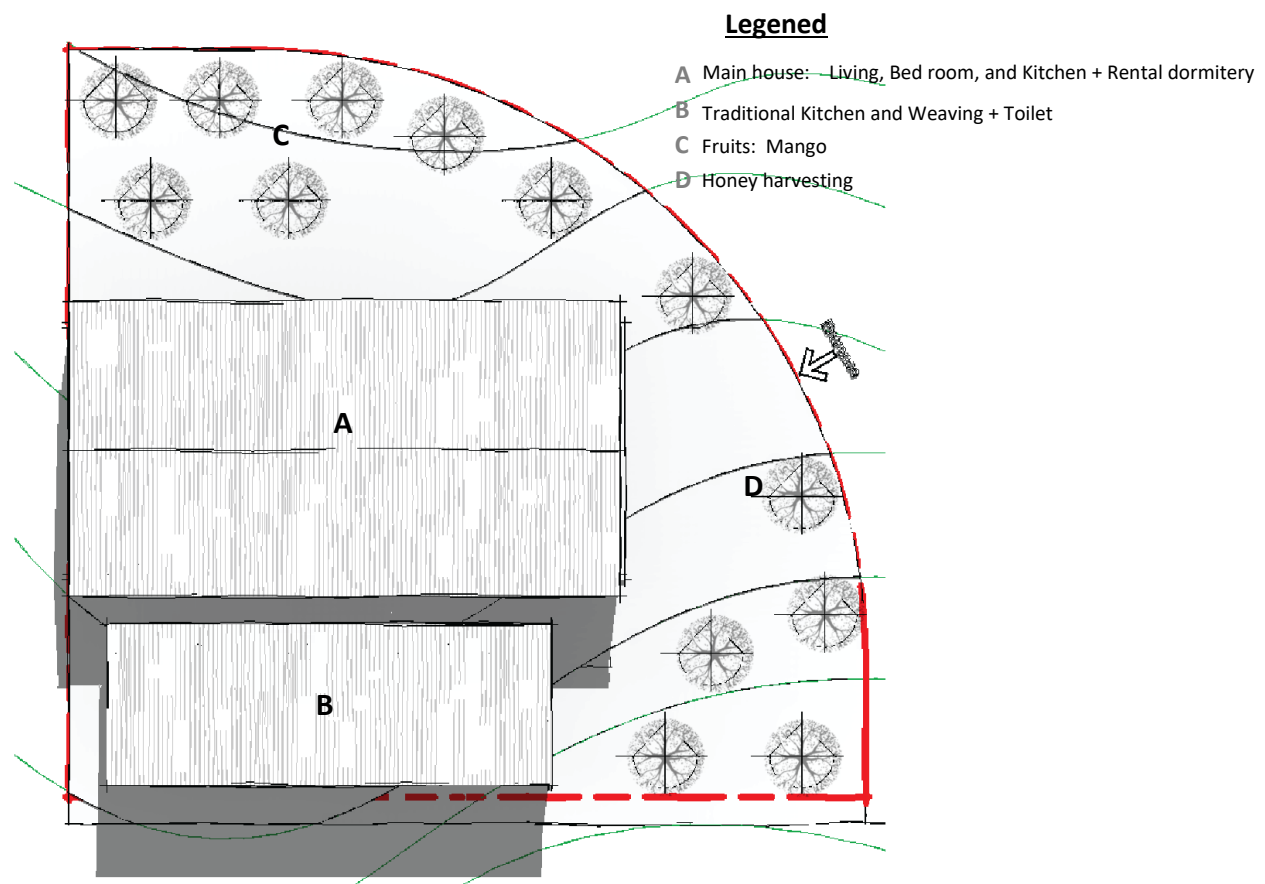


Figure A.35 W/ro Mulunesh's house site plan

The House:

There are two huts in W/ro Mulunesh's compound which have a linear arrangement. The first house is a linear arrangement detached type. The total area of the house is 65.4m² with 12.1x5.40meters in size. The internal space of the house is used for cooking, sleeping, and, a

sleeping zone and rental dormitory. The second house is a linear arrangement detached type. The total area of the second house is 26.7m² with 3.10x8.60meters in size. The internal space of the house is used for cooking, and, working.

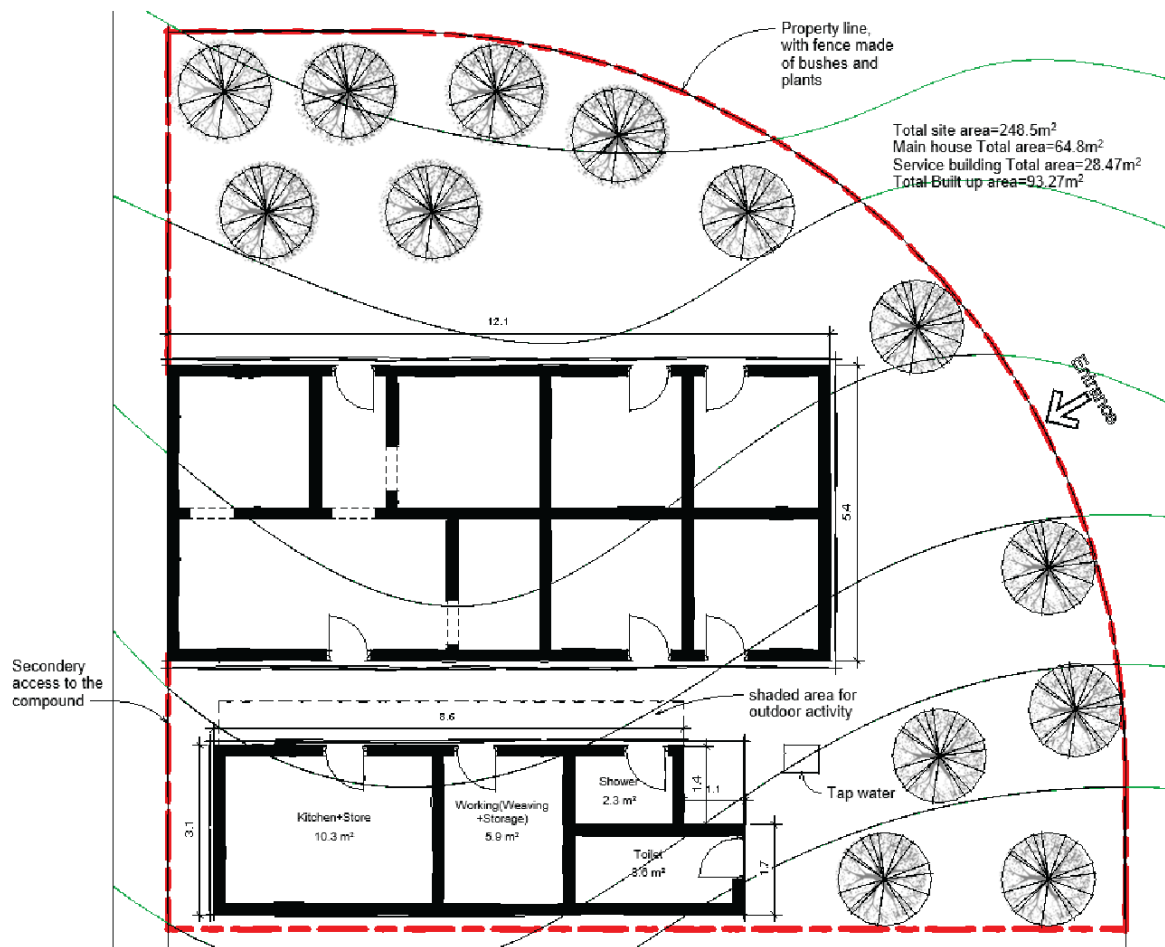


Figure A.36 W/ro Mulunesh's house site floor plan

The Front Yard:

W/ro Mulunesh's compound has a front yard. The front yard is located in between the main house and the traditional kitchen which is covered with a corrugated iron sheet. The area of the front yard is 24m². In the front yard, daily activities like weaving, socializing, playing, clothes drying and spice drying are taking place.

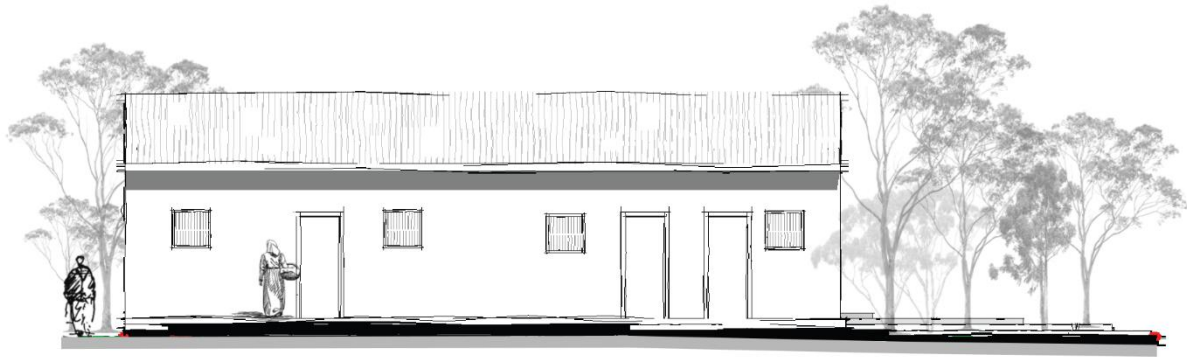


Figure A.37 W/ro Mulunesh's house front elevation



Figure A.38 W/ro Mulunesh's house front yard

The backyard:

The backyard space is located at the highest level of the compound. It can be directly accessed from the house. The total area of the backyard is 60.28 m², which is used to plant fruits and vegetables during the rainy season, and for honey harvesting.

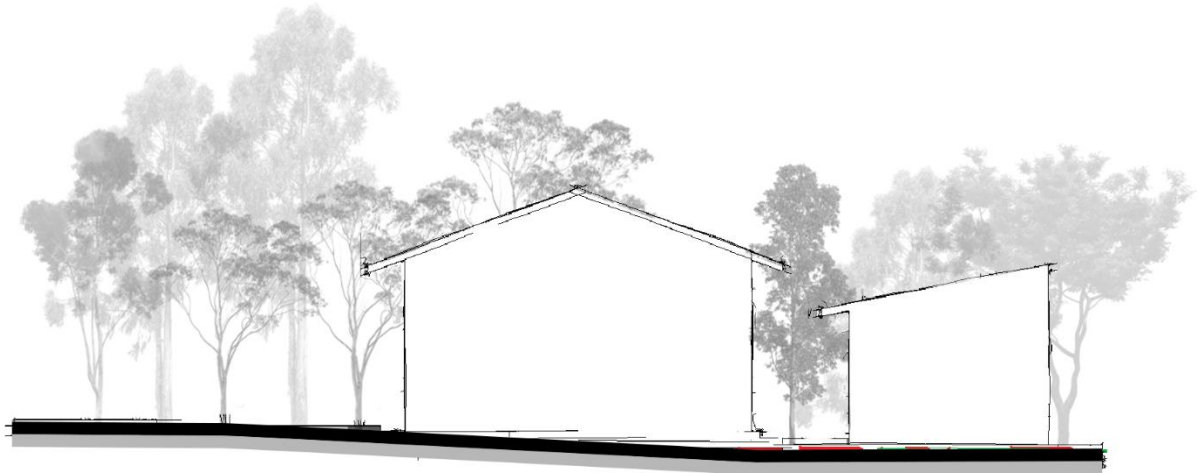


Figure A.39 W/ro Mulunesh's house backyard

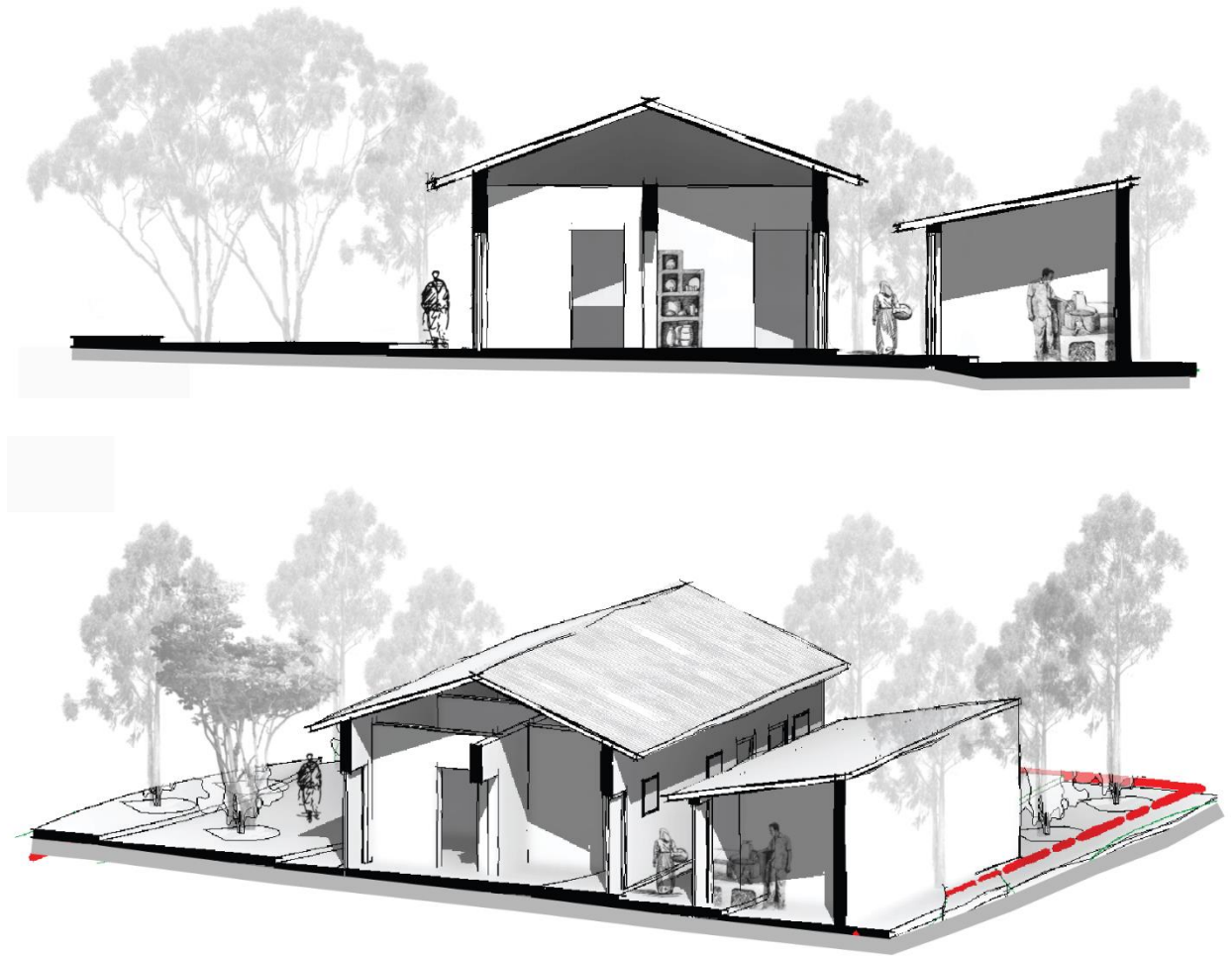


Figure A.40 W/ro Mulunesh's house section

Furniture of the House:

a) Living area

- Bed, shelf made from wood and mud (Mesikot).



Figure A.41 W/ro Mulunesh's living room furniture

b) Traditional kitchen

- Traditional stove (Midiya).





Figure A.42 W/ro Mulunesh's traditional kitchen furniture

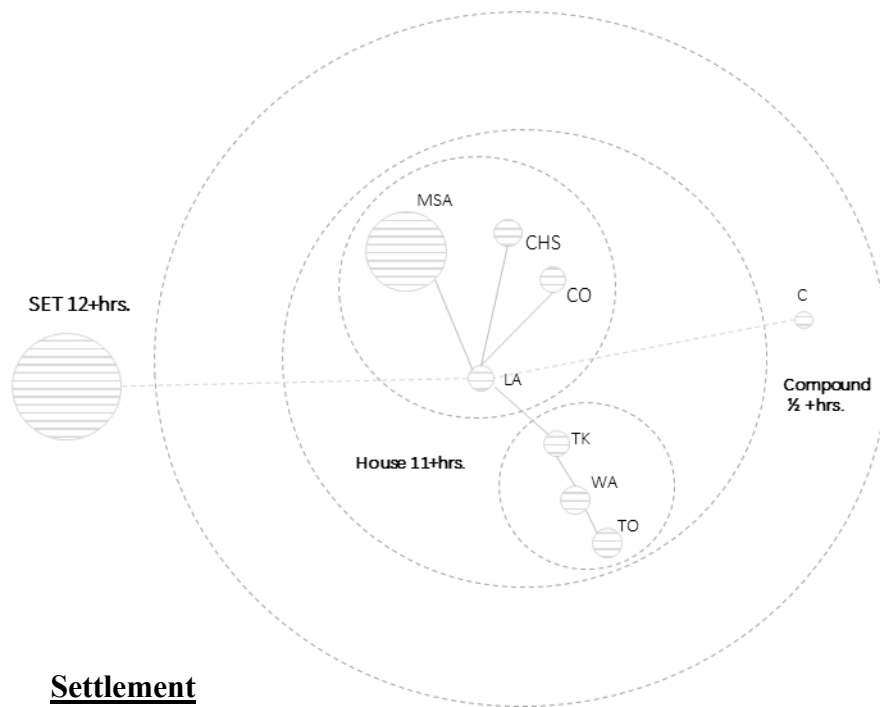
C) Bedroom

- Clothes (Mesikot).



Figure A.43 W/ro Mulunesh's bedroom furniture

Fig. A.44 below shows the space used by W/ro Mulunesh's family at settlement, compound, and house levels. The interview was conducted with two family members within 48 hours. The family spent 50 % of their time within the house and 50% outside of the compound.



Settlement

SET- community work,
service, way to work, others

House

MAS - Master sleeping area

CHS- Children sleeping area

LA- Living area

CR- Corridor

CA- Cattle area

ST- Storage area

CO- Cooking space

WA- Weaving area

Compound

CCO- Compound cooking area

FB- Fore and back yard

VA – Vegetation

TO- Toilet

Figure A.44 J graph of W/ro Mulunesh house

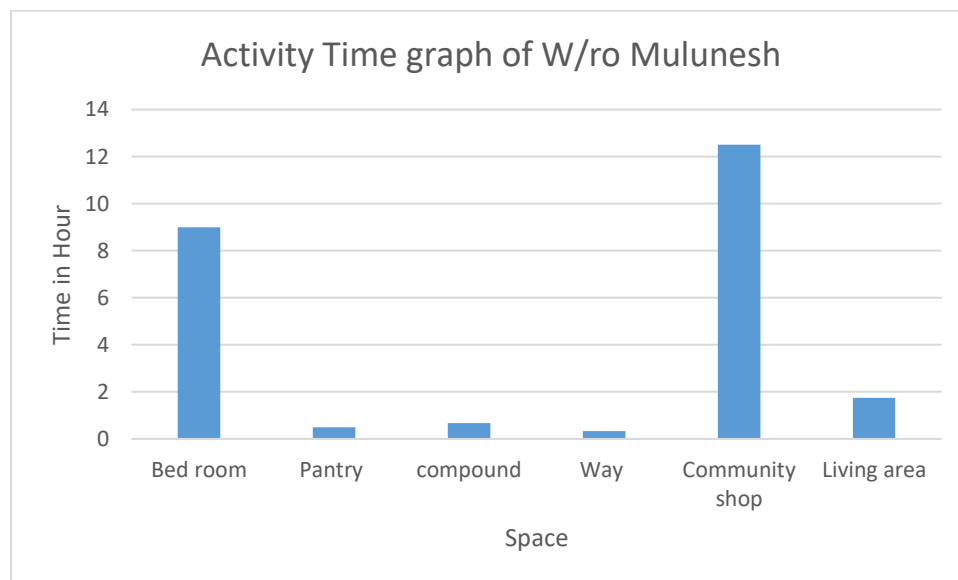


Figure A.45 Activity Time graph of W/ro Mulunesh's family

AP. A15: Ato Nureahmed Yesuf 's Compound

The life story of Ato Nureahmed Yesuf Ahmed:



Figure A.46 Ato Nureahmed Yesuf

Ato Nureahmed Yesuf Ahmed is one of the elder residents of the Awra Amba community, born in 1939 at a nearby place called Sinko-Medihaniyalem 1 hour walk from Awra Amba. He is 73 years old and his educational background has studied “meserete timihirt” until 4th grade. He married three times. His first marriage was when he was 14years old. He married his first wife Anchiye Kasse. He lived with his wife for less than a year. He divorced his first wife because his wife went to go to the new settlement by the Derig regime which is Addis Agar 30min wake from Awra Amba but he doesn’t want to go there because he sees dreams. They have 5 children Tigabe, Ziyn, Kindenew, Beletey, and Abezash. None of them live in AwraAmba. The second wife Tuba Birile is one of the founders of the Awra Amba community Nureahmed is her second husband and she has children from her first husband. The reason to divorce is the disagreement between him and

his stepchildren. They have three children Aleminew, Fenitaye, and Birihane who are 15, 21, and 24 years old simultaneously. The third wife Maditu Seyid is one of the founders of Awra Amba. They have one child Aregash. She is a university graduate who works as a tourist guide in the Awra Amba community. Nureahmed Yesuf narrates his life history as follows:

“The community goes to southern Ethiopia Bonga in the 1980s there are some people who go and back from Bonga to Awra Amba at that time we register the exact location kebele where they settle. I goes to south Bonga in 1982 E.c I joined them later. After staying 3 years I get sick asthma I go to Debire Tabor where my father is living there my mother is at Sinko-Medehaniyalem I stay for 2 years. Then I join the Awra Amba community again in 1987.”

Ato Nureahmed Yesuf has been weaving working since he was in Sinko medihaniyalem and a farmer working on the land he gains from kebele outside of Awra Amba territory. When he became a cooperative member of the Awra Amba community in 1985 E.c, his land includes the community. Previously His work in the community was weaving now he works dairy farmer because he gets sick of his eyes because of the dust that comes from the cotton during weaving, starting six years early. His annual income in 2012 E.c from the community finance allocation for each cooperative member was 13,000 birrs.



Figure A.47 Ato Nureahmed Yesuf

Table A.11 Spaces –Time Dairy of Ato Nureahmed Yesuf ’s Family.

S.No	Date	Activities (Daily)	Room /place	From/at	To
1		Waking		12:00AM	
2		Get dressed	Bed room	12:00AM	12:30AM
3		Cleaning the house	Compound	12:30AM	1:00AM
4		Eating breakfast	Living area	1:00AM	1:45AM
5		Walking	Way to work	1:45AM	2:00AM
6		Work	Community Diary farming	2:00AM	6:00 PM
7		Walking	Way to home	6:00 PM	6:15 PM
8		Eating lunch	Living area	6:15 PM	6:45 PM
9		Walking	Way to work	6:45 PM	7:00 PM
10		Work	Community Diary farming	7:00 PM	11:45 PM
11		Walking	Way to home	11:45 PM	12:00 PM
12		Guarding the community	compound	12:00 PM	2:00 PM
12		Playing with family	Living room	2:00 PM	3:30 PM
13		Eating dinner	Living area	3:30 PM	4:00 PM
14		Sleeping	Bed room	4:00 PM	12:00AM
Weekly activity					
		Marketing			
		Cleaning the compound			
		Washing clothes			
		Asking relatives			
		Bringing firewood			
		Balitinamazegaget			
		Washing children’s			
Monthly Activities					
		Preparing spice (Balitina) for eating			

The Compound

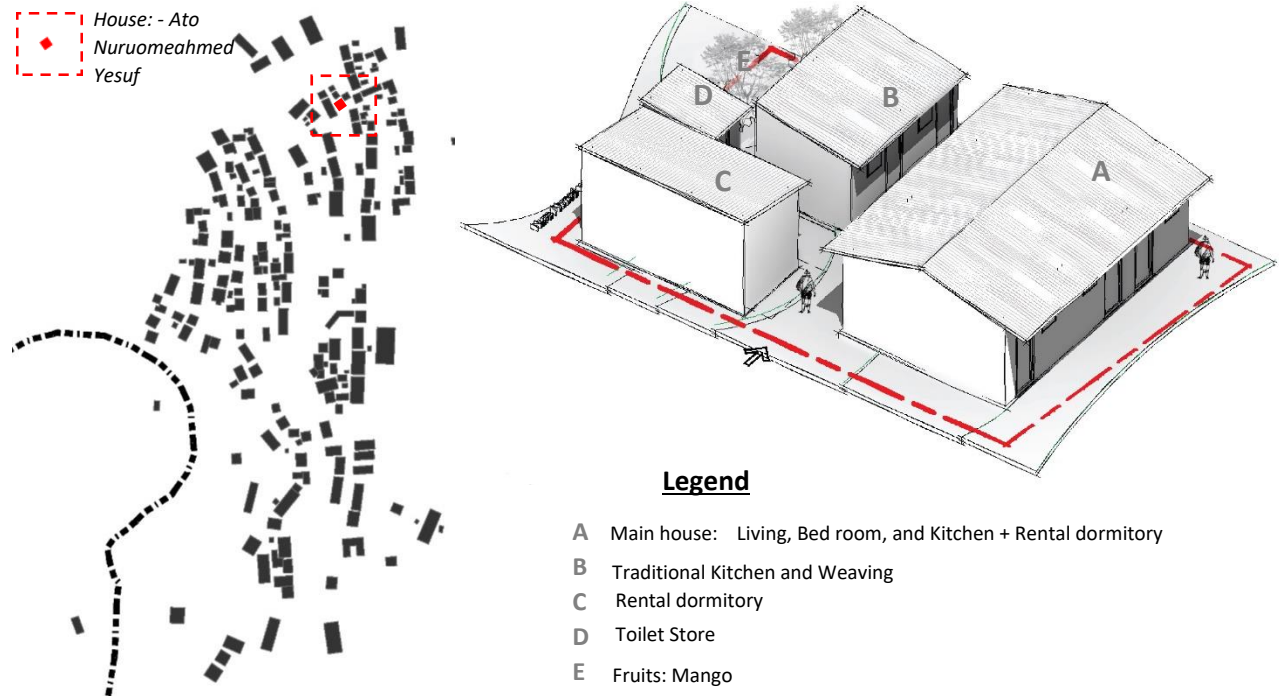


Figure A.48 Ato Nureahmed Yesuf compound

Ato Nureahmed Yesuf gets the land from the housing committee. His compound is located in the Northern direction from the central warka tree, near the community Dairy farming and oil factory the compound is accessed through the narrow unpaved footpath.

The compound is rectangular form. It is more of an urban form parcel and the total compound area is 150 m² with 15x10meters in size. The perimeter of the compound is fenced with shrubs.

As it is indicated in the compound plan, Ato Nureahmed Yesuf's house was constructed on the Northern boundary of the compound. Ato Nureahmed Yesuf compound has a row house. Other elements in the compound are the front yard, traditional kitchen, back yard, store, weaving room, dormitory, and toilet.

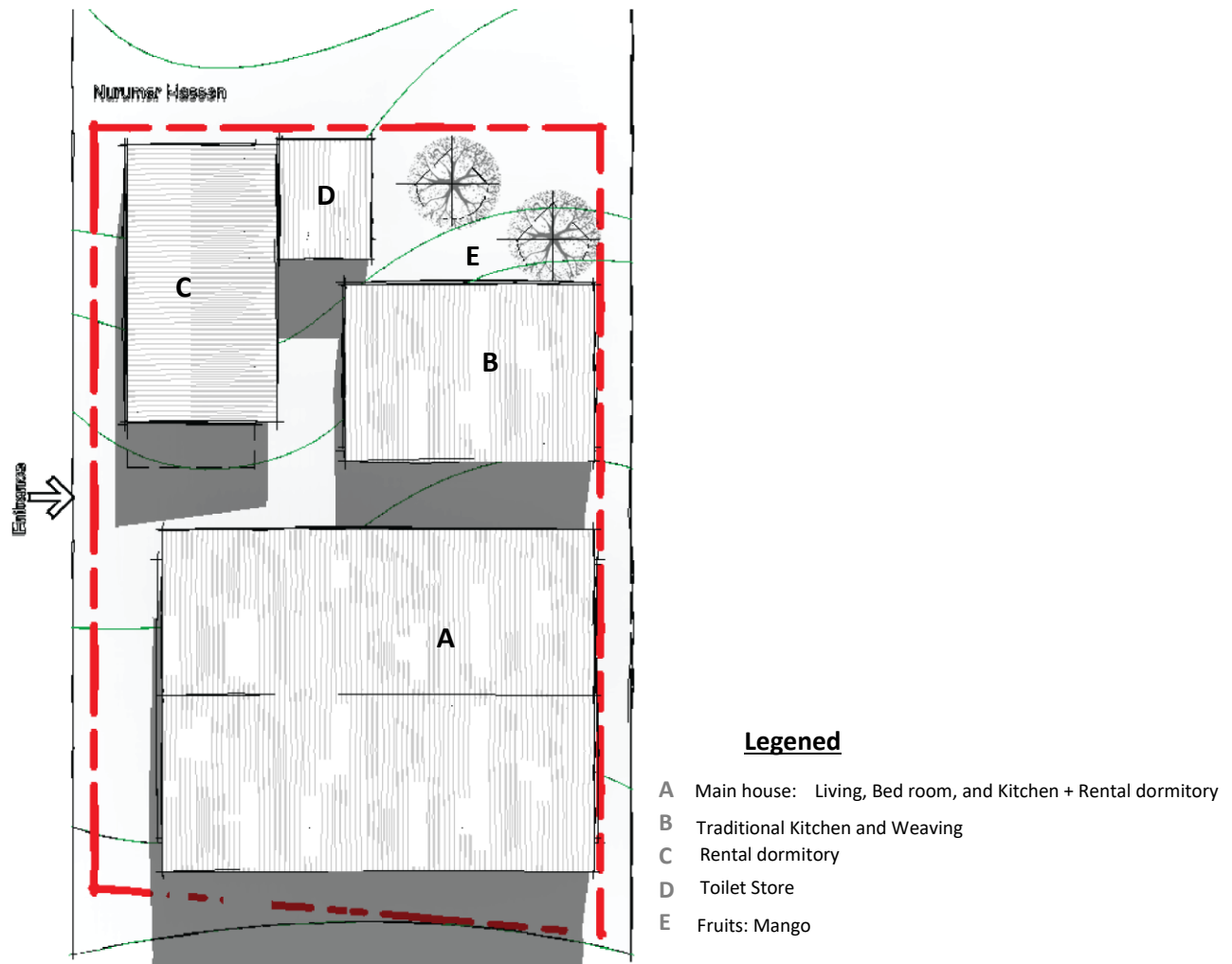


Figure A.49 Ato Nureahmed Yesuf house site plan



Figure A.50 Ato Nureahmed Yesuf house site floor plan

The House:

Ato Nureahmed's house is a type of detached house which have a grid arrangement. The total area of the house is 45.9m² with 8.5x5.4meters in size. The internal space of the house is subdivided into four functional spaces, which are living area which accommodates Medeb (grinding stone with chika) space for eating and playing with family. The second is a sleeping zone that accommodates a bed and grain store (Gota) and the last is a cereal store (Gushigusha).



Figure A.51 Ato Nureahmed Yesuf house floor plan

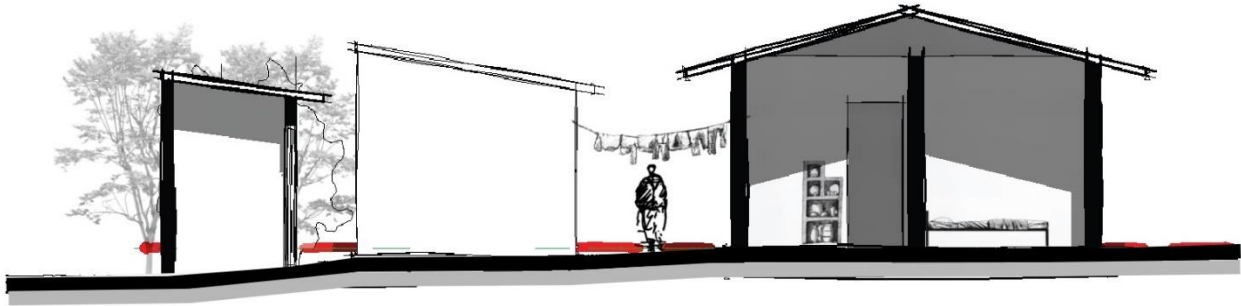


Figure A.52 Ato Nureahmed Yesuf house section

The Front Yard:

Ato Nureahmed Yesuf compound has a front yard. The front yard locates in the middle of the main house and the weaving room. It was covered with a corrugated iron sheet this makes the house dark and they dismantle it. The area of the front yard is 20m². the activity in the front yard is daily activities like socializing, playing, clothes drying, and spice drying.



Front yard: it is located next to the traditional kitchen at the boarder of the compound.

waste water drains through over the hole of the jar.

It is 1m depth hole fill with gravel for purification of waste water

Figure A.53 Ato Nureahmed Yesuf's house front yard

The Back yard:



Figure A.54 Ato Nureahmed Yesuf house backyard

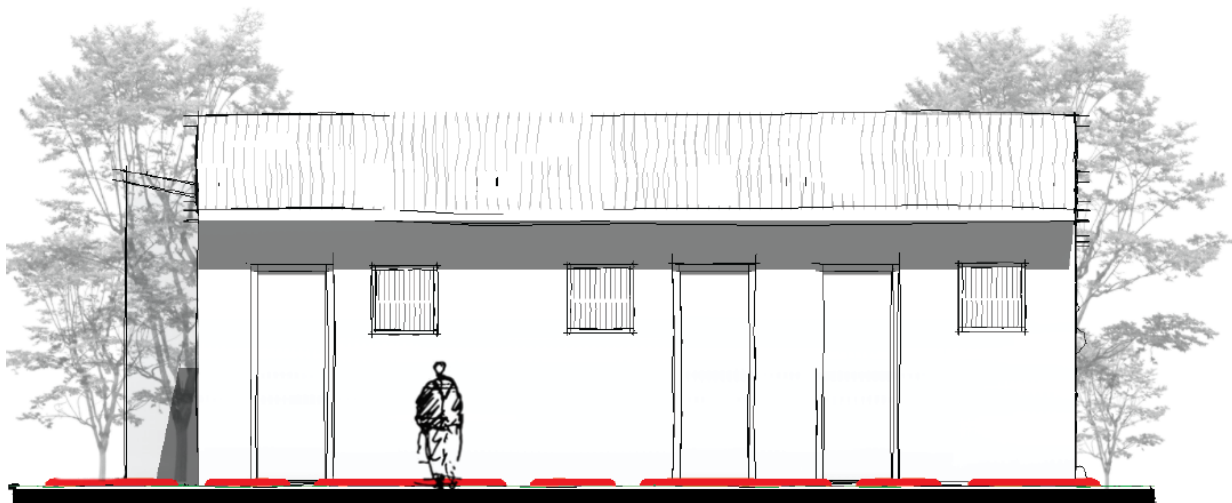


Figure A.55 Ato Nureahmed Yesuf house front elevation

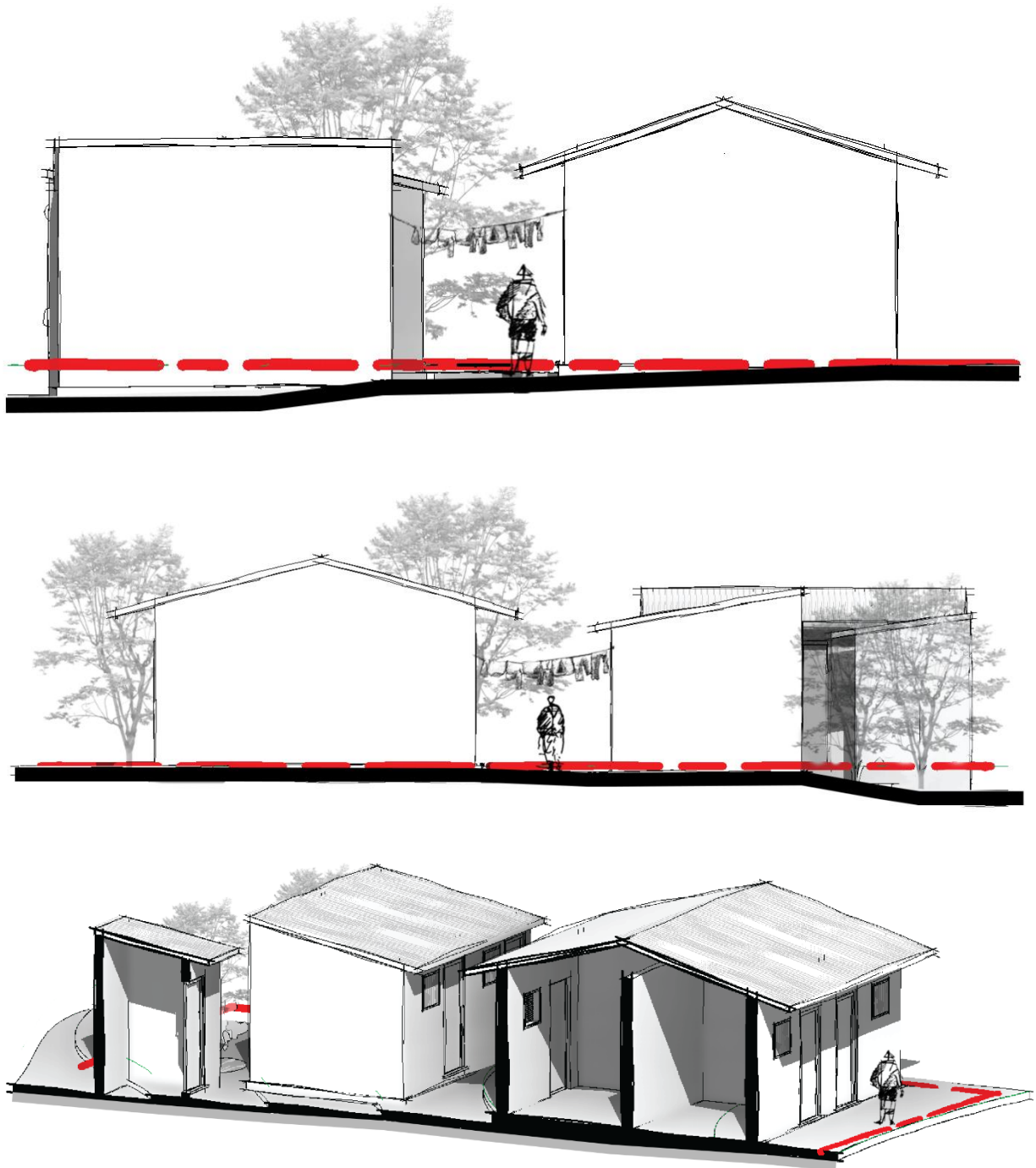


Figure A.56 Ato Nureahmed Yesuf house section



Sanitary: it is located next to the traditional kitchen at the boarder of the compound.

waste water drains through over the hole of the jar.

It is 1m depth hole fill with gravel for purification of waste water

Figure A.57 Ato Nureahmed Yesuf sanitary system

Furniture's in each room:

a) Living area

- Mede plastic skin, bed

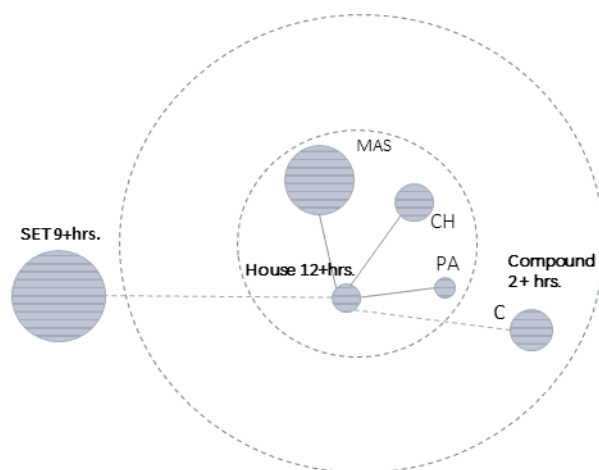


- Shelf (Meskot), bed



Figure A.58 Ato Nureahmed Yesuf living furniture

Fig. A.59 below shows the space used by Ato Nurahmed Yesuf's family at settlement, compound, and house levels. The interview was conducted with one family member within 24 hours. The family spent 62.5 % of their time within the house and 37.5% outside of the compound.



House

MAS - Master sleeping area
CHS- Children sleeping area
LA- Living area
CR- Corridor
CA- Cattle area
ST- Storage area
CO- Cooking space
WA- Weaving area

Compound

CCO- Compound cooking area
FB- Fore and back yard
VA – Vegetation
TO- Toilet

Settlement

SET- community work,
service, way to work, others

Figure A.59 J graph of Ato Nureahmed Yesuf's house

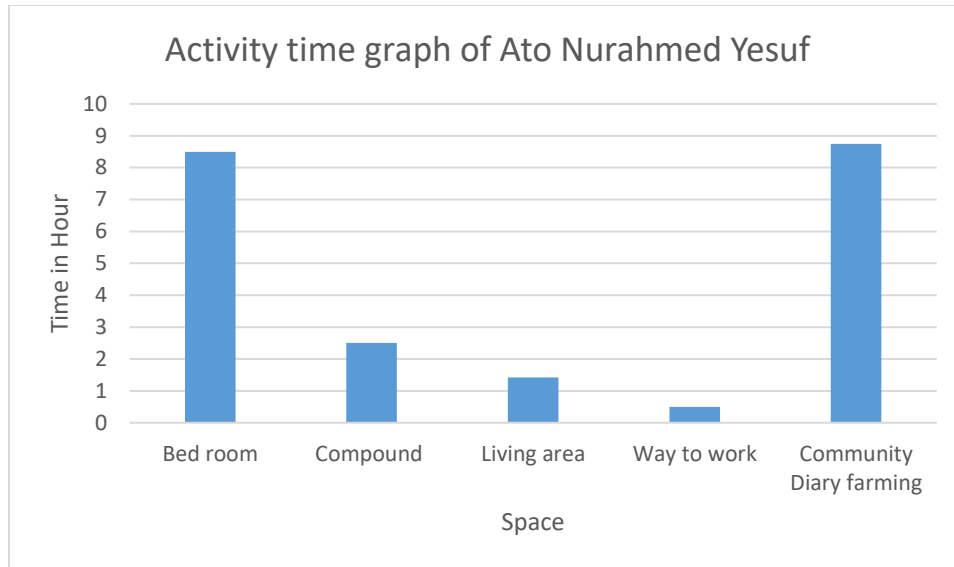


Figure A.60 Activity time graph of Ato Nureahmed Yesuf family

AP. A16: W/ro Tirusew Fenite's Compound

The life story of Wro Tirusew Fenite: Life History, Activity, and Services



Figure A.61 Wro Tirusew Fenite's

W/ro Tirusew Fenite Salih is 33 years old. She was born and grew up in Awra Amba. Her parents are the founder of the community and accepted and approved of the lifestyles of the Awra Amba community thus her life as a community member begins. Tirusew goes to South Ethiopia, Bonga

with her parents when she is a child (9 years old). The community back to the former land through two trips. She comes back on the second trip to the community which is in September 1986 E.c.

She married her husband Ato Haybachew Jemal at Awra Amba in 1993 E.c. They have four sons. The eldest son Azimeraw Haybachew, is 17 years old and in 11th-grade studying at the community school which is Adiss Ra'ey secondary school, the second eldest son Endalikachew Haybachew, is 13 years old and in 8th grade, the third Abriham Haybachew is 9 years old and he is 3rd-grade study at the community school which is Adiss Ra'ey primary school. The youngest son Metages Haybachew is 3 years old.

Wro Tirusew Fenite formal educational background is attended class until elementary school. She is impressed with the community lifestyle and she became a cooperative community member in 1978. She serves the community based on her ability which has experienced a job in weaving. Her other job experience is Guiding for 26 years now. Her annual income in 2012 E.c from the community finance allocation for each cooperative member was 13,000 birrs, and from a private business that is weaving in her home when she works hard, she gets an additional 17,000birr. Wro Tirusew's total annual income was 30,000 Birr.

The water source is located in the compound when there is no water, they bring it to form the community groundwater pump which is located at the center of the community next to the Warka tree taking a 15minute walk. For washing cloth, they go to the Ginde river which takes a 10minute walk. Health and other service facilities were located inside the community. The health post took about 15 minutes of walking. Their burial ceremony took place in Quarqe South West direction next to the community Adiss Ra'ey secondary school taking 30 minutes to walk. Both Awra Amba and the neighborhood Muslim community use this common land for the burial ceremony. Wro Tirusew's working space the community museum is located at the center of the community next to the Warka tree taking 5 minutes to walk from home.

Table A.12 Spaces –Time Dairy of W/ro Tirusew Fenite's Family.

S.No	Date	Activities (Daily)	Room /place	From/at	To
1		Waking		12:00AM	
2		Get dressed	Bed room	12:00 aM	12:20AM
3		Washing	Toilet	12:20AM	12:30AM

4		Cleaning the house	Compound	12:30AM	1:00AM
5		Making breakfast	Pantry	1:00AM	1:30AM
6		Eating breakfast	Living area	1:30AM	1:45AM
7		Walking	Way to work	1:45AM	2:00AM
8		Work	Community reception	2:00AM	6:00PM
9		Walking	Way to home	6:00 PM	6:15 PM
10		Making lunch then and eating	Living area	6:15 PM	6:45 PM
11		Walking	Way to work	6:45 PM	7:00 PM
12		Work	Community reception	7:00 PM	12:00 PM
13		Walking	Way to home	12:00 PM	12:15 PM
14		Making dinner	Pantry	12:15 PM	1:00 PM
		Eating dinner	Living area	1:00 PM	1:20 PM
15		Making weaving	Waving room	1:20 PM	4:00 PM
16		Sleeping	Bed room	4:00 PM	12:00AM
Weekly activity					
1		Marketing			
2		Cleaning the compound			
3		Washing clothes			
4		Asking relatives			
5		Bringing firewood			
6		Balitinamazegaget			
7		Washing children's			
Monthly Activities					
1		Preparing spice (Balitina) for eating			

The Compound

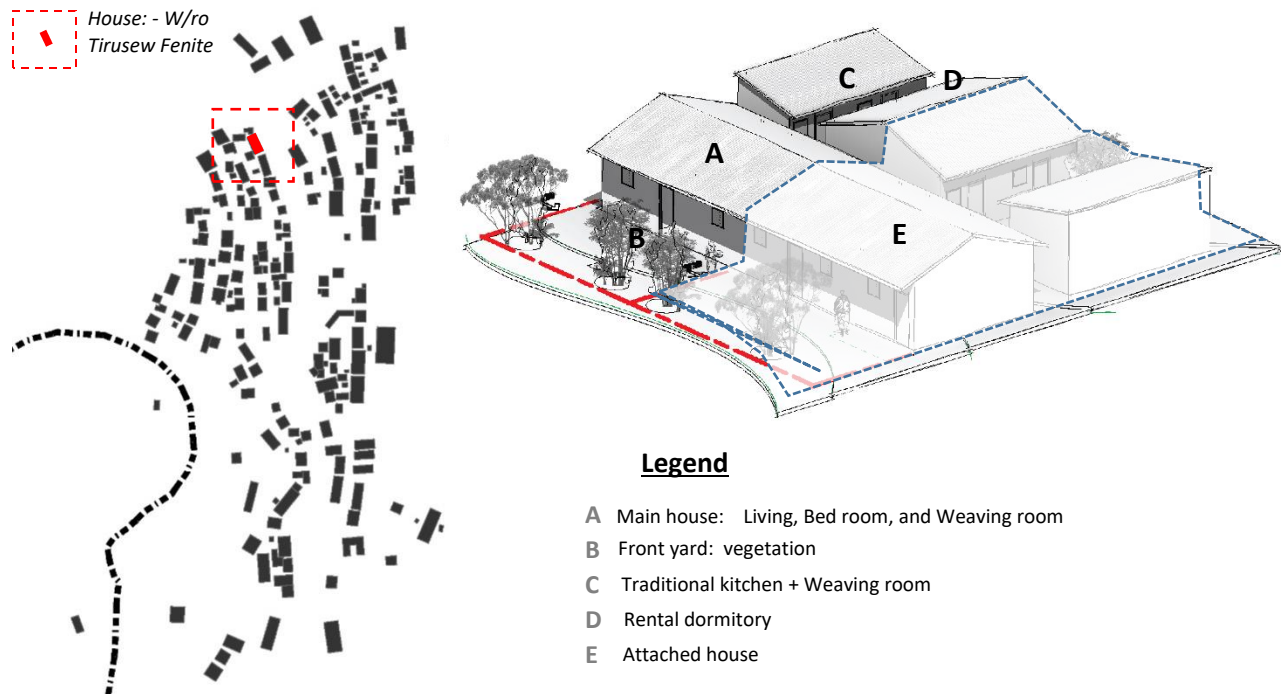


Figure A.62 Wro Tirusew Fenite's compound

W/ro Tirusew Fenite's get the land from the housing committee. Her compound is located in the Northern direction from the central "Warka tree", near the community meal house and dairy farming. The compound is accessed through the main road which crosses the community settlement.

The compound is rectangular form. It is more of an urban form parcel and the total compound area is 142.4 m² with 17.8x8meters in size. The front and the back yard of the compound are fenced with trees.

As is indicated in the compound plan, W/ro Tirusew's house was constructed on the Eastern boundary of the compound. W/ro Tirusew's compound has a row house attached to Ato Jemal's house. Other elements in the compound are the front yard, traditional kitchen, store, and toilet.

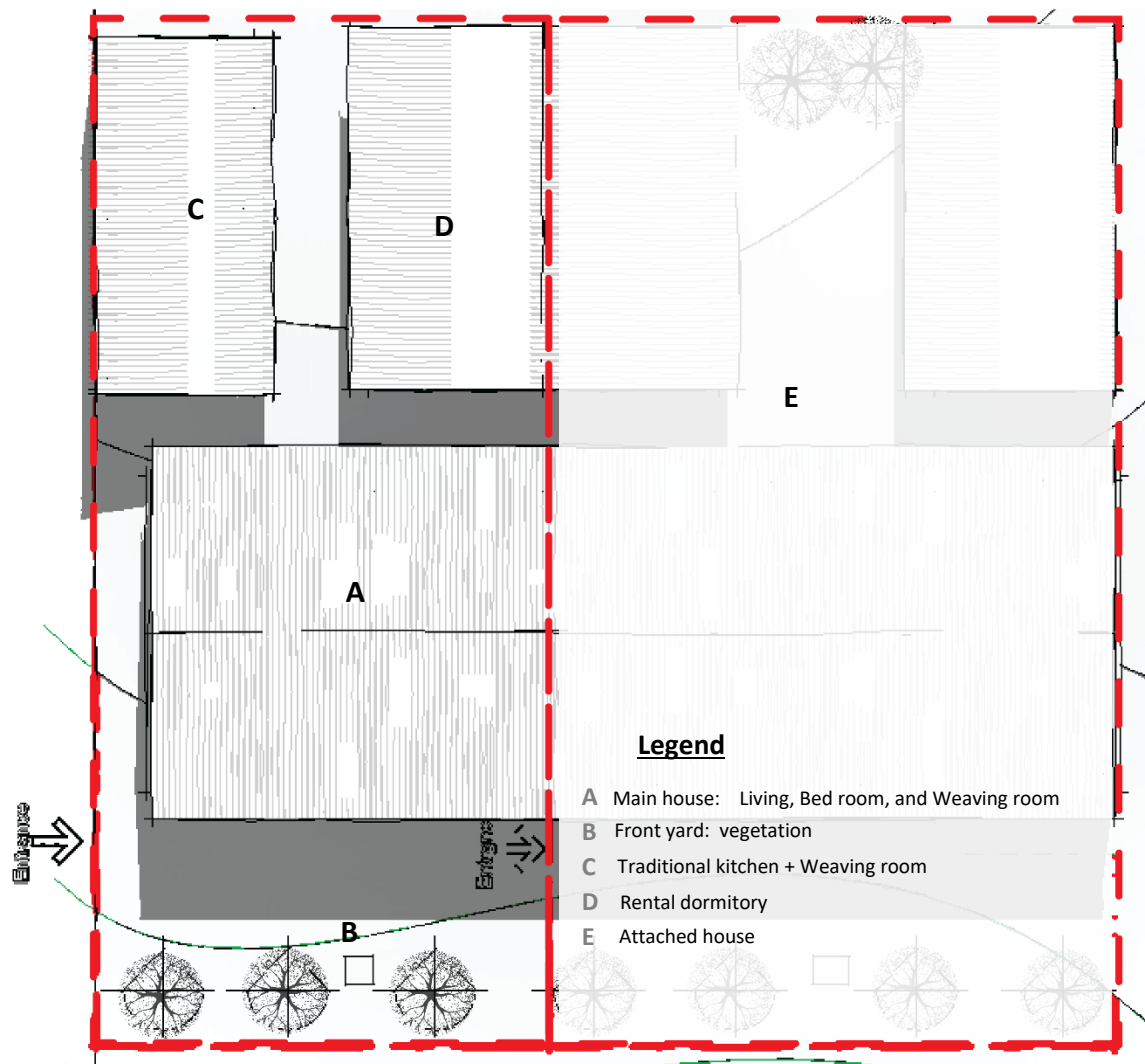


Figure A.63 Wro Tirusew Fenite site plan

The House:

W/ro Tirusew Fenite's house is a row house attached with Ato Jemal Mohammed to minimize the housing cost by sharing the central wall (Gib A'af). The total area of the house is 37.8m² with 7x5.4meters in size. The internal space of the house is subdivided into four parts. One is the living area which accommodates Medeb, and shelf. It is the space for eating and playing with family. the second space is the pantry which is used for cooking and storing. The third and fourth are sleeping areas for the master and children's bedroom.



Figure A.64 Wro Tirusew Fenite house site floor plan

The Front Yard:

W/ro Tirusew's compound has a front yard. The front yard is located next to the main road which parcels the community settlement into two. To reduce the sound, the perimeter of the front is trees. The area of the front yard is 40m². In the front yard, daily activities like socializing, playing, clothes drying and spice drying are taking place.

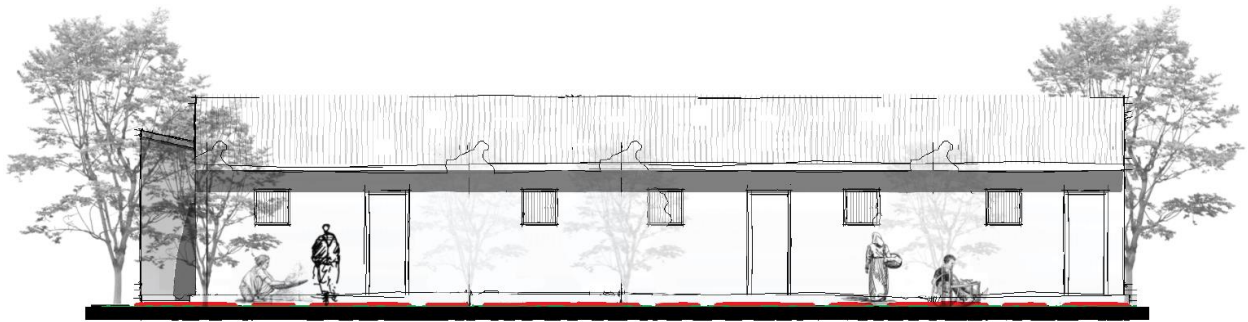


Figure A.65 Wro Tirusew Fenite house front yard

The backyard:

The backyard space is connected to the linkage road which is used to access the attached house. The total area of the backyard is 28.4 m², which is used to dry spices and cloth, cooking, as a corridor to access the next row houses, etc. The backyard space can be directly accessed from the house.

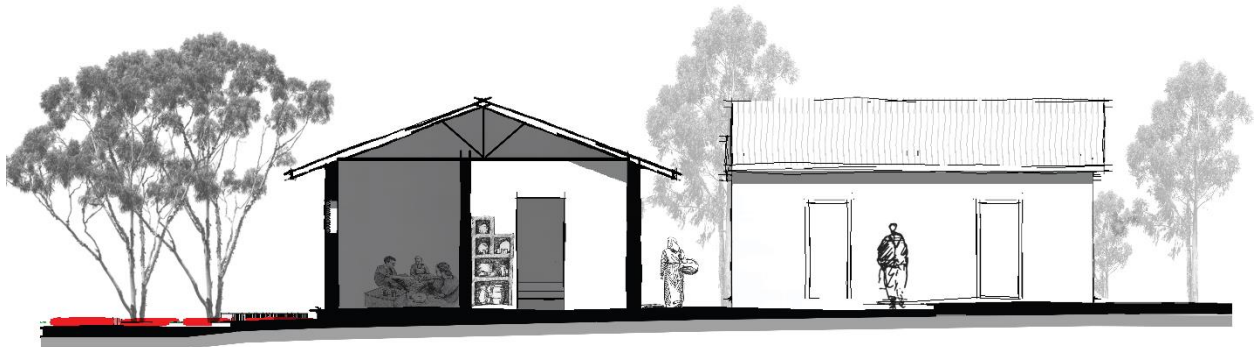
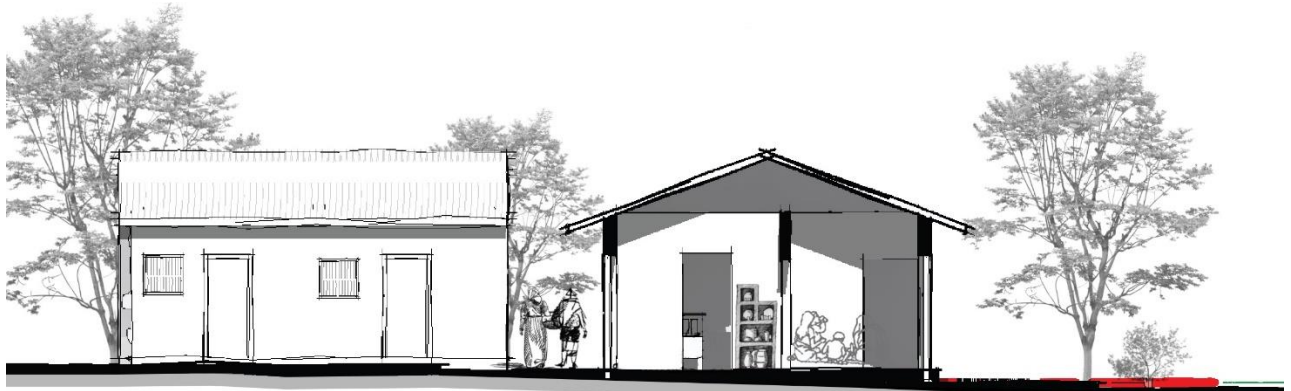


Figure A.66 Wro Tirusew Fenite house backyard

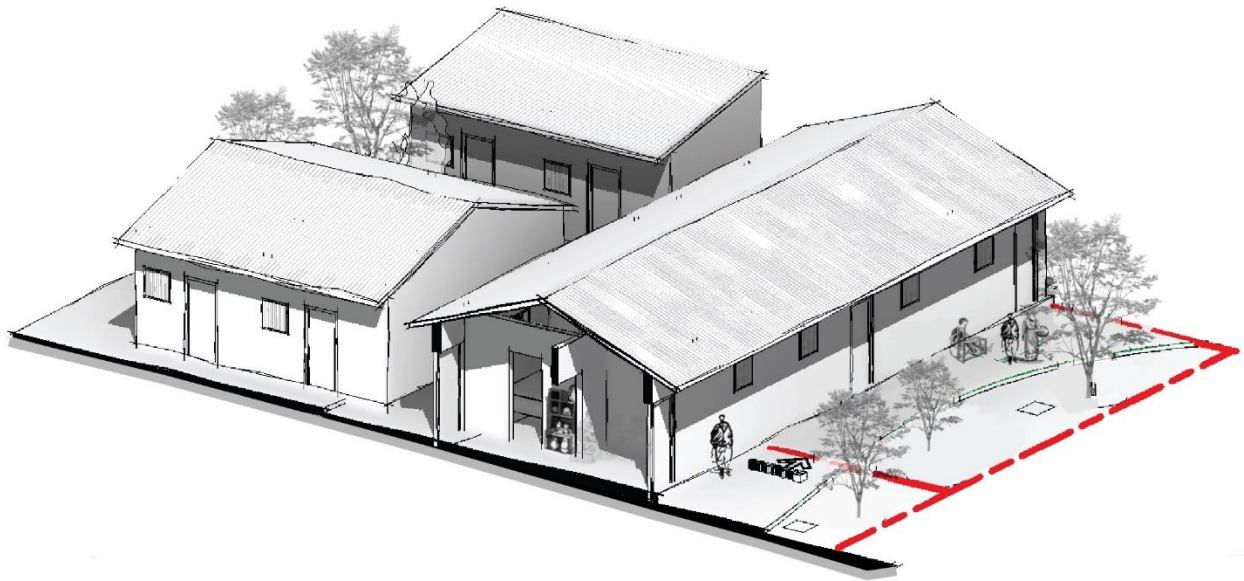


Figure A.67 Wro Tirusew Fenite house section

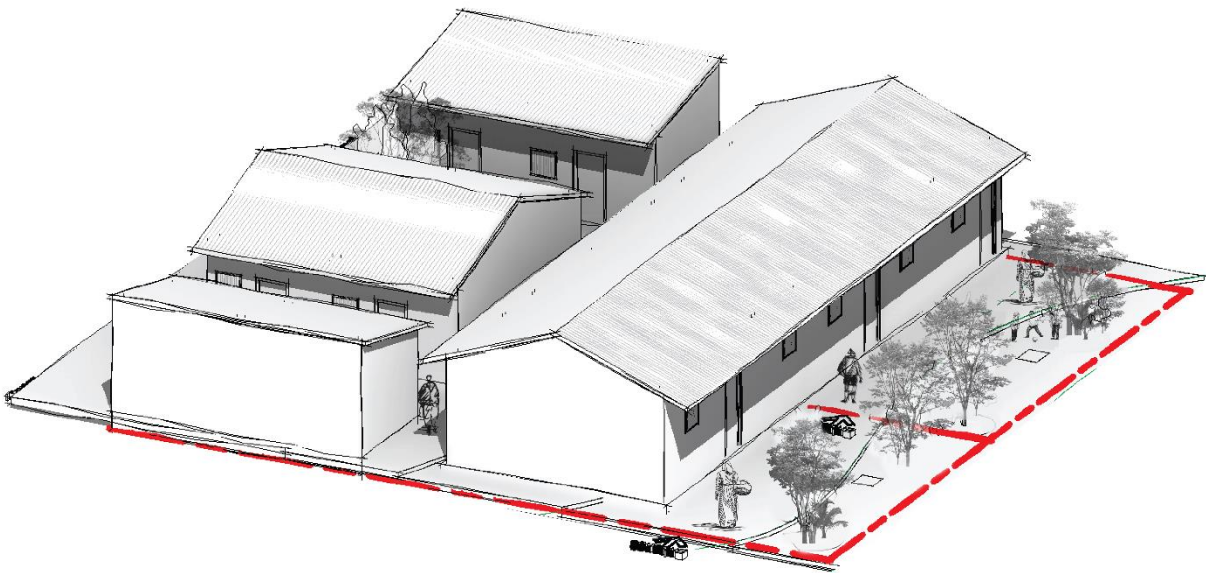


Figure A.68 Wro Tirusew Fenite house 3d

Furniture's in each room:

a) Living area

- Shelf (mesikot)



Figure A.69 Wro Tirusew Fenite living room furniture

b) kitchen

- Electric stove



Figure A.70 Wro Tirusew Fenite kitchen furniture

Fig. A.71 below shows the space used by W/ro Tirusew Fenite's family at settlement, compound, and house levels. The interview was conducted with one family member within 24 hours. The family spent 58.33 % of their time within the house and 41.67% outside of the compound.

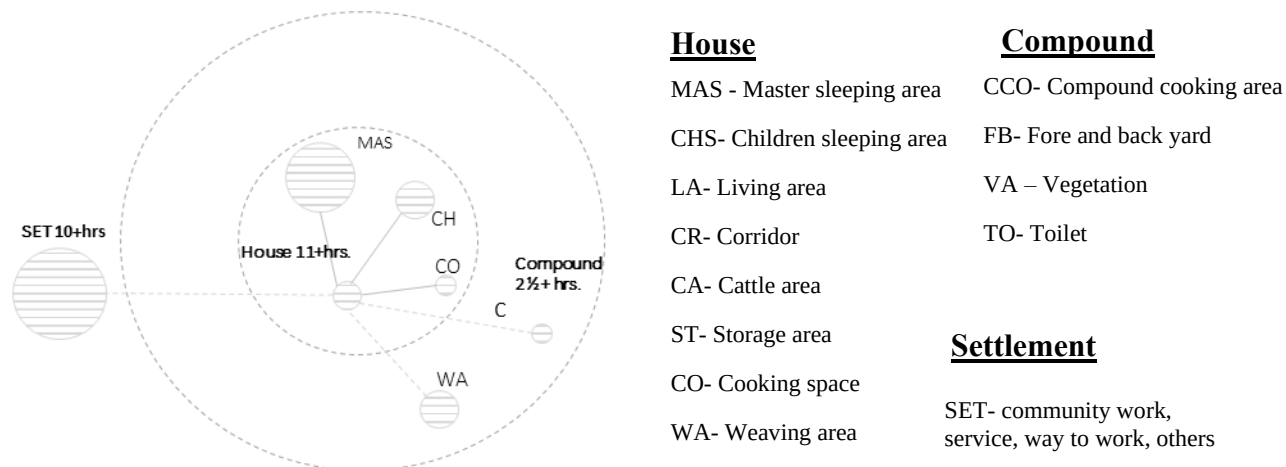


Figure A.71 J graph of Wro Tirusew Fenite house

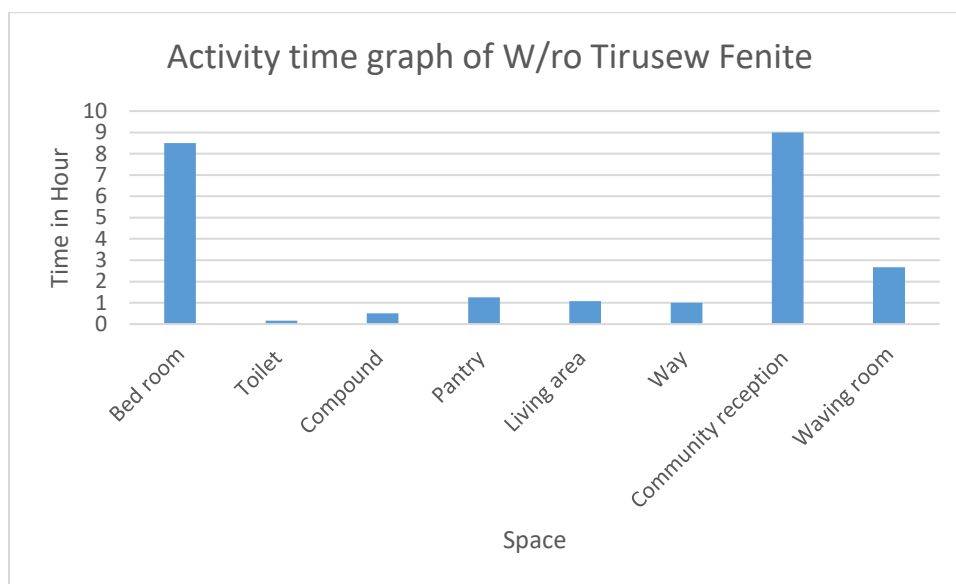


Figure A.72 Activity time graph of Wro Tirusew Fenite house

AP. A17: W/ro Temalsa Yemar's Compound

The life story of W/ro Temalsa Yemar's:



Figure A.73 Wro Temalsa Yemar's family

W/ro Temalsa Yemar was born in 1966 E.c in Wonji Awra Amba. She is now 46 years old. She lived in Southern Ethiopia from the year 1980 to 1986 E.c, started living in Awra Amba Community 1986 E.c, she came from WonjAwra Amba in 1986 E.c, was forced out of the current community when she finds a chance to come back to this place, she returned and continued her life in this community.

She married her husband Ato Mohamed Ayenew at Awra Amba in 1993 E.c. They have five children, three sons, and two daughters. The eldest son Gashaw Mohamed, is 24 years old and graduated and is looking for a job, the second eldest son Habtam, is 19 years old and 12^h grade studied at Adiss Ra'ey secondary school, the third Azimeraw Mohamed is 17 years old and he is 10th-grade study at Adiss Ra'ey secondary school, the rest are youngest daughters Friehiywt (11 years old) and Hayat (6 years old) and 5th and 1st-grade study at Adiss Ra'ey primary school. respectively.

W/ro Temalsa Year formal educational background is attended only "Merete timihirt". She is impressed with the community lifestyle and she became a cooperative community member in 1984. She has experienced a job in agriculture since childhood. Her other job experience is weaving for 26 years now. She serves the community based on her ability which has experienced a job in weaving at the community textile factory. Her annual income in 2012 E.c from the community finance allocation for each cooperative member was 13,000 birr, and from a private

business that is weaving in her home when she works hard, she gets an additional 17,000birr. Wro Temalsa's total annual income was 30,000 Birr.

The water source is located in the compound when there is no water, they bring it to form the community groundwater pump which is located at the center of the community next to the "warka tree" which takes a 15minute walk. For washing cloth, they go to the Ginde river which takes a 10minute walk. Health and other service facilities were located inside the community. The health post took about 15 minutes of walking. Their burial ceremony took place in Quarqe South West direction next to the community Adiss Ra'ey secondary school taking 30 minutes walk. Both Awra Amba and the neighborhood Muslim community use this common land for the burial ceremony. W/ro Temalsa's working space the community museum is located at the center of the community next to the "Warka tree" taking 5 minutes to walk from home.

Perception of the spaces as understood by her is enjoyable and sufficient but has difficulties adopting the conditional cold air. W/ro Temalsa spends more of her time at her workplace found not far from her settling area, since it takes more of her day time, and it's a place where she interacts with her friends and neighbors.

In this community the only holiday they celebrate is New year's under the big tree rooted in the heart of the village, this happens only when their daily task has ended. It's celebrated until 2:00 pm local time the night.

Table A.13 Spaces –Time Dairy of W/ro Temalsa Yemar's Family.

S.No	Date	Activities (Daily)	Room /place	From/at	To
1		Waking		12:00AM	
2		Get dressed	Bed room	12:00 aM	12:20AM
3		Washing	Toilet	12:20AM	12:30AM
4		Making breakfast	Pantry	1:00AM	1:30AM
5		Eating breakfast and washing dishes	Living area	1:30AM	1:45AM
6		Walking	Way to work	1:45AM	2:00AM

7		Work	Community Textile factory	2:00AM	6:00PM
8		Walking	Way to home	6:00 PM	6:15 PM
9		Making lunch then and eating	Living area	6:15 PM	6:45 PM
10		Walking	Way to work	6:45 PM	7:00 PM
11		Work	Community Textile factory	7:00 PM	11:00 PM
12		Walking	Way to home	11:00 PM	11:15 PM
13		Making dinner	Pantry	11:15 PM	12:00 PM
14		Eating dinner and washing dishes	Living area	12:00 PM	12:20 PM
15		Making weaving	Waving area/ living room/	12:20 PM	3:00 PM
16		Sleeping	Bed room	3:00 PM	12:00AM
Weekly activity					
1		Marketing			
2		Cleaning the compound			
3		Washing clothes			
4		Asking relatives			
5		Bringing firewood			
6		Balitinamazegaget			
7		Washing children's			
Monthly Activities					
1		Preparing spice (Balitina) for eating			

The relation between settlement and her social interaction is when an issue occurs its resolved in discussion, support, and open-mindedness to bring back the peace it was disturbed.

During the years, changes in the settlement have occurred. Back then meal grinding houses were not provided like now a day. It had challenges buying a meal from somewhere else and finding another place to grind the meals.

W/ro Temalsa's residence has a Living room when approaching from the exterior. She mostly enjoys spending her time in this room with her family. The front door is always opened for light source purposes and ventilation systems. On the other way, opening the door means opening the route of communication to the surroundings.

Table A.14 W/ro Temalsa Yemar's compound unit.

No	Compound unit	Local Name	Quantity
1	Living Room	Salon	1
2	Kitchen	Kushna	1
3	Bedroom	Megnta Bet	1
4	Weaving Room	ShmenaKfl	1
5	Traditional Kitchen	Madbet	1
6	Rental Houses	Kiray bet	6



Figure A.74 Wro Temalsa Yemar's house living room

Table A.15 W/ro Temalsa Yemar's Housing unit location and activities.

No	Housing unit	Location	Activities
1	Living Room	Front	Watching Tv, Dining, welcoming Guests
2	Kitchen	Left to corridor	Food preparing
3	Bedroom	Left	sleeping
4	Weaving Room	Right	Producing traditional clothing items
5	Traditional Kitchen	Back of the main house	Baking injera, producing traditional beverages.
6	Rental Houses	In front and back of the main house	Living places for most students.

W/ro Temalsa Yemar does her weaving work within the house, between the gap she gets just before work, not only that during the weekends especially on Sunday she continues this task in the weaving room (room next to the living room).

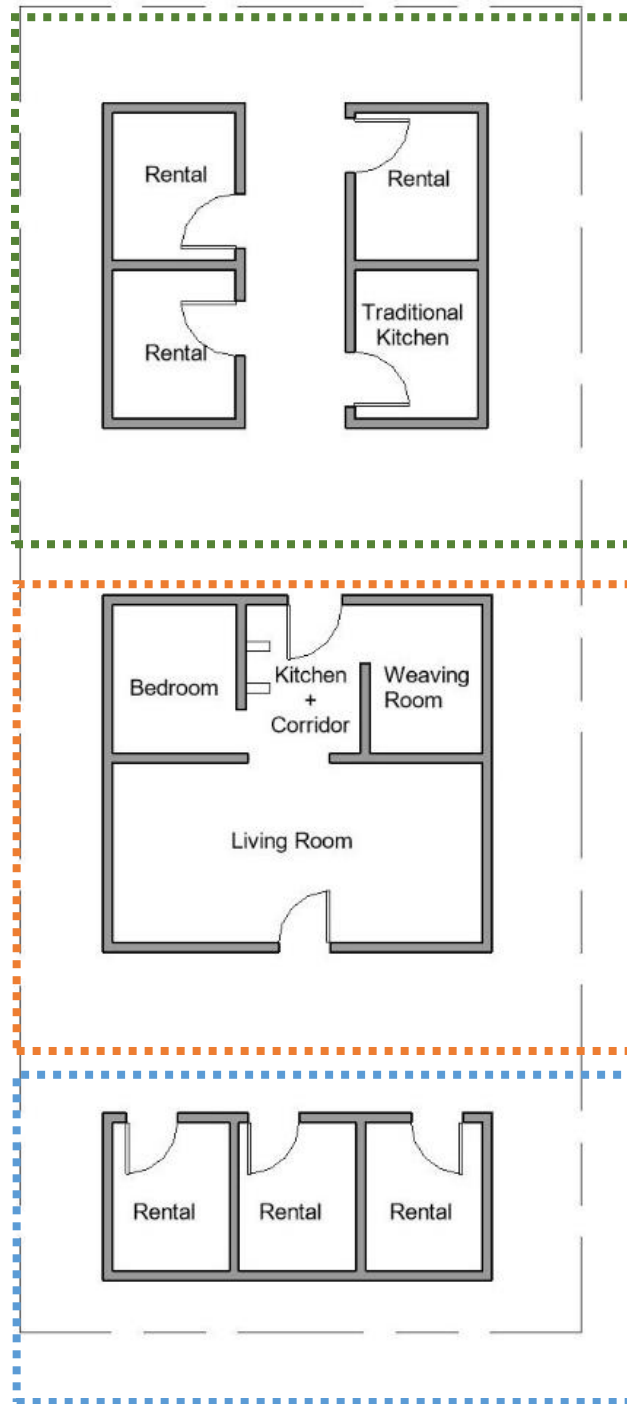


Figure A.75 Wro Temalsa Yemar's house floor plan

The House

W/ro Temalisa's house is detached attached. The total area of the house is 37.8m² with 7x5.4meters in size. The internal space of the house is subdivided into four parts. One is the living area which accommodates Medeb, and shelf. It is the space for eating and playing with family. the second space is the pantry which is used for cooking and a corridor and a store. The third and fourth are the sleeping area and weaving room.

The Back Yard:

This section consists of 4 rooms, including Rental rooms and a traditional kitchen. In the corridor, a task takes place as being close to the kitchen. The equipment used is shown in the figure below.



Figure A.76 Wro Temalsa Yemar's house backyard

The house

Consisting of Living room, Bedroom, Kitchen + corridor, and weaving room.

Residence

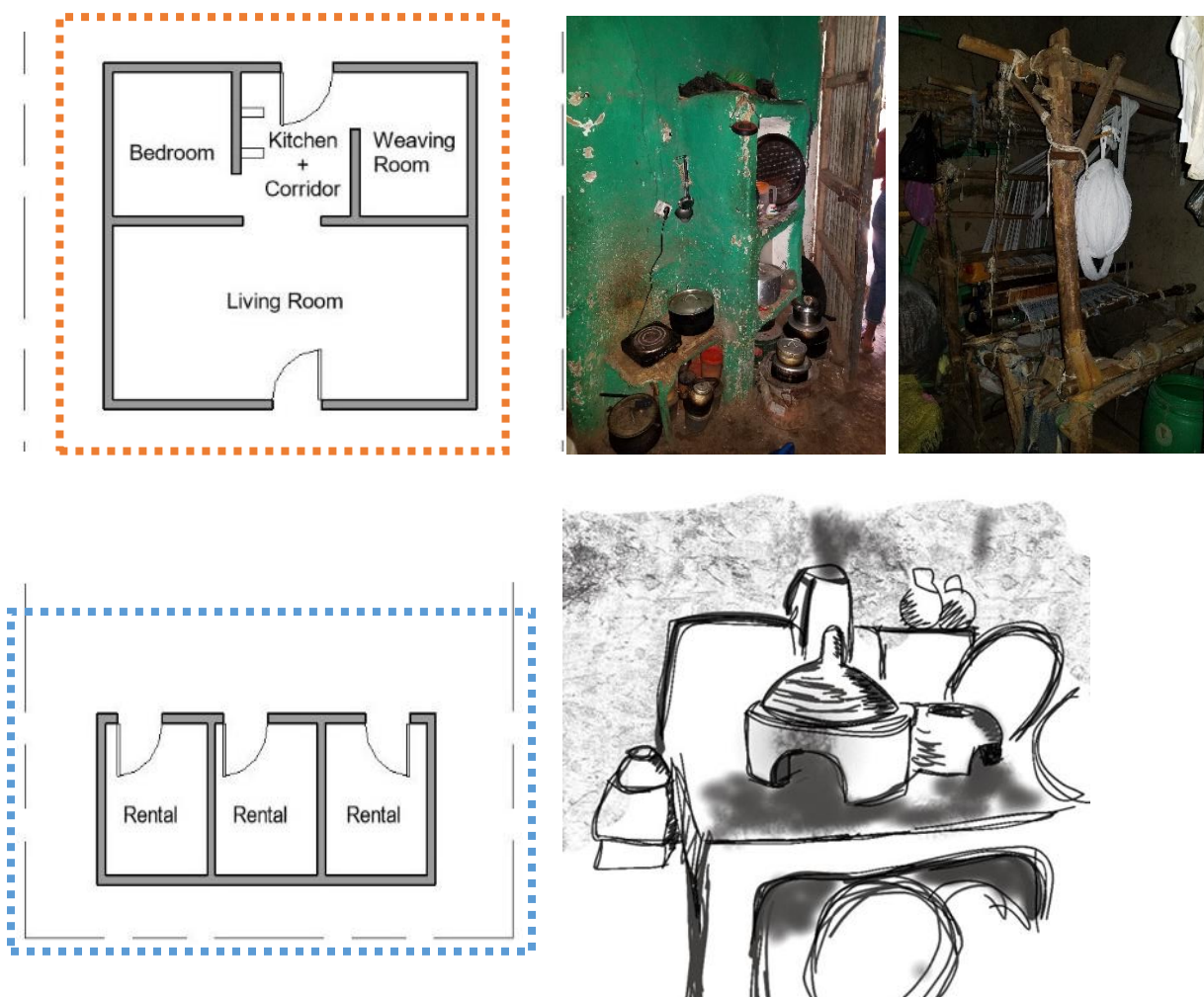


Figure A.77 Wro Temalsa Yemar's house and furniture

The Front yard:

This part consists of the main corridor to the residences, the rental houses face the front door of the house. Neighbors pass with this route. Most houses are similar. The figure seen on the right is the equipment used by Temalsa for the clothing items she produces.



Figure A.78 Wro Temalsa Yemar's house front yard

Physical Situation

When W/ro Temalisa is defining the changes on the private compound, the house was at first a shack. Traditional housing is commonly seen in the community. In the year 2000, it was changed to single detached housing made from mud reinforced with raw wood covered by corrugated sheet roofing. Observing the layout of the compound its elongated rectangular form.

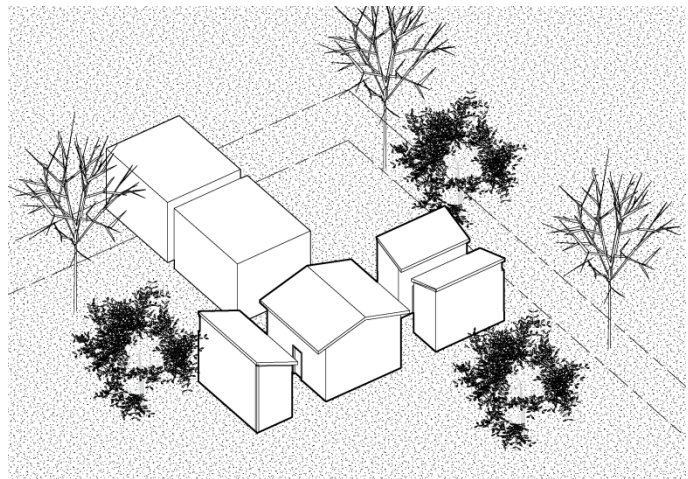


Figure A.79 Wro Temalsa Yemar's compound 3d

This is the second residence W/ro Temalsa has lived in since she and her family came from Southern Ethiopia, Bonga. This residence is constructed using the materials that are available around the town and the neighboring cities. The type of housing constructed around this area is mostly mud houses covered with a corrugated iron sheet and other cheap materials: wood, cow dung, and ash. This is due to the economic status of the community.

We can see the site dominating the type of construction methods and materials to be used have influenced the characters of the residences that are being built and already built in the community.

These residences are not built with skilled labor rather they are built by more or less an instinct that we all have to create something. For instance, Temalsa's residence is built in the same way as others; which is people will gather around to help with the construction, they each will be assigned a job like Mr. X will cut trees while Mrs. Y will dig for the foundation while Mr. Z mixes the mud paste.

As W/ro Temalsa explained the house is comfortable in a different scenario, she also said that the house stays cool on hot sunny days and warm or cold windy nights. This reason came from the obvious property of the materials used in the construction.

Recently she made a change in the house, they demolished a partition wall and replaced it with a curtain so that the space is wider and free to circulate. Other than this modification her dwelling has not been modified or repaired since its construction days.

She seems to be satisfied with her current dwelling and she seems to not want changes being made shortly.

In the coming 5 years, she has a dream to live in a wider house than her current one. all the functions; kitchen and working place separated from each other. She wanted a regular-shaped rectangular house and she explained this need for a specific shape since she assumes it's comfortable and has a modern look. She also wants to add guest rooms and each space to be defined by a wall that separates their function and space quality. The main reason that she did not use this approach to her house was that they had a smaller plot area.

Furniture's in each room:

a) Living area:- shelf



Figure A.80 Wro Temalsa Yemar's living room furniture

b) traditional kitchen

- Fuel-saving stove



Figure A.81 Wro Temalsa Yemar's kitchen furniture

c) weaving

- Traditional and modern weaving



Figure A.82 Wro Temalsa Yemar's weaving furniture

d) Bedroom

- Bed



Figure A.83 Wro Temalsa Yemar's bedroom furniture

Fig. A.84 below shows the space used by W/ro Temalisa Yimer's family at settlement, compound, and house levels. The interview was conducted with one family member within 24 hours. The family spent 62.5 % of their time in the house and 37.5% outside of the compound.

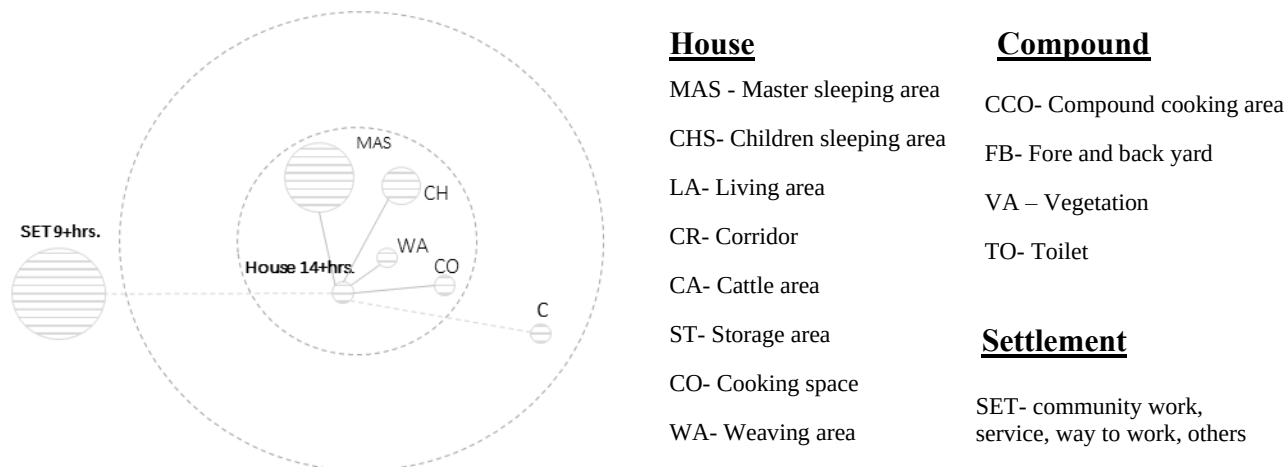


Figure A.84 J graph W/ro Temalsa Yemar's house

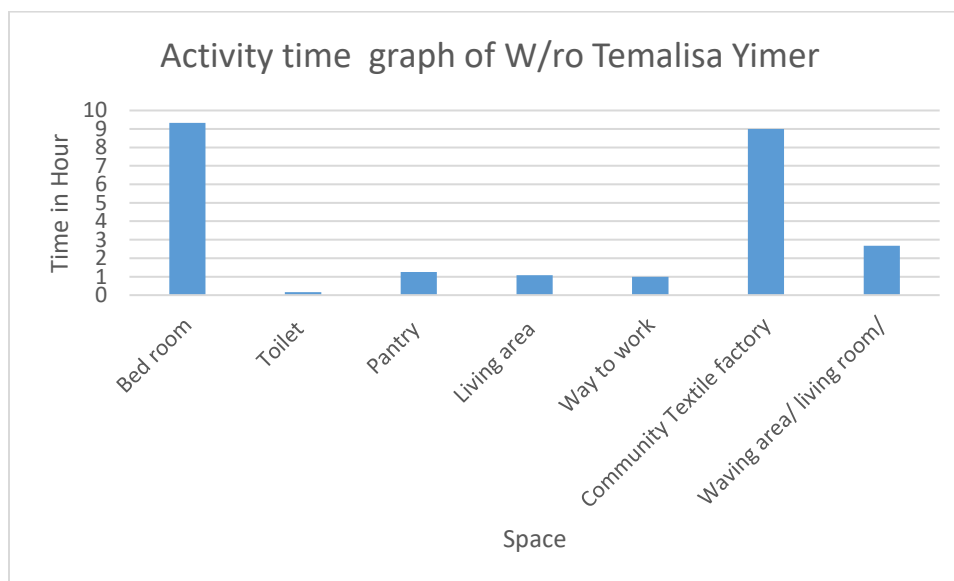


Figure A.85 Activity time graph of Wro Temalsa Yemar's family

AP. A18: W/ro Kidija Ayenew's Compound

The life story of W/ro Kidija Ayenew:

W/ro Kidija Ayenew was 57 years old and was born and grow up in Awra Amba. She was married to Ato Jemale Mohamed his age was 67 and he was educated “Meserete timihirit” during the Derig regime. They have six children, three of them are married and two of them are living with them. W/ro Kidija Ayenew was one of the founders of the community. She was one of the residents has a journey and lived in Southern Ethiopia, Bonga from the year 1980 to 1986 E.c, and then go back and started living in Awra Amba Community in 1986 E.c. she inherits land for a dwelling from the community committee and started living in her hut in 2009 E.c. she is currently serving as the urban agriculture of the community. Her annual income in 2012 E.c from the community finance allocation for each cooperative member was 13,000 birrs, and from a private business that is weaving in her home when she works hard, she gets an additional 17,000birr. W/ro Kidija's total annual income was 30,000 Birr.

The water source is located in the compound when there is no water, they bring it to form the community groundwater pump which is located at the center of the community next to the “warka tree” which takes a 15minute walk. For washing cloth, they go to the Ginde river which takes a 10minute walk. Health and other service facilities were located inside the community. The health post took about 15 minutes of walking. Their burial ceremony took place in Quarqe South West direction next to the community Adiss Ra'ey secondary school taking 30 minutes walk. Both Awra Amba and the neighborhood Muslim community use this common land for the burial ceremony. W/ro Kidija's working space the community museum is located at the center of the community next to the “Warka tree” taking 5 minutes to walk from home.

Table A.16 Spaces –Time Dairy of W/ro Kidija Ayenew's Family.

S.No	Date	Activities (Daily)	Room /place	From/at	To
1		Waking		12:00AM	
2		Get dressed	Bed room	12:00AM	12:30AM
3		Making breakfast	pantry	12:30AM	1:30AM
4		Eating breakfast	Living room	1:30AM	1:55AM
5		Walking	Way to work	1:55AM	2:00AM

6		Work	Community urban agriculture	2:00AM	6:00PM
7		Walking	Way to home	6:00PM	6:05PM
8		Making lunch then and eating	Living room	6:05PM	6:55PM
9		Walking	Way to work	6:55PM	7:00PM
10		Work	Community urban agriculture	7:00PM	11:30PM
11		Walking	Way to home	11:30PM	11:35PM
12		Making dinner	Pantry	11:35PM	1:00PM
13		Eating dinner	Living room	1:00PM	1:30PM
14		Playing with family	Living room	1:30PM	4:00PM
15		Sleeping	Bed room	4:00 PM	12:00AM
	Weekly activity				
1		Marketing			
2		Cleaning the compound			
3		Washing clothes			
4		Asking relatives			
5		Bringing firewood			
6		Balitinamazegaget			
7		Washing children's			
	Monthly Activities				
		Preparing spice (Balitina) for eating			

Compound

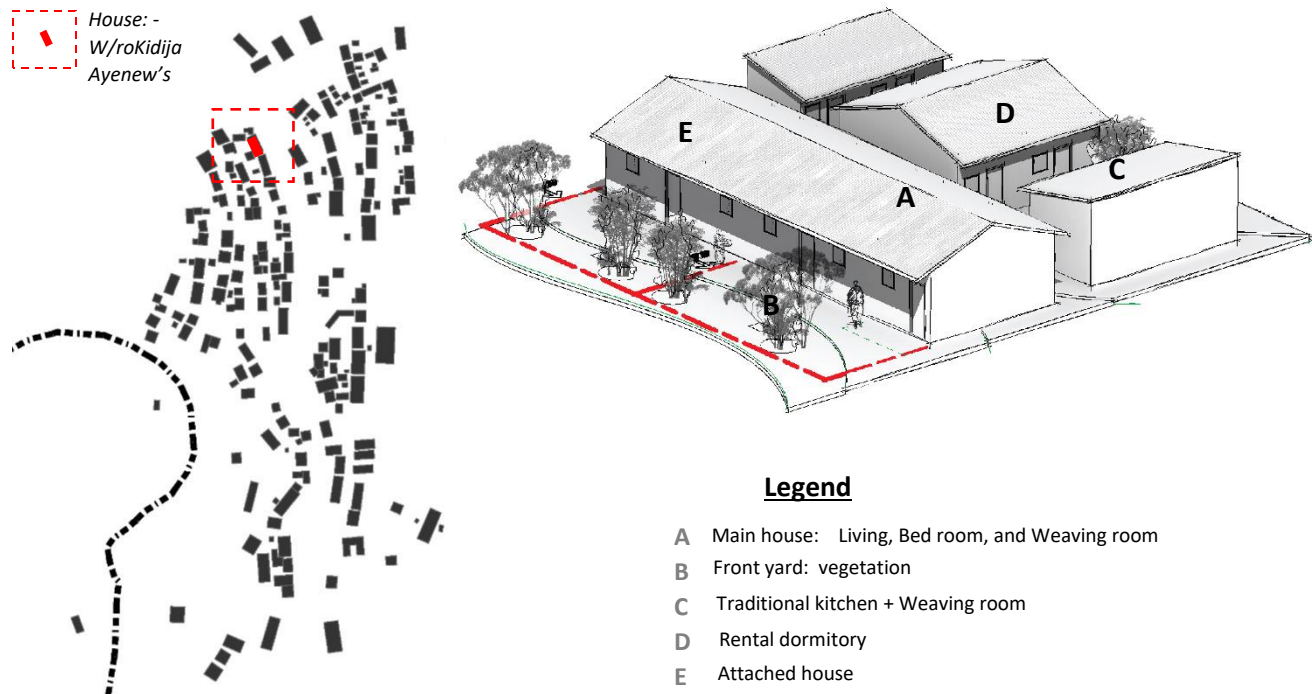


Figure A.86 W/ro Kidija Ayenew's Compound

W/ro Kidija Ayenew's get the land from the housing committee. Her compound is located in the Northern direction from the central "Warka tree", near the community meal house and dairy farming. The compound is accessed through the main road which crosses the community settlement.

The compound is rectangular form. It is more of an urban form parcel and the total compound area is 178 m² with 17.8x10meters in size. The front and the back yard of the compound are fenced with trees.

As it is indicated in the compound plan, W/ro Kidija Ayenew's house was constructed on the Eastern boundary of the compound. The compound has a row house attached to W/ro Tirusew's house. Other elements in the compound are the front yard, traditional kitchen, store, and toilet.

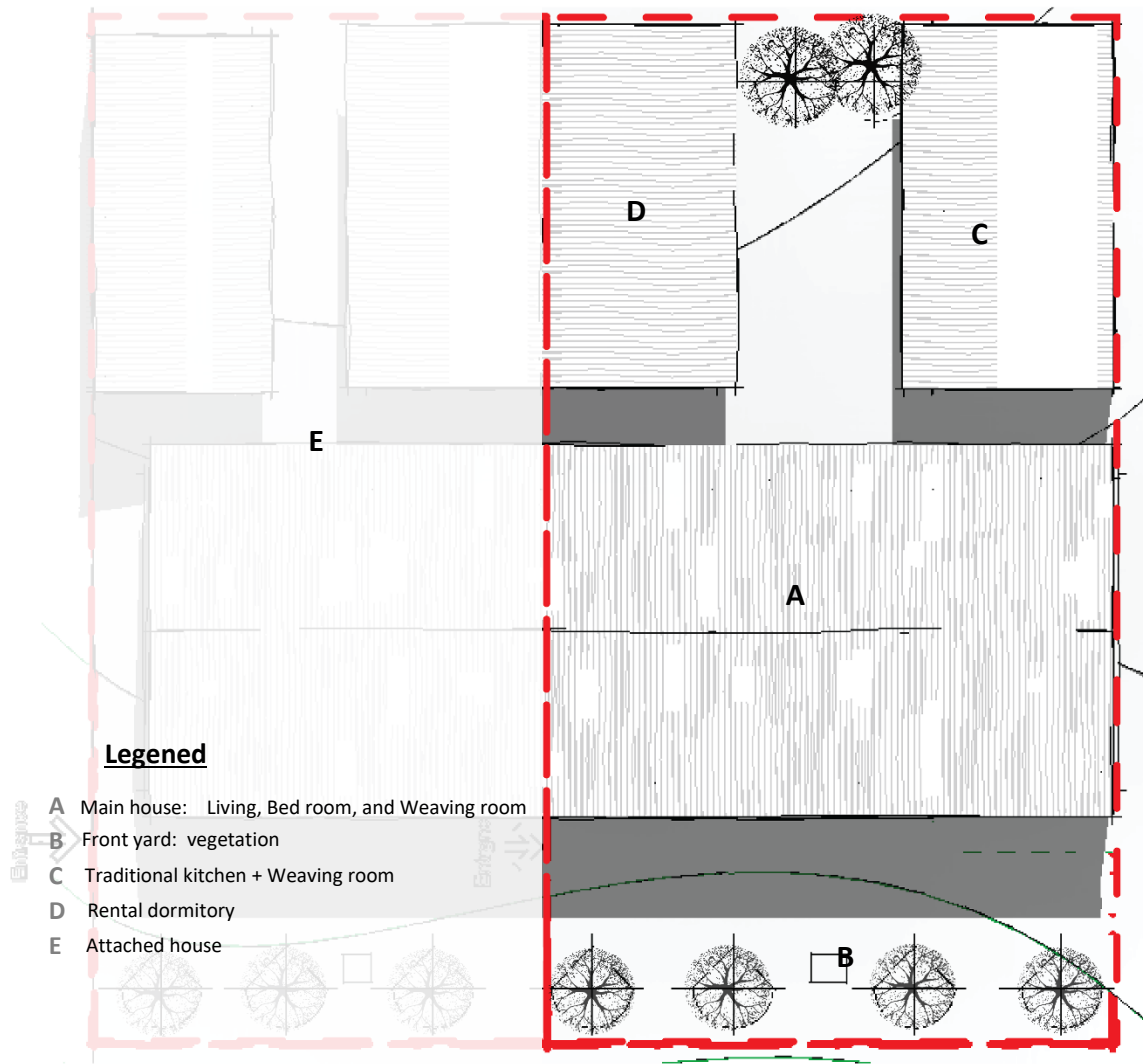


Figure A.87 W/ro Kidija Ayenew's site plan

The House:

W/ro Kidija Ayenew's house is a row house attached to Tirusew house to minimize the housing cost by sharing the central wall (Gib A'af). The total area of the house is 37.8m² with 7x5.4meters in size. The internal space of the house is subdivided into four parts. One is the living area which accommodates Medeb, and shelf. It is the space for eating and playing with family. the second space is the pantry which is used for cooking and storing. The third and fourth are sleeping areas for the master and children's bedroom.

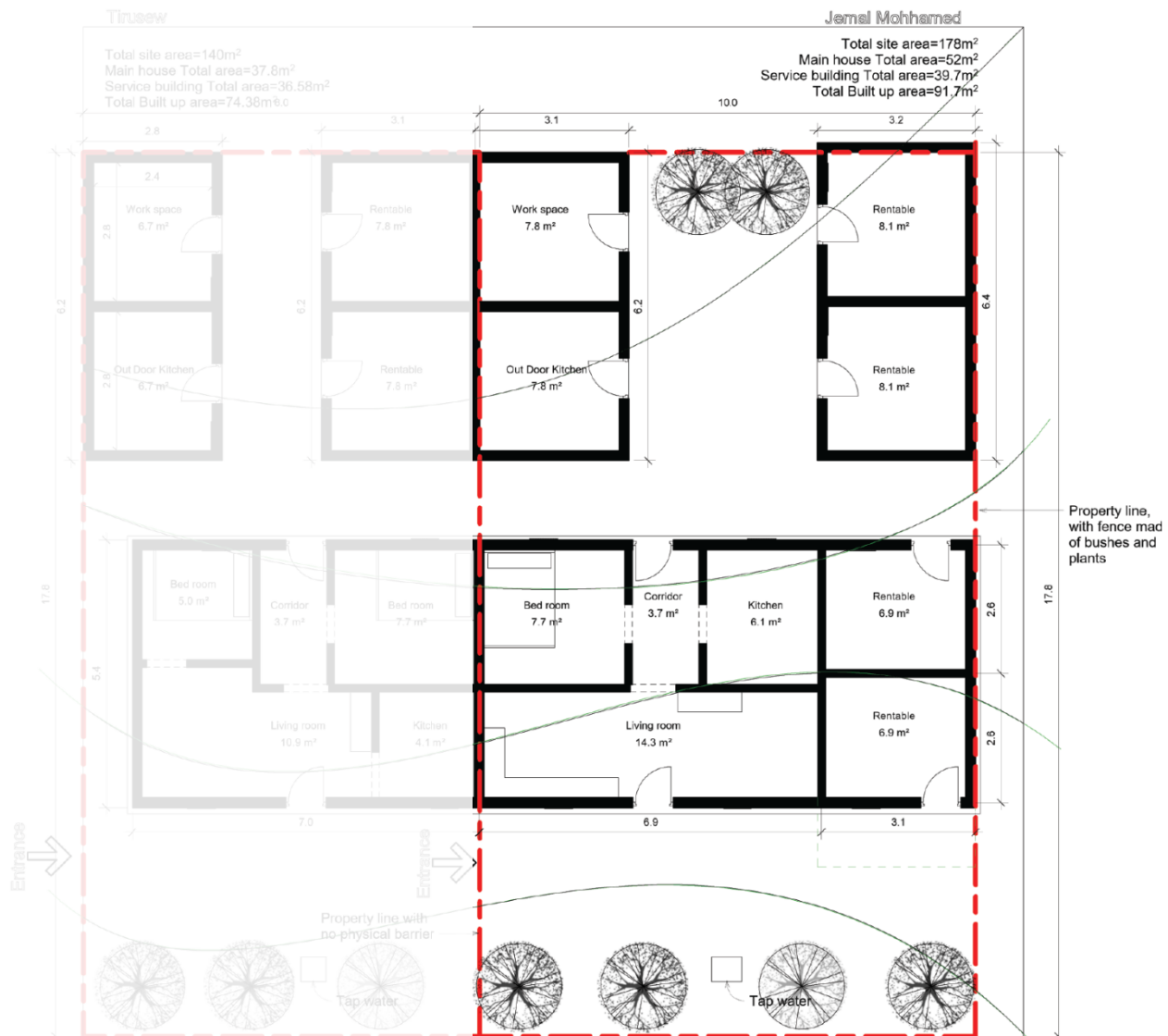


Figure A.88 W/ro Kidija Ayenew's house site floor plan

The Front Yard:

W/ro Kidija Ayenew's compound has a front yard. The front yard is located next to the main road which parcels the community settlement into two. To reduce the sound, the perimeter of the front is trees. The area of the front yard is 50m². In the front yard, daily activities like socializing, playing, clothes drying and spice drying are taking place.

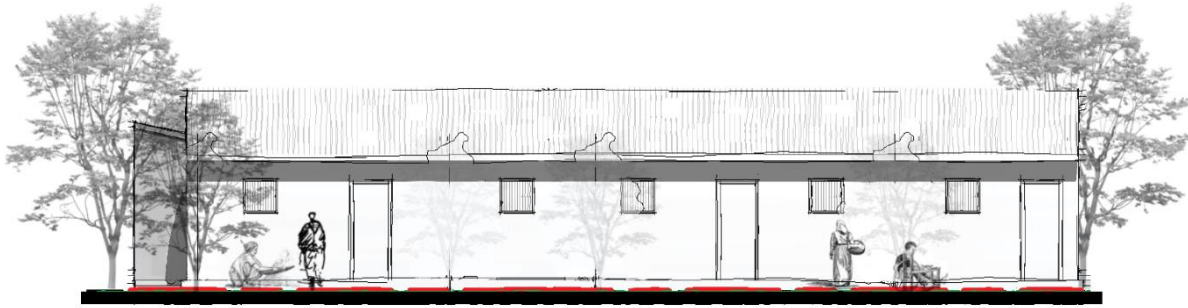


Figure A.89 W/ro Kidija Ayenew's house front elevation

The backyard:

The backyard space is connected to the linkage road which is used to access the attached house. The total area of the backyard is 43.7 m², which is used to dry spices and cloth, cooking, as a corridor to access the next row houses, etc. The backyard space can be directly accessed from the house.

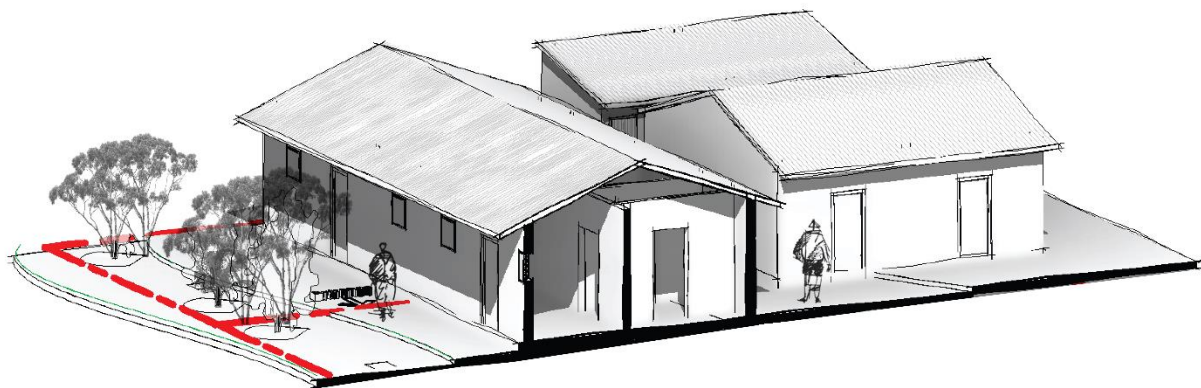
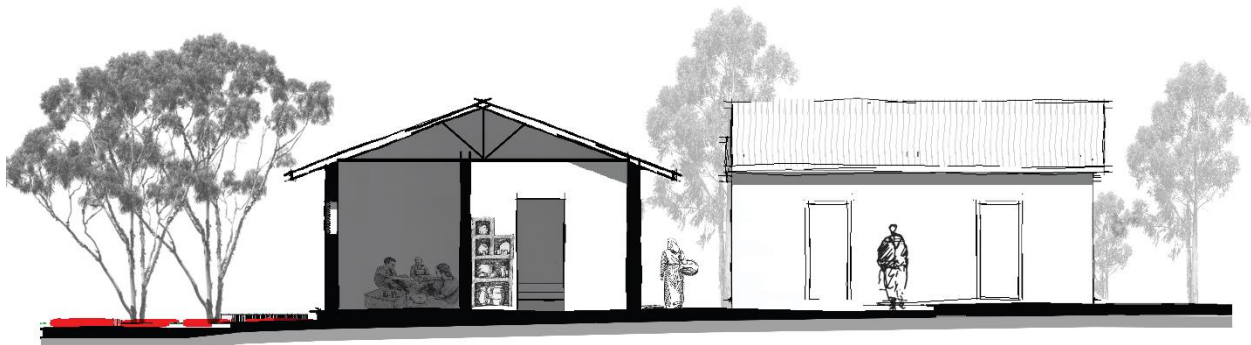


Figure A.90 W/ro Kidija Ayenew's house section

Furniture's in each room:

a) Living area

- Medeb



- Shelf (mesikot) and chair



- Metal crop store



Figure A.91 W/ro Kidija Ayenew's living room furniture

Fig. A.92 below shows the space used by W/ro Kedija Ayenew's family at settlement, compound, and house levels. The interview was conducted with one family member within 24 hours. The family spent 66.66 % of their time within the house and 33.34% outside of the compound.

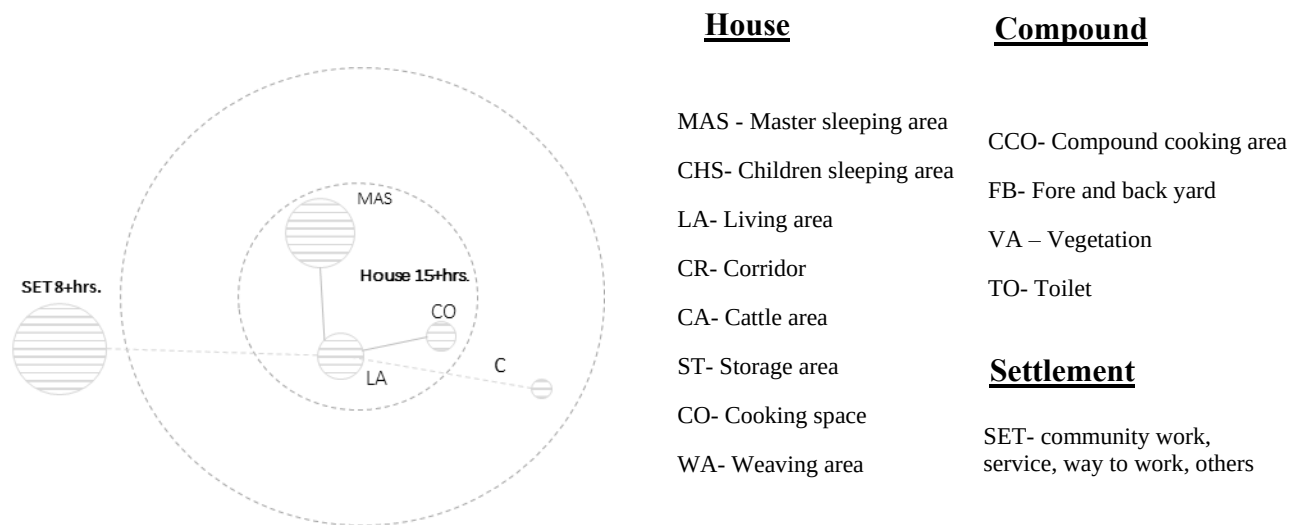


Figure A.92 J graph of W/ro Kedija Ayenew's house

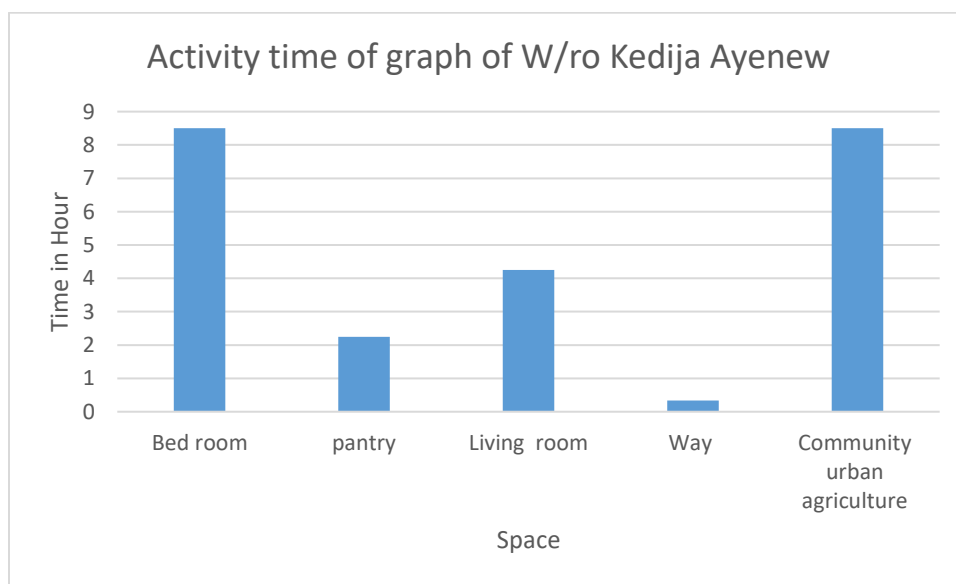


Figure A.93 Activity time graph of W/ro Kedija Ayenew's family

AP. A19: W/ro Melike Zumura's Compound

The life story of W/ro Melike Zumura's:

W/ro Melike Zumura is the daughter of Abba Zumura Nuru the founder of the Awra Amba community. She was born in 1972 E.c in Gibiran Eyesus, a 1-hour walk from Awra Amba. When she is seven years old, she comes to Awra Amba.

She married Ato Wasse Abbidelain 1986 E.c when she is 18 years old. Last year because of health problems they divorce. They have four children Marifa, Alem ante, Yalem, and Netsanet all is a student.

W/ro Melike's formal educational background is only attended class until the 9th grade. She became a cooperative community member in 1987 E.c. She serves the community based on her ability previously by farming and weaving, now she works in the shop. To increase her income source, she works on weaving in her home. she buys the raw material for weaving from the community shop. Her annual income in 2012 E.c from the community finance allocation for each cooperative member was 13,000 birrs, and from a private business that is weaving in her home when she works hard, she gets an additional 17,000birr. W/ro Melike's total annual income was 30,000 Birr.

The water source is located in the compound when there is no water, they bring it to form the community groundwater pump which is located at the center of the community next to the "Warka tree" which takes a 15minute walk. For washing cloth, they go to the Ginde river which takes a 10minute walk. Health and other service facilities were located inside the community. The health post took about 15 minutes of walking. Their burial ceremony took place in Quarqe South West direction next to the community Adiss Ra'ey secondary school taking 30 minutes to walk. Both Awra Amba and the neighborhood Muslim community use this common land for the burial ceremony. W/ro Melike's working space the community computer center is located at the center of the community taking 5 minutes to walk from home.

Table A.17 Spaces –Time Dairy of W/ro Melike Zumura's Family.

S.No	Date	Activities (Daily)	Room /place	From/at	To
1		Waking		12:00AM	

2		Get dressed	Bed room	12:00AM	12:30AM
3		Cleaning the house	compound	12:30AM	1:00AM
4		Making breakfast	Pantry	1:00AM	1:30AM
5		Eating breakfast	Living room	1:30AM	1:55AM
6		Walking	Way to work	1:55AM	2:00AM
7		Work	Community shop	2:00AM	6:00AM
8		Walking	Way to home	6:00AM	6:05AM
9		Making lunch then and eating	Living room	6:05AM	6:55AM
10		Walking	Way to work	6:55AM	7:00AM
11		Work	Community shop	7:00AM	11:30AM
12		Walking	Way to home	11:30AM	11:35AM
13		Making dinner	Pantry	11:55AM	1:00AM
14		Eating dinner	Living room	1:00AM	2:00AM
15		Making weaving	Waving room	2:00AM	5:00AM
16		Sleeping	Bed room	5:00 PM	12:00AM
	Weekly activity				
1		Marketing			
2		Cleaning the compound			
3		Washing clothes			
4		Asking relatives			
5		Bringing firewood			
6		Washing children's			
	Monthly Activities				
1		Preparing spice (Balitina) for eating			

The Compound

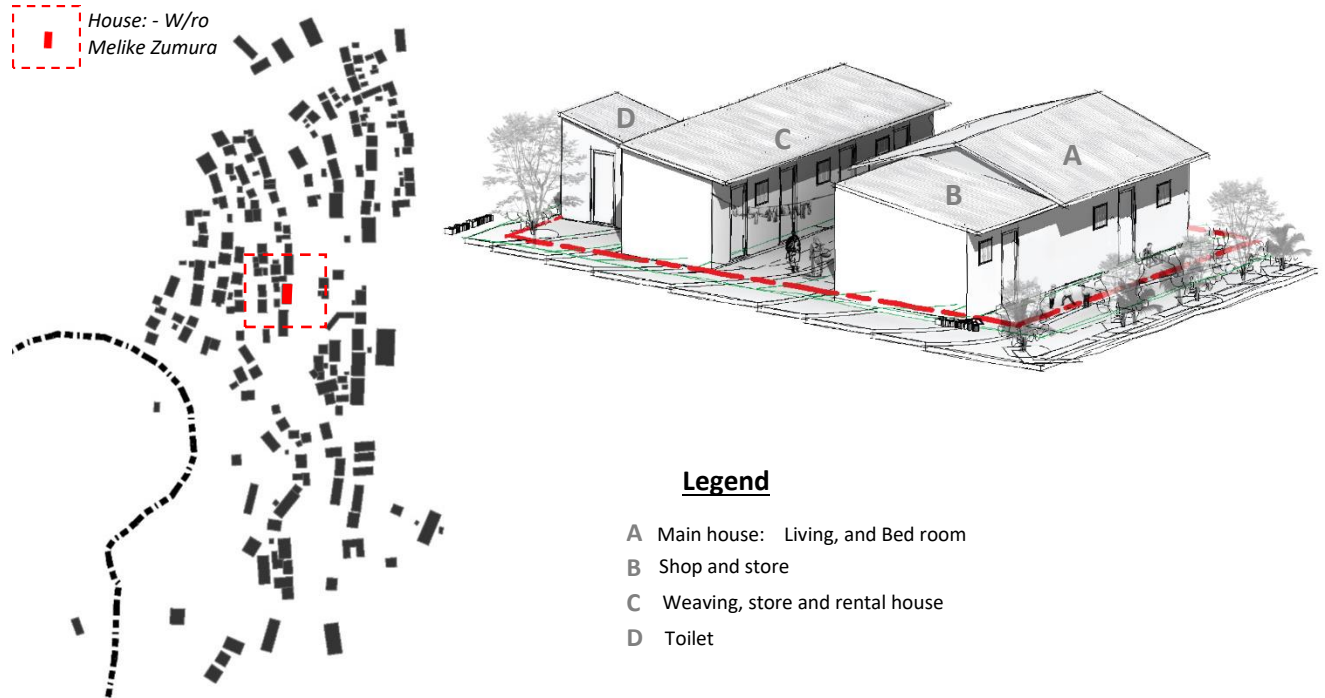


Figure A.94 W/ro Melike Zumura's Compound

W/ro Melike Zumura gets the land from the housing committee. Her compound is located at the central “Warka tree”, near the community meal house and oil factory the compound is accessed through the main road which crosses the community settlement into two.

The compound is rectangular form. It is more of an urban form parcel and the total compound area is 198.9 m² with 17x11.7meters in size. The perimeter of the compound is fenced with trees.

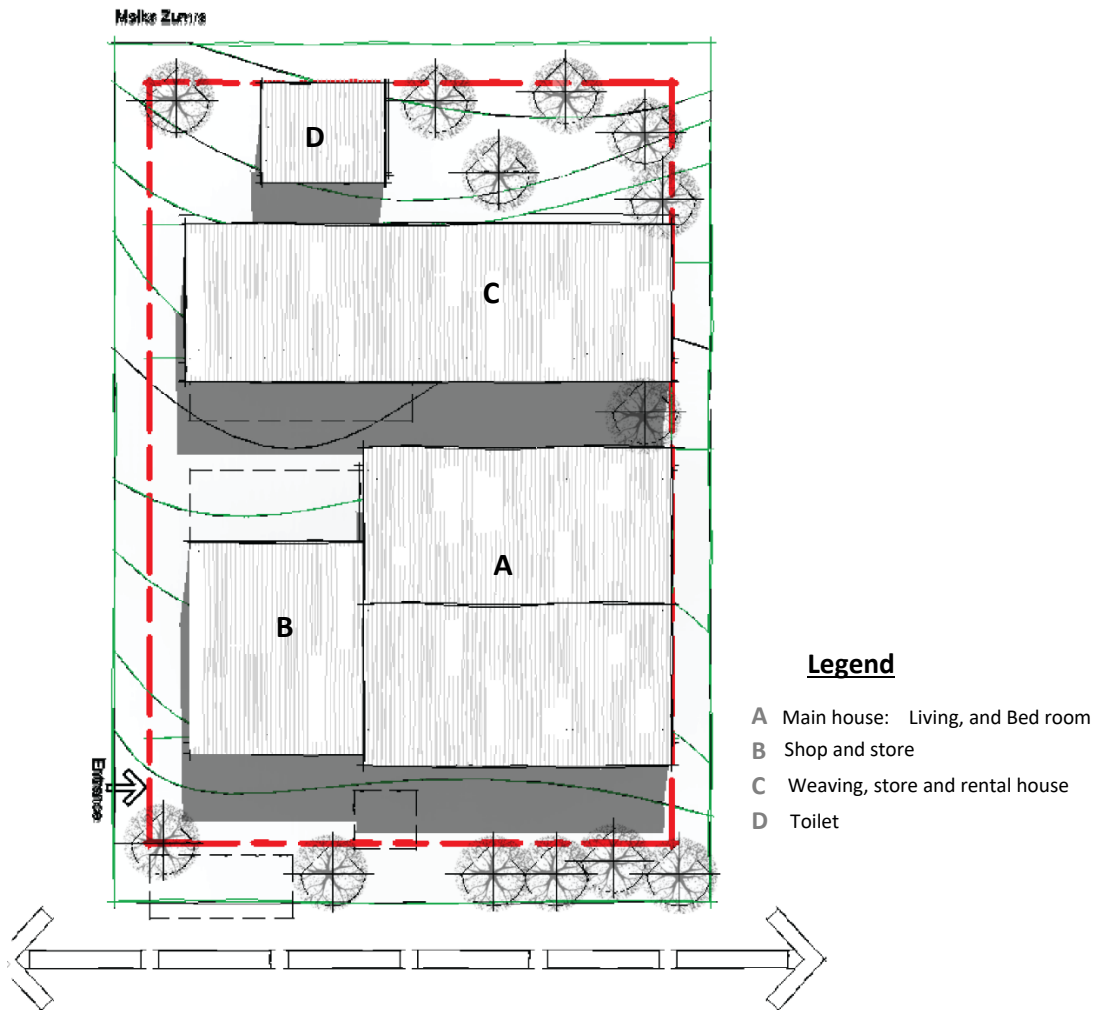


Figure A.95 W/ro Melike Zumura's house site plan

As is indicated in the compound plan, W/ro Melike's house was constructed on the Eastern boundary of the compound. The compound has a row house. Other elements in the compound are the front yard, traditional kitchen, store, and toilet.

The Front Yard:

W/ro Melike's compound has a front yard. The front yard is 27m². In the front yard, daily activities like socializing, playing, clothes drying and spice drying are taking place.

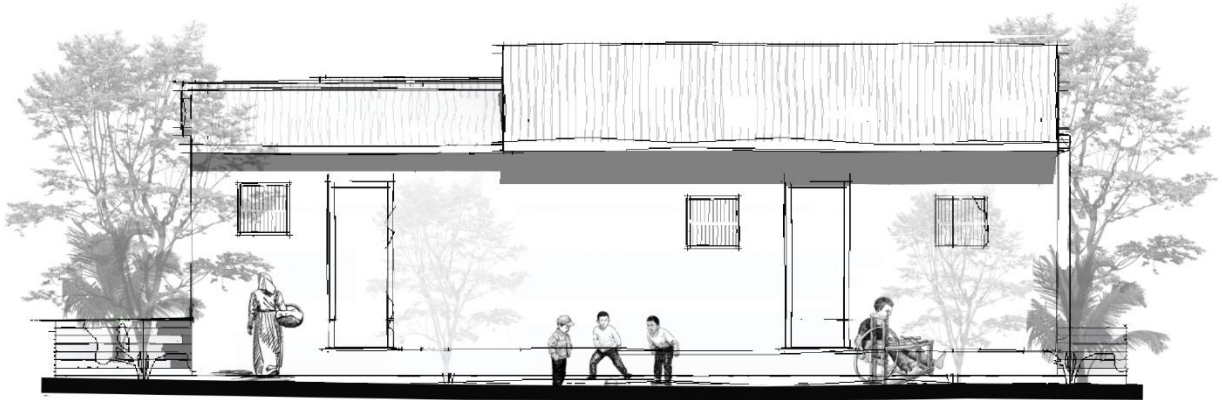


Figure A.96 W/ro Melike Zumura's house front yard

The backyard:

W/ro Melike Zumura's compound has a front yard. The front yard is located next to the main road which parcels the community settlement into two. To reduce the sound, the perimeter of the front is trees. The area of the front yard is 27m². In the front yard, daily activities like socializing, playing, clothes drying and spice drying are taking place.

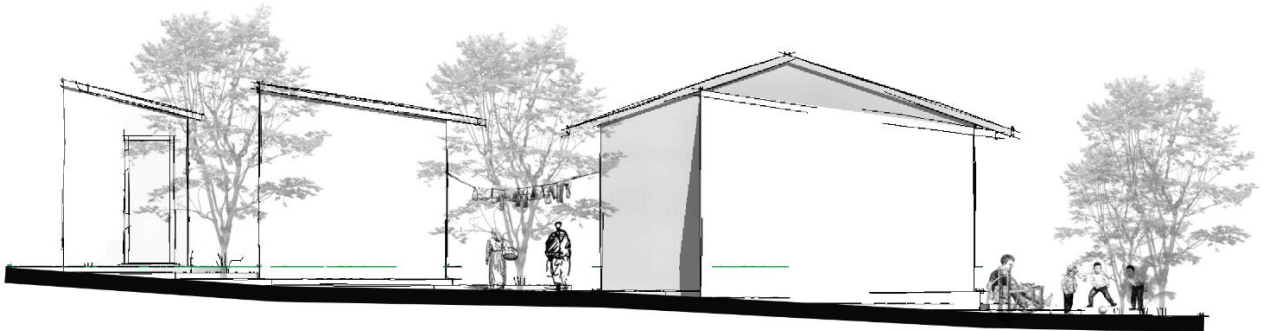


Figure A.97 W/ro Melike Zumura's house backyard

The House:

W/ro Melike Zumura's house is a row house. The total footprint of the main house is 57.2m². due to the divorce from the husband, they divide the house into two. So that W/ro Melike Zumura's house is half of the total footprint, which includes 11.5m² living room, 5.8m² master bedroom, and 5.2m² shop. The houses are constructed from wood and mud for the wall, masonry floors, and corrugated iron sheet roofs.

The walls both in the interior and exterior act as load-bearing for the support of the roof trusses. Other than that, there are no columns in the house. The walls have 20 cm thickness the woods act as structural support and the mud plastering is used to cover the cracks of the wood also it has an aesthetic value, above that, it's either paint finish or paper finish. Other than this house there are rental houses in the backyard with the same structural and wall finishes.

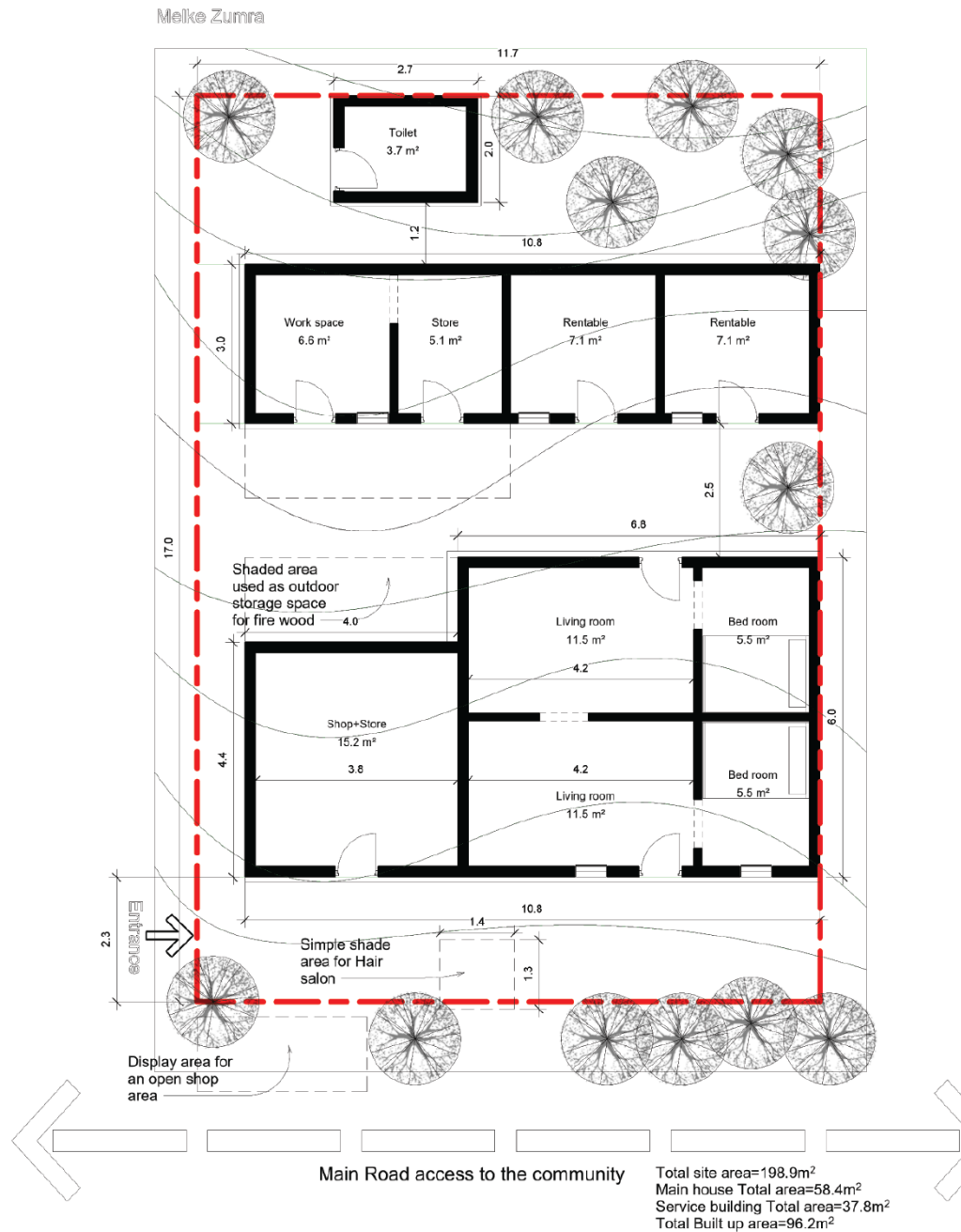


Figure A.98 W/ro Melike Zumura's house site floor plan

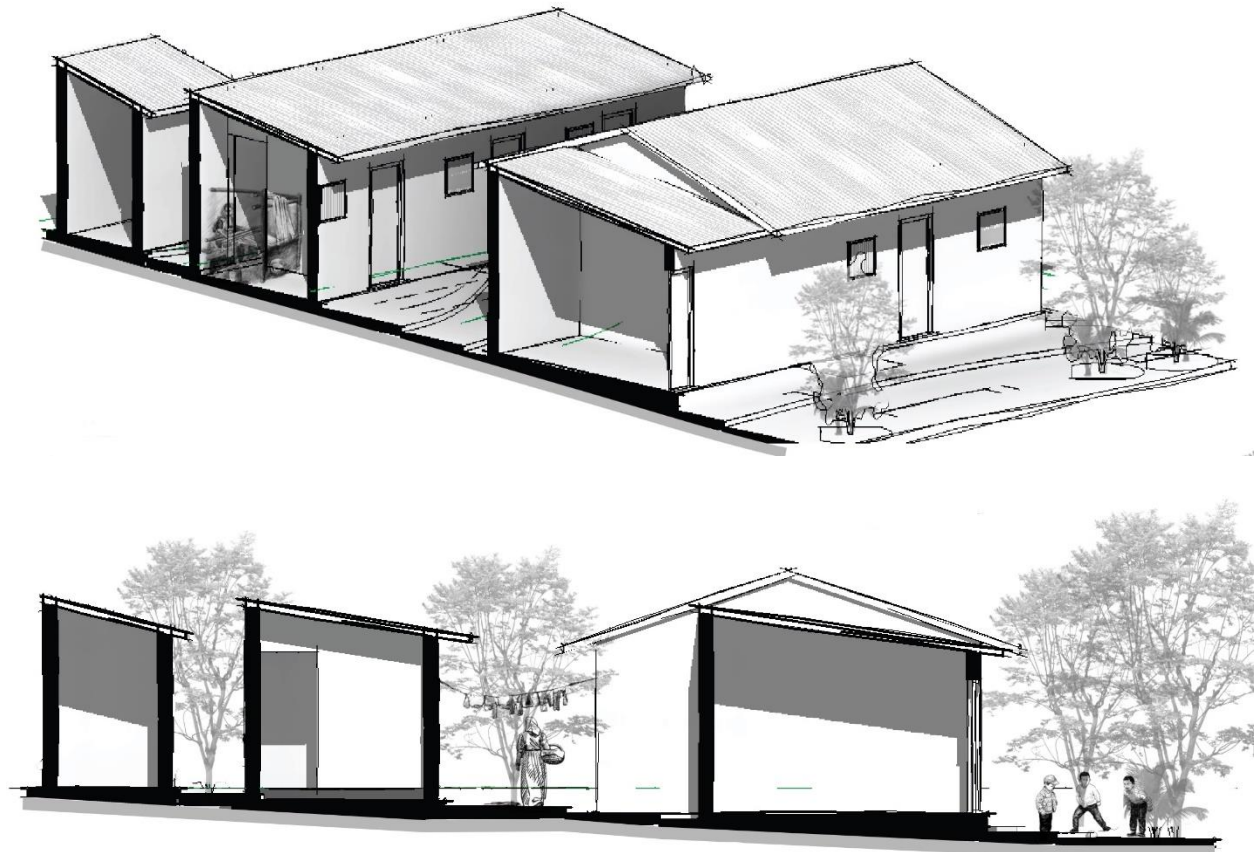


Figure A.99 W/ro Melike Zumura's house section

Furniture's in each room:

a) Living area

- Mattress for seating and kitchen plate



Figure A.100 W/ro Melike Zumura's living room furniture

Fig. A.101 below shows the space used by W/ro Melike Zumura's family at settlement, compound, and house levels. The interview was conducted with one family member within 24 hours. The family spent 62.5 % of their time in the house and 37.5% outside of the compound.

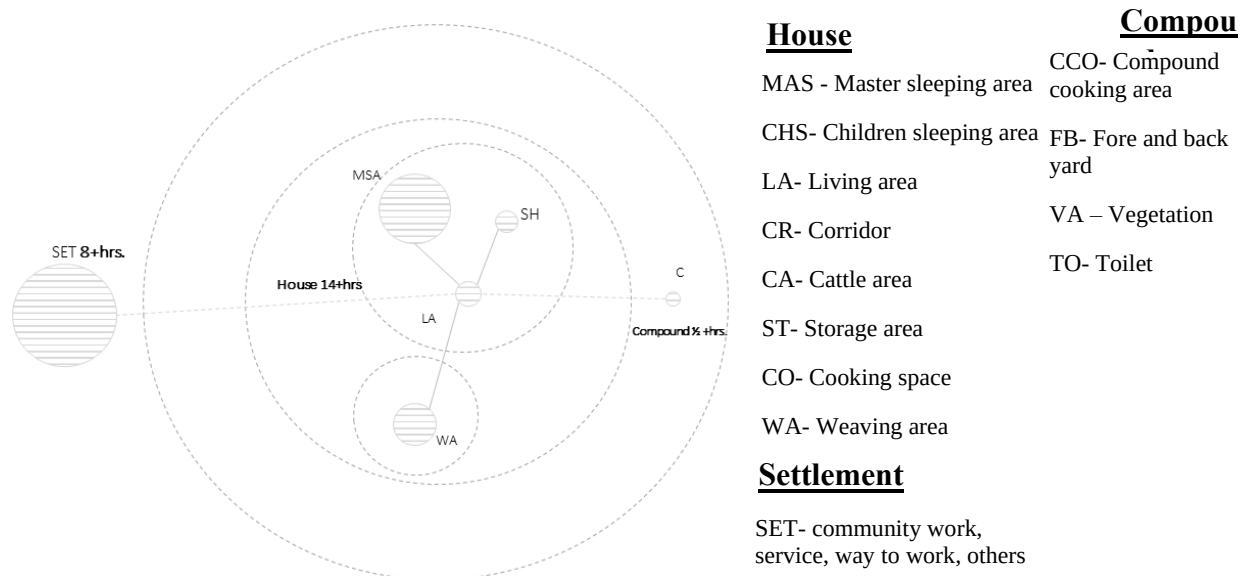


Figure A.101 J graph of W/ro Melike Zumura's house

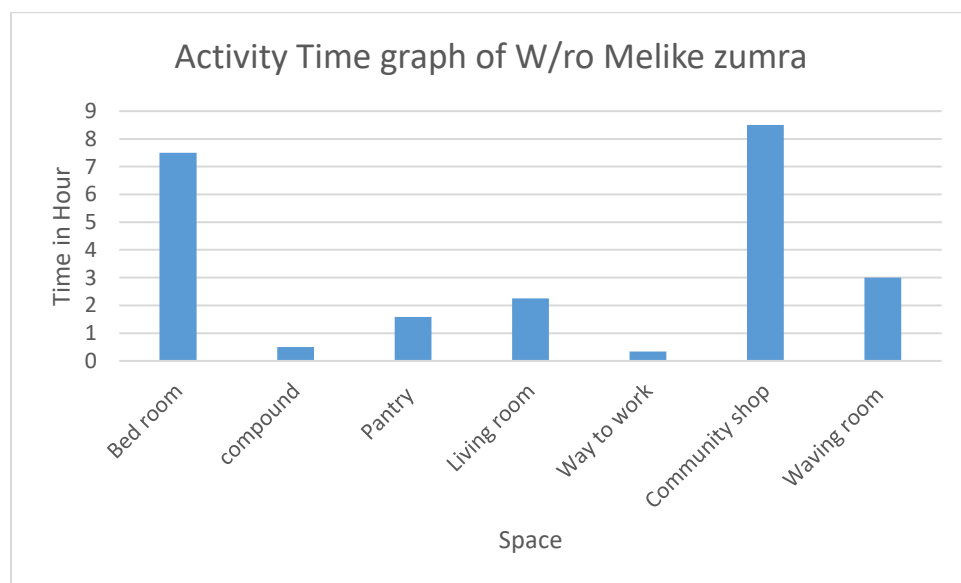


Figure A.102 Activity time graph of W/ro Melike Zumura's family

AP. A20: Ato Mershas' Compound

The life story of Ato Mershas':



Figure A.103 Ato Mershas' house

Ato Mersha was born in 1955 E.c, in the Northern part of Ethiopia, Amhara region in Awra Amba community living area and now he is 57 years old, He married a woman living around there, and started a new life with her, they have 4 children, 2 girls, and 2 boys. Their first son Aragaw Mersha is 26 years old and has graduated with a BSc degree, now he is employed and working in Addis Ababa with a salary of 4000 ETB. Their second child named Zenebech Mersha is 23 years old and graduated with a diploma, now she is working in Woldia with having monthly income of 3000etb, the other girl Helen is 6 years old and is learning at kindergarten, and the last baby Adino Mersha is 2 years old.

Ato Mersha lived at Awra Amba since he was born in 1955 until they got into trouble with the government by the idea of the community which is led by Aba Zumra. So, they had gone to the southern part of Ethiopia and lived for 6years in Bonga from 1980 up to 1986 E.c after the problem was solved, they come back and started living in their first living place.

Ato Merisha Gebeyehu is an education background he has a chance attending up to a 'meserete timhirt'. He is a cooperative member of the community since 1979 E.c. He had experienced many types of work, mainly the works in agriculture, but now He serves the community by working on human resource management of the community, and at his part-time, he serves as a security guard. To increase his income source, he works on weaving in his home. He buys the raw material for weaving from the community shop. His annual income in 2012 E.c from the community finance allocation for each cooperative member was 13,000 birrs, and from a private business that is

weaving in his home when he works hard, he gets an additional 17,000birr. Ato Merisha's total annual income was 30,000 Birr.

The water source is located in the compound when there is no water, they bring it to form the community groundwater pump which is located at the center of the community next to the "warka tree" which takes a 15minute walk. For washing cloth, they go to the Ginde river which takes a 10minute walk. Health and other service facilities were located inside the community. The health post took about 15 minutes of walking. Their burial ceremony took place in Quarqe South West direction next to the community Adiss Ra'ey secondary school taking 30 minutes to walk. Both Awra Amba and the neighborhood Muslim community use this common land for the burial ceremony. Ato Merisha's working space the community computer center is located at the center of the community taking 5 minutes to walk from home.

He loves to spend his free time in the mountainous place to refresh his mind. The community celebrates the holiday once in the new year, by gathering at the big tree at night and they spent it playing games.

Table A.18 Spaces –Time Dairy of Ato Merisha's Family.

S.No	Date	Activities (Daily)	Room /place	From/at	To
1		Waking		9:00AM	
2		Get dressed	Bed room	9:00 AM	9:20AM
3		Washing	Toilet	9:20AM	9:30AM
4		Safeguarding the community (Rond)	Compound	9:30AM	1:00AM
5		Making breakfast	Pantry	1:00AM	1:30AM
6		Eating breakfast	Living area	1:30AM	1:45AM
7		Walking	Way to work	1:45AM	2:00AM
8		Work	Community human resource management	2:00AM	6:00 PM
9		Walking	Way to home	6:00 PM	6:15 PM

10		Making lunch then and eating	Living area	6:15 PM	6:45 PM
11		Walking	Way to work	6:45 PM	7:00 PM
12		Work	Community human resource management	7:00 PM	11:00 PM
13		Walking	Way to home	11:00 PM	11:30 PM
14		Making dinner	Pantry	11:30 PM	12:30 PM
15		Spent time with friends	Living area	12:30 PM	1:30 PM
16		Take rest and eating dinner	Living room	1:30 PM	3:00 PM
17		Sleeping	Bed room	3:00 PM	9:00AM
Weekly activity					
1		Marketing			
2		Cleaning the compound			
3		Washing clothes			
4		Asking relatives			
5		Bringing firewood			
6		Balitinamazegaget			
7		Washing children's			
Monthly Activities					
1		Preparing spice (Balitina) for eating			

The compound:

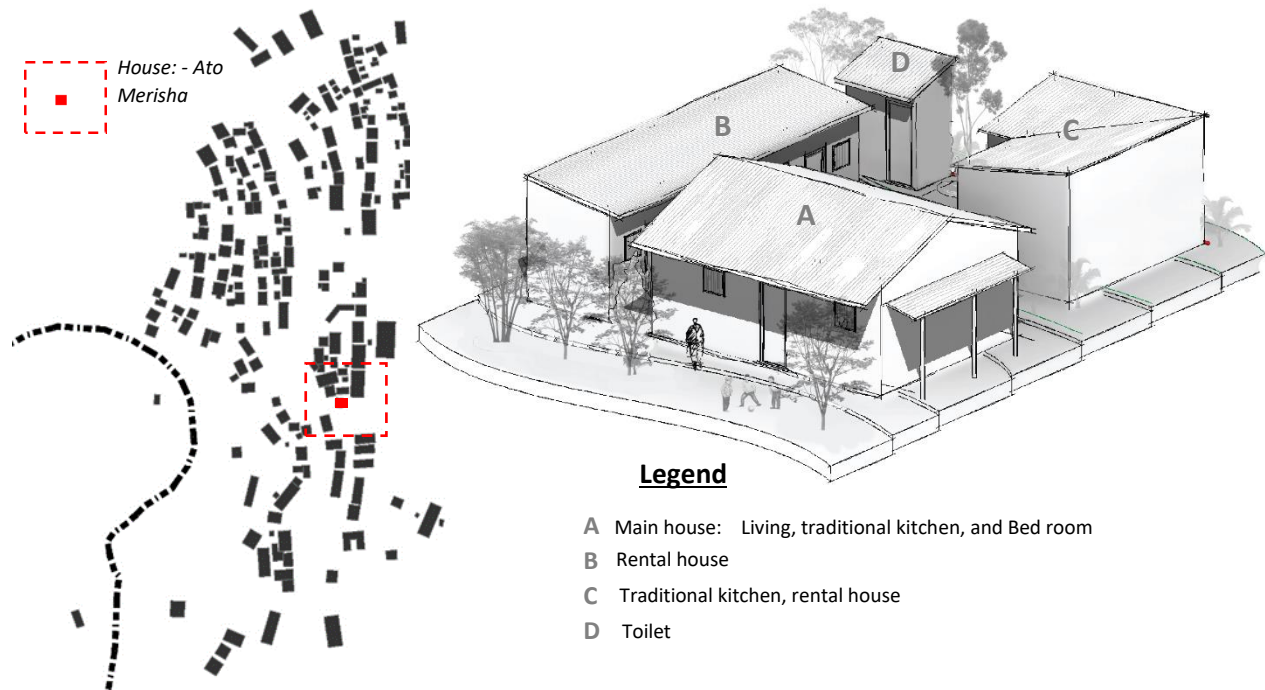


Figure A.104 Ato Mershas' compound

Ato Merisha gets the land from the housing committee. The compound is located in the center of the Awra Amba settlement, near the community eldercare center in front of the community groundwater. The compound is accessed through a narrow footpath.

The compound is rectangular form. It is more of an urban form parcel and the total compound area is 167.4m² with 10.8x15.5meters in size. The eastern and west perimeter of the compound is fenced with eucalyptus an average height of 1.5 meters. The other two side doesn't have a fence. The spatial relation between the neighborhood settlement and Ato Merisha compound is linear and it also shows the interaction and flow of her activity and social interaction.

Ato Merisha's compound has four huts. The main house includes a Living, bedroom, weaving, and traditional kitchen, the second includes a rental house, the third outdoor kitchen, and the fourth toilet.

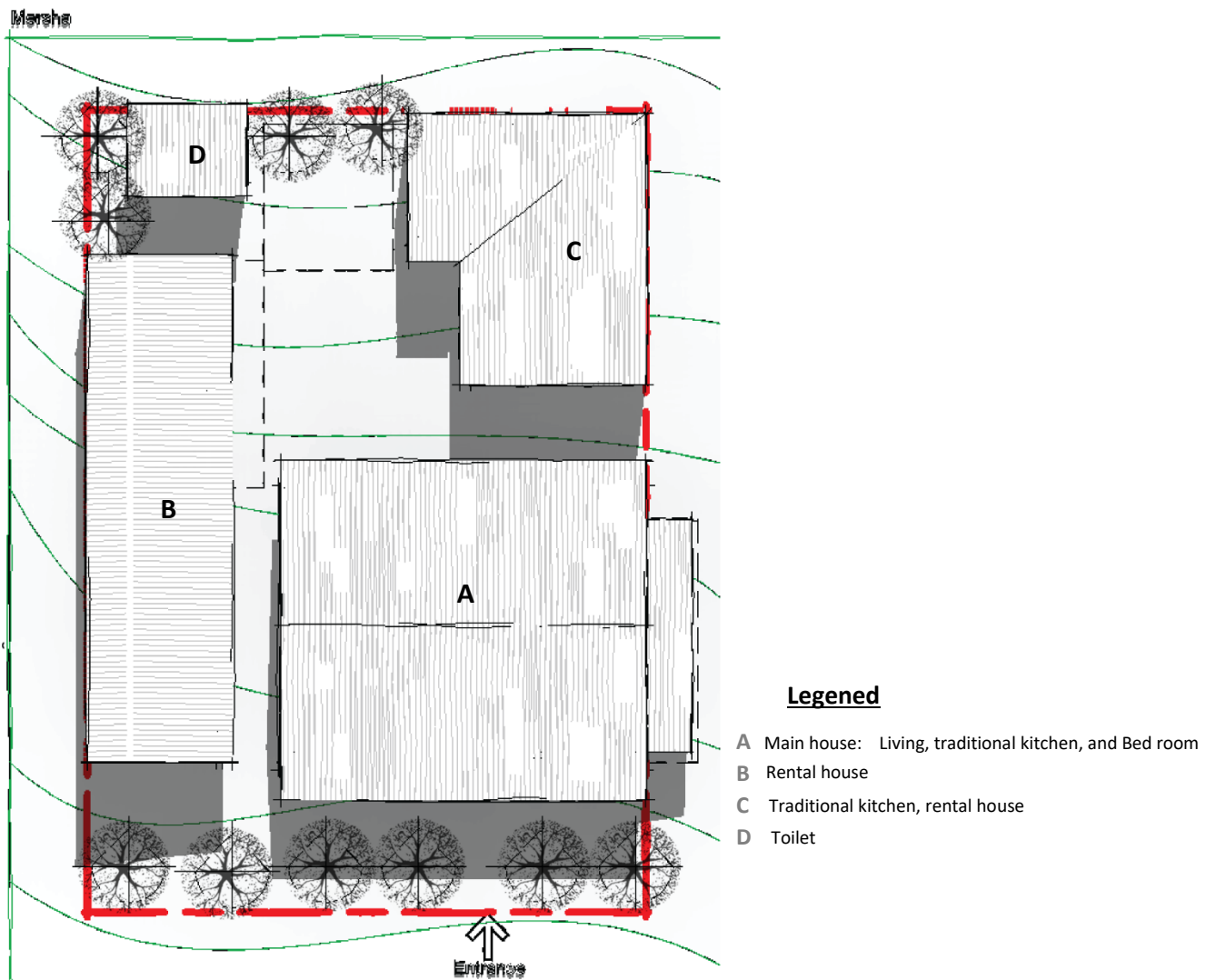


Figure A.105 Ato Mershas' house site plan

Most of the house was first made up of straw and mud with a thatched roof but now after some years, they changed into a mud house with a corrugated iron sheet roof to make them more comfortable to live in.

Table A.19 Ato Merisha's compound unit.

No	Compound unit	Local name	Years of built	quantity
1	Living room	Salon	1986	1
2	Bed room	Megnita bet	2004	2
3	kitchen	kushina	“	1
4	Outside kitchen	Yewchikushina	“	1
5	Toilet	Shint bet	1986	1
6	store	ekabet	2004	1
7	Rental rooms	Kiray bet	2004	4



Figure A.106 Ato Mershas' house living room

The house

Ato Mersha's house is located near the big tree which is rooted at the center of the village, so it is near to his workplace and also suitable for a living but there is not enough space for additional home work.

The residence has a living room with built-in sitting furniture which is called “medeb” which runs along the wall, most of the furniture is made from stone, and mud, and is fined with a cinder. The bedroom is at the front of the living room closed with curtains, on the right side there is the children's bedroom, and there is a corridor to access the kitchen and the backyard. And Ato Mersha spent most of his time in the living room.

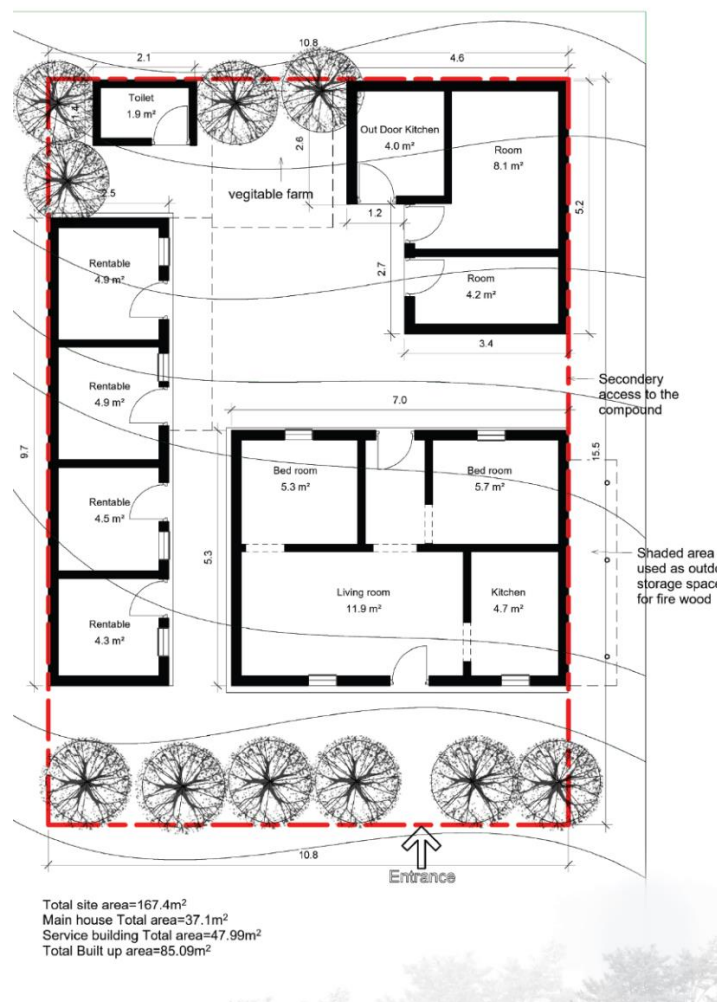


Figure A.107 Ato Mershas' house site floor plan

The Front yard

The compound has thorny vegetation at the borders used as a fence, and there is the main get at the front of the house next to the road to get into the compound and leads to the door of the living room, also there are some shrubs at the front yard.



Total Built up area=85.09m²



Figure A.108 Ato Mershas' house front yard

The back yard

The backyards consist outside kitchen, store, toilet, and 5 rooms for rent, there is also some vegetation. The kitchen and the toilet are usually maintained within some period.



Figure A.109 Ato Mersha's house backyard

About the construction

Table A.20 Ato Merisha's house construction material.

NO	Building components and others	Construction material	Cost at the construction time
1	Floor	Mud finished covered with plastic carpet	15 m2 *85Etb= 1275 Etb
2	Wall	Wood and mud	1 wood 7Etb
3	Ceiling	Fabric	15m2 *14 Etb=210 Etb
4	Roof	Corrugated iron sheet	50 pc *60 =3000
5	Substructure	Big stones with mud	
6	Fence	Thorny vegetation's	

The construction system is adopted from the neighboring rural towns.

The materials used for construction are coming from Debre Tabor, especially because of the scarcity of wood it is imported from Debre tabor.

They have lived since 1986 in this house they only repair and change it into a mud and iron sheet roof house, they got the money for repairs from the community by working hard.

They have a plan for the future to repair and change their house into an HCB walled house, in the coming 5 years they expect to have a large factory of weaving, and making legal plans and documents for the house and if they get money, they will repair the house, and also, they want to add rooms for rental service.



Figure A.110 Ato Mershas's house section

Furniture's in each room:

a) living room

- Sofa and shelf (mesikot)



Figure A.111 Ato Mershas's living room furniture

b) bedroom

- Bed and shelf



Figure A.112 Ato Mershas's bedroom furniture

c) kitchen and weaving area

- Traditional weaving room



- Cooking area



Figure A.113 Ato Mershas's kitchen and weaving room furniture

d) compound

- Plastic jar



Figure A.114 Ato Mershas's compound furniture

e) traditional kitchen

- Fuel-saving room



Figure A.115 Ato Mershas's traditional fuel-saving stove

Fig. A.116 below shows the space used by Ato Merisha’s family at settlement, compound, and house levels. The interview was conducted with one family member within 24 hours. The family spent 62.5 % of their time in the house and 37.5% outside of the compound.

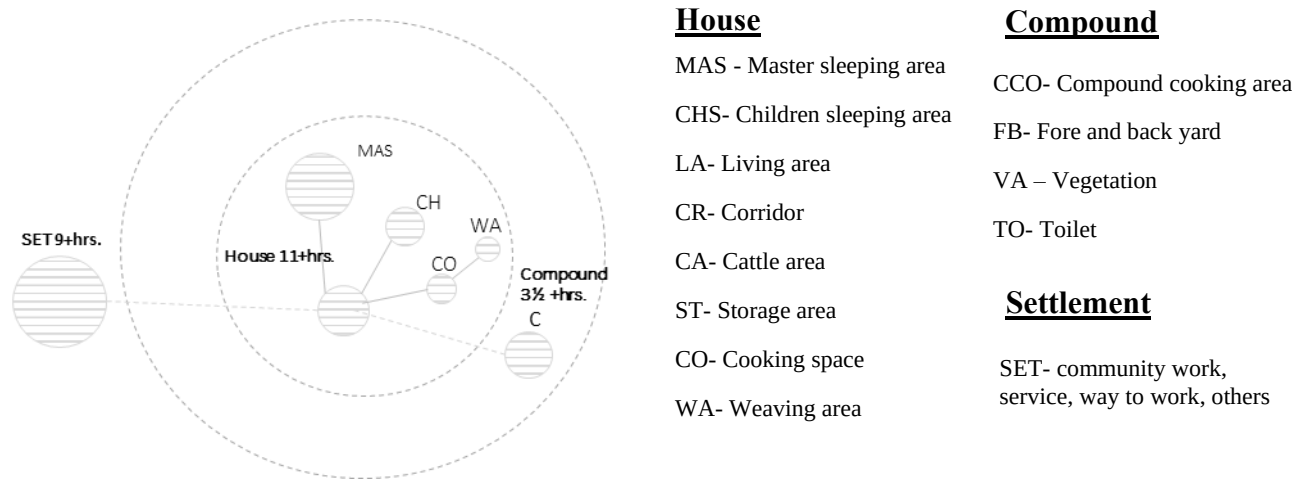


Figure A.116 J graph of Ato Mershas’s house

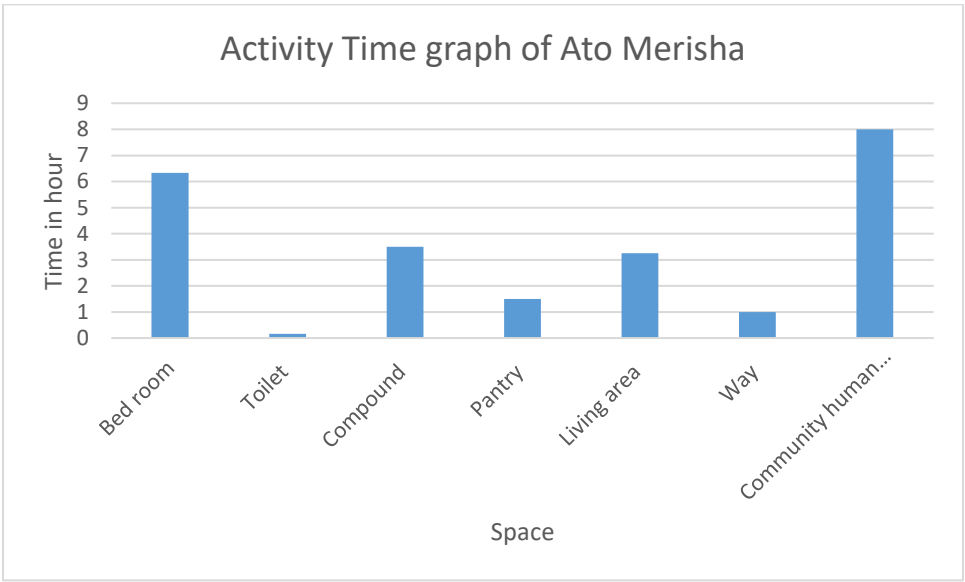


Figure A.117 Activity time graph of Ato Mershas’s family

AP. A21: W/ro Kidane Muhammed's Compound

The life story of W/ro Kidane Muhammed:



Figure A.118 W/ro Kidane Muhammed

W/ro Kidane Mohamed was born in 1957 E.c, in Sinko/ Amedber, a 1-hour walk from Awra Amba and now she is 55 years old. Her parents accepted and approved the lifestyles of the Awra Amba community thus her life as a community member begins. Her family lived in Awra Amba for years until they immigrate to the Southern part of Ethiopia called Bonga because of conflict with the neighborhood community government and stayed there for five years from 1980 up to 1985 E.c. While the unrest has stopped, they began to return to their home and settle in Awra Amba again. An old man has given them bare land as a gift to settle. At first, they use a temporary traditional pavilion made of fabric and canvas. Then as they began to capitalize, they began to build a home together.

She has married her beloved husband Ato Haffis in 1988 E.c at Awra Amba based on the community rule which is a girl should be above 18 and men 20, when she is 20 and when he is 24 and they have 7 children, two daughters, and five sons. Their eldest son, Nurbegna has graduated with a diploma and is a married man, and has an income of 3500 ETB. Asnakachew Haffis has graduated with a BSc degree and is married and has an income of 4200 ETB. Wuletaw and Fentaw Haffis are graduated with a BSc degree and single and have an income of 3700 ETB and 4000 ETB respectively. Tirunat is also single and has graduated with a BSc degree and has an income

of 3200 ETB. Werknesh is a high school senior and single. Misge is the youngest and he is a high school junior.

W/ro Kidane Mohamed educational background is studied ‘Meseret timihirt’ during the Derg regime. Her life as an Awra Amba community member begins and she became a cooperative member of the community in 1982 E.c after requesting for five years. Her service to the community is working in the kitchen of the Awra Amba community café. To increase her income source, she works on weaving in her home. she buys the raw material for weaving from the community shop. Her annual income in 2012 E.c from the community finance allocation for each cooperative member was 13,000 birrs, and from a private business that is weaving in her home when she works hard, she gets an additional 17,000birr. W/ro Kidane total annual income was 30,000 Birr.

The water source is located in the compound when there is no water, they bring it to form the community groundwater pump which is located at the center of the community next to the “Warka tree” which takes a 15minute walk. For washing cloth, they go to the Ginde river which takes a 10minute walk. Health and other service facilities were located inside the community. The health post took about 15 minutes of walking. Their burial ceremony took place in Quarqe South West direction next to the community Adiss Ra’ey secondary school taking 30 minutes to walk. Both Awra Amba and the neighborhood Muslim community use this common land for the burial ceremony. W/ro Kidane’s working space the community computer center is located at the center of the community taking 5 minutes to walk from home.

People of Awra Amba celebrate a holiday once a year, “Enkutatash”, an Ethiopian name for the new year celebration. they gather around the big tree which is Awra Amba’s landmark and spend the whole day playing games.

Houses in Awra Amba are close to one another. This shows their social interaction is strong. They usually use a shared wall with neighbors to optimize space and minimize cost.

Table A.21 Spaces –Time Dairy of W/ro Kidane Muhammed’s Family.

S.No	Date	Activities (Daily)	Room /place	From/at	To
1		Waking		11:30 AM	

2		Get dressed	Bed room	11:30 AM	11:35 AM
3		Washing his face	Living area	11:35 AM	11:40 AM
4		Walking	Way to work	11:40 AM	11:45 AM
5		Cleaning the cafe	Community cafe	11:45 AM	12:00 AM
6		Serving at the cafe	Community cafe	12:00 AM	2:00 AM
7		Walking	Way to home	2:00 AM	2:05 AM
8		eating breakfast	Living area	2:00 AM	2:20 AM
9		Walking	Way to work	2:20 AM	2:25 AM
10		Serving at the cafe	cafe	2:25 AM	6:00 PM
11		Walking	Way to home	6:00 PM	6:05 PM
12		eating lunch	Living area	6:05 PM	6:30 PM
13		Walking	Way to work	6:30 PM	6:35 PM
14		work	cafe	6:35 PM	1:30 PM
15		Walking	Way to home	1:30 PM	1:35 PM
16		Eating (dinner)	Living area	1:35 PM	2:00 PM
17		weaving	Weaving room	2:00 PM	4:00 PM
18		Sleeping	Bed room	4:00 PM	11:30 AM
Weekly activity					
1		Marketing			
2		Cleaning the compound			
3		Washing clothes			
4		Asking relatives			
5		Bringing firewood			
Monthly Activities					
		Preparing spice (Balitina) for eating			

The compound

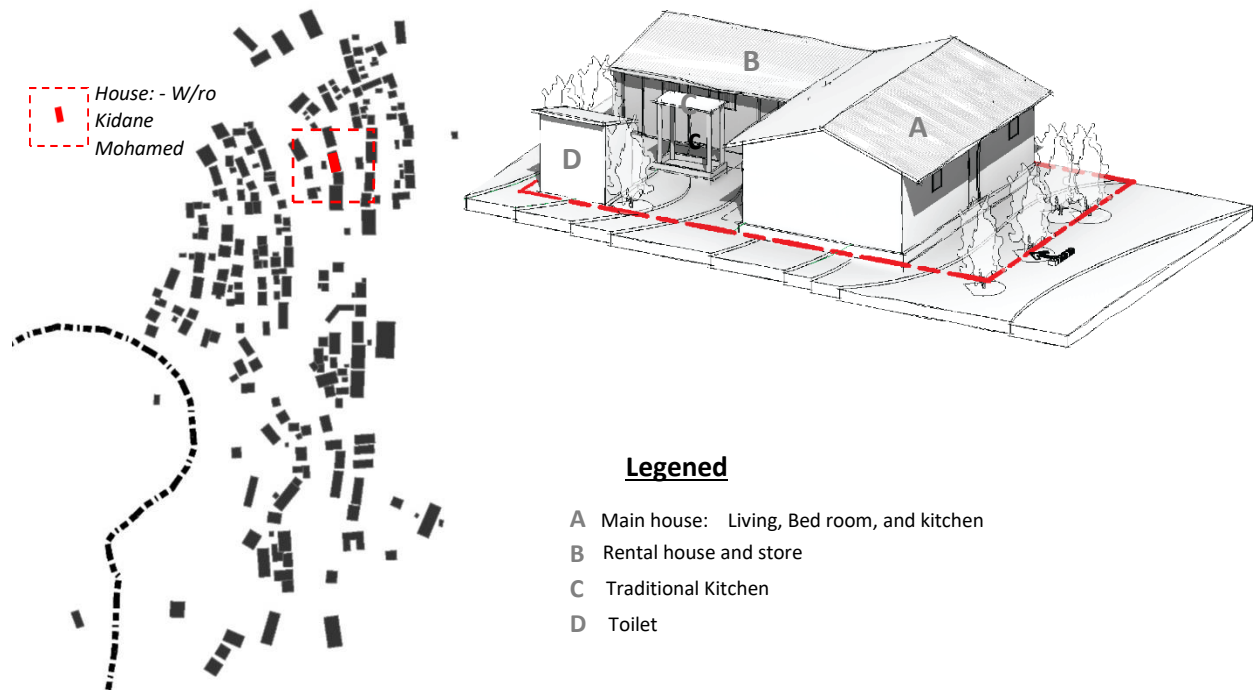


Figure A.119 W/ro Kidane Muhammed's compound

W/ro Kidane Mohamed's get the land from the housing committee. His compound is located in the Northern direction from the central "Warka tree", near the community Dairy farming and oil factory. the compound is accessed through the narrow unpaved footpath.

The compound is rectangular form. It is more of an urban form parcel and the total compound area is 170 m² with 17x10meters in size. The perimeter of the compound is fenced with shrubs.

As indicated in the compound plan, W/ro Kidane Mohamed's house was constructed on the Northern boundary of the compound. W/ro Kidane Mohamed's compound has a row house. Other elements in the compound are the front yard, traditional kitchen, back yard, store, weaving room, dormitory, and toilet.

Table A.22 W/ro Kidane Muhammed house compound unit.

No	Compound unit	Local name	Years of built	quantity
1	Living room	Salon	1992	1
2	Bed room	Megnita bet	1992	2

3	Outdoor kitchen	kushina	1992	1
4	Toilet	Shint bet	1992	1
5	store	ekabet	1992	1
6	Rental rooms	Kiray bet	1993	3

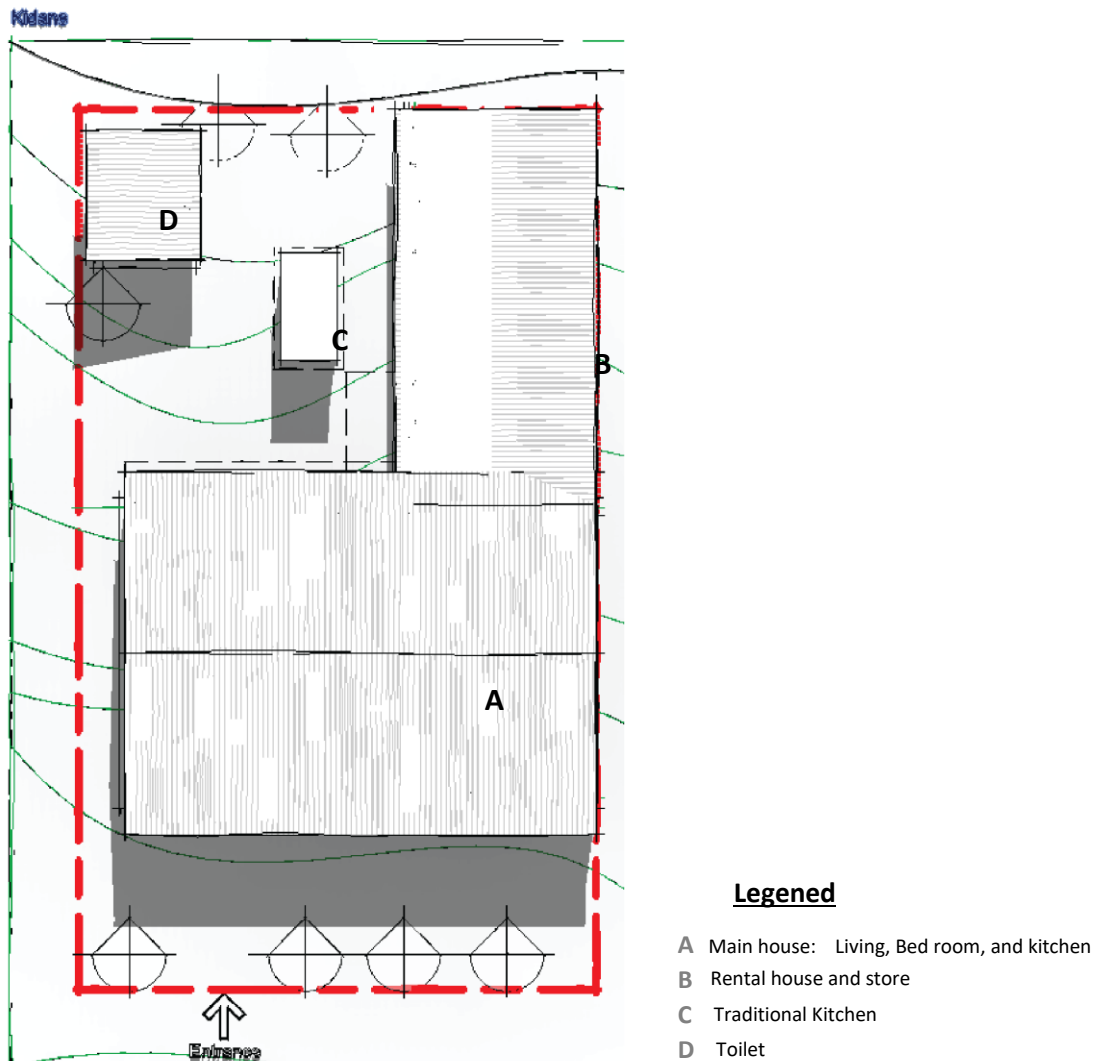


Figure A.120 W/ro Kidane Muhammed's site floor plan

The Front Yard:

W/ro Kidane's compound has a front yard. The front yard is the main access road because the house is constructed on the border of the road. Therefore, the main road also serves as a transition for the house.



Figure A.121 W/ro Kidane Muhammed's front yard

The House:

W/ro Kidane's house is a type of detached house. The total area of the house is 80.14m^2 . The internal space of the house is sub-divided into a 19.8m^2 living area which accommodates Medeb (grinding stone with Chika) space for eating and playing with family, grinding stone, and shelf, a sleeping zone which includes children and master bedroom, and the rental house. She has no time for spending time in special places outside the house because they spent their time in a rush on work. She likes to spend her days in her living room.

The dwelling's roof was made of straw, which should be renewed within a period of two or three years. They told us it is a bit expensive because it needs careful maintenance throughout the year. Because of this, they decided to construct the roof with CIS (corrugated iron sheet) buying from Debre Birhan and Bahir Dar even though it's expensive it lasts longer.

Total site area=170m²
 Main house Total area=80.14m²
 Service building Total area=6.87m²
 Total Built up area=87.01m²

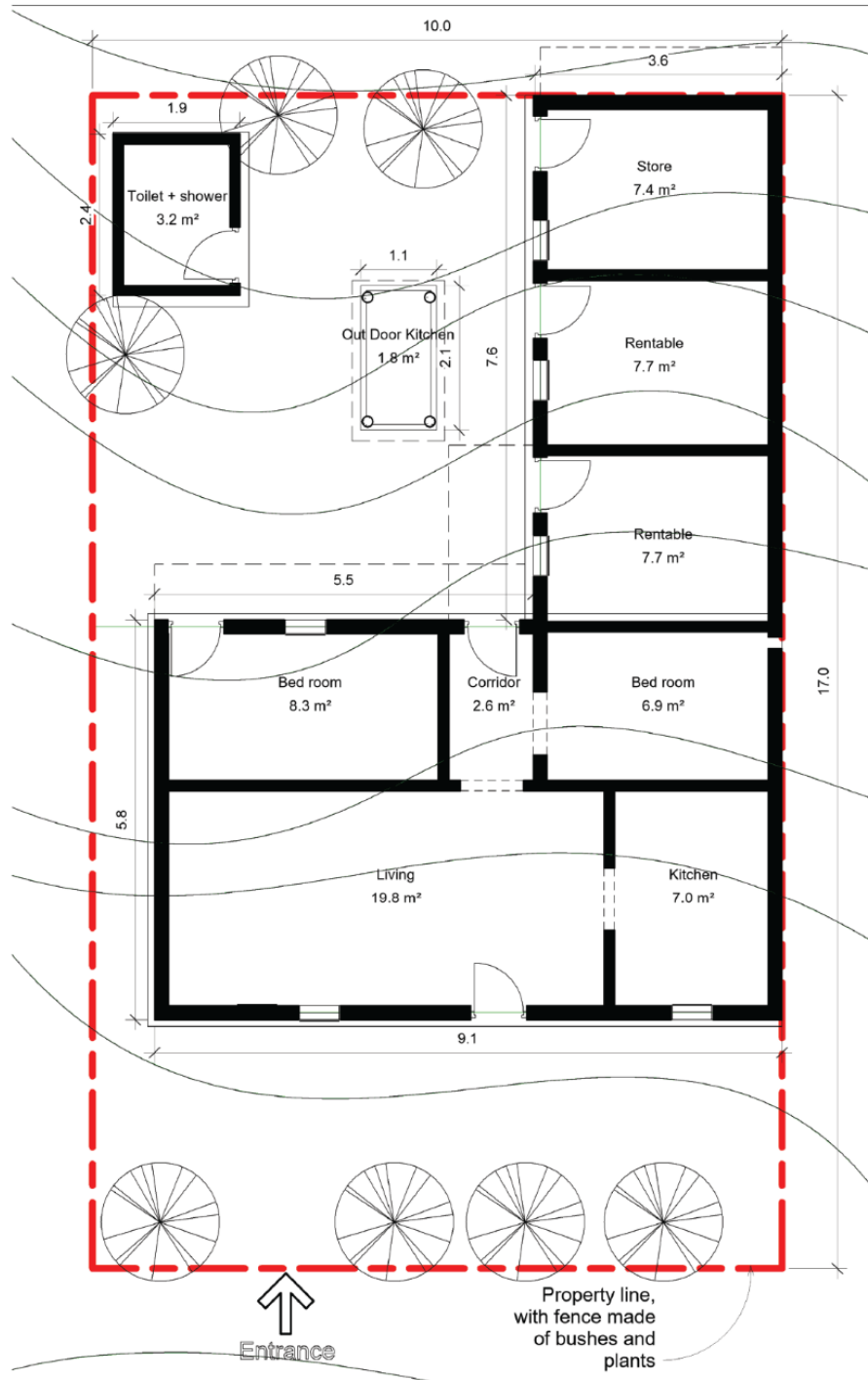


Figure A.122 W/ro Kidane Muhammed's floor plan

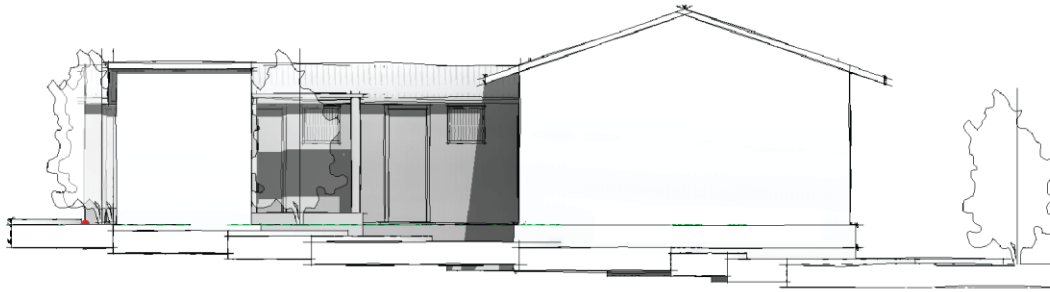


Figure A.123 W/ro Kidane Muhammed's elevation

Material and construction

The walls are made up of raw timber, which is available material found in Debre Birhan and Bahir Dar, and mud transported by vehicles. To protect the timber from rotting and insect attack they use black gas. Ash is used for finishing and plaster which gives a smooth surface to the wall and also aesthetic value.

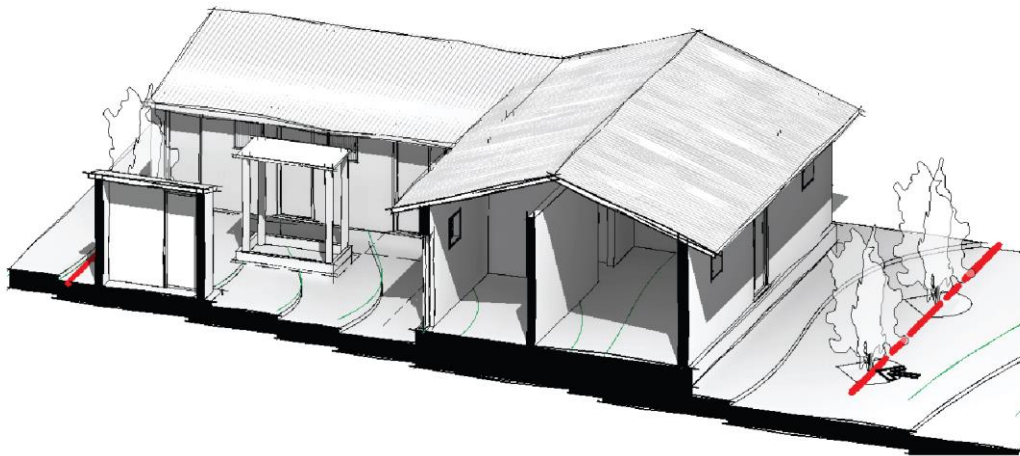


Figure A.124 W/ro Kidane Muhammed's section

The ceiling is made up of canvas. They use built-in furniture such as “medeb” for bed and also as a chair for sitting. They use small partitions of cabinets attached to the wall which are used for storing kitchen objects.



Figure A.125 W/ro Kidane Muhammed's backyard

Kidane said “I’m happy with the current house, I’ll be happier if the house has more plot size with wider units with more additional rental houses and modern toilet. Since human beings don’t stop wishing for more. For the future, we would like to demolish the house and build a modern house, and enhance the qualities of spaces”

Furniture's in each room:

a) living room

- Medeb



- Shelf (mesikot)



Figure A.126 W/ro Kidane Muhammed's living room furniture

b) Pantry

- Crop store (gushigusha)



Figure A.127 W/ro Kidane Muhammed's pantry furniture

c) Bedroom



Figure A.128 W/ro Kidane Muhammed's bedroom furniture

d) Traditional kitchen



Figure A.129 W/ro Kidane Muhammed's traditional kitchen furniture

e) Compound



Figure A.130 W/ro Kidane Muhammed's compound furniture

Fig. A.131 below shows the space used by W/ro Kidane Muhammed's family at settlement, compound, and house levels. The interview was conducted with one family member within 24 hours. The family spent 50 % of their time in the house and 50% outside of the compound.

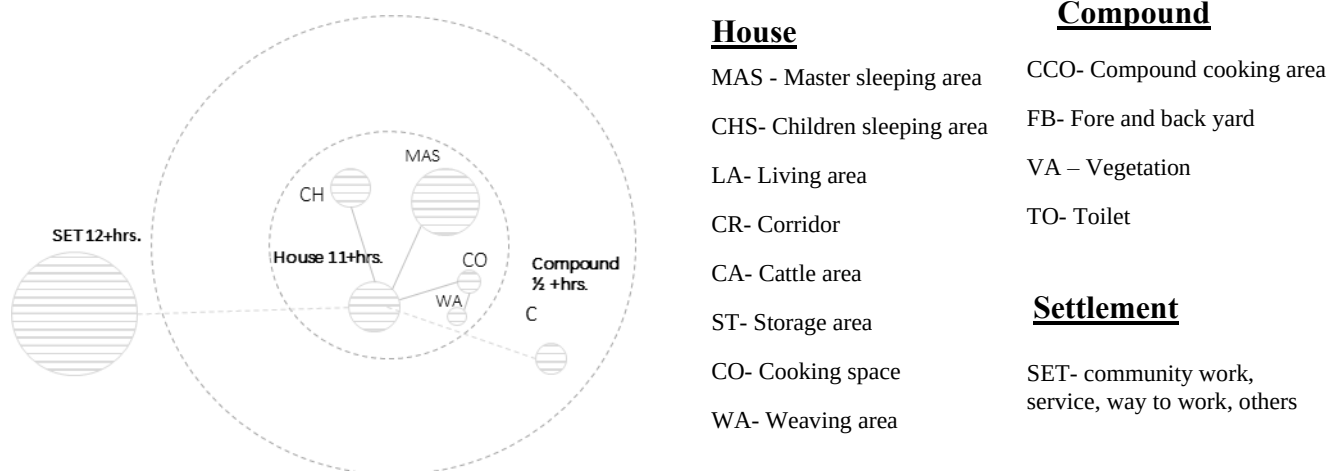


Figure A.131 J graph of W/ro Kidane Muhammed's

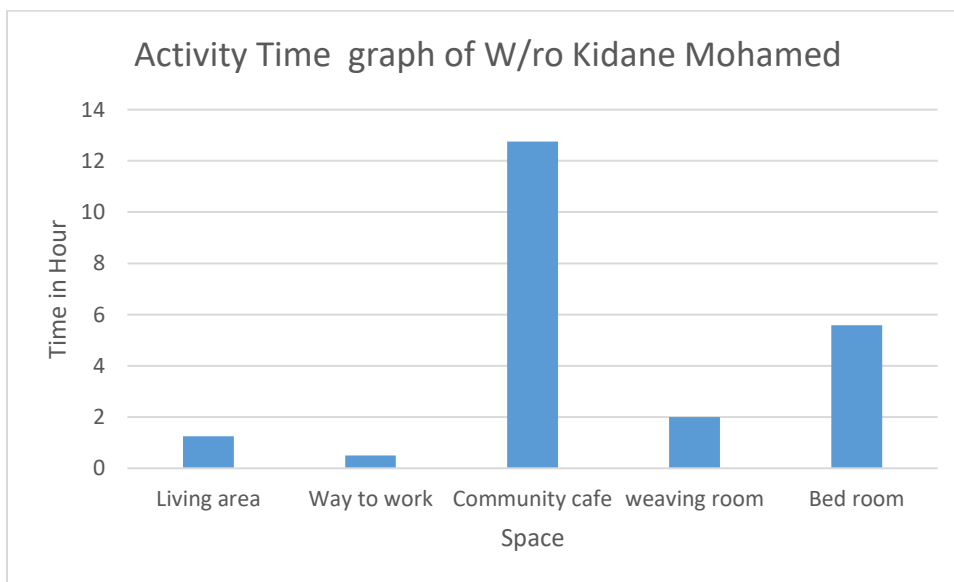


Figure A.132 Activity time graph of W/ro Kidane Muhammed's

AP. A22: W/ro Yemiserach Mohammed

The life story of W/ro Yemiserach Mohammed: Life History, Activity, and services

W/ro Yemiserach is a married woman and a mother of four. She doesn't know the exact time of her birth but guesses her age to be in the mid-40s. However, she remembers the place of her birth which is called Belesa. W/ro Yemiserach didn't attend school and now she spends all her children at a school that the community built. Two of her children are male and the others female.

Before W/ro Yemiserach and her family moved to Awra Amba after they lived in Gayint for 20 years. While living in Gayint they worked in farming and weaving side by side, both of which are inherited from their elders. The first three children were born in Gayint, namely, Kindu Firew, Nurit Firew, and Habtamu Firew whose ages are 25, 20, and 11 respectively. Their youngest daughter who is now 7 years old, Jemaye Firew is born in Awra Amba.

W/ro Yemiserach claims that her family was one of the founding members of the Awra Amba community. This was one of the reasons why they moved to the village and the other is that the weather in Gayint was too hot for them.

At the time of the interview, all her children were students except for the eldest child who quit school after 8th grade and now is working in a nearby town of Woreta.

W/ro Yemiserach is allocated the duty of taking care of the elderly members of the community at the eldercare center. Since her children are still in school the responsibility of taking care of them falls to her and her husband who works at the poultry farm.

The daily activity of the family is mostly a routine that revolves around their tasks in the community and their life at home. As for the children their activities are mostly that of school. Their mother says they are too little to be given any chores yet.

Perception and desire about the space

W/ro Yemiserach said that she is satisfied with the way things are in terms of the provision of dwelling, and in the future, she wished to build a multistory concrete house on a wider plot for her family but finance is the main constraint.

Table A.23 Spaces –Time Dairy of W/ro Yemiserach Mohammed’s Family.

S.No	Date	Activities (Daily)	Room /place	From/at	To
1		Waking		12:00AM	
2		Get dressed	Bed room	12:00AM	12:30AM
3		Cleaning the house	compound	12:30AM	1:00AM
4		Making breakfast	Pantry	1:00AM	1:30AM
5		Eating breakfast	Living room	1:30AM	1:55AM
6		Walking	Way to work	1:55AM	2:00AM
7		Work	Elder care center	2:00AM	6:00PM
8		Walking	Way to home	6:00 PM	6:05 PM
9		Making lunch then and eating	Living room	6:05 PM	6:55 PM
10		Walking	Way to work	6:55 PM	7:00 PM
11		Work	Elder care center	7:00 PM	11:00 PM
12		Walking	Way to home	11:00 PM	11:05 PM
13		Making dinner	Pantry	11:05 PM	12:00 PM
14		Eating dinner and spending time with family	Living room	12:00 PM	1:00 PM
15		Making weaving	Waving area/ in the pantry	1:00 PM	4:00 PM
16		Sleeping	Bed room	4:00 PM	12:00AM
	Weekly activity				
1		Marketing			
2		Cleaning the compound			
3		Washing clothes			
4		Asking relatives			
5		Bringing firewood			

6		Balitinamazegaget			
7		Washing children's			
	Monthly Activities				
1		Preparing spice (Balitina) for eating			

The compound

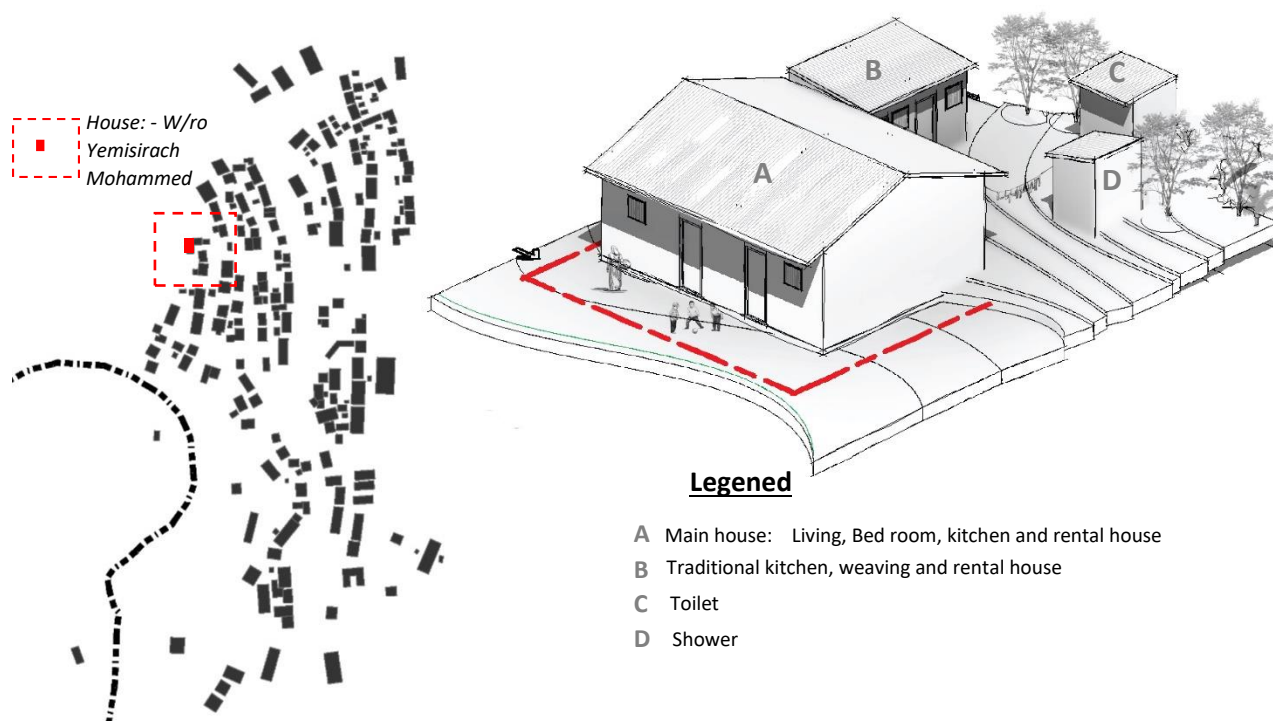


Figure A.133 W/ro Yemisrach's compound

W/ro Yemisrach's is located at the top of the hill settlement, W/roYemisrach's house is a detached house, which has no individual boundary fence and detached block laying on an 11m x 15m plot of land. On the compound there are two main blocks, one is the main dwelling area and the other is a service quarter with an additional house for rent.

The compound is adjoined by land on the south and a hilly bare land on the south. Also, in the west, the compound faces a mountain that is not inhabited. Besides dwelling blocks, there are two additional structures (shower and toilet) that are situated further than the main building due west.

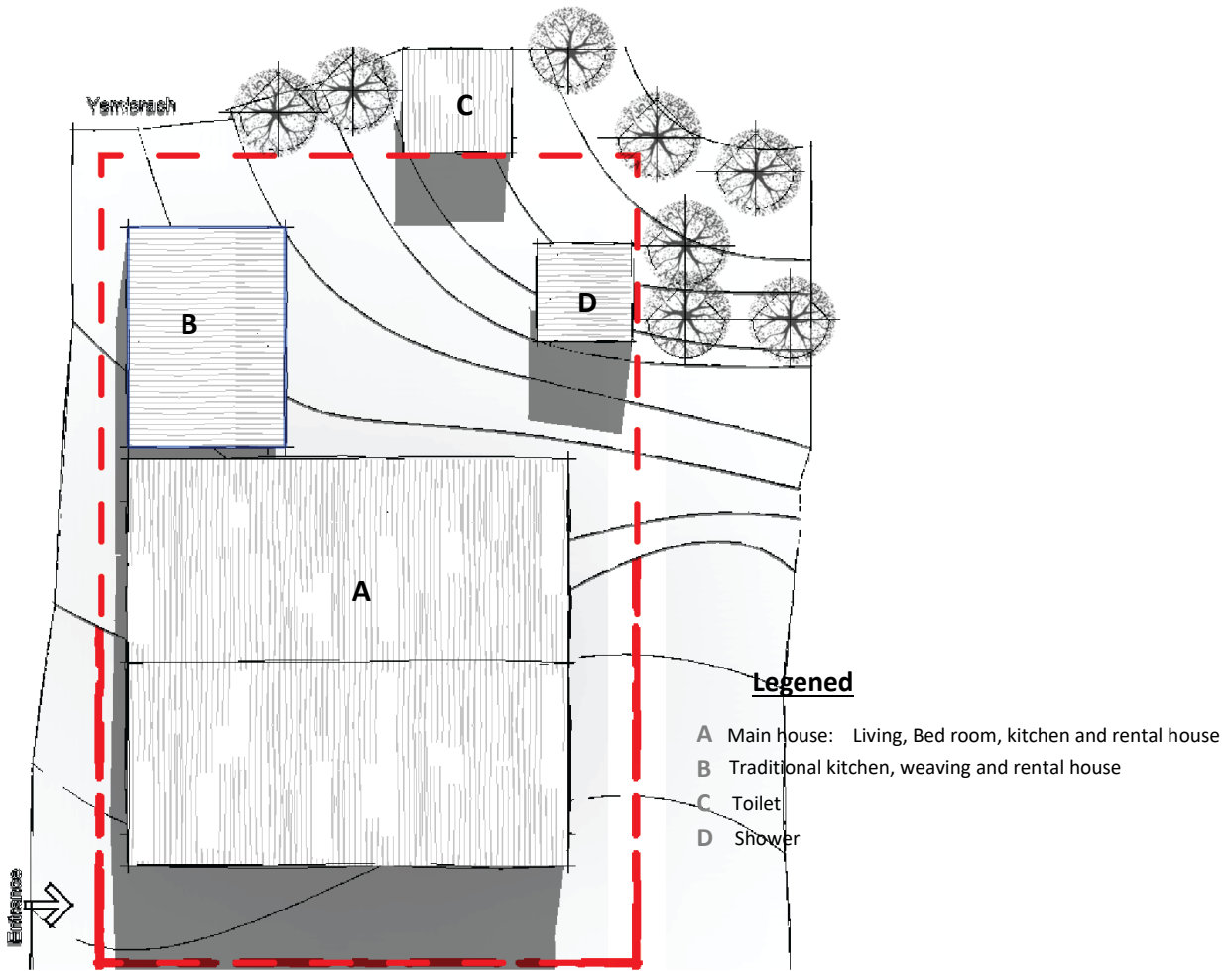


Figure A.134 W/ro Yemisrach's house site plan

Due to the school being built by the community, recently the community is hosting students from the nearby villages to attend the school, hence providing an opportunity to generate additional income for the families by renting rooms for those students. W/ro. Yemisrach's family seems to realize this opportunity and has decided to rent 2 rooms on their property.

Table A.24 W/ro Yemisrach Mohammed's compound unit.

No.	Compound Units	Local name	Years of Built	Remark
	Main House			
	Outdoor kitchen		2	Adjacent to the service quarter
	Toilet			
	shower			
	Service quarter	“dorm”	2	Used as rentable space and kitchen

Front yard

The compound has a setback from the building in front of it that is also a footpath linking all the houses along the strip of detached houses. The house is accessed directly from the footpath leaving no space to be considered a practical front yard.



Figure A.135 W/ro Yemisrach's house front elevation

The back yard

As opposed to the front yard, the backyard on the west is spacious and used wisely by the family. Because there is no building adjoining the compound, the backyard terrain needed to be leveled to be used. Having done so, space is used to accommodate additional blocks mentioned above in the compound.

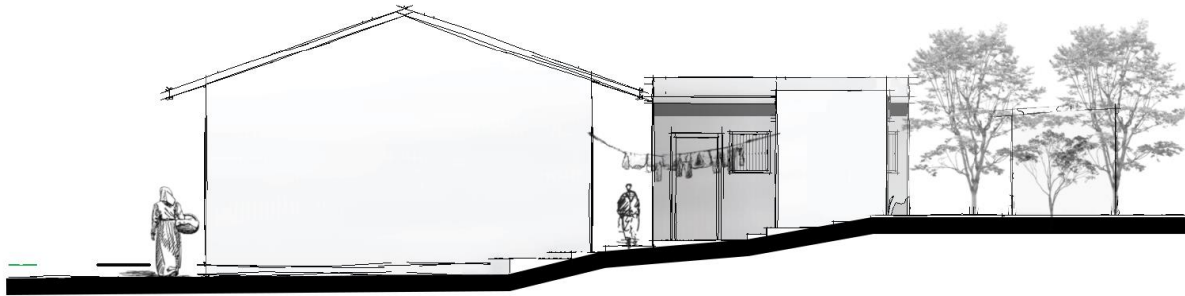


Figure A.136 W/ro Yemisrach's house right side elevation

The building

Neither the building design nor the construction material is different from the rest of the community. W/ro. Yemisirach says her family didn't have much say in the allocation of their blocks as it was given to them by the committee. Also, the layout of the house was done by the men who constructed the house.

The main building rests on 8m x 6m land. Locally the house typology is called "hulet dejaf bet", roughly translated to a house with two frontages. The other blocks on the compound are relatively recent considering the main building is 8 years old and the rest is constructed only 2 years ago.

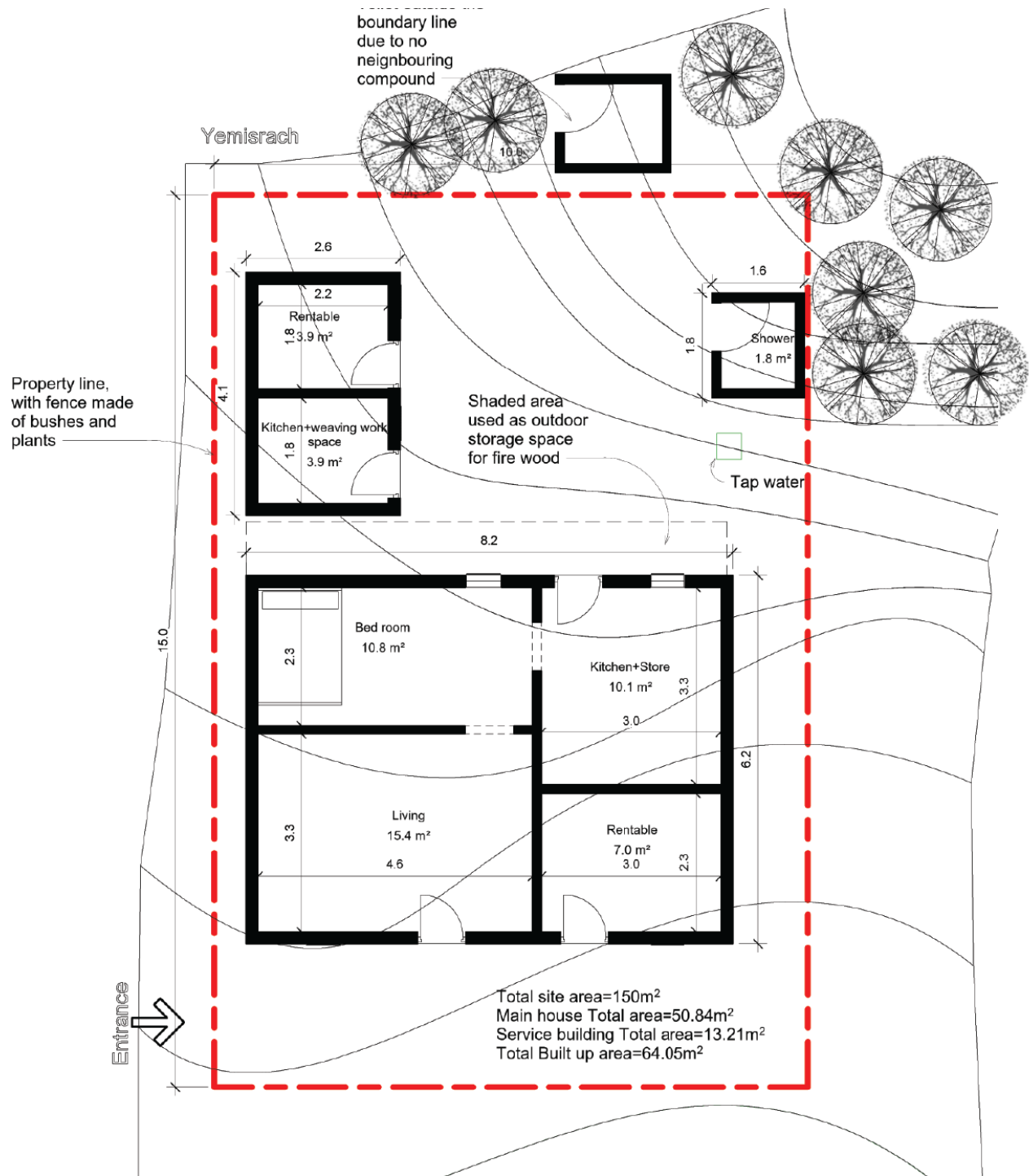


Figure A.137 W/ro Yemisrach's house site floor plan

Table A.25 W/ro Yemiserach Mohammed's house spatial parts

No.	Spatial part	Local name	Activities
	Living	Salon	
	Kitchen	Eqka bet	Also used as a storage space for weaving equipment
	Bedroom	Megneta bet	
	Children's bedroom		
	Kitchen (outdoor)	Ye chise bet	Out the door, used as a working space
	Back yard		
	Toilet /Shower		
	Dorm (in the house)		Rented room with Separate entrance
	Dorm (in-service quarter)	Dorm	Rented room for a student.

The main house has never undergone any major renovations since the time it was constructed which was 8 years ago. But once a year they apply cow dung to the interior surface to deter insects and keep the space easy to clean.

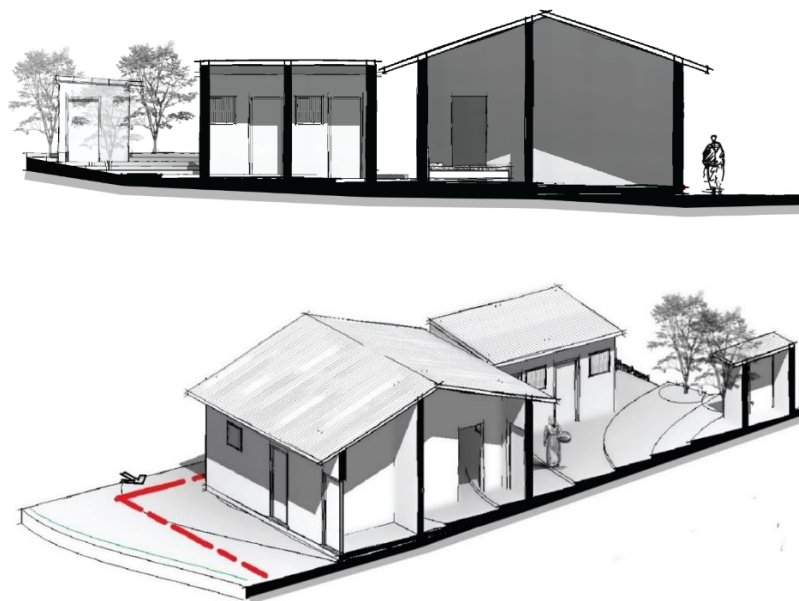


Figure A.138 W/ro Yemisrach's house section

Furniture's in each room:

a) traditional kitchen furniture

- Crop store (gushigusha), and weaving instruments



- Traditional fuel-saving stove



Figure A.139 W/ro Yemisirach Mohammed's traditional kitchen furniture

b) Living area: - mattress as a chair for the living room



Figure A.140 W/ro Yemisirach Mohammed's living furniture

C) bedroom: - bed



Figure A.141 W/ro Yemisirach Mohammed's bedroom furniture

d) kitchen



Figure A.142 W/ro Yemisirach Mohammed's kitchen furniture

Fig. A.143 below shows the space used by W/ro Yemisrach Mohammed's family at settlement, compound, and house levels. The interview was conducted with one family member within 24 hours. The family spent 66.66 % of their time within the house and 33.34% outside of the compound.

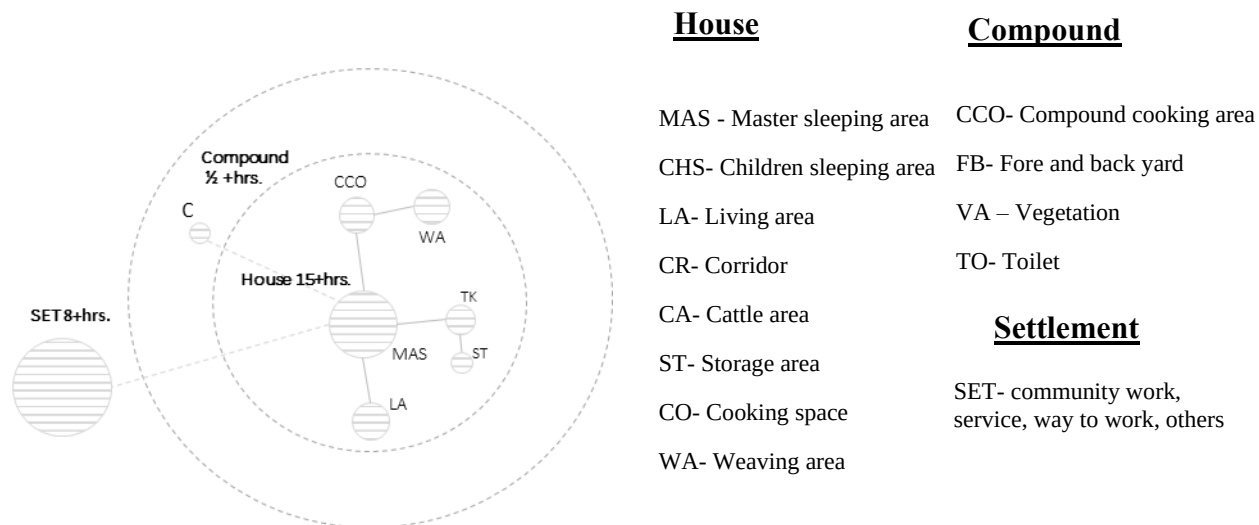


Figure A.143 J graph of W/ro Yemisrach's house

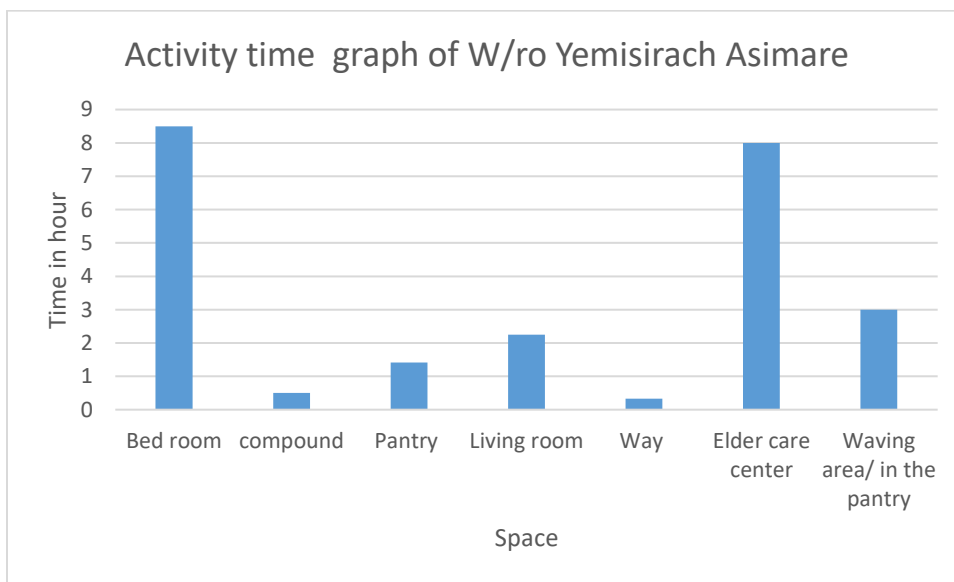


Figure A.144 Activity time graph of W/ro Yemisrach's family