HOUSING AS REVITALIZATION STIMULUS:

INNER-CITY REVAMPING OF ADDIS ABABA

GRADUATION THESIS BOOKLET BY -

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School of Architecture Urban Planning Construction Engineering

MSc Architecture and Urban Design

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Academic Year 2020/2021

Acknowledgment

First and foremost, let God be praised!

I would like to express my sincere gratitude to the “Invest Your Talent in Italy – IYT” Scholarship program for giving me the opportunity to study in Milan, Italy. My study at Politecnico di Milano would not have been possible with out the support of the IYT scholarship program. I am also deeply grateful to professor Corinna Del Bianco & Professor Maria Chiara Pastore for their constructive advice throughout the work.

Further on, I dedicate my thesis work to my my beloved parents for their unwavering support and love.

Hallelujah!

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Abstract

The proposed thesis aims to rectify current urban challenges: rapid urbanization, population growth and increasing demand for housing through a realization of a masterplan and design of a housing complex. The thesis is project oriented and seeks to demonstrate how urban integrated explicit architectural approach to housing developments can be a key strategy to revitalize inner urban areas and address contemporary urban phenomenon - quality public open spaces and community facilities. Housing led urban regeneration to elucidate the complexity of urban conditions in fast growing cities like Addis Ababa can stimulate changes through a development of underperforming and degrading urban areas. Such kinds of redevelopments can also bring economic opportunities to local communities.

Like other major African cities, Lagos, Dar es Salaam, Kinshasa and Nairobi to name a few, the urbanization rate in the Ethiopian capital - Addis Ababa is also rapidly increasing making the city as one of the fastest transforming urban environments in the continent and hence the world. As a political and financial capital of the nation, the city continues to attract residents from all around the country which means the need for urgent response to the inevitable problems associated with urbanization is crucial. This exceptional degree of complexity and challenges of uncontrolled urban transformation in the main capital needs a different approach in terms of development strategy to enhance the urban and social fabric of the city.

In this regard as an urban redevelopment scheme urban regeneration strategy can be considered as a convenient means to tackle critical issues of rapid urbanization particularly in declining inner-city neighborhoods and intensifying urban areas whilst being conscious of the existing social, environmental, demographic and urban conditions. With the intent of an initiative to reimagine and revitalize a major district in the inner-city with five distinct hubs along a strip of a main road, the idea of urban regeneration has therefore been welcomed by Ethiopia's Land Bank and Development Corporation (LBDC)- a government enterprise engaged in property development and landholdings management. The proposed thesis is based on LBDC's initiative and it aims to rectify current urban challenges through a realization of a masterplan and design a housing complex on a site selected on one of the five redevelopment hubs.

Keywords: rapid urbanization; Addis Ababa; Ethiopia; housing; urban regeneration

Riassunto

La tesi proposta mira ad affrontare le attuali sfide urbane: rapida urbanizzazione, crescita demografica e crescente domanda di alloggi attraverso la realizzazione di un masterplan e la progettazione di un complesso abitativo. La tesi è orientata al progetto e cerca di dimostrare come l'approccio architettonico esplicito integrato urbano agli sviluppi abitativi può essere una strategia chiave per rivitalizzare le aree urbane interne e affrontare il fenomeno urbano contemporaneo: spazi aperti pubblici di qualità e servizi alla comunità. La rigenerazione urbana guidata dall'edilizia abitativa per chiarire la complessità delle condizioni urbane nelle città in rapida crescita come Addis Abeba, può stimolare i cambiamenti attraverso lo sviluppo di aree urbane degradate e sotto sviluppate. Tali tipi di riqualificazioni possono anche creare opportunità economiche alle comunità locali.

Come altre grandi città africane, Lagos, Dar es Salaam, Kinshasa e Nairobi per citarne alcune, anche il tasso di urbanizzazione nella capitale etiope - Addis Abeba sta rapidamente aumentando, rendendo la città uno degli ambienti urbani in più rapida trasformazione del continente e quindi del mondo. In quanto capitale politica e finanziaria della nazione, la città continua ad attrarre residenti da tutto il paese, ciò comporta la necessità di una risposta urgente agli inevitabili problemi associati all'urbanizzazione. Questo eccezionale grado di complessità e le sfide della trasformazione urbana incontrollata nella capitale, richiedono un approccio diverso in termini di strategia di sviluppo per migliorare il tessuto urbano e sociale della città.

A questo proposito, come schema di riqualificazione urbana, la strategia di rigenerazione urbana può essere considerata un mezzo conveniente per affrontare le questioni critiche della rapida urbanizzazione, in particolare nei quartieri urbani in declino e intensificando le aree urbane, pur essendo consapevoli delle condizioni sociali, ambientali, demografiche e urbane esistenti . Con l'intento di reimmaginare e rivitalizzare un importante distretto nel centro della città con cinque distinti hub lungo una fascia di una strada principale, l'idea di rigenerazione urbana è stata quindi accolta dalla Land Bank and Development Corporation (LBDC) dell'Etiopia - un'impresa governativa impegnata nello sviluppo immobiliare e nella gestione delle proprietà terriere. La tesi proposta si basa sull'iniziativa di LBDC e mira a rettificare le attuali sfide urbane attraverso la realizzazione di un masterplan e la progettazione di un complesso residenziale in un sito selezionato in uno dei cinque centri di riqualificazione.

Parole chiave: rapida urbanizzazione; Addis Abeba; Etiopia; alloggio;
rigenerazione urbana

Methodological Note

The project is developed primarily based on desktop study and literature reviews focusing on theoretical frameworks and hypothesis about housing, rapid urbanization and urban regeneration practices in Addis Ababa, Ethiopia. Background studies and analysis to identify one key area as a project site of the thesis work are organized around three core ideas- connectivity, green system and density. The methodology to analyze the evolution and historical context of the project area is also based on a mixture of archival collections and site visit to have a clear understanding about the current condition and future prospect of the area and develop a masterplan that could provide an urban framwork for the new housing scheme.

Introduction

By 2030 over half of Africa's population will be living in urban areas and the current population will grow by 350 million people (Parnell and Pieterse, 2014). The current urbanization trend in the continent has already had negative social, economic and environmental impacts with consequences of extreme urban pollution, urban poverty, informal settlements, housing crisis, inadequacy of public services and lack of sufficient infrastructure. Fueled by the need for economic development and overall growth, this wave of urbanization is escalating at a very fast pace.

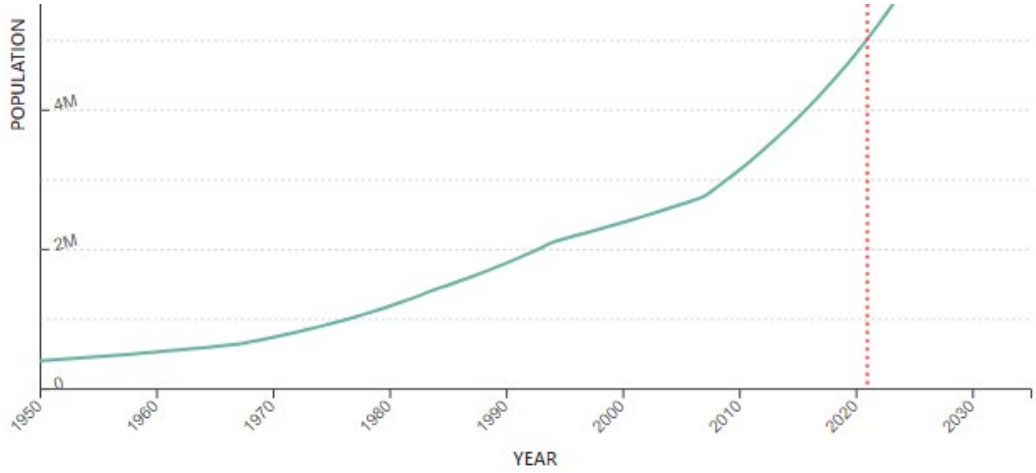
Even though the main objective of this project is to tackle problems of urbanization and inner-city revitalization issues with emphasis on housing, the scope is not limited to the provision of housing. It also aims to stir from the idea of housing as a separate and autonomous urban component and become proactive in the regeneration process and development of active city districts with an urban integrated architectural design approach. As an element among the multiple urban components, and redefining planning strategies and contexts, housing can have a major role in the urban regeneration process. Masterplans anchored by housing facilities and physically linked to other urban fabrics and programs can project an active city district with its own urban and architectural character further reinforced by a comprehensive and sustainable urban future.

1 THE CONTEXT OF ADDIS ABABA

1.1 CITY PROFILE: ADDIS ABABA

As the second most populous country in Africa, Ethiopia has an annual population growth rate of 2.6%.[1] Due to this increasing population number and other factors like economic challenges, low level of education, growing urban population, interregional migration and extreme poverty, Ethiopia is ranked 169th out of 175 countries as one of the poorest countries in the world according to the United Nations Development Programme Human Development Index. Despite having one of the lowest urban population proportion in the world, Ethiopia is experiencing a rapid urbanization at a high annual average growth rate of 3.49%.[2] The urban population makes only 16.7% of the total population but 30% of this urban population lives in the capital city Addis Ababa.[3]

Figure 1.1 - Location Map of Addis Ababa
Source: Beken Amde, Self-construct based on Google Maps



Graph 1.1 Population Size of Addis Ababa
Source: World Population Review
https://worldpopulationreview.com/world-cities/addis-ababa-population

Addis Ababa was founded in 1886 by emperor Menelik II and Empress Taitu Betul. The emperor and his chiefs were the first settlers in Addis Ababa and the area around the palace was surrounded by other city settlers resulting in an organic growth of the city.[4] The victory of the Emperor against the colonial attempt of the Italians in 1896 at the battle of Adwa made the throne settle in Addis Ababa.[5] The city is not only a national capital, but also diplomatic center of Africa hosting headquarters of the African Union, United Nations Economic Commission for Africa and many other international organizations.

SIZE AND DENSITY

The capital city extends over 527 square kilometers of area. The Population dnesity is estimated to be near 5,165 individuals per square kilometer available.[6]

DEMOGRAPHIC COMPOSITION

Half of the population is of the ethnic group Amhara, while the remaining population is split among the ethnic groups Oromo, Gurage and Tigray.[7] Amharic is the dominant language spoken in Addis Ababa more than 71% of the population speaking it.[8] Oromo is in use with just over 10% of the people.[9] The city of Addis Ababa has a higher population of female residents than male residents.[10] Approximately 82% of the population is of the Orthodox Christian religion, 12% of residents are Muslim, 3.9% Protestant, less than 1% Catholic, and a smaller percentage following other faiths.[11]

ADMINISTRATION: KEBELES AND SUB CITIES

With a federal form of government, Ethiopia has nine regional states and two autonomous administrative cities.[12] Addis Ababa is one of the two administrative cities and comprises ten sub cities: Addis Ketema, Arada, Lideta, Kirkos, Gullele, Kolfe-Keranio, Nefas Silk, Akaki Kaliti, Bole and Yeka.[13] The sub cities manage and administer their own matters. The kebeles make the smallest administration unit managing local matters within each sub city. The city administration of Addis Ababa has the responsibility of improving access roads, building communal latrines, public taps, culverts and bridges.[14]

ECONOMIC SITUATION AND EMPLOYMENT

Unemployment in the country is 16.7% and 32% in the capital city of Addis Ababa.[15] Employed individuals have a monthly income that does not exceed $ 68 USD.[16] The dependency ratio is 28% which means that for every employed 10 individuals, three persons of age less than 15 years or older than 65 years of age are dependent on the working individual for their livelihood.[17] The city administration has been trying to reduce the unemployment ratio through government led housing projects like the integrated housing program by increasing job opportunities for micro and small enterprises and unskilled labors.

1.2 URBAN AND ENVIROMENTAL CONTEXT

The urban and environmental context analysis consists of existing data and graphic representation of the physical, urban and environmental conditions of Ethiopia and Addis Ababa: topography, precipitation, dry temperature, population movement, urban expansion of Addis Ababa, city networks, transportation system, green condition, orography and topography, river streams, settlement density and peripheral expansion to give a broad overview of the existing context that are relevant to the subject matter of population growth, rapid urbanization, urban regeneration and housing. The increasing population number and the uncontrolled urbanization rate has an exceptional degree of influence on the natural systems, public and urban infrastructure, physical form, environmental condition and likewise, on the social fabric of the city.

1.2.1 TOPOGRAPHY

The topography and climate condition in Ethiopia greatly varies depending on the altitude and elevation from sea level and consists almost all kinds of landforms: mountains, plateaus, flat lands, and river valleys are the most dominant land features. The topography in the North-West part of the country is elevated higher than other parts of the country mostly constituting the Ethiopian highlands with different climatic conditions. The mountain Ras Dashen has the highest altitude at 4,620 m above the sea level topped with snow. Parts of the country forming the lowlands which are hot all the year are concentrated in the South-East and North-East part of the country sharing borders with Kenya, Somalia, and Djibouti. The Afar depression in the North Eastern part of the country, in the Afar Region is the lowest altitude at -125 m below sea level. Lake Tana, the largest lake, located in the North-West makes the mainstream contributing more than 85% of the Blue Nile river.

(Source - Climates to Travel, World Climate Guide, Retrieved from https://www.climatestotravel.com/climate/ethiopia)

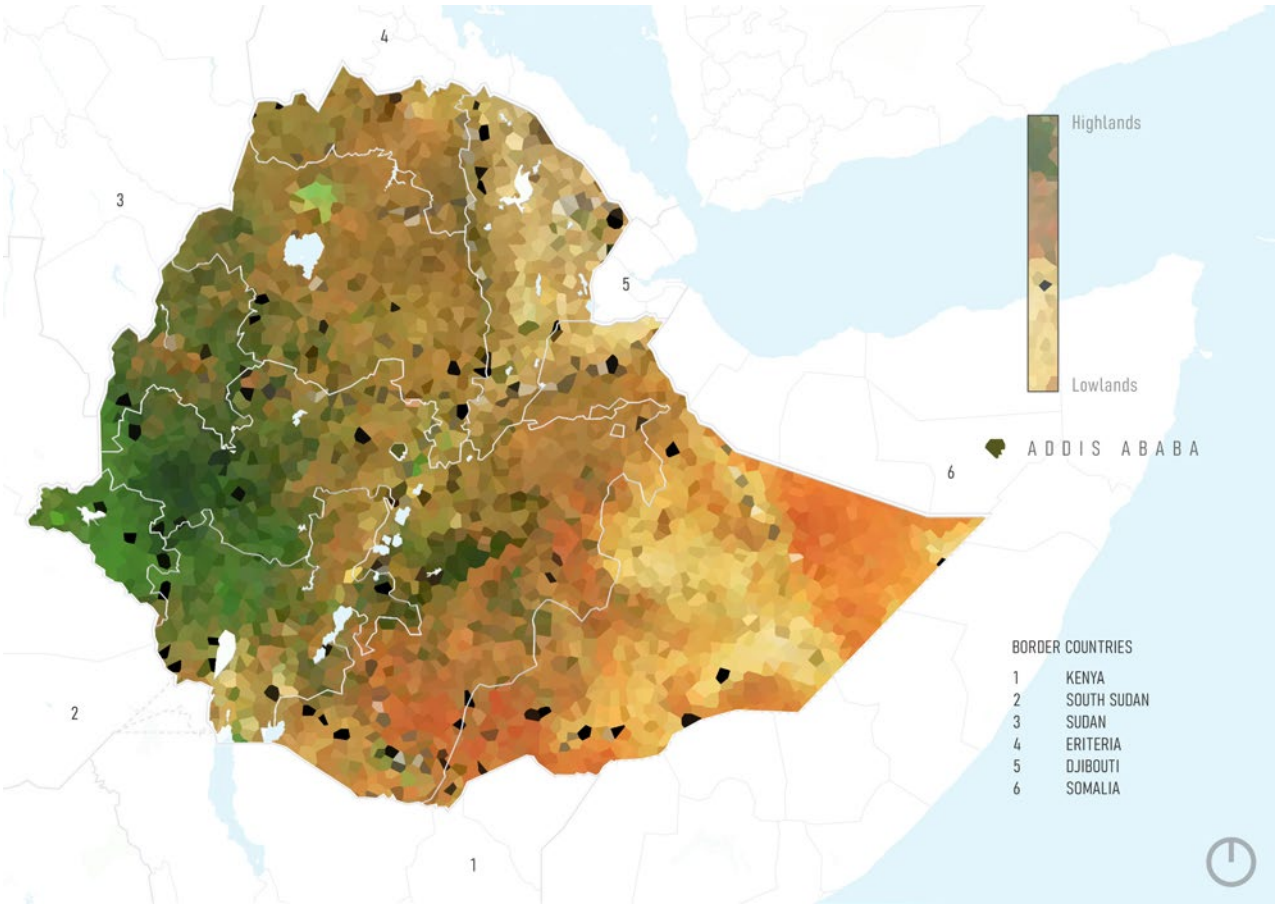


Figure 1.2 - Topographic Nature of Ethiopia
Source: Beken Amde, Self-construct based on Google Maps

1.2.2 PRECIPITATION

Located at 8° 00 N latitude and 38° 00 E longitude in the horn of Africa the climatic condition of Ethiopia has four major seasons; June-August; September-November; December-February and March-May exhibiting the Summer, Autumn, Winter and Spring season of the year, respectively. During the summer season most part of the country experiences their fair share of rainfall and during the winter season the rainfall amount will generally decrease throughout the year. Geographically, the amount of rainfall drops down as one moves from the southwest to northeast part of the country. The exceptions in this case are the lowlands in the Afar region and some parts of the Ethiopian Somalia which are hot and dry throughout the year. Because of the cloudiness and higher altitudes in the north south and northwest part of the country, during the wet summer season from June to August most part of the country receives the highest amount of rainfall ranging from 1,000 to 2,200 millimeters.

(Source - Climates to Travel, World Climate Guide, Retrieved from https://www.climatestotravel.com/climate/ethiopia)

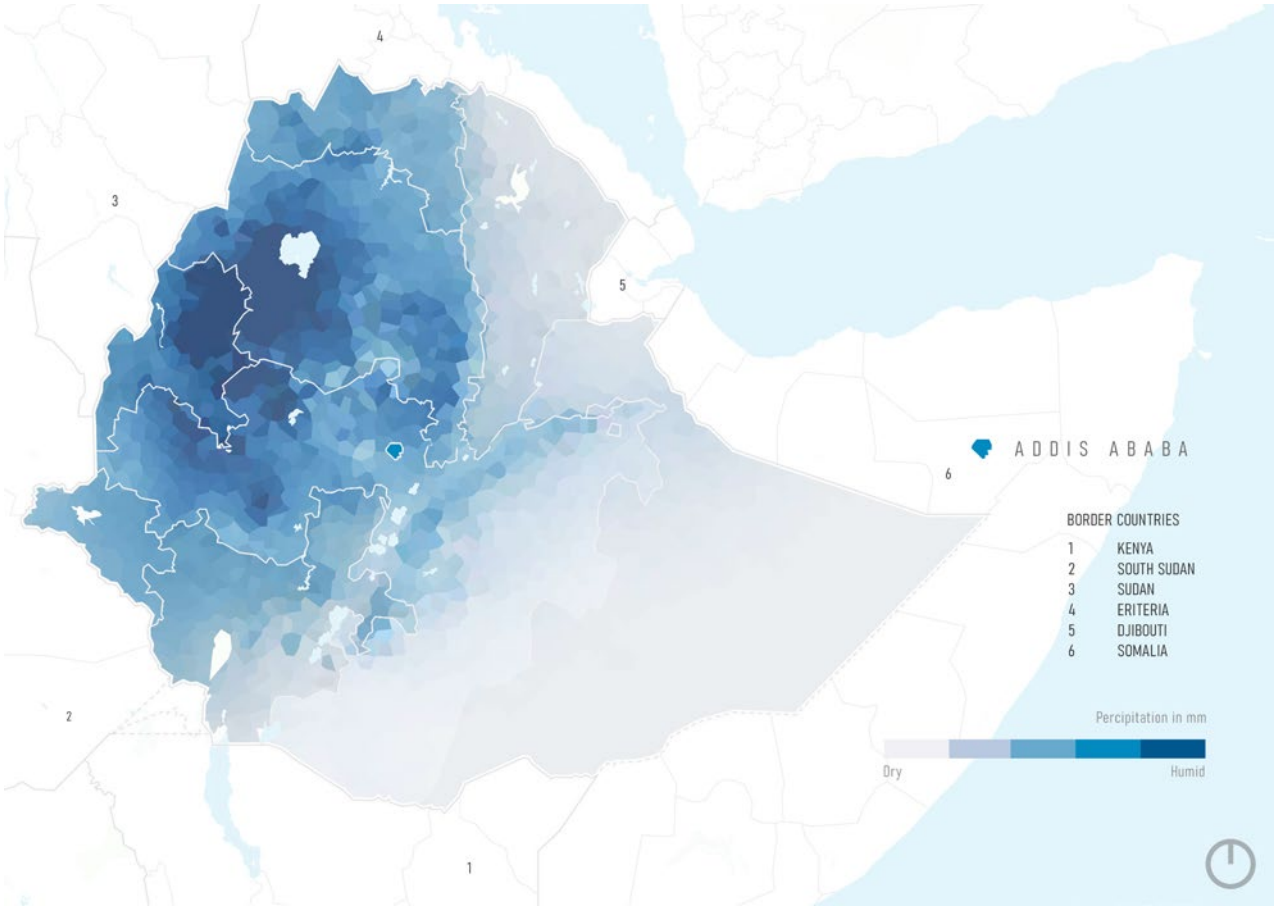


Figure 1.3 - Precipitation in Ethiopia
Source: Beken Amde, Self-construct based on Climate Data

1.2.3 DRY TEMPERATURE

Most of the months during wintertime and autumn with average seasonal temperature as high as 31° and 35° respectively makes the hottest seasons of the year. The climatic condition is peculiar to a particular region and differs according to the topographic nature and landscape form of the region. In the highland regions the temperature is relatively moderate with cool temperature as low as 4°. The temperature sometimes drops to a negative level on the highlands while the temperature in the hot and dry lowlands in the northeast and southeast part of the country becomes unbearable almost throughout the year measuring as high as 40°.

(Source - Climates to Travel, World Climate Guide, Retrieved from https://www.climatestotravel.com/climate/ethiopia)

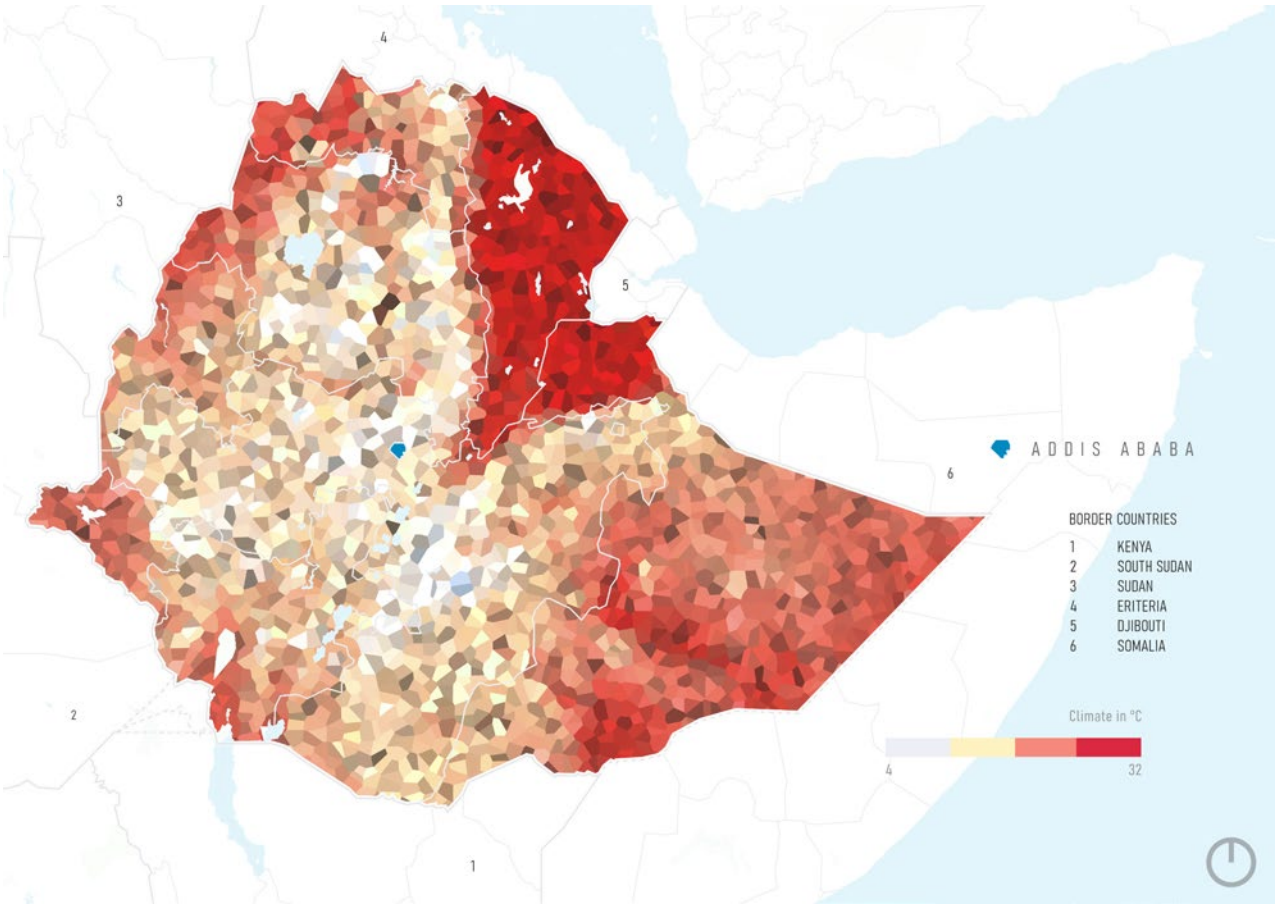


Figure 1.4 - Dry Temperature in Ethiopia
Source: Beken Amde, Self-construct based on Climate Data

1.2.4 DEMOGRAPHIC DYNAMICS

The total population number in Ethiopia is now over the hundred million threshold and more than 80% of this population currently dwells in rural areas. However, this number is expected to drop to 60% percent by 2050 according to the United Nations Department of Economic and Social Affairs (UNDESA) due to the rapid rate of urbanization and rural-urban transformation the country is currently experiencing. The urbanization process in the country is mainly driven by rural to urban migration and the population increase in the rural regions is primarily due to natural fertility rate. Caused by the natural population increase and the economic hardships in the rural areas, the urbanization rate is increasing at an unprecedented level in intermediary cities (in gray cross), regional capitals (in red cross) and the main capital city- Addis Ababa.

(Source - Population Projection of Ethiopia from all Regions at Wereda Level for 2014–2017)

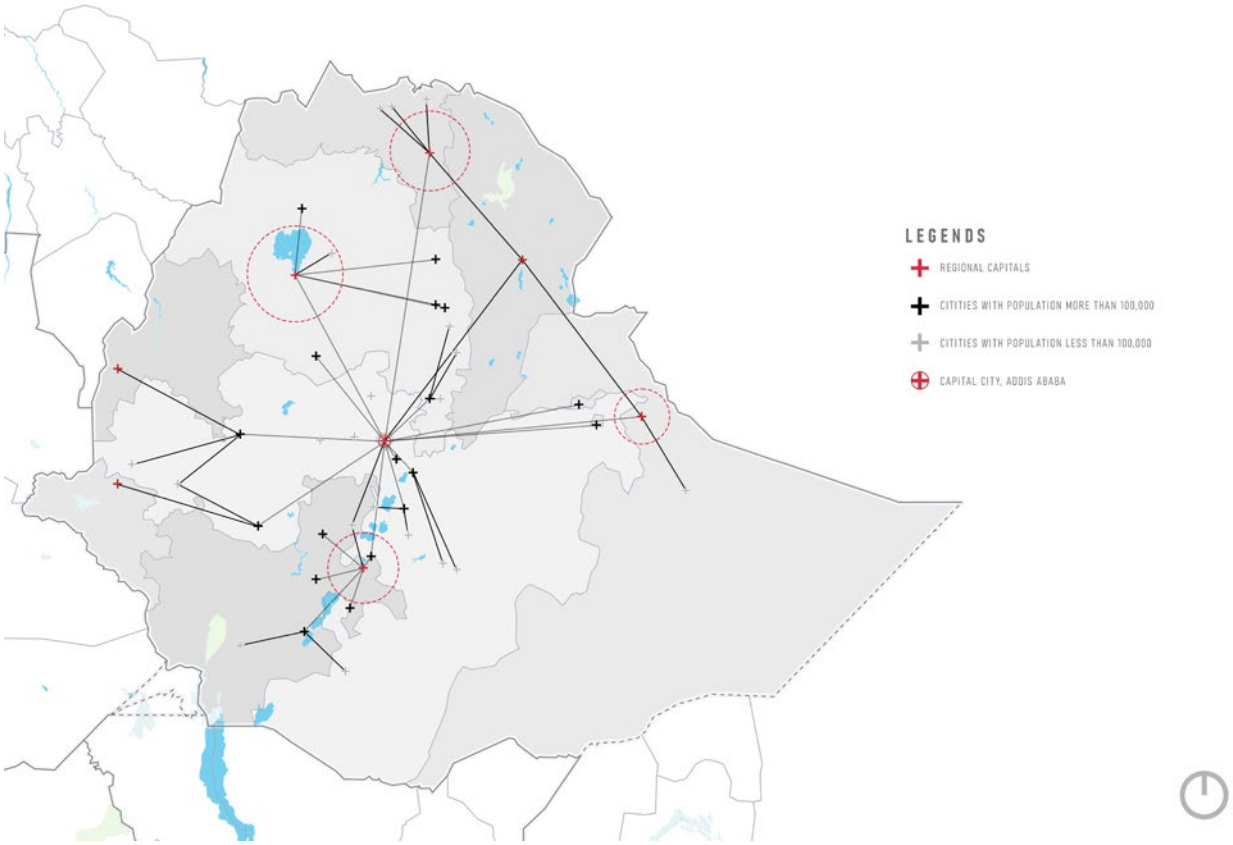


Figure 1.5 - Demographic Dynamics in Ethiopia
Source: Beken Amde, Self-construct based on 2014 - 2017 Population Projection

Much of the intermediary cities (represented in black cross in the scheme on the left) are at the center of the rural urban transformation and the urbanization process comprising essential pulling factors like basic public services and infrastructure: education, health services, economic opportunities which are not easily available in the rural areas. The people tend to move from the intermediary cities and then to the regional capitals (red cross in the scheme) where a relatively better social and economic systems could be found. It is from these regional capitals that the majority of the population migrates to the main capital putting pressure on the delicate and already decaying urban system of the city.

(Source - Population Projection of Ethiopia from all Regions at Wereda Level for 2014-2017)

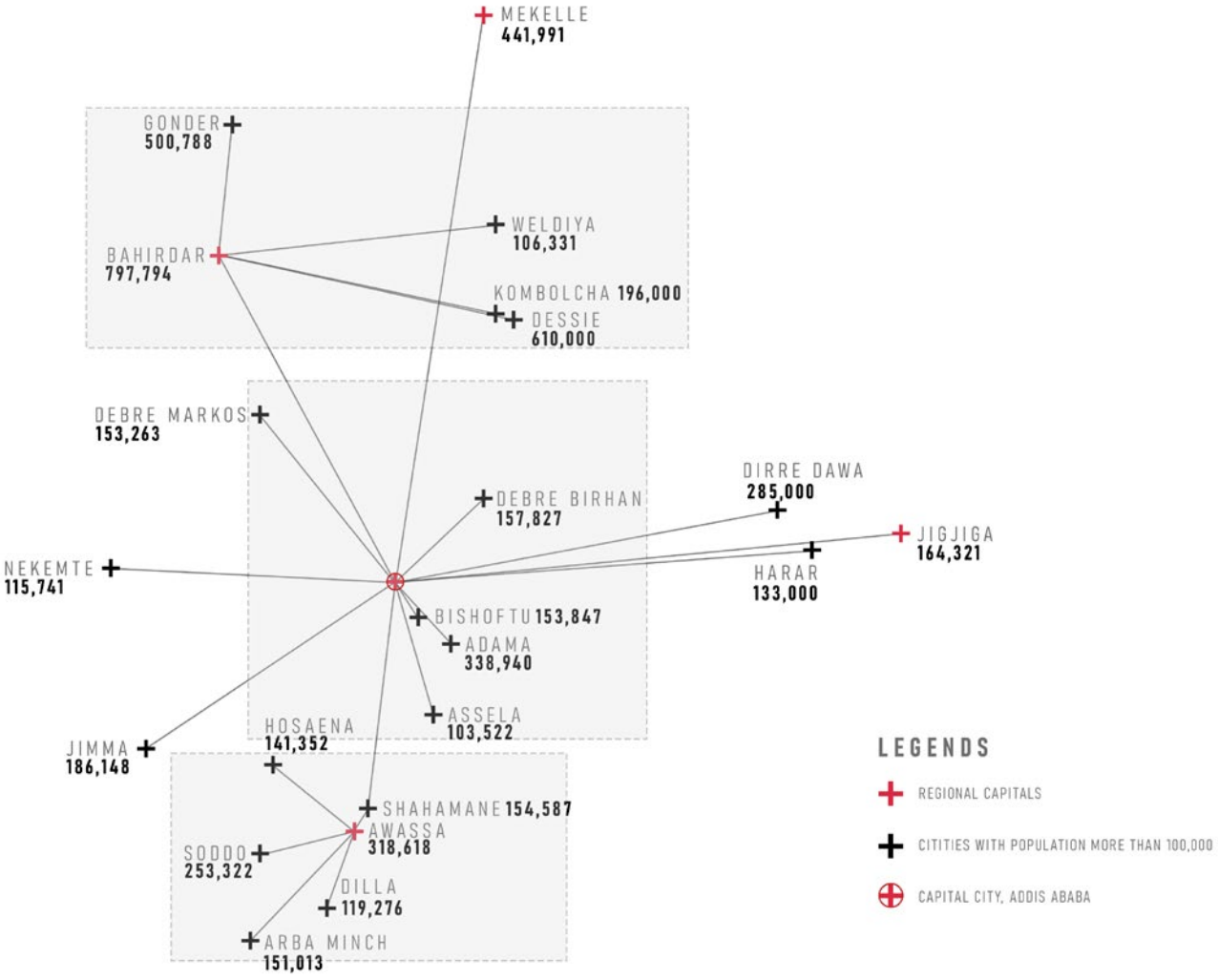


Figure 1.6 - Pattern of Movement and Population Number
Source: Beken Amde, Self-construct based on 2014 - 2017 Population Projection

1.2.5 URBAN EXPANSION OF ADDIS ABABA

located at the geographical center of the country at an altitude of 2,300 meters above sea level, the population number in the capital city, Addis Ababa, has been growing ever since its foundation in 1889. Following an irregular and organic urban growth the rural urban migration contributed to the spike in the population number. As the economic and political capital of the country, the city continued to attract more residents over the last three decades. The urban expansion pattern is dispersed in every direction leapfrogging farmlands, embracing informal settlements, and exhibiting unplanned urban growth.

(Source -MDPI, Urban Expansion in Ethiopia from 1987 to 2017:
Characteristics, Spatial Patterns, and Driving Forces)

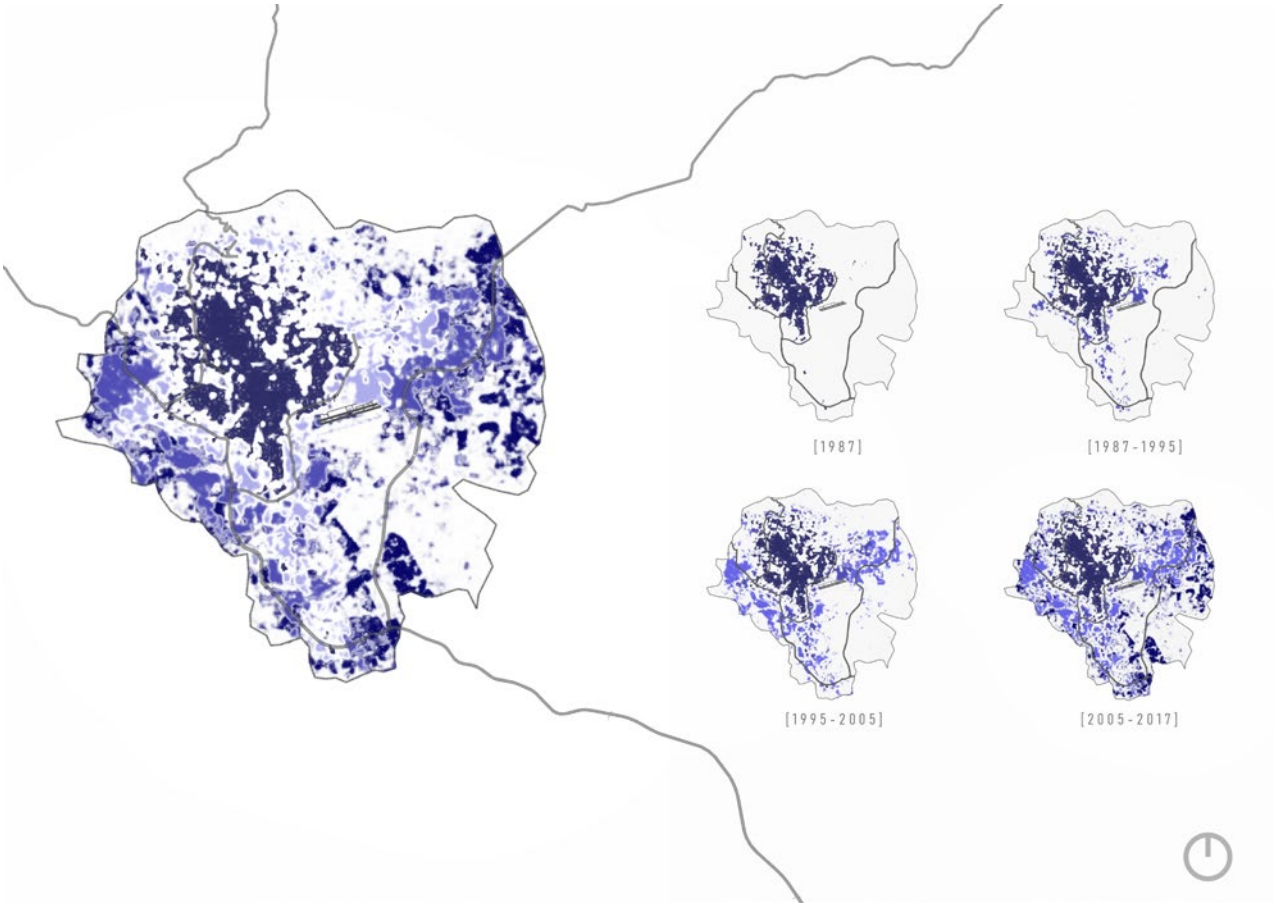


Figure 1.7 - MDPI, Urban Expansion in Ethiopia from 1987 to 2017:
Source: Beken Amde, Self construct based on map from MDPI: Characteristics, Spatial Patterns, and Driving Forces

1.2.6 CITY NETWORKS

Addis Ababa is surrounded by multiple fragments of intermediary cities that continued to grow and expand physically and gradually filling in the land between the cities with housings, transportation infrastructure and industrial buildings in some cases. The capital city has five main urban gateways that connects the city to the surrounding urban areas. Most of the people from these intermediary cities continuously moves to work and live in the capital and residents from Addis Ababa also makes their livings in the intermediary cities taking advantage of their proximity.

(Source -MDPI, Urban Expansion in Ethiopia from 1987 to 2017:
Characteristics, Spatial Patterns, and Driving Forces)

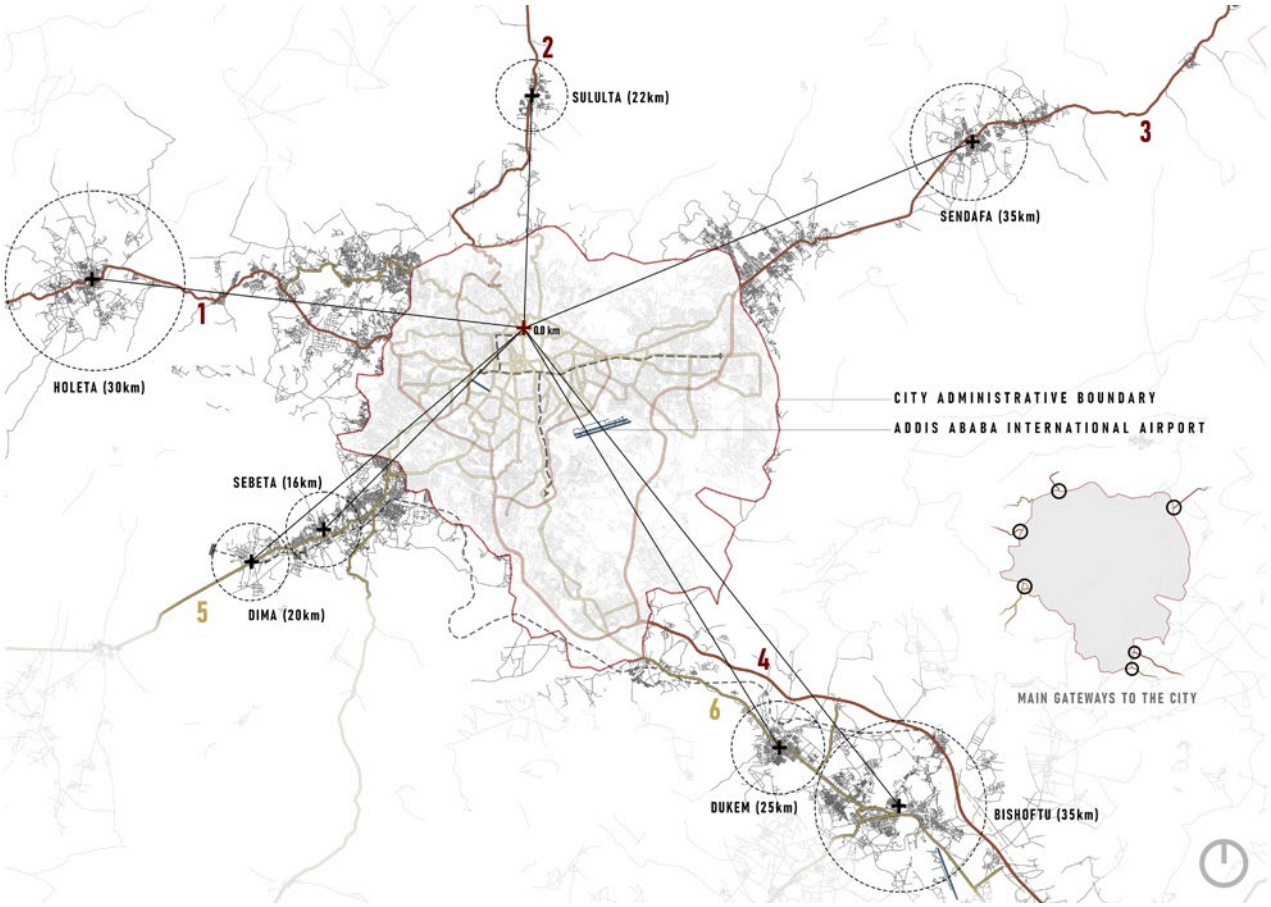


Figure 1.8 - Cities Surrounding Addis Ababa and Main Gateways
Source: Beken Amde, Self-construct based on Google Maps

1.2.7 TRANSPORTATION SYSTEM

Characterized by poor infrastructure network like transportation system the capital city is still one of the most populous cities in Africa. The urban transportation system in the city is comprised of the ring road, primary and secondary streets although the streets do not exclusively host only the vehicles. The streets are also marketplaces for the street vendors without a distinct physical separation between pedestrian walkways and main streets. The LRT (Light Railway Transit) was also integrated to the urban transport system since 2015 running east to west and south to north connecting different parts of the city.

(Source -MDPI, Urban Expansion in Ethiopia from 1987 to 2017:
Characteristics, Spatial Patterns, and Driving Forces)

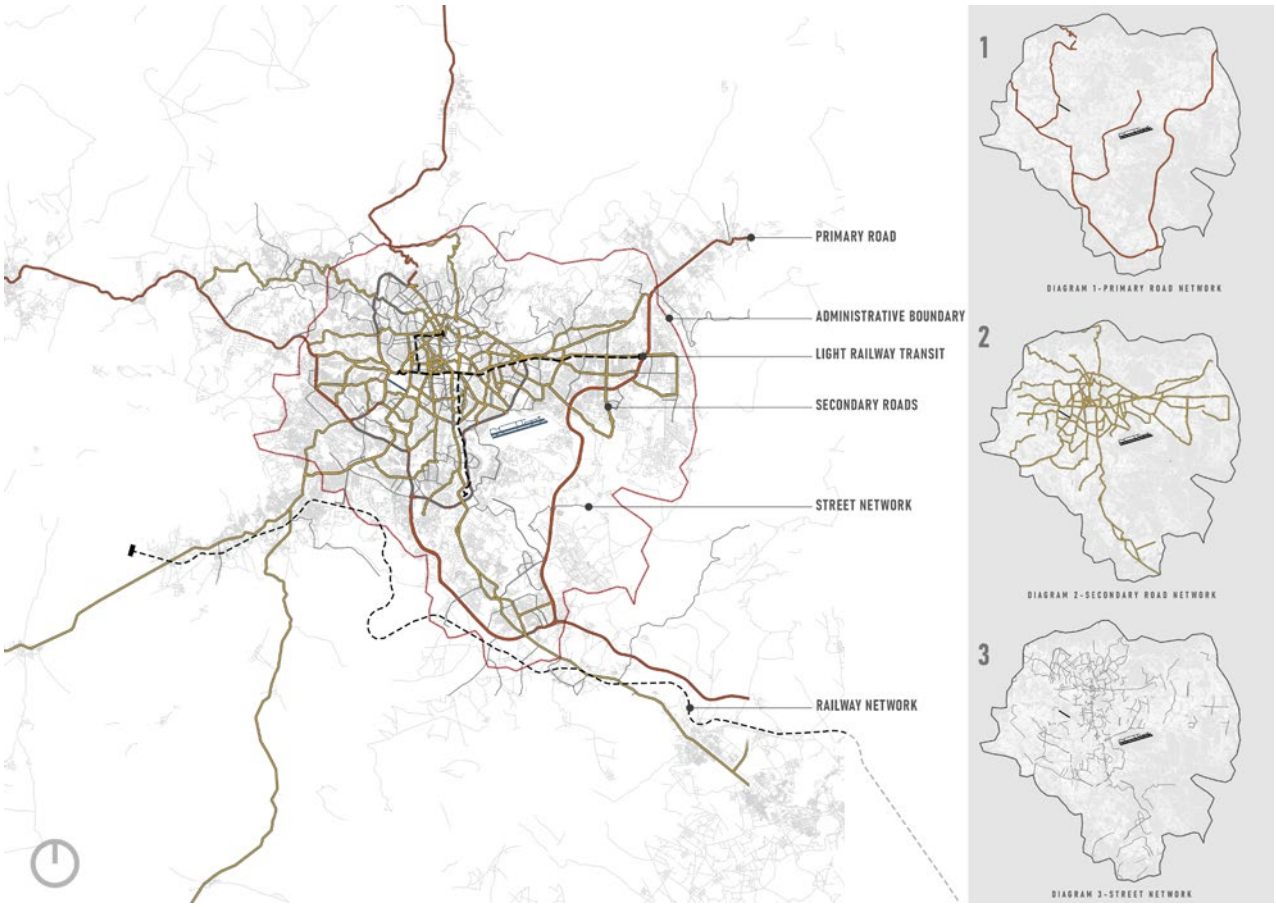


Figure 1.9 - Transportation Networks in Addis Ababa
Source: Beken Amde, Self-construct based on Google Maps

1.2.8 GREEN DISTRIBUTION

The green cover and quality of open landscapes within the city of Addis Ababa has been depilated because of the rapid urbanization and deforestation in the urban peripheries in pursuit of land for agricultural activities and the purpose of land speculation. On top of that, prompted by the social housing expansion projects introduced by the Office for the Revision of Addis Ababa Master Plan (ORAAMP) in 1999, the green areas almost in every direction of the city has been deteriorating contributing to the problem of urban heat island effects coupled with high temperature and abrupt change in the environmental conditions. In the north of the city, the highlands are covered with dense forest and lush green areas. Botanical gardens and public parks are also found in this part of the city.

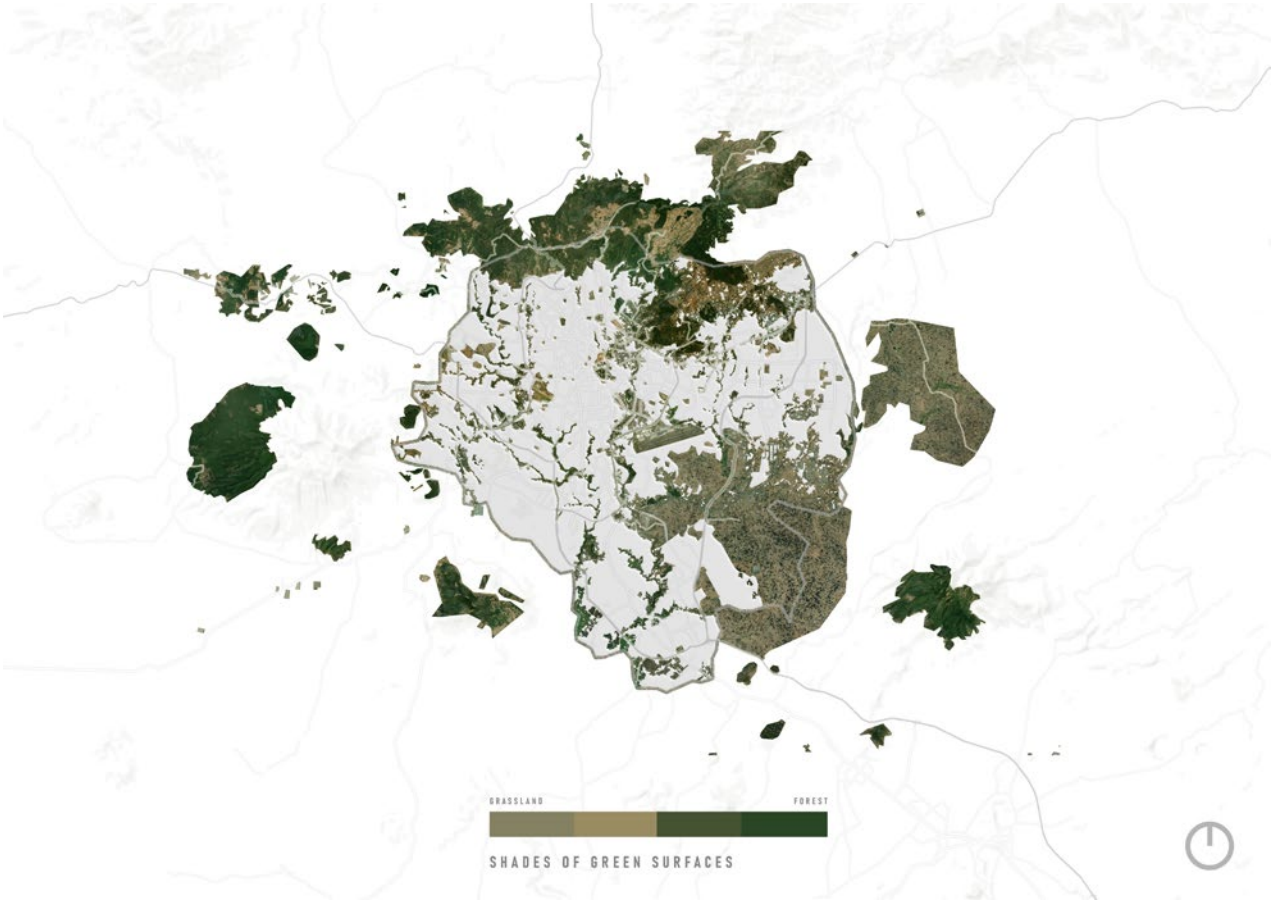


Figure 1.10 - Greenery Distribution in Addis Ababa
Source: Beken Amde, Self-construct based on Google Maps

1.2.9 TOPOGRAPHY AND OROGRAPHY

The climate of Addis Ababa is not the result of only its higher altitude, but also the mountains surrounding the city in four directions has determined the micro climatic condition of the city. The tree covers on the mountains on the north and west of the city has also created a destination area that serves as a national park. The orographic nature of the surrounding landscape and the higher altitude of the city which is between 2000 and 3000 meter above sea level gave the city a warm and temperate climate.

The national parks in the north and west of the city are main destinations for the city residents. There is uneven green cover distribution within the administrative boundary of the city characterized by lack of character, plot boundary and proper management. The city administrative has launched mega projects to improve the green cover of the city creating an urban green networks and corridors along the north south axis of the city. Despite these efforts, In parts of the city where settlements are escalating, mainly in the southeast, southwest and northeast parts of the city, the green coverages are rapidly decreasing.

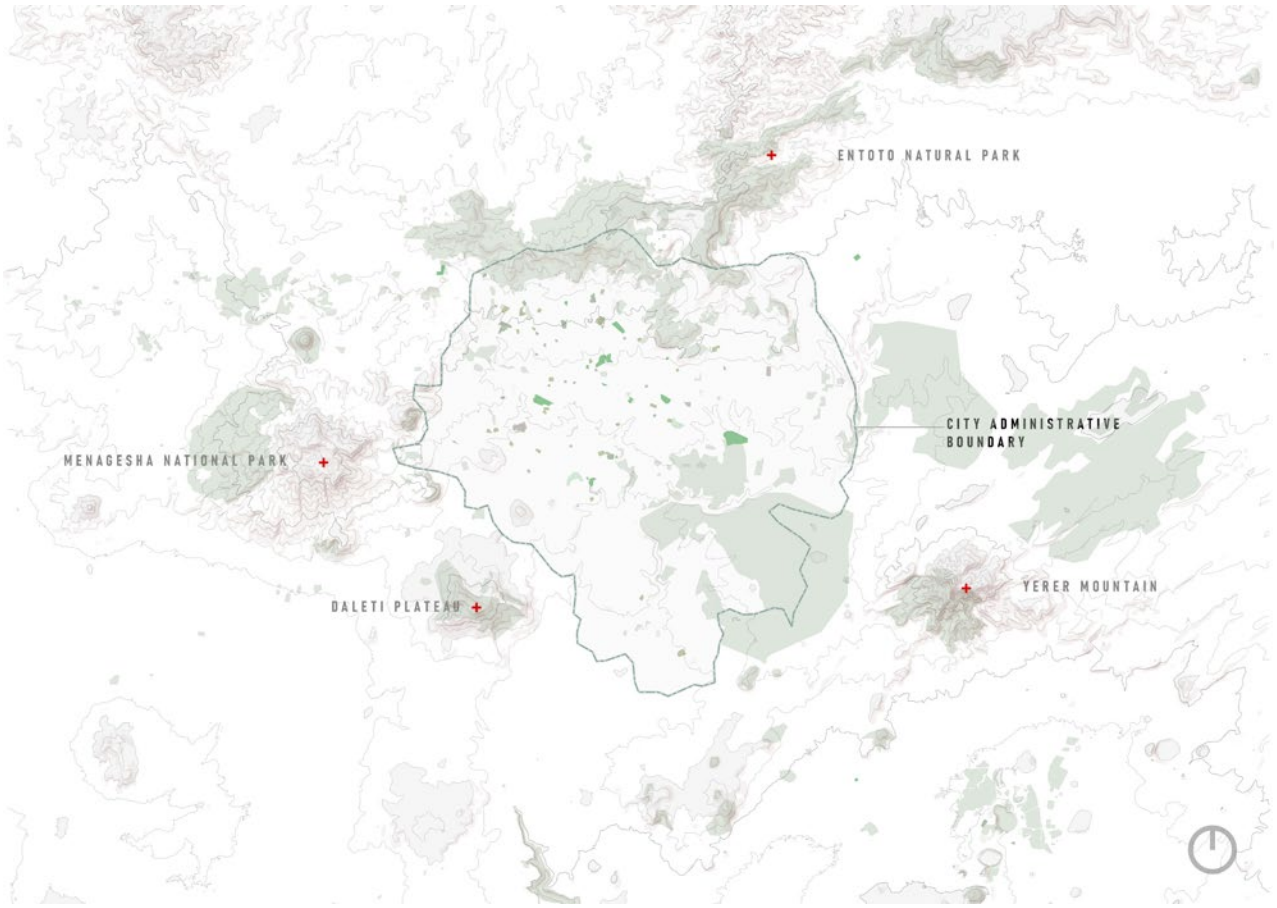


Figure 1.11 - Mountains and Topography Near the Surounding of Addis Ababa
Source: Beken Amde, Self-construct based on Google Maps

1.2.10 RIVER CONNECTIONS

The landscape of the city is featured with a network of rivers crossing and connecting neighborhoods of the city. The water features are already threatened by the effects of the rapid urbanization resulting in urban water pollution and contamination. The riverbanks are main areas for waste disposals coming directly form dwelling units and industries that are built near and around the rivers. The city has two main water reservoirs in the north and the south. The residents travel to the nearby city in the south for leisure activities built around fragments of lakes.

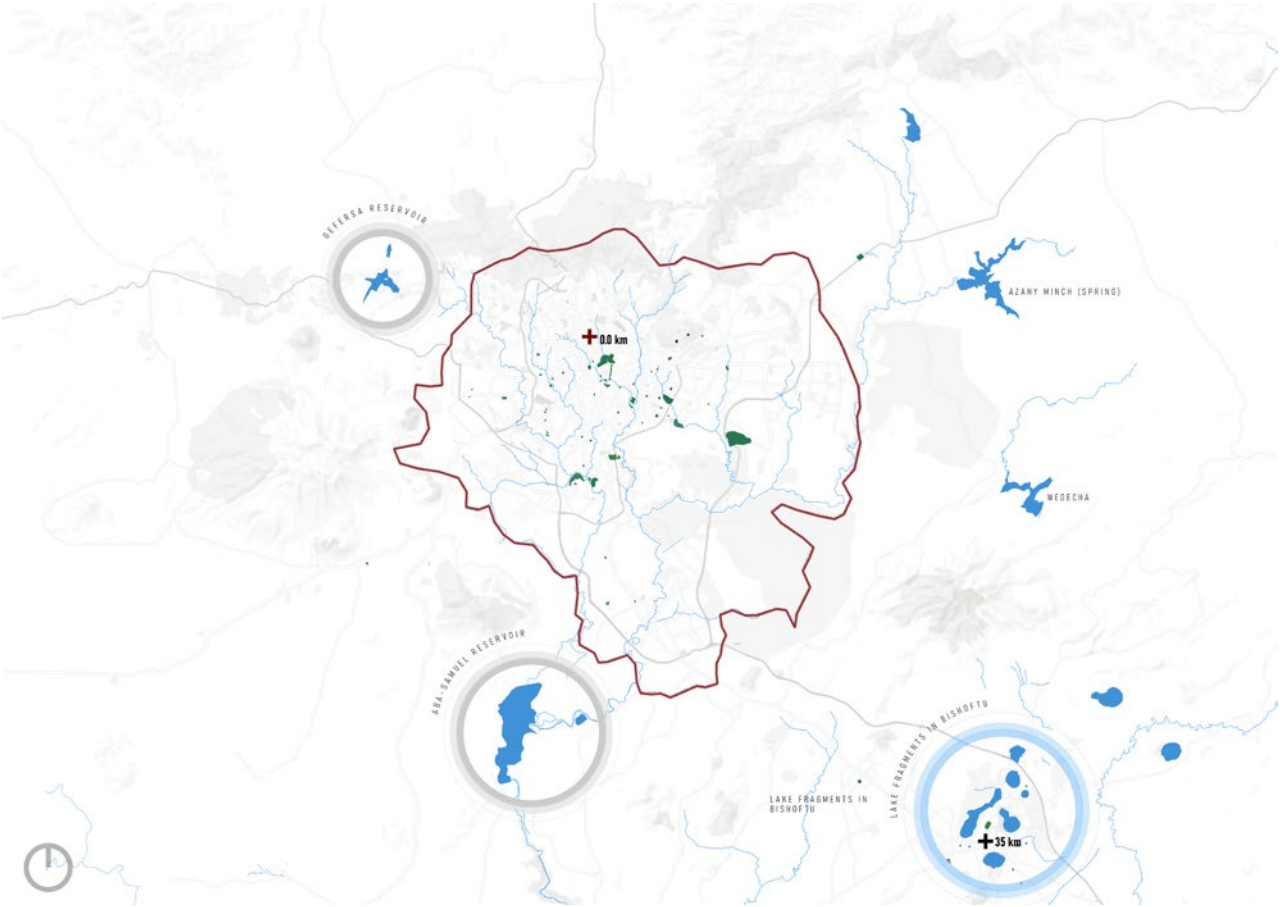


Figure 1.12 - River Connections in Addis Ababa
Source: Beken Amde, Self-construct based on Google Maps

1.2.11 SETTLEMENTS DENSITY

According to statistical data from the World Bank (2019), the number of populations in Ethiopia is estimated around 112,976,188. Least amount of this population lives in urban areas, but a large portion of the urban dwellers resides in the main capital due to uneven distribution of urban areas in Ethiopia. For most of the inhabitants within the city, it is the informal settlements and dense urban areas with the least quality of urban infrastructure that is considered as home. The population density is concentrated following main transportation routes and river streams forming dense settlements. Ironically, the settlement density within the city is much less compared to the population density around the city outskirts expanding much further into the fringe. The density of the buildups following the light rail transit has also been growing with a mix of developments mostly comprised of mixed-use built-up structures.

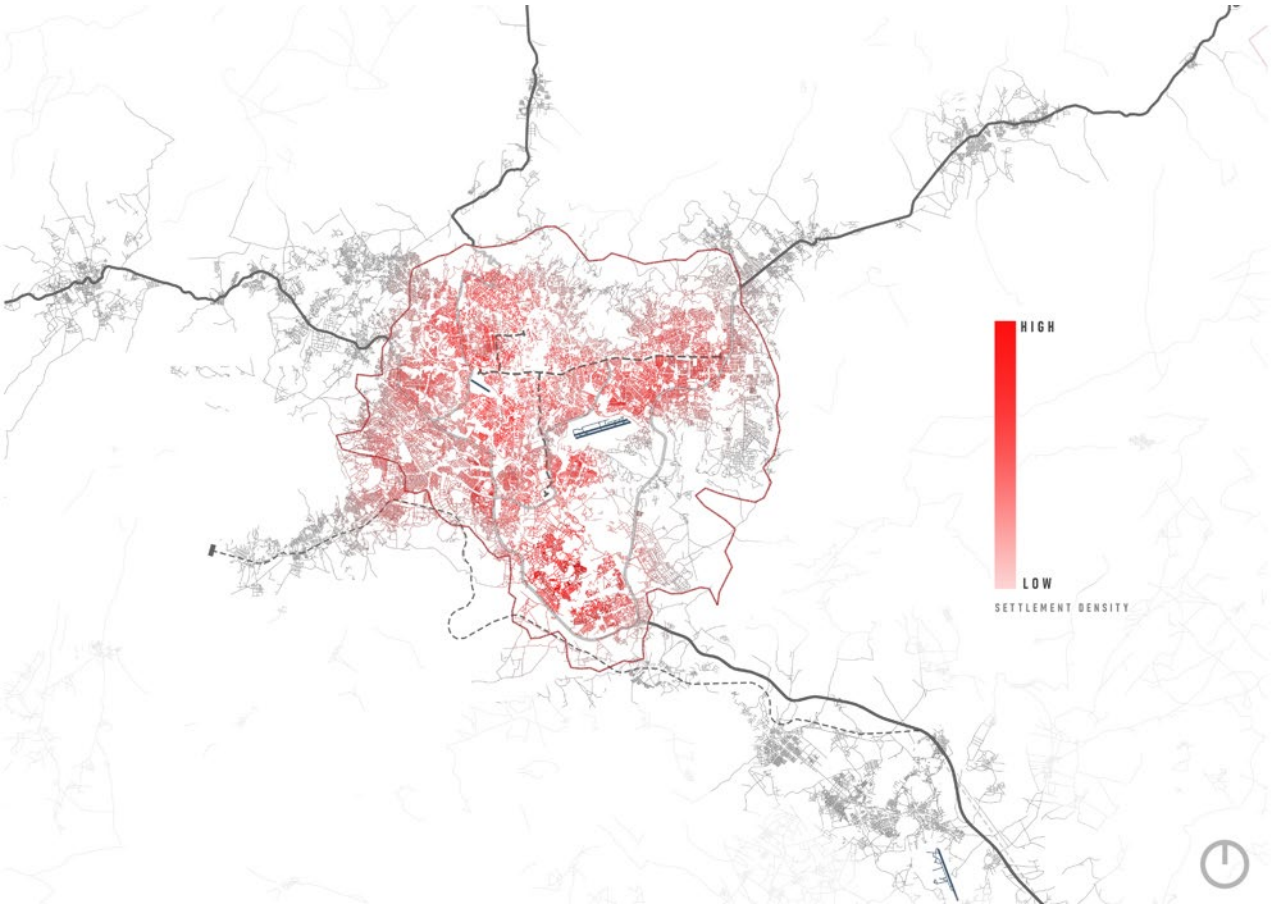


Figure 1.13 - Settlment Density in Addis Ababa
Source: Beken Amde, Self-construct based on Google Maps

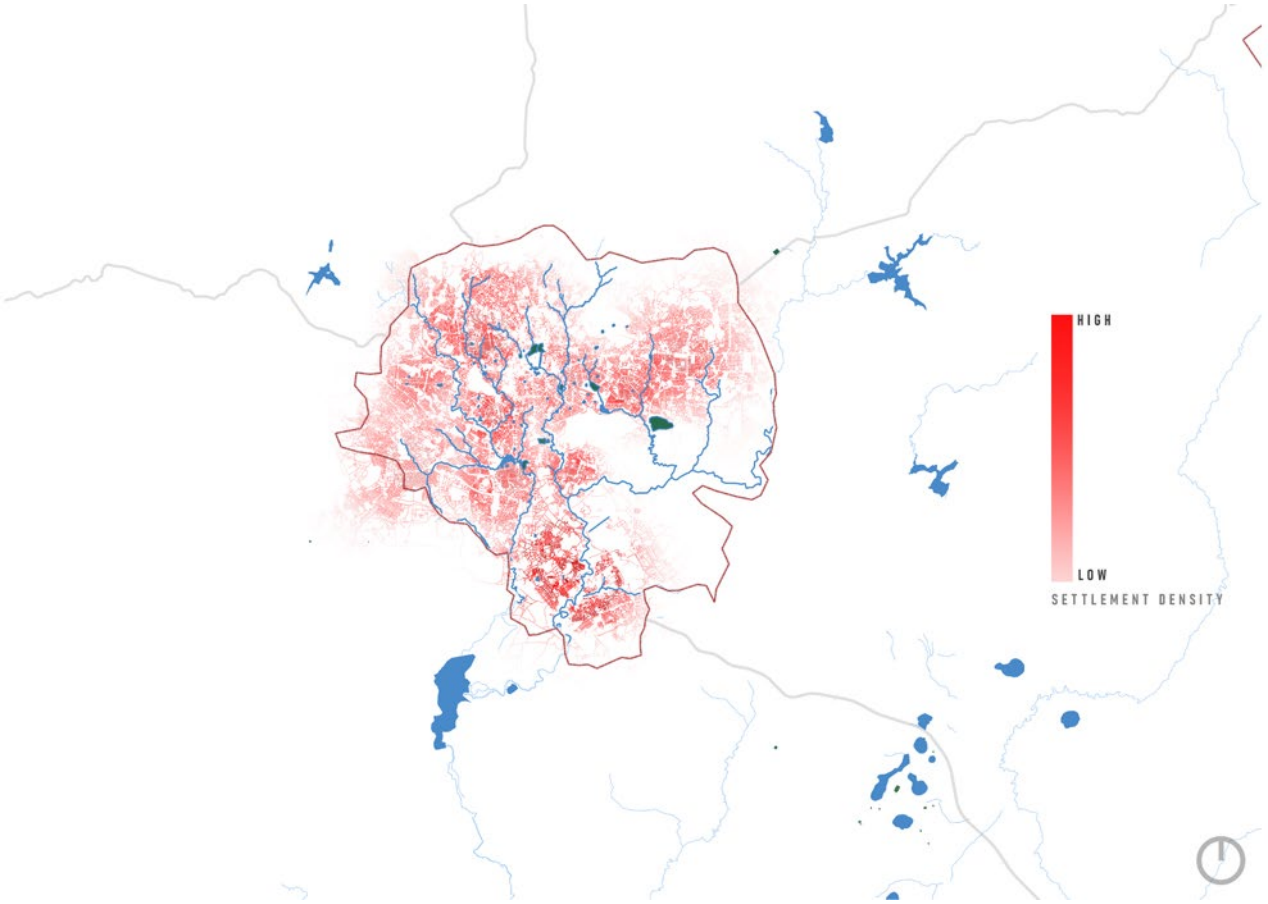


Figure 1.14 - Relationship b/n Settlment Density and Rivers in Addis Ababa
Source: Beken Amde, Self-construct based on Google Maps

Most of the settlements built around the river streams are constructed without any regard or respect to the buffer space near the streams. Open land areas around and along the river streams are the primary targets for illegal land grabbing and informal settlements created by people moving to the city from different parts of the country. The infrastructure systems in these areas are oftentimes inadequate disposing wastes directly into the rivers. The uncontrolled and illegal developments along the rivers created a dense settlement generating a large amount of domestic solid waste disposals dumped into the rivers creating a harmful living and environmental conditions.

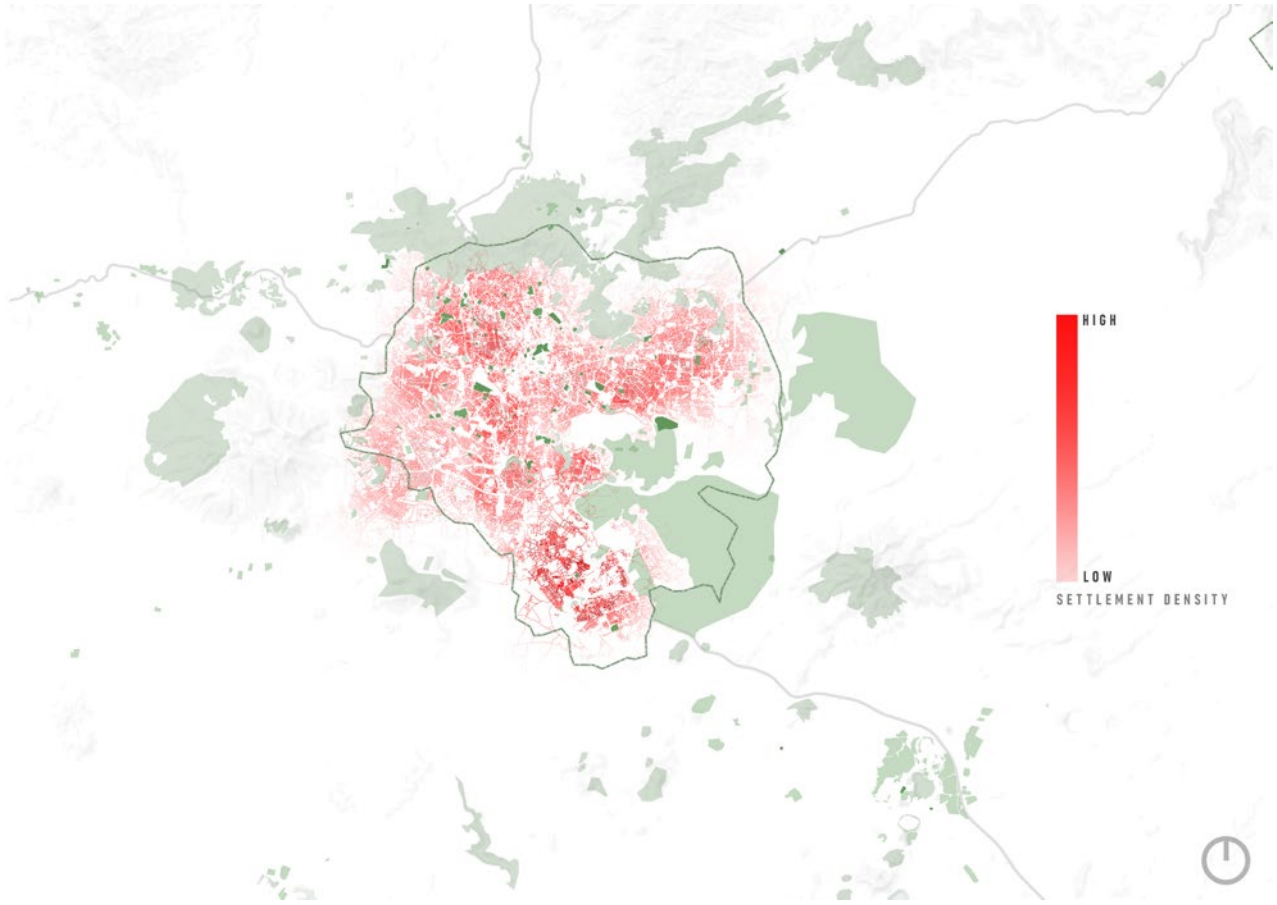


Figure 1.15 - Relationship b/n Settlment Density and Green System in Addis Ababa
Source: Beken Amde, Self-construct based on Google Maps

The link between the green space structure of the city and the settlement density is comparatively damaging if not more when compared to the impacts of the settlements on the river streams. The highlands of the city have favored the expansion of the urban population resulting in environmental degradation of unoccupied green spaces. The pattern of the existing green system within the city, however, is scattered and uneven and lacks any form or elements that characterizes a quality green public space. As the settlements continue to grow in size and density, the negative consequences of these physical expansions on the urban green areas continued to put even more pressure on the wellbeing and health of the general population.

1.2.12 PERIPHERIAL EXPANSION

The phenomenon of rapid urbanization in Addis Abba is physically perceivable through the expansions underway on the city outskirts following the main roadways that connects the city to other parts of the country. This physical growth and horizontal expansion of the city is not limited within the administrative boundary of Addis Ababa as the urbanization is stretching out to the surrounding cities sometimes even with disputes and political conflicts over land ownership between the Addis Ababa city administrative and regional governments. Protests and oppositions claimed over 140 lives when the city announced a new masterplan in 2016 to expand the capital into the surrounding farmlands. Land ownership in the city outskirts is often a delicate and sensitive political issue.

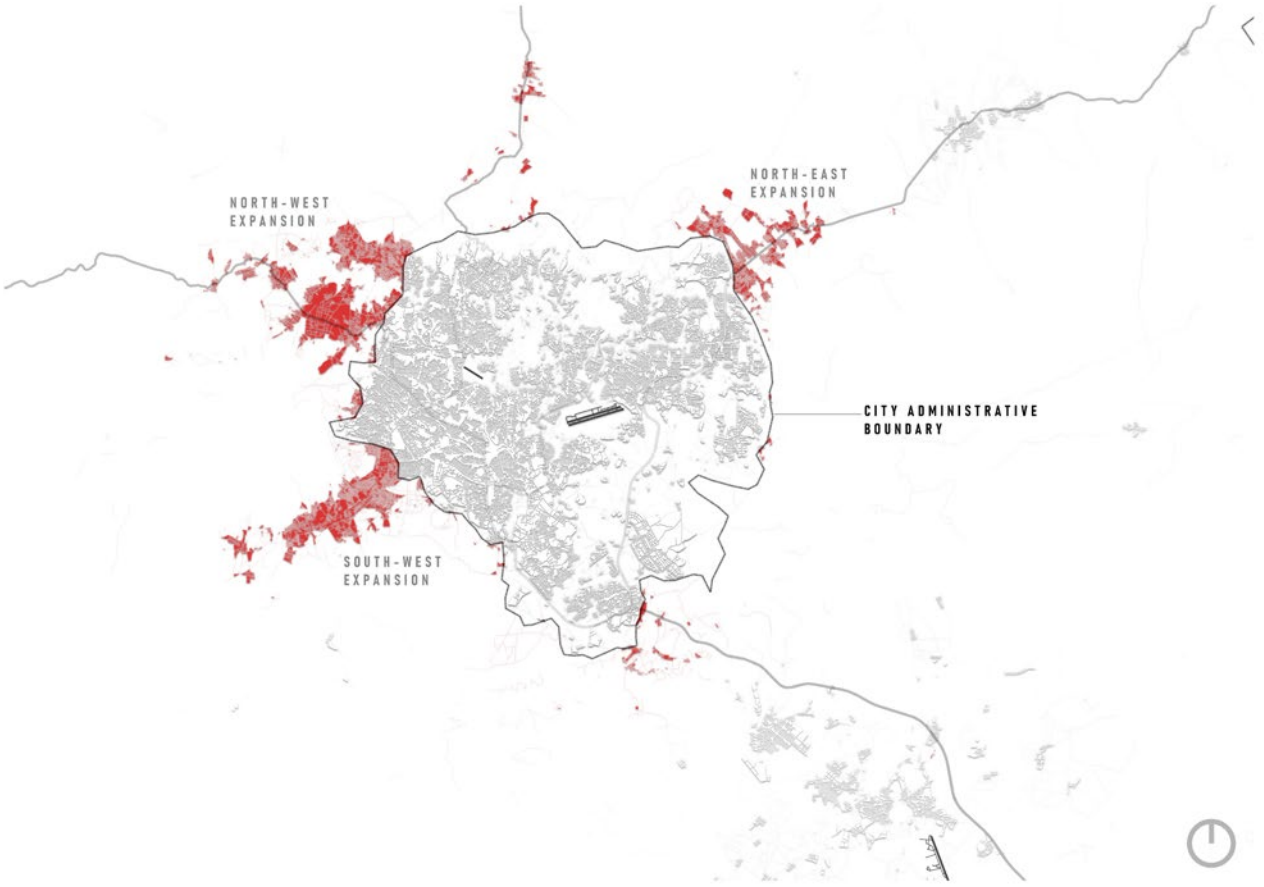


Figure 1.16 - Peripherial Expansion of Addis Ababa
Source: Beken Amde, Self-construct based on Google Maps

Figure 1.17 - Open Lands Within City Administrative Boundary of Addis Ababa
Source: Beken Amde, Self-construct based on Google Maps

The issue of informal and uncontrolled land sprawl in the peripheries and city outskirts could be addressed if the open and usable lands within the administrative boundary of the city are put into use with a proper urban planning and design that entails a socially inclusive and politically correct land management. Much of these urban land sprawls are driven by the need for housing and the government's attempt and advocacy for housing projects in the fringe areas of the city has rather been part of the problem than the solution. An architecture and urban design of a housing complex in the most inner part of the city, could set the direction for change creating a dense urban character, well connected to quality green public spaces, embracing the strong sense of community that the city residents are used to.

ENDNOTES

[1] Central Statistical Authority and United Nations Population Fund (2008). Ethiopia, Summary and Statistical Report of the 2007 Population and Housing Census, Population Census Commission. UNFPA.

[2] ibid

[3] Ministry of Works and Urban Development (2008) Integrated Housing Development Programme of the Federal Democratic Republic of Ethiopia. African Ministerial Conference on Housing and Urban Development, AMCHUD, Abuja, Nigeria, 28-30 July 2008, p.2.

[4] Fasil Giorghis and Denis Gérard, "The City & Its Architectural Heritage: Addis Ababa 1886-1941 La Ville & Son Patrimoine Architectural" Addis Ababa: Shama Books, 2007

[5] Dirk van Gameren and Anteneh Tesfaye Tola, A city shaped by diplomacy: The case of Ethiopia's capital Addis Ababa, Architecture beyond Europe, 2017

[6] World Population Review (2019). Retrived from https://worldpopulationreview.com/world-cities/addis-ababa-population

[7] ibid

[8] ibid

[9] ibid

[10] ibid

[11] ibid

[12] UN HABITAT, United Nations Human Settlements Programme, Addis Ababa: Urban Profile, 2008

[13] ibid

[14] ibid

[15] Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, World Population Prospects: The 2008 Revision and World Urbanization Prospects: The 2009 Revision

[16] UN HABITAT, United Nations Human Settlements Programme, Addis Ababa: Urban Profile, 2008

[17] ibid

2 PROBLEM STATEMENT AND RESEARCH QUESTION

2.1 THE ZERO SUM OUTPUT

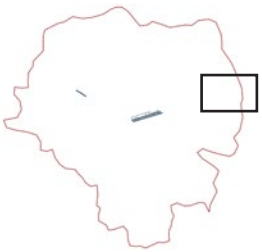
Addis Ababa, the Ethiopian capital, since the last two decades, has been through an unprecedented urban transformation process, in which the development efforts of the city aspired to cater positive changes for the masses through the major projects from the major social housing scheme, which is ongoing since 2000 to the most recent LaGare project - 36 hectare urban regeneration. These grand projects aimed to reboot overly crowded and derelict neighborhoods of the city to turn them into a new livable environment as a way of response to solve the housing shortage problem and rescue a city that is struggling to accommodate its growing population.

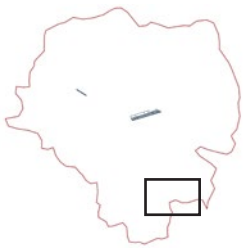
The latest urban regeneration projects are, however, different from the past urban redevelopment programs. For instance, the condominium social housing project which was advocated by the Addis Ababa city administrative almost 20 years ago, with an extreme marginal approach, this redevelopment scheme assumed to clear land within the city centers for new commercial developments by raiding, evicting and rehousing area residents to the city outskirts. This government led initiative failed to recognize and keep the unique social and economic character and networks of the dislocated communities. In the contrary, recent urban regenerations like the LaGare redevelopment project, opted to keep area residents and put emphasis on the quality and economic benefit of the new physical environment but with threats of increasing housing price of the apartments to be added to the city's skyline that would be a pushing factor for residents to move out of the inner cities.

While such kinds of regeneration schemes are struggling to bridge the housing demand and accommodate the urban transformation, great percentage of the population in Ethiopia are still continuously moving to the capital increasing the problems associated with rapid urbanization. The urban regenerations that are trying to meet the housing demand have to put emphasis on building communities and not only physical infrastructures to comprehensively manage the growing number of populations. The social, economic and environmental values of urban regenerations can actually translate into an architectural and urban form that can be an appropriate solution to the issue of housing that unfortunately is being intensified by the facts of rapid urbanization.

Image 2.1 - Condominium Expansion in north east of Addis Ababa

Image 2.2 - Condominium Expansion in south of Addis Ababa





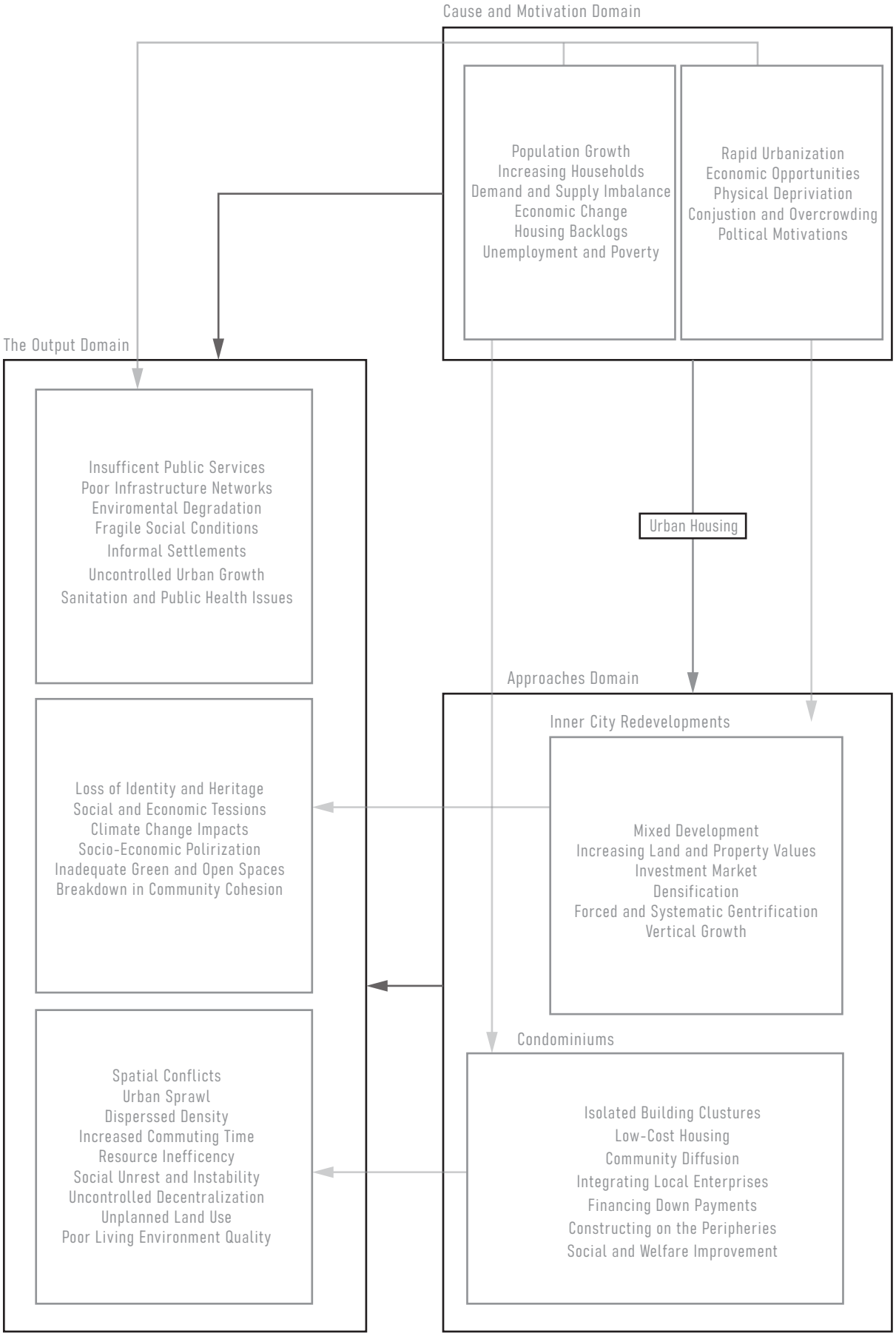


Diagram 2.1 - The Zero Sum Cycle

2.2 PROBLEM STATEMENT

Housing crisis is one of the inevitable effects of rapid urbanization. Due to the huge increase in population number, in Addis Ababa, it still is and has proven to be a challenge to sustain the growing population through adequate housing. The urban regeneration efforts made in different times to meet the demand for housing are forcing residents in the urban centers to move to the outskirts of the city. The systematic gentrification combined with the uncontrolled speed of rural urban migration contributed to a large extent to the increase of urban sprawls in the fringes.

The urban sprawl in the peripheries propelled by the low density public housing condominium blocks, has caused interspatial conflicts over complicated land ownership issues and have overlooked the needs and desires of local communities. These standalone housing blocks on the outskirts are often built in rural settings on scattered meadowlands with insufficient and ineffective urban infrastructures, increasing threats on the environment, creating unhealthy social and economic conditions, and putting strain on the fragile ecological system of the surrounding area.

2.3 THE OPPORTUNITY LOOP

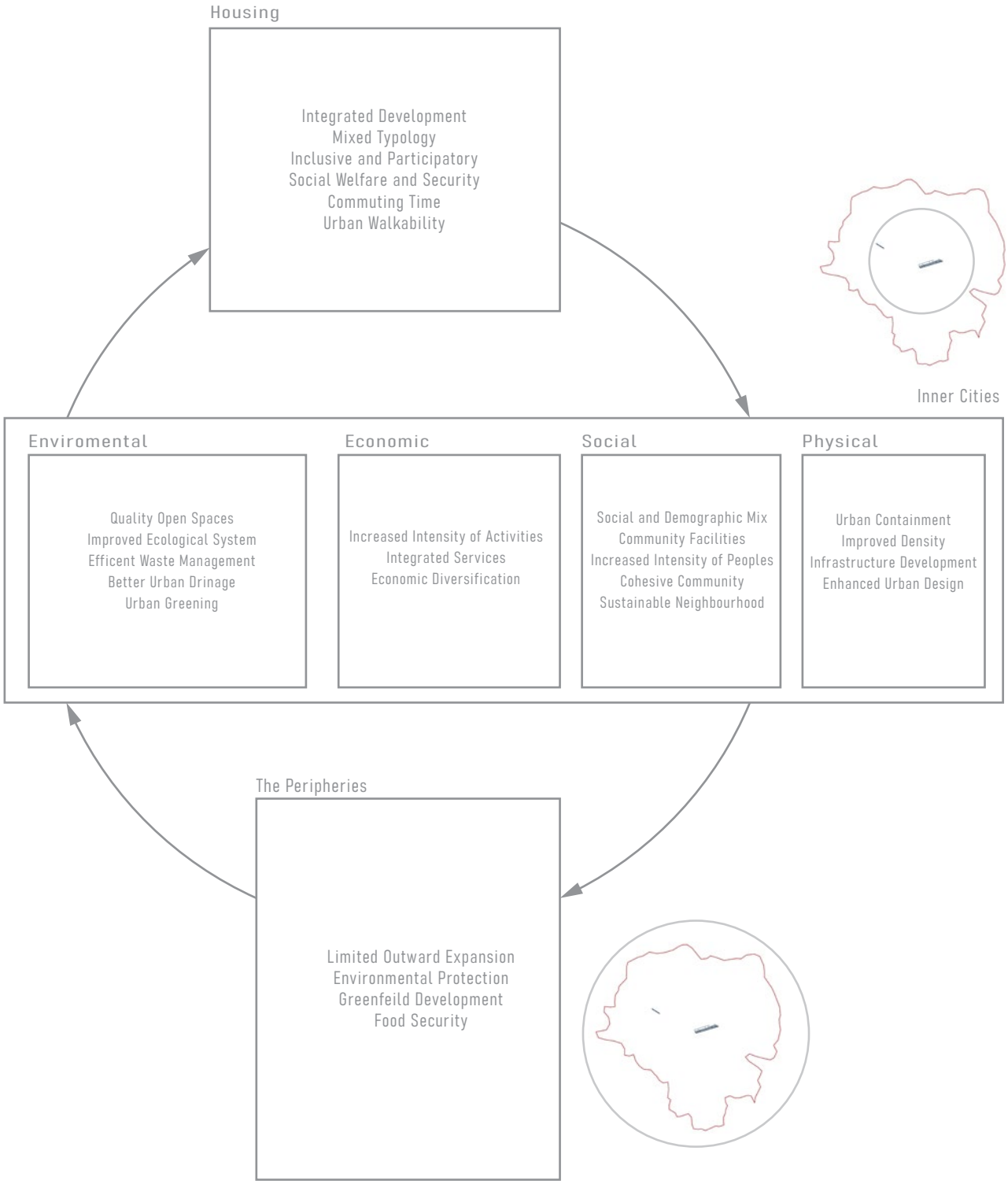


Diagram 2.2 - The Opportunity Loop

2.4 RESEARCH QUESTION

There is a clear correlation between the current urban redevelopment approach being implemented to regenerate urban centers and the increasing level of urban sprawls in the city outskirts. To address the most fundamental issue in the face of rapid urbanization - housing, the regeneration and redevelopment schemes did not only focus on building more social housings on the city outskirts, but also removed people from the urban centers to rebuild the physical environment with new commercial development programs. Residents from the urban centers continued to sprawl out because of gentrification to be rehoused in social housing condominiums in the outskirts and due to the increasing housing price in the new redevelopment areas.

Housing led urban regenerations can create urban centers which promotes density and efficient use of urban resources in redevelopment schemes that can potentially be an antidote to the problems of the prevalent out sprawls in the peripheries of Addis Ababa. Solutions and explanations to issues related to population growth cannot, however, be encapsulated only within urban areas. But the question how inner cities can mitigate the impacts of rapid urbanization through housing can be explored to revitalize urban areas and avoid the contradictions of moving peoples to the outskirts to seize land for regeneration developments within the city centers. This quest can be summarized with the question: how can a housing in the inner city be responsive to rapid urbanization without compromising environmental conditions and social values?

2.5 OBJECTIVE AND STRATEGY

The current rate and volume of urbanization is the prime cause of the complex and diverse range of social, economic and environmental problems prevailing in Addis Ababa. Urban regeneration as a comprehensive redevelopment model, however, can be disposed to suggest a mechanism to respond to these wide range of issues related to rapid urbanization. Among the most prevalent and urgent issues, the rate and scale of urbanization have exerted a significant influence over the problem of housing. Although the responses made to this challenge varied in time and approach, most of the attempts and efforts failed to duly consider the living culture, environmental condition and collective need of the inhabitants dwelling in a growing city like Addis Ababa.

The loopholes in these urban redevelopment schemes focused on housing can be exploited to have positive impacts in the revitalization process to create an urban center that is inclusive, dynamic, mixed and environmentally sustainable. Planning and design of housing operating in urban centers maximizing density and proximity can enhance spatial norms that characterize an area hosting complementary socio-spatial and socio-economic activities. Providing a compact housing scheme integrated with public and semipublic spaces can further induce these interactions and create socially just community engagement. The planning and design should also achieve flexible spaces combined with a mix of economic and cultural activities for social gatherings and public events which are inherent in Ethiopian social life. Sufficient green spaces in such developments are also a decisive factor in determining the quality of the living environment. Therefore, its essential to provide greeneries in different scale and varied amenities integrated with the dense and low rise housing scheme to be proposed.

Diagram 2.3 - General Approach and Strategy

To appropriately address the implications of rapid urbanization from the housing perspective and take the strain off the social and environmental systems, the regeneration scheme should put focus on the inner cities. Concentrating the housing development within an urban center in an approach reverse to the condominium developments on the peripheries can result an increase in the intensity and activities of people creating an economically and socially active neighborhood. Designed around the themes of connectivity, density and environmental sustainability, the housing model can effectively play a significant role to proactively respond to the impacts of population growth and rapid urbanization.

3 HOUSING AND URBAN REGENERATION IN ADDIS ABABA

3.1 HISTORY OF HOUSING IN ADDIS ABABA

INTRODUCTION

A research conducted by Urban and Regional Planning Program, University of Michigan in collaboration with Ethiopian Institute of Architecture, Building Construction, and City Development (EiABC), in 2019 compared the type and distribution of land uses in Addis Ababa, Ethiopia, between 2006 with 2016. The study revealed that overall density has decreased from 109 people/ha to 98 people/ha while the residential density has increased since land occupied by residential housing increased from 33% to 39% between 2006 and 2016.[1] According to the study, the occupation of highrise condominiums in residential areas in 2006 was only 1% and the development of higher density residentials was concentrated in the eastern edges of the city.[2] This section explores the evolution of housing overtime in Addis Ababa where the overall density has decreased due to the increasing consumption of land as a result of population growth.[3]

HOUSING UNTIL 1974

Ethiopia had an imperial ruler until 1974 and the country has never experienced colonization except the occupation of the Italians from 1935 to 1941. The urban planning system of colonized countries usually reflects the planning system of the colonizers with formal physical and spatial organization due to their long occupation period.[4] In contrast to other colonized African countries the effects of the Italians occupation on the physical form of the east African city, Addis Ababa was limited and partly explains why organic street network and informal housing is dispersed throughout the city.[5] During the imperial time housing supply was led by landowning elite with less than 1% of the population owning more than 70% of the arable land, on which 80% of the peasants were tenants.[6] 58% of the land in Addis Ababa was owned by only 1,768 individuals, leading to 55% of housing units being rental housing.[7]

HOUSING FROM 1974 – 1991

In 1974 'Derg' a military junta overthrow the imperial regime and formed a new government and nationalized all privately held land.[8] In July 1975, Proclamation No. 47: 'Government Ownership of Urban Lands and Extra Houses' nationalized all urban land as part of its socialist manifesto.[9] The new government established two new typologies in the housing sector: Government-owned rental Housing, administered by the Agency for the Administration of Rental Houses, and Kebele Housing managed by Kebele Administration units, the smallest government administration unit, operating at the neighborhood level.[10] As a result of the nationalization policy, housing rents decreased significantly, and housing stock possessed by the government increased.[11] During this time approximately 60% of housing in Addis Ababa was rental accommodation and kebeles accounted for 93% of this rental accommodation.[12] The nationalization subsequently resulted in poor housing conditions in the center of Addis Ababa leading to deterioration of housing quality due to the lack of investment in improvements and new housing.

HOUSING AFTER 1991

The 'Derg' military regime was overthrown by the Ethiopian People's Revolutionary Democratic Force (EPRDF) in 1991. When taking power, the EPRDF continued the land policy of state ownership of its predecessor but retreated from housing provision.[13] In its early government terms, the new administration made efforts to address the issue of housing in Addis Ababa first by discouraging in-migration to Addis Ababa through a rural development policy named Land Reform Programme introduced in 1994 which encourages in migrants to move to one of Ethiopia's secondary cities.[14] The second effort made was advocation of a housing oriented development program in which the government pulled back as a major provider of housing and let the private developers take the leading role.[15] However, despite the provision of land for new developments and financial subsidies by the government, due to the state controlled land management and limited private investment in low cost housing, the new government failed to fulfill the demand for both the amount and quality of housing.[16] In 2003, 34.1% of Addis Ababa's housing stock was composed of informal housing.[17]

In 2005 the Addis Ababa city administration initiated a government led housing program that has evolved over time from a Low Cost Housing (LCH) to a large scale housing scheme called the Addis Ababa Grand Housing Programme (AA-GHP) in 2004.[18] The AA-GHP was extended to a national integrated housing development programme that involved the combination of government financing and construction of housing in large and medium sized cities targeted at middle and low income households.[18]Throughout the country, approximately 245,000 units have been constructed. In Addis Ababa, approximately 175,000 units in multistory condominiums have been completed in over 100 sites throughout the city.[20] An additional 132,000 housing units are currently under construction.[21]

3.2 EXISTING TYPOLOGIES IN ADDIS ABABA

KEBELE HOUSES

These are the typologies dominating most part of the city. Up until the provision of the social housing programs introduced by the Addis Ababa city Administrative in 2004, the number of these dwellings was proliferating exhibiting every characteristic that informal developments possess. Originally these typologies were recognized by the city administrative and included under the formal urban structure of the city after the nationalization of private properties by the nationalist regime in 1975. The Kebele houses used to account for more than 70% of houses in Addis Ababa according to the Ethiopian Census made in 2007. Most of these dwelling structures are ever growing self-built structures constructed with cheap and sometimes recycled materials. The physical expansion of these houses was usually motivated by the need to accommodate the growing number of family member dwelling under these roofs and sometimes to financially support the family by extending the house with a new room to rent out.

The expansion of these house is usually horizontal and the living standard and economic condition of people that lives in such structures is worsen by the lack of proper public service and lack of sanitation systems which is peculiar to such informal and dense settlements formed by the congestion of these typologies. One could not find a room dedicated for a single purpose and most of the rooms in these typologies are multi-functional hosting activities according to the time of the day. Rooms that are used as living space during the daytime transforms into a storage area or sleeping zone by night. The social structure formed by the collection of these typologies is economically homogeneous and culturally vibrant with an incredible sense of community.

Images 3.2.1 - Kebele Houses in Addis Ababa

SOURCES
IMAGE 1 - MEREJA
IMAGE 2 - RESEARCH GATE
IMAGE 3 - POVERTY AND DEVELOPMENT RESEARCH CENTER
IMAGE 4 - REUTERS

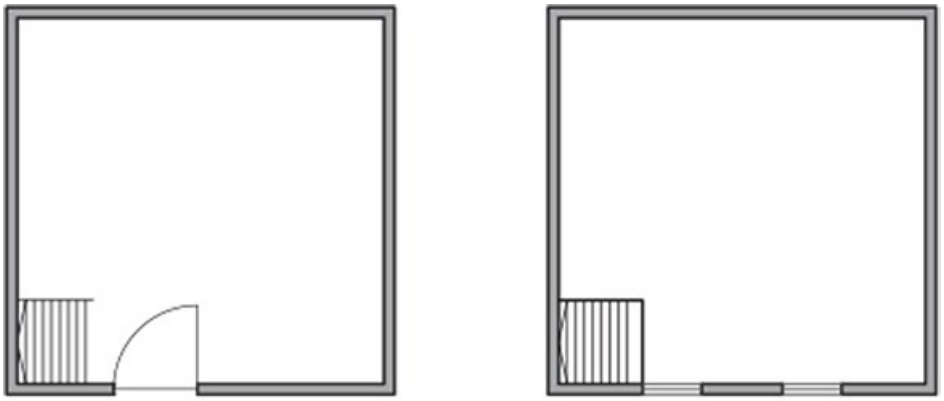


Image 3.2.2 Typical Kebele House
Source - Heisel, Housing Typologies, 2012, A Case Study In Addis Ababa

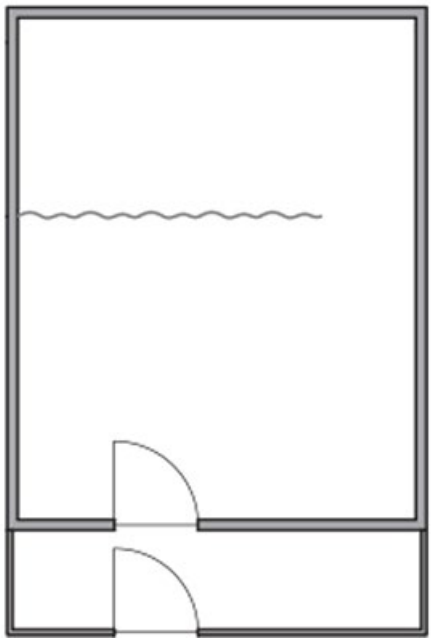


Image 3.2.3 Typical Kebele House With Curtain Fabric Partition
Source - Heisel, Housing Typologies, 2012, A Case Study In Addis Ababa

The low income citizens reside in government owned kebele houses of low physical quality. A typical kebele house has an average 24m^2 floor area and 5.7 occupants. Most of the kebele houses are constructed using traditional building materials like mud.

CONDOMINIUM HOUSES

The social housing project model that was initiated in 2005 by the city administration, although it was initially politically motivated, it aimed to address the issue of homeownership for the low and middle income residents of the city, providing them thousands of housing units built on hundreds of blocks in 103 building sites predominantly located in the fringe areas. The scheme included primarily four unit types; studio, 1-Bed, 2-Bed, 3-Bed and spaces on ground floors which are available for commercial purposes. The purpose of the integrated housing project was also to boost the economy in the housing sector creating new jobs and integrated small enterprises.

This housing scheme was included in the most controversial master plan of the city introduced by the Addis Ababa city administration in 2015 even though the master plan was scrapped after blood shading protests and conflicts against it. However, the condominium projects continued to invade landholdings that used to be farmlands, expanding the construction in the city outskirts over the same peripherals where rural life is also prevalent. The projects continued to displace people both from the inner parts of the city and on the outskirts because of the marginal approach followed by the government. The people in the inner parts are displaced by the city administrative to seize their land for the purpose of inner city redevelopment and relocating the people to the outskirts of the city. This approach proved to be problematic over several events and eventually housing, especially the condominium typologies, became a delicate political issue.

It cannot be denied the fact that the condominium housing projects have increased the number of housing units available in the stock in an attempt to bridge the demand-supply gap. However, despite of being topic for a sensitive political discourse, the housing projects could not have been able to efficiently address the problem of increasing population number and rapid urbanization. The large scale and ambitious number of housing units in the condominium housing projects created an isolated neighborhoods and socially dysfunctional communities despite their economic significance arguably being affordable.

Images 3.2.4 - Condominium housing projects in Addis Ababa

SOURCES
IMAGE 1 - BOREKENA
IMAGE 2 - WORLDPRESS
IMAGE 3 - ADDIS STANDARD
IMAGE 4 - KICHUU

These are government subsidized housing typologies transferred to individual owners through a lottery system and aimed to improve low income settlements. A typical condominium floor comprises units ranging from studio to a three bedroom unit. As of 2010 80,000 units had been built all over Addis Ababa.

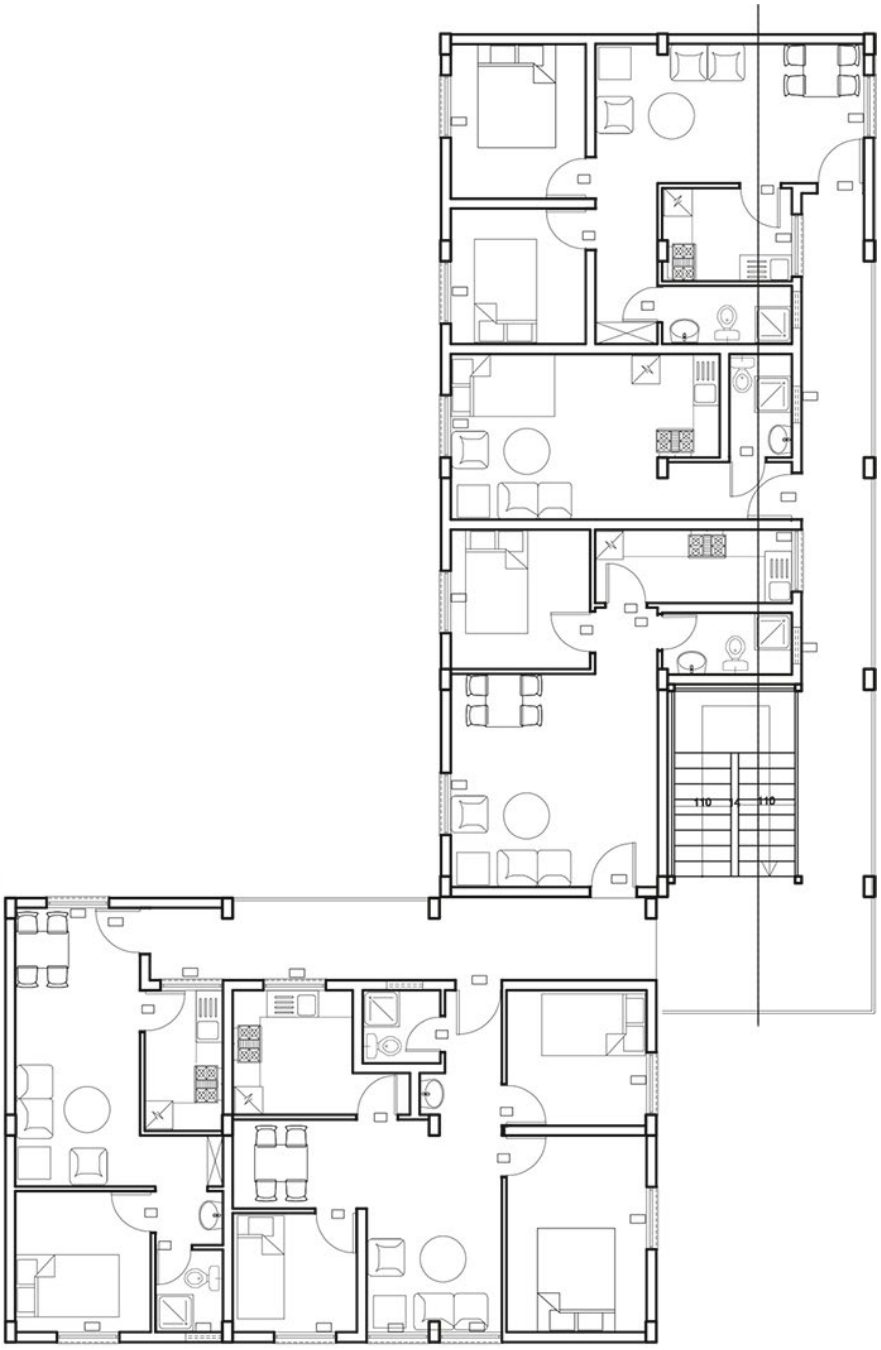


Image 3.2.5 Typical Condominium Floor Plan
Source - Condominium Housing In Ethiopia: The Integrated Housing Development Programme, P.33

VILLAS AND ROW HOUSES

City inhabitants living in Addis Ababa more or less share the public and semipublic spaces of the city equally with exceptions to the villa house typologies where a thick and high wall separates the villa houses from the surrounding urban realm, built for the purpose of security and symbolic representation of wealth of the homeowners. Usually, people living in these kinds of typologies are economically affiliated with a high earning stable employment or owning their own private businesses. With a range of plot sizes, the villa house typologies share some common features with row houses forming a collection of homogeneous living compound which are exactly the same in building form, material finish, plot size and number of rooms in the houses. These compounds are sometimes formed by associations from the same institution or professional background.

The plot sizes of these typologies usually range between 90 sq. meters and 300 sq. meters with different number of stories and forming gated communities. Multistory buildings are common in the row houses although sometimes free standing villa houses are also built with multiple floors. The social and economic tie between residents or private villa owners is not as strong as in communities living in a congested informal housing settlement. The sense of community in these housing typologies is weak due to the physical structures built around individual plots.

The concentration of these typologies is now a common feature of neighborhoods in the city outskirts. Just as much as the condominium housing projects, these typologies usually built by housing associations and real estate companies is destroying the aesthetic and environmental quality of the surrounding landscape not to mention its visual and social impact. Destroying social capitals and creating segregated communities, the consequences of these typologies on the society in general is immense.

mages 3.2.6 - Villas and Row Houses in Addis Ababa

SOURCES
IMAGE 1 - EMTER ETHIOPIA
IMAGE 2 - PAMBAZUKA NEWS
IMAGE 3 - AYAT REAL ESTATE
IMAGE 4 - ADDIS HOUSES

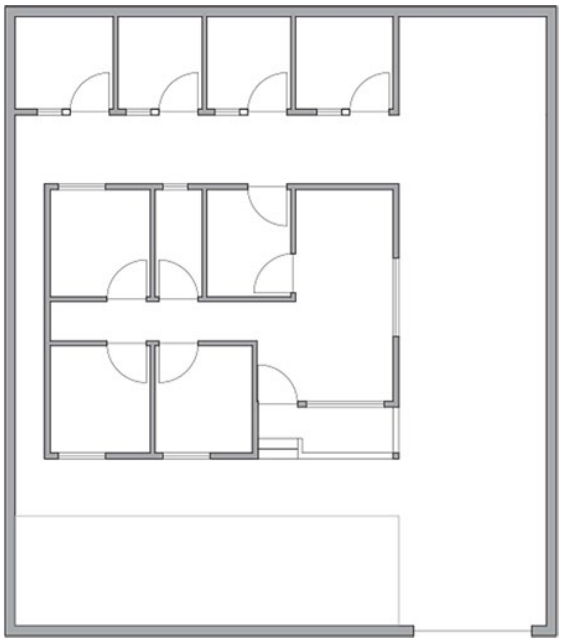


Image 3.2.7 Typical Villa House Floor Plan
Source - Heisel, Housing Typologies, 2012, A Case Study In Addis Ababa

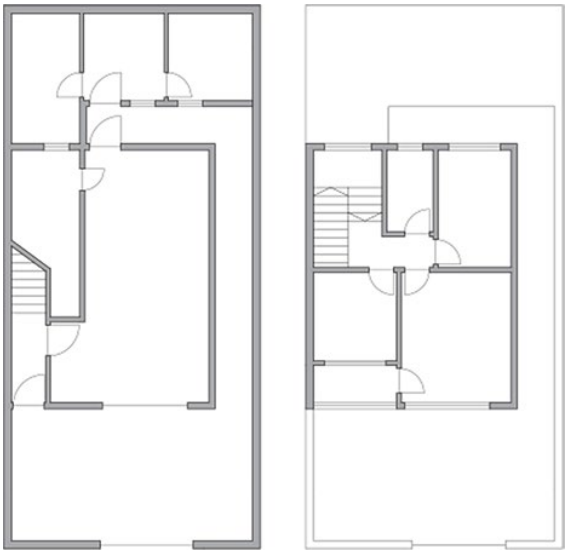


Image 3.2.8 Typical Row House Floor Plan
Source - Heisel, Housing Typologies, 2012, A Case Study In Addis Ababa

The average plot area of a typical villa differs between 200m^2 and 300m^2 with a free standing structure isolated from the surrounding with a security fence. Middle and high income residents mostly occupy this kind of typology. Row houses are multistory typologies similar to villa houses in characteristics with a garden space Infront and a service quarter in the back. On average these typologies have 9 rooms and accommodates 6.6 persons.

APARTMENTS

In Addis Ababa, apartment building is not an uncommon housing typology. Modern apartment buildings were introduced in the city in the early 1940's primarily by private local and foreign investors involved in the housing market and construction industry at the time. Most of the apartment's found in the city have multi stories usually without elevators and poor drainage and water systems. Dark and narrow hallways are also common feature of these buildings particularly those built between 1940 and 1960. Most of these apartment buildings are usually found within the city centers and are owned and operated by the public institution, the Agency for the Administration of Rented Houses, AARH with exception of some buildings (third image). Apartments constructed these days do not deviate in terms of architectural character and spatial configuration from the early apartment buildings and people from the middle and upper class most of the time lives in apartment buildings.

Images 3.2.9 - Apartments in Addis Ababa

SOURCES
IMAGE 1 & 2 - ISPADA
IMAGE 3 & 4 - DOS ARCHITECTS

Most apartment blocks in Addis Ababa are a vertical replica of the villa housing typologies in terms of number of rooms and spatial organization. Apartments in the city are administered through a government agency called Agency for the Administration of Rented houses. located within old districts and downtowns of the city, these apartments features commercial spaces on their ground floor.

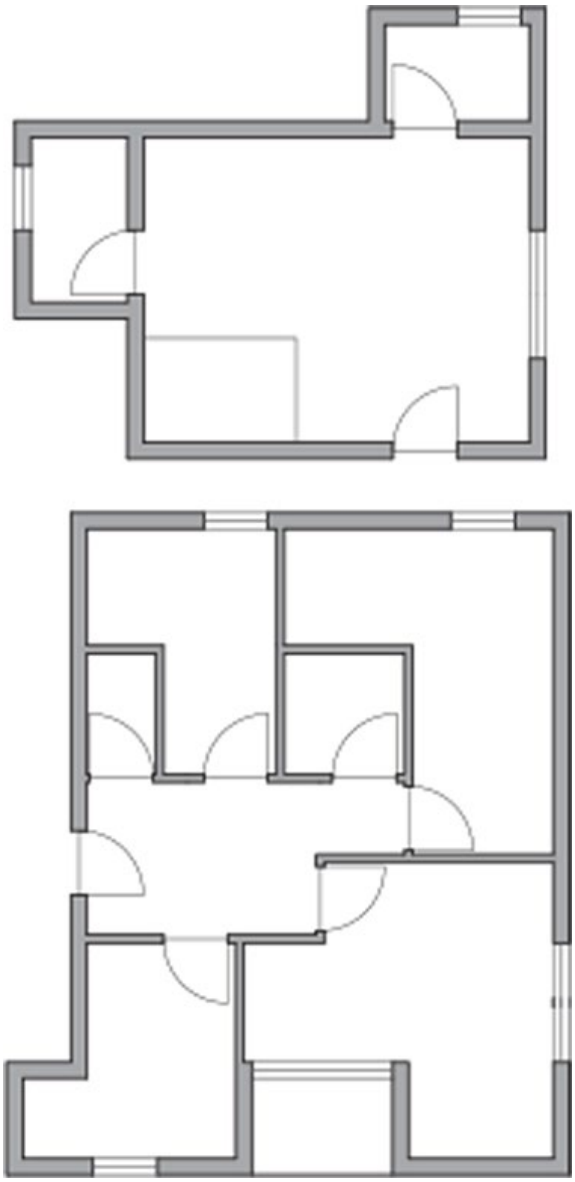


Image 3.2.10 Apartment Unit Typical Floor Plan
Source - Heisel, Housing Typologies, 2012, A Case Study In Addis Ababa

SUMMARY ON HOUSING TYPOLOGIES IN ADDIS ABABA

Housing typologies in Addis Ababa exist in different social dynamics such as bipolar economic conditions. The most prevalent typologies in the city are kebele houses, condominium houses, villas and row houses and apartments. Usually with an average floor area of 24m^2 and constructed using cheap and traditional building materials like mud, the kebele houses are home for the majority of the city residents living in Addis Ababa. Originally the kebele houses were cheap self-constructed informal housing structures. They were recognized by the city administrative and included under the formal urban structure of the city after the nationalization of private properties by the nationalist regime in 1975.

Because of the growing tension of the gap between demand and supply of housing in Addis Ababa and to replace and upgrade slum settlements in inner parts of the city, the Addis Ababa city administration initiated the condominium houses project model. A typical condominium block currently being constructed in the city comprises four unit types; studio, 1-bed, 2-bed and 3-bedroom units targeting low and middle income residents for homeownership. Invading landholdings that used to be farmlands, the construction of condominium houses has continued to expand to the outskirts of the city.

Villas and row houses and also apartment houses found in the city are usually occupied by people economically affiliated with a high earning stable employment or owning their own private businesses. The floor area of these typologies usually ranges between 200m^2 and 300m^2. From the urban point of view, such typologies are usually isolated from the surrounding context with a thick and high security fence inducing privatization and social segregation.

3.3 URBAN REGENERATION: HOUSING AS A REGENERATION TOOL

URBAN REGENERATION

Indicating the very nature of urban regeneration as a constantly evolving and varying activity, an initial definition given by Peter R., Hugh S. and Rachel G. about urban regeneration is given as:

> comprehensive and integrated vision and action which seeks to resolve urban problems and bring about a lasting improvement in the economic, physical, social and environmental condition of an area that has been subject to change or offers opportunities for improvements.[22]

The scholars also stated that regeneration often operates in a fragmented manner after having identified and traced the evolution of some of the major issues and factor that have been evident in urban regeneration on the basis of six themes - the relationship of physical conditions and social response; the need for replacement of changing urban fabric; the importance of economic success as a foundation for urban prosperity and quality of life; the need to make the best possible use of urban land and avoid unnecessary sprawl; the need for regeneration to reflect the priorities of sustainable development; and the importance of recognizing that urban policy mirrors the dominant social convention and political forces of the day.[23]

Urban regenerations in Addis Ababa have had different facets and approaches throughout the city's urban transformation periods. In 2005 the city administration adopted the Urban Development Policy and subsequently involved in a massive urban renewal program.[24] Under a five year strategic plan for the years 2008-2013, the city also introduced a Local Development Plan that focused on urban re-development and slum renewal.[25] The efforts and focus of the urban renewal programs within the city were to restructure the socio-economic and socio-spatial challenges brought about as a result of rapid urbanization and population growth.[26] However, urban regeneration is a little understood practice and concept in Addis Ababa that its role in accompanying and guiding the dramatic physical, social, spatial and economic transformation of the city over the past two decades, has been insignificant. Urban regenerations and renewals in Addis Ababa are linked to the aspirations of the government to demolish inner city slums to create space for the development of new and modern housing schemes.[27]

According to a data from Addis Ababa City Administration Renewal Agency (2016) compiled in a report on State of Addis Ababa by UN-Habitat (2017), the city has expropriated 392 hectares of inner-city land between 2009-2015 and demolished a total of 23,151 dilapidated houses in 23 urban renewal project sites (see image below). Demolition and relocation were usually carried out before exploring the overall urban upgrading and regeneration outcome.

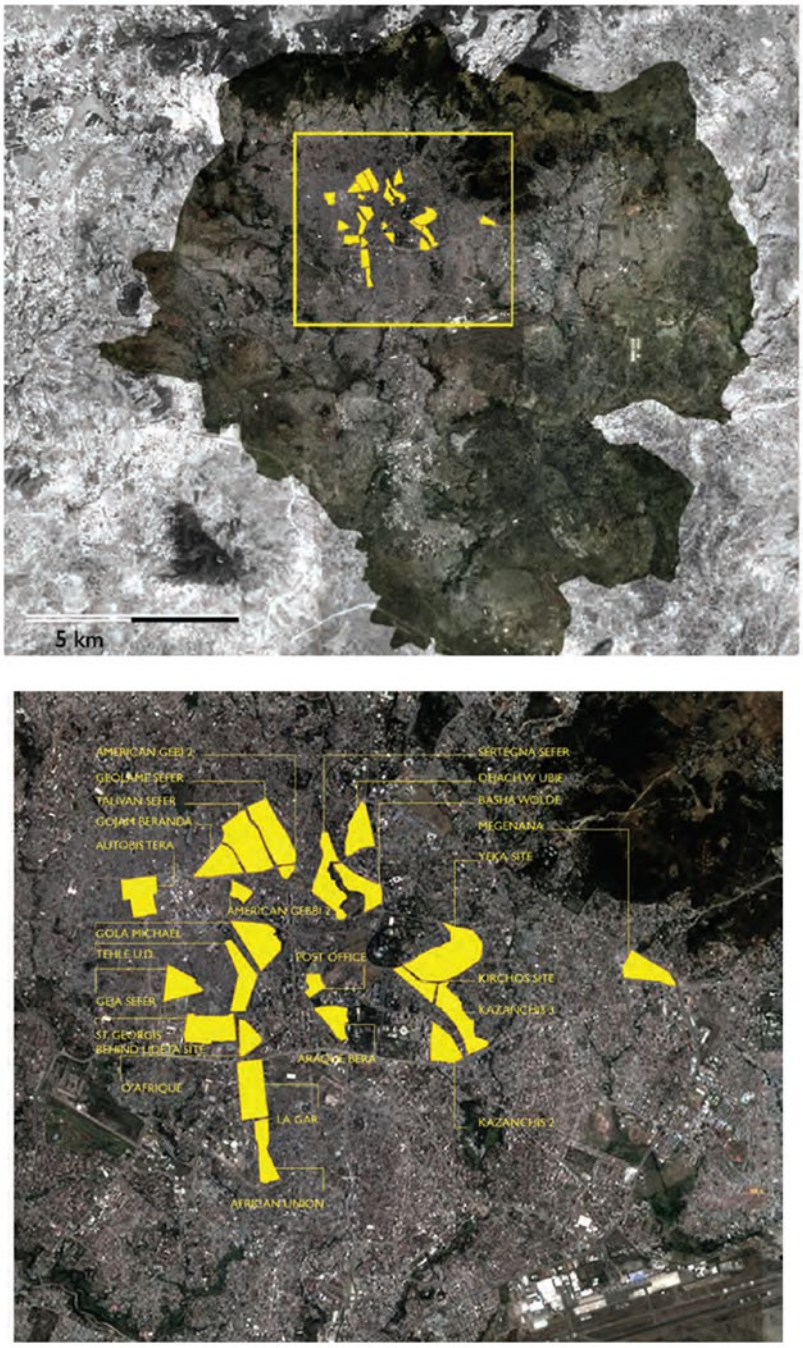


Image 3.3.1 Relocation map Addis Ababa's boundaries
Source - Marjan Klosterboer and Linda Zardo
(Adopted from The State of Addis Ababa 2017: The Addis Ababa We Want at UN-Habitat.
Available online: https://unhabitat.org/books/the-state-of-addis-ababa-2017-the-addis-ababa-we-want/)

HOUSING AS A REGENERATION TOOL

Massive urban renewal and redevelopment projects have been underway across Addis Ababa primarily to tackle the huge backlog in housing and basic service delivery through accelerated investment in infrastructure and public housing programs.[28] The massive housing backlog was first revealed in a survey conducted in the early 2000's in accordance with the revision of Addis Ababa's masterplan. According to the survey, at the time, the city accumulated a housing backlog of 233,000 units as of 2000 and would need additional 223,000 housing units by 2010.[29] Empirical data is lacking about the current housing backlog but up until 2011 the government estimated that 300,000 units were required to meet the housing deficit in Addis Ababa.[30] To mitigate this deficit, the condominium redevelopment scheme assumed to clear land within the urban centers moving residents to the peripheries, in the contrary, recent urban regenerations opted to keep area residents.

One key feature of major urban renewal programs like the Addis Ababa grand housing program (AAGH) and the integrated housing development program (IHDP) was inner city redevelopment and relocation of residents to newly-constructed condominium housings.[31] The integrated housing development program (IHDP) aimed to supply residential units through the construction of condominium housing, while also providing infrastructure, service and job opportunities as part of its inner city upgrading development.[32] The prominent IHDP envisaged housing as an instrument to promote urban development.[33] The government aimed to leverage the IHDP for the years between 2006-2010 nationwide: to construct 400,000 housing units; to create 200,000 jobs; to promote the development of 10,000 small enterprises on sustainable basis in the construction industry; and to support the private sector to produce 125,000 housing units per annum through the provision of land and infrastructure.[34] Comprehensive up-to-date data on the city's current housing stock is unavailable, however, country-wide, the programme only delivered 142,802 housing units between 2006-2010 and of these, a little over 80,000 were built between 2003 and 2010 in Addis Ababa, spread over thirty different sites (see table next page).[35]

SUMMARY OF HOUSING CONSTRUCTION FROM 2006-2010

Type of Dwelling	Addis Ababa
Commercial	5,592
Studio	12,968
One bedroom	31,169
Two bedroom	23,430
Three bedroom	7,086
Total	80,245

Table 3.3.1 Summary of Housing Construction From 2006-2010
Source - MUDHCo, National progress report on achievements of the past year, 2014
(Adopted from The State of Addis Ababa 2017: The Addis Ababa We Want at UN-Habitat.
Available online: https://unhabitat.org/books/the-state-of-addis-ababa-2017-the-addis-ababa-we-want/)

These urban renewal programs in Addis Ababa were also promoted as a mechanism to enhance the inner city land management strategy in a sustainable manner through promoting compact city development.[36] However, the built portion of Addis Ababa has expanded from 24,942 ha in 2006 to 35,050 ha in 2016 despite the effort of the renewal programs to increase urban containment.[37] The dramatic urban expansion was propelled by the increasing housing developments on the urban peripheries to clear informal and slum settlements within the urban center. Concentration of informal housing in 2006 in the central city (see image below, a), the informal housing cluster decreased in 2016 as condominium housing increased to occupy 11% of the city with the largest concentration towards the city's south and eastern boundaries (see image below, b).[38]

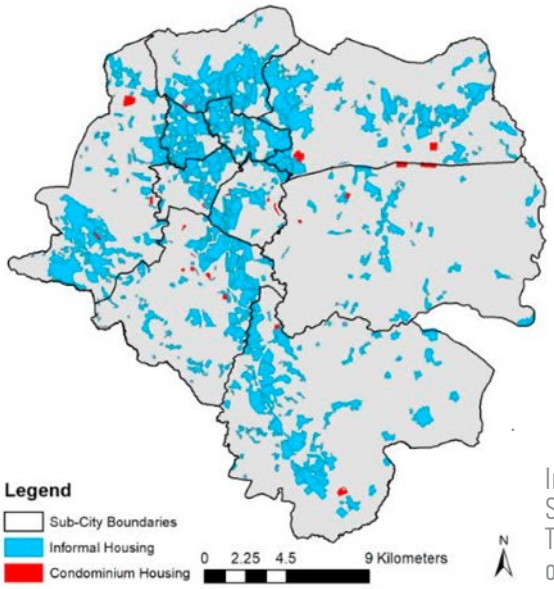


Image 3.3.2 Informal Housing Clusture, 2006
Source - Adopted from MDPI article published 18 April 2019,
The Impact of Rapid Urbanization and Public Housing Development on Urban Form and Density in Addis Ababa, Ethiopia

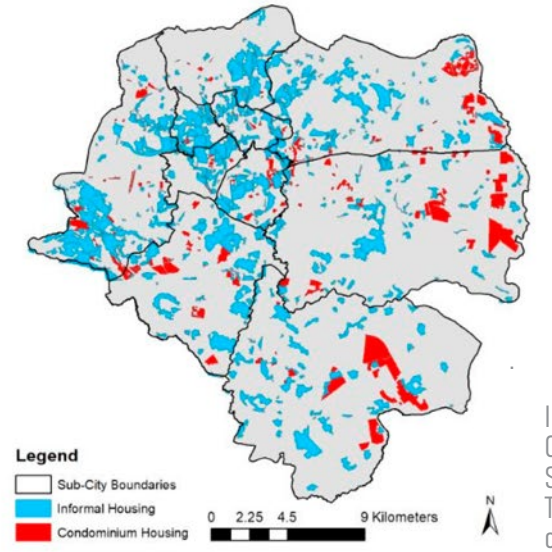


Image 3.3.3 Informal Housing Clusture and
Condominium housing Distribution, 2016
Source - Adopted from MDPI article published 18 April 2019,
The Impact of Rapid Urbanization and Public Housing Development on Urban Form and Density in Addis Ababa, Ethiopia

ENDNOTES

[1] UN HABITAT, United Nations Human Settlements Programme, Addis Ababa: Urban Profile, 2008

[2] Larissa Larsen, Kumelachew Yeshitela, Tilahun Mulatu, Sisay Seifu and Hayal Desta, MDPI article published 18 April 2019, The Impact of Rapid Urbanization and Public Housing Development on Urban Form and Density in Addis Ababa, Ethiopia

[3] UN HABITAT, 2017

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[14] Larissa Larsen, Kumelachew Yeshitela, Tilahun Mulatu, Sisay Seifu and Hayal Desta, MDPI article published 18 April 2019, The Impact of Rapid Urbanization and Public Housing Development on Urban Form and Density in Addis Ababa, Ethiopia

[15] ibid

[16] Sascha Delz, Ethiopia's Low Cost Housing Programme: How concepts of individual home-ownership and mass housing blocks fail to be realized, Architectural Production, Addis Ababa: A Manifesto on African Progress

[17] The State of Addis Ababa 2017: The Addis Ababa We Want at UN-Habitat. Available online: https://unhabitat.org/books/the-state-of-addis-ababa-2017-the-addis-ababa-we-want/

[18] Sascha Delz, Ethiopia's Low Cost Housing Programme: How concepts of individual home-ownership and mass housing blocks fail to be realized, Architectural Production, Addis Ababa: A Manifesto on African Progress

[19] ibid

[20] Keller, E.J.; Mukudi-Omwami, E. Rapid urban expansion and the challenge of pro-poor housing in Addis Ababa, Ethiopia. Afr. Rev. 2017, 9, 173–185.

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[34] ibid

[35] MOUDCo, 2014

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4 PROPOSED PROJECT LOCATION AND SITE

4.1 PROJECT LOCATION

Located at a latitude 8.9806 N and longitude 38.7578 E, Addis Ababa, the capital city of Ethiopia is one of the fastest growing Cities in the world experiencing a rapid urban transformation. In light of the ongoing rapid growth, Ethiopia's Land Bank and Development Corporation (LBDC) envisioned revamping projects on five distinct hubs along a strip of on of the main roads in the city.

Ethiopia's Land Bank and Development Corporation (LBDC) is a government enterprise engaged in a property development and landholding management. The site is selected from the five hubs proposed by the LBDC specifically from three contiguous hubs in accordance with its proximity to the urban center, scale, density and land use. The site strategy to be implemented in the project development integrates the architectural output to the immediate urban realm and beyond.

SITE ZONING INFORMATION

As per the 1994 structural plan of the city, the land use where the site is located is dedicated for a mixed use and as per the zoning regulation it is required to include a minimum of 60% residential programs in the mixed development. The zoning limits the floor area ratio (FAR) to a minimum of 2 and to a maximum of unlimted FAR. Non-permitted developments on the site includes industries, manufacturers and storage that require more than 500m^2 area; military establishments and prison; waste treatment plants and landfill sites. On north east corner of the site is a junction point where a local street stretching south to north meets a main road stretching east to west. 35 meter is the maximum building height allowed in the zoning regulation.

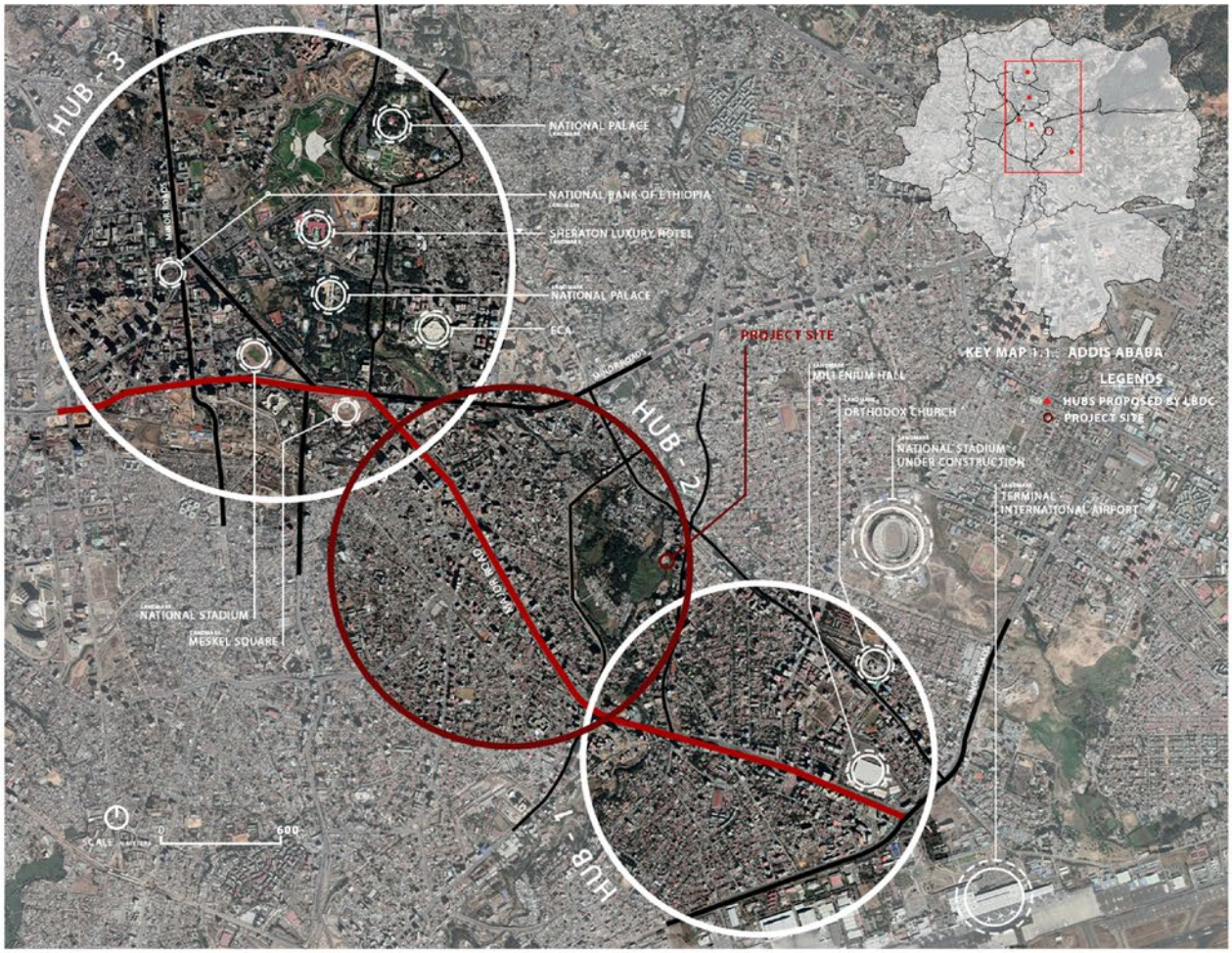


Image 4.1.1 - Project Location Map

4.2 NEIGHBORHOOD CONTEXT

The neighborhood context of the site on the south is adjacent to a major road running east to west. To the east of the site is an area of mixed development and a secondary road running north to south. The urban setting of the proposed site, since it is located in the middle of the city is well connected through primary and secondary roads adjacent to the surrounding neighborhood. Despite the availability of these multiple street networks around the site, there is a limitation in terms of viable accessibility to the site. Due to the narrow width and inconvenient ground conditions of the pedestrian accesses, the site remained inactive, and the overall potentials to create points of interest for the general public along the riverside has been overlooked. The multitude of pedestrian and road networks; the proximity of the site to the surrounding urban services; the lavishly green environmental context can be leveraged to make the housing scheme an integral part of the existing urban fabric.

Key Map - Addis Ababa

Image 4.2.1 - Neighborhood Context
Source - Google Map

ROAD AND PEDESTRIAN NETWORK

Diagram 4.2.1 - Neighborhood Analysis – Road and Pedestrian Networks

LAND USE

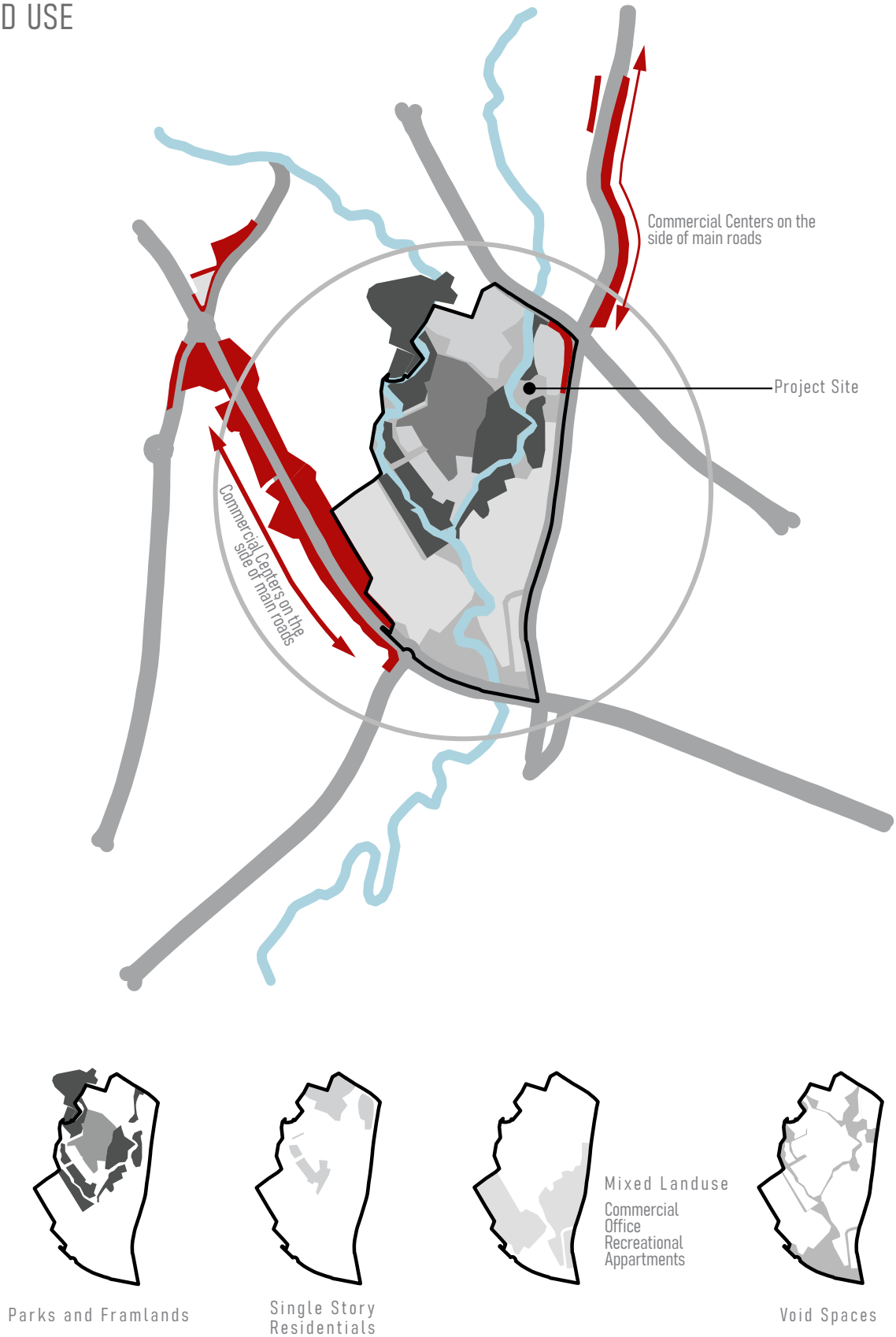


Diagram 4.2.2 - Neighborhood Analysis – Land Use

ECOLOGY

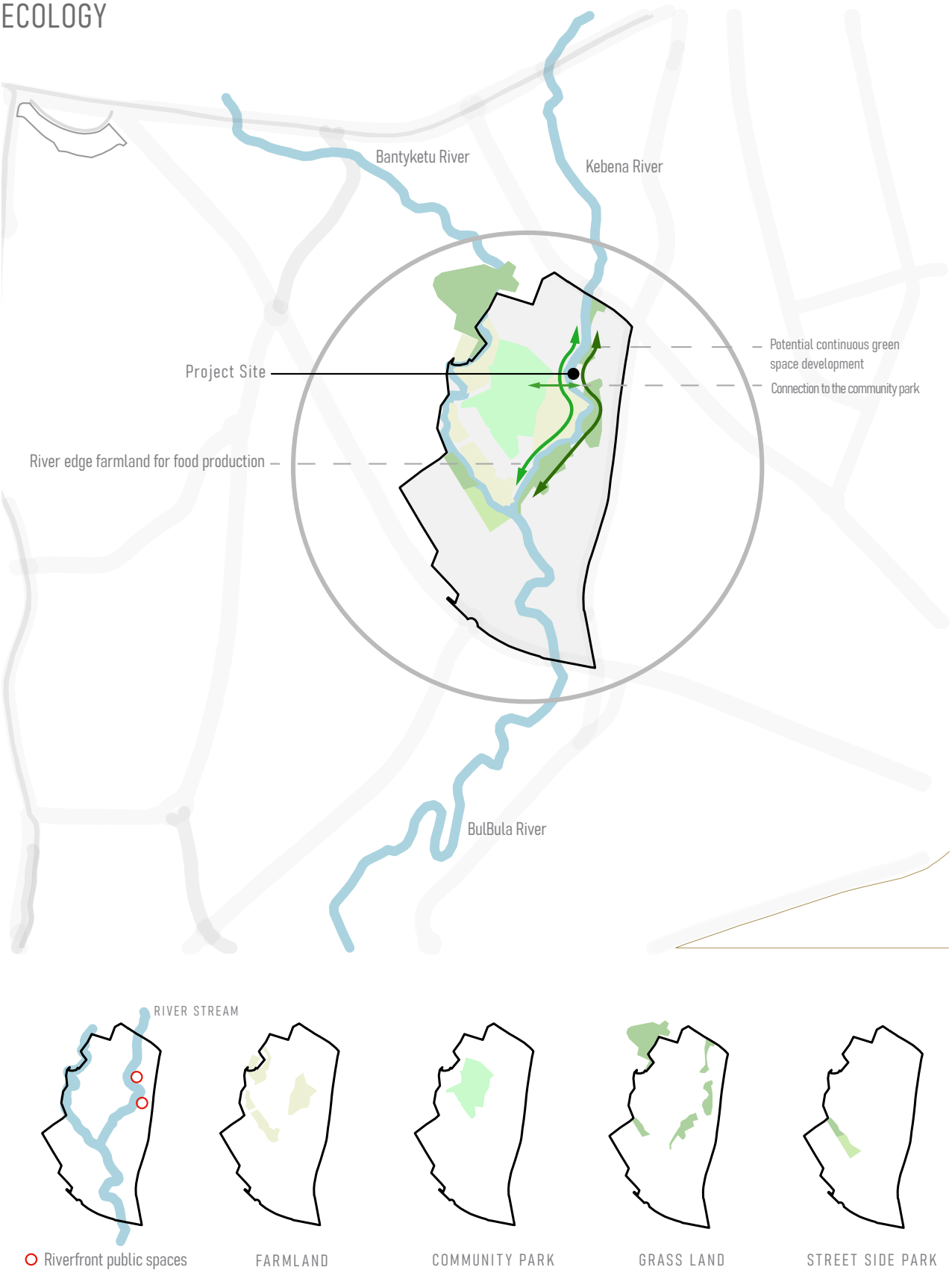


Diagram 4.2.3 - Neighborhood Analysis – Ecological System

4.3 EXISTING SITE CONTEXT

The site is situated adjacent to farmlands and a less active community park. The river bounding the site on the western edge brings an additional element of natural feature into the context. In the current situation, the river does not have any points of connection to either side of the banks and serves only as a barrier between the community park and the small farmland on one side and the proposed site on the other side. The site slopes down to the riverside from the road making the river nearly invisible. The view to the river is also obscured by random overgrown greenery on the proposed site and on the edge of the river and buildings concentrated on the side of the road which in fact has contributed to the site's low permeability and limited access to the river. Multiple points of connections can be created following the river edge to link the site to the community park. This connection can further be enhanced through bike lanes, linear parks, and pedestrian walkways integrated with public amenities developed along the edge of the river.

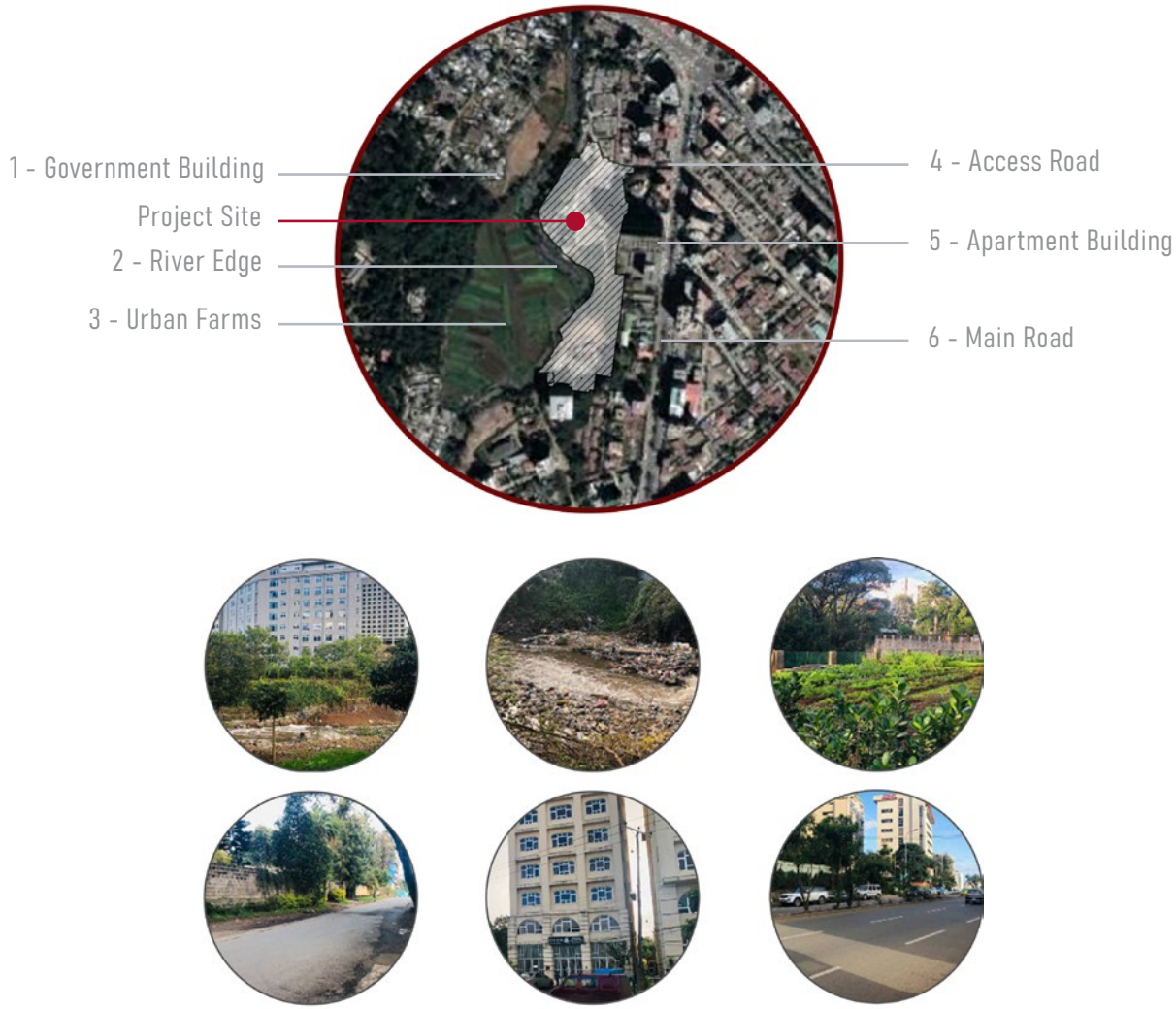


Image 4.3.1 - Existing Site Context

SITE CONTEXT & BOUNDARY

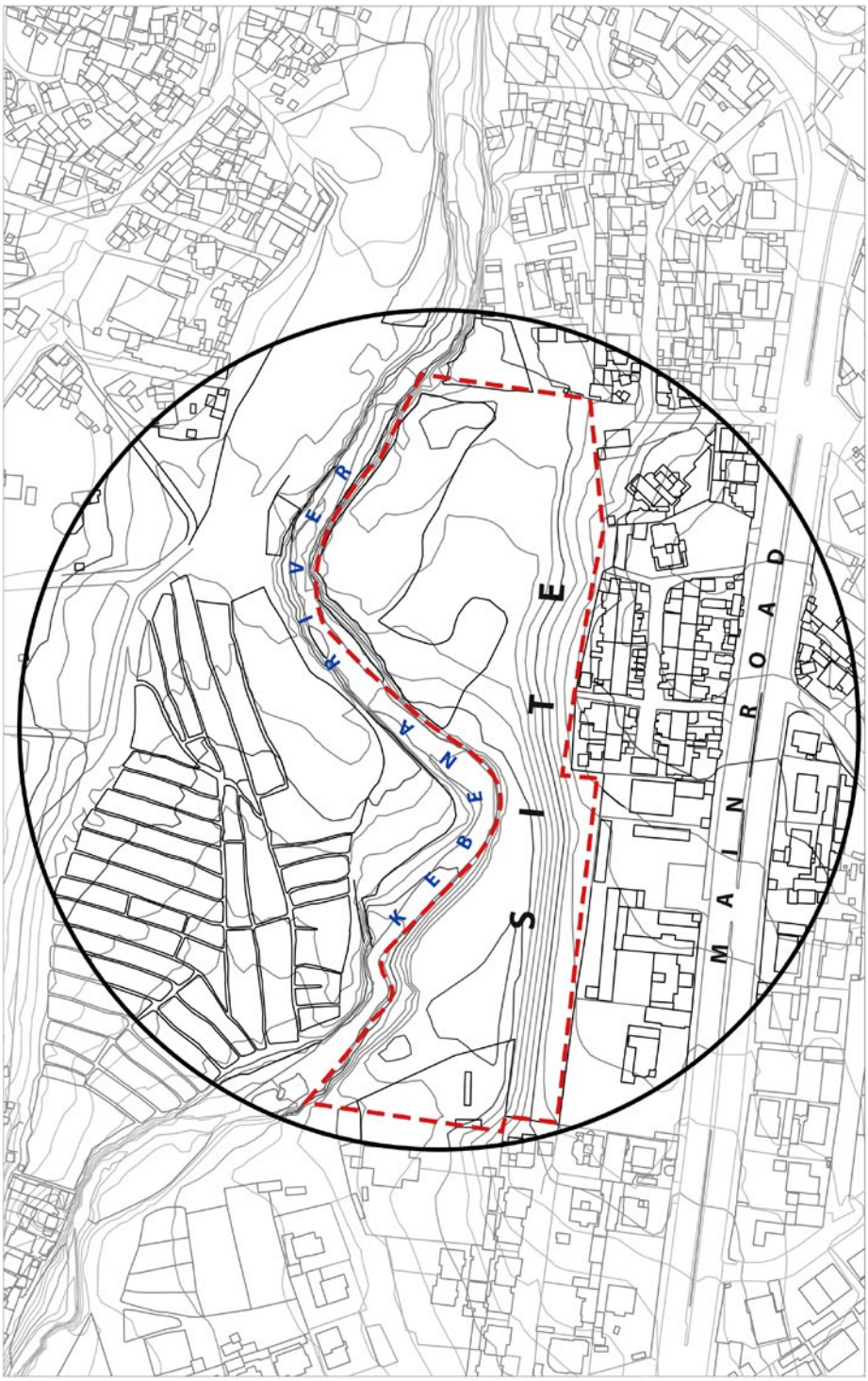
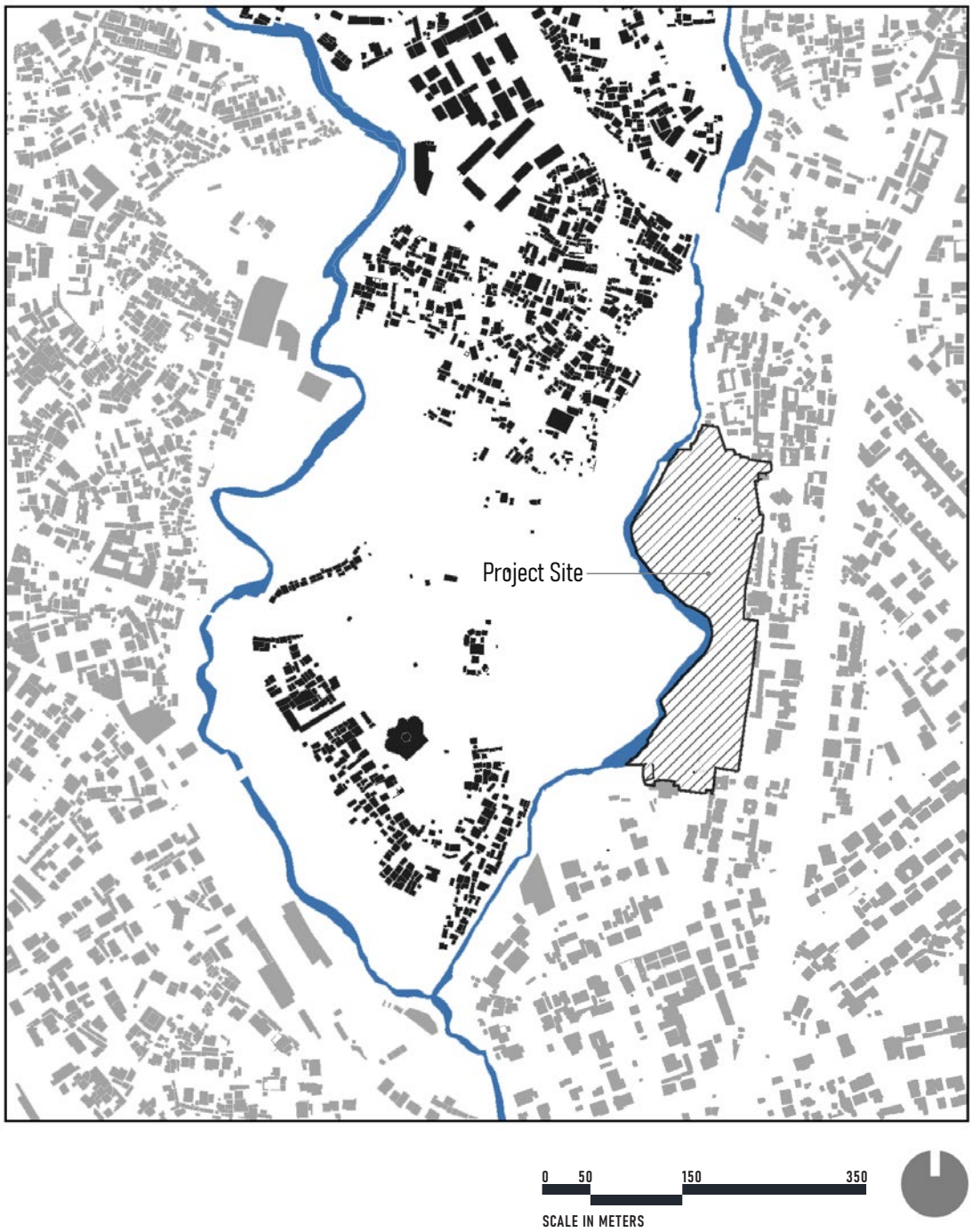


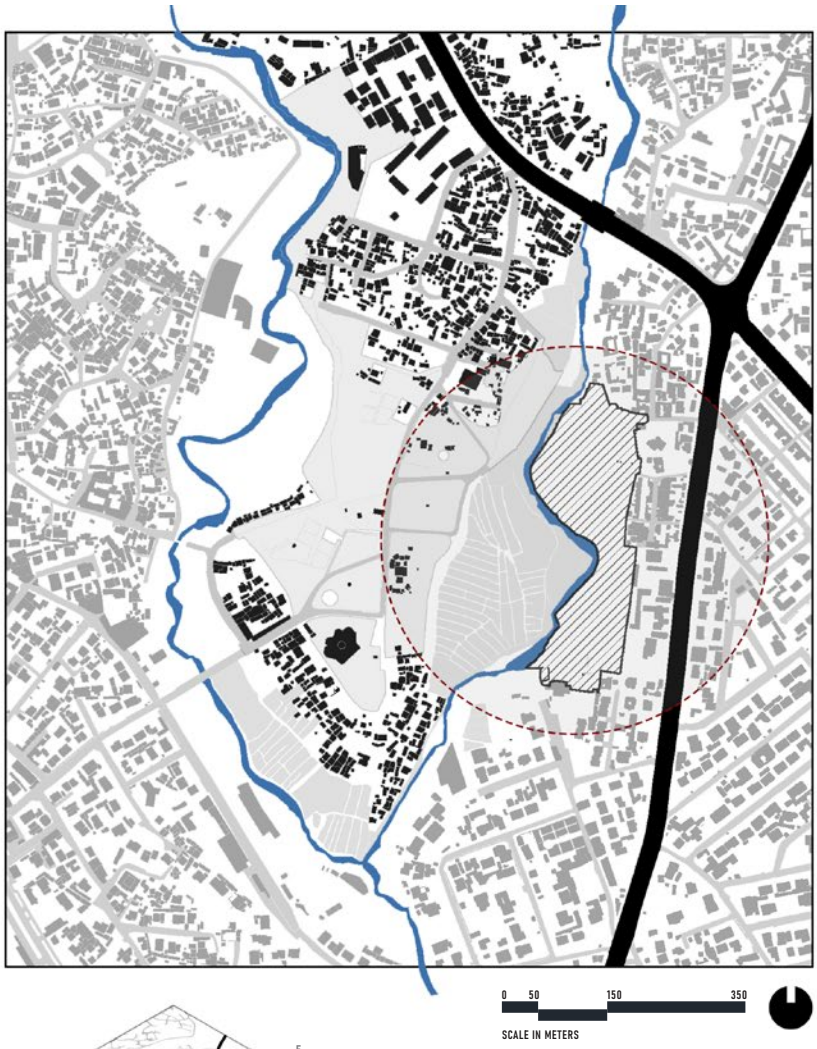
Image 4.3.2 - Site Context and Boundary

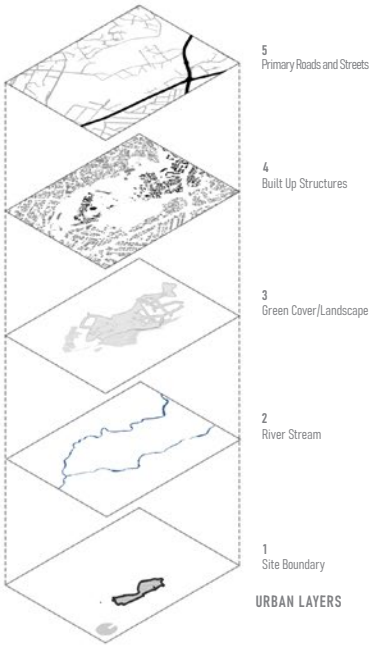
URBAN MORPHOLOGY



Built up structures between the two rivers west to the project site are mostly informal settlements with organic development. The built up form in the rest of the surrounding context have no regular urban form.

Diagram 4.3.3 - Morphology in context with the river stream and project site





The morphological pattern of the project site is very inorganic, and the site has layers of different urban elements. Although hidden from the public and lacks direct access, the river is the most dominant feature of the site. Beyond the river is the farmland and public park. Most of the built up structures are low rise with few exceptions of medium rise apartment and hotel structures along the road east of the proposed site.

Diagram 4.3.4 - Urban Layers and Built Environment Morphological Pattern

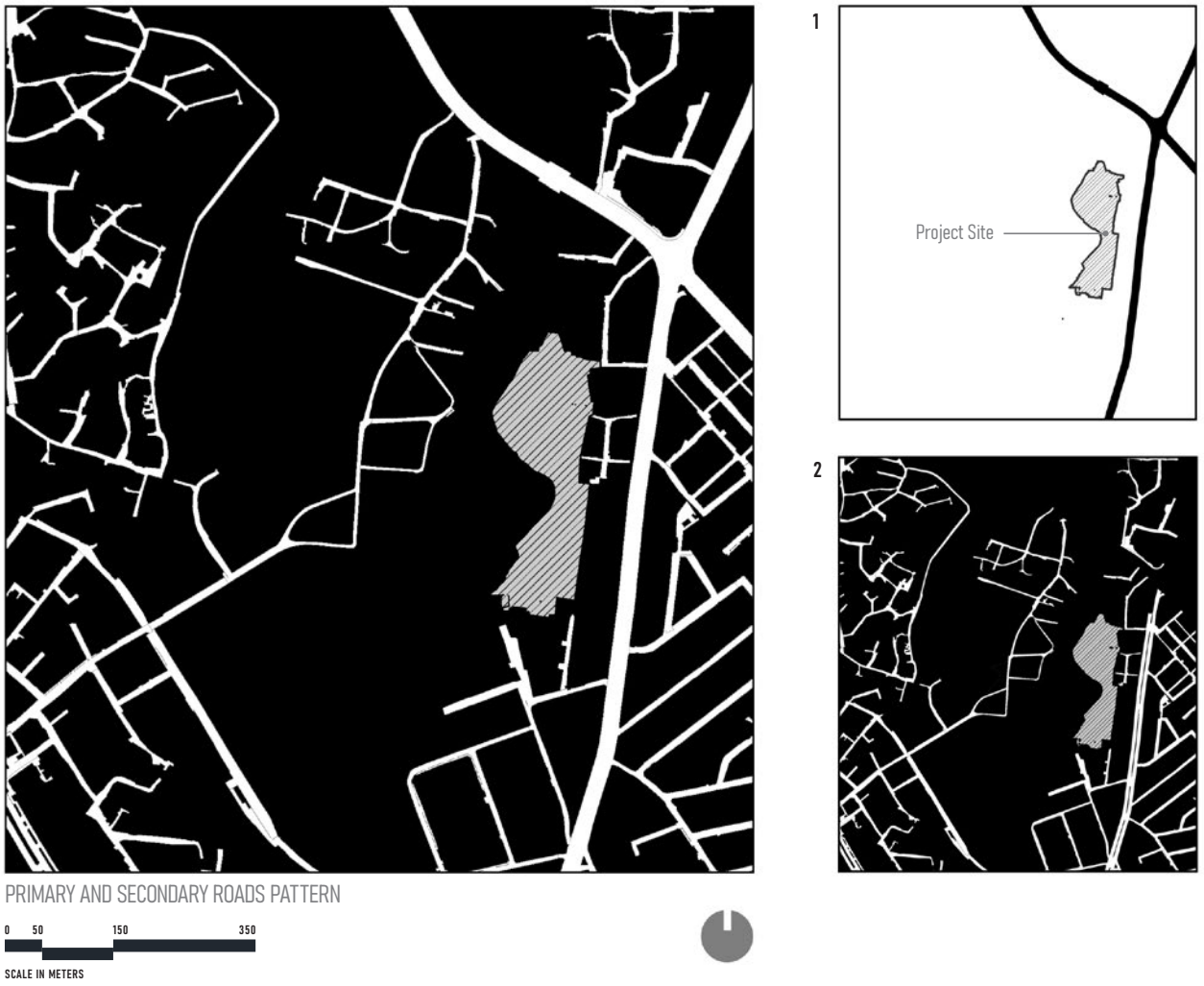


Diagram 4.3.5 - Street Morphology

The crossing roads on east and north of the site (1) forms a junction and an active urban node. The street pattern observed in the morphological study reveals that the street patterns are informal which are also different in shape, width and length. The secondary roads and pedestrian streets (2) have informal pattern developed from natural pedestrian flow throughout time as a result of unplanned development that have no regular urban pattern.

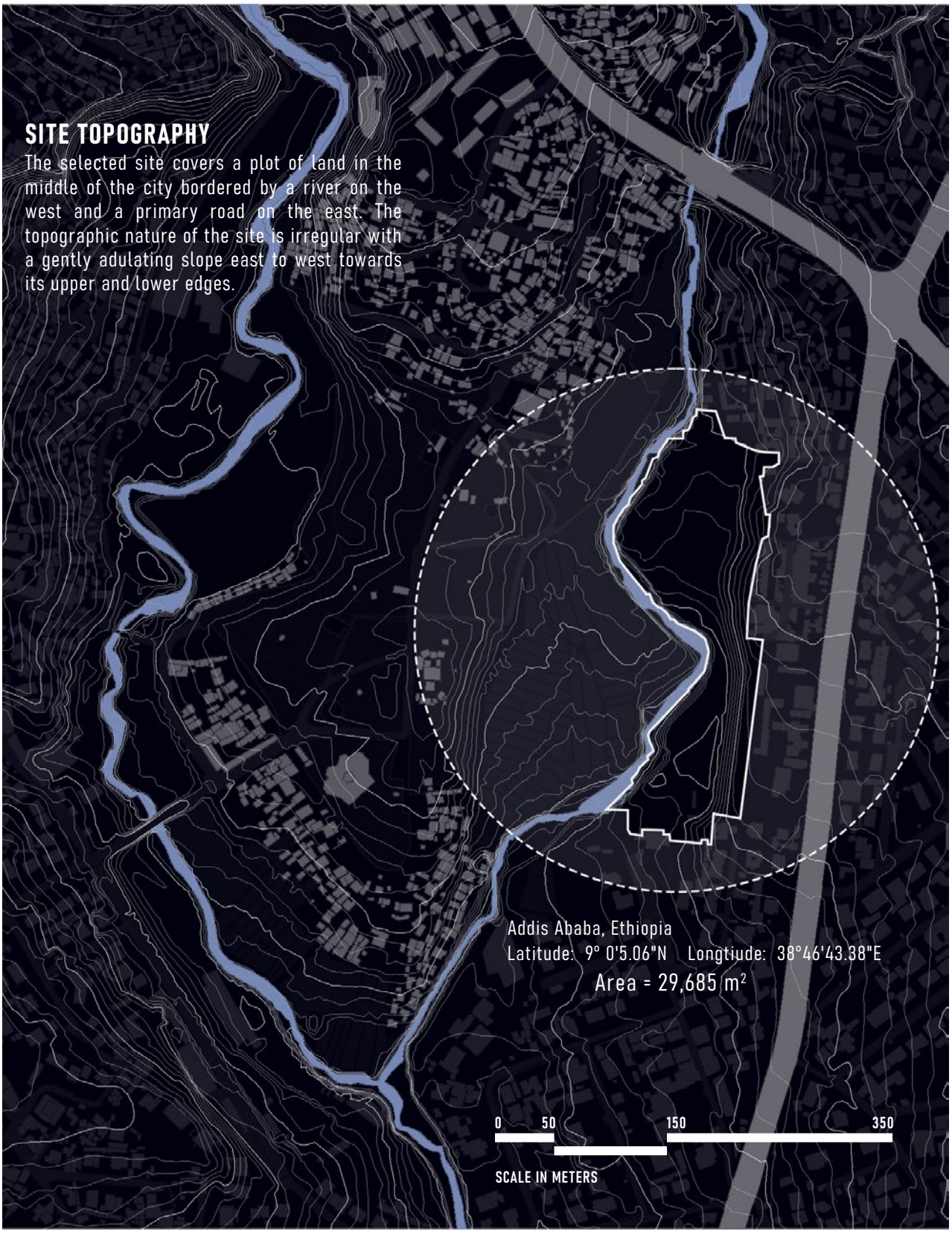
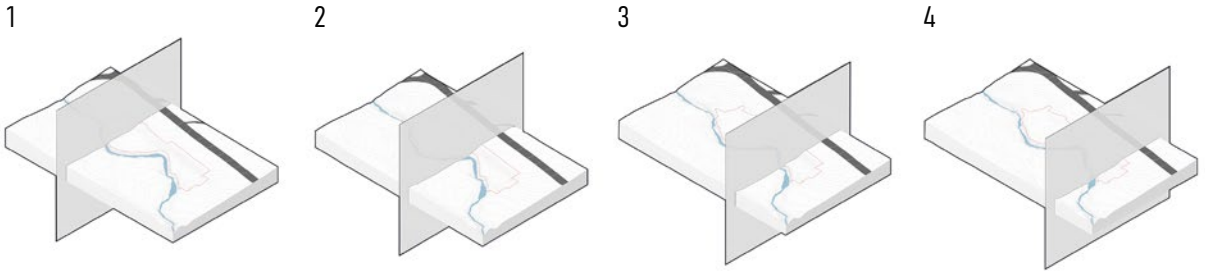


Diagram 4.3.6 - Topographic Context

TOPOGRAPHY 3D MODEL

The site has a prominent slope along its transversal direction towards the river from the road. This made the river hide from the public attention due to the significant lower level of the river from the street side. The east side of the site followed the outline of the river creating a wetland on the edge. The whole site covers an area of 29, 685 square meter and the longest side extends along the north south axis with an overall length of 386 meter.

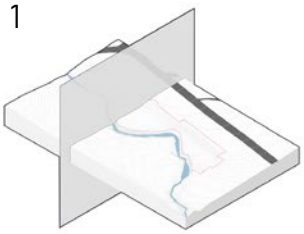


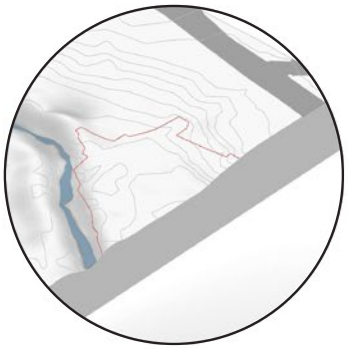
Cutting Planes Position [1 2 3 4]

To suggest a design intervention that could create a symbiotic relationship between elements of the site and the topography, its important to examine the level difference transverse to the longitudinal direction of the site.

Diagram 4.3.7 - Site 3D Topography and Cutting Plane Positions

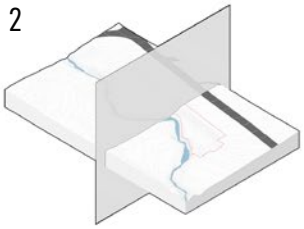
1



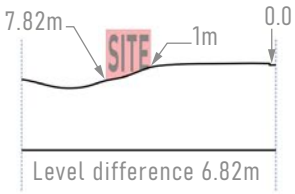


3D Topography Section - 1

2



3D Topography Section - 2



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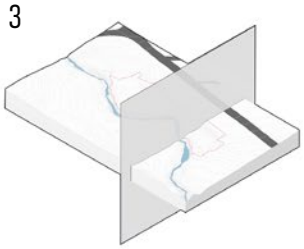
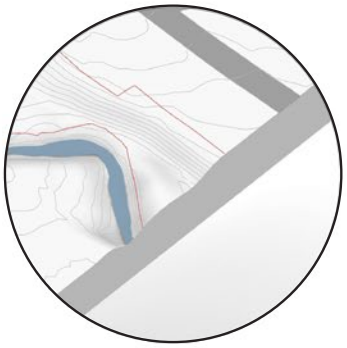
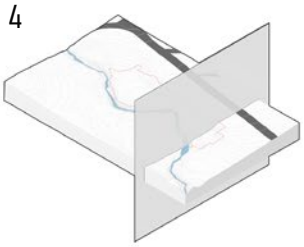




3D Topography Section - 3

4



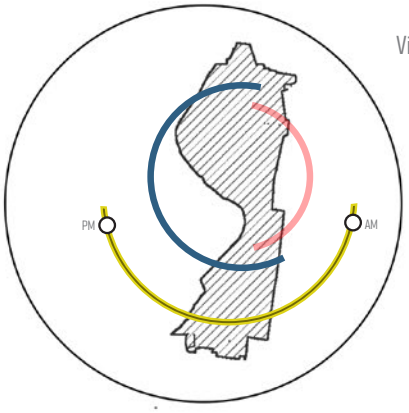
3D Topography Section - 4

Diagram 4.3.8 - Leveling Analysis

4.4 SITE STRATEGY

By its location, available open land, and green environment, the site has great potential. As indicated in the analytical diagrams, the current access points to the site can be extended by creating defined gateways to the river edge to increase the permeability of the site and the public activity near the river. The major aim of the site strategy is to create a true communal surrounding on a livable setting integrated with its environmental context and urban elements underpinned by a new low rise housing model. The built environment on the east and the natural green setting on the west will eventually link through the new housing development that will be nested between the dominant environmental and infrastructural elements that are found on either side of the site enabling green and community amenities with a low rise housing scheme.

Existing Condition



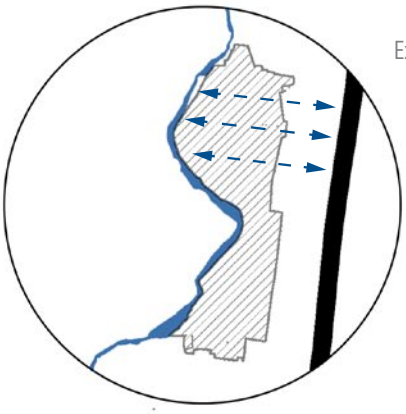
Views and Sunpath

Sun Path
Good Views
Blocked Views

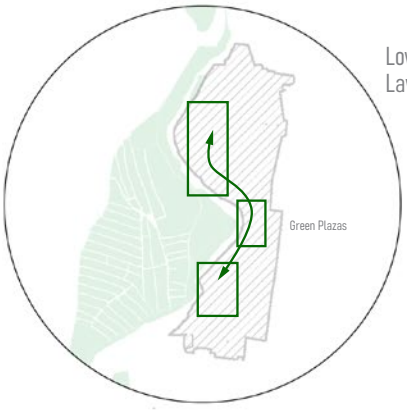
River Edge Development

Link to
Community Park

Access to Site



Extended Connection



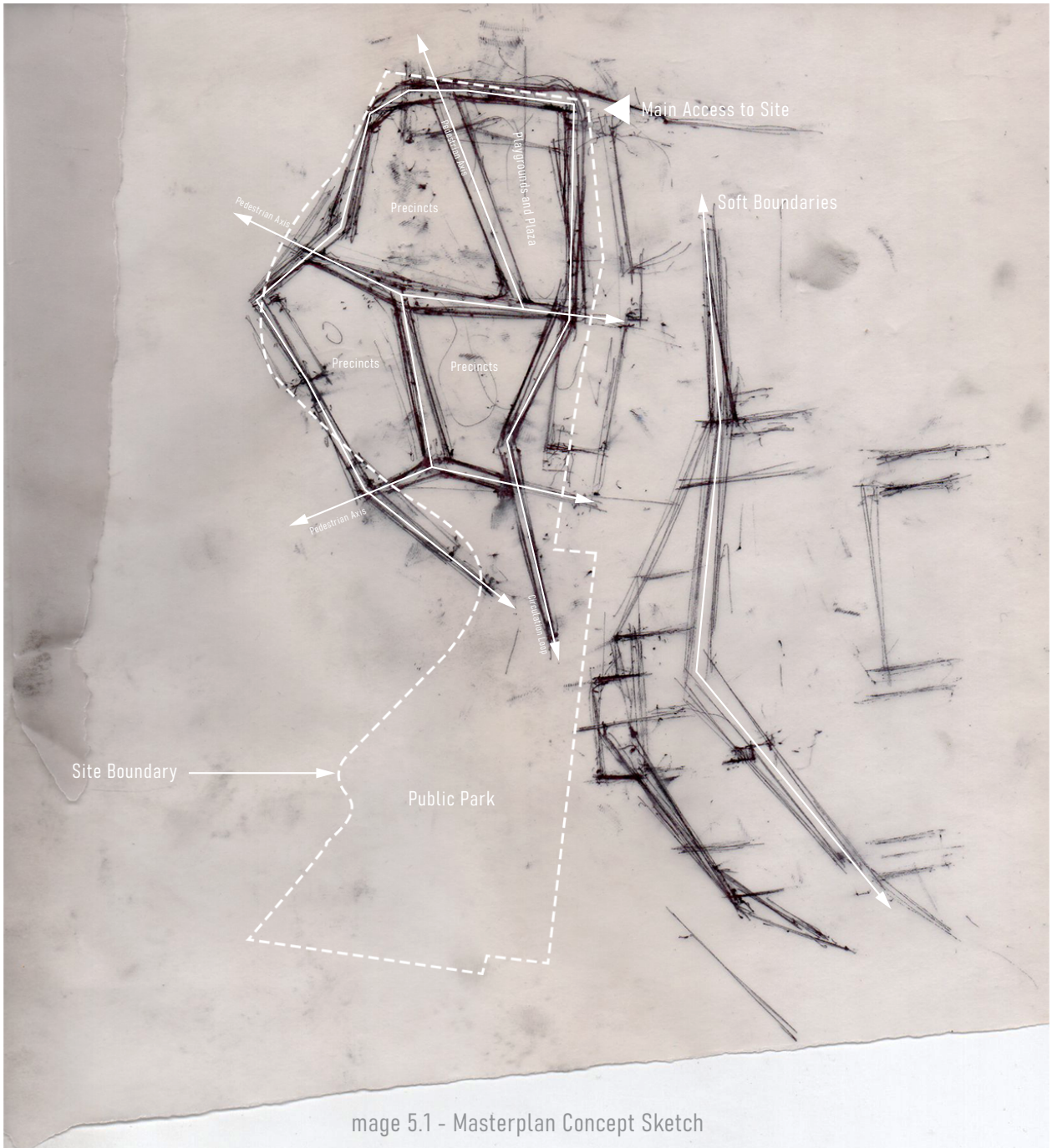
Low meadows and
Lawns

Urban Threshold

Diagram 4.3.9 - Site Approach and Strategy

5 PROPOSED HOUSING DESIGN

5.1 PROPOSED MASTERPLAN AND PROGRAMS



mage 5.1 - Masterplan Concept Sketch

The site is challenging because of its irregular shape and blured boundaries. However, it presents itself with a natural boundary of both infrastructural and natural site features despite the unusual shape and topographic character. The design elements proposed in the masterplan: the pedestrian path, bike lanes, squares and plazas, fragments of green areas and the proposed precincts for the housing typologies gently distorts to positively compliment the irregular shape of the site. The general spatial order of the proposed programs and activities is dictated by the circulation path to be articulated by river front amenities, a public park and bike lanes to promote walkability and pedestrianization.

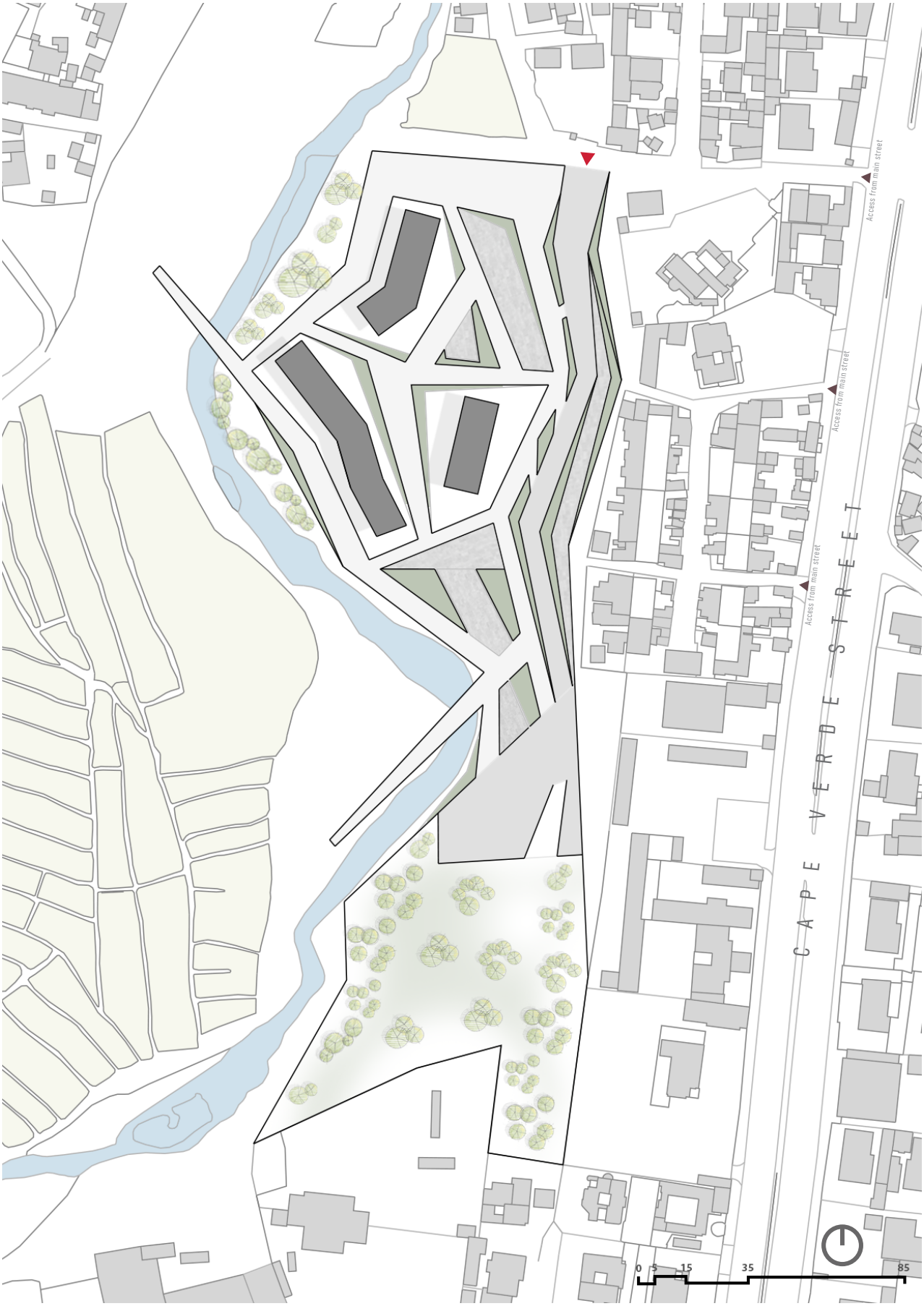
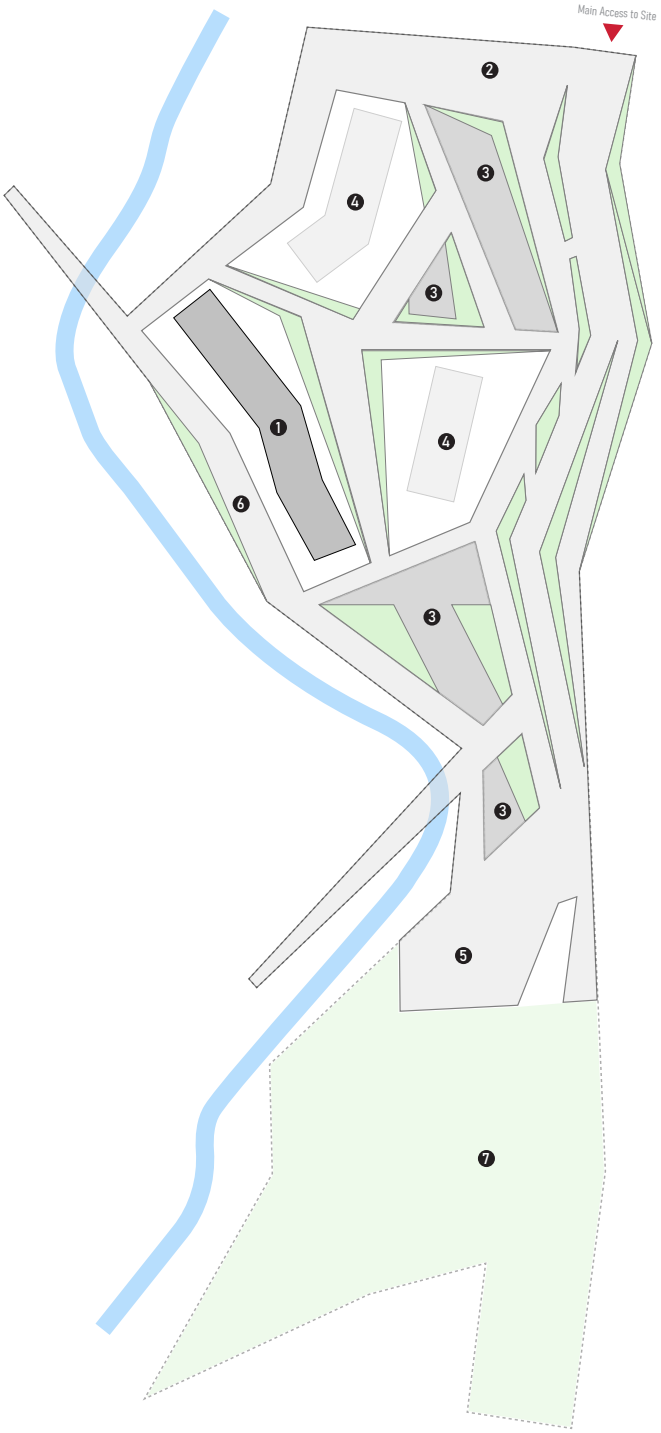


Image 5.2 - Proposed Masterplan

PROGRAMS AND ACTIVITIES



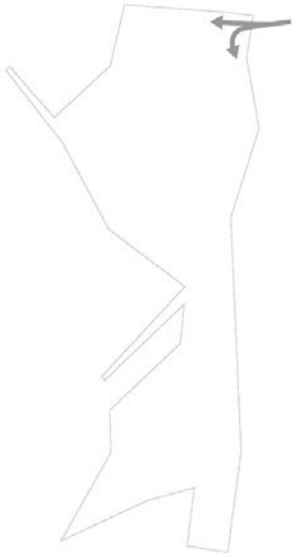
LEGENDS

1 - Housing to be proposed
2 - Street Extensions/Side Plazas
3 - Main Plazas/Squares
4 - Building Volumes
5 - Park Plaza
6 - River Front
7 - Public Park

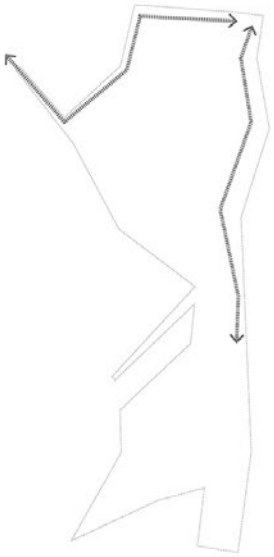
Image 5.3 - Proposed Programs and Activities

CIRCULATION HIERARCHIES AND SPATIAL ORDER

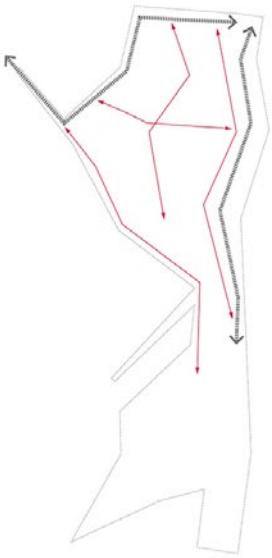
1. Access to site



2. Primary Circulation Paths



3. Lanes



4. Site spatial order dictated by circulation paths

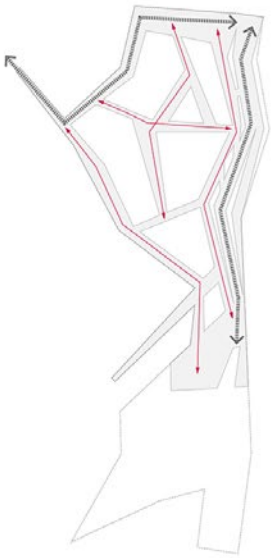
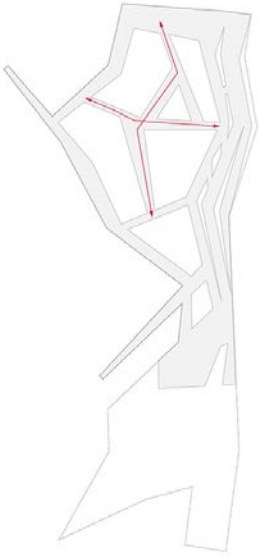


Diagram 5.1 - Circulation Hierarchies and Spatial Order

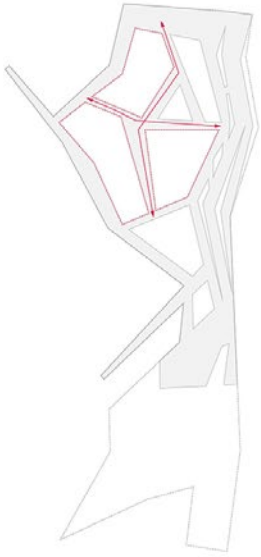
The primary circulation paths and lanes are systematically sorted out following the topography which gradually slopes down to the river edge. The main circulation paths that anchor the remaining walkways and lanes runs along the edge of the site boundary adding an additional layer of function as a natural boundary between the site and surrounding context. The circulation also informs the spatial order and composition of the site.

BUILDING PRECINCTS LOGIC

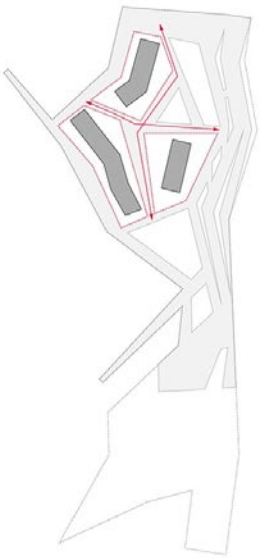
1. Circulations forming precincts



2. Building precincts



3. Building clusters



4. Housing complex to be developed

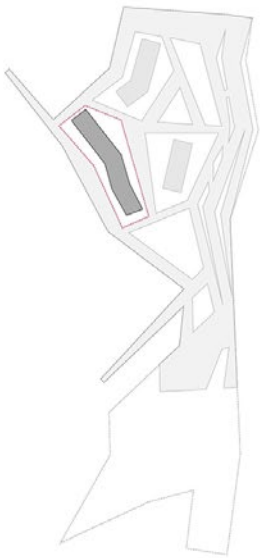
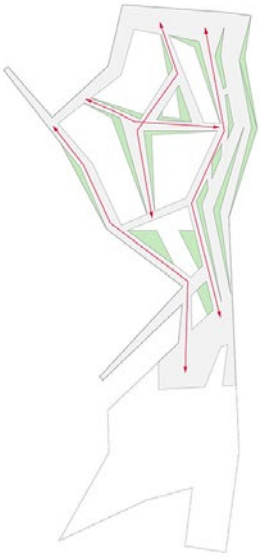


Diagram 5.2 - building Precincts Logic

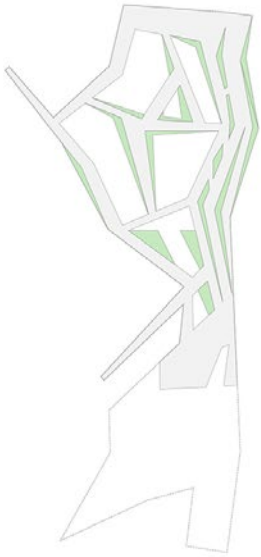
In terms of activating and enhancing the communal spirit of the project site, the building precincts are organized around pedestrian paths forming a cluster of exterior spaces connecting the building plots. The precincts accommodate the building structures and a series of public spaces, playgrounds and plazas extending and stretching along the circulation paths to set up a threshold for a strong sense of community.

GREEN SYSTEM

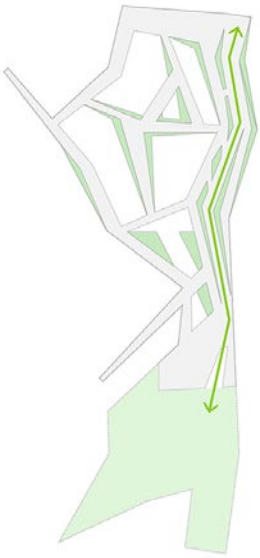
1. Pedestrian green paths



2. Green Systems as soft boundaries



3. Access to public park



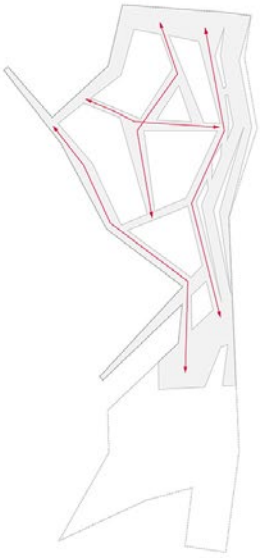
4. Pedestrian bridge with access across the river

Diagram 5.3 - Green System

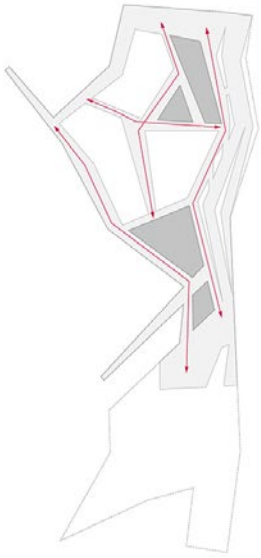
As a transition from the surrounding context to the new development, there are a system of green areas that gives a different width to the pedestrian paths and creating soft boundaries between different elements of the site like the public space, paly grounds, river fronts, and adjacent buildings. The main access to the path is the longest walkway widening into the new park which complements the farmlands on the other side of the river. Two pedestrian bridges connect the different sides of the river with possibilities of increasing pedestrian flow.

PUBLIC SPACES AND PEDESTRIANIZATION

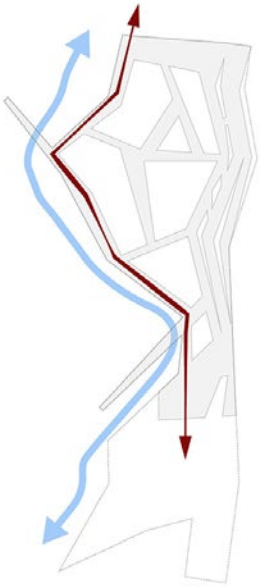
1. Walkways and Bike Lanes



2. Public Plazas and Squares



3. River Front



4. Public Access to River Front

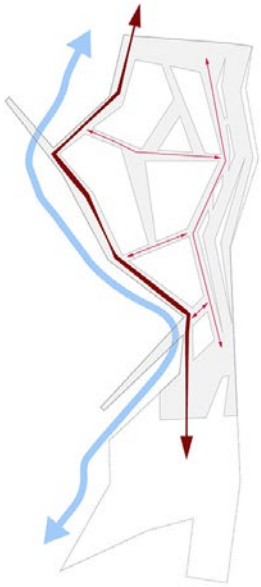


Diagram 5.4 - Public Spaces and Pedestrianization

To favor a necessary pedestrian flow and promote walkability, another major walkway extends parallel to the river front. The integration of public plazas and squares defined by the circulation paths will rehabilitate the centrally located degraded site. The site strategy cites pedestrianization and cycling to make the river front more active and create a space connected to the plazas and the squares.

5.2 ARCHITECTURAL DESIGN

DESIGN CONCEPT

The design concept took Inspiration from the informal pedestrian streets of neighborhoods in Addis Ababa (see image below). It is conceived as a system of circulation that act as a tool of social condenser horizontally reinforcing the local living culture, sense of community and architecturally shaping the housing building form. New urban pattens created by demand driven infrastructure and housing developments such as the condominium housings in cities with emerging economies and complex societies like Addis Ababa are usually achieved at the cost of the social networks and values of existing communities to be cleansed, upgraded or renewed. As a result of such actions, the current urban realm in Addis Ababa represents extremely contrasting living standards and bipolar social and economic realities.

The design aims to mitigate the socio economic polarization through manifestation of urbanization at an architectural scale which is synthesized through the encounter between informality and order; complexity and clarity; community and individualism exploring a new form of symbiosis between urban density and social network – creating a neutral urban and architectural ground shaped by the coexistence of various urban conditions and qualities. A horizontal strata of cascading floor plates shaped by circulation areas form the genesis of the architectural composition for a comprehensive integration of increased density, typological variation, and social harmonization to form a community complex where informality is tolerated, and social cohesion is celebrated.

Image 5.4 - Pedestrian streets in local neighborhoods of Addis Ababa

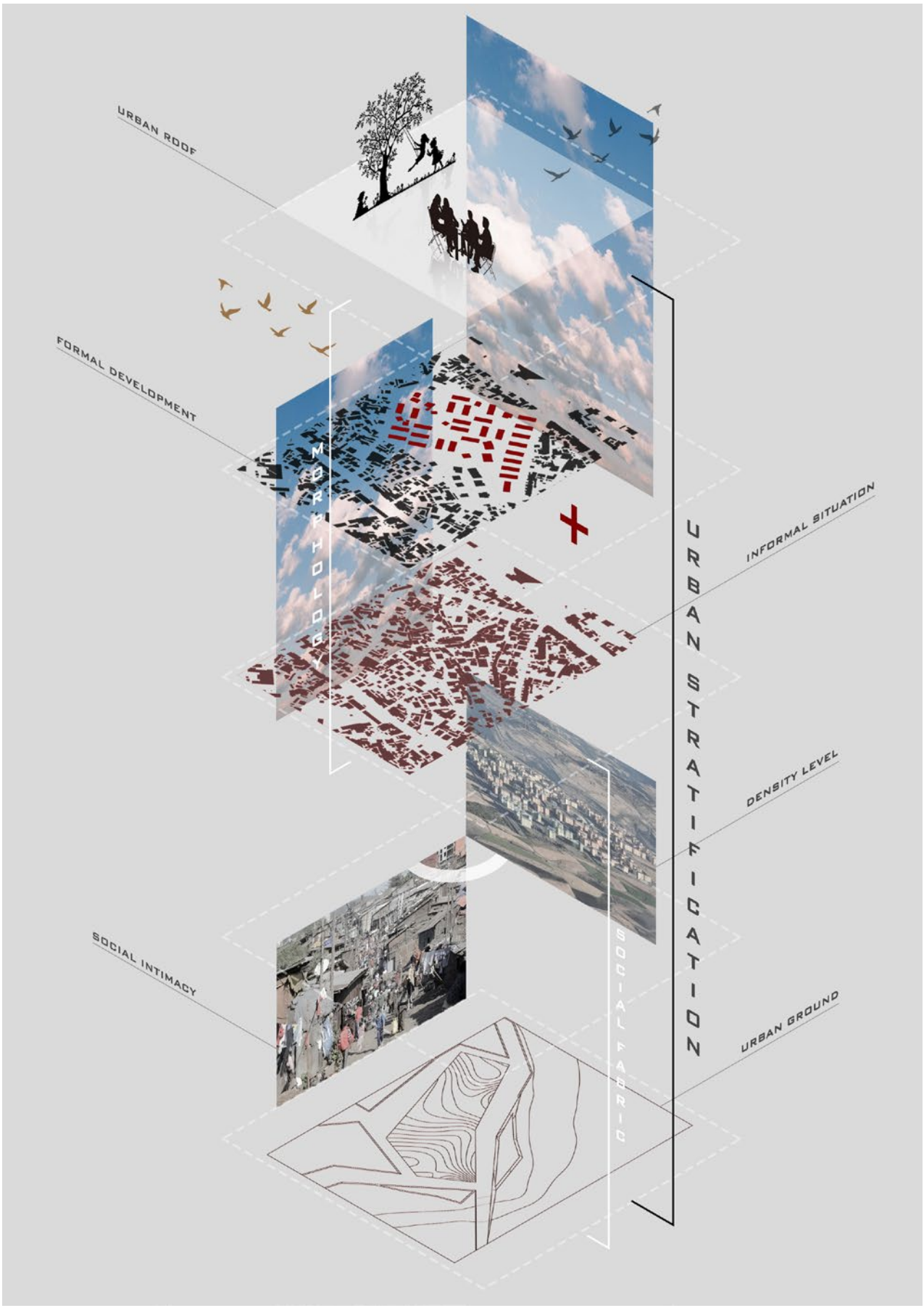
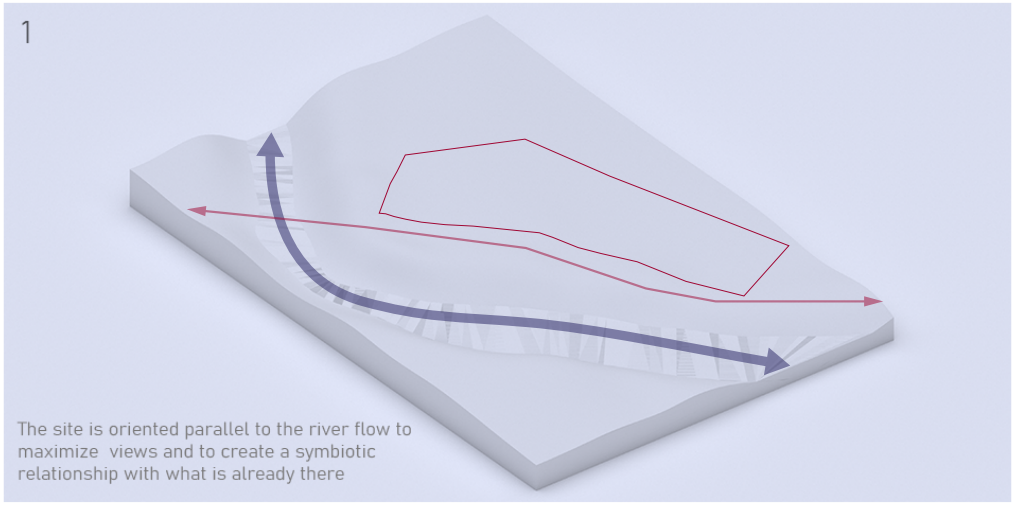
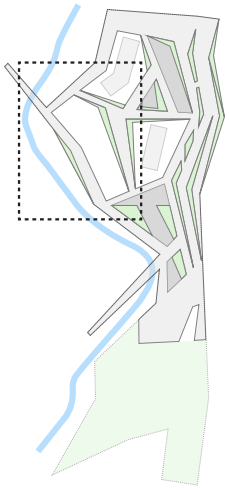


Image 5.5 - Design Concept

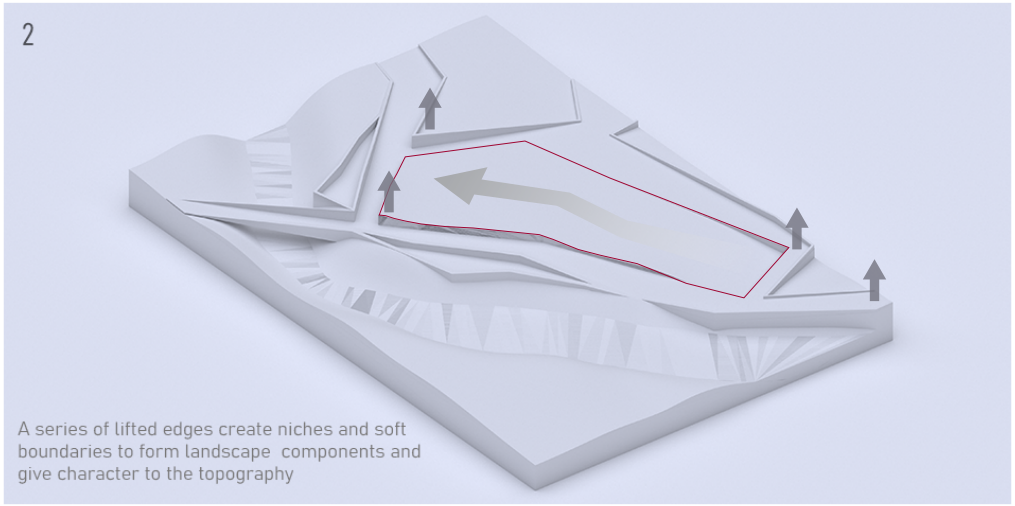
SITE DESIGN DEVELOPMENT



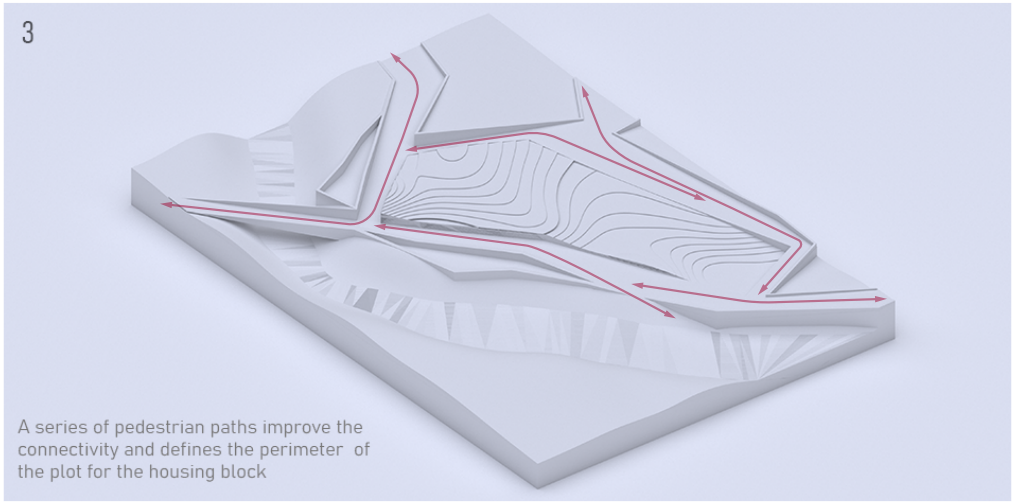
Site Orientation



ey Plan



Lifted Edges



Pedestrian Flow and Connectivity

Image 5.6 - Site Design Development

SITE COMPONENTS

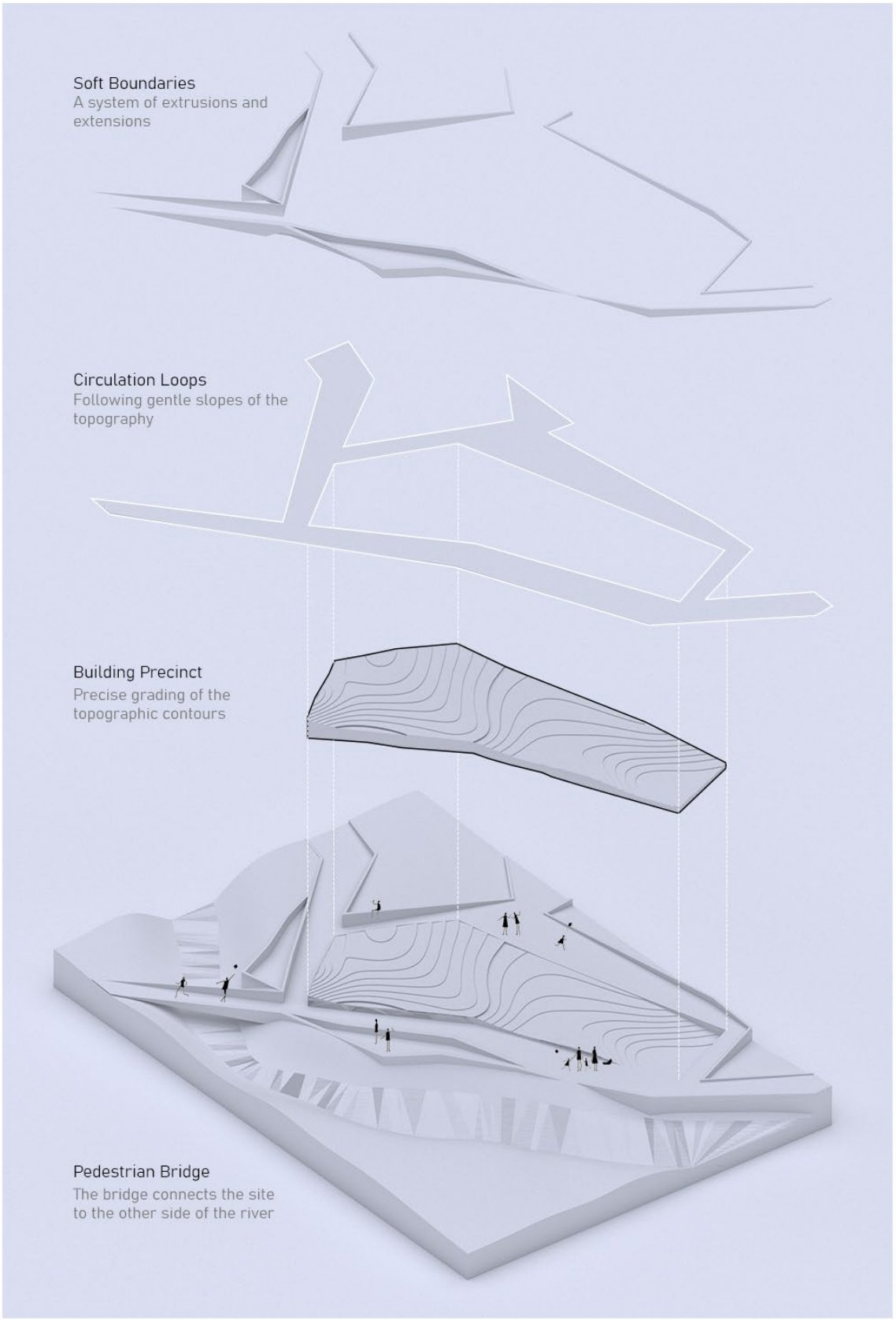
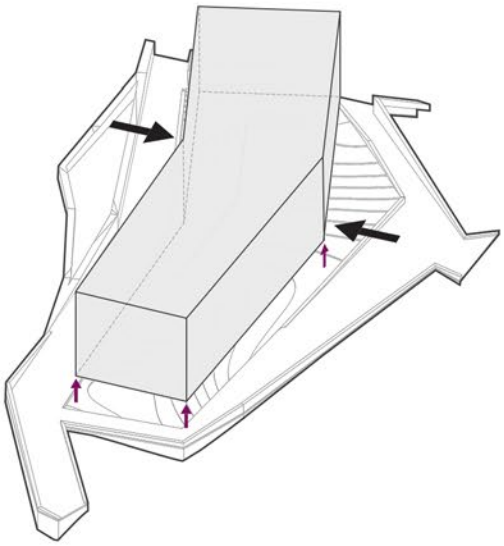


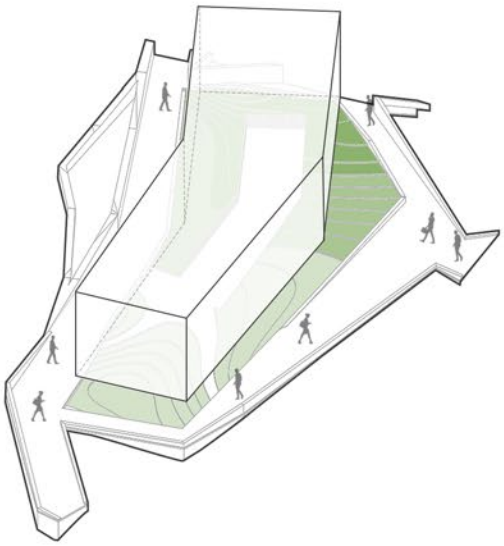
Image 5.7 - Site Components

Massing and Context

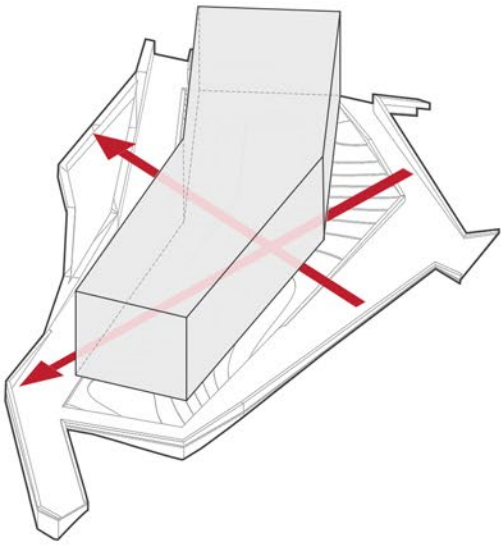
1
Shape and Volume



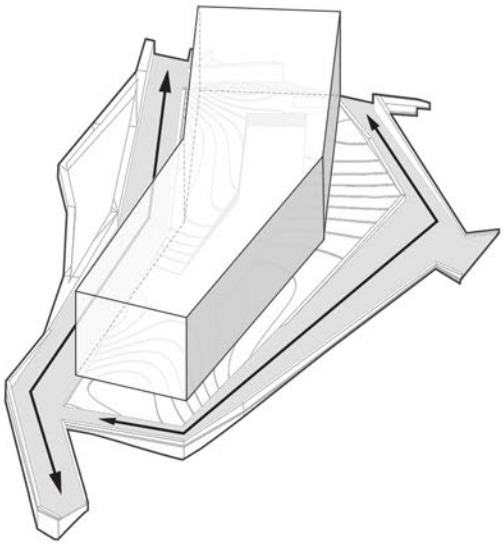
2
Green Landscape



3
Visual and Spatial Continuity

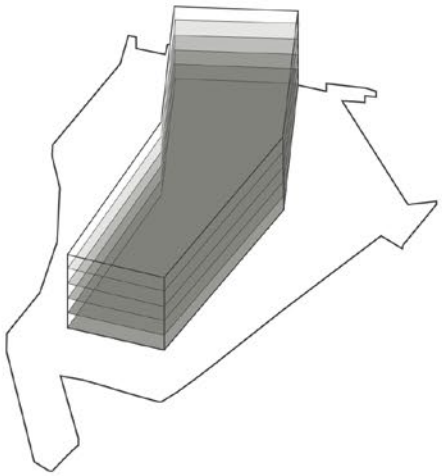


4
Connection to Pedestrian Street

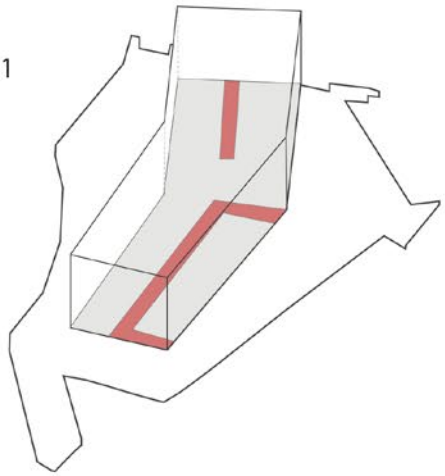


The building volume is extruded and pushed in and out to follow the shape of the site's perimeter. The elevated building mass will allow a visual connection between opposite sides of the pedestrian lanes and the open ground beneath will act as a communal place for residents. With its long and horizontal surfaces extending as the length of the pedestrian paths on each side the massing relates to its immediate surrounding.

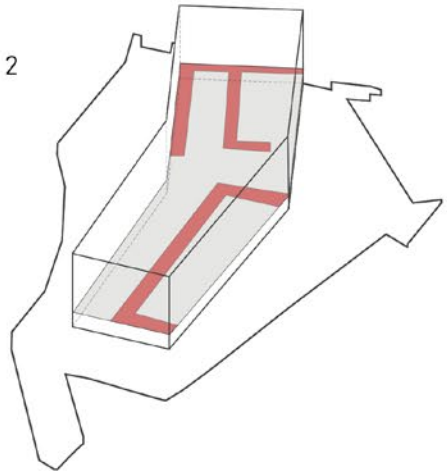
Horizontal Carves and Cuts



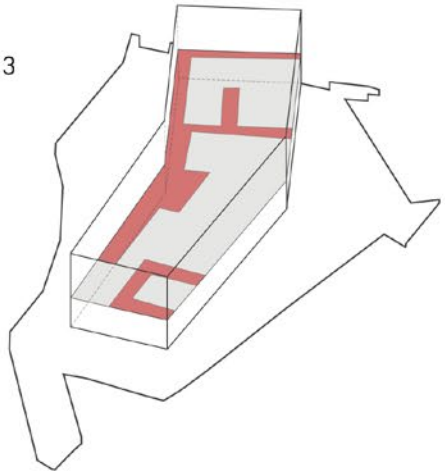
Standard Floor Layered



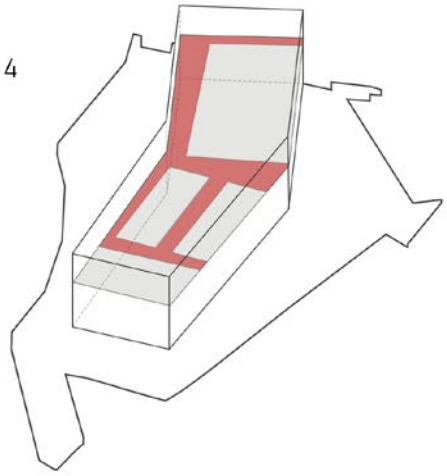
Level - 1



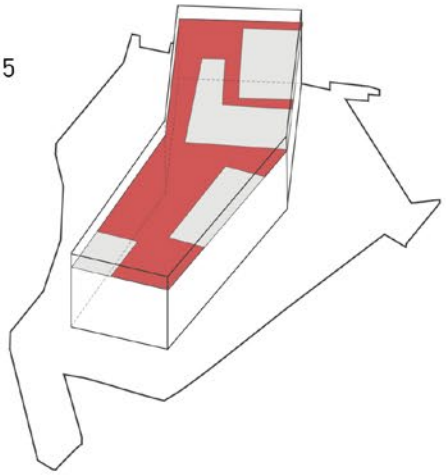
Level - 2



Level - 3

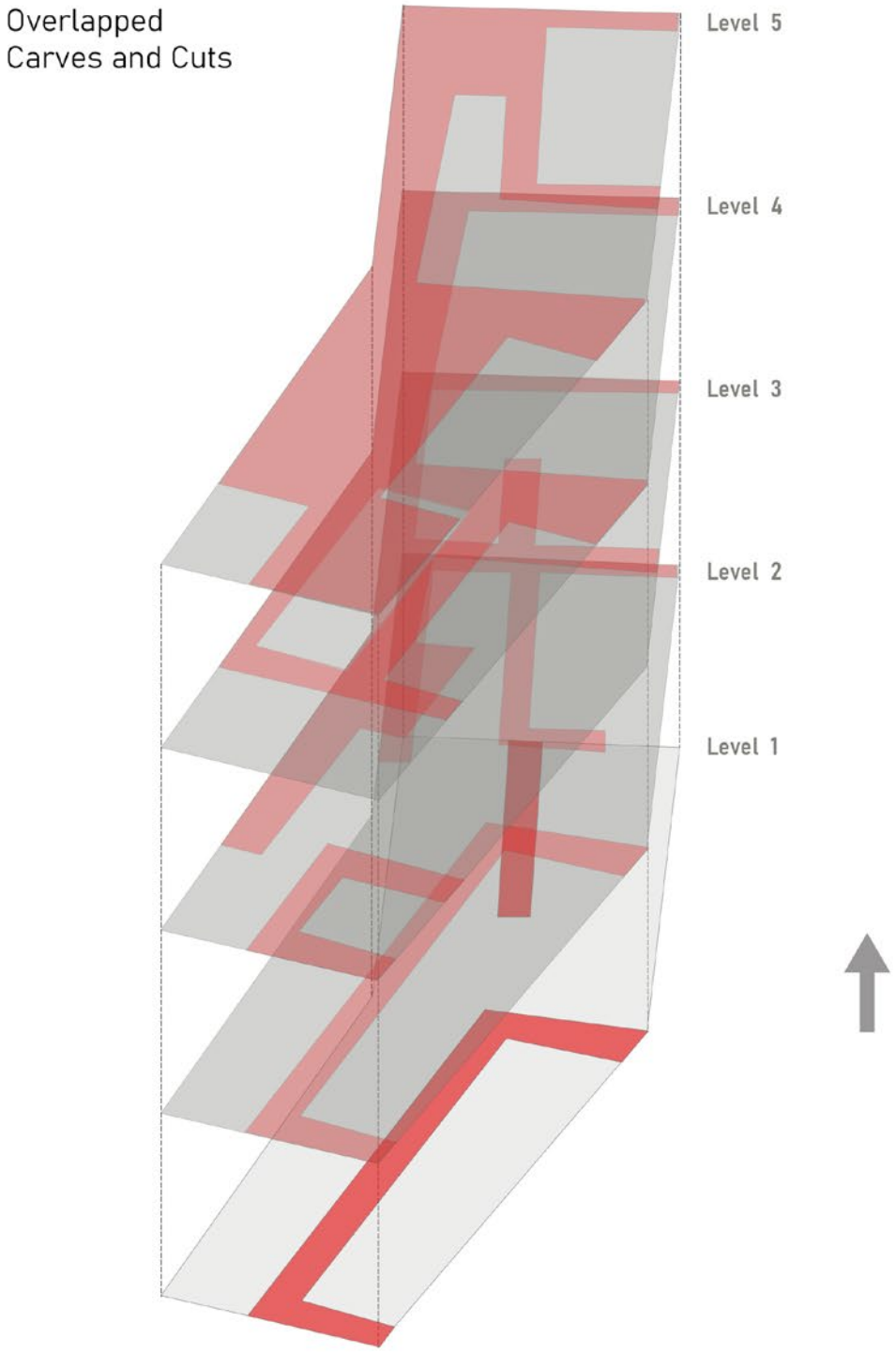


Level - 4



Level - 5

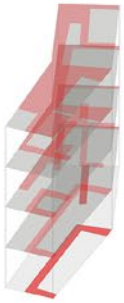
The carves and cuts on each floor level creates a system of horizontal circulation and common areas for the building residents and dictates the shape and form of each floor level.



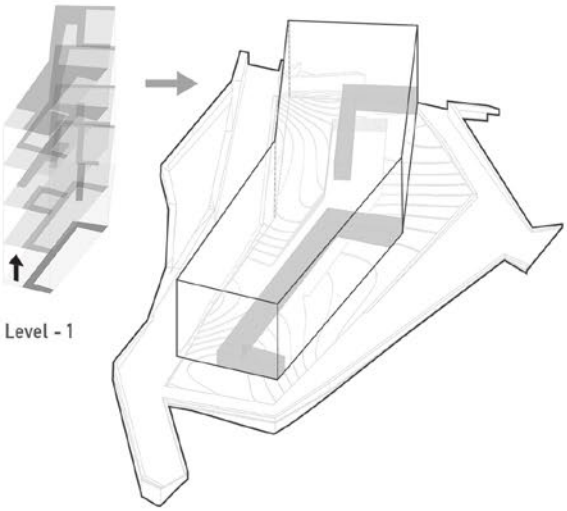
Much of the existing social networks of the residents in Addis is dependent on the connection of different urban fabrics to the pedestrian street networks on the ground which has evolved organically overtime. The irregular and informal shape of the streets are symbolic representation of the forces of social intimacy and community. The layered horizontal carves and cuts, while creating a system of circulation and streetscape on each floor level, continues the social connection and maintains the sense of community at building level.

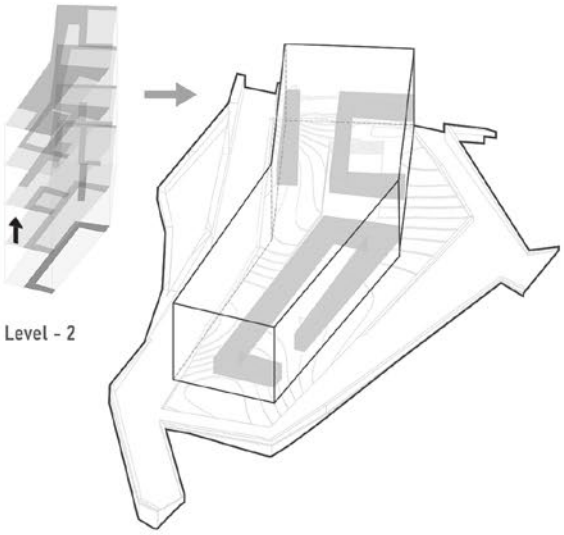
Carves and Cuts Extrusion

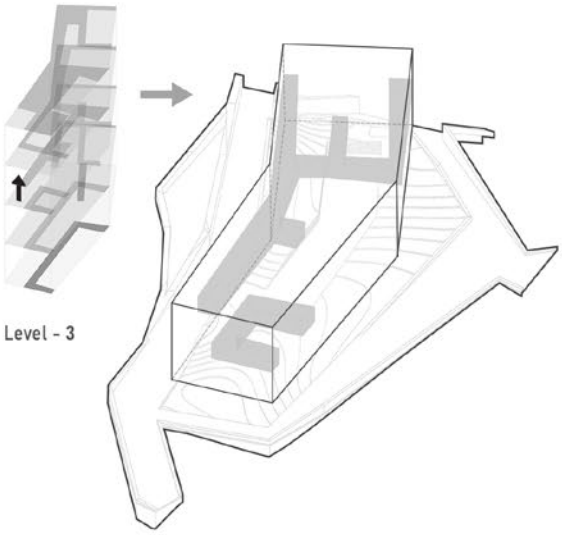
Design Strategy

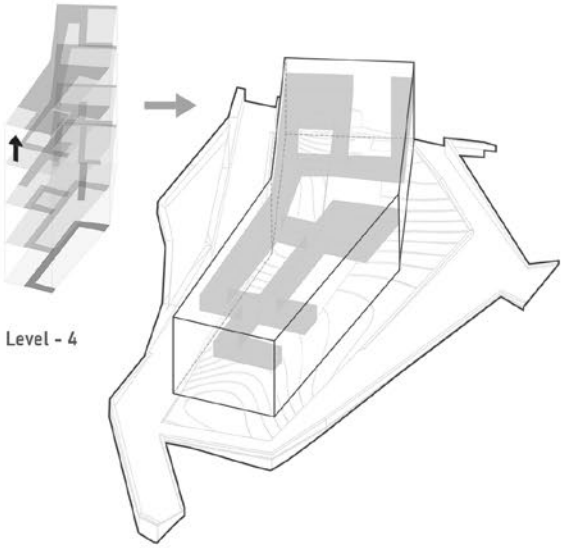


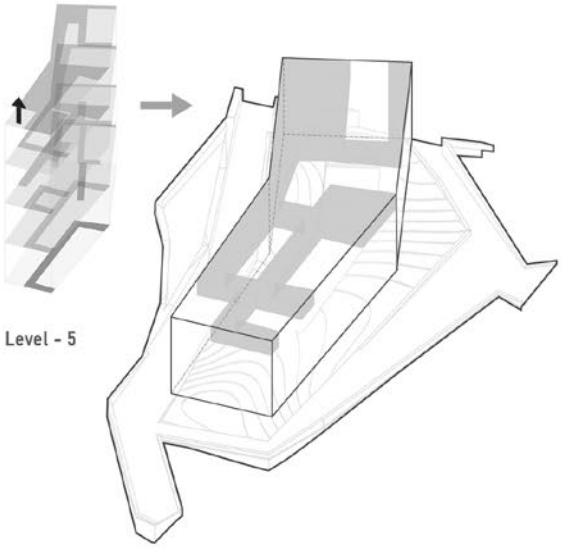
How can the generic mass be transformed into a housing complex with a sense of identity and place making? The carves and cuts on each floor are extruded at a single floor height simultaneously forming a void space.



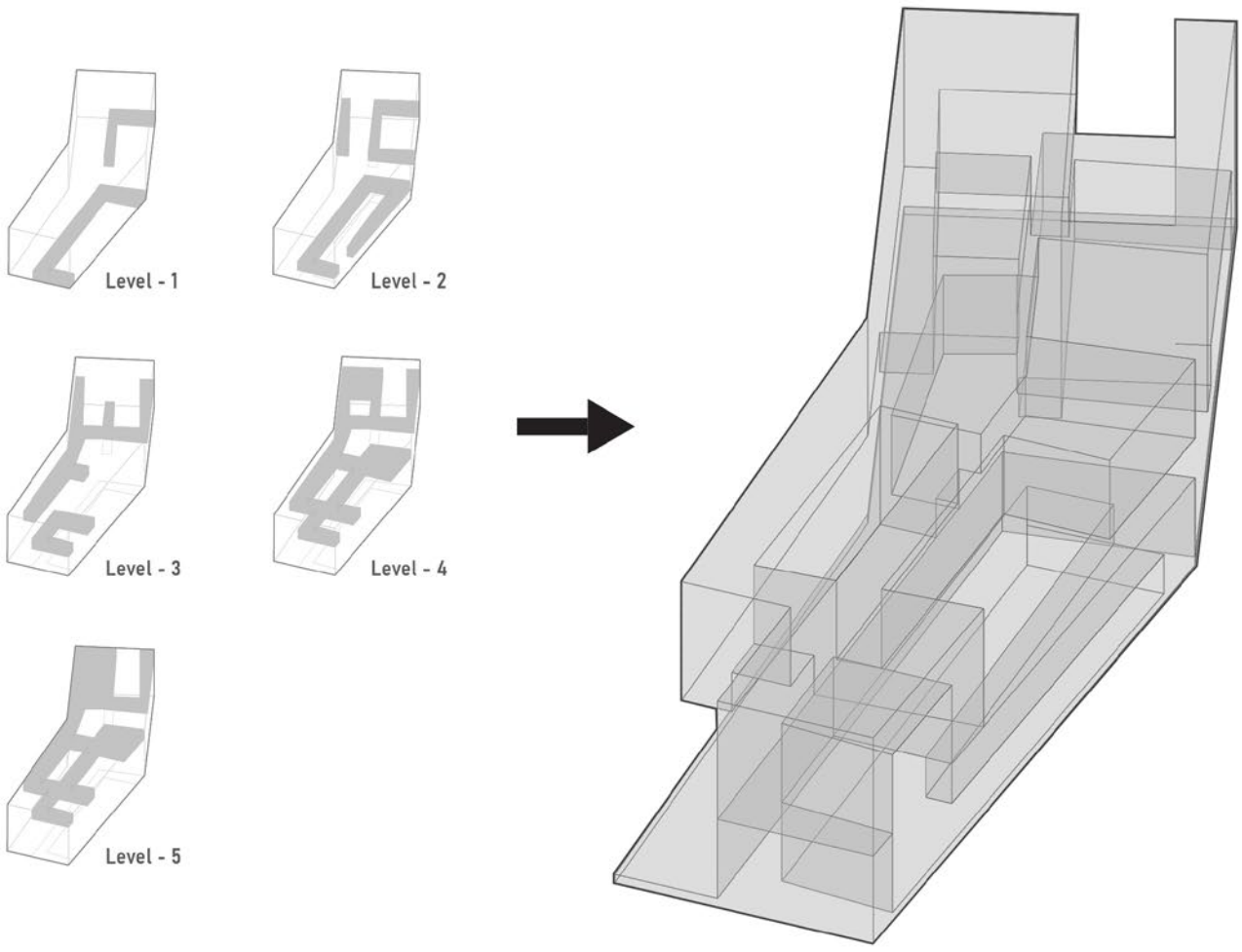




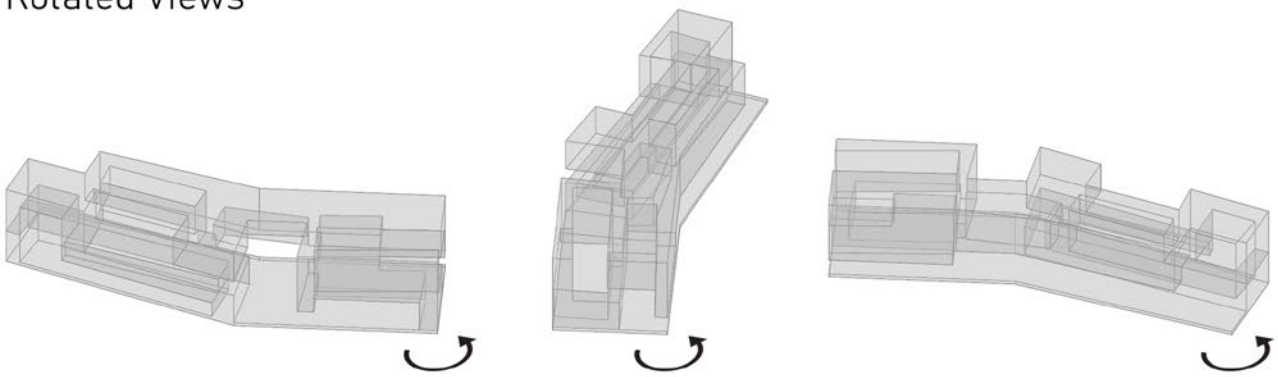




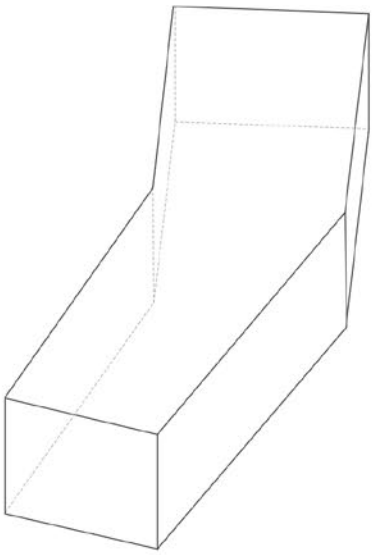
Clustered
Carves and Cuts



Rotated Views



The resulting void spaces from the extruded carves and cuts are clustered together forming a single cutting void. The result is a cutting mass to be subtracted from the main volume. Each void space is layered and joined leaving a functional area for circulation, connection and views and daylights from multiple directions.

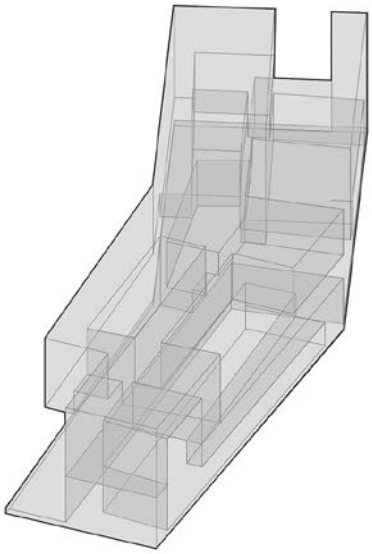


Base Volume

−

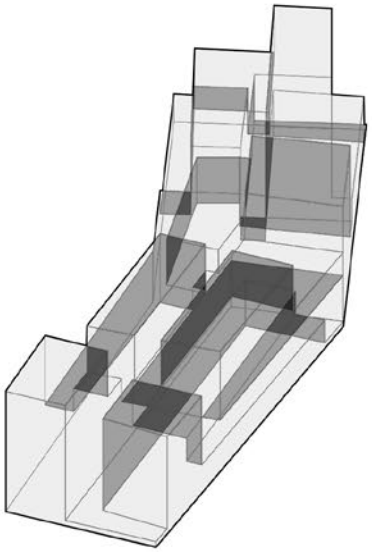
Mass Subtraction

The carves and cuts cluster, merged to form a single cutting mass, subtracts a void space from the base volume creating a compact housing complex characterized by deep cuts and openings. The resulting design composition forms adulating building mass with different open spaces at every floor level for maximum connection and community interaction.



Cluster of Carves and Cuts

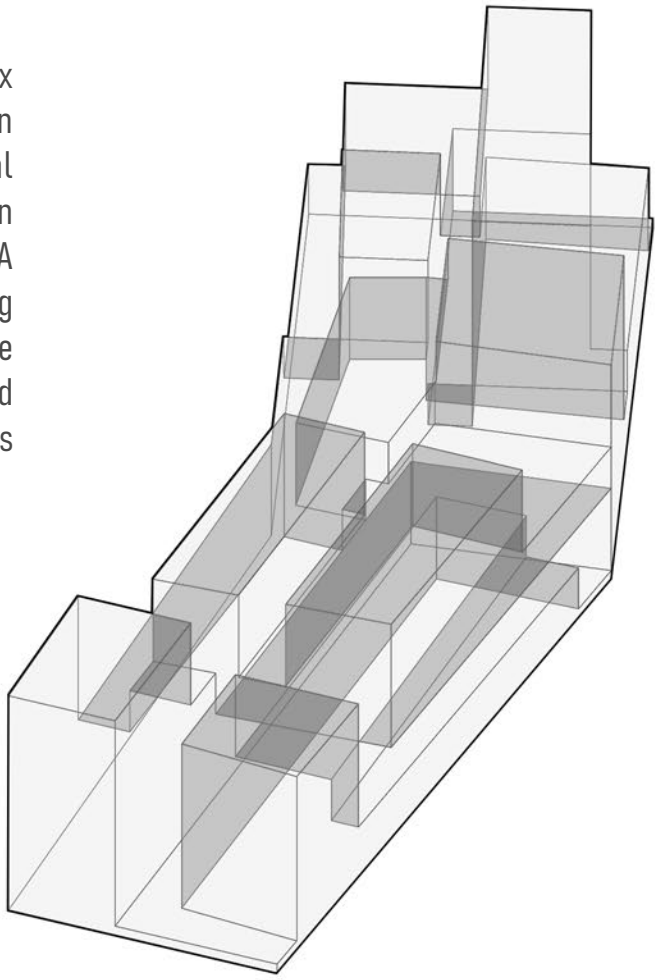
=



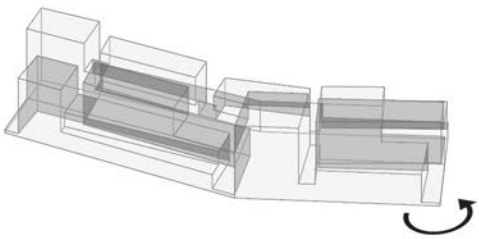
Building Mass

Building Mass

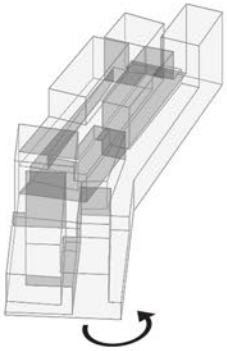
In architectural terms the housing complex is shaped by overlapping cluster of open spaces which makes both the horizontal and vertical circulation as well as common areas that works as social condenser. A series of interconnected and adulating spaces are formed as a result of the subtraction. The terraced spaces and communal areas at different floor levels overlooks the surrounding context.



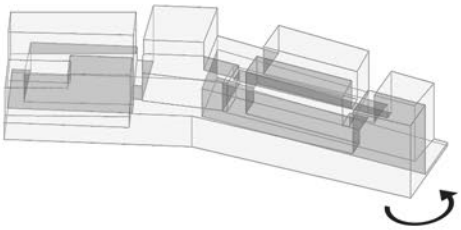
Rotated Views



North-East



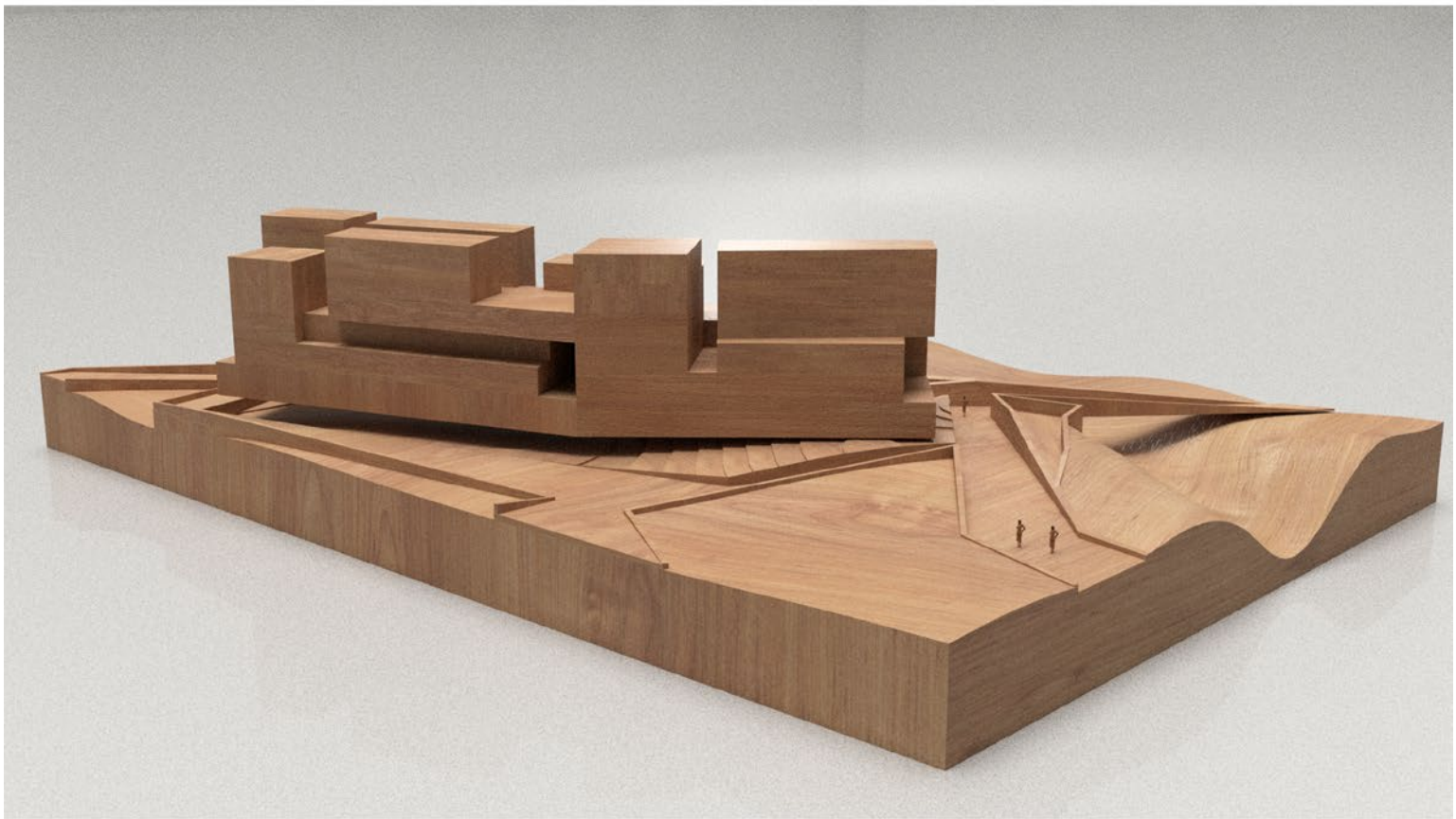
North-West



West-South

Multi-Level Cuts and Voids

The subtracted carves and cuts opens and connects the building mass to the surrounding context while providing deep natural light, common areas and circulation spaces. The multi-level cuts create the impression of excavating the building mass to reveal the smaller massing clusters metaphorically and physically to the surrounding context.

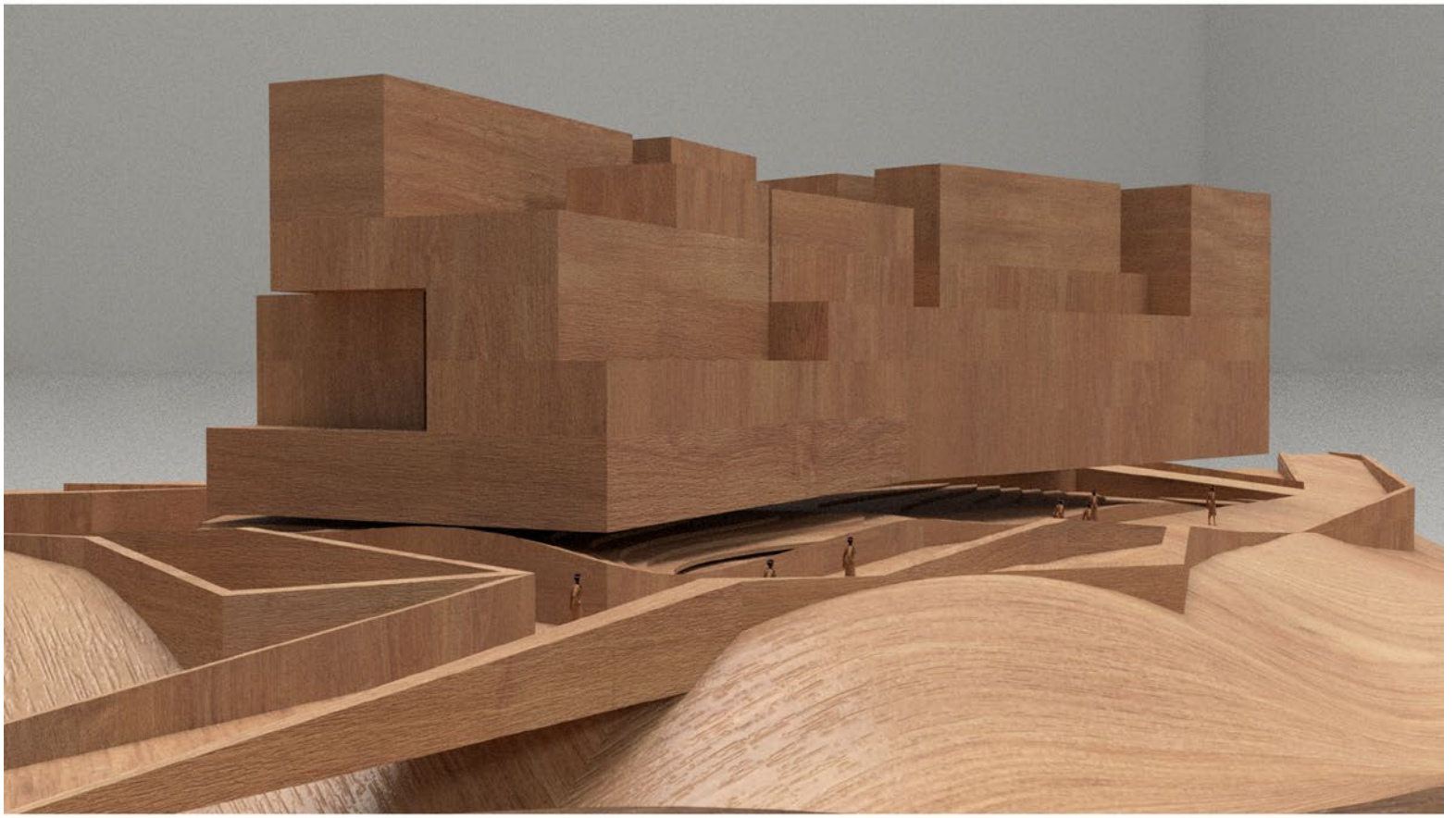


Scale and Context

In the process of visiting the proposed site, it was apparent that the building mass has to be placed facing the topographic dip. In order to bring the building into a relationship with the surrounding context, its horizontality is emphasized rather than the building height with a comfortable ense of scale.

Cascading Open Spaces

Outdoor public terraces cascades at multiple level facing the river front and pedestrian path. The cascading open areas are the primary social condensing spaces in the housing complex. The open spaces correspond to the extraction of the cuts and carves from the generic building mass o create a multitude of social spaces.

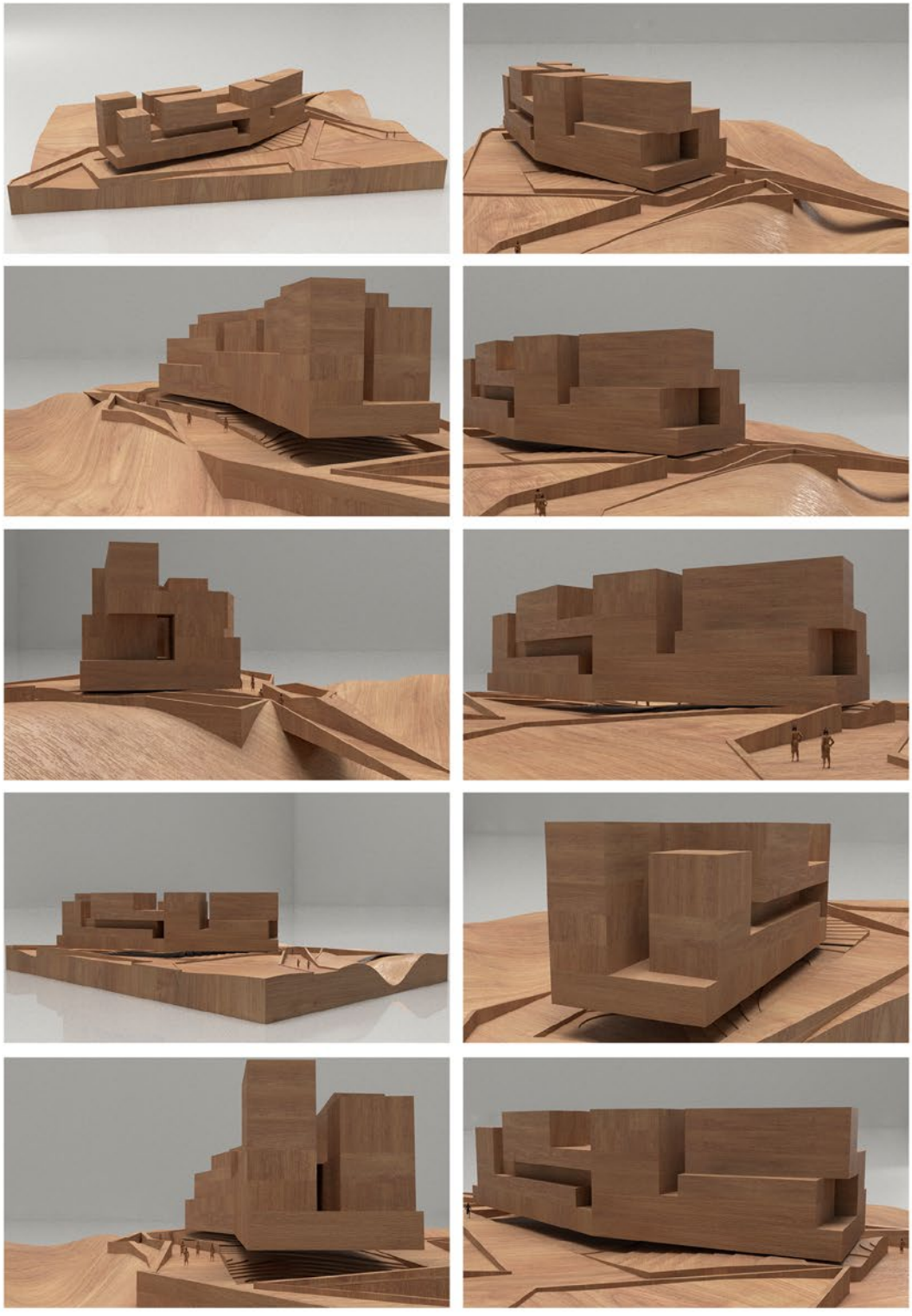


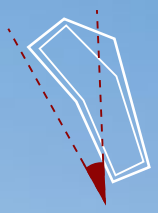
Community Cluster

The clustered elements form a whole that is greater than the sum of its parts maximizing social interaction and creating a symbiotic relationship between the housing complex and the surrounding context. The open areas between the agglomerated masses and the roofscapes offers spaces that can be customized and sed for different events and activities.

Changing Facades

From afar the building complex gives the impression of a sculptural mass sitting near the approximate center of the surrounding context oriented along the site's diagonal axis. Carved negative spaces creates porous openings occurring on different parts of the building mass. The porosity creates uneven and different urfaces to complement the volumetric complexity.



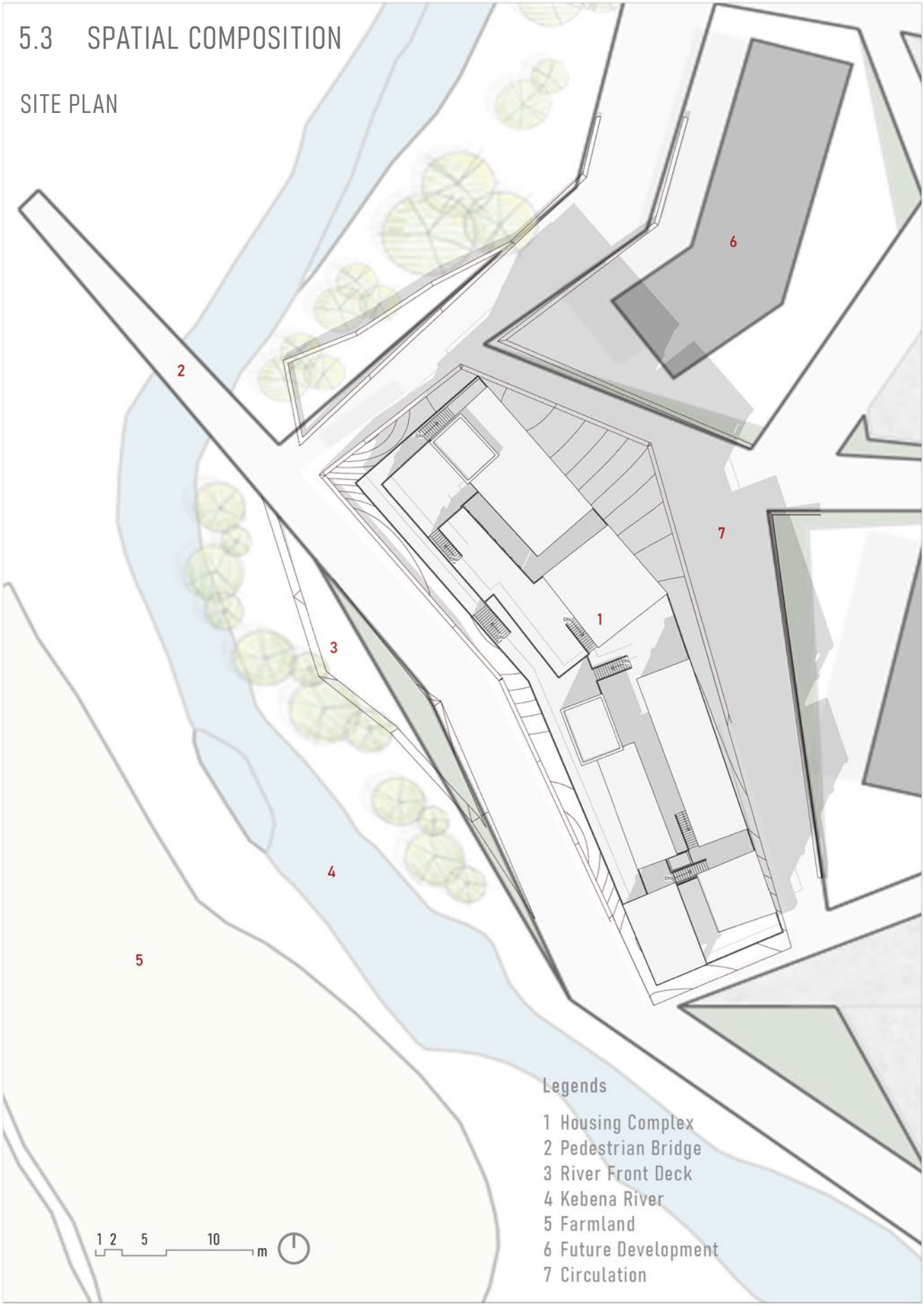


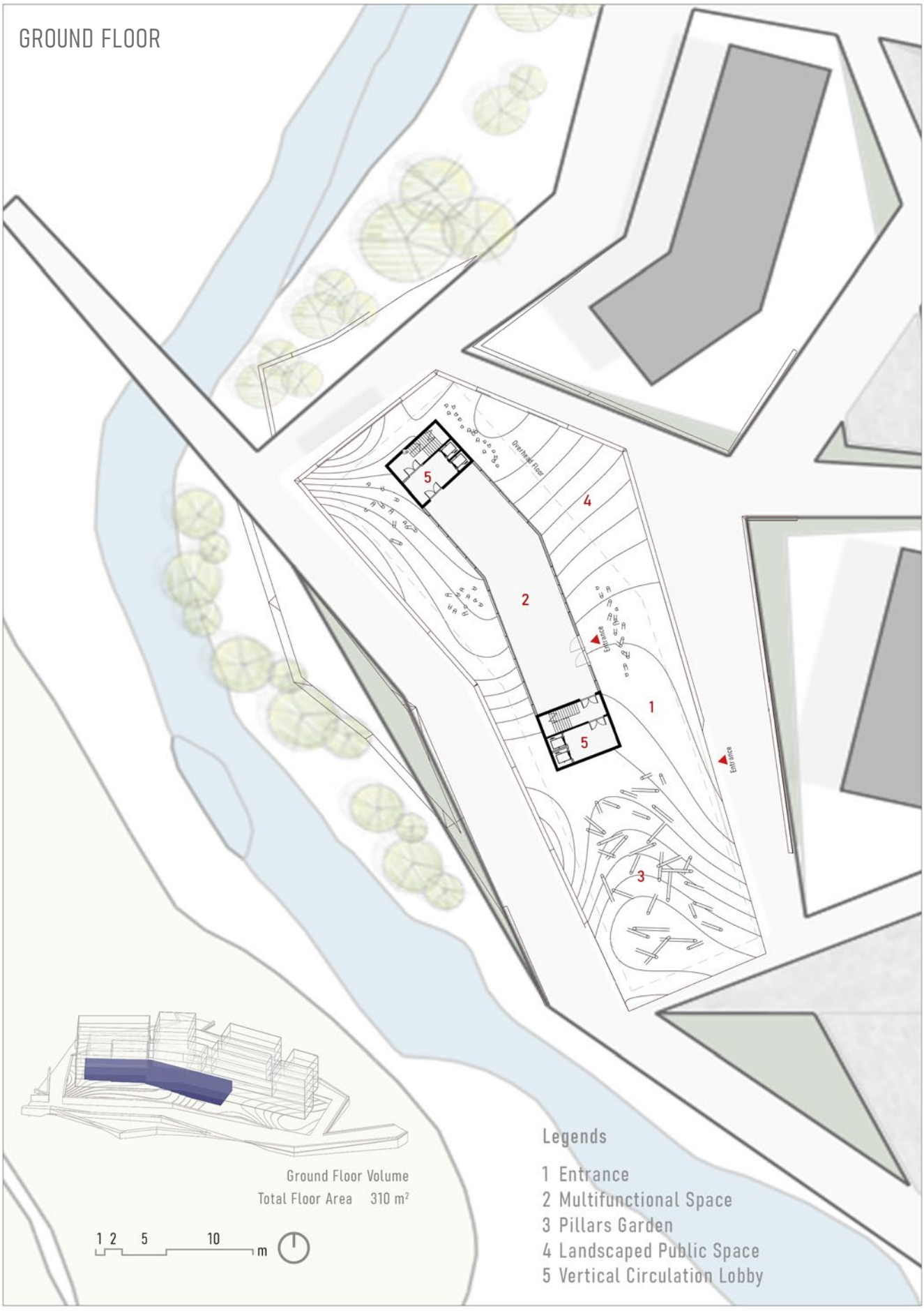
View Direction

RENDER IMAGE - 1

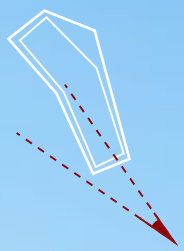
5.3 SPATIAL COMPOSITION

SITE PLAN




GROUND FLOOR
Overhead Floor
Entrance
Exit and Entrance
5
4
2
1
5
3
Ground Floor Volume
Total Floor Area 310 m²
1 2 5 10 m
Legends
1 Entrance
2 Multifunctional Space
3 Pillars Garden
4 Landscaped Public Space
5 Vertical Circulation Lobby

RENDER IMAGE - 2



View Direction

FIRST FLOOR

First Floor Volume

Total Floor Area 1247 m²

Unit Legends

▶	One Bedroom Units	5 Units
▶	Two Bedroom Units	4 Units
▶	Three Bedroom Units	1 Unit
▶	Duplex Units	6 Units
		16 Total Units
▶	Community Center	

1 2 5 10 m

SECOND FLOOR

Second Floor Volume

Total Floor Area 1054 m²

Unit Legends

▶	One Bedroom Units	7 Units
▶	Two Bedroom Units	2 Units
▶	Three Bedroom Units	1 Units
		10 Total Units

1 2 5 10 m

THIRD FLOOR

Third Floor Volume

Total Floor Area 1063 m²

Unit Legends

▶	One Bedroom Units	12 Units
▶	Two Bedroom Units	2 Units
▶	Duplex Units	1 Unit
		15 Total Units

1 2 5 10 m

FOURTH FLOOR

Fourth Floor Volume

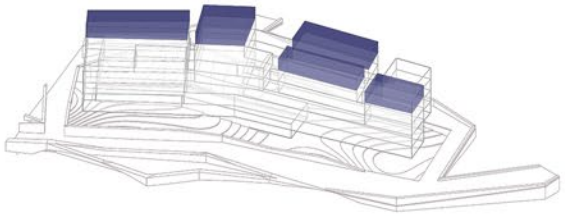
Total Floor Area 892 m²

Unit Legends

▶	One Bedroom Units	4 Units
▶	Duplex Units	4 Units
		8 Total Units
▶	Community Centers	

1 2 5 10 m

FIFTH FLOOR



Fifth Floor Volume

Total Floor Area 538 m²

Unit Legends

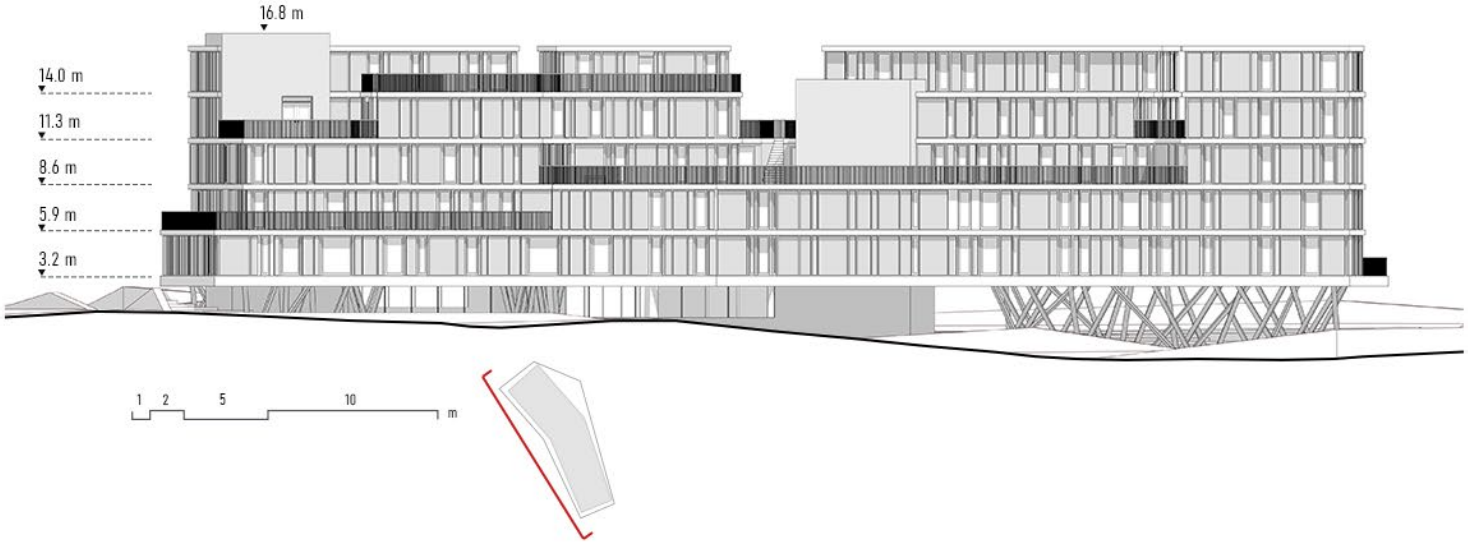
▶	One Bedroom Units	2 Units
▶	Three Bedroom Units	1 Units
		3 Total Units

1 2 5 10 m

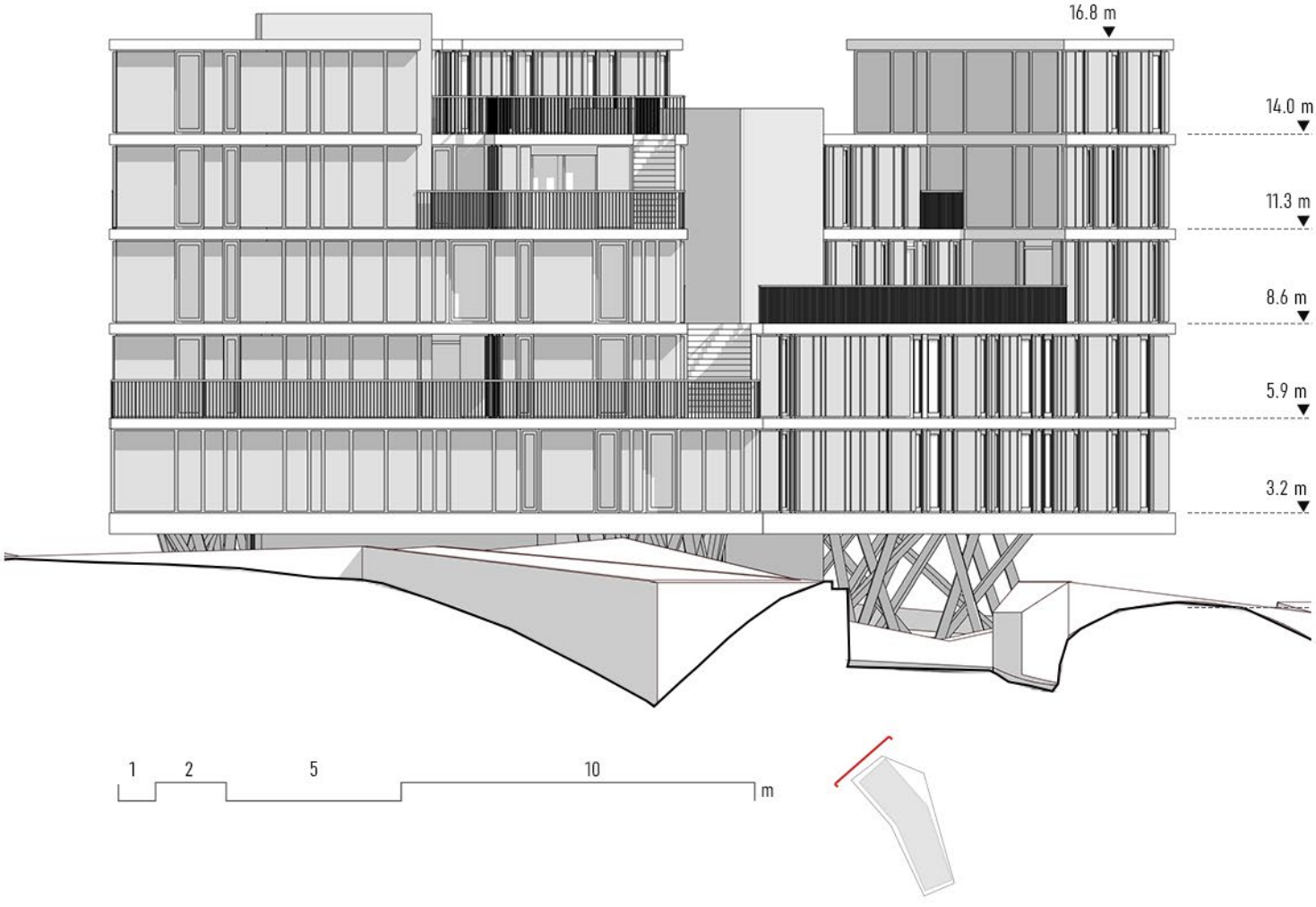
View Direction

RENDER IMAGE - 3

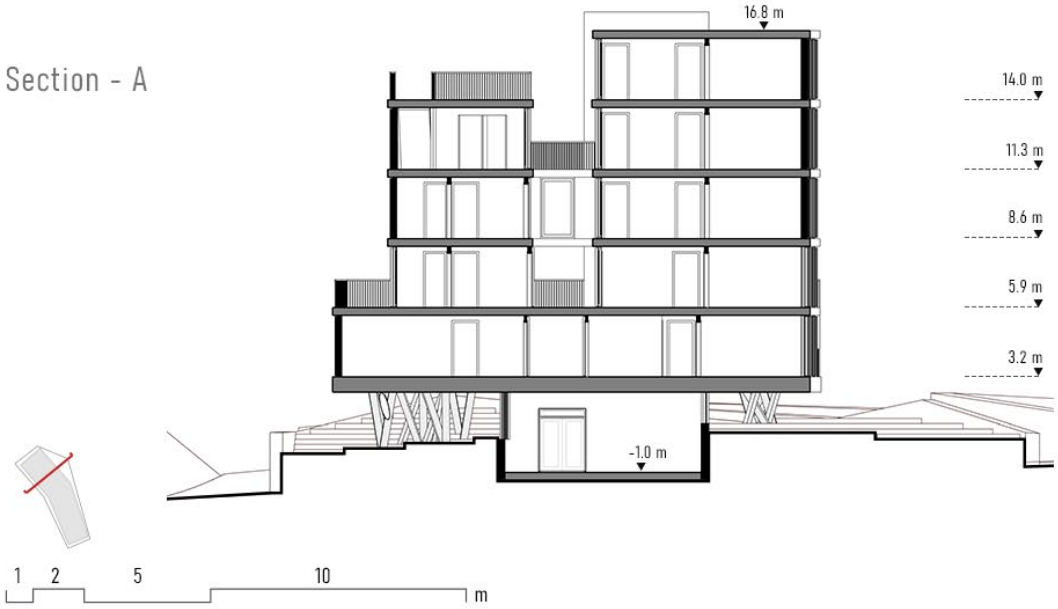
South - West Elevation



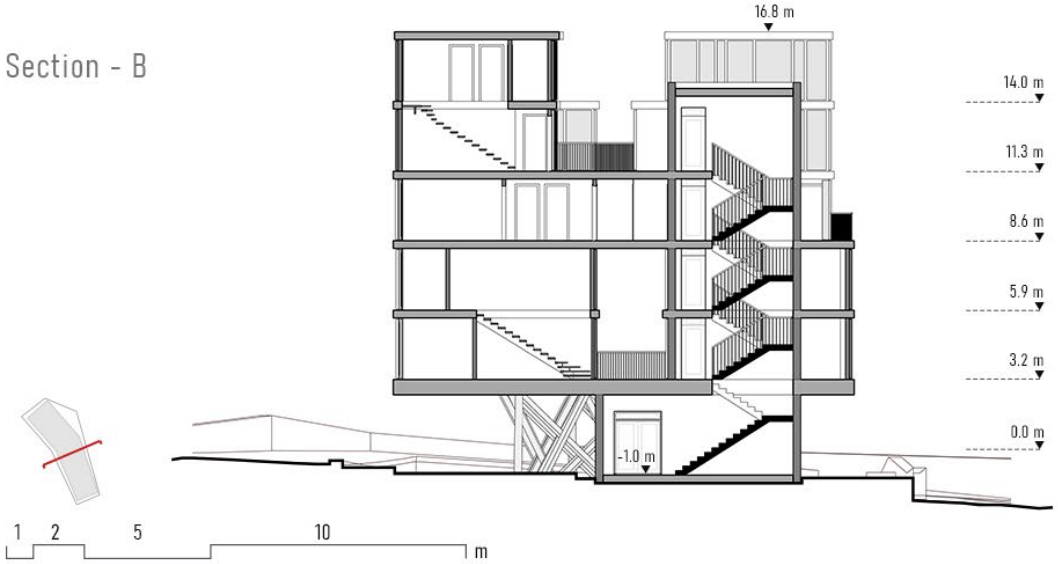
North - West Elevation



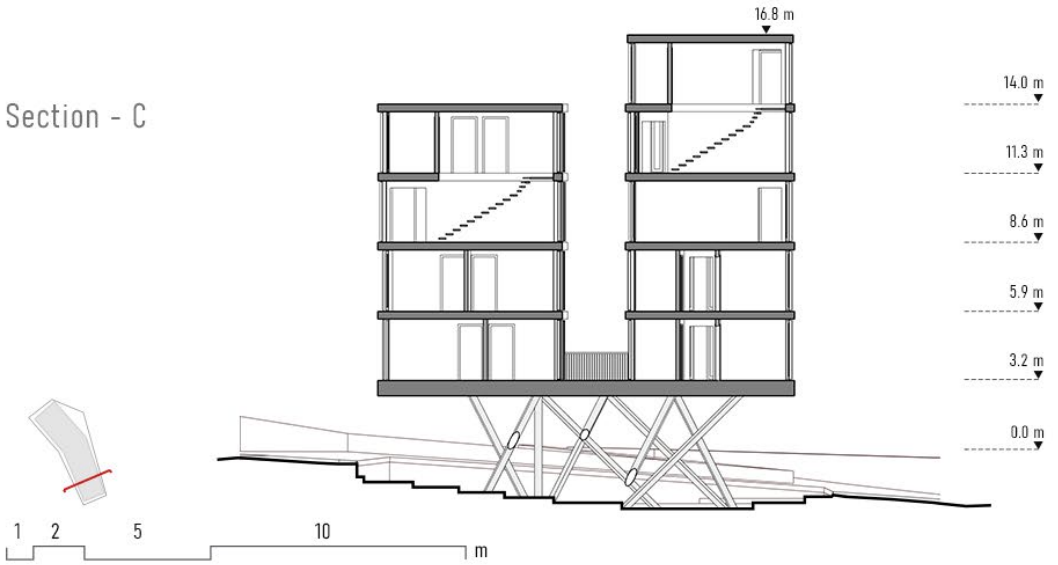
Section - A



Section - B



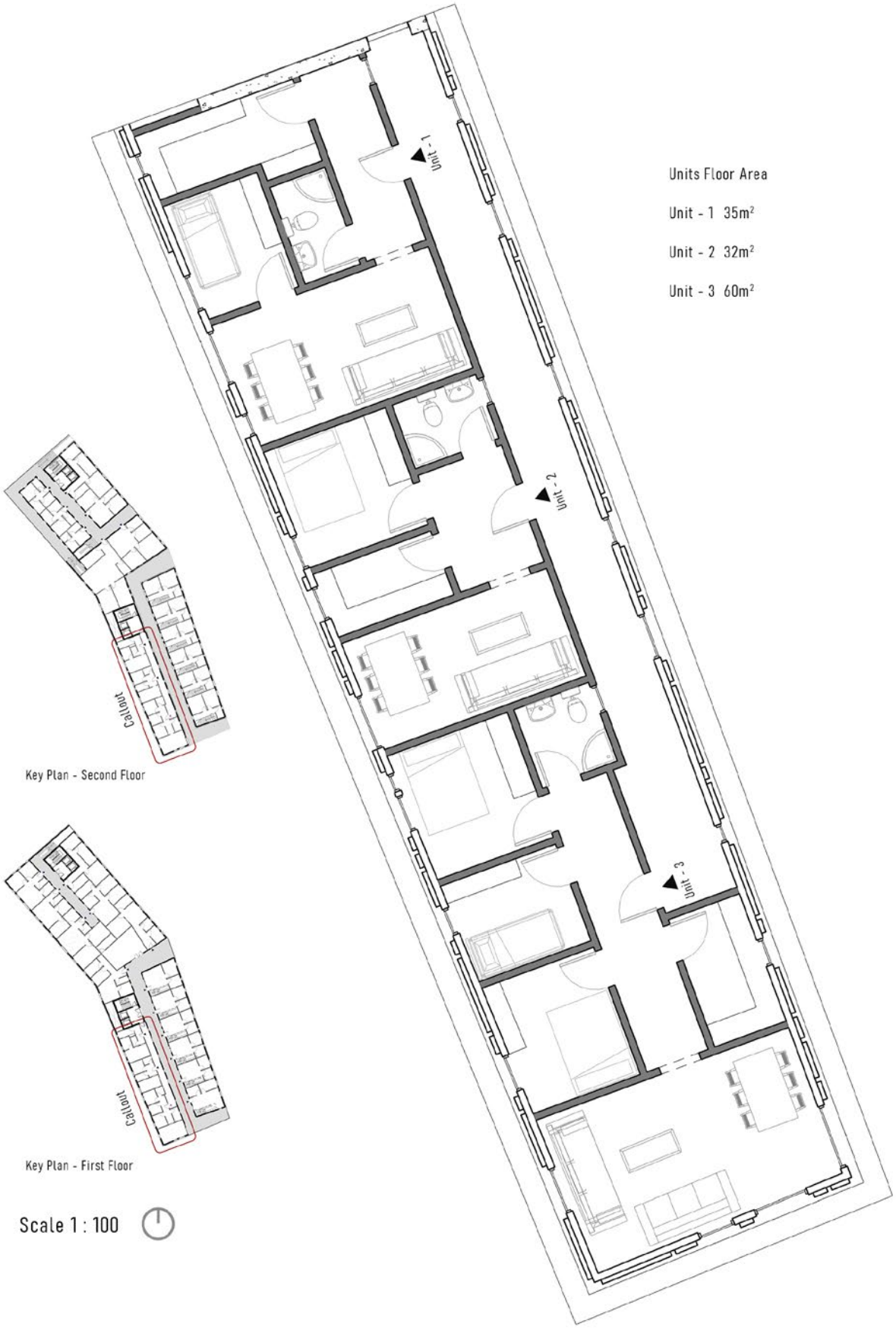
Section - C



View Direction

RENDER IMAGE - 4

5.4 UNITS VARIATION AND DISTRIBUTION



Units Floor Area

Unit - 1 35m²

Unit - 2 32m²

Unit - 3 60m²

Key Plan - Second Floor

Key Plan - First Floor

Scale 1 : 100

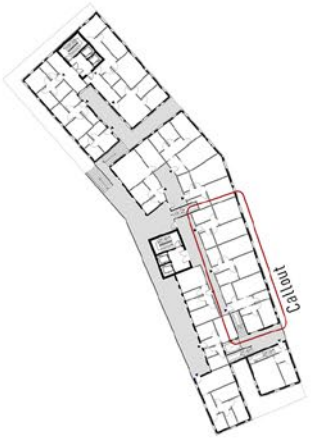
First and Second Floor Callout Plan

Units Floor Area

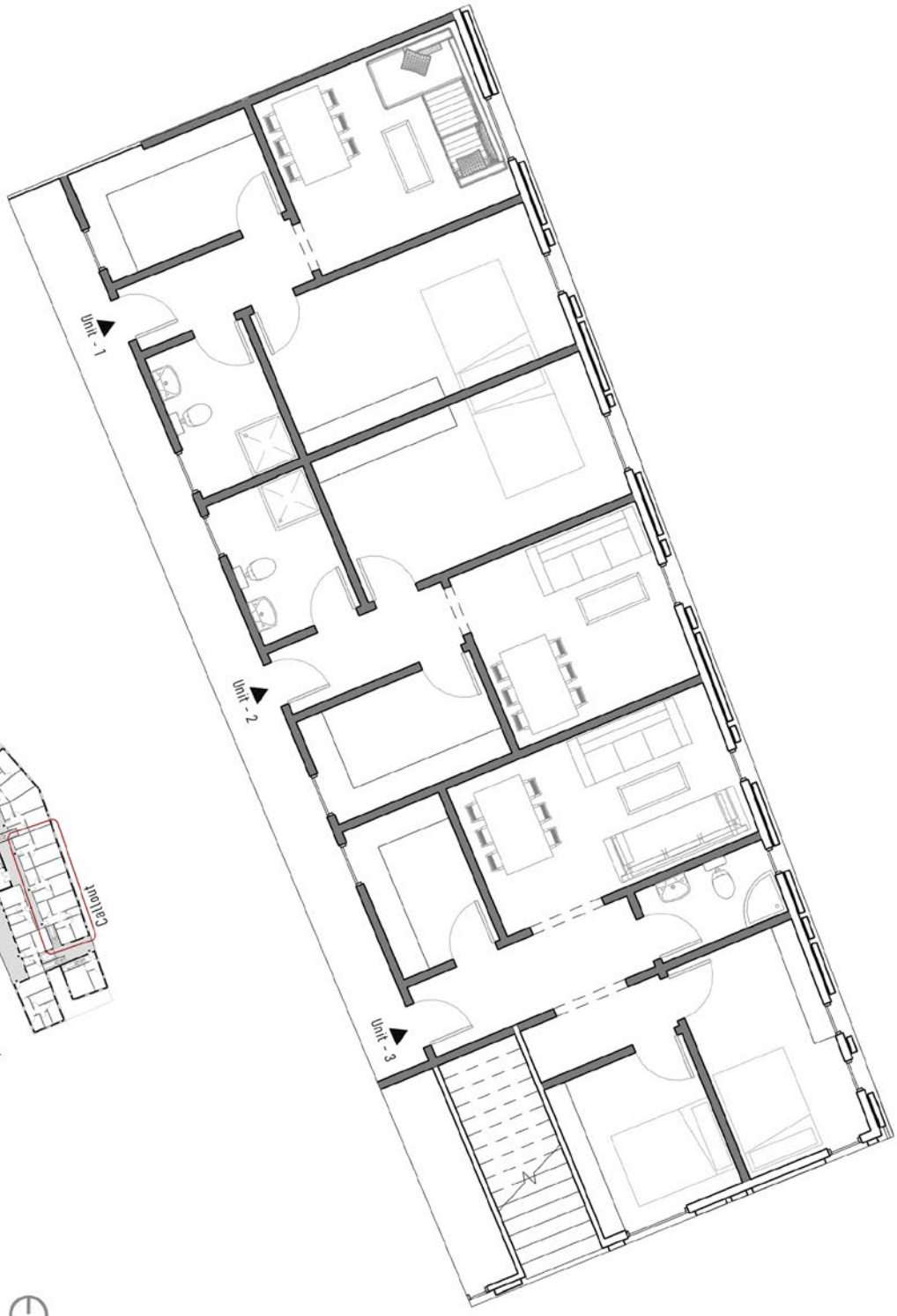
Unit - 1 46m²

Unit - 2 44.8m²

Unit - 3 53m²



Key Plan - Third Floor



Scale 1 : 100

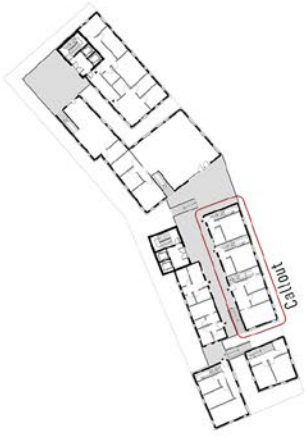
Third Floor Callout Plan

Units Floor Area

Unit - 1
- First Level Gross Area - 29m²
- Second Level Groos Area - 24m²

Unit - 2
- First Level Gross Area - 28m²
- Second Level Groos Area - 23.6m²

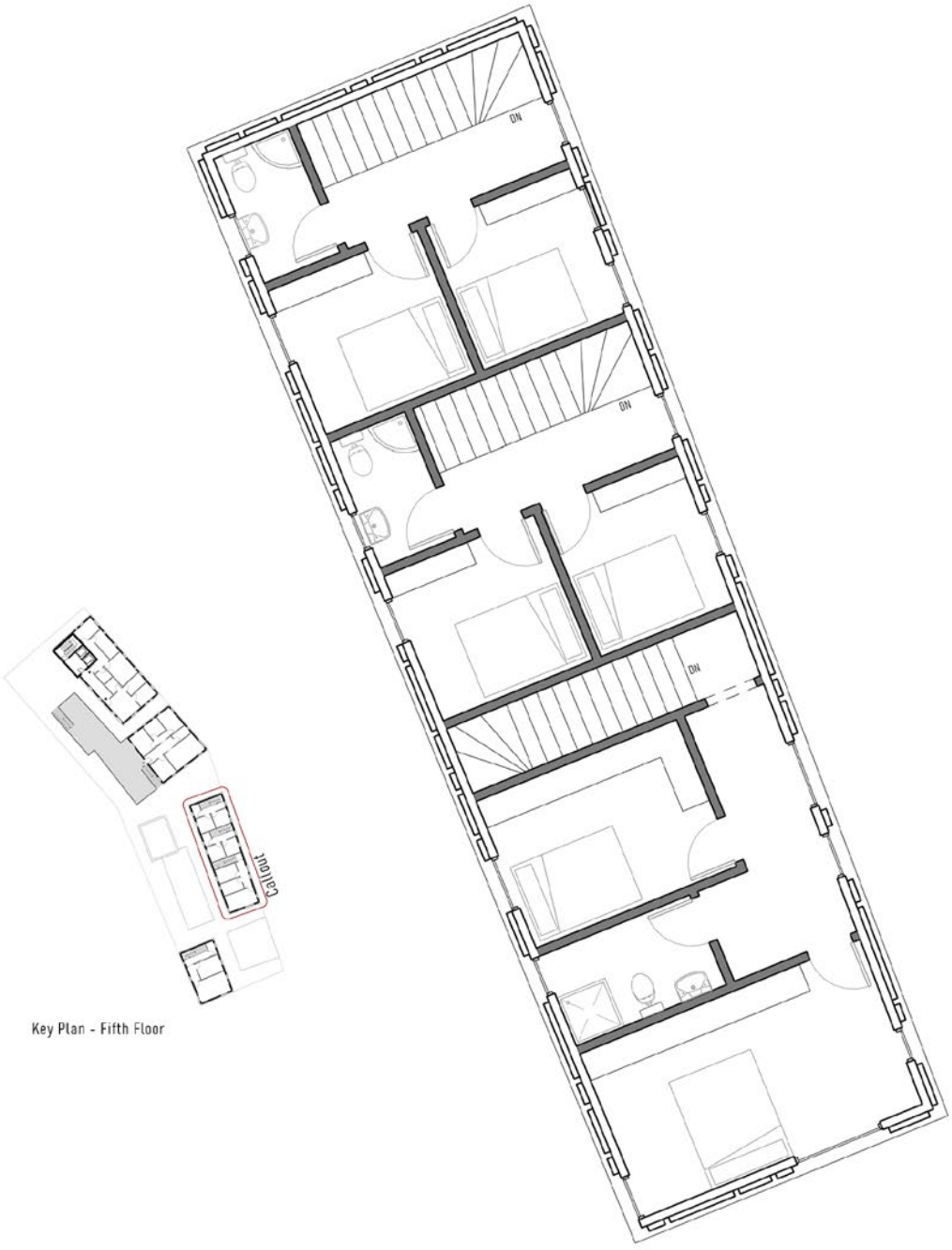
Unit - 3
- First Level Gross Area - 48m²
- Second Level Groos Area - 43m²



Key Plan - Fourth Floor

Fourth Floor Callout Plan

Scale 1 : 100

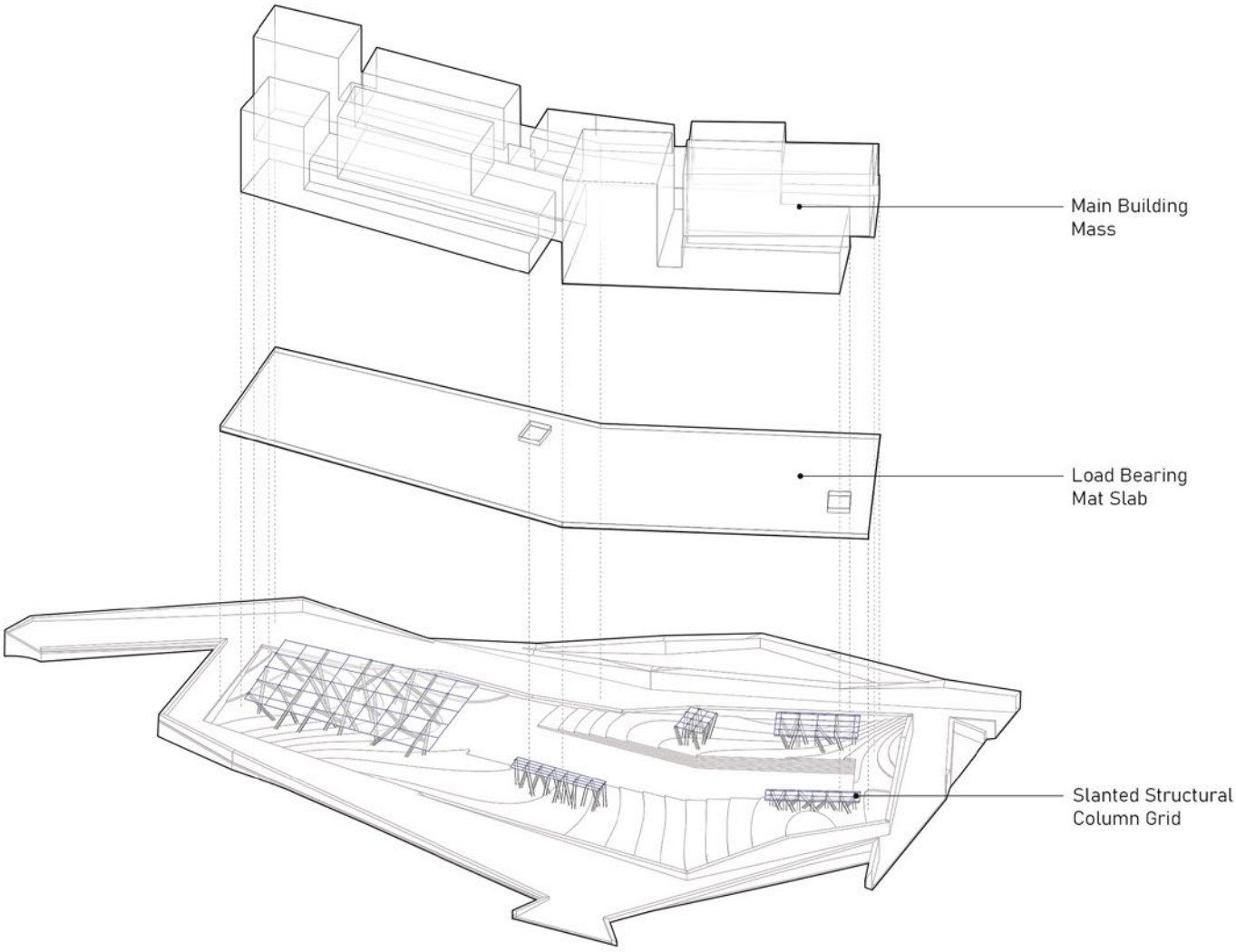


Key Plan - Fifth Floor

Fifth Callout Floor Plan
Duplex Upper Level

Scale 1 : 100

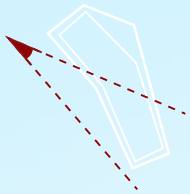
5.5 STRUCTURAL SYSTEM



The idea for the structural system of the building is influenced by Villa dall'Ava in Paris, designed by OMA and another headquarter building in Milan, NEXXT designed by Antonio Citterio Patricia Viel. The main volume of the housing complex sits on a structural floor acting as a mat slab elevated above the ground using clusters of structural columns. The structural columns protrude from the ground at full floor height as a primary structural support and their clusters animates the outdoor space as a sculptural element.

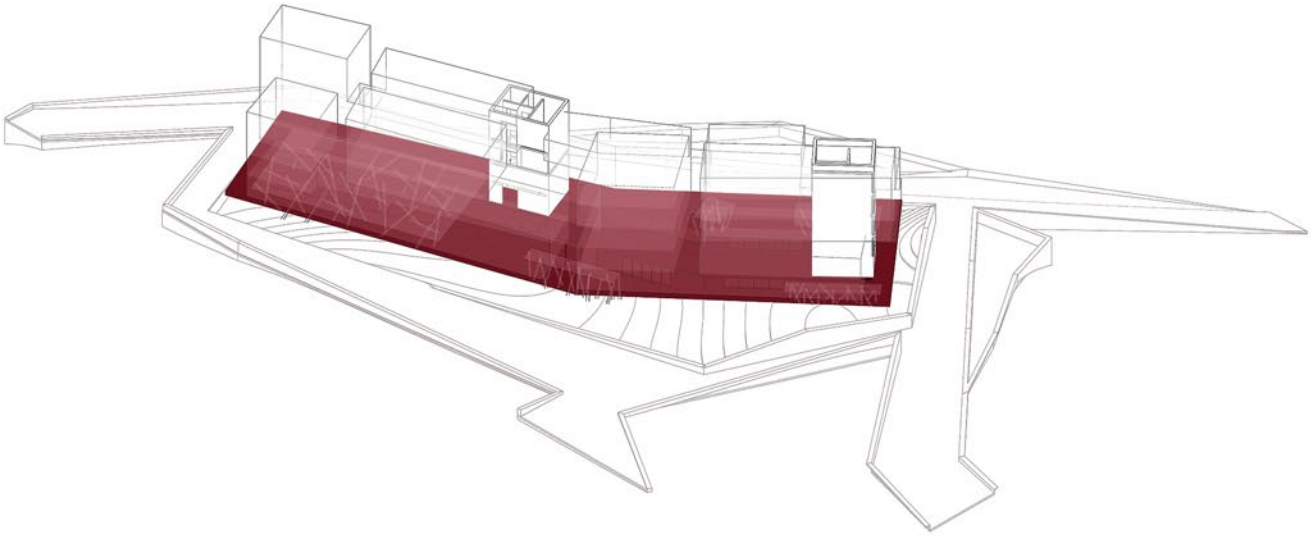
Villa dall'Ava / OMA
Source - Archdaily

NEEXXT / Antonio Citterio Patricia Viel
Source - Archdaily



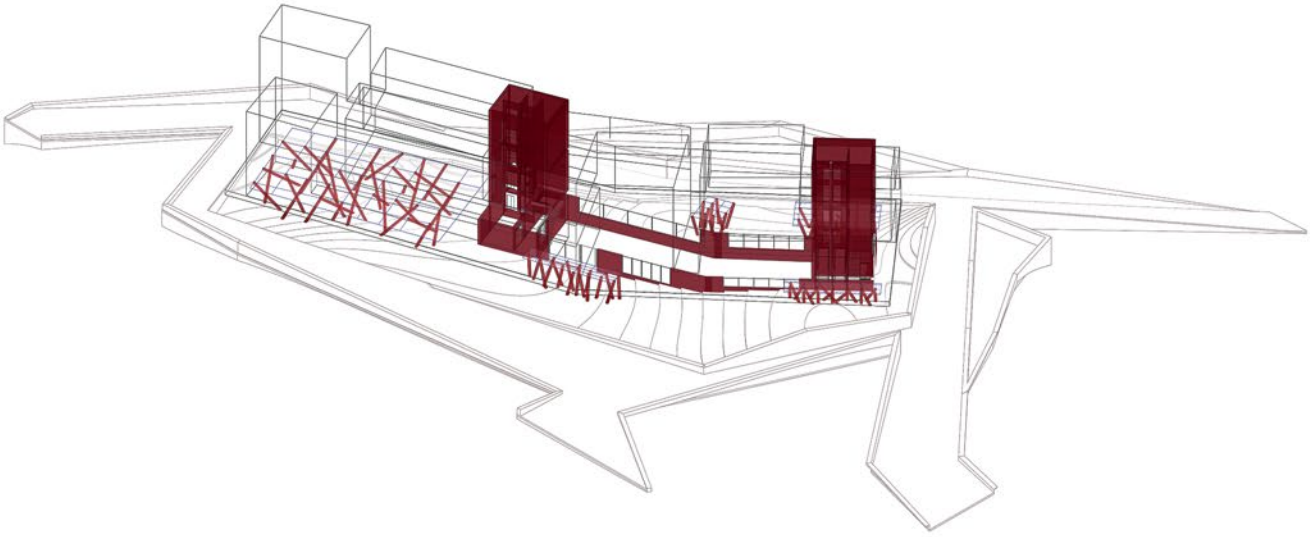
View Direction

RENDER IMAGE - 5



Load bearing
Mat Slab

The first floor is a structural slab that works as a load bearing mat floor capable of supporting concentrated loads at any point and distributes heavy loads across its surface. The thick concrete slab holds the entire mass of the building as a plate supported by the slanted structural columns with different angles and positions. The load from the structural matt is transferred to the slanted columns and then down to the ground.



Vertical Cores &
Slender Columns

Multiple structural columns are grouped together and physically connected to the structural matt slab on the first floor. The structural columns are clustered to form a support system acting as a single structural element transferring the vertical loads to sub structures in the ground. The column clusters also form a sculpture garden in the outdoor space double functioning as an architectural element and liberating the ground floor for outdoor activities.

06 BIBLIOGRAPHY

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