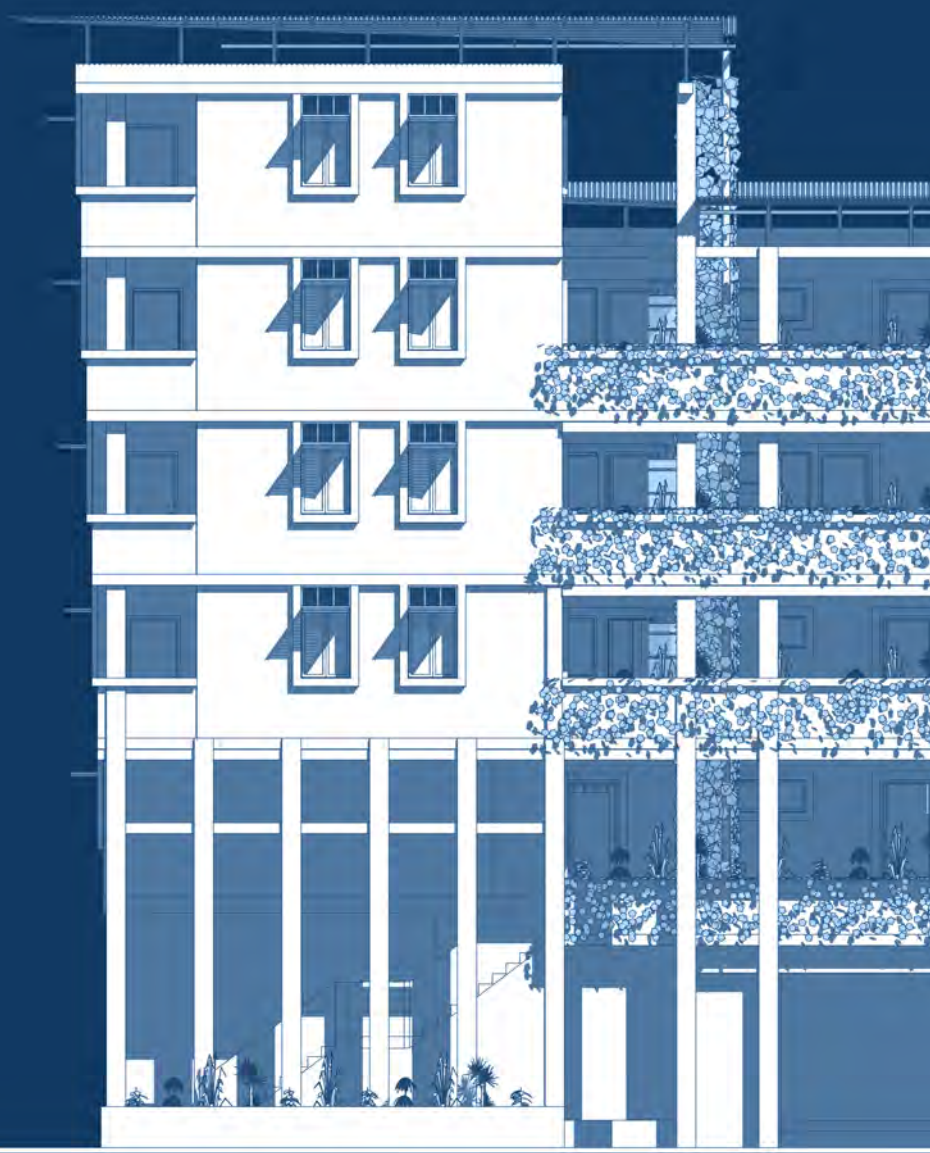
Kebele 24

An urban redevelopment scheme for multistory dwelling in Addis Ababa, Ethiopia

Casper Pasveer



Acknowledgment

The result of this project was possible thanks to the enormous support from those people who surrounded me throughout last year.

I would like to thank my tutors and mentors, Dr. Nelson Mota, Ir. Stephan Verkuijlen and Ir. Harald Mooij for their time and dedication, to me, to teaching, and the field of architecture in general. Being part of the Global Housing Studio was a very inspiring experience.

I could not forget to thank my family and friends who helped me through this process. A particular thanks to Menno for the endless meals he cooked for me during busy periods, to Silke for giving me love, and to Erik my father for the endless calls we made during the past year, and years; always making time to help me with my projects.

I could not have finished this work without you.

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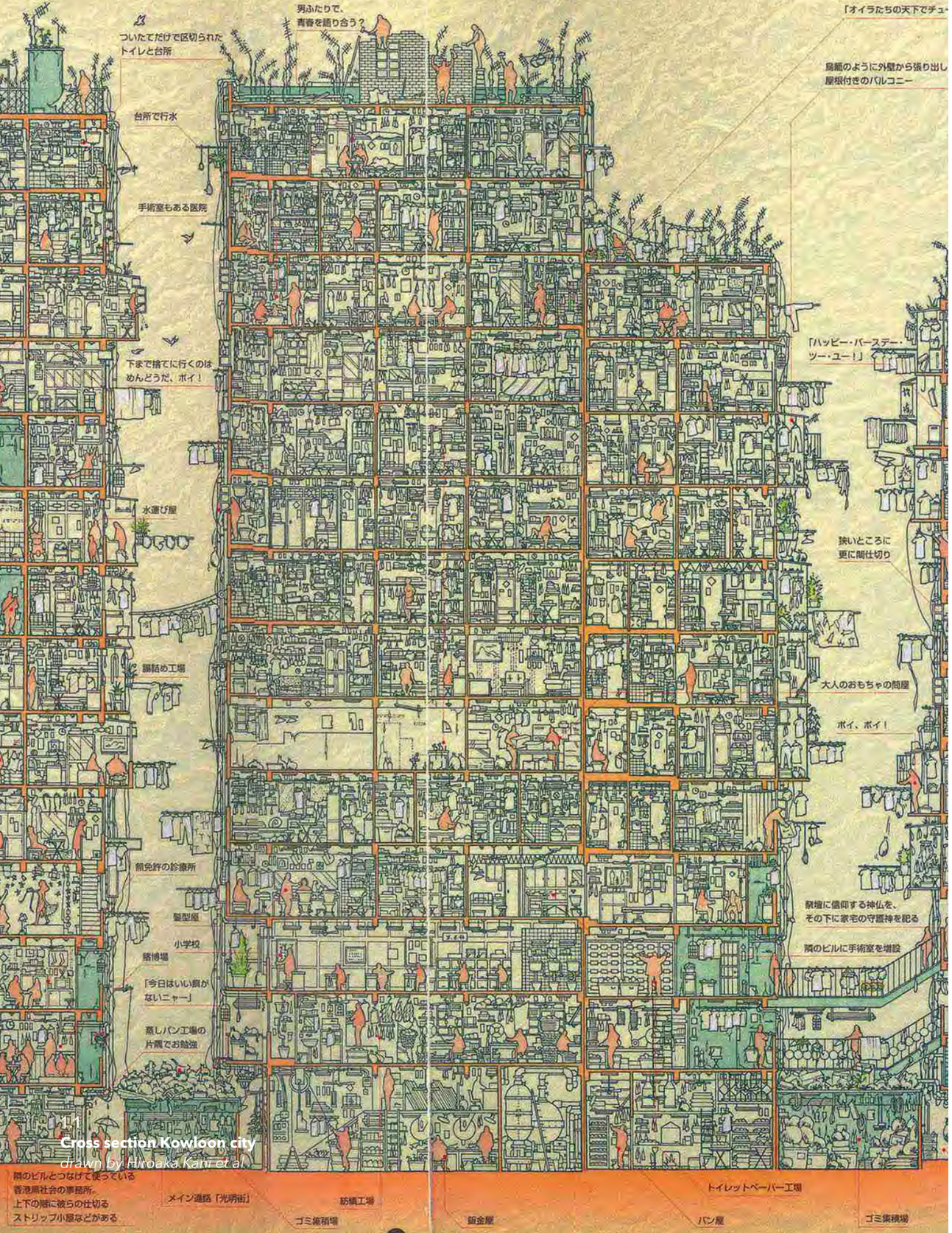


1.1
Cross section Kowloon city
drawn by Hiroaka Kaiv et al.

Introduction

During my studies in the past five years, I've worked and studied on many different projects, all with different scopes and on different scales. The one which stood out to me was housing, which I see as being one of the cores of the profession for which I'm trained for (Architect), and which I appreciate for its down to earth approach. To me, housing is a synthesis of different fields of science, e.g. economics, sociology, politics, ethics, building technology, among many others. And that synthesis should finally be delivered with beauty (aesthetics), whatever that may be.
A part of housing is also the study of how people dwell and how they live their daily lives. Therefore, I think it's valuable for an architect to study the way people live in other places in the world. Housing in Addis Ababa will need a complete rethinking of the concepts of dwelling I'm used to and will bring forward a great opportunity to see a new part of the world.

Problem Statement

Problem Statement

The habitat of modern man is the city. That is at least what the numbers tell us. In 2018, the world population living in cities was estimated at 55,3 per cent, compared to 30 per cent in 1950. This number is still growing. It is projected that by the year 2050, the urban population will be 68 per cent of the total world population, an increase of 2.5 billion people. Ninety per cent of this increase will take place in Asia and Africa. (United Nations, 2018)

For many countries in the global south, the growth of cities is taking place with such a vast speed that governments struggle in managing this growth. As a result, cities are growing in an unplanned way. This is an inefficient way of allocating resources (land, materials, labour), but also the conditions in the informally build settlements are considered to be poor.
Nonetheless, according to the UN-Habitat, today, about a billion people live under these so-called slum conditions, from which 55,9 per cent of them can be found in Africa. (UN-Habitat, 2016)
Addis Ababa proves to be no exception to these numbers, with 80 per cent of the total housing stock consisting of slums.

Looking towards the Ethiopian context from a broader perspective we see that the urban population is taking account of 21 per cent of the total population, which makes that Ethiopia ranks 12th on the least urbanised countries in the world. (The Worldbank, 2019) That percentage becomes critical when we bear in mind the conclusion of the OECD which generally predicts that "in the coming two decades most young villagers will have to move to cities of over 2 million to find work; small towns can no longer support them." (Sennet, 2019, p99)

However, the process of rapid urbanisation for the case of Addis Ababa is not just something of the future but has been taking place for several decades. As a result, Addis Ababa is facing a housing shortage of 1.2 million units; a number that is growing every year with another extra 100.00 units. (File, 2019)

2.1
40/60 condominiums
photo by c.pasveer

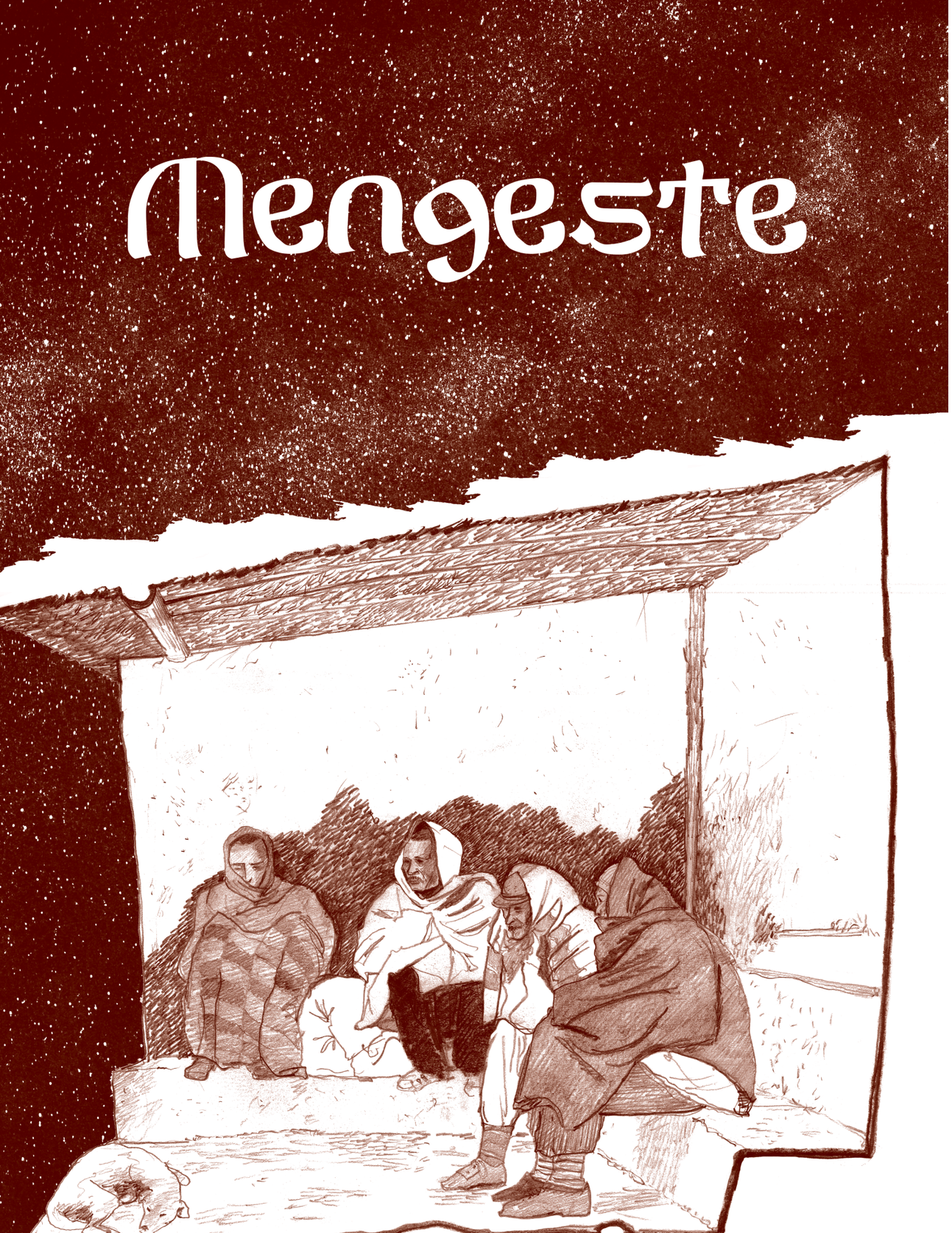
What makes it even worse is that Addis ran out of space. A former master plan made it possible to develop land within the bordering Oromia region. It created substantial political tensions and eventually resulted in a state of emergency of 9 months period. The plan does not exist anymore.
To sum up:

- A significant part of the housing stock of Addis Ababa is built in an unplanned way, and the people living in those settlements dwell in poor conditions
- The shortage of housing in Addis Abba is very high and is growing every year.
- Addis is running out of space, and further expansion is not an option anymore.

To tackle these problems, the Ethiopian Government launched in 2005 the 'Integrated Housing Development Programme', commonly referred to as (IHDP), aiming at providing affordable housing for the low and medium-income society (Hassen & Soressa, 2018), but also creating jobs and with that reducing unemployment. It is a lottery-based system where participants who are selected get the option to buy a house on a 10, 20 or 40 per cent down payment, with the remaining part being converted into a loan.
The program made some accomplishments, e.g., constructing or being constructed over 365.000 units and creating 846.000 jobs, (File, 2019) but it is far from perfect. Followed are two lists of flaws, the first seen from a broader perspective, where the problem comes from a managerial decision, the latter from the scale of the building or unit itself, where the solution should be found in design decisions.
First:
- It is difficult for the low-income group to pay the down payment and the loan.
- Not enough units have been built
- Often people are relocated towards expansion areas; People lose their social ties and the income generation activities, which are heavily dependent on the economic conditions of the inner city, are lost.
- The condominium building is not suited for informal income generation activities. For example, preparing food in a traditional way cannot take place on the upper floors of the standardised apartments; neither do customers want to go up all those floors to buy the products which are being made at home.
- Sharing the caretaking of small children becomes difficult, due to a lack of social spaces, directly connected to the house.
- The size of a household is, contrary to building themselves, a dynamic phenomenon. People, especially the economically weaker, need the possibility to rent out rooms. Also, with a housing demand as high as in Addis, empty square meters are a waste of recourses and are no option.

As a result, the low-income-group, the people for whom the system was intentionally initiated, reject the option to get a condominium apartment. Those who do get one, rather sublet the apartment, then that they live in it themselves. In the end, the problem is not solved. They, the low-income-group, stay in the same place, often in the earlier described poor conditions. Since there is little land in Addis Ababa left to build on, a day will come that someone will tell them to leave and eventually they will be evicted. This is a bad, an unsustainable situation.
However, we must not forget that Ethiopia, besides being in the process of rapid urbanisation, is also in the process of rapid economic development. Since 2003 Ethiopia has seen a tenfold increase in GDP, and the prospects for the coming decades are that this growth will continue (Worldbank 2019). This means that society as a whole will continue to change and that perhaps the low-income group will find new and different forms of income generation. This will once again ask for a different infill of the built environment.
Addis Ababa is in a state of rapid Urbanisation. Based on the numbers, we can conclude that the housing situation of Addis Ababa is in a state of emergency. There is a high need for densification.
The IHDP stamp based condominium approach is found not to be a sustainable solution. It lacks in fulfilling the daily habits and needs of the people, the low-income group, for whom it was initially created. It is shifting the problem, not solving it.

Design Assignment
In order to prevent the relocation of the current inhabitants, it will be necessary to build in a progressive manner. This implies that the site 24 Kebele cannot be considered as a tabula rasa and that the current plot perimeters have to be respected to a large extent in the design. Another aspect that comes with the resettlement of the current inhabitants is that they already, contrary to the new dwellers, have a place to live in the city, and are only willing to collaborate with the resettlement if their new situation will be an upgrade of their current.
To create a resilient urban economy, the project should accommodate different social classes and be multifunctional. From the dwelling point of view, this not just a matter of size or number of square meters, but rather a matter of needs, lifestyles and social-status-aspiration. Looking towards the household and income generation activities of the low-income group, the ground floor plays a very important role, while the social status aspirations of a higher income group might be an apartment typology of dwelling.
The economy and society of Ethiopia are changing very rapidly. Right now, there are many people in Addis Ababa who can not afford a large apartment, but this could change within the lifespan of a building and therefore the buildings should be designed in order to be flexible to this change. This aspect is strongly related to the building technology of a building; especially those things which you cannot (easily) change, the construction and the piping infrastructure like water and sewerage.



Ethnographic Research

Ethnographic research
During the graduation studio, the students studied the act of ethnographic research. During the research the focus was on the daily lives of people in two neighbourhoods: Liskwartier in Rotterdam, as a mean to practice this form of research, and Kechene in Addis Ababa. The output of the research had the form of a graphic novel. The text followed is a reflection I wrote about the results of the research.

Reflection on the process and output of two graphical novels - Casper Pasveer, 03-02-20

Space, place (and time)
One of the goals of the research was to make the patterns of everyday life in their relation to the build context visible in an explicit way. The research of our team heavily depended on the plans and old photographs we found in the Rotterdam archives as well as on the internet. This historic approach was useful in the two following ways. Firstly, because in order to make something visible, you need to be able to compare it to something else. By that I mean that the existence of something depends on the fact that it differs from something else. This becomes especially important in everyday practices because those are activities which are shown implicitly to our eyes. By knowing the past, the ordinary of the present (that of which we normally are unaware of) becomes visible.

The second reason why the historic approach was useful was that we had a starting point, something in common, from where a conversation could begin with the respondent while triggering their memory. An example of this we can see in the graphical novel of Jan. In the archive, we found plans and photographs of a small building inside the neighbourhood, situated within one of the city blocks. When we showed that information to the interviewed, he recognized it immediately. It was a bathhouse build in the 50s, placed in the courtyard of the school where he used to go to. When you walk through the Liskwartier or any other neighbourhood build prior to the 50s or 60s in the Netherlands you tend to forget that that was the case, that there was no hot running water, and to have a proper wash, one had to go to a communal bathhouse. Some of those buildings still exist, but fulfil now other functions; in this case, the building became a boxing gym. The ‘space’ stays the same, but the place disappeared or should we say changed.

For someone who uses a certain place, its very hard to give a clear description of everyday practices because for him or her those practices are implicit acts. Therefore, the interviewer needs to ask the right questions. I would like to give an example of that while still using the case of the bathing house. At a certain point during our conversation, we asked the interviewed

if there was any different use of the bathing house from the perspective of gender. Was it mixed-use? Where certain showers only for men and others for females? Was it only used by certain sex? The interviewed was a bit perplexed by this question because it simply had never come to his mind and after thinking about it for a moment, he came to the conclusion that he had actually never seen a woman in there. However, he was sure that women did go there as well. He remembered that every Friday he went there to take a shower and so probably women went on other days of the week. See the quote at the first chapter of Jan: "there must have been a schedule".

When we continue to develop the thought that the notion of a change helps us to make something visible or clear, I think the graphic novel was a very suitable medium for the output of the research. Because a novel, or a story, exist upon the dimension of time, we could easily integrate the history of a place into a research. But also different times of the days; for example the day and night situation of the house in Kechene. But just as we need time, we need space to tell a story: "Every story is a travel story – a spatial practice. For this reason, spatial practices concern everyday tactics, are part of them, from the alphabet of spatial indication ("it's to the right," "take a left"), the beginning of a story rest of which is written by footsteps, to the daily "news" ("guess who I met at the bakery?"), television news reports ("Teheran: Khomeini is becoming increasingly isolated…."), legends (Cinderella living in hovels, and stories that are told (memories and fiction of foreign lands or more or less distant times in the past). (Cercteau in the practices of everyday life, p116)

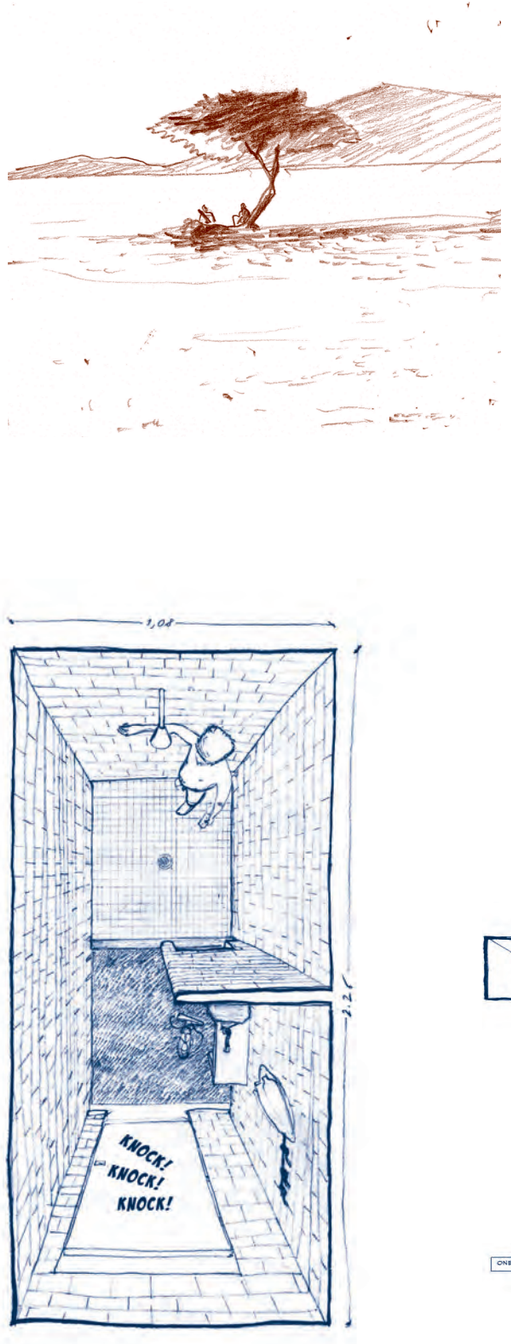
Based on this statement, and the experiences from the process, my mind moves to the idea that the crucial question throughout the whole research was: 'where?'. Always after the questions 'what?' why? and 'with whom'? We asked where? And I would state that by that question our research became architecture.
"Where did you write those letters? In the shadow of a tree. If there was no hot water in the house, where did you had to go then? I had to go with a bucket to a boiler place, to the right, left and then the first shop on the corner". "During your journey to Addis Ababa, where would you sleep? Under the verandas of strangers, who were offering me a place to spend the night".

People

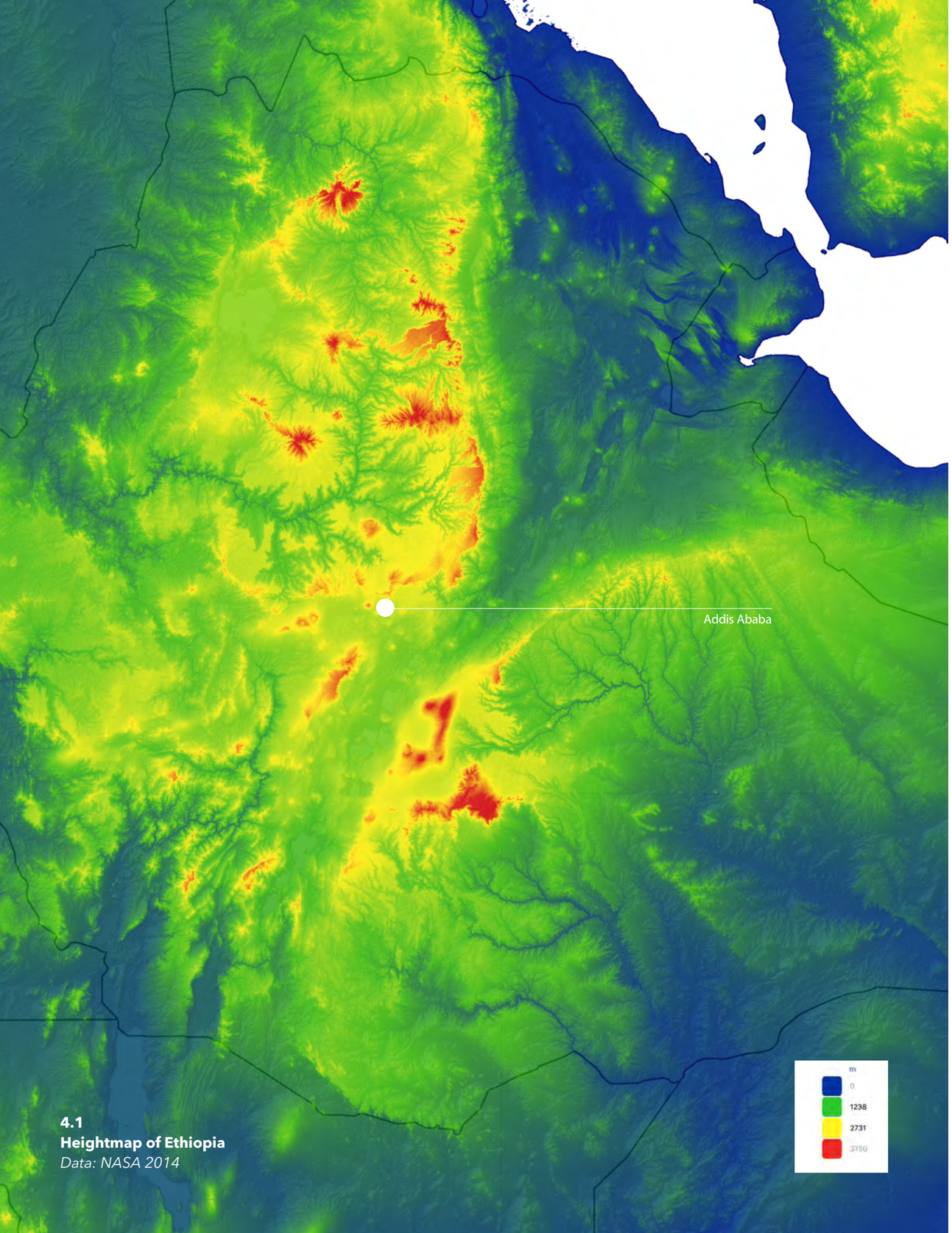
Both novels show fragments of the lives of two working-class men, and while the scenes evolve it we can take a glimpse of what their goals and social aspirations were and what the way to reach those goals was. The protagonist in the novels started their lives with little; of course relatively seen from their own context. During their life's risks were taken. Mengeste left his home, his family and his source of income to move to a city he had only heard of. The same was for the woman in the Liskwartier novel, who left Porto for job opportunities to Rotterdam, and later became the wife of Jan.

Besides the risk which were taken, both protagonists also made concessions. Jan became a sailor on a tug-boat, on which he went to the most exotic places, but which also meant that he was repeatedly away from his home, wife and children for several months. And Mengeste became a soldier shortly after he married his wife and became a father. He was away from his home for a continuous period of 12 years, in which he and his wife only had contact by letters.

In the last scenes of both novels, we see their current living conditions; their houses and ordinary as well as personal objects they own, which were collected and changed during the course of their lives. We see sofas, fridges, televisions among many other things and in the case of Jan a private bathroom and shower. The places where they lived now are bigger, brighter, and offer better hygienic conditions. When we compare their current situation to where they come from, we see that they have built up something, not in the things they own, but a stable situation which they have created for themselves, and perhaps mostly for their family and relatives. We see two placid aged men, a satisfied one, and one with melancholy in the eyes.



3.1
Drawings grahpic novel
'Jan' and 'Mengeste'



4.1
Heightmap of Ethiopia
Data: NASA 2014

Ethiopia in Hard Data

Altitude
Ethiopia is a country located on the Ethiopian high plateau in Subsaharan-Africa, divided into two parts by The Great Rift valley. The majority of Ethiopia consists of high altitude plateaus or mountain areas, in the drawing on the left you can see the most of country is elevated by more than 1200 meters of altitude. The white dot in the middle represents the capital Addis Ababa located at an altitude of 2.355 meters high.

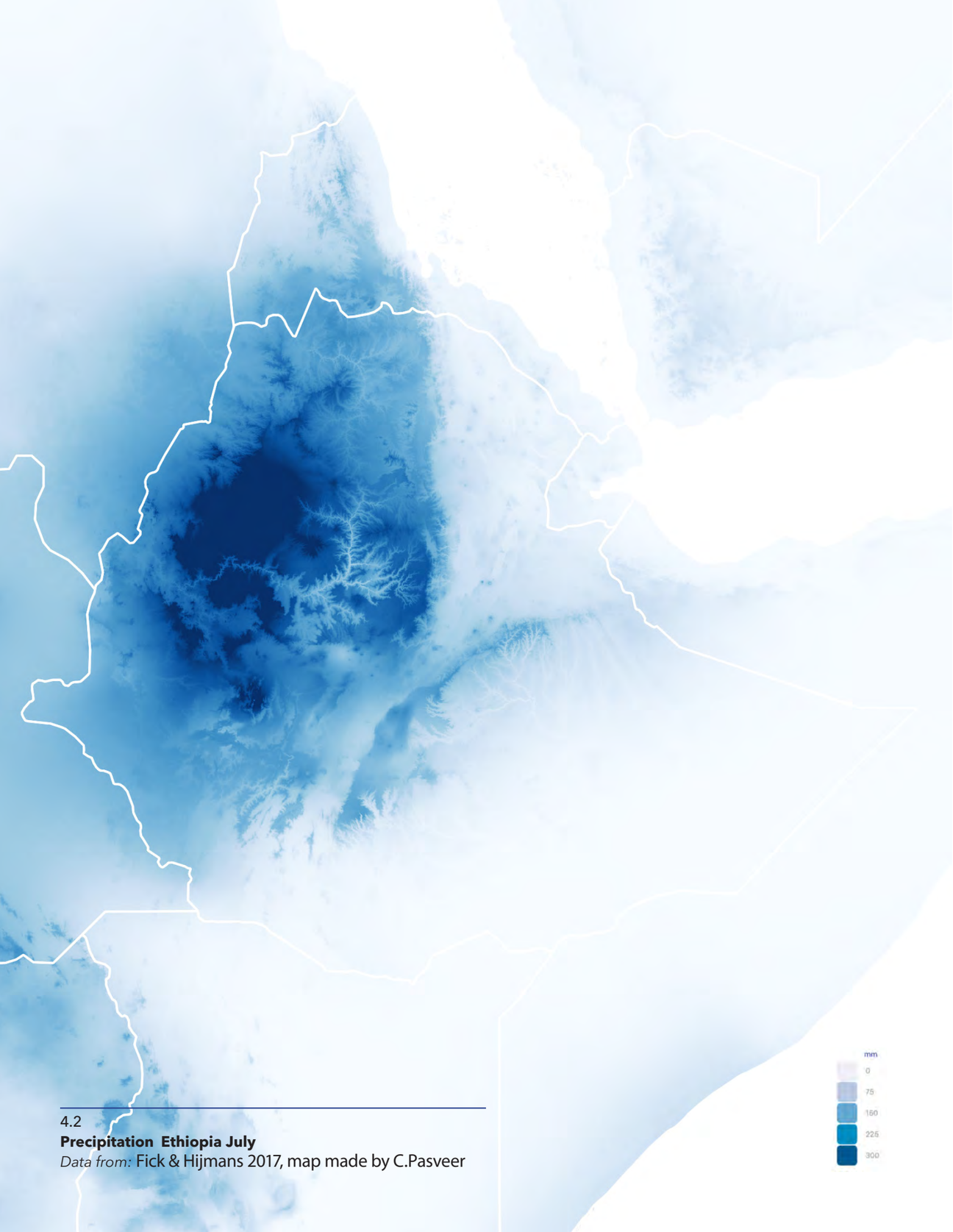
Climate
There are multiple different climatic regions in Ethiopia, types ranging from equatorial desert to a humid subtropical climate. The altitude plays a major role in these differences in climate. Addis Ababa is classified within the range of the climatic type of a subtropical highland climate. In figure 4.4 you can see the maximum and minimum temperature range of Addis Ababa. On the horizontal axis, the months within a year are shown, and within every month an average 24-hour cycle is plotted. The average temperature of 16 degrees Celsius doesn't change so much during the year, though during the summer season there's a little drop.

Addis Ababa has two seasons: a wet summer and a dry winter. See 4.3 the dark blue graph below shows the monthly precipitation in Addis Aba. (World Weather Information Service, 2019) In July and August, it can rain up to almost 300 mm per month. For a comparison a lighter blue graph on the background is plotted, which shows the monthly precipitation of Amsterdam. (World Weather Information Service 2019) The map on the right shows the rainfall in July. You can see the strong correlation between topography and precipitation. (Fick & Hijmans 2017)

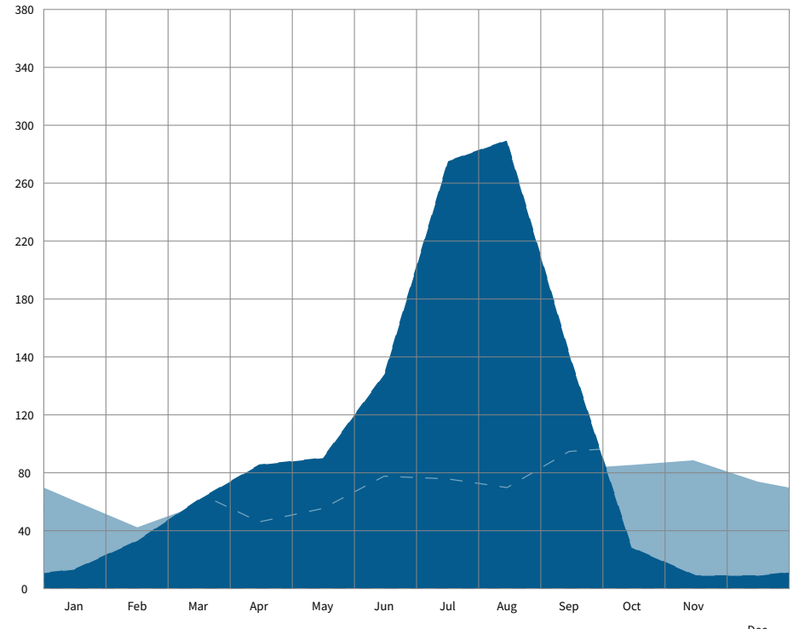
Economy and Demographics
As of October 2019, The current population of Ethiopia is 112,976,188, based on Worldometers elaboration of the latest United Nations data. Since 1955 the population quintupled from 20 000 000, to 100.000.000 (World Bank 2019) 4.6 Shows the rapid population growth according to the age distribution in real numbers. Since infant, child, and maternal mortality have fallen sharply over the past decade, but with the fertility rate only slowly declining, the population continues to grow rapidly. Ethiopia's rapid population growth is putting increasing pressure on land resources, expanding environmental degradation, and raising vulnerability to food shortages. (Worldometers, 2019)

Together with a rapidly growing population, Ethiopia is also considered to be one of the fasted developing economies see 4.7. In 4.5 is a survey represented about migration patterns to Addis Ababa. (Moller, 2010)

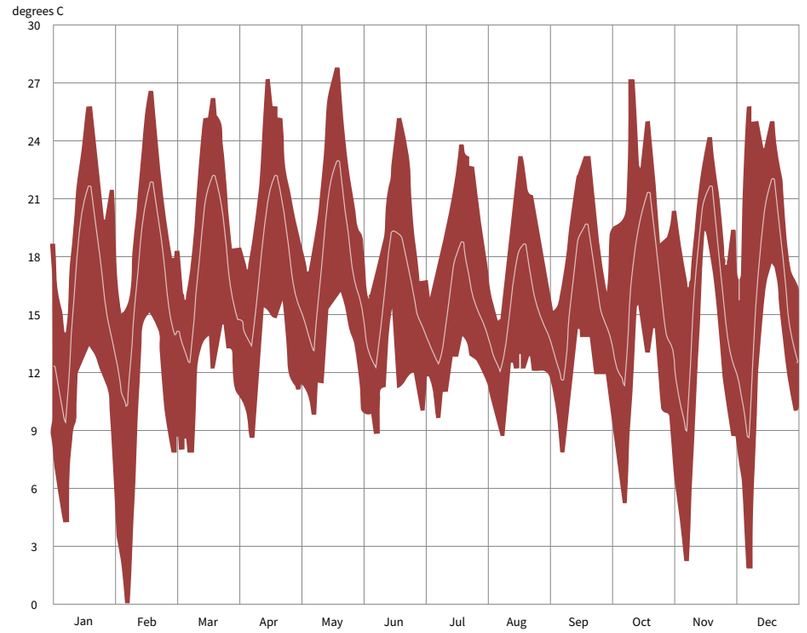
Some of the text is taken from passages written earlier this year during other graduation courses.



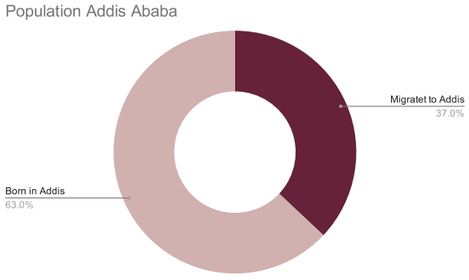
4.2
Precipitation Ethiopia July
Data from: Fick & Hijmans 2017, map made by C.Pasveer

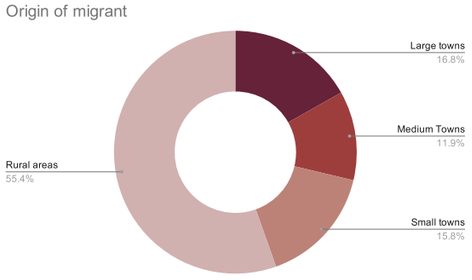


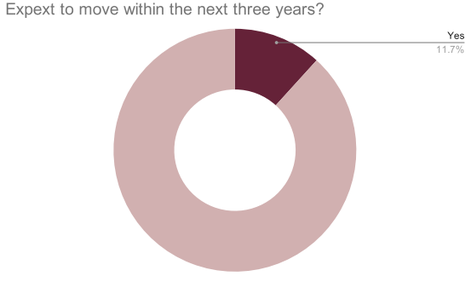
4.3
Precipitation annual
Ethiopia dark blue, amster light blue. (WWIS, 2019)

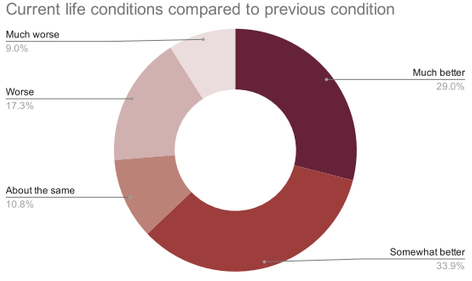


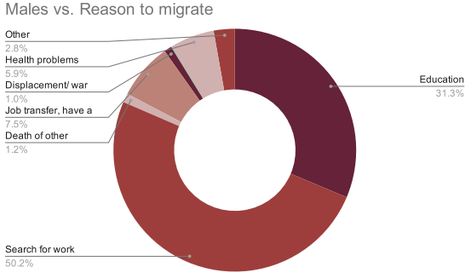
4.4
Temperature flucatiation Addis Ababa
24 hour cycle plotted annually (SWERA, 2019)

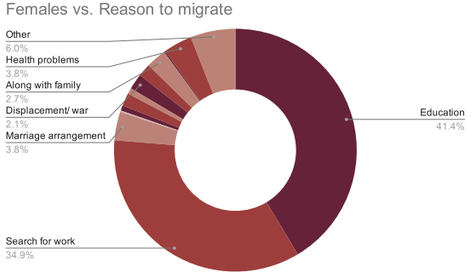


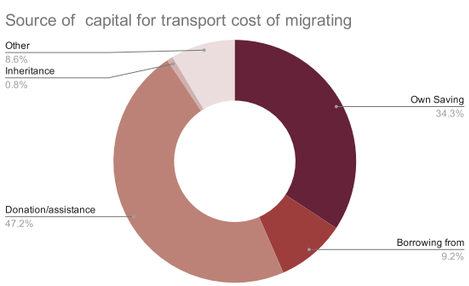




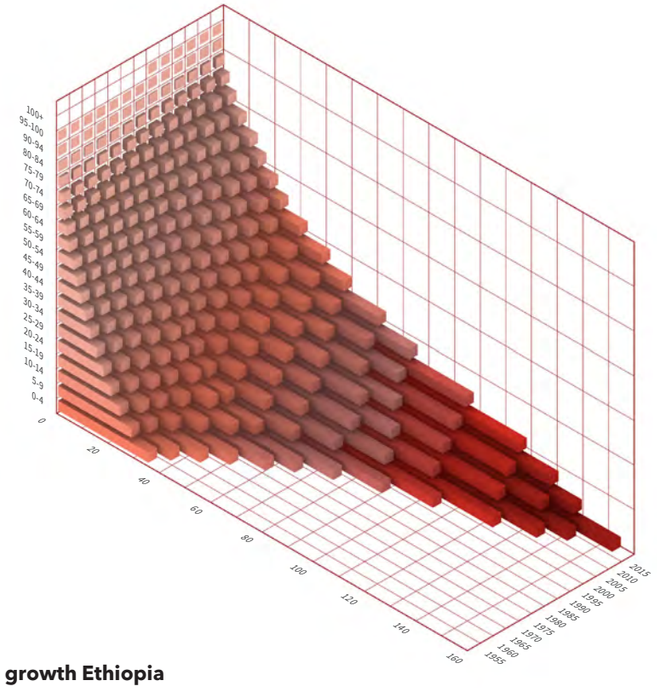




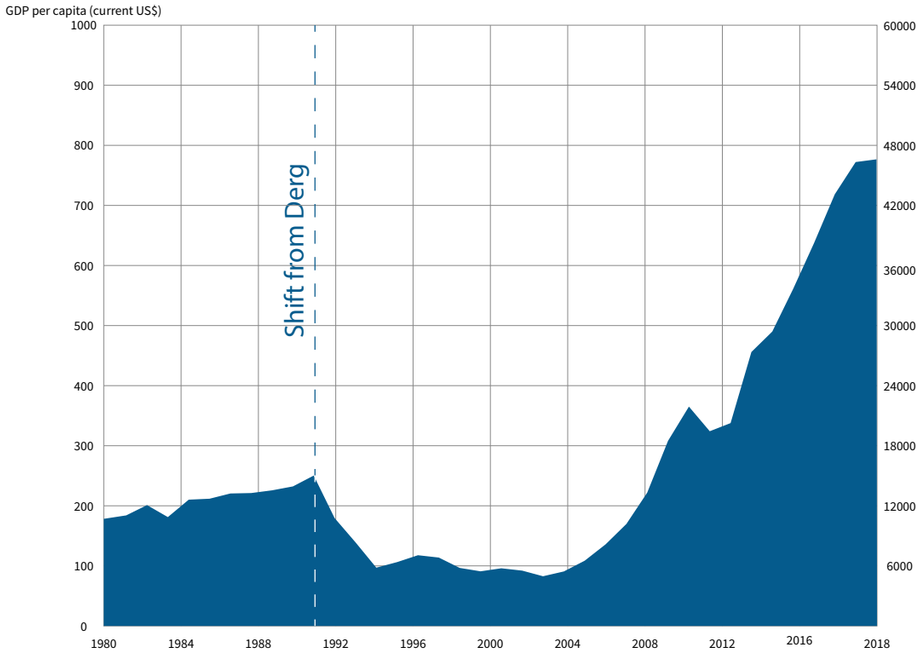




4.5
Diagrams on migrational patterns
(Moller, 2010)



4.6
Poplution growth Ethiopia
Real numbers, x10.000 (UNDESA, 2019)



4.7
GDP developments Ethiopia
(Worldbank, 2019)

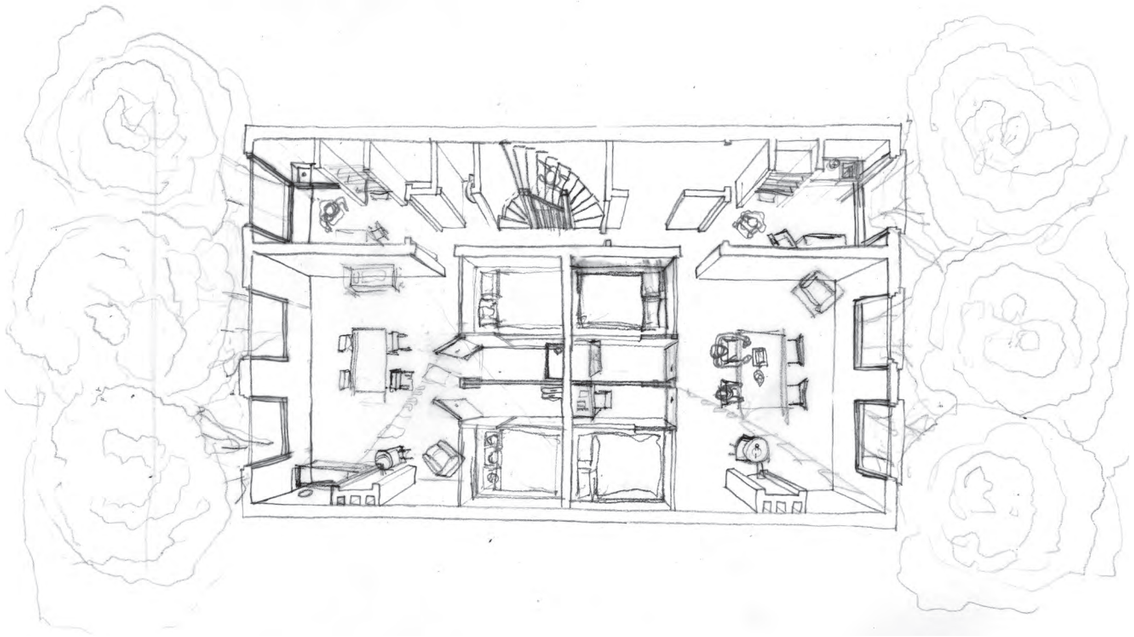
5.1
Sketch presented at P1
Section of U-Shape courtyard

Hypothesis

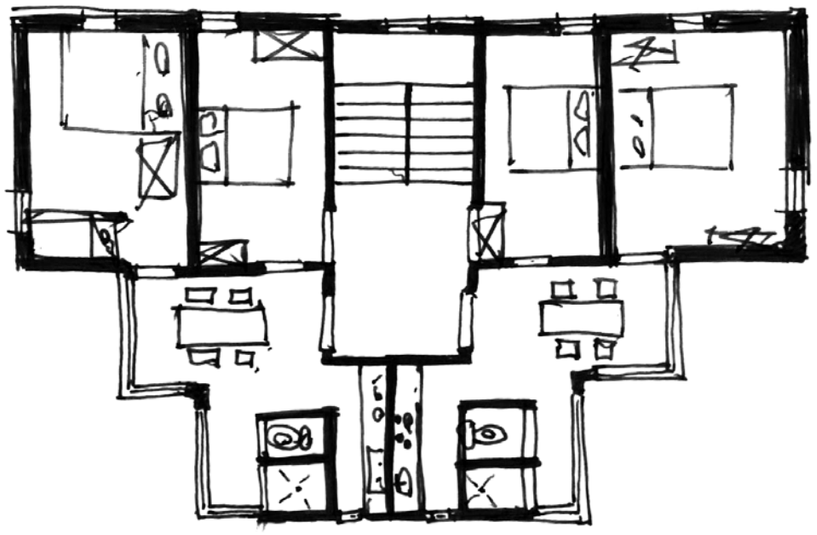
The U-Shaped dwelling courtyard.
During the field trip to Addis Ababa, I noticed that the majority of housing was single-story housing, hidden by a large fence. This illustrated a pattern of the need for privacy and safety from the city. The fences made the streets very anonymous, and sometimes a bit scary. Moreover, Kebele type of housing does not meet the requirements of density need to cater for the growth of Addis Ababa, nor does it facilitates in the urban conditions; high density and a plinth with commercial activities. As a hypothesis, I propose a U-shaped dwelling courtyard, a typology inspired by the 'Casa Rustici' of Giuseppe Teragni. This will allow forming a private and safe courtyard for a dwelling community, while the life taking place in the courtyard still being visible from the streets, and thereby breaking the pattern of anonymous streets.

A De-densification scheme
There is an extreme demand for housing right now in Addis Ababa. A logical response would be to try to make housing for as many people as possible. This will generally result in very small apartments since resources are always scarce. A problem could be that within the next decades when the Ethiopian economy develops further and the living standard improves, that these houses do no meet these future demands anymore. The strategy that I propose is a dwelling unit, right now is very small, and just meet the requirements of today, but could easily be enlarged in the future by combining multiple units. Within this strategy, the construction and the placements of the vertical shafts are crucial since these elements can not be easily modified. An example of this strategy is shown in 5.2, a drawing of an old alcove house in the Netherlands. Two units with two kitchens. These units are nowadays combined into one or more, and one kitchen became a bathroom.

Subrental posibilites
Ethiopia is a developing country, not a welfare state. This became visible in housing during the field trip. One thing I noticed is that many people very often sublet a part of there house, most of the time just a room with a front door. Many people rely on this sort of income and is an important factor whether to buy a house or not. Another benefit from this system is that every square meter in the city is used to a maximum, which is important in the current housing crisis in Addis Ababa. However, healthy living conditions can not be compromised. Those who sublet should have a bit of privacy, and a place to wash. In my project, I propose a system where bedrooms have a front door and thereby can be easily subletted, without having to make to many modifications to the house. This was inspired by a project I visited in Bangladesh, see 5.3



5.2
Alcove house Rotterdam
De-densification



5.3
Plan appartment Bangladesh
Possibility for subletting

5.4
Casa Rustici (1933-1935)
Giuseppe Terragni

5.5
Beluik in Gent
U Shaped courtyard

6.1
Location Kebele 24

Site: Kebele 24

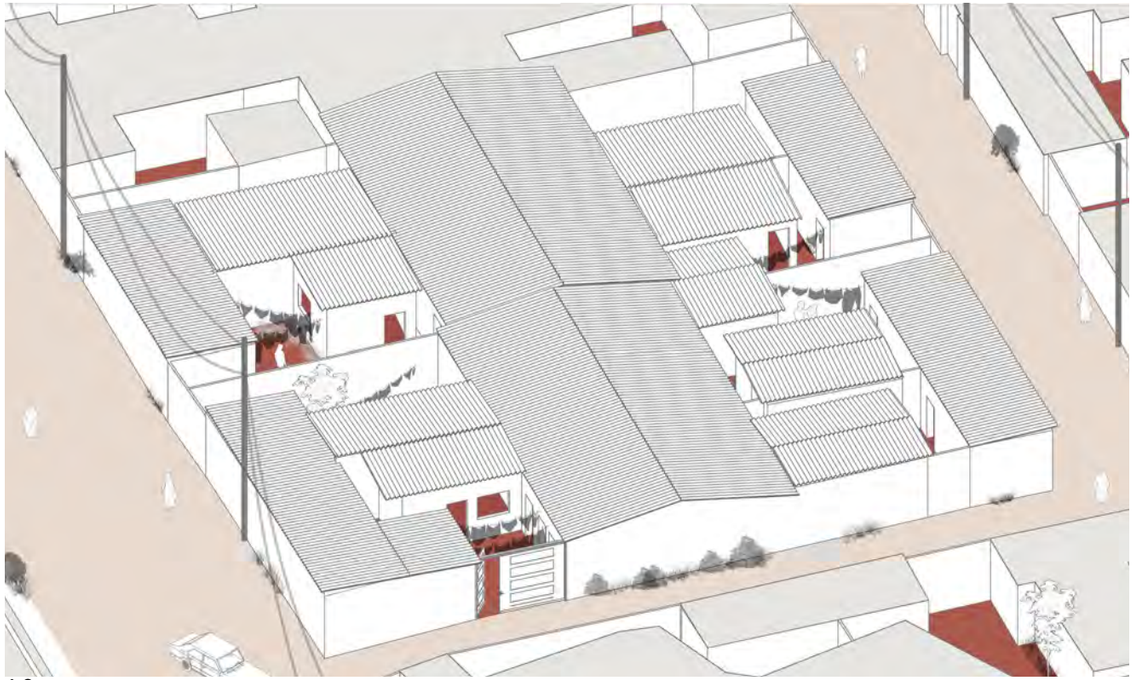
Kebele 24
The location I chose for this graduation project is the neighbourhood Kebele 24, located on the eastside of Ethiopia, close to the international airport, the being in construction National Stadium, and the new build Addis Ababa Ring road. The site is slightly sloped.

There are 3 main typologies, see figures 6.3 - 6.5, represented in the site. On the east side, close to a small and polluted stream, there is the form of illegal and unplanned settlements. These houses are built with very low quality and living conditions inside the settlements can be considered to be poor. Then in the middle of the site, the location where my project will take place, we find an FHC (Federal Housing Corporation) owned kebele housing. The quality of these houses are better than the informal ones, but due to expansion through time, the small compound became very dense and overcrowded. People were also complaining about the rise of the rents inside these houses, therefore being forced to sublet parts of there house.

On the east side we find once again FHC-owned housing, but this time very spacious, with large and green gardens. However, also in these compounds, a room made in the shed, are sub rented as single bedroom ‘apartments’.

FSI
The part in the middle of Kebele 24 which I chose to be the location of the project consist of a building footprint of approximately 80615 square meters, and a footprint of 44418. Since all houses are single-story houses, this results in an FSI, floor space index, of 0,55.

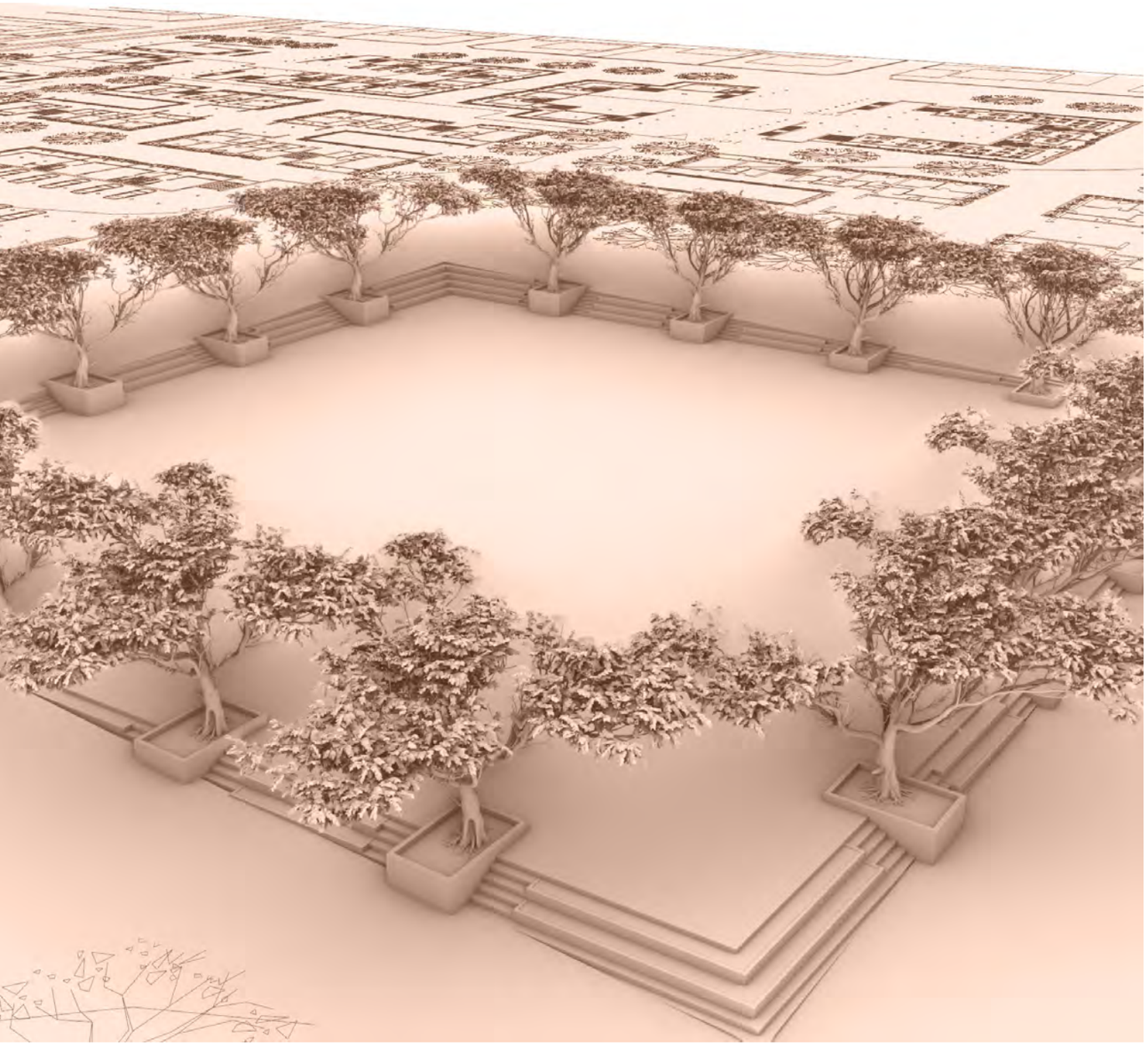
6.2
Kebele 24
source: Google Satelite



6.3
Typology 1
FHC-Owned very dense

6.4
Typology 2
Informal illegal settlements

6.5
Typology 2
FHC-Owned very open



7.1
Plaza Mayor
tree are accacia trees

The Urban Strategy

A hierarchy of spaces and streets
One of my critiques about the condominium buildings (20/80, 40/60) developed by the Integrated Housing Development Program is that the public space, formed by the buildings surrounding the open spaces, is not well defined. The large open public spaces in between the (40/60) block are fore example very wide and open but are not activated for any sort of activity. Are they meant for parking, recreational activities, or just green open spaces to look at?

The 40/60 condominiums are tower apartments, sometimes up to 18 floors. The towers are built on a commercial plinth, but this plinth is located in something which we can consider an endless field of open space, and thereby no used to activate the urban space around it.

The urban plan I propose consists of two main typologies, a U shaped courtyard block and residential towers based on a two-story commercial plinth. The courtyards are later on an organised in a cluster. These clusters form an inside world, which I describe as a serendipitous space, inspired by the atmospheres you find in informal settlements. These areas are characterized by a mix of living and income generation activities in the same place.

The outside of the cluster forms large and wide-open streets bringing a lot of light into the courtyards. These streets are accessible by cars, and there are also parking spaces provided.

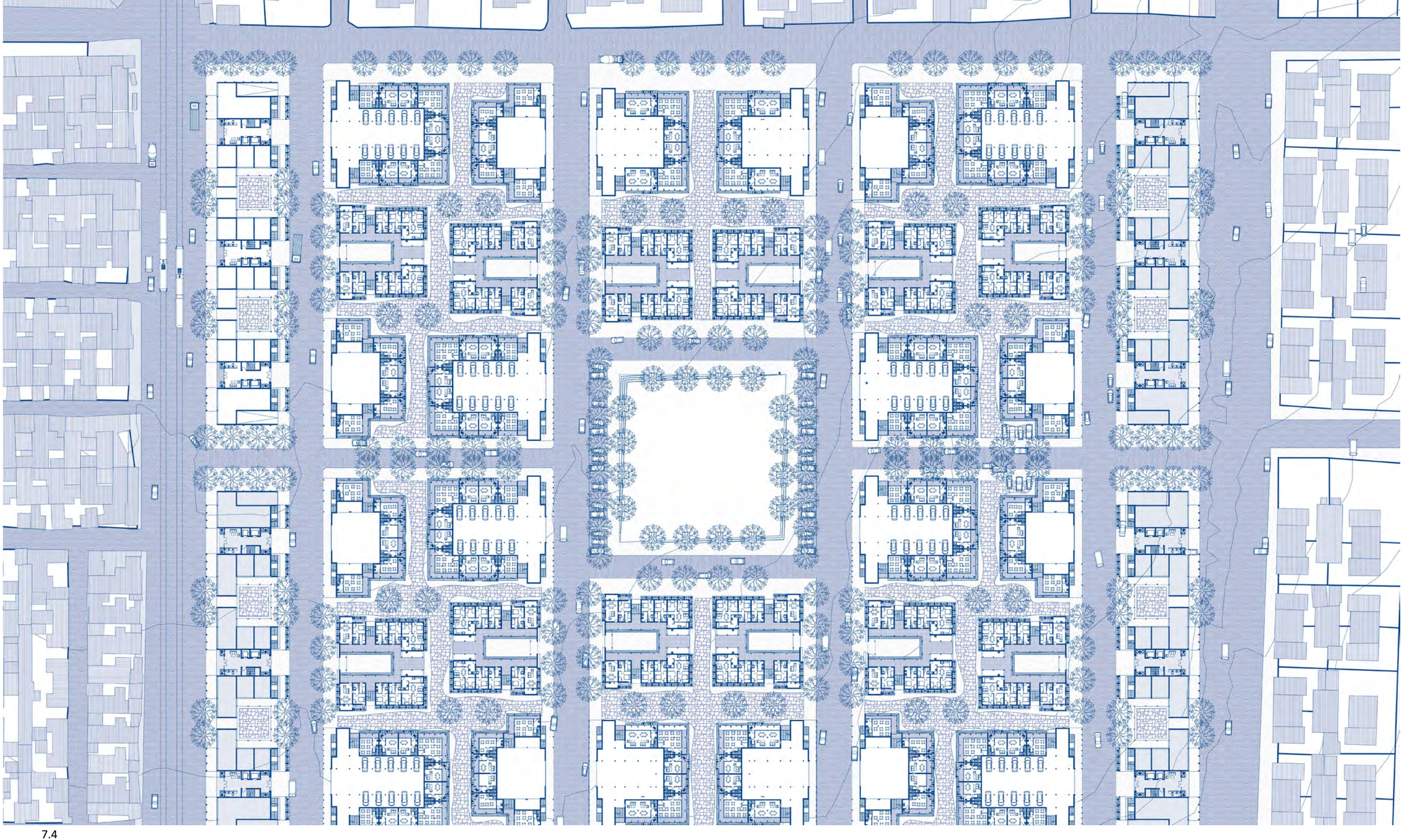
Finally, these clusters form a mixed-use, residential neighbourhood, with a large and open public space in the middle, to which I refer as a plaza mayor. This plaza mayor is cut out of the slope, forming a set of stairs which can be used to sit and relax in the shade of overhanging acacia trees.

The towers are located next to primary streets, and the streets are dimensioned in such a way that they offer the possibility of future sustainable transportation like a bus or tramline. In between the residential tower are market courtyards which are connecting the inside (informal) clusters, to the outside formal world of the primary roads and commercial activities.

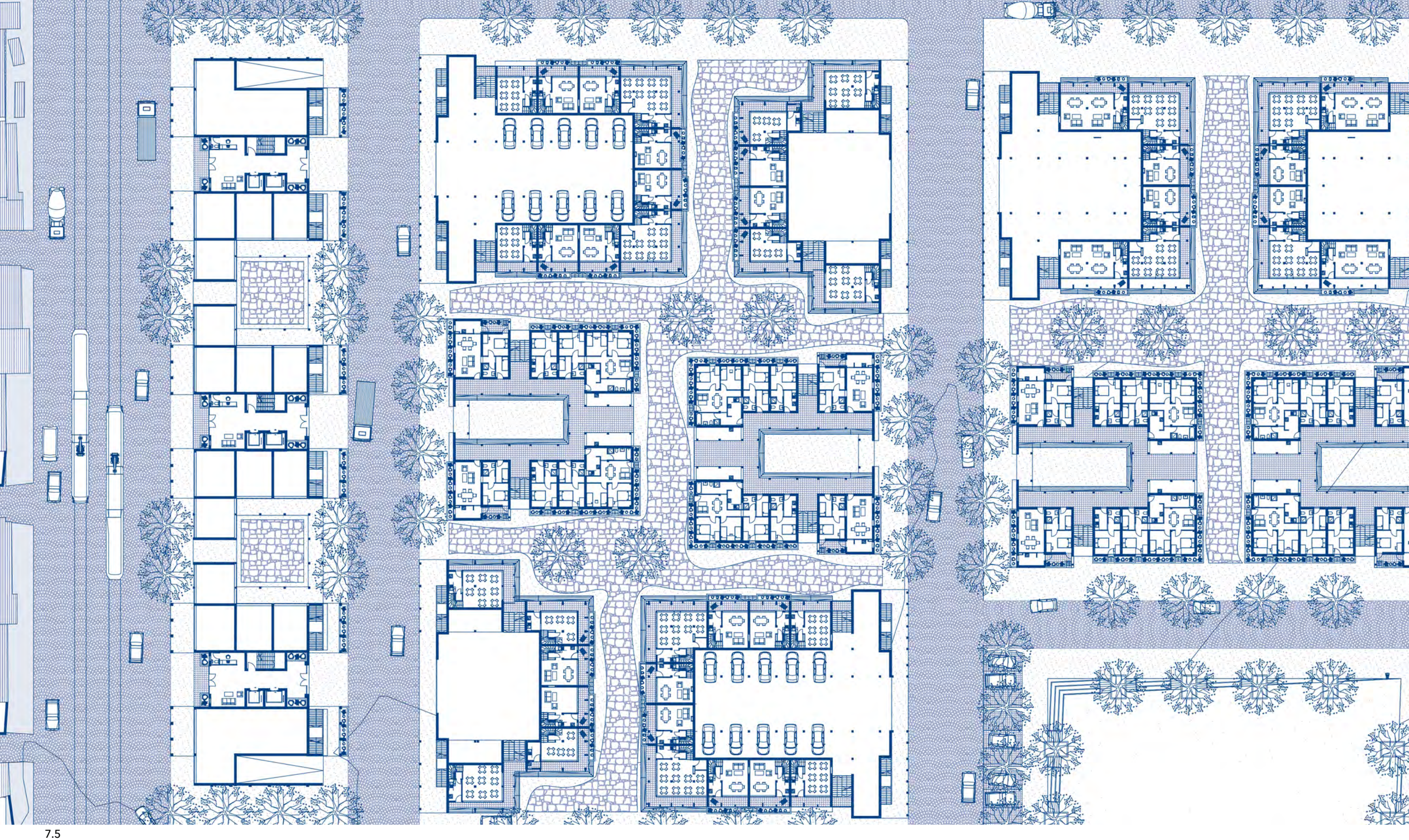
Progressive building
A crucial aspect of the project is that Kebele 24 is not a vacant area. It is a neighbourhood with real people, living real lives. The project is designed in such a way that it can be built in a progressive matter, meaning step by step, and therefore giving the resident the possibility to remain living in Kebele 24. The football pitch on the east-side is used as a shifting space so that in theory not a single resident has to be relocated.

7.2
Typological section (not up to date)
Scaled to fit

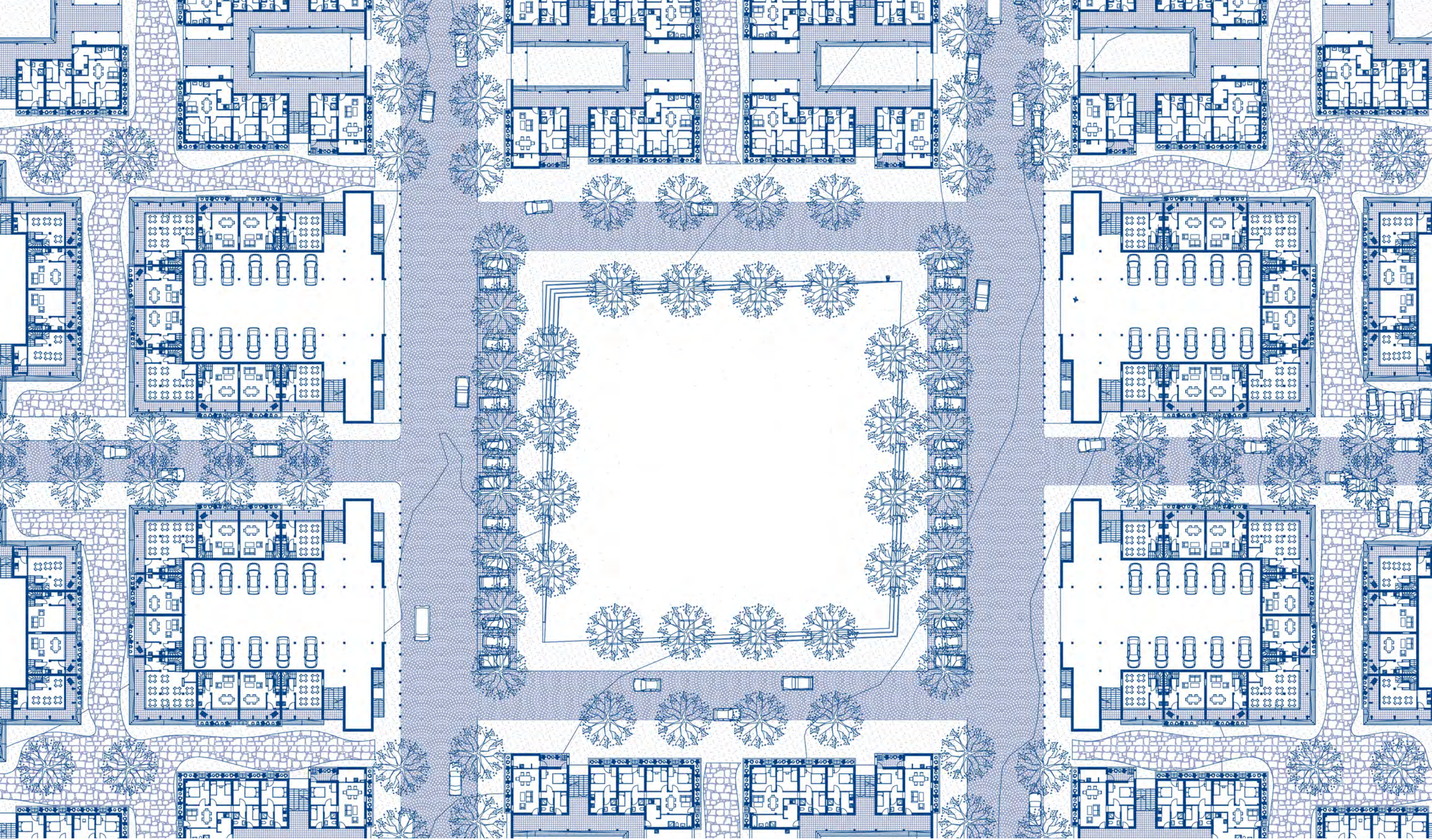
7.3
Proposal for Kebele 24
Phase 1



7.4
Urban Plan
Drawing scaled to fit



7.5
Urban Plan
Drawing scaled to fit



7.6
Plaza Mayor
Drawing scaled to fit

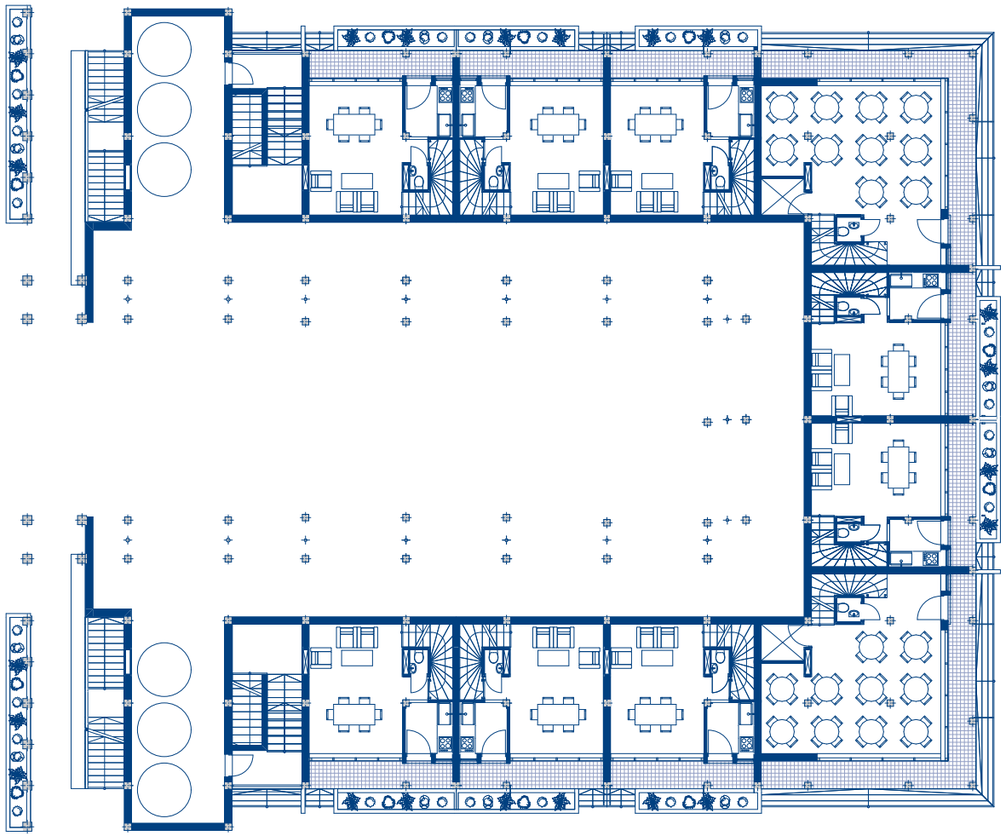
The U-shaped Courtyard

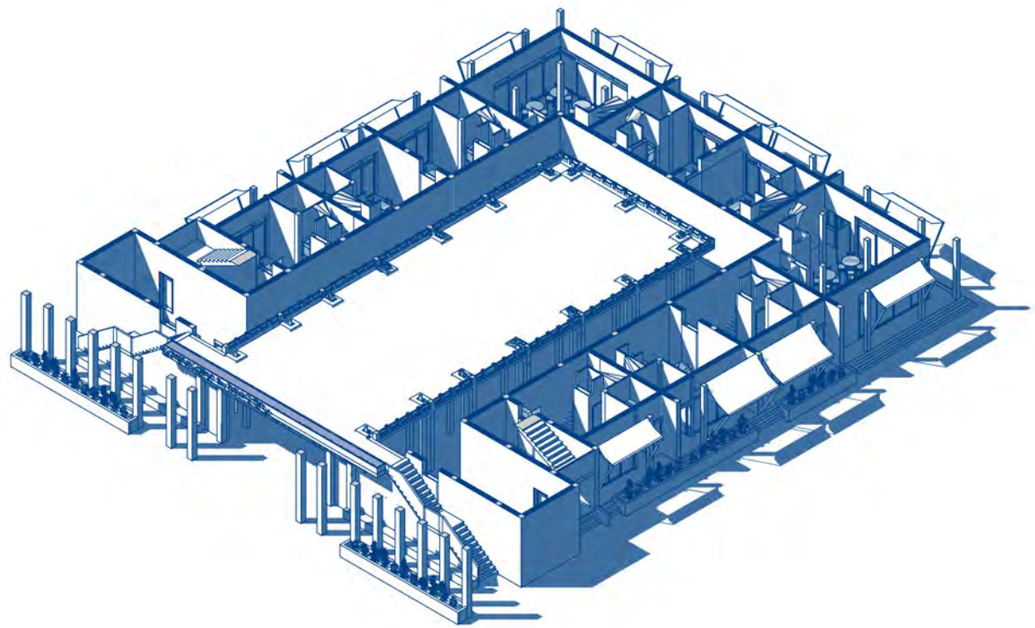
The U-shaped courtyard
The first typology which I will discuss in this booklet is the U-shaped-elevated courtyard. The block opens up towards the opening of the ‘u’ to the primary streets, and forms a cluster with the closed parts of the ‘u’.
There are three main types of spaces on the ground floor. First, a gallery overhanging the street, creating shade for the pedestrians. Secondly a large open space underneath the courtyard slab. This space can be either used for commercial activities, like a shop or workshop, but it could also be used as a space to park cars for the residents of the block. Then thirdly a plinth that could be either used as an extension of the house, like a living room and kitchen, or commercial space, like a small shop, bakery, or cafe.

On the second floor, we find the base of the courtyard. Here there is another floor for the units based on the ground floor so that the residents living in those apartments are not excluded from the community this block forms. Next to the staircases are two open areas, which can be used according to the preferences of the residents of the block; examples are a communal kitchen or washing place, storage for chairs and tables, of a playroom for the youngsters.

On the third floor represents a typical floorplan of the units and the gallery connecting them. First I would like to describe how the units can be combined to form larger units. Every unit is based within a construction grid of 3,9 by 6,4 meters and in between the units are shafts located. These shafts make it possible that the hallway of the unit can be either used as a kitchen, in a single formation, or as a bedroom, in double or third formation. Right after this shaft, there is a wall made out of adobe dried brick, and therefore easily removed. I previously wanted to separate the units by just a door, so that without any effort these units could be enlarged, but due to fire protection reasons, this was not possible.
In the 1:50 drawings, (FIGURE), is shown how the gallery can be used as an extension of the home. In front of every courtyard, the gallery cantilevers outward, forming a small space, filled in by either a kitchen top, some chairs, or plants, according to the preferences of the residents. This space accommodates in the need of an outside area, for cooking or washing for example, by using the square meters one had to build in any case, for circulation.

Facade
The facade is organised in three layers. An open plinth which jumps backwards, 3 levels of a solid wall with large shadable windows, and on the top of the building a ‘french style balcony’, which jumps backwards. This organisation is used to make the buildings look less tall, and thereby preserving the density.

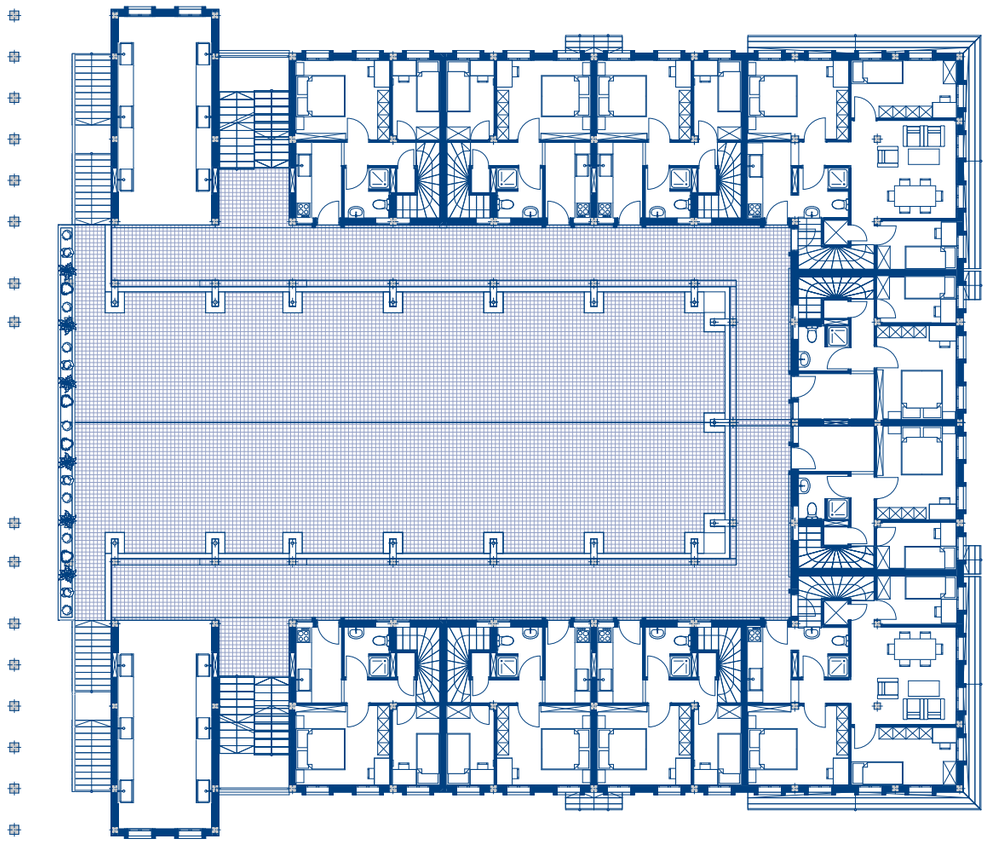


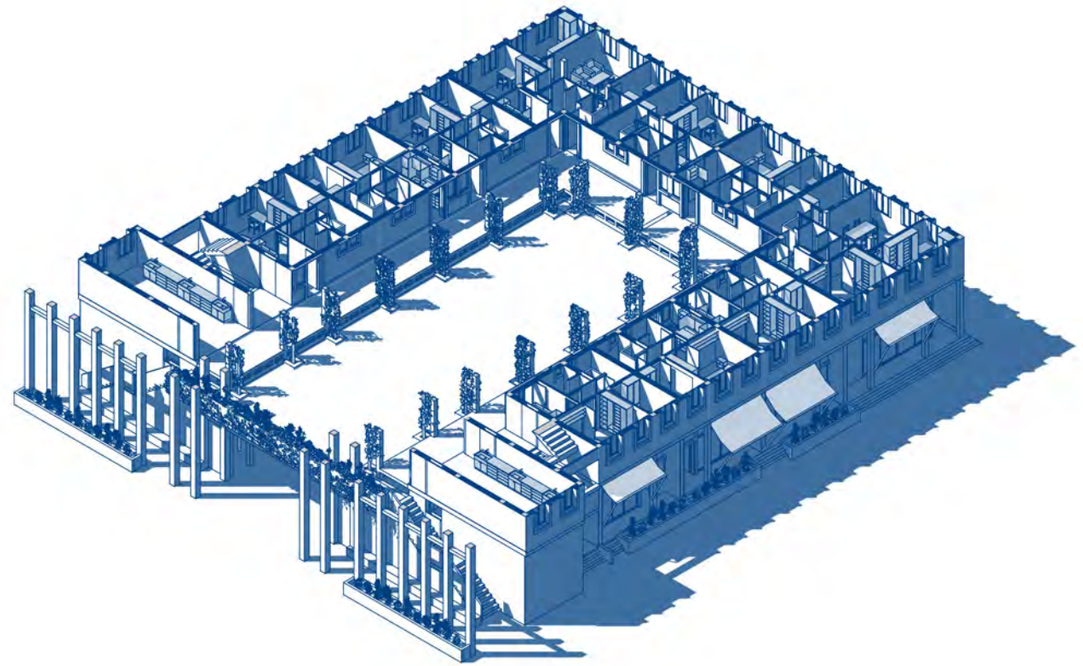


8.1
U Shaped courtyard
Ground floor

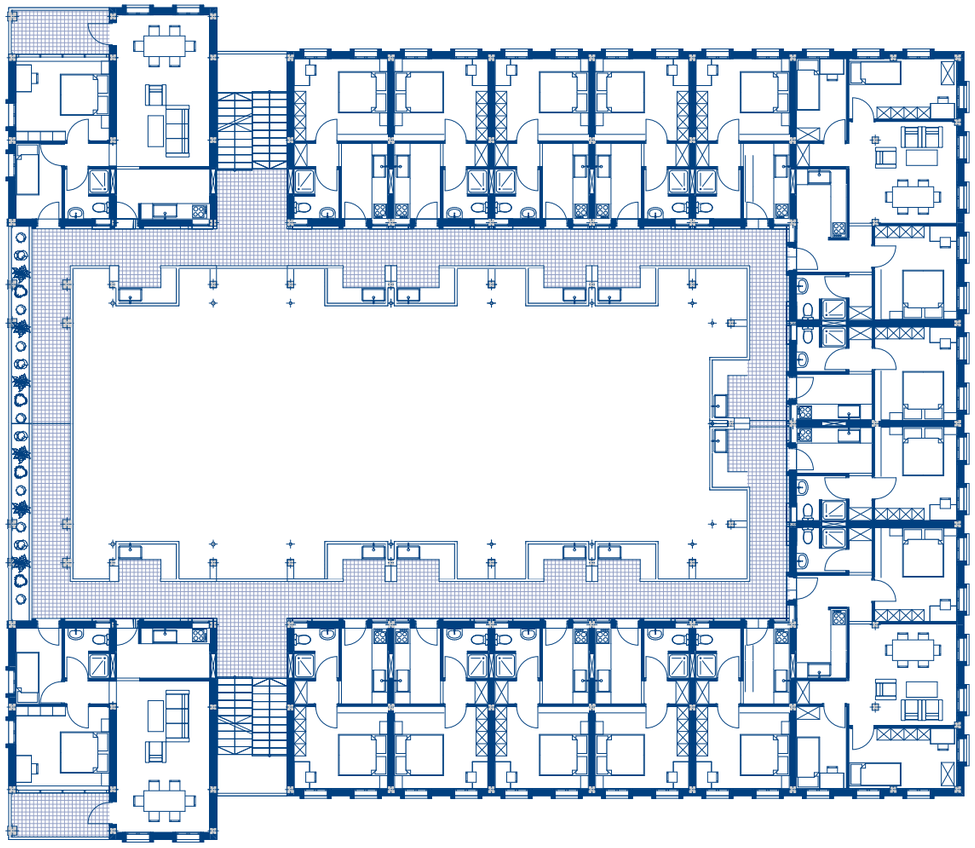
1:200

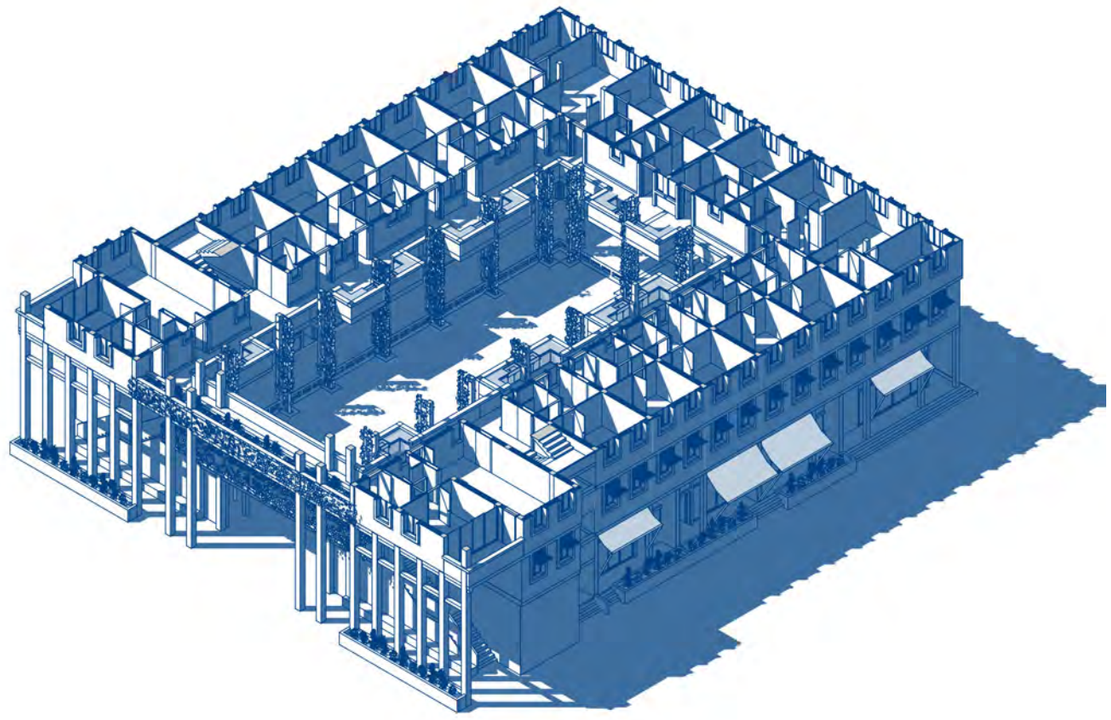
0 2 10m





8.2
U Shaped courtyard
First floor

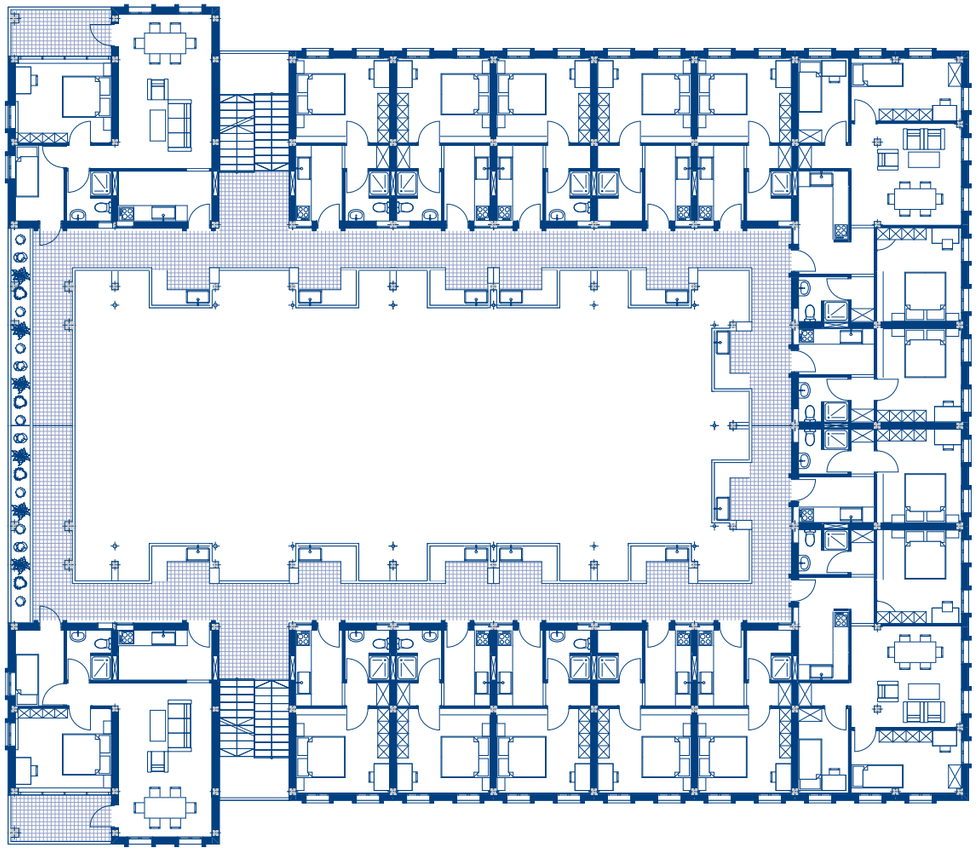


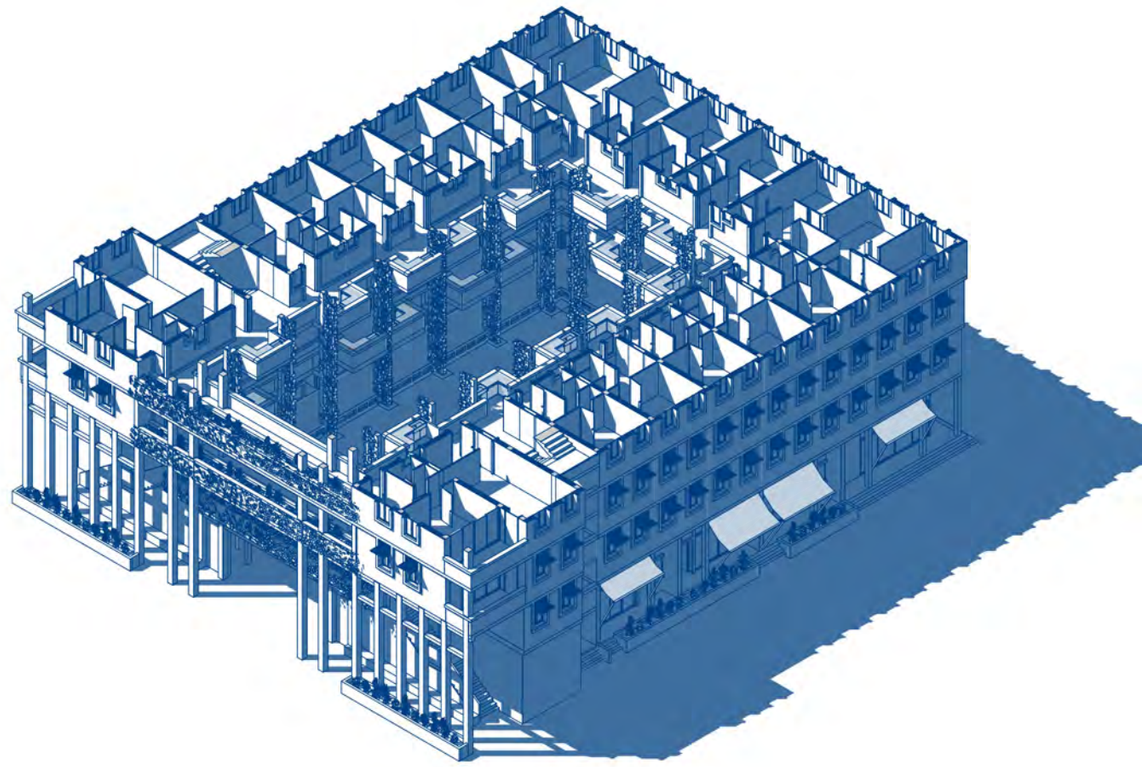


1:200

0 2 10m

8.3
U Shaped courtyard
Second floor

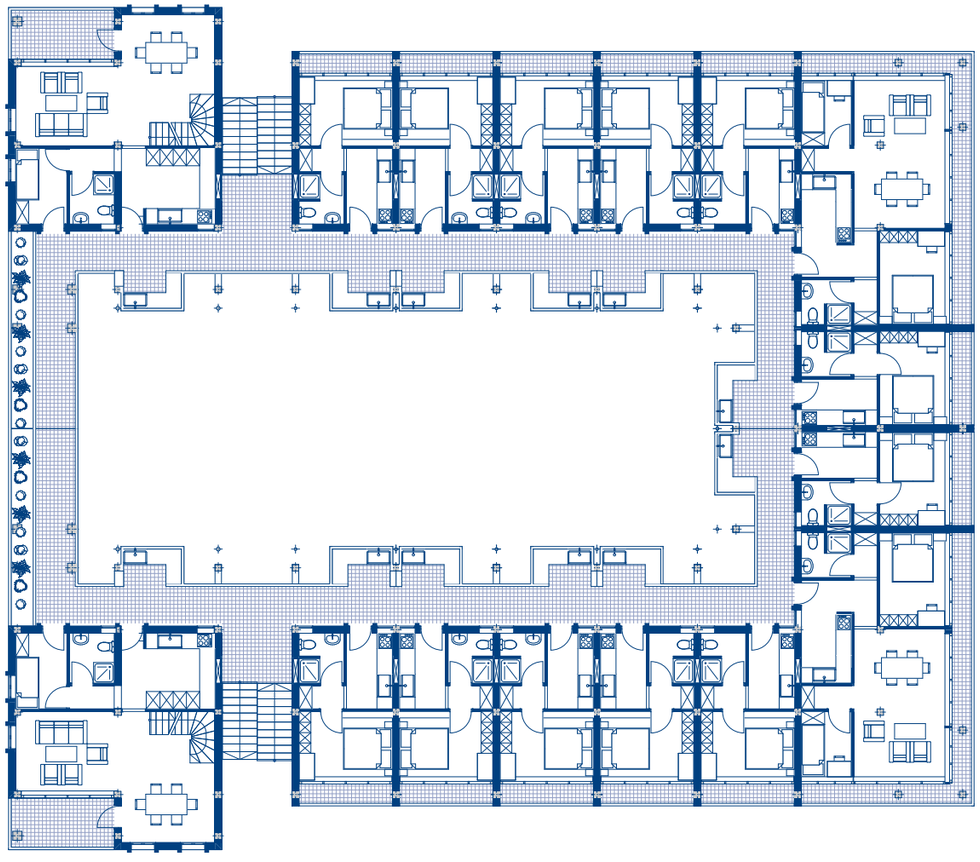


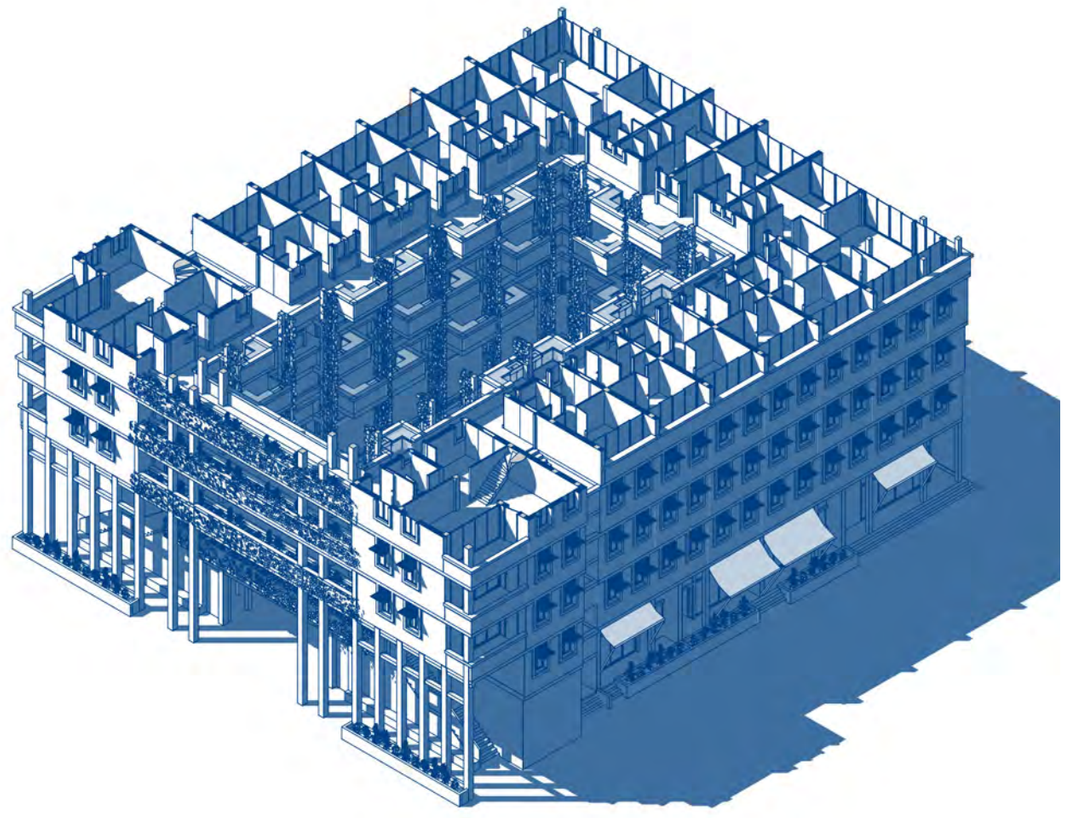


1:200

0 2 10m

8.4
U Shaped courtyard
Third floor

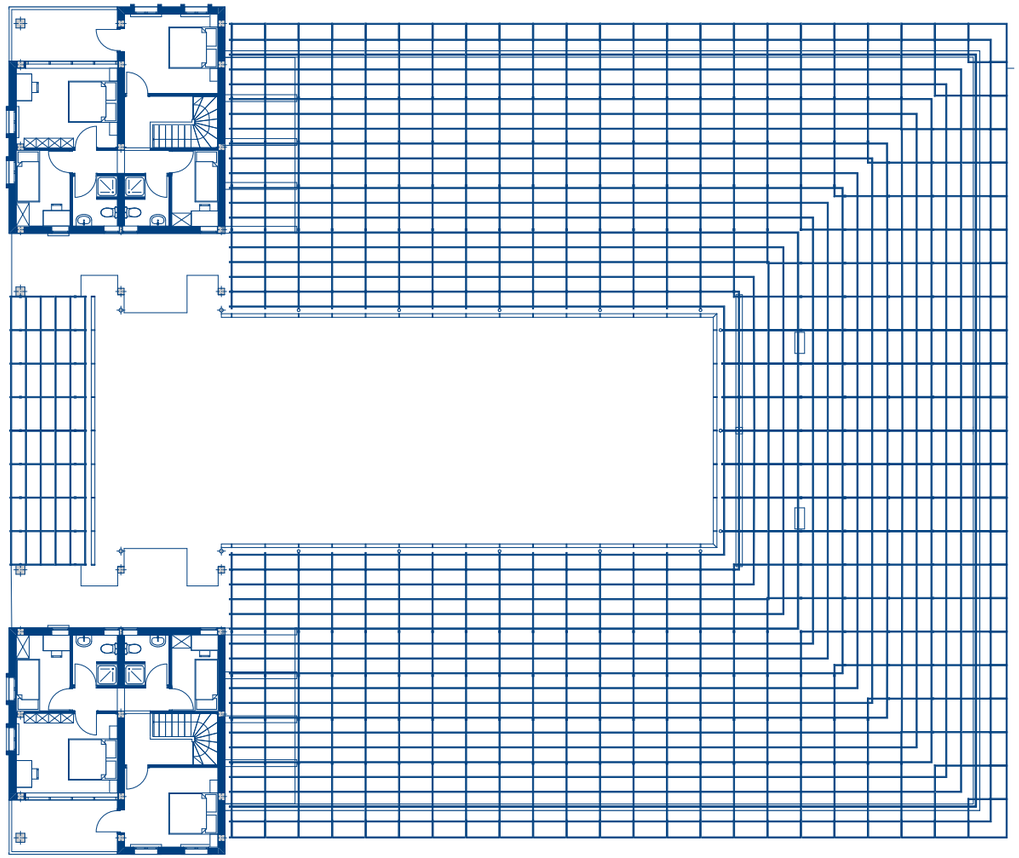


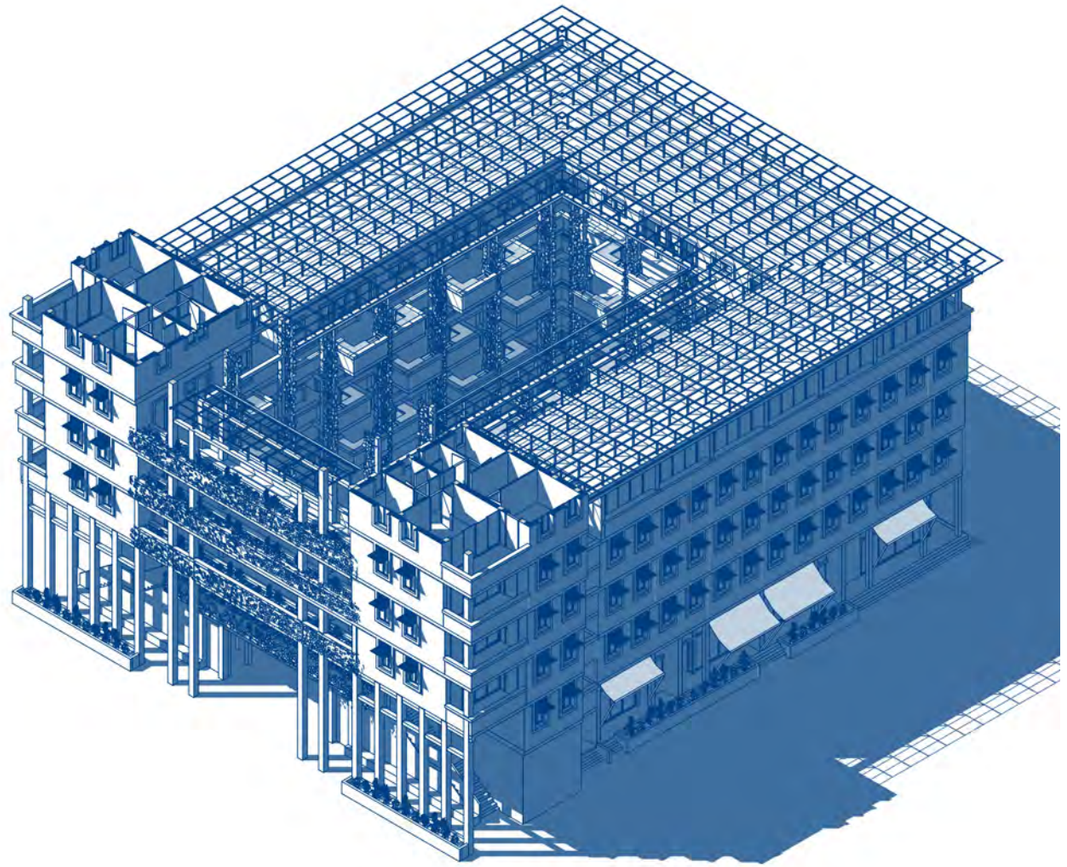


1:200

0 2 10m

8.5
U Shaped courtyard
Fourth floor

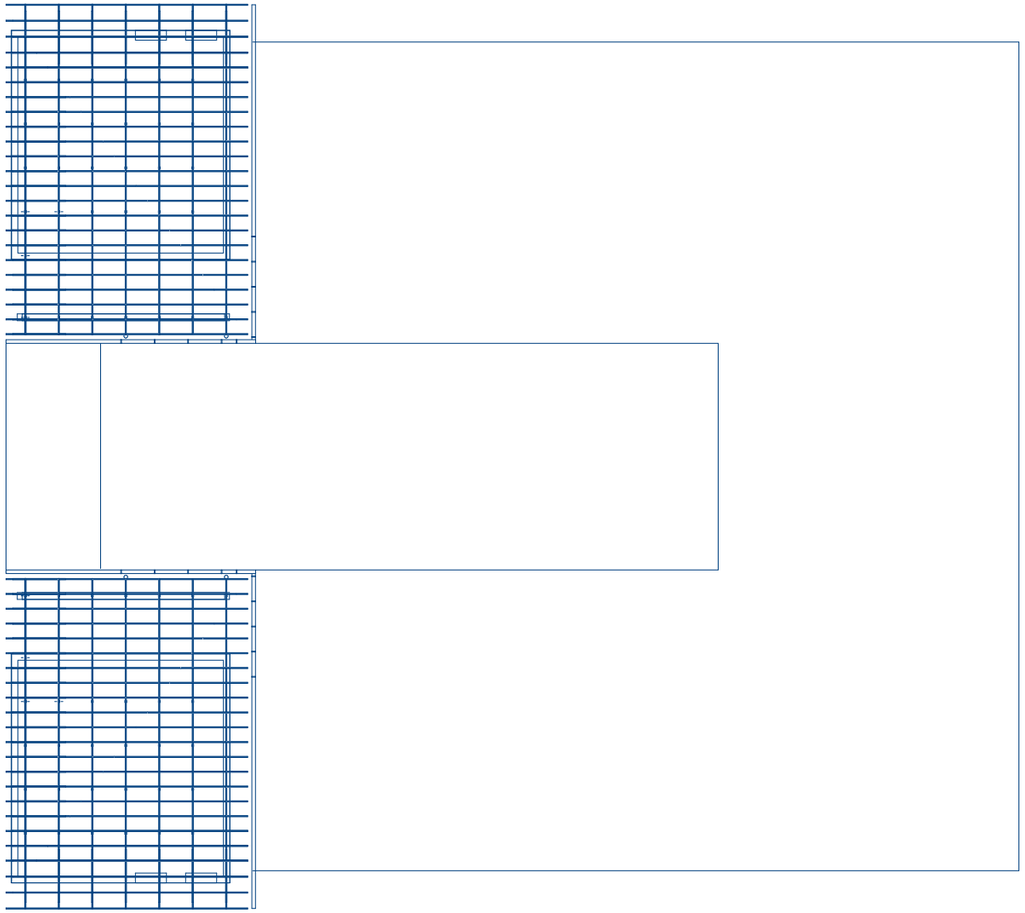


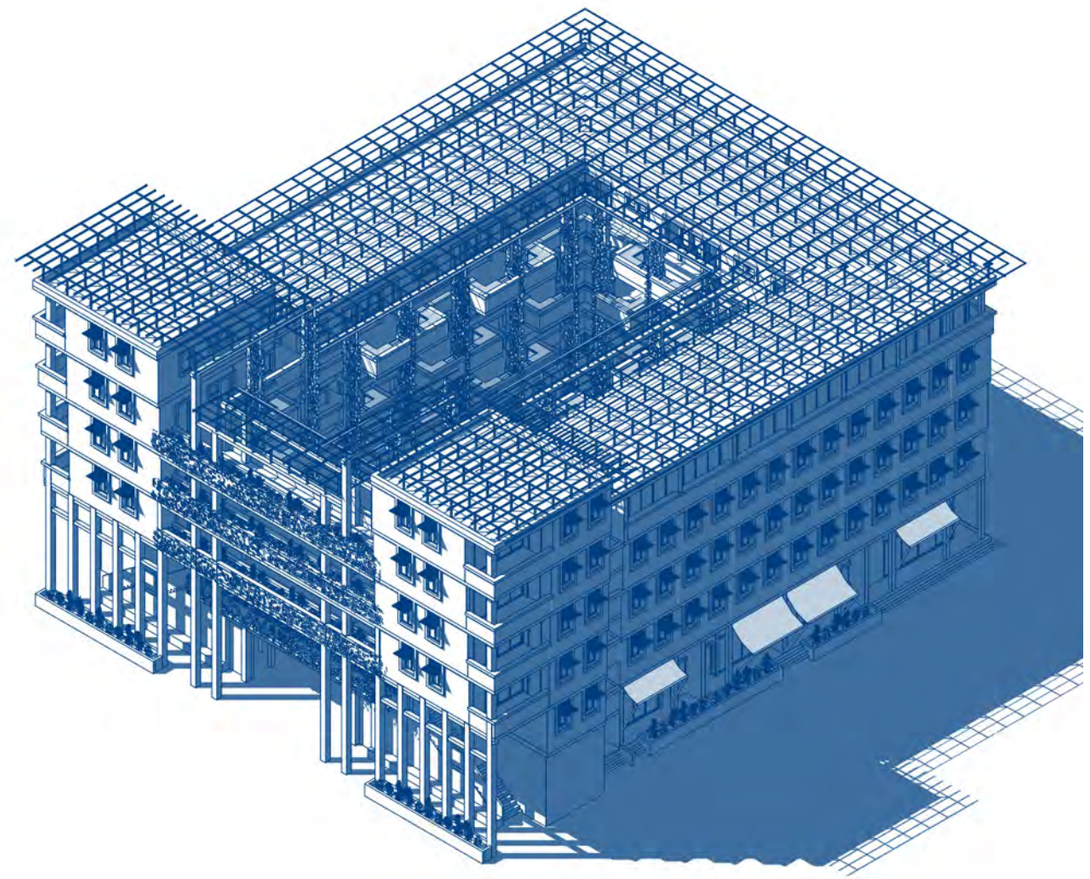


1:200

0 2 10m

8.6
U Shaped courtyard
Fifth floor - roofplan

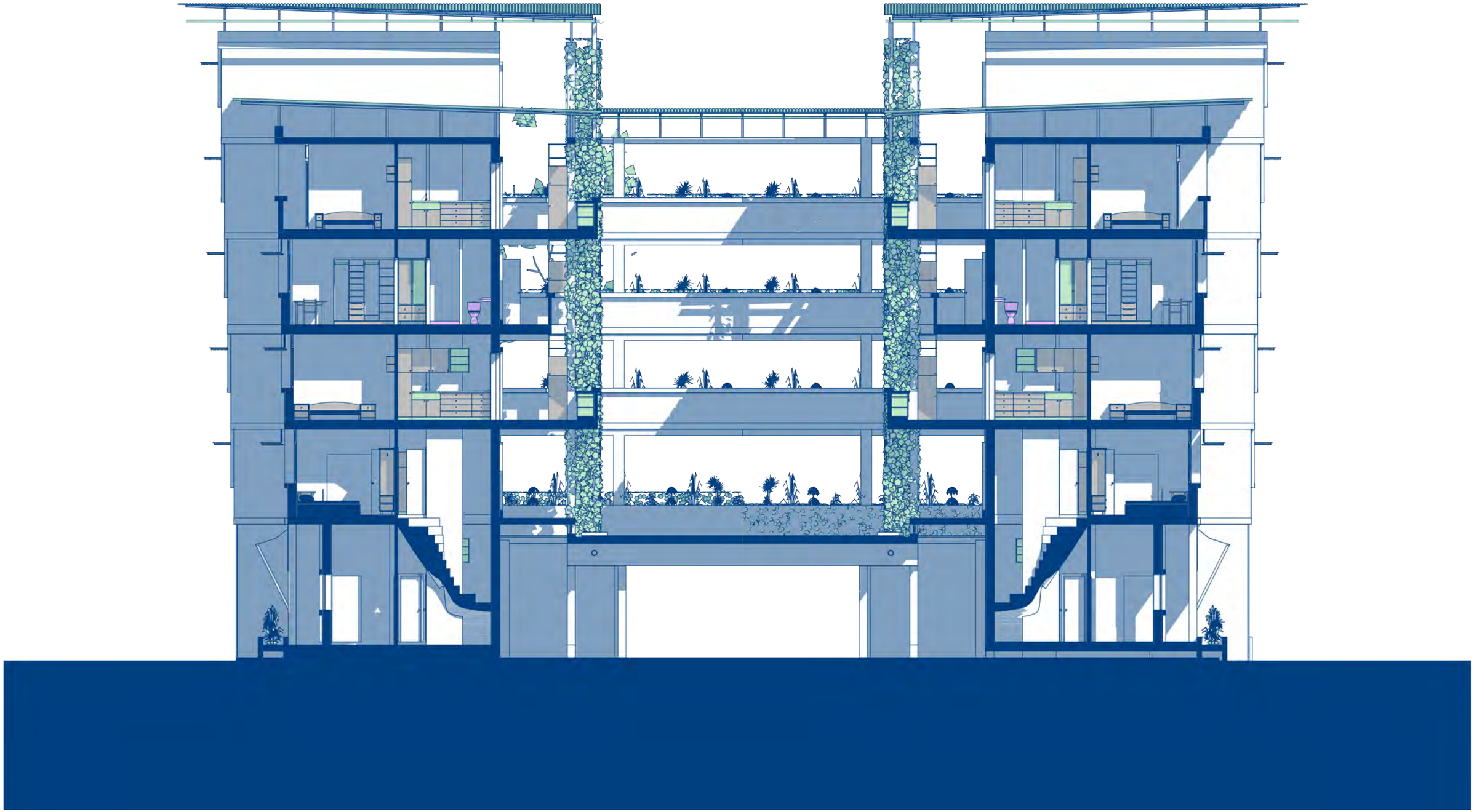




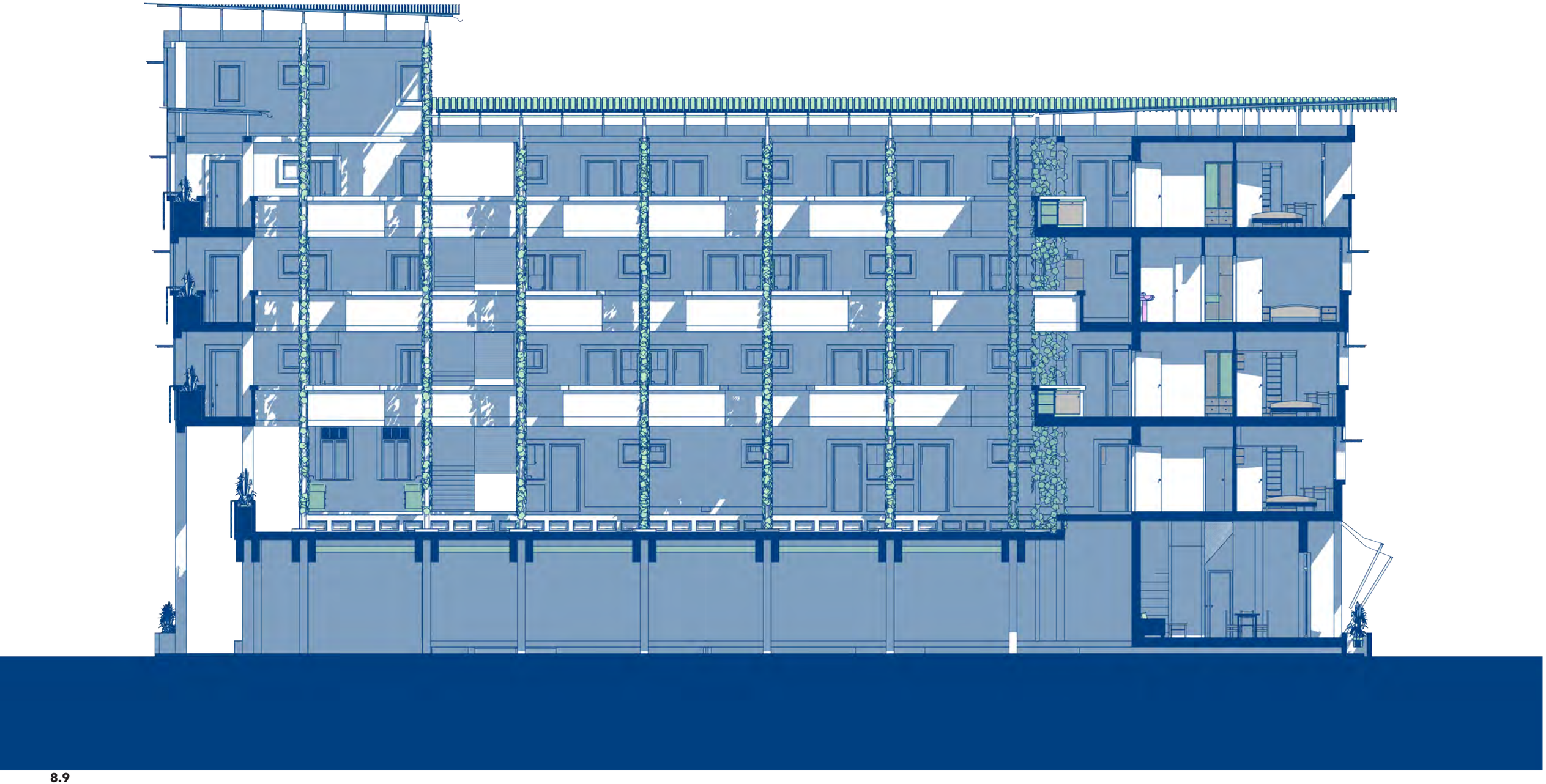
1:200

0 2 10m

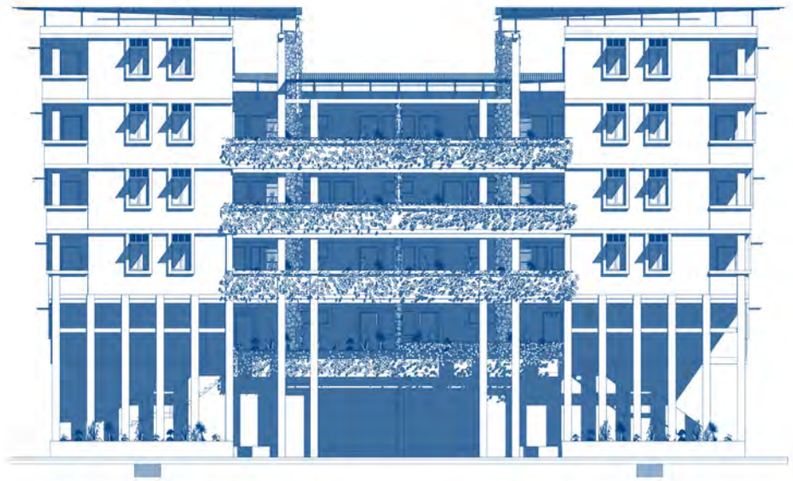
8.7
U Shaped courtyard
Roofplan



8.8
Cross section
1:100



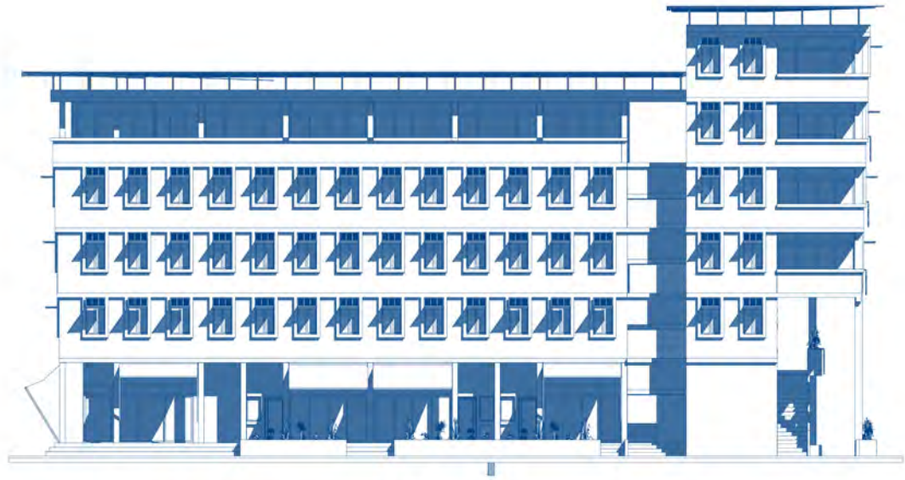
8.9
Longitudinal section
1:100



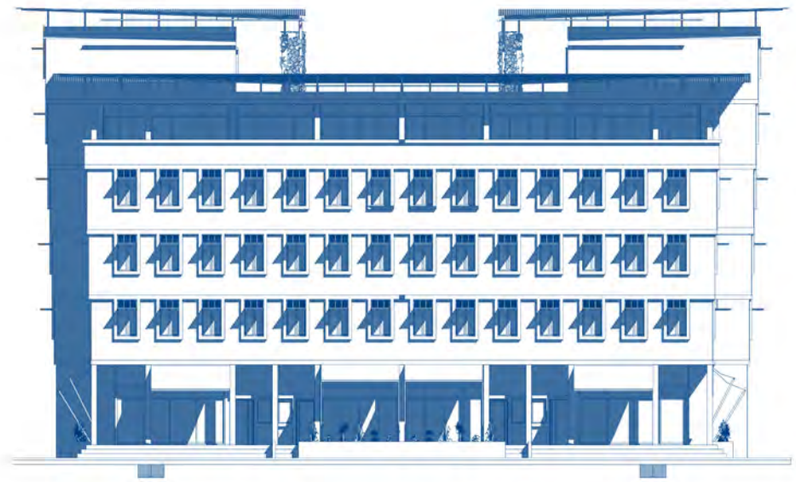
8.10
Elevation Courtyard
Front

1:200

0 2 10m



8.11
Elevation Courtyard
Side

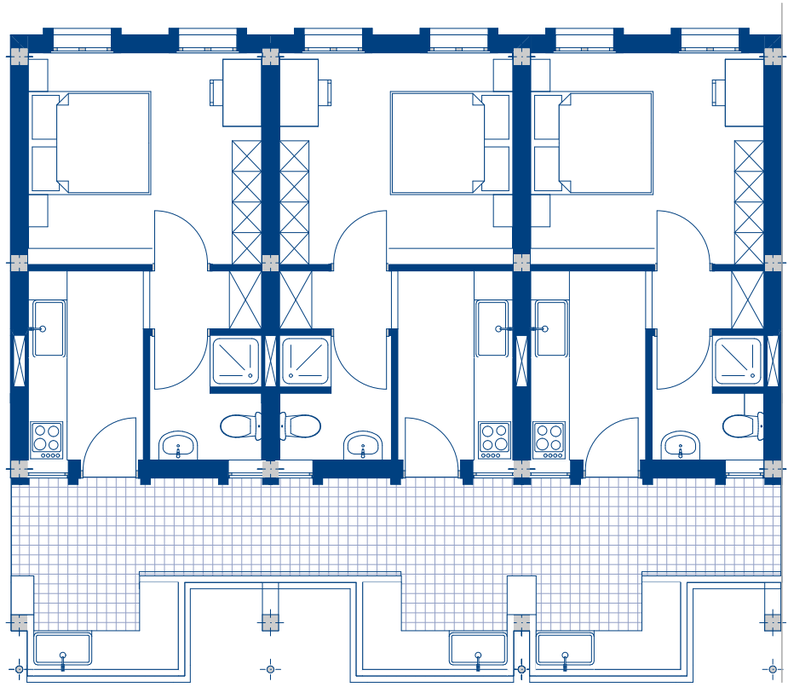


8.12
Elevation Courtyard
Back

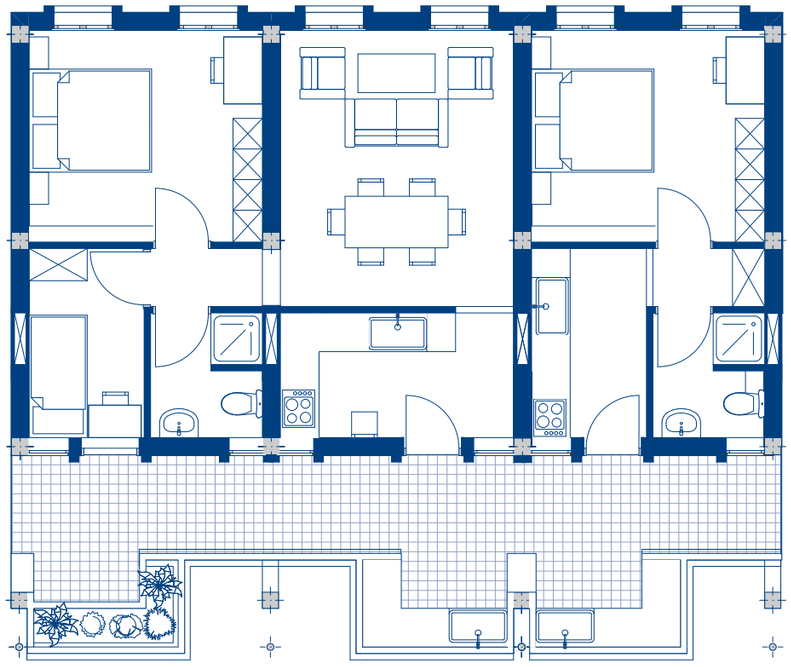
1:200

0 2 10m

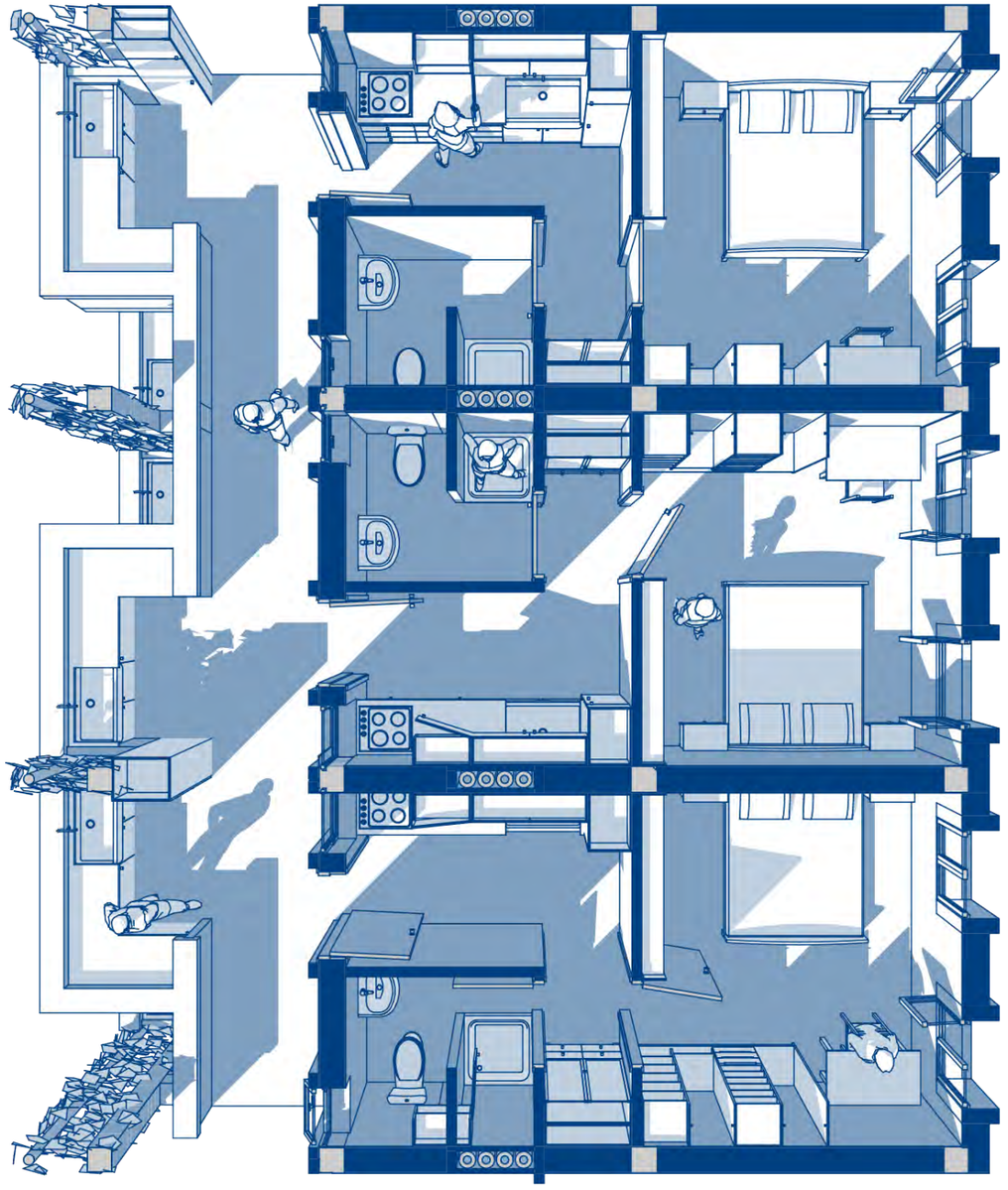
8.13
Perspective Section



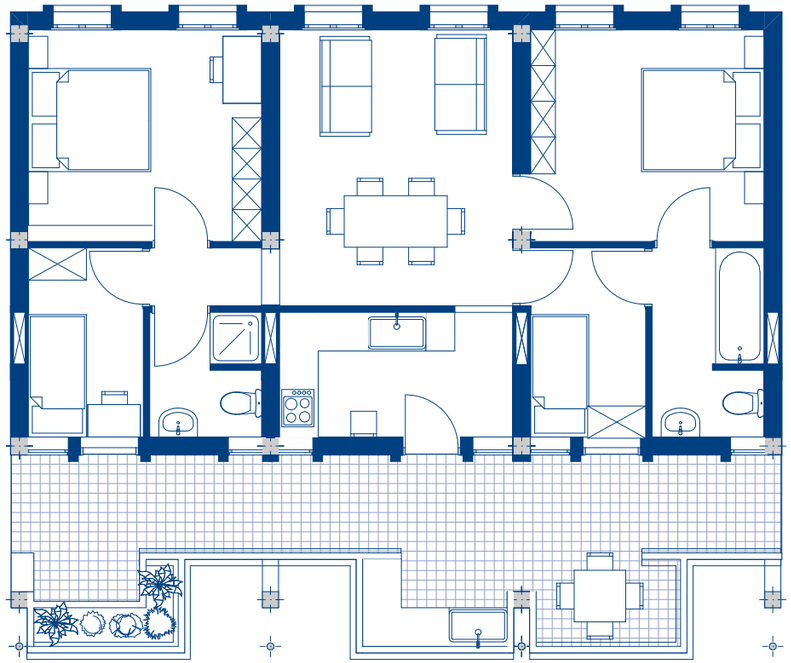
8.14
Plan
1+1+1 units



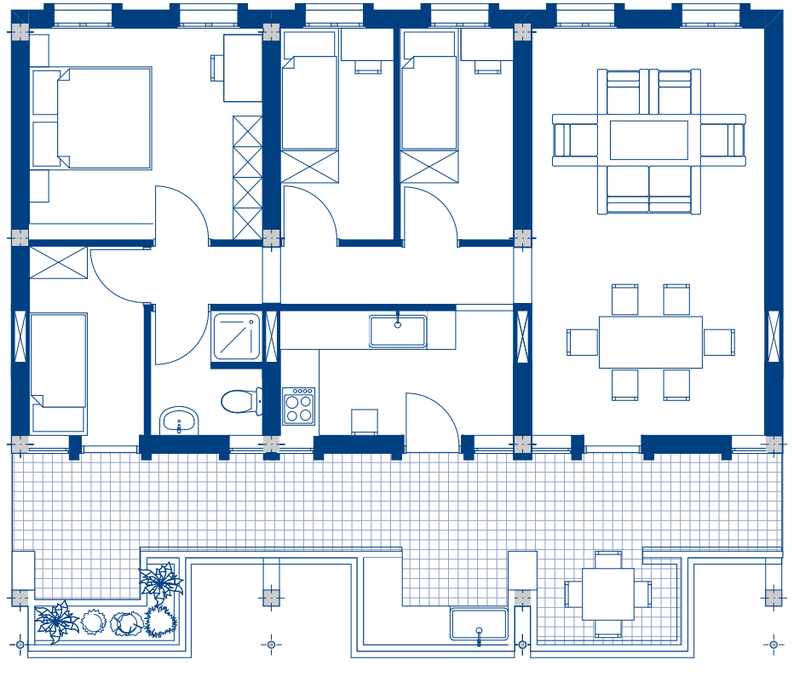
8.15
Plan
2+1 units



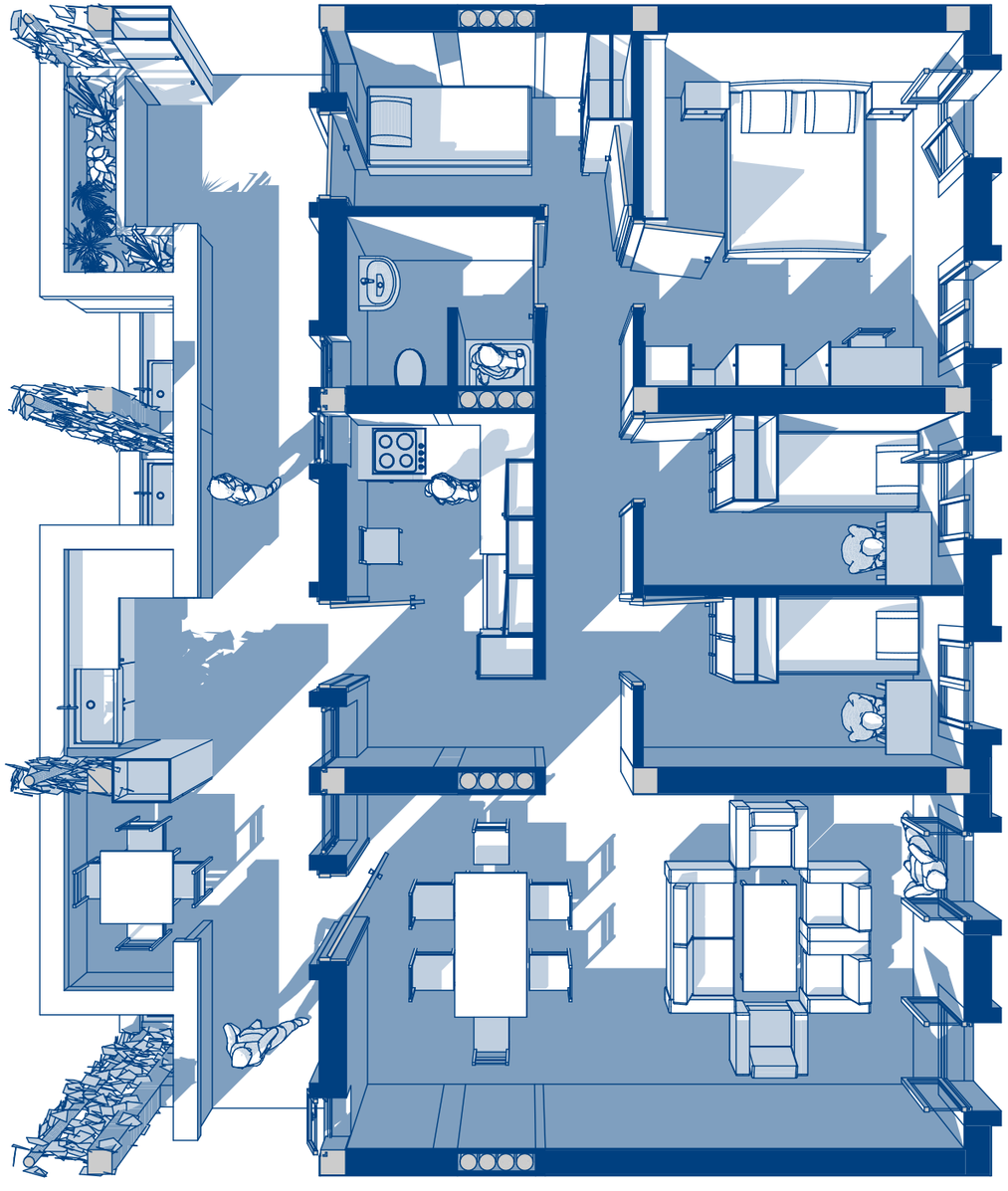
8.16
Perspective section
1+1+1 units



8.17
Plan
3 units



8.18
Plan
3 units



8.19
Perspective section
3 units

9.1
Section tower
Scaled to fit

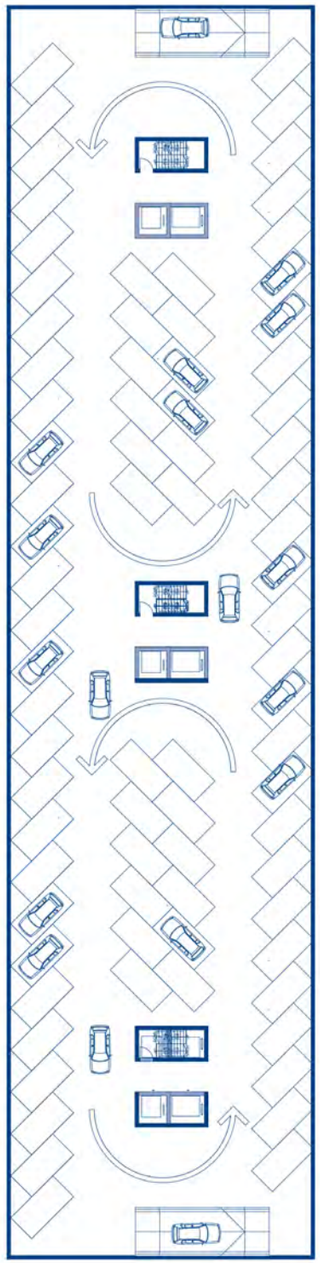
The Tower

Typology
The tower can be separated into four characteristic layers:
- A basement serving as a parking garage
- A commercial plinth on the ground floor and entrances to towers
- A commercial plinth on the second floor
- A typical floorplan of the apartments on the tower.

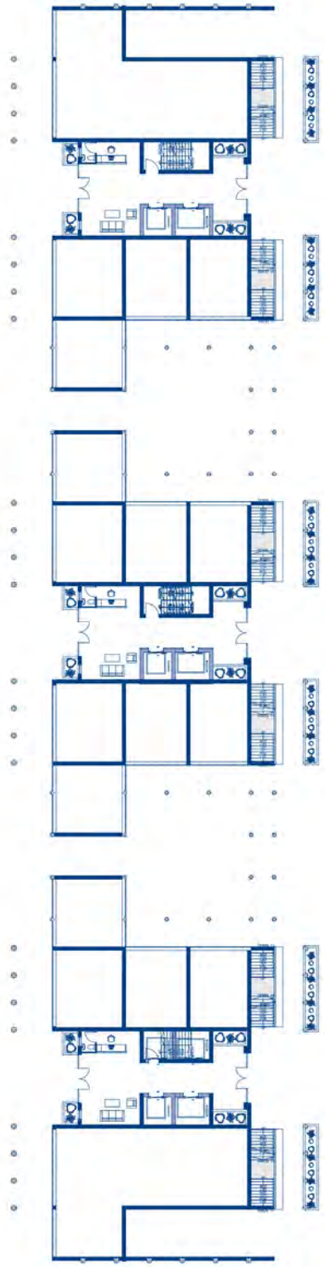
The commercial plinth towards the primary road is made in a straight line thereby defining and shaping the street. It is though penetrated with entrances an accesses to the commercial courtyards, on the backside of the building, facing towards the residential neighbourhood.
These courtyards form some sort of pockets, which are in line with the entrances of the dwelling clusters. This is done to some sort of pulling the commercial activities from the formal towerblock, into the dwelling clusters.

The apartments are designed for a higher income class of society than the U-shaped blocks. This becomes visible in the floorplans of these towers, which are more spacious and which always have a small bedroom where the maid can stay. This bedroom is separated by the kitchen from the living space of the residents, thereby offering both some privacy within the same house. The dwelling units are drawn in such a way that the needs of the inhouse maid are also taken into account. An example of this is the balconies that face inward. These balconies shift every floor so that a physical connection is formed between these balconies. When the maid is doing work on the balconies, like washing, or hanging up clothes, they could start a chat with maids on other floors.

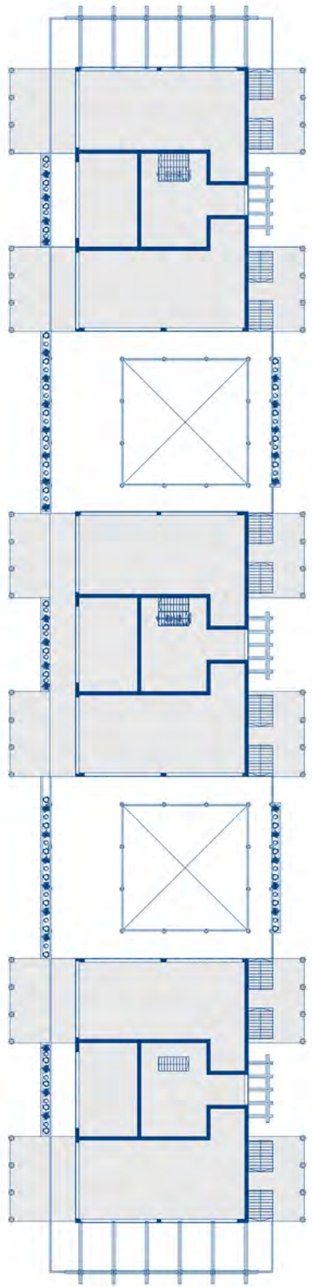
The typical floorplan of the tower is in itself some sort of U shaped courtyard, where the access hallway opens up to the residential neighbourhood.



9.2
Plan Tower
Parking Garage minus one

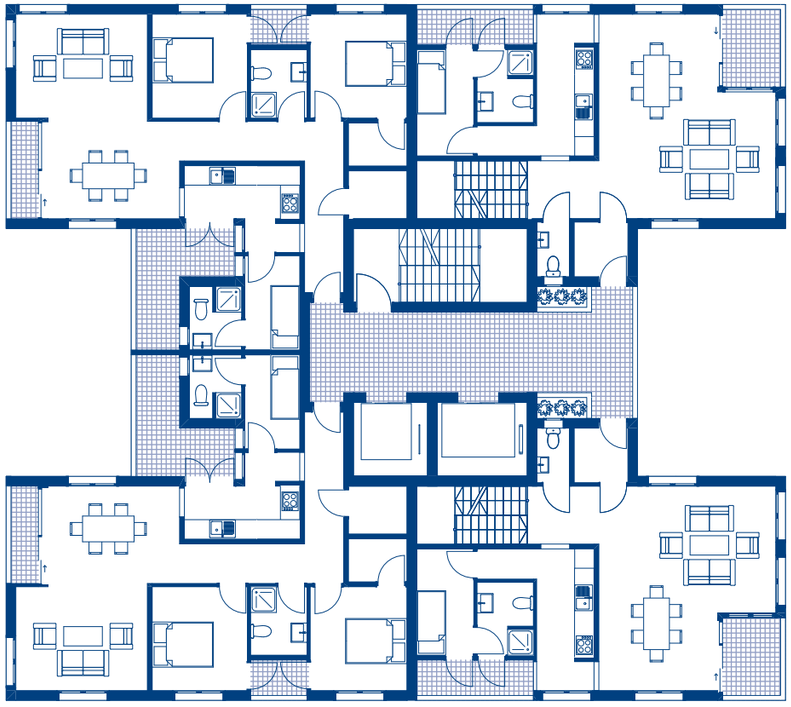


9.3
Plan Tower
Ground Floor

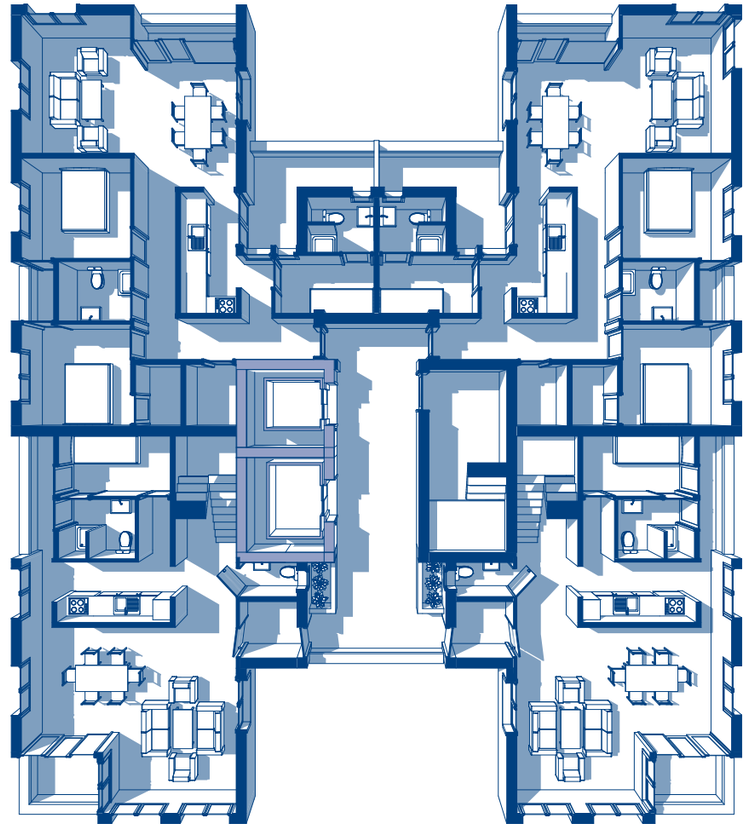


9.4
Plan Tower
Second Floor

9.5
Plan tower
Third Floor

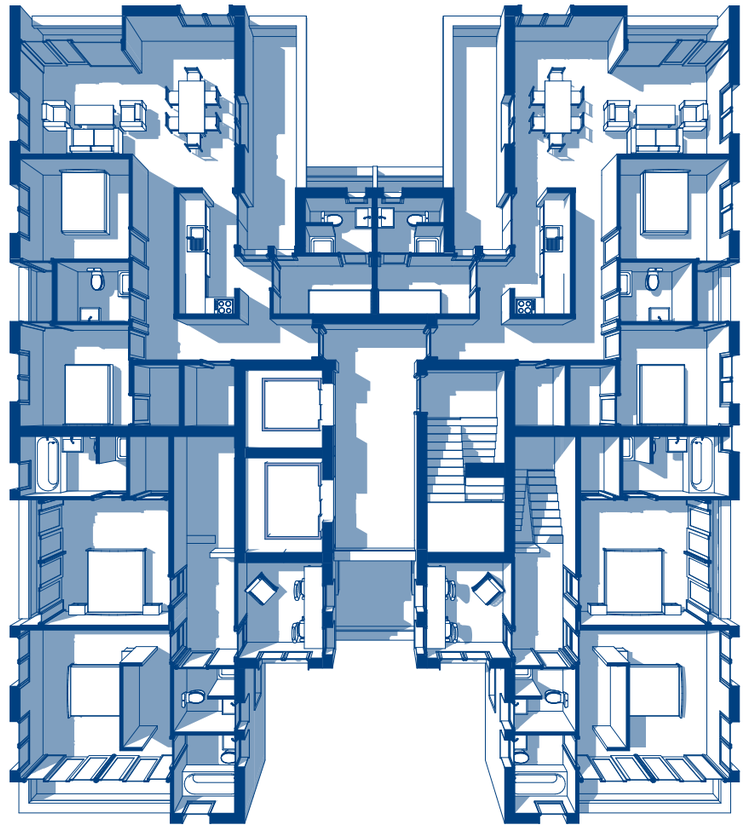


9.6
Typical floorplan tower
Alternating lvl 1



9.7
Perspective section
Alternating lvl 1

9.8
Typical floorplan tower
Alternating lvl2



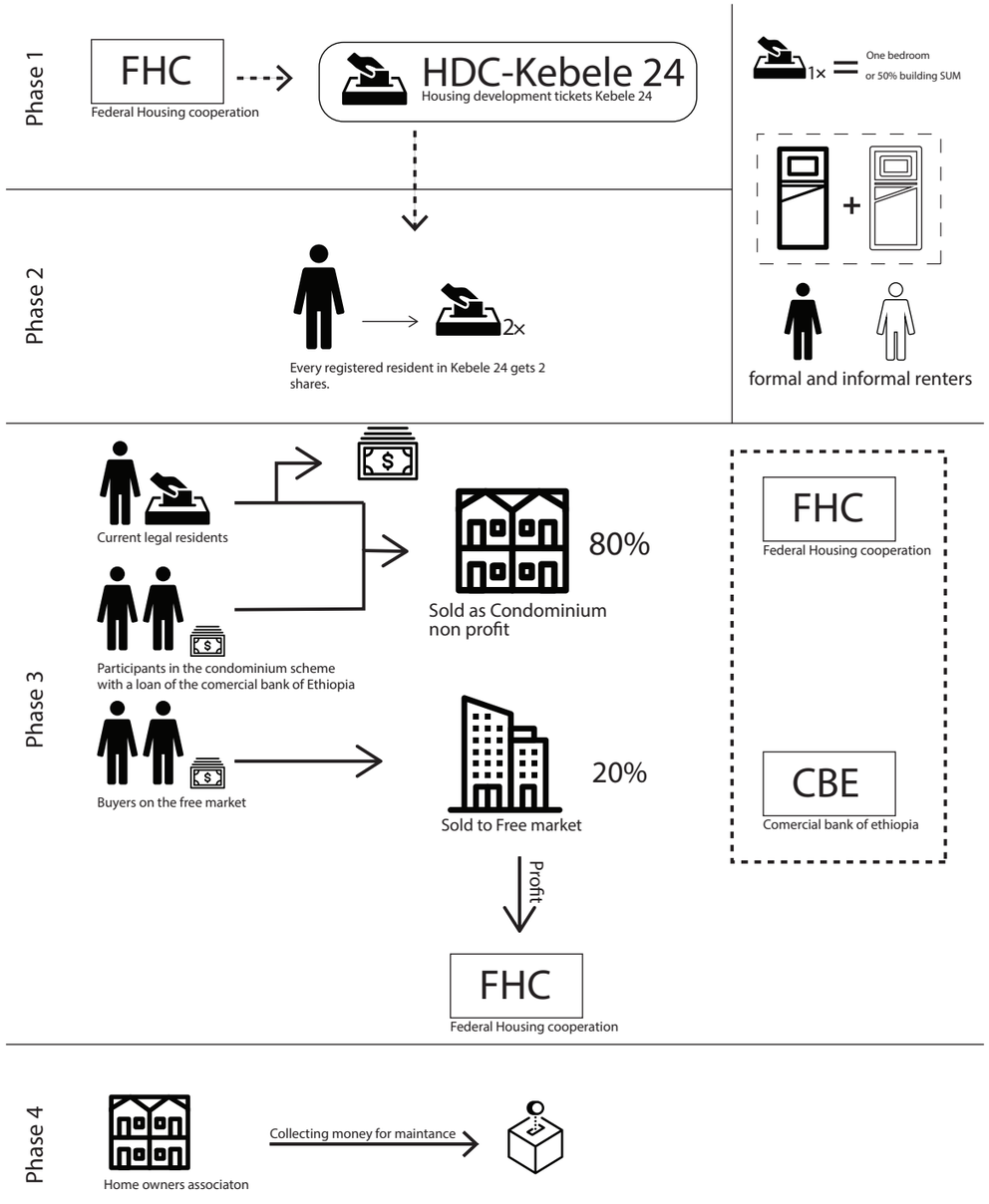
9.9
Perspective section
Alternating lvl 2

9.10
Atmospheric elevation
Side U-shaped block

9.11
Atmospheric impresion
View inside block

9.12
Atmospheric impresion
View from street

9.13
Atmospheric impression
inside cluster



10.1
Manegerial scheme
-

Managerial Scheme

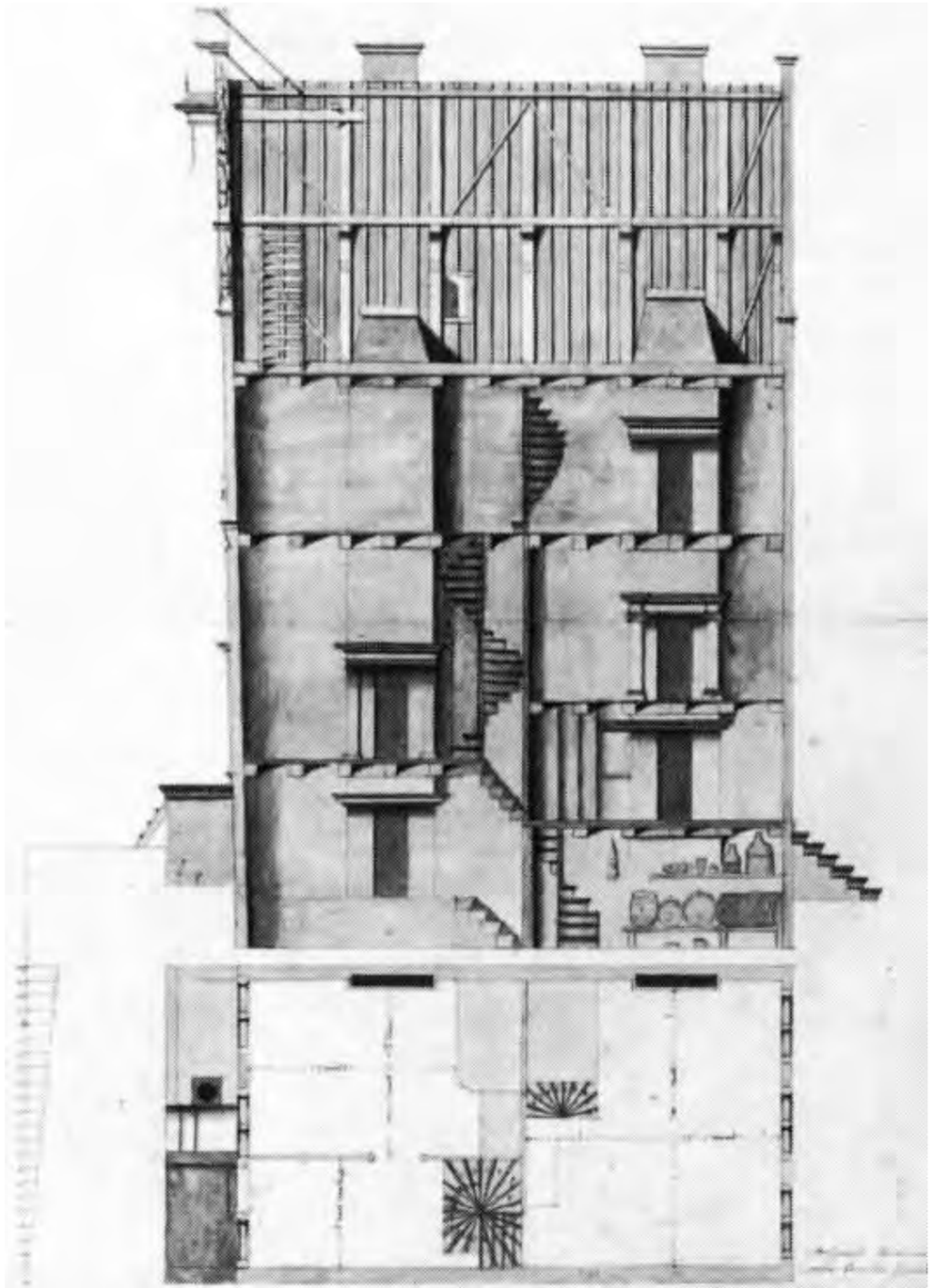
Managerial scheme
There are currently already people living in Kebele 24, some of whom have lived their entire life there. Other residents might depend heavily on their social and economic network, or perhaps even have a business at home. Redeveloping a neighbourhood has a very strong impact on the life of these people, causing a lot of stress and anger. However, based on the research described in the problem statement, these single-story houses need to be redeveloped.

The managerial scheme I propose works as follows: Every current adult and registered resident in Kebele 24 is offered a share, or ticket, which represents the right to one unit in a courtyard dwelling block. These shares can be handed in throughout the development of the neighbourhood, which I think can take up to 10 years. During this period people can find the right moment to move out of their current apartment, but also move out with their neighbours or relatives into the same block. When people don't feel like moving to one of these courtyard blocks, or just want cash because they found another place somewhere else, they could also sell their share on the free market.

When an adult couple owns 4 shares, meaning 2 units, they have the possibility to sublet one of the rooms. An entire family also has the possibility to combine 4 units into one, so that they mimic their situation from the compound they are living in right now.

Giving the residents a house, and demolishing the current situation means a cost an loss of capital for the FHC. This loss will be covered by the profit made from the apartment towers which will be sold to the free market.

The system I propose mimics the condominium system: people own their houses, and do not rent them. To have some sort of organisation which takes care of the maintenance of the building a housing association will be formed inside every courtyard. They could also decide what to do with the space underneath the courtyard. Rent it out as a supermarket, or workshop, and thereby covering the costs of the maintenance? Or using it themselves as a parking place for cars.



11.1
Traditional Dutch house
Build on the ' vlucht'

Building Technology

Building technology strategy
The procedure I followed during the process of design the building technology of the project is as following: First selecting and finding appropriate, locally available, and possibly cheap materials, that could also be easily processed by the local workforce. And then design, change and modify the building in such a way that it suits the local climatic conditions and that the design is inherently connected with the specific qualities and aspects of the building materials.

Materials
The building industry is a major global polluter. Thinking about the number of new urban dwellers within the next 30 year, 2.500.000.000, it could become a climatic disaster if all those buildings would be built with materials like concrete and steel, just how people have been doing in the past century. Possible substitution of these materials could be the usage of the earth in buildings. Earth is in many cases, locally available, and also has the advantage that thick solid walls could be constructed, to buffer energy from the day to the night. During the first stages of the design, I tried to fully build the building in a load-bearing rammed earth facade. This proposed several conflicting problems: a major one was the fact that the windows had to become very small. Constructing the separating walls of the unit in rammed earthed conflicted with the future flexibility of the project. Lastly, the safety of the project would also become in danger, since calculations of rammed earth constructions up to 6 stories become unreliable.
In the end, I chose for a hybrid solution, a skeleton of concrete with an earth infill facade. This meant that the advantages of earth would be preserved: a local low-cost material with the possibilities to buffer energy while having at the same time a safe and reliable and flexible construction.

Sun
The windows are fitted with custom made blinds, that can provide privacy while being closed, and shade while being open.

The concrete slab of the roof is protected from heating up by the sun with a so-called tropical roof. This roof partly reflects, partly absorbs the energy from the sun. The corrugated steel sheet roof is also elevated so that the heat could easily be ventilated away. This results in a more comfortable climate for those who are living on the top floor.

This roof could be replaced by photovoltaics in the future,

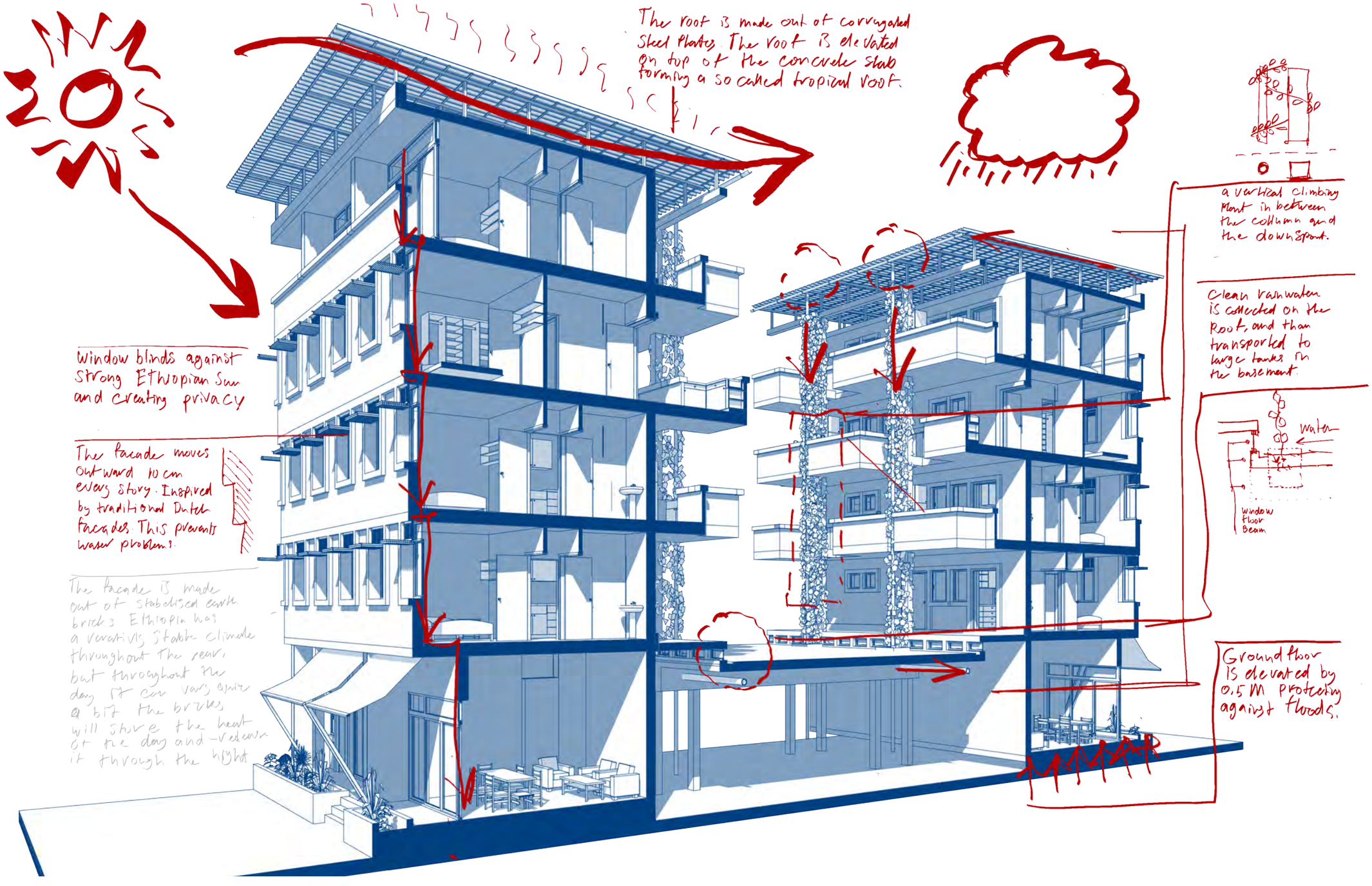
Water
There are two aspects when considered water in Addis Ababa. Sometimes there is not enough, meaning that there is no pressure and people can't flush toilets or

cook. Sometimes there is too much, especially during the rainy months. As a result, Addis is confronted with occasional floods. Also, the earth brick which is used to make the facade can't cope so well with water.
The tropical roof is used to collect water during the rainy periods and will be stored in the basement in large vessels. Since the roof is not accessible this water will be relatively clean. Then water will be pumped up to smaller tanks, located in between the concrete roof and the tropical roof. This water can then be used to flush toilets or to water.

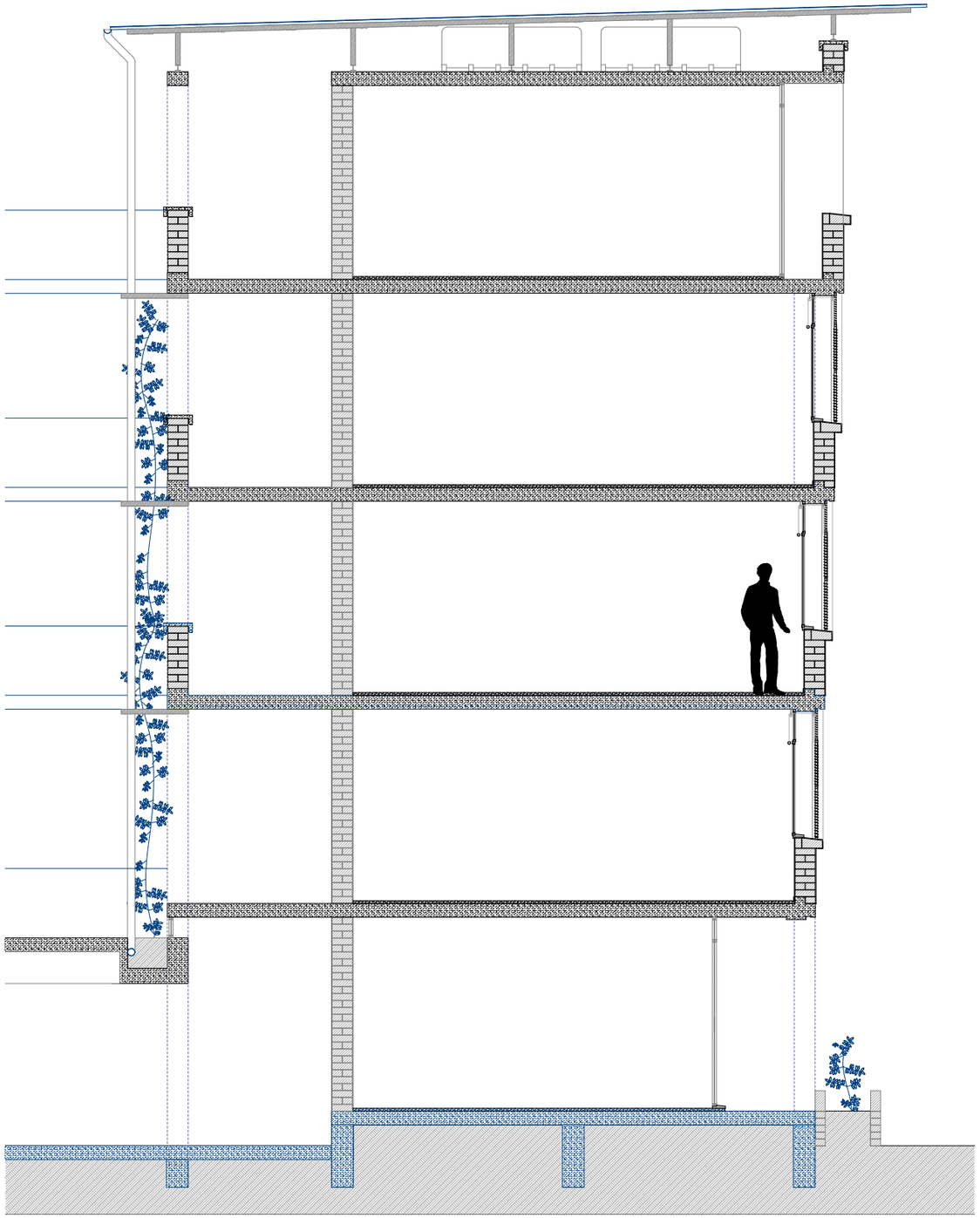
Dirty rainwater which falls inside the courtyard is sloped to a gutter, connected to a planter, from which climbing plants will grow up in between the downspout and the column.

The whole U- shaped block is also elevated by 0.5 meters, so in case of heavy rainfall, at least the people will stay dry.

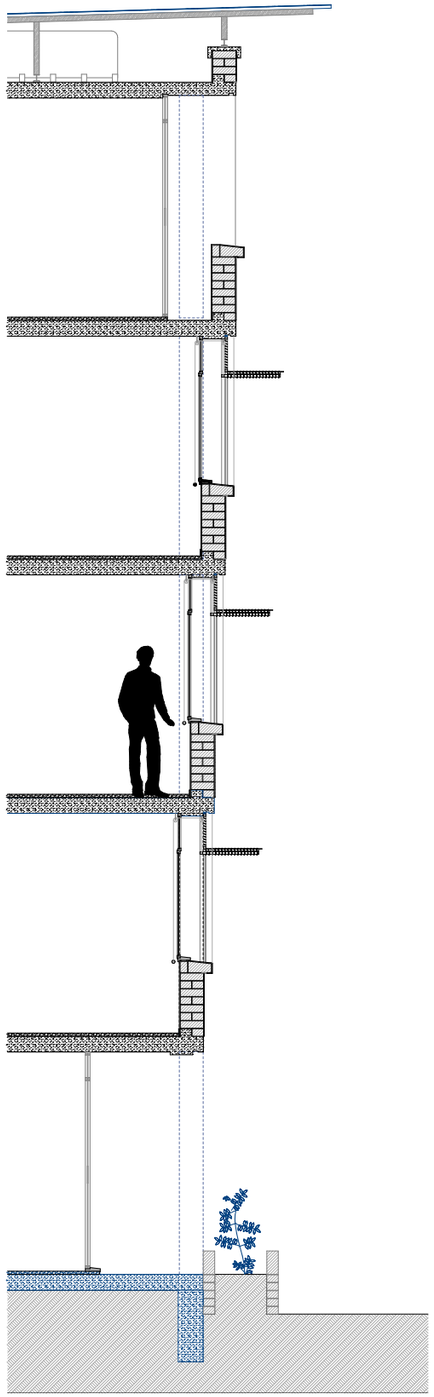
The facade is building according to a traditional dutch principle: 'op de vlucht bouwen'. Every level the floor is cantilevered outwards an extra 10 cm. This ensures that water will fall down, and not stay on top of window sill etc. It also creates an aesthetic effect of relief.



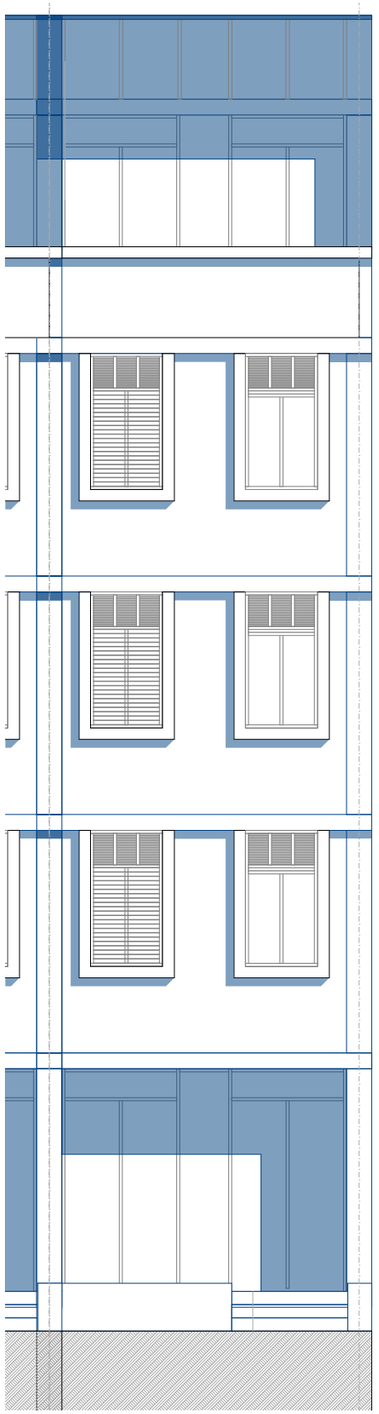
11.2
BT Scheme
-



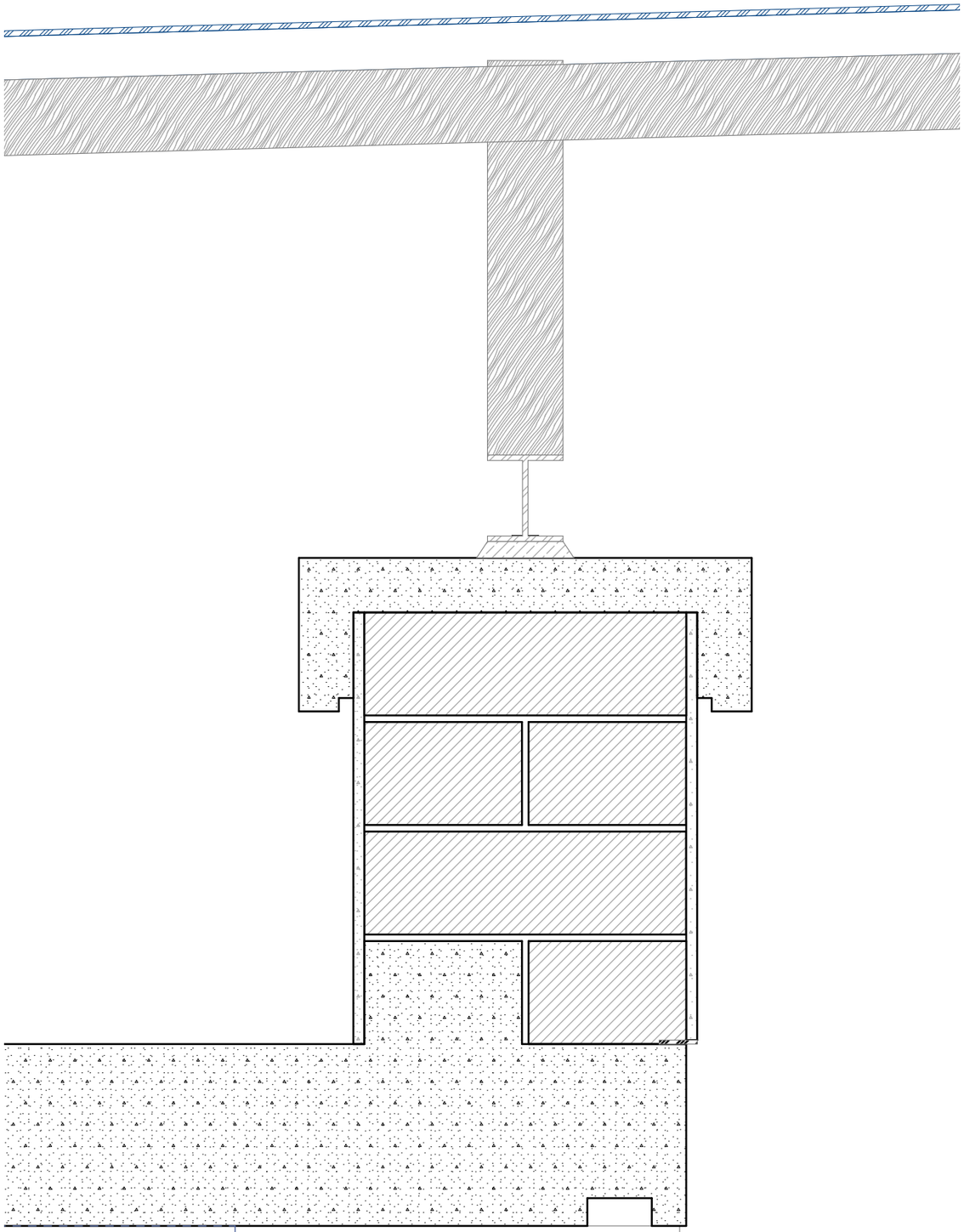
11.3
Section blinds closed
1:20 (scaled to fit)



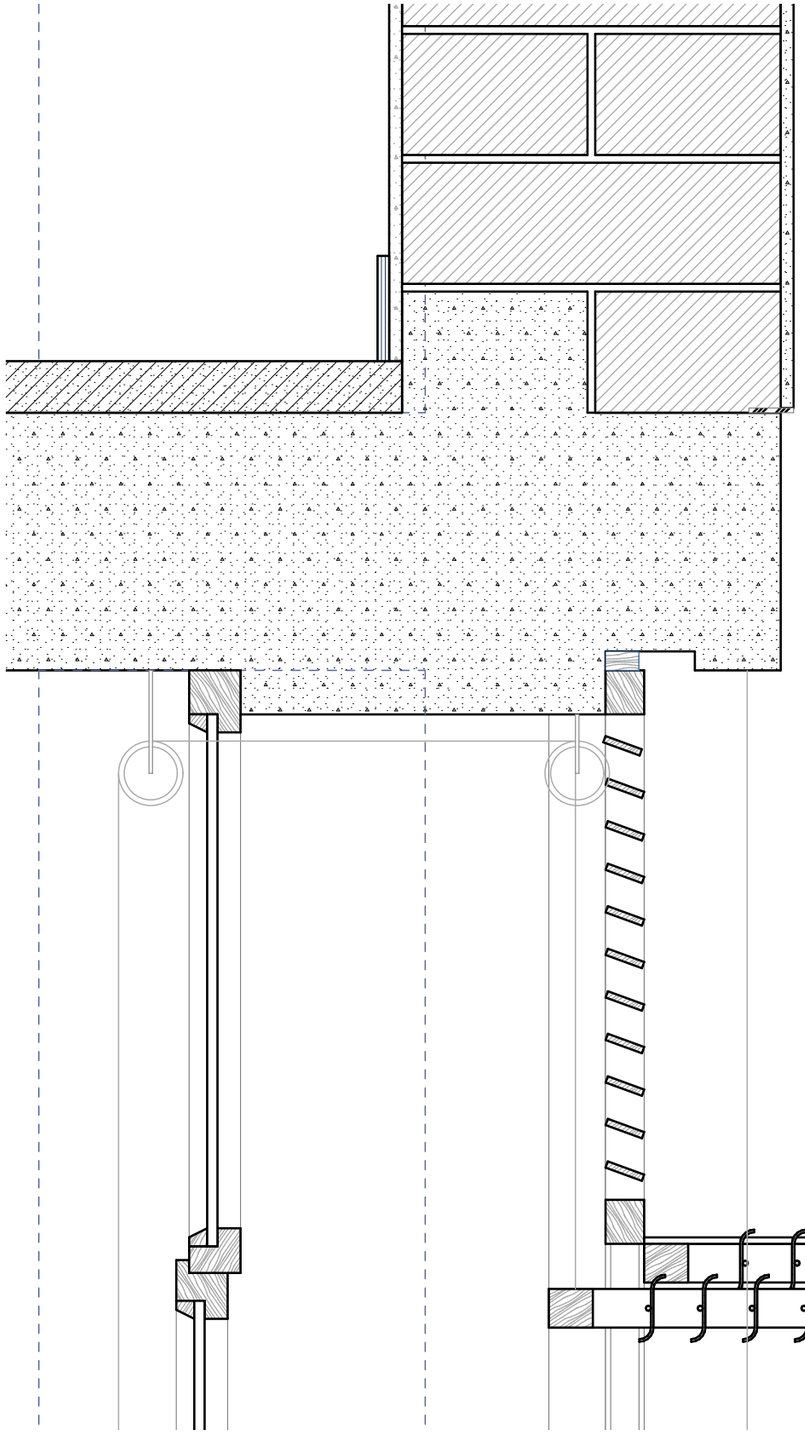
11.4
Section blinds open
1:20 (scaled to fit)



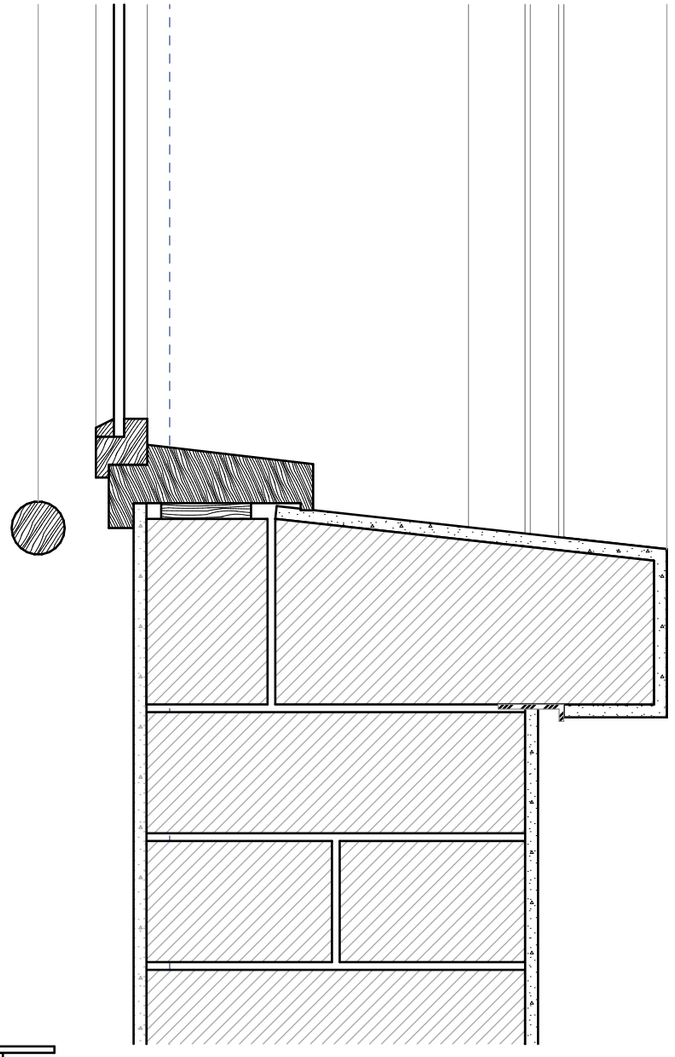
11.5
Elevation
1:20 (scaled to fit)



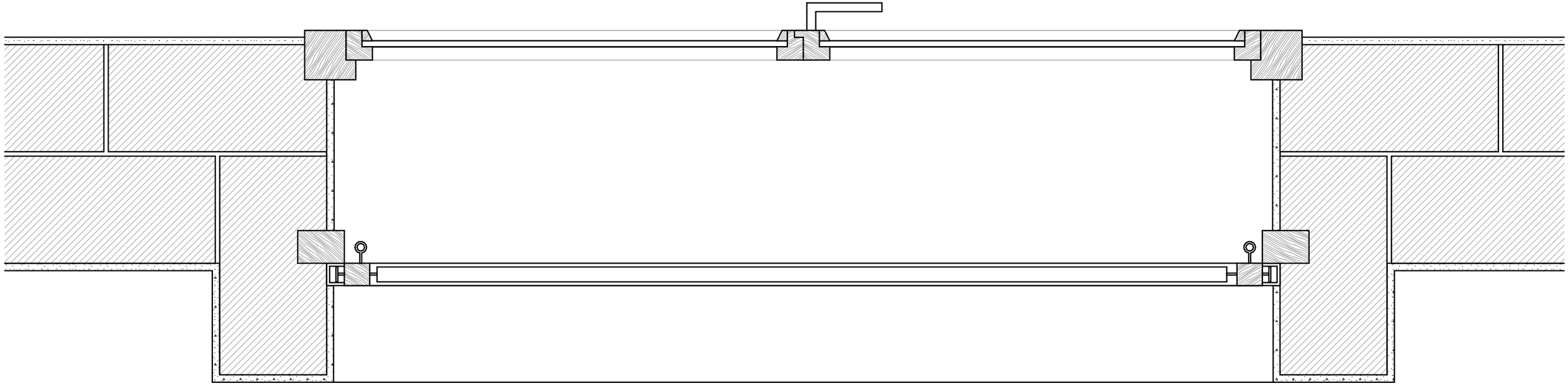
11.6
Detail roof
1:5



11.7
Detail window + floor
1:5



11.8
Detail window sill
1:5



11.9
Horizontal section
1:5

Reflection

At the end of last academic year, I had the possibility to start my graduation project. Study and work on a topic, which interested, and passionate me very much, together with a group of teachers and students who I really appreciated for a full year. I chose to do it, with the knowledge that it wasn't going to be easy. This was because I still had some other courses unfinished, which if I had to finish in order to graduate. Therefore, I followed along the Msc3 another two courses, adding up to a total of 46 etc during the first semester. This was intense, although I believe graduating is always intense. It also had a great influence on the process of my design project, affecting both design and research.

One of the implications was that I had less time to think and to do research, especially on the aspect of the design of the project. Whenever a deadline came close, I had to act fast. This isn't perse a bad thing. One can become very productive when there is some pressure. However, I believe that in the beginning the process I have made some design decisions too quickly, and perhaps stuck to them too harshly. Taking a step back is very difficult, and feels risky because the show must go on. You're faced with the dilemma: fix the problem, or get rid of the problem; how to do this isn't so clear in reality.

In my project this dilemma was shown as followed: As a hypothesis for the project, I proposed developed U-shaped dwelling courtyard block. One the scale of the block it seemed to work well, and there were many aspects I appreciated in the design, on which I invested also a significant amount of time. But multiple repetitions of this block within the existing urban fabric resulted in a very rigid, monolithic neighbourhood. The sense of a human scale disappeared. I was faced with the choice of rejecting the typology of the U shaped block, and come up with a different typology, or by modifying the blocks and urban plan in such a way that the hypothesis works both on the smaller scale and the bigger scale. I chose for the latter, not throwing the baby away with the bathwater, fix the problem instead of getting rid of it, and preserving the ideas in which I believed. This however, showed to be a very time-consuming task. A more on research-based and a less output orientated initial design phase, could have been the better way around. But you'll never know. Withing the process of architectural design, there isn't a clear difference between what is research and what is design(ing); every design process follows some capricious paths. And project which is elaborated and makes sense one all scales will always ask for a large intellectual effort.

Dwelling

Dwelling is both one of the simplest and most complex in the study and practice of architecture. It focuses is to a large extent on the things we people do every day and in the end, a house is a fairly simple composition of a limited amount of spaces; very bluntly said: a place to sleep, to relax, to cook, to eat and to wash. This seems no rocket science. However, the available resources needed to create housing, e.g land(location) and financial resources are limited, and the fact that a save shelter is a basic human need, the architect find him or herself quickly in a very intricate field of social, political and economical interest. Not to forget to mention the complexity of the daily lives of all different people living on this planet.

The rapid rates of urbanisation in the global south, combined with the already existing housing shortage and very limited financial resources, makes the task of creating affordable housing even more complicated.

In the project I propose, I've tried to stress the relation between community and architecture, resulting in a courtyard type of typology and show the importance of the practicalities which come with a community, like the daycare of children.

Method

In the graduation studio, the students conducted two types of research whereas the method and output of research were chosen by the tutors of the studio. The first one which was large collaborative group research divided into the following 4 books: Soft data (history, sociology, focusing on qualitative data), Hard data (economy, demographics, climate focusing on quantitative data), Housing typologies and spatial mapping. I was part of the Hard data group where the goal was to synthesize all kinds of information into incomprehensible charts and figure which could be later used by all students to consolidate their problem statements and to form their research questions.

The second research was an ethnographic study on two neighbourhoods; Liskwartier in Rotterdam served as a means for practice and comparison, and Kechene in Addis Ababa. The outputs were in the form of a graphical novel. In order not to fall into standard patterns, the study of everyday life is a crucial aspect in the process of designing a project in a culture which is completely different from the one I am used too. The importance of making the findings explicit, in the form of drawings, lies in the fact that only then it becomes possible to share with others where certain design decisions come from.

Episteme

The project itself is both a design, as well as the manifestation of a research; it tries to answer the question of creating affordable housing in the global south. Designs which will not be realised, like this one, are still a valuable source of knowledge. They give us the possibility to place different solutions next to each other, compare and evaluate them and perhaps will bring new insights which can be used in a future project. In the end, the housing crisis in the global south is not about to end soon, and within the next 30 years this planet has to host another 2.5 billion new urban dwellers.

Ethical Dilemas

There is very little space left in Addis Ababa to build, however, de demand on housing is extreme. The consequence is that the development of housing becomes redevelopment. In the 24 kebele, the site I chose approximately 2400 people are living. If the project I am designing in a potential situation would become real that means that the houses of 2400 people will be destroyed. This has a tremendous impact on the life of people. Practical and emotional. What if people don't want to move to? What if they cannot move, because they are living there for example illegally? But also, there have people been grown up in 24 kebele. A part of their history and memories will vanish, which I believe close to a criminal act. A new design has to be worth all the pain and issues it creates.

In my opinion, one of the most crucial ethical dilemmas was that of density. The key problem in housing affordable for the masses are numbers; there simply are not enough houses. Within world with of limited resources – land, financial, labour, natural resources – a noble goal would be to provide a place to live at a good location. However, when one builds to dense, the quality of life decreases, and although the numbers are met, people won't be happy. When one builds not dense enough, there can be a high quality of life, but just for a few. And the others people comeing to the cities won't go away, that's for sure.

Another question we should ask is why a student, but also someone from the professional

work field, would design a housing project, a way of living, in a country and culture unfamiliar to his own 6000 km away? It's a question that relates one side to paternalism and postcolonialism (although Ethiopia was never colonized), and on the other side of nationalism. It might feel and could be, paternalistic that people from rich and developed countries are the ones to know how to solve problems in a developing country, and thereby in some sense also tells them what to do. The opposite could also be said: why are only people from a certain place or context able to design within that context. Can we never understand each other?

Could we never work together?

I believe it's neither one of these two sides. Projects like these are useful because off the exchange of ideas and knowledge, one of the key aspects of science, and not because of telling each other what to do. Designing and working in an environment different to the one you are used too, not only let you experience something different, but it also tells you a lot about yourself and the place where you're from.

In the end, the goal is the same: the provision of shelter, a place where people feel safe, can be happy, prosper and dream.

Conclusion

Conclusion
The question central to this project was the following: How can a large scale affordable and progressively built housing scheme, incorporate the needs of different social classes while accommodating, maintaining different kinds of (informal) economic urban activities and being at the same time adaptive to future social changes?

I think the project I propose gives an answer to that. The usage of different typologies, the u-shaped courtyard, and the apartment tower, yet also the possibility of different sized apartments in the blocks allows the possibility for different social classes living in proximity of one and another.

Flexible construction systems allow the apartments to grow, or shrink, throughout time. The groundfloor + one houses in the U-shaped block offers the possibility to have a shop at home, and, on the other hand also to become a living room. The courtyard mimics a form of living in a compound vertically. Furthermore, the size of the courtyard makes it possible to be carefully placed within the existing situation, as opposed to megastructure.

The galleries, with the generous cantilevered extensions, can be transformed into outside kitchens, so that traditional charcoal cooking can take place, but these places could also be transformed to a small terrace or an area for plants.

And lastly, this the project fulfils the need for densification. In the current situation, the FSI of the neighbourhood is 0,55 and with the proposed plan it will become 2.27. A fourfold increase.

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