TRANSITION OF THE BAITHI CHAWL

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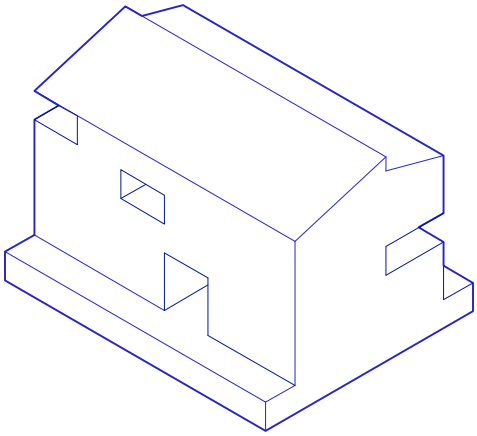

Architectural Research

P5
GRADUATION STUDIO
04-07-18

Global housing
AR3AD132

Prof.ir. Dick van Gameren
Dr. Ir. Nelson Mota
Ir. Rohan Varma
Ir. Maarten Meijs

Pepijn Holthuis
4147464

INDEX

INTRODUCTION

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Introduction

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THE GLOBAL SOUTH

In the next three decades, the planet's rate of urbanization will increase at a fast rate, adding 2,5 billion new dwellers to the current urban population. To accommodate this demographic growth, the world needs to tackle the many challenges of sustainable and fair urban development. Right now, urbanization in the Global South happens in mainly unsustainable ways, with approximately 850 million people living in slums in 2014 (1/3 of all urban dwellers). Rethinking the current systems of affordable housing production is a major challenge that needs urgent actions. The stakeholders involved in housing production, in general, and the architecture discipline, in particular, need a critical evaluation of their processes, methods and strategies to answer some pressing questions. Where will all these new urban dwellers live? More importantly perhaps, how will these new urbanites dwell? What will be the role of architects and urban planners in this process?
The graduation studio Mixing Mumbai: Affordable Housing for Inclusive Development aims to stimulate the participants to contribute answers to these questions, engaging with pressing dwelling and urban issues in developing territories, as well as with the increasing cross-cultural character of contemporary architectural practice.

[1]Global housing, Course Manual 2017-2018

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SYNOPSIS

This years graduation studio will focus on the metropolitan region of Mumbai as a significant case in the Global South, in general, and in India in particular. The housing shortage in Mumbai's metropolitan region is dramatic: currently, 54% of its 20 million inhabitants lives in slums. The local government has recently launched new policies to provide more affordable housing. However, these policies are mainly focused on efficiency (building quickly and cheaply), overlooking the resilience of the new communities.

The graduation studio Mixing Mumbai: Affordable Housing for Inclusive Development explores alternative approaches to deal with Mumbai's dramatic housing issues. We are challenged here to explore innovative possibilities to produce an inclusive urban habitat in this expanding megacity. The studio stimulates us to develop a critical integration of design and research. First, we worked in groups to investigate the project's political, technical, geographical and sociological context. Following up, each of us were invited to develop a design hypothesis for an inclusive, sustainable and resilient dwelling environment in the Nalasopara area, in the north of the urban agglomeration of Mumbai. Each project should consider design solutions crossing multiple scales: from the community's masterplan to the detailing of the building's materialization.

[1]Global housing, Course Manual 2017-2018

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PERSONAL FACINATION

I am interested in the current, global trend of urbanization and the consequences that it has on major cities such as Mumbai. Especially the 'Global South' witnesses a staggering influx of new citizen in its cities. A great number of these newcomers end up living in slum-like conditions, such as the 10 million of the 20 million inhabitants of Mumbai. Mumbai in this sense, is an extreme example, but nevertheless a very interesting case study. The fact that the 'Global Housing Graduation Studio' is dealing with these problems of urbanization, affordable housing and inclusive development in a complex city such as Mumbai made me choose this graduation track.

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METHOD DESCRIPTION

Research will be done by a preliminary analysis of hard and soft data and by spatial and typological mapping of the site. Thereupon, more extensive research will be done during a two-week fieldtrip to Nala Sopara. Site surveys will be held in order to further improve the ongoing research. The research process will be complemented with a research report (a book of patterns) that will consist of all the findings and that will serve as a helpful tool in the upcoming design assignment. Following the formulation of the problem statement, research question and design hypothesis.

*

LITERATURE & CASESTUDIES

During the research process I will consult information on the topics of co-housing, affordability, incrementalism, the effects of rapid urbanization and Mumbai's governance and policies. Case studies and precedents that show resemblance with one of the topics will be thoroughly examined. Such precedents are: the project of La Presita (co-housing), works of Charles Correa (incrementality) and casestudies concerning affordability and density in Mumbai (Urbz) and globally, looking at works of Alejandro Aravena (affordability). Furthermore, 'Arrival City' by Doug Saunders will be referenced, being part of the Bibliography.

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RELEVANCE IN A WIDER FRAMEWORK

"In today world, half of humanity's population (3.5 billion people) lives in cities. It is estimated that by 2030 60 per cent of the world's population will live in urban areas. 95 per cent of the urban expansion in the next decades will take place in the developing world in countries like India. Today, already 828 million people live in slum-like conditions and the number keeps rising. These world cities occupy just 3 per cent of the Earth's land, but account for 60-80 per cent of energy consumption and 75 per cent of carbon emissions, with the building sector playing a crucial part in this consumption of resources and energy. Rapid urbanization is exerting pressure on fresh water supplies, sewage, the living environment, and public health. Many cities are also more vulnerable to climate change and natural disasters due to their high concentration of people and their location, so building urban resilience is crucial to avoid human, social and economic losses. All these issues will eventually affect every citizen if they are not tackled. Inequality can lead to unrest and insecurity, pollution deteriorates everyone's health and affects worker's productivity and therefore the economy, and natural disasters have the potential to disrupt everyone's lifestyles."

The topic of the inhabitation of the economical weaker section of society in the metropolitan area of Mumbai is of societal relevance, while it is part of the above stated problems, which are further elaborated in the 2015 adopted '2030 agenda for sustainable development' by the UN. In this plan 17 sustainable development goals are introduced of which goal number 11 (make cities inclusive, safe, resilient and sustainable) on the topic of 'sustainable cities and communities' is related to the issue that is discussed in my graduation project. Especially the goal that states that by 2030 there should be access for all to adequate, safe and affordable housing and basic services and the upgrading of slums as a necessity, corresponds with my graduation plan.1 The goal of my design hypothesis is to create a design which accommodates affordable housing for the masses that is both safe, liveable and resilient, while simultaneously rejecting the commercial developer. The concept rests on the ideas of co-housing, flexibility and simplicity, making it possible to be constructed by local contractors only. This will make it a relevant design strategy that can be copied outside of its context too, contributing to its significance in the wider framework of affordable housing in the global south.

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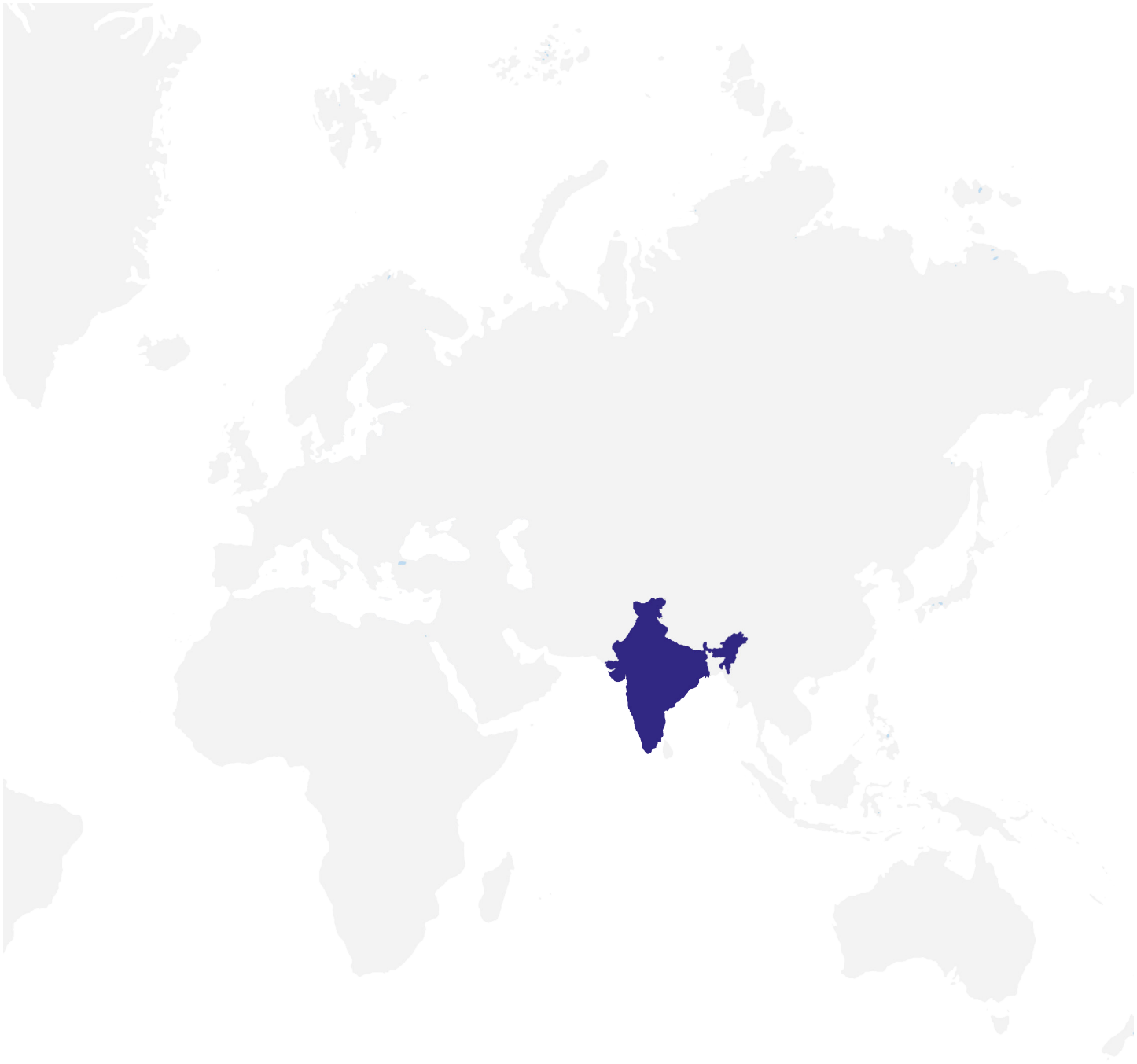
INDIA



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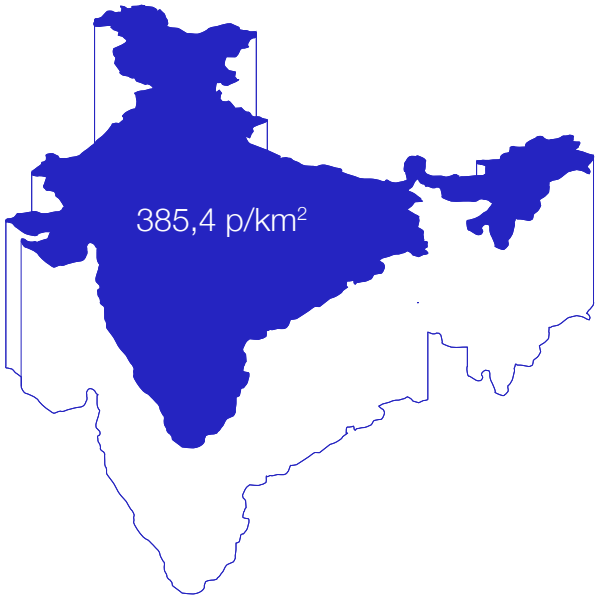
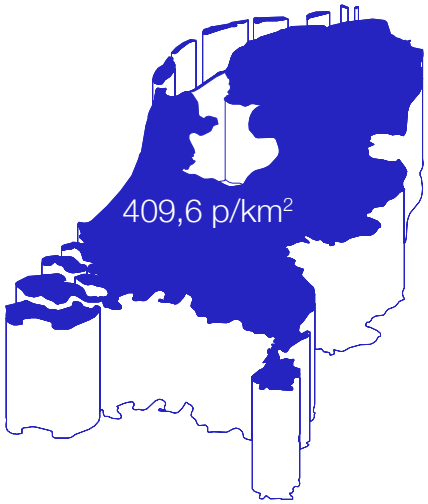
INDIA
Geography





Although India is a far bigger country, it has almost the same density as the Netherlands. Most of the people live in mega cities such as Mumbai, but India still remains a relatively rural country. This will slowely prosumably change the coming years with a vast number of people moving to the cities. This will have a major impact on the cities in India, which will need inventive design solutions to rethink the urban planning.

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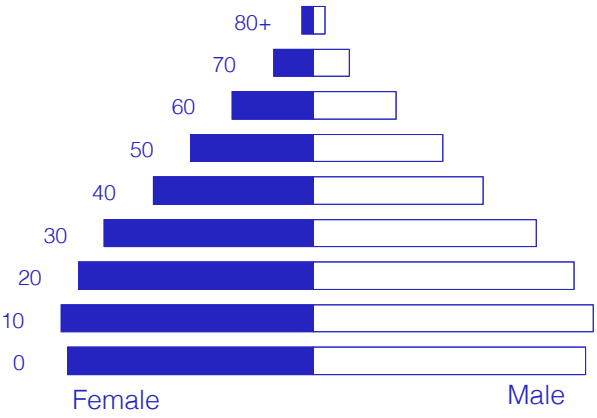
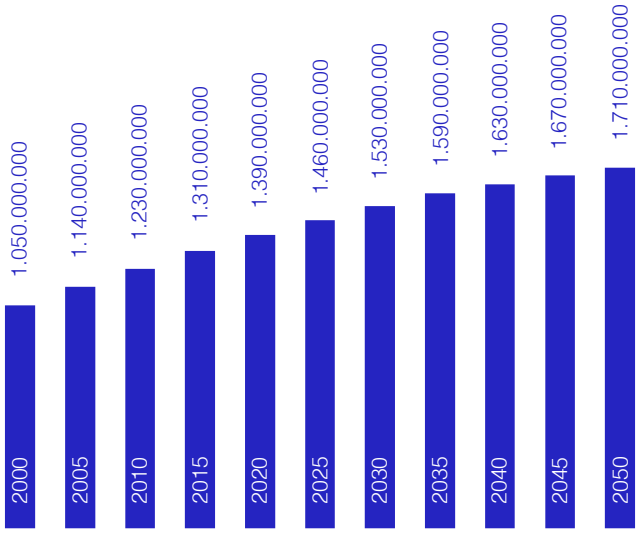
INDIA
Demography





The male female ratio is out of balance, with a greater population of men being born in India. This likely because of the privileged status and roll men have in the traditional society. What also becomes apparent is the amount of young people that is being raised in India, showing the growing population of the country. India has the world's second biggest population and is likely to surpass China in the coming years, becoming the biggest country in the world.

Research

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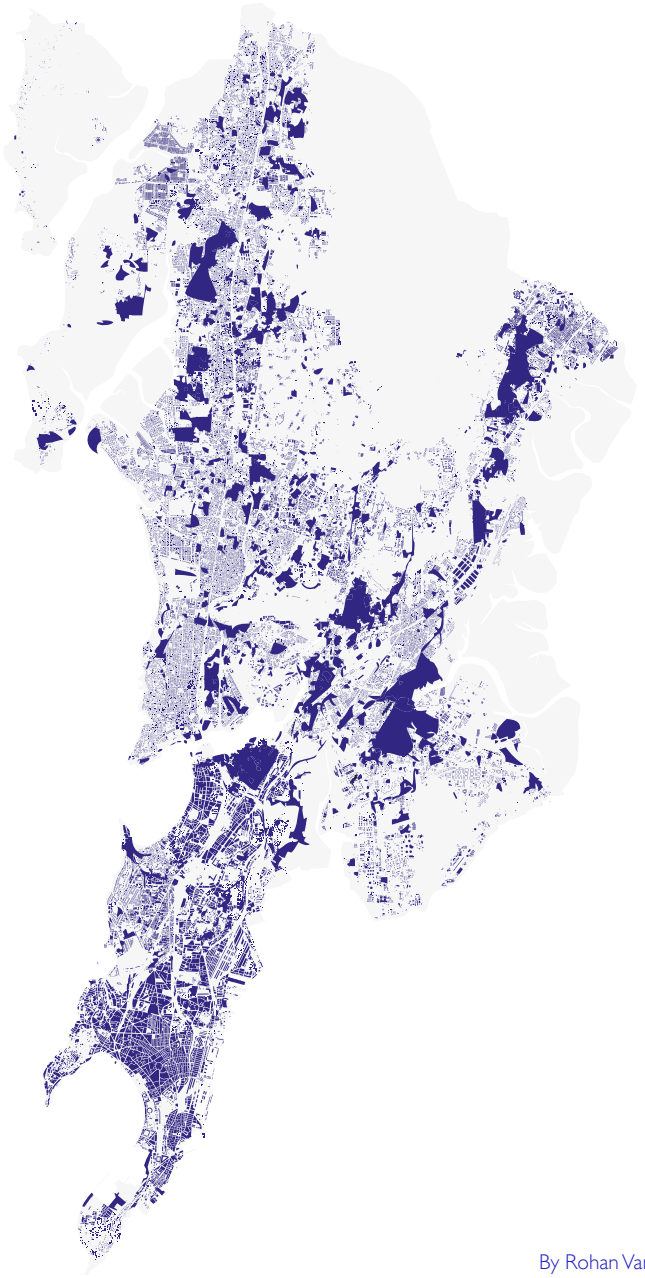
MUMBAI



By Rohan Varma, TU Delft

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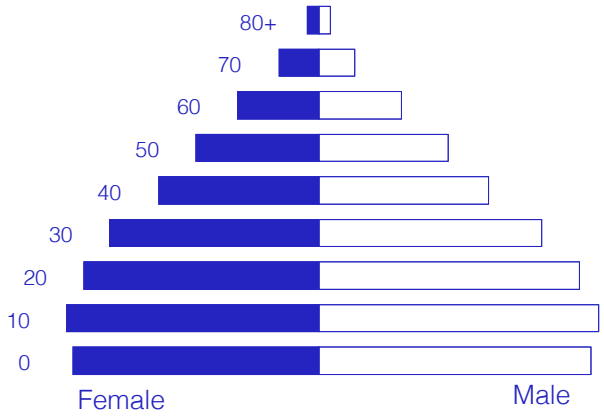
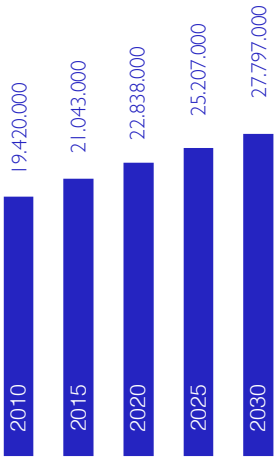
MUMBAI
Demography





The male female ratio in Mumbai is out of balance, with a greater population of men living it the city. This is likely because of two reasons: the privileged status and roll men have in the traditional society and the migrant population that mainly consists of young men that moved from the countryside to Mumbai in search of work. What also becomes apparent is the amount of young people (10-20) living in Mumbai, showing the growing population of the city.

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MUMBAI
Density

2017

2017

The population of Mumbai is 21 million people on a plot of land of only 4355 square kilometres, creating a staggering population density of 4822 people/m2 (Netherlands: 409,6 p/km2).

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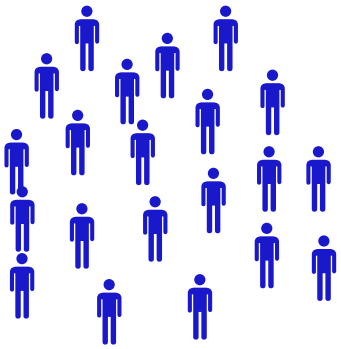
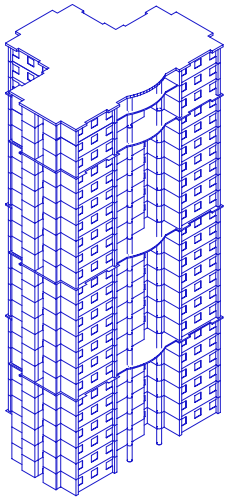
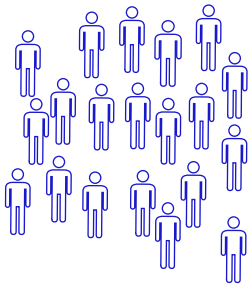
MUMBAI
Housing situation 2017

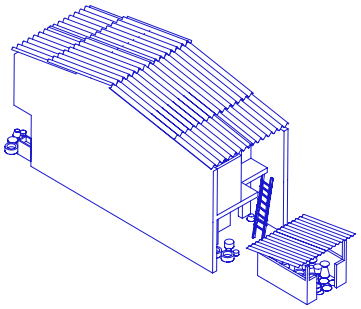
11 milion



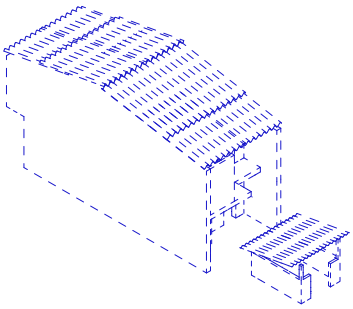


10 milion





1 milion



Out of these 21 million people, 11 million (50%) have regular homes, but 10 million live in slum-like conditions and 1 million is even homeless.

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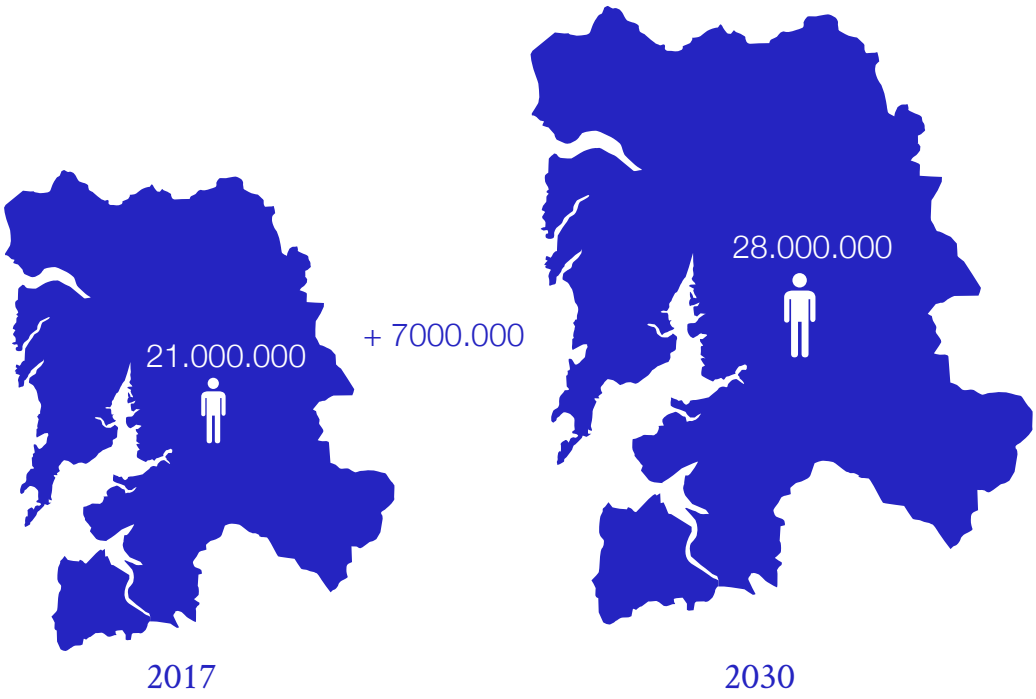
MUMBAI
Population growth



The population will further grow from 21 million people in 2017 to 28 million people in 2030. So only in 13 years there will be an increase of 7 million people.
This is partly due to the fact that in Mumbai, average wages are higher, compared to other places in India for both regular salaried/ wage employees, as well as casual wage labourers.

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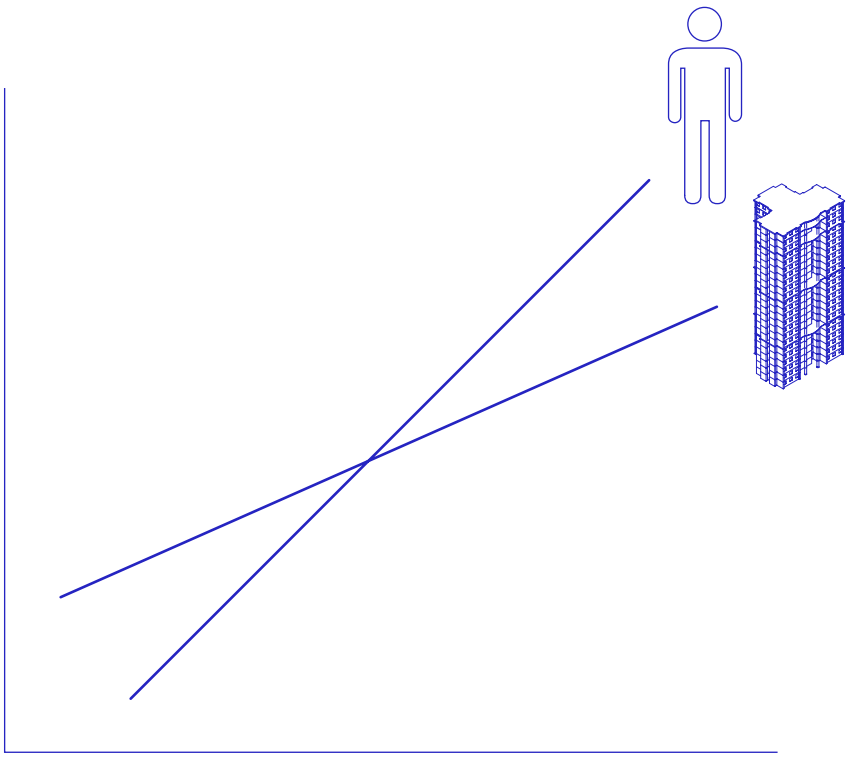
MUMBAI
Imbalance housing stock



This demographic situation puts a lot of pressure on Mumbai's housing market, while the demand for housing exceeds the upgrading of the housing stock.

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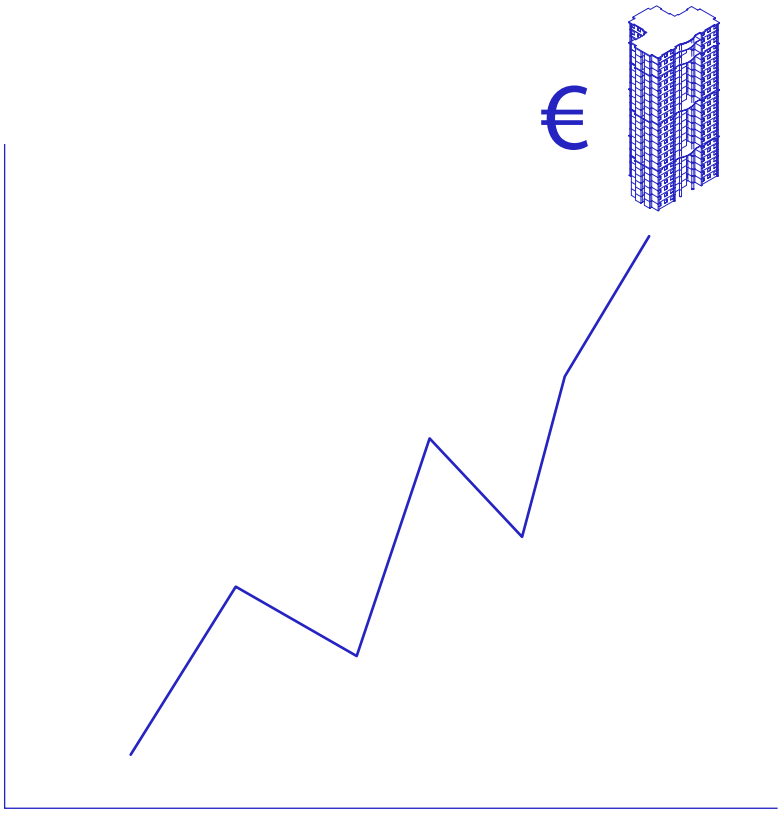
MUMBAI
Imbalance housing stock



while the demand for housing exceeds the upgrading of the housing stock the rental rates and land prices will go up, as a consequence.

There is a recent housing boom in Mumbai, but only within the speculative commercial housing market. This has been accompanied by a widening income gap across different income groups and a resultant decline in housing affordability for the lowest segment of the population.

The neoliberal interpretation of affordable housing that conveniently establishes itself in the broad mind-set of the policymakers as well as private developers has induced a transition from a state-led to a market provision. As the national developers plunge into building homes in the affordable range the focus is rapidly moving away from providing housing to the bottom 30 per cent of the housing population.
The brief history of neoliberalism in India has shown obsession for hyper forms and mega construction and a much reduced appetite on aspects such as real affordable housing.

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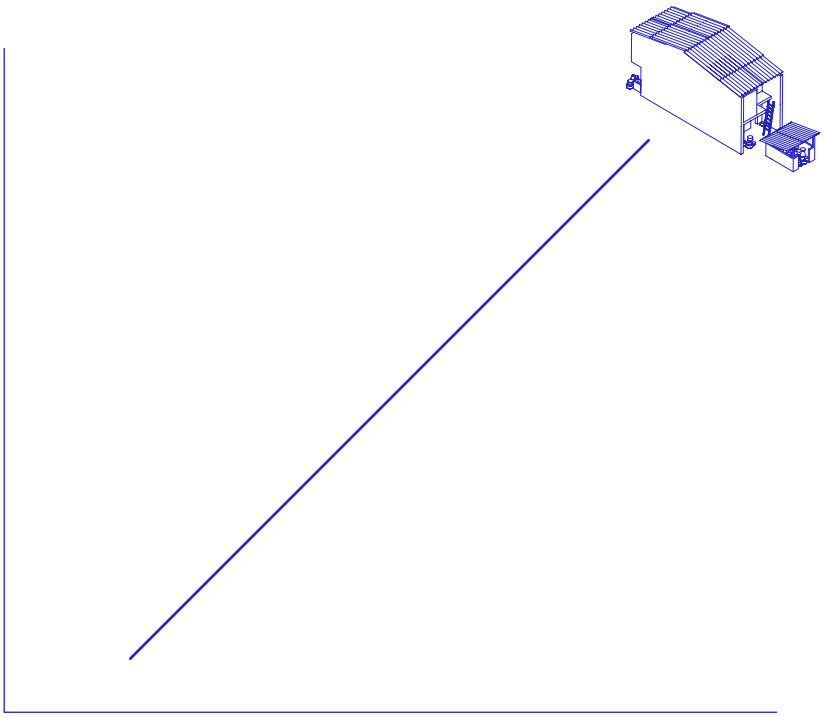
MUMBAI

Imbalance housing stock



The people most affected by this increase of rental prices are the poorest dwellers and often migrant workers of Mumbai. These economically weaker sections of society (EWS) increasingly struggle with finding affordable accommodation and therefore a growing number of people sprout out on vacant governmental land, which is free from rental burdens (slums).

However, this encroachment of governmental land is viewed as illegal. For this reason, the municipality of Mumbai in the past vigorously tried to flatten these informal settlements

Although the municipality of Mumbai puts a lot of effort in the demolition of slums it is not a feasible solution for the shortage of affordable housing, while whenever a slum is destroyed a new one is created elsewhere. The slum, which is the result of a lack of affordable housing, is only resituated, consequently pushing the EWS further out of the city to places such as Nala Sopara.

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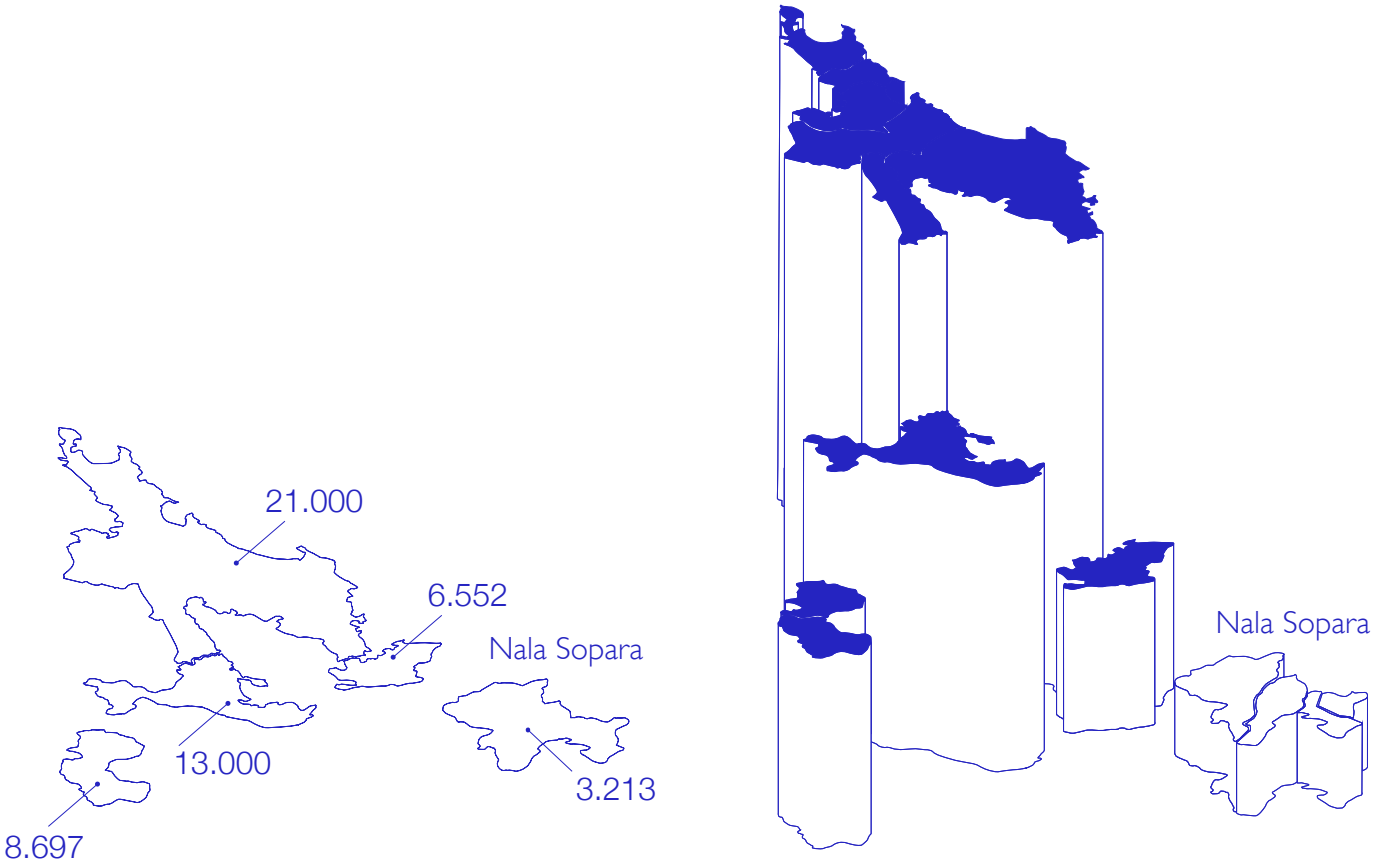
MUMBAI
Rental prices (2017)



This drawing shows the rental rates in Mumbai in 2017. What becomes evident is that the centre of Mumbai is the most expensive part to live. Here are most of the offices and in a city where streets are jam-packed and traffic has stagnated you want to live close to work your social network. The periphery of the city is far less expensive and therefore it houses the relatively poorer people.

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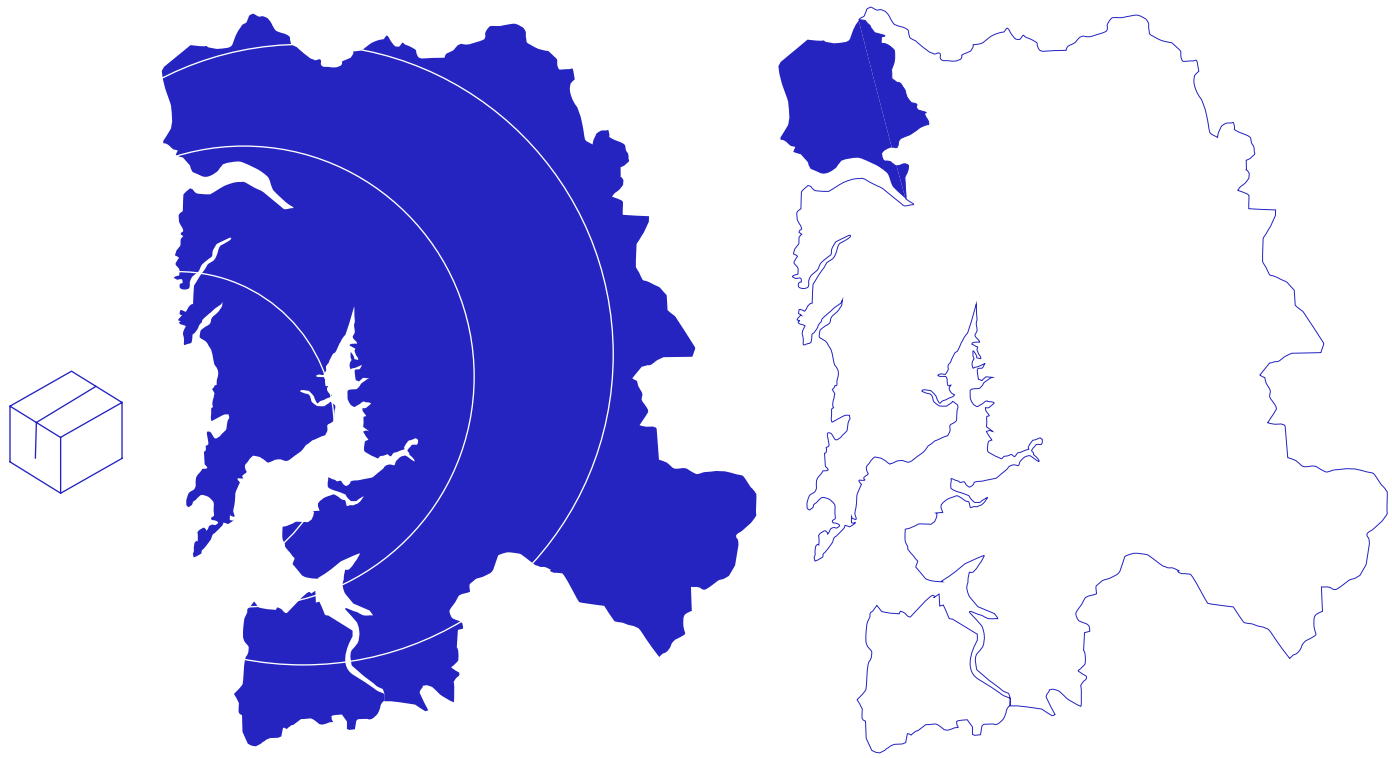
MUMBAI
Affordable periphery



The economically weaker sections of society (EWS) and Low income groups (LIG) also have the option to find affordable accommodation in the periphery of the city and therefore a growing number of people choose to resettle in the outskirts of the city where the rental rates are much lower.

The cheapest area to live in is Nala Sopara in the north end of the city of Mumbai.

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NALA SOPARA

Nala Sopara has a history going as far back as the Portuguese colonial times rooted in the small villages surrounding the lakes. The last two decades it is quickly developing as part of the metropolitan area of Mumbai.

Nala Sopara, is a peripheral area of Mumbai, situated in the north side of the city. Most of the people who live here are relatively new, while the population of Nala Sopara grew substantially over the last few decades. The majority of the inhabitants are people from the EWS and LIG who were pressed out of Mumbai, who got evicted or were migrants from elsewhere in India looking for better-paid jobs.

The people of the EWS especially benefits from living close to jobs, because work is the main game changer in their life and the only chance to move up on the social-economical latter.

While not having the possibility to live close to work, they try to resettle close to the train station of Nala Sopara, which acts as a transport hub that connects to the rest of the city. Nala Sopara therefore has an important function, while it accommodates the inexpensive workforce of a city. The area literally forms a transition zone for people going to work elsewhere and figuratively, a transition zone in the sense that it is a stop for people anticipating to get further in their career and closer to the inner-city.

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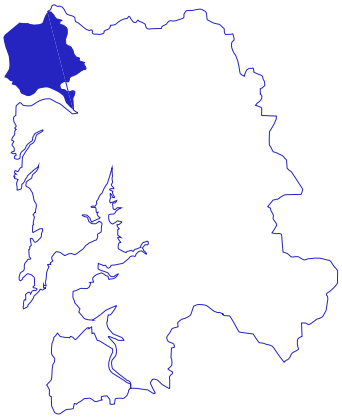
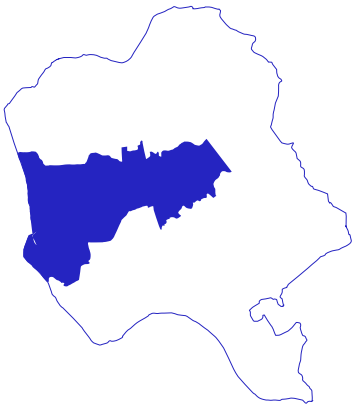
NALA SOPARA

Geography

Mumbai



Vasai-Virar



Nala Sopara

The diagrams above show the geographical situation of Nala Sopara, which is located in the far north side of Mumbai and is part of the bigger sub-district.

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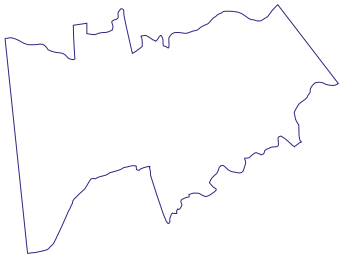
NALA SOPARA

Urban growth

2002



2005

2009

2012

2017

Nala Sopara today is still viewed as an inexpensive part of Mumbai, but real-estate developments are starting to emerge more frequently, showing the increase in value of the place. In today's Nala Sopara, most of the west side of town is newly developed and consists of multi-story gallery flats, called 'chawls'. The influx of newcomers is the main reason for this increase in density in Nala Sopara.

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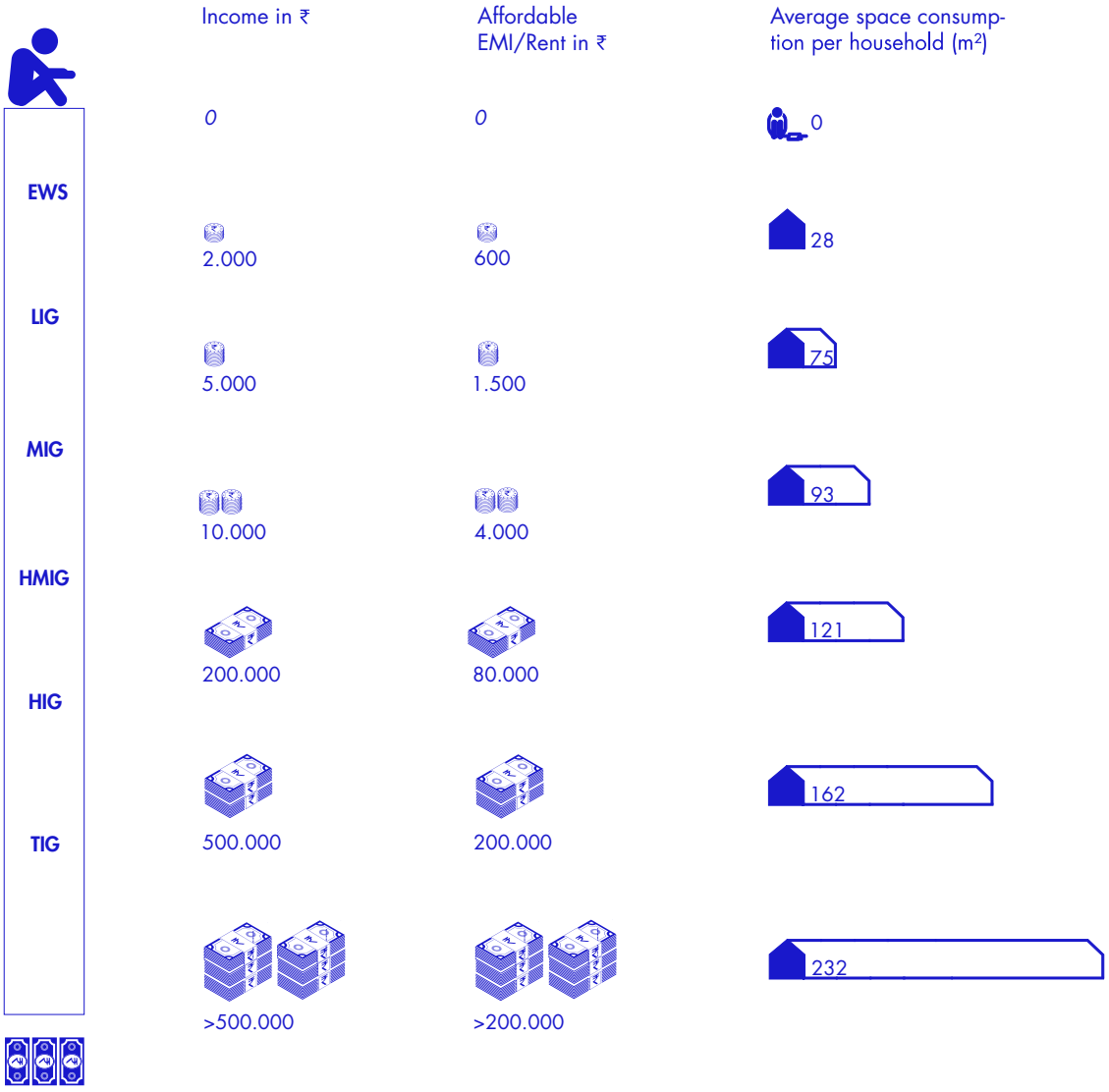
NALA SOPARA

Affordablity



The recent housing boom in India has been accompanied by a widening income gap across different income groups and a resultant decline in housing affordability for the lowest segment of the population.6

The neoliberal interpretation of affordable housing that conveniently establishes itself in the broad mindset of the policymakers as well as private developers has induced a transition from a state-led to a market provision. As the national developers plunge into building homes in the affordable range the focus is rapidly moving away from providing housing to the bottom 30 per cent of the housing population.6

The brief history of neoliberalism in India has shown obsession for hyper forms and mega construction and a much reduced

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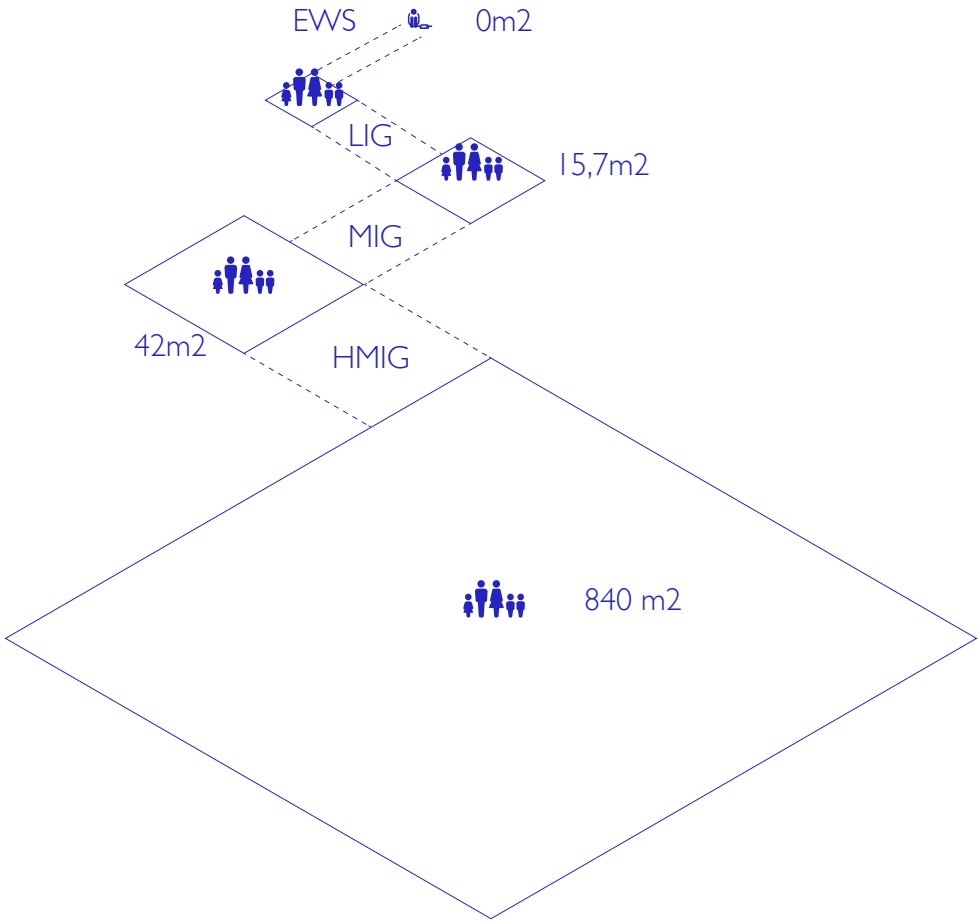
NALA SOPARA
Affordability



Affordable space in m2, Nala Sopara

The image depicts the ruthless outpricing of the Economic Weaker Sections and the Low Income Group on the regular housing market of Nala Sopara.
A rent average is used of 95.18/m2 as a depiction of the current market situation of Nala Sopara.
An affordability ratio of 30% is used for the EWS and the LIG and 40% for the MIG, MHIG, HIG and TIG.

The average household size in Mumbai is approximately the same in slum and non-slum areas and among poor and non-poor households.10 With an average of 4.8 persons per household

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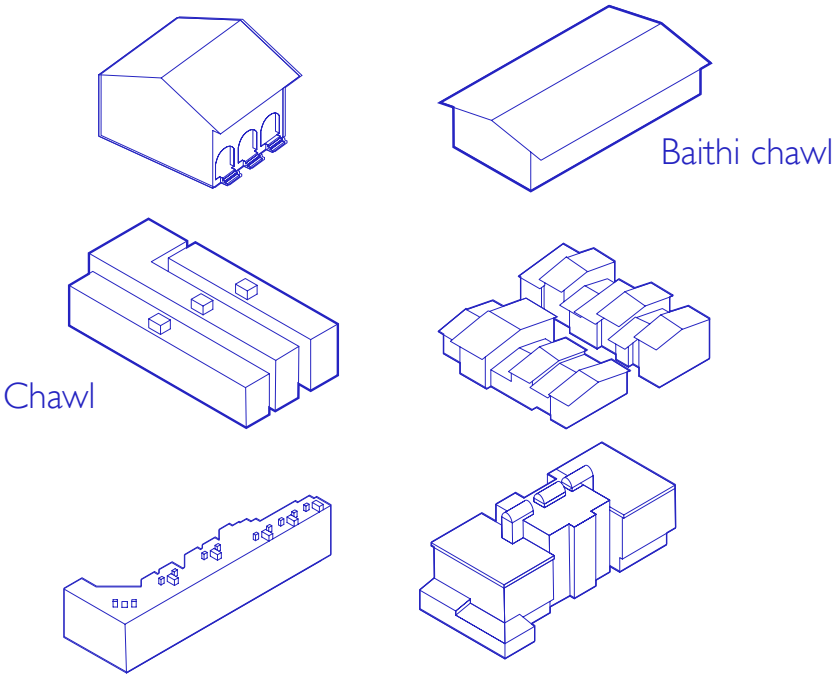
NALA SOPARA
Housing typologies



We distinguished six different types, spread out over the whole area. The selection is based on the possibility to relate within one 'type' by typological aspects and elements and on the other hand distinguish to the other housing found. This goes from the scale of the urban fabric to the architectural element. The analysis is not complete due to a lack of information but still gives an understanding of Nala Sopara's housing and architectural culture.

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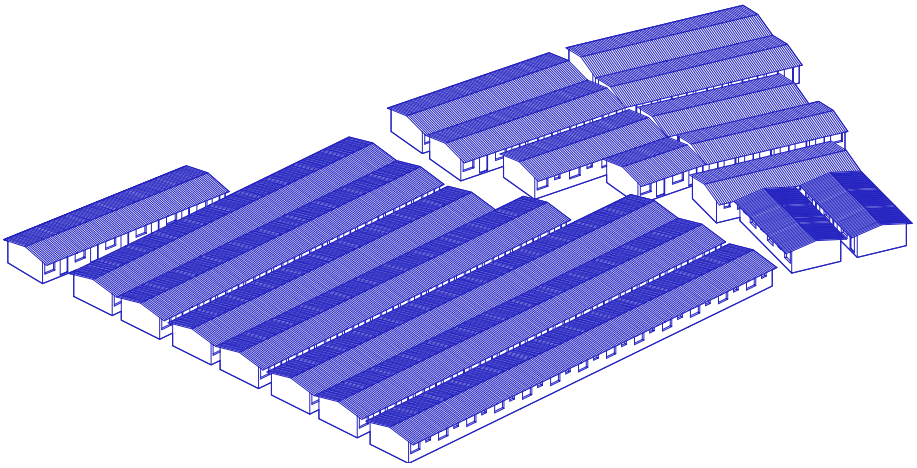
NALA SOPARA
Housing typologies
- Baithi chawls -



The Baithi Chawls are located on the east of Nala Sopara, close to the hill and on the outskirts of the village. They are scattered around and in the informal settlements. From satellite images, it is unclear to see if the dwelling is an informal settlement or a Baithi Chawl, as they are very similar.

Baithi Chawls are packed very close to each other. They are built as long, rectangular stretches and form an irregular pattern of dense blocks. The urban pattern is formed of wider, central streets and narrower paths between the blocks. The dwellings can be accessed via these smaller paths. The front doors of the dwellings are all opposite to each other, so that the backs of the dwellings are very close to each other, forming a narrow 'back alley'. The Chawls have been built in quite an organized way and form part of a centrally developed scheme, presumably build by factories to house their workers.

The Baithi Chawl blocks are composed of small, rectangular units, placed side by side to form longer rectangular blocks. They are accessed on one side, where each unit has a front door and a larger window.

Research

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NALA SOPARA
Housing typologies
- Baithi chawls -

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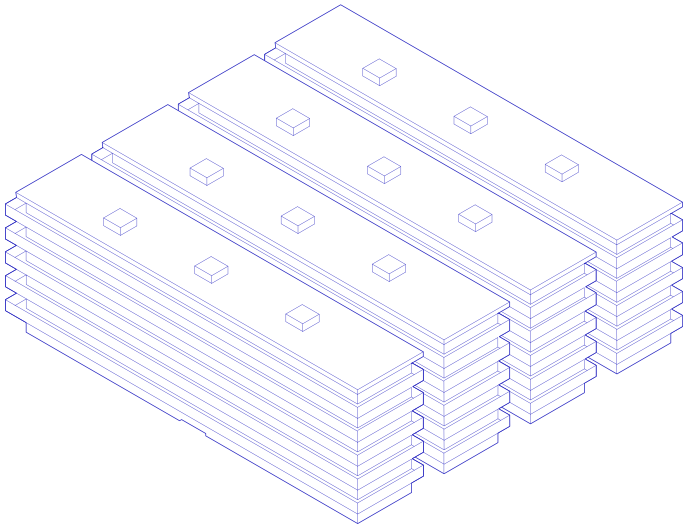
NALA SOPARA
Housing typologies
- Chawls -



The chawl typology can be found on multiple locations in the east side of Nala Sopara of which the biggest plots are more or less 1 km north of the station, close to the train depot.
One of the characteristics of this type becomes clear in the morphological reduction. The buildings are placed extremely close to one another making the density extremely high. Sometimes a bigger street is left open but most 'streets' are not bigger than a few meters with some buildings 'caught' in on all sides. In grey the adjacent informal settlements are projected.
Zoomed in on one of the more characteristic buildings in the rehabilitation scheme, one can see a typical Chawl type. This type originated as working class building built by a factory for its workers or a thrust rather than a single developer. It is characterised by small tenements and horizontal walkways that serve both as circulation and social space for the residents. They are mostly ground + 4 or 5 and have a vertical circulation shaft that extends on the roof.

Research

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NALA SOPARA
Housing typologies
- Chawls -

Research

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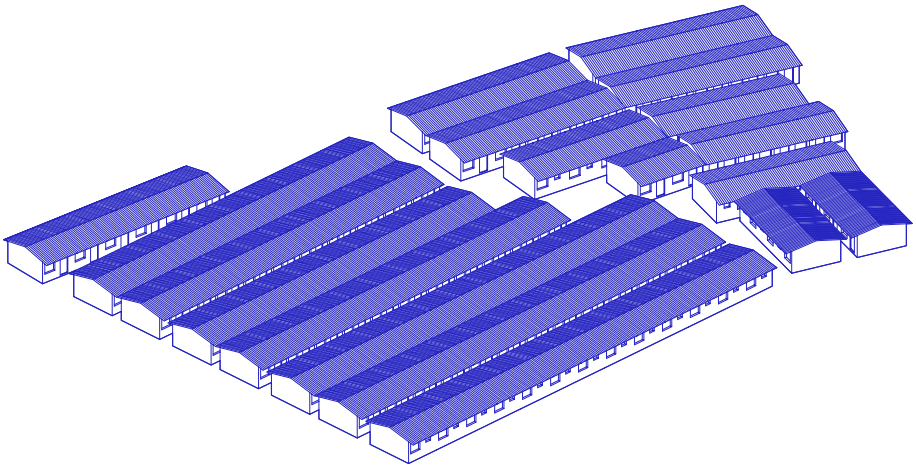
PATTERNS OF INHABITATION

Baithi chawls



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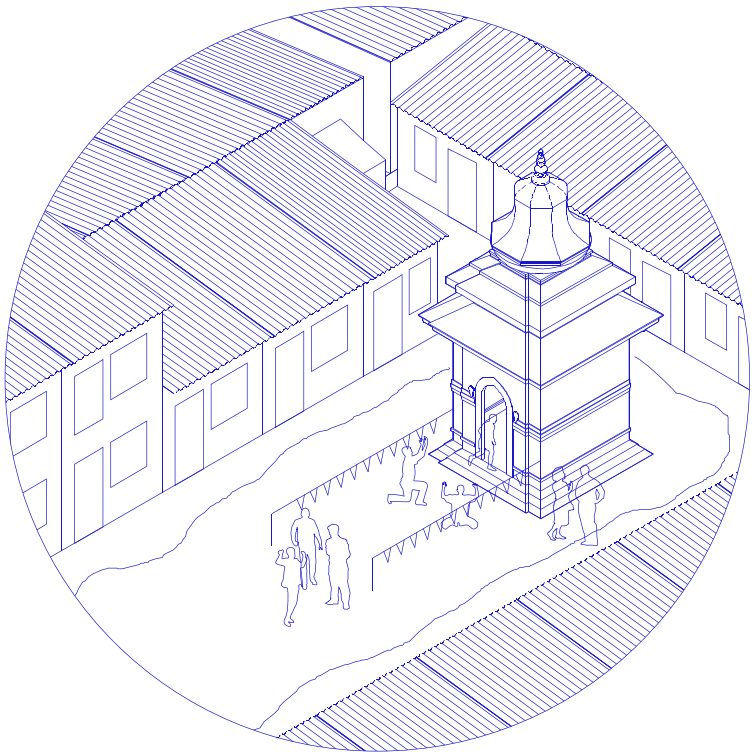
PATTERNS OF INHABITATION

Baithi chawls

- Social spaces -



1

Temples or places of worship are scattered all around the baithi chawl alleys, often situated in open areas. These places are spaces to pay respect to the gods but also to meet the community, to show that you are pious and committed and fitting within the group.

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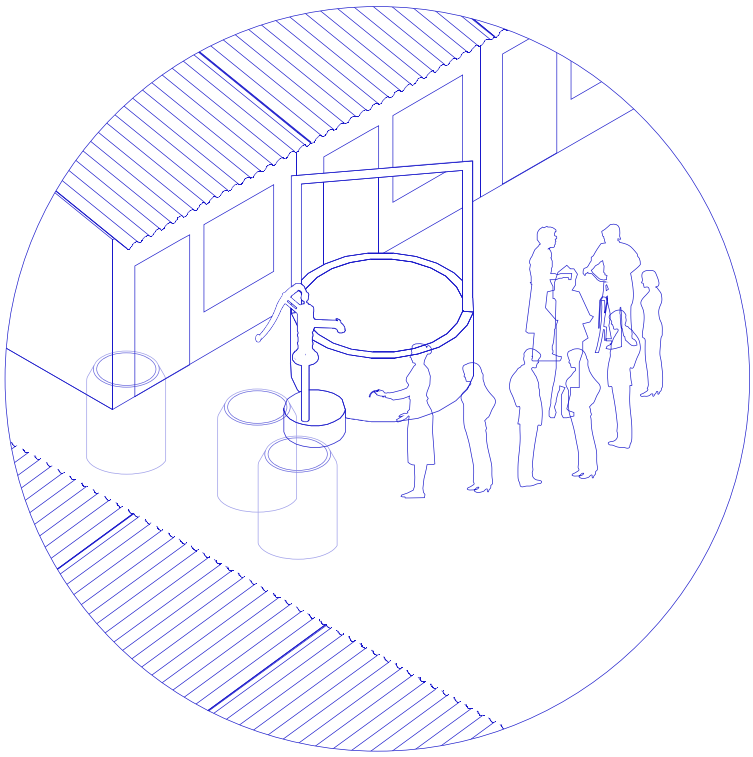
PATTERNS OF INHABITATION

Baithi chawls

- Social spaces -



2

Wells around the rows of baithi chawls act as a place to meet for the women of the baithi chawl area. In a conservative nation such as India, where women of economical lower classes have not always the freedom to move around freely, the act of getting water as a daily activity act as a way for women to go out of their houses and to meet one another, to gossip or to talk. This happens on a local basis so this social space is characterized by its semi-public appearance.

*

PATTERNS OF INHABITATION

Baithi chawls

- Social spaces -

3

The communal alley is, although its cramped space a very lively social area. This is where the private liv of the dwellers meet the public sphere and where family, friends and neighbours meet each other. It is a very important space for the community to bond and to discuss important matters. People sit in front of their houses or stand in door openings chatting with each other.

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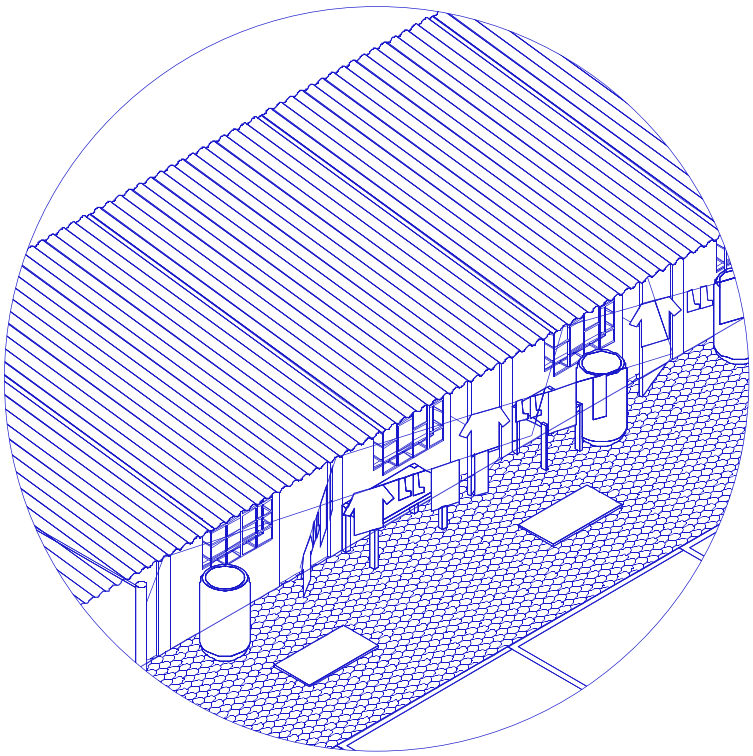
PATTERNS OF INHABITATION

Baithi chawls

- Borders -



4

The society gate acts as a transitional border that sets the perimeter of semi-public space: the society area. This measure not only gives information about the society itself but also gives a very clear message that everyone not from the society: they are visitors/guests.

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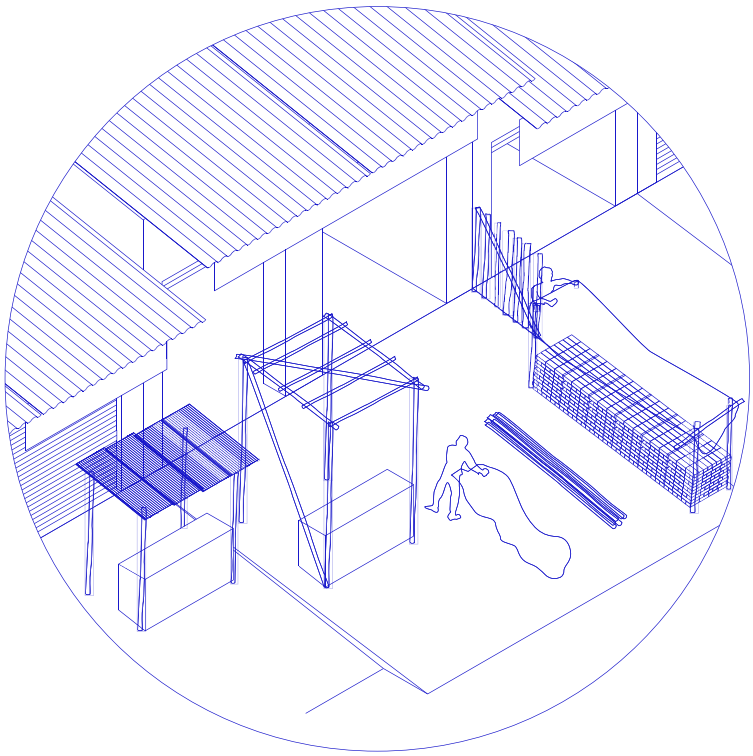
PATTERNS OF INHABITATION

Baithi chawls

- Borders -



5

The local shops and industrial ghalas appropriate some of the exterior space in front of the unit with secondary structures. These structures have different functions: sometimes they serve as a reception desk, as a cover for goods or to mark the border between two units. The used materials are wooden or bamboo sticks or small steel beams covered by a plastic canvas or corrugated steel or plastic sheets. The desks are made of wood or sometimes cast in concrete.

*

PATTERNS OF INHABITATION

Baithi chawls

- Income generation -

6

The baithi chawls are perpendicular to secondary roads which are themselves perpendicular to the main road. In this secondary roads local shops are placed along the streets. These shops vary in size, ranging from a couple of square meters to deeper units which sometime have a backroom or second floor to house the owner's family. The roads are wider than the baithi chawl paths giving space for other forms of mobility than pedestrians. The shops sell a variety of products mostly related to daily needs and in some cases other functions are housed such as small offices. The sidewalk in front of the shop is used to place signs, tables and stalls as an extension to the shop.

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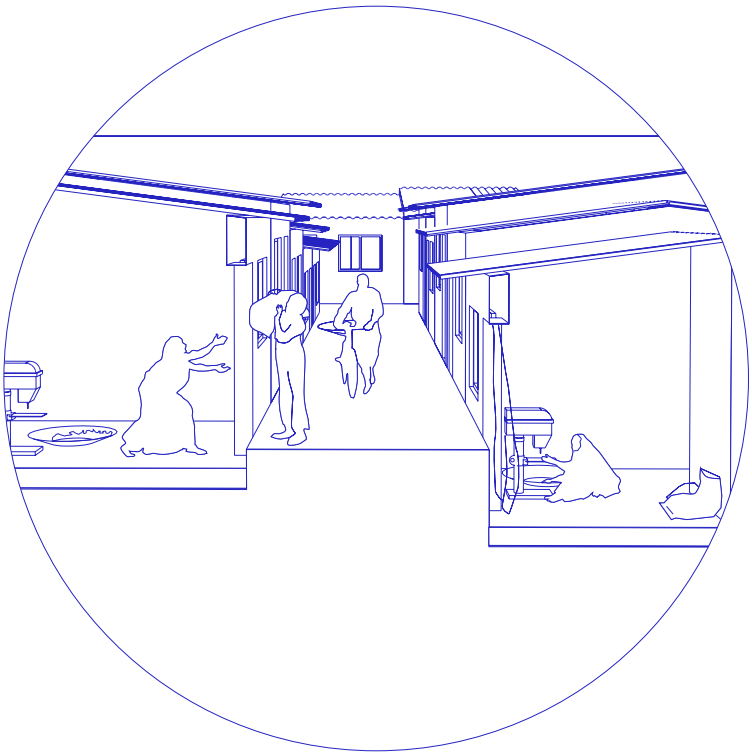
PATTERNS OF INHABITATION

Baithi chawls

- Income generation -



7

In some of the Baithy Chawls manufacturing of goods takes place in mixed used residential units. It both occurs that multiple units in one chawl are producing the same goods being part of one company, as are the autonomous operating units working individually. The front room is both used for manufacturing and storing the goods and production material.

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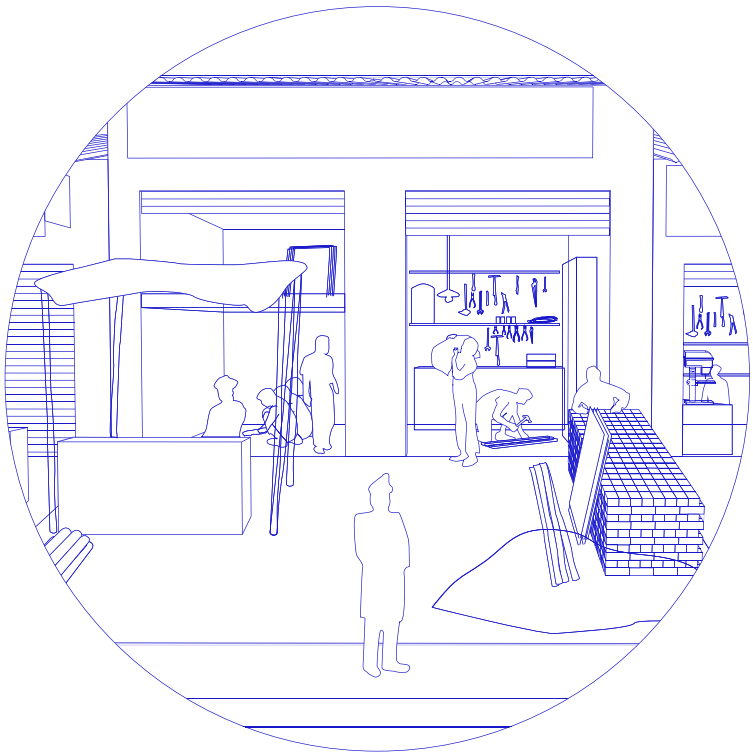
PATTERNS OF INHABITATION

Baithi chawls

- Income generation -



8

The highway coming from Mumbai offers a vital artery for various industrial activities taking place in the area of Nala Sopara East. These activities are held in workshops of varying size close to the highway and along the main road crossing the area. These so-called Ghalas are manufacturing and selling various products mostly related to construction such as bricks, cement, steel beams etc. A concrete ramp is built in front of the ghalas on which the finished goods, raw material and a reception desk are placed.

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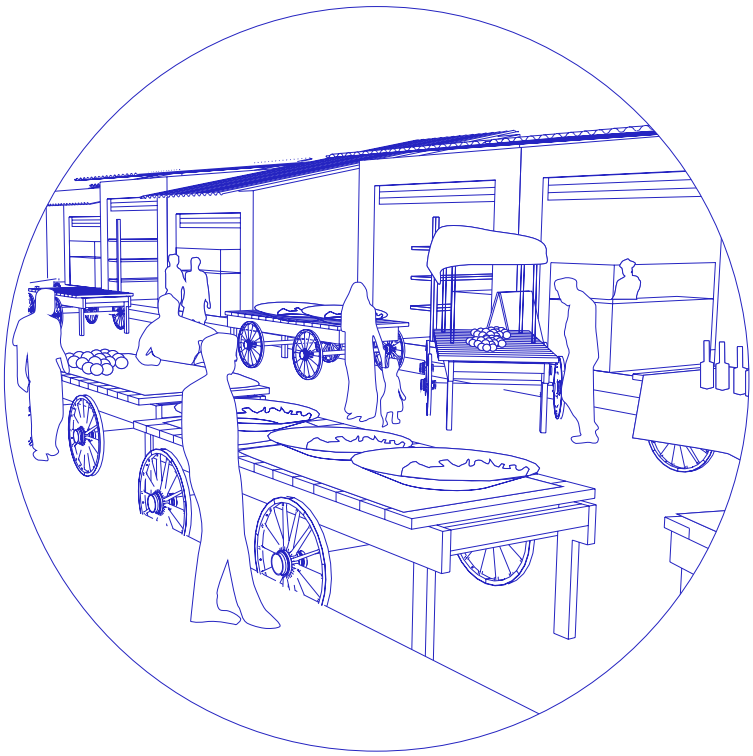
PATTERNS OF INHABITATION

Baithi chawls

- Income generation -



9

The street vendor stand offers another way of selling goods in the shopping streets. In the busier streets these stalls are clustered in a market but they also appear 'alone'. They are mostly made of wood or metal with plastic sheet covers and often mobile or temporary constructions. The vendors sell mostly products related to daily needs such as food. Sometimes the stall is part from the shop where they stand in front of and serve as an extension to the interior.

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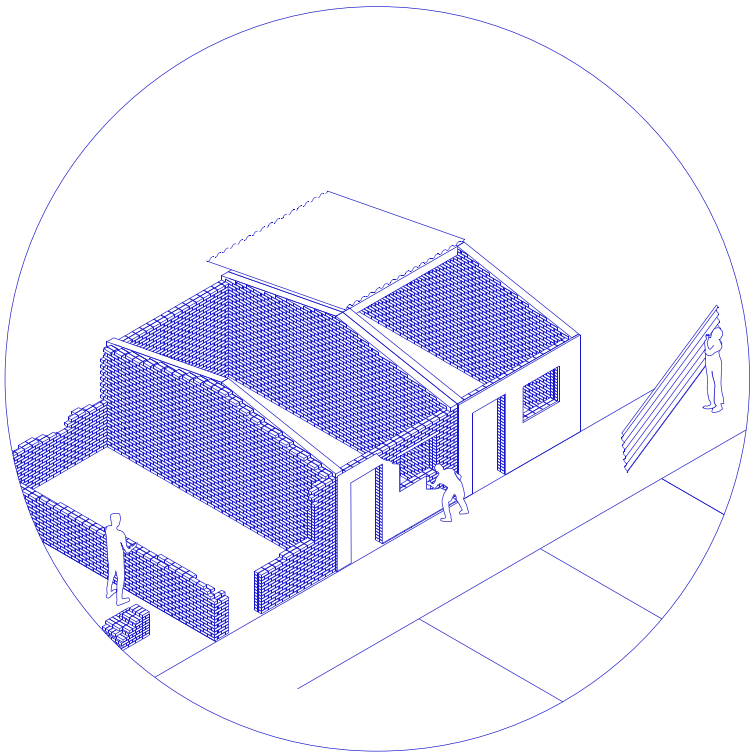
PATTERNS OF INHABITATION

Baithi chawls

- Building techniques -



10

The units of the baithi chawls are constructed by the same contractor or developer and grouped in clusters of approximately twenty parts. The walls are made of brick after which the exposed walls are covered with a layer of cement to protect the bricks from the rain. After this small steel beams are laid upon the wall to support the roof made of corrugated steel.

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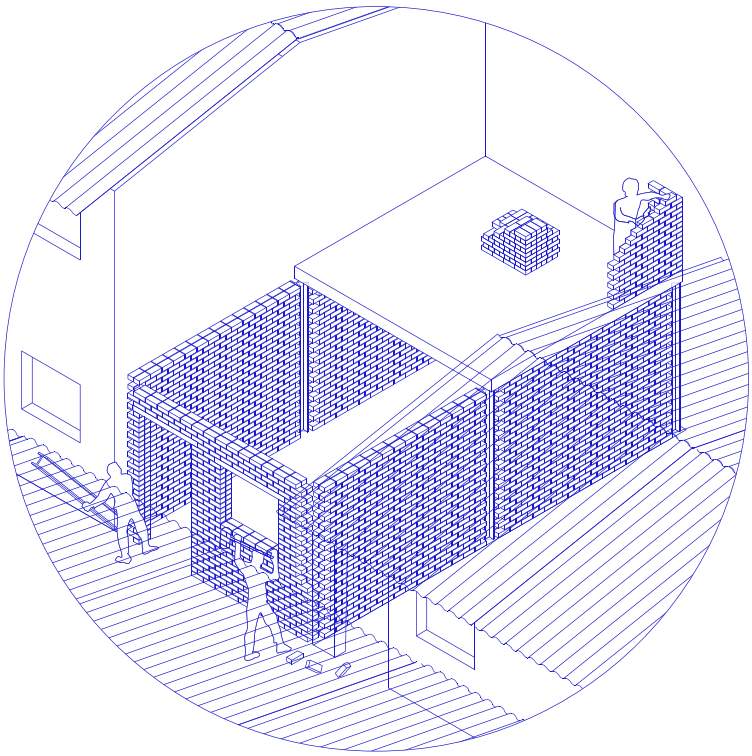
PATTERNS OF INHABITATION

Baithi chawls

- Building techniques -



11

In some cases, the units can individually be extended with a second floor on top of the existing structure. The load bearing structure exists out of steel beams that are placed in voids that are cut out of the brick. On top of this construction a new concrete slab is cast after which brick walls cladded with cement are used for infill.

Research

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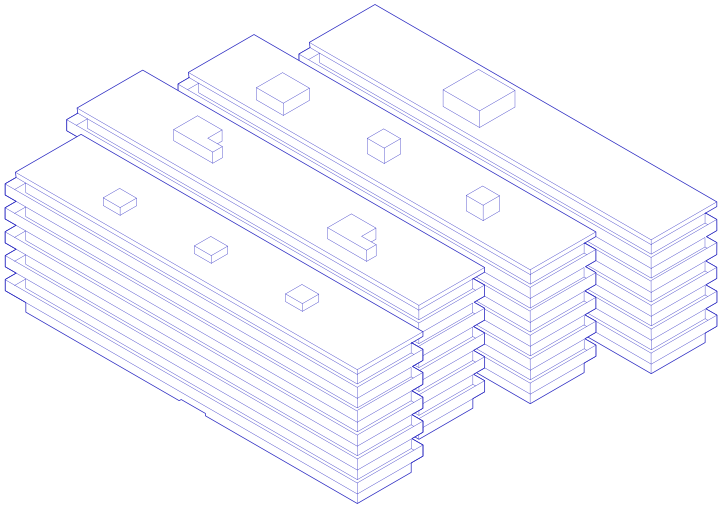
PATTERNS OF INHABITATION

Chawls



Research

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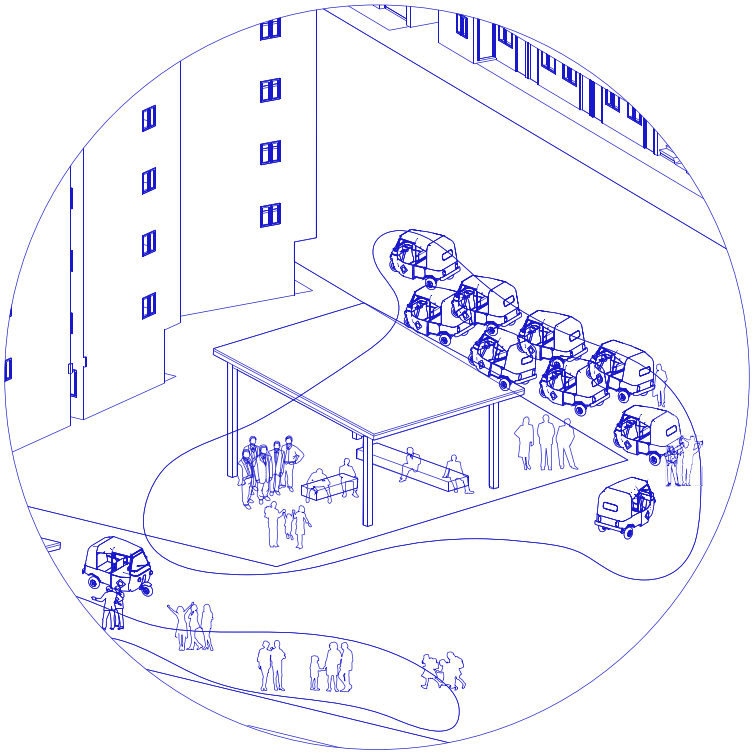
PATTERNS OF INHABITATION

Chawls

- Social spaces -



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Research

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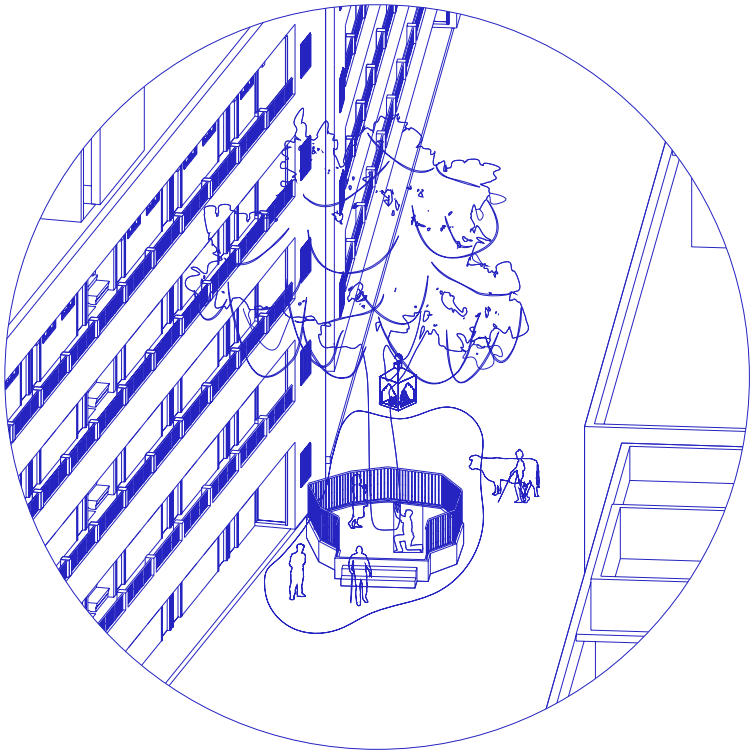
PATTERNS OF INHABITATION

Chawls

- Social spaces -



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Research

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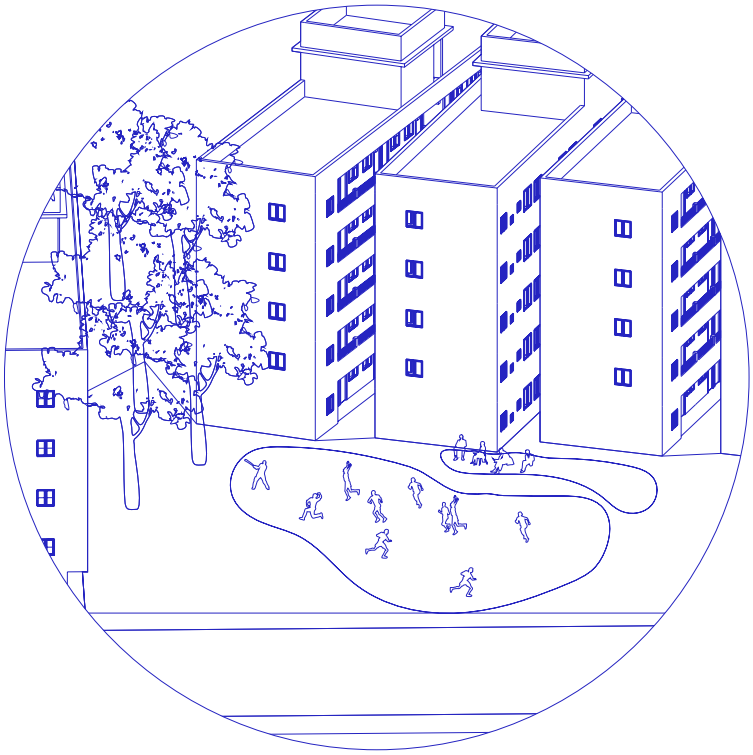
PATTERNS OF INHABITATION

Chawls

- Social spaces -



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Research

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PATTERNS OF INHABITATION

Chawls

- Social spaces -

6

Research

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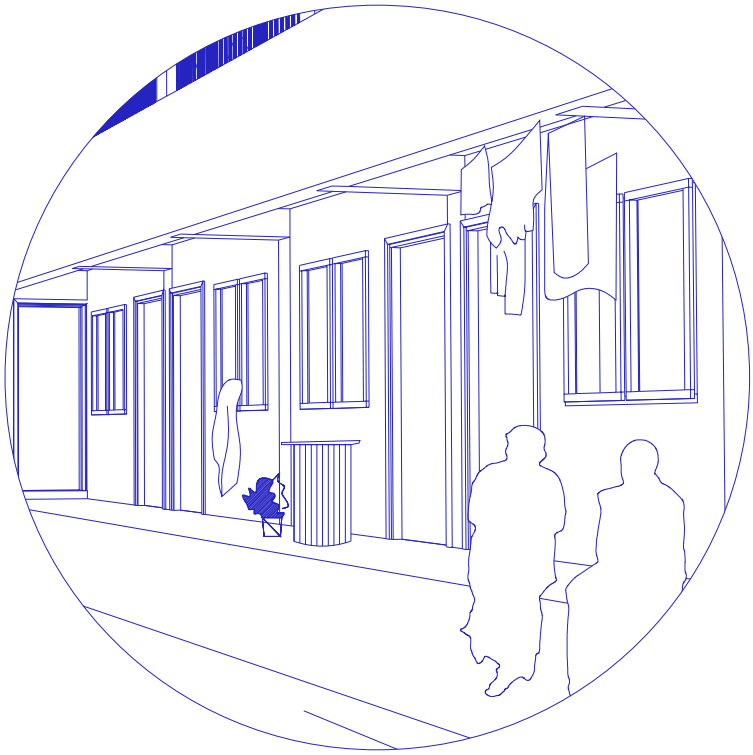
PATTERNS OF INHABITATION

Chawls

- Borders -



1

Research

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PATTERNS OF INHABITATION

Chawls

- Borders -

2

Research

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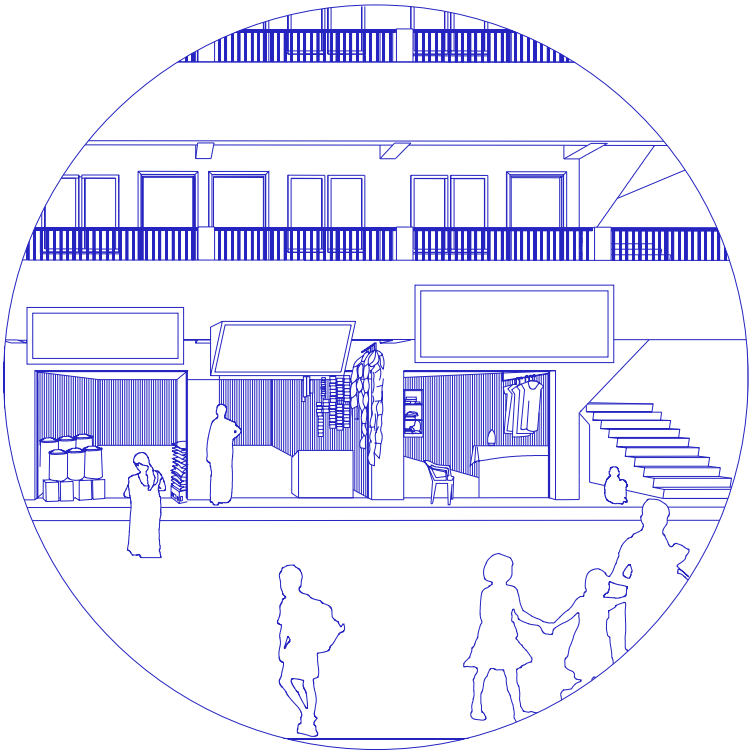
PATTERNS OF INHABITATION

Chawls

- Income generation -



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Research

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PATTERNS OF INHABITATION

Chawls

- Income generation -

8

Research

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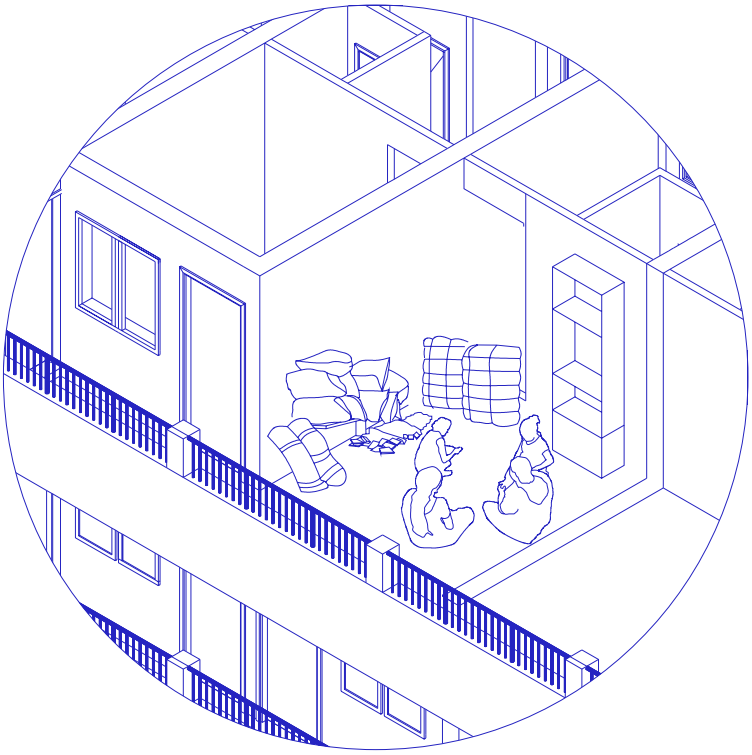
PATTERNS OF INHABITATION

Chawls

- Income generation -



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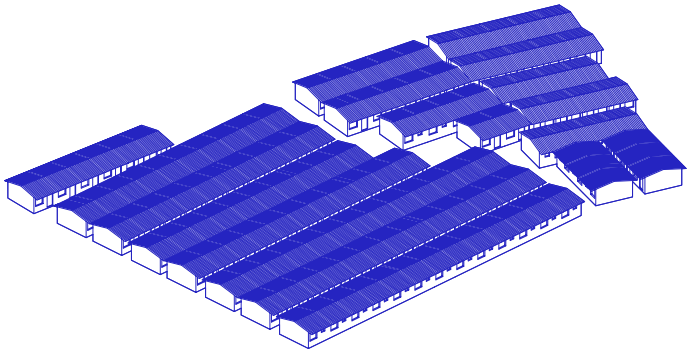
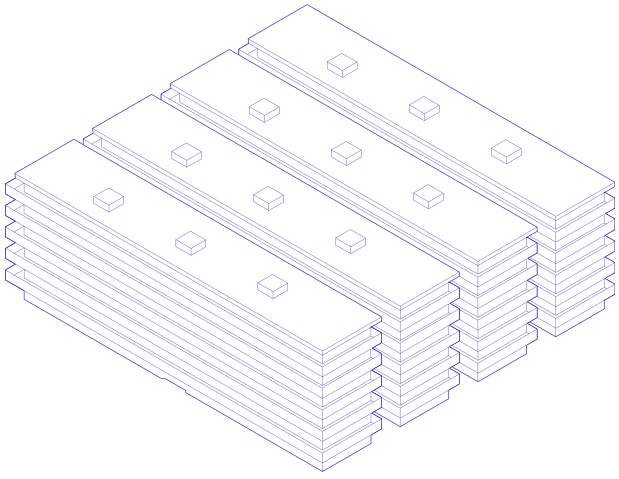
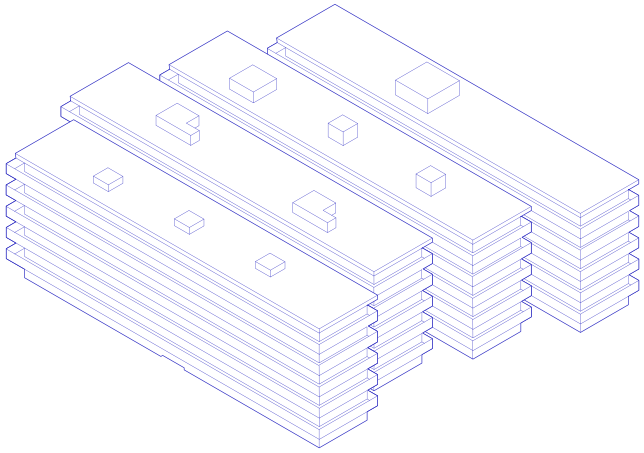
NALA SOPARA
Commercial (re)development
- (baithi) chawls -

Commercial
development







in today's Nala Sopara most of the Chawls are realised by commercial developers. These chawls are either developed in one go or by redeveloping baithi chawls per row over time.

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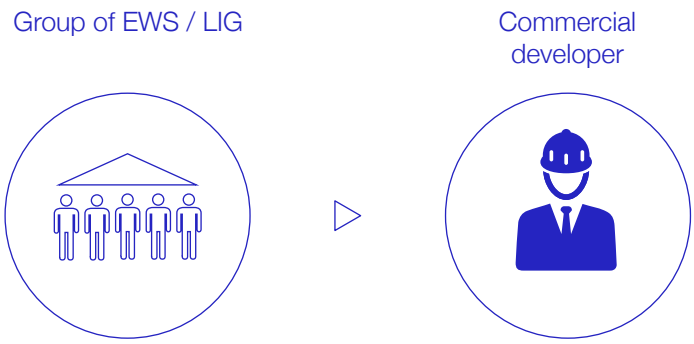
NALA SOPARA
Commercial (re)development
- Scheme -



In Mumbai, affordable housing is often realised through a commercial (re)developer only. (Re)development is undertaken without the interference of an architect.

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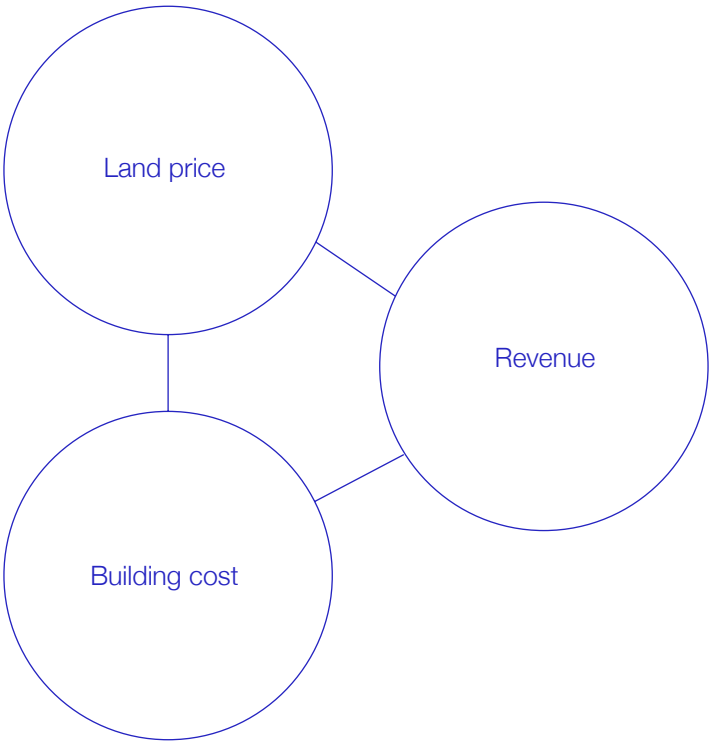
NALA SOPARA
Commercial (re)development
- Tripartite cost -



In Mumbai, profit margin of commercial development varies between 10% and 70%. On average, builder profit is set on 20% of the selling price.

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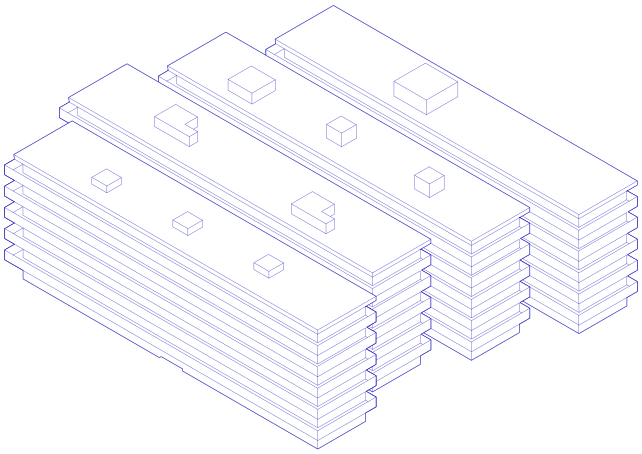
NALA SOPARA
Commercial (re)development
- Problematic consequences of the Chawl -



Cramped configurations - Safety hazard
Neglected in-between spaces - health hazard
Lack of daylight - health hazard
Lack of social space

As a consequence, the (re)development projects for the poorer inhabitants (the chawls) are made to accommodate the maximum amount of people per plot size, in order to achieve the maximum profit. This has severe consequence for people living in this build environment. These chawls often don't have running water and unlike its historic counterparts it doesn't provide social amenities.

Research

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NALA SOPARA
Commercial (re)development
- Problematic consequences of the Chawl -

Research

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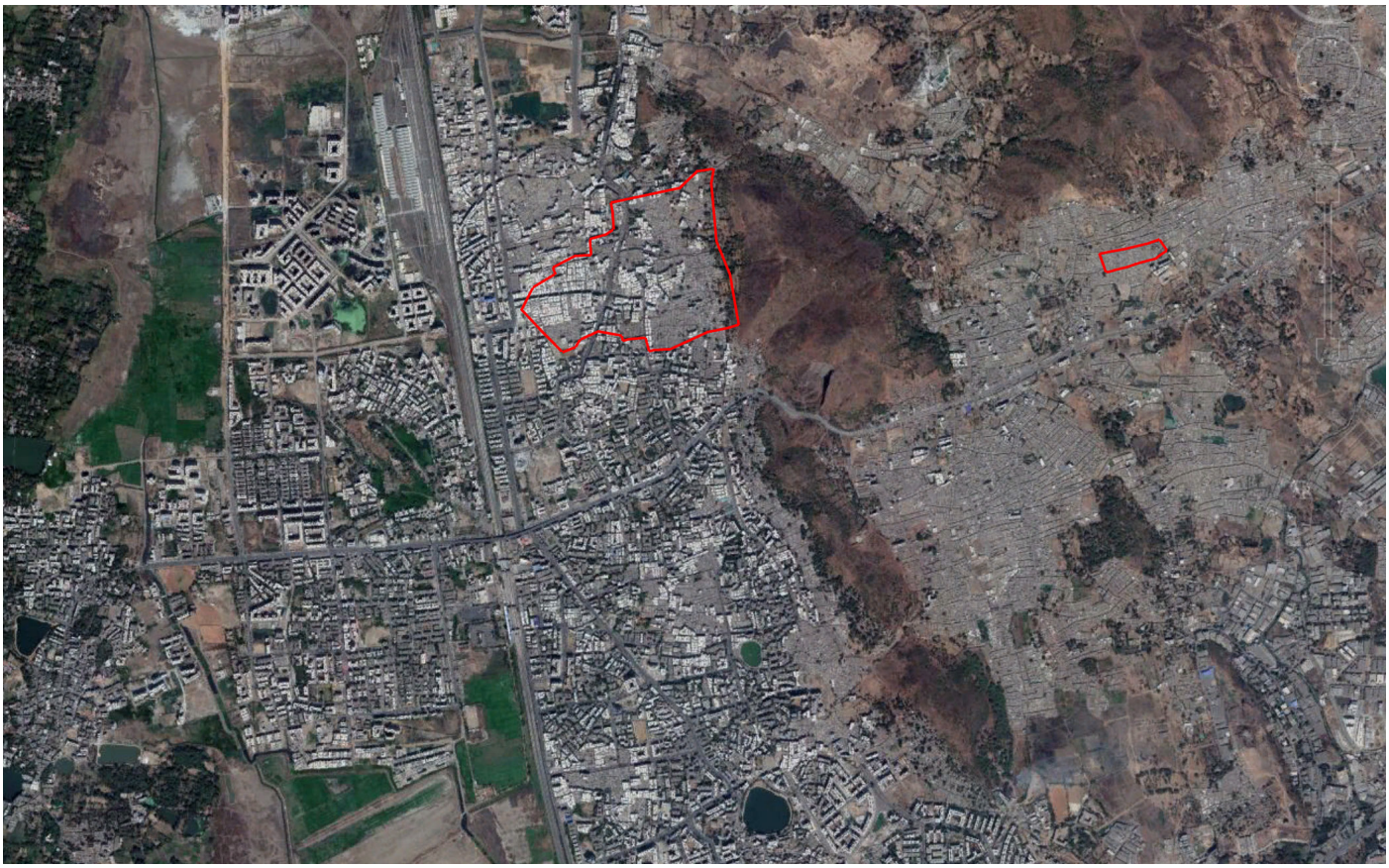
NALA SOPARA

Urban consequences

- Centre & east Nala Sopara -



Research

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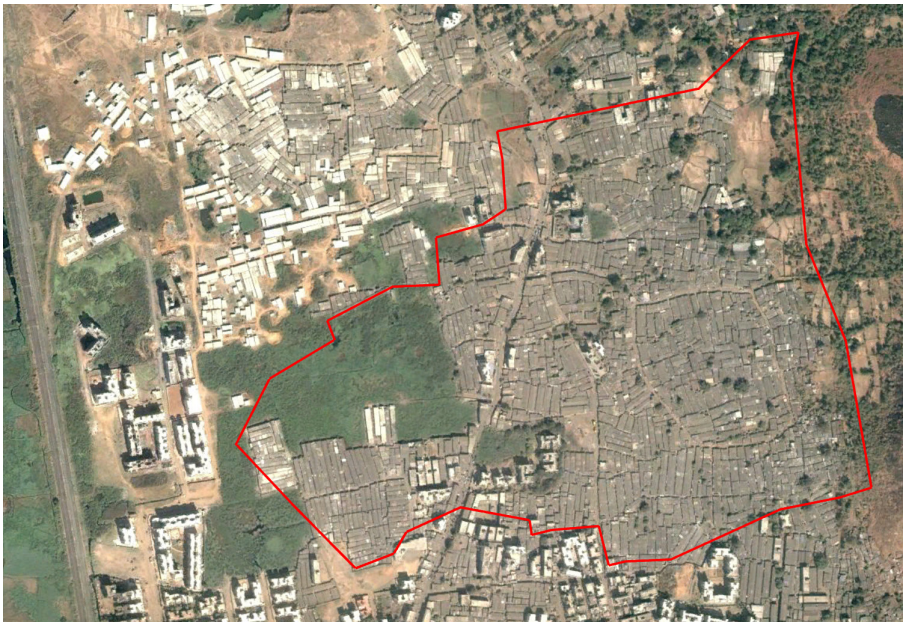
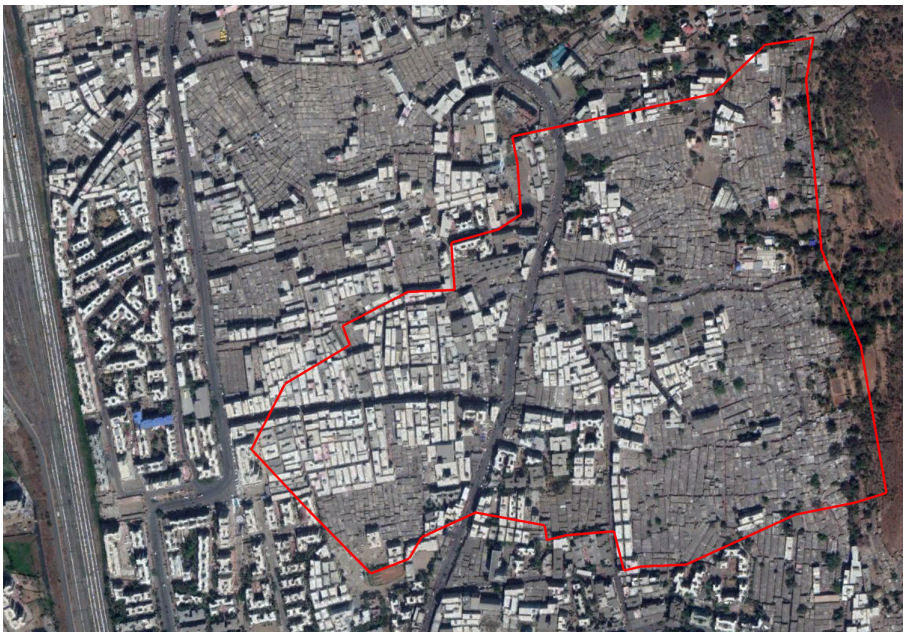
NALA SOPARA
Urban consequences
- Centre Nala Sopara -



2004



2017

The influx of newcomers is the main reason for this increase in density in Nala Sopara, but something disastrous has happened: tightly cramped building configurations (often associated with slums) are now formed by these multi-story gallery flats: rows of baithi chawls (single-level houses), which are positioned back-to-back, are converted into multi-story chawls. This process happens gradually, with rows of baithi chawls getting redeveloped by different commercial developers one after the other, until every original row of baithi chawls has been redeveloped. The living conditions in these 'handshake' chawls is questionable, while they often lack in running water and the jam-packed structural conditions create safety hazards.

Research

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NALA SOPARA
Urban consequences
- East Nala Sopara -

This area, located in the east of Nala Sopara and was 10 years ago still rural area. This land, which was or still is owned by famers was sold or leased out to new inhabitants. These inhabitants or smaller investors created single story row houses (called baithi chawls), one at a time or all at once. The reason for the low-rise urban tissue are the building restrictions still in place. But you can see that the same density is obtained as in the rest of Mumbai by building very densely. In 2021 the building height control is not enforced anymore making the transformation to a cramped urban area filled with chawls very likely.

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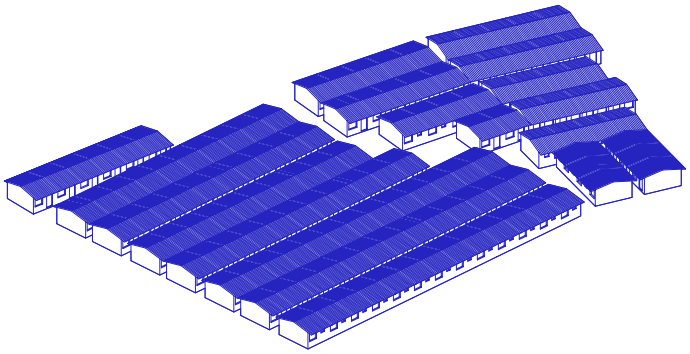
PROBLEM STATEMENT
Transition of the baihi chawl



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?

today's Nala Sopara is changing rapidly, with the continual redevelopment of its former urban tissue, the baithi chawls. Cramped 'handshake chawls' spread out throughout Nala Sopara, further depleting the living conditions of its tenants. Two of the main issues here are the commercial developer and the lack of housing regulations, but wouldn't it be possible to implement other ways of redevelopment, simultaneously excluding the commercial developer, who only thrives to create maximum profit, while ignoring the needs of the economical weakest section of Mumbai?

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DESIGN QUESTION

What incremental, low-cost design approach could be implemented as a small scale redevelopment scheme for the transformation of the Baithi chawl housing stock of of east Nala Sopara, facilitating inclusive, affordable housing and simultaneously creating a humane, sustainable alternative for the large scale redevelopments seen in the centre of Nala Sopara?

*

DESIGN HYPOTHESIS

The in situ, incremental redevelopment design of the 'baithi chawls' in east Nala Sopara is a feasible alternative for the private redevelopment practise and successful in replacing the commercial developer with local contractors.

GENERAL APPROACH

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General approach

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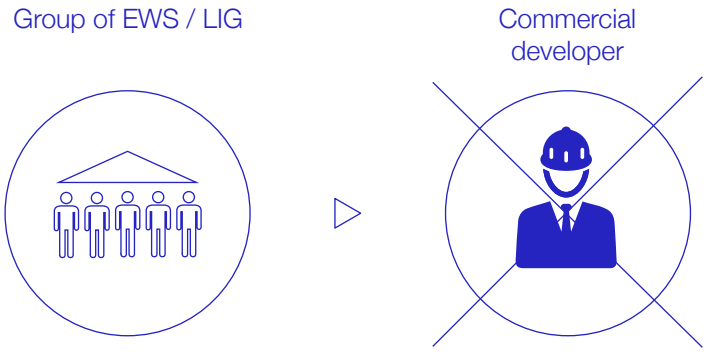
NON-COMMERCIAL REDEVELOPMENT
Excluding the commercial developer



My conclusion from the research is the devastating effect of the commercial developer on the housing situation of Nala Sopara. The commercial developer, who only thrives to create maximum profit, ignores the needs of the poorer inhabitants of Nala Sopara. and are part of the problem of liveability.
Another scheme should be implemented: one that empowers the local inhabitants of the baithi chawls. A strategy that creates an alternative for redevelopment and gives the dwellers more control, saying and freedom how to live.

General approach

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CO-HOUSING
Scheme

The realistic solution for excluding the commercial developer and empowering the baithi chawl dwellers can be seen in this scheme. Here a collaboration between a housing society and NGO is introduced. The NGO could function here as the major financer while the housing society (as collective) looks after the wishes and needs of the dwellers. The NGO and the society will set up a board that will put in charge of the overall redevelopment process. The board thereupon appoints an architect/project manager who will be in charge of the actual building process and who will attract local contractors that are fit to work on the project. This focus of this project will be on the creation of a building toolkit that consists of housing types, configurations and building constructions/materials that will give expression to affordable and differentiated living options for the new dwellers.

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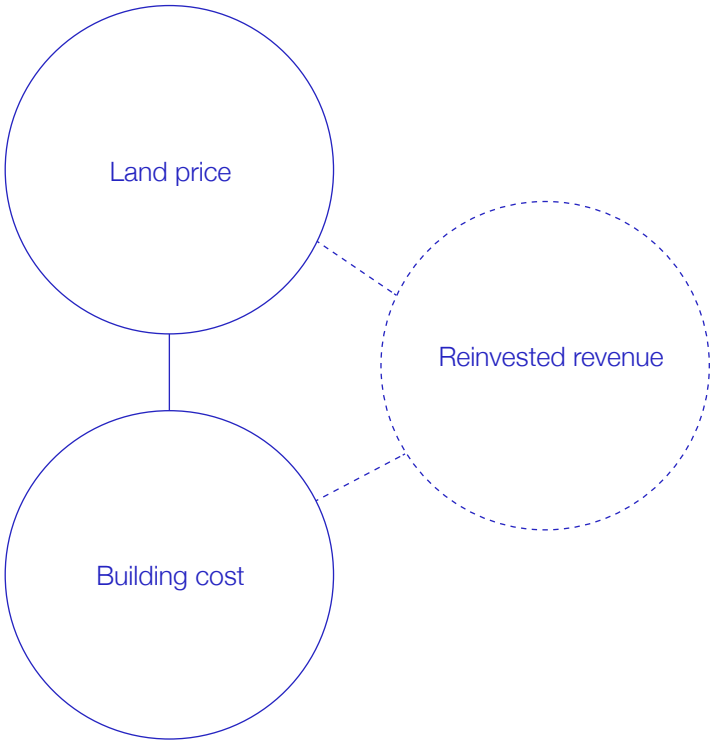
NON-COMMERCIAL REDEVELOPMENT

- Semi-tripartite cost -



One of the main advantages of introducing the housing society (managed by the community) as a stakeholder is that profit is now flowing back to the occupants who can reinvest it in the building in the form of maintenance or further expansions. and won't end up as revenue for a commercial enterprise. The formation of an active housing society functioning as the developer will also contribute to the solidarity and responsibility within the commune.

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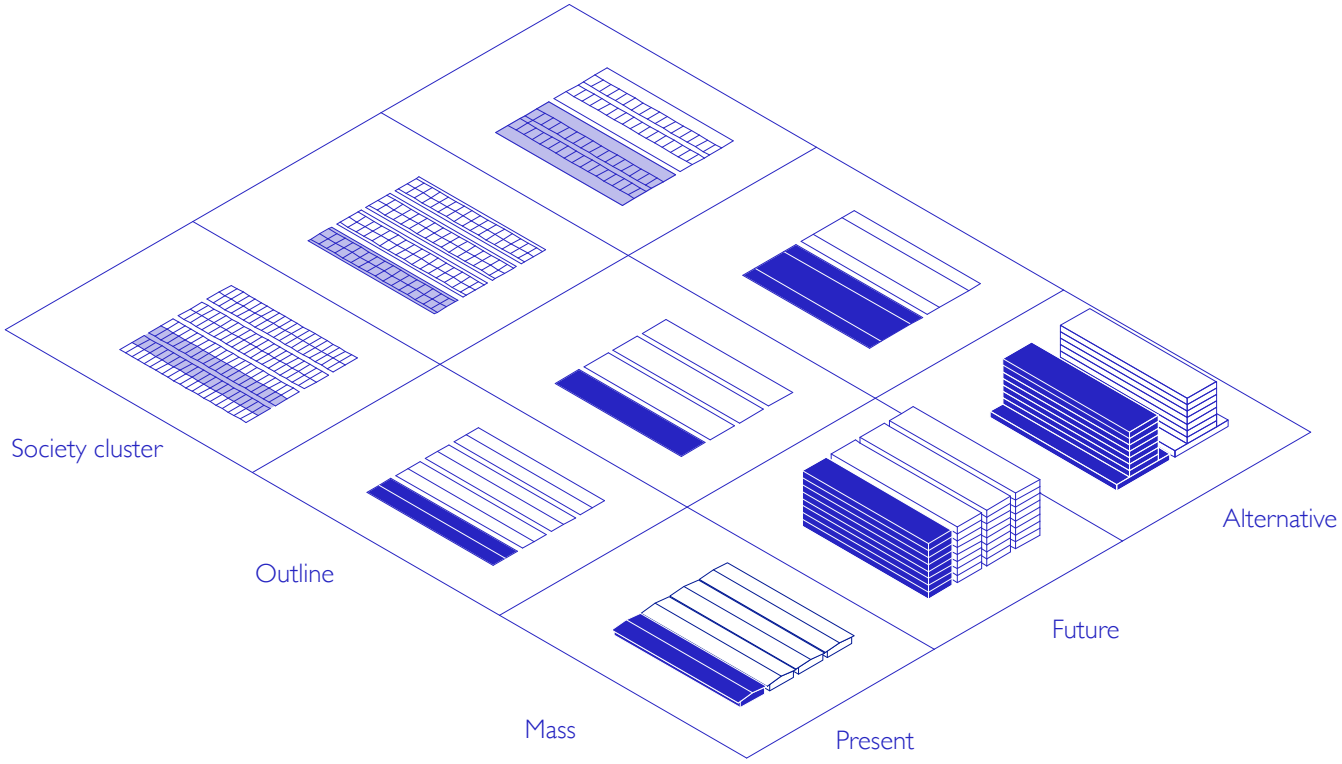
DEVELOPMENT STRATEGY

Concept



The simple scheme of the (baithi) chawl could function well as a base for a new incremental scheme that permits growth in a horizontal and vertical direction. These units will have the same orientation as that of an original chawl, while this is economically efficient and less expensive to build.
The main difference with the original type of the chawl is that the new intervention is double in its width as the (baithi) chawls. The in-between spaces between the new buildings will be designed as places for communal interaction. A challenge will be to protect these areas for future development. This problem is tackled by making the plinth of the new building bigger on both sides creating a buffer zone.

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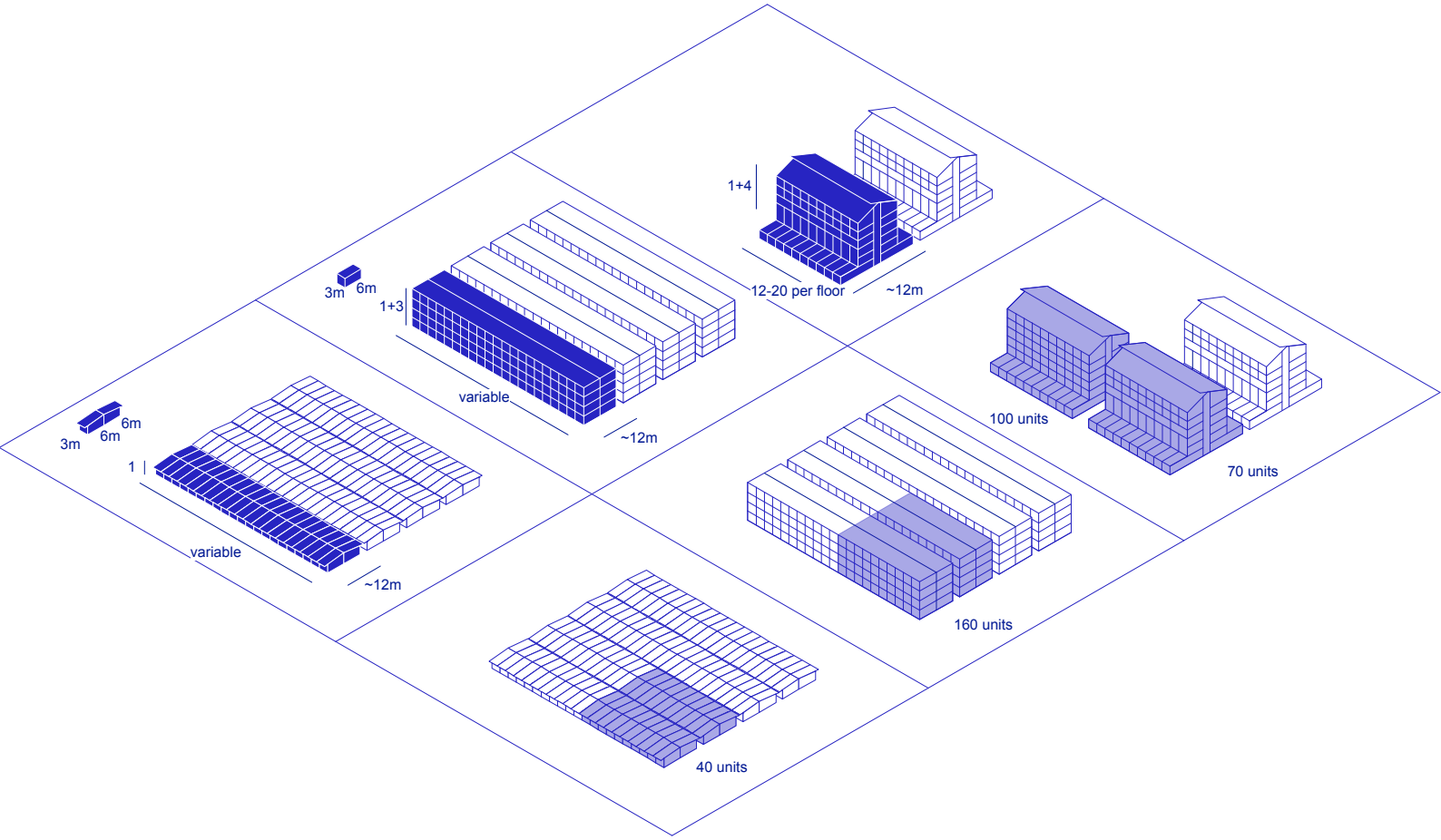
DEVELOPMENT STRATEGY

System & parameters



The plan is to create a scheme that can be implemented by housing societies themselves, using local contractors during development without the interference of a commercial developer.
The system behind the concept works as follows:
An original society only consists of one lane of baithi chawls. The new proposal looks at it from a broader scope. It incorporates two lanes to create a alternative housing society. This size here isnt the issue while the maximum units per level is set on 20. Creating bigger housing societies allow a bigger building, one that can use its bigger plinth to enforce more liveable space between the buildings.

*

DEVELOPMENT STRATEGY

Location

A suitable location to test this hypothesis is the area in east Nala Sopara, which lies across the small hill ridge. This area is less developed and a relatively new part of town. Along the Pelhar road, that connects west and east Nala Sopara and further up connects to Dhaniv and the national highway 48, you find industrial galas (single-story workshops). There are side streets along this main artery, which are used for commerce and are also accessible by car. Perpendicular to these commercial streets you will find the alleys with baithi chawl row houses. The far east of Nala Sopara has the same build-up and transition of space as the centre of Nala Sopara, but it is far less evolved. Most of the housing stock here consist of baithi chawls, that have not yet been converted to jam-packed apartment blocks. It is therefore a suitable project location (relatable to the centre of Nala Sopara in the past) and an interesting case study to test the hypothesis if a multi-story, low-cost, affordable housing scheme by local contractors is feasible and successful in excluding the commercial developer.

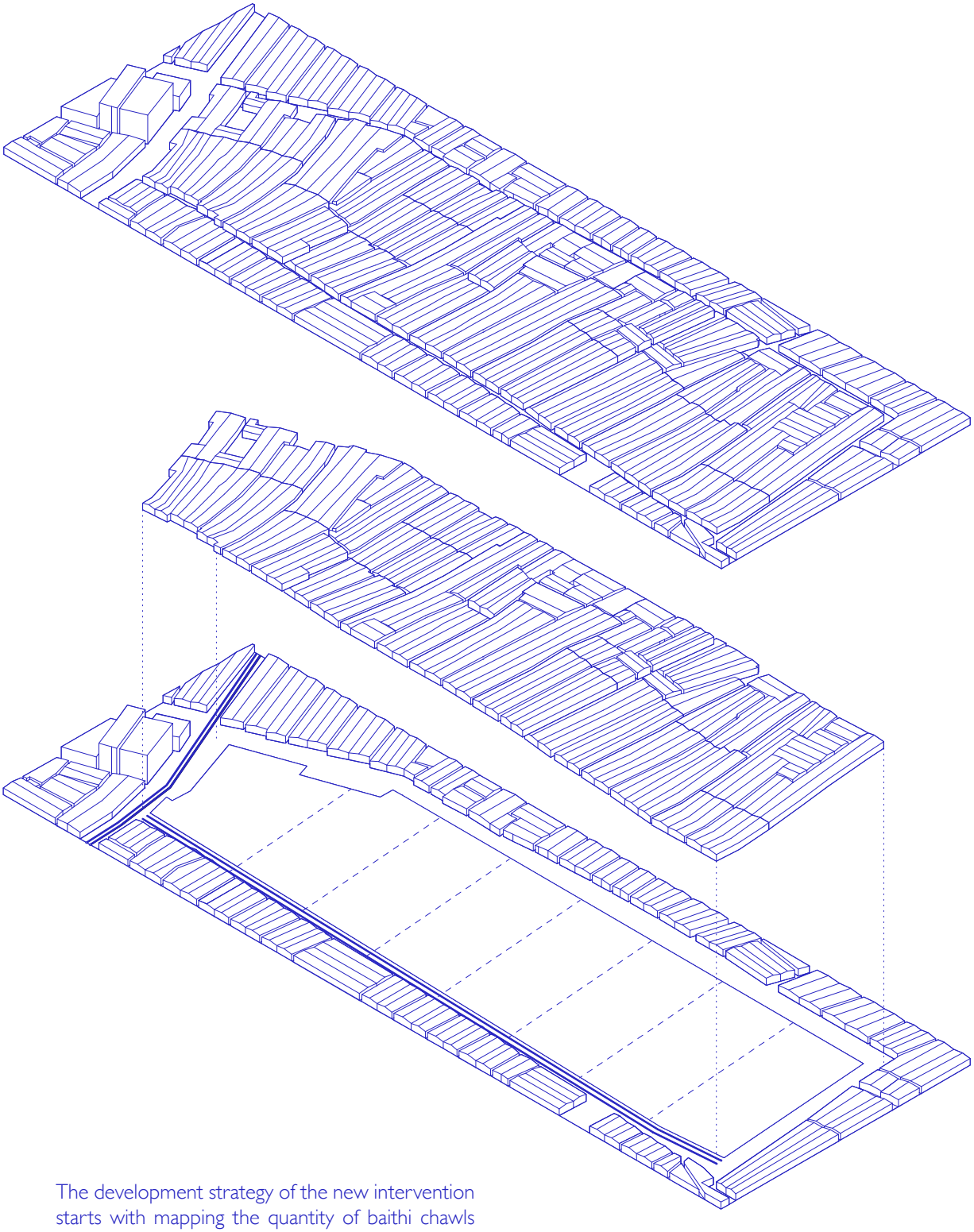
*

DEVELOPMENT STRATEGY
Location density

Looking at both negatives it becomes clear how dense this particular area really is and the risks for the future scenario of the area. Baithi chawl configurations with this density isn't problematic. Redevelopment of this area with five story height chawls however makes it unliveable. Only think about the amount of people moving through these small lanes (dark blue) of only 2 meter in width.

*

FASING



The development strategy of the new intervention starts with mapping the quantity of baithi chawls and thereafter fragmenting them in different potential housing societies.

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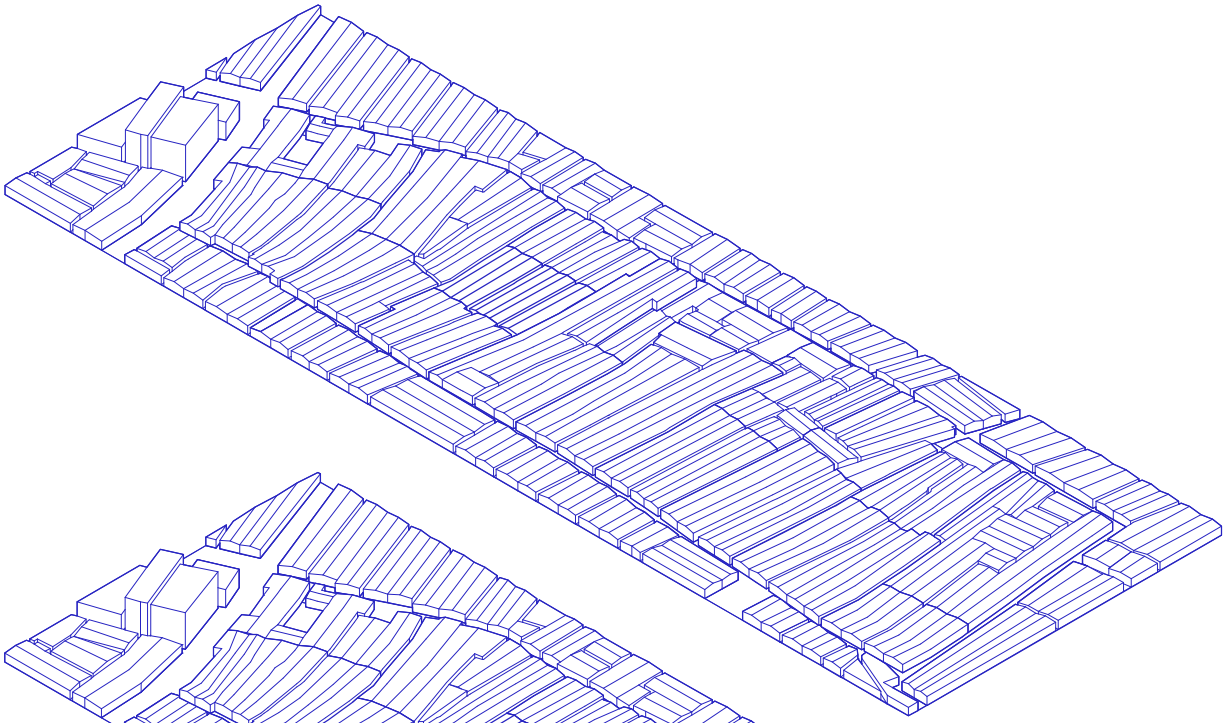
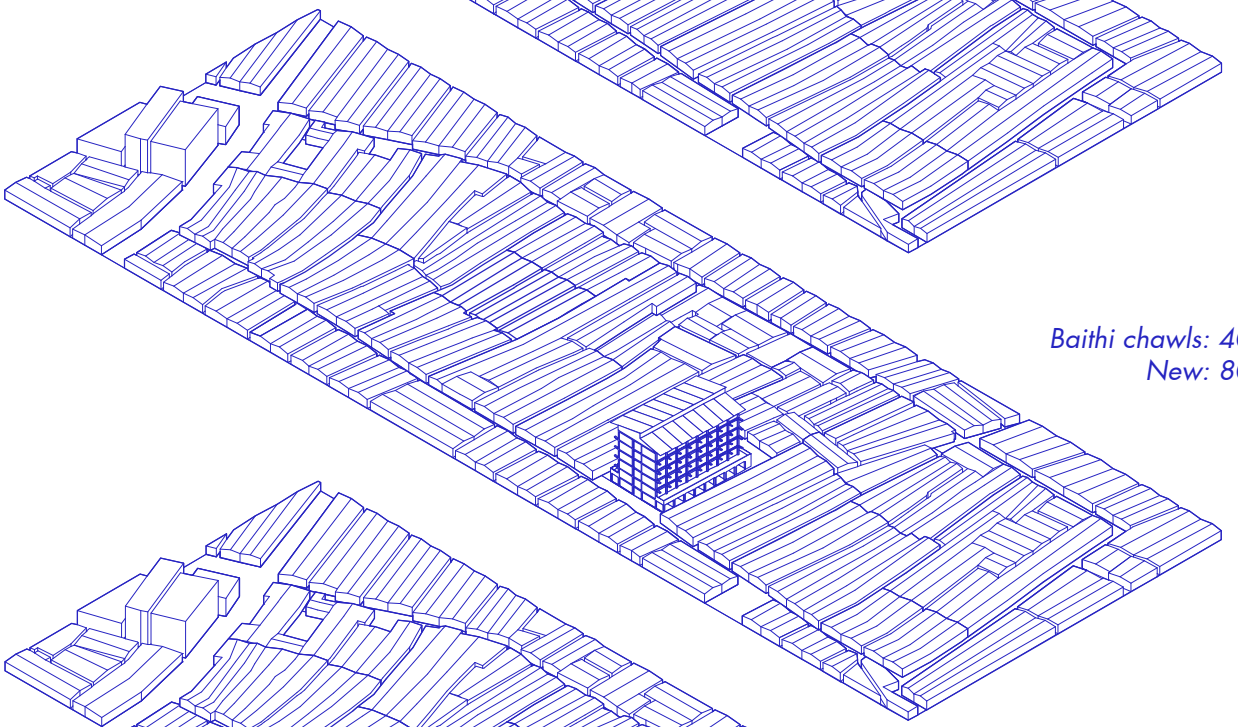
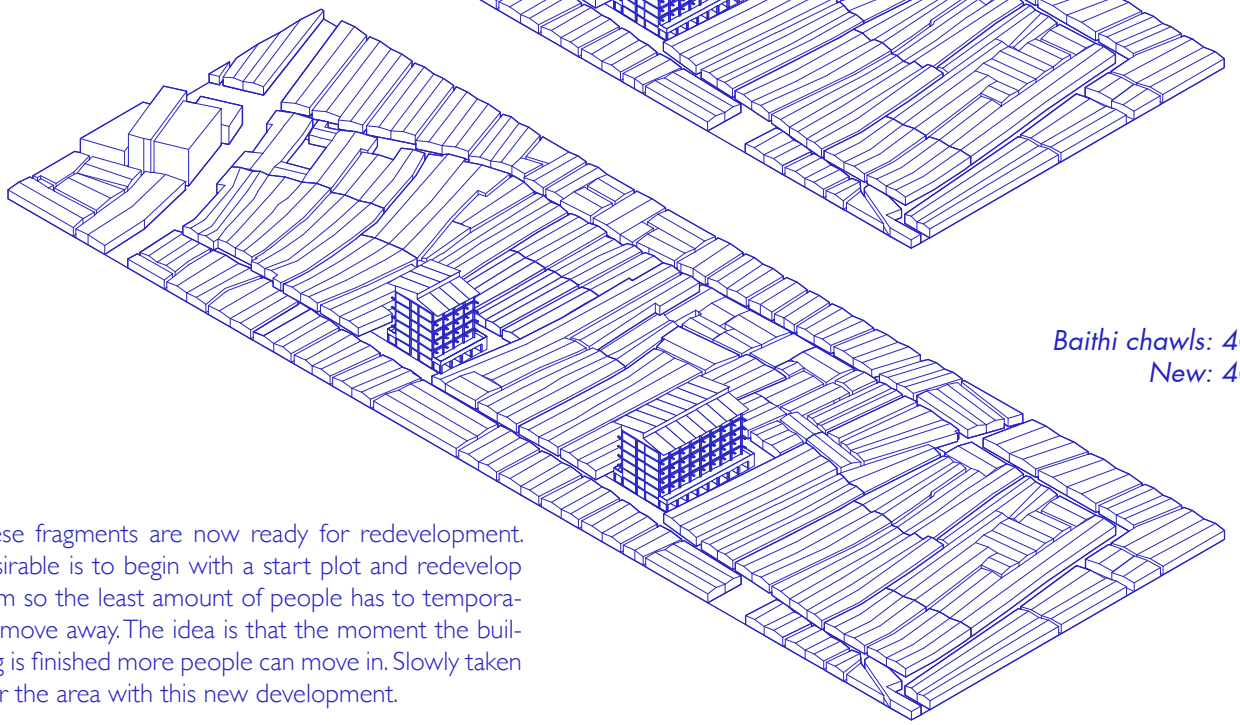
FASING





Baithi chawls: 40 units
New: 80 units

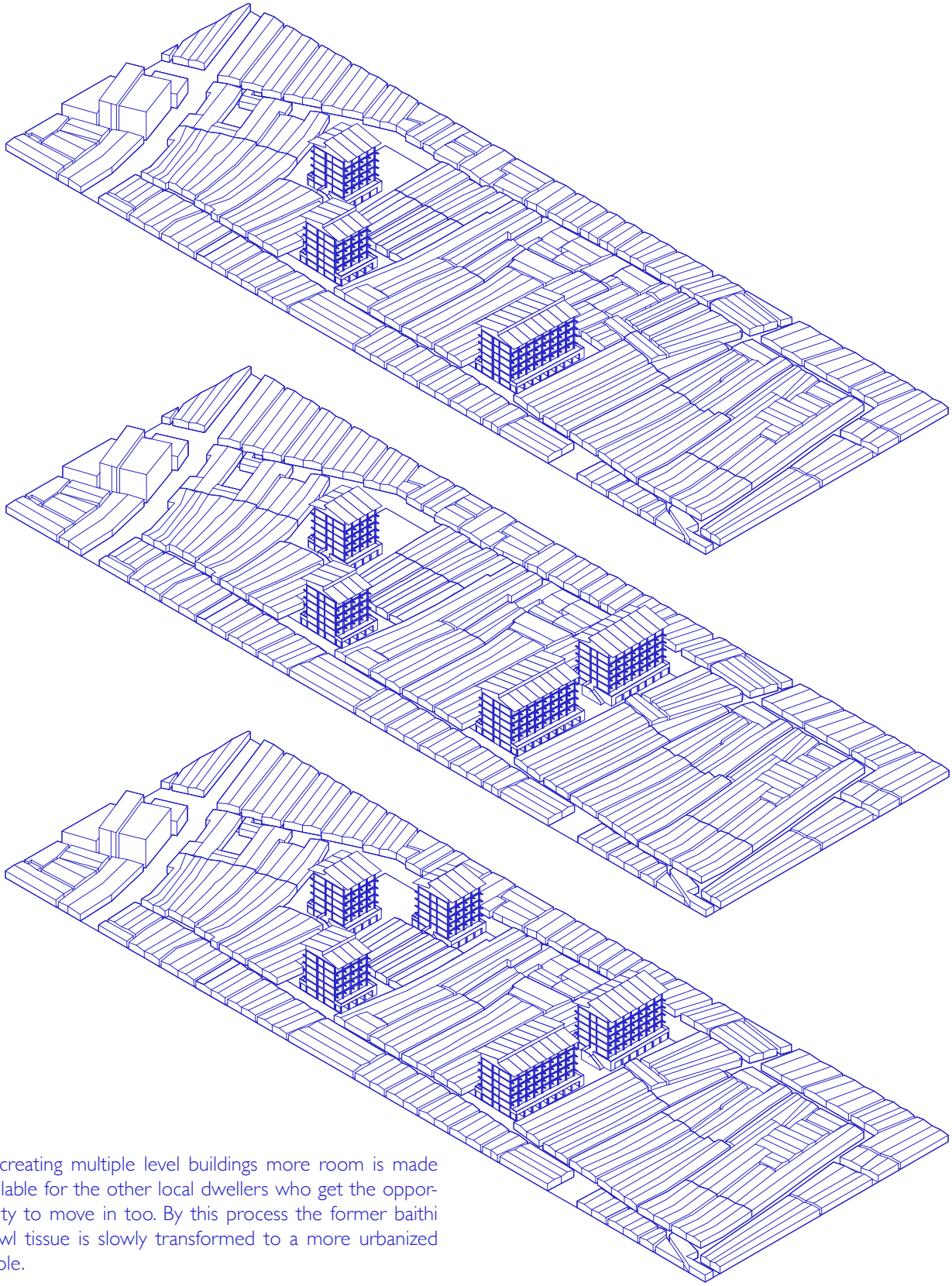


Baithi chawls: 40 units
New: 40 units

These fragments are now ready for redevelopment. Desirable is to begin with a start plot and redevelop them so the least amount of people has to temporarily move away. The idea is that the moment the building is finished more people can move in. Slowly taken over the area with this new development.

*

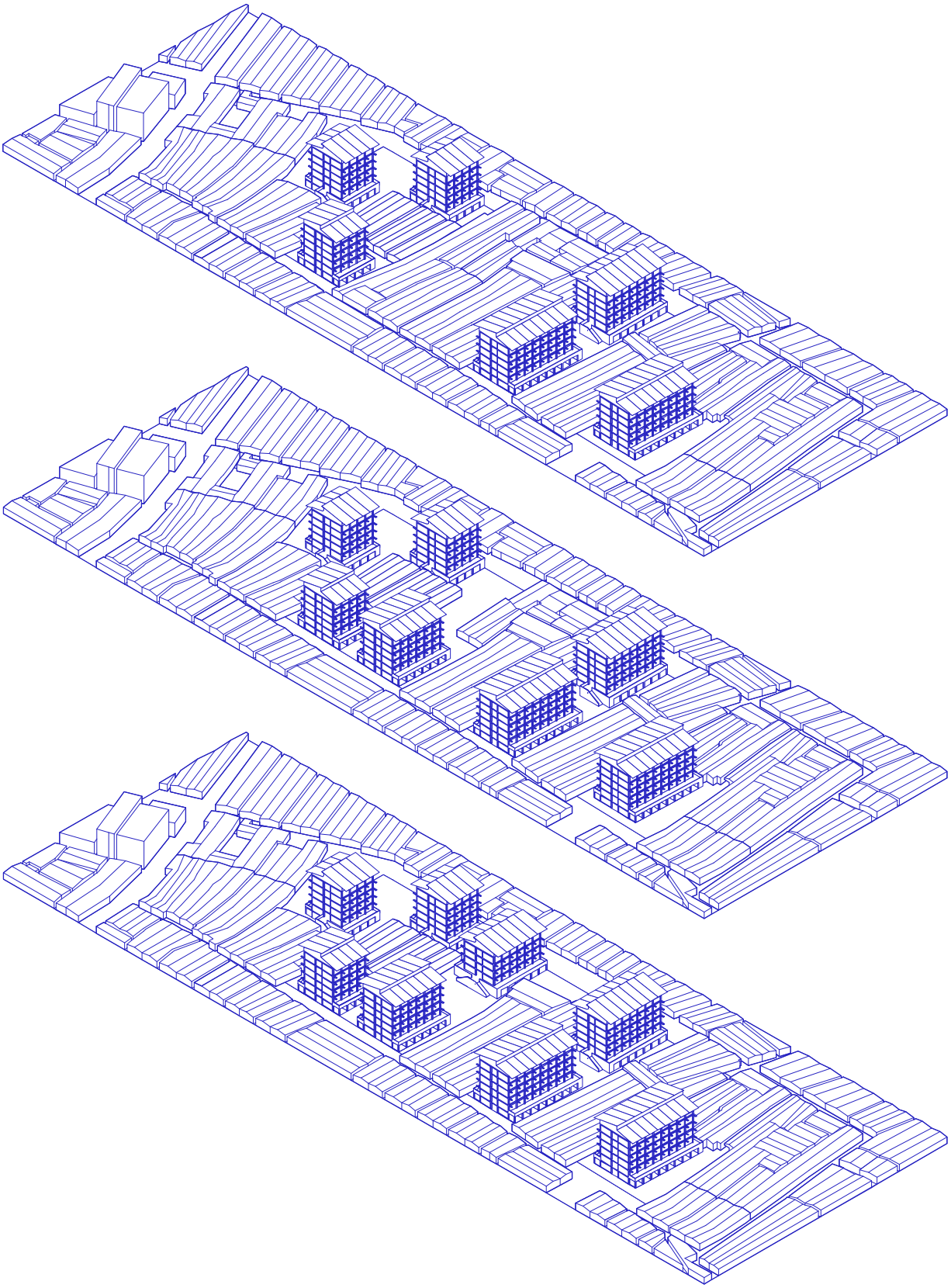
FASING



By creating multiple level buildings more room is made available for the other local dwellers who get the opportunity to move in too. By this process the former baithi chawl tissue is slowly transformed to a more urbanized whole.

*

FASING



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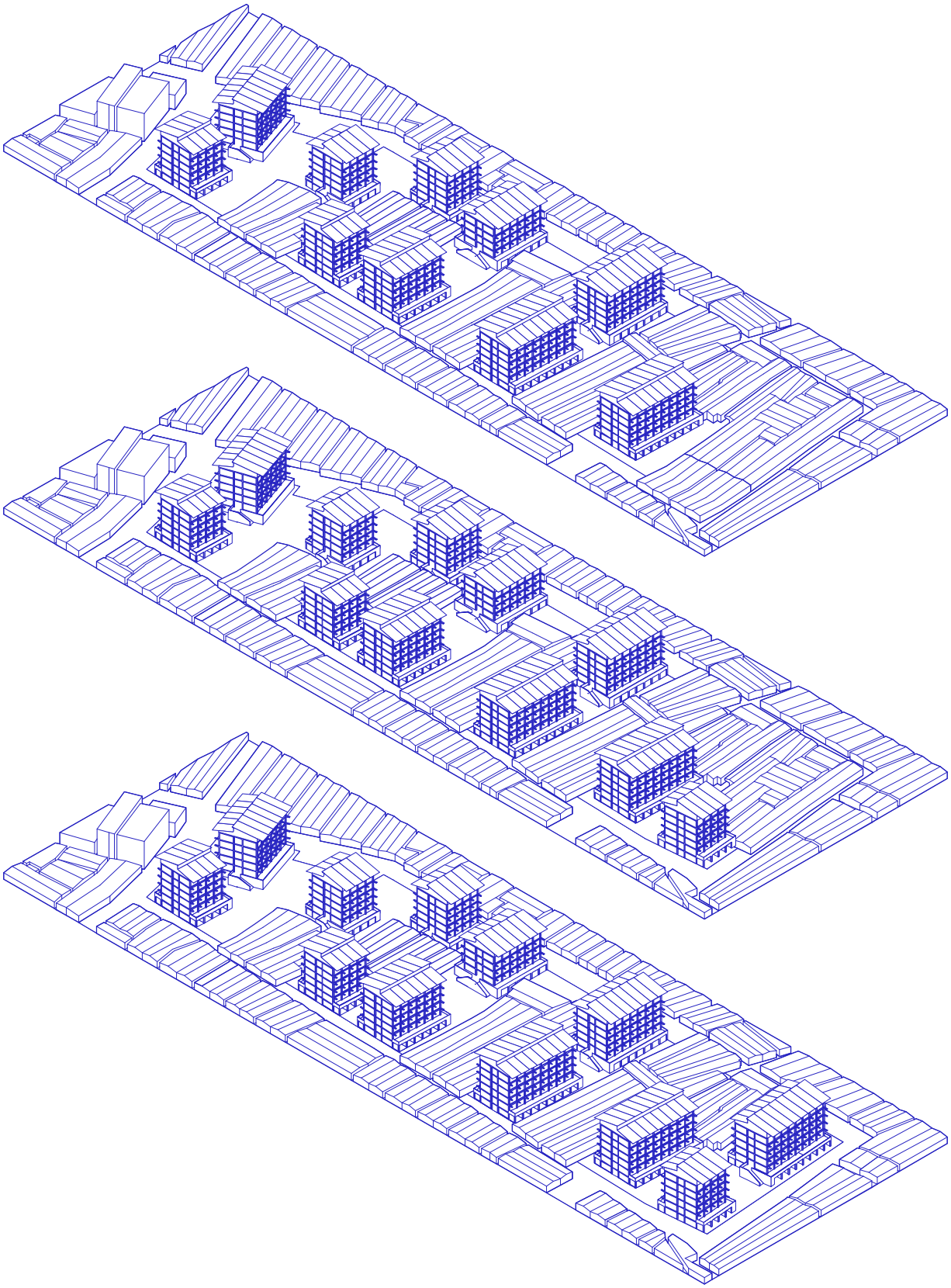

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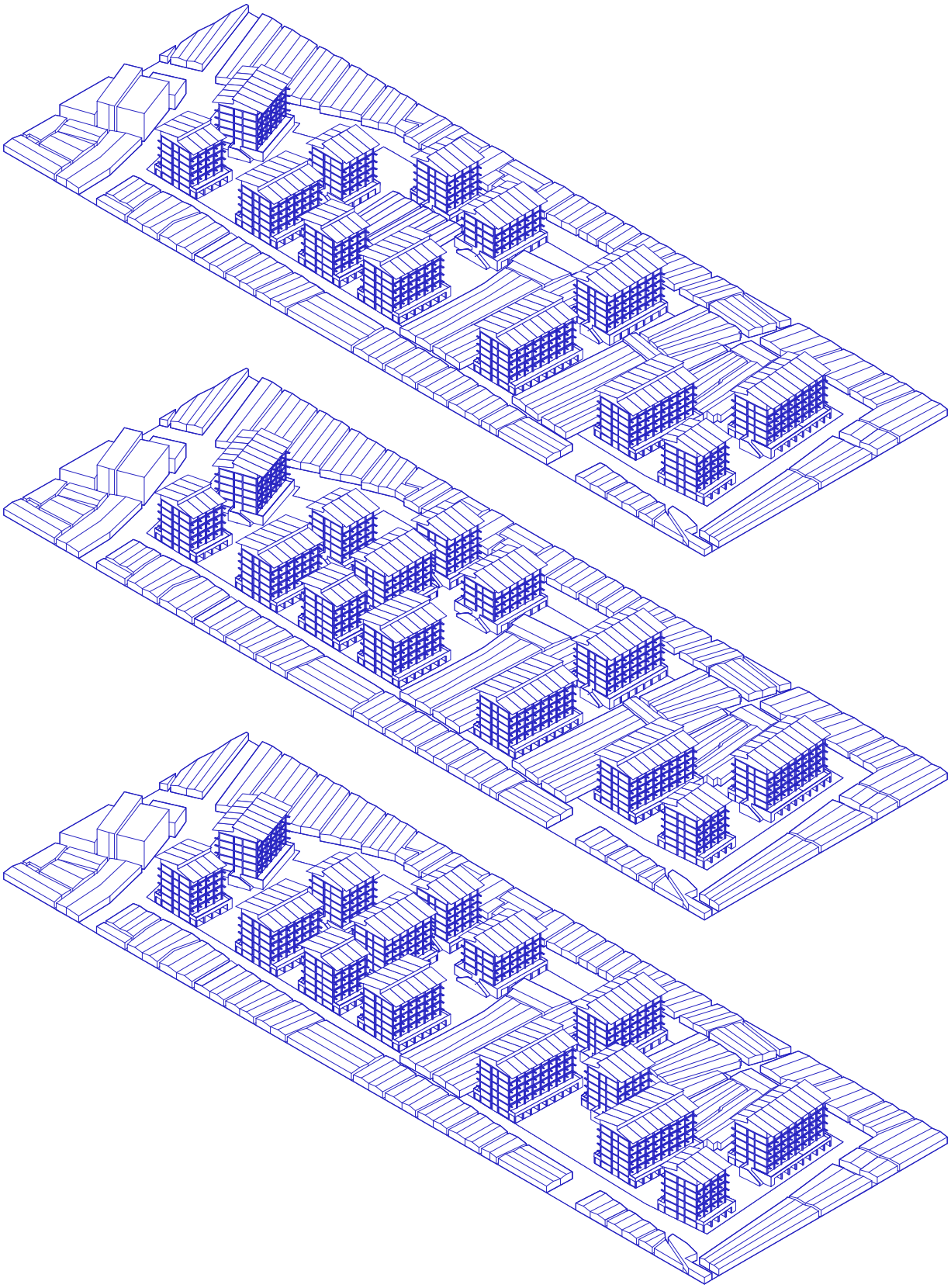
FASING



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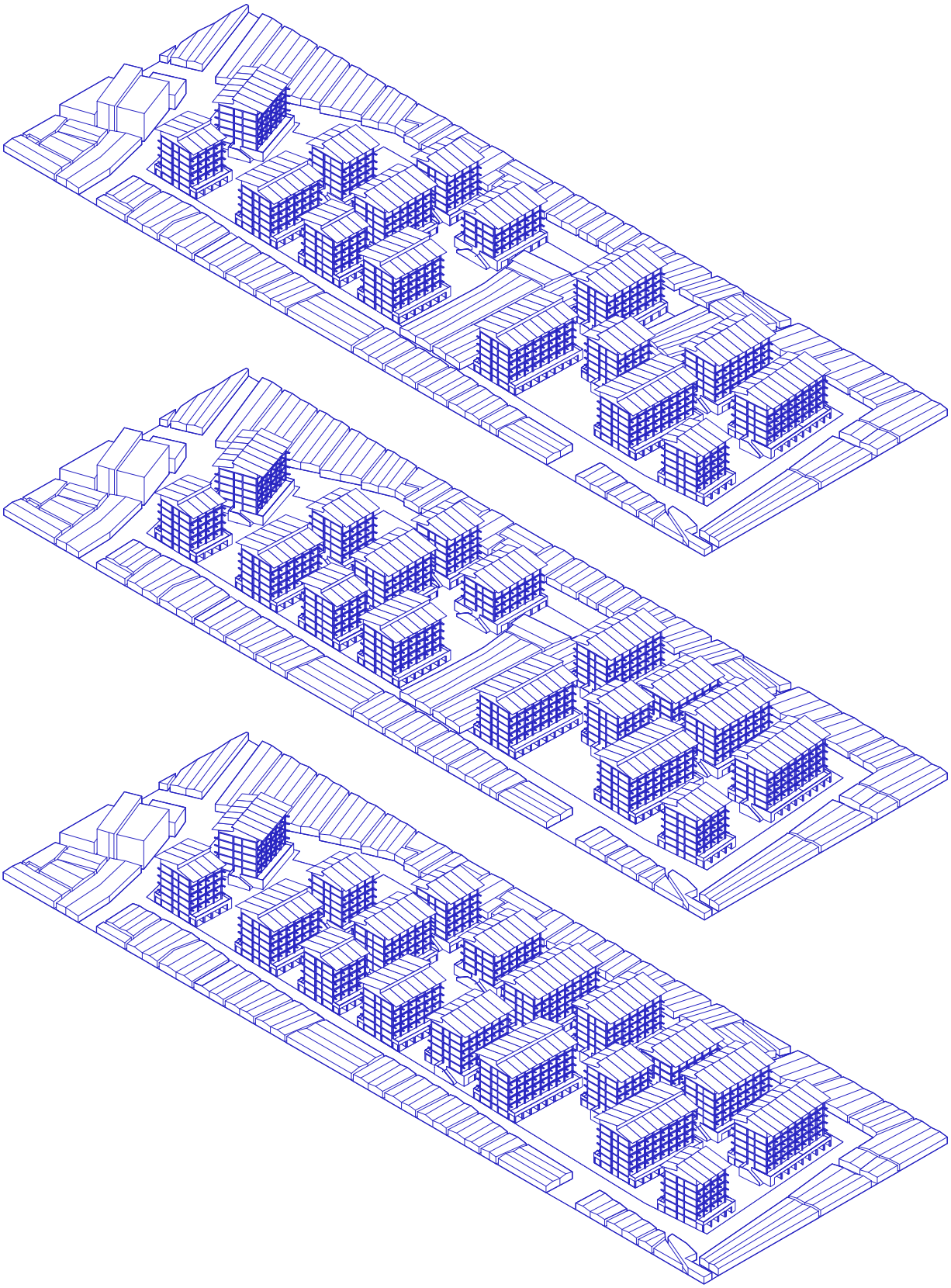
FASING



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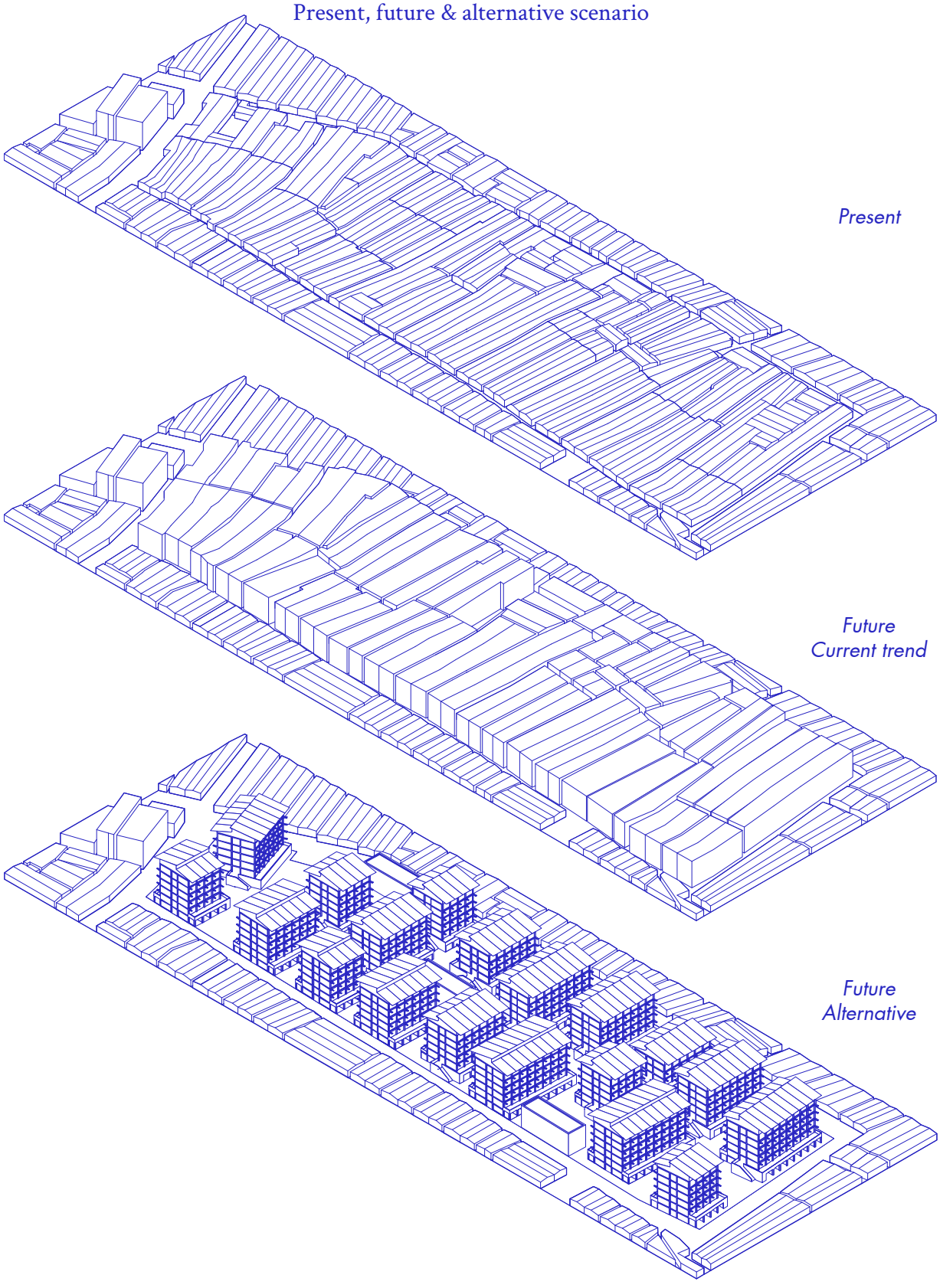
ANALYSIS
Present, future & alternative scenario



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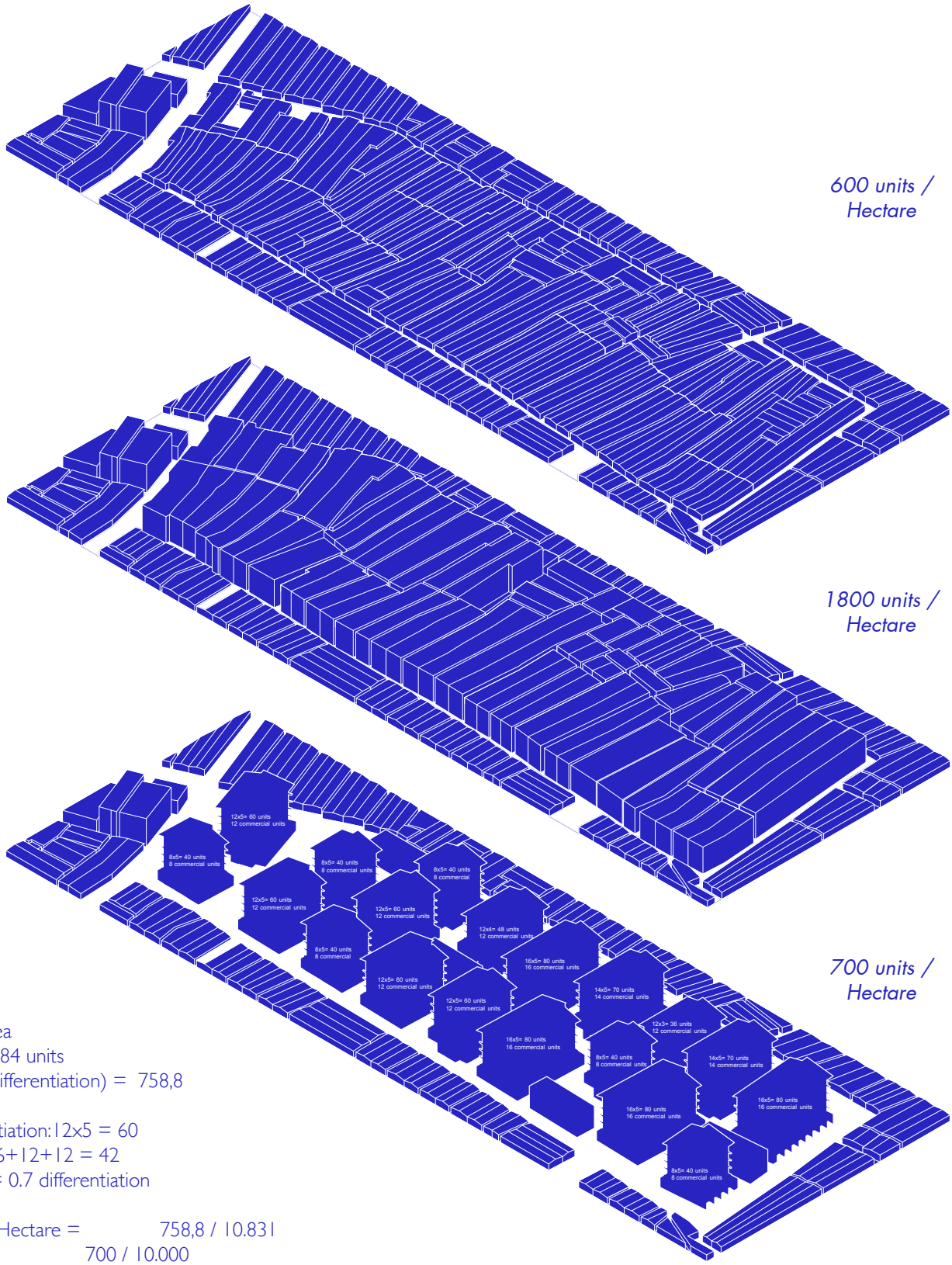
ANALYSIS
Built area



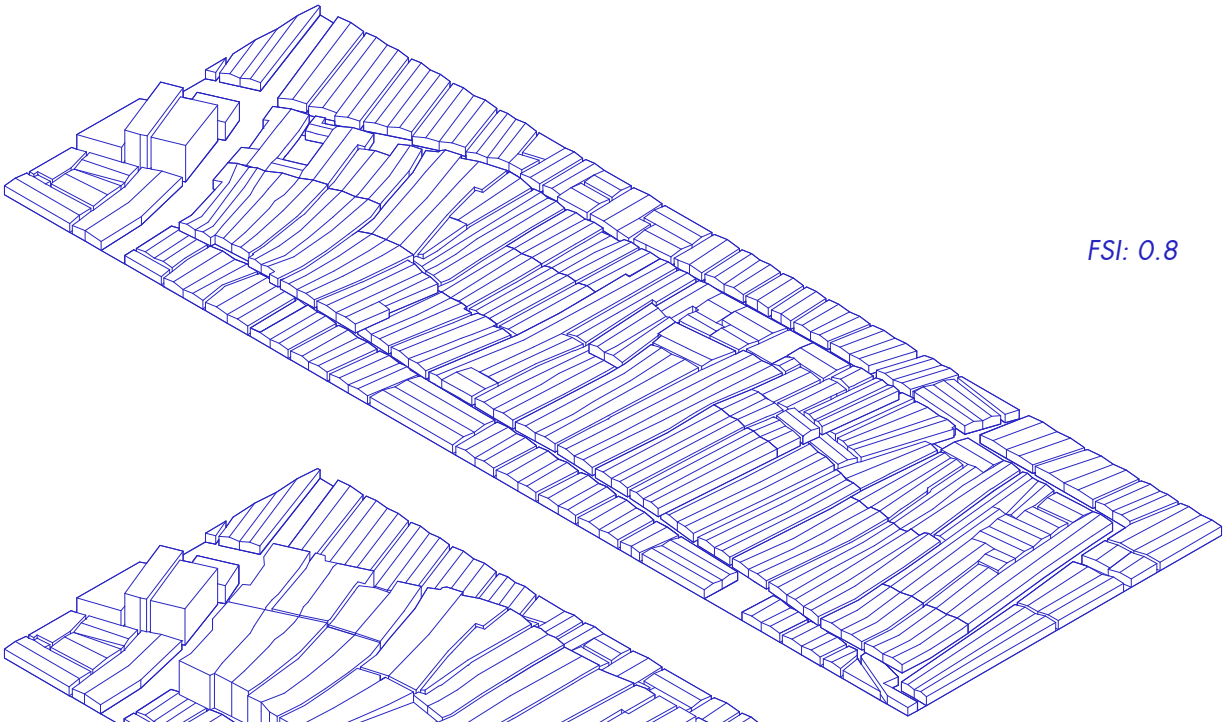
Built area
Max: 1084 units
x 0.7 (differentiation) = 758,8

differentiation: 12x5 = 60
12+0+6+12+12 = 42
42/60 = 0.7 differentiation

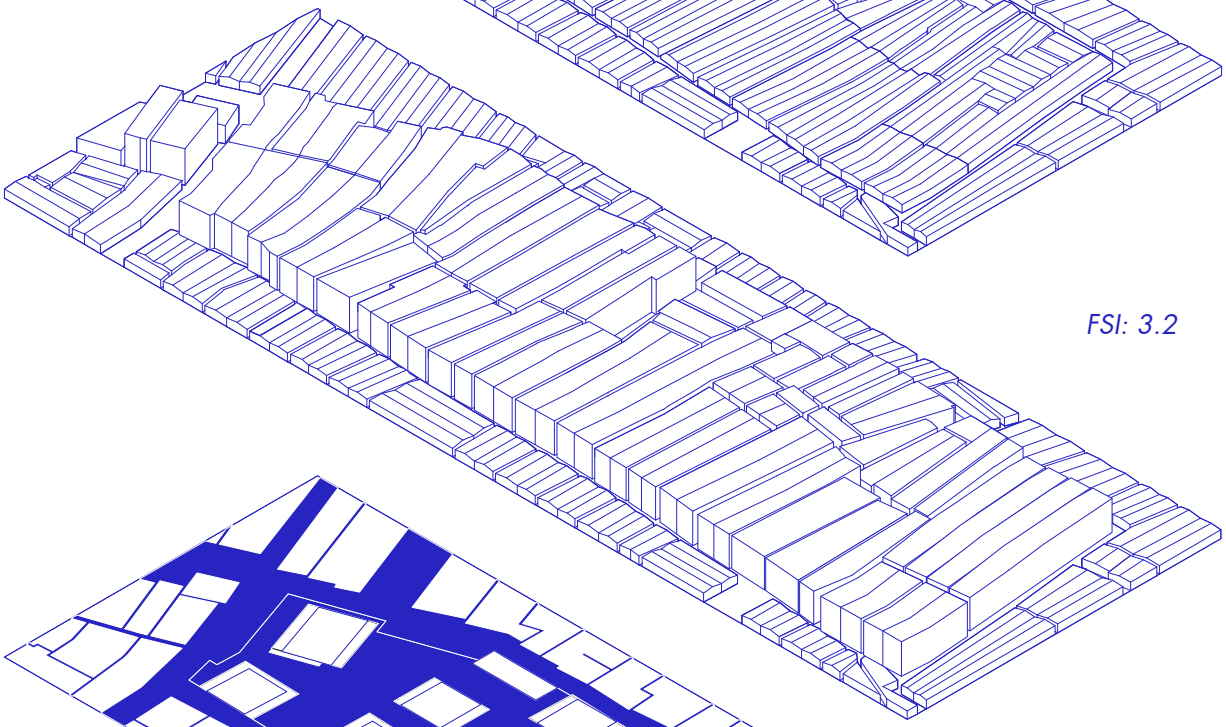
Units / Hectare = 758,8 / 10.831
700 / 10.000

*

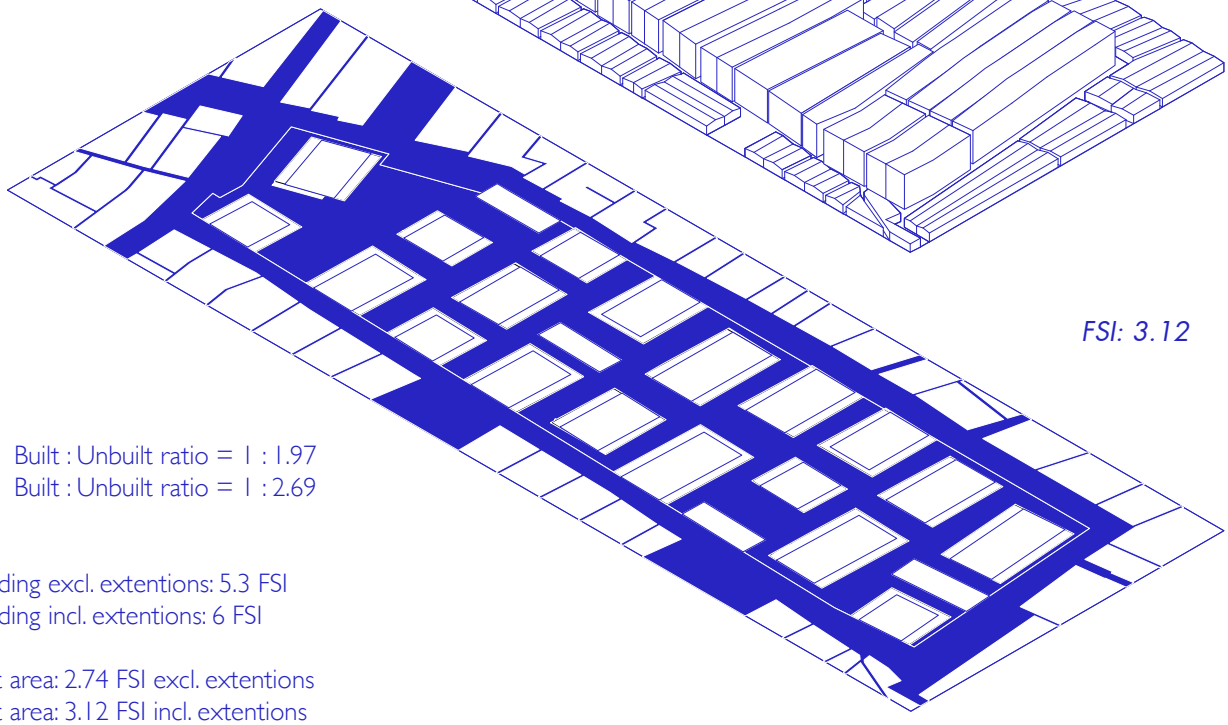
ANALYSIS
Un-built area



FSI: 0.8



FSI: 3.2



FSI: 3.12

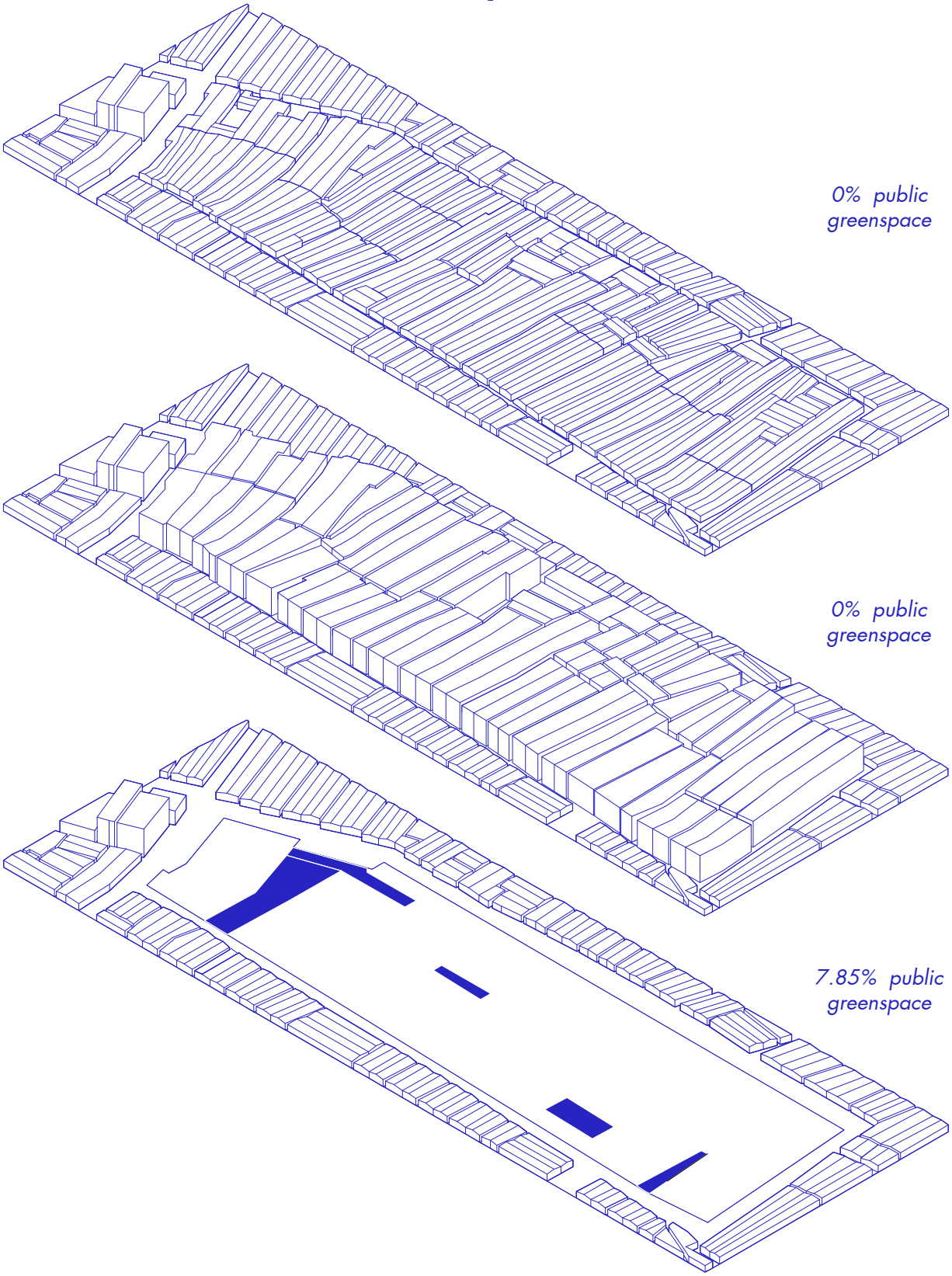
+0 Built : Unbuilt ratio = 1 : 1.97
>+0 Built : Unbuilt ratio = 1 : 2.69

FSI_building excl. extentions: 5.3 FSI
FSI_building incl. extentions: 6 FSI

FSI_Plot area: 2.74 FSI excl. extentions
FSI_Plot area: 3.12 FSI incl. extentions

*

ANALYSIS
Green spaces



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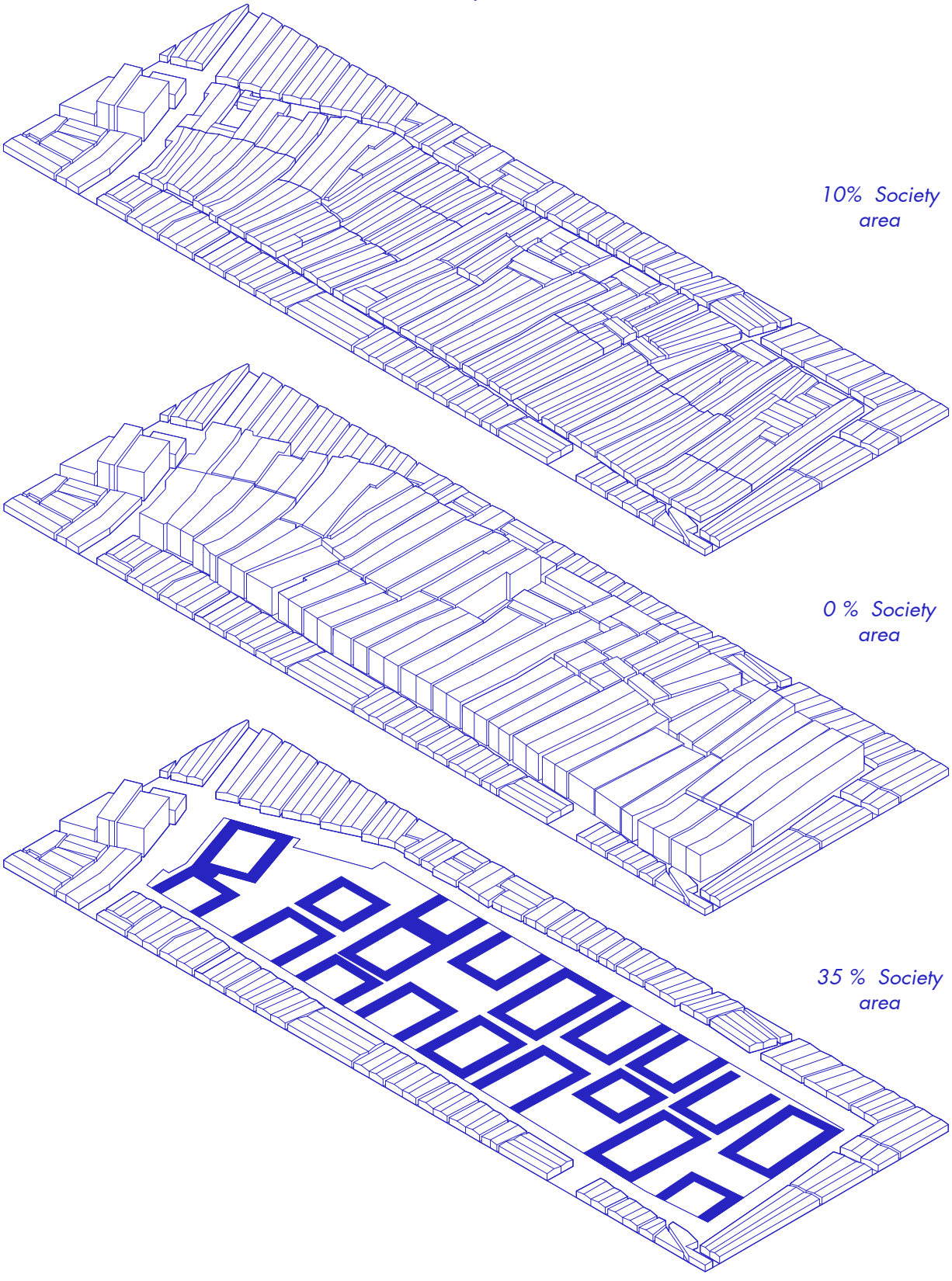
ANALYSIS
Society areas



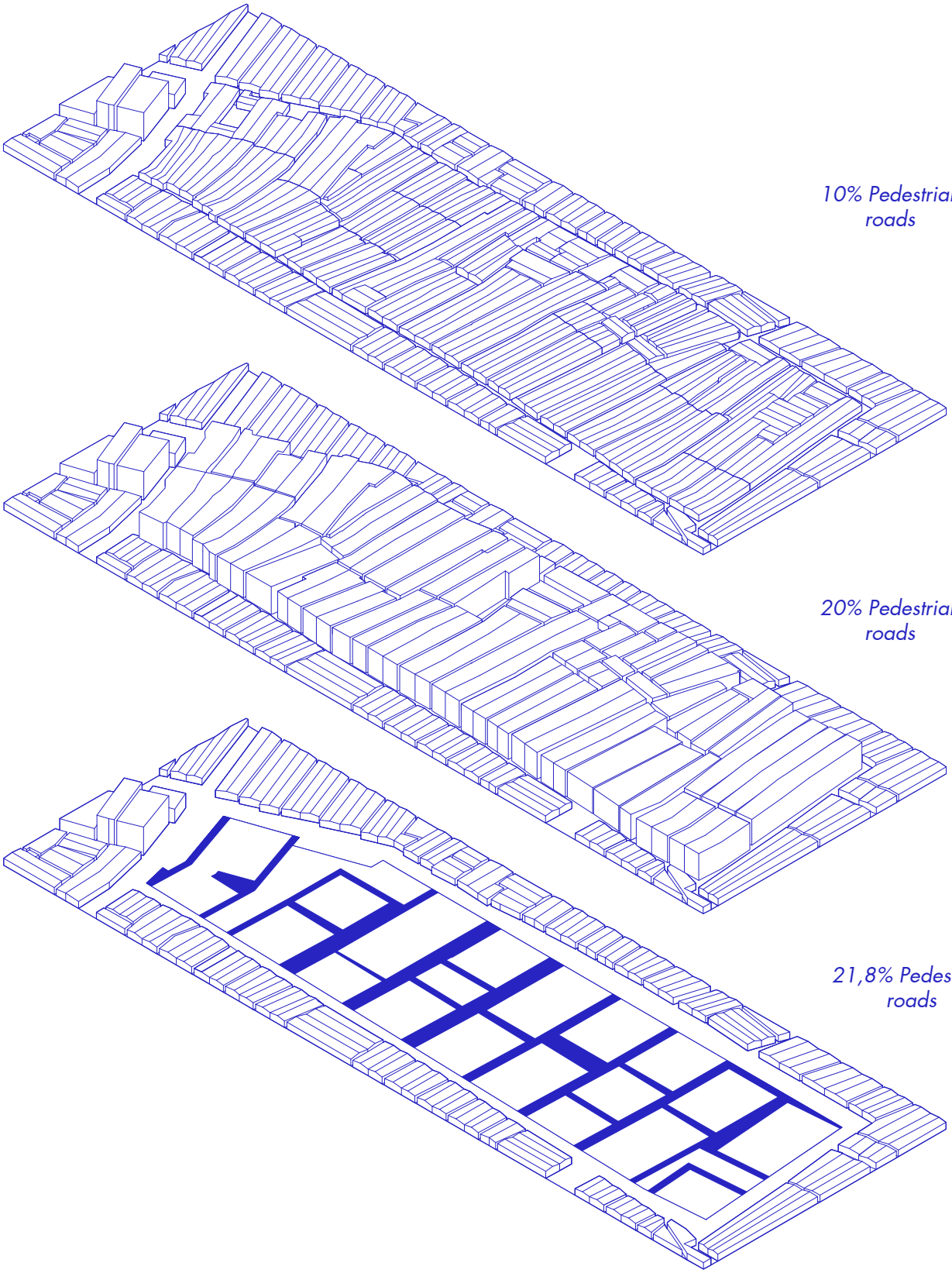
10% Society area

0 % Society area

35 % Society area

*

ANALYSIS
Pedestrian roads



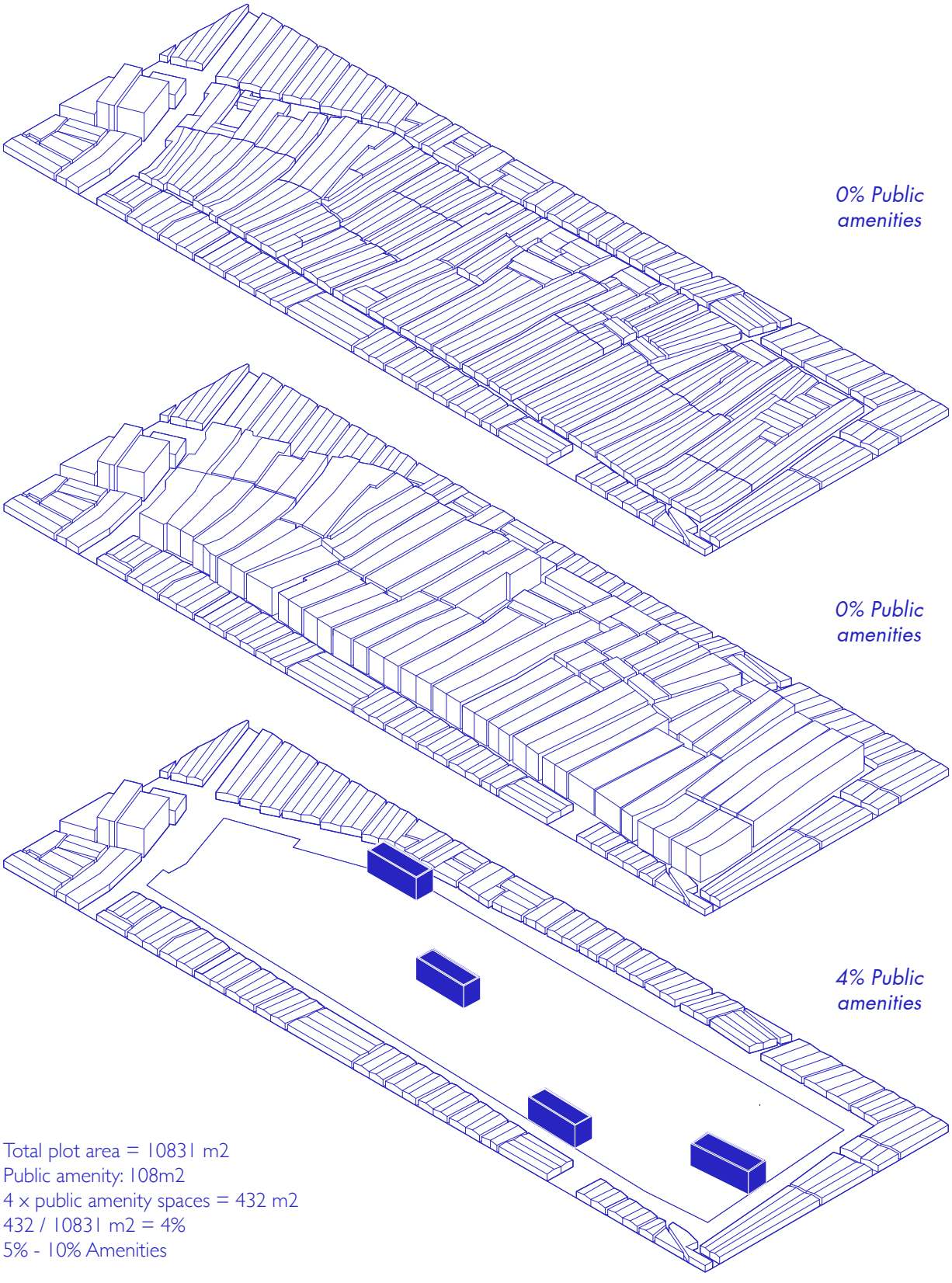
10% Pedestrian roads

20% Pedestrian roads

21,8% Pedestrian roads

*

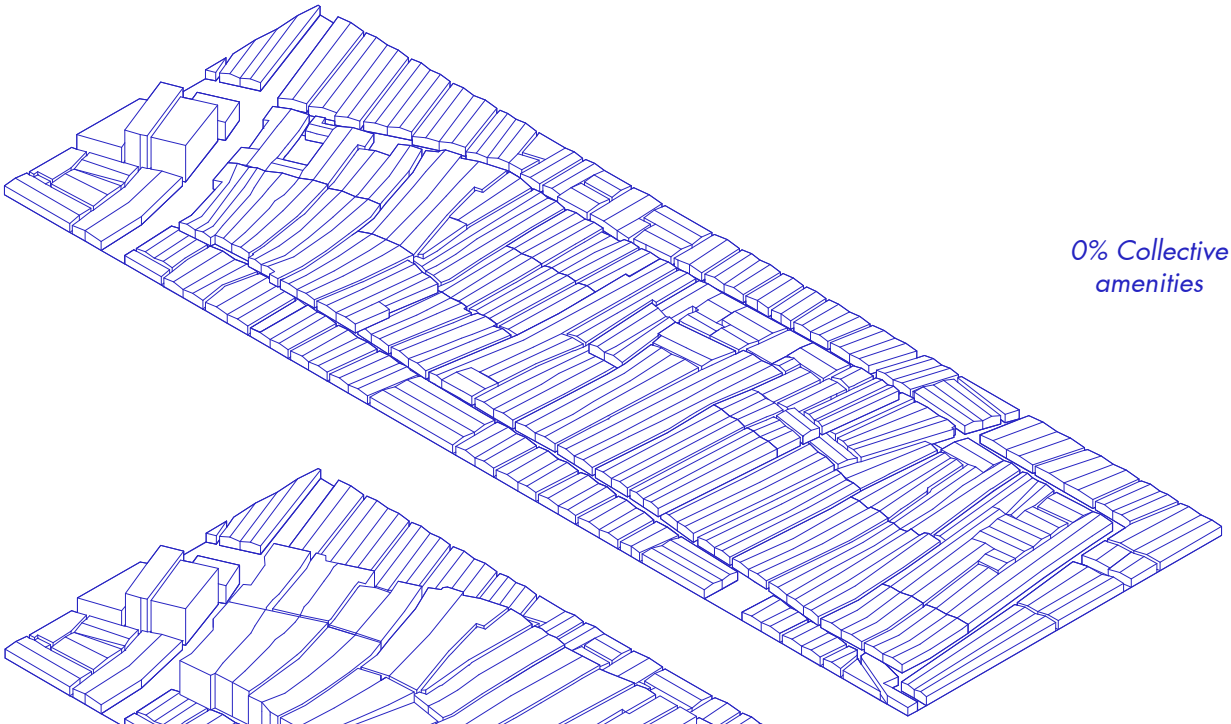
ANALYSIS
Public amenities



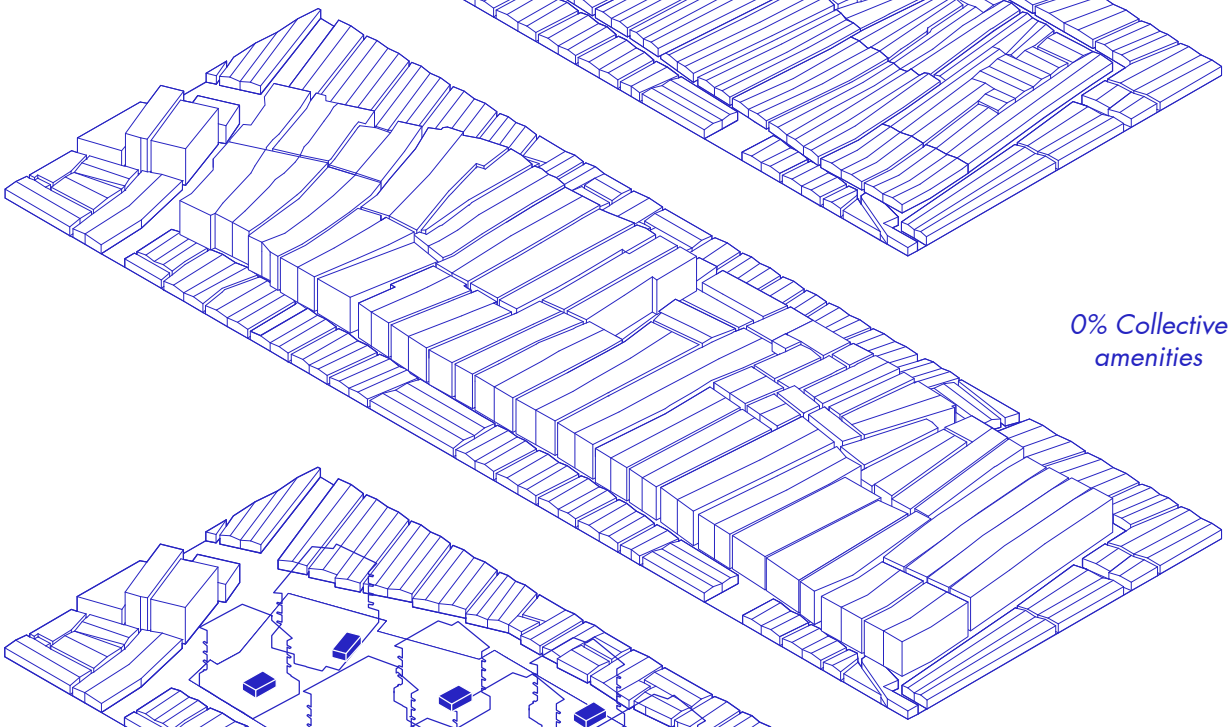
Total plot area = 10831 m2
Public amenity: 108m2
4 x public amenity spaces = 432 m2
432 / 10831 m2 = 4%
5% - 10% Amenities

*

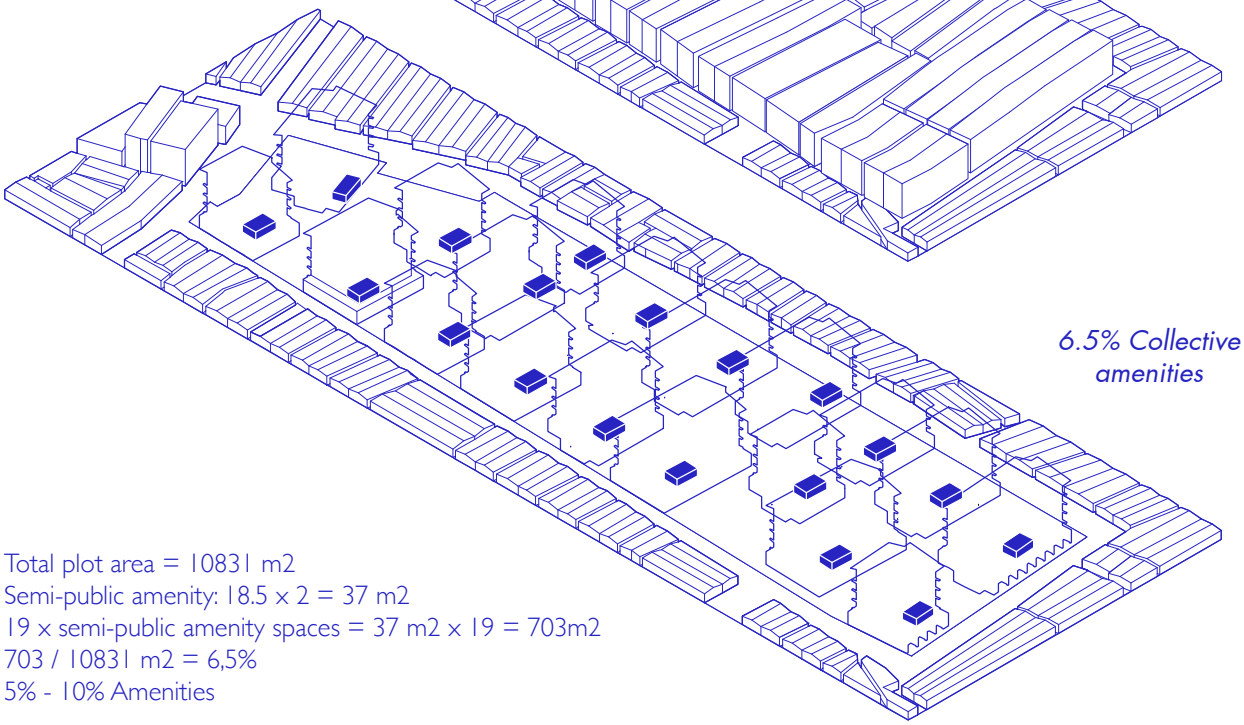
ANALYSIS
Collective amenities



0% Collective amenities



0% Collective amenities

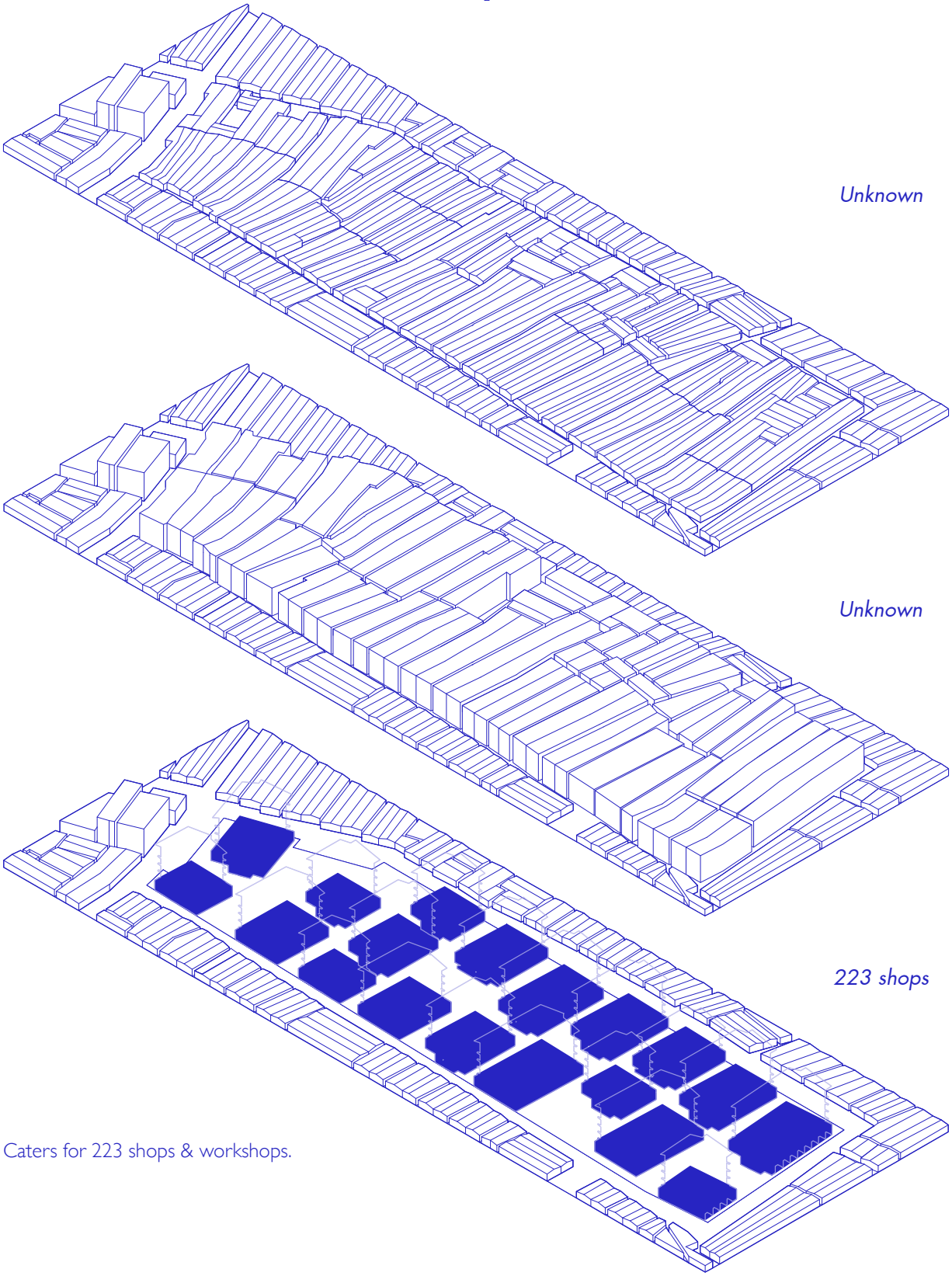


6.5% Collective amenities

Total plot area = 10831 m2
Semi-public amenity: 18.5 x 2 = 37 m2
19 x semi-public amenity spaces = 37 m2 x 19 = 703m2
703 / 10831 m2 = 6,5%
5% - 10% Amenities

*

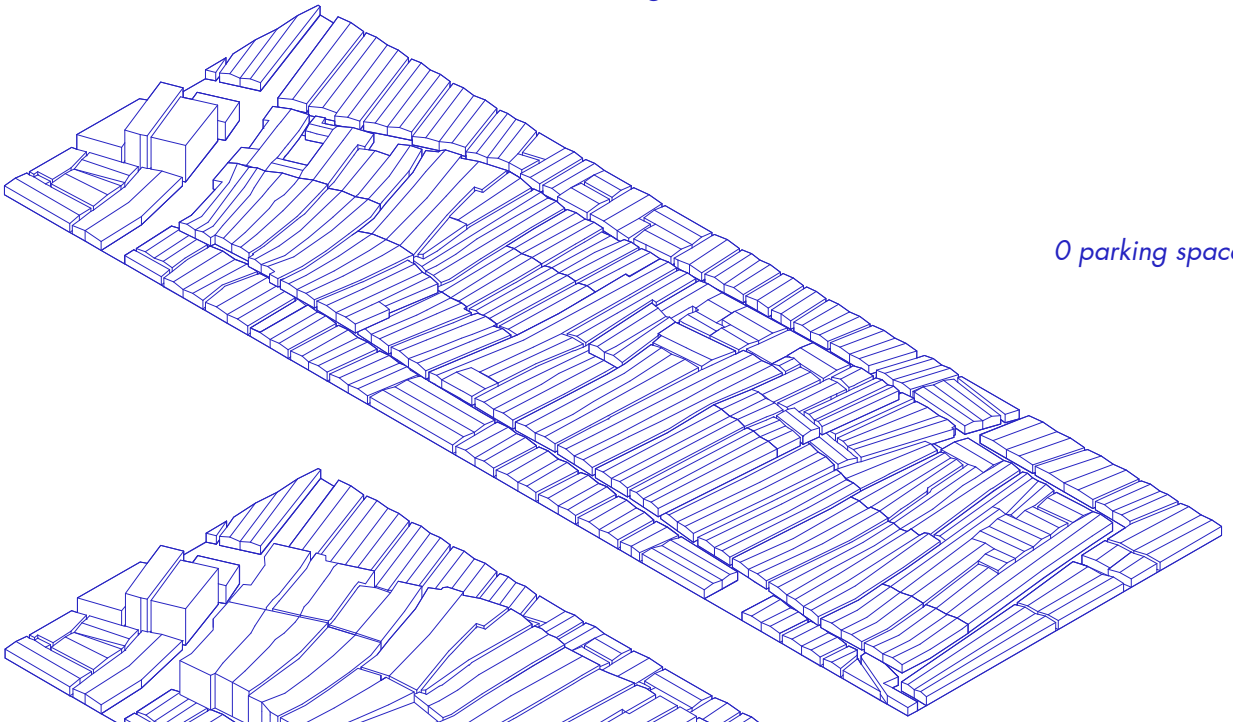
ANALYSIS
Shops



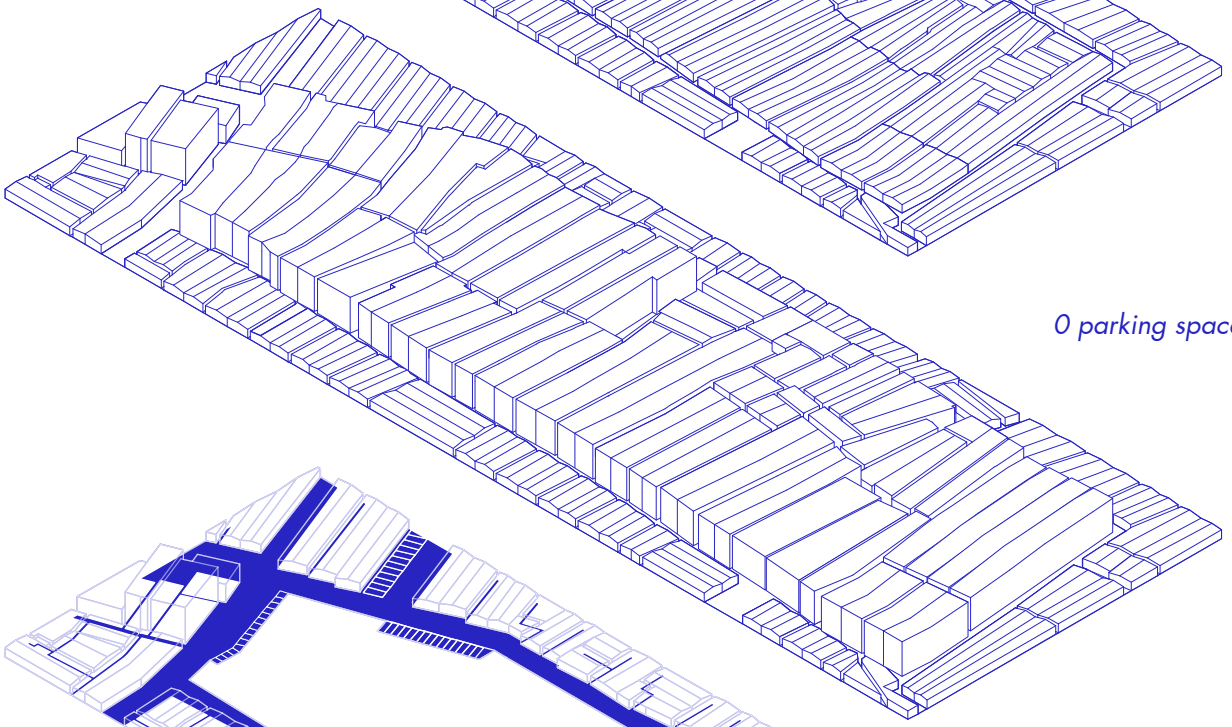
Caters for 223 shops & workshops.

*

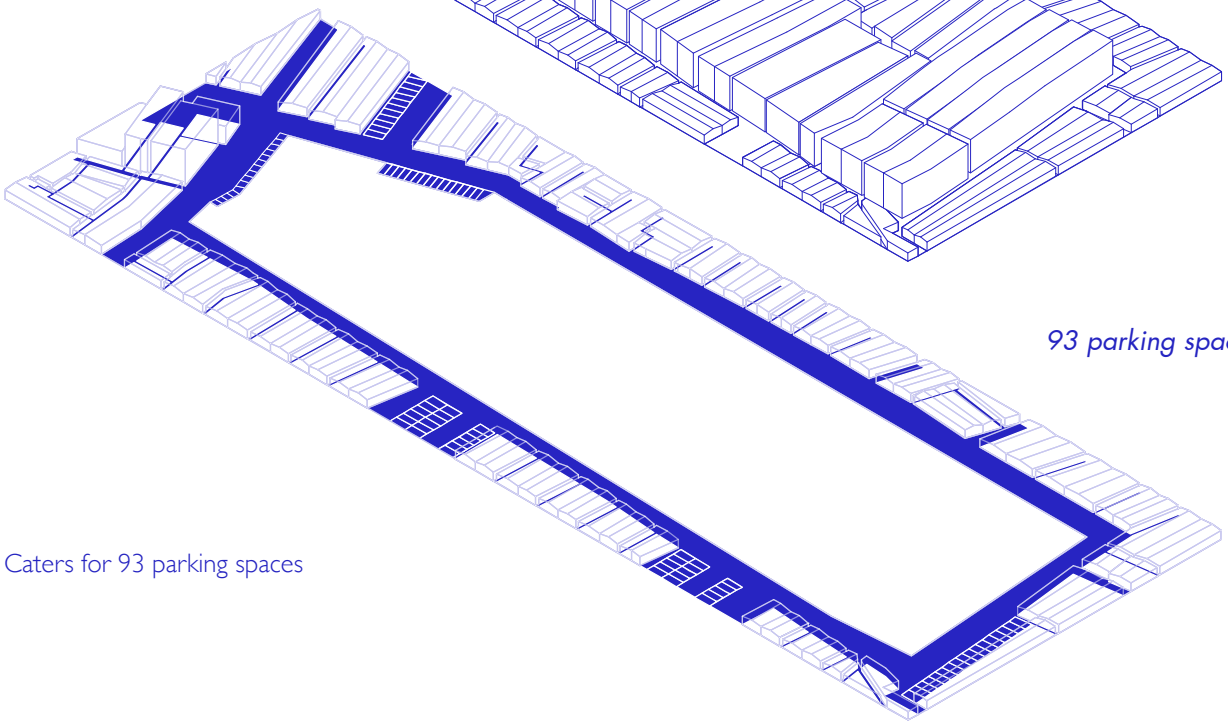
ANALYSIS
Parking



0 parking spaces



0 parking spaces



93 parking spaces

Caters for 93 parking spaces

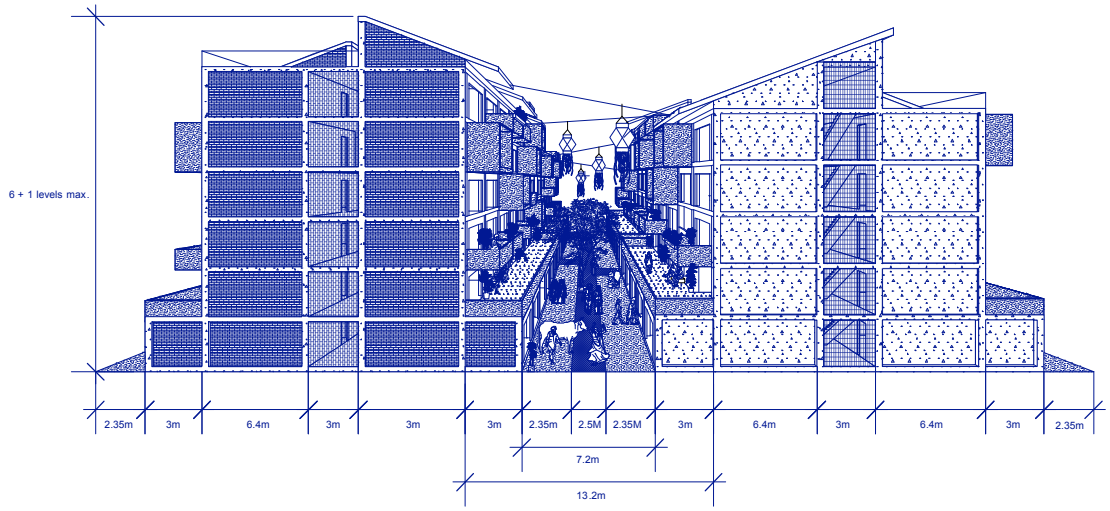
*

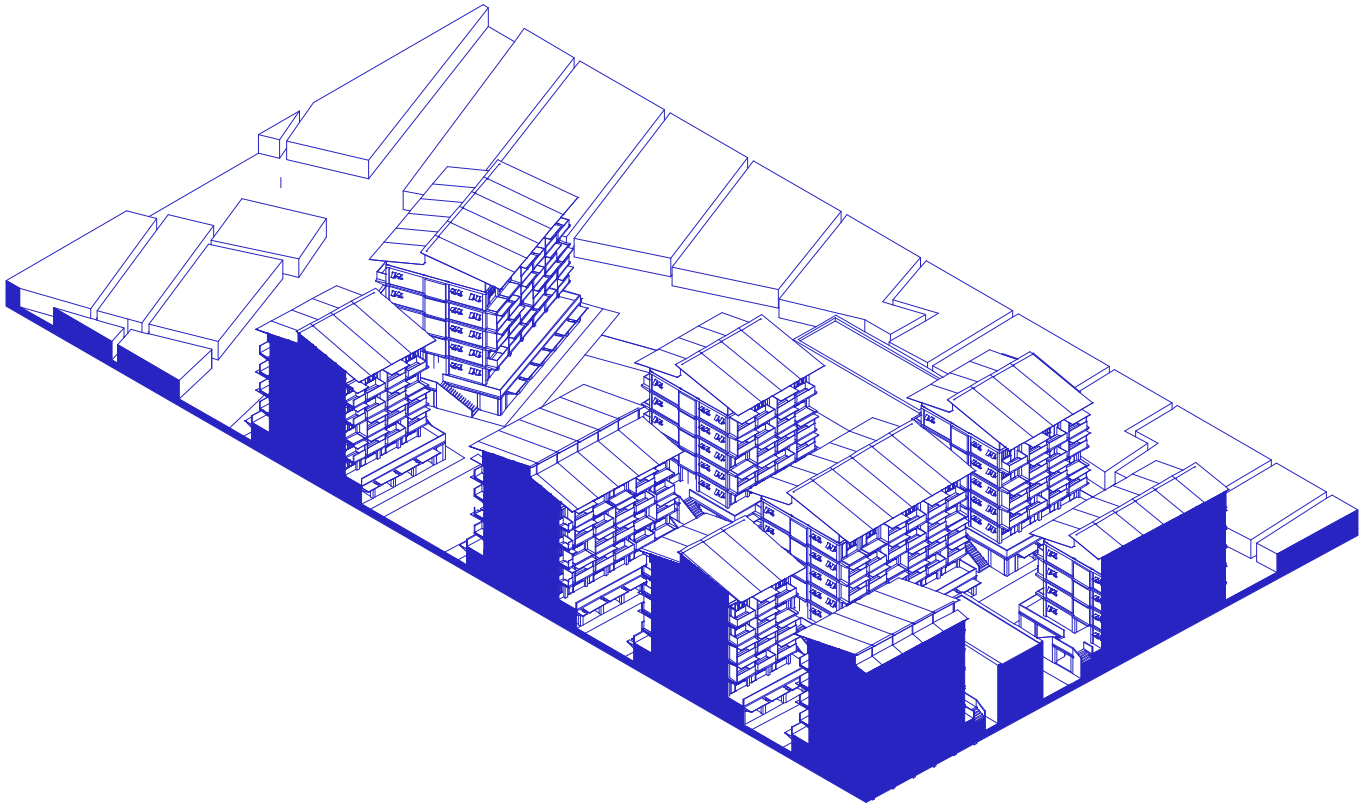
ANALYSIS
Infrastructure

This drawing shows the proximity to the main artery, bus stop and train station which is a hub to the city centre of Mumbai, making the location valuable for Mumbai's (new) inhabitants.

*

DESIGN STRATEGY

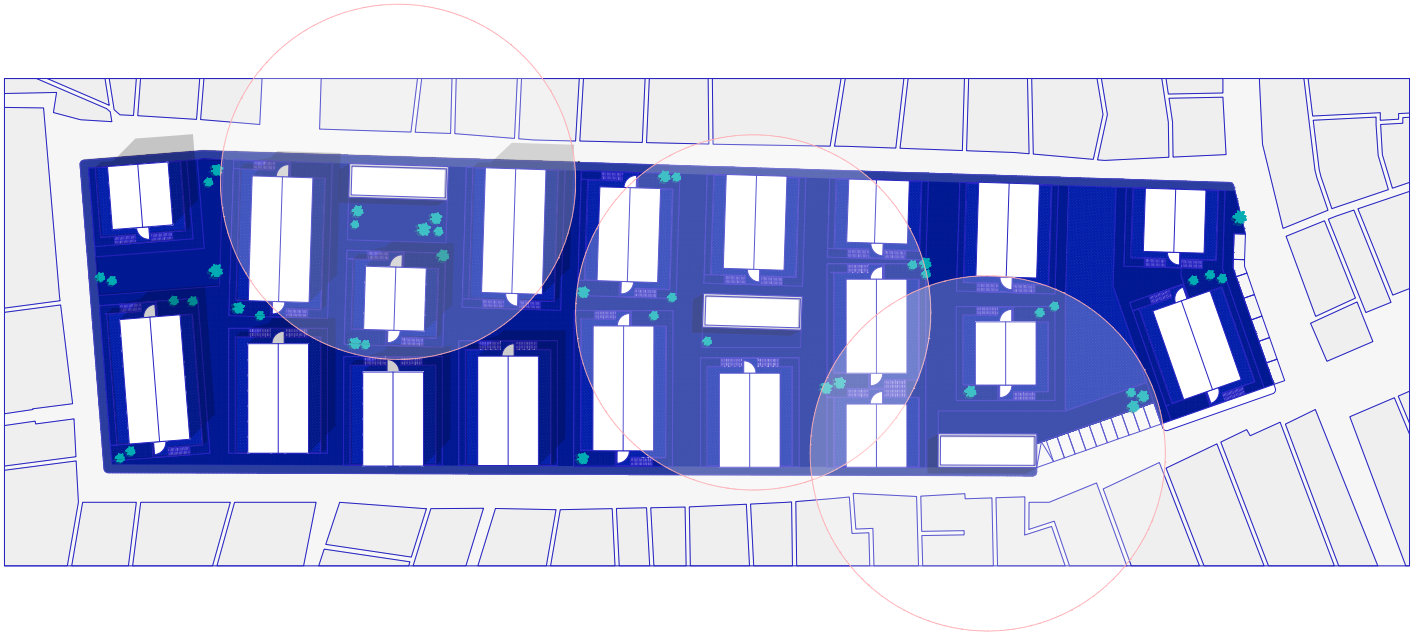




As a final result this strategy creates a dense but liveable unity. The drawings above show that more open space is created between the buildings. This spaces are needed once higher buildings are developed, like in this case. The streets are wider and follow the same path as the existing tissue, only transformed. By accommodating all the inhabitants is multiple level buildings public is space is created., space which is very scarce in these areas.

*

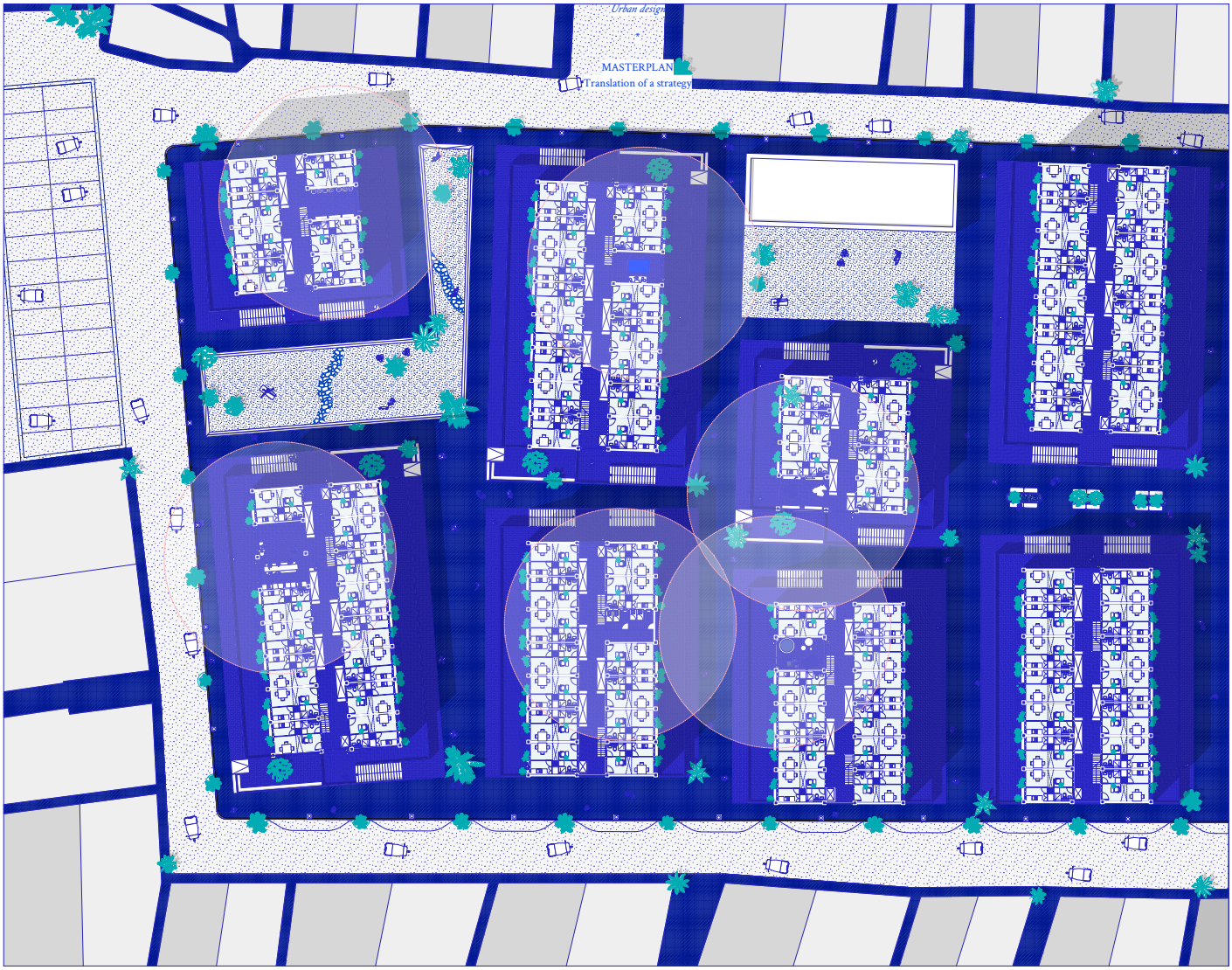
MASTERPLAN



In the masterplan you find the roads to be wider than in the former urban tissue. Open spaces between the new developments are created because the rest of the dwellers have moved to one of the new buildings leaving space available for potential recreational use. These areas also accommodate amenities for the people of this area. Amenities could be schooling, public buildings, or health safety buildings.

In the masterplan there is the same transition of space as with the former baithi chawls. You will find the pedestrian alleys which are filled with commercial activity, the secondary roads are accessible by smaller vehicles and have bigger shops. The main road on the right is connecting the area with the rest of the city: here you will find transport hubs, busses and bigger workshops (ghalas).

BLOCKPLAN



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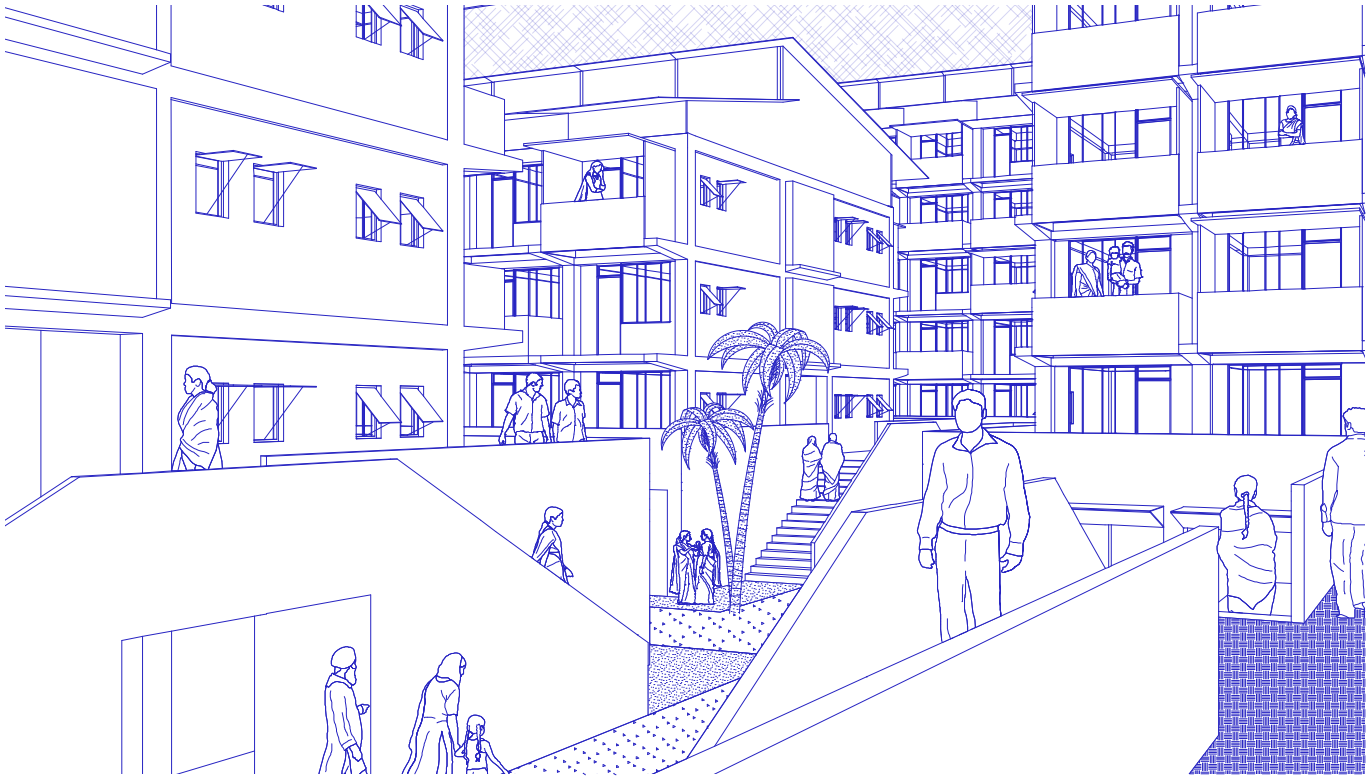
IMPRESSIONS

*

IMPRESSIONS



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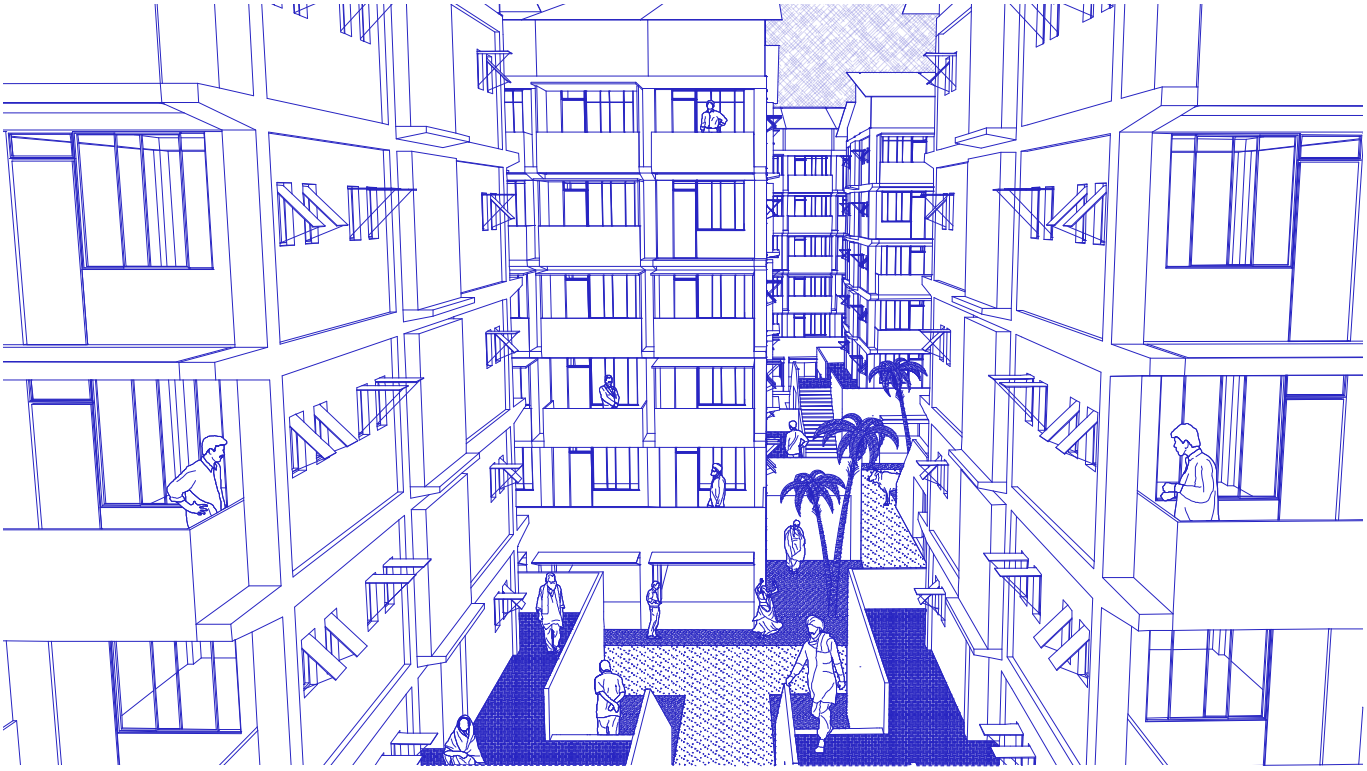
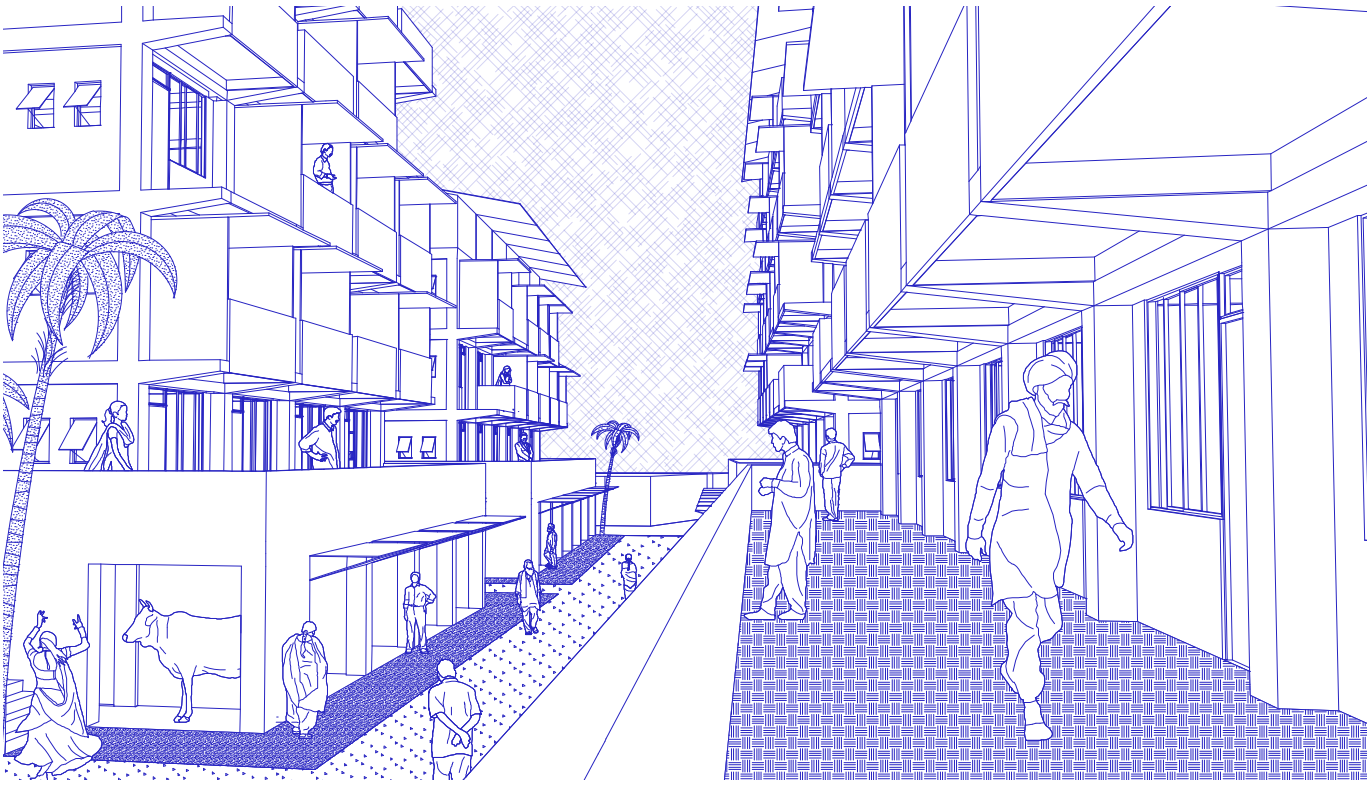
IMPRESSIONS



Urban design

*

IMPRESSIONS



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DEVELOPMENT STRATEGY

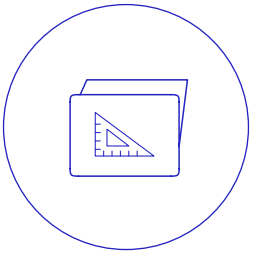
Co-housing scheme

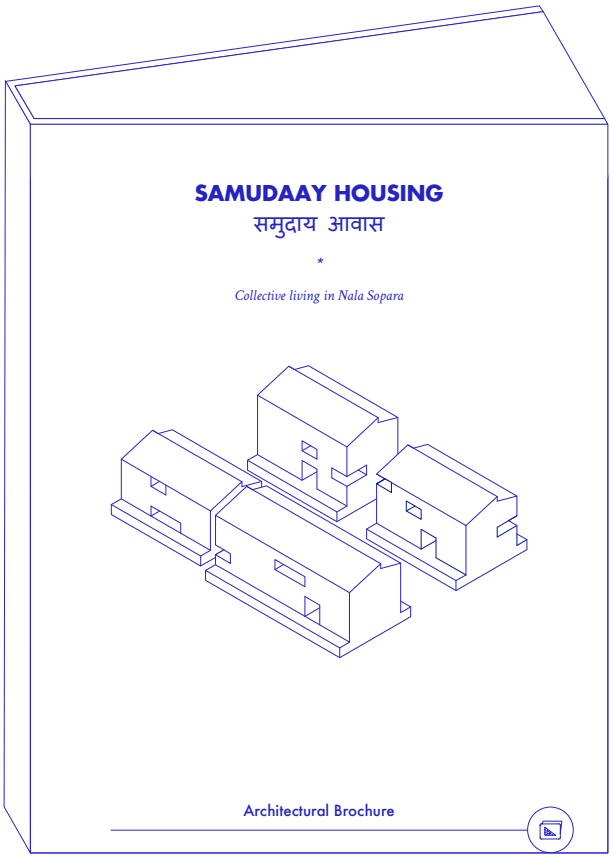
An advantage of introducing the housing society (managed by the community) as a stakeholder is that it will contribute to the solidarity and responsibility within the commune. Another benefit will be the profit that will now flow to the maintenance and development of the housing block and won't end up as revenue for a commercial enterprise.

*

DEVELOPMENT STRATEGY

Design toolkit



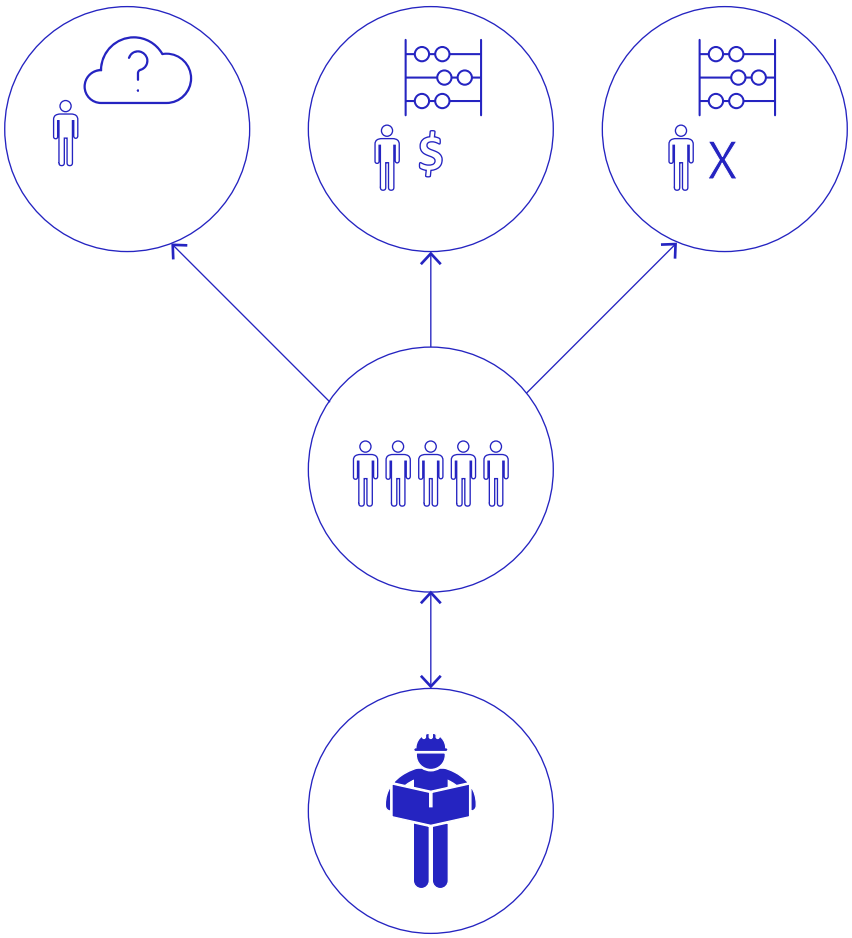


This toolkit could function as a helpful portfolio for the architect who got appointed to design the co-housing project for the dwellers in question. It gives an overview of the possibilities and available decisions and is meant to make the design process more uniform and, efficient, fast and reproducible.

*

DEVELOPMENT STRATEGY

Mapping & data collection

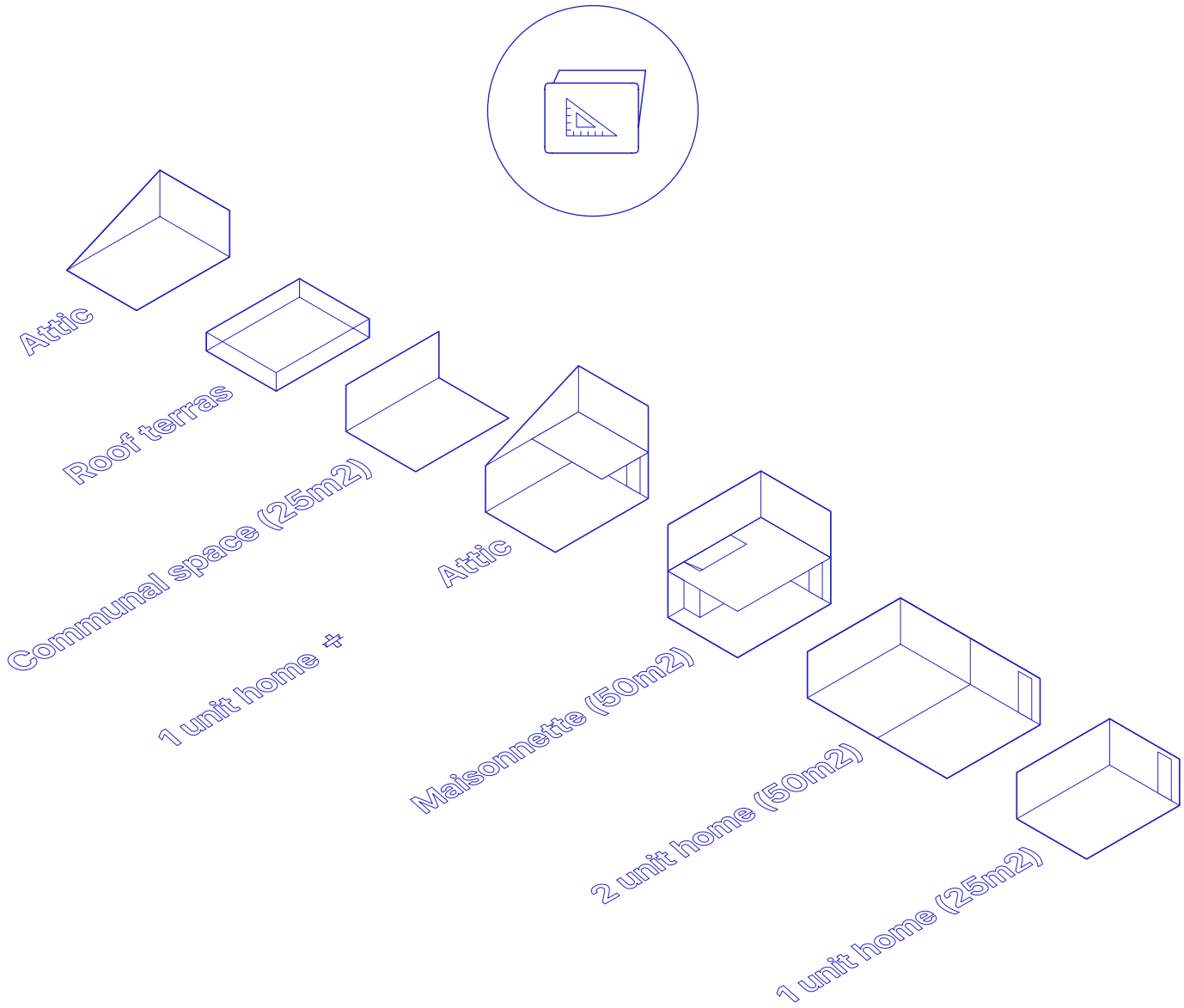


With the open source toolkit available the architect can now make a data collection and mapping of the demands and wishes (1) of the upcoming dwellers, an overview of the financial status (2) and the number of people and families who are part of the newly formed housing society.

*

DEVELOPMENT STRATEGY

Assessment

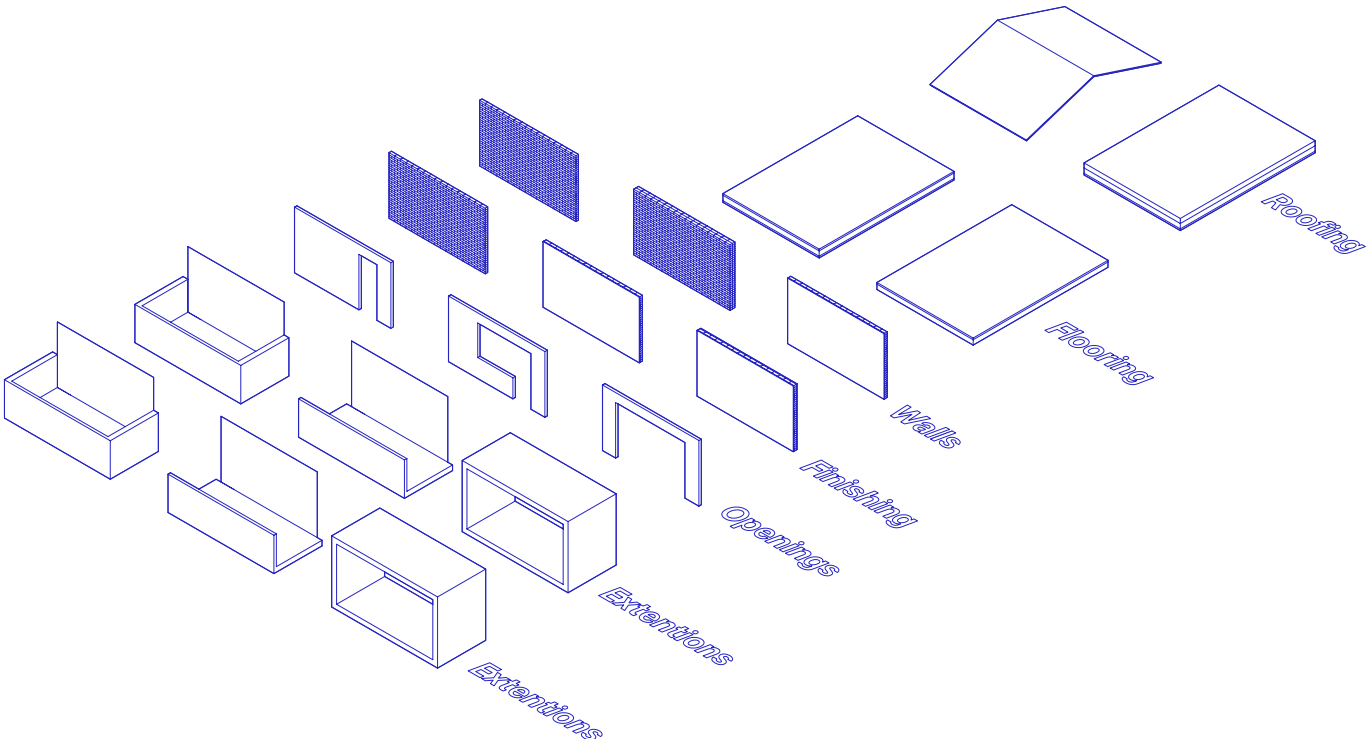


From this data collection and mapping the architect creates an overview by making an assessment of the number of different typologies needed.

*

DEVELOPMENT STRATEGY

Assessment

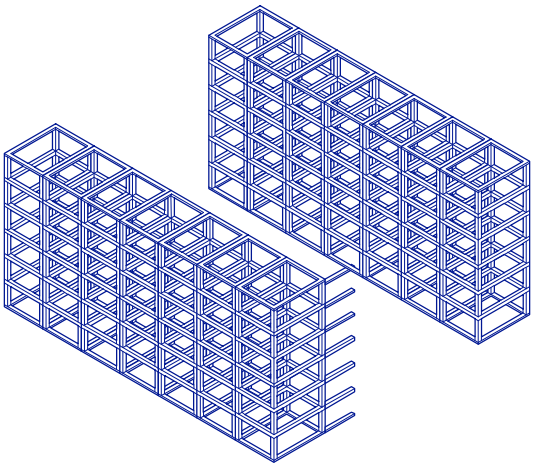


From this data collection and mapping the architect creates an overview by making an assessment of the number of different materials needed.

*

DEVELOPMENT STRATEGY

Construction grid

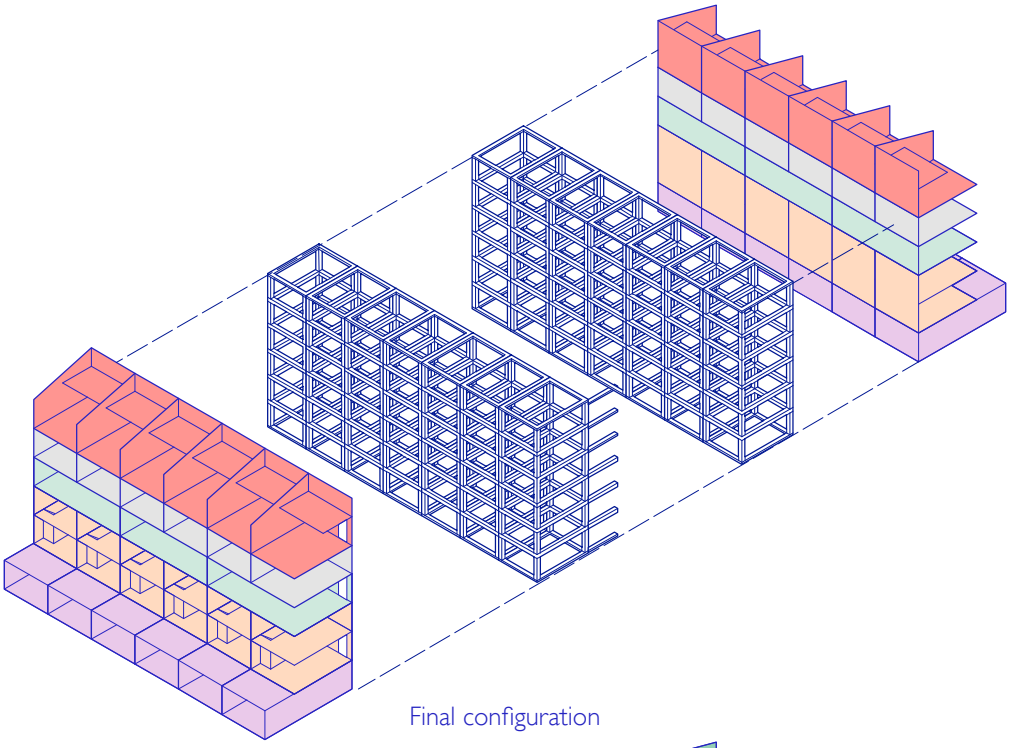


From this data collection and mapping the architect creates an overview by making an assessment. After this assessment the architect can design the construction of the building that corresponds to the wishes and needs of the housing society and to the number of typologies needed.

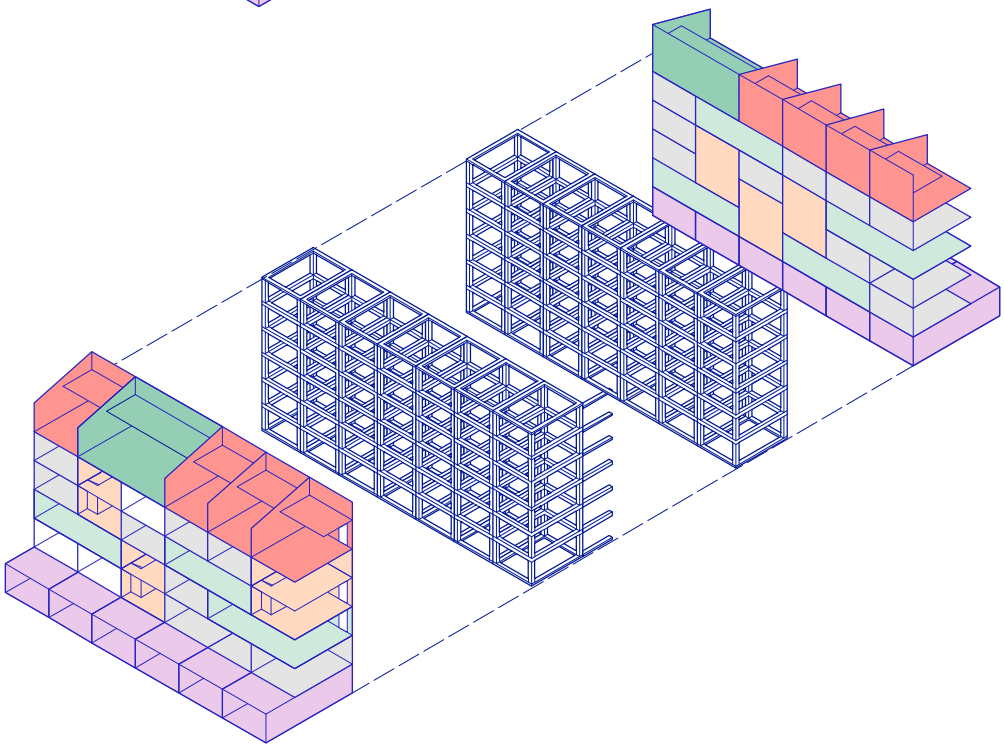
*

DEVELOPMENT STRATEGY

Configuration



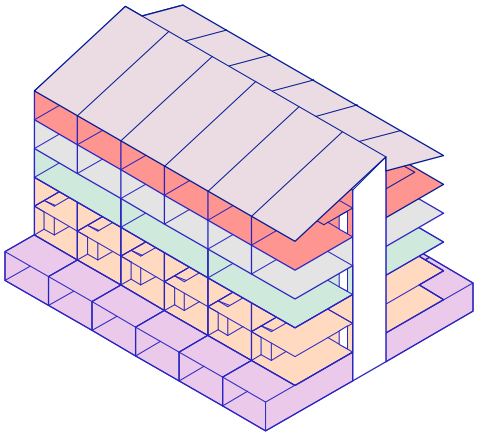
Final configuration



Various configuration alternatives possible

*

DEVELOPMENT STRATEGY
Configuration



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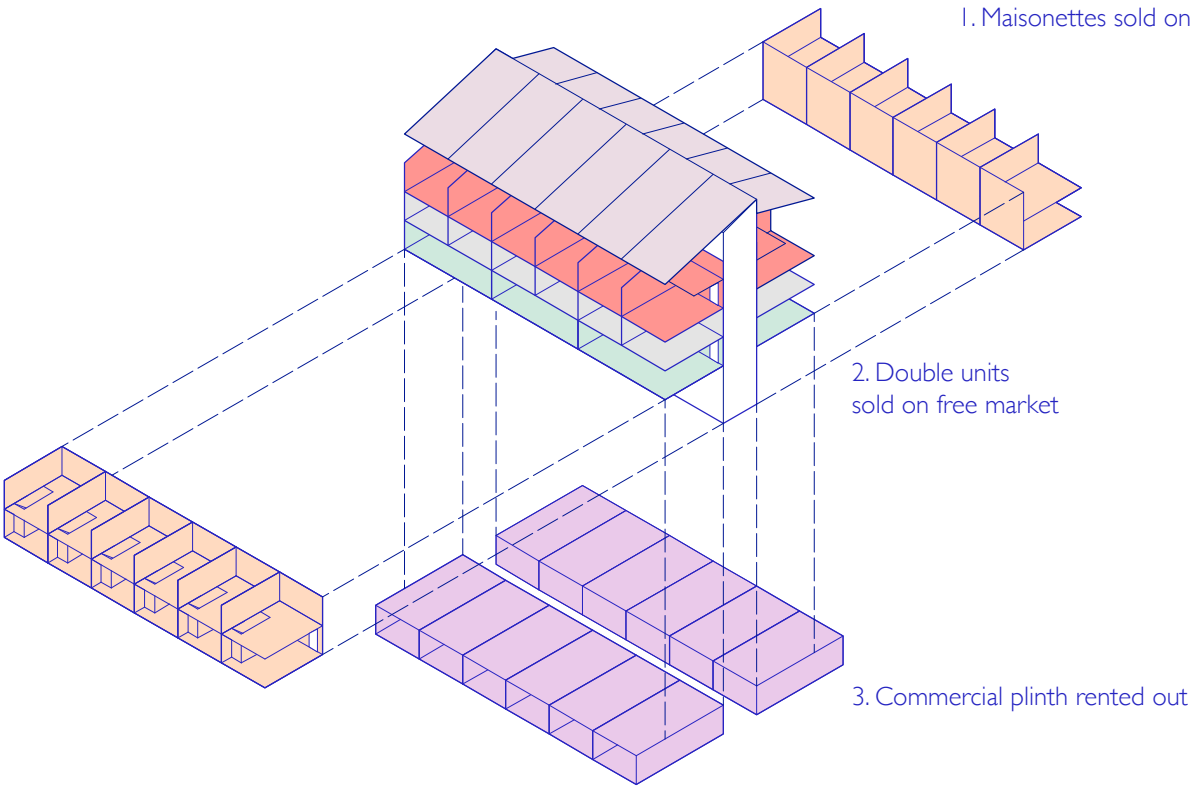
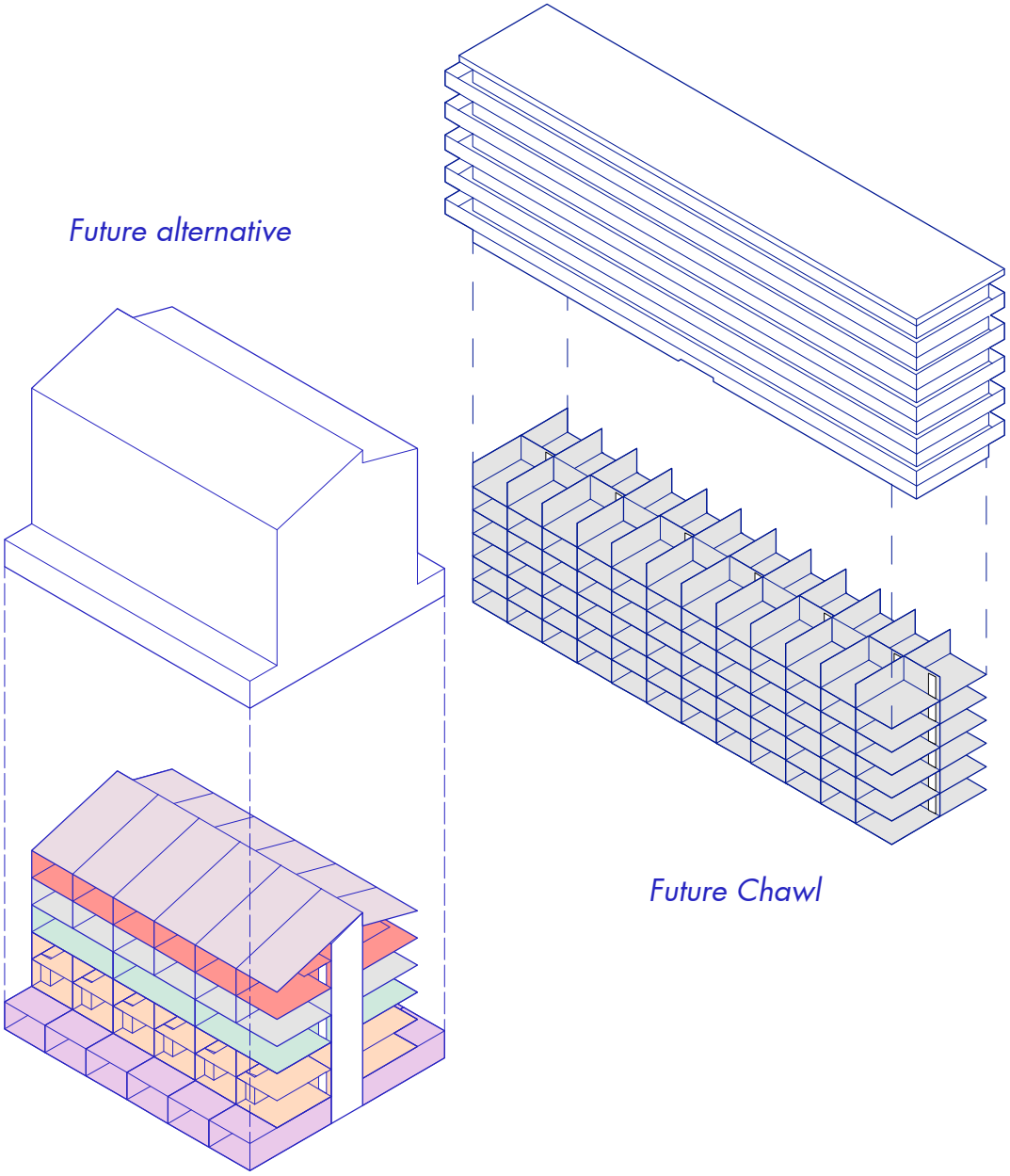
DESIGN STRATEGY
Cash recovery



The cash recovery of the investment by the NGO can be earned back via a couple of channels: the plinth will be rented out to businesses. The bigger apartments will be sold on the higher segments of the market.

*

DESIGN STRATEGY
Differentiated architecture



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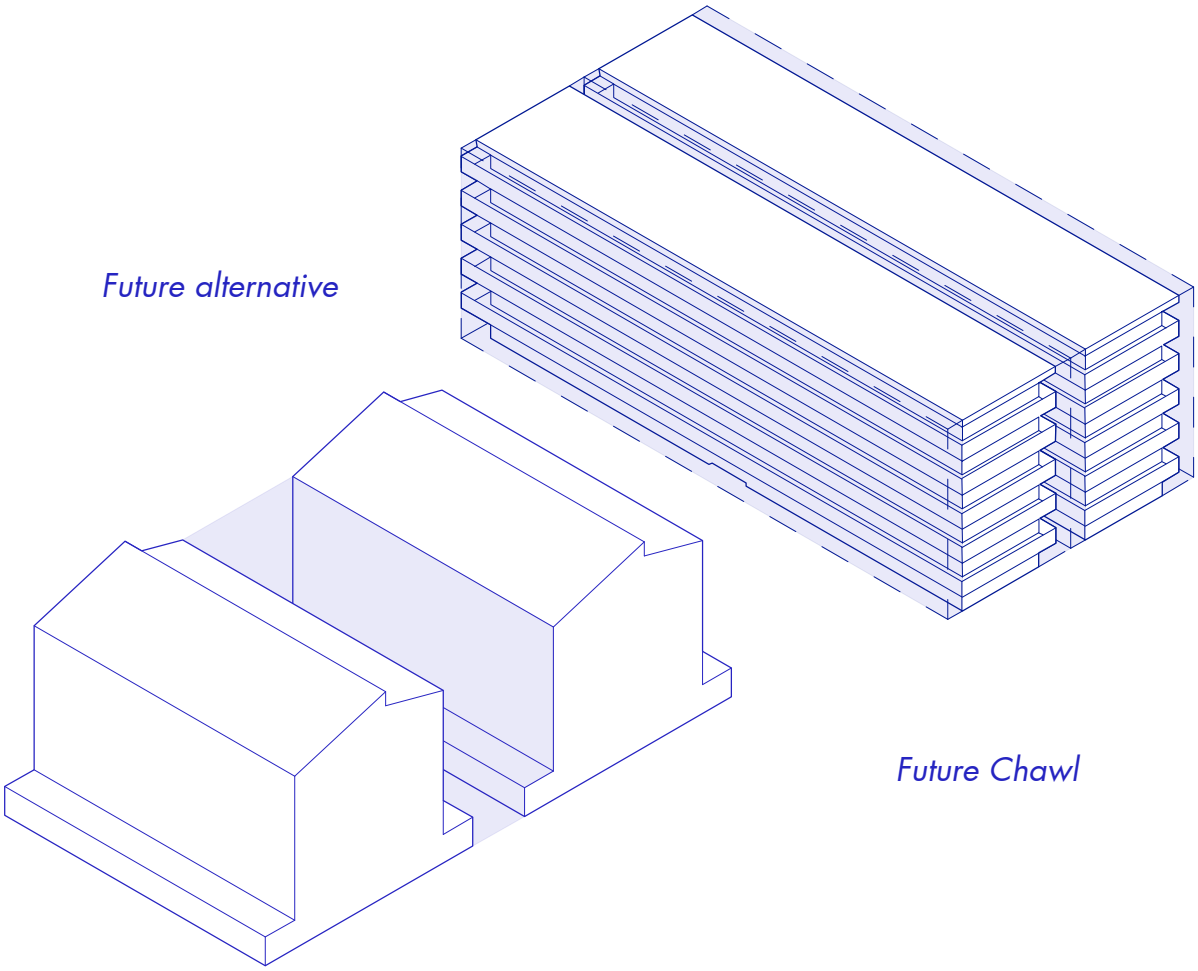
DESIGN STRATEGY

Buffer zones



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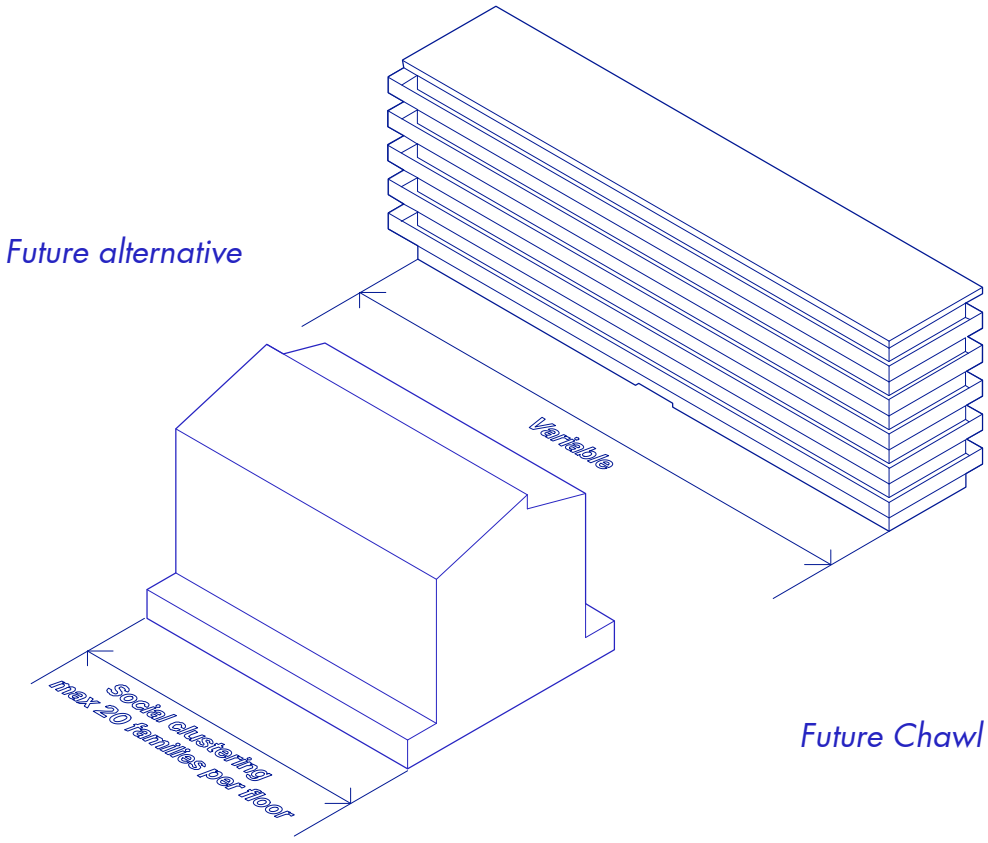
DESIGN STRATEGY
Social clustering



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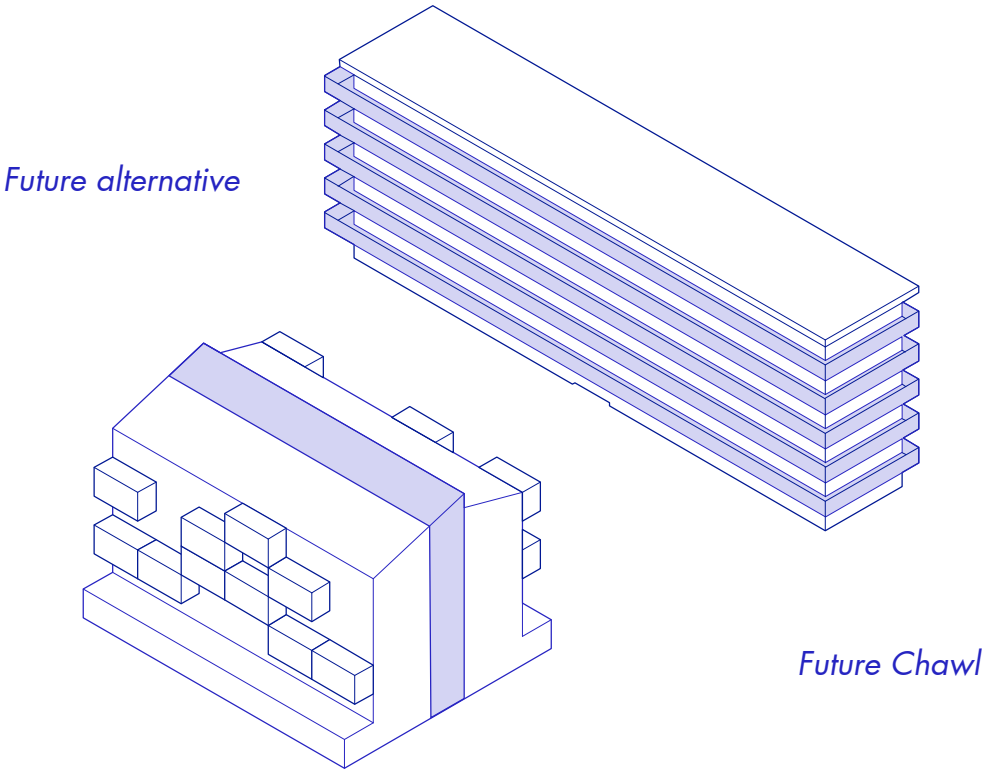
DESIGN STRATEGY
Incrementality



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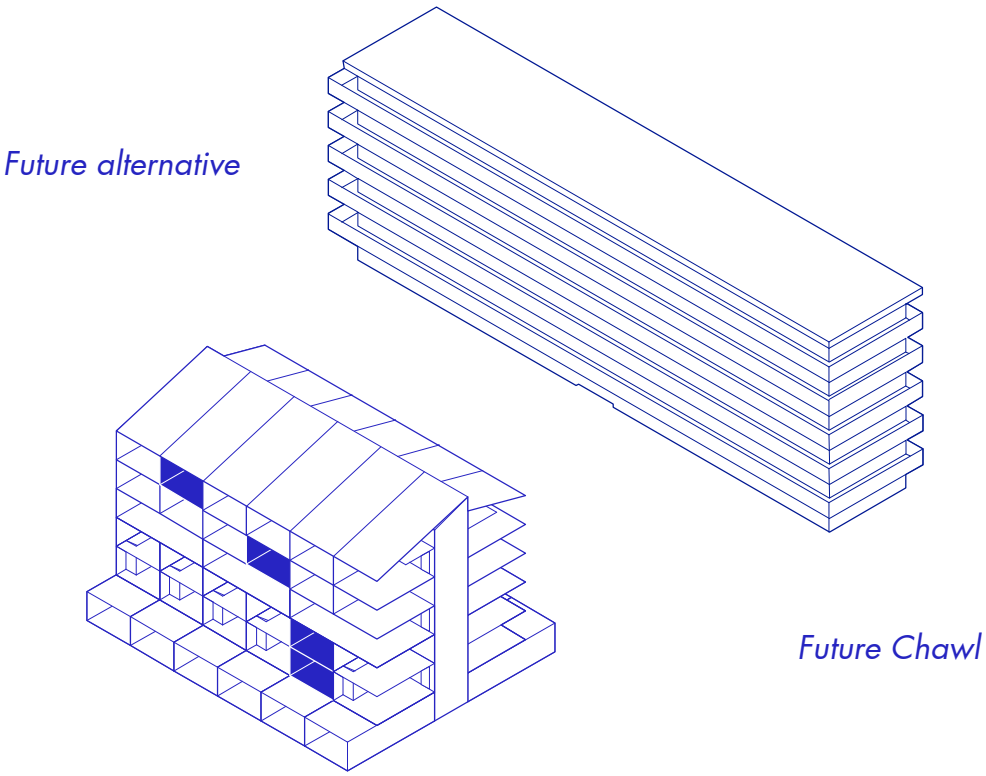
DESIGN STRATEGY
Communal spaces



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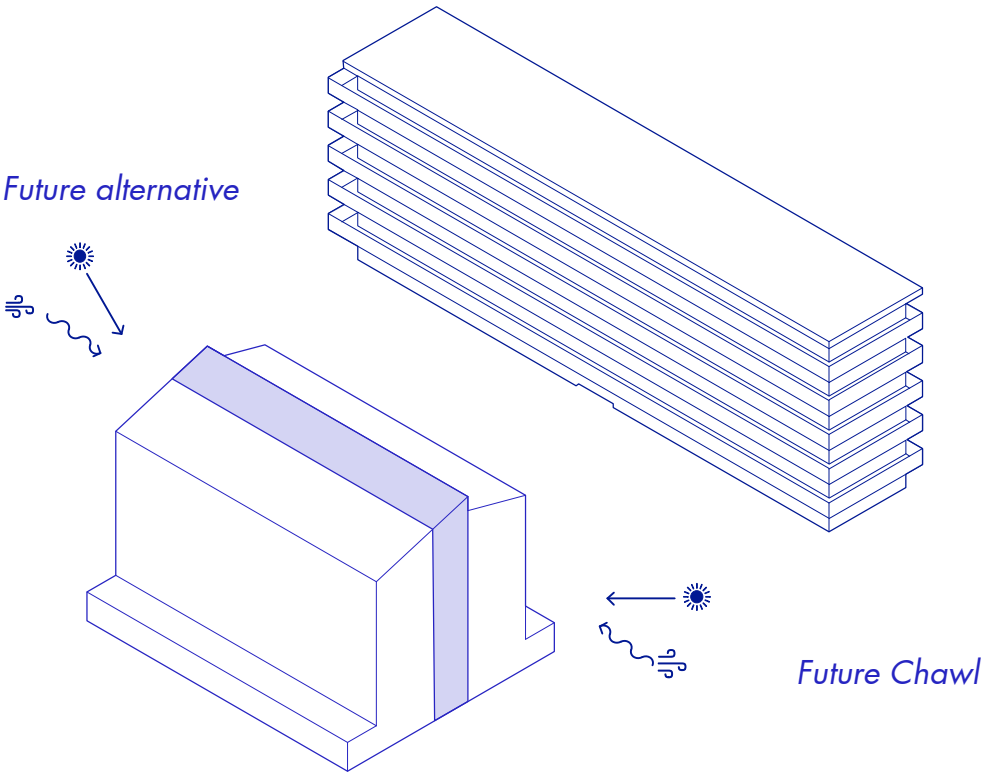
DESIGN STRATEGY

Cross ventilation



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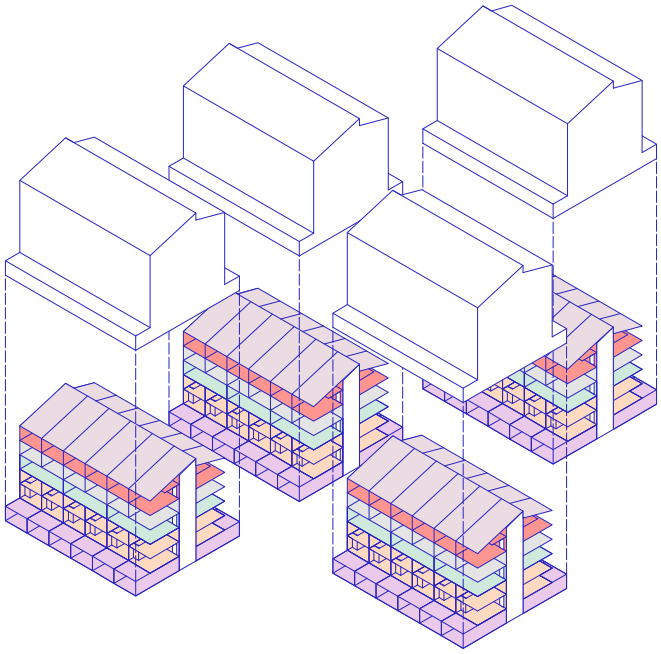
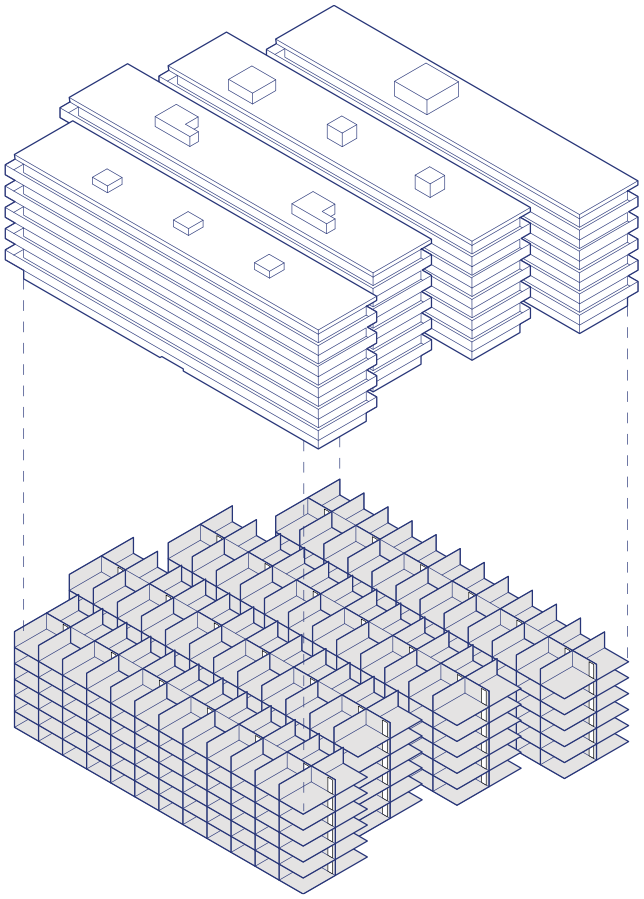
DESIGN STRATEGY
Differentiated blocks

Future alternative





Future Chawl

ARCHITECTURAL DESIGN

*

Transition of a strategy

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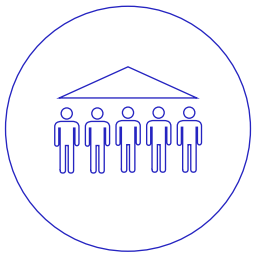
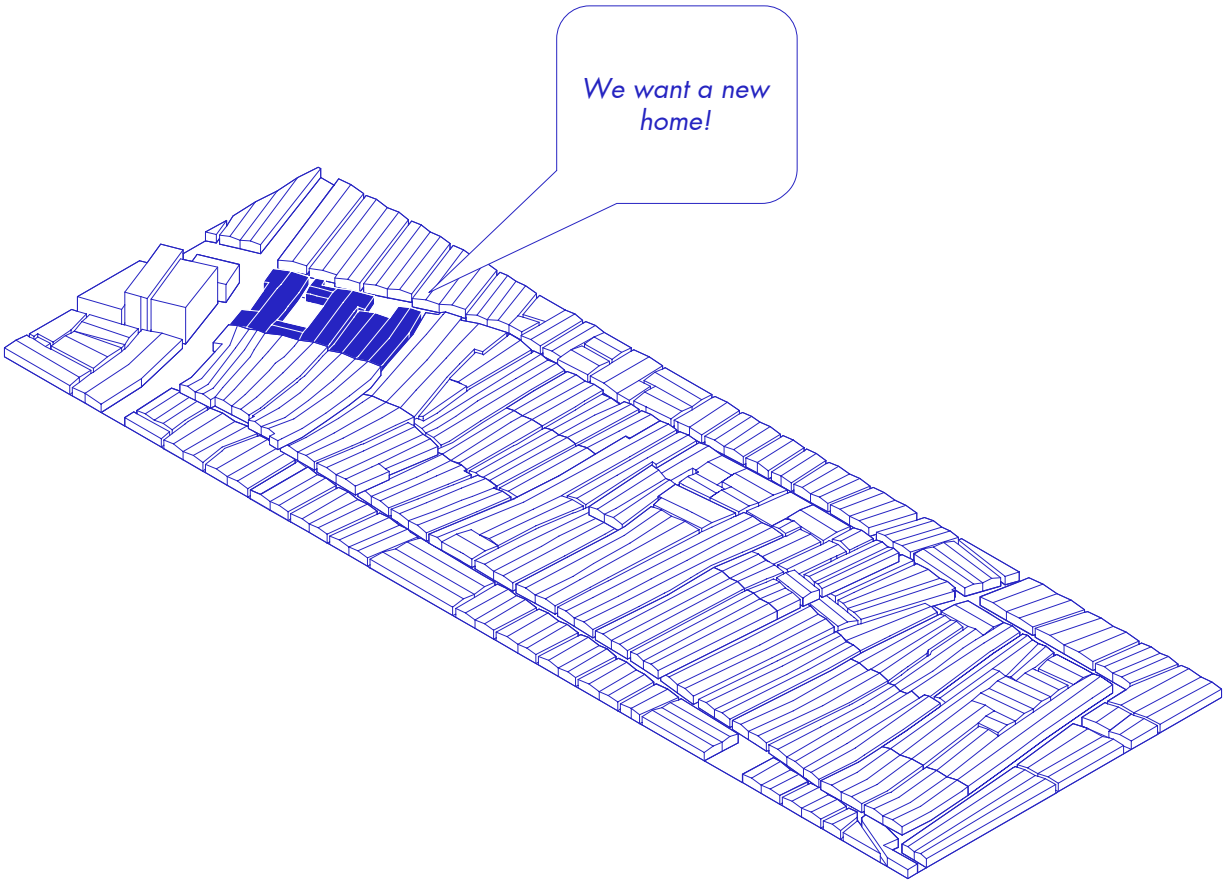
SCENARIO
Baithi chawl society



Housing society of 36 families



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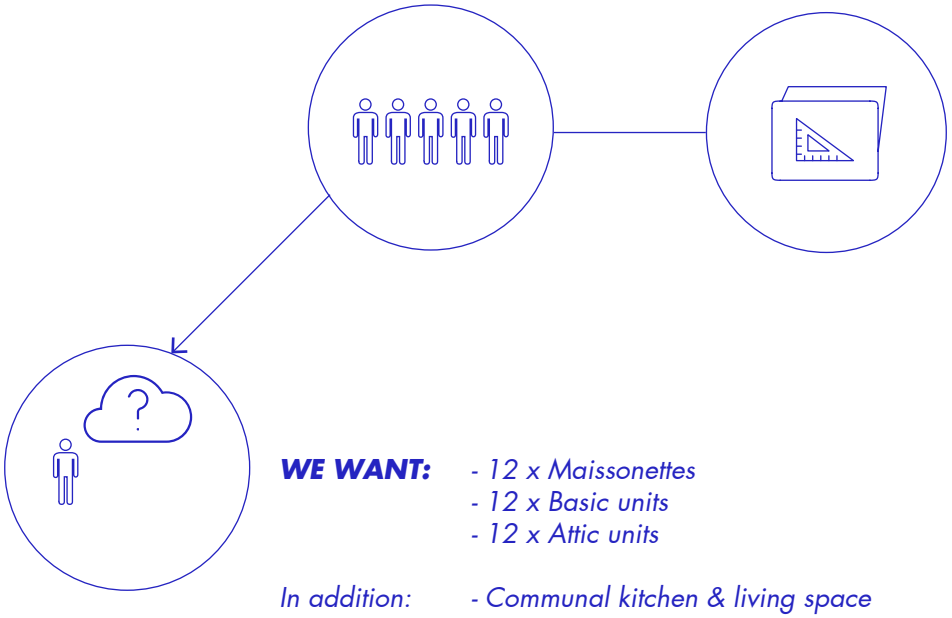
SCENARIO
Assessment demands



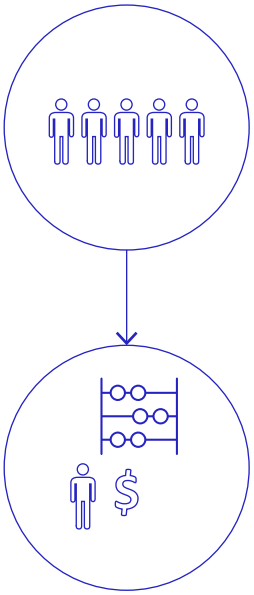
WE WANT: *- 12 x Maissonettes*
- 12 x Basic units
- 12 x Attic units

In addition: *- Communal kitchen & living space*

Cash recovery: *- 6 x Double units (Sold open market)*
- 12 x Commercial units (rented out)

*

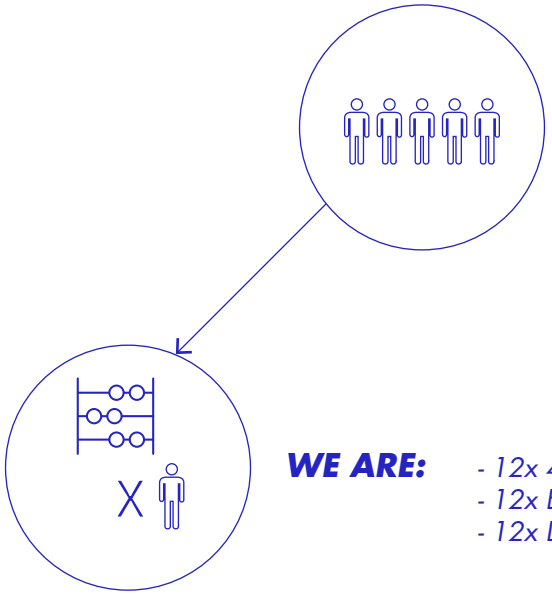
SCENARIO
Assessment financial capacity



WE HAVE:
- 12x LIG: 1.5 lakh (A.I.)
- 12x EWS: 1.5 lakh (A.I.)
- 12x LIG:1.5 lakh (A.I.

*

SCENARIO
Family composition

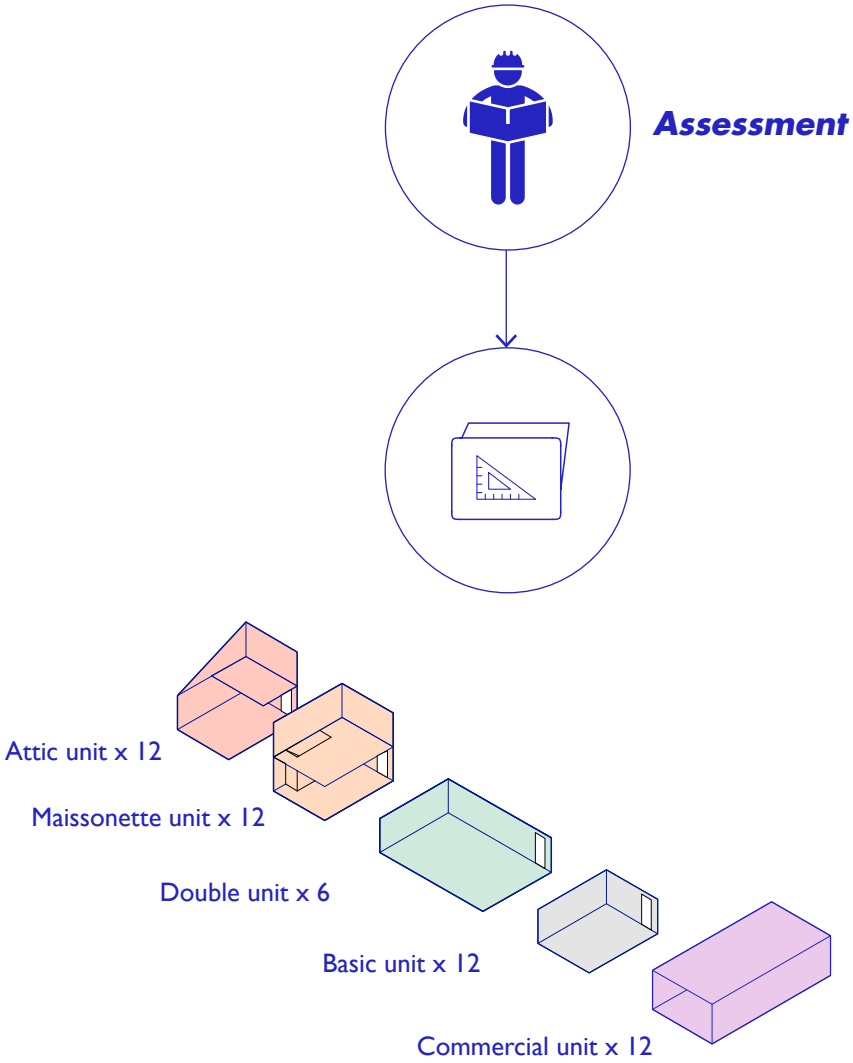


WE ARE:

- *12x 4-6 member family*
- *12x EWS: 1-2 member family*
- *12x LIG: 4 member family*

*

SCENARIO
General assessment



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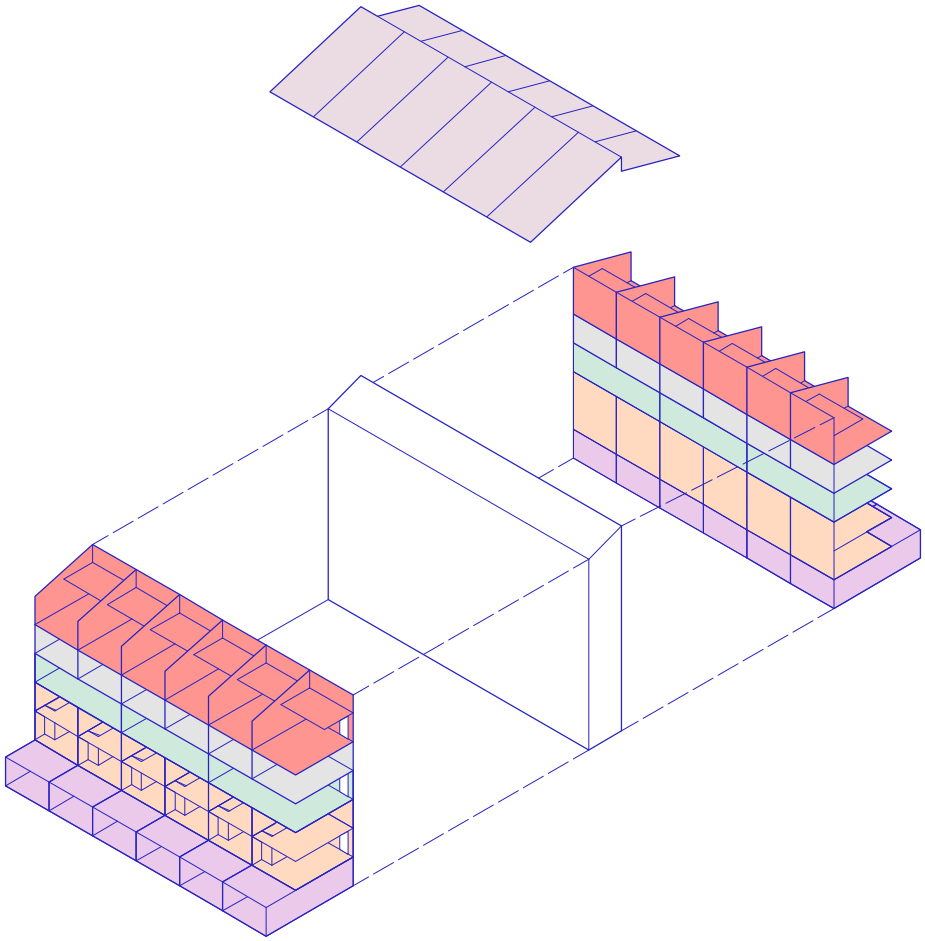
SCENARIO
General assessment

Configuration



Architectural design

*

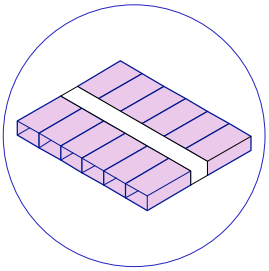
SCENARIO
General assessment

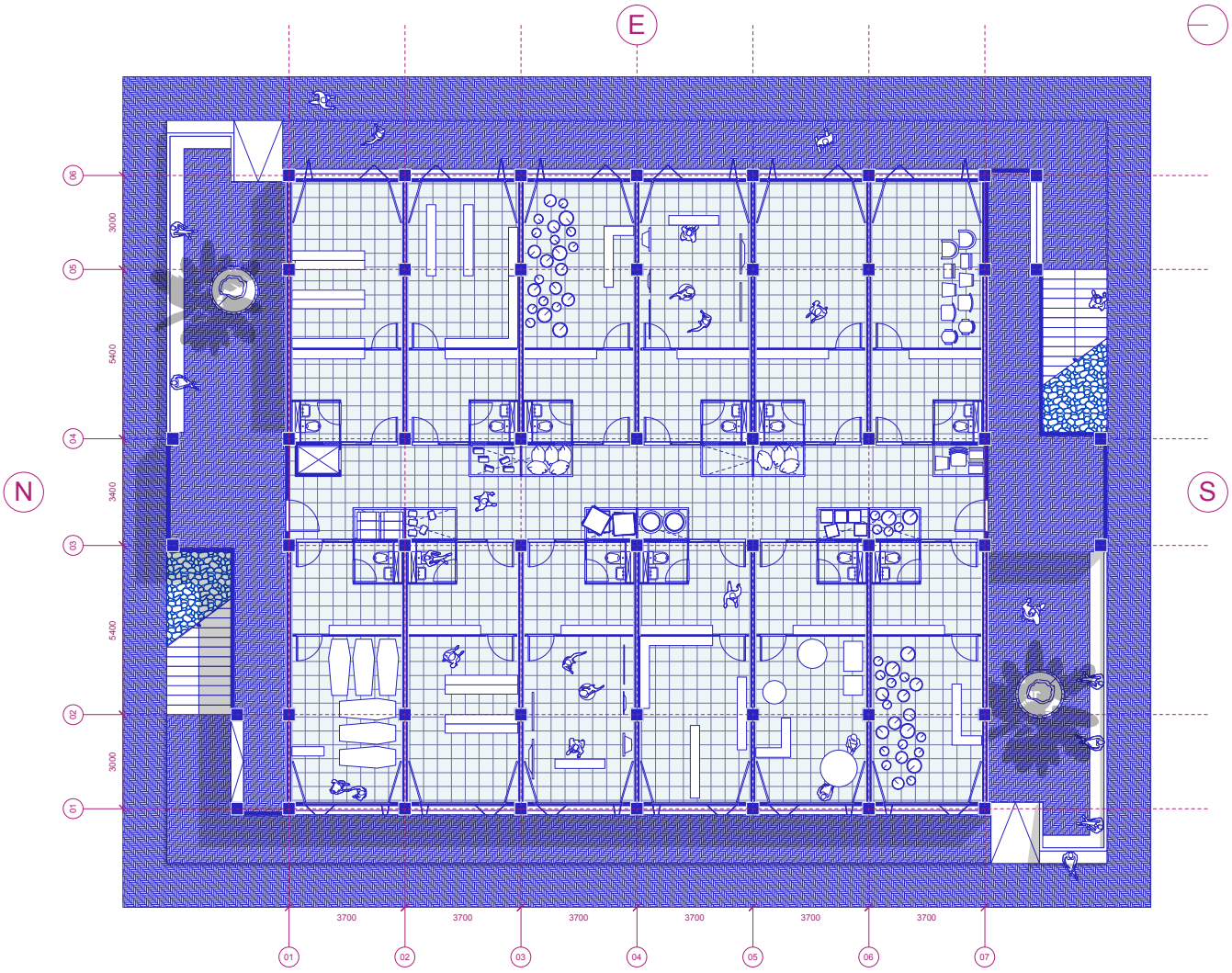
RESULT

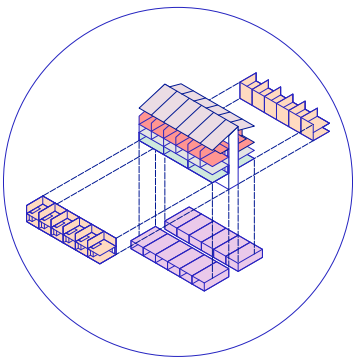
*

FLOORPLANS

Level +0





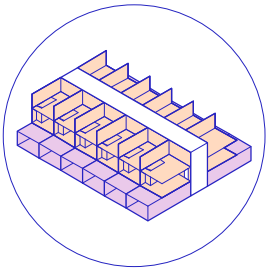


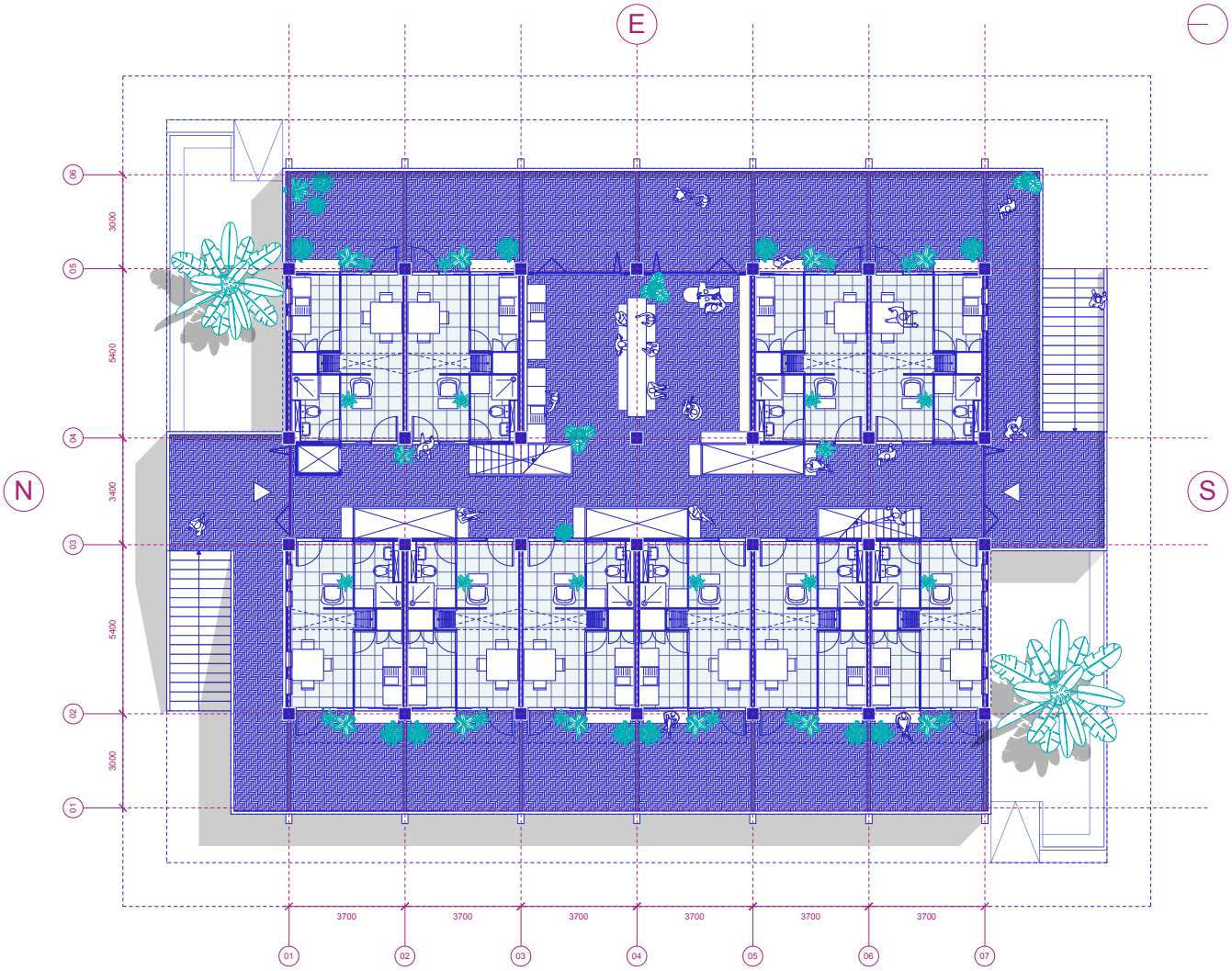
Cash recovery

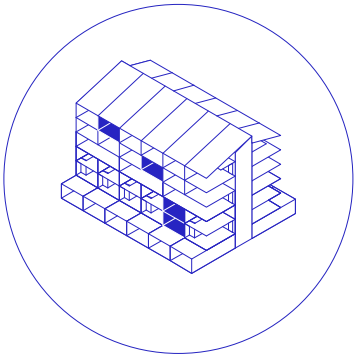
*

FLOORPLANS

Level +1





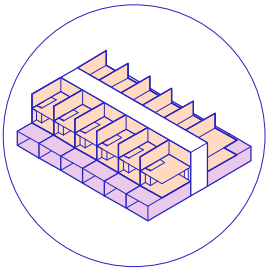


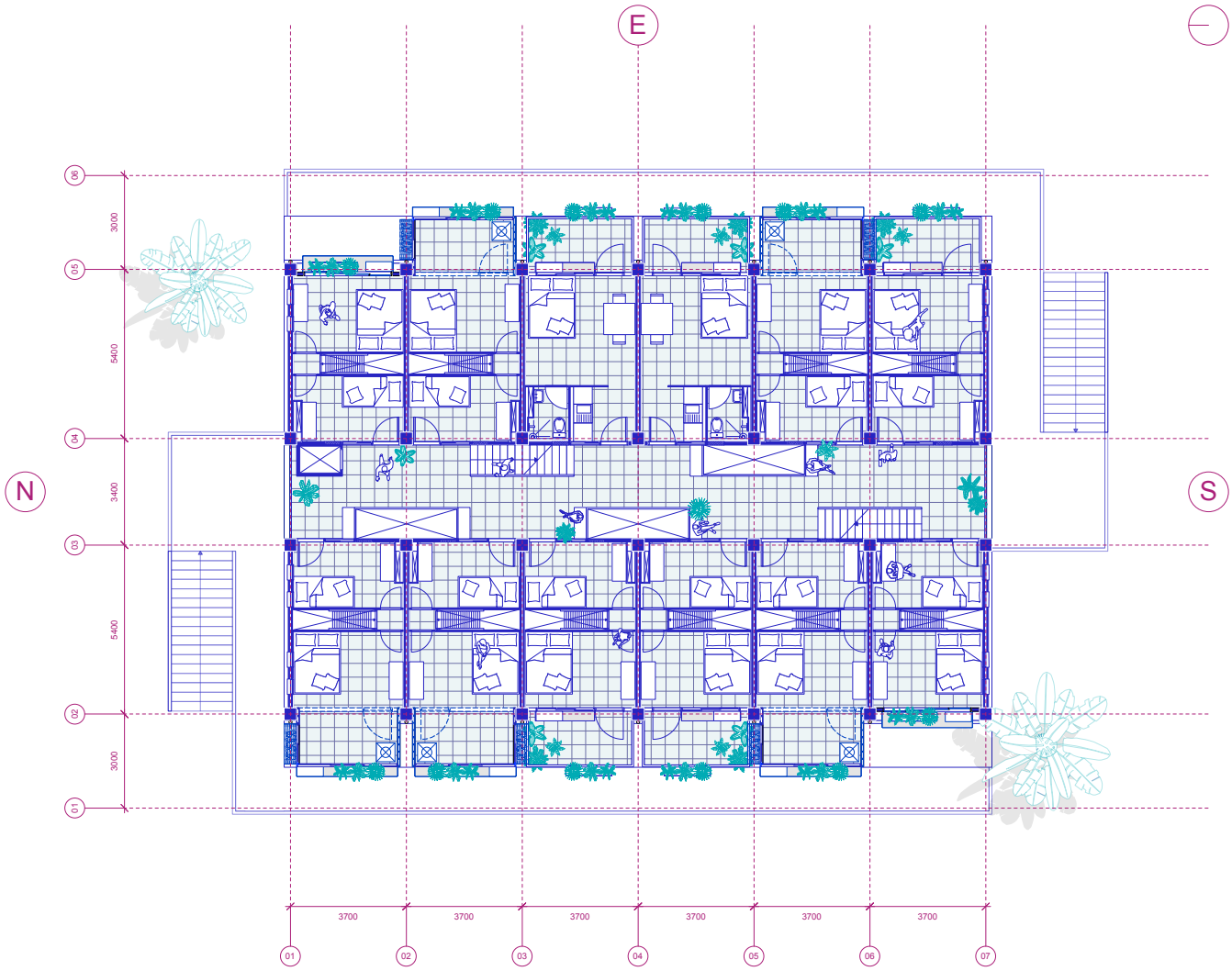
Communal spaces

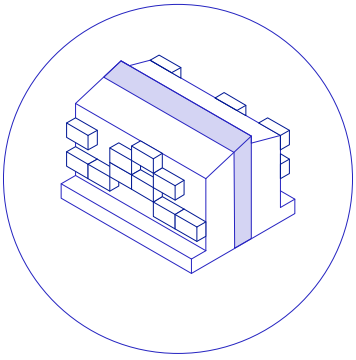
*

FLOORPLANS

Level +2



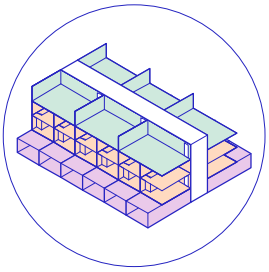


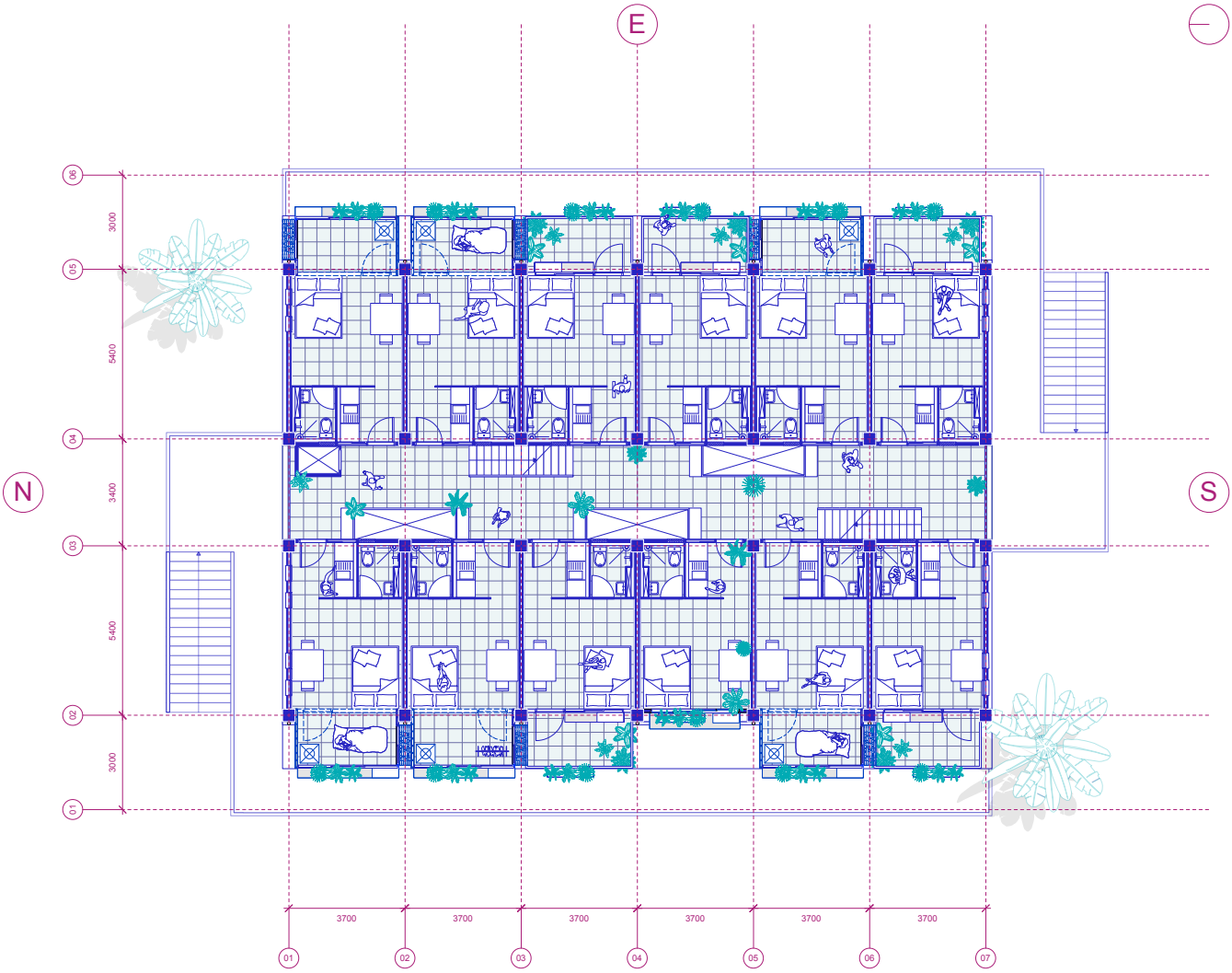


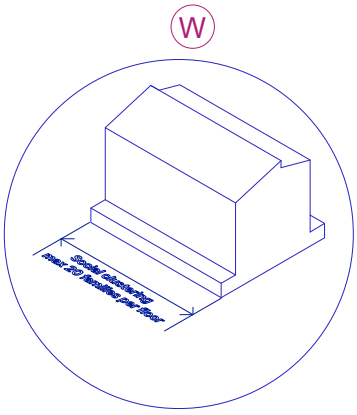
Incrementality

*

FLOORPLANS
Level +3





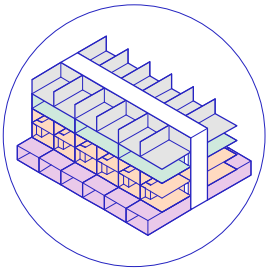


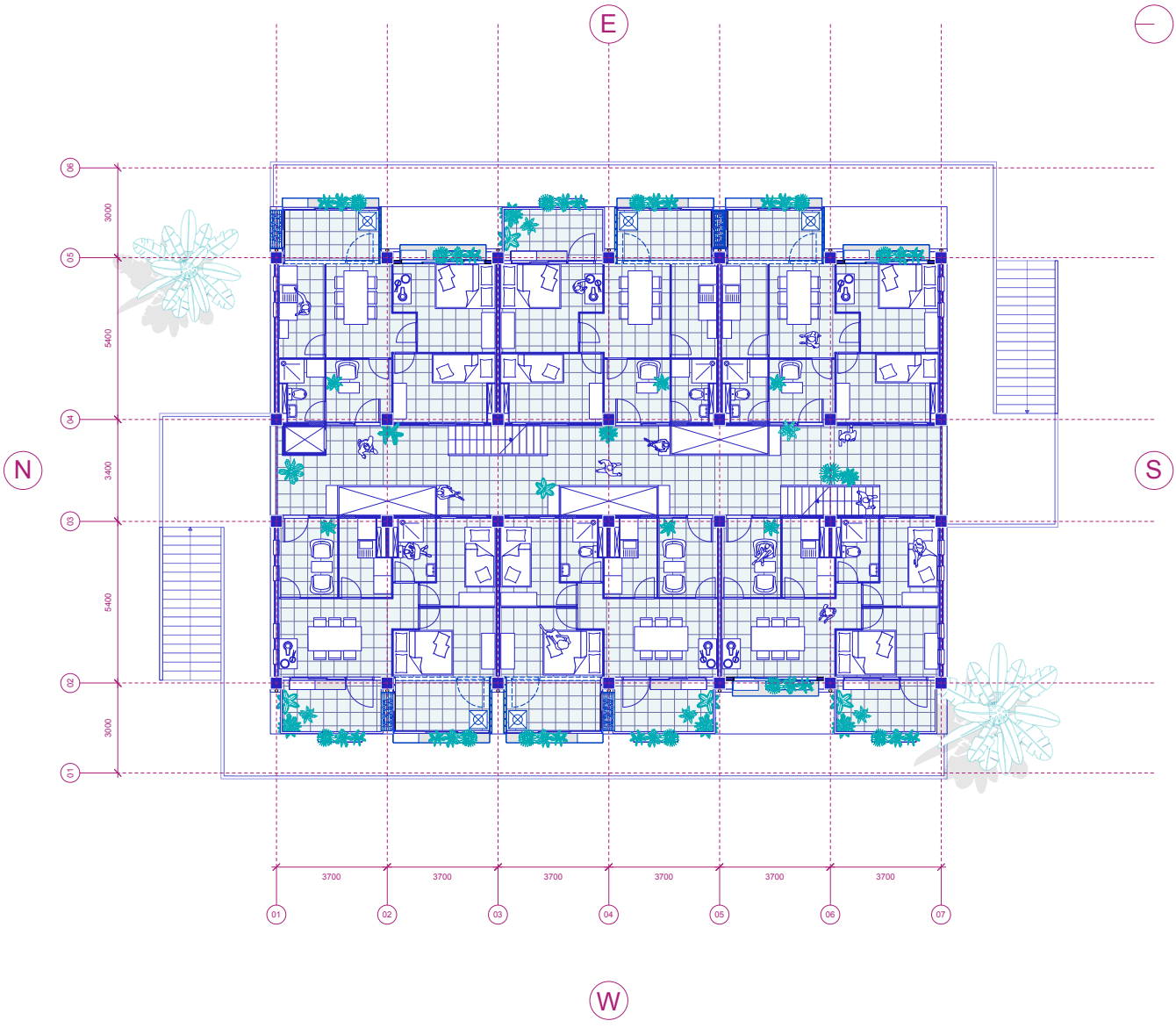
Social clustering

*

FLOORPLANS

Level +4





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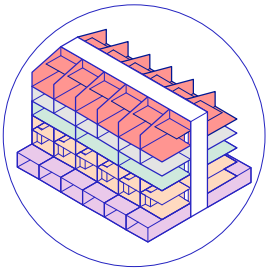
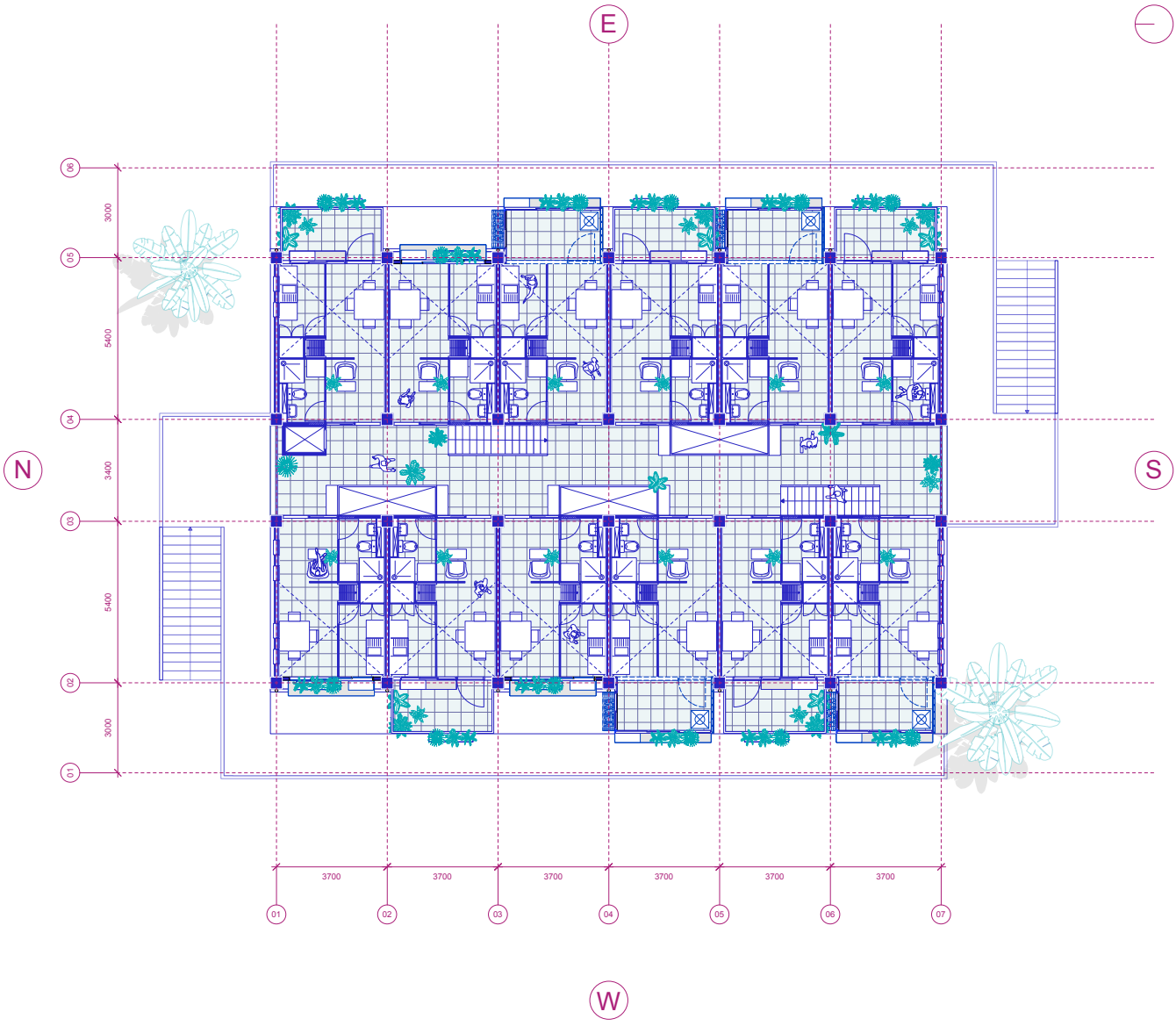
FLOORPLANS

Level +5





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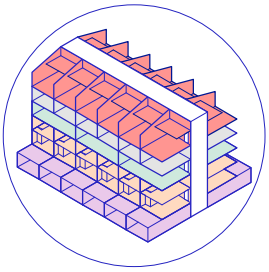
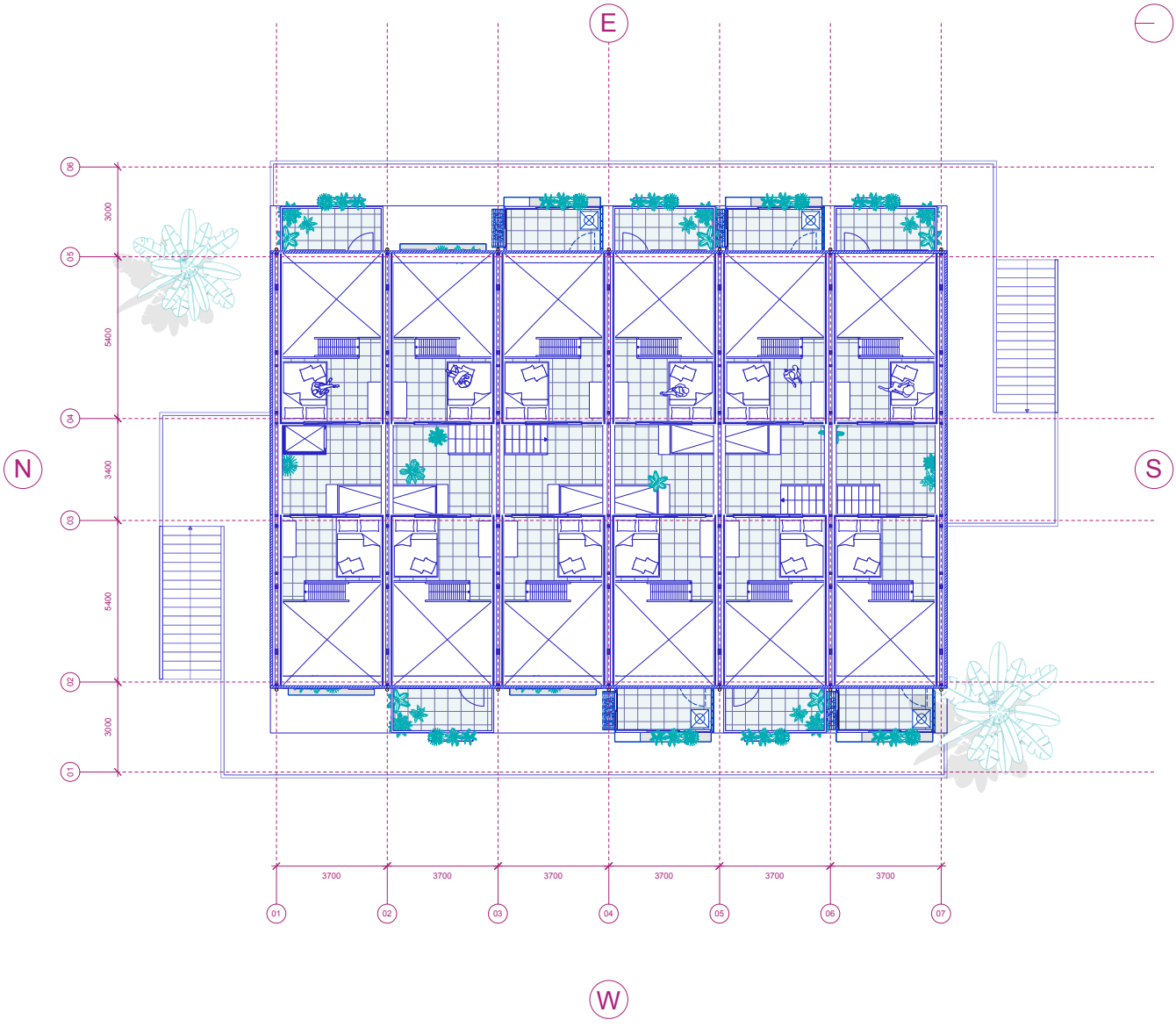
FLOORPLANS
Level +6





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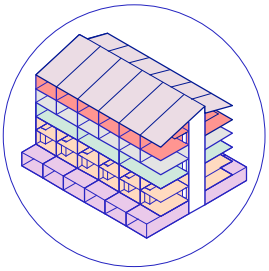
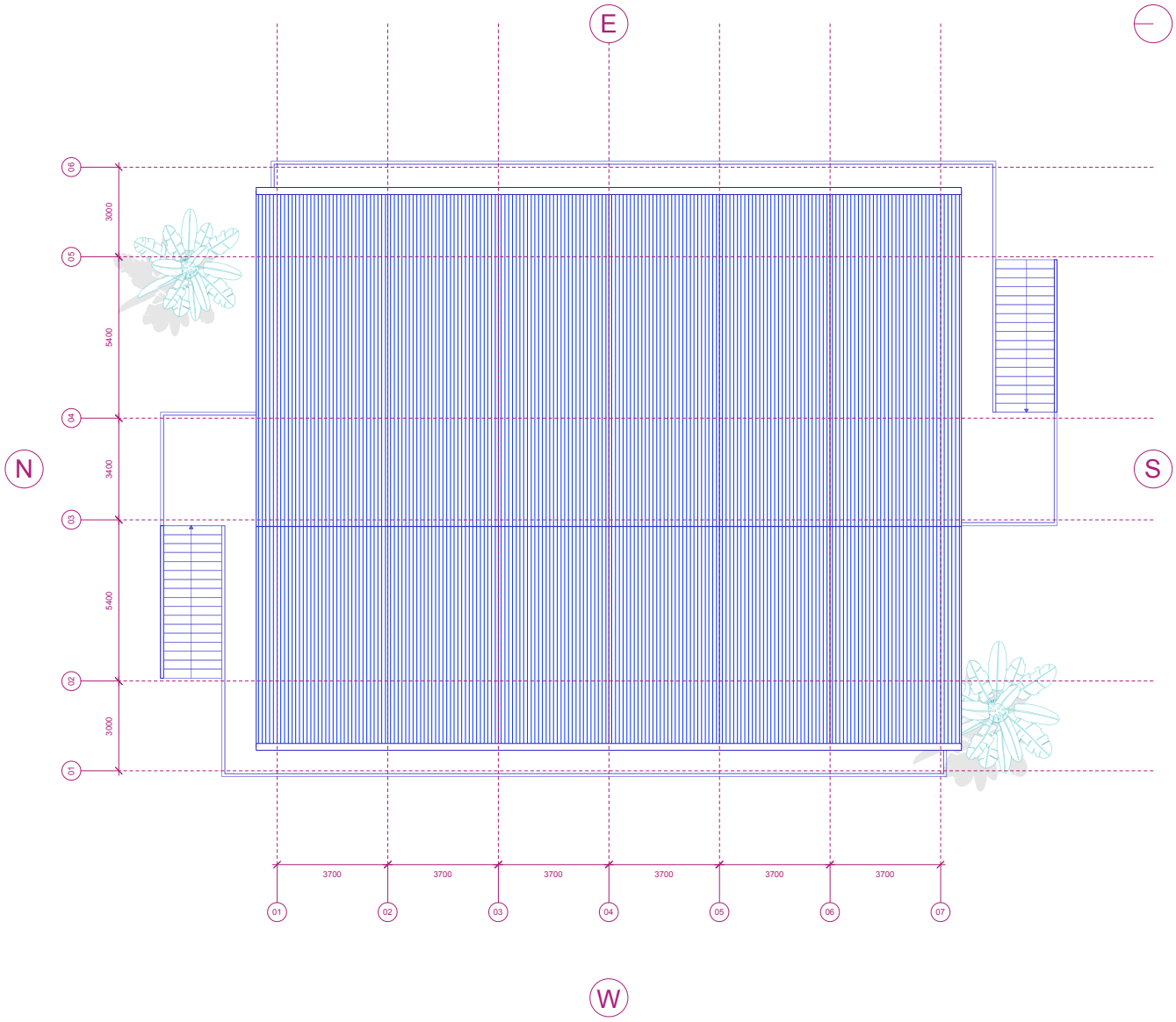
ROOFPLAN
Level +7





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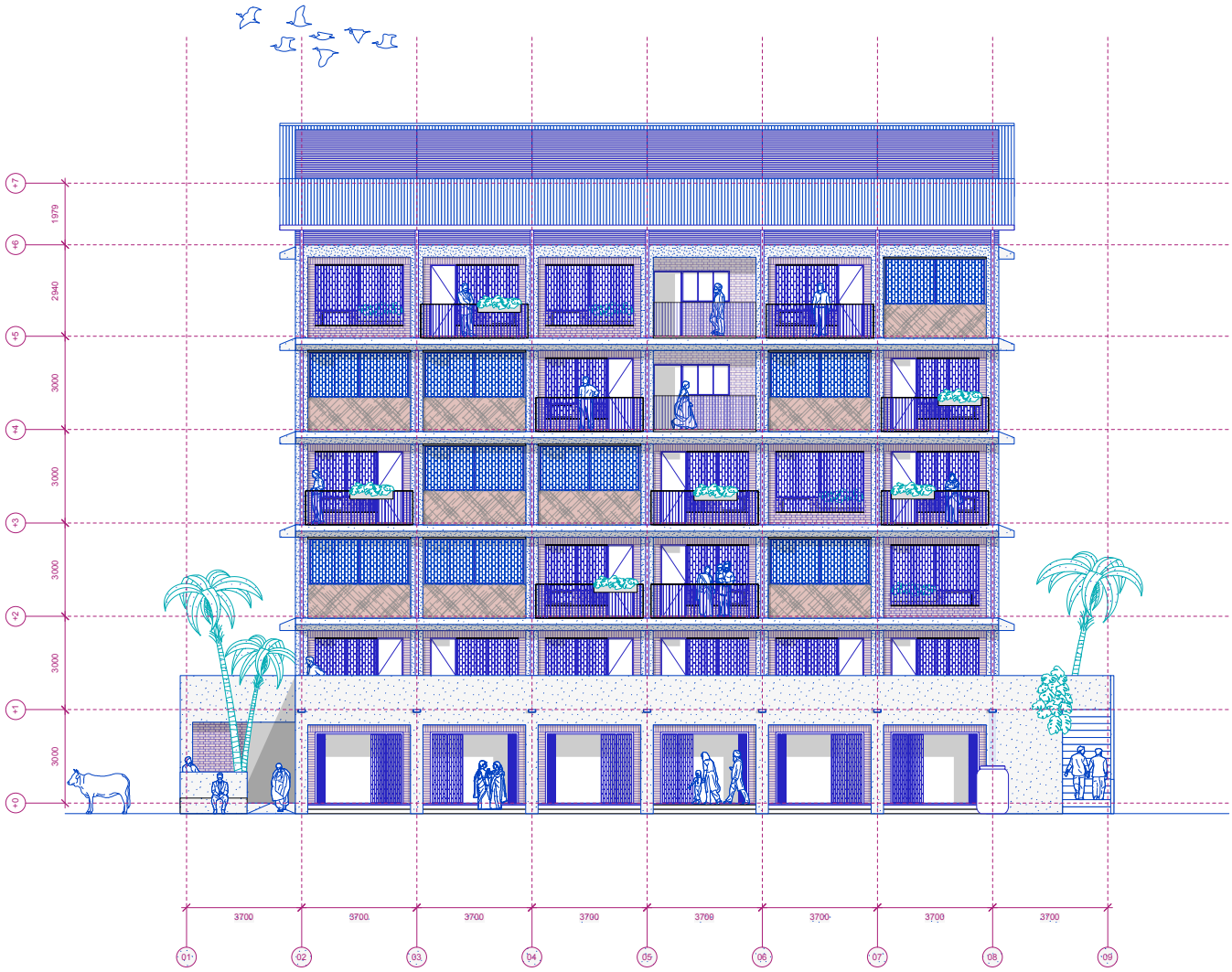
ELEVATIONS

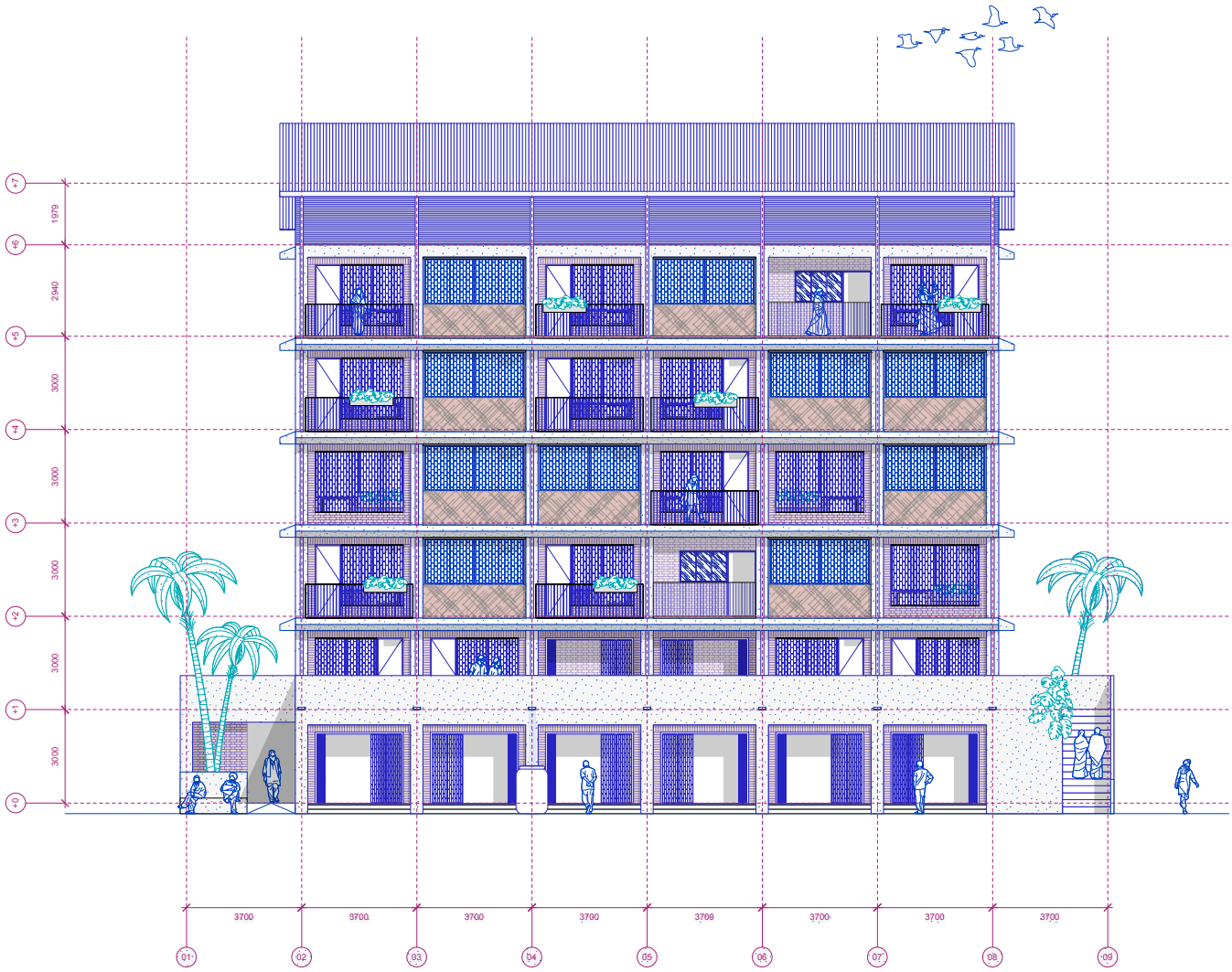
East



*

ELEVATIONS

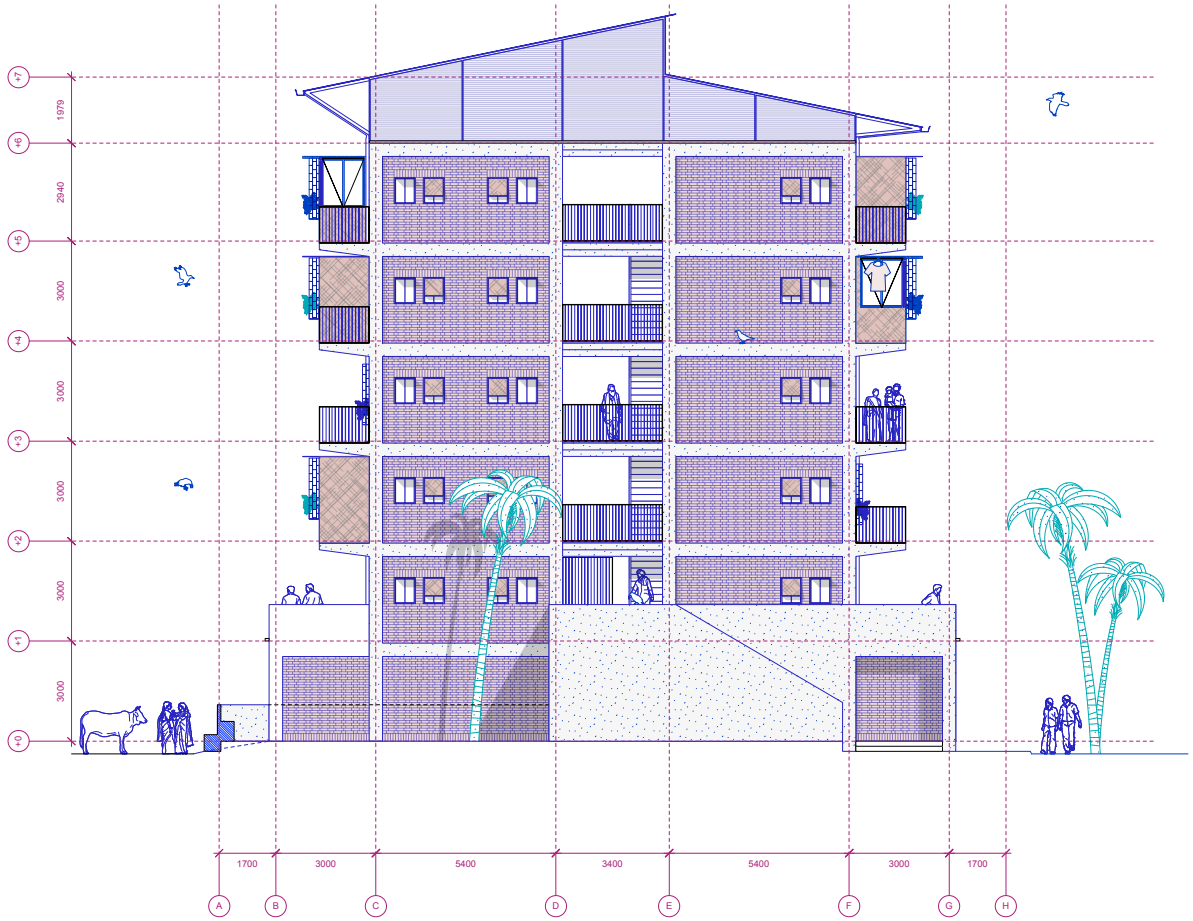
West



*

ELEVATIONS

South

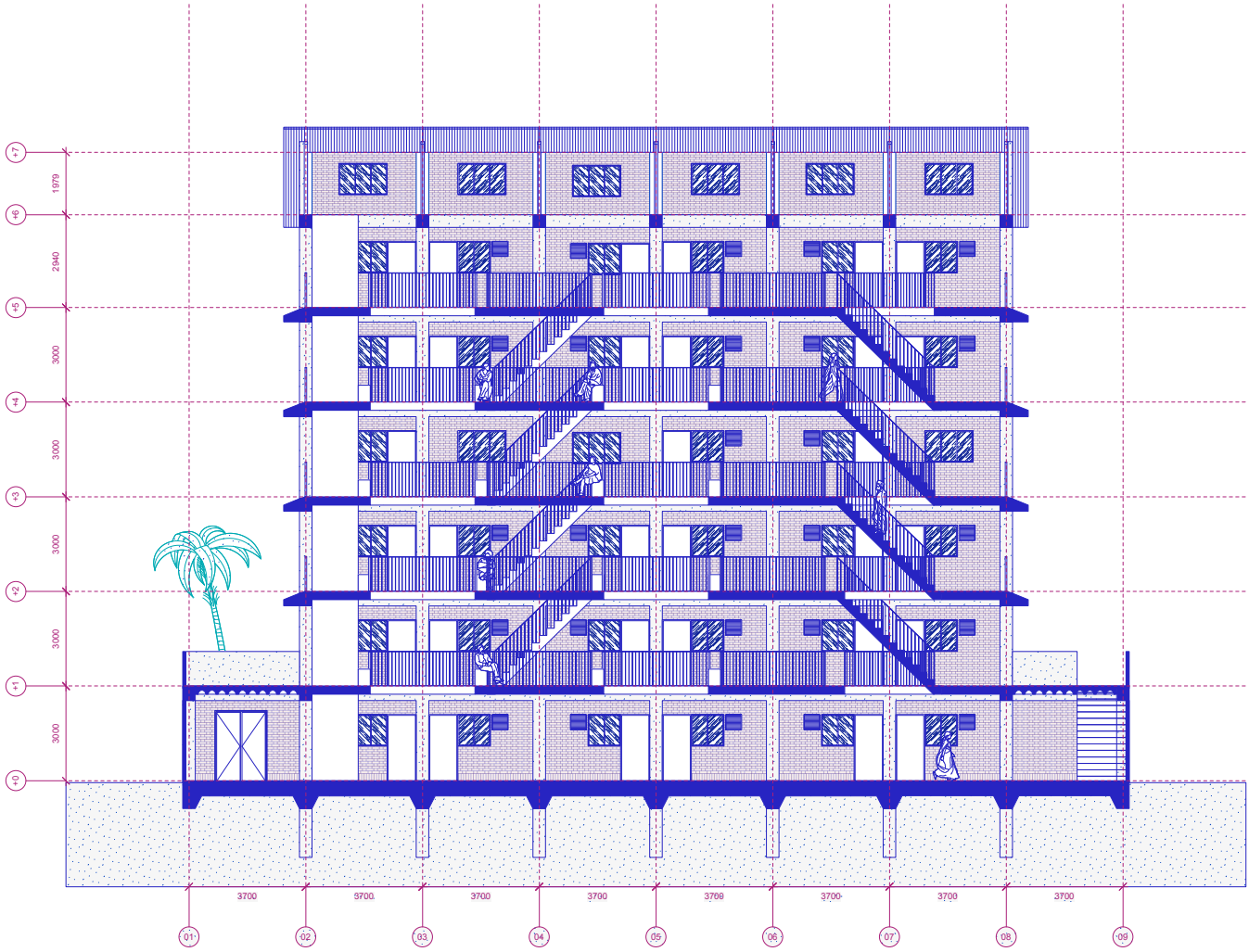


*

ELEVATIONS
North

*

SECTIONS
South - North



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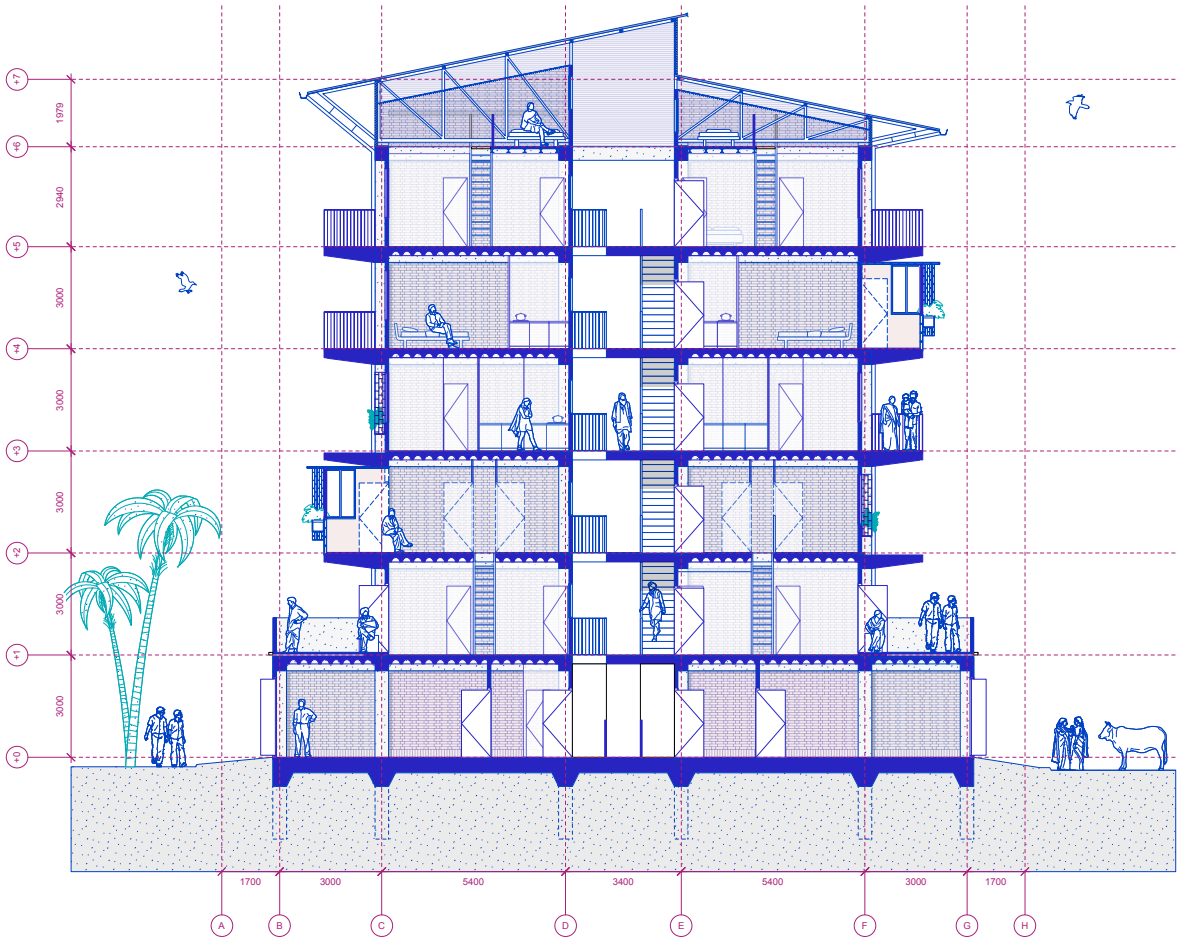
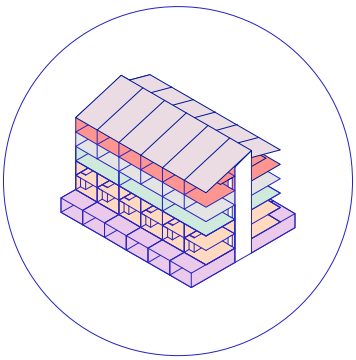
SECTIONS
West - East

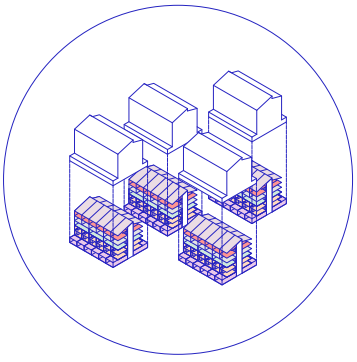




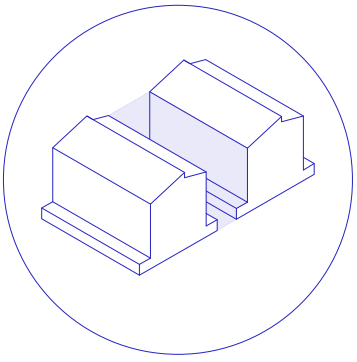
Differentiation

*

THE URBAN BLOCK



Differentiated blocks



Buffer zone

Architectural design

*

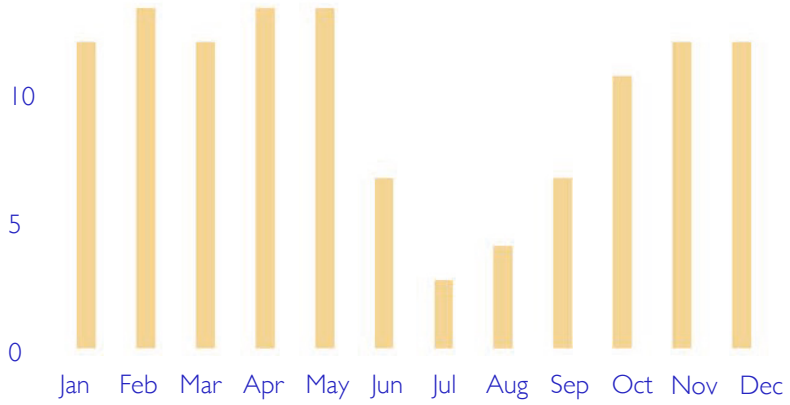
BUILDING TECHNOLOGY

*

CLIMATIC DESIGN

Sunshine hours

SUNSHINE HOURS
Average daily sunshine hours



CLIMATE MUMBAI (MMR)
Mumbai has a tropical monsoon climate.

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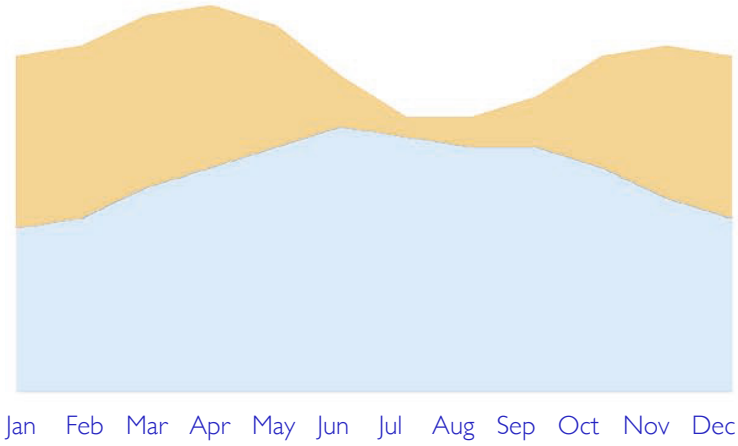
CLIMATIC DESIGN

Annual temperature

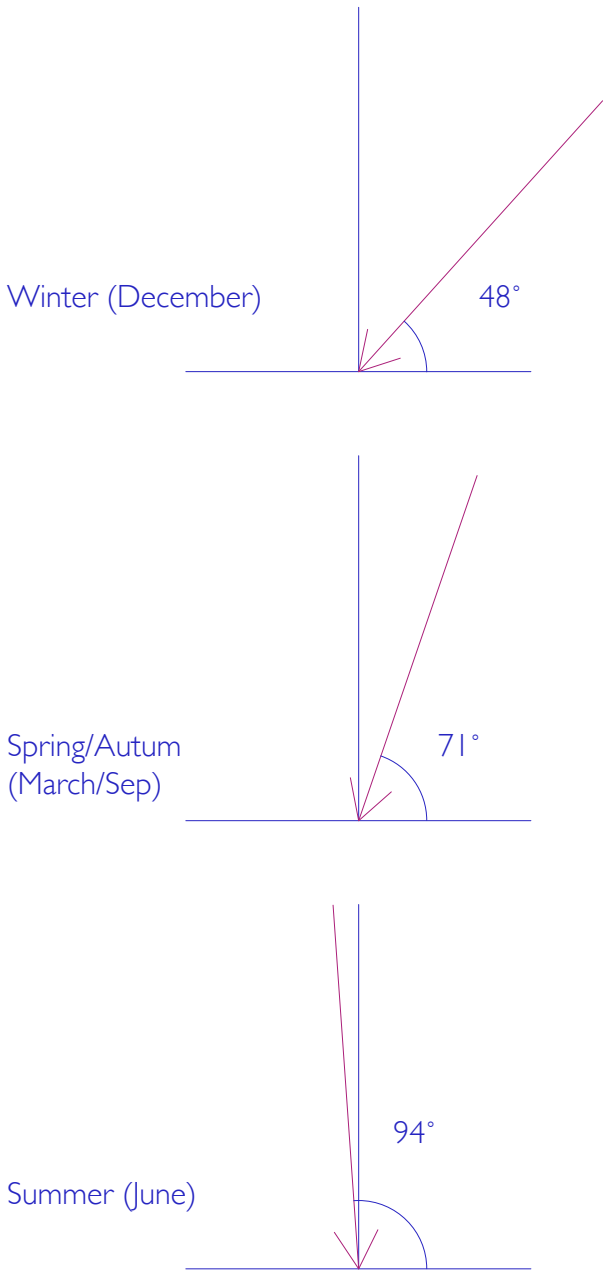
TEMPERATURE
Average temperatures



CLIMATIC DESIGN

Sunray insidence

SOLAR ANGLE



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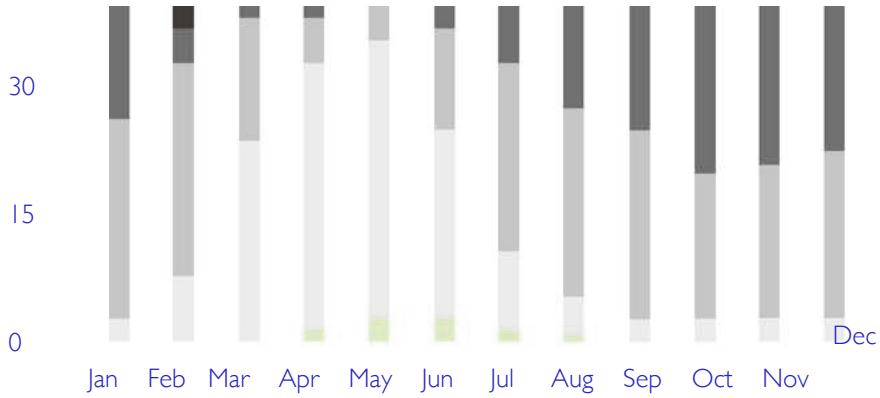
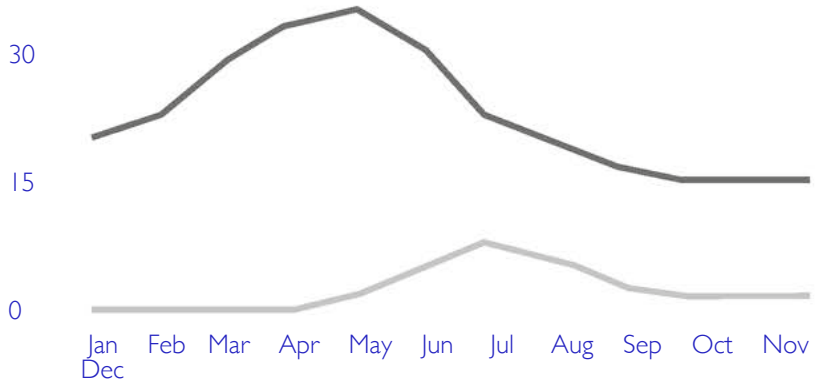
CLIMATIC DESIGN

Annual wind speed

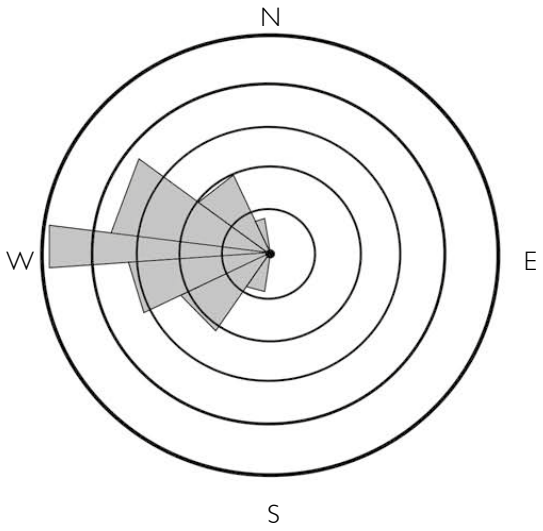
WINDSPEED
Average windspeeds in km/h



WINDSPEED
Maximum and minimum
windspeed in km/h



WIND-ROSE PLOT
In km/h



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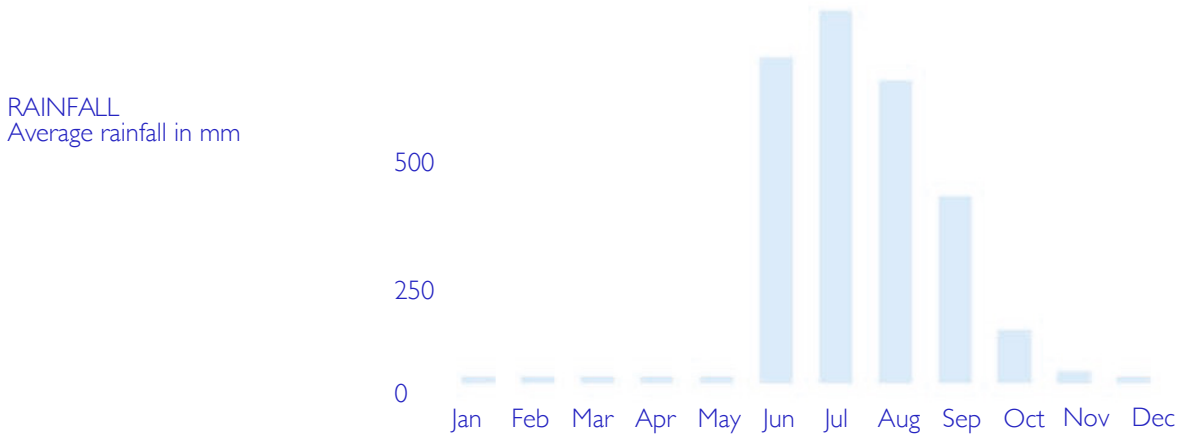
CLIMATIC DESIGN

Annual rainfall



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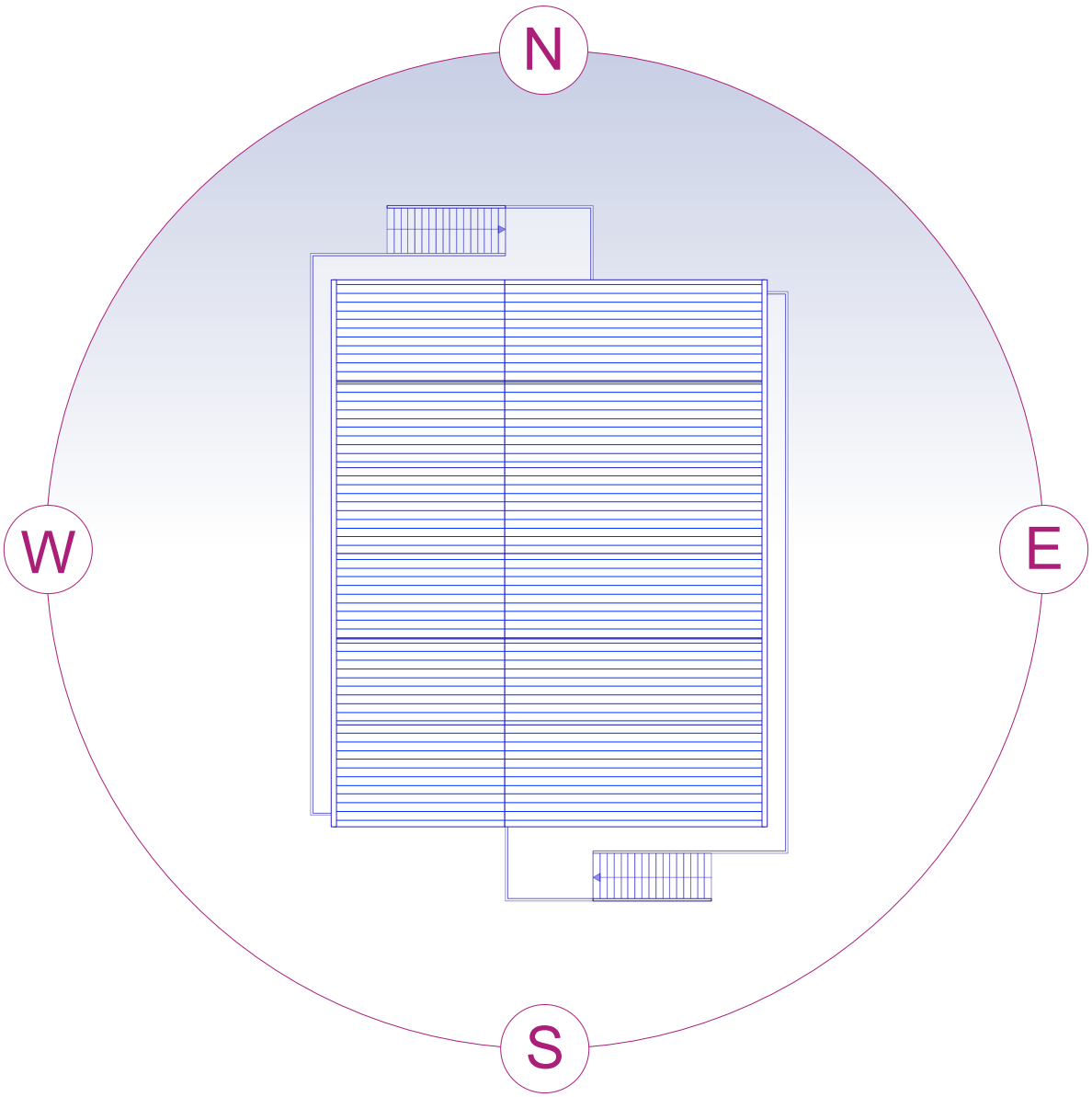
CLIMATIC DESIGN
Building orientation & sunload



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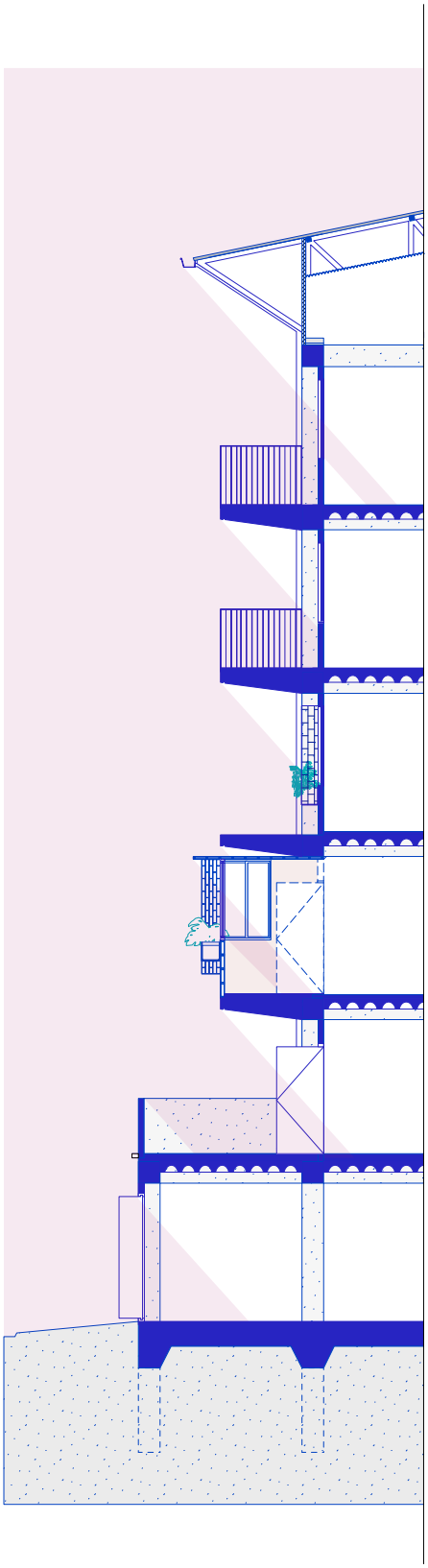
CLIMATIC DESIGN
Natural shading - Winter (48°)



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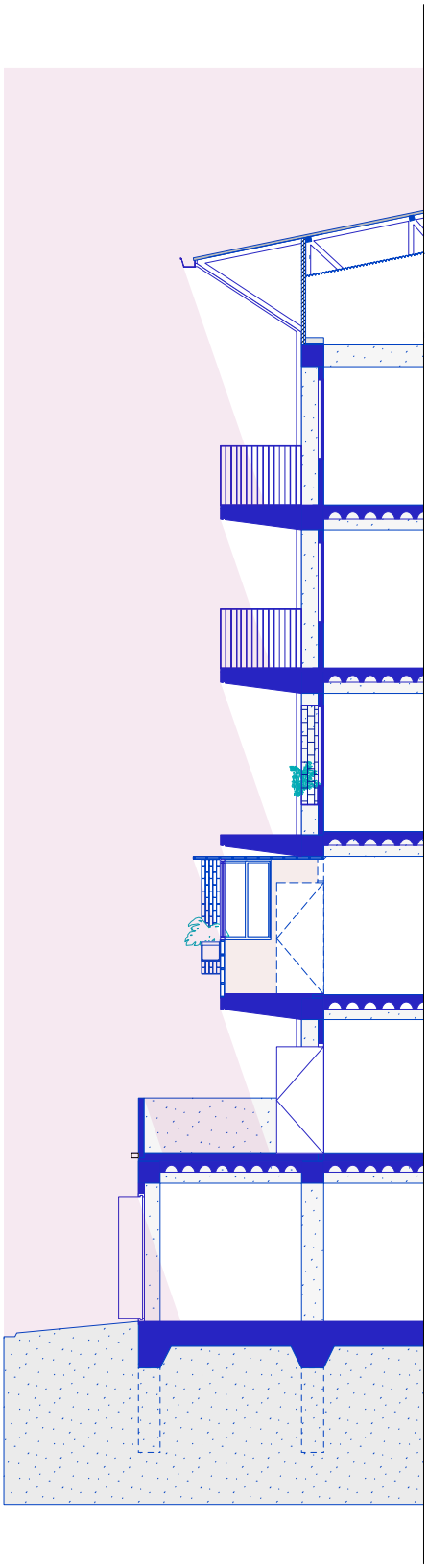
CLIMATIC DESIGN
Natural shading - Autum/spring (71°)



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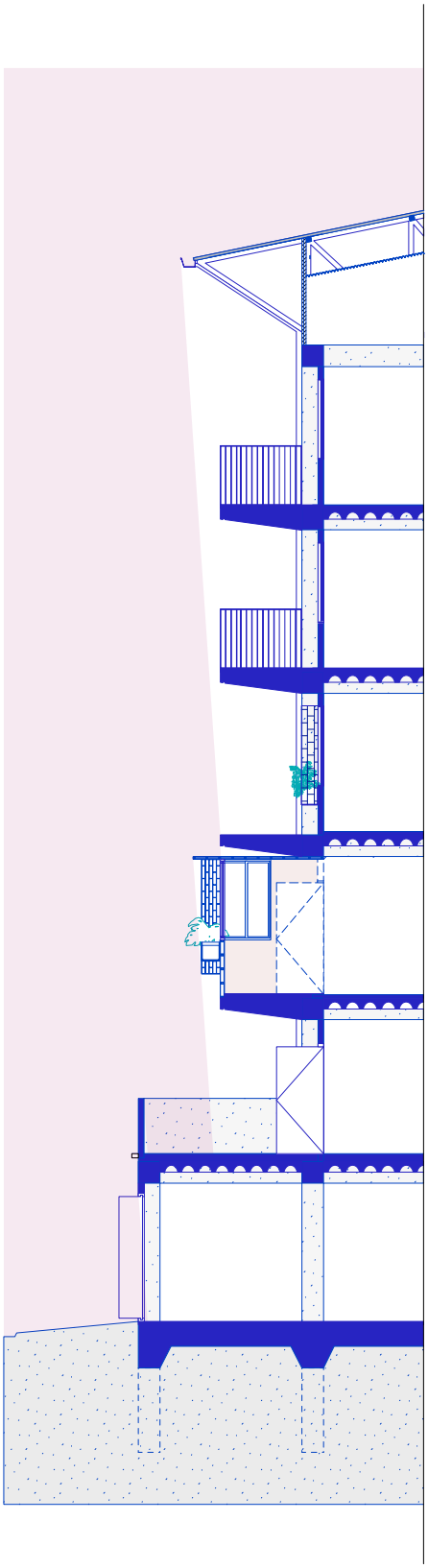
CLIMATIC DESIGN
Natural shading - Summer (98°)



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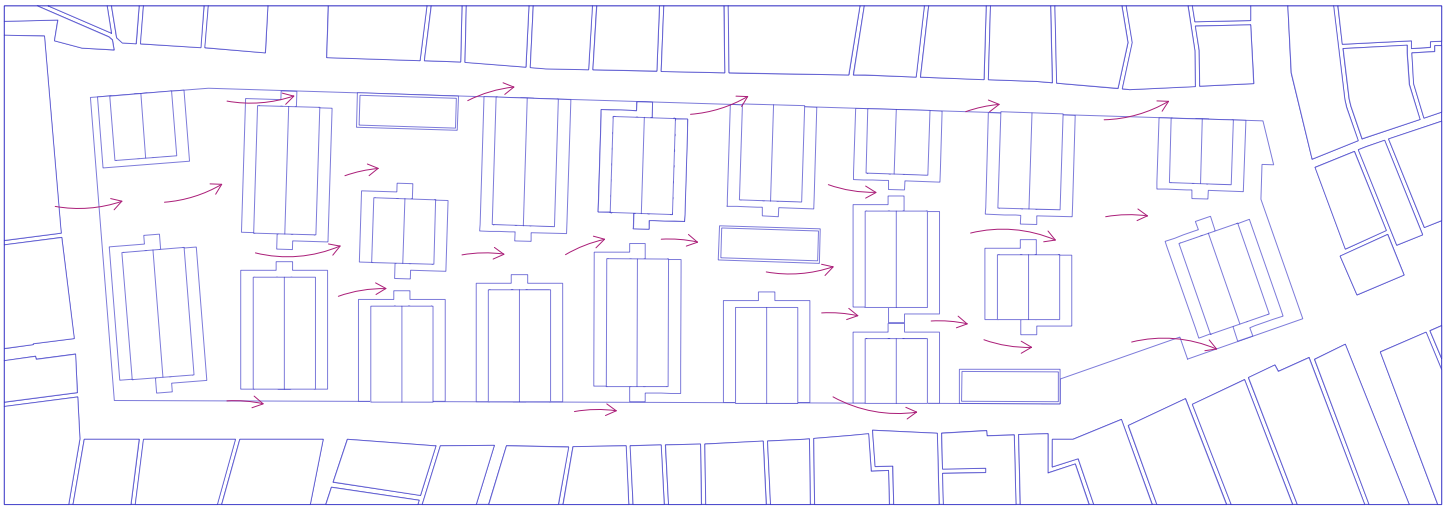
CLIMATIC DESIGN

West wind, orientation & double roof ventilation

N

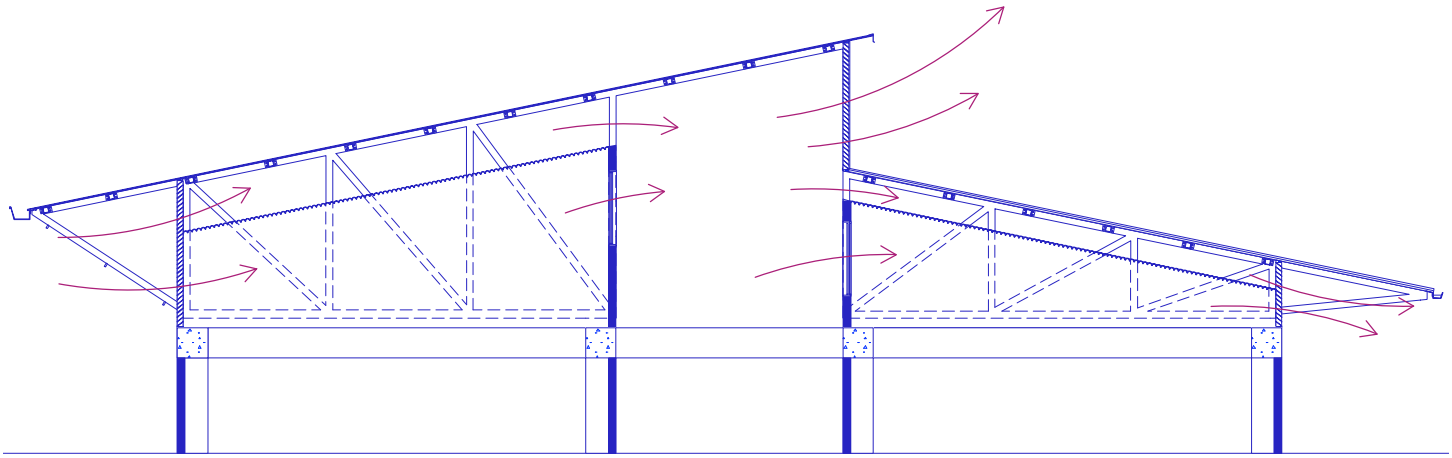


S

*

CLIMATIC DESIGN

West wind, orientation & double roof ventilation



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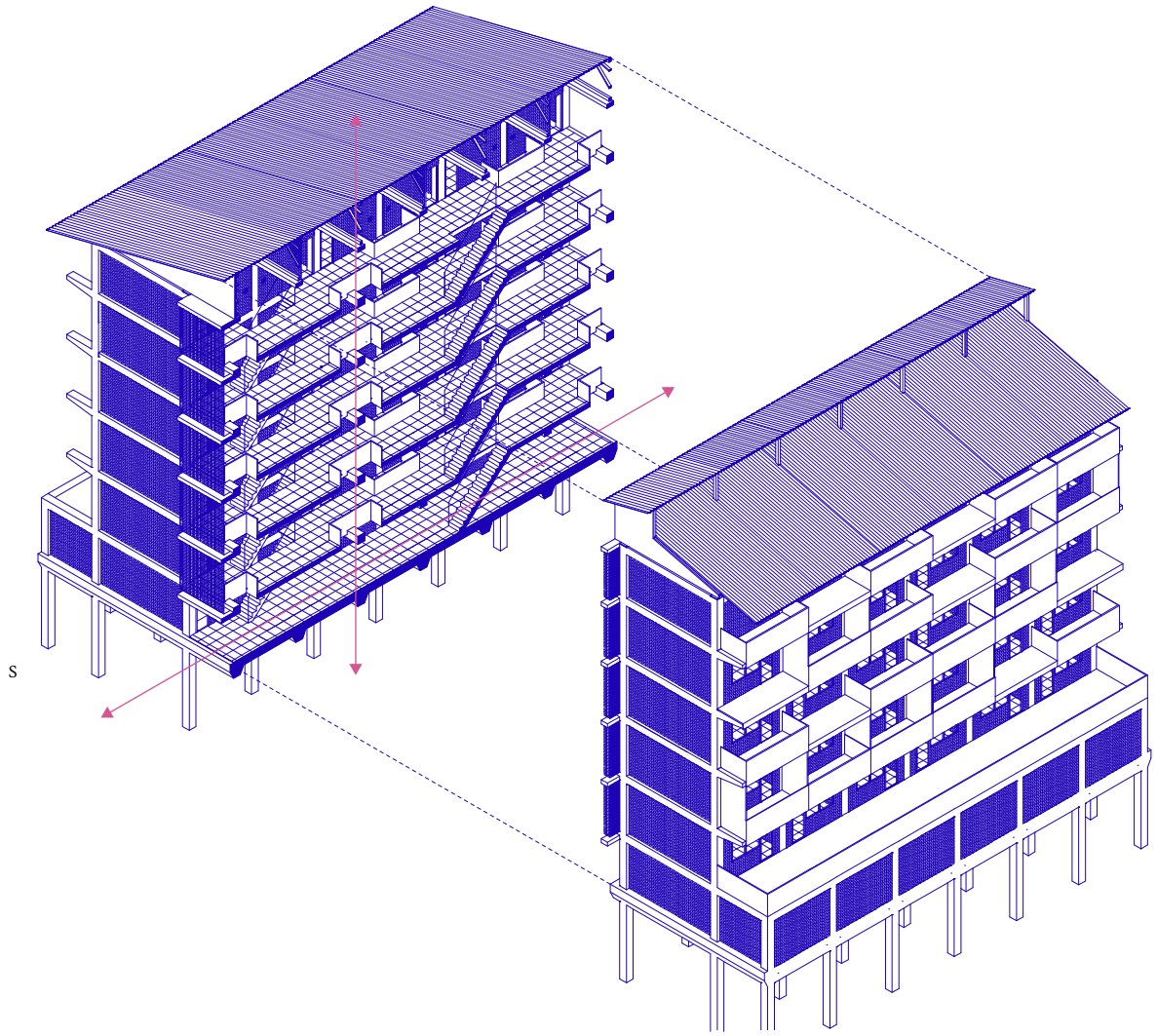
CLIMATIC DESIGN
Cross & stack ventilation



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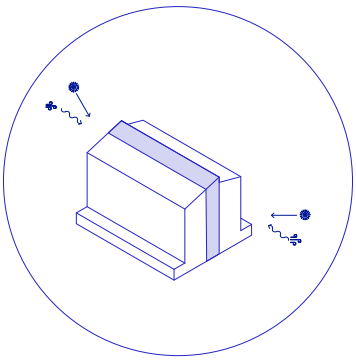
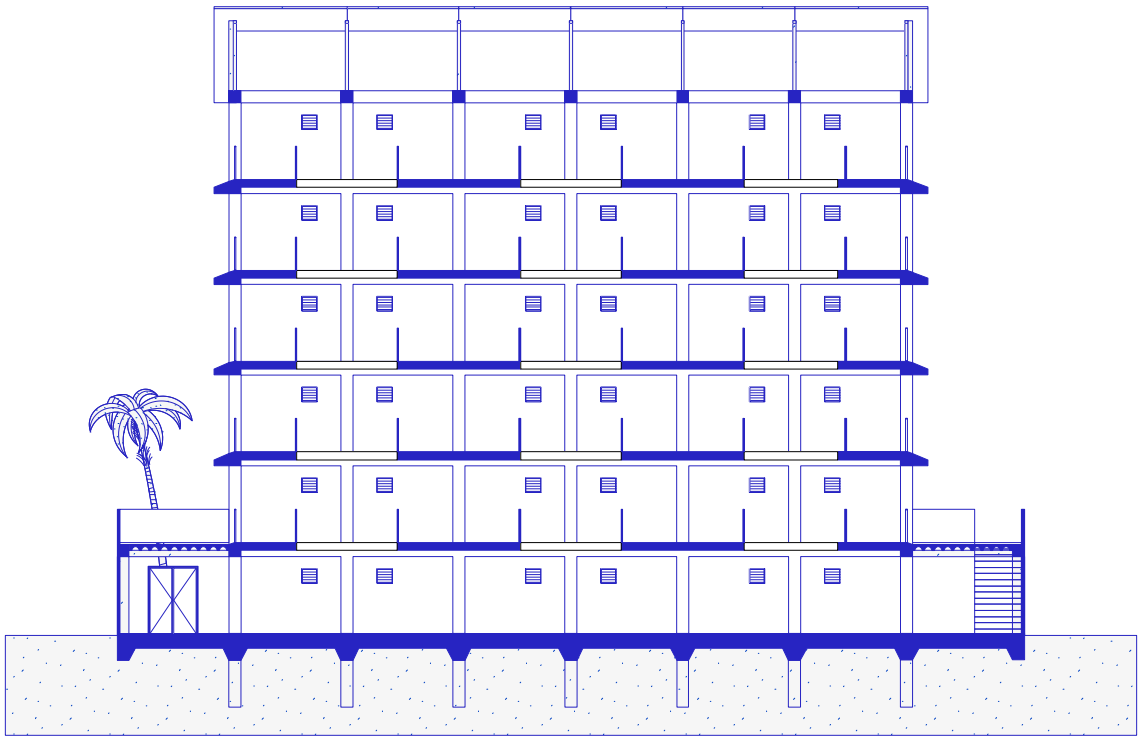
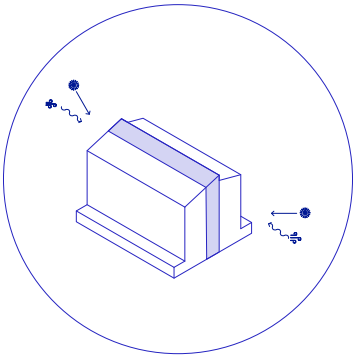


Cross ventilation

*

CLIMATIC DESIGN
Natural ventilation bathroom

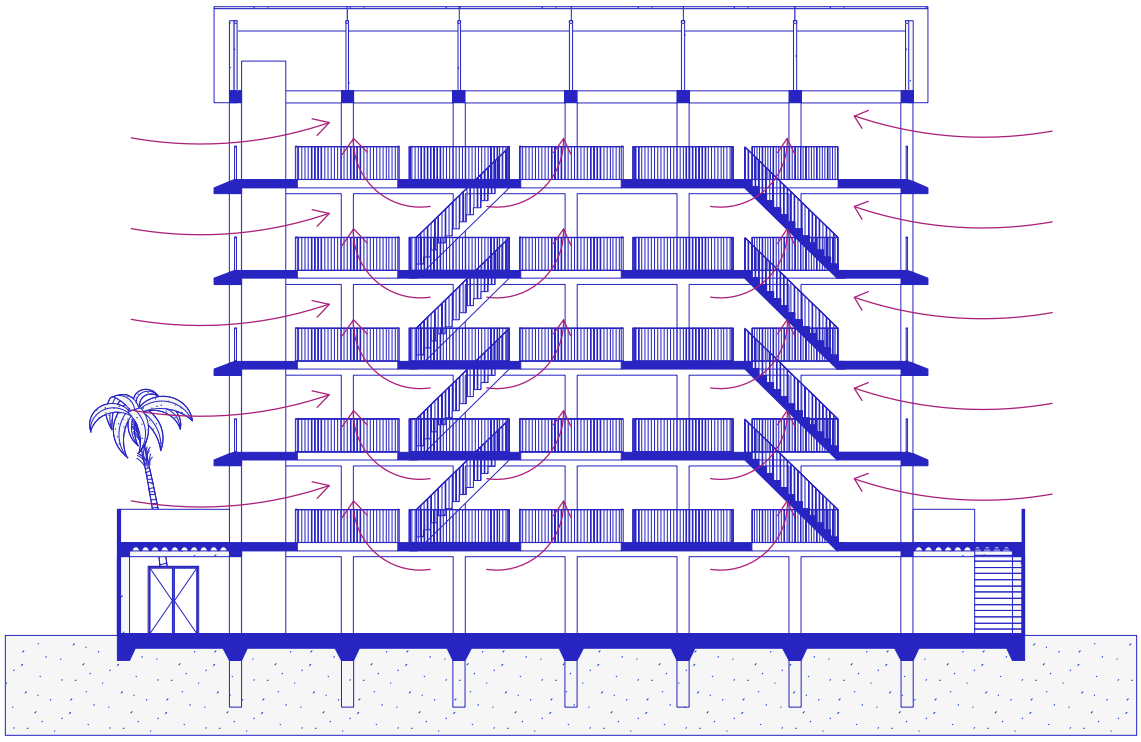


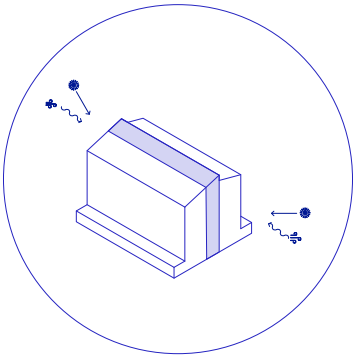


Cross ventilation

*

CLIMATIC DESIGN
Cross & stack ventilation

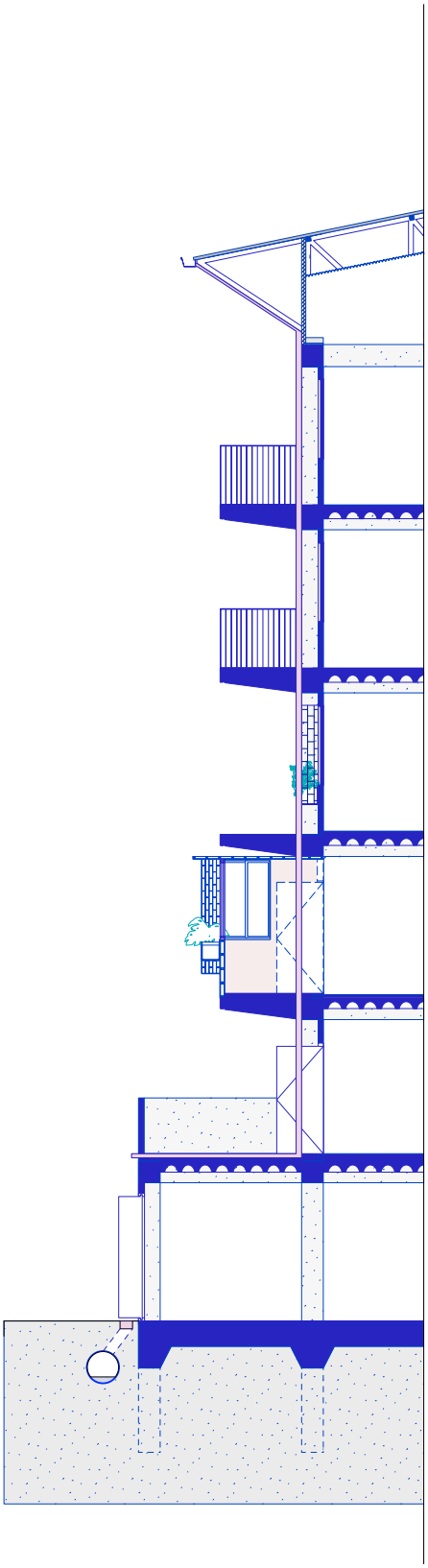




Cross ventilation

*

CLIMATIC DESIGN
Rainwater collection



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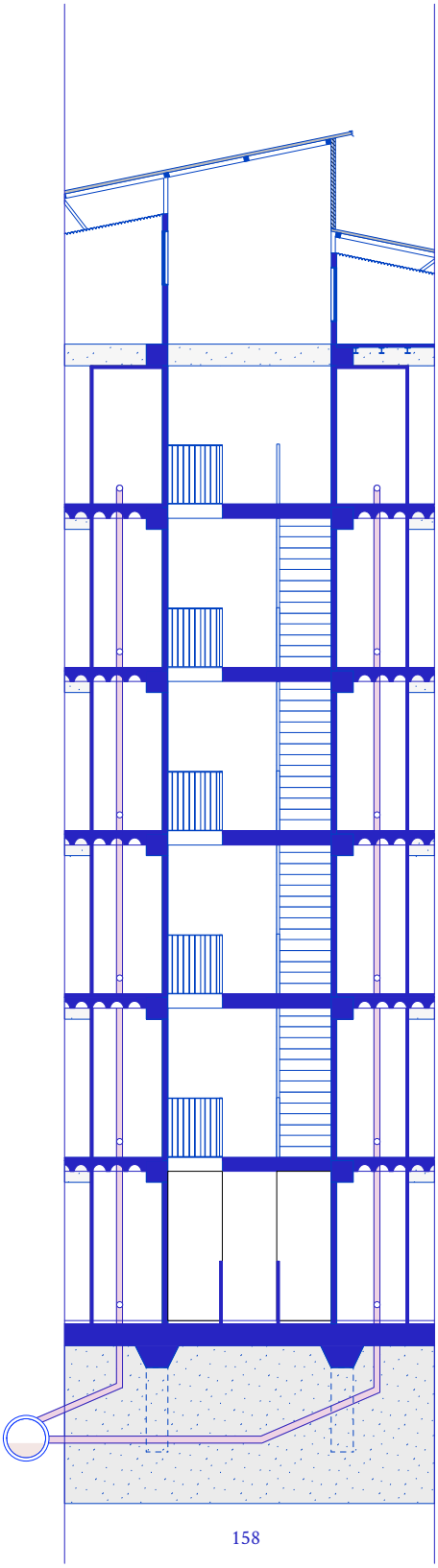
CLIMATIC DESIGN

Sewage system



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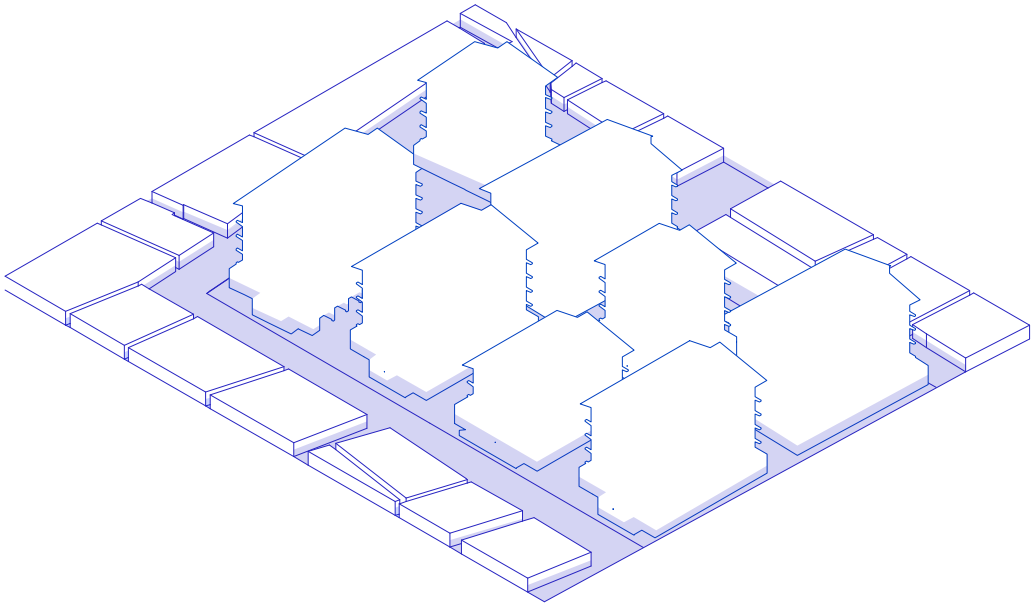
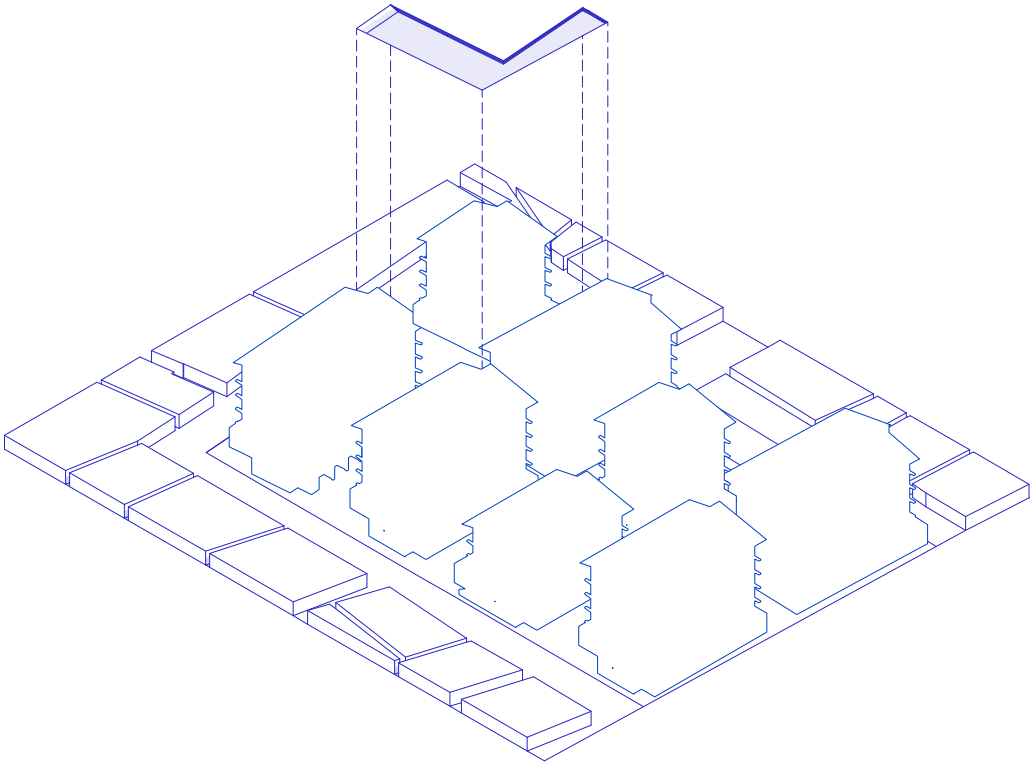
SUSTAINABILITY & RESILIENCE

Rainwater management



- Without reservoir square -
(Flooding during monsoon)

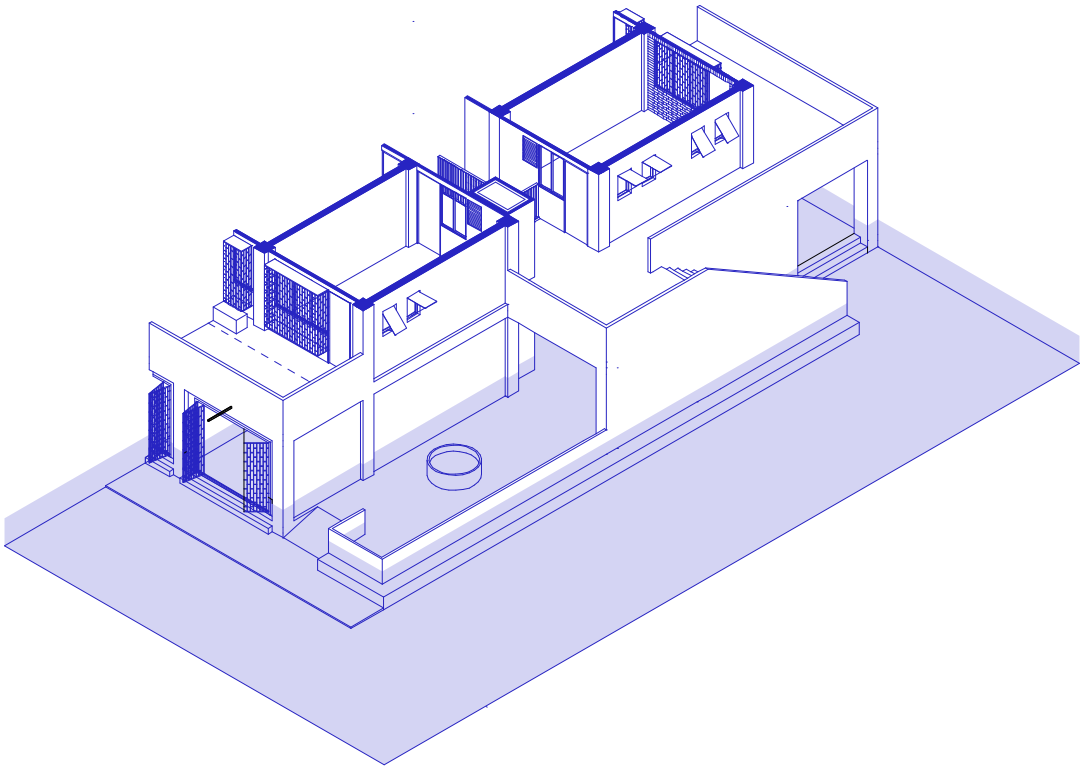


- Reservoir square for the uptake of rainwater -

*

SUSTAINABILITY & RESILIENCE

Rainwater management

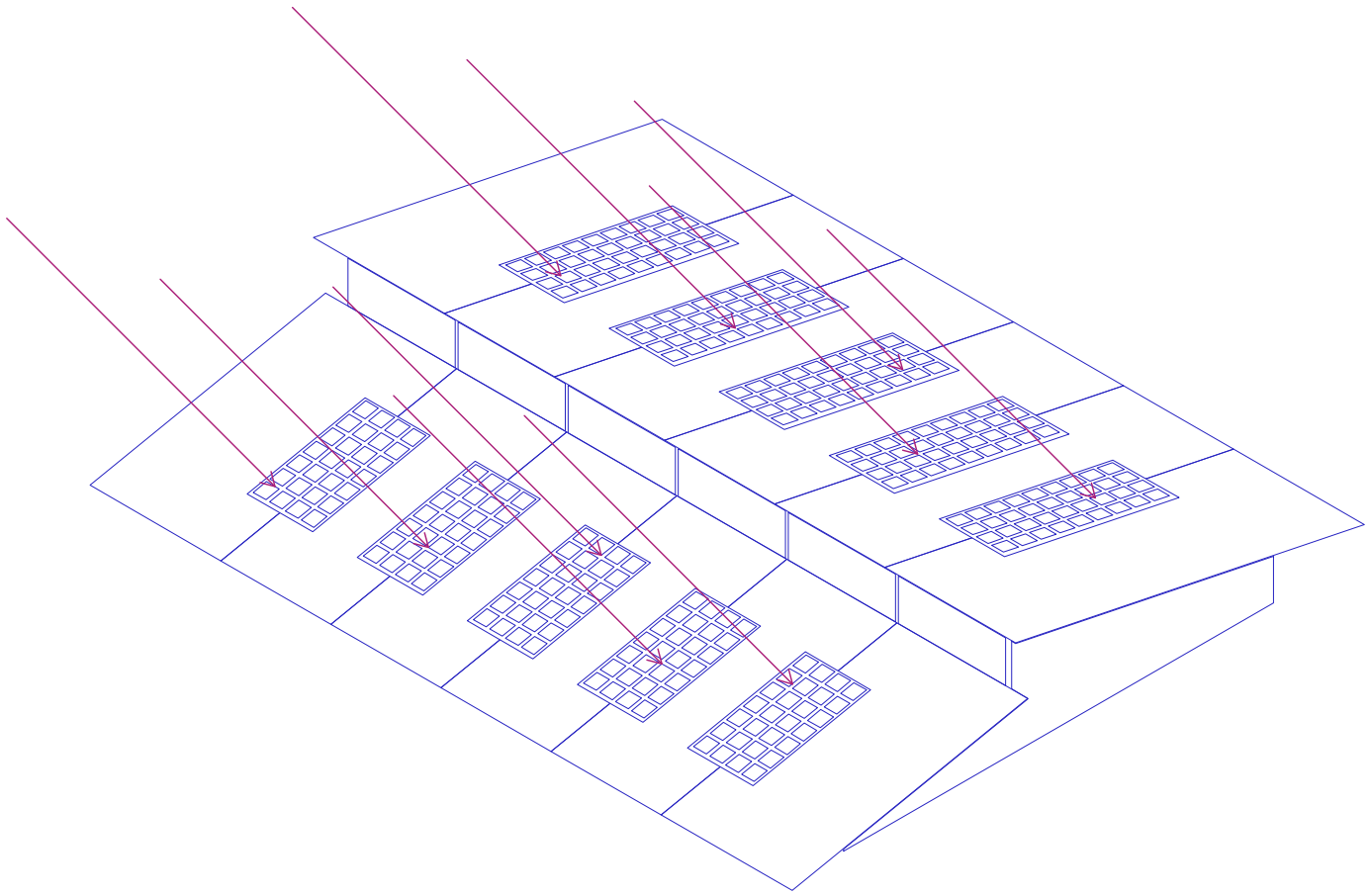


- Elevated groundfloor -
- Dwellings on first floor -

*

SUSTAINABILITY & RESILIENCE

Green energie production: PV panels



There is the possibilty to invest in PV panels. The housing society has as advantage that it can split the cost as a collective and can approach the NGO to ask for additional funding.

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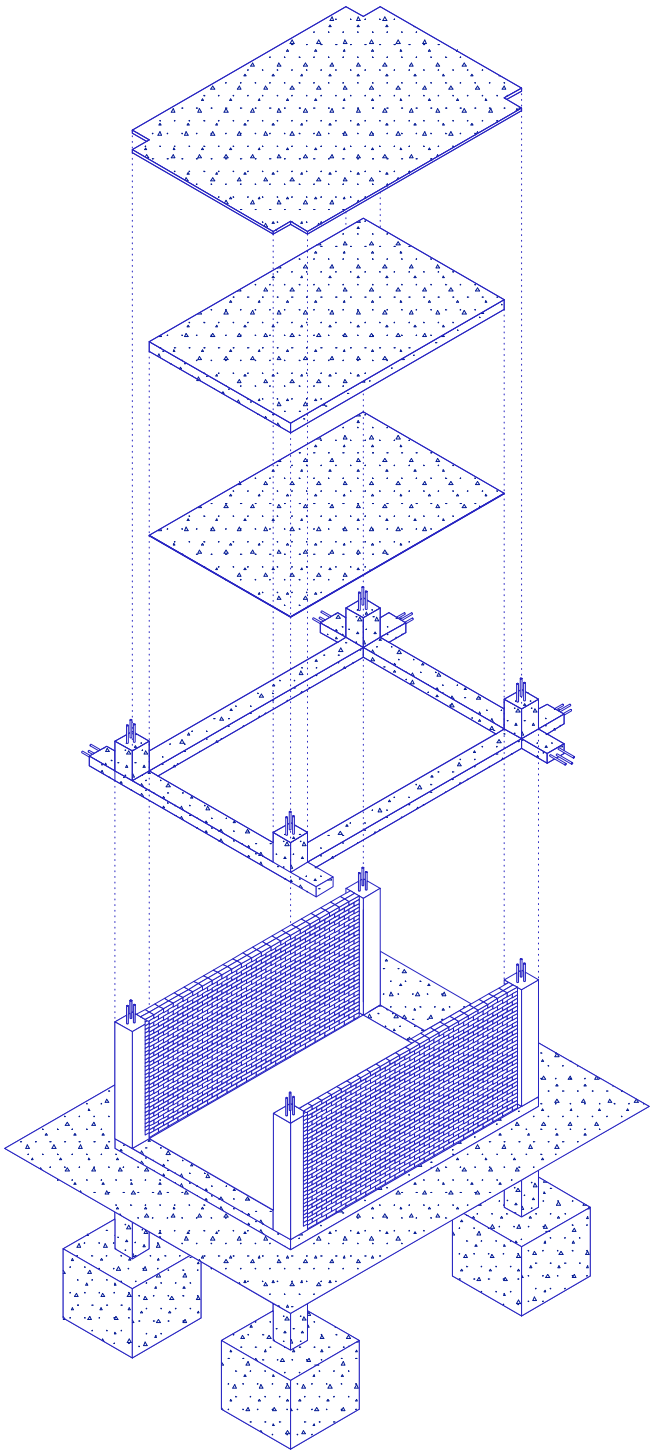
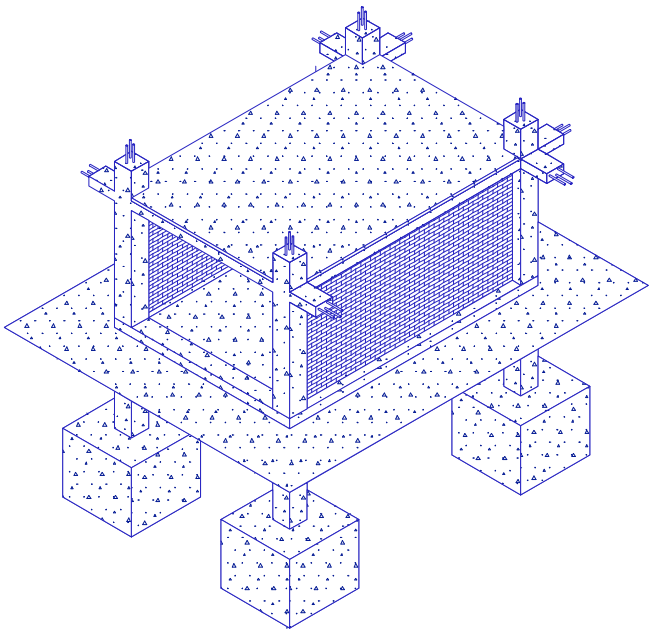
CONSTRUCTION
Main loadbearing construction





Construction consists of a reinforced concrete frame with reinforced concrete flooring infill with ceramic pots for more material cost-efficiency and weight reduction.

Architectural design

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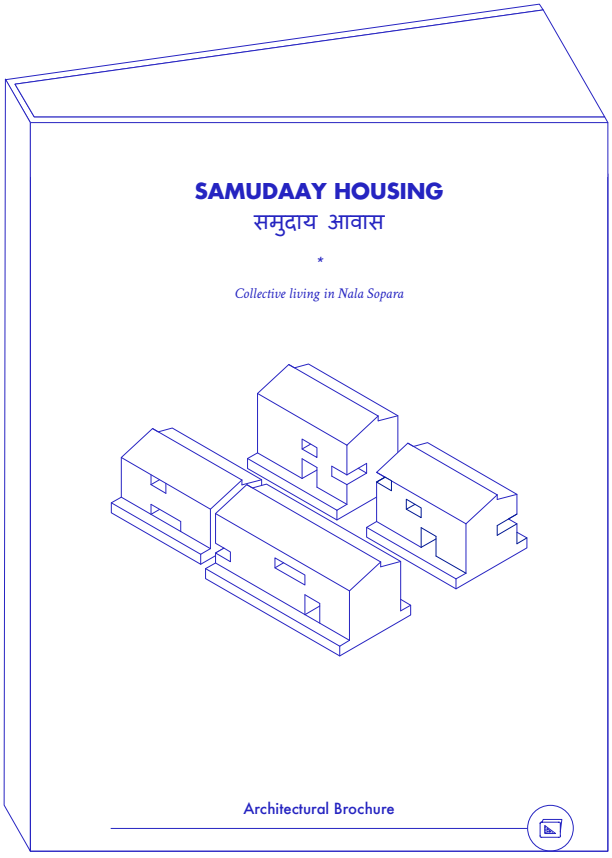
MATERIALISATION, DETAILING & COST ESTIMATION

See Architectural brochure



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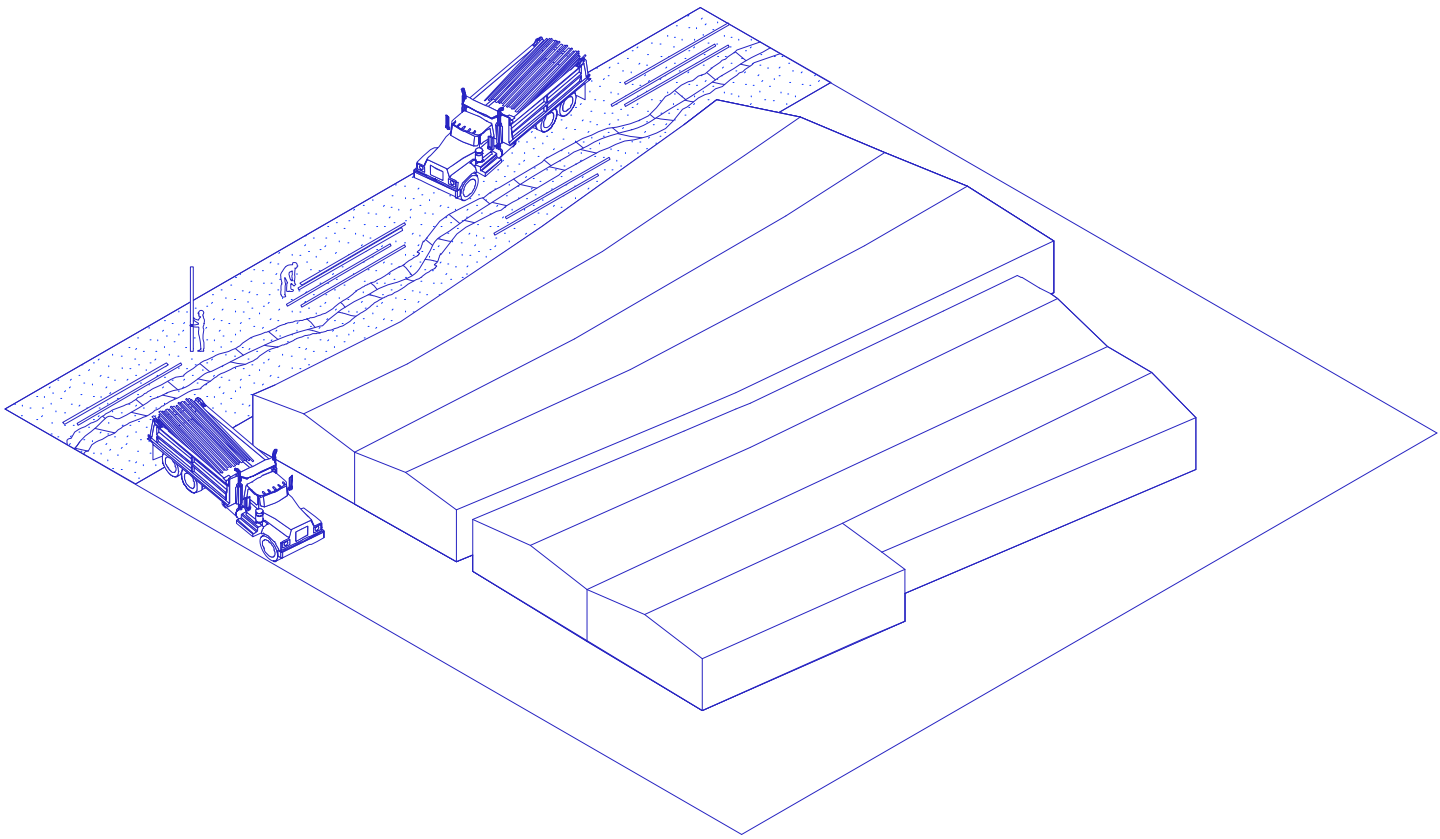
FASING & CONSTRUCTION TIME

Public infrastructure



Month 1 | Month 2 | Month 3

At the initial start of the building process, the local municipality needs to step in to deliver and construct the basic public infrastructure such as a sewage system, drainage water system and water supply. In reality this probably won't happen this easily and is time consuming, but in the best scenario this will take two months.

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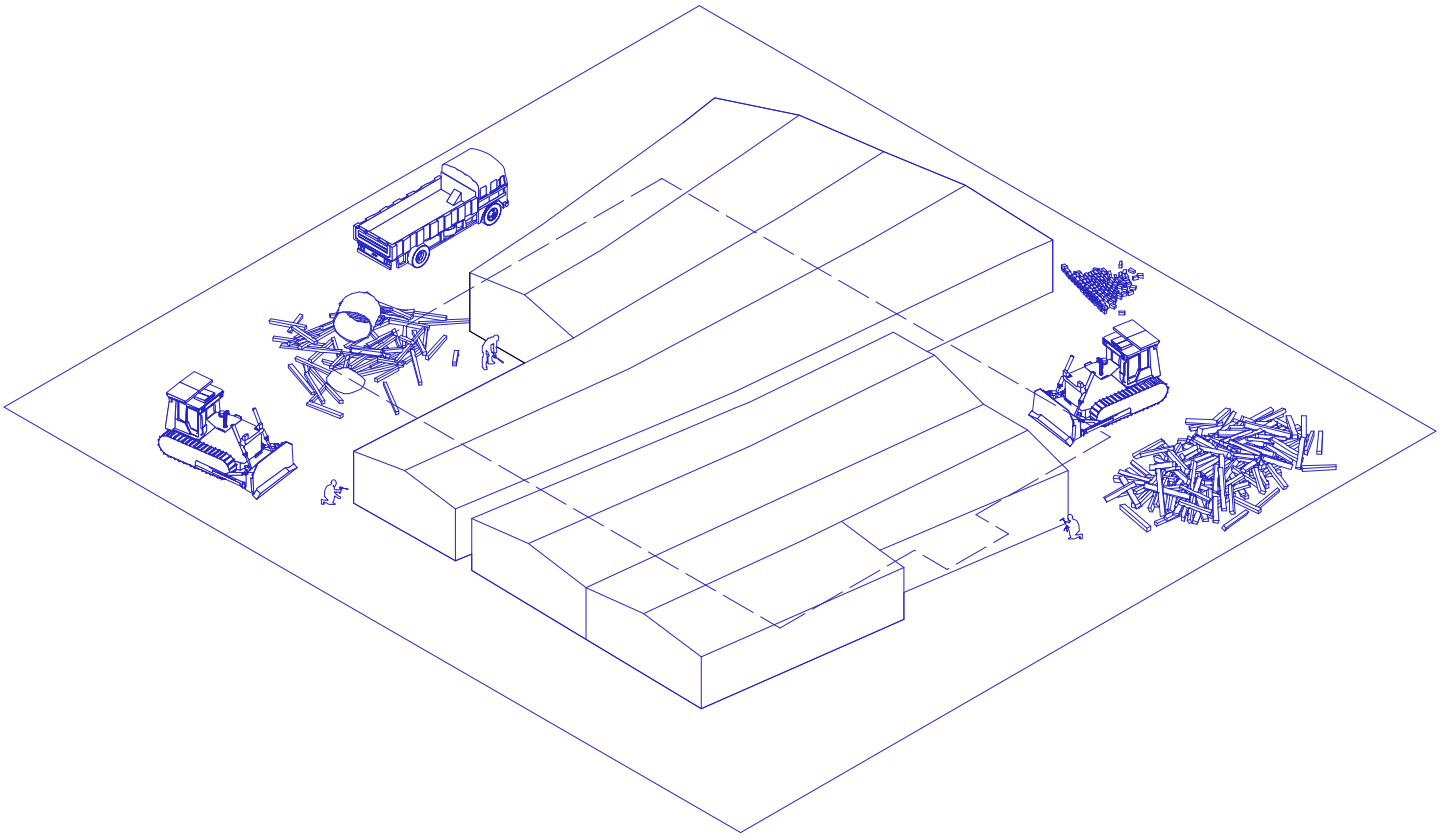
FASING & CONSTRUCTION TIME

Demolition & displacement



Month 1	Month 2	Month 3

Now basic infrastructure is in place demolition can begin (in fases), depending on the society/building group that is interested in living in the new development. Demolition, while it is happening in smaller portions can be done within the timespan of a month.

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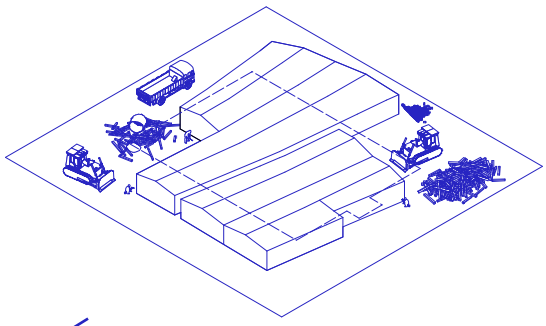
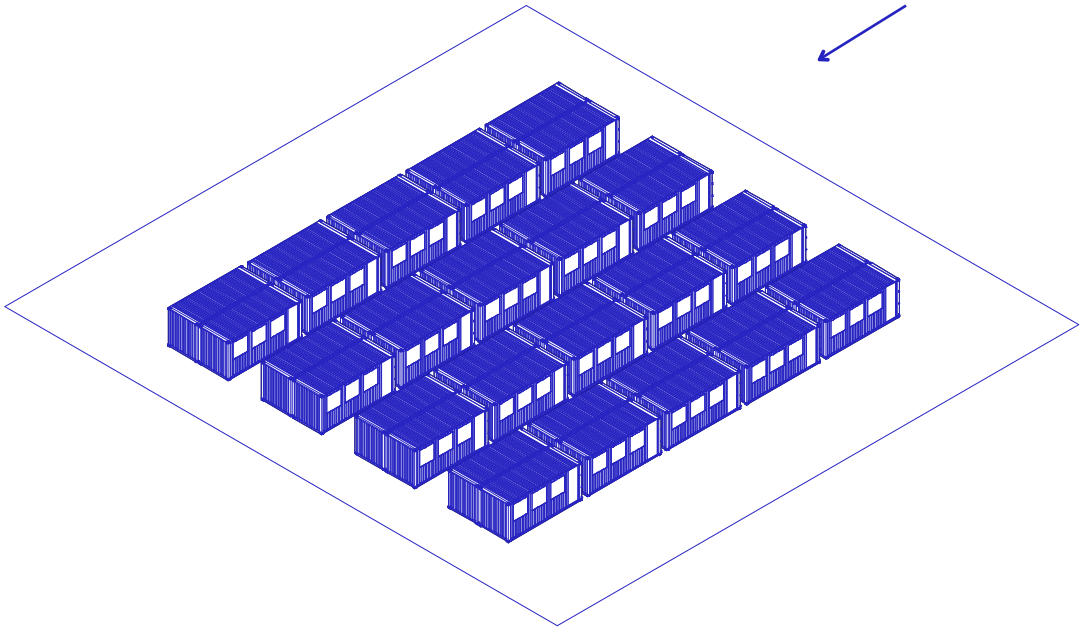
FASING & CONSTRUCTION TIME

Demolition & displacement

Baithi chawls: - 40 units



Temporary homes: + 40 units



Month 4 | Month 5 | Month 6

During demolition local people are being evicted and need to be offered a temporarily new home. While Mumbai is a big port city and modern building materials and goods are available a good, economical option could be the use of temporary container houses.

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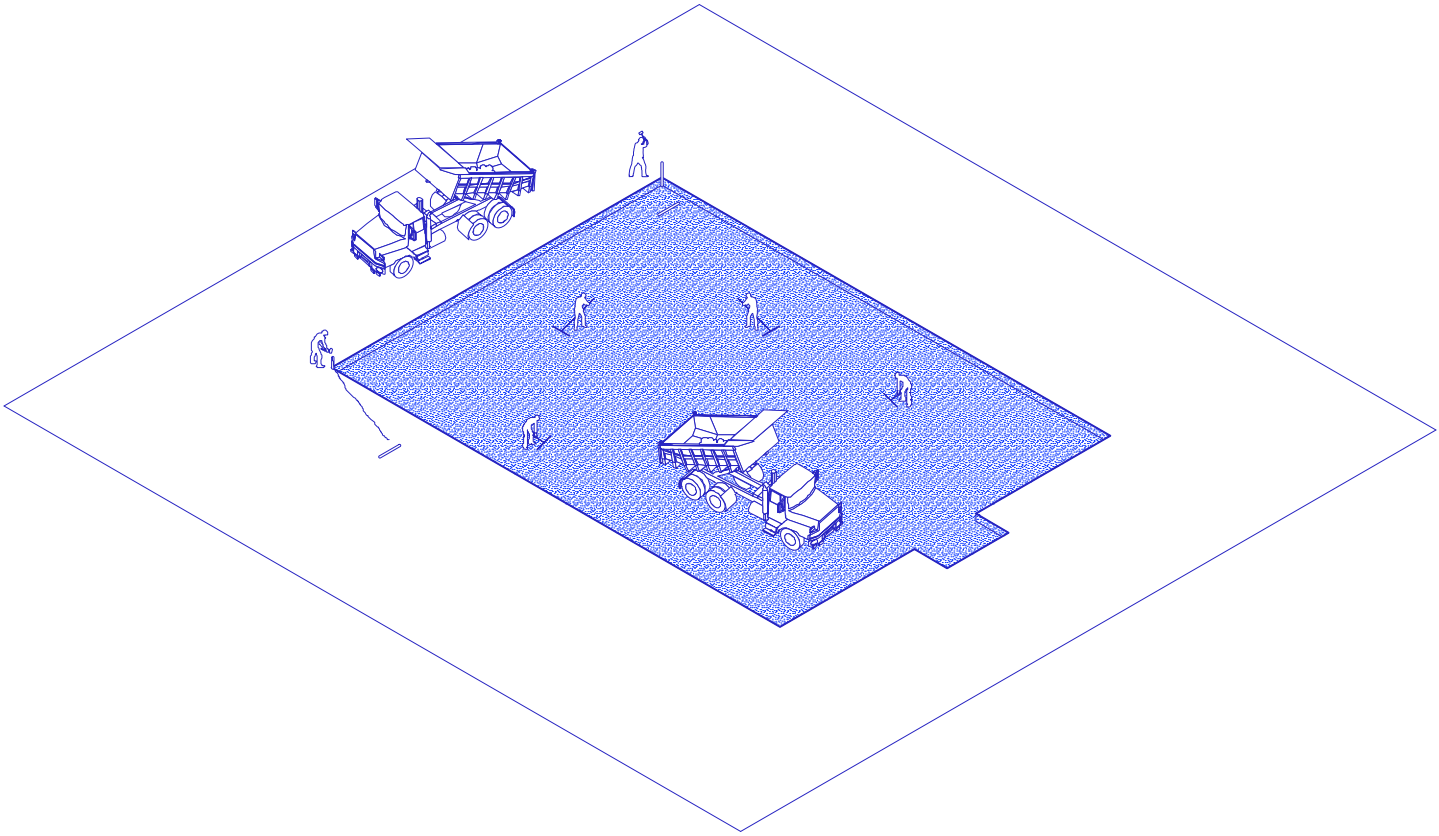
FASING & CONSTRUCTION TIME

Groundwork

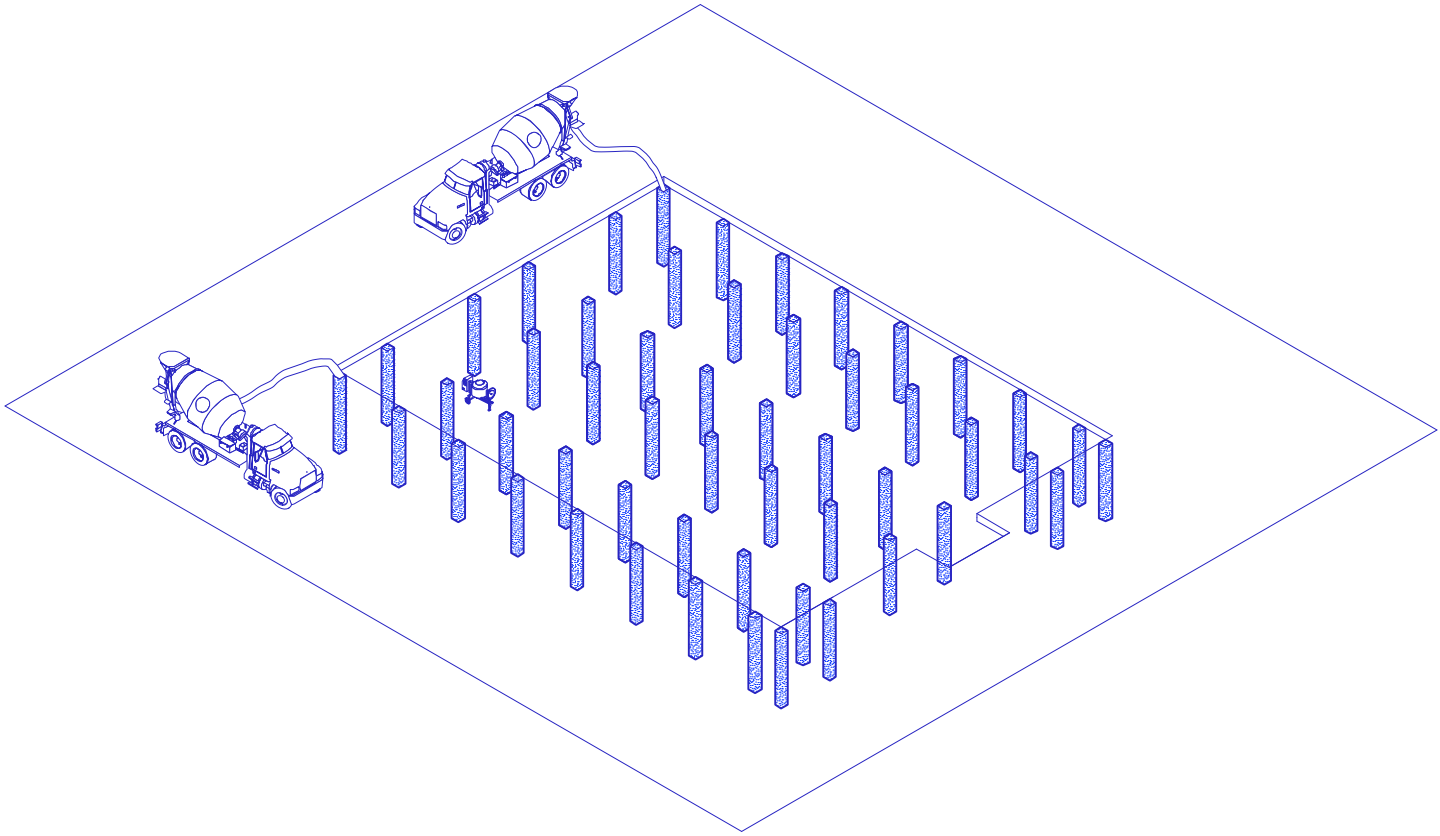


Month 4 | Month 5 | Month 6

*

FASING & CONSTRUCTION TIME

Foundations



Month 4 | Month 5 | Month 6

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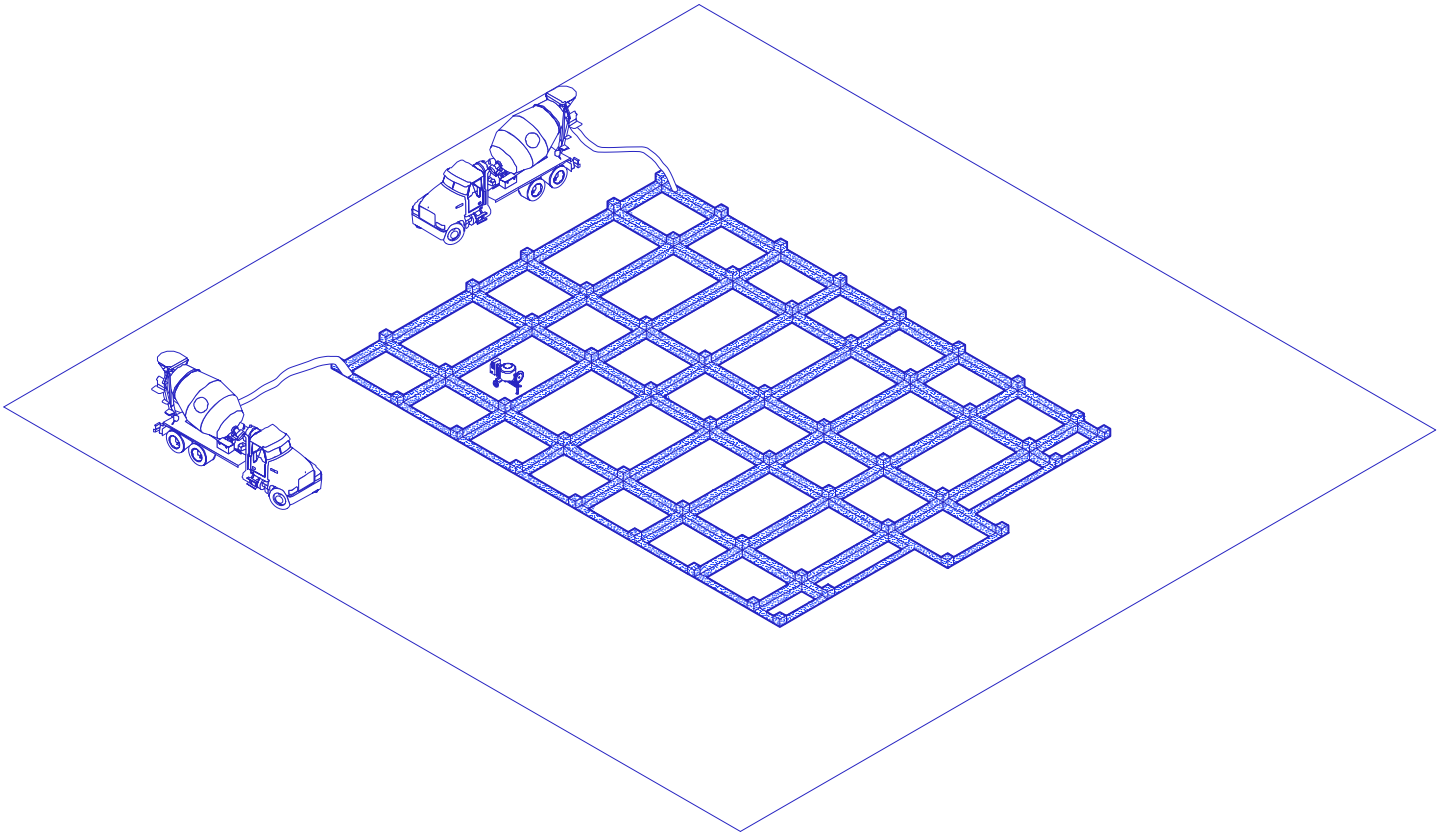
FASING & CONSTRUCTION TIME

Foundations



Month 4 | Month 5 | Month 6

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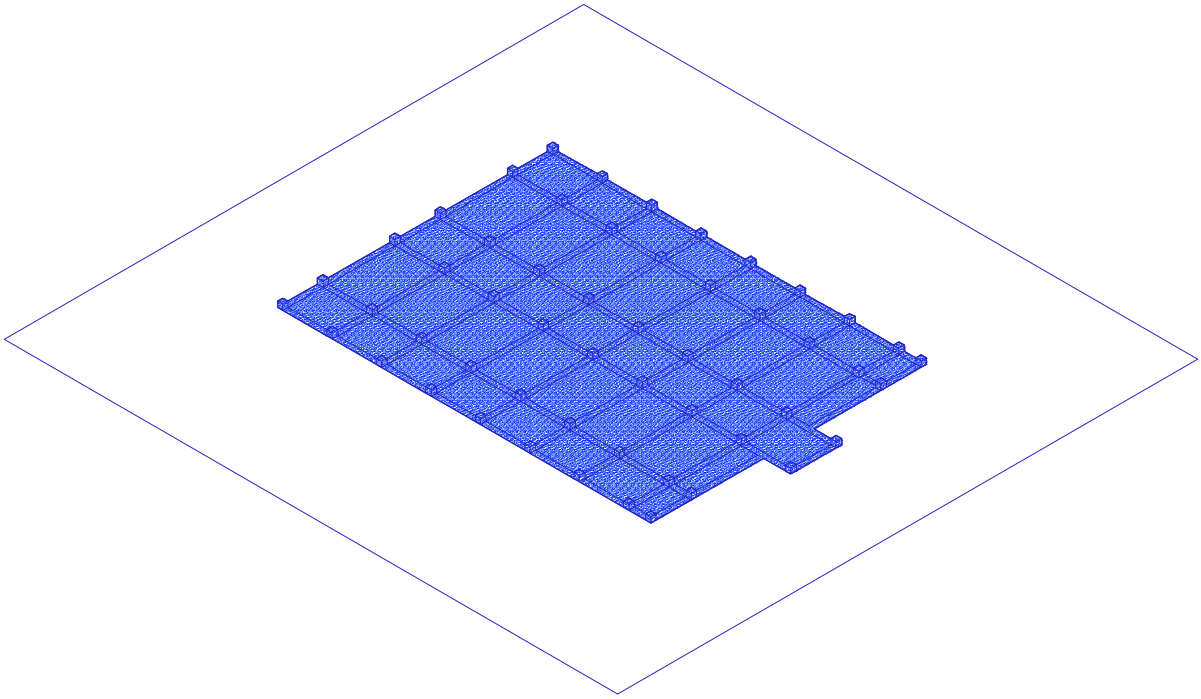
FASING & CONSTRUCTION TIME

Ground floor

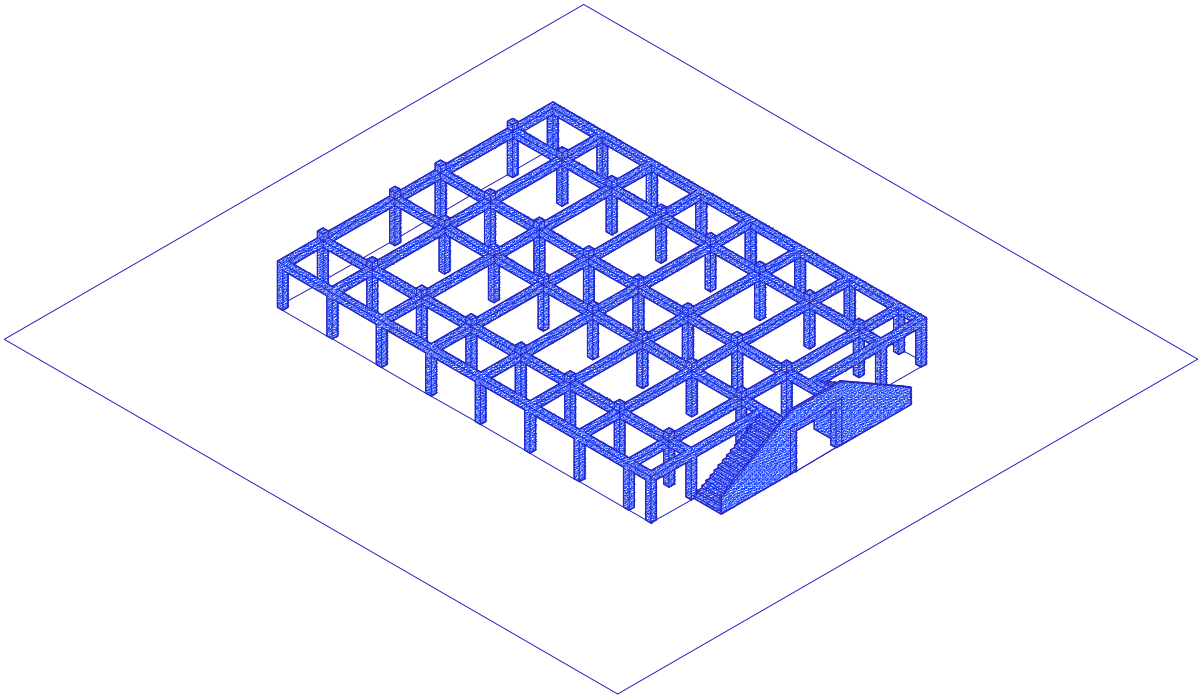


Month 4 | Month 5 | Month 6

*

FASING & CONSTRUCTION TIME

Ground floor construction

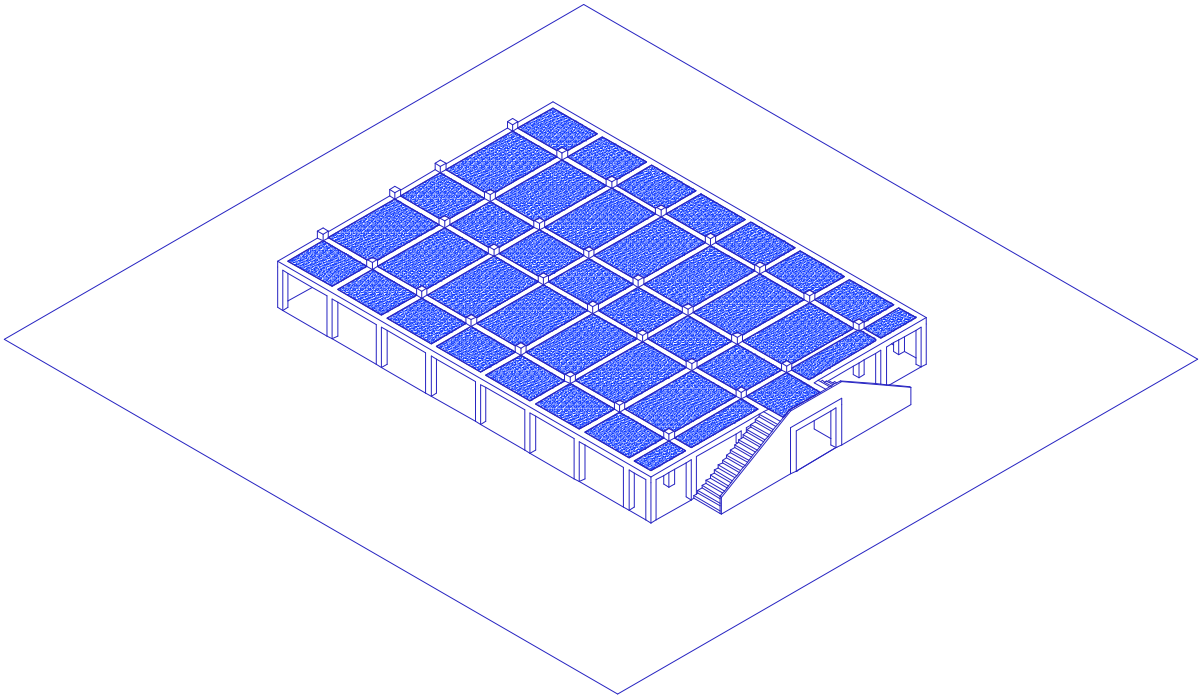


Month 7 | Month 8 | Month 9

*

FASING & CONSTRUCTION TIME

First floor inlay

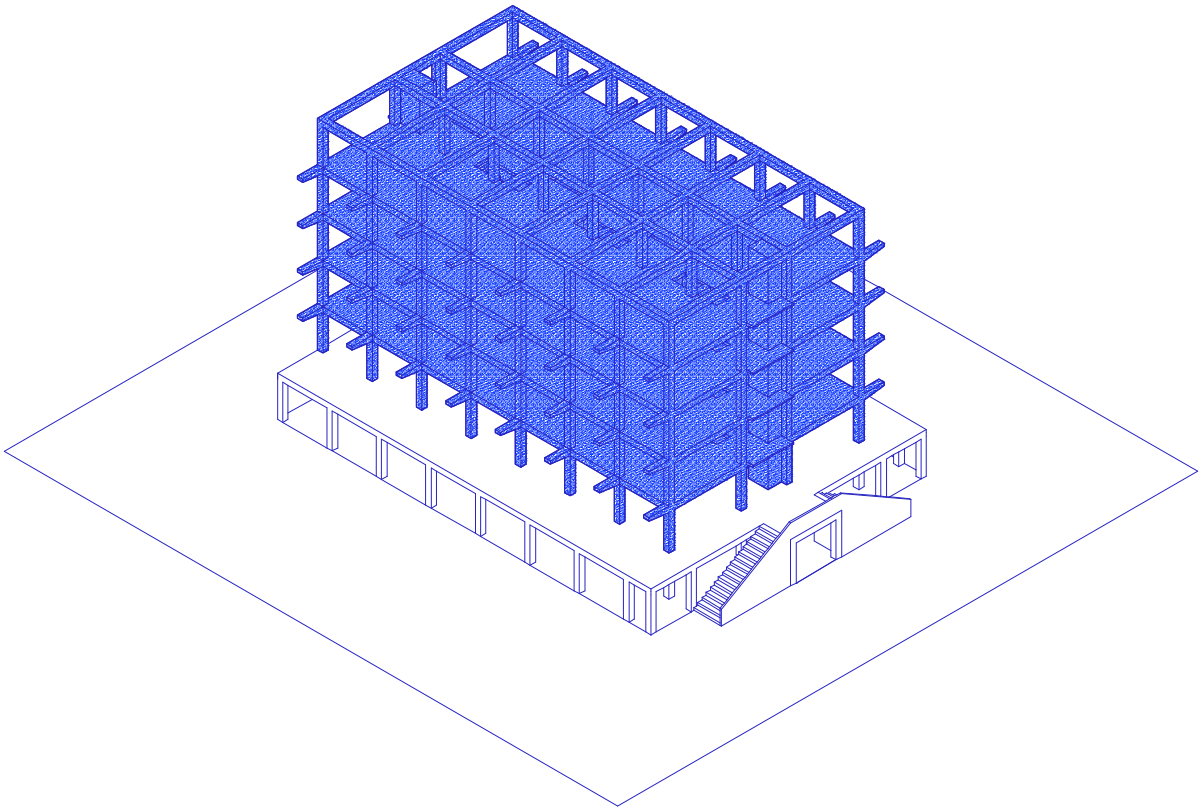


Month 7 | Month 8 | Month 9

*

FASING & CONSTRUCTION TIME

Construction of other floors



Month 9	Month 10	Month 11	Month 12	Month 13

For the construction time per floor I made an estimate of one month. This seems short but I took in consideration the fact that it implies for the construction of the concrete grid structure only. The walls and additional elements are added later.

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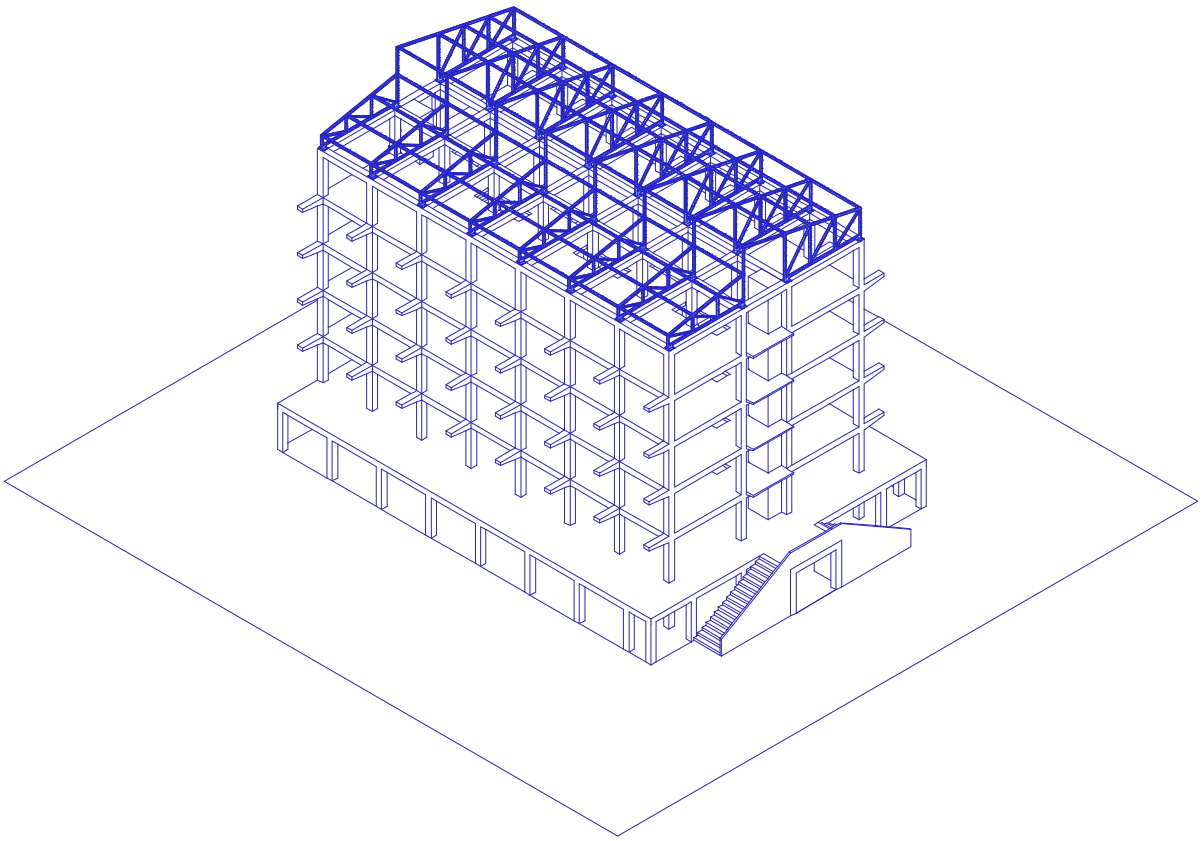
FASING & CONSTRUCTION TIME

Roof structure



Month 14 | Month 15 | Month 16

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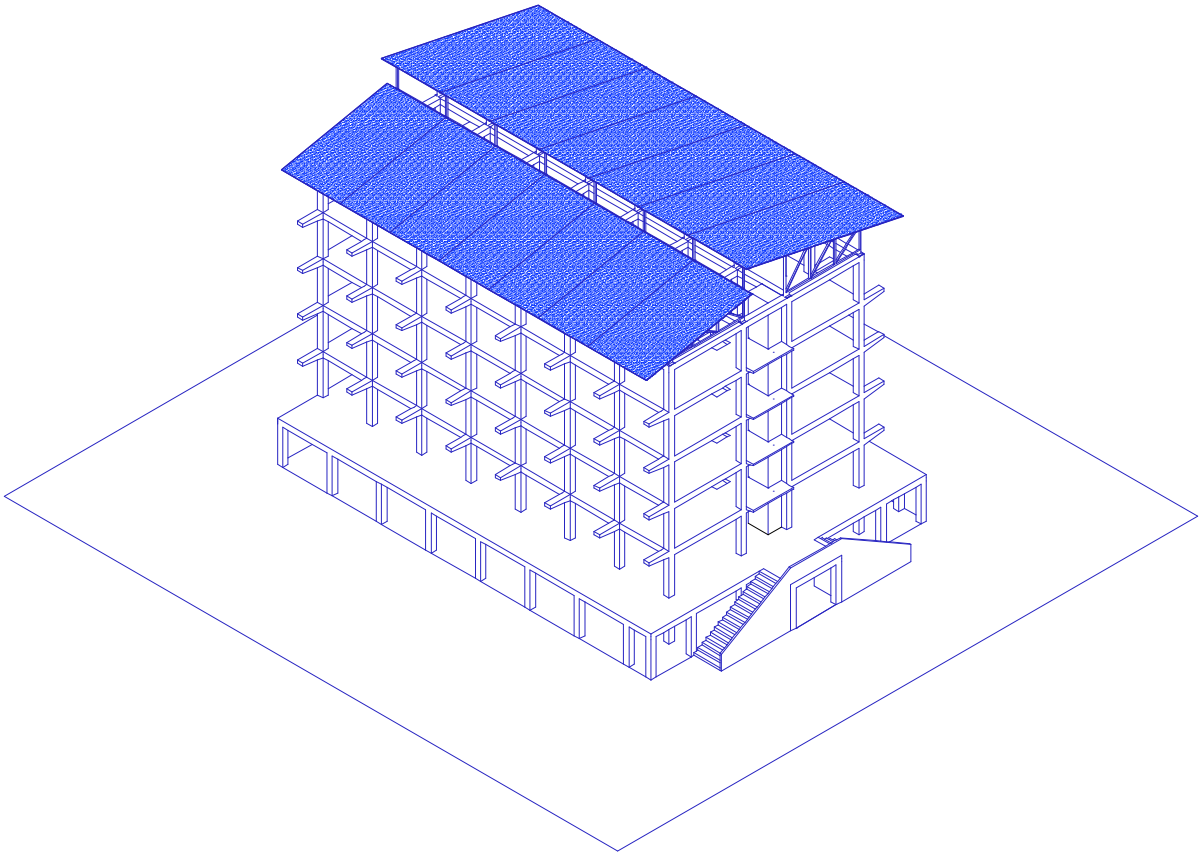
FASING & CONSTRUCTION TIME

Roofing

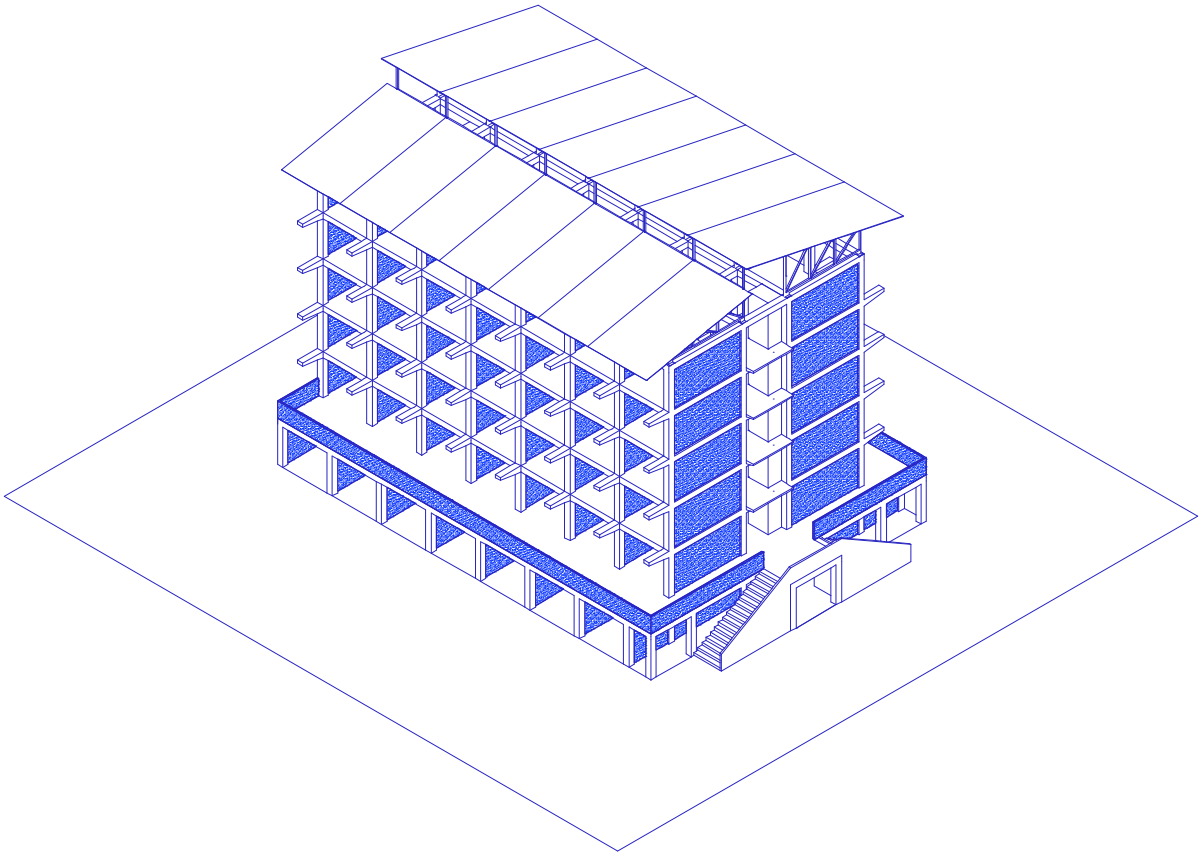


Month 14 | Month 15 | Month 16

*

FASING & CONSTRUCTION TIME

Brick infill

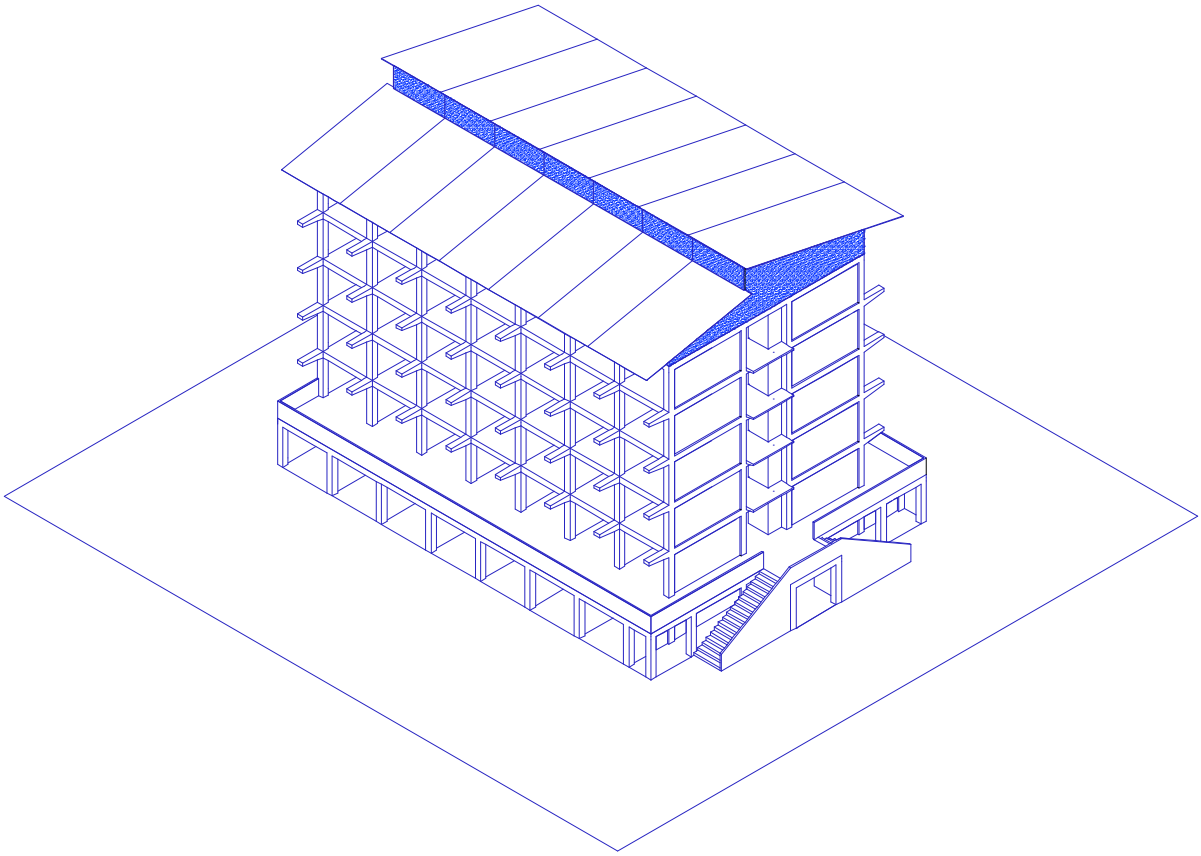


Month 14 | Month 15 | Month 16

*

FASING & CONSTRUCTION TIME

lamellae outer protection

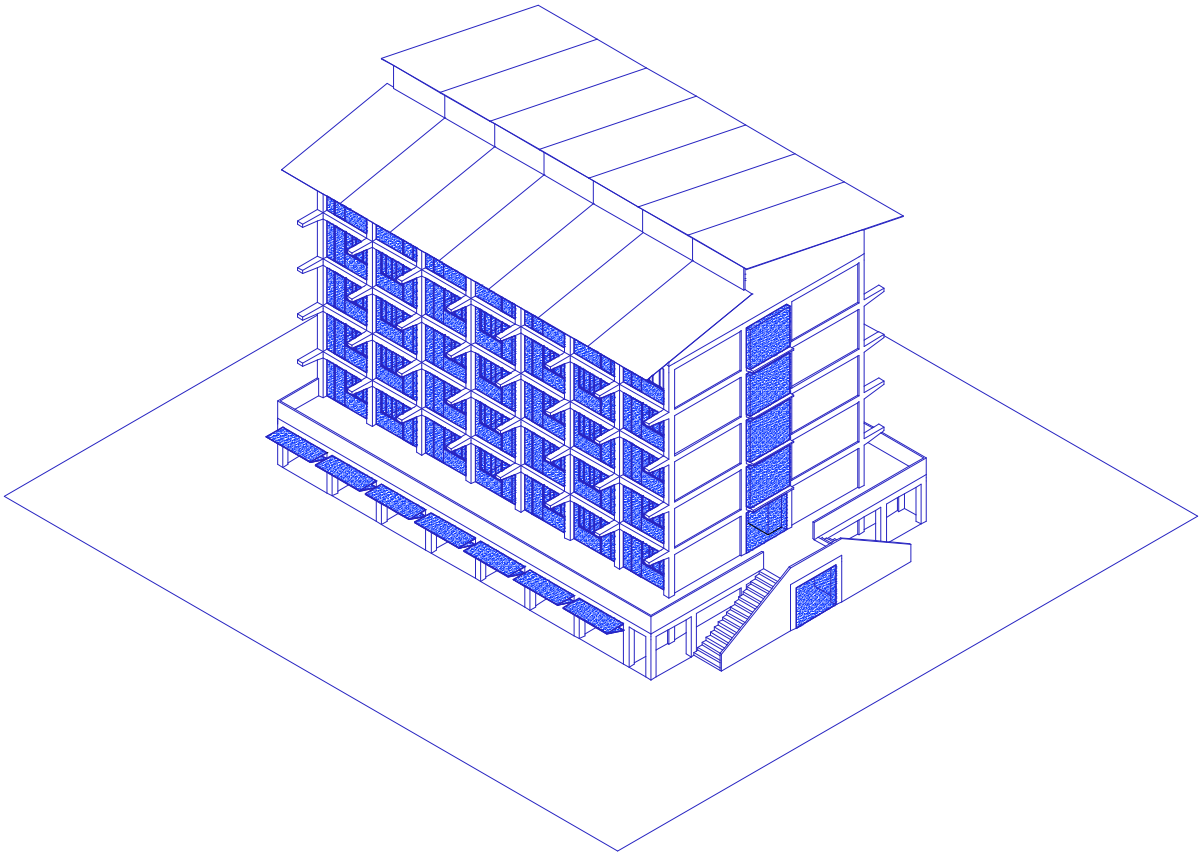


Month 17 | Month 18 | Month 19

*

FASING & CONSTRUCTION TIME

Facade construction

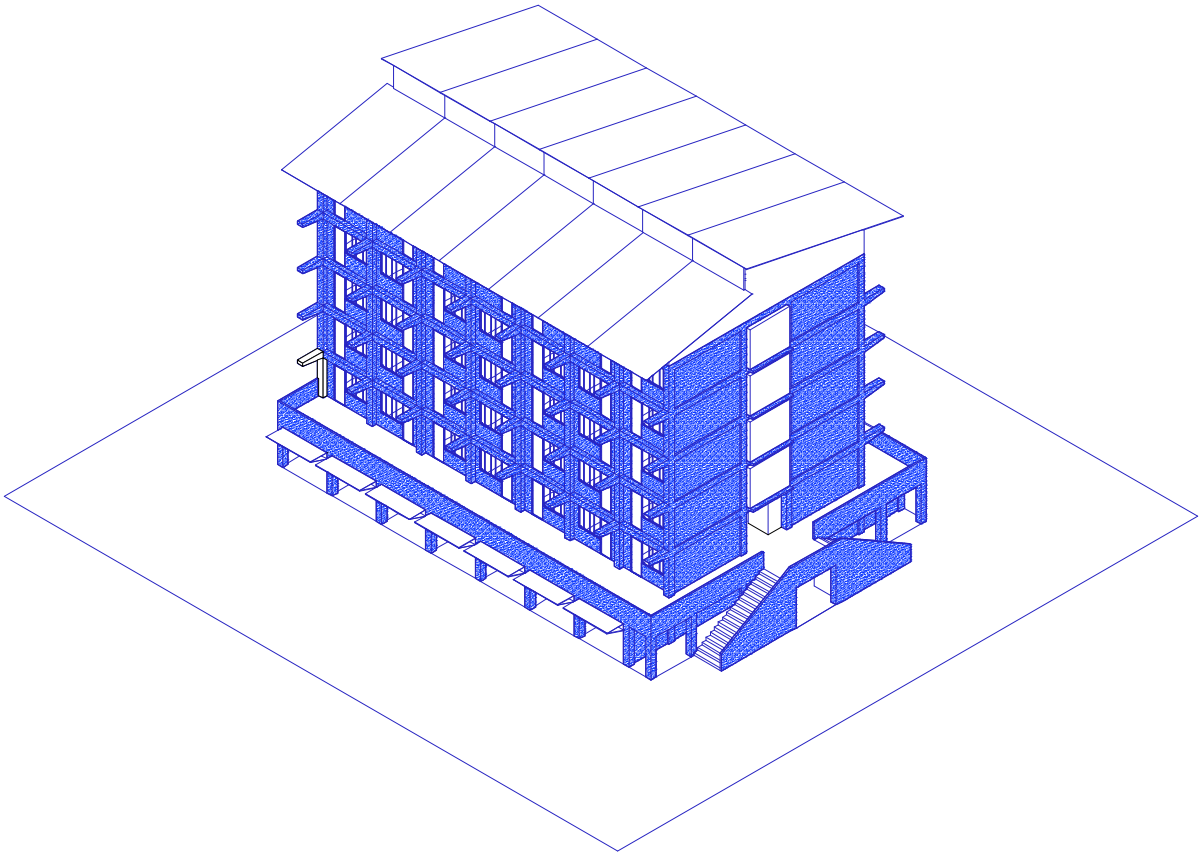


Month 17 | Month 18 | Month 19

*

FASING & CONSTRUCTION TIME

Plastering

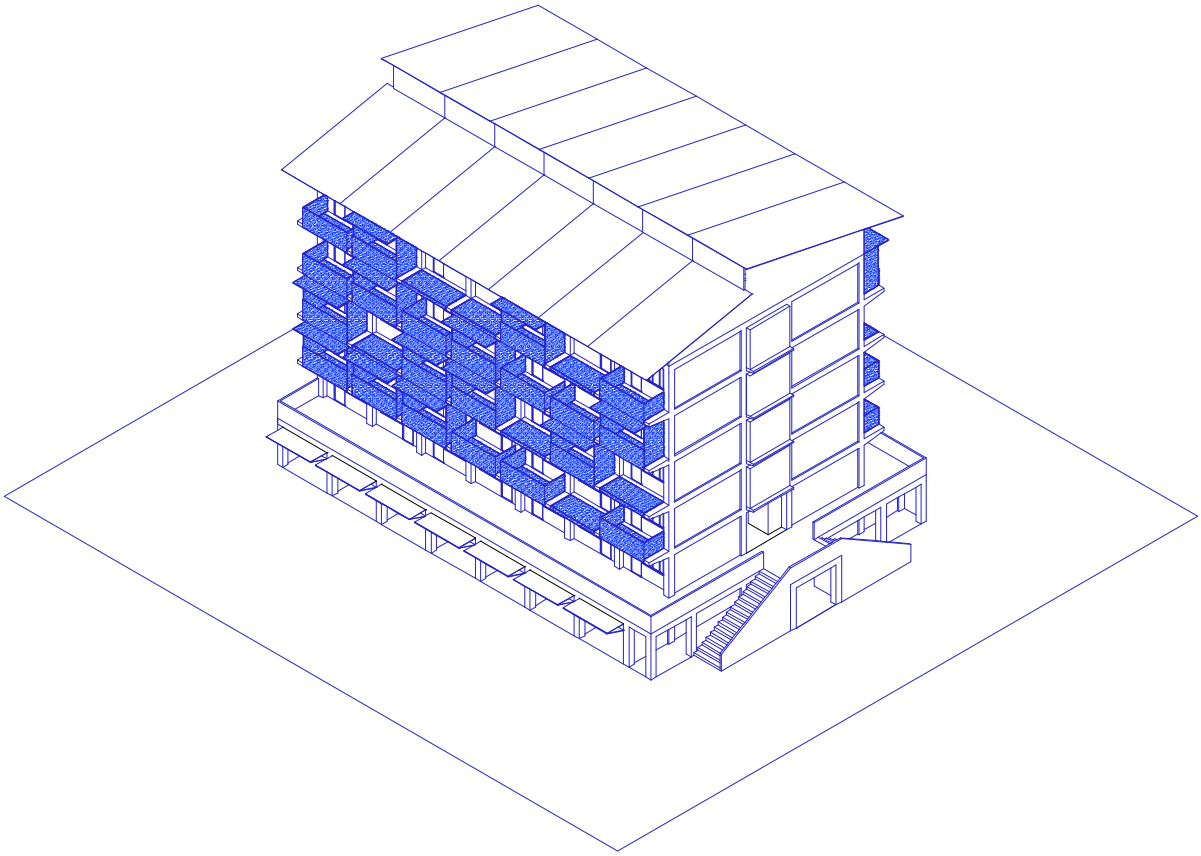


Month 17 | Month 18 | Month 19

*

FASING & CONSTRUCTION TIME

Extentions



Month 20

Future

The extensions can be added at any given time after completion of the project. It is flexible in the sense that the load-bearing construction is already in place, so people who acquire the money and/or need to expand their home can do so in the future.

Architectural design

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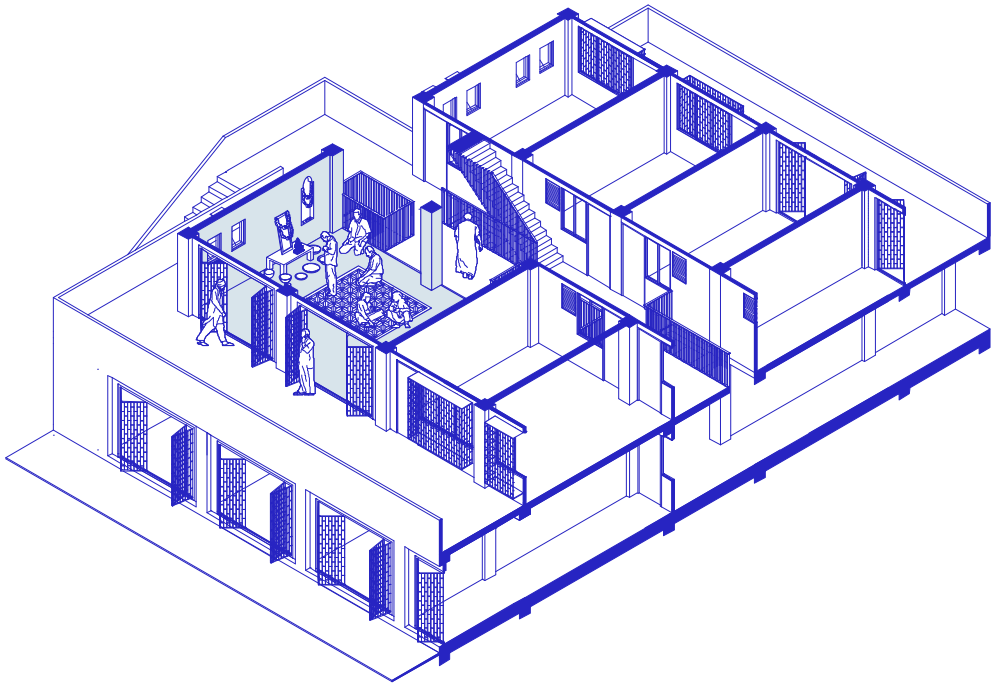
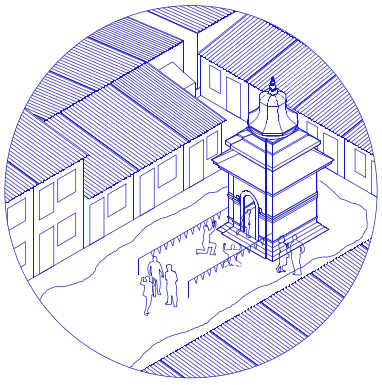
TRANSLATION OF THE PATTERNS OF INHABITATION

Social spaces

- Collective amenities -





Architectural design

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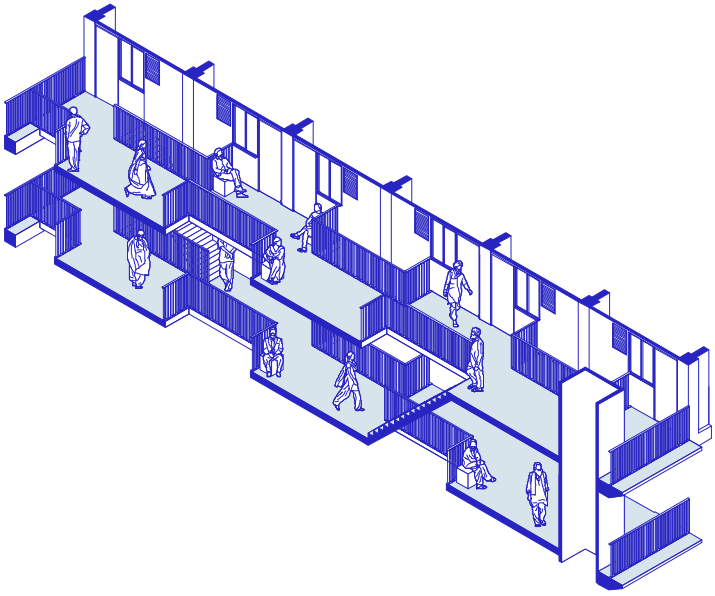
TRANSLATION OF THE PATTERNS OF INHABITATION

Social spaces

- Communal corridor -



Architectural design

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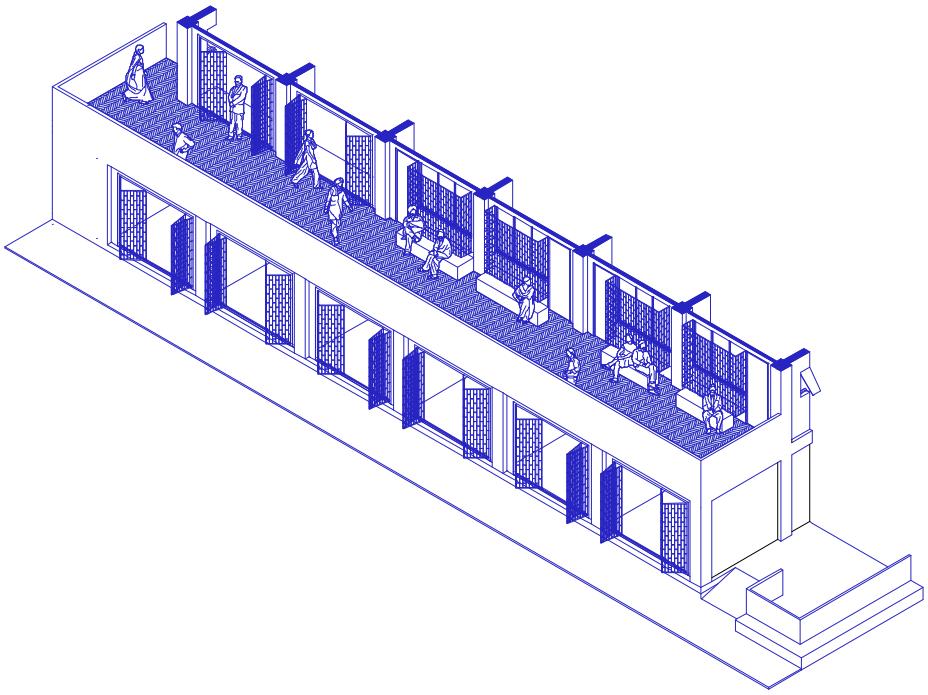
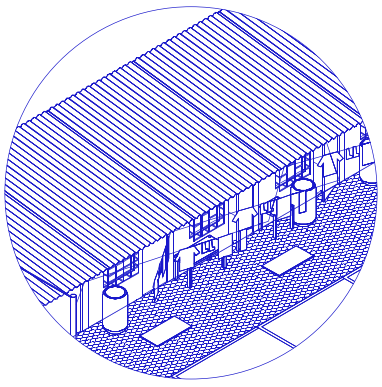
TRANSLATION OF THE PATTERNS OF INHABITATION

Social spaces

- Elevated street -





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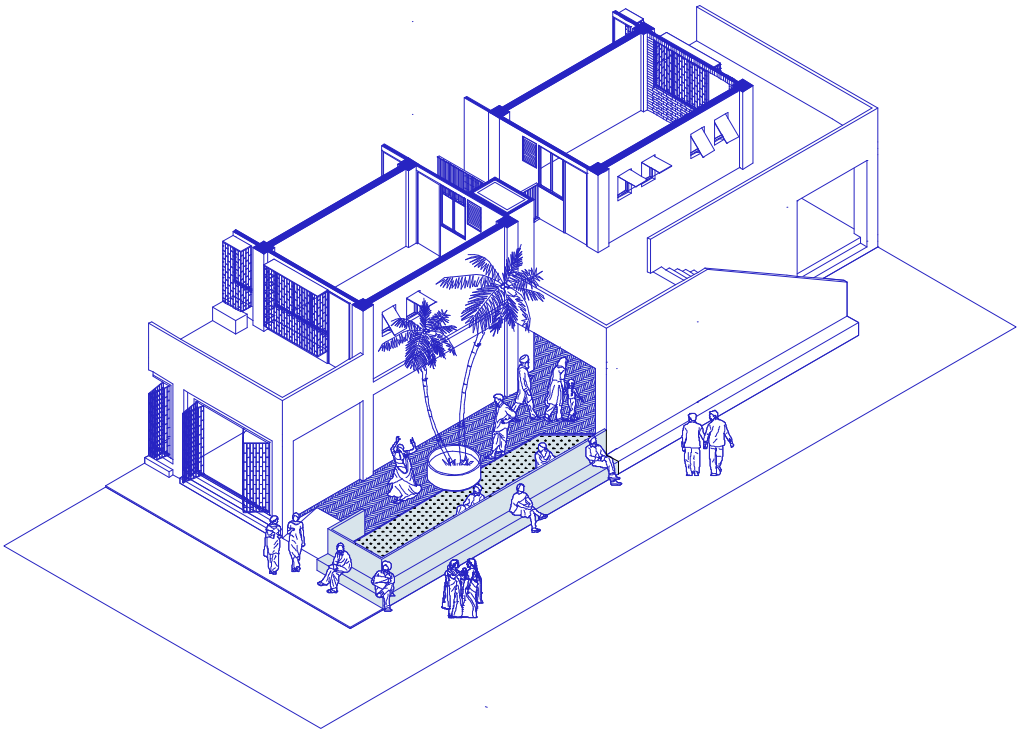
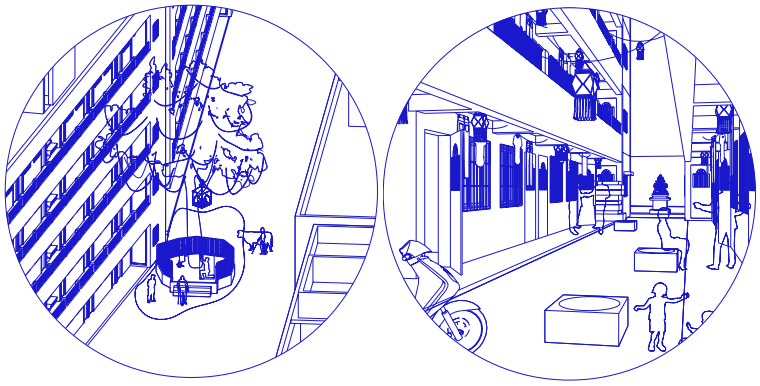
TRANSLATION OF THE PATTERNS OF INHABITATION

Social spaces

- Communal green pockets -





Architectural design

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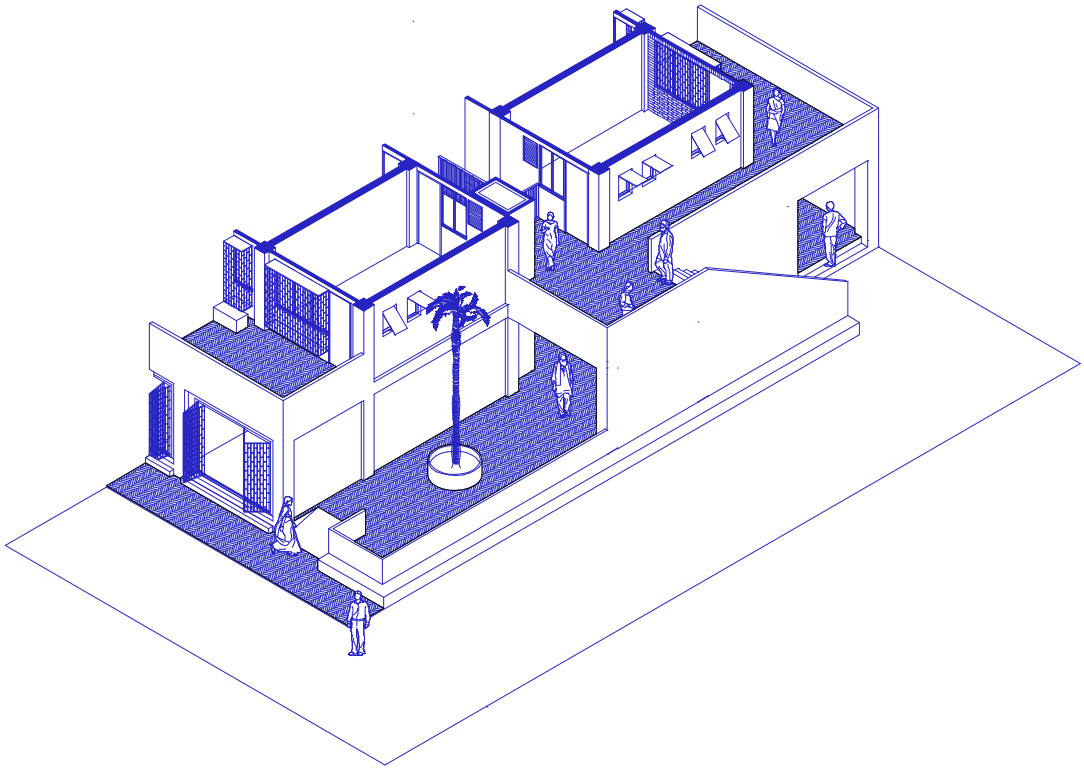
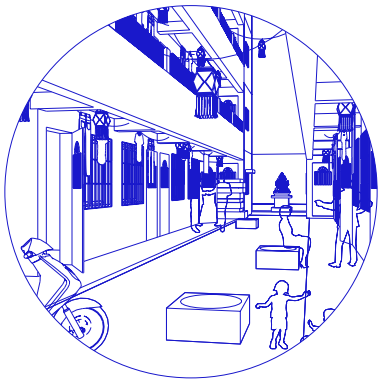
TRANSLATION OF THE PATTERNS OF INHABITATION

Borders

- Society pavement -





Architectural design

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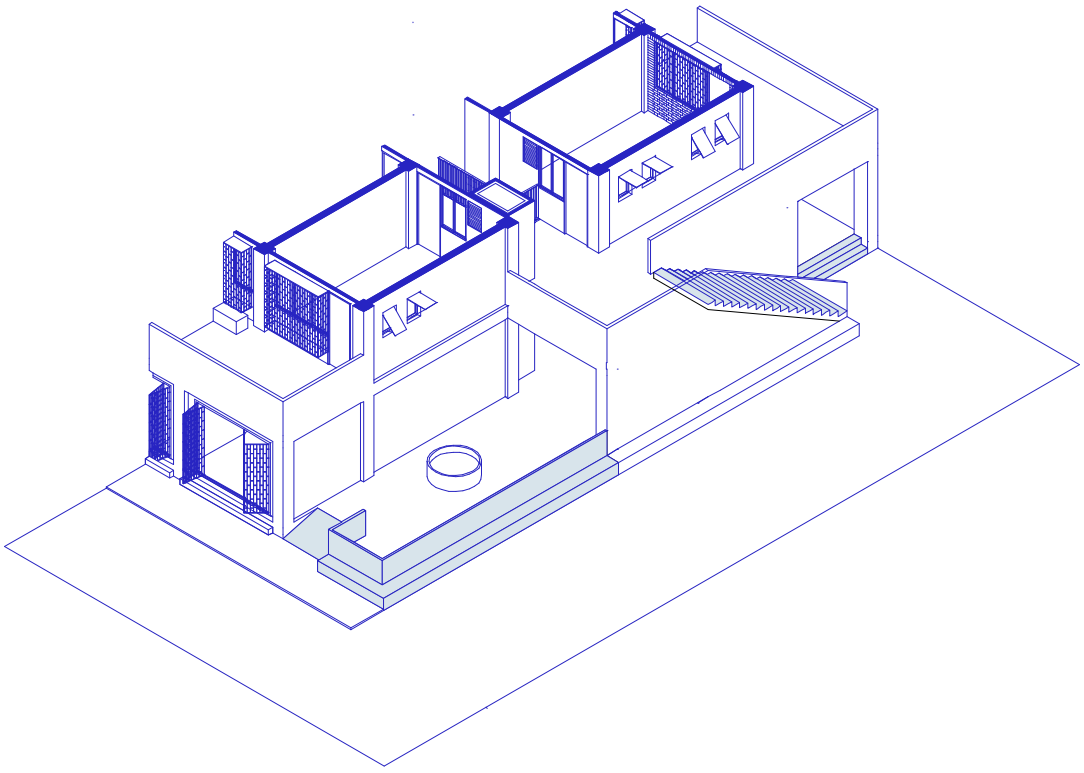
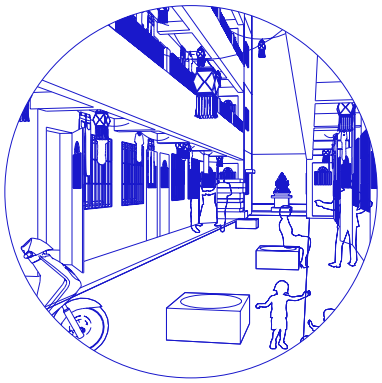
TRANSLATION OF THE PATTERNS OF INHABITATION

Borders

- Height differences -





Architectural design

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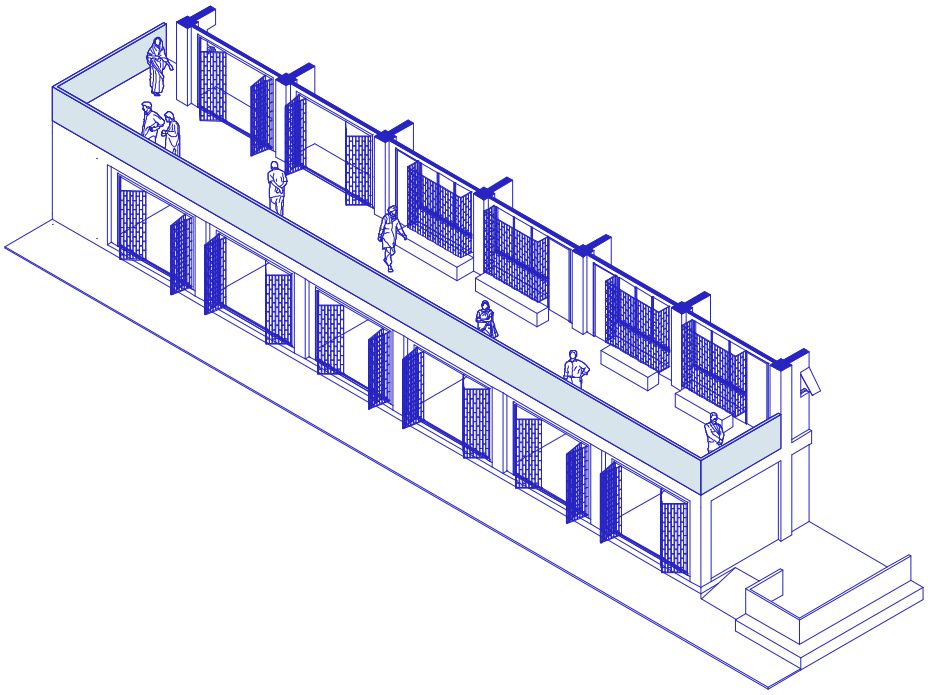
TRANSLATION OF THE PATTERNS OF INHABITATION

Borders

- Communal balcony -



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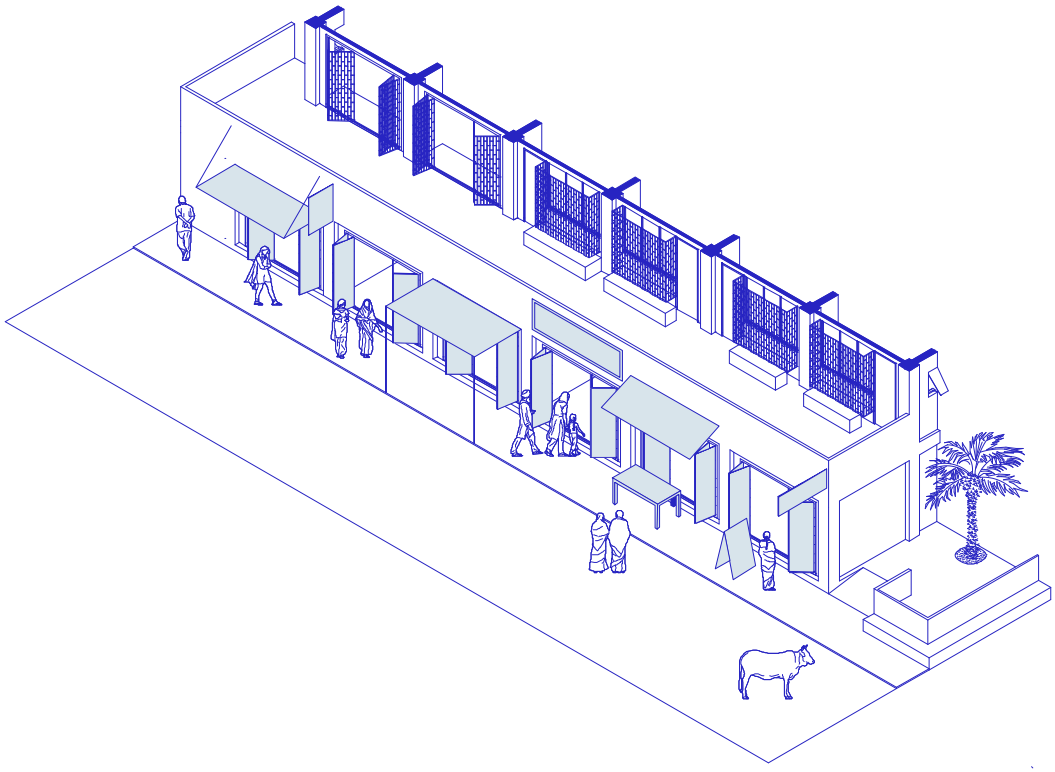
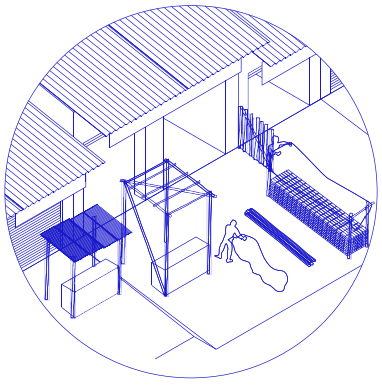
TRANSLATION OF THE PATTERNS OF INHABITATION

Borders

- Commercial fronts -





Architectural design

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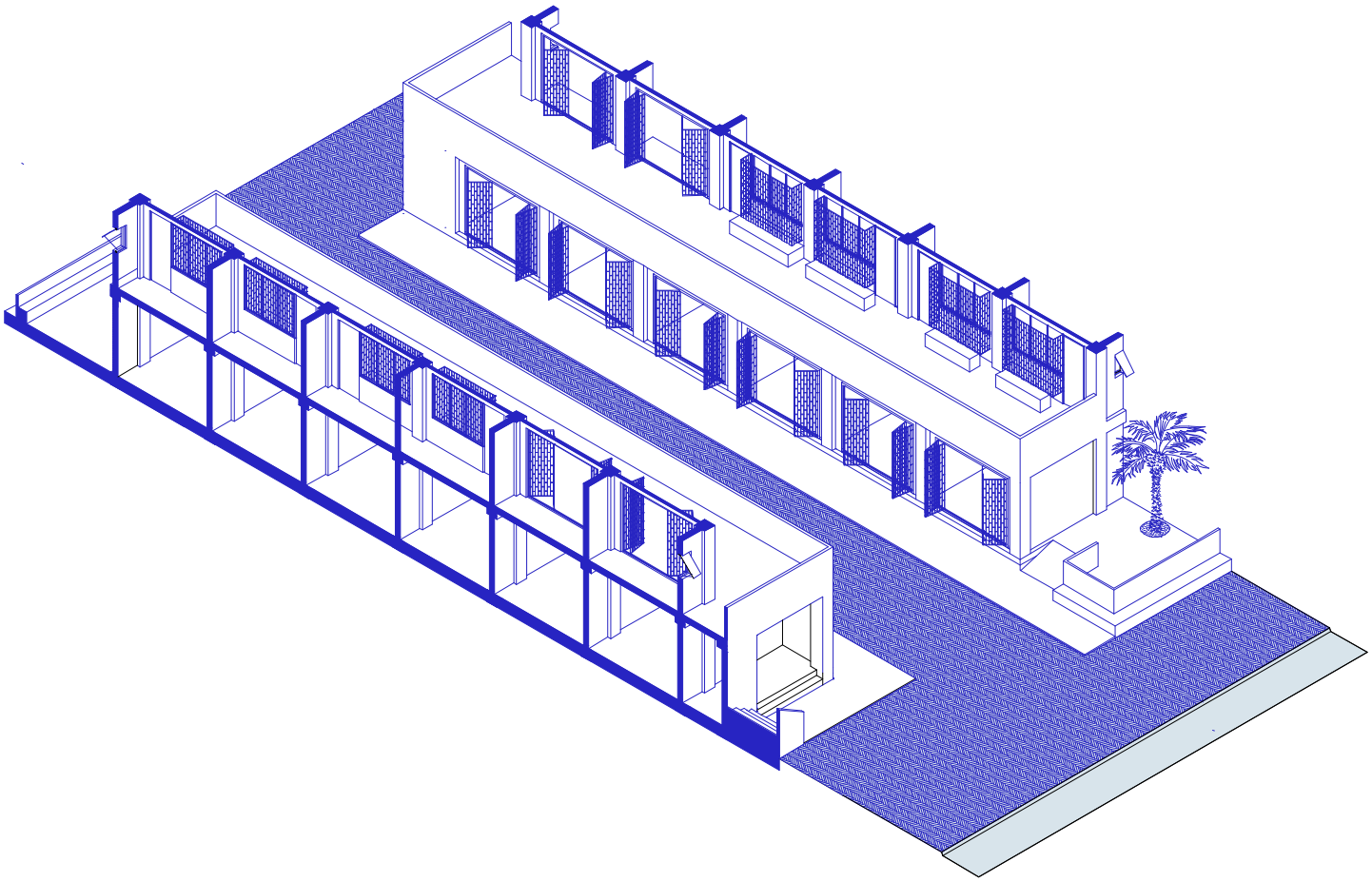
TRANSLATION OF THE PATTERNS OF INHABITATION

Borders

- Cluster lane -



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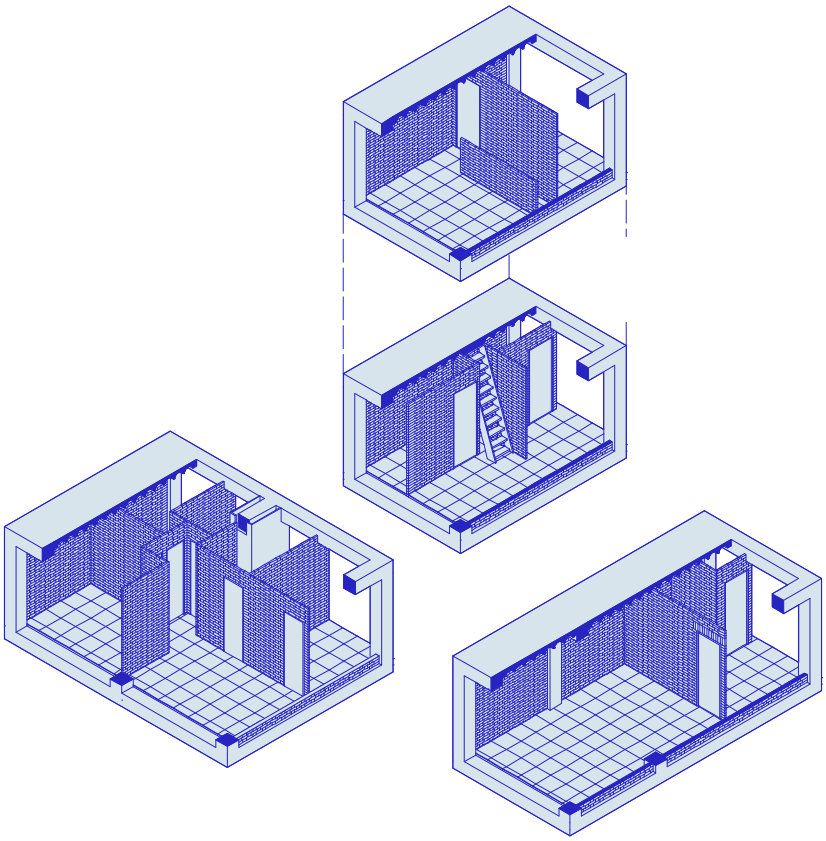
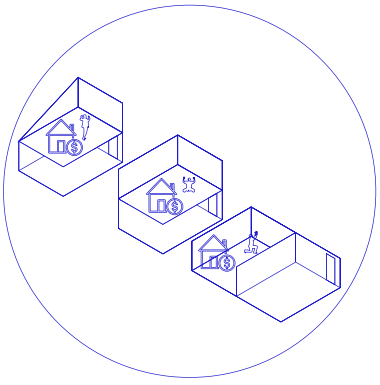
TRANSLATION OF THE PATTERNS OF INHABITATION

Income generation

- Open market & commercial rent -





Architectural design

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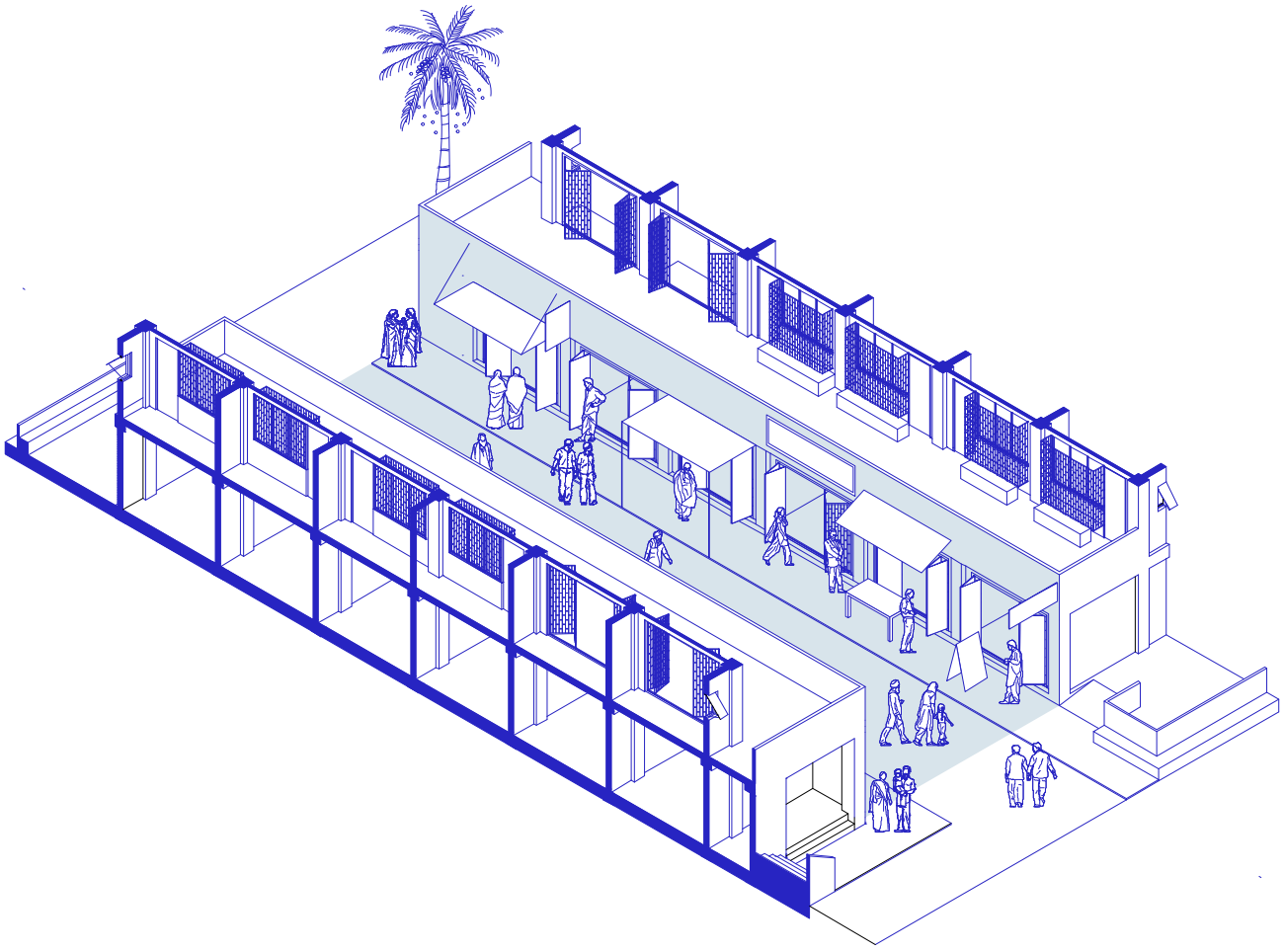
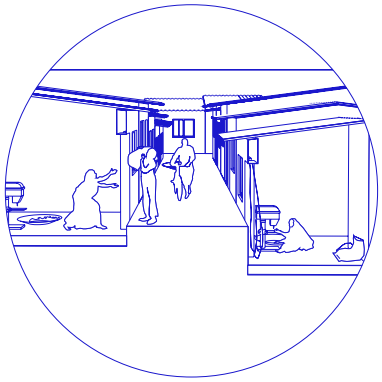
TRANSLATION OF THE PATTERNS OF INHABITATION

Income generation

- (work)shops & street -





Architectural design

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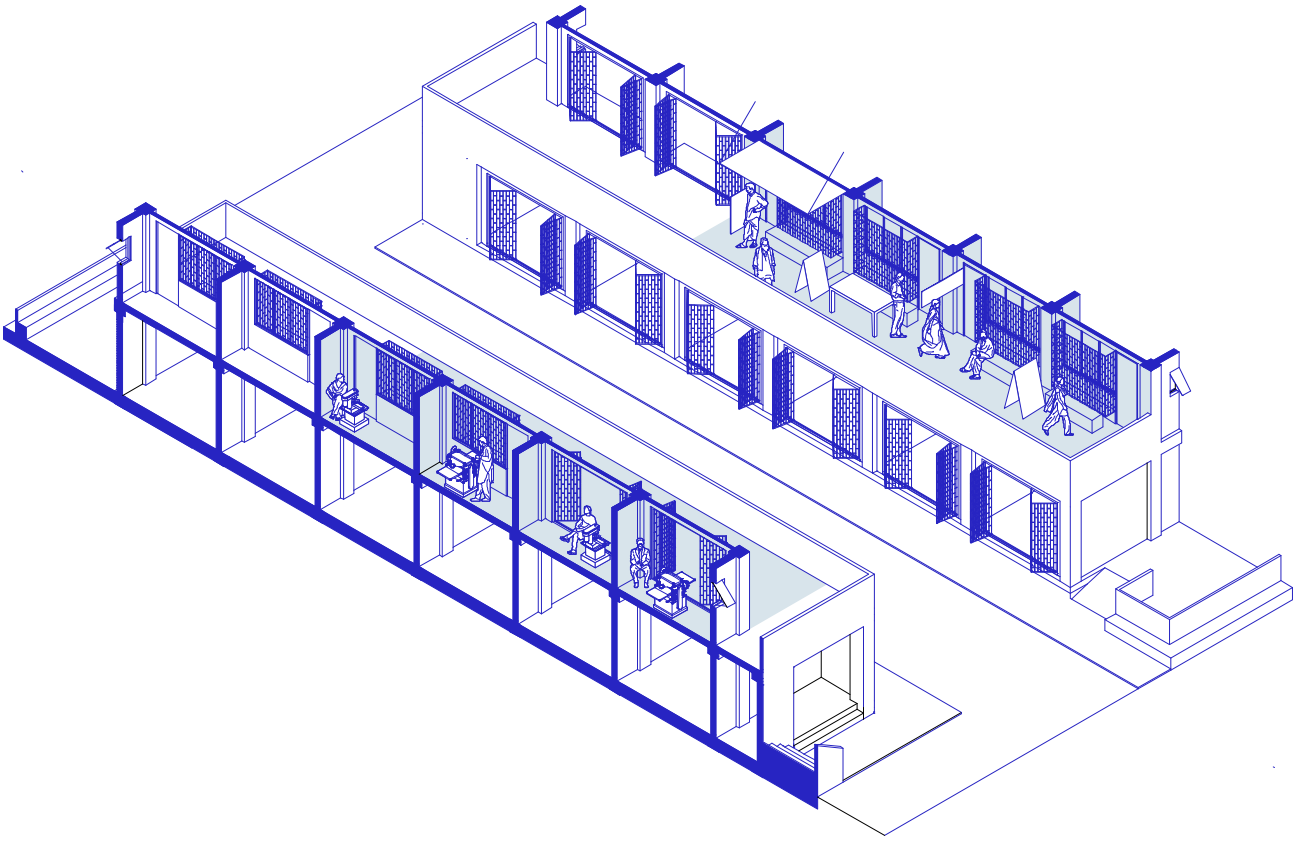
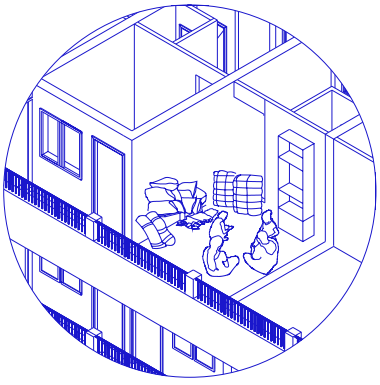
TRANSLATION OF THE PATTERNS OF INHABITATION

Income generation

- Domestic (work)shops -





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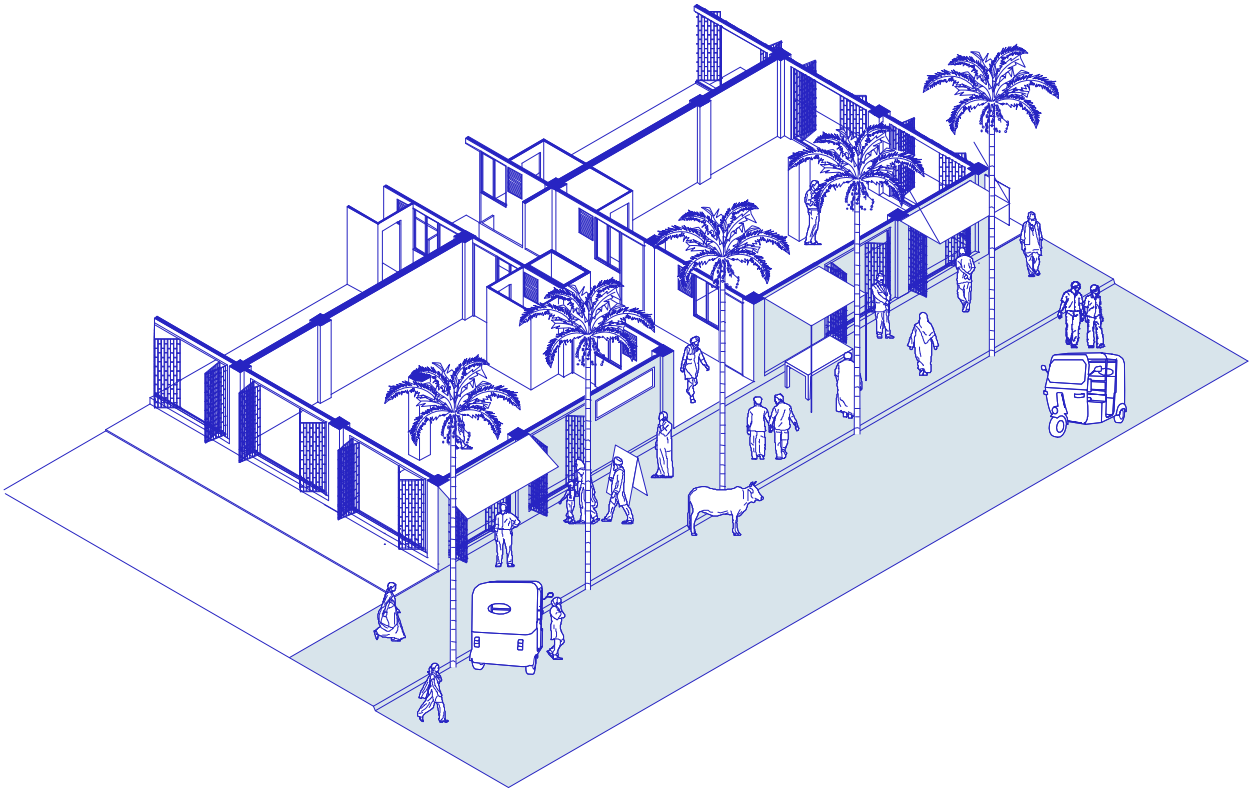
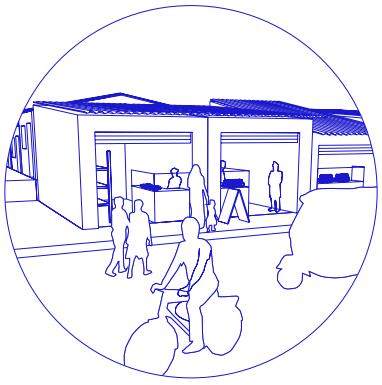
TRANSLATION OF THE PATTERNS OF INHABITATION

Income generation

- Industrial ghalas & main street -





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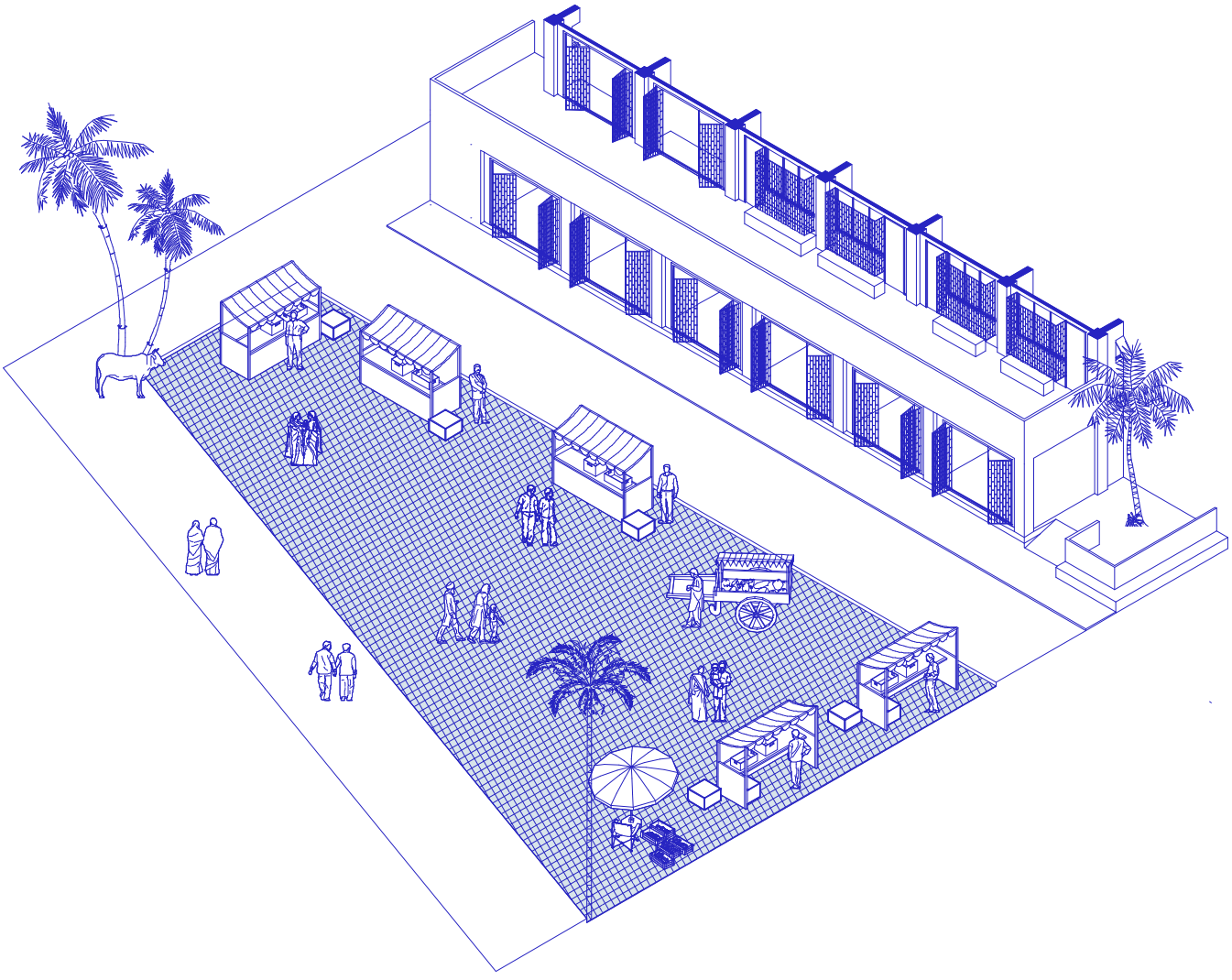
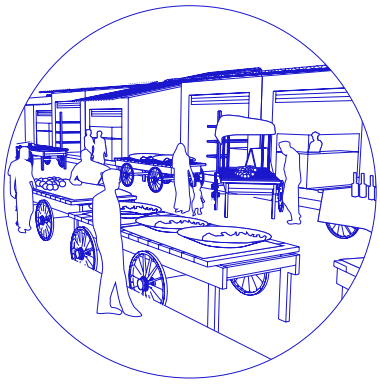
TRANSLATION OF THE PATTERNS OF INHABITATION

Income generation

- Market stands -





Architectural design

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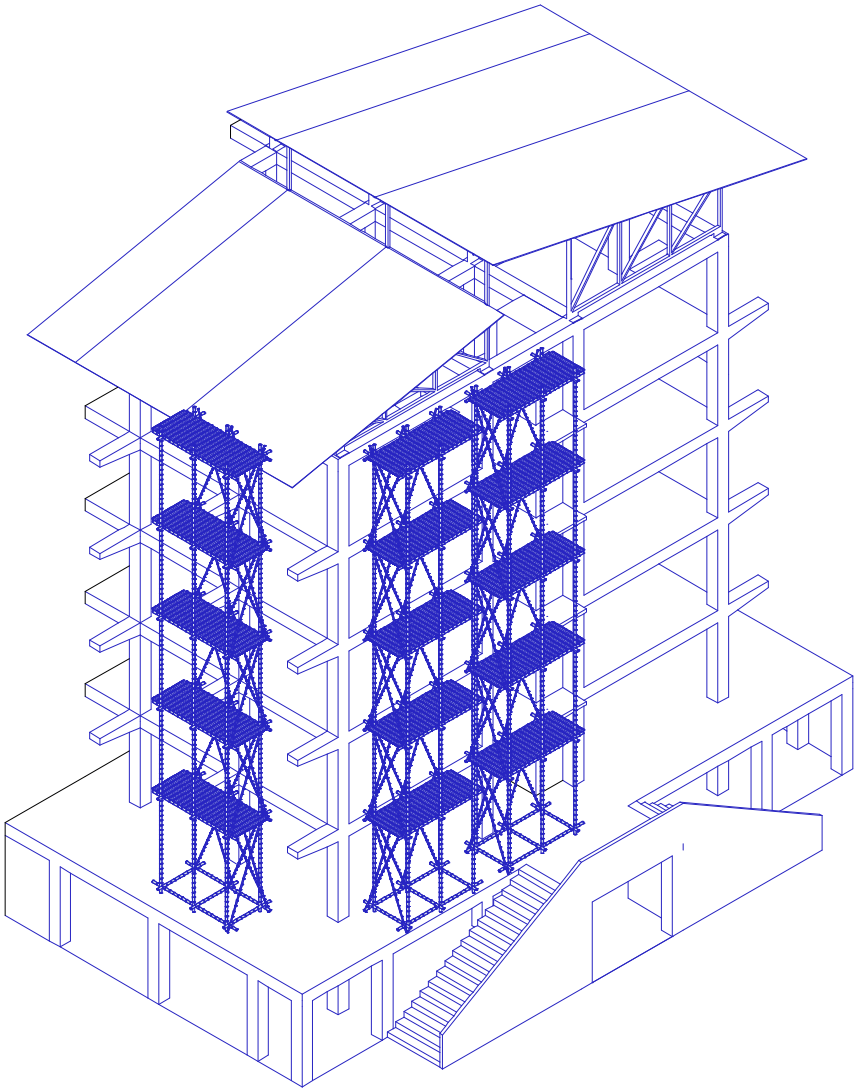
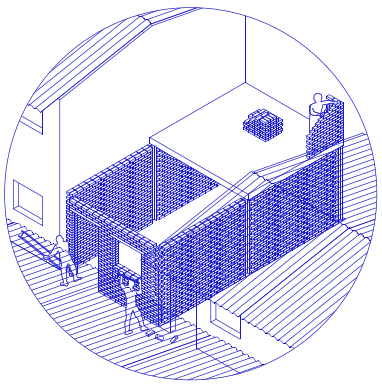
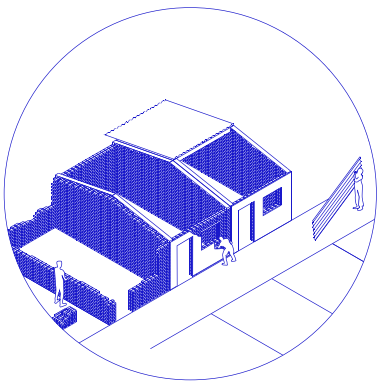
TRANSLATION OF THE PATTERNS OF INHABITATION

Building techniques

- (Fasing) -







Architectural design

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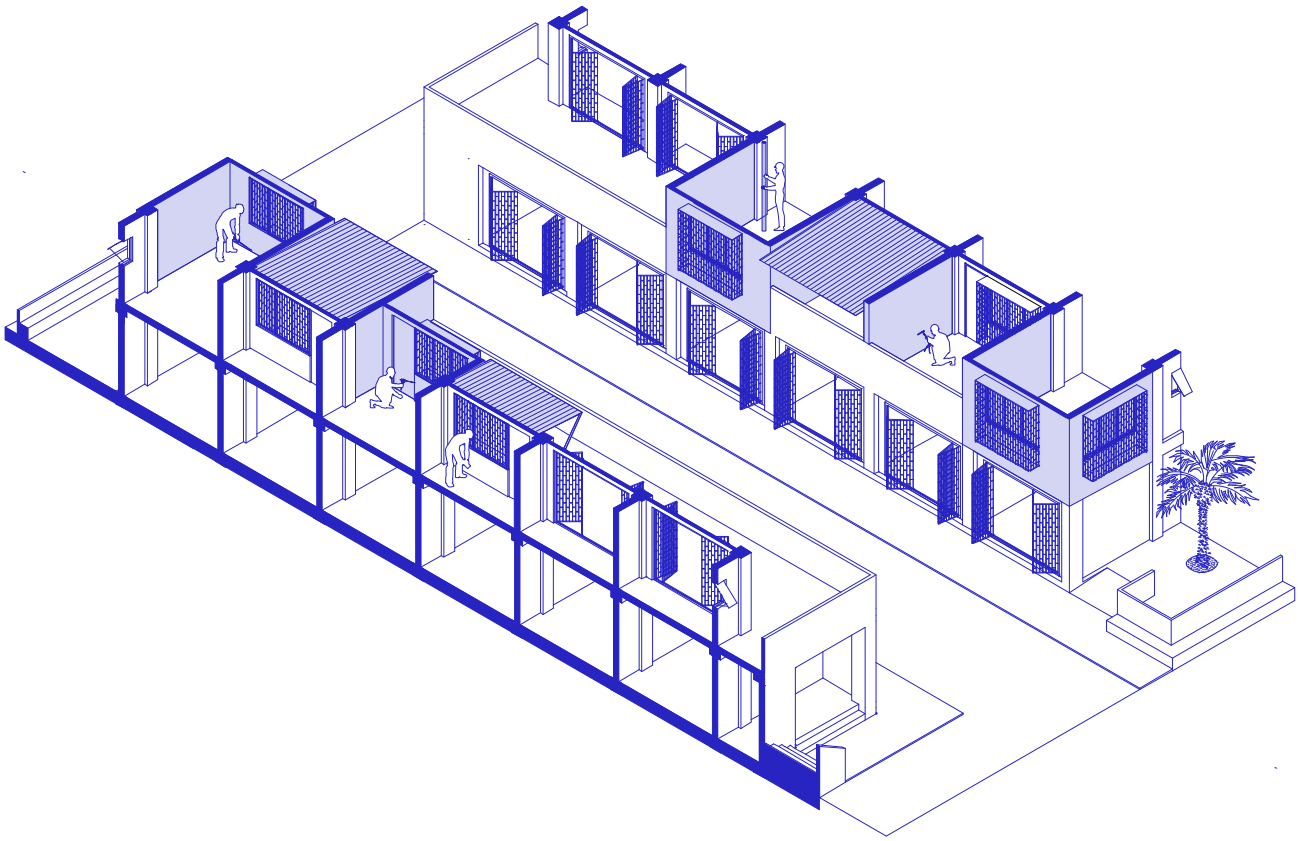
TRANSLATION OF THE PATTERNS OF INHABITATION

Building techniques

- Tolerated encroachment -



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ASPIRED & (UN)FORSEEN FUTURE SCNENARIO

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A SMALL MANIFESTO
"What we can learn from the BDD Chawls"

The Sumadaay project has a lot of features in common with the BDD chawls. These chawls were built in 1947, but still could serve as an example today.
Of course BDD chawls are mostly known for their cramped inhuman living spaces, with two major problems: water availability and toilets. But looking closer to the project the flexibility, creativity and power of the people living there becomes clear. People took control of their own living situation and started to expand their homes, making the building their own domain. The social ties are strong here and people are overall content with their housing situation. Kids play in the spaces in-between te chawls, shops are opened to the side of the streets and people gather at the shared water supplies in the building.
The main problems of these BDD chawls is the upkeep and restoration work that is lacking and good sewage and water systems are lacking. The project Samudaay learned from the BDD chawls by implementing similar communal amenities, providing possibilities of expanding one's home and creating common places and spaces for people to meet, while simultaneously providing access to the water and sewage net (the downfall of the BDD chawls) and giving everyone their own toilet and washroom. Through this an architectural model is created that could serve people from the LIG's and EWS and provides affordable housing for the people in Nala Sopara.

Architectural design

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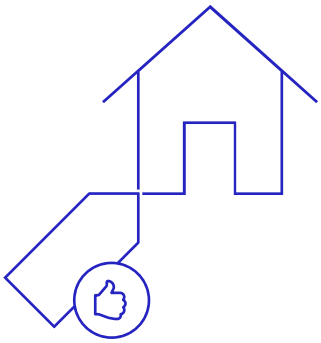
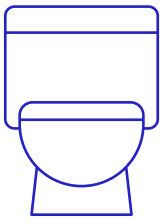
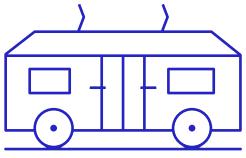
A SMALL MANIFESTO
“What we can learn from the BDD Chawls”







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REFLECTION

The final results of the design are coming together and will be presented on time for the P4 presentation, I am glad with the project process so far, while it went according to plan and the process itself over the last few months went steady. I am also glad to have worked with such a supportive group and tutors and am really grateful for the time and effort the three mentors, Dick, Nelson and Rohan, put into this graduation period. They were often available and constructive in their comments. In addition, I like to give extra acknowledgement to their positive approach and enthusiasm, which made it very pleasant working with them.

At the beginning of the project, during the preliminary research, we did most of the assignments in groups, which made it sometimes feel as a whole-class teaching program, but looking back, I am really glad that we did, while I came to realize you learn so much more when working in together in groups and from these mandatory weekly meetings. This made it a very structured first semester, and although after the P2 the work became more individual, a strong foundation was made and the weekly (recap)meetings remained. Dick van Gameren (construction), Nelson Mota (design, masterplan) and Rohan Varma (design, Mumbai know-how) all took part in the weekly tutoring, but had distinctive roles when it came to the feedback on the design process. This worked well and made it clear when what to show and ask to whom. To my opinion this was in balance.
Finally, I made the decision to play it on safe by implementing most of the feedback which was given by the tutors. Doing this too often could be considered lack a lack of backbone and vision, but I believe by working like this, it will only train you for the better, while listening is so important in our profession. Embracing this way of working will be greatly beneficial while working with other professionals and clients later in life.

The coming week I'll finish my research booklet, posters and a additional architecture brochure. Next week Tuesday will be the P4 for and my objective is to have everything finished by then. This will give me enough time to shift back and again reflect on the work that has been done. The weeks after will be assigned to make the presentation even clearer, small alterations and diagrams will possibly be made, but for the most part I will work on the model that will consist of two units, forming a block and showing a part of the potential urban fabric. If everything works out Ill present my final project in the end of June, with finished posters, booklet and model.
The graduation project: "mixing Mumbai, Affordable housing for inclusive development" focusses on creating a low-cost, inclusive environment for the common dweller in Mumbai, which relates clearly to the master track of global housing, which covers housing and its dwellers in the global world, especially in rapidly growing urban areas in the global south. This track falls under the broader category of architecture (Master track) and is an established part of Dutch architectural culture (housing). Furthermore, this graduation project, which tries to detangle the living conditions/traditions in other cultures is part of a broader master programme (MSc) and is a continuation of the bachelor program (basics), delving deeper in the theories of housing and how our cultural perception, history and research is related to that of other building cultures, world-wide.
The studio 'Mixing Mumbai' has a firm general research approach and is very rigid in its methodology: As a group we did extensive research on analysis of hard (facts & numbers) and soft data (sociological) and by spatial (geographical) and typological (architectural) mapping of the site's context. This gave us the tools and knowledge to better understand the metropolitan area when we made a visit a few weeks after. During this two-week fieldtrip to Mumbai and the area of Nala Sopara, more extensive research was done. For the site survey we conducted in-situ research and investigated housing figures, vernacular social and spatial practices, building techniques and climate conditions. We used our own first-hand experiences of the location as a starting point for examining of the site's specific characteristics and qualities. By conducting interviews with the local population of Nala Sopara and by trying to gain their trust, useful social-economic insights were given. Also more insights on political and economic level was acquired through this, making it possible to gain more hard data on the project's area.
During our visit we also visited Mumbai's architecture college Kamla Raheja Vidyanidhi Institute of Architecture and Environmental Studies (KRVIA), here we collaborate with fellow students and local housing experts. These students and experts gave us more in-depth knowledge of the local conditions. This was further stimulated trough debates, participatory observation and interviews.

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This preliminary research period was really important for us, while it created the so-called groundwork from where we could further develop our ideas. A well-articulated design is a well though-through design which is based on important findings. Without research we students (aliens to places like Mumbai) would have come up with probably beautiful but irrelevant and unrealistic designs. This became very clear when the partner group of students from the KVRIA came to visit us in the Netherlands and had to come up with an urban design for an area in Amsterdam. The designs were fascinating, but you could clearly tell that some cultural, historic aspects and know-how was lacking. The same would probably also go up for us Dutch students doing our first exercises in Mumbai: lacking the knowledge to comprehend the city. This made it important at the start to dive deeper into the cultural differences and preferences of dwellers living in Mumbai.
Around the P1 the research process was complemented with a research report in the form of a 'book of patterns' that consisted of all the findings and was used as a helpful tool for the follow up of the design assignment.

During this first semester we were repeatedly asked by our mentors to look into challenges such as parking, mobility, income generation and waste management, which are crucial aspects to deal with in the context of this project.
Also, the moist climate and sanitation are vital aspects while designing affordable dwellings in Mumbai. Also issues of water management, sanitation, waste and energy needed to be tackled as pressing questions for inclusive urbanization. The studio is so concerned with these matters, "while in the next three decades, the planet's rate of urbanization will increase at a fast pace, adding 2,5 billion new dwellers to the current urban population. To accommodate this demographic growth, the world needs to tackle the many challenges of sustainable and fair urban development such as proper sanitation and affordable dwellings."21 (Van Gameren & Mota)
Right now, urbanization in the Global South still happens in mainly unsustainable ways, with approximately 850 million people living in slums in 2014 (1/3 of all urban dwellers). This problem is being recognized by the UN. And related objectives are adopted in the '2030 agenda for sustainable development'. Especially the goal that states that by 2030 there should be access for all to adequate, safe and affordable housing and basic services and the upgrading of slums as a necessity, corresponds with the studio's guidelines.
Also, my own graduation topic/project is scientific relevant, while the topic of the inhabitation of the economical weaker section of society in the metropolitan area of Mumbai is touches upon the same the topic as stated above. (Mota & Gameren)

The goal of my design for the graduation project is to create a design which accommodates affordable housing for the masses that is both safe, liveable and resilient, while simultaneously rejecting the commercial developer. The concept rests on the ideas of co-housing, flexibility and simplicity. By creating a cost-efficient, easy-to-built building portfolio that can be constructed by local contractors it is possible for the design to be implemented by building-groups and societies in other cultures too, showing the potential transferability of the project. Making it a relevant design strategy that can be copied outside of its context, contributing to its significance in the wider framework of affordable housing in the Global South.

The dilemma's I often faced the difference in building regulations between The Netherlands and India and the difference of your own upbringing, believes and preferences that are 180 degrees different than that of the people we design for in this project: the lower economic classes from Mumbai. While we tent to design what we think is wanted and beneficial (open-kitchen), closed-off bathroom, there is a very strong hierarchy of spaces in India which you need to consider (kitchen are closed-off and women's domain, bathrooms at the façade and natural ventilated).
However, these differences make it also interesting and challenging and gives you a set of rules and perimeters to play with. This could be an important lesson for design assignments elsewhere too and again shows the significance of doing cultural-social research in the architectural practice.
My initial research question that I formulated was based on a pre-assumption of the site. However, through first-person (in depth) research, I came to the realisation that the dwellers in Nala Sopara weren't actually living in slums: although they live in slum-like conditions they were still owners of the land they occupy.

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This illustrates the nuances that we often overlook while working from our faculty. This last example particularly got me, while talking to the inhabitants of Nala Sopara: we often tend to romanticise slums as socially lively places, while we disregard the cramped high rises that replace them. During different interviews we came to the conclusion that the perception of the inhabitants was totally different from that we expected: they actually preferred living in these slum re-developments and aspired to move out of these slum-like homes. This for me depicts the imbalance of reality with the perception of us, architects. While doing research, I realized that everything comprehending Architecture is just a matter of perspective.

BIBLIOGRAPHY

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Bibliography

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BOOKS & ESSAYS

1. A+1 research group. (2013). 10 stories of Collective housing. Vitoria-Gasteiz, Alava: A+1 architecture publishers. Retrieved from https://issuu.com/aplust/docs/10-stories-of-collective-housing

2. A+1 research group. (2015). Why density?. Vitoria-Gasteiz, Alava: A+1 architecture publishers. Retrieved from https://issuu.com/aplust/docs/why_density_issuu

3. Adarkar, N. (Ed.). (2011). The chawls of Mumbai: Galleries of Life. New Delhi, Delhi: imprintOne.

4. Bredenoord, J., Lindert, P., & Smets, P. (2014). Affordable housing in the urban global south: Seeking sustainable solutions. Abingdon, Oxon: Routledge.

5. Chalana, M. (2010). Slumdogs vs. Millionaires: Balancing Urban Informality and Global Modernity in Mumbai, India. Journal of Architectural Education, 63(2), 25-37.

6. Correa, C. (2012). A place in the shade: the new landscape and other essays. Ostfildern: Hatje Cantz.

7. Curtis, W., & Kagal, C. (1988). Balkrishna Doshi: An architecture for India. Ahmedabad, Gujarat: Mapin.

8. van Gameren, D., & Varma, R. (2015). Shifting scales. Dash journal, 12-13, 1-8.

9. Gast, K. (2007). Modern traditions: Contemporary architecture in India (Online access with purchase: springer). Basel: Birkhäuser.

10. Gulyani, S. (2005). Squatters as developers? slum redevelopment in mumbai. Urban Studies, 42(11), 2092-2092.

11. Habitat III Secretariat (2017). New Urban Agenda. New York, New York: United Nations publication.

12. Mehrotra, R. (2011). Architecture in India: since 1990. Mumbai, Maharashtra: Pictor.

13. Padora, S. (n.d.). In the name of housing. Mumbai, Maharashtra: UDRI.

14. Patel, S. B. (2006). Housing policies for Mumbai. Mumbai reader, 6. Mumbai, Maharashtra: UDRI.

15. Payne, G. K. (1984). Low Income Housing in the Developing World. Hoboken, New Jersey: John Wiley & Sons.

16. Rybczynski, W. (1990). How the other half builds. Space, 1(2). Montreal, Quibec: McGill University.

17. Saunders, D. (2012). Arrival city: how the largest migration in history is reshaping our world. New York, New York: Vintage Books.

18. Shirish, B. (n.d.). Housing, FSI, Crowding and Densities, Handbook, 1. Mumbai, Mumbai, Maharashtra: Praja.

19. Steele, J., & Doshi, B. (1998). The complete architecture of Balkrishna Doshi: Rethinking modernism for the developing world. London: Thames and Hudson.

20. Urban, F. (2012). Tower and slab: Histories of global mass housing. London: Routledge.

Bibliography

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INTERNET ARTICLES

1. Carr, C. (2015). The best idea to redevelop Dharavi slum? Scrap the plans and start again. Retrieved from https://www.theguardian.com/cities/2015/feb/18/best-ideas-redevelop-dharavi-slum-developers-india

2. Cities - United Nations Sustainable Development Action 2015. (n.d.). Retrieved from http://www.un.org/sustainabledevelopment/cities/

3. Delhi is world's second most populous city in 2014 after Tokyo: UN report. (2014). Cities. Delhi: Hindustan times. Retrieved from http://www.hindustantimes.com/delhi-news/delh-is-world-s-second-most-populous-city-in-2014-after-tokyo-un-report/story-kLkT6f62GOfXqpg3PHAGBK.html

4. Dhar, A. (2012). India Will See Highest Urban Population Rise in Next 40 Years. Retrieved from http://www.thehindu.com/todays-paper/india-will-see-highest-urban-population-rise-in-40-years/article3289129.ece.

5. Doshi, S. (2013), The Politics of the Evicted: Redevelopment, Subjectivity, and Difference in Mumbai's Slum Frontier. Antipode, 45: 844–865. Retrieved from http://onlinelibrary.wiley.com/doi/10.1111/j.1467-8330.2012.01023.x/full

6. Guidelines for Affordable Housing in Partnership. (2011). Ministry of Housing & Urban Poverty Alleviation (MHUPA). Retrieved from http://www.naredco.in/notification/pdfs/GUIDELINES%20FOR%20AFFORDABLE%20HOUSING%20IN%20PARTNERSHIP_2012.pdf

7. Logements Kodus. (2015). Retrieved from http://atelierfuso.com/projets/kodus/

8. Nijman, J. (2008). Against the odds: Slum rehabilitation in neoliberal Mumbai. Cities, 25(2), 73-85. Retrieved from http://www.sciencedirect.com/science/article/pii/S0264275108000188?via%3Dihub

9. Moitra, M. (2012). Shivaji Nagar: Homegrown Neighbourhood. Urbz. Retrieved from https://urbz.net/articles/shivaji-nagar-homegrown-neighbourhood.

10. Roy, A. (2009), Civic Governmentality: The Politics of Inclusion in Beirut and Mumbai. Antipode, 41: 159–179. Retrieved from http://onlinelibrary.wiley.com/doi/10.1111/j.1467-8330.2008.00660.x/full

11. Self-Re-Development of Housing Society Buildings. (2014). Retrieved from http://accommodationtimes.com/self-re-development-of-housing-society-buildings/

12. Shaikh, Z. (2017). Mumbai most populous in county, 41.3% live in slums. Mumbai most populous in county, 41.3%. Retrieved from http://indianexpress.com/article/cities/mumbai/mumbai-most-populous-in-county-41-3-live-in-slums-4861241/

13. Srivastava., R. & Echanove M. (2014). 'Slum' is a loaded term. They are homegrown neighbourhoods. Retrieved from https://www.theguardian.com/cities/2014/nov/28/slum-loaded-term-homegrown-neighbourhoods-mumbai-dharavi

14. The New Urban Agenda. (n.d.). Retrieved from http://habitat3.org/the-new-urban-agenda/

15. The missing housing type. (2016). PLURAL. Retrieved from https://www.plural.org.in/single-post/2016/05/03/Cornell-student-designs-a-structure-made-exclusively-from-recycled-materials

16. https://www.worldweatheronline.com/mumbai-weather/maharashtra/in.aspx?wwo_r=srch

17. http://solarelectricityhandbook.com/solar-angle-calculator.html

18. http://plea-arch.org/ARCHIVE/2012/files/T11-20120130-0061.pdf