

Juxtaposition of notions
Adaptable housing through circular transformation

New Heritage



Project report

Faculty of Architecture and the Built Environment

Tutors: Uta Pottgiesser, Lidwine Spoorman, Ger Warries, Nicholas Clarke

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CONTEXT

PROJECT LOCATION

The project is located in The Bijlmer, which is one of the neighborhoods that forms the Amsterdam-Zuidoost borough of Amsterdam, Netherlands (1).

The Bijlmer neighborhood, which today has over 50,000 people and over 150 nationalities, was designed as a single project as part of a then innovative and Utopian Modernist approach to urban design in 1965. Led by architect Siegfried Nassuth and his team, the original neighborhood was designed as a series of nearly identical high-rise buildings laid out in a hexagonal grid. The goal was to create open spaces for recreation at grade, elevated roads to reduce pollution and traffic from those same recreation areas, and residences climbing upward offering residents views, clean air, and sunlight. The apartments were meant to attract a suburban population, in the manner of condominium housing. The buildings have several features that distinguish them from traditional Dutch high-rise flats, such as tubular walkways connecting the flats and garages. The blocks were separated by large green areas planted with grass and trees. Each flat had its own garages where cars can be parked.

The research focused on H-buurt neighborhood which included Heesterveld, Hoptille and Bijlmerplein. H-buurt was designed later in 1986 and was a reaction to Bijlmer modernist Utopian philosophy. In the later stage of the research, Bijlmerplein was chosen for the graduation project for several reasons.

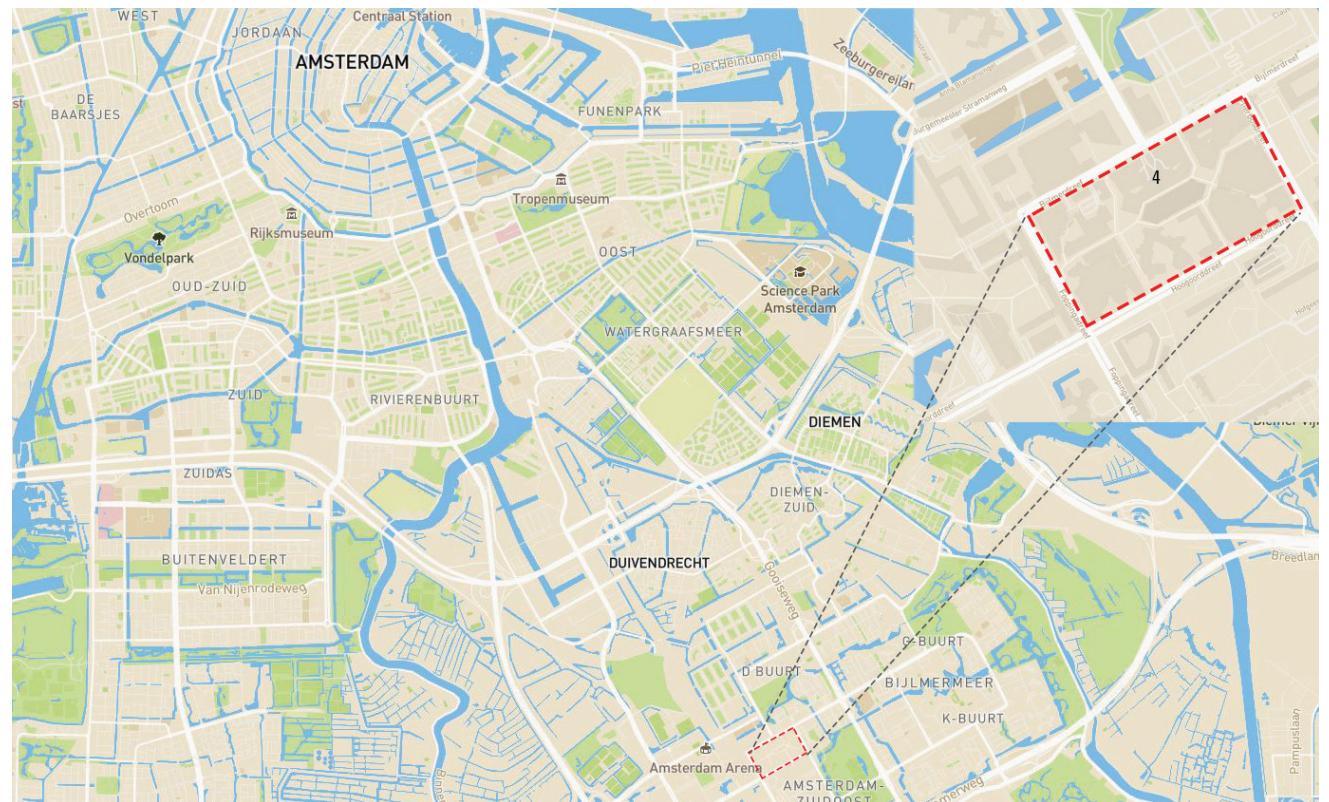


Fig1. The location of Bijlmerplein

BIJLMER

The aim of the research is an area called Bijlmermeer or the Bijlmer, which is located, in the outskirts of Zuidoost several kilometers to the south east of the city of Amsterdam. Bijlmer is a large scale residential project that was built on a polder land in the 1960s to provide housing for the severe post-war housing shortage within Amsterdam area. It has had several changes in administrative policies over the years and is now under the control of the City of Amsterdam, and together has formed part of the Southeast municipal area in 1987 (Karen Leeming and Tasleem Shakur 2014).

Bijlmer intended to be a modernistic, model satellite neighborhood to the Netherlands capital and was designed to house 50,000 people (Catling, 1998)). Le Corbusier advocated clear separation between living, working, recreation and traffic areas. The result was a design for Bijlmer which had a car-free zone with medium-rise buildings in park-like surroundings (figures 1 & 2). Vehicles' transit was diverted via elevated roads, and parking garages were in peripheral (Kwekkeboom, 2003).

For the Bijlmer it was decided to follow CIAM ideas . Wide avenues were constructed, with plenty of space for the cars, which would never meet a pedestrian. Everything that wasn't a car had to go on the ground level including the parks. The park was designed under the road via viaducts. The cars could only go two ways in the Bijlmer: through it or to a garage. The garage space also became the entrance feature to the residential buildings. Everything was designed for safety and convenience.

There were no streets on the ground level. The garages were included to the lanes, which were designed as a kind of ring road around the residential areas. Because of this, it became huge residential areas of 800 meters wide and 800 meters long. These dimensions were also determined by the mobility requirement that garages, community centers, metro stations and bus stops should never be more than 400 meters from the residential clusters. That meant that the areas did not become too large (bijlmermuseum.nl).



Fig.1 Original plan of Bijlmerp (Source: Bruijne, D.2004: 10)

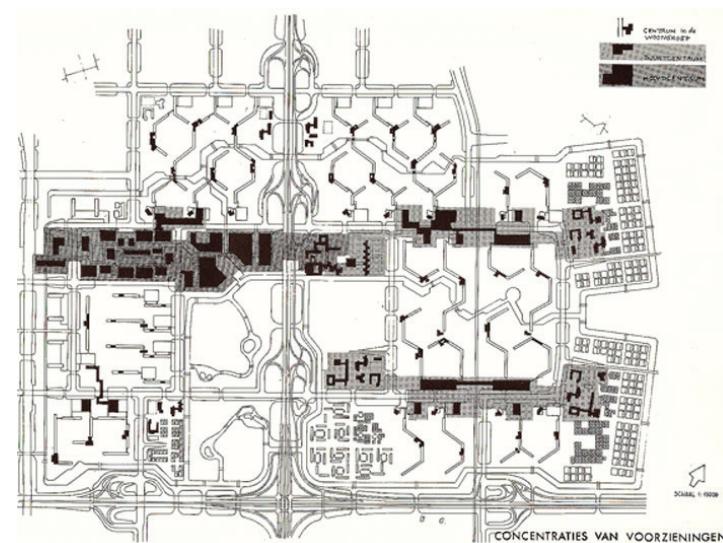


Fig. 2 The original plan of Bijlme. Source: bijlmermuseum

BIJLMERPLEIN

The site of Bijlmerplein was chosen for research as an example of created identity through different notions. In the context 70s and 80s heritage, Bijlmerplein is significant example of ideological interplay between different ideas and ways of design of built environment in one city block. Bijlmerplein was designed as a remediation and a response to failed modernist utopia - "City of the future" of Bijlmer together with other clusters of Heesterveld, Hoptille and Haardstee. The final goal intended to create new identity for an area which would be relevant to Amsterdam city and could give sense of belonging to society in contrast of alienated and futuristic Bijlmer urban setting. Bijlmerplein boundaries had been shaped by infrastructure (elevated streets, parking lots and separated traffic) which is consequence of CIAM ideas. The area has anthroposophical concepts which are embedded into NMB head office in Amsterdam by Alberts & Van Huut and cluster 5 which was also designed by A. Alberts. Cluster 4 (1.) was designed by Van den BroekBakema architects who were looking for national Dutch identity in the architecture and developed the "total" space concept inspired by idea of neo-plasticism (Evelien van Es, 59p). Also, the marks of 1970-1980 era in rediscovery of architecture and city are significant and visible in street layout, composition and shape of buildings, facade aesthetics. Also, one of the strongest drivers of the area was commercial shopping function (2.), which soon became hot spot of the entire Bijlmer (Frank Wassenberg, 64p).

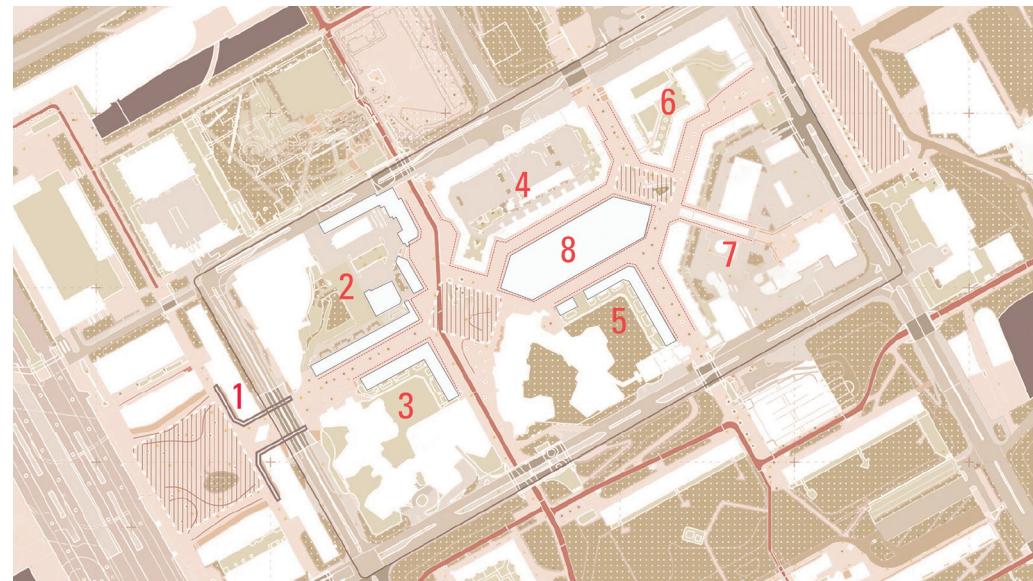


Fig 1. The composition of clusters in Bijlmerplein



Fig 2. Cluster 4 (archief.amsterdam/)

THE PROJECT DESCRIPTION

The project aims for revitalization of cluster 4 regarding several aspects.

RESIDENTIAL QUALITIES

First of all residential qualities in the cluster 4 were vague and neglected: no communal meeting space, poor circulation, dark and shady nooks were perfect place for drug dealers and homeless people, there was no playground for children.

URBAN GREENERY

The cluster 4 had no greenery, the entire elevated deck and the ground floor was taken by car park, which is the notion of 1970s car mobility and consequence of Bijlmer urban planning with elevated roads and separation of functions. The project aims to introduce greenery and incorporate it into new urban landscape.

DENSIFICATION

The project aims to densify the area. House shortage in the Netherlands is evident issue and by 2030 Dutch government aims to build 1 million new homes. Bijlmerplein is excellent example for new housing as it has metro station and other public transport nearby. Bijlmerplein is the hub for shopping which can also be enhanced by bringing more residents. Also, vacant parking garages also are potential for new housing.

POST MODERN ARCHETYPES

From the heritage perspective, archetypes are purified and introduced into the design.

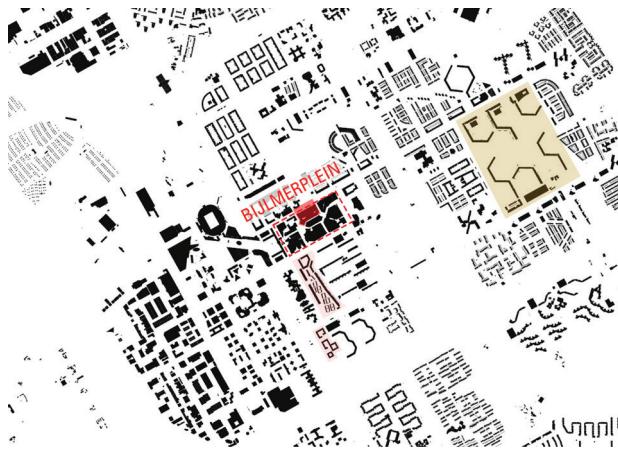


Fig 1. The composition of clusters in Bijlmerplein



1972 Aerial photo Bijlmer East Center



1987 Aerial photo Bijlmerplein

<http://archief.amsterdam/ceilidh/7mode-gallery&view=horizontal&q=bijlmer&row=25&page=7>

Fig 2. Cluster 4 in the context of Bijlmer (archief.amsterdam/)

NOTIONS

THE NOTION OF “WORK AND LIVE”

Bijlmerplein is unique in the Bijlmer context, where different functions such as housing and shopping were strictly separated, however, this was not new in the Netherlands where this concept was used widely. Looking at the cluster 4 and whole Bijlmerplein, it is evident, that two interconnected worlds were created - shopping and residential. There are some Van den Broek en Bakema buildings designed earlier where they implemented similar strategies like in Cluster 4.

Project: Mariniersweg housing

Architect: Van den Broek en Bakema

Period: 1954-1957

Location: Mariniersweg 55, Rotterdam, Netherlands

Function: Residential, commercial

The housing block was designed with an angled geometry which was formed by Goudsesingel and Mariniersweg streets. Six-storey housing block was raised on the basement and 14 retail units. These shops, which can also be accessed from the yard, are punctuated by seven stair towers. The most centered tower marks the point where the building pivots on that axes. The corner treatment is significant, due to the extended balconies, which was placed on a pair of freestanding round concrete columns, that parry the vertical thrust of the stair tower (1.) Mariniersweg street became a major traffic corridor, and the development along the street was designed to flank that corridor, with the curved block. Similar to cluster 4 in Bijlmerplein, the architecture language is striking. The block creates a single entity with the housing and shops on Pannekoekstraat street at the side. A delivery connection extends through the building to accommodate the shops on both streets. The shops on Mariniersweg street were precisely dimensioned: 9.50 meters wide, 19 meters deep and 6 meters tall.



Fig 1. Mariniersweg housing

Each of the shops contained a mezzanine across the full width of the space as well as a storage basement which is also similar to Cluster 4 in Bijlmerplein regarding the ground floor. A canopy frames the shop fronts which was quite typical. Organization between the shops was quite simple: seven entrance halls that lead to the apartments above. Some apartments were designed to open into each hallway, which also contained a lift. The fan-shaped hallway at the center of pivoting point in the building eliminated the need to design any complicated corner apartments (2.) There were two types of apartment layouts: one had a balcony, while the other has a balcony with a protruding triangular sun lounge. The balconies were designed to overlook the street, and the apartments also feature some loggias at the side. The apartments also have a large central hallway. Bedrooms are kept to the quieter rear side which is also the case in Bijlmerplein.

1. <https://wederopbouwrotterdam.nl/en/articles/mariniersweg-housing>

2. http://www.architectureguide.nl/project/list_projects_of_architect/arc_id/48/prj_id/29

THE NOTION OF “PUBLIC PARTICIPATORY”

Urban planning

Project: HOUSING 'T HOOL

Architect: Van den Broek en Bakema

Period: 1962-1972

Location: Eindhoven, Netherlands

Function: Residential, mix use

't Hool neighbourhood in Eindhoven (picture 1.) was designed as a large development. Public green and common areas were mixed with various living forms for all ages, rental and for sale providing large scale diversity. In the design phase the future residents were deliberated with of all scales, from greenery to number of plugs per apartment. The final design contains nine residential types including row houses, patio houses, urban villas, split-level bajonet houses and drive-in houses (1). This project also had strong notion of public participatory. During a number of conversations Bakema translated the opinions of the public board of the housing association at the end of 1961 into a first design proposal for the project. An important part of this was the core wall building at the corner of the neighborhood with a tower block that embraced the low-rise houses at an angle of ninety degrees. Bakema architects had provided so-called split-level houses in both the high-rise buildings and the houses. An important thing was flexibility. The surface area of various rooms could be enlarged in the future. The final design proposed a total of nine different housing types with different layouts. In total three types of terraced houses were designed, three types of patio houses, a detached city villas with a large gardens, the split-level “bayonet” house and the drive-in house with garage under the house. Bakema and Van den Broek were critical functionalists who were opposing the ideology in the movement.

1. <https://www.broekbakema.nl/en/projecten/t-hool-neighbourhood/>

2. http://www.architectureguide.nl/project/list_projects_of_architect/arc_id/48/prj_id/29

3. <https://woonwijkthool.nl/achtergrond/geschiedenis/>

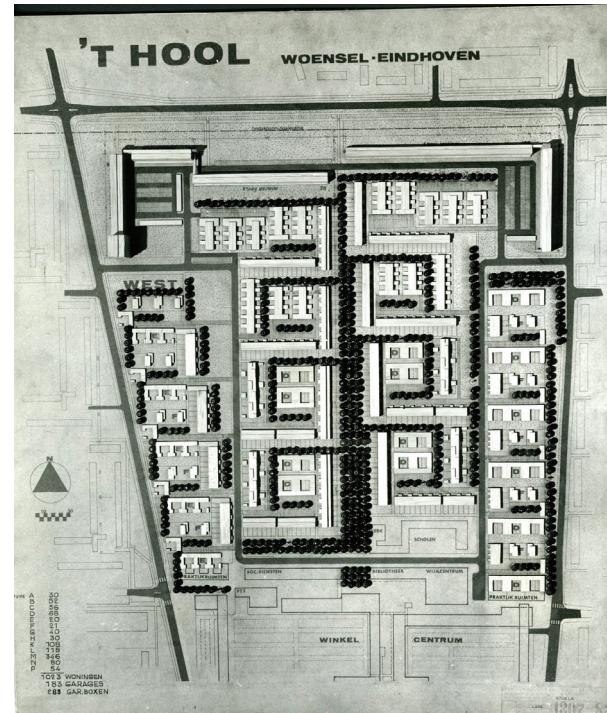


Fig 2. Housing 't Hool

This is also visible in cluster 4. The architects believed that a building should be envisioned through its form and show significance for society. For them “functionalism was a form of humanism” (3).

Common greenery

There was a special concept of greenery proposed in 't Hool (3). For that purpose a garden committee was set up to deal with communal greenery. These were mainly the two-meter strips that formed the boundary between the back gardens and the public area. The communal greenery had to enclose the housing areas, and thus provide the privacy. The two-meter strips and some wider strips were planted with flowering shrubs and plants, so that a lively whole was created (3). Comparing with Bijlmerplein and cluster 4, it is evident, that diversity in unit sizes, function (shopping, residential), spacial differentiation and significance of architectural language were the main drivers shaping the block.

THE NOTION OF “BLENDING WITH NATURE”

Interview and narrative walk with Hans van Beek confirmed the perception of collage like image of Bijlmerplein created by different notions. Hans van Beek highlighted, that Atelier Pro was hired to design ING bank “The Treasury Center” and residential cluster 3 in Bijlmerplein because of their another project in Den Haag called “Couperusduin”.

Project: Couperusduin

Architect: Sjoerd Schamhart , Hans van Beek

Period: 1974

Location: Den Haag

Function: Residential

Couperusduin intended to show the key concepts of resilient housing: urban, diverse and local. It was designed as a city in miniature, embedded in the existing city.

On the Burgemeester Patijnlaan in the Archipel neighborhood of The Hague, the building was constructed opposing of Lindoduin, a block from 60's. It was monotonous building that had nothing to do with the context in terms of scale and architecture and diversity in unit layouts and facade expression. In contrary, Couperusduin was designed in close relation with nature and a context. It was designed with two residential courtyards, which allowed to provide desired density and diversity. The building has S shaped ground floor layout which is slightly elevated and blends with a landscape creating dune like feature. The inner spaces of the cluster also slopes back so the image of the “dune” is significant all around the building (Fig 1.). Also some materials was re-used from the demolished barracks. The footpaths consists of reclaimed brick and excavated soil was used to create the landscape. The building shows the diversity in unit layouts as well. It has six housing types where the majority



Fig.1. The picture of the courtyard

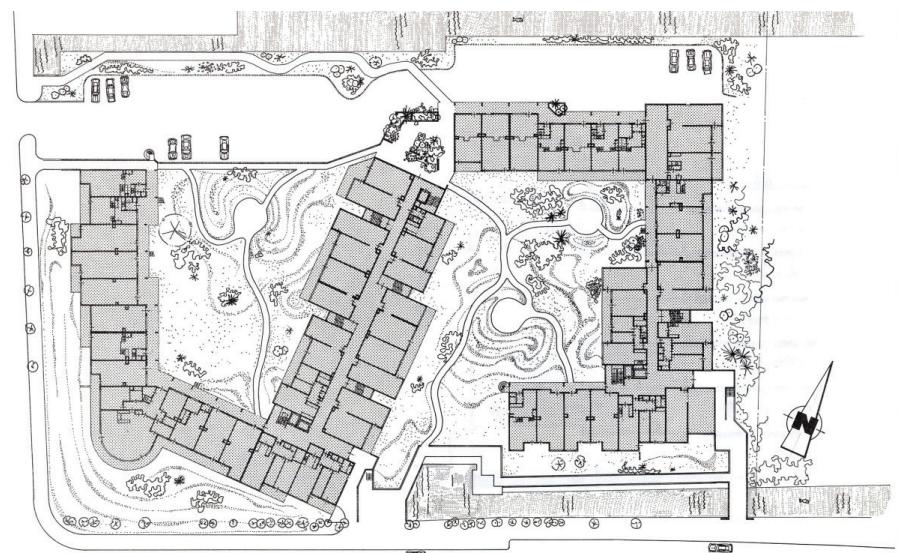


Fig. 2. The ground floor plan illustrating courtyards and the landscape

1. <https://www.atelierpro.nl/nl/projects/180/couperusduin>

2. <https://www.experimentelewoningbouw.nl/portfolio/ex-72-137-haag-couperusduin/>

THE NOTION OF "BLENDING WITH NATURE"

Project: The Treasury Center

Architect: Hans van Beek, Erik Paardekooper Overman

Period: 1989 - 1993

Location: Bijlmerplein, Amsterdam

Function: Office

The Treasury Center is based next to the head office of the ING Bank in Bijlmerplein. The office together with residential building forms cluster 3. In both the exterior and interior natural materials dominate: stone, brick stone tiles

Two office wings are designed in L-shape adjacent of the Bijlmerdreef and Foppingadreef. The corner of two wings is marked shaped by an oval glass shaft with an elliptical staircase.

The formal main entrance is located on Foppingadreef street. There is also access to the parking garage, which is located under the building in two floors. The informal side of the building is located at the back. Shopping street emerges in to this back yard which is full of plants and shaped by curved facade surfaces (Fig1.4)

The building is outstanding of many architectural features incorporated into the design: public garden, informal square, revolving facade, red stairwell maid in natural materials, waterfall.



Fig. 1. The courtyard

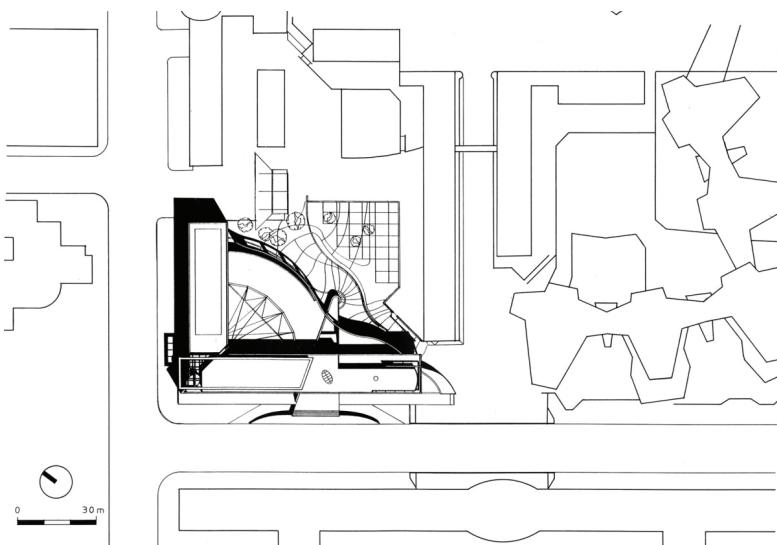


Fig. 2 The site plan and connection with a context

SITE OBSERVATION

CIRCULATION

MINI CARS. People with disabilities

The site observation showed, that elevated decks are hardly accessible for disable people. The entrances to the dwellings are located on the first floor and reached by sequence of ramps and stairs from the ground level. There are no elevators which could improve circulation. What is significant for this neighborhood, that residents use mini cars to reach their homes from the shopping streets. Many of Canta cars were spotted in different clusters. It means that residents reach their homes from parking lots using the elevated highways, which boarders Bijlmerplein. It can point few possible issues regarding mobility: lack of universal infrastructure, unpleasant pedestrian connections, cultural differences regarding pedestrian and vehicle mobility.

The Canta (1) is a two-seat micro-car from the Netherlands specifically created for disabled drivers. It was developed in 1995 by Waaijenberg together with the Delft University of Technology. In addition to the standard petrol-engined production models, an electric Canta was designed for the German market but it has remained at the prototype stage. In the Netherlands, it is classified as a mobility aid because the width of the vehicle is only 1.10 meters, thus it may - unlike larger micro-cars - be used on cycle paths as well as sidewalks and footpaths; in addition a driver's license is not required.

The new interventions could aim to improve the accessibility for disable people and introduce more friendly universal design such as elevators to the elevated decks, comfortable ramps and pathways without physical obstacle. Also, physical connections could be revitalized making them more attractive and friendly for the user.



1. Scheme of indicated handicap vehicles

SHOPPING MALL

Public realm and connection with residential clusters

Challenges

The inner space of the cluster 4 has several issues. First of all, the courtyard is on the northern part of the building, so it gets many shadows. Especially in winter it gets very dark. Another main issue is maze like structure of stairs and entrances to the elevated deck. Elevators don't work at the moment. Also ground level is vacant, lacks of ownership. The service building blocks the inner space and doesn't bring qualities.

Entrances to the elevated deck

Access to the deck is based on the staircases and elevators which are connected to the underground parking (6,7).

Entrances to the dwellings

Circulation is complicated. Residents have to enter the cluster through the main entrances, then use the stair to reach the elevated deck and then reach the stair to the dwellings. It means that on the elevated deck there is a row of entrances to the block. Each of the staircase accommodates two dwellings per floor (red dots in the map indicates the entrances to the block). The elevated deck itself is plain, the surface is hard paved, without greenery and space for social gatherings.



4. Shopping street and elevated sky-bridge

5. Elevated sky-bridge

6. Shopping street

CIRCULATION

Cluster 4 - entrances to the block

Cluster 4 has three main entrances from the shopping level (Pictures 1,2 ,5). Entrances are narrow, shady, dirty, many entrances to the shops at the side are vacant. There is visible lack of ownership and negligence. At the current moment entrance 2 is covered and not accessible. This is significant issue for livability and satisfaction of living condition for dwellers. During the interviews, residents mentioned, that these kind of dark pockets create spaces for drug dealers and other criminal activities.

It is important to highlight other two entrances to the cluster. Entrance 3 is a pedestrian sky bridge from the shopping mall (cluster 8). This means, that residents can access the shopping mall without reaching shopping level. However, this indicates another problem. During the pandemic, shopping mall was closed and kids occupied empty shopping space on the first floor for sport activities. It is obvious, that without pleasant environment for kids on elevated deck, residents find other spaces to occupy. Elevated deck in Cluster 4 was one of the group research objects. Residents indicated, that it has too many hard surface, narrow passage for entrances and not enough space for daily community activities.

One of the biggest issues is a huge parking lot and service building, which create unpleasant communal yard (7). It has small offices and bicycle storage underneath of parking level.

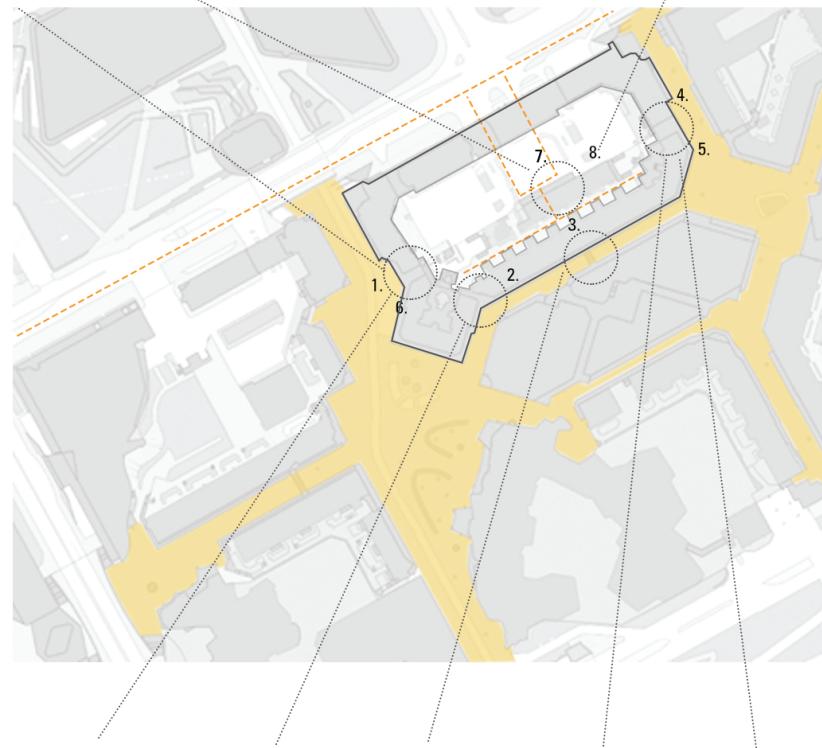
To conclude, entrances to the cluster are quite important “gates” from public real to the private-residential realm separating and distinguishing two worlds. However, the architectural language and geometry created many nooks and niches which are not pleasant for a user.



6. East entrance

7. Service building

8. Entrance to the parking



1. East entrance



2. Middle entrance



3. Entrance to the shopping mall



4. West entrance



5. West entrance

COURTYARD SPACE

Cluster 4 - inner space

Challenges

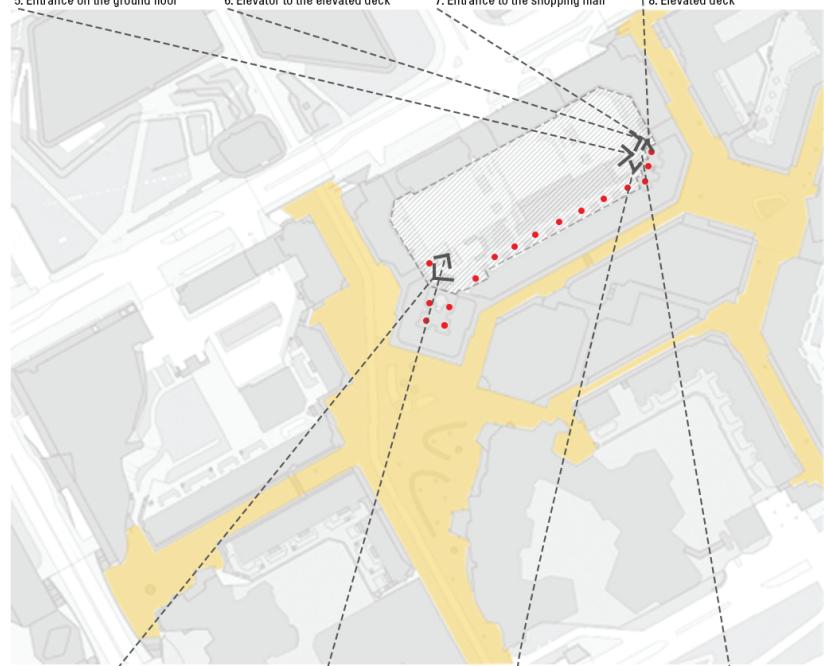
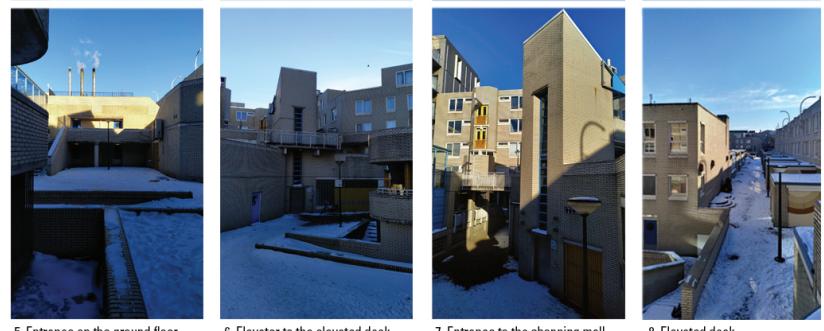
The inner space of the cluster 4 has several issues. First of all, the courtyard is on the northern part of the building, so it gets many shadows. Especially in winter it gets very dark. Another main issue is maze like structure of stairs and entrances to the elevated deck. Elevators don't work at the moment. Also ground level is vacant, lacks of ownership. The service building blocks the inner space and doesn't bring qualities.

Entrances to the elevated deck

The access to the deck is based on the staircases and elevators which are connected to the underground parking (6,7). The ramps are not maintained and is in complicated geometry, so not used by people with disabilities.

Entrances to the dwellings

Circulation is complicated. Residents have to enter the cluster through the main entrances, then use the stair to reach the elevated deck and then reach the stair to the dwellings. It means that on the elevated deck there is a row of entrances to the block. Each of the staircase accommodates two dwellings per floor (red dots in the map indicates the entrances to the block). The elevated deck itself is plain, the surface is hard paved, without greenery and space for social gatherings. Few playground were installed on the elevated deck, but nobody uses them. It is hard to tell why, but some of the reasons could be that it is in a shadow (north orientation), it is elevated and not attractive, has generic design.



Circulation in Cluster 4

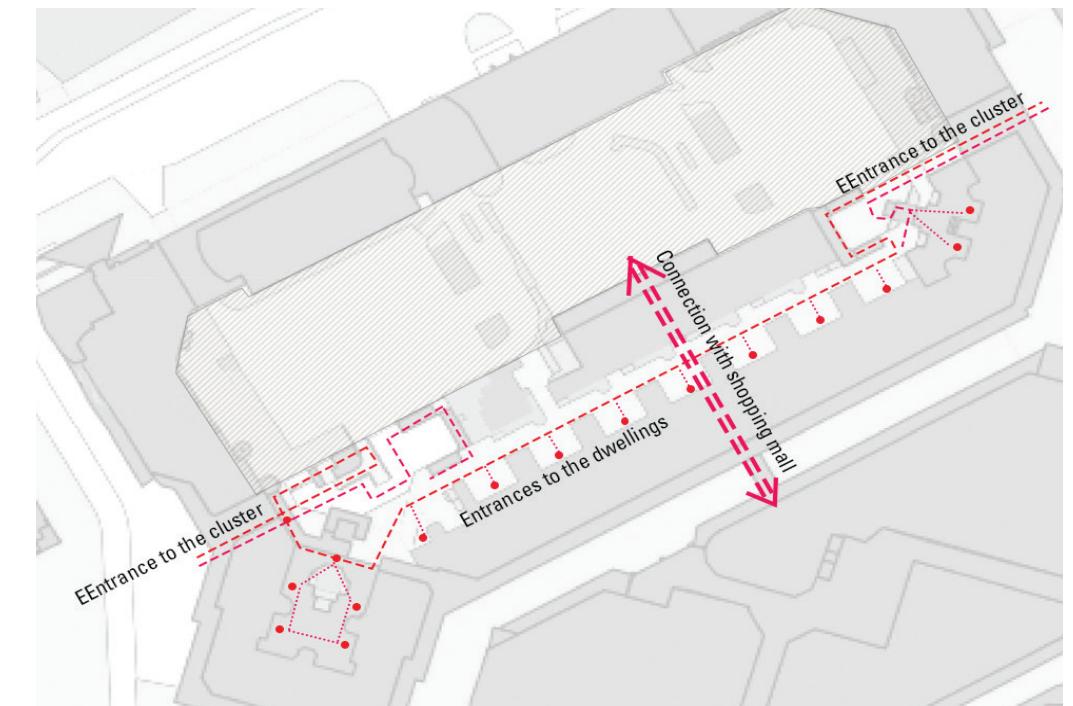
Cluster 4 has complex circulation system, which was interconnected with an elevated street predesignated in 1970. The cluster is shaped as an enclosed block with a courtyard. Connection with a courtyard is through the arch entrance connecting it to the street (1.). The primary purpose of the courtyard was dedicated for the car parking.

The car parking is connected with a service building. The service building has two elevators which were used to bring goods from the parking level to the shopping street level. Also there is connection for pedestrians from the parking area to the elevated deck and to the shopping mall (cluster 8). This idea is dominant in the cluster 4, where car mobility is above pedestrian mobility.

The pedestrian circulation in the block is quite complicated. In order to reach dwellings, residents have to walk through one of three opening "gates" to enter the inner space of the cluster. After entering the inner space (2.), pedestrians have 3 options to reach the elevated deck: parking staircases, pedestrian staircases and the elevator. The biggest challenge is for people with disabilities because the elevator is not working and is not maintained. Also, the ramps are not maintained and are in bad condition.

Access to the dwellings are straight forward from the elevated deck. Elevated deck is designed as a street structure, where every six meters there is a separated entrance to the block. The corners of the building are special, because it has commercial functions on the first floor and are deeper, so access to the dwellings are elevated on the second deck. It creates maze like circulation nature, where units are difficult to access it from the ground level.

From the scheme (1.) is also clear, that there is no connection on the ground level for residents, because of the service building, which interrupts the flow and blocks the possibility to walk through one "gate" to the another. What is more, the connection from the elevated deck to the shopping mall is common in Bijlmerplein, where one cluster is connected to each other using



01. Circulation scheme



02. Ground level and access to the elevated deck (the service building on the right)

Circulation in Cluster 5

The cluster 5 entrances to the inner spaces are different from cluster 4, because it doesn't have ground outside space and connects shopping street with elevated deck directly. This is because of the shops underneath the deck and close proximity to the parking garage.

Connections to the deck are not pleasant for users and usually locked trying to avoid trespassing (Pictures 1 and 6).

There is another missing physical connection with the shopping mall from the elevated deck. The residential building has a gap revealing the view to the shopping mall, but no pedestrian bridge was designed there. To conclude, cluster 5 is missing few important connections which could enhance the livability for residents (picture 4).

The gap between building creates visual connection to the shopping mall but doesn't have physical connection (picture 1).

Some shopping carts were noticed close to the residential entrances which lets us make assumption, that close proximity to the shopping facilities and mobility in this way do shopping is common in this neighborhood (picture 2).



1. Entrance to the block

2. Entrance to the block

3. Elevated deck of cluster



4. Small yard between ING bank and cluster 5



5. Elevated deck



6. Entrance to the cluster

Circulation in Cluster 5

Cluster 5 has much simpler circulation schemes comparing with cluster 4. It has one entrance from the shopping street ground level on the one side and another entrance on the another street where is connection with office building (1.). Also, there is straight connection with the street level providing access for vehicles. From the elevated deck there are entrances to the building which also creates pedestrian like atmosphere. The problem with entrances to the elevated deck is unpleasant niches and accessibility for people with disabilities. There is no ramps or elevator to reach the deck. The only way is to use access from the street (2.).

Also there is no connection with "Sand Castle" building at the south, which is totally separated with 2 meters wall. Former ING bank building is now being converted to the residential block, so connection between these two residential buildings would benefit residents.

The niche between "Sand Castle" and cluster 5 forms the dead end square, where circulation is blocked. There is no access to the elevated deck only some sort of the connection to the parking lot and service space.



01. Circulation scheme

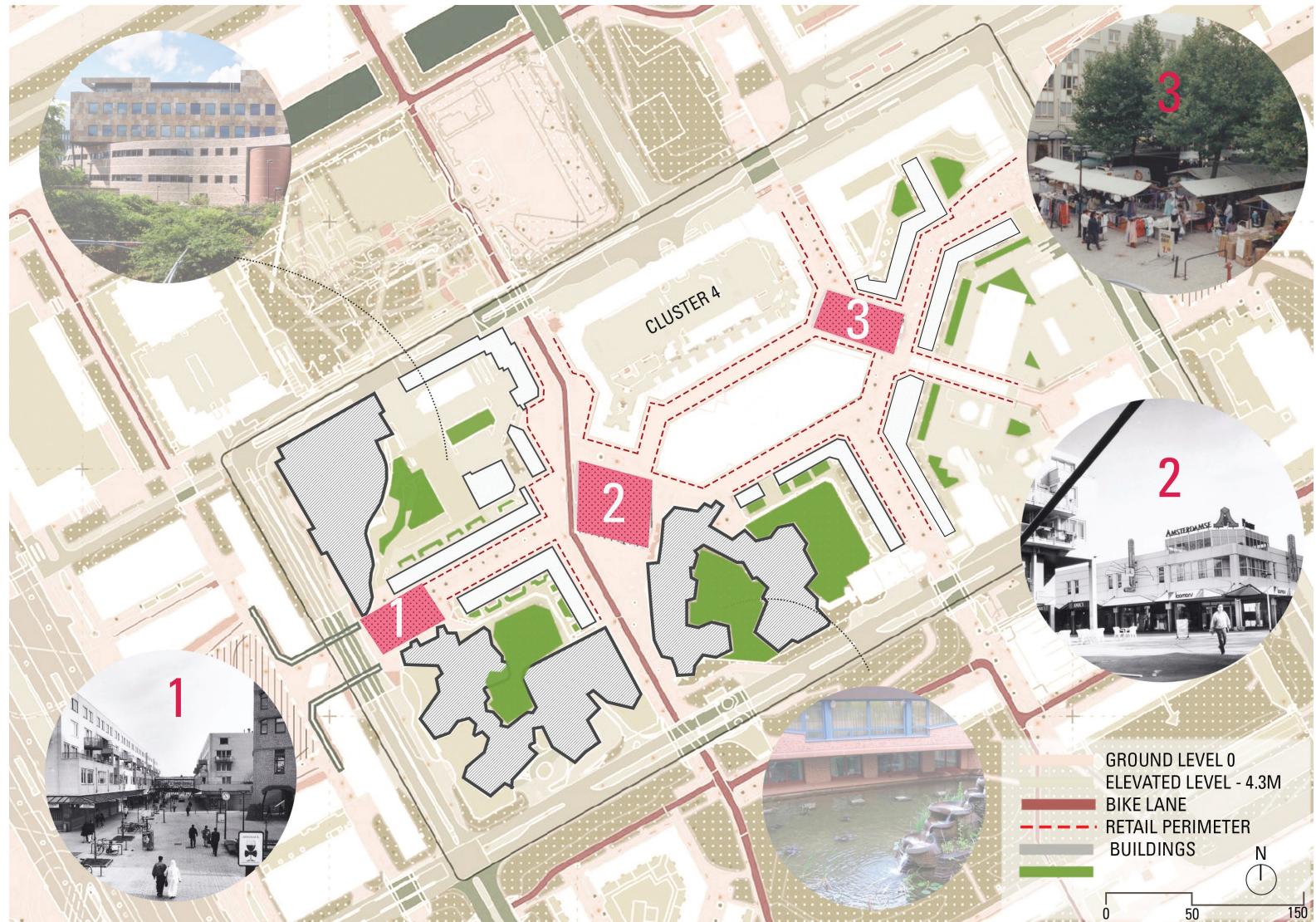


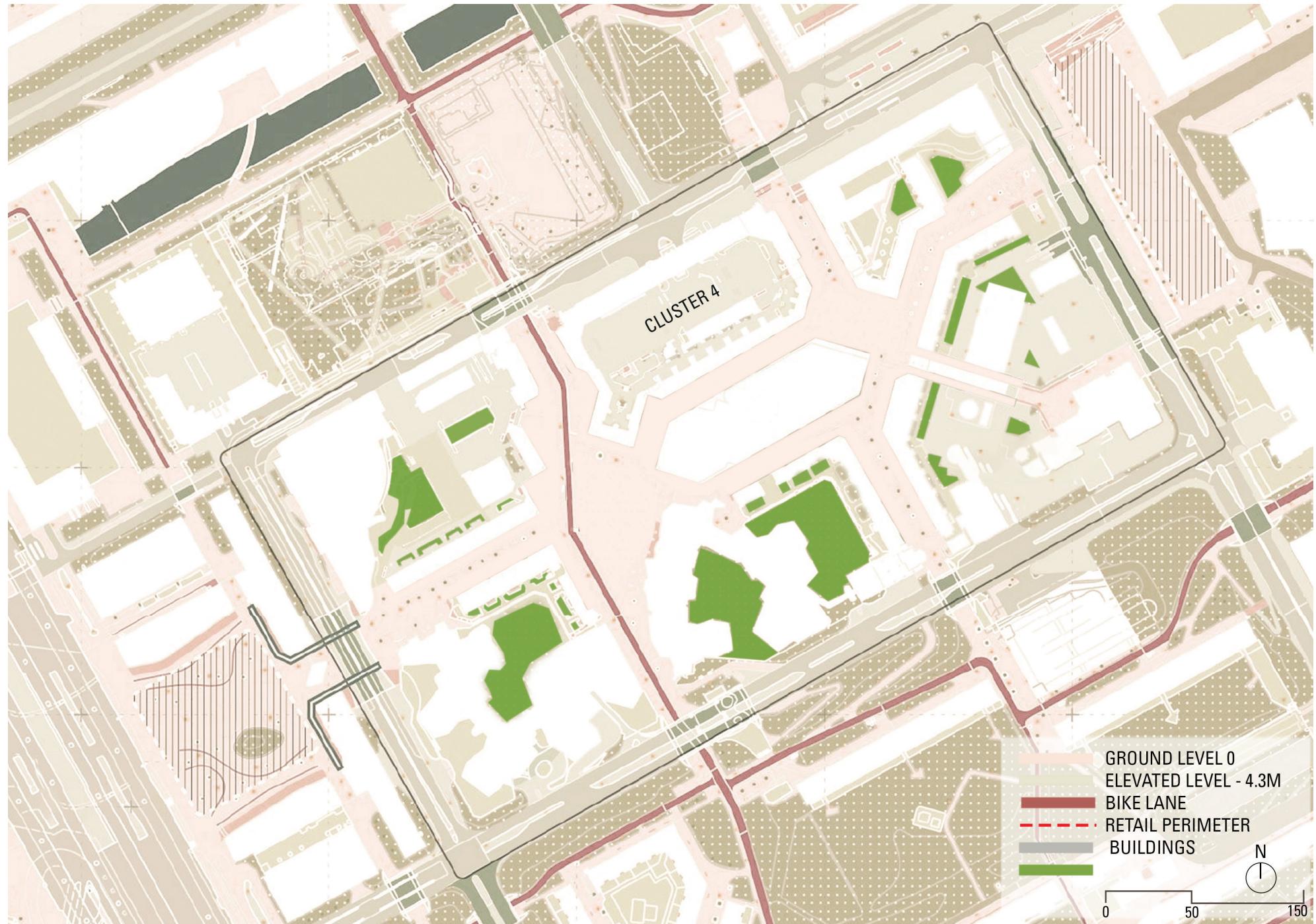
02. Elevated deck, cluster 5

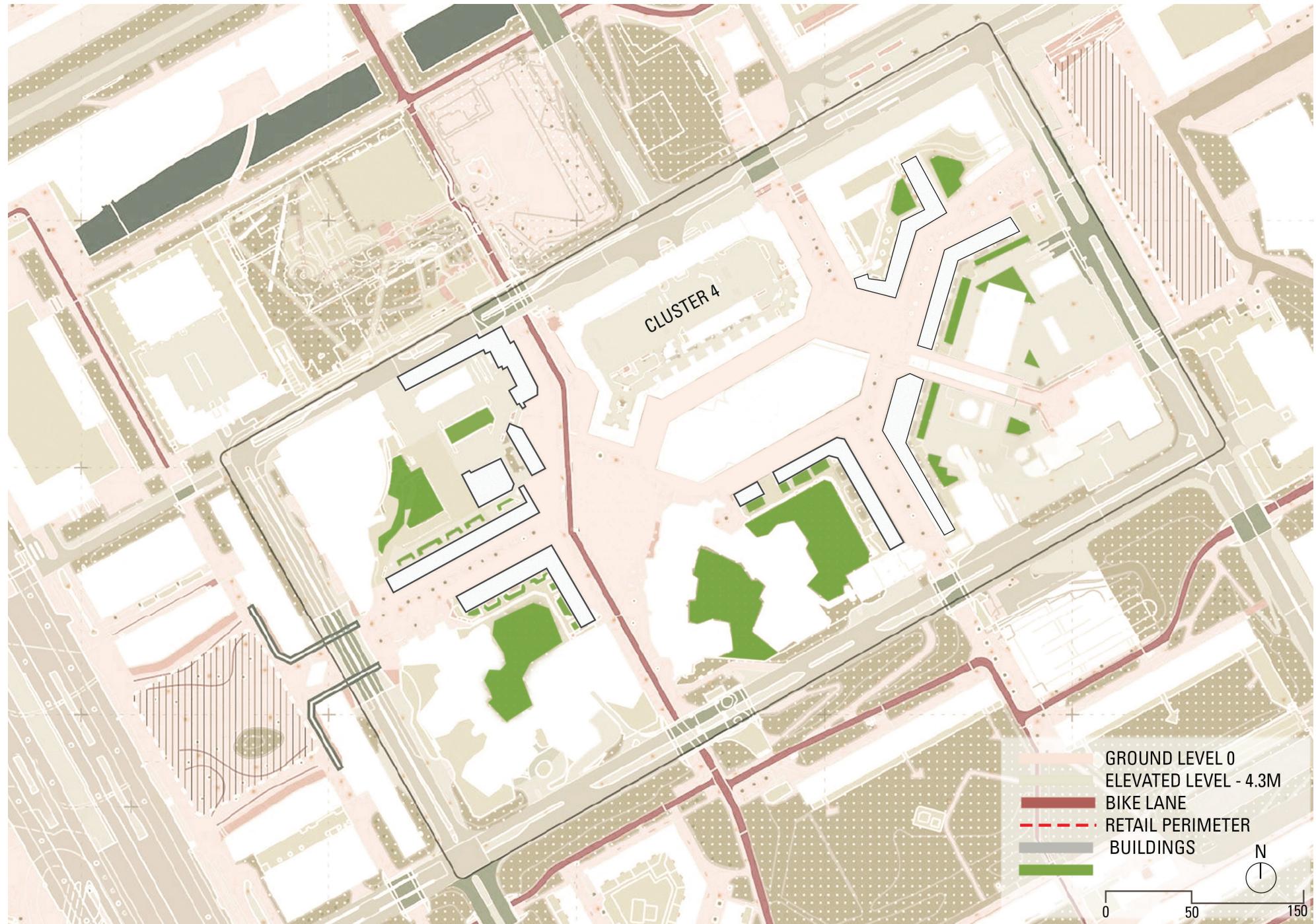
SITE ANALYSIS

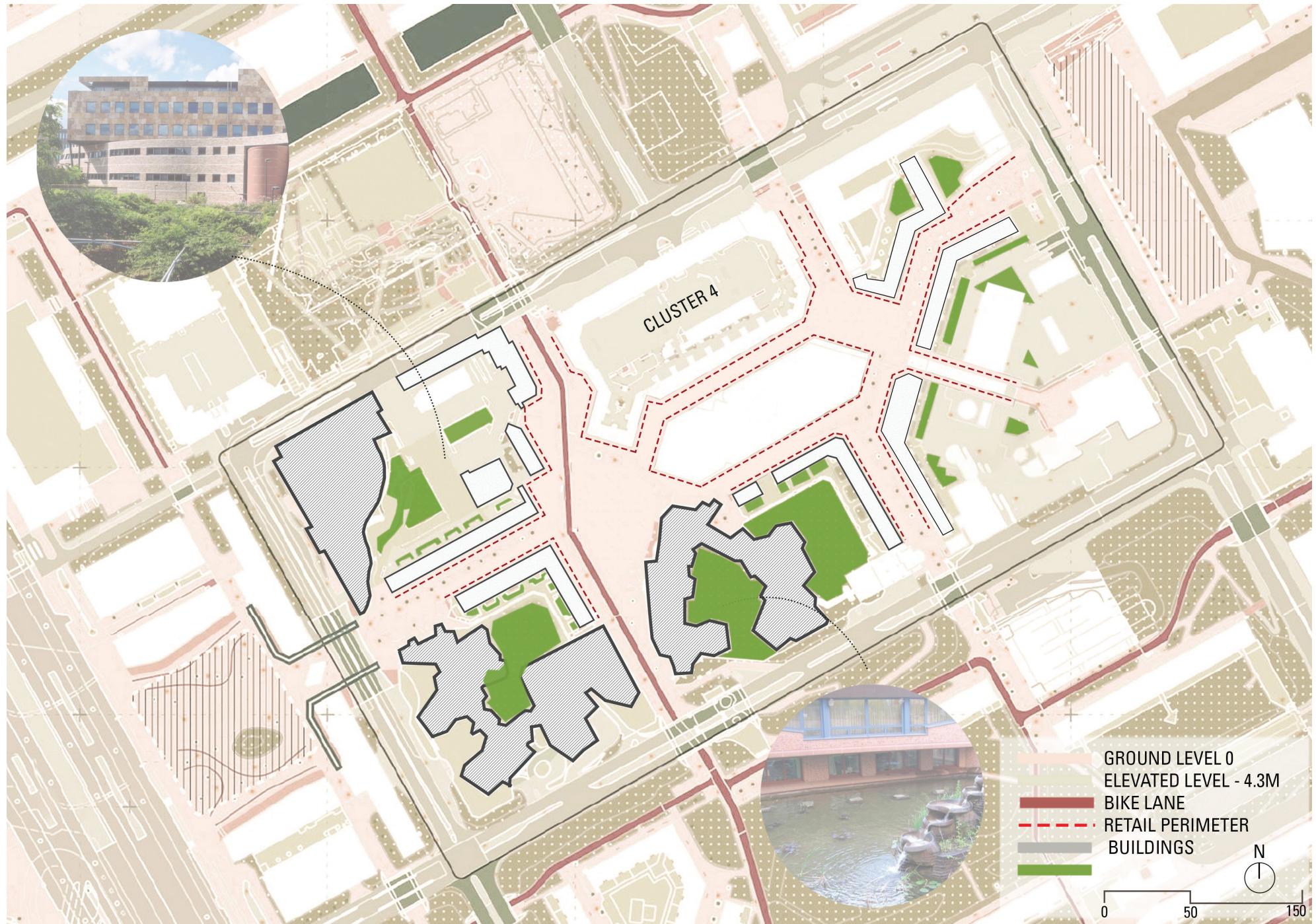
Cluster 4 has no greenery where as other clusters have extensive greenery or front gardens. All public spaces are framed by residential blocks and forms retail perimeter at grade. Cluster 4 building mass is moved toward public square and the building facade becomes striking feature. It is worth to mention, that residential blocks are quite strict and defined in their geometrical form where as public buildings such as ING office or "Sand castle" are more sophisticated in their forms, facade shapes, materialization and spatial qualities. The same is done with courtyards, which are also more sophisticated comparing with residential blocks and its courtyards.

Cluster 4 is set back from the market square and has less exposed facade language. It is due to hierarchy of public squares where square 2 is bigger, wider, has more circulation nodes and has clear connection with metro station.









HERITAGE PERSPECTIVE

SYMBOLS AND ARCHETYPES

Heritage perspective

From the heritage perspective, Bijlmer and Cluster 4 is significant in postmodernist architecture language. As a reaction to Bijlmer modernistic city approach with homogenates and micro-cosmic spaces, Bijlmerplein was designed looking back at more traditional city concepts. It was designed as a city block with public squares, narrow shopping streets, private residential backyards. From the spatial perspective, Bijlmerplein Clusters define strict perimeter for shopping streets but at the same time has more variation within the residential blocks. That variety is embedded into materiality of the facades, green courtyards, geometrical composition.

Symbols and archetypes are significant in Bijlmerplein as it was used as a tool to create familiar picture of the city (as we know, Bijlmer was erected on the polder, in outskirts of Amsterdam). This was the main of the issues of bijlmer and its failure, because new residents were not familiar with modernistic alienated Utopian design. in that sense, Bijlmerplein was based on post-modernistic construct and incorporated well known architecture symbols: "tower", "gate", "bridge", "colonnade", "courtyard", "street", "square", "arch". These elements are dominant in Cluster 4, so design aims to revitalize and purify them.

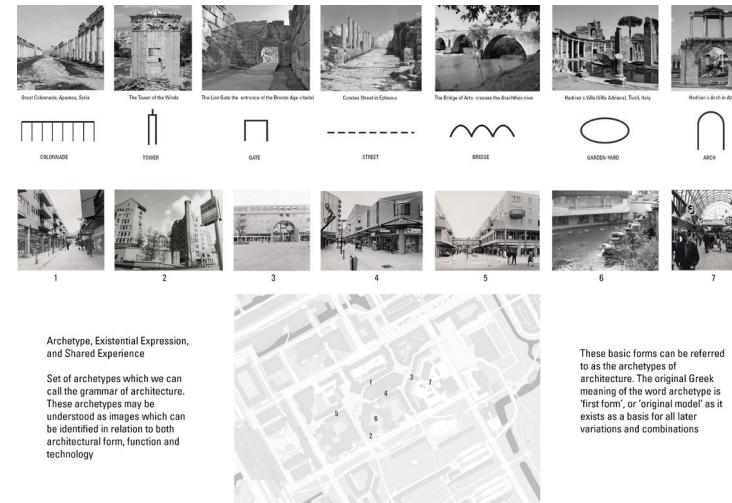


Fig 1. Sustainable development goals

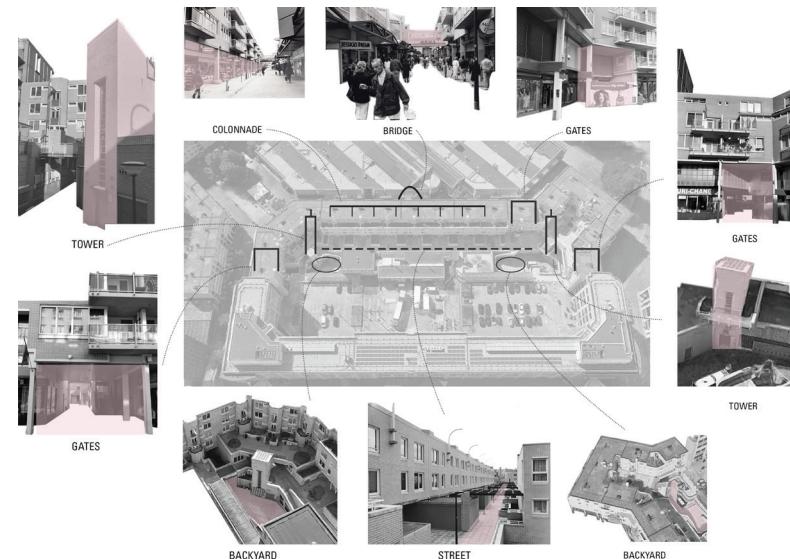
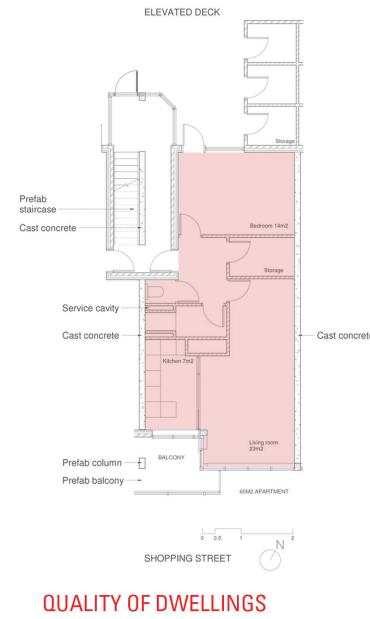


Fig 2. Consumption circle

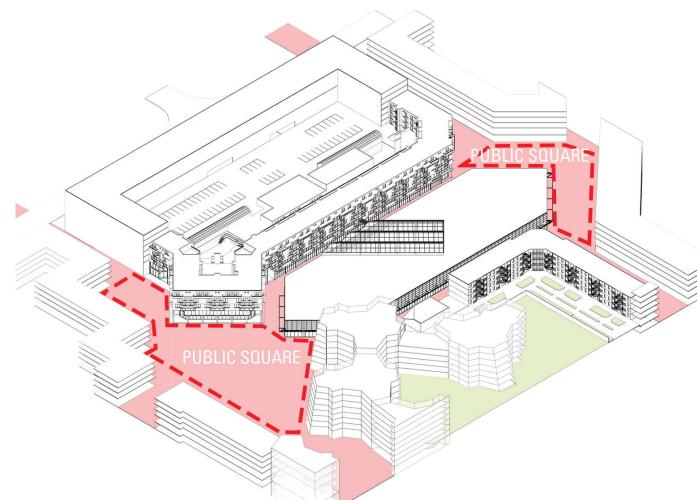
SOCIAL AND USE VALUE

The social value of Bijlmerplein is seen in many cultural events and festivals, which used to take place in public squares before Covid-19 pandemic. All of these events are diverse and multicultural and represents wide variety of people and cultures in Bijlmerplein. Another significant notion in Bijlmerplein is shopping, where many traditional shops and restaurants could be found. The public squares in Bijlmerplein are used for cultural exchange. It means that value of "Use" and "social values are interlinked.

From the residents perspective the dwelling layout is appreciated because it is two sided orientation where one side is orientated towards public spaces and north-west side is facing. Also it affordable and quite spacious with a lot of storage space.



COMMERCIAL NOTION

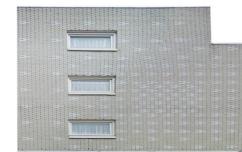


HISTORICAL VALUE

The cluster 4 is significant regarding postmodern architecture language. First of all, the structure follows the functions and the ground floor has flexible beam and column system, which allows to rearrange the shops underneath the dwellings. Secondly, the building envelope is made of lime stone white brick, which is dominant in Bijlmerplein. Also, the corners of the building has brick ornamentation, which emphasis the public square. The main facade of the building is facing the public square and it is accentuated. The facade has exposed structure, the light base and more solid upper part. So this relation between interior, facade and the square is quite significant. Other facades are designed following structural grid and has strict rhythm of windows and balconies. All these aesthetic features of the building are seen as attributes for historical value as it links with postmodern approach and way of thinking.



WHITE BETON BRICK



ORNAMENTATION OF THE CORNERS



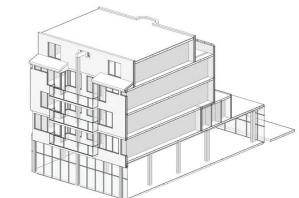
EXPOSED STRUCTURE



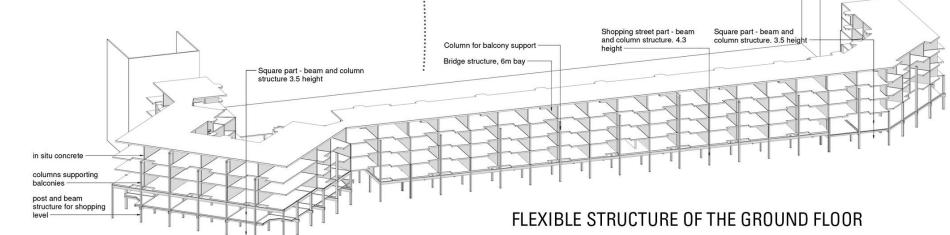
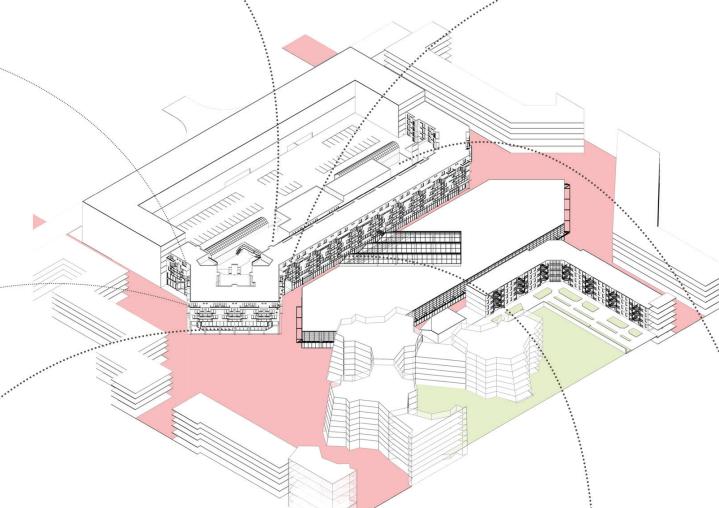
STRUCTURAL GRID AND ENCODED POSTMODERNIST LANGUAGE



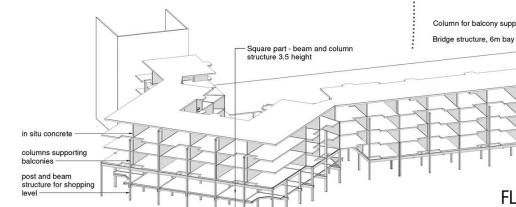
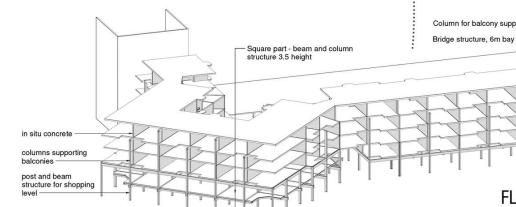
FACADES ARE RELATED WITH PUBLIC REALM



ELEVATED DECK WITH RESIDENTIAL FUNCTIONS

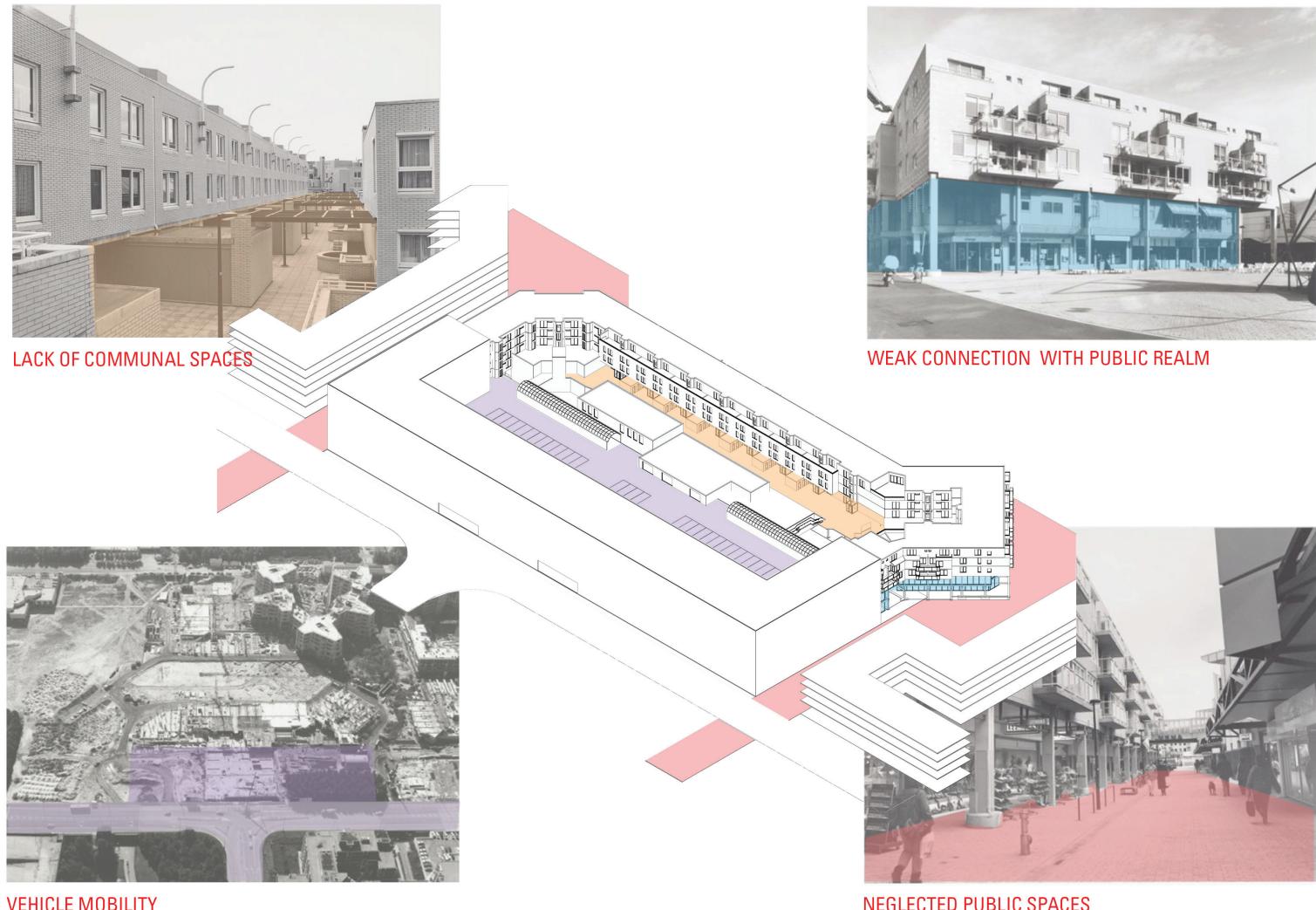


FLEXIBLE STRUCTURE OF THE GROUND FLOOR



ORIGINAL DESIGN CHALLENGES

The Cluster 4 has several encoded design challenges. First of all the inner courtyard of the cluster is occupied by storage units, service building and small office spaces, which doesn't leave space for residential activities. These buildings take majority of the space and leave only narrow passage walk way to the entrances. Secondly, the entire ground floor is dedicated for parking garage, which connects the elevated road with elevated deck. This was vehicle driven notion of connecting different sides of the block. Also, the main facade of the building had closed curtain wall aesthetic, which weakened the connection between the buildings' interior and public square. Lastly, the shopping street colonnade was neglected and pushed to the street edge, because it created unpleasant atmosphere and had no direct sunlight



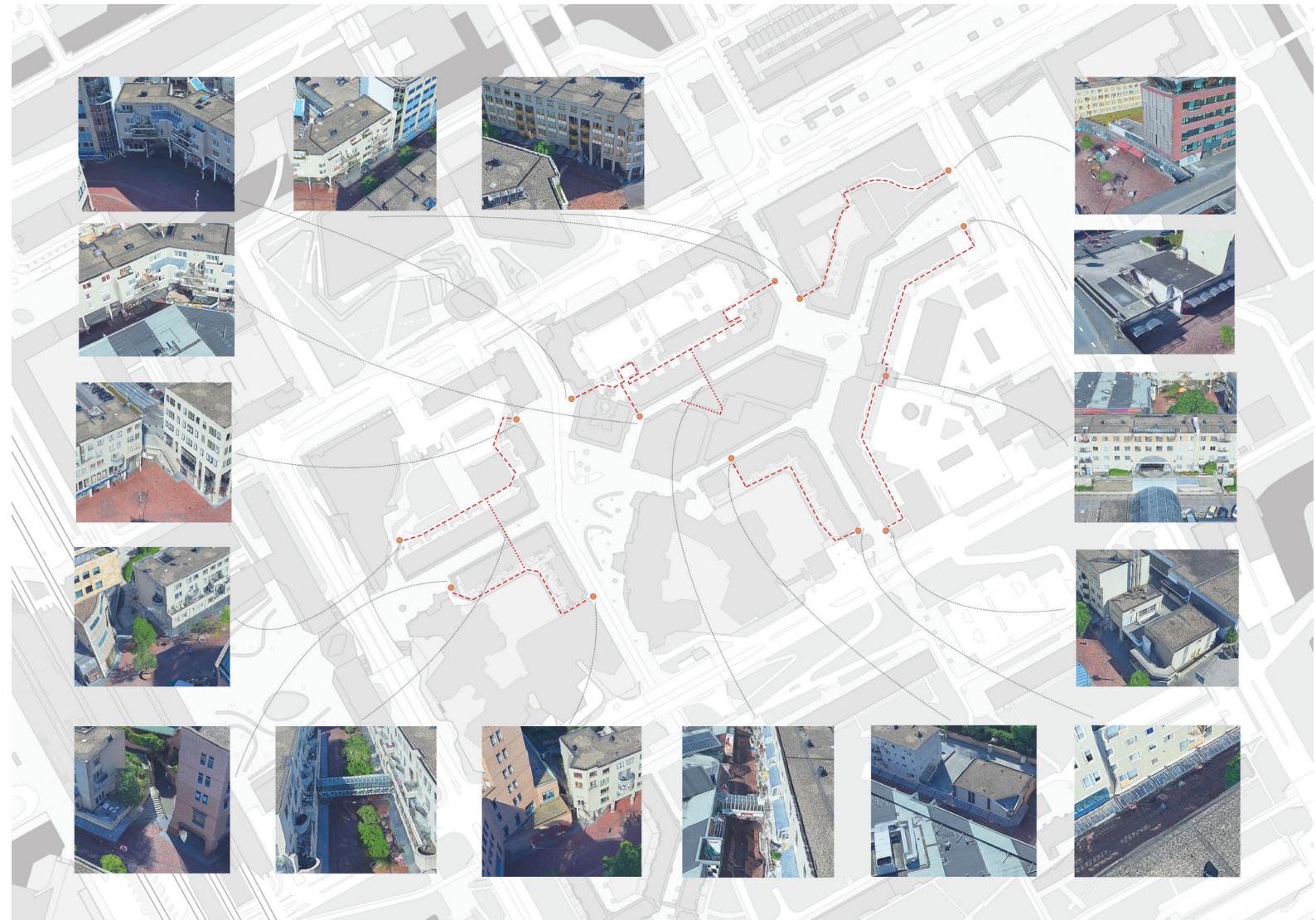
RESIDENTIAL CIRCULATION

In Bijlmerplein there is clear distinguish between residents and outsiders circulation. The entrances to the residential blocks are usually located at the side of the cluster with a gate to enter the block. In this way, shop streets are left uninterrupted by entrances to the residential blocks. Entrances to the residential block are located on elevated deck. In cluster 4 elevated deck accommodates storage units, which makes circulation even more unclear because entrances become hidden.

Usually the circulation is difficult because of the series of stair and ramps. These features also create unattended spaces for unpleasant activities.

However, the design tries to enhance circulation in Cluster 4, where the stairs are redesigned and the entrances are made more transparent.

Entrances are made using "gate" archetype, which helps to define the boundary between public and private. Also, it shows the entrance to residential part and welcomes residents.



VEHICLE AND PEDESTRIAN CIRCULATION

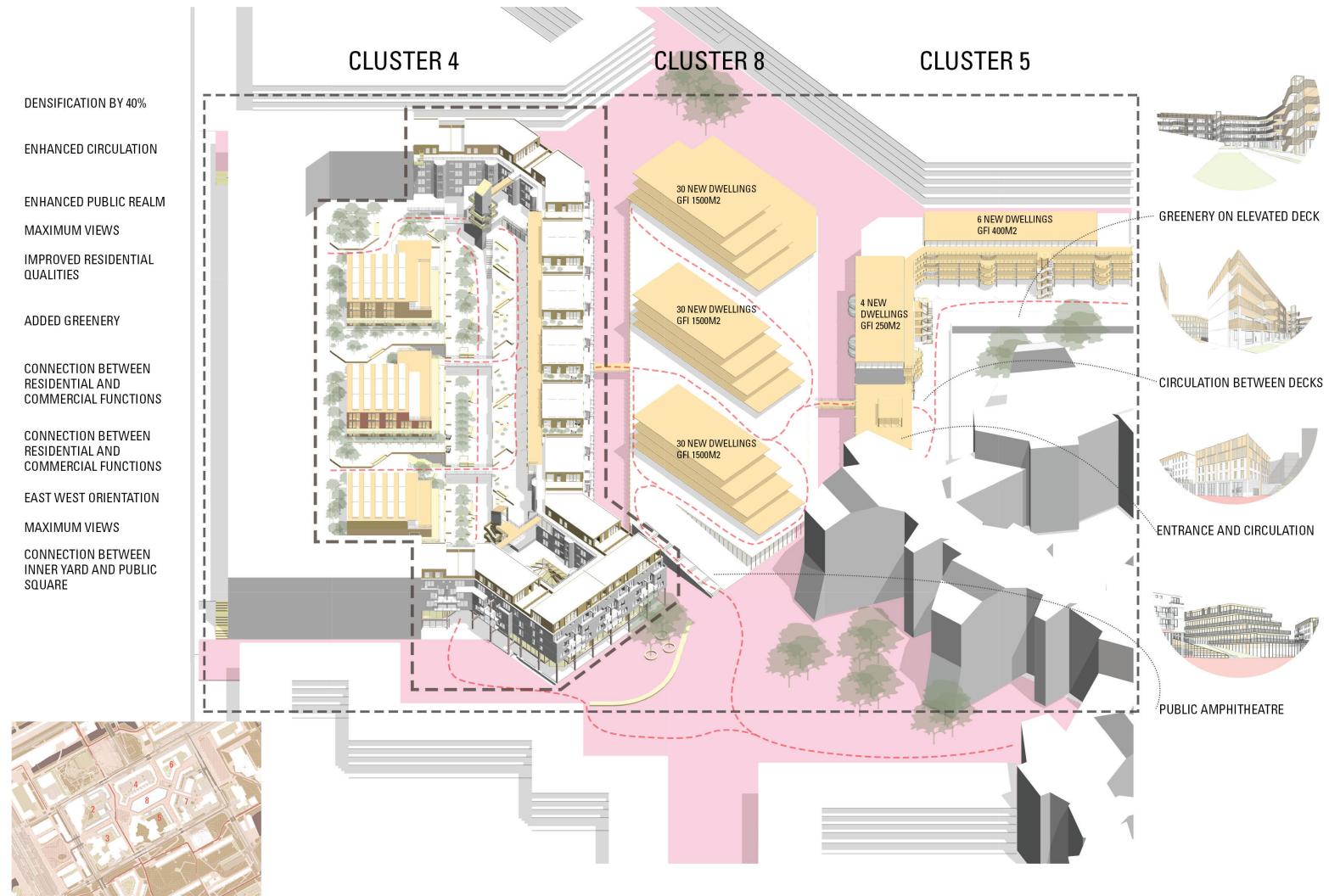
Entire Bijlmerplein is shaped by elevated roads, which were designed in 1965s and was part of Bijlmer infrastructure. This led to vehicle notion and separated different blocks from each other. Bijlmerplein is pedestrian friendly block, where bikers, pedestrians and small cars share the space. The cars are used mainly to service the shops at grade. However, elevated roads create visual and physiological boundary and often become a place for unwanted activities under the viaducts.

The pedestrian paths have 3 main directions connecting adjacent neighborhoods. The circulation is based on the sequence of street - square -street notion, which gives sense of a city in Bijlmerplein.



URBAN PROPOSAL

The design by research tended to address densification possibilities in Cluster 4, Cluster 5 and Cluster 8, because of its proximity and similarities and interlinks. Cluster 5 has a possibility to accommodate extensions on the roof. Cluster 8 is envisioned as a podium for new residential housing, which could connect cluster 4 and cluster 5 through roof garden and enhance circulation. Cluster 4 has a potential to be densified because of its big parking garage. Finally, more emphasis was dedicated to Cluster 4 and it was chosen to explore due to its articulated facade language and significant inner core composition. Also, the biggest potential for densification was seen in this cluster.



MIX-USE NEIGHBORHOOD

Bijlmerleijn has diverse functionality which varies from shopping, housing, cultural, dining spots, to residential, educational, office-commercial. The spatial composition of functions is defined where residential housing blocks shape the shopping streets with commercial and public activities located at grade. The outside perimeter is shaped by buildings with office function, such as ING bank. The central building is shopping mall which is shaped by public squares.

Each of the clusters form inner residential space with some greenery and residential amenities such as small gardens.

One of the biggest assets of the Bijlmerplein is metro station, which provides quick link with Amsterdam center. The main pedestrian axes starts at the station and leads to Bijlmerplein square. After passing the square, shopping district starts, which leads to smaller square. Differently from Bijlmer, functions are closely related in Bijlmerplein and shapes spatial qualities in that sense.



ENVIRONMENTAL POSITION

The main driver of environmental position was sustainable development goals. One of these were "sustainable cities and communities": "Make cities and human settlements inclusive, safe, resilient and sustainable, by ensuring land and soils are protected as they safeguard our cultural and natural heritage.

The project also aims to design circular building which focuses on resource-efficiency: materials are bio-based/renewable, many components are modular, connections are designed for disassembly and many components are re-usable.

The building as a whole is designed for a maximum life-span and unknown future re-use.

Big part of the project aims to reclaim and reuse lime stone brick and steel beams from the service building and shopping mall, which are proposed for tearing it down.

New dwellings are designed as extensions on the roof and follows the existing grid of the building. Also, it is designed in modular way from prefab CLT elements, which could be dismounted in the future. The same is done with housing on the car park.

Majority of the cluster 4 building is preserved as it has tight envelope, which could be insulated, the natural light in public part is enhanced by introducing the atrium feature.

Soil and United Nations Sustainable Development Goals
Many global policy frameworks, including the United Nations Sustainable Development Goals (SDGs), directly and indirectly address land and soil. Many of these SDGs cannot be achieved without healthy soils and a sustainable land use. Below is an overview of the SDGs with strong links to soil.



Fig 1. Sustainable development goals

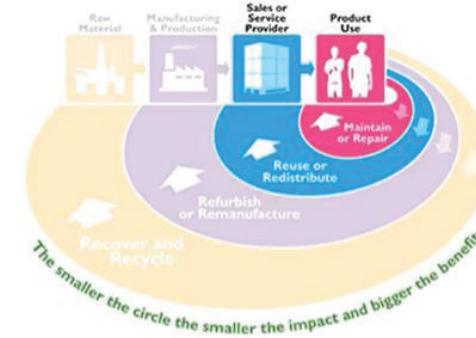


Fig 2. Consumption circle

PROBLEM STATEMENT

How Bijlmerplein can be densified using "Open building" concept by creating harmony with existing notions (juxtaposition).

- What could be a set of solutions? Disassembling housing, portable housing, open plan buildings, collective living, portable houses, mobile houses, expandable home, divisible home.
- How existing clusters can be re-designed to achieve more flexibility in their structure, plan layout, maintenance, social coherence.
- How densification can enhance local identity?
- How multicultural atmosphere can be enhanced (flexible housing ideas letting residents to express themselves and their culture and lifestyle?). This could involve into closer relation between makers and users whereas using flexible housing ideas (changeable facades for example) users could create unique living environment.

THE MAIN CONCEPT

In order to address problem statement, the main concept of the design was to purify the inner core of Cluster 4 by removing storage and service building and by converting it to the green alley (inner street) which becomes the connecting element regarding residential activities, greenery, circulation, enhancing existing archetypes and creating links with new housing units.

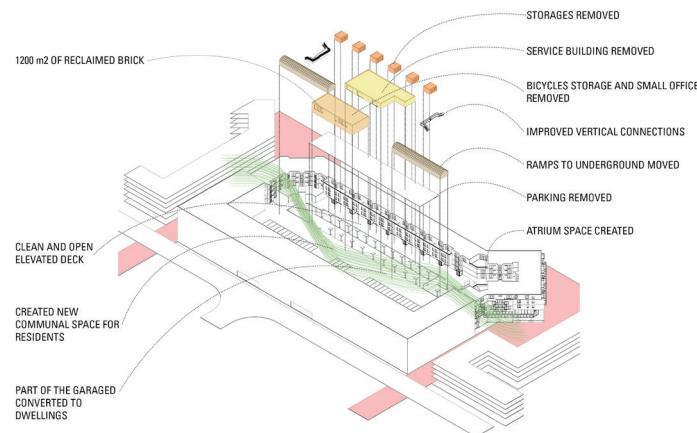


Fig 1. Sustainable development goals

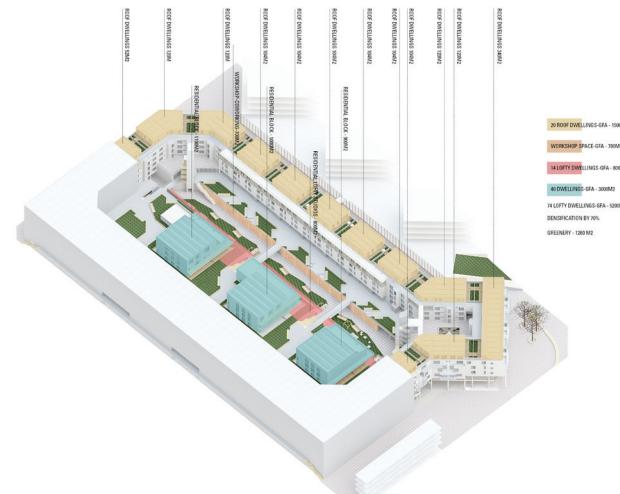
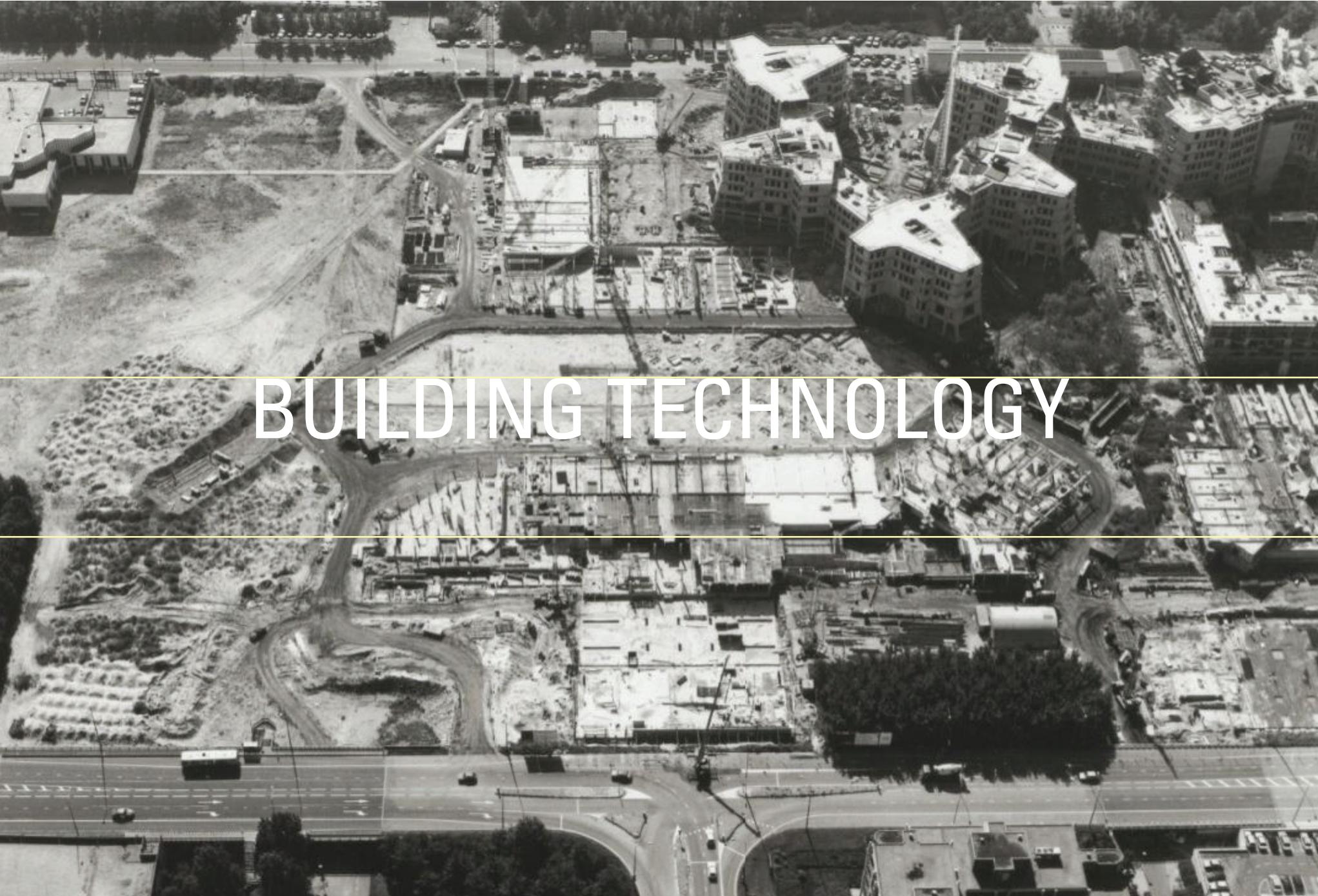


Fig 2. Consumption circle



BUILDING TECHNOLOGY

INTRODUCTION

The experimental housing of the 70s and 80s had a big variety of housing types and building shapes with different geometry including sophisticated roof styles, dormer and bay windows, balconies, canopies, pergola's, elevated decks, staircase hooks (for furniture), colonnades. These elements were introduced to create more familiar city picture in contrast for regularity and simplicity and CIAM ideas two decades before.

In this period construction companies experimented with new building methods and materials.

In this chapter insight are given towards the technical construction of the building blocks by Broekbakema that was introduced in the previous chapter. Where the previous chapter was mainly focused towards the spatial structure of these building blocks, is this chapter focused towards the technical construction and its details. More insight will be given into the building structure, its thermal properties, rainwater drainage, heating installations and important details.

Methods and literature

The different subjects in this chapter are established by analysing the original drawings and built-description. The most important building components are discussed from the larger to the smaller scale. Every subchapter starts with general information that continues with specific information of the building block itself. By doing this a better insight is given towards the dominant methods and technologies of that time, and how they relate to this specific building project. It will furthermore, where possible and necessarily, be related towards the present ideas and visions on how to live and build. One can understand that for example visions towards energy sustainability have changed over time. At the end of the chapter a short summary will be given with conclusions and recommendations.

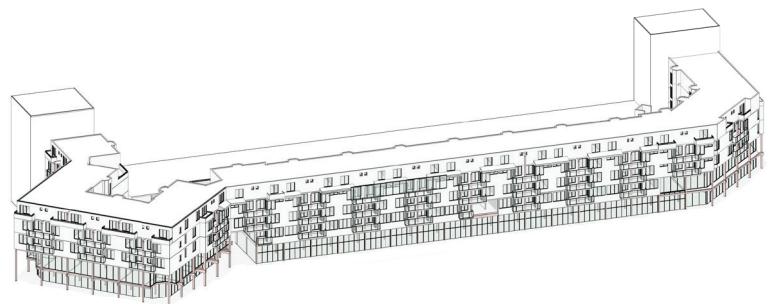
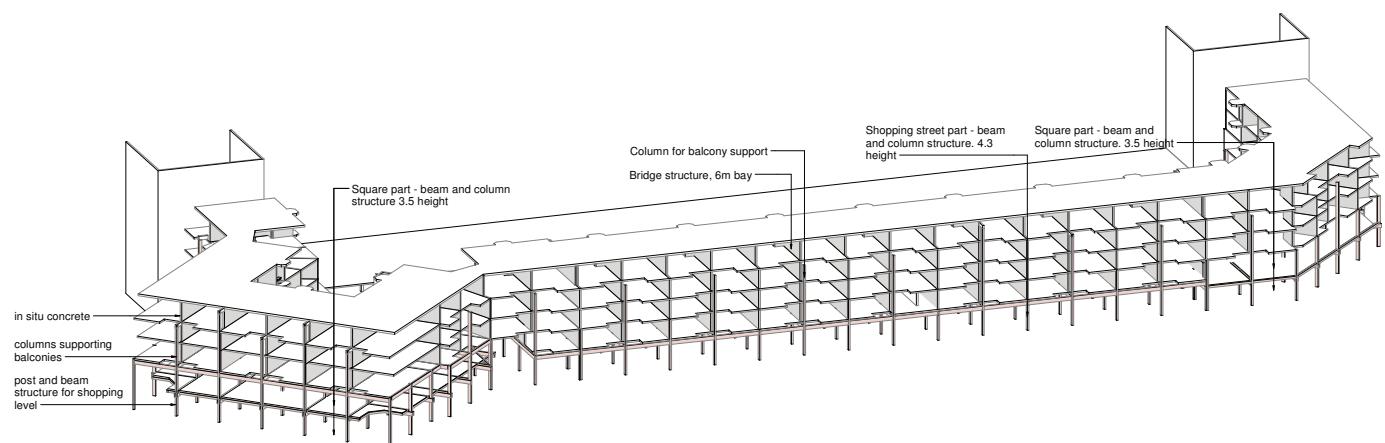


Fig 1. Differentiation of architectural forms in Bijlmerplein

STRUCTURAL COMPOSITION

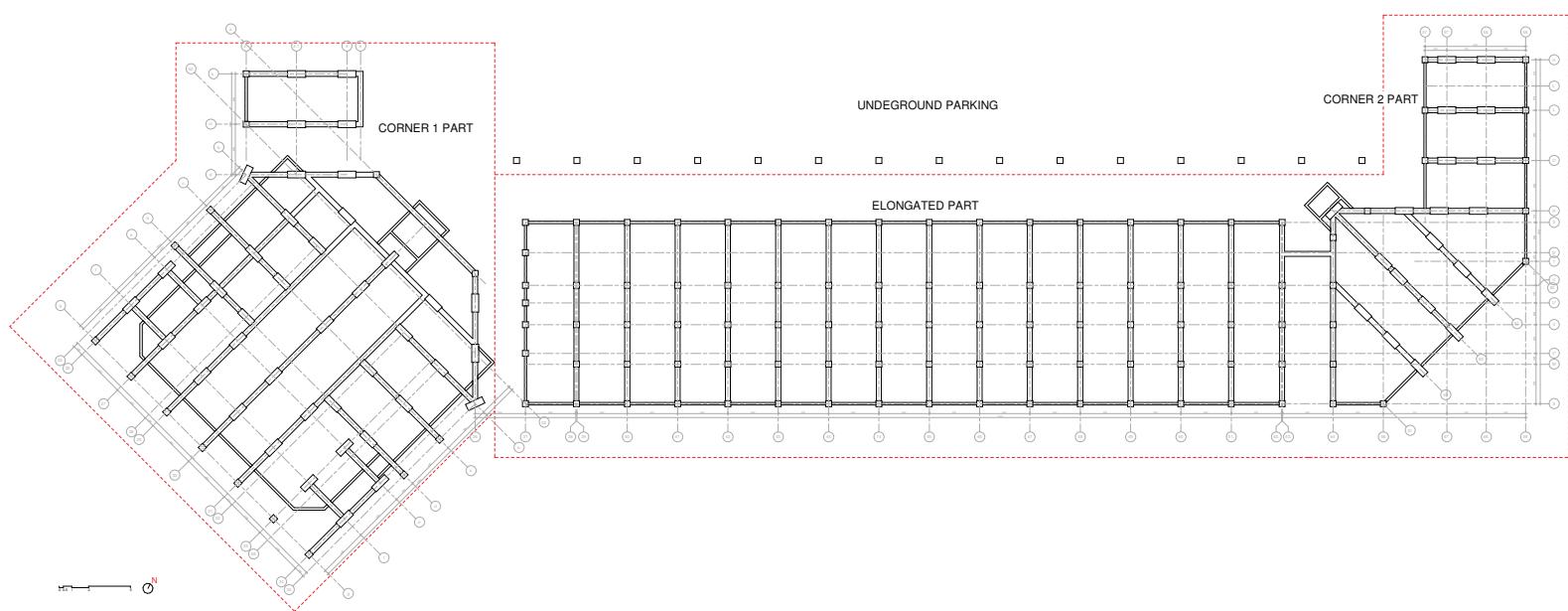
The Cluster 4 has four distinctive structural parts: elongated shopping core which is 90 m long. At the sides it has two geometrically more complicated cores which are connected to elongated part via transferred beam and columns assembly. At this points columns are double taking loads from the elongated and side parts. In the research paper side parts are called "cores". The cores are separated from the elongated part because of the several reasons. One of these are different functions - elongated part has shopping plinth with a height of 4.5 meters where as cores have 3.5 m height of the ground and first floors, because it accommodates different functions. Second reason is functionality and circulation where entrances are located at the sides of the cores making a gap between two building parts. The fourth part of the building is elevated deck with the connection with parking garage. This part is the continuation of the elongated shopping plinth.

There are two structural systems used in the building construction. For retail and public functions beam and column system has been used because of its flexibility. The bay or a distance between the columns is strict of 6 m width at elongated part and more sophisticated and complex at the cores. It is due to public functions on the first and ground floors.

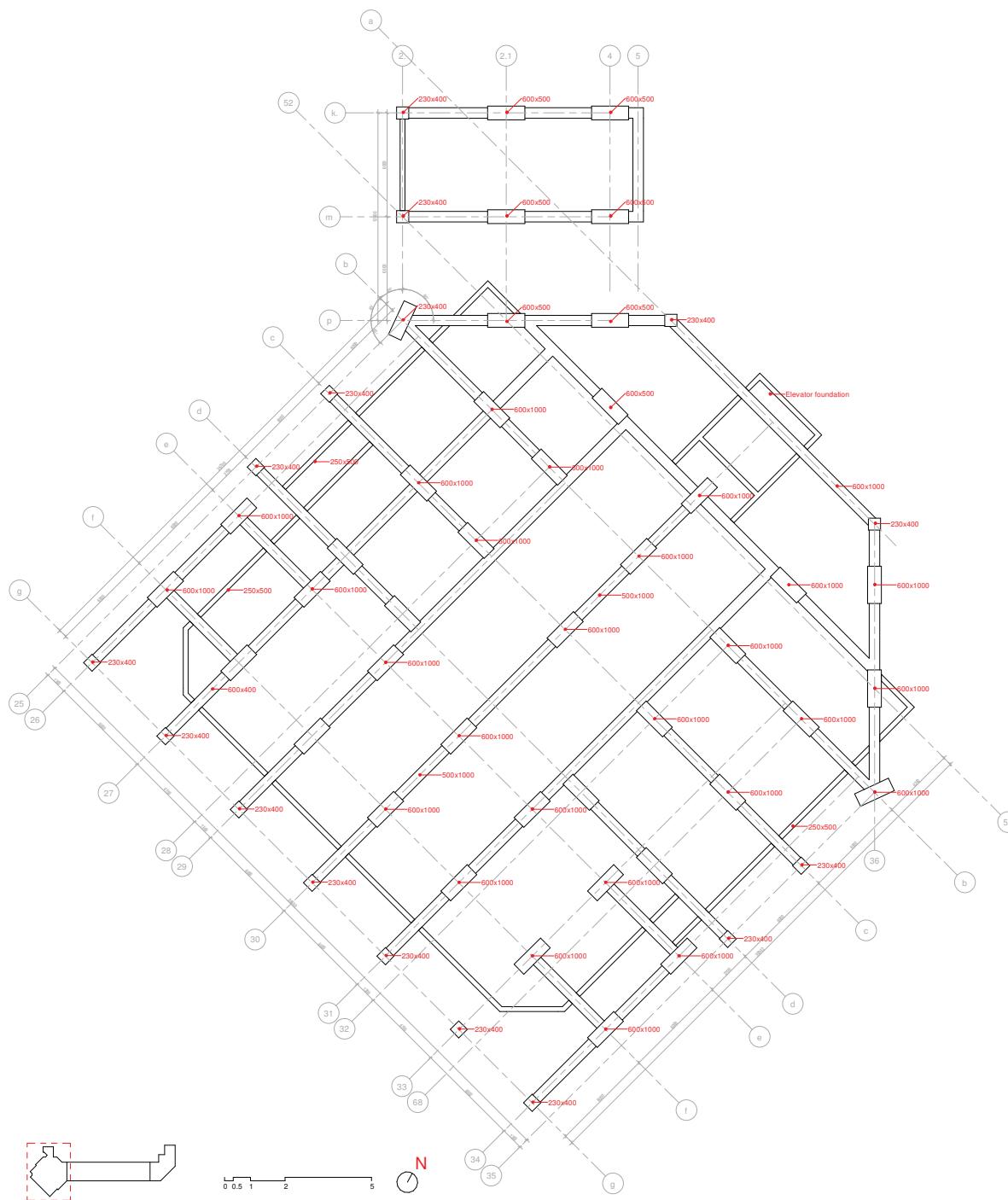


FOUNDATION

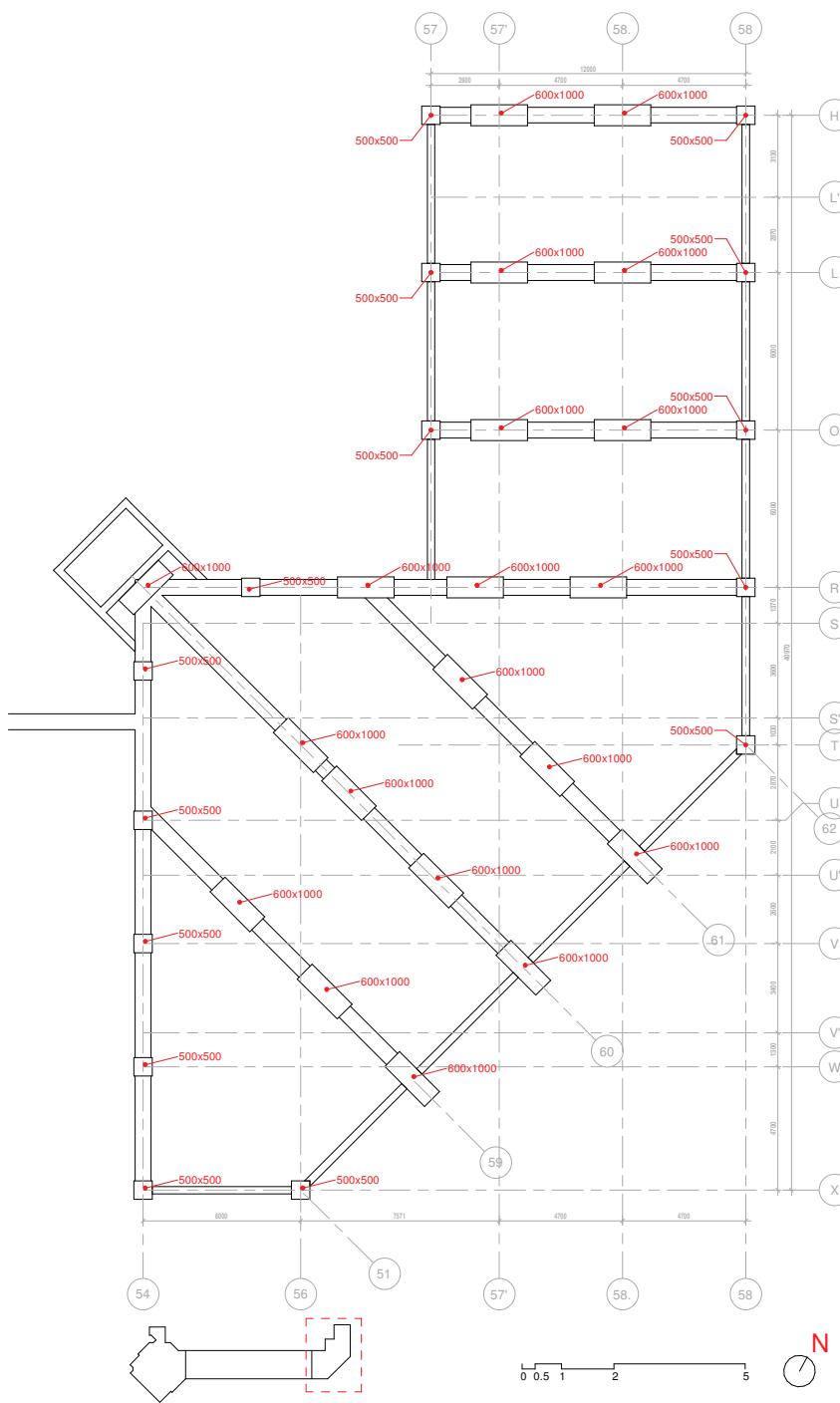
Building mass composition is defined by 3 elements: two corner wings and elongated shopping mass. This is also evident in the foundation structural scheme, where these three parts are distinguished. The first wing has sophisticated pillar and supporting beam structure which is interconnected. The foundation of the elevator is centered and connects with central beam. The elongated part has quite regular grid and structural scheme where structural bays are 6 m wide. This is dictated by residential unit sizes above. There is a gap between the cores and the elongated part separating three parts from each other.



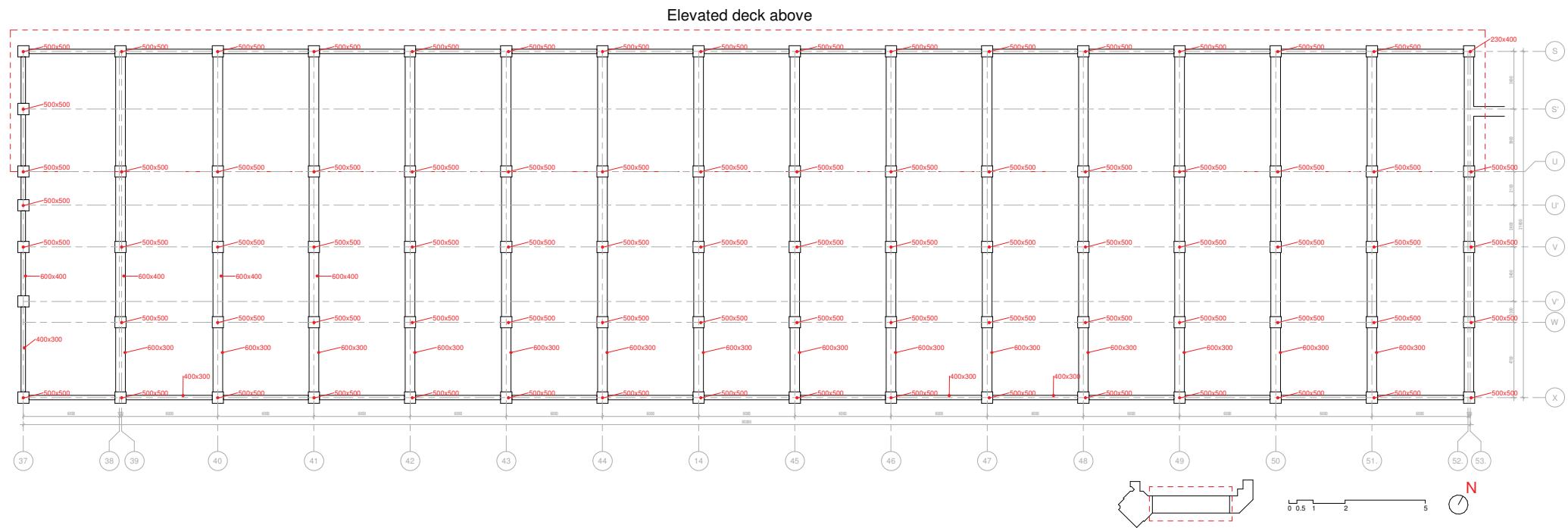
FOUNDATION SCHEME OF THE MAIN CORE



FOUNDATION SCHEME OF THE SECOND CORE

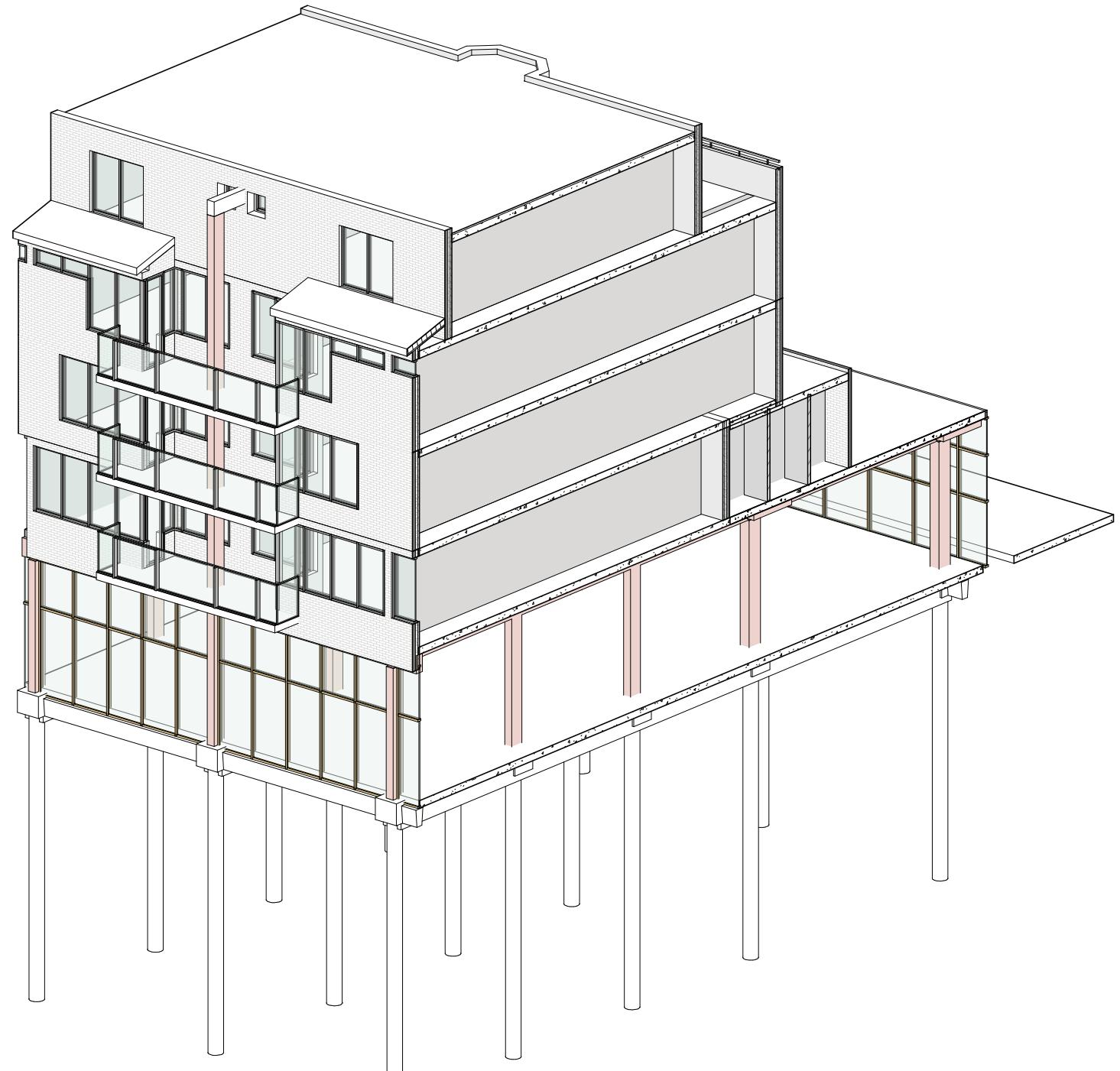


FOUNDATION SCHEME OF THE ELONGATED PART



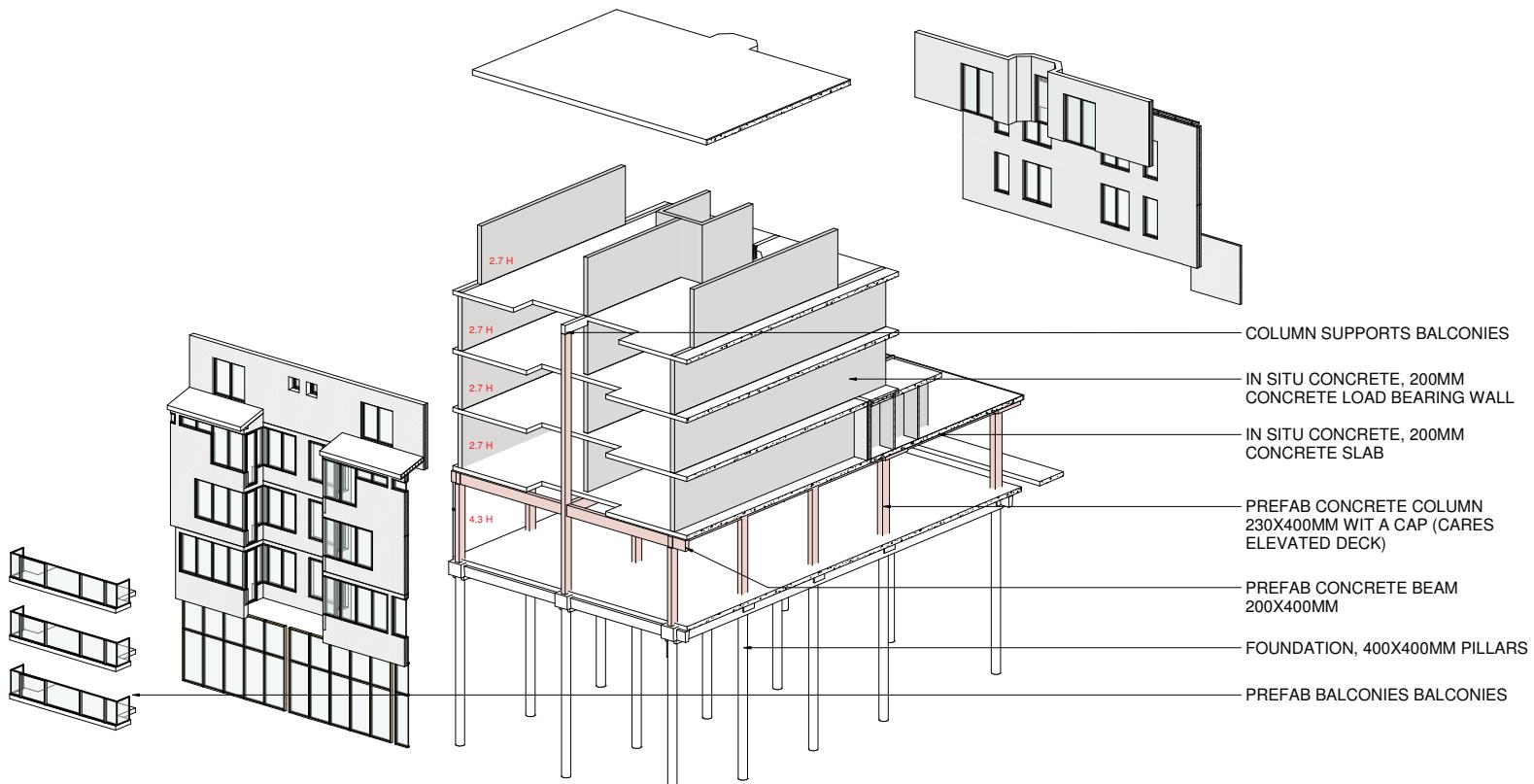
STRUCTURAL COMPOSITION - ELONGATED PART

For the residential part "bridge system" was used where load bearing walls made in situ concrete. The distance between load bearing walls is 6m and accommodates two sided apartment. As mentioned before, retail part on the ground floor has beam and column system and which holds residential part above. Beams and columns are prefabricated elements. Stability of the building is ensured by staircase cores which are located every 12 meters. Elevated deck has columns with "mushroom caps" system because the distance is longer - 8 m.



STRUCTURAL COMPOSITION - ELONGATED PART

Regarding new interventions and facade improvements, it is important to highlight that the facade has prefabricated timber stud framework. The timber frame wall consists of timber stud framework, with insulation between each stud, which is sheeted with either plywood or Oriented Strand Board (OSB). This consists of battens being attached to the plywood or OSB, again with insulation fitted between each batten, with a finishing plasterboard put in place. This facade construction is independent from the load bearing structure and allows for more radical facade transformations.

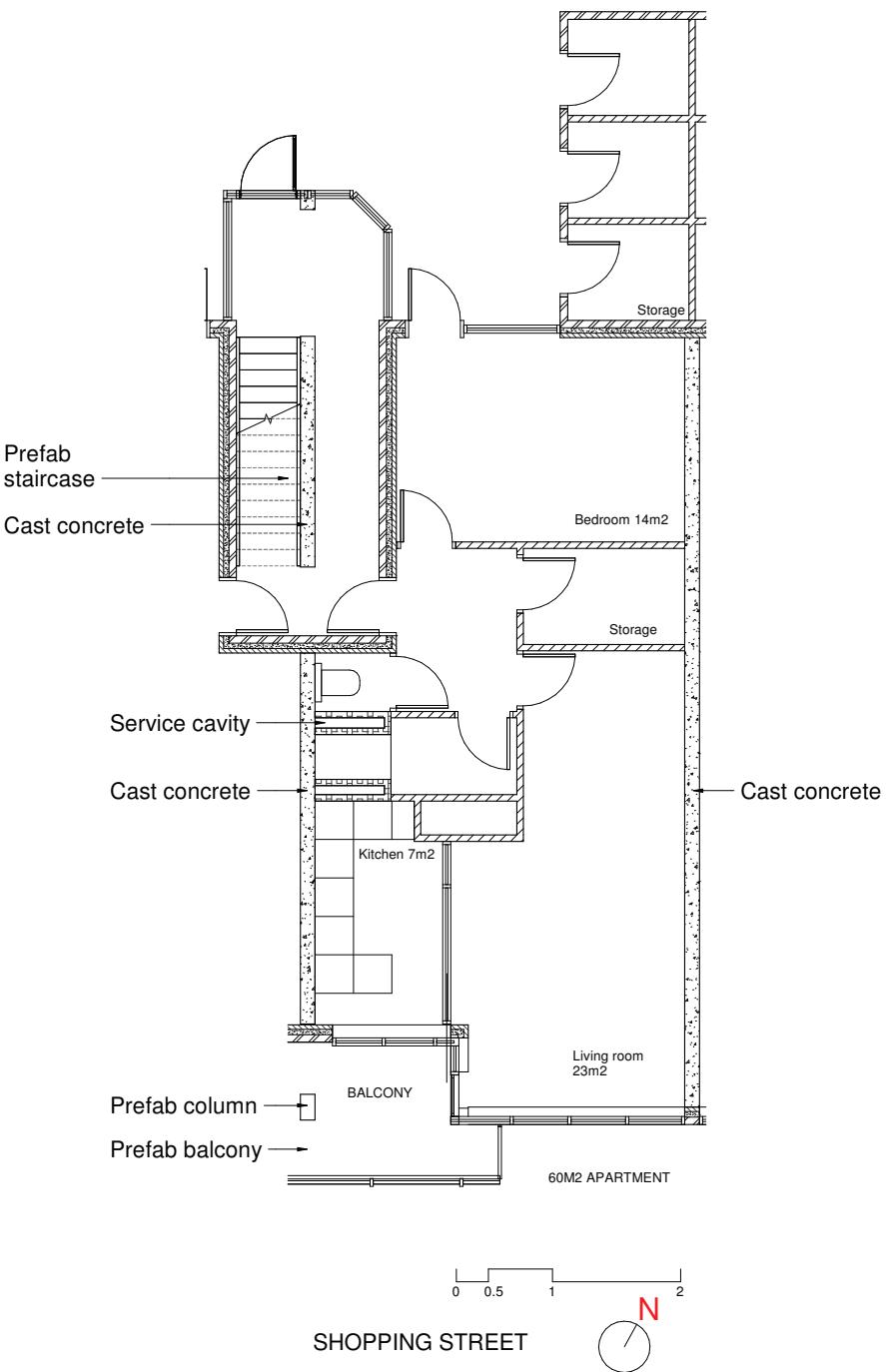


TYPICAL UNIT STRUCTURAL COMPOSITION

Typical units within elongated part have two load bearing walls of 200 mm thick cast concrete. Units are connected with staircase cores which are also made of cast concrete and has brick finish on the outside. The staircases have glazed exterior on the ground floor and heavier brick finish on the upper floors. In order to accommodate brick finish on the upper floors, there is beam system on the first floor connected to the load bearing structure (see in the scheme 1). The dwellings are quite insulated, taking into account that the layout has 12 meters depth and 12 meters of exterior (including both sides). The height of the apartment is 2.3 from the floor to the ceiling, which was minimum standard in 80s, however it doesn't match recent requirements of the 2.7 meters height standard.

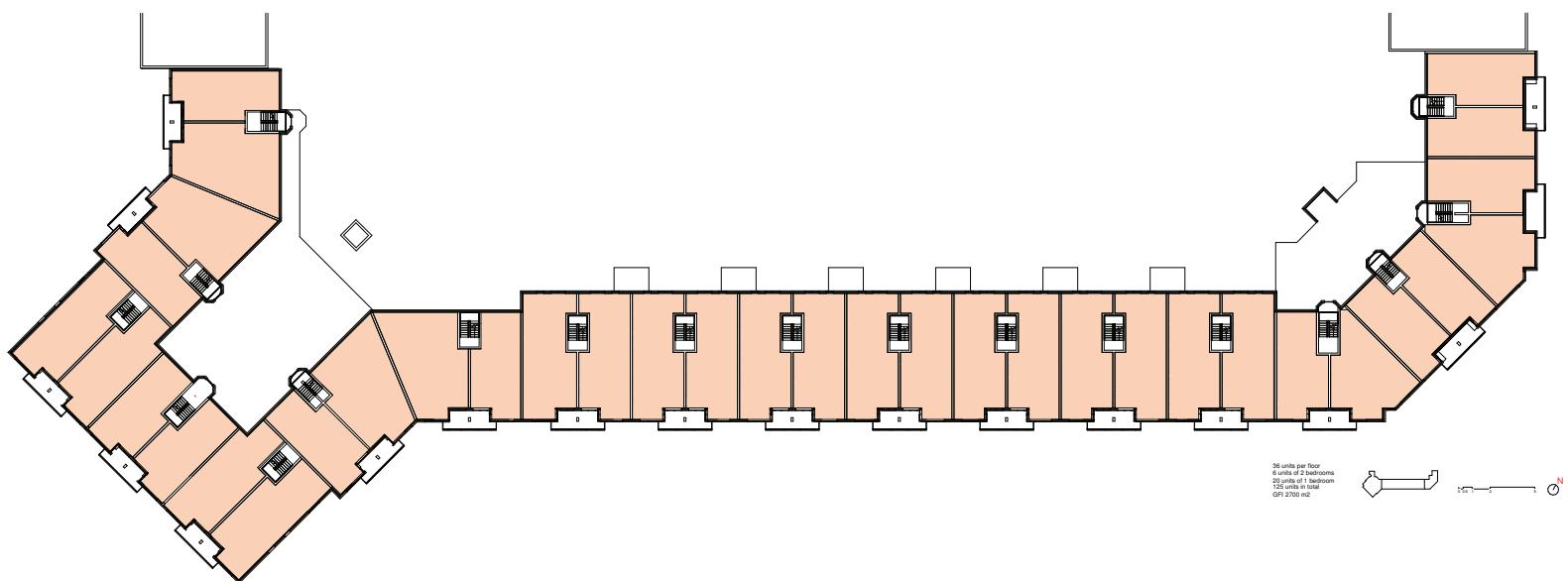
The interior wall are made of sand lime brick 70 mm thick. Each apartment has service walls with cavities to accommodate gas pipes and boiler for heating system. The balconies are prefabricated and loaded on the structural column and beam system, so it is separate element from the cast concrete slab.

ELEVATED DECK



FLOOR LAYOUT

The typical floor consists of 36 dwellings which are based on 6m structural grid. The depth of the unit is 12m - it is two side orientation (north-west to south-east). Every 12 meters the staircase is located which accommodates 2 dwellings per floor. The cores of the cluster is more sophisticated with upper elevated deck and small courtyard which is formed by two building wings. At the core there is 5 staircase and one elevator tower which connects ground level, first and second level of the building.

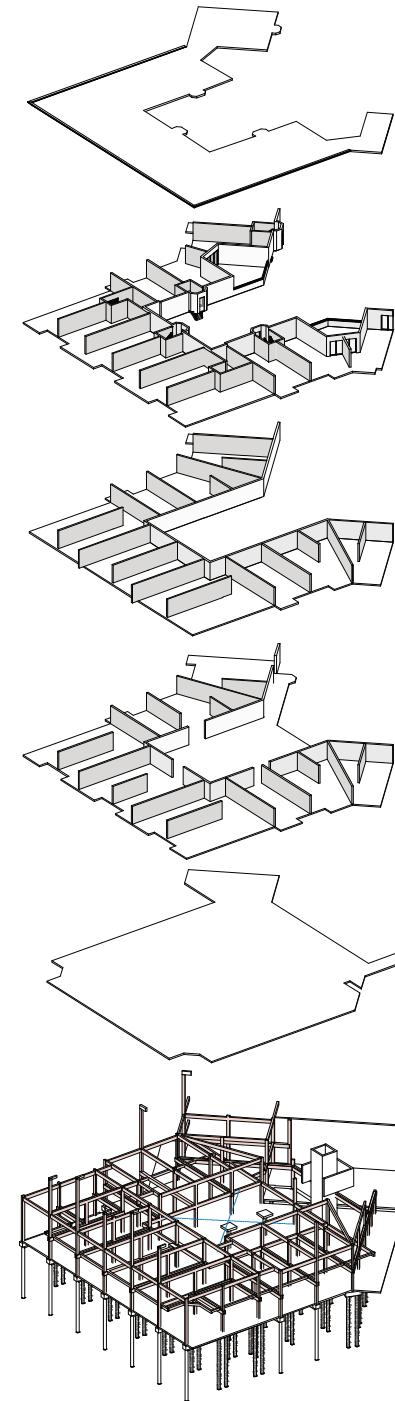


THE CORE

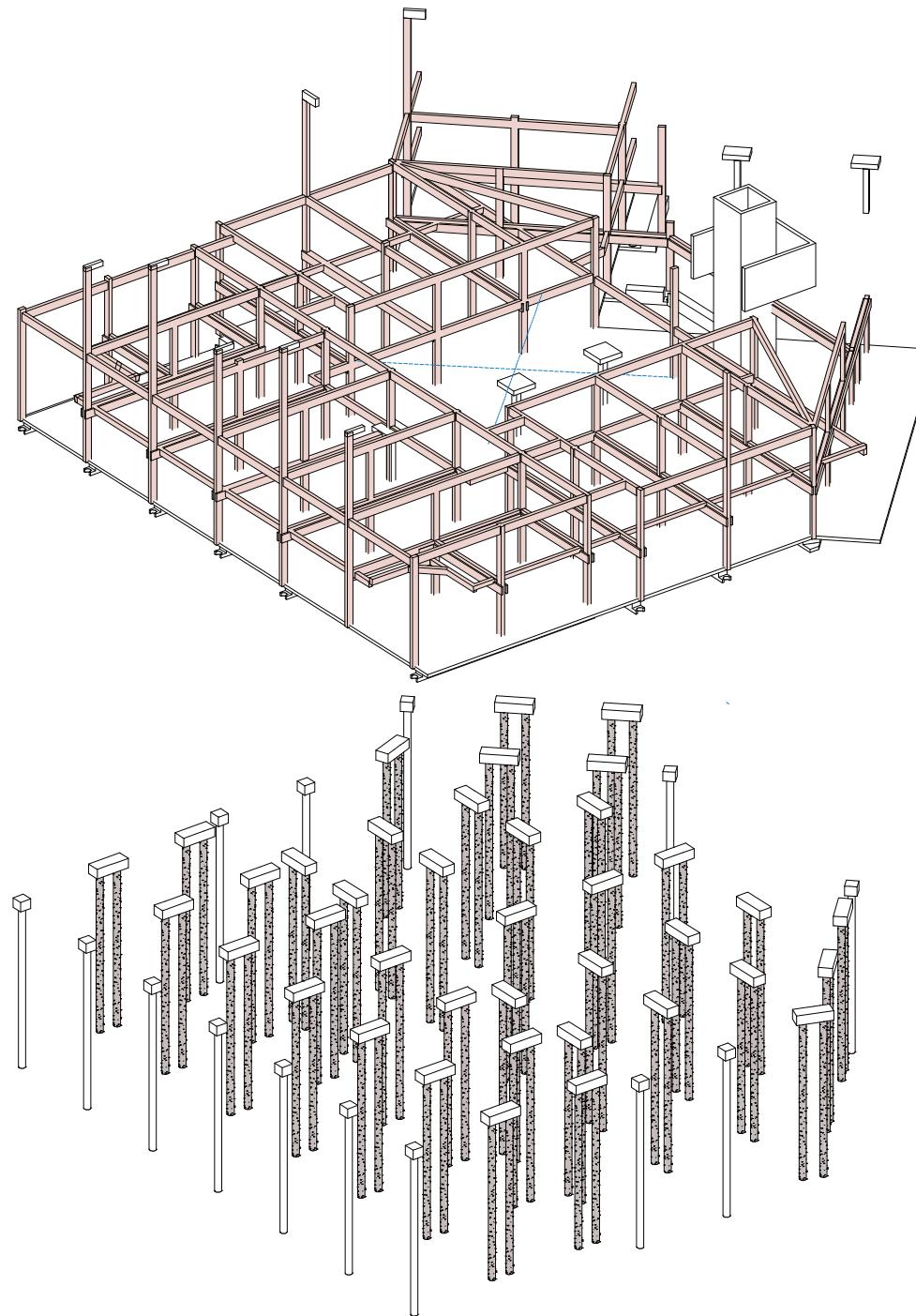
The main core is located at the south side. This is the most dominant feature of the building. The core is distinctive from elongated part having square shaped plan and expanding from the perimeter to the public square. The structural composition of the core is quite complex comparing with other parts of the building. On the ground floor it has 60 columns which forms complex structure. Part of the columns at the rear of the building are pushed out from the envelope and forms colonnade feature in the perimeter. Columns has the diameter of 20x20 cm. The largest distance between the columns is 6m, because of the dwellings on the upper floors.

The core is connected with an elongated part with double transfer columns and beams and also forms two entrances to the inner space of the cluster. The ground floor and the first floor has flexible structural scheme based on beam and column system, however, the middle part has two columns with mushroom cap because it takes load from the upper elevated deck. The upper elevated deck is also connected with a ground floor with an elevator, which stands at the back and provides the stability for entire core structure. Another significant aspect of the core is the height difference between the elevated deck and the first floor where as the difference is 1 meter. Because of this reason, the core is hardly accessible from the elevated deck.

The dwellings are accessible by the staircase on the elevated deck and it continues only till third level and do not reach the ground level.



CORE STRUCTURE OF THE GROUND AND FIRST FLOOR

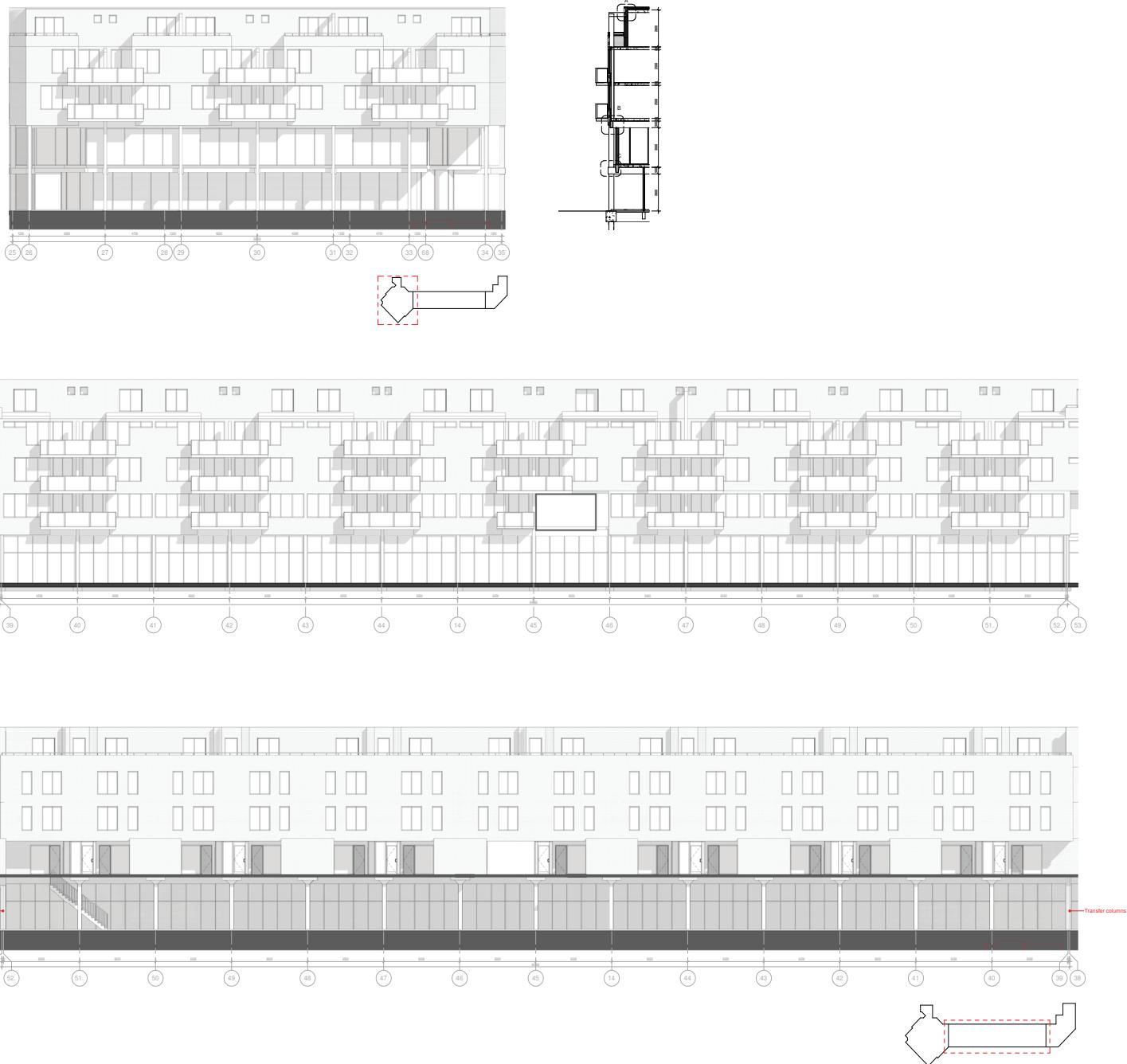


FACADES COMPOSITION

The Cluster 4 has several facade approaches related to its orientation. The most distinguishable are shopping street facade, courtyard facade and public square facade.

The shopping street facade has colonnade feature at grade, which was enclosed in 2005. The colonnade used to accentuate shopping plinth and create spatial qualities for shopping. The first, second and third floors have defined sequence of windows, where the area of openings is decreasing going up from 1st floor. This aesthetically approach lets to create impression that the lower part of the building is lighter and gets heavier on top.

The back side facade is more modest having monotonous window rhythm. There is no ground level facade, because of elevated deck and connection with parking garage. On the first level facade is dominant by storage units and entrances to the dwellings.

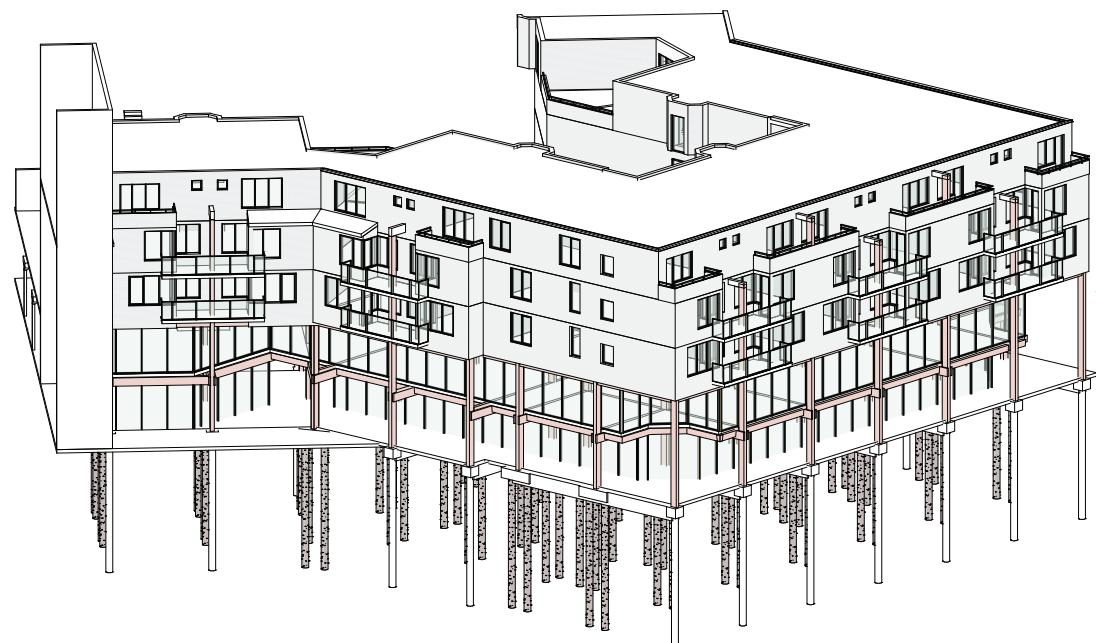


FACADES

Open / Closed

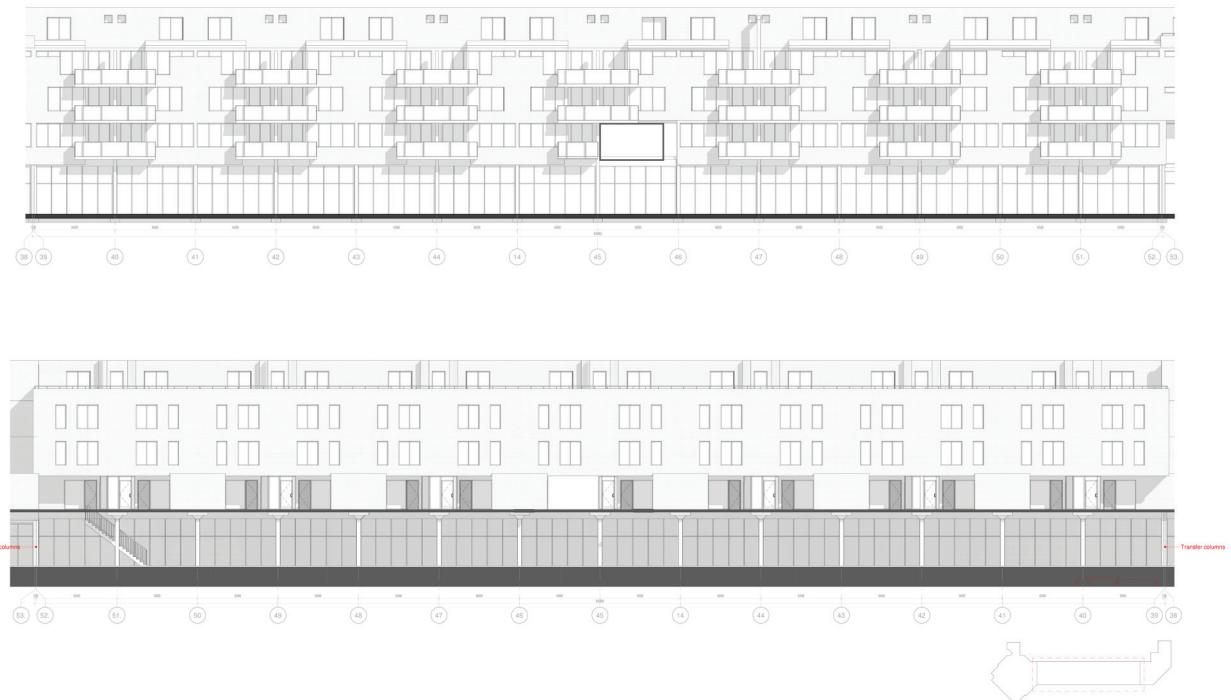
The facades were traditionally constructed with an external cavity wall of white lime stone brick, the internal cavity wall is constructed in sand-lime. The brick was high quality from the company called Robensteen with parameters of 240x115x52. It is quite long, heavy brick which One of the many different types of building bricks, limestone bricks are highly popular because of their durability and hardness. For the window frames on the north facade small opening were chosen. It can be concluded how much of the façade is open and how much is closed per block.

It can be concluded that 47% of the façade is open. This is however based towards the original situation, not the current as there is a slight difference. Radiators are placed behind directly behind the windows of the third floor. In the past the bottom parts of these window frames were glazed. Nowadays the glazing is swapped by a closed panel. The reason for this modification is unclear, it might have to do something with preventing heat loss. Whatever it is, it results in a reduction of 8 m² of glass-surface in the facade. The average newly built home in 1973 needed around 3.300 m³ gas for heating per year. In 1988 this was reduced to 1.000 m³. This reduction was the result of new regulations due to the energy crisis of 1972. In the years following multiple experiments were done to reduce the heating costs. The core has 10 apartment per floor and one staircase per two apartments. The structural grid follows the ground floor and the unit bay is 6 m wide with cast concrete 200mm walls.



BUILDING SKIN

The skin gives the building most of its aesthetically identity and recognizability. It is also protects its users from events happening on the outside. There is strong separation between inside and outside of the cluster where facade on the outside is more articulated, more open with exposed structural elements, where as on the inside of the cluster is more closed, modest, simple. The technical characteristics of the façade was influenced by the first public discussions about housing design in the eighties. These discussions led to reduce noise disturbance from the outside preventing to enter the noise to the inside yard. The regulations for sound, but also for insulation, kept getting higher to accomplish the wished and achievable quality in housing development. The energy crisis in 1972 lead to housing development and maintenance more focused towards the energetic quality of houses. A compact design, insulation of the envelope and energy efficient installations were a result of this crisis trying to lower the energy consumption. Furthermore there was the growing attention towards the increasing of environmental crisis. This lead to new policies that also influenced housing development (Vreeze, 1993).



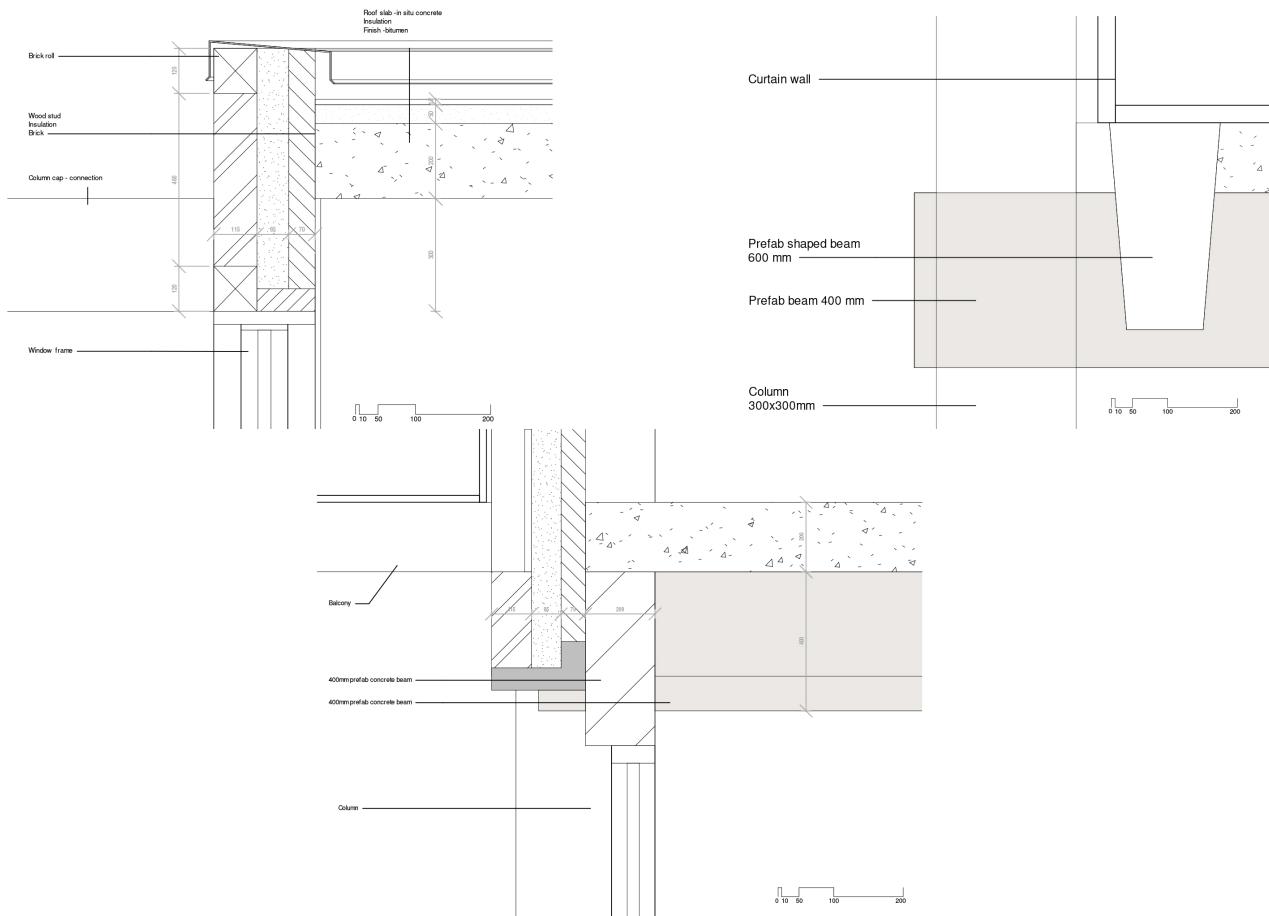
BUILDING SKIN

The floors of the ground floor has been designed with prefab 'Flevobeton' floors system. This kind of floors had a polystyrene insulation layer at the bottom of 20 mm. According to the 'Voorschriften en Wenken 1965' the heat resistance (RC) of the floor had be at least 0,17 m² K/W or higher. With 20 millimetres insulation the heat resistance is estimated to be around 0,59 m² K/W. This value was higher than required and already met the regulations of 1979 (0,52 m² K/W). The facade is constructed as a cavity wall. The cavity is 50 mm wide and mainly filled with 'Rockwool Lapinus' mineral insulation wool. All the cavity walls of the front facade are insulted with this product. Insulation is absent in the facades of the ground and first floor because of the "window wall" system. According to the 'Voorschriften en Wenken 1965' the heat resistance of the façade had be at least 0,43 m² K/W. With 50 mm insulation the heat resistance is estimated around 1,42 m² K/W. This value was higher than required, and met the regulations of 1982 (1,3 m² K/W). The concrete balconies at the second, third and forth floor were not insulated as prefab concrete elements were used. The rooftop terraces (8 in total) on the fourth floor were insulated with 50 millimetre 'Roofmate' under the concrete tiling. According to the 'Voorschriften en enken 1965' the heat resistance of the roof had be at least 0,86 m² K/W. With 50 mm insulation the heat resistance is estimated to be around 1,33 m² K/W. This is double higher as it had to be, meeting the regulations of 1982 (1,3 m² K/W).



THERMAL BRIDGES

A thermal bridge is a spot in the construction that forms a direct link between the inside and outside (exterior -interior). This results in cold coming from the outside to the inside through the construction details. This problem can be seen numerous times within the construction of the building blocks designed in 1970 -1980s in the Netherlands. The most extreme thermal bridge is where the floor beams are directly visible in the facade (south side of the building), as can be seen in the details. Furthermore the balconies of the second floor form a thermal bridge as they are laying directly on top of the concrete floors. The prefabricated concrete elements of the facade form a thermal bridge as they are directly connected to the inside construction, this can be seen in the picture on the next page. Smaller thermal bridges can be found on numerous other places (W.B. Tromp architecten H.B.O, 1977). Solving these thermal bridges is desirable as they lead to energy- and comfort loss. On the other hand the solution could lead to deterioration of the aesthetics of the façade.



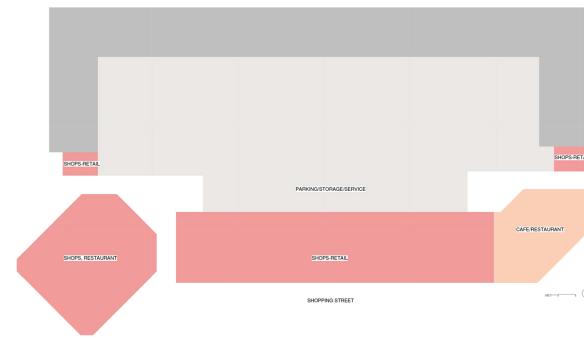
DESIGN

SPATIAL CONCEPT

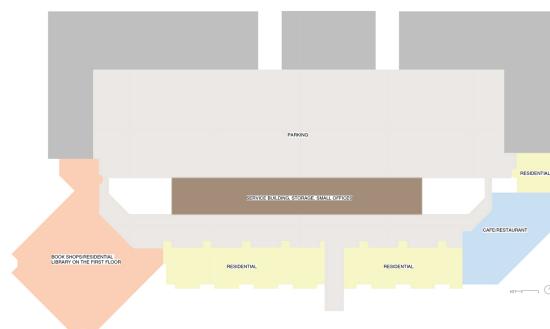
The existing urban structure is introduced by green alley feature which connects all three entrances. It becomes the connector and the main circulation route within the cluster. New functions are composed at the sides of the green alley in order to activate it. Two building cores are introduced by cafe, library and bookshop functions which are also connected through green alley.

The green alley also lets to create a void above. On the first level the pedestrian street is purified and connects dwellings and public cores of the building. It is also penetrated by two pedestrian bridges which also connects two housing blocks (existing and proposed) north-south direction. At the same time entrance to the cluster is enhanced.

EXISTING SITUATION

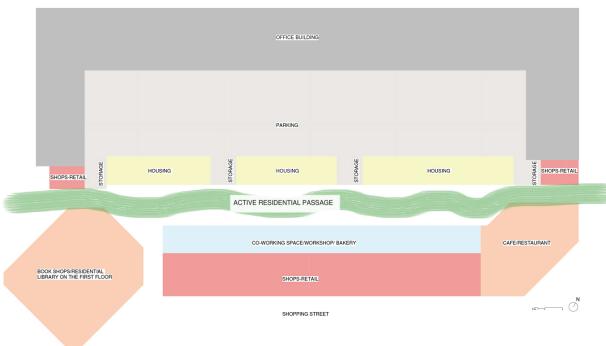


THE GROUND FLOOR

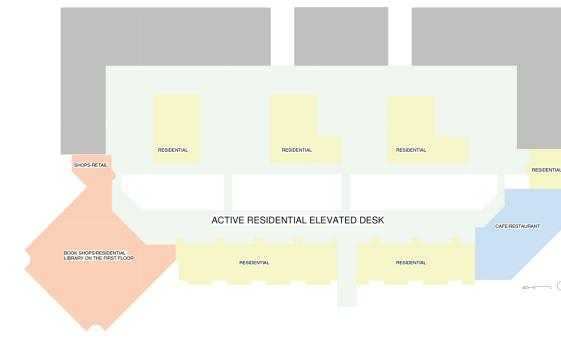


THE FIRST FLOOR

PROPOSED SITUATION



THE GROUND FLOOR



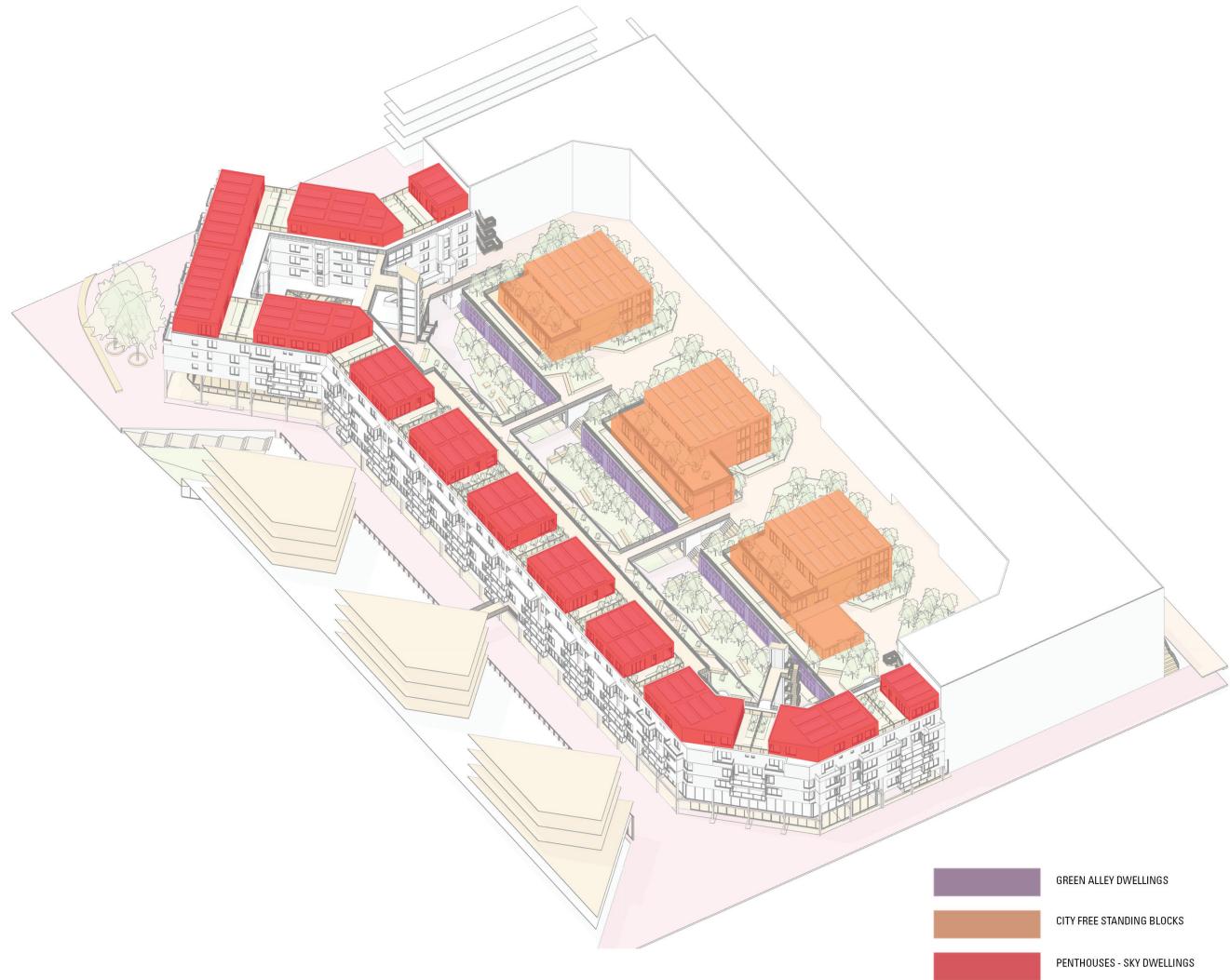
THE FIRST FLOOR

- SHOPPING FUNCTION
- RESIDENTIAL FUNCTION
- PUBLIC FUNCTION
- CO-WORKING
- STORAGE FUNCTION
- CATERING

DWELLINGS

Three types of dwellings are introduced within the block. At grade where the car park is located, lofty studios for young professionals are designed. In total 14 units with flexibility in unit layout. The idea is to make the ground level activated by residential activities and people interaction through the entrances. The second type of housing is 3 free standing residential blocks which allows to create human scale atmosphere by its masses composition. Each of the block has one entrance with one staircase which allows to make it more affordable. Also all these three blocks are embedded into green yards which would belong for first floor dwellings.

The last type of new housing units are the sky dwellings which are designed as individual penthouses with private entrances. These dwellings are aiming for residents with medium or upper income because of its prime location within the block and prime views to Bijlmerplein.



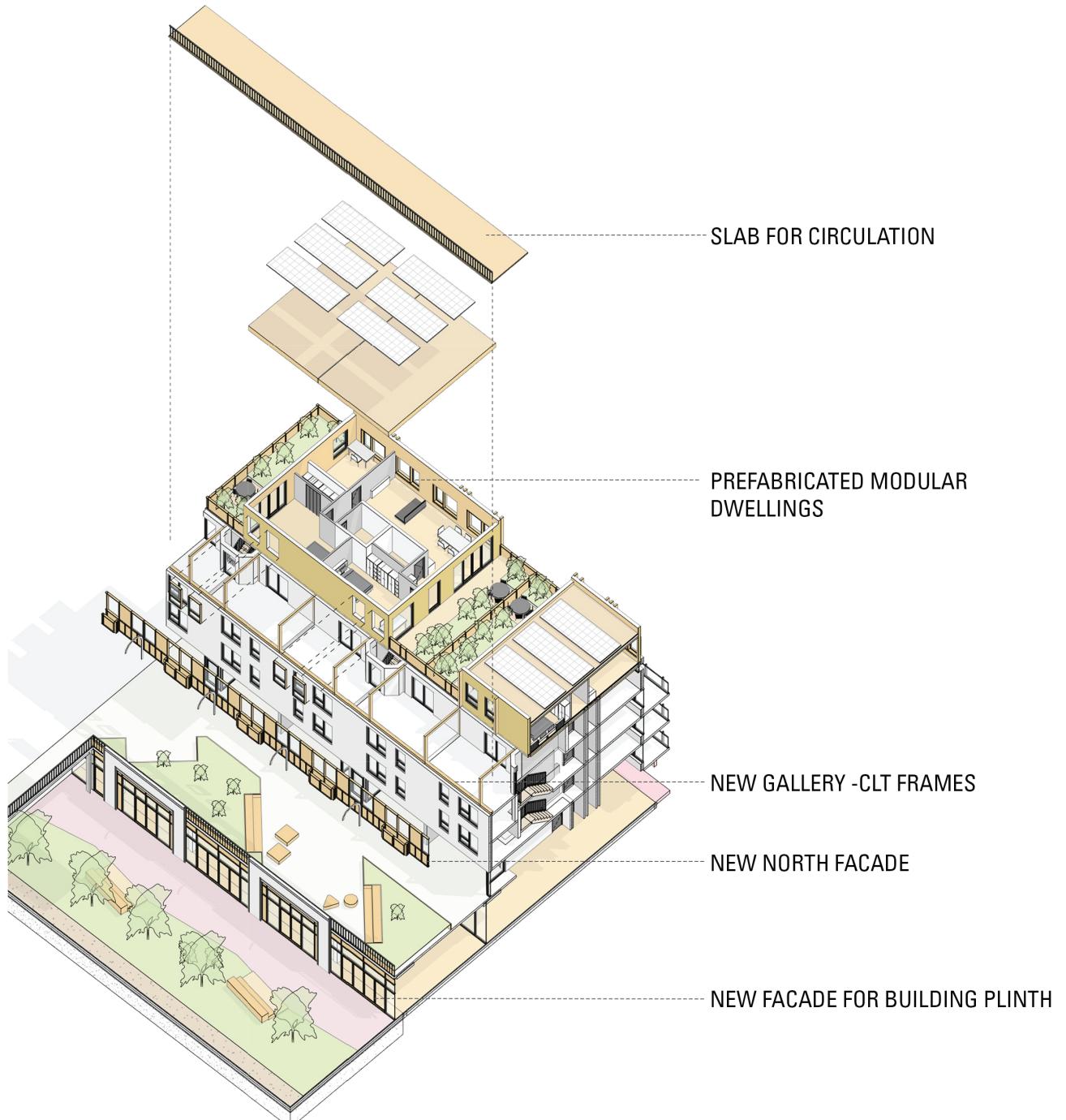
Exterior wall
CLT (Exposed inside) 120 mm
Wood Fiber Board (WFB) 200 mm
WFB T&G 100 mm
Strapping 40 mm
Wood Siding T&G 25 mm
U-value = 0.119 W/(m²K)

Roof
CLT (exposed inside) 140 mm
WFB 240 mm
WFB T&G 120 mm
DO 180 membrane
Strapping 38 mm
Cross Strapping 38 mm
Metal Roofing
U-value = 0.101 W/(m²K)

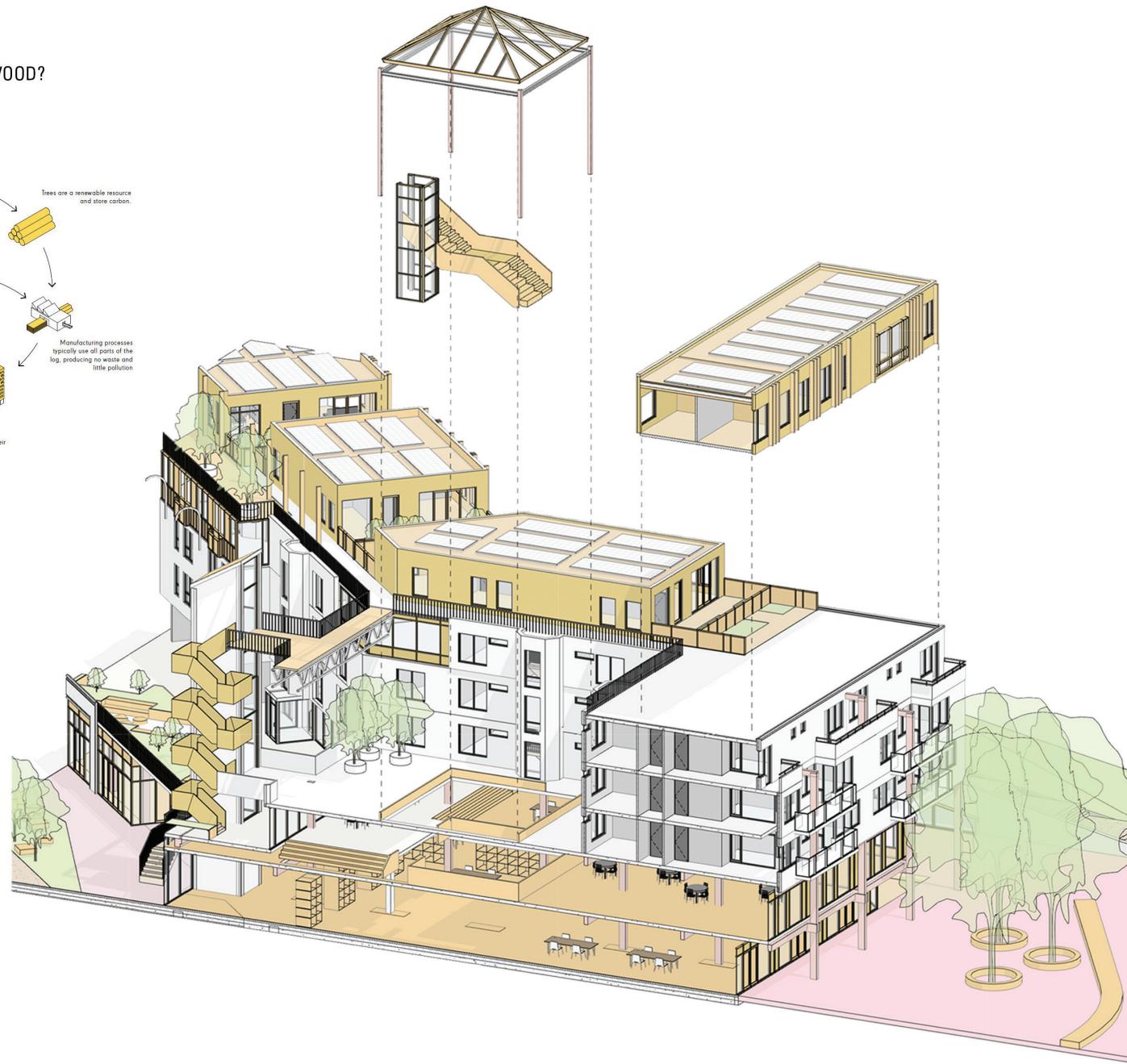
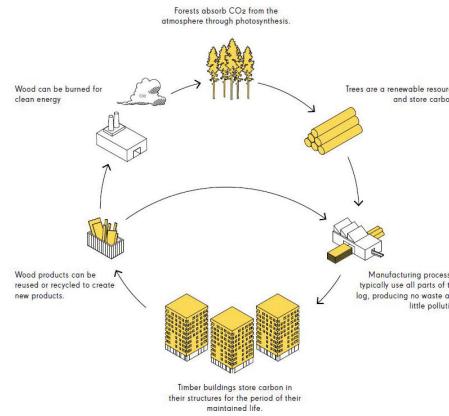
Windows/ Frame
Wood Aluminum Clad windows with
motorized exterior venetian blinds
U w-value = 0.63 W/(m²K)

Basement floor / floor slab
Oak Flooring 19 mm
WFB 13 mm
Plywood 19 mm
Strapping 45 mm
Concrete (reinforced) 152 mm
6 mil Poly 0.6 mm
EPS 152 mm

Gravel Compacted 100 mm
U-value = 0.097 W/(m²K)



WHY BUILD IN WOOD?

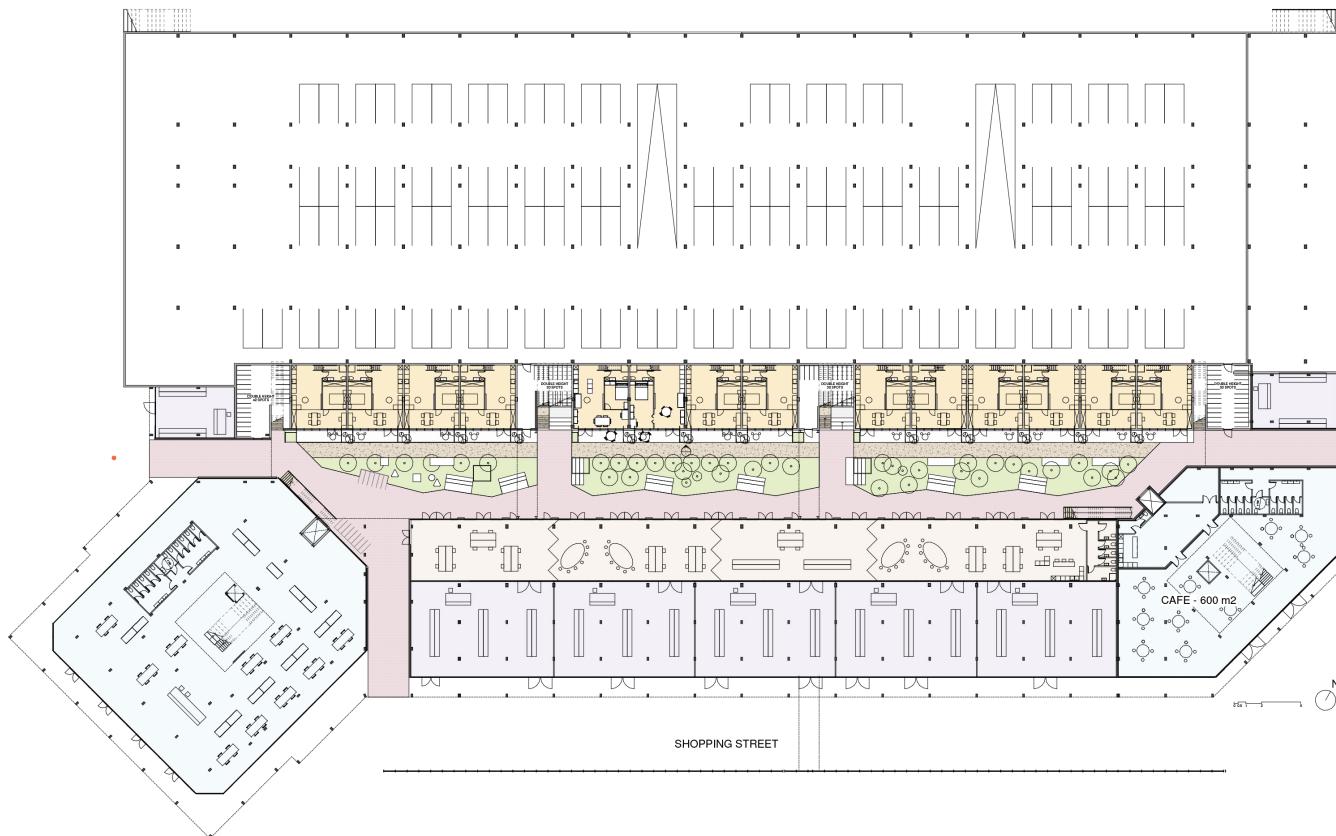


THE GROUND FLOOR PLAN

The design focused on residential realm and tried to improve living conditions. For that reason to inner structure of the cluster 4 green alley was introduced. The green alley becomes the axes for circulation of the block, meeting space, space for various activities and provides much needed greenery. Part of the garage is redesigned to lofty studios with high ceiling (4.2) and are open and transparent which allows to activate the green alley. This is very open living concept, so the privacy is created by soft design features such as different pavement, planting, landscape, terraces.

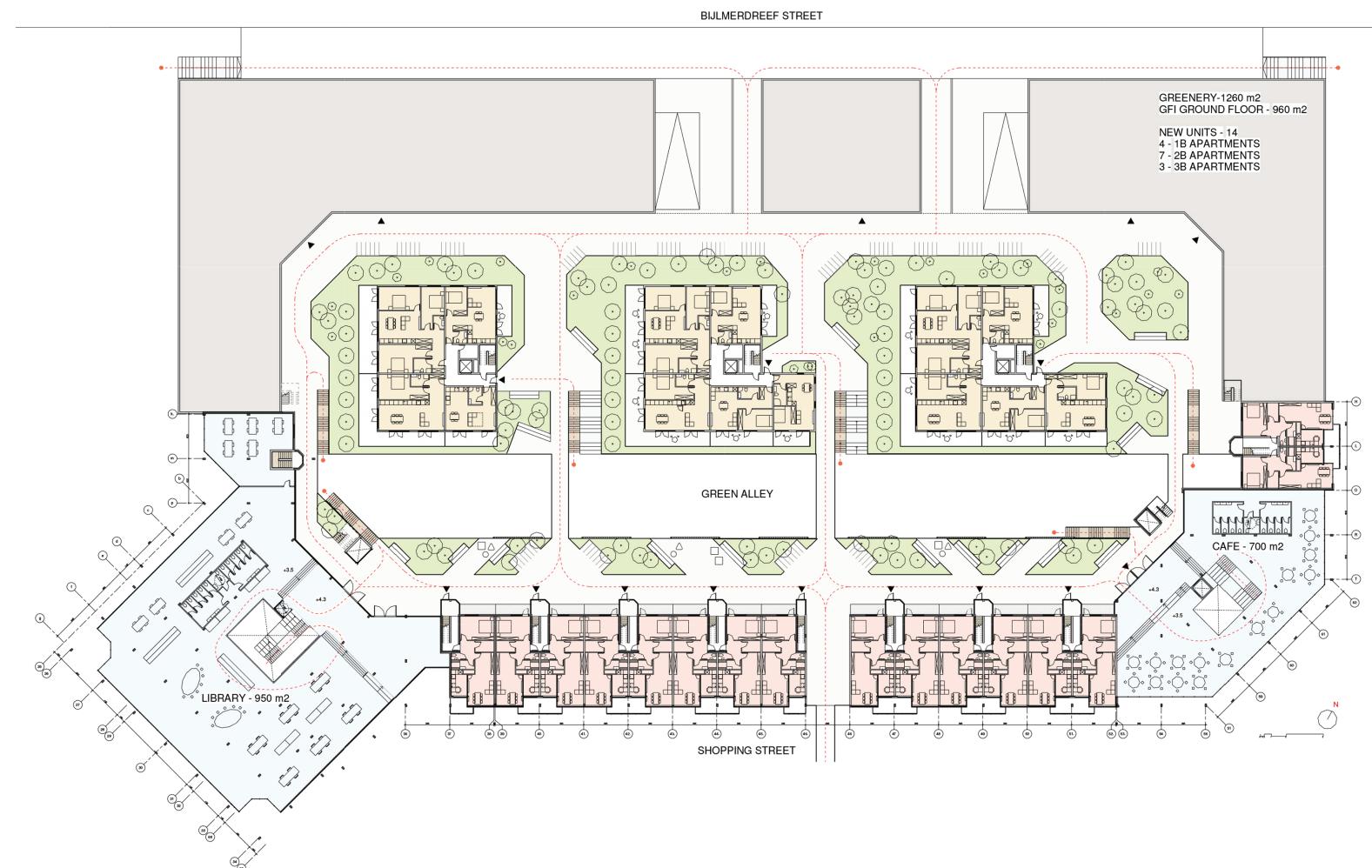
The Northern part of the building is dedicated for co-working and workshop space, which is linked with shopping street. This enhance local residents for craft making and selling it, also it is part of communal living strategy within the block.

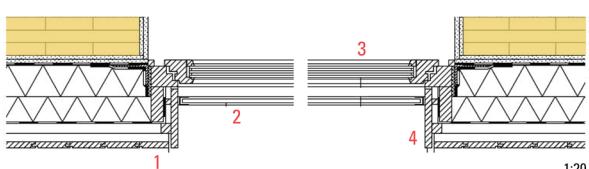
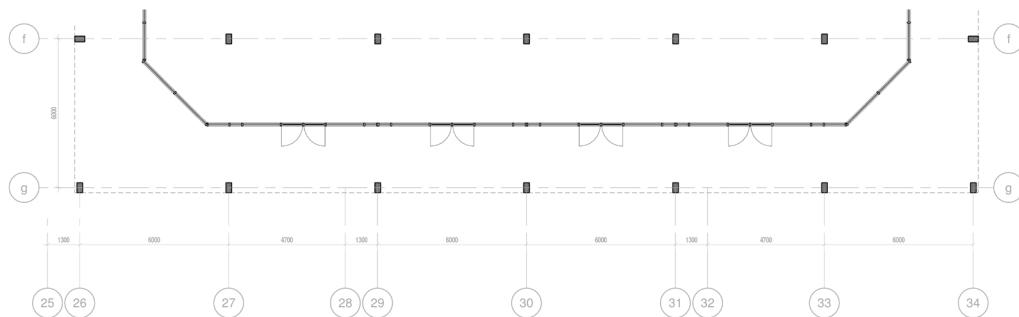
The circulation within the block starts in the green alley with series of stairs and elevators to elevated deck and other dwellings.



THE FIRST FLOOR PLAN

The first floor also becomes active and green with circulation routes. The main changes of elevated deck is that storage units are removed and "green"pockets are created for meeting. Also, some playgrounds are introduced as well. The entrances to the residential block become clear and more pleasant. The corners of the existing building are dedicated for residential library with a connection to bookshop on the ground floor and cafe space in the east corner of the building. The aim was to create stronger link between public square and residential inner space. To do so, atrium space and skylight was incorporated into existing building structure. Also, three bigger housing units are designed on the existing parking structure, which are surrounded by green landscape. What is important, that all spaces are designed with an open manner without visual and physical barriers between spaces.

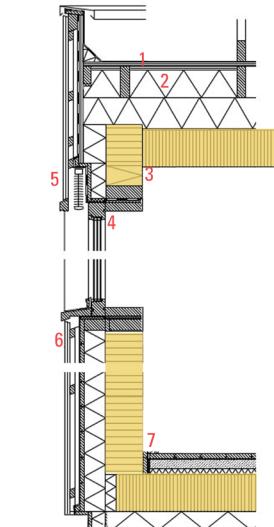
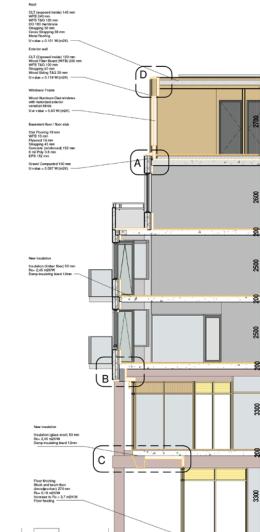




DETAIL A - HORIZONTAL SECTION

- 1 14 21 mm larch tongue-and-groove boarding; 25/38 mm battens
38/38 mm counter-battens
sealing layer; 180 mm mineral-wool thermal insulation
over mineral-wool
2- 125 mm plasterboard
120 mm CLT wall
2- 12.5 mm plasterboard
- 2 15 10 mm laminated safety glass in
3 30/30 mm aluminium-channel frame
- 4 16 triple glazing in wood frame

1:20



DETAIL A - D
1 two-layer bituminous seal;

2 27 mm softwood boarding

3 500 mm timber supporting structure/ventilating layer
polythene sheeting;

4 27 mm softwood boarding
40-230 mm timbers to false wood-fibre insulation
100/180 mm softwood beams/wood-fibre insulation
100/220 mm softwood beams/wood-fibre insulation

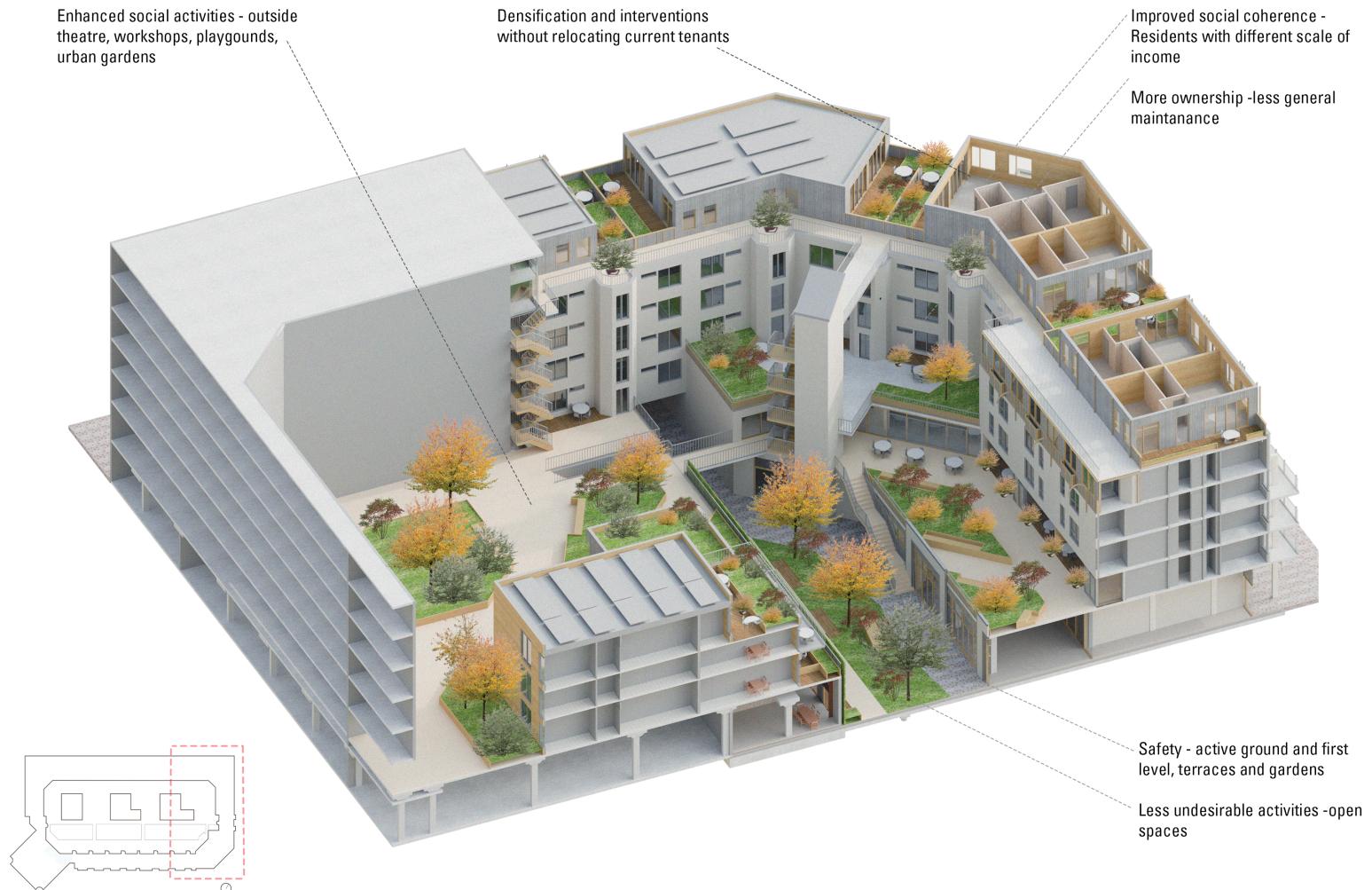
5 27 mm softwood boarding;
polythene vapour-retarding layer;

6 110 mm services layer; 30 mm sheep's wool acoustic insulation;

7 Black mat as moisture protection;
36/40 mm silver-fir strips, untreated
230/50-120 mm sawn silver-fir strip cladding
30/50 mm softwood battens painted black

1:20





ATMOSPHERE OF PENTHOUSES

Penthouses have exposed CLT walls in the interior and wooden flooring, which lets to create cozy atmosphere within apartments. In the exterior penthouses have thermo wood cladding which also creates distinguishable contrast with lime stone brick cladding of the existing building. All dwellings are orientated toward the green courtyards which allows to create pleasant view through the windows. All dwellings have three orientations looking at the circulation gallery, green yards and public square or shopping street.

Between the core "wings" there is upper enclosed yard, which is more observable and activated after interventions. The skylight lets to look into the library space and became a sitting feature with some plantings around.



THE ROOF EXTENSIONS

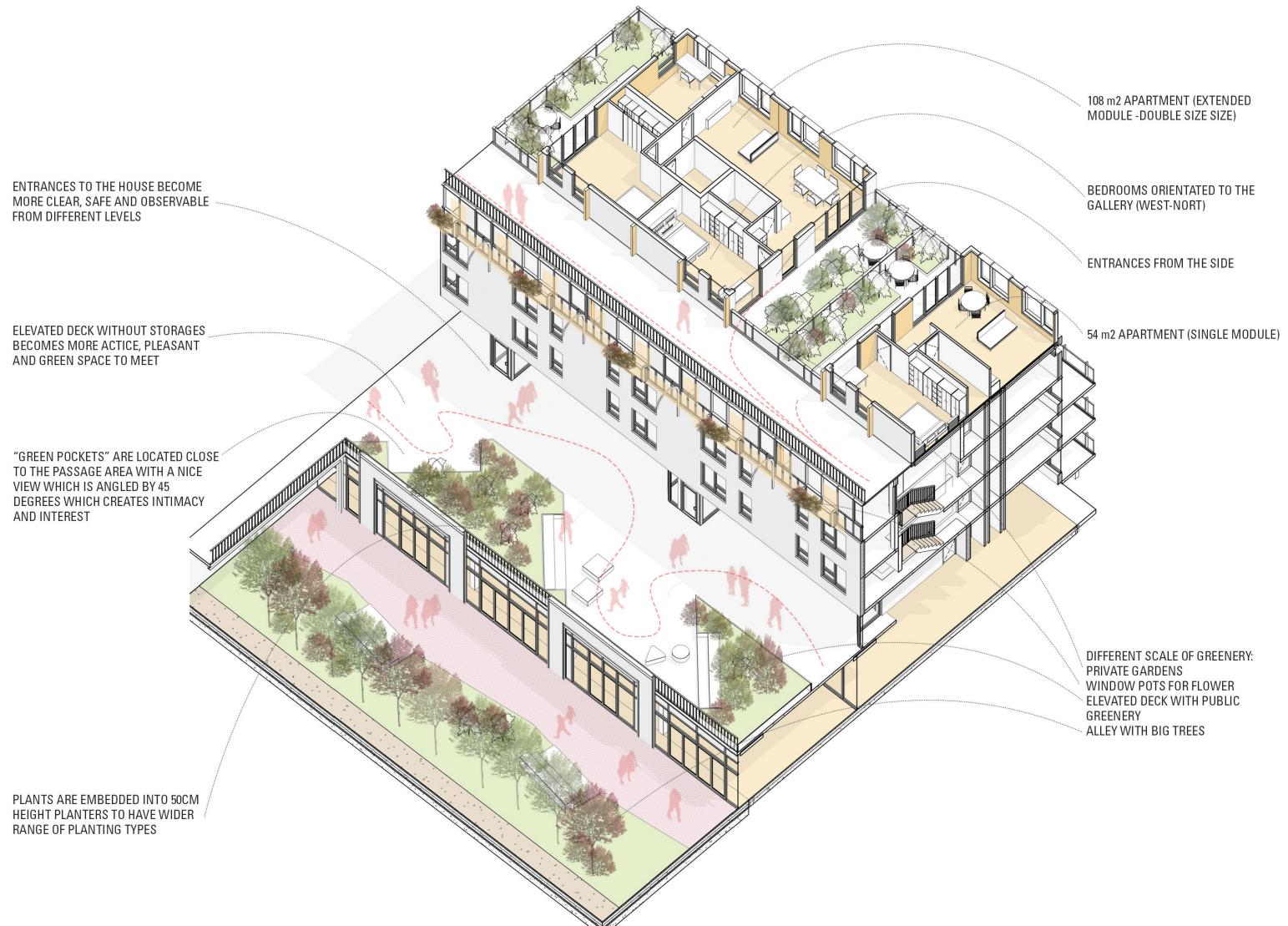
The existing building is 5 storeys high and there was a possibility found, how to densify it by stacking up new dwellings. The existing buildings has 2 elevator towers, which service the elevated deck. The design approach was to extend elevator towers to the 6th floor and introduce the gallery, which becomes circulation feature. The "sky dwellings" are designed in modular way with a possibility to be dismantled. The geometry of the units follow the existing structural grid of the building and are located on the load bearing. The position is also defined by service walls where pluming pipes and shafts are located. The modular scheme of the apartments provide small front courtyards with private entrances to the dwelling. The orientation of the building dictated the layout of the rooms, where the bedrooms are located on the North side facing the inner space, whereas living rooms are located on the south side looking at shopping street. This concept allowed to provide privacy regarding the circulation on the gallery space.



SCALES OF GREENERY

The project aims to introduce different scales of greenery where on the ground floor of the green alley bigger trees are planted. On the elevated deck the green pockets are shaped by planters with bushes, flowers and grass in fills. The upper roof extensions have small green front yards with small greenery. In the gallery, there is possibility to hang some planters as well. In the scheme is also evident, that the greenery is designed in these spots, where is circulation routes.

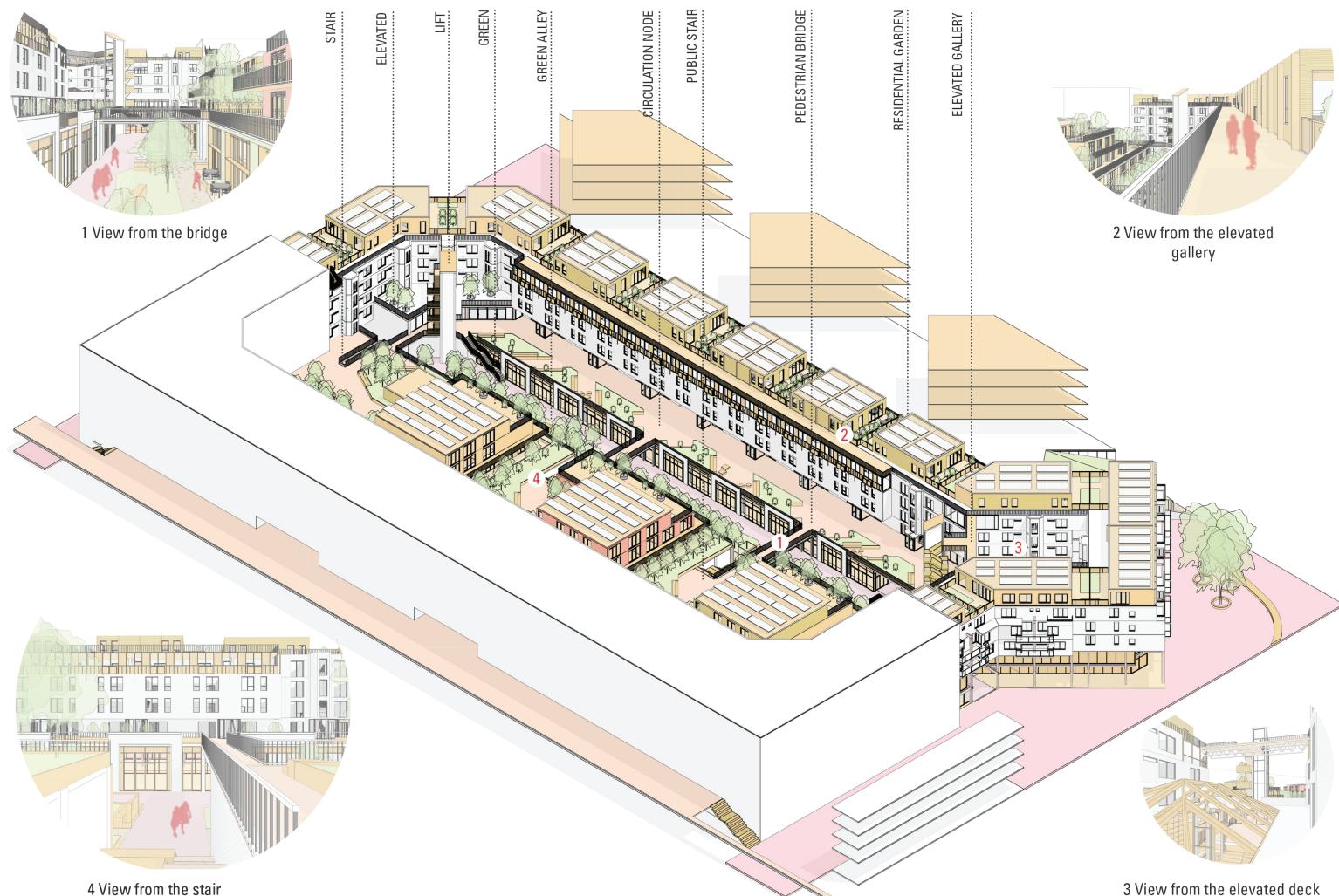
One of the bigger problems in Cluster 4 is that it is orientated south-north direction, so elevated deck gets little direct sunlight. For plantings, orientation is significant, so for that reason green pockets are located at the edge of the elevated deck, because of the afternoon and evening sun.



SAFE AND PLEASANT INNER WORLD

The design follows the primary idea of small scale urbanity and creates open, live and pleasant inner world for resident. It is important to highlight, that the common areas are observable from different levels, which lets to feel safe and monitored. There are many view point starting from the highest point to the lowest: upper gallery, elevator towers, upper elevated deck, primary elevated deck, sky bridges, public stairs, private balconies and green alley itself.

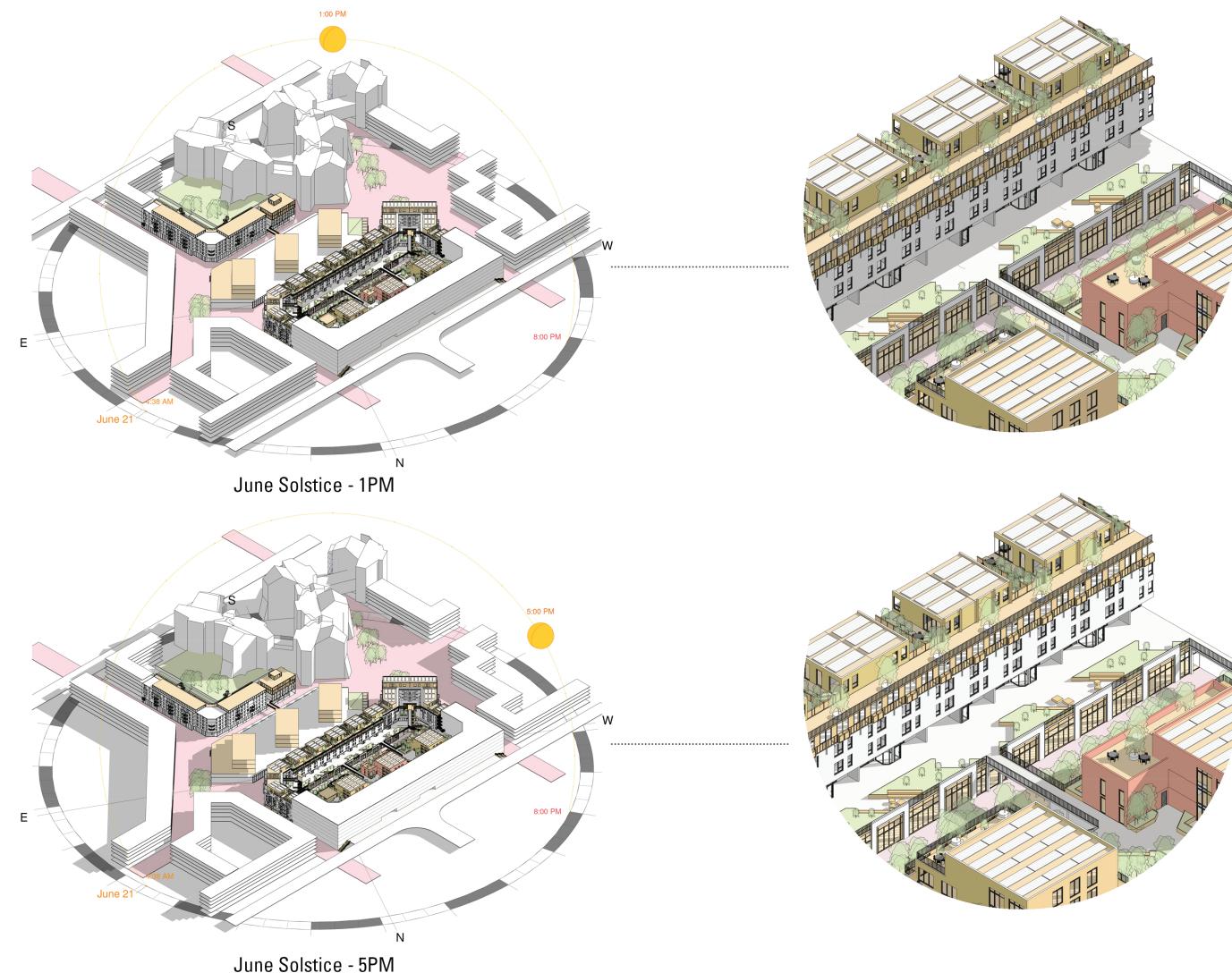
This helps to prevent unwanted activities in the block such as homeless people, drug trading, littering. It also creates common feeling of being a community and common property where residents share responsibilities for their living environment.



SUN LIGHT STUDY

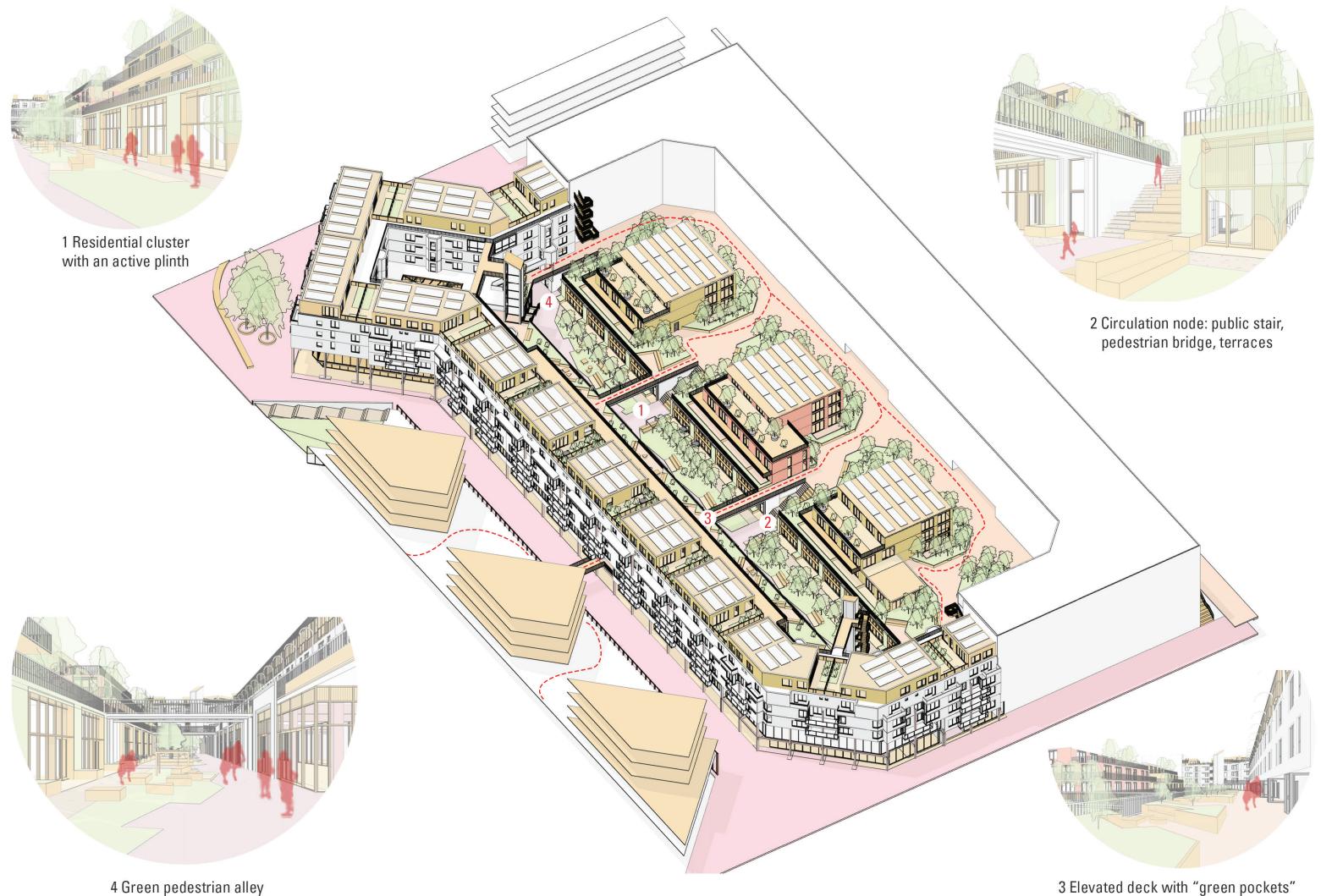
The orientation of the building played significant role designing new interventions. First of all it was noticed, that elevated deck is shaded because of the storage units. So it was the first move to remove it. Secondly, the greenery on the elevated deck was pushed to the edge to maximize sun light for planters. Also, the extensions on the roof are designed as one storey units with a gap in between them. The green alley is pushed back from the building to get more direct sunlight as well.

The same strategy is followed by designing residential housing on the existing garage. It is 3 storey houses with 10 meters space in between them. This strategy lets to have sunny courtyards, which are essential for residential outdoor activities.



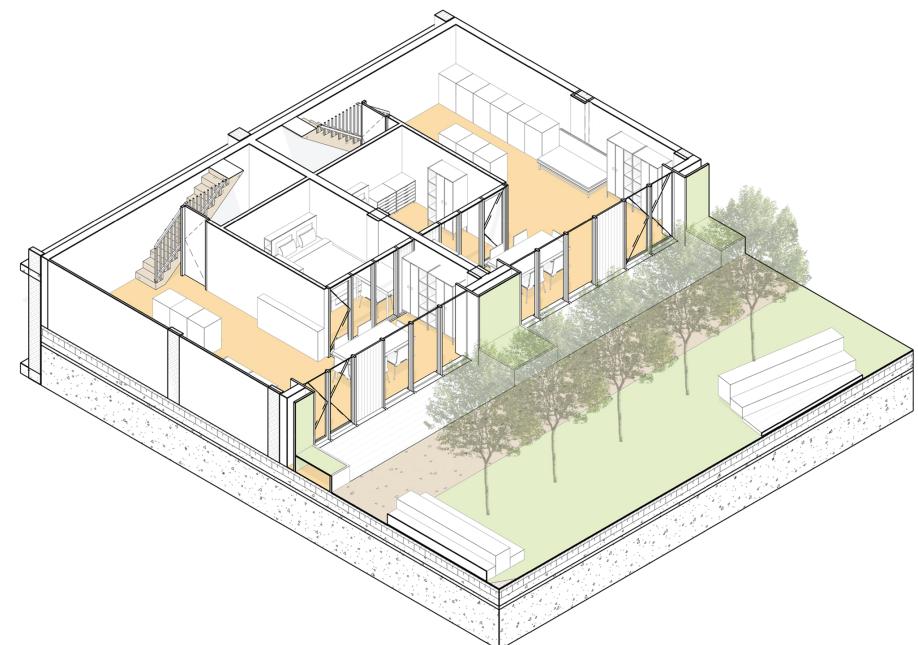
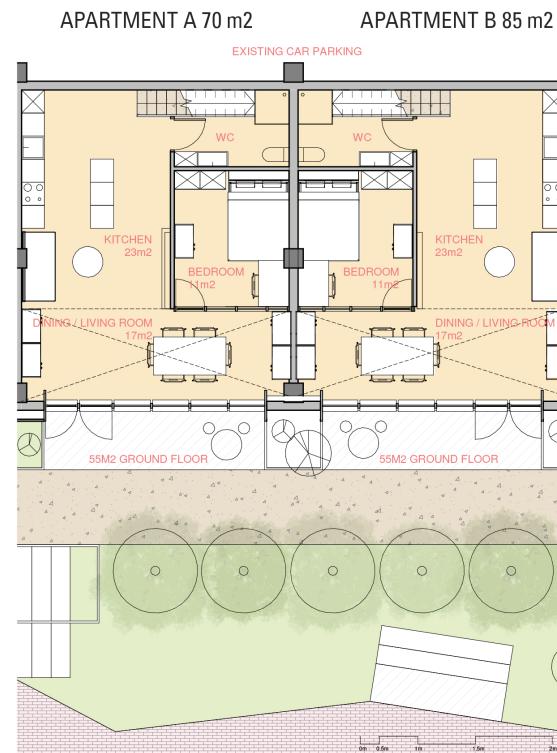
ACTIVITIES WITHIN THE GREEN ALLEY

The green alley is designed as multi-functional space which first of all serves as circulation axes and accommodates residential activities. First of all, co-working and workshop space opens and expands to the green alley. So part of the alley could be used as workshop space. The second half of the alley opens up to the lofty studios, which provides some privacy for its residents. Also, there are two public stairs with wider risers, so it could be used for film watching in summer time evenings. The playground for children are located at intersections. There are several terraces, benches and other spots to sit, meet and mingle.



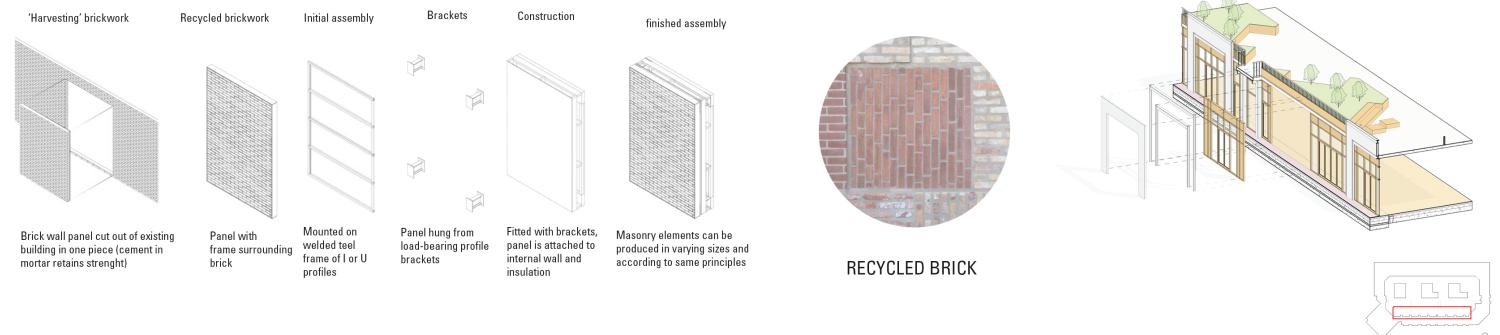
THE LOFTY STUDIOS

The part of the garage is redesigned into lofty, spacious studios with high ceiling of 4.2m. The extra space could be redesign by the users by themselves if there would be a need for that. The units itself follow the existing structural grid of the garage and has exposed concrete pillar in the interior. The units are 7 meters deep, so it has enough sun light. All of the units are orientated south direction, so sun shading devices are incorporated into the facade. Also, the entire plinth is design as a green wall, which reduce overheating and brings more greenery to the alley. The dwellings are quite open and have close relation with a green gallery. The issue with privacy is solved by using different materials and the landscape to indicate residential use. All of the dwellings have their own terraces. There is also a possibility to combine units in the future if there would be this kind of need.



THE NORTH FAÇADE AND MATERIALITY

The ground floor facade is designed by re-using reclaimed lime stone brick from the service building. The lime stone brick is durable, uniform and has plain surface, but it is a challenge to remove mortar without breaking or cracking the brick. So the walls are cut in pieces and embedded into steel frames. The composition of the facade creates defined rhythm of portico in the same white aesthetic as the existing building. The gallery and the "sky dwellings" are clodded with thermo wood. Thermo wood is a beautiful, sustainable wood material produced by using natural methods, heat and steam. Thermal modification improves the wood's properties, thereby expanding the range of applications in which the wood can be used. Thermowood is dimensionally stable, resistant to decay and resin free. It can be used inside or outdoors, in any climate, other exterior applications as well as for interiors.



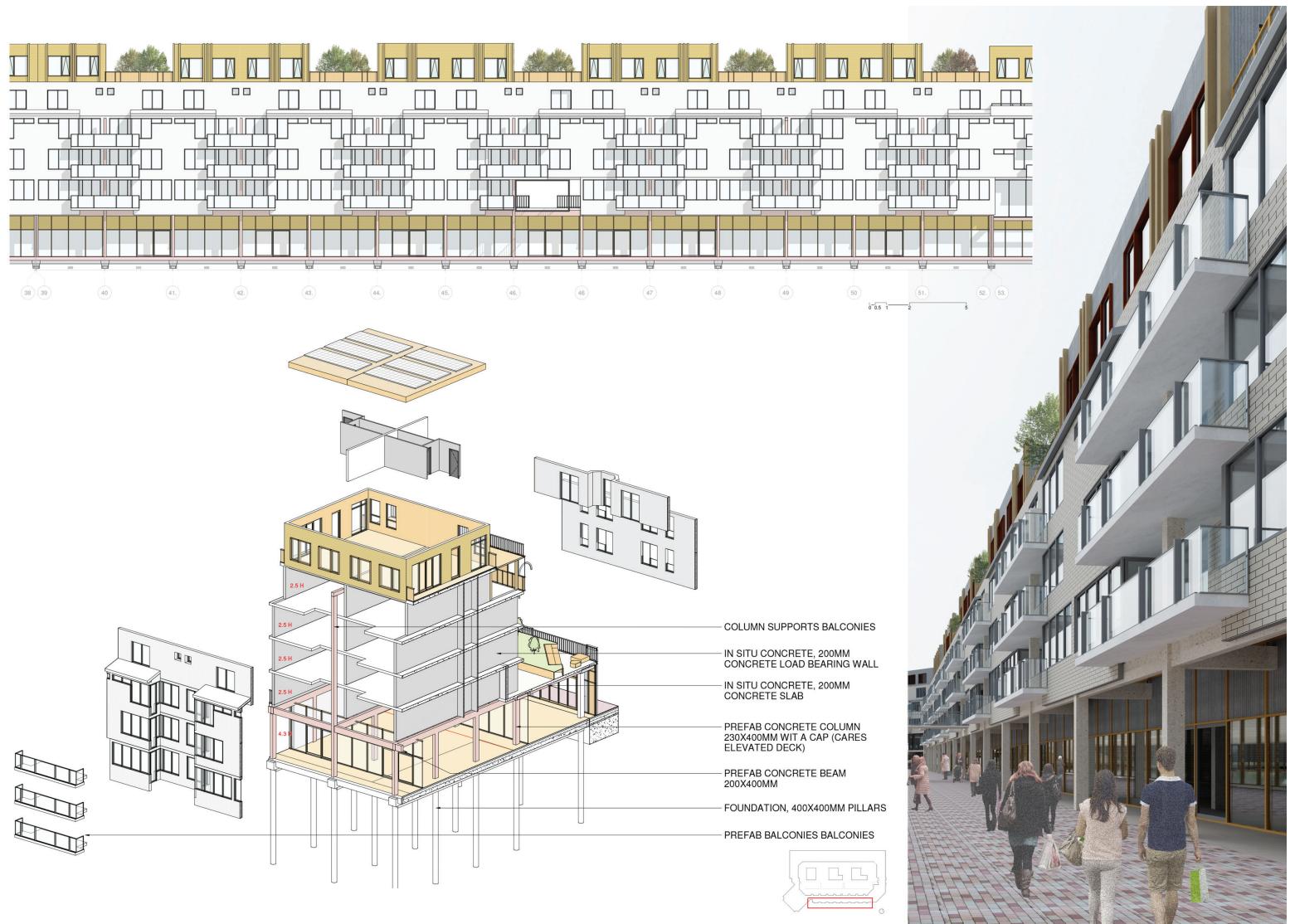
THE RELATION BETWEEN TWO WORLDS

The relation between public square and residential inner space is enhanced by several steps. First of all there is new circulation route introduced from the public square to the book shop, then to the residential library upstairs and then the elevated deck. This is done by introducing atrium space, which allows this kind of route and provides visual connection with upper deck. Also, it brings natural light to the core through the skylight. The facade is also changed to the more transparent providing visual connection. Also, the interior infill creates more inviting and cozy atmosphere which is the contrast to cold concrete slabs.



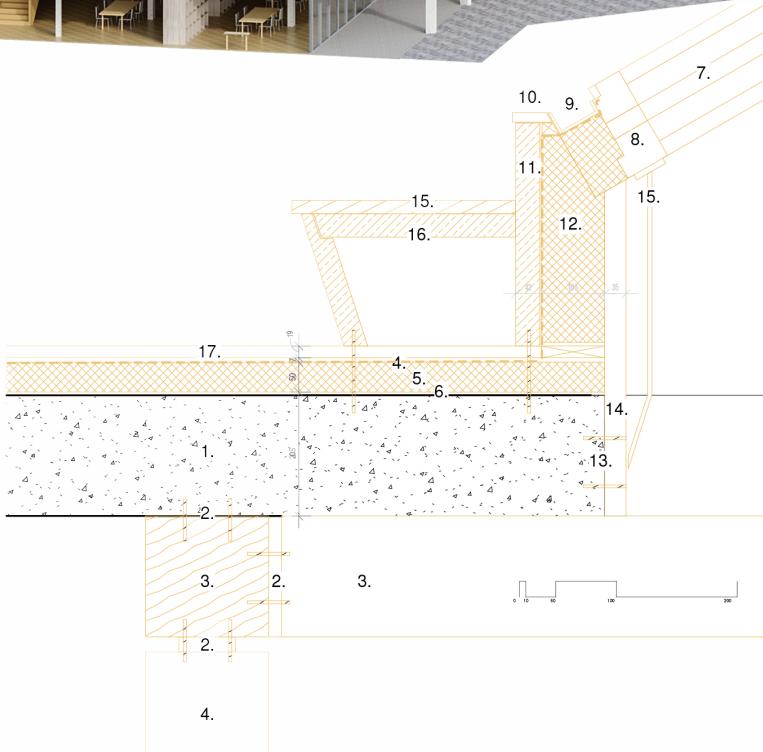
SHOPPING STREET FACADE

The main facade changes was to purify the colonnade and push the facade back on the ground floor. It allows to create wider shopping street at grade. The facade is designed as transparent wall to enhance the link between the shops and the street. The "sky dwellings" are designed following existing structural grid, designed in modular scheme.



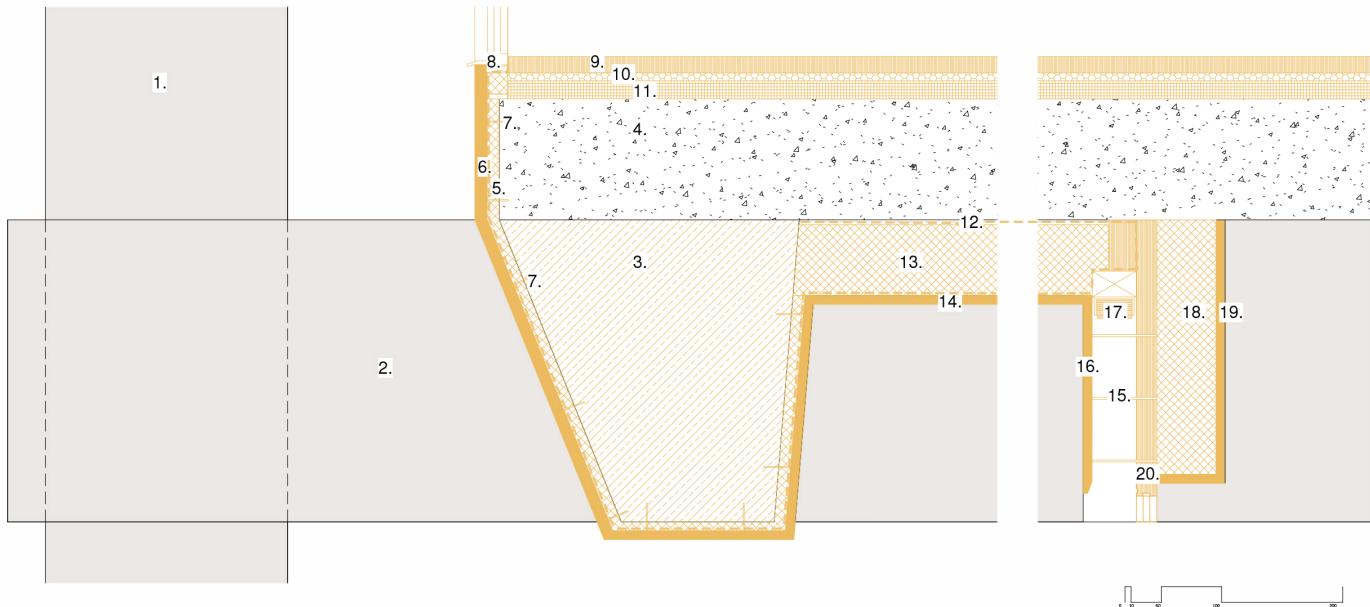


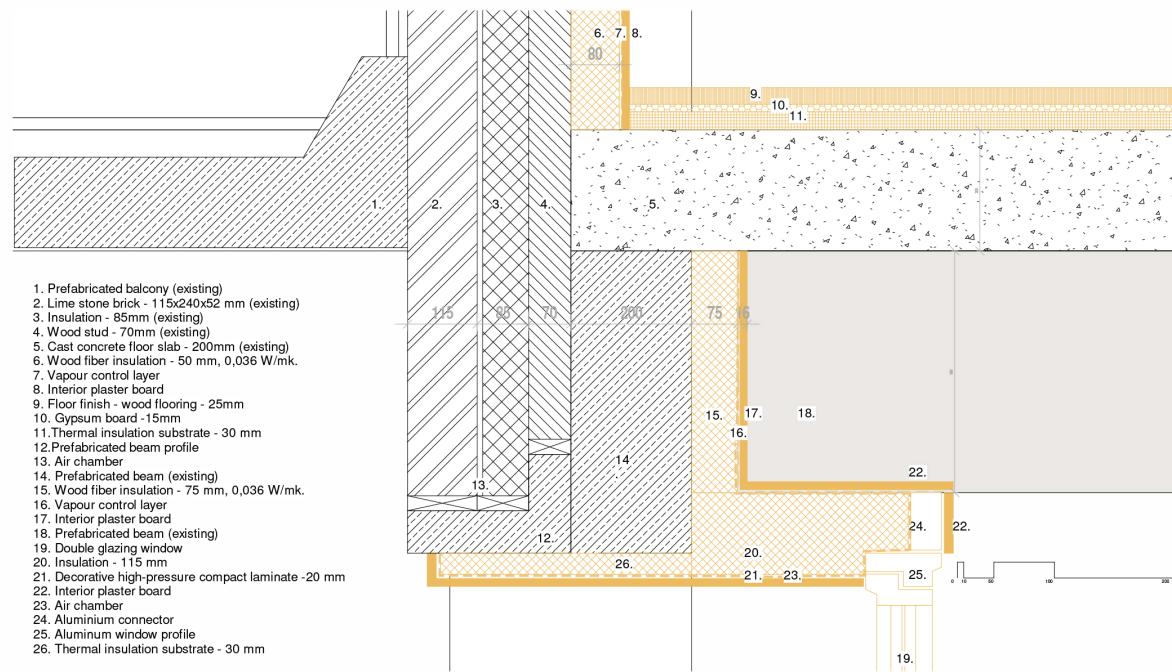
- 1. Existing concrete slab - 205 mm
- 2. Steel connector
- 3. Glulam timber beam - 200x200 mm
- 4. Glulam column - 200mm
- 5. Wood fiber insulation - 50 mm, 0,036 W/mk.
- 6. Vapour control layer
- 7. Sky light - laminated glass, 8 mm
- 8. Aluminum profile of skylight
- 9. Aluminum drainage profile
- 10. Prefab concrete cap
- 11. Prefab concrete wall element
- 12. Wood fiber insulation - 105 mm, 0,036 W/mk.
- 13. Steel connector
- 14. Aluminum support
- 15. Thermal wood plate
- 16. Prefabricated concrete bench element
- 17. Sand stolté tiles
- 18. Automatic opening system





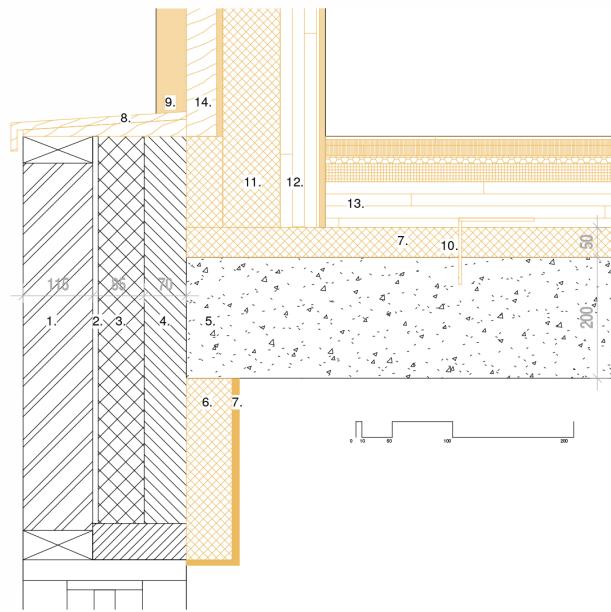
1. Prefabricated column - 400mm (existing)
2. Prefabricated beam - 400mm (existing)
3. Prefabricated beam - 300mm (existing)
4. Cast concrete floor slab - 200mm (existing)
5. Extruded polystyrene (XPS) insulation -20 mm
6. Decorative high-pressure compact laminate -20 mm
7. Aluminum connectors
8. Aluminum window profile
9. Floor finish - wood flooring - 25mm
10. Gypsum board -15mm
11. Thermal insulation substrate - 30 mm
12. Vapour control layer
13. Wood fiber insulation - 50 mm, 0,036 W/mk.
14. Decorative high-pressure compact laminate -20 mm
15. Aluminum connectors
16. Decorative high-pressure compact laminate -20 mm
17. Automatic sun shadings
18. Wood fiber insulation - 50 mm, 0,036 W/mk.
19. Interior plaster board
20. Window profile

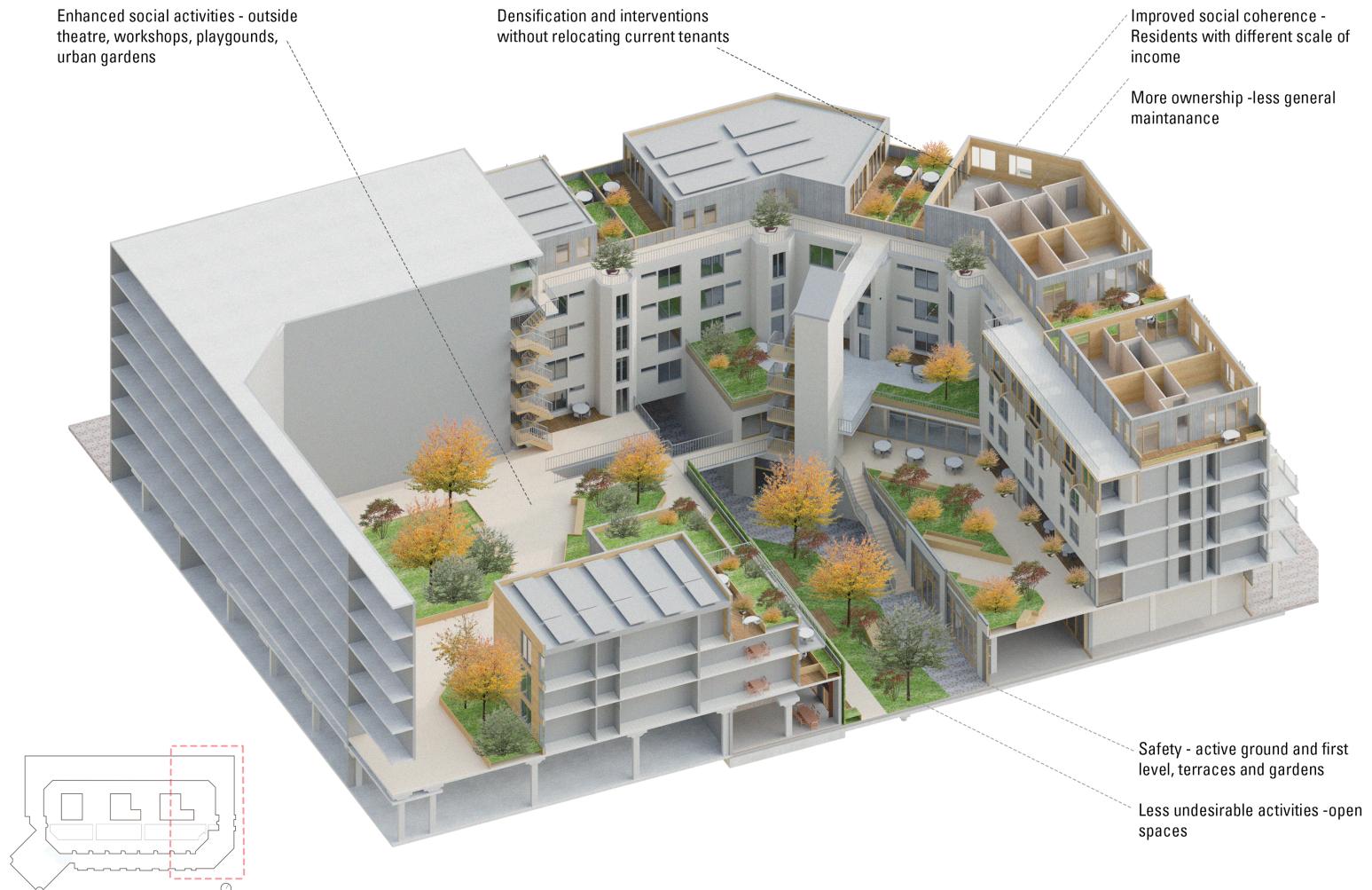






- 1. Lime stone brick - 115x240x52 mm (existing)
- 2. Air chamber
- 3. Insulation - 85mm (existing)
- 4. Wood stud - 70mm (existing)
- 5. Cast concrete floor slab - 200mm (existing)
- 6. Wood fiber insulation - 75 mm, 0,036 W/mk
- 7. Wood fiber sound insulation - 80 mm
- 8. stainless-steel eaves trim as lightning conductor on 20/20 mm alum. SHS
- 9. Thermal wooden slats
- 10. Steel connectors
- 11. Wood fiber insulation - 150 mm, 0,036 W/mk
- 12. CLT structure 110mm
- 13. CLT structure floor - 110mm
- 14. Thermal wood cladding 50 mm







SYMBOLS AND ARCHETYPES

Heritage perspective

From the heritage perspective, Bijlmer and Cluster 4 is significant in postmodernist architecture language. As a reaction to Bijlmer modernistic city approach with homogenates and micro-cosmic spaces, Bijlmerplein was designed looking back at more traditional city concepts. It was designed as a city block with public squares, narrow shopping streets, private residential backyards. From the spatial perspective, Bijlmerplein Clusters define strict perimeter for shopping streets but at the same time has more variation within the residential blocks. That variety is embedded into materiality of the facades, green courtyards, geometrical composition.

Symbols and archetypes are significant in Bijlmerplein as it was used as a tool to create familiar picture of the city (as we know, Bijlmer was erected on the polder, in outskirts of Amsterdam). This was the main of the issues of bijlmer and its failure, because new residents were not familiar with modernistic alienated Utopian design. in that sense, Bijlmerplein was based on post-modernistic construct and incorporated well known architecture symbols: "tower", "gate", "bridge", "colonnade", "courtyard", "street", "square", "arch". These elements are dominant in Cluster 4, so design aims to revitalize and purify them.

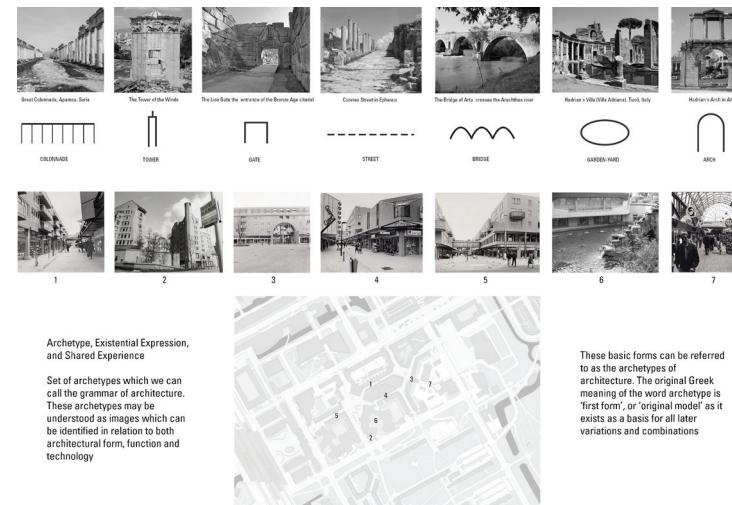


Fig 1. Sustainable development goals

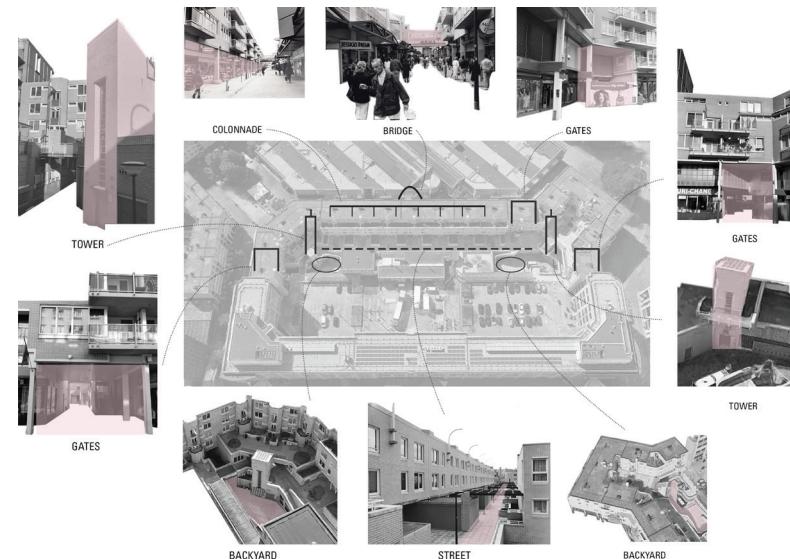
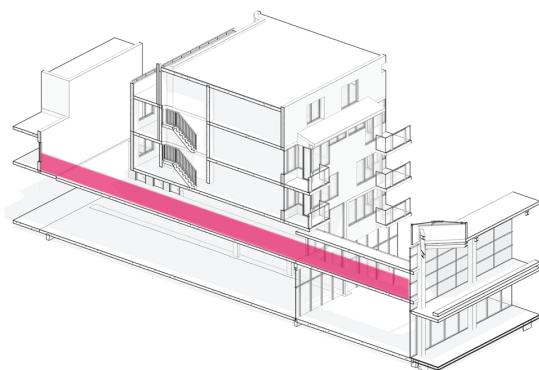


Fig 2. Consumption circle

CONCLUSIONS

EXISTING

A bridge is a structure built to span a physical obstacle (such as a body of water, valley, road, or rail, without blocking the way underneath. It is constructed for the purpose of providing passage over the obstacle, which is usually something that is otherwise difficult or impossible to cross.

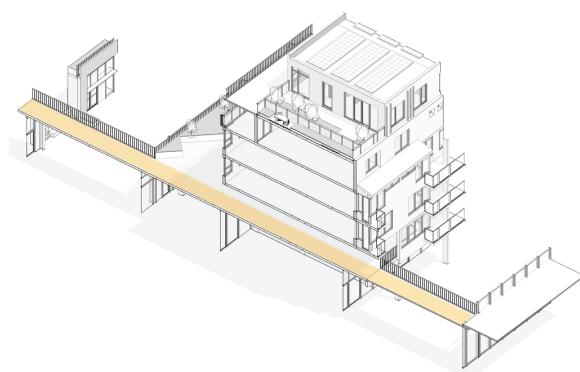


In this case connects different clusters and different elevated decks over shopping street and green alley

ISSUES

BRIDGE IS NEGLECTED
COVERED IN GLASS
UNPLEASANT
THERE IS NO CONTINUOUS FLOW

PROPOSED

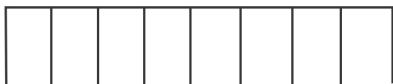


IMPROVEMENTS

OPEN DESIGN
THERE WAS CREATED A FLOW BETWEEN CLUSTERS

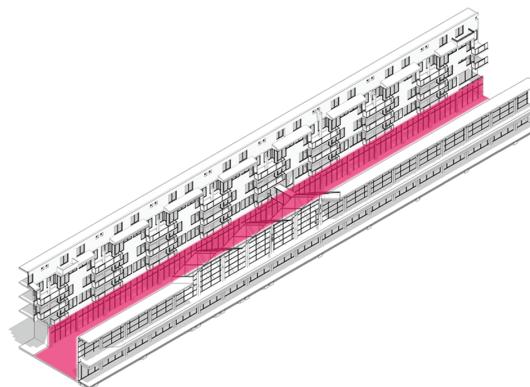
EXISTING

A series of columns set at regular intervals and usually supporting the base of a roof structure. In classical architecture, a colonnade is a long sequence of columns joined by their entablature, often free-standing, or part of a building. Paired or multiple pairs of columns are normally employed in a colonnade which can be straight or curved. The space enclosed may be covered or open.



Colonnades have been built since ancient times and interpretations of the classical model have continued through to modern times, and Neoclassical styles remained popular for centuries.

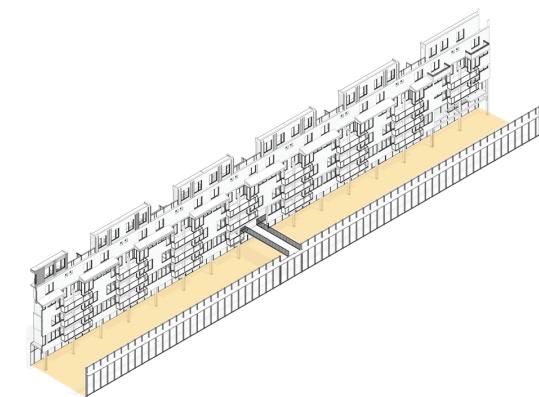
PROPOSED



ISSUES

COLLONADE PUCHED TO THE EDGE OF THE FACADE, NEGLECTED THE IMAGE OF THE BUILDING

NEGLECTED PLINTH



IMPROVEMENTS

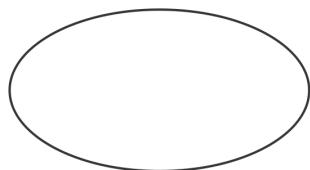
COLLONADE IS RECREATED BY PUSHING BACK THE FACADE

CLUSTER 8 IS DESIGNED AS ONE STOREY PLINTH, SO IT LETS TO GET MORE SPACE AT THE SHOPPING STREET

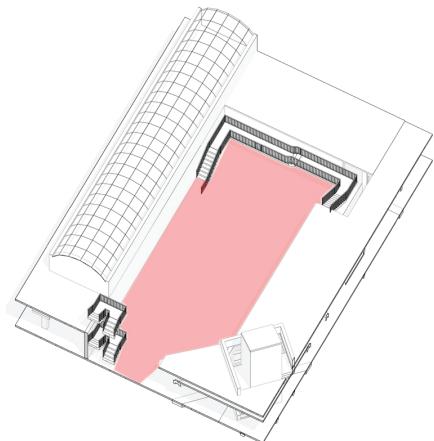
EXISTING

A courtyard or court is a circumscribed area, often surrounded by a building or complex, that is open to the sky.

Courtyards are common elements in both Western and Eastern building patterns and have been used by both ancient and contemporary architects as a typical and traditional building feature.



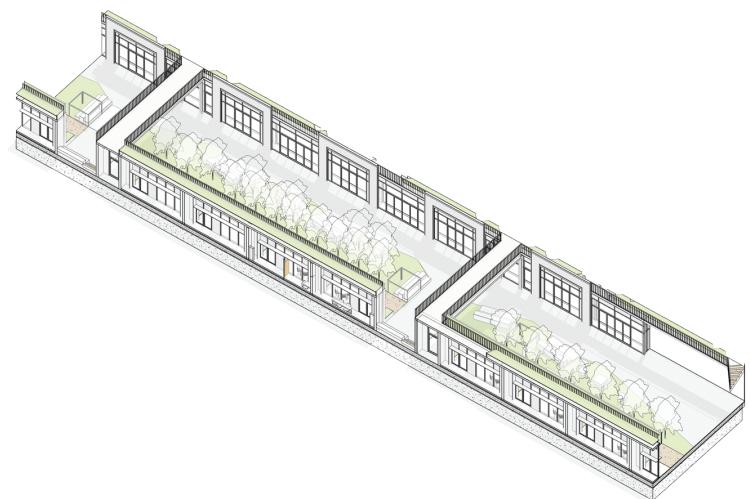
The courtyard is a feature of the inner structure. It is usually an active space for the residents.



ISSUES

NEGLECTED
DESOLATED
NO GREENERY
PASSIVE PLINTH

PROPOSED

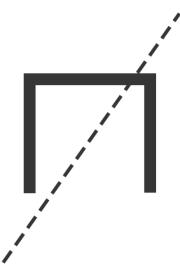


IMPROVEMENTS

ACTIVATED
ACTIVE PLINTH
OPEN
ADDED GREENERY
INCLUDED SMALL ARCHITECTURE FEATURES

EXISTING

Gate or gateway is a point of entry to or from a space enclosed by walls. The word derived from old Norse "gat" meaning road or path; But other terms includ yett and port. The concept originally referred to the gap or hole in the wall or fence, rather than a barrier which closed it.



Gates define the boarder between outside and inside space. It is an element for transition.



ISSUES

INNER SPACE IS NOT PLEASANT
DARK ENTRANCE
NO LIGHTING
NEGLECTED PLINTH

PROPOSED

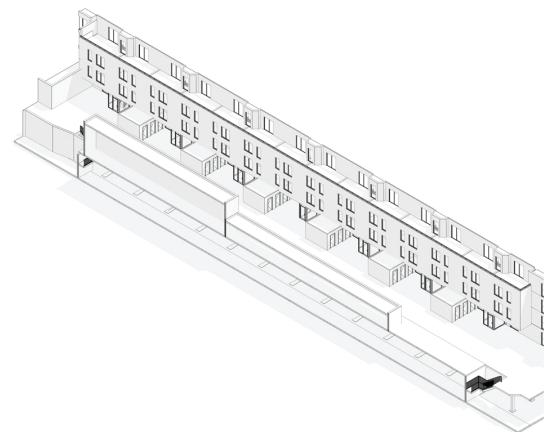


IMPROVEMENTS

INNER SPACE BIG, LIGHT, ATTRACTIVE
LIGHTING
ACTIVE PLINTH

EXISTING

A street is a public thoroughfare in a built environment. It is a public parcel of land adjoining buildings in an urban context, on which people may freely assemble, interact, and move about. A street can be as simple as a level patch of dirt, but is more often paved with a hard, durable surface such as tarmac, concrete, cobblestone or brick.



Elevated street provides access to the dwellings, it is the main axe of circulation within the block.

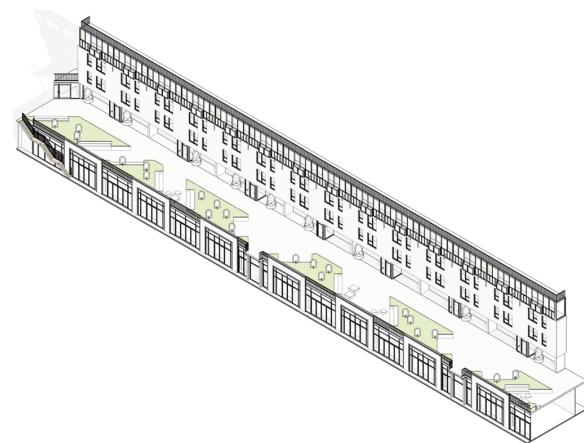
ISSUES

CLOSED, NARROW, CRAMPED WITH STORAGES

NO COMMUNAL SPACE

NO GREENERY

PROPOSED



IMPROVEMENTS

OPEN FOR RESIDENTIAL ACTIVITIES

PLAYGROUNDS, BENCHES, SPOTS FOR PLANTINGS, TERRACES

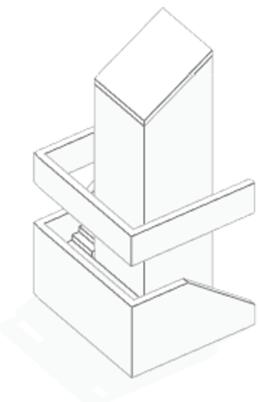
GREEN POCKETS

EXISTING

A tower -a building or structure typically higher than its diameter and high relative to its surroundings that may stand apart (such as a campanile) or be attached (such as a church belfry) to a larger structure and that may be fully walled in or of skeleton framework (such as an observation or transmission tower



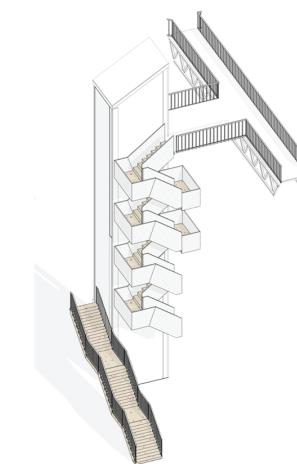
Tower provides the view and serves as a landmark. Also it give possibility for vertical connection.



ISSUES

ELEVATOR TOWER IS NOT IN USE
NEGLECTED

PROPOSED



IMPROVEMENTS

EXTRA 25 APARTMENTS ON TOP WILL ADD MORE NEED OF USING ELEVATOR

ELEVATOR TOWER CONNECTS GROUND FLOOR, LIBRARY, UPER DECK AND SKY UNITS

PROVIDES VIEW POINT OVER THE "GREEN ALLEY"

Bibliography

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