



POLITECNICO
MILANO 1863

BOTU FUTURE HUB

a new living experience

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Abstract

The project is located in the heart of the youth population in Botu, Rotterdam. This particular location thrives on the youths' multicultural, talented mindset, where they require a central location where they could exhibit and public could explore, their talents and products.

Our proposal is a multifunctional building block that houses both residential and commercial spaces, creating a central hub that inspires innovation and learning while boosting the much needed socio-economic aspect of a vulnerable location, set out by the local government. Inspired by the library of the future, the environment that it creates, this project can promote a healthier aspect of the neighborhood both physical and mental as well as incorporating much-needed infrastructure that can assist the new generation for their future economic and cultural development. A place where you can work together, study together, live together, for a brighter future.

01

General background and introduction

The site of our project is located in the center of Botu area in Rotterdam, the Netherlands. To better understand its urban background, we will have a general introduction as following.



the Netherlands

Lowland country

The Netherlands is located in the northwest of Europe, in the Rhine, Maas and Scheldt deltas. There are more than 1,800 km of sea dams and banks along the coast, with a coastline of 1,075 km. Since the thirteenth century, about 7,100 square kilometers of land have been encircled, equivalent to one-fifth of the land area of the Netherlands. Today, 18% of the Dutch territory is artificially reclaimed. The whole territory is lowland, one quarter of the land is less than 1 meter above sea level, and one quarter of the land is lower than the sea surface. Except for some hills in the south and east, most of the land is very low. Its lowest point is near Rotterdam, 6.7 meters below sea level.

The main wind direction in the Netherlands is the southwest, which leads to a mild ocean climate, moderate summer temperatures, cold winters and usually high humidity. This is especially the case near the Dutch coastline, where the temperature difference between summer and winter and between day and night is significantly less than the temperature difference in the southeastern part of the country.



Inclusive and open country

The Netherlands has a developed economy and has been playing a special role in the European economy for many centuries. Since the 16th century, shipping, fishing, agriculture, trade, and banking have been leading sectors of the Dutch economy. The Netherlands has a high level of economic freedom. The Netherlands is one of the top countries in the Global Enabling Trade Report (2nd in 2016), and was ranked the fifth most competitive economy in the world by the Swiss International Institute for Management Development in 2017. In addition, the country was ranked the second most innovative nation in the world in the 2018 Global Innovation Index.

The diversity of Dutch culture is reflected in the differences in culture between different regions and the influence of foreign culture. The Netherlands is known for its openness to society. Usually, the image of the Netherlands is linked to trade, tulips, windmills, wooden shoes, cheese and white-blue glazed porcelain. The Netherlands' open policy on issues such as narcotics, sex trade, same-sex marriage and euthanasia has drawn worldwide attention.



Radical renewal spatial policy

Environmental act

The Omgevingswet (Environmental Act) is a Dutch act that will enter into force in 2021. The Environmental Act is about the physical living environment, in other words: about everything we need to live, work, study and recreate, such as water, air, soil, nature, roads, energy and buildings. At this time there are many separate rules and regulations that concern our physical living environment. When the new act is in force, all those different rules and regulations will have been combined into a single, coherent act. The Environmental Act not only ensures that there are fewer rules, but also that these rules are clearer and more accessible. In addition, it will be easier for residents and entrepreneurs to start initiatives together. The municipality monitors and advises what possibilities there are.

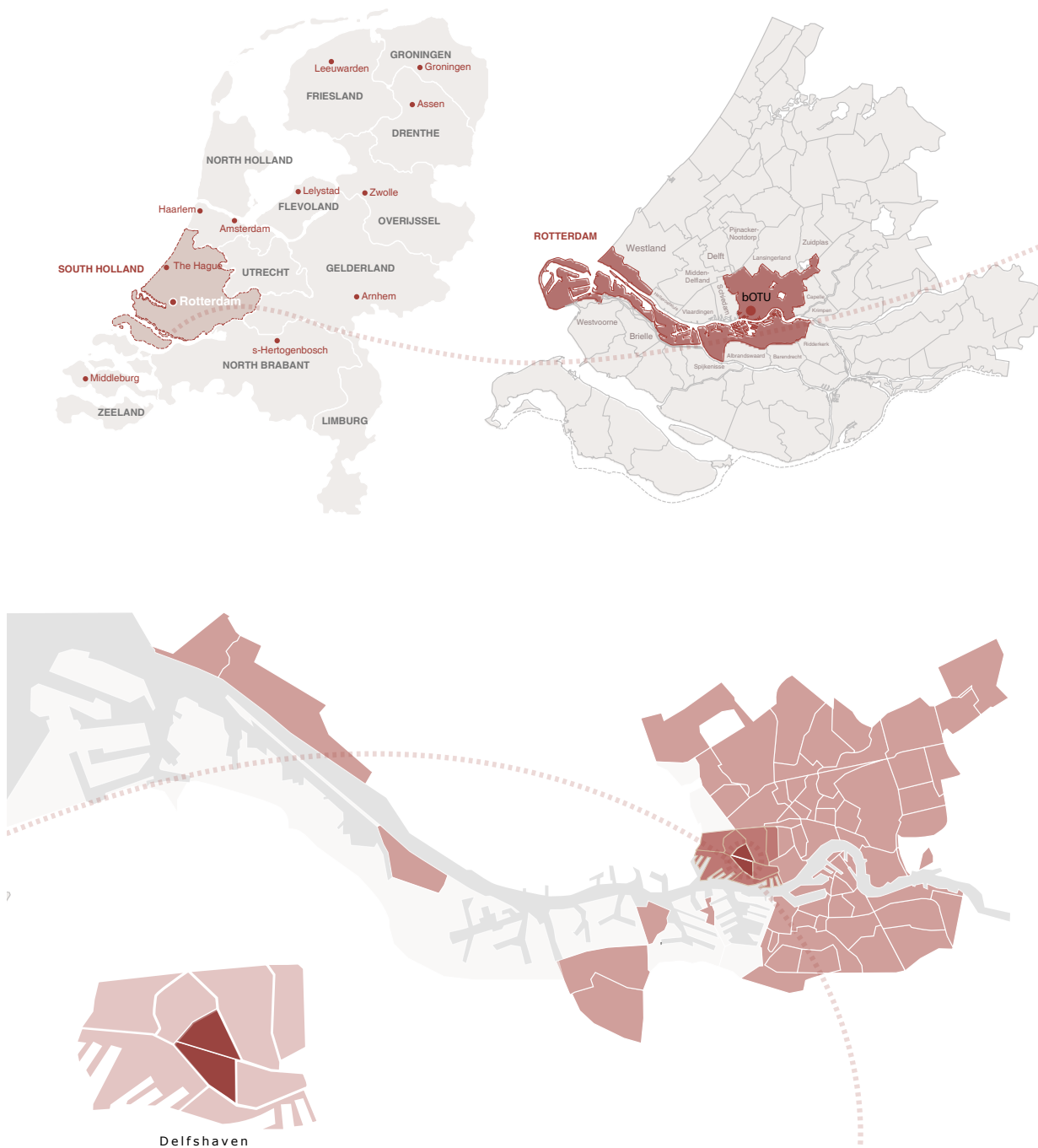
Environmental strategy NL

The Environmental Act requires that all municipalities and provinces draft a local environmental strategy that reflects how each municipality or province will deal with developments in the physical living environment now and in the future. Central government also draws up an environmental strategy. An environmental strategy is a story, image or website by which the municipality shows how it wants to organize its physical living environment.



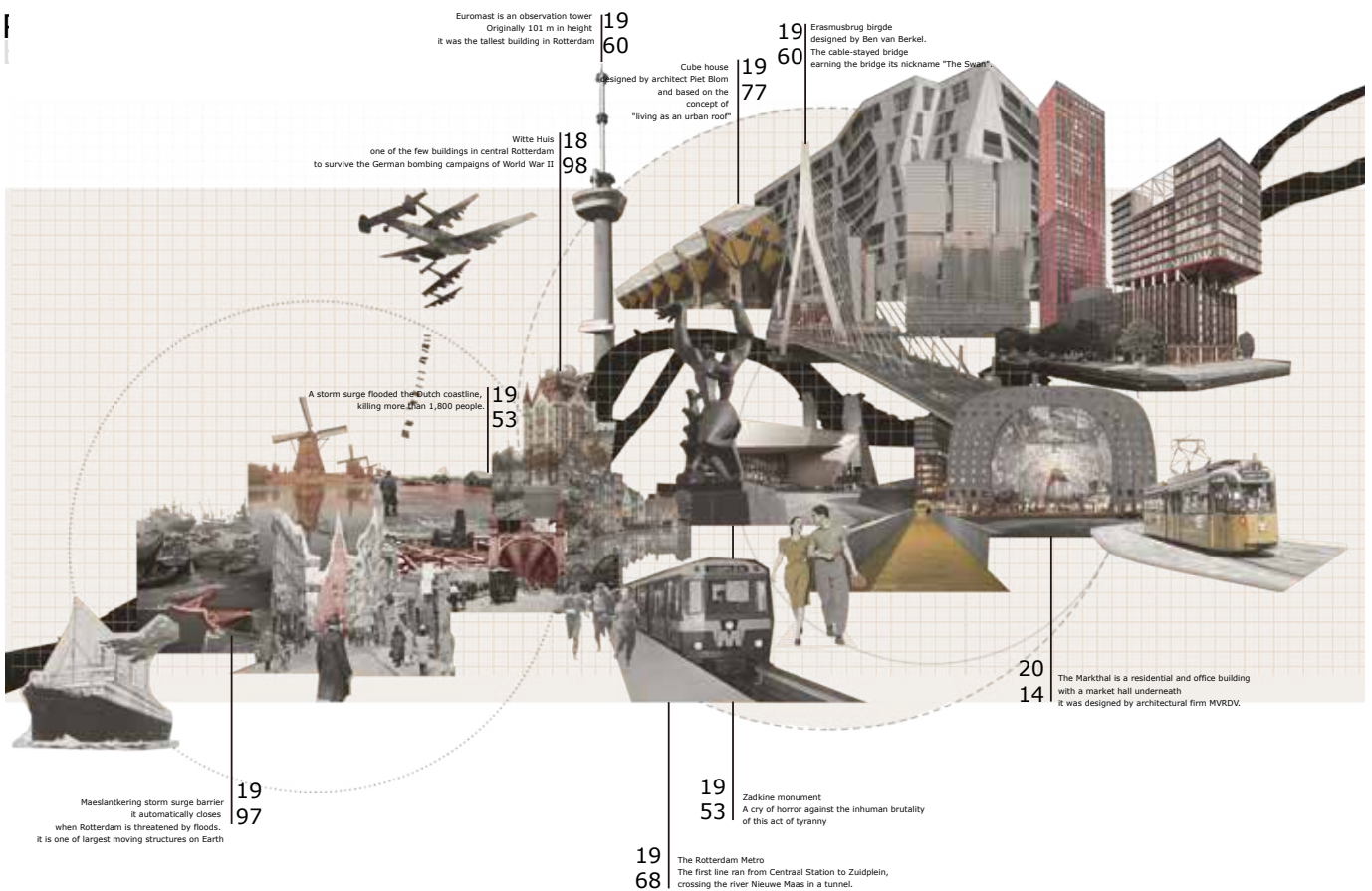
Rotterdam

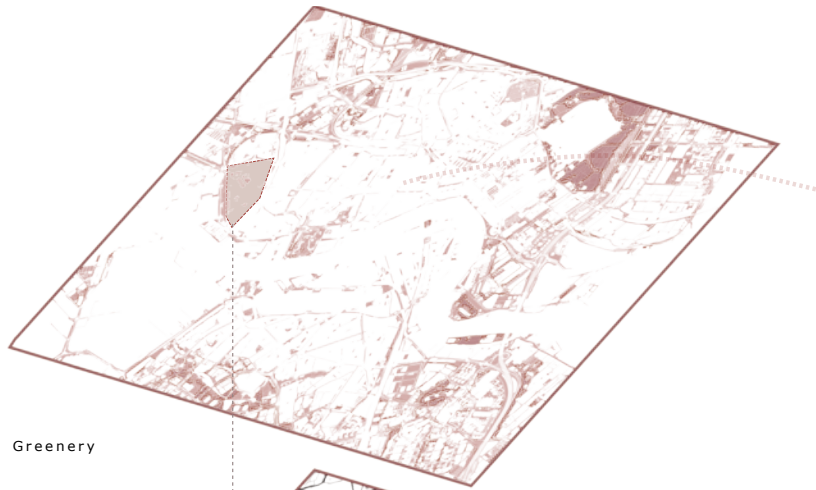
By Dutch standards, the municipality of Rotterdam is big in terms of both population (644,000) and surface area (320 km²). It is the second-biggest city in the Netherlands after Amsterdam. Rotterdam's territory consists of some very different areas. Roughly speaking, there are four distinct: core urban area, port area, separate residential areas and scenic areas.



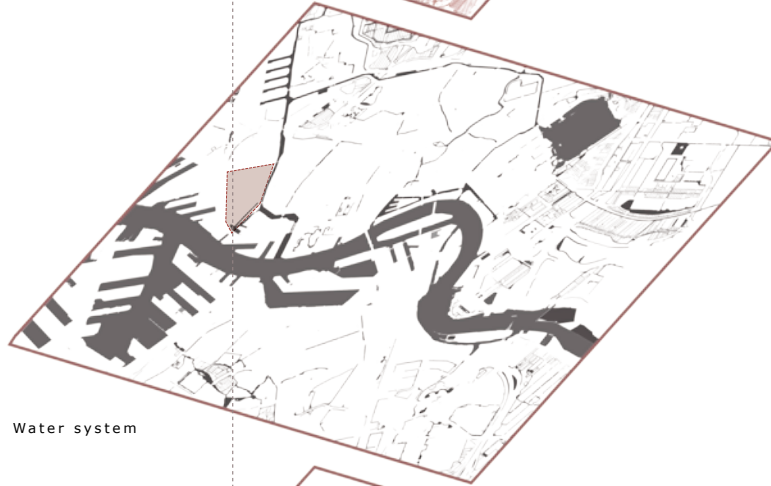
City image

Rotterdam would not be the same without its rivers. The city was built on the dam between the Rotte and the Nieuwe Maas. Thanks to the Nieuwe Waterweg – the stretch of water that connects Rotterdam to the North Sea – Rotterdam developed into an international sea port. For years, the Nieuwe Maas was a highway for inland shipping, a place where work was getting done. The city developed on two banks, its harbours separated by the river in between. When the port activity began to move west, this literally made room for transformation and densification in the middle of the city. As attractive residential locations sprouted along the Maas banks, the city centre began to span the river. During this period, waterfront development resulted in vibrant spots along the water and the river showed its recreational potential.





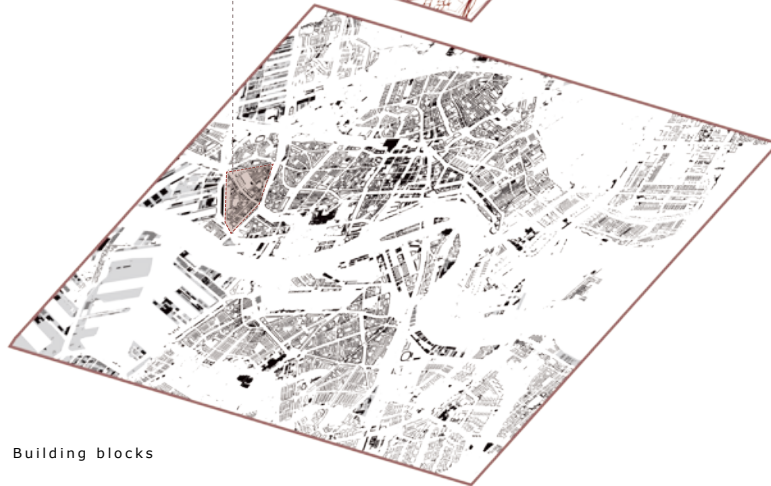
Greenery



Water system

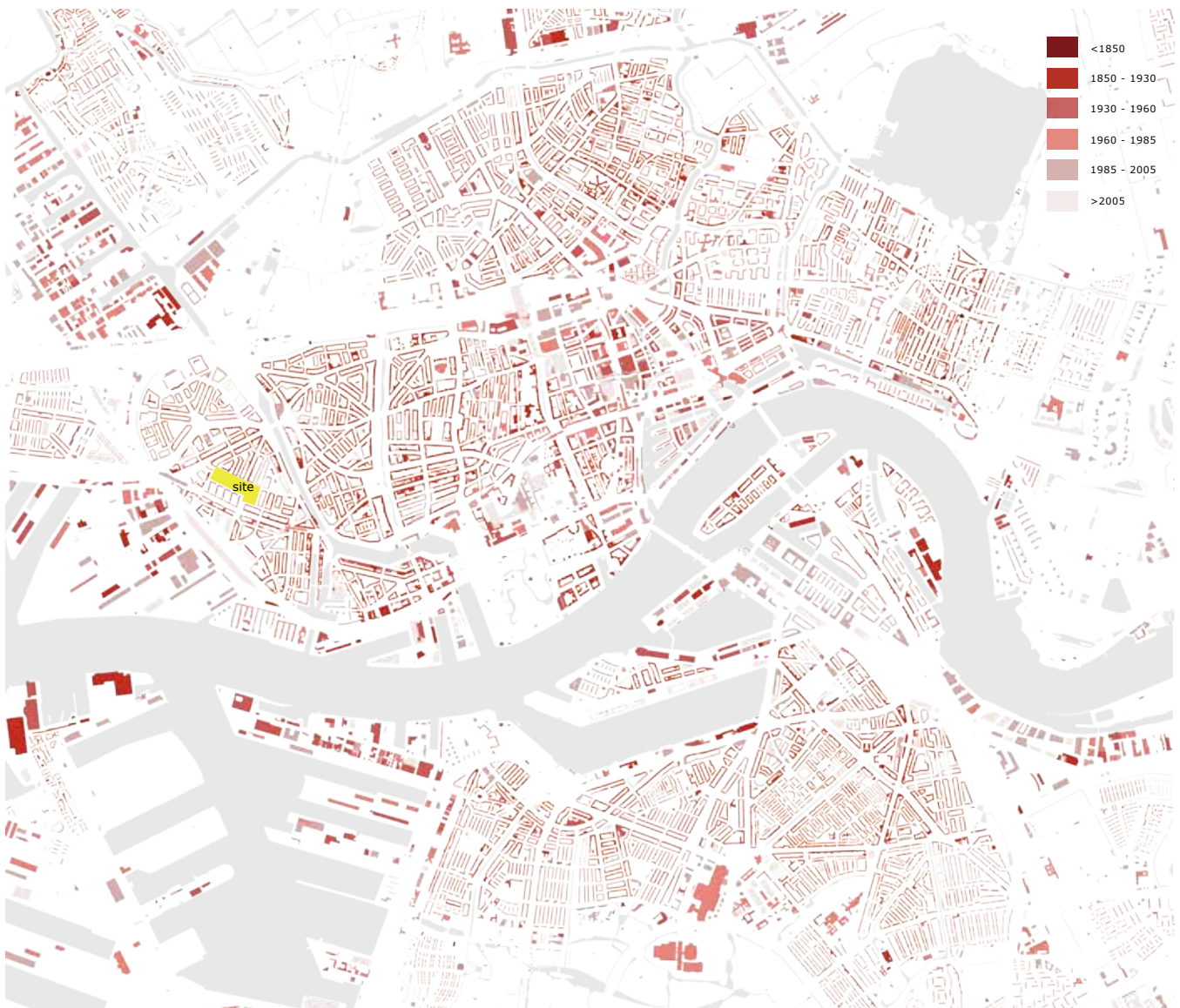


Road system



Building blocks

Layers of Rotterdam



We can easily find in the whole Rotterdam, the most buildings in the city center are reconstructed after 1930, that is because the bomb in the WWII. While in Botu, the building age is mostly in 1940-2005, there are also some new constructions after 2000, but just a few.

Building ages of Rotterdam

Reconstruction after WWII

More than 75 years ago, the city centre of Rotterdam was erased by a bombardment during the Second World War. A post-war reconstruction plan was carried out according to then-modern principles with regard to the separation of functions: a spatial layout in quarters separated by boulevards with plenty of space for traffic. Today, modern post-war reconstruction buildings, such as the Groothandelsgebouw designed by architects Van Tijen and Maaskant, are listed monuments. Rotterdam's new cultural heritage accommodates a town centre that reflects the individuality of the city. The post-war reconstruction buildings have shown themselves quite easily transformable. Many have been given new functions, but they have also been able to retain their special exteriors.



City centre before the bombardment, 1939



City centre after the bombardment, 1953

Modern city

Experiment, make room, inspire

Looking back, one might say that Rotterdam is a relatively young city that, more than other European cities, has been characterized by a desire for innovation. Generally speaking this has worked out all right, although infrastructural interventions and the post-war reconstruction after the Second World War have resulted in an 'expanded' city and, in some districts, to a high concentration of identical, small dwellings. Rotterdam wants to build on the valuable icons from previous construction periods – such as its canals, city streets, lanes, boulevards and parks – and on the innovative mindset that characterizes Rotterdam. Experimenting and making room are in the city's DNA. By noticing and seizing opportunities, the inventive and enterprising people of Rotterdam have been very important to the growth and prosperity of the city. The grain elevators of the Nieuwe Maas silo, the Lijnbaan, the Van Nelle factory, the Maeslantkering, the water squares, the Erasmus Bridge, the kluswoningen (DIY renovations) and the Markthal are embodiments of audacious, unprecedented thinking that took place here and thus raised the city to the next level.



Aerial view on Rotterdam, 2005



Aerial view on Rotterdam ,2014

Urban strategy

Rotterdam aspires to develop an integrated approach to the trends and transitions the city faces and the needs of its people. Although there is currently no integrated vision for Rotterdam (yet), strategic documents from the social, economic and physical domains that appeared in recent years have been developed in conjunction with each other.

Resilient City

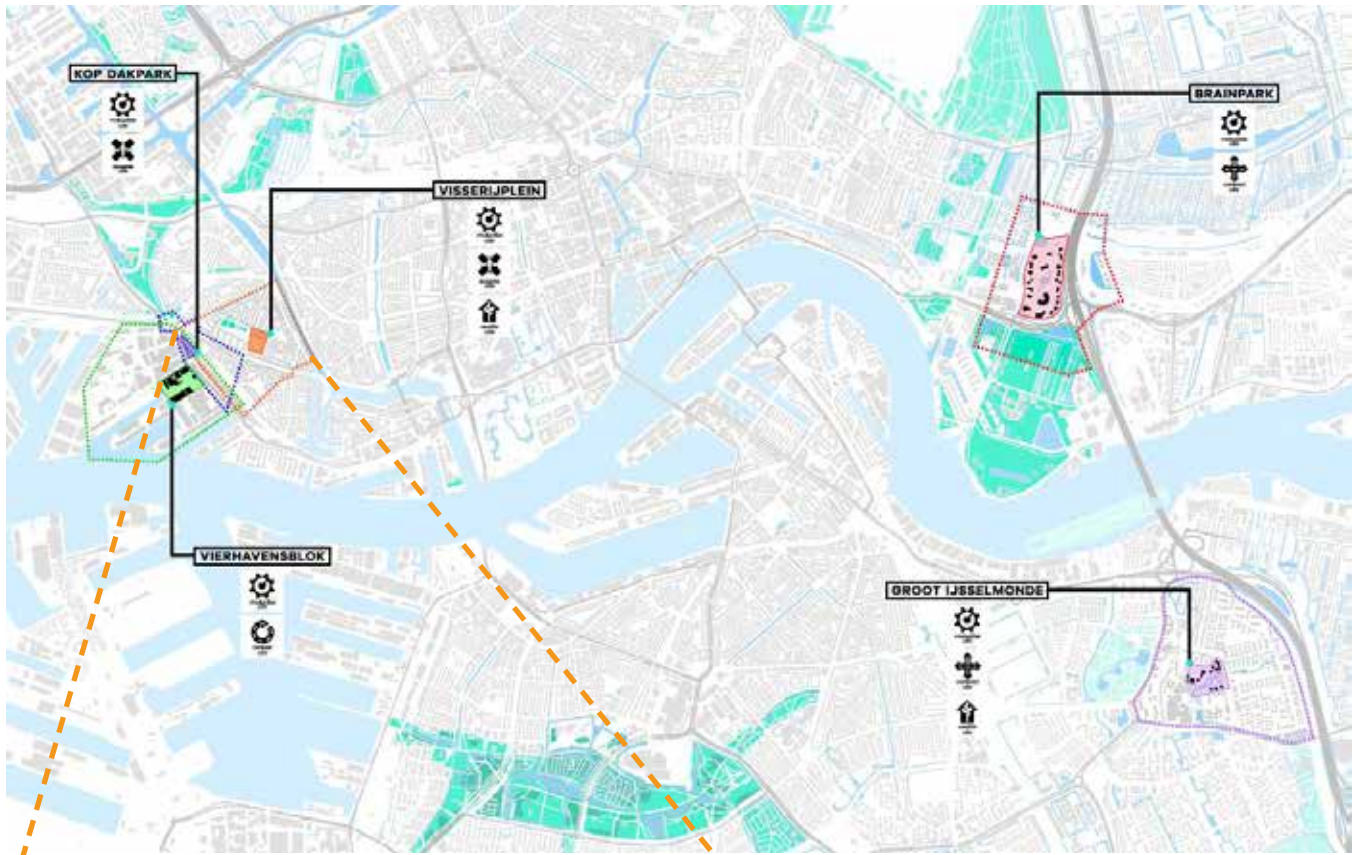
In policy, a recurring starting point is that Rotterdam wants to be a resilient city: a city that is able to respond to external dynamics and use growth opportunities to improve. A resilient city continuously adapts to developments and not only recovers quickly after an incident, crisis or setback but also grows stronger in the process. The resilience of the economy and the people is essential to a delta and port city like Rotterdam.

Densification of the existing city

More than a decade ago, Rotterdam published an important decision in its Stadsvisie 2030 (Urban Vision 2030): 'To meet housing needs, Rotterdam will only build in existing urban areas.' This meant, among other things, that the number of people living in the city centre of Rotterdam had to double from 28,000 in 2007 to 56,000 in 2030. The decision to densify the existing city centre ten years ago has visibly resulted in a livelier centre and a more attractive city.

Public space and water

Another important intention voiced in the Stadsvisie 2030 was: 'Rotterdam will use the public space and the water challenge to accelerate the intended developments in the physical living environment.' Rotterdam's strategy for climate adaptation is now worldfamous. And the attractive design of the public space has made Rotterdam safer, cleaner, greener and more sociable.



- 
Compact City Rotterdam develops into a densified, attractive city by the river
- 
Healthy City Rotterdam makes healthy urban living possible
- 
Inclusive City Rotterdam offers space for encounter and participation
- 
Circular City Rotterdam offers space for sustainable energy and recycling
- 
Productive City Rotterdam makes room for The New Economy

BOTU

The neighborhoods of Bospolder and Tussendijken have a common interest in an area of approximately one square kilometer. Together they count around 7,000 households with more than 14,000 residents. Both neighborhoods have a high population density and there is a lot of diversity among residents. About 80 percent of the population is "new Dutchman" and nearly 70 percent have a non-Western background. In addition, the composition of the population is relatively young. There are more 0 to 14 year olds than the Rotterdam average, while the percentage elderly (65+) is lower.

Many households in Botu have serious debts and the average unemployment rate is high. Almost three quarters of households fall into the "low" category of income. On the list of 20 poorest postcode areas of the Netherlands, Tussendijken and Bospolder are the 2nd and 5th place.

Although more and more highly educated people come to live on the edges of the neighborhood, the residential neighborhoods remain very vulnerable on the inside. More than 60 percent of the housing stock consists of social rental housing in the lowest segment. These homes are often outdated and struggling with overdue maintenance.



Before the bombardment, 1939



After the bombardment, 1943

Reconstruction after WWII

Bospolder was known as a working-class neighbourhood and Tussendijken housed more municipal workers and small-business owners. The land in Bospolder was sold by the municipality in plots to private construction companies, causing a cluttered city image.

On 31 March 1943, the western part of the area was bombed by American airplanes by mistake: the forgotten bombardment. The construction designed by Oud was for the most part destroyed. It took until the 1960s for the ruined streets to be rebuilt.

After the war, apartment buildings and shops were built here, and the Grote Visserijplein and Park 1943 were constructed. An urban renewal operation started in 1979 and was completed in the 1990s. The visible dichotomy in the structure of Tussendijken stems from the reconstruction of the western part and the heart of the neighbourhood in the 1950s. This part of the neighbourhood has a much broader layout and also contains more public space.



City after reconstruction, 2018

Socioeconomic Challenges

Nevertheless, because it is dealing with serious issues, BoTu is not associated with attractive living. The neighbourhoods deal with great challenges in the realm of safety, working and living. The socioeconomic problems in BoTu are complex: prolonged dependence on social security, health concerns, financial problems, loneliness among the elderly and disturbances by street youths. A large part of the population has no access to the labour market. The ratio of the amount of jobs and the population is 13 to 100. This is one third of the city's. This ratio can be seen in the income data. Almost three quarters of the households are in the 'low-income' category. Aside from the Schiedamseweg, the shopping strip on the south side of Tussendijken with a few successful entrepreneurs and a lot of one-man shops, the local employment rate in the neighbourhood is low.

There is also little variation in housing supply. Of over 3,000 houses, about 75 per cent is social housing. About 70 per cent of the residences are tenement buildings or apartment buildings without elevators in the low-rent sector. The current residents have, contrary to some other areas in the city, a strong connection to the neighbourhood. There are, however, few possibilities for various target groups to find a suitable residence or advance their living circumstances. This is why many residents, when their income improves, move to a better house outside of the neighbourhood. In short, the neighbourhoods score well below the Rotterdam average. The situation has improved in the past years but the neighbourhood still scores half the Rotterdam average in the social index (general experience of quality of life), safety index as well as the physical index (satisfaction in living environment). The neighbourhoods therefore unabatedly demand attention.



Low-income residents

Facilities as a Basis for an Inclusive Neighbourhood

BoTu has a great range of shopping facilities (among which the well-known Schiedamseweg and the market twice a week on the Visserijplein), schools and social facilities and proximity to urban facilities. An important positive aspect of the neighbourhood is that the urban subway system runs underground through the neighbourhood (under the Schiedamseweg), providing a good connection with the city and the greater area.

A specific occasion for this is the improvement of sports facilities for schools and afterschool activities. Facilities like outside playing spaces and gymnasiums can subsequently be shared. Plus a number of existing gymnasiums in the area, also used for after-school activities, no longer meet the current standards. Creating new gymnasiums that do is not possible in the current locations due to the limited size of the locations combined with the increased space demand. An innovative design at a new location offers a chance to strengthen the heart of BoTu.

Creative and social entrepreneurs create a new dynamic. This also offers strong starting points for the emancipation of local residents. The challenge is to make sure these new forms of working and entrepreneurship contribute structurally to the prospects of the current residents. In various locations in BoTu and outside, entrepreneur skills are cultivated in a cooperative setting. One example is the Bouwkeet, a makerspace in BoTu. Every local resident, mostly children but adults too, can (learn to) make something here. They can develop new skills and that results in new creative entrepreneurs but also in encounters with locals.



Bouwkeet learning center

Upgrading Living Conditions

In BOTU, the focus is on restructuring and reorganizing the existing housing stock, so that growth within these neighbourhoods results in an inclusive living environment. Investing in the existing housing stock to improve on quality of life for the current residents and to widen the variation within the existing stock is a requirement for these kinds of neighbourhoods. A diversified housing stock means a better balance between the underprivileged and the privileged, increasing the social and economic resilience of the area. The locations that become available for development are to contribute to the part of the housing supply that is currently insufficient, or to create some leeway to be able to deal with other parts of the neighbourhood that are not scheduled yet. Bospolder and Tussendijken have been thoroughly renewed and are places where people of Rotterdam of various lifestyles live side by side.



Housing complex Le Medi (founded in 2008):
a unique design that symbolizes integration of residents and lifestyles

Improving Educational Infrastructures

Rotterdam strives for schools that offer good-quality education, focused on language development and tailored support. The way schools are housed is an important contributing factor. The municipality has therefore drawn up the Integraal Huisvestingsplan 2015-2019 (Comprehensive Housing Strategy 2015-2019) in coordination with the various school boards. In the framework of this housing strategy, an inventory has been taken of the various schools in the city. It focused on the spatial needs of the various schools (overcapacity or a shortage of space) as well as the quality of the school buildings themselves. The Nicolaasschool in Tussendijken is one of the schools that are being dealt with in the scope of this strategy. The goal is to turn the four different locations that are spread out over the neighbourhood into a single school cluster at Park 1943 that will meet the current quality standards.



Training center

Empowering Citizens with Common Spaces

Development towards the new economy, which is increasingly focused on 'white-collar labourers', threatens to increase the disadvantages of the residents in neighbourhoods like Bospolder and Tussendijken. The large percentage of social housing in these kinds of neighbourhoods house citizens of Rotterdam of which many are unemployed, have a low income and little education and whose lifestyle can be labelled as unhealthy. The 'Dakpark' on the border of neighbourhood Bospolder (on the right), one of the largest rooftop parks in Europe Photo: Frank Hanswijk). To prevent this, Rotterdam focuses on an inclusive city where the prospects of these vulnerable groups are improved upon. An inclusive city enables everyone to participate. To this end, it aims to remove barriers so that everyone can participate more easily in social and societal processes, with equal opportunities in education, work, culture and sports. This means that the spatial developments in these neighbourhoods are used to create this inclusive and healthy city. A good example is the 'Dakpark' – bordering on the neighbourhood of Bospolder, initiated and still managed and programmed by local residents – which is a visible improvement on the quality of living and creates a meeting place for various groups of people.



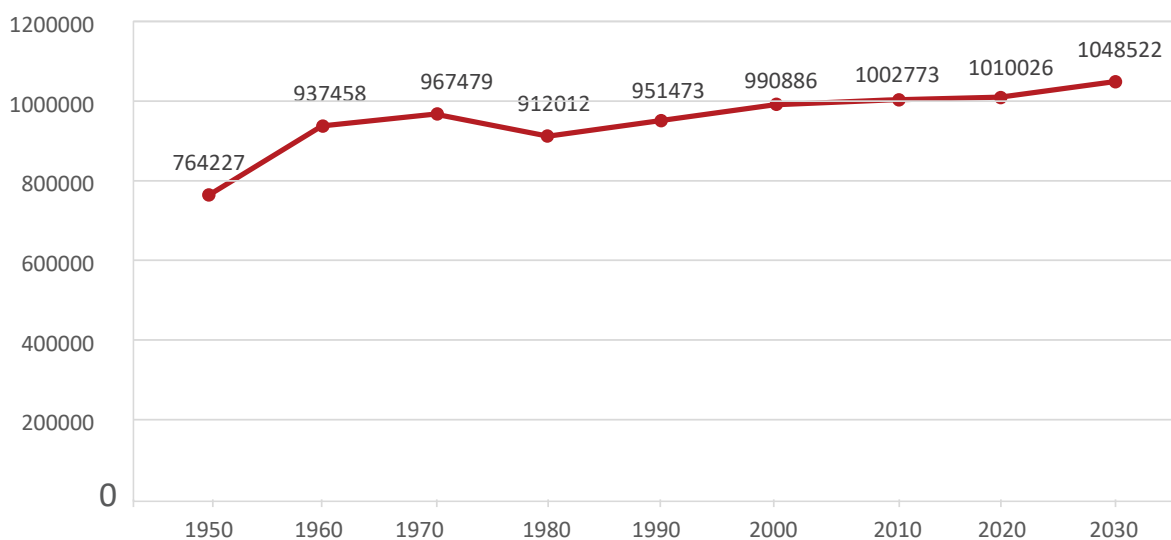
02

Analysis of existing situation

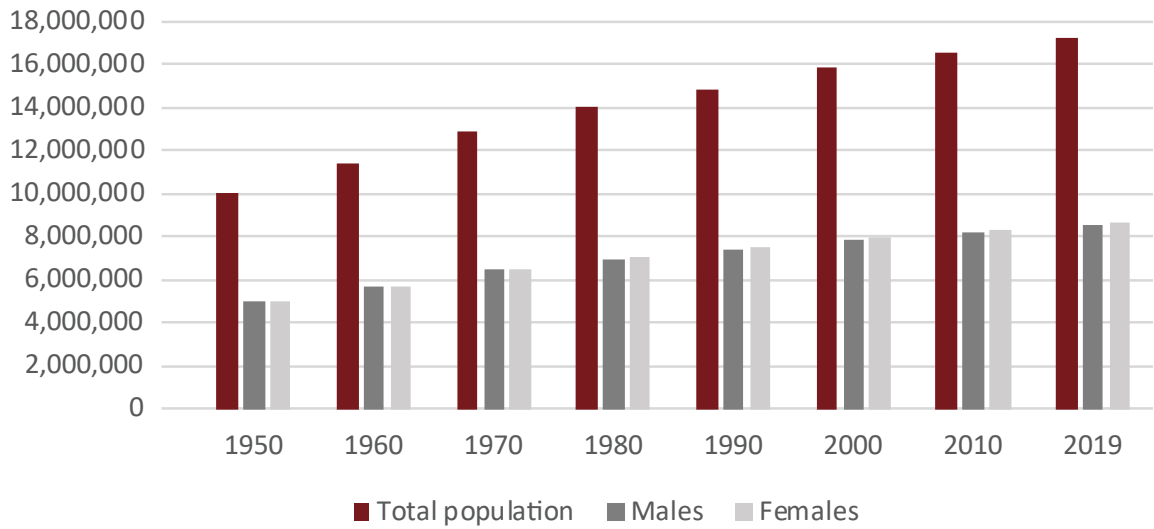
Population

There is an enormous diversity and dynamic among the residents, entrepreneurs and organizations in BoTu. That is the strength of the neighbourhoods and also what makes them unique. BoTu has a high population density of over 14,000 residents and is viewed as a people's neighbourhood with a relaxed and friendly atmosphere where its multicultural character is not up for discussion. About 80 per cent of the population consists of so-called 'new' Dutch people and almost 70 per cent is of a non-western background. BoTu is a society of various communities that contain strong networks. BoTu has relatively a lot of senior housing but is also home to many children: about a fifth of the population is younger than 15.

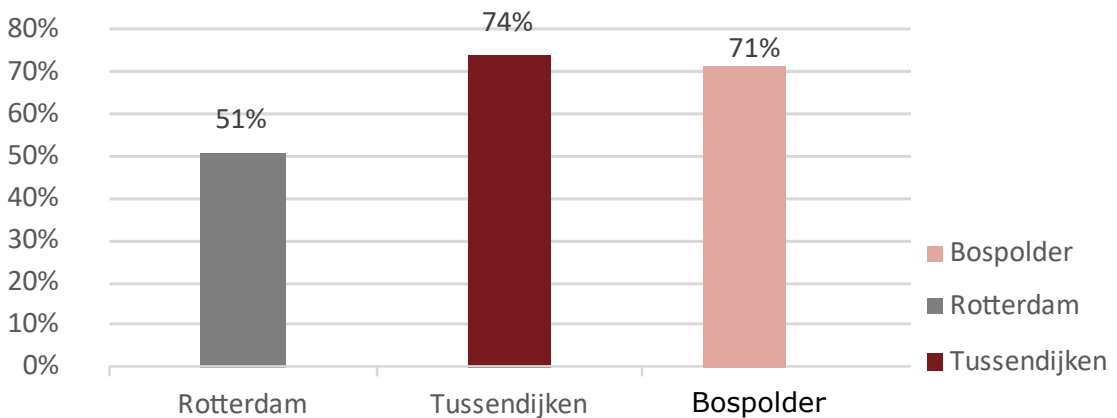
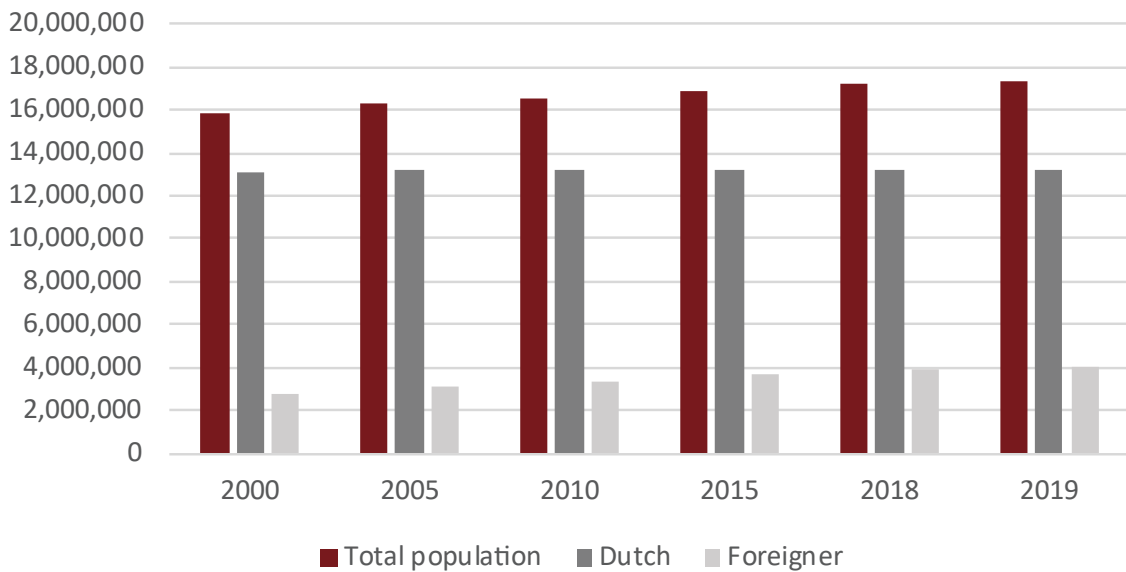
Rotterdam Population growth prediction

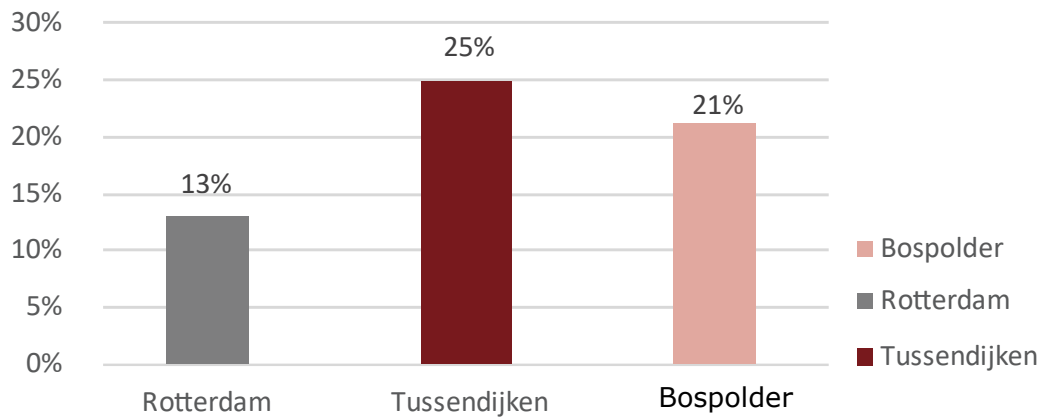


Rotterdam population growth

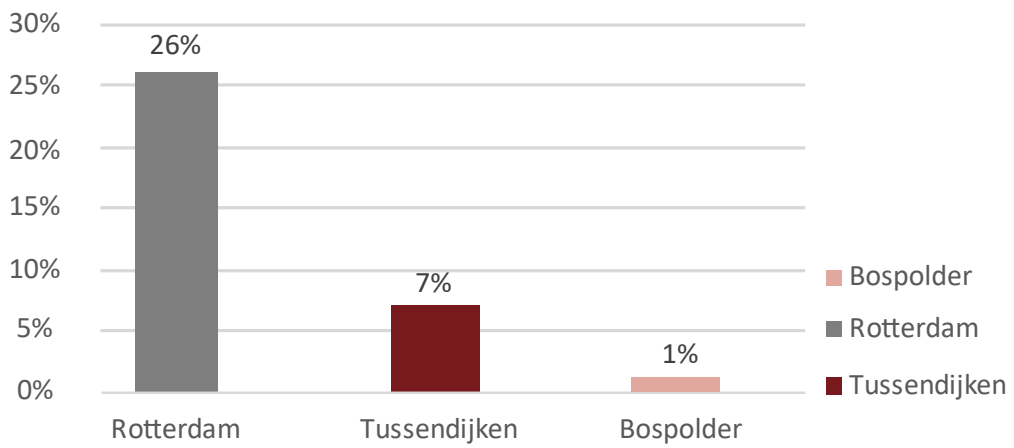


Migration background

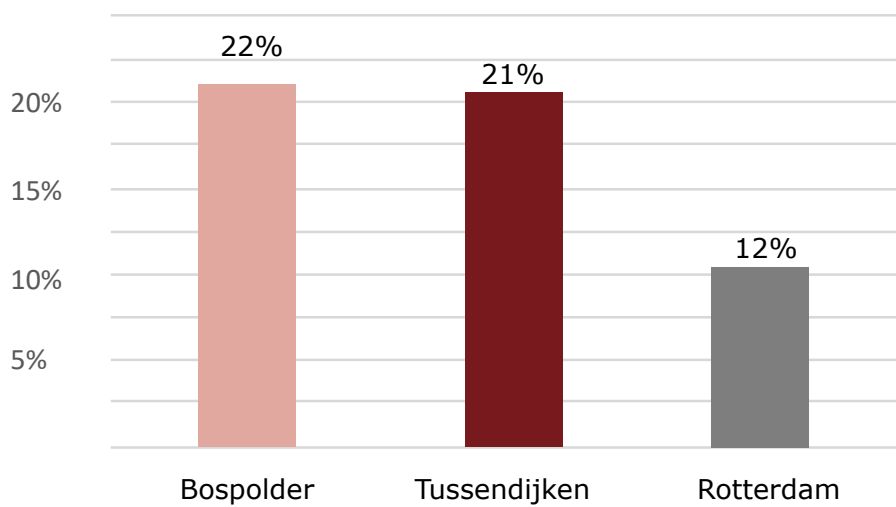




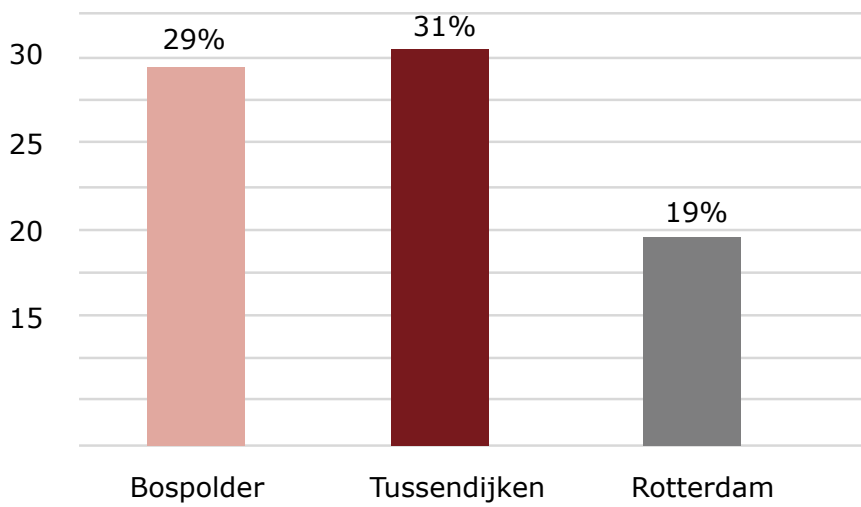
**Single family house
(over occupied homes)**



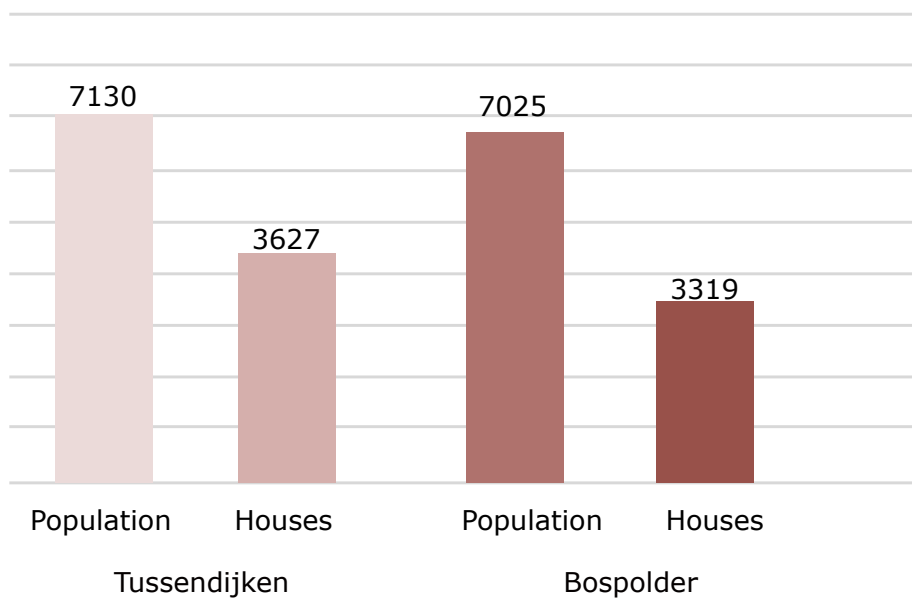
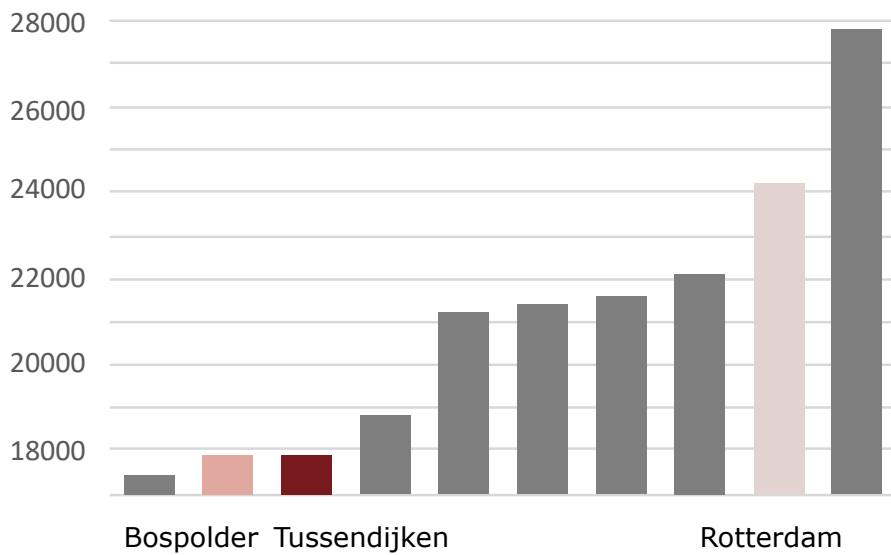
Percentage of households on social assistance



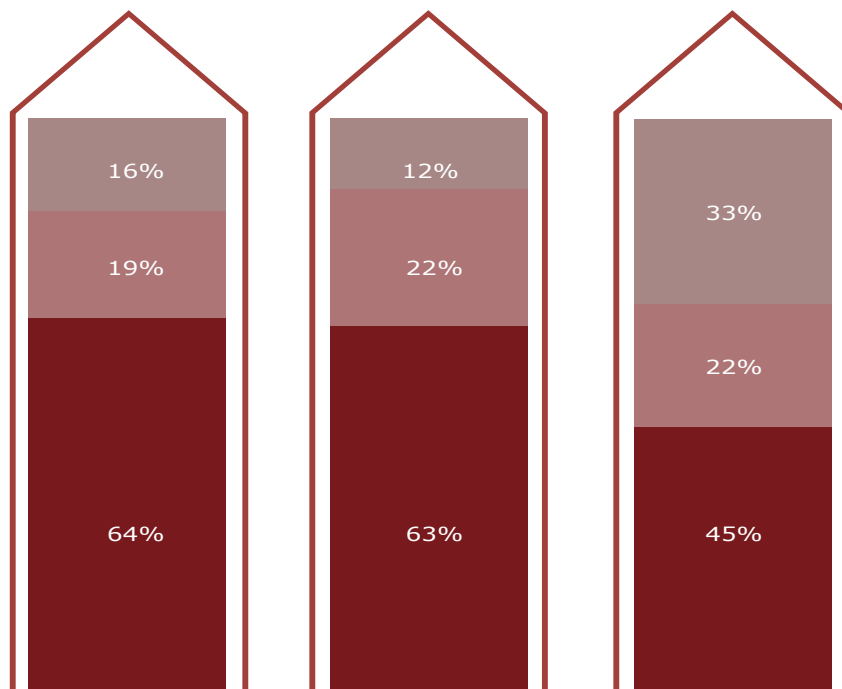
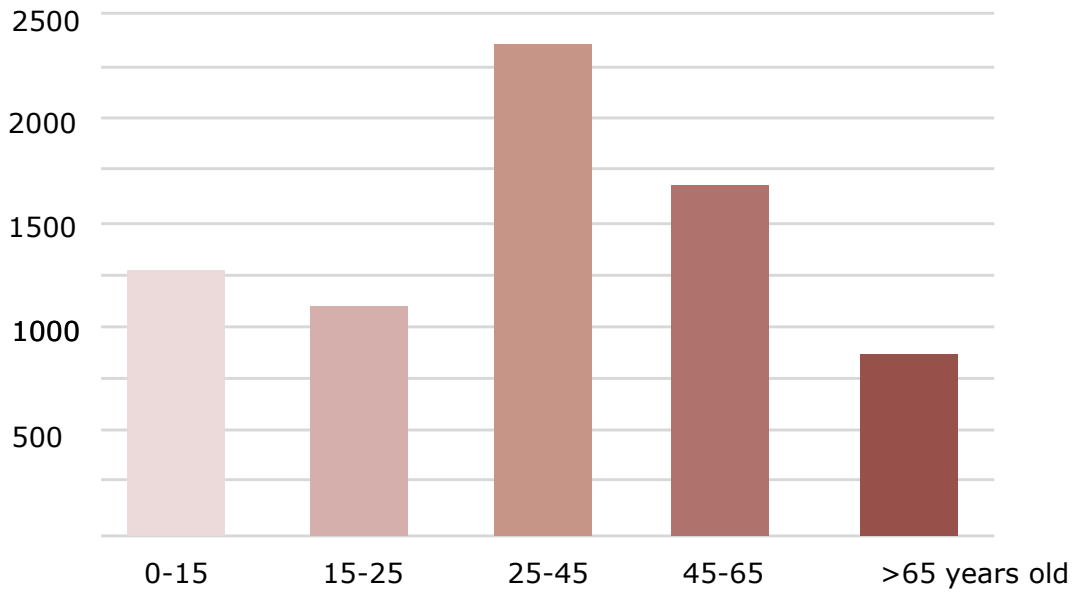
**Residents without a basic qualification
between 24 and 65 years old**



Average annual income



Residents by age



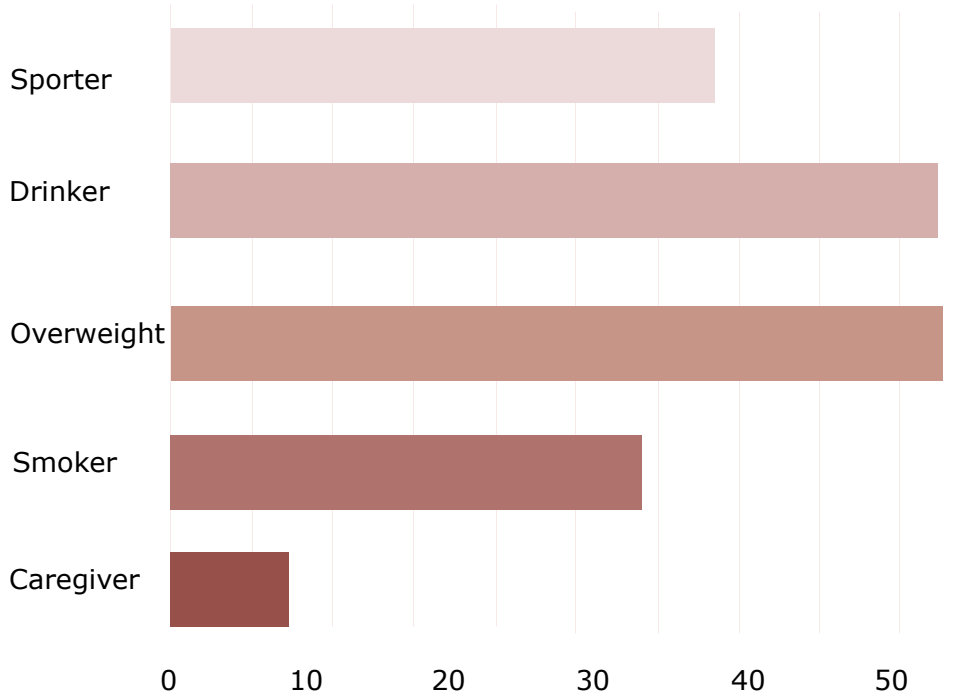
- Owner-occupied homes
- Private rental
- Social rental housing

Bospolder

Tussendijken

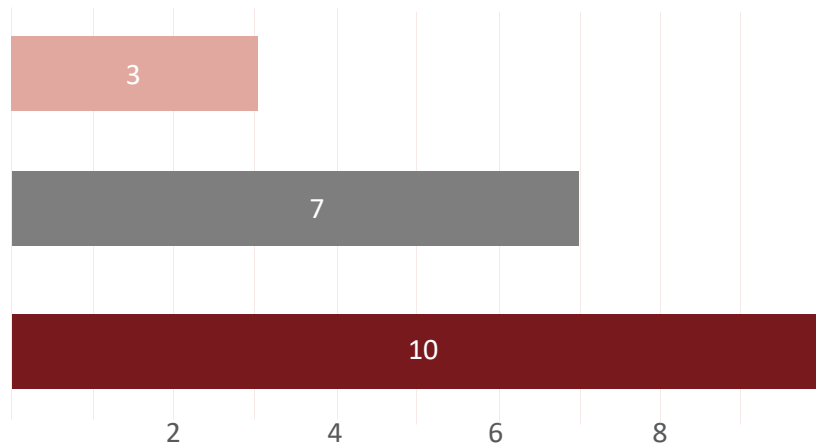
Rotterdam

Healthy & Behaviors



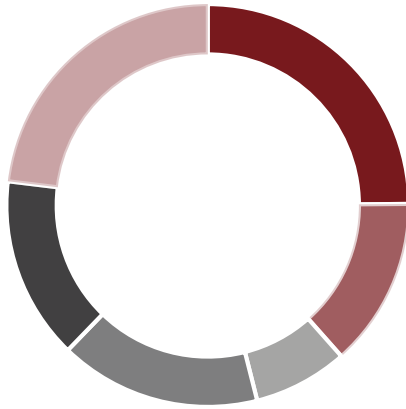
Crime

Number per 1000 inhabitants



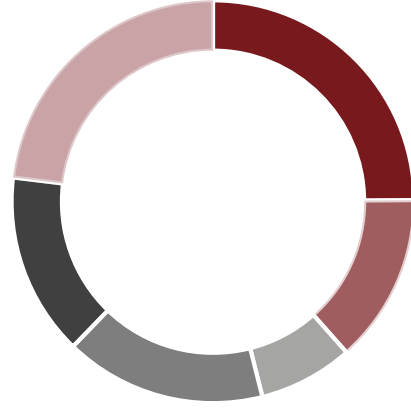
- Home theft
- Crime of destroying public property and endangering public order
- Number of violence and sexual offences

Rotterdam



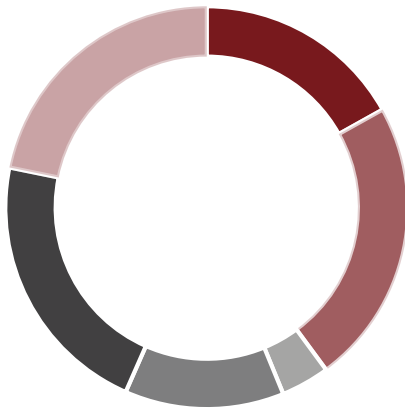
- Western
- Morocco
- Antilles
- Suriname
- Turkey
- Others

Rotterdam



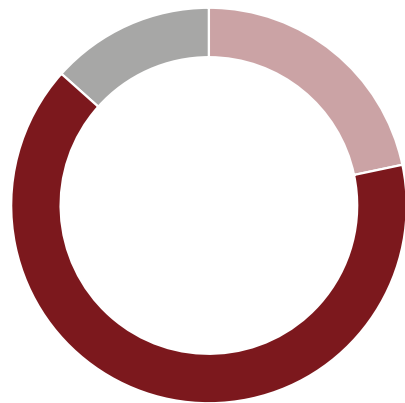
- Western
- Morocco
- Antilles
- Suriname
- Turkey
- Others

Tussendijken



- Western
- Morocco
- Antilles
- Suriname
- Turkey
- Others

Tussendijken



- Native
- Western Migration
- Non-western Migration

Society issues

Safy, Social, Physical index



Rotterdam



Bospolder



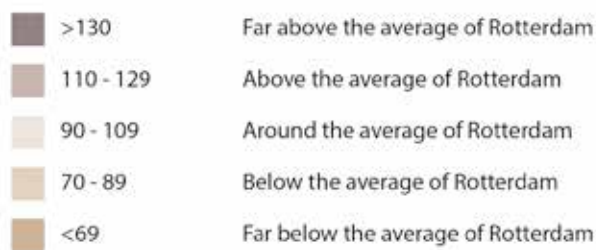
Tussendijken



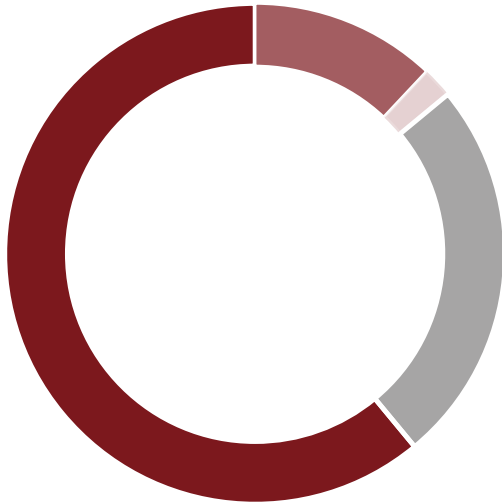
Bospolder



Tussendijken

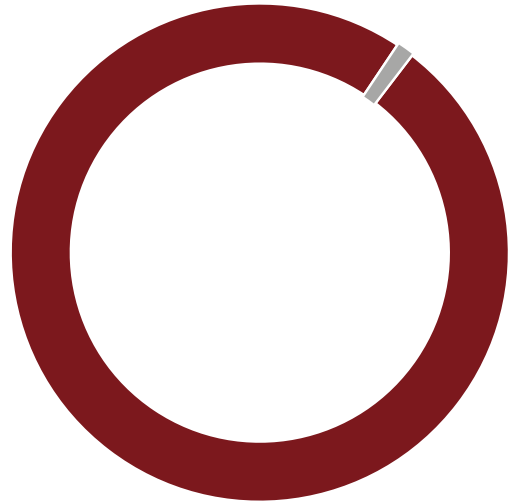


Housing property



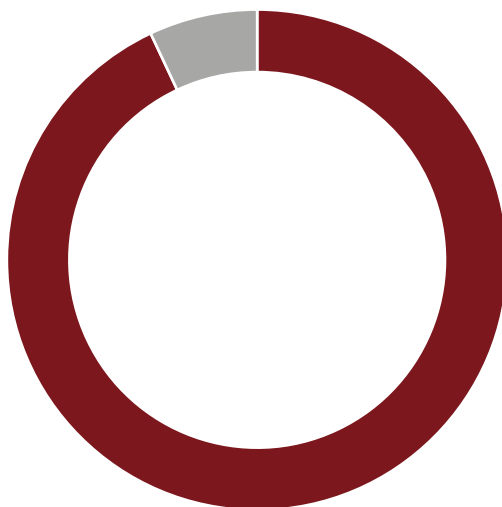
- sell
- unknown
- rent
- hourly rate room

Habitation



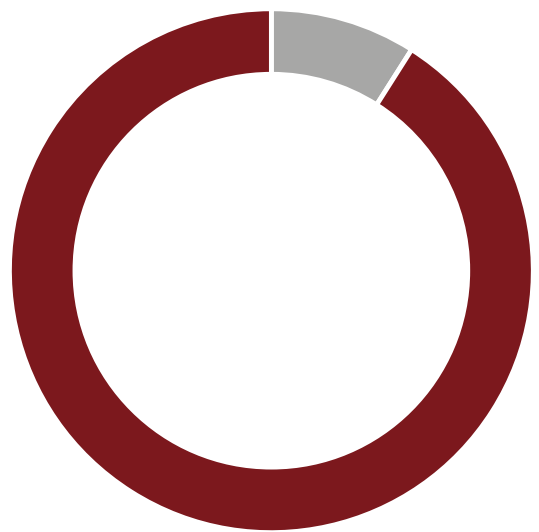
- multifamily
- single family

Type of houses



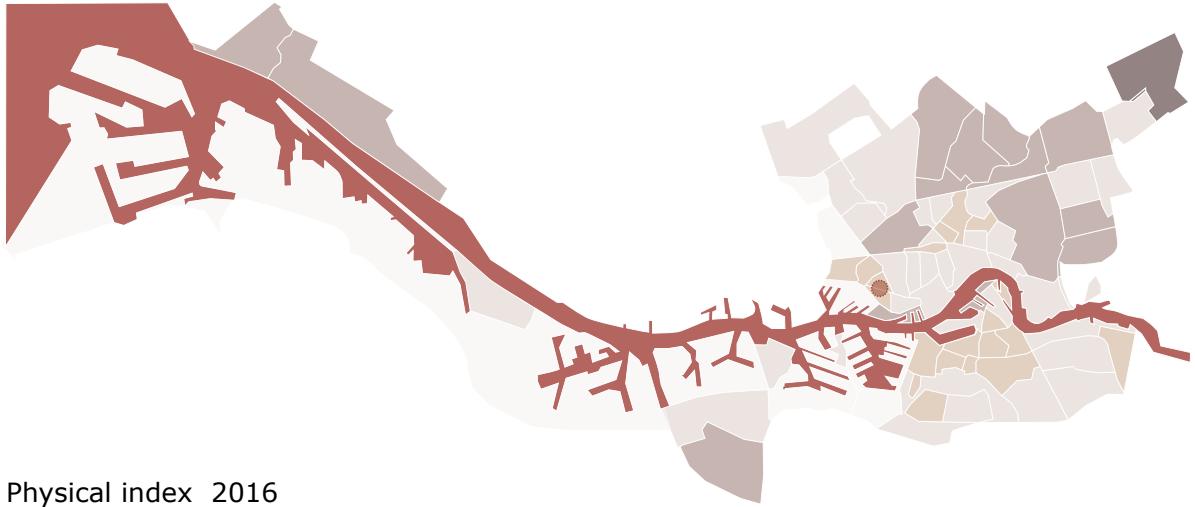
- habitation
- uninhabited

Construction year

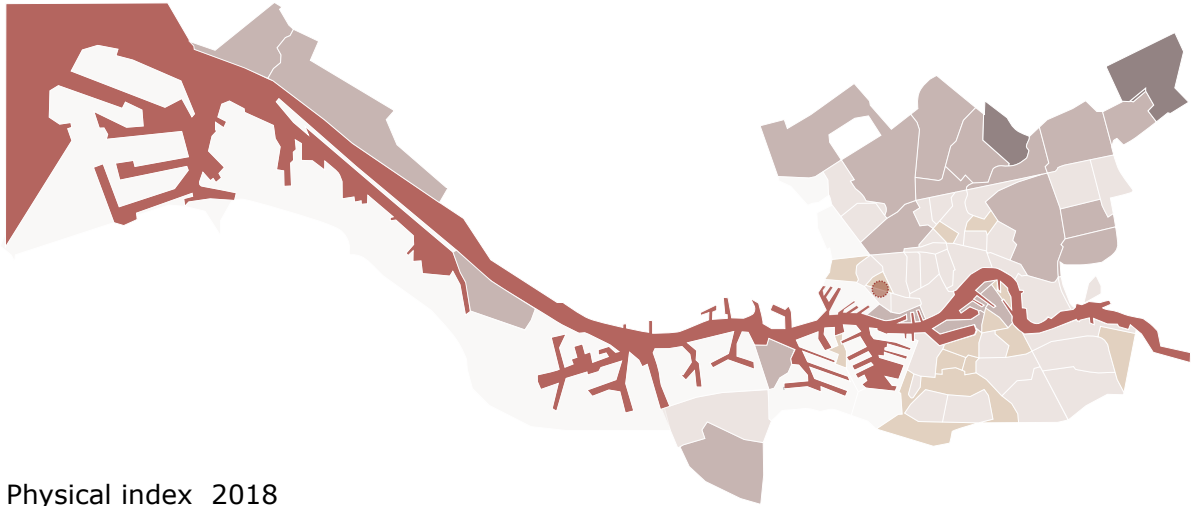


- after 2000
- before 2000

Physical Index









Physical index 2016



Physical index 2018



-  Site area
-  >130 Far above the average of Rotterdam
-  110 - 129 Above the average of Rotterdam
-  90 - 109 Around the average of Rotterdam
-  70 - 89 Below the average of Rotterdam
-  < 69 Far below the average of Rotterdam

Social index 2014









Social index 2016

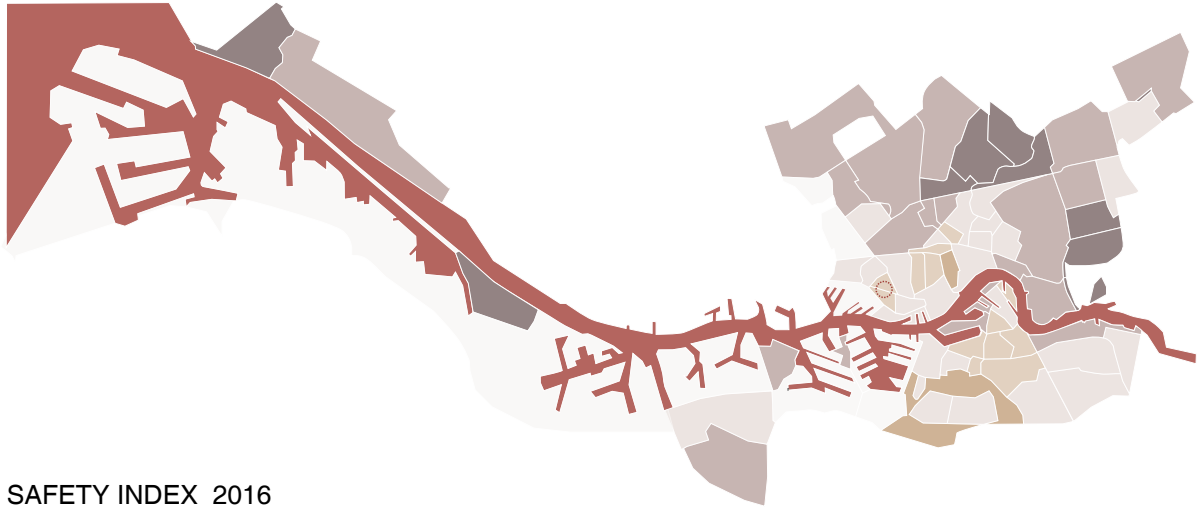


Social index 2018

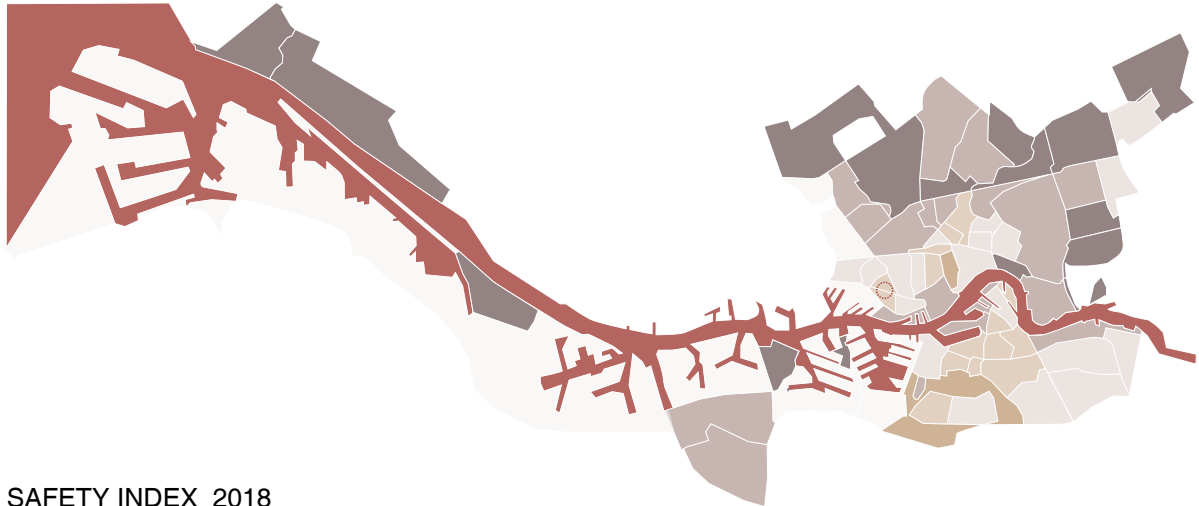


- | | |
|---|---|
|  | Site area |
|  | >130
Far above the average of Rotterdam |
|  | 110 - 129
Above the average of Rotterdam |
|  | 90 - 109
Around the average of Rotterdam |
|  | 70 - 89
Below the average of Rotterdam |
|  | <69
Far below the average of Rotterdam |

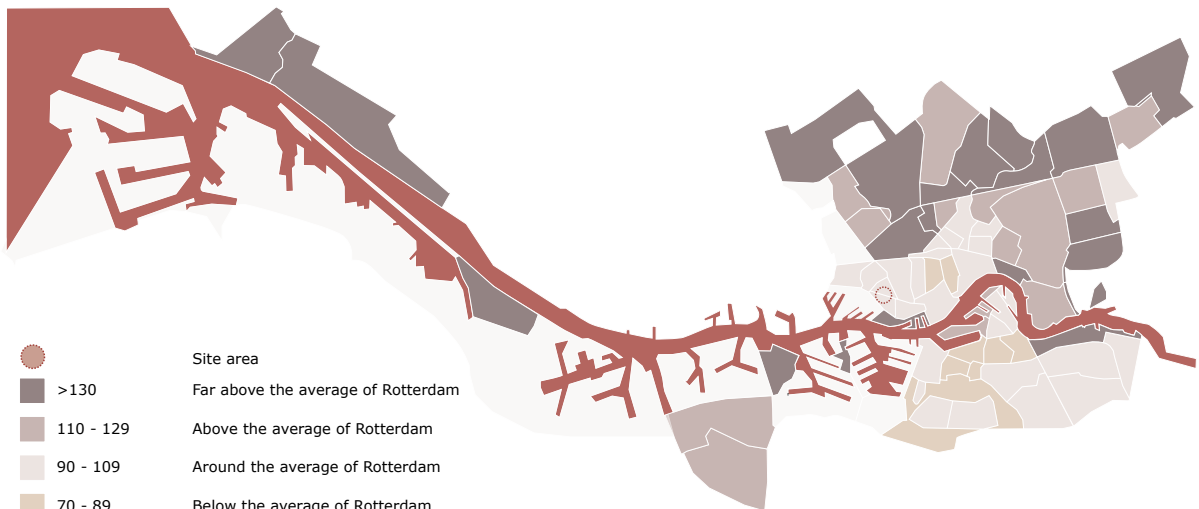
SAFETY INDEX 2014









SAFETY INDEX 2016

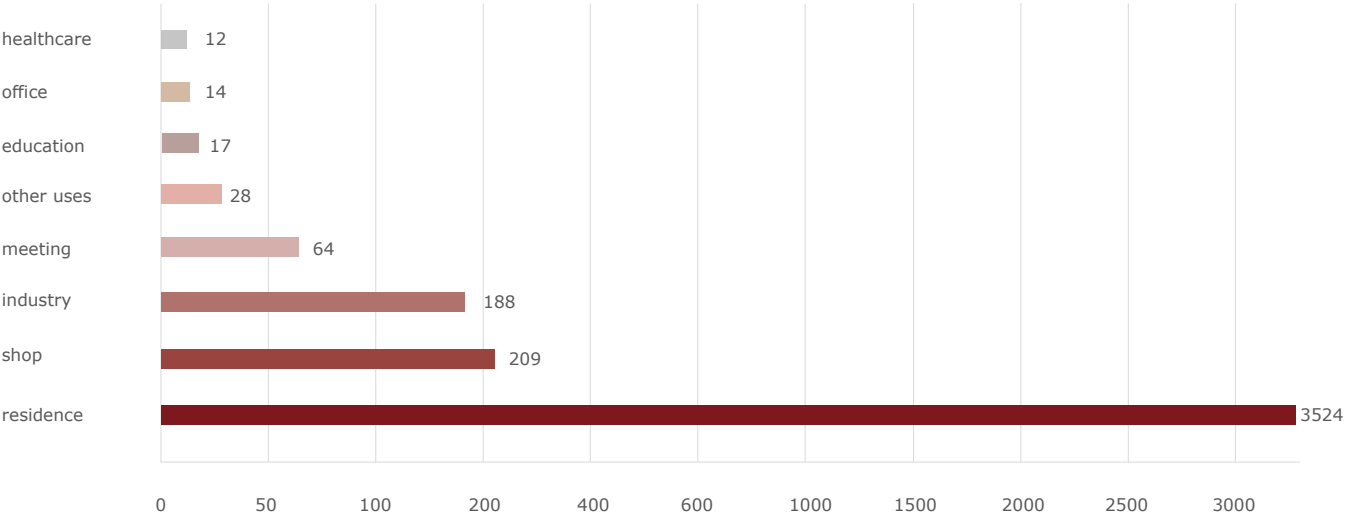


SAFETY INDEX 2018

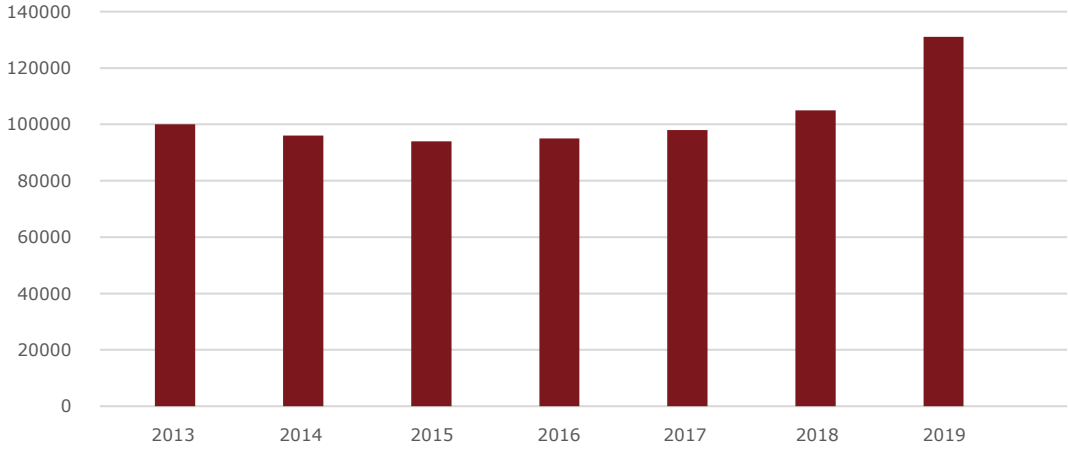


-  Site area
-  >130 Far above the average of Rotterdam
-  110 - 129 Above the average of Rotterdam
-  90 - 109 Around the average of Rotterdam
-  70 - 89 Below the average of Rotterdam
-  <69 Far below the average of Rotterdam

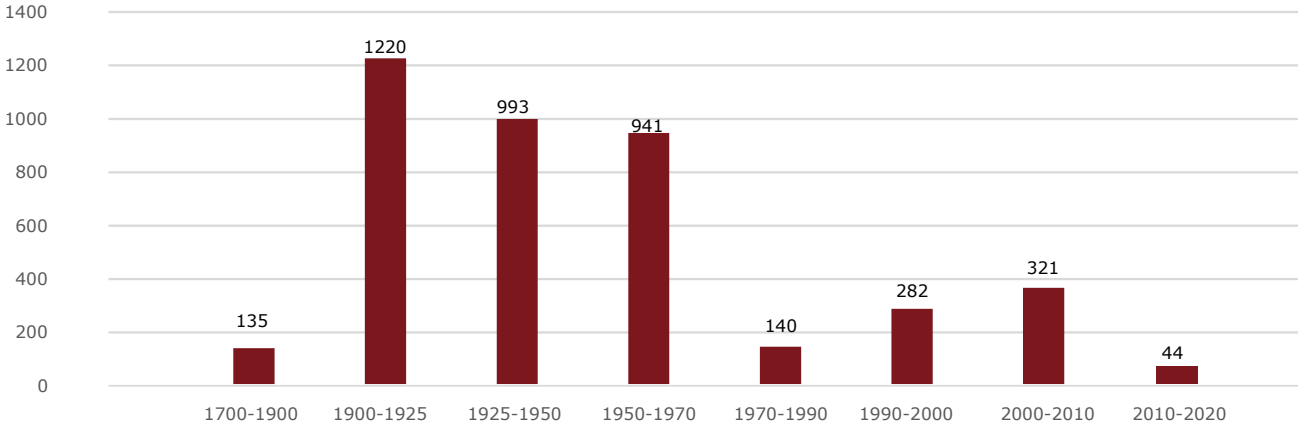
Purpose of use



Average WOZ home value per year

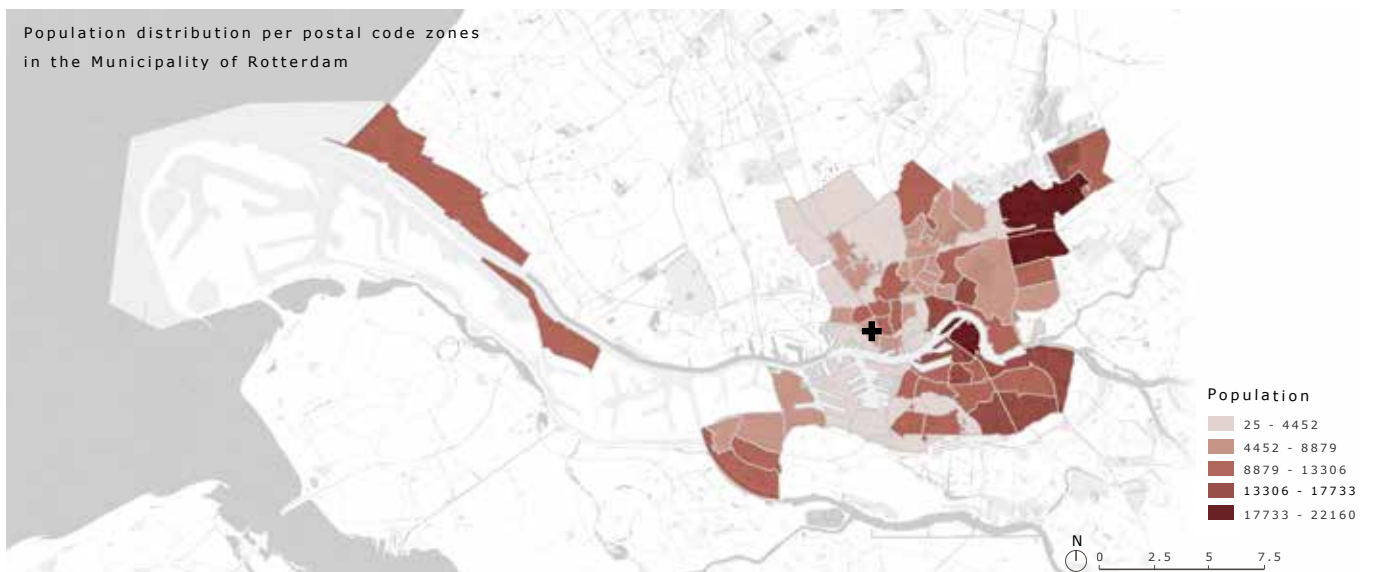
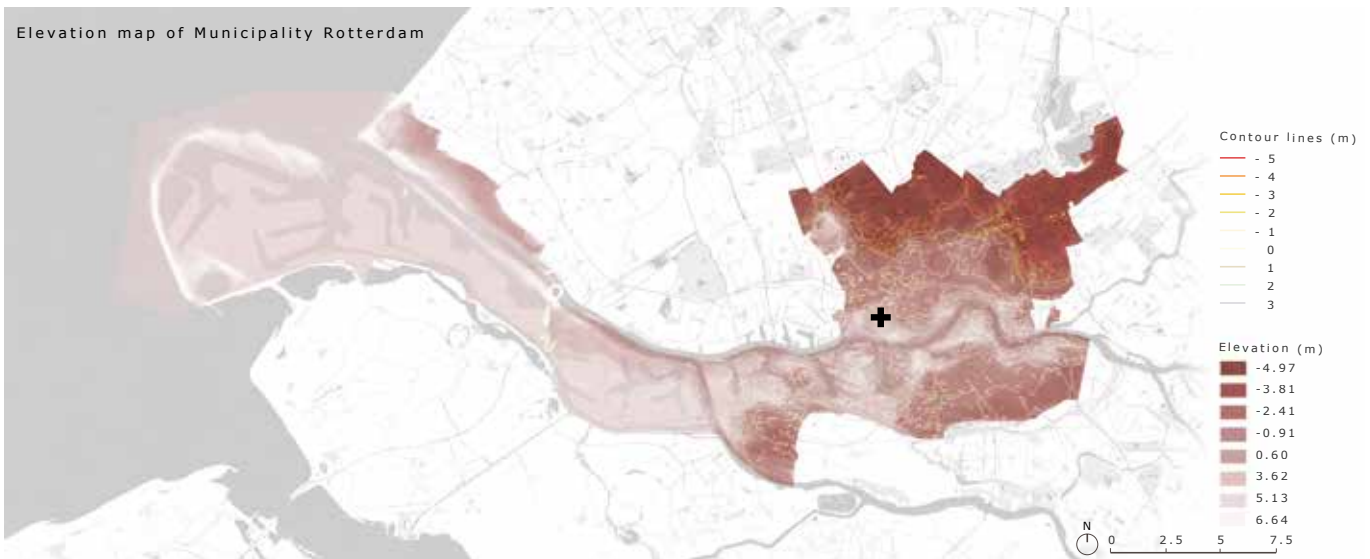


Building construction year

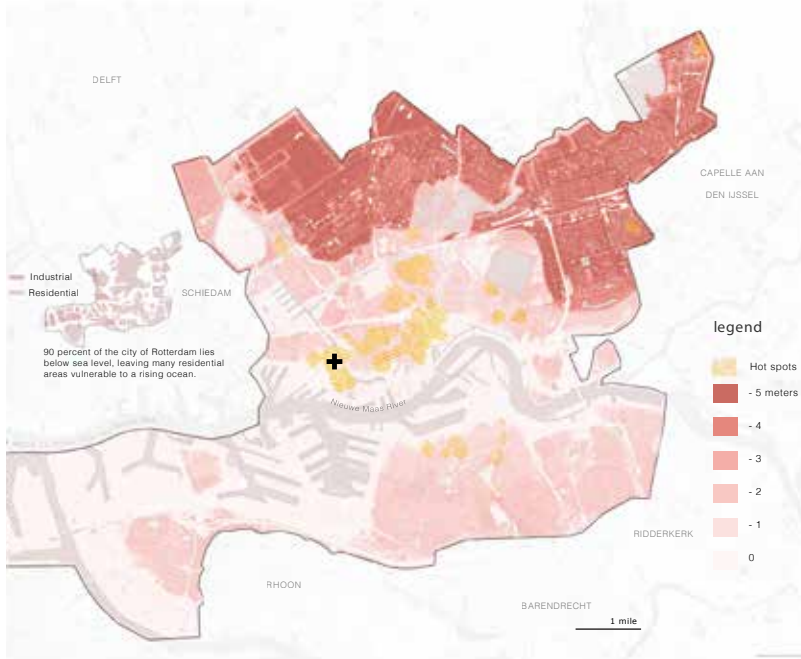


Flood issues

There is a lot stress on the urban drainage system in times of heavy rainfall, excess water can be discharged over a multitude of overflow points to prevent water from ending up on the streets in the city. Rotterdam has to adapt the water system to make it more robust. they increase water storage capabilities, separate wastewater from rainwater and enhance groundwater control. With increased water storage capabilities, the water system will be able to coop better with excess water from heavy rainfall events.



Urban pluvial flood risk areas Solutions



Area of Rotterdam below sea level



Eendragtspolder

Rowing teams practice at the Eendragtspolder, a site intended to be both a public amenity and a reservoir for floodwater.



Het Park

Under the Museumpark an underground storage facility has been built by Rotterdam City, to reduce flooding risk in the district during heavy rainfall



Maeslantkering

The Maeslantkering, an immense sea gate conceived decades ago to protect the port of Rotterdam.



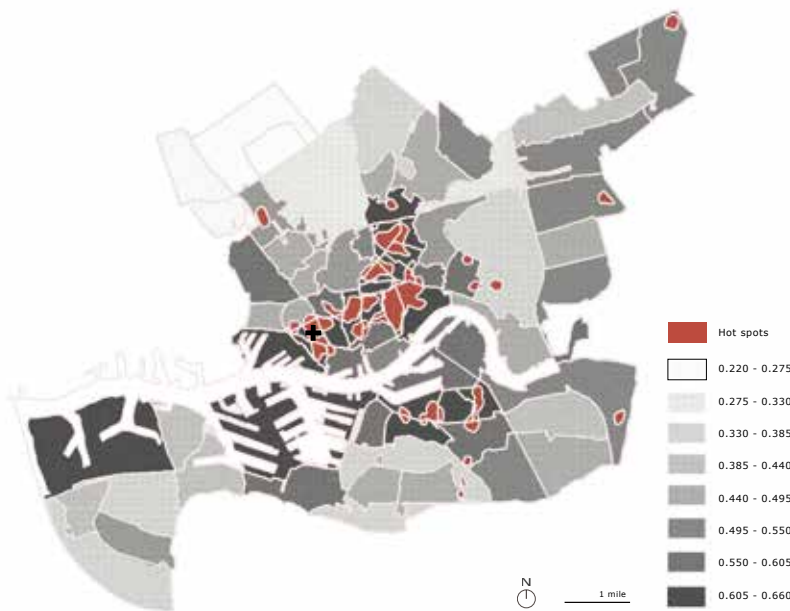
Kralingse Plas

The Kralingse Plas is a 100 ha lake adjacent to the green area.

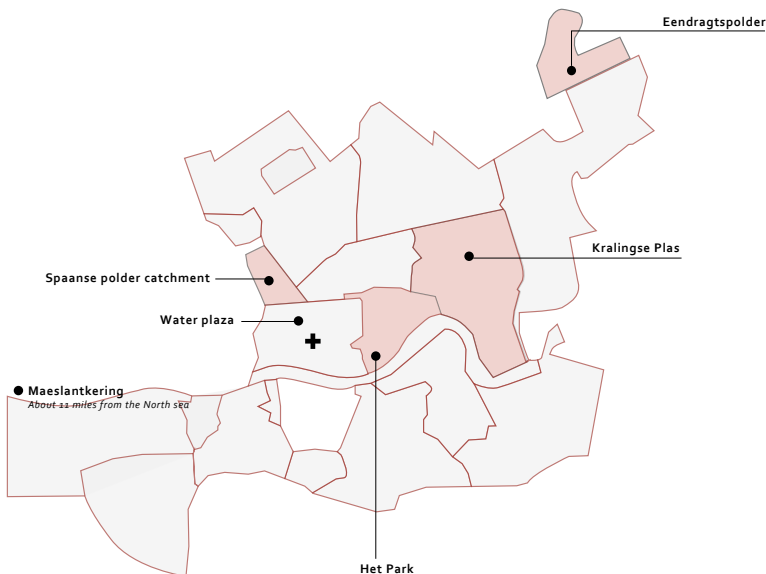


Water plaza

A water plaza in the Spangen neighborhood of Rotterdam was created to capture floodwater.



Map of imperviousness per postal code zone versus hot spot locations



Urban pluvial flood risk areas

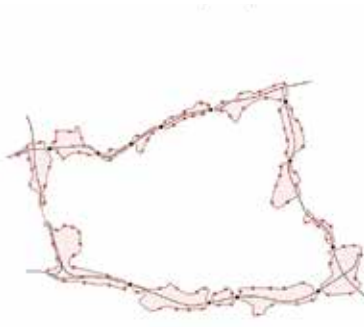
Green structure analysis

There is a 8 kilometer long green connection. it connects many neighborhood, gardens, urban natural spaces and parks. People can wader, do sports and rest here.

Along the old railway lines, canals and port areas of the city. it is one unique green ribbon park. Every part has its own character, from rough and adventurous to elegant and comfortable.



infrastructural landscape



Active Mobility Loops



Green Radials



Rotterdam necklace



BOTU green structure

In the Botu area, although there are many private courtyards in the residential blocks, public green spaces are only available in the central 1943 park.



Site green structure analysis

the BOTU government has a clear rule about the green structure, according to their documents, we need to preserve some of the big trees along the site boundary, and it is suggested to provide more green connections besides the streets



Landuse analysis

The Botu area is located in the west of Rotterdam. The main function of the area is residential land and there is a lot of educational land around the area. With the development of the large number of residential buildings, the corresponding commercial facilities have not been developed.

Mobility analysis



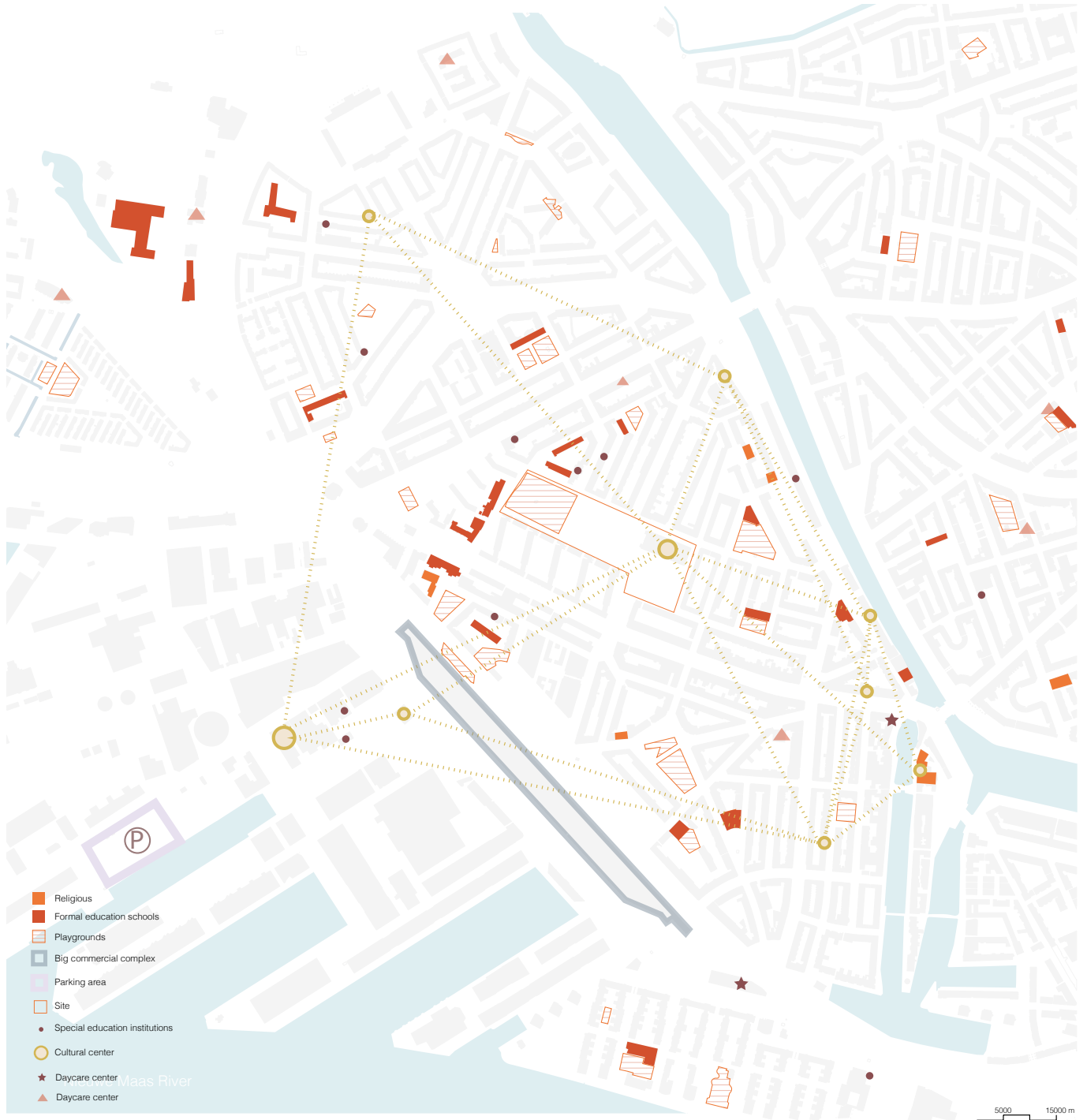
Rotterdam mobility system

We can easily find that the most important metro lines in the map above. The red, yellow and green metro lines are all together which pass through almost the whole central Rotterdam. on this line two metro station are also important accesses to our site.

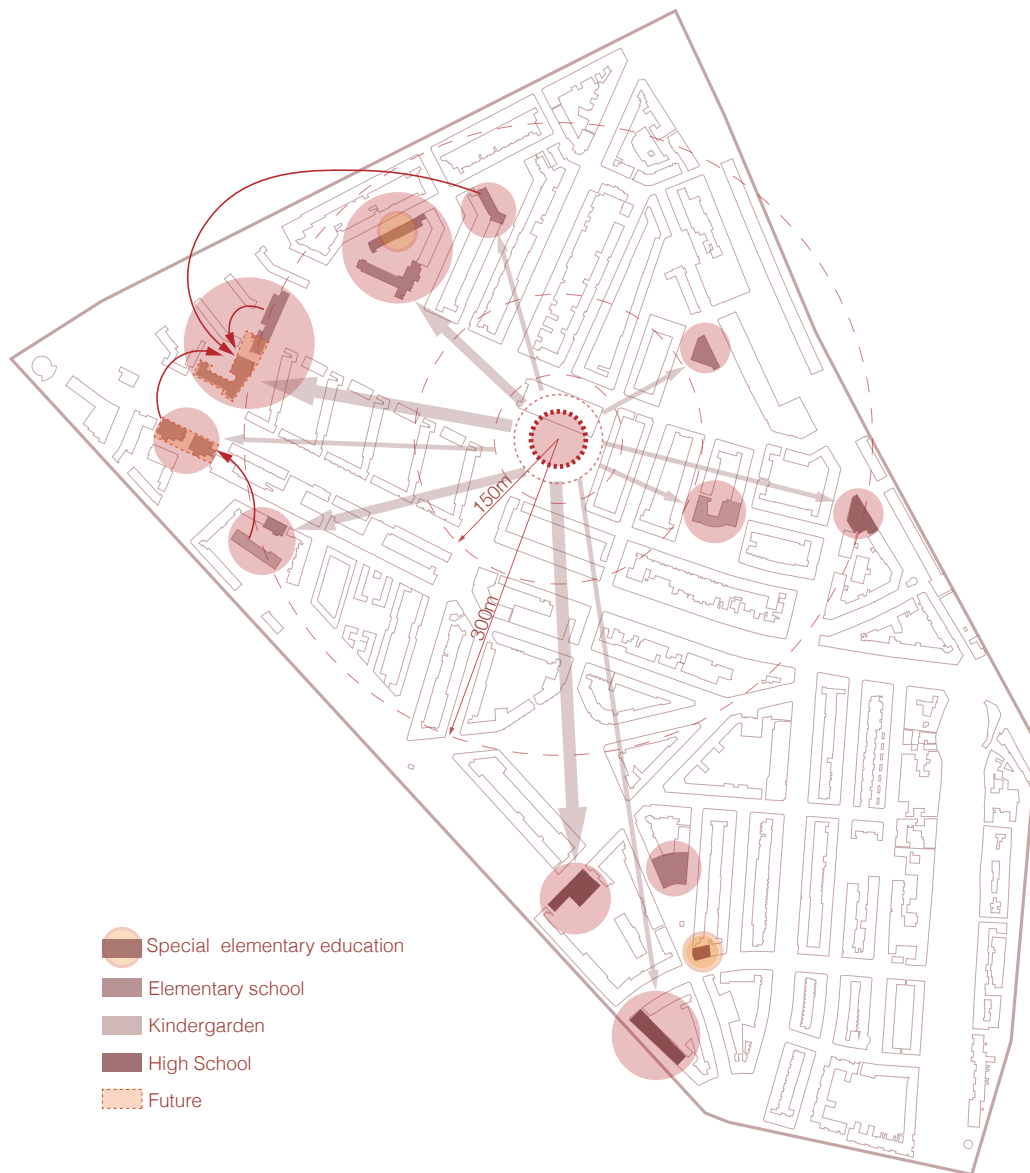


BOTU area mobility system

Public space analysis



BOTU public service analysis



Educational analysis



Commercial analysis



Sports area analysis



Road width analysis



Static snapshots: Native Dutch



Static snapshots: Non-Western immigrants



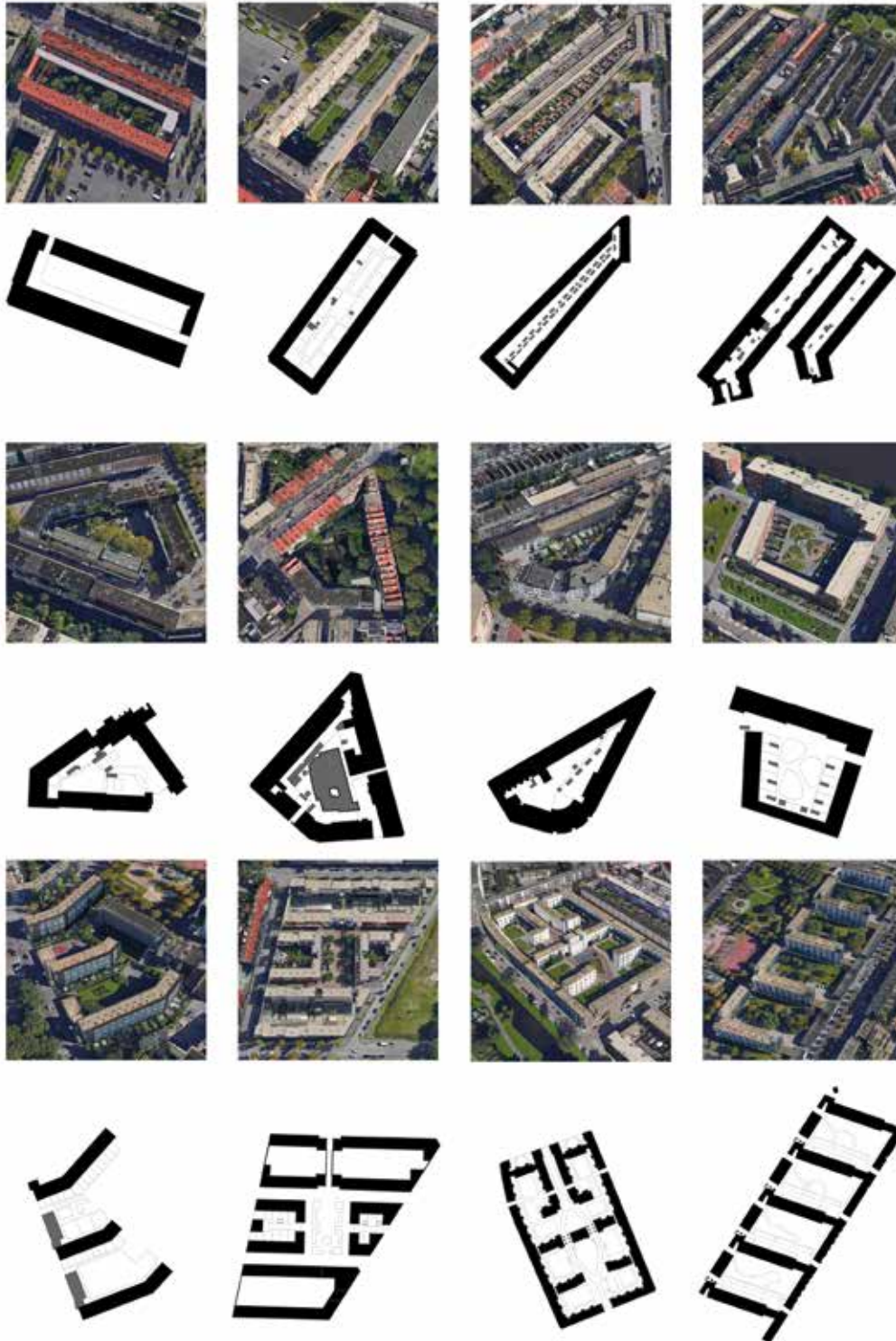
Building ages

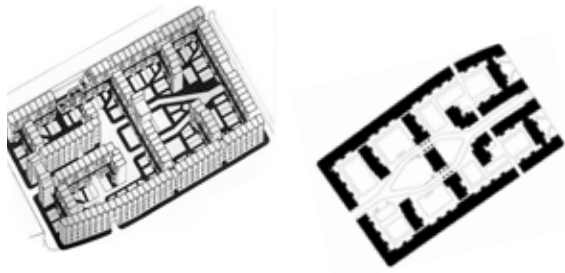


Building height

03

Building typology study





Project 1: Spangen Quarter Housing

Realisation : 1919

Architect: Michiel Brinkman



Entrance



Courtyards

Spangen Quarter is the first housing project where the concept of Streets on the sky is carried out. The access to housing is made through a one kilometre length and 2-3 meter width gallery. The gallery is located in the interior courtyard of the building, so it is considered as a private space and there is no visual connection with the neighbourhood. It is the first time in a built project where it appears a transition space between the public street and the flats.

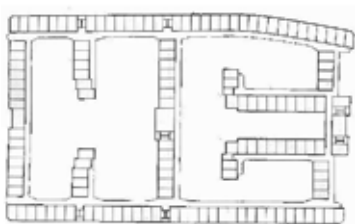
In 1919 Michiel Brinkman designed a complex of 273 dwellings in the Spangen district. Commissioned by the Municipal Housing Authority, it exploits the possibilities of the perimeter block to the full. One large block of 147 by 85 metres enfolds a courtyard containing a few smaller blocks and a central taller building comprising the central heating plant, baths and cycle shelter. A public street running through the large block forks at the facilities building. A new feature for those days was the use of an access gallery, a raised walkway along the block's inner edge. This permitted a high housing density without having to resort to complicated space-consuming stair towers. Almost all dwellings are entered from the inner courtyard. Units on the ground and first floors are accessed at ground level and have their own garden. Above these are two maisonettes reached from the access gallery.



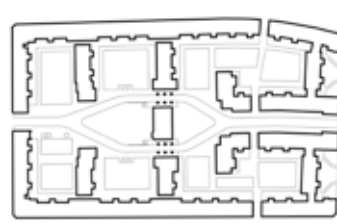
residential units plans

All units consist of a living room, kitchen, toilet and three bedrooms, plus central heating (a first for Dutch social housing) and a rubbish chute. The courtyard is entered through four striking gateways, one on each side. Ten staircases and two goods lifts for tradesmen's handcarts lead to the access gallery which, with its ample width of 2.2-3.3 metres, functions as a raised street, a children's play area and a balcony for neighbourly contact and door-to-door services. Plant boxes, tiled artwork and peep-holes for children enliven this concrete gallery, which also has balconies for drying clothes between its columns. There is a stark contrast between the taut, rhythmic street facades and the lively elevations facing onto the courtyard. Each dwelling has its own outdoor area. Initial criticism of the plan was crushed thanks to the intervention of Auguste Plate, director of the Municipal Housing Authority, and various socialist aldermen. This criticism was levelled especially at its 'un-Dutch' character, the emphasis on collectivity and its costly amenities. There were fears, too, that the combination of flat roofs and access galleries would lead to 'dangers of a moral nature'. This use of an access gallery in housing was to be of enormous influence on Dutch architecture. It has served as a continuing inspiration to new generations of architects, as evidenced by the Bergpolderflat, Hengelose Es in Hengelo, Buikslotermeer in Amsterdam and Bleyenhoek in Dordrecht.

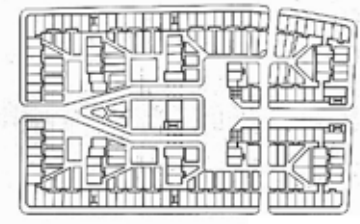
In 1984, the De Jonge architectural practice began work on renovating this internationally renowned housing complex in close collaboration with the Netherlands Department for Conservation. Pairs of maisonette dwellings were combined into one larger four- or five-room apartment so that families with children could live here once more. The access gallery was carefully restored and partly replaced, while the former baths became a crèche cum clubhouse. The inner courtyard is as traffic-free as ever. In 2012 the complex was completely restored.



Interior units of building



Master plan



Courtyards landscape



Project 2: Housing Tusschendijken

Construction year: 1920-1923

Architect: J.J.P. Oud, Joh. van Bokkum(extention)

In between dikes, there is a remnant of originally eight residential blocks designed by jypoud in the service of the municipality on the corner of duylstraat / rosenmanzstraat. for the construction of a total of 1005 municipal dwellings: "The municipality yesterday satisfied its hectares of hunger. The decisions to expropriate and purchase of approximately.

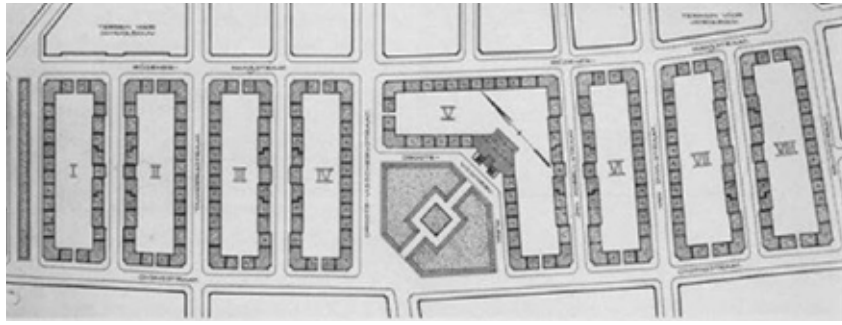
From 1920, the design of architect Oud was built. Block IX from Spangen was the prototype for the project. Oud used a standard type (the "normal type") , left the facades flat and accentuated the corners. The essence of his design was that the resident had the idea of living in a large city, but at the same time experienced the safety of the closed building block. The individual houses are subordinate to the street scene. Architecture critic J.P.Mieras wrote in 1923: Oud's street development is based on perspective. A building block is a unit of which the parts (the houses) do not have to speak. The block must speak, and the street is the speaking concatenation of the blocks. The communal inner areas were special, for which Oud designed sandboxes and sheds.



Street view



Courtyards



Master plan top view

Half a block is all that survives today of the original eight housing blocks built here by Oud as City Architect. The rest of the block was added shortly after the war. Block IX of the Spangen housing (D019) served as a prototype for the project, though this time the inner courtyard gets a more lavish and successful treatment. The various blocks clearly show Oud advancing towards an anonymous, taut streetscape in which the individual dwelling is subordinated to the unity of the streetscape, a point driven home by the increasingly sculptural treatment of the corners.



Community blocks



Project 3: Housing Mathenesserweg

Construction year: 1950-1953

Architect: Leo de Jonge
Jos de Jonge

When the Allies undertook a bombing raid over Rotterdam on March 31, 1943, they mistakenly hit the area at the end of Schiedamseweg instead of their intended target, the German Kriegsmarine complex at Vierhaven. More than 2600 houses were destroyed. This reconstruction project (the 'forgotten bombardment') consists of housing with shops on Schiedamseweg and five east-west oriented eight-storey blocks of gallery-access flats with elegant concrete entrance zones. On Mathenesserweg there is a remarkable housing project by Jos and Leo de Jonge, three angled six-storey blocks of maisonettes in a half-open layout with shared green spaces. The uppermost entry level sits just below the lift limit of 11 metres above the street plane. An alternation of balconies and access galleries makes for a lively exterior.





Project 4 : Housing BOTUGAT

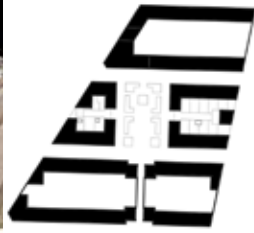
Construction year : 1984-1987

Architect: Francine Houben
Henk Döll
Erick van Egeraat

The acronym 'Botugat' stands for building in gaps left in the Bospolder-Tussendijken area. Seven such gaps scattered across this urban renewal district have been filled with a standardized dwelling type modified to suit each site. The blocks of maisonettes slip into the existing lot division partly by having internal galleries and balconies.

With its brick basement rendered in pastel hues, this is the prototype of Mecanoo's well-groomed neo-modernist architecture and an object lesson in successful urban renewal: decent, affordable dwellings of a high architectural quality.





Project 5: "mediterranean" housing block

Realisation: 2008

Architect: Geurst
Schulze Korteknie Stuhlmacher

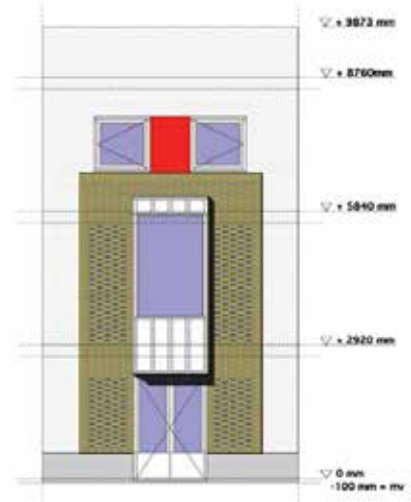
Le Medi is a colourful enclave attracting a variety of different inhabitants, young families in particular. Its inclusive character is exceptional for its location, as the neighbourhood is dominated by immigrants. The project therefore contributes to the social and cultural development of the area.

Within the ambitious revitalisation of Rotterdam Bospolder, a building block inspired by the architecture from the countries around the Mediterranean Sea was initiated. Years of discussions and various preliminary schemes have resulted in a dense, colourful building block with several carefully defined semi-public spaces, and simple back-to-back dwellings with a covered parking garage on the ground floor and a formal square in the centre. The project hopes to offer a suitable place for people of various cultural backgrounds to live in. For that reason the scheme consists of a number of basic houses that sell for a small price and can be extended in the future.

The plan of the house is inspired by some essential characteristics of Mediterranean domestic architecture: symmetry of the plan, direct relationship between inside and outside at ground level, equally sized rooms, additional window elements and light filtered by perforated screens in the façade.

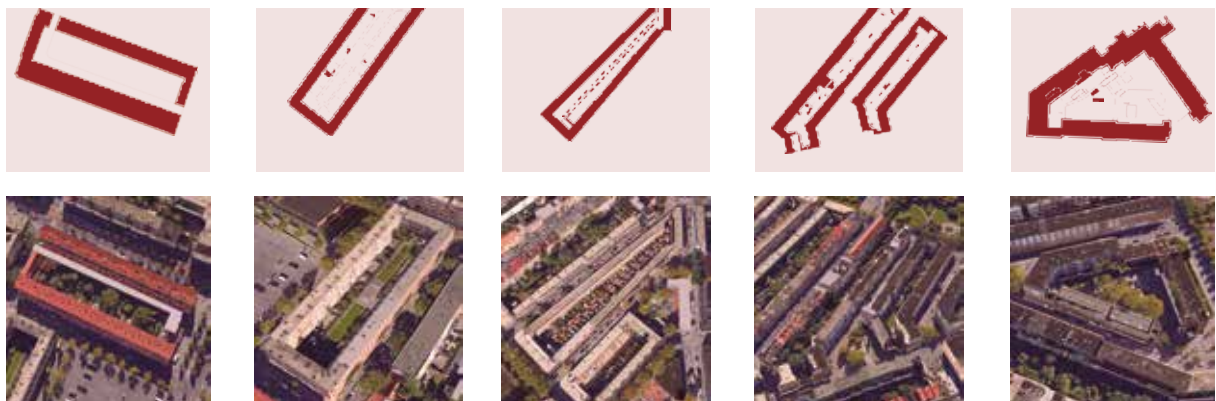
The design of the façade is a response to the colourful elevations of the dwelling designed by Geurst&Schulze and consists of a simple plastered surface framing a symmetrical piece of filigree masonry and a bay window.

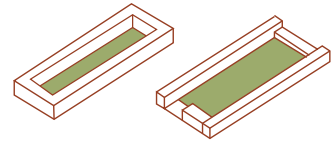
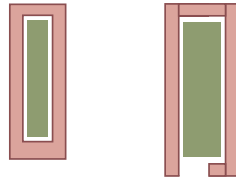
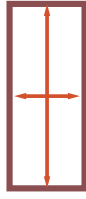
Within the very narrow margins of the project, we attempted to rethink stereotypical solutions for conventional Dutch standard bay-width of 5.4 m and develop a floorplan without the typical, small, Dutch entrance hall or the conventional division of space into a wide bay and a narrow bay. Therefore, a central feature of the house is the spacious entrance accessed directly from the exterior and spanning the entire width of the house. It can be used as a reception room, a workspace, a kitchen, an office or a living room.



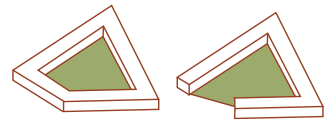
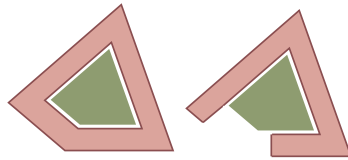
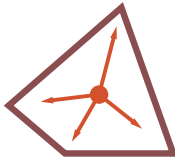


Building type analysis

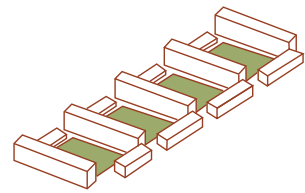
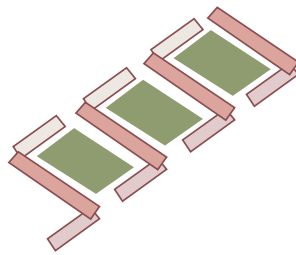
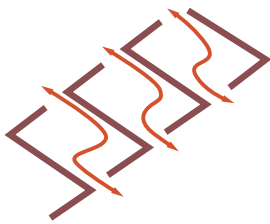




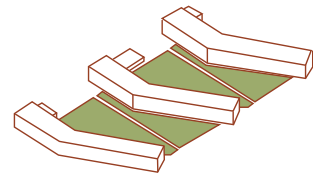
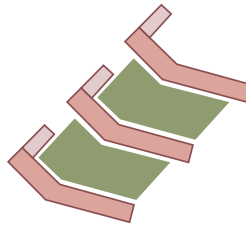
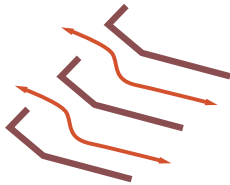
Long rectangular courtyard



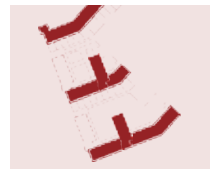
Center surround courtyard



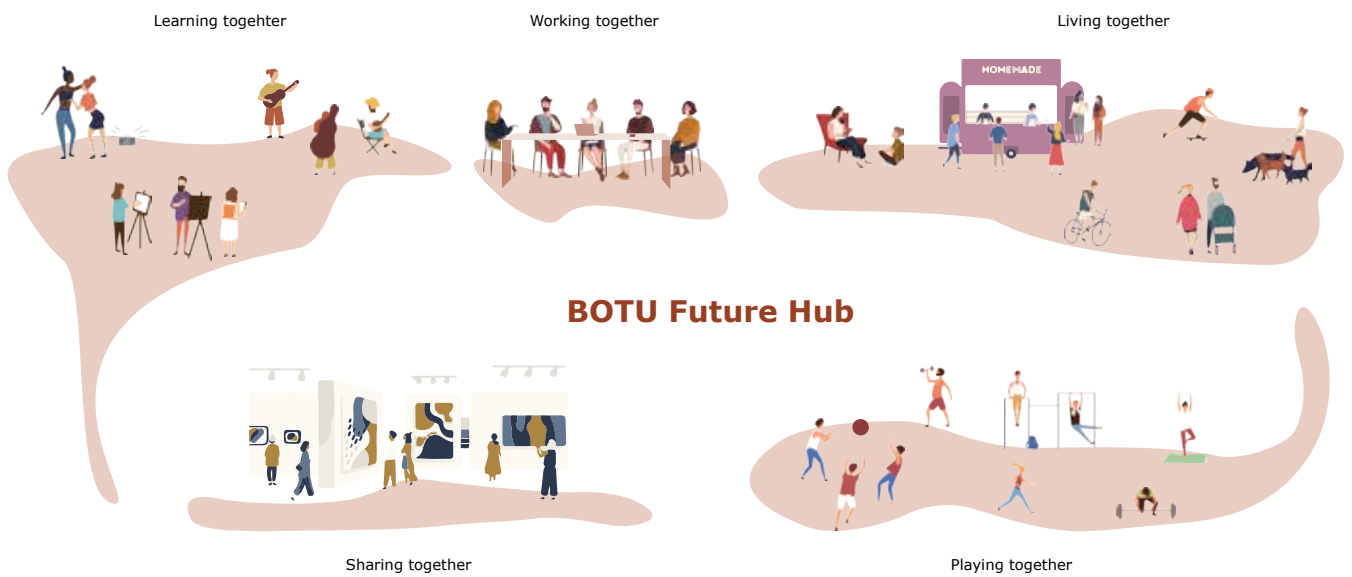
Weak connection courtyard



Semi-open courtyard

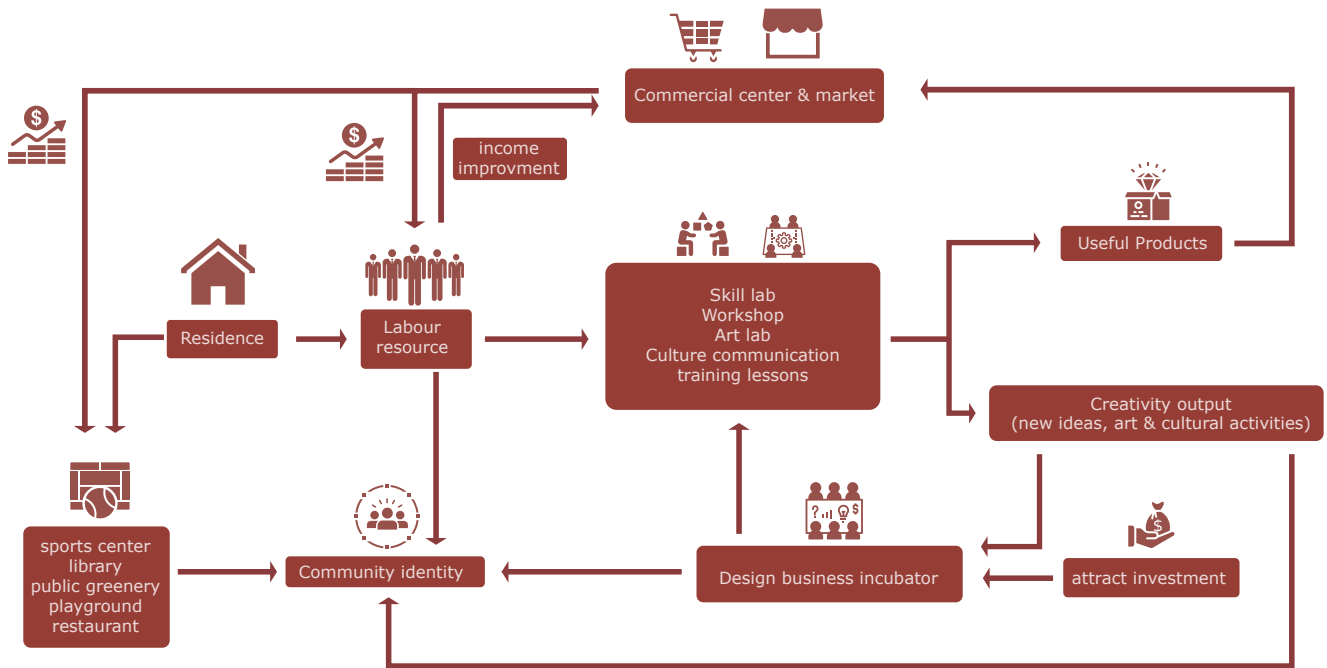


04 Project Concept



To lift the socioeconomic status of vulnerable neighbourhood BoTu, we focus on improving the perspective of vulnerable residents in the area. To this end, it aims to remove barriers so that everyone can participate more easily in social and societal processes, with equal opportunities in education, work, culture and sports. We came up with the idea of community Symbiosis. A place not only provide the multifunction, but also give local people a sense of belonging while the visitors a sense of welcoming.

The multifunctional building block in the heart of this multicultural, vulnerable neighbourhood, incorporating the local market, create the new form of the future life in BOTU—a place that people can play together, work together, learn together, make together, live together.



Community Symbiosis

We studied a lot of international communities, and then designed the strategy for our area. In order to solve the unemployment and low income problems, creating a good and healthy community atmosphere. The local people is good labor resource, we could encourage they to go to work and produce goods, such as creative cultural products. these will bring lots of profits and spirits improvements.

Transforming natural meeting place into such a multifunctional 'hub' ensures that these new interaction milieus are deeply rooted in the daily life of residents. a multifunctional hub that houses both residential and commercial spaces, creating a central hub that inspires innovation and learning while boosting the much needed socio-economic aspect of a vulnerable location, set up a business incubator where young people can grow their talents and realize their creativity.

Site current situation

The City of Rotterdam seeks opportunities in the combination of accommodating its growth and creating a more inclusive and healthy city. To lift the socioeconomic status of vulnerable neighbourhoods, like Bospolder and Tussendijken, it focuses on improving the perspective of vulnerable residents in the area. To this end, it aims to remove barriers so that everyone can participate more easily in social and societal processes, with equal opportunities in education, work, culture and sports. Upgrading and diversifying the housing stock, and improving educational infrastructures are important basic strategies.

In addition, strategic urban interventions – new developments on a relatively small scale and a more attractive public space – are used to embed mixed programmes and facilities in the heart of these neighbourhoods, empowering residents of all ages on multiple levels and building a just and equitable city.

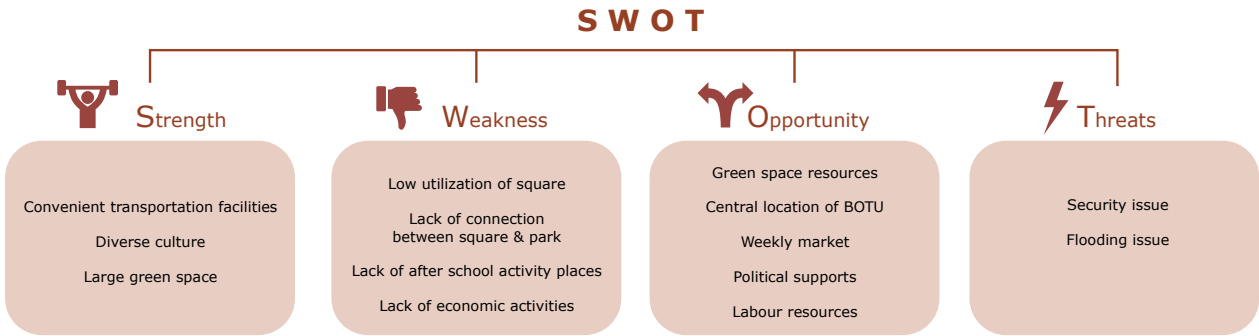


Located in the heart of BoTu. The site is bordered on three sides by archetypal serially produced housing blocks (partly after the Second World War) and on one side by Park 1943. Twice a week the square is the setting of a busy market. On the other days of the week, it is a large underused open space. Pier 80, a multifunctional community centre, is located on one end of the square. It includes a library, sport facilities, and (co-)work and meeting spaces.

The current programme of Pier 80 already attracts many residents, but should be more progressive. It can be a place that connects population groups and gives the neighbourhood a socioeconomic boost with a suitable programme. Especially youths who grow up in BoTu, often in poverty, are confronted with disadvantages in various fields. A renewed multifunctional neighbourhood centre could be an important and safe starting point for them.



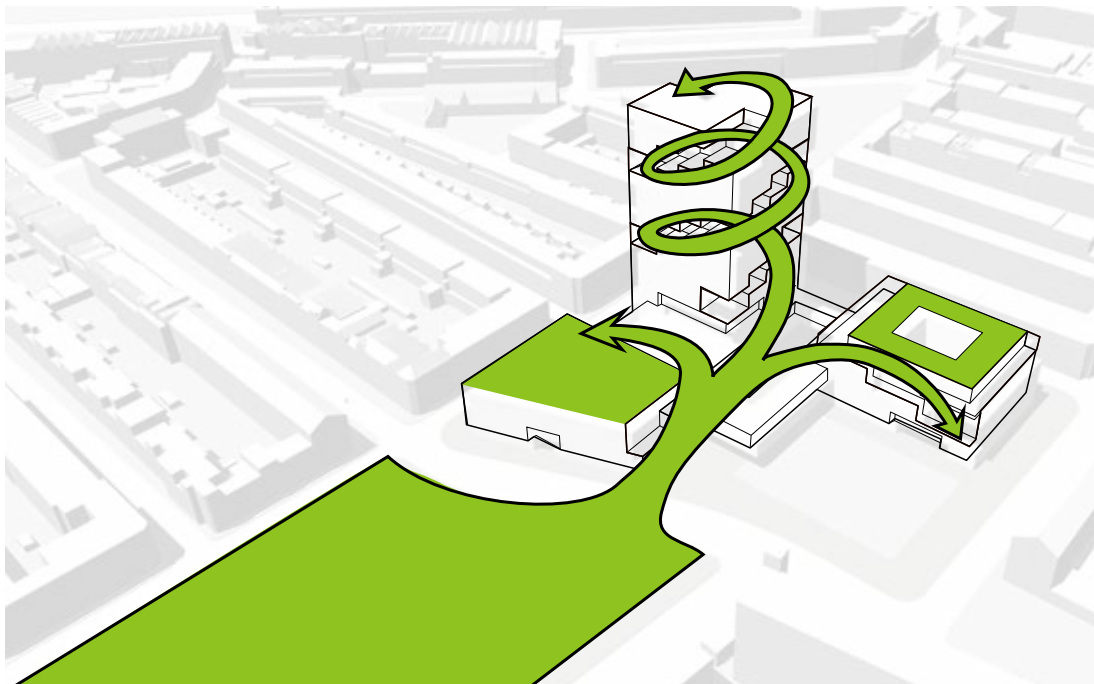
Urban design approach



Site accessibility analysis

Sky park concept

The heart of the neighborhood was mistakenly bombed by the Allies on March 31, 1943. The bombardment created an empty space in the district, which after World War II was converted into Park 1943. It is the gathering and leisure center of Botu area. We came up with the idea that connect the park 1943 with our project. Making the green space "grow" on our buildings with linear greenery system. For this concept of vertical green design, we named it "sky park".



Greenery continuity

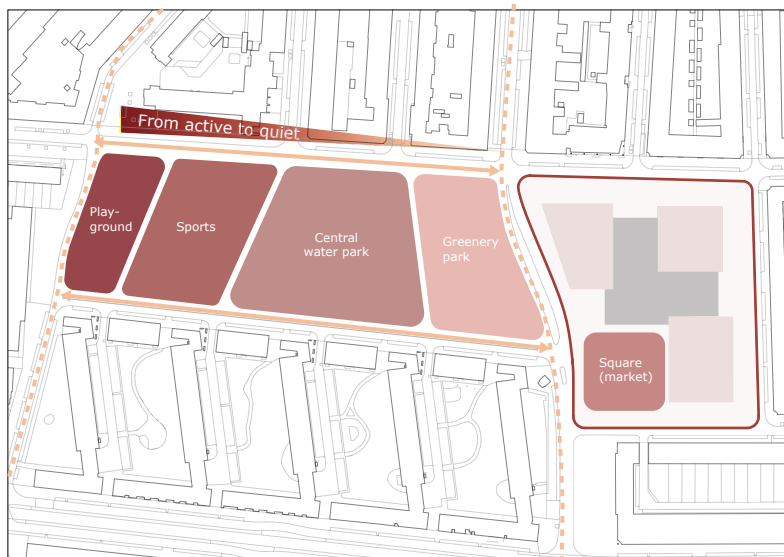
Master plan design processing



1. Adding the most convenient roads according to the urban context.



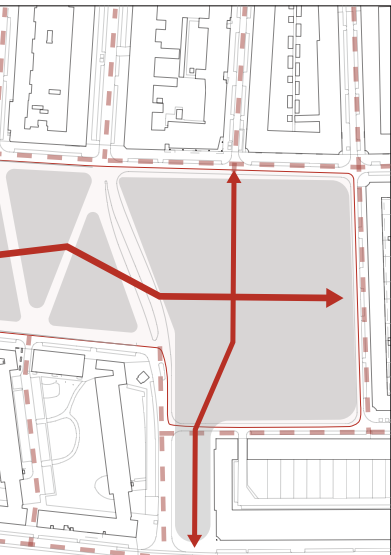
2. Adding main access that passes through the plot.



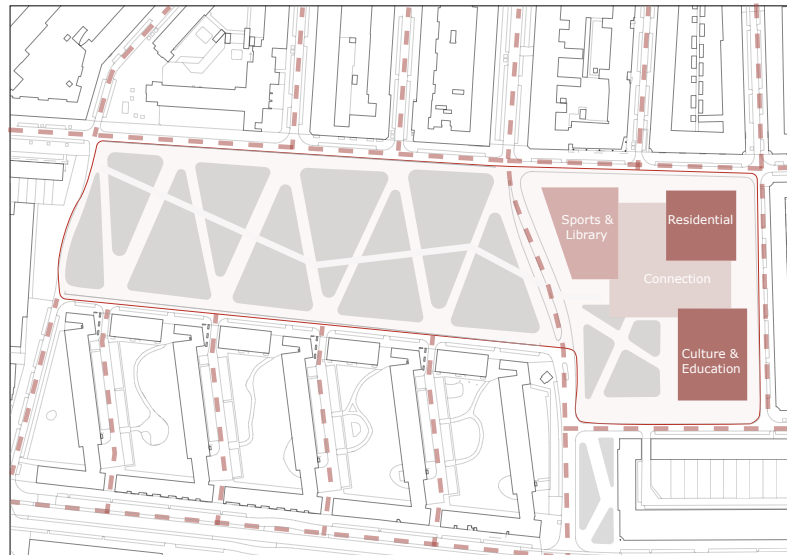
4. Putting different functions according to the surrounding needs.



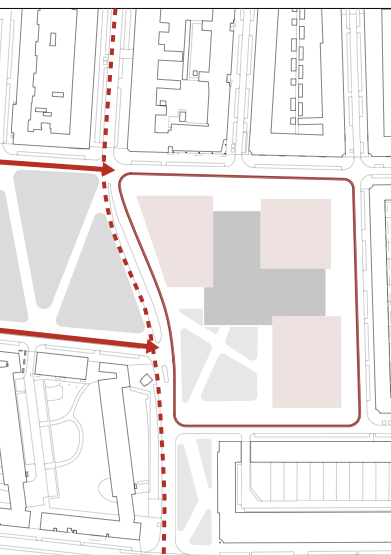
5. Adding bike lane on two sides of the main access road.



through the whole site.



3. Giving functions to building according to the needs.

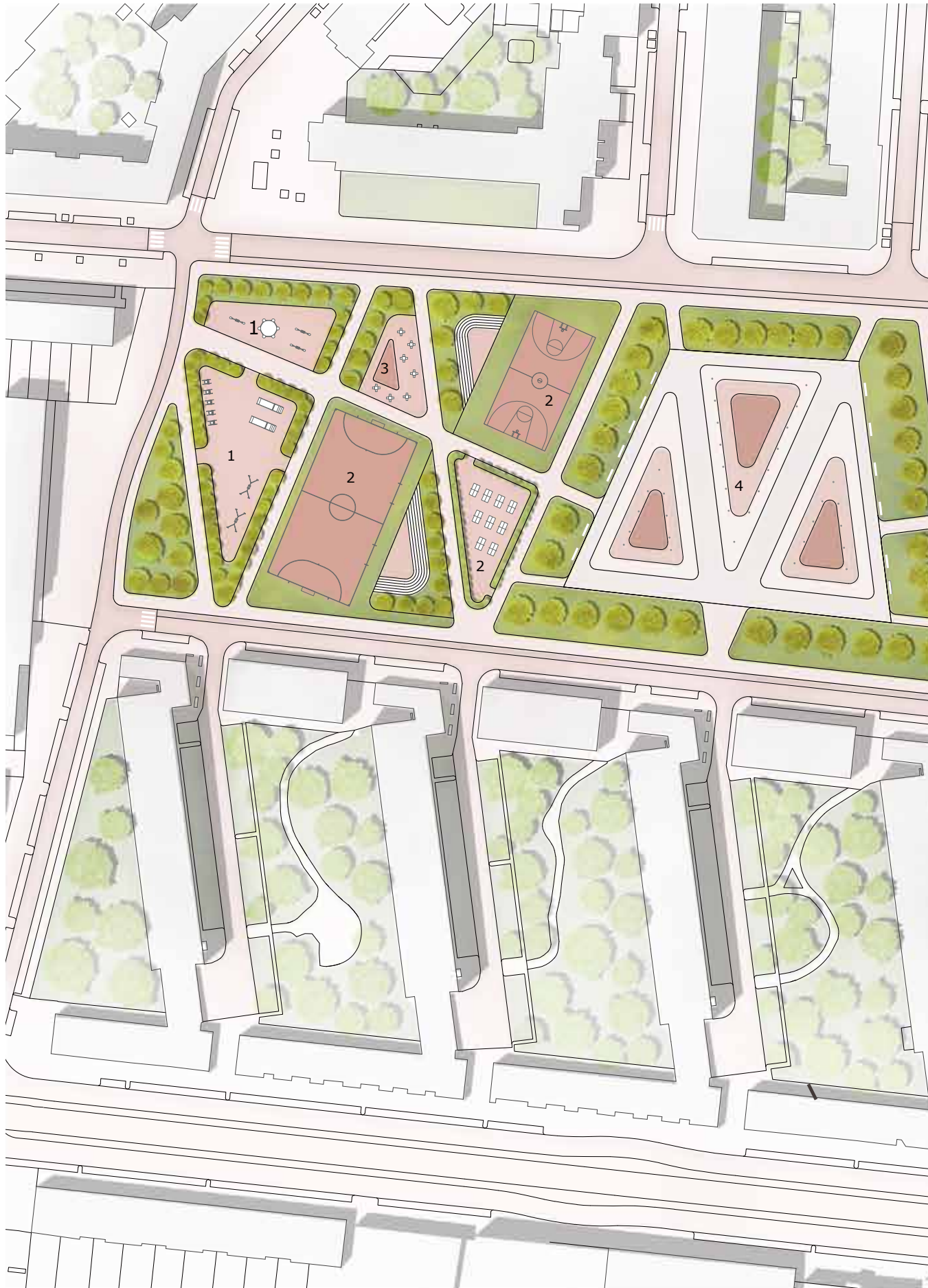


of park to improve the accessibility.



● Trees need to be preserved ● New Trees added ● Trees need to be strengthened

6. Organizing the green structure according to government planning.



Children's playground
2 Roof garden

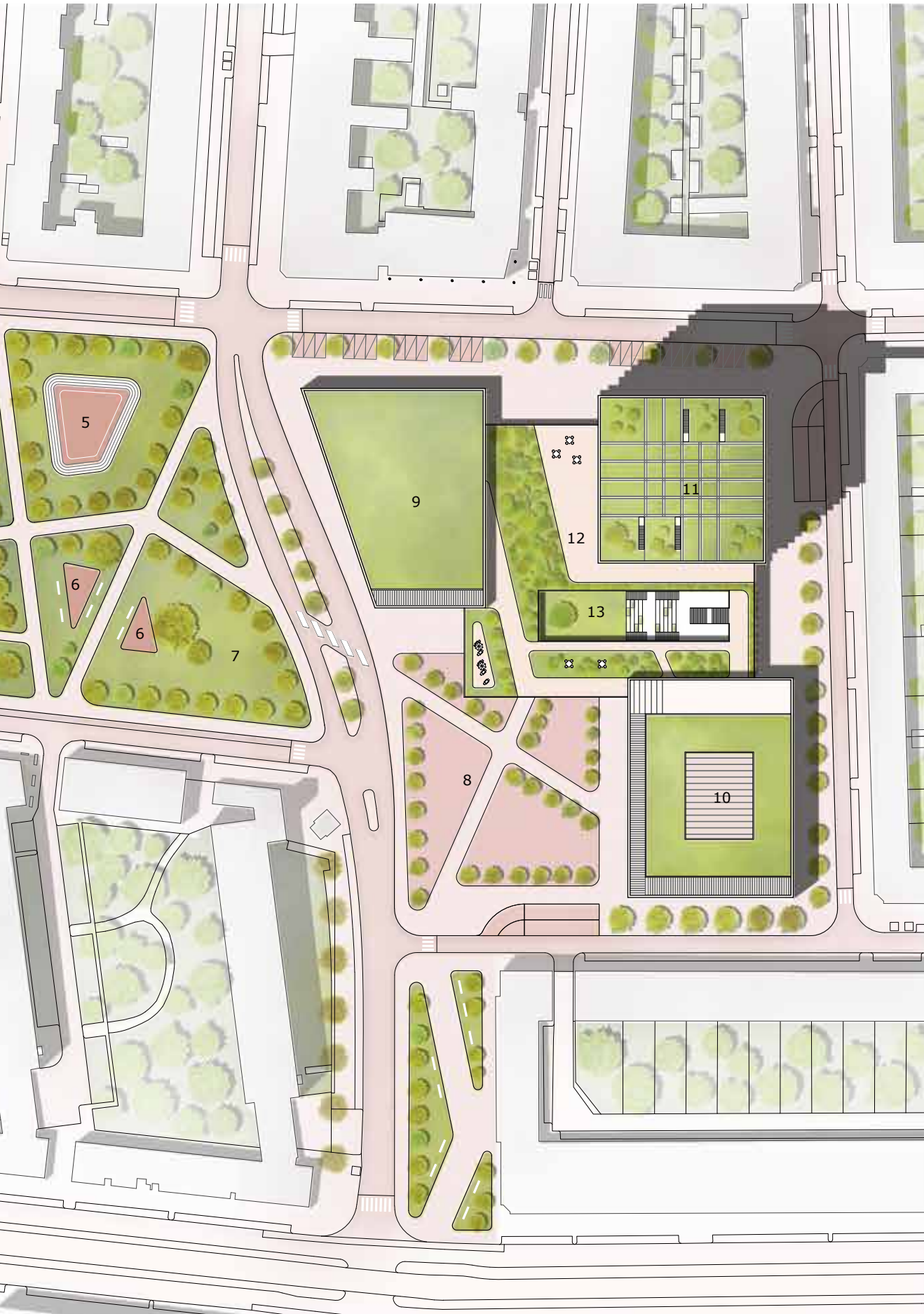
2 Sports area
13 Courtyard

3 Park bar

4 Central Water park

5 Theater

6 Pavilion



7 Green space

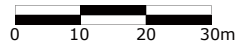
8 Market square

9 Library & Sports center

10 Culture center

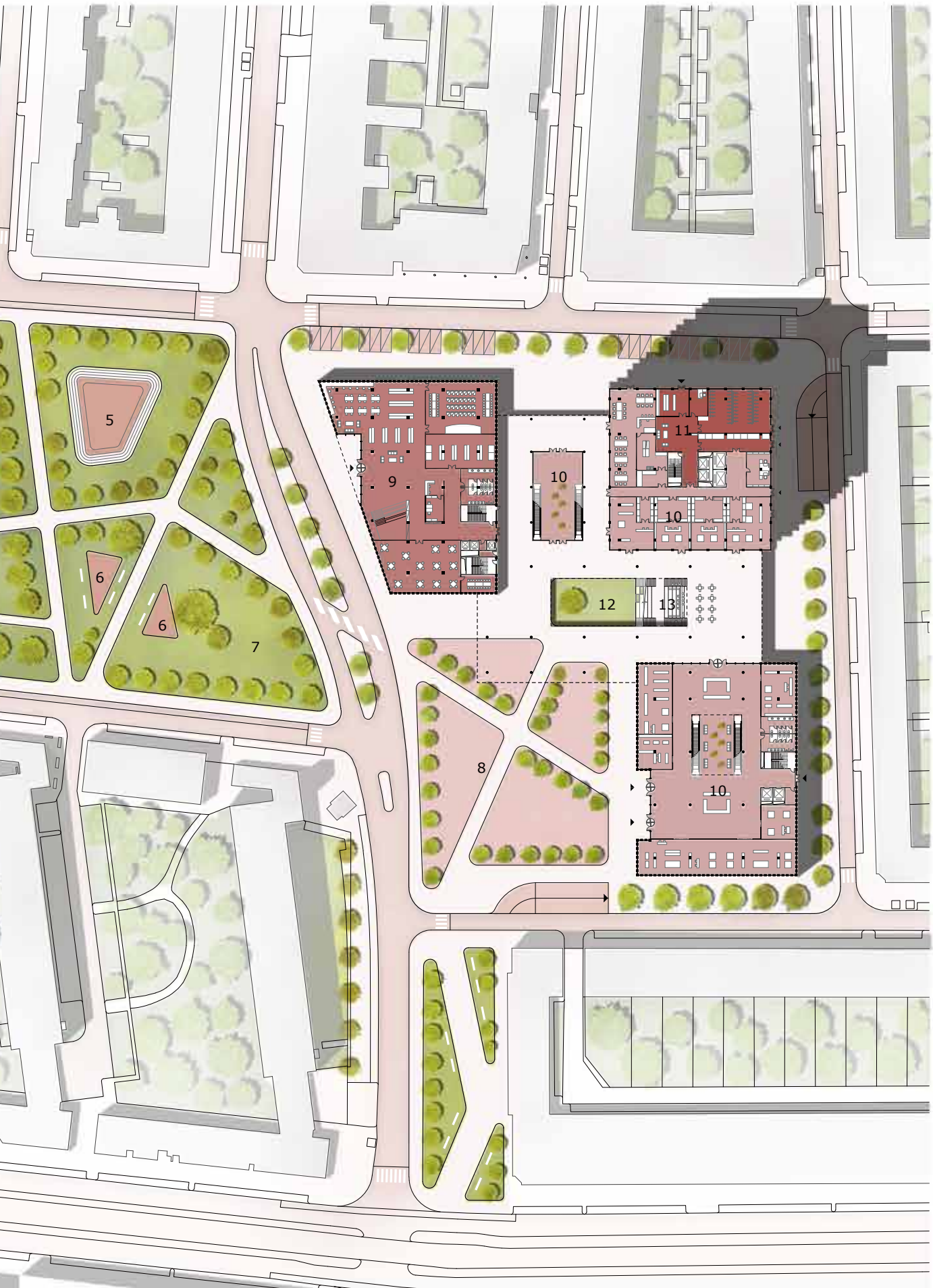
11 Residence

Masterplan





1 Children's playground 2 Sports area 3 Park bar 4 Central Water park 5 Theater 6 Pavilion 7 Green space



Open space
 8 Market square
 9 Library
 10 Commercial area
 11 Residence
 12 Courtyard
 13 Cafeteria



New functions for the 1943 park



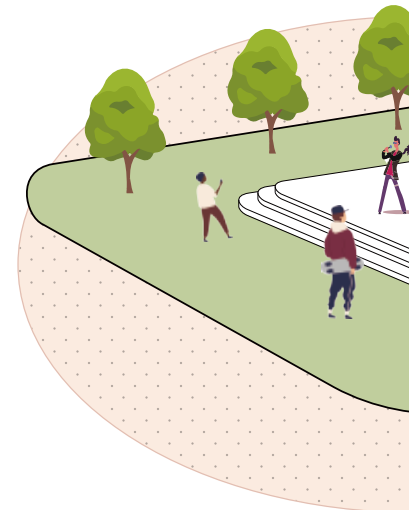
1 Playground



2 Groundsta



4 Central water park



5 Park



nd for sports



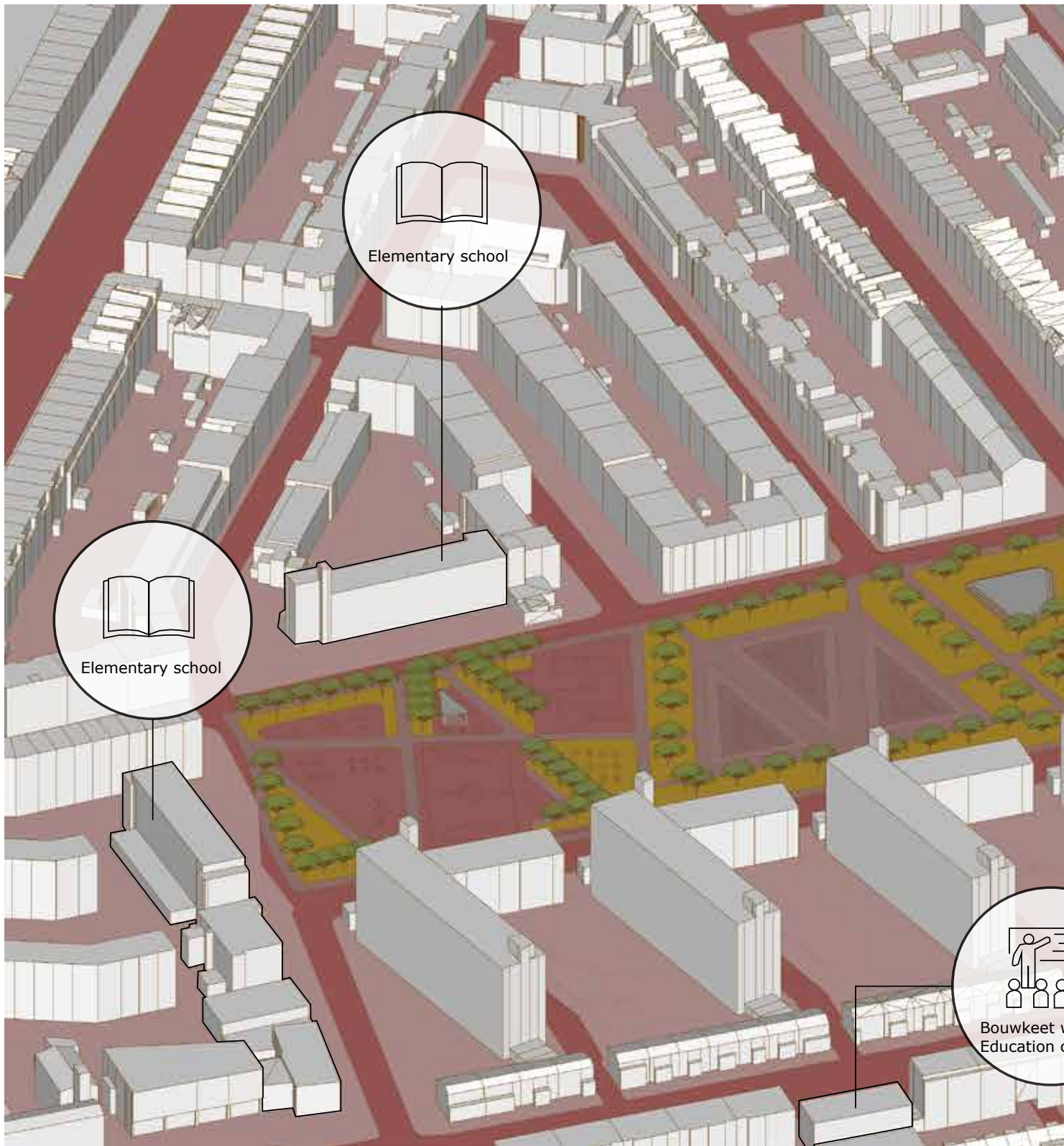
3 Park bar



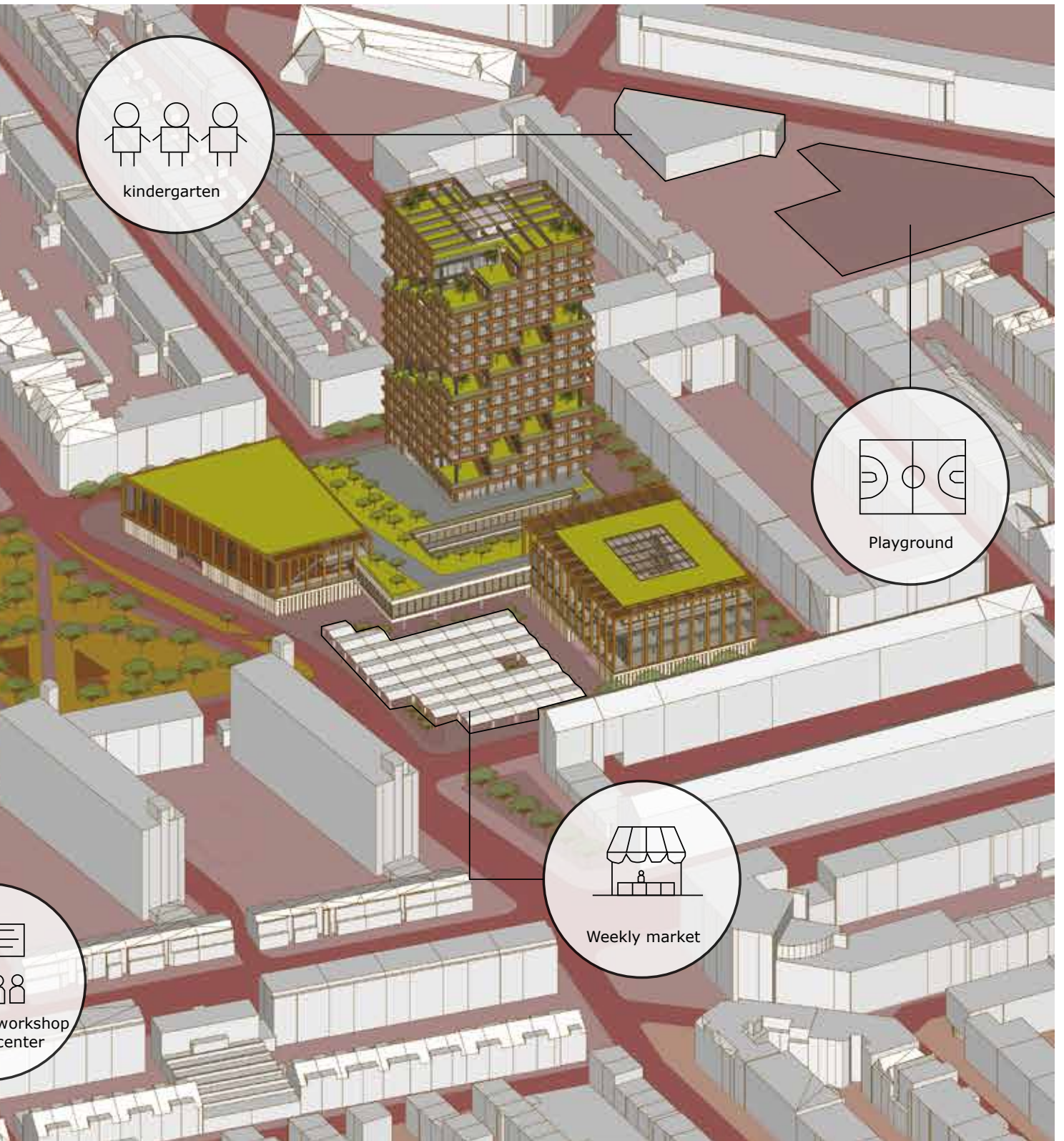
k theater



6 Park pavillion



Axonometric Bird view and urban context



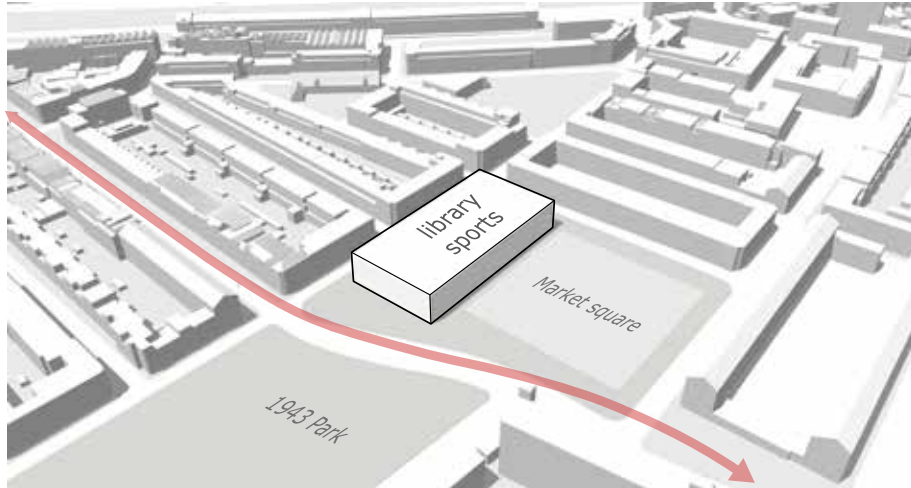
kindergarten

Playground

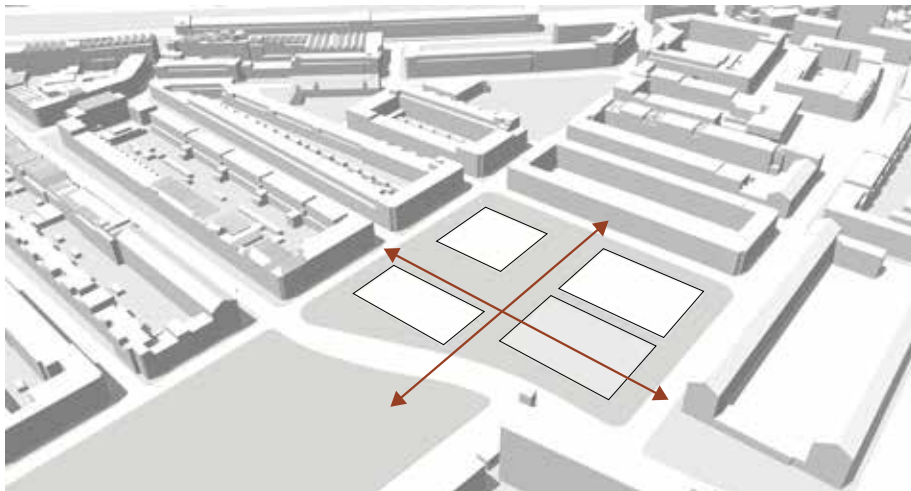
Weekly market

workshop center

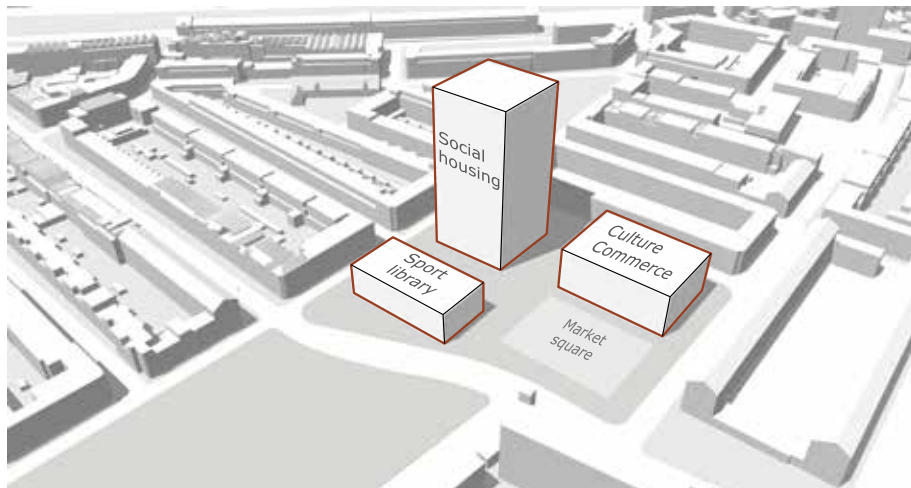
Architecture design processing



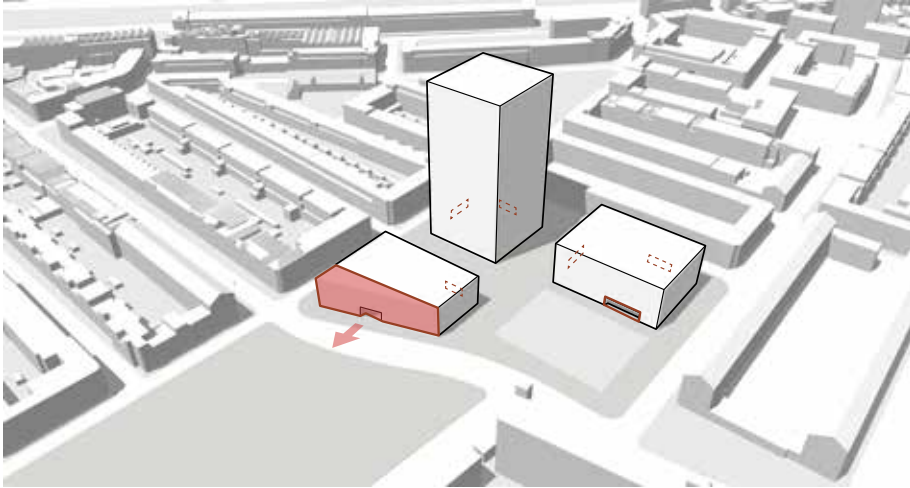
Existing situation



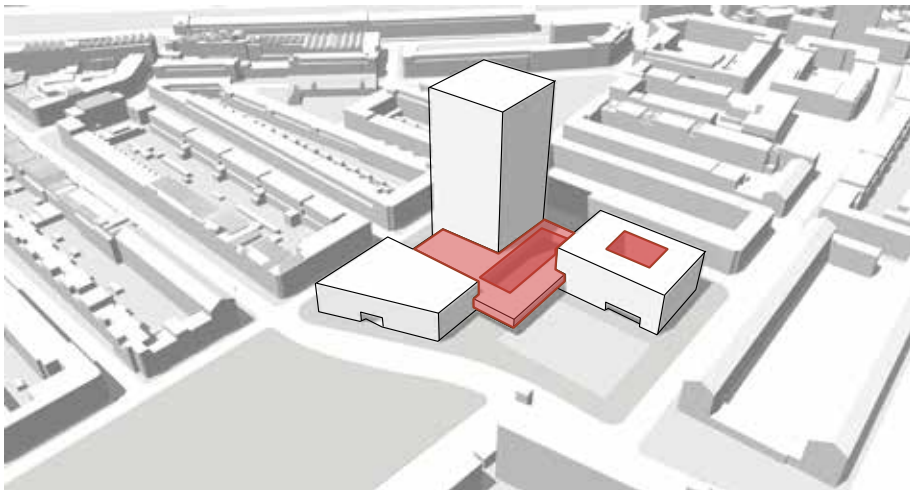
Major axis



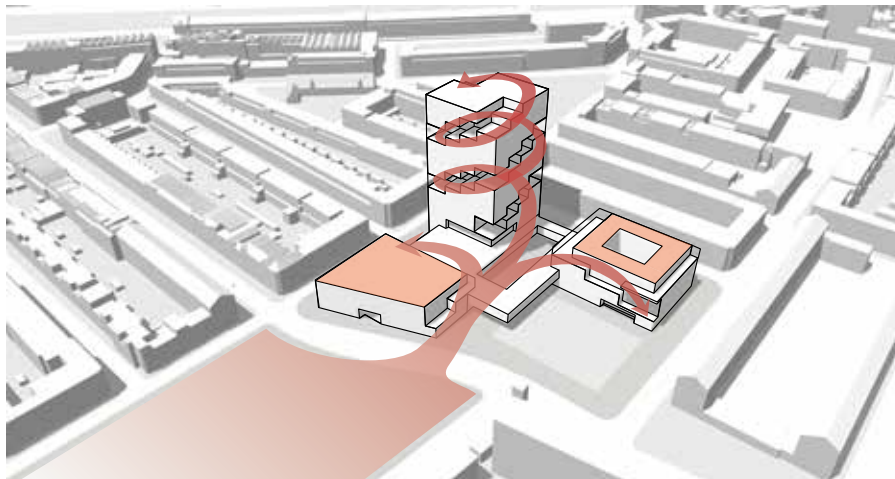
New volumes



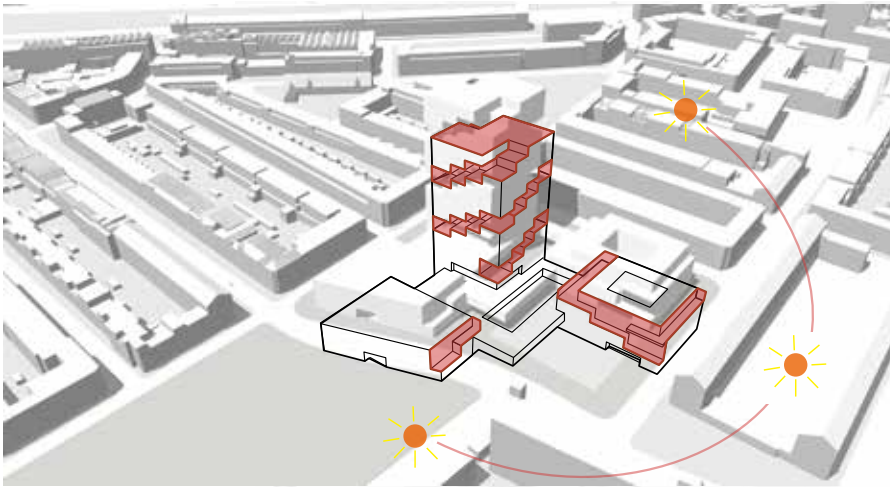
Entrance



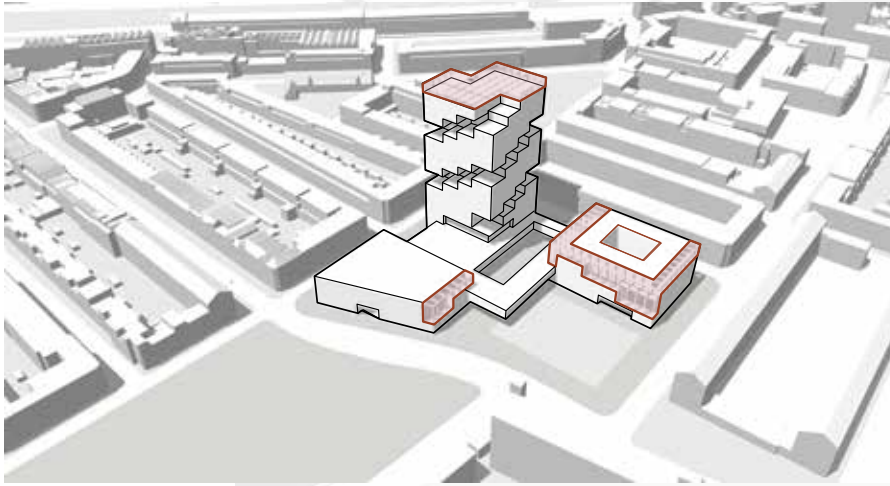
Courtyard with connecting program



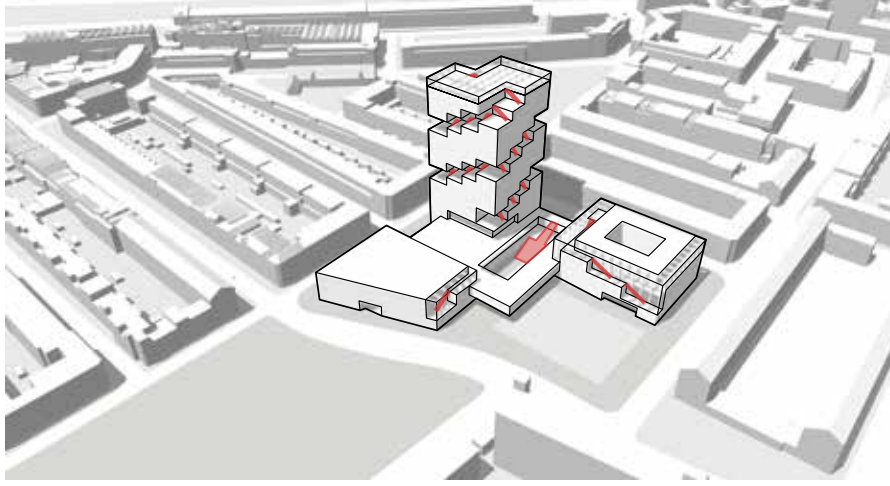
Concept of Sky park



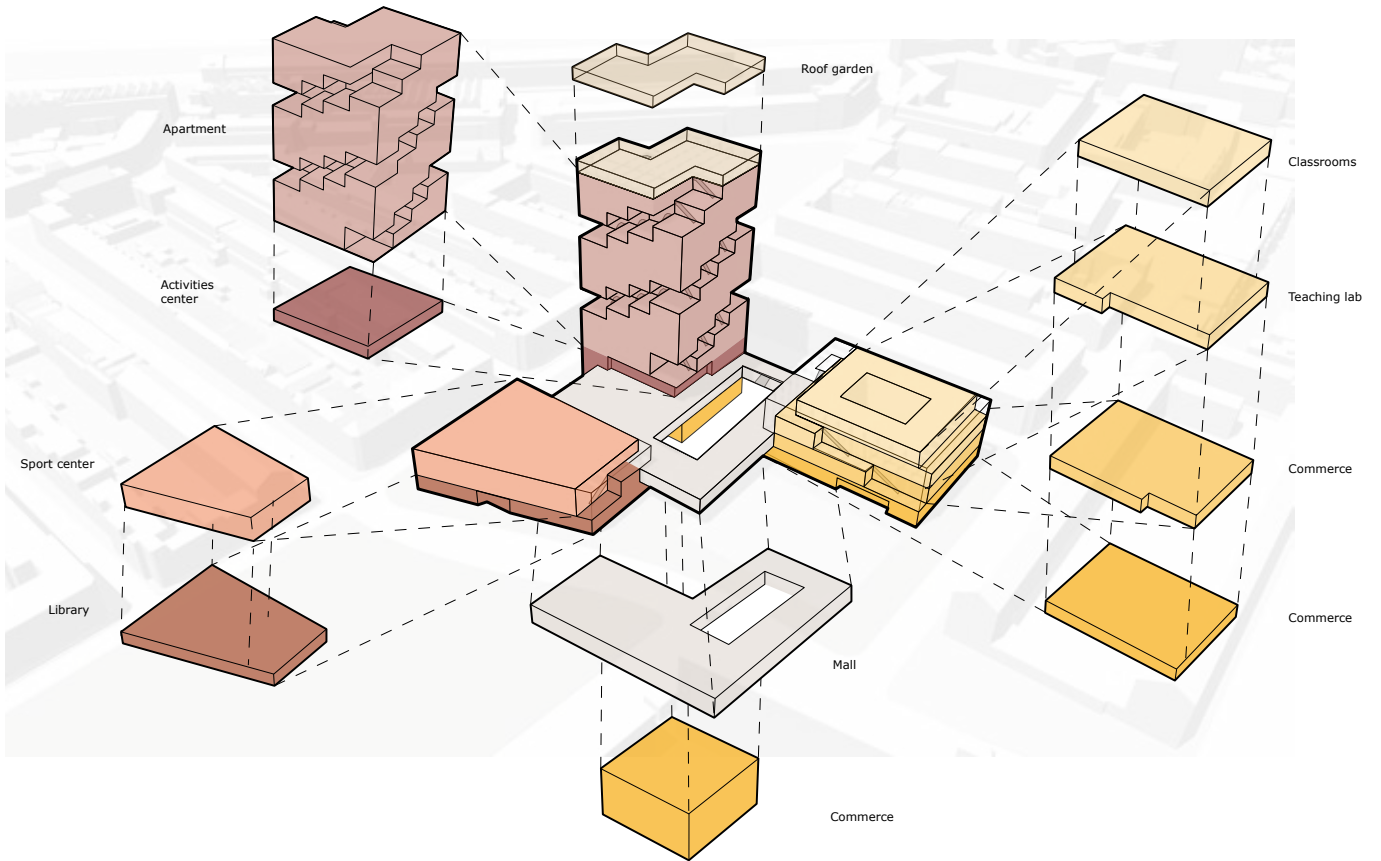
Terracing



Canopy



Vertical connections



Function exploded diagram

Technical drawing

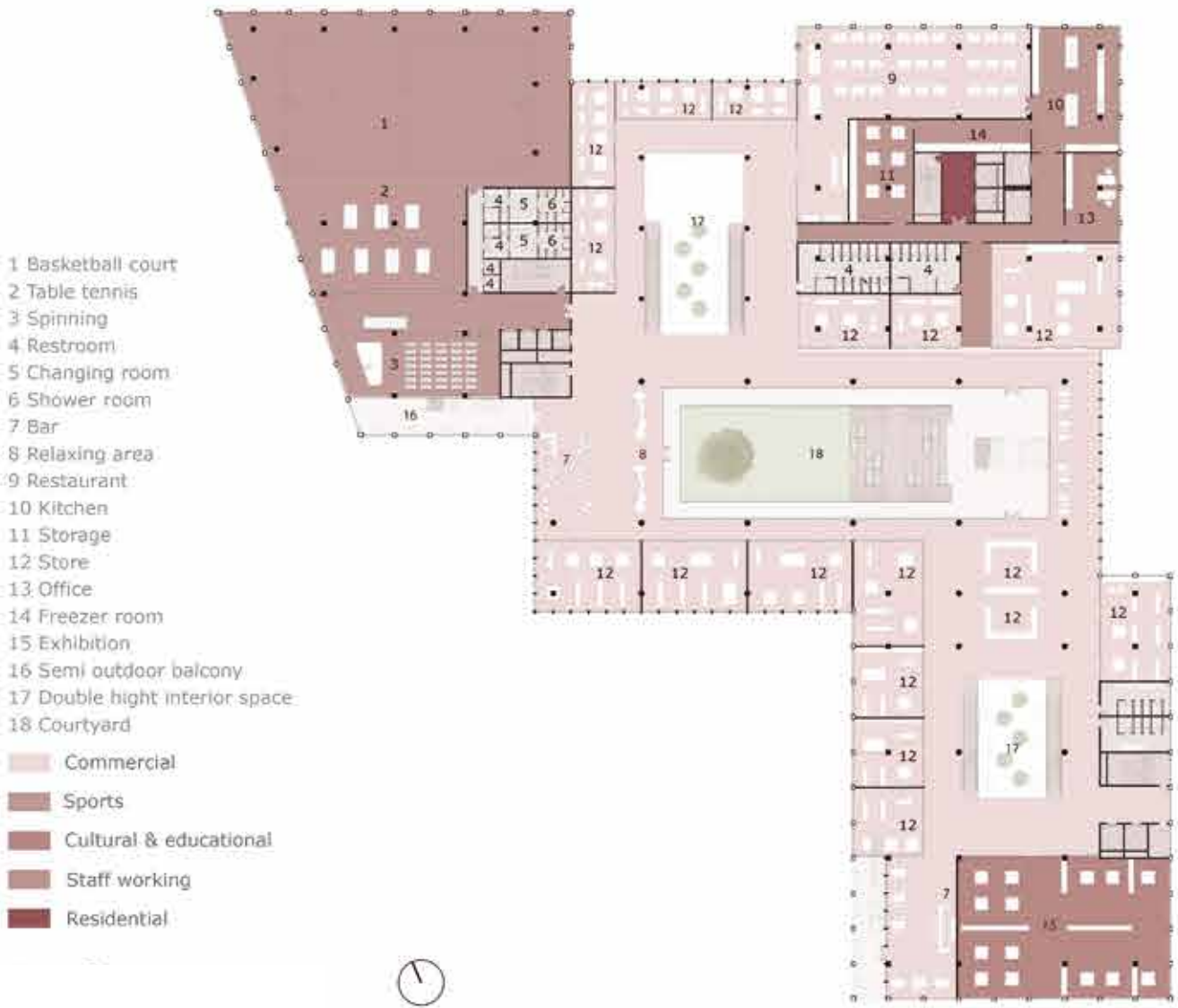
Plans



Underground floor plan 1:500



Ground floor plan 1:500



First floor plan 1:500



Second floor plan 1:500

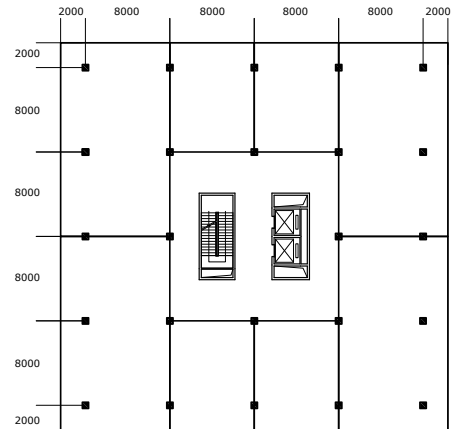
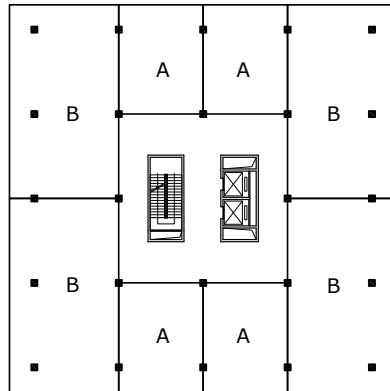


Third floor plan 1:500



Roof floor plan 1:500

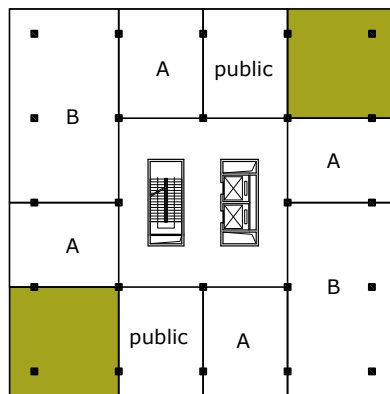
Residential units



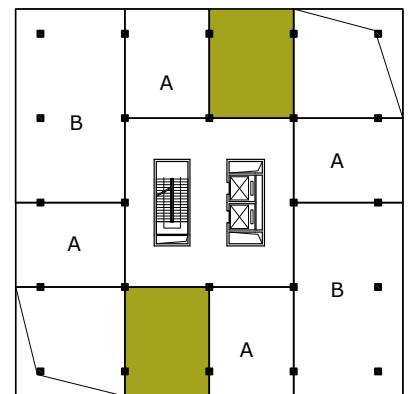
Type A : for single or couple

Type B : for family

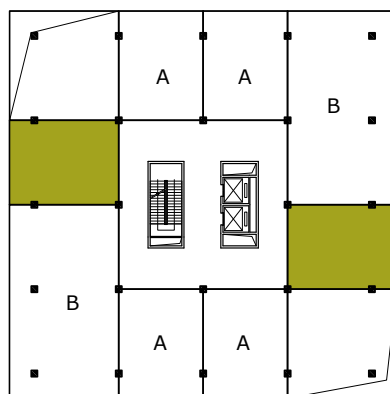
Column net (8*8m)



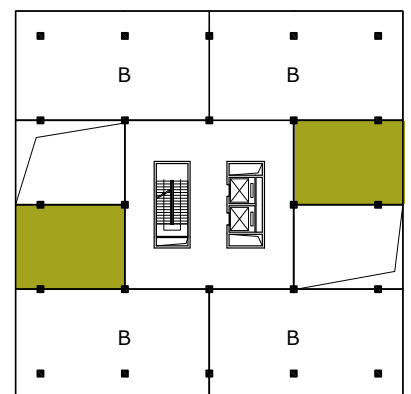
3rd floor



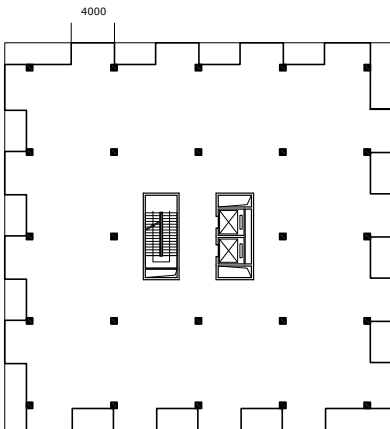
4th, 10th, 16th floor



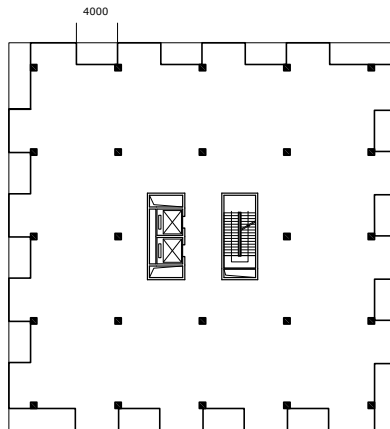
7th, 13th floor



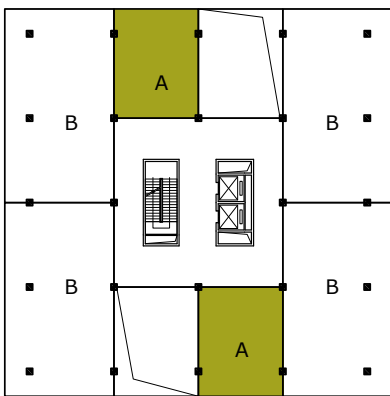
8th, 14th floor



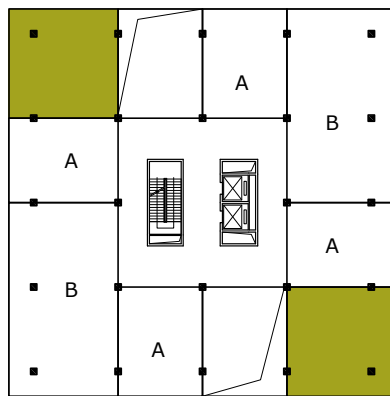
Facade design



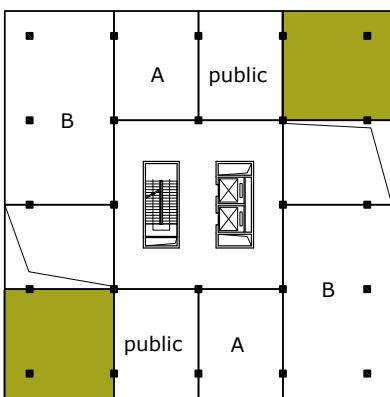
Facade design (balcony shifted)



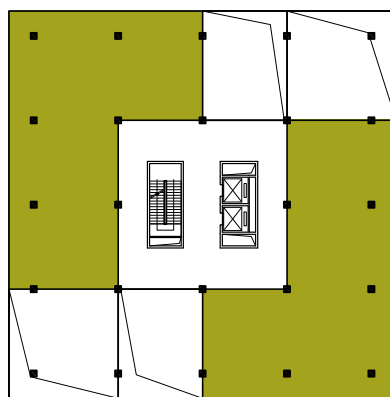
5th, 11th floor



6th, 12th floor



9th, 15th floor



17th floor roof garden
green terrace



Elevations

East elevation





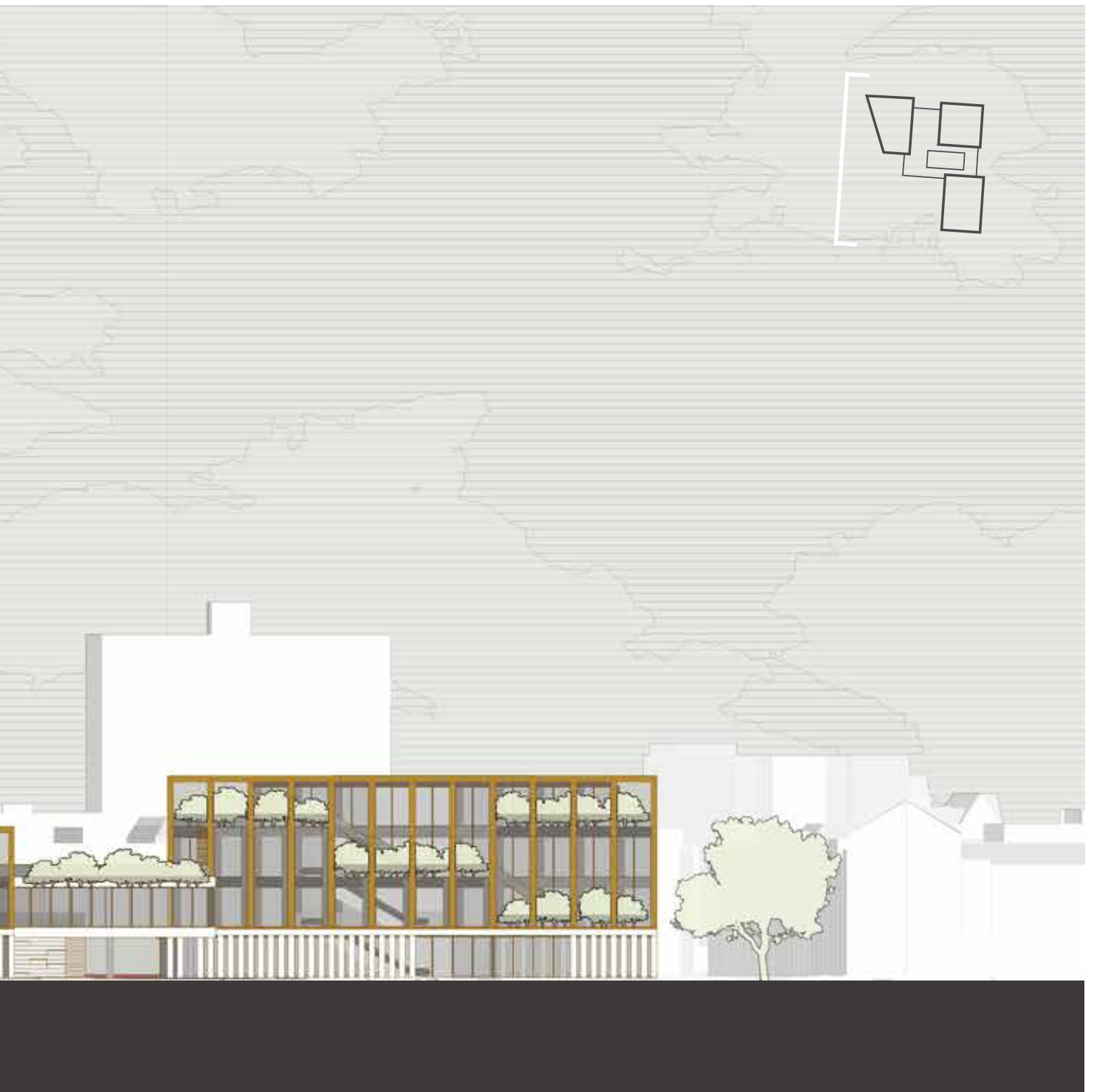
South elevation





West elevation





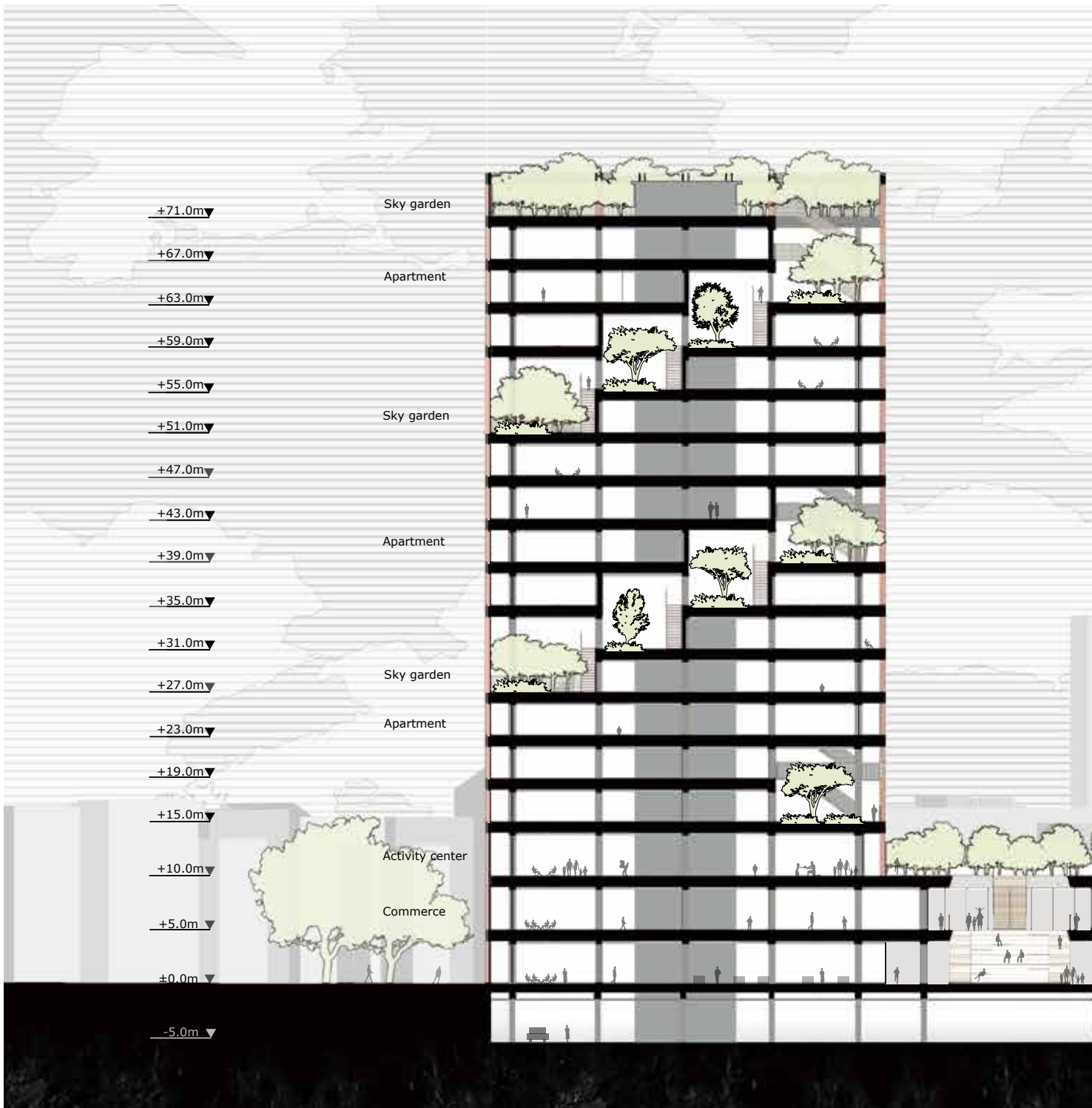
Sections

Section A-A





Section B-B





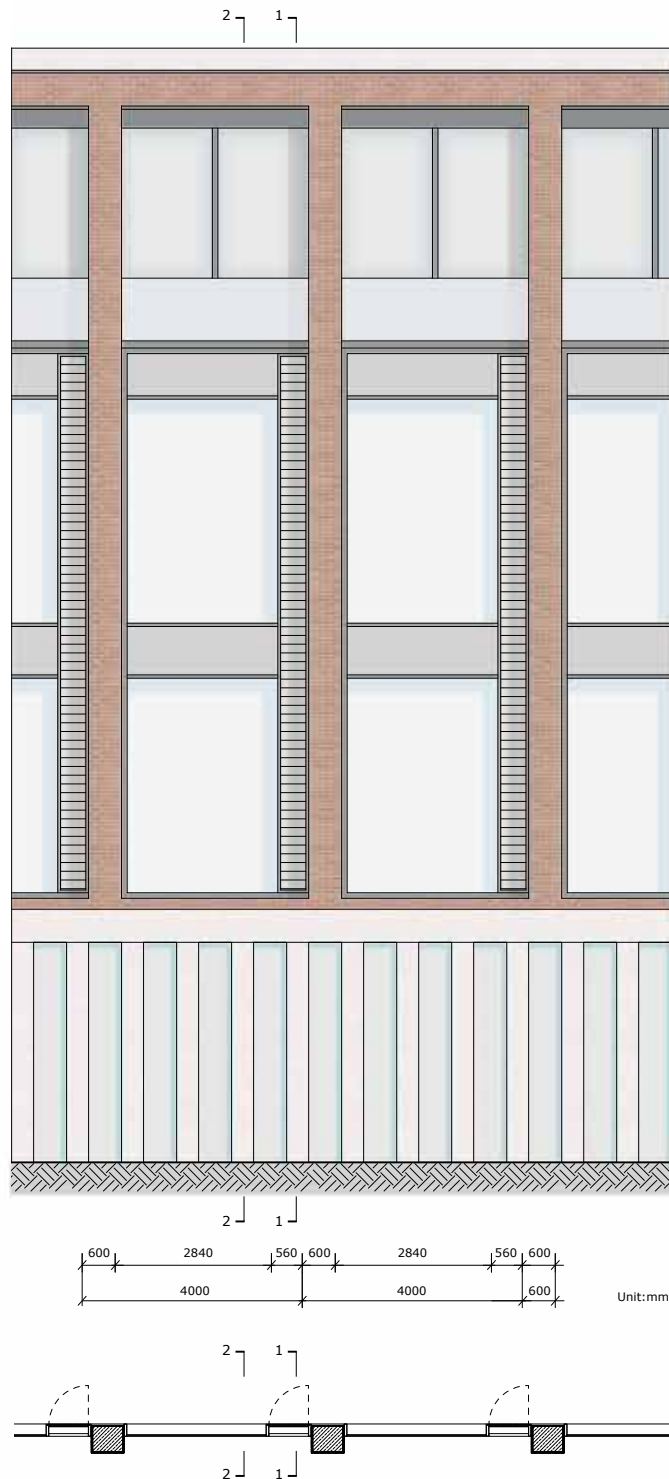
Perspective section

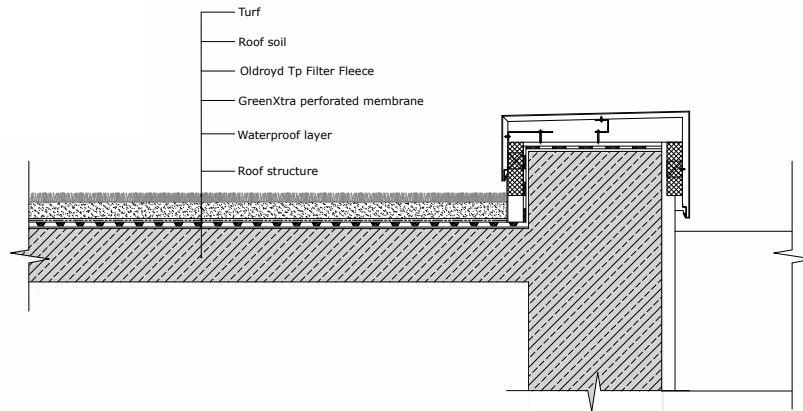




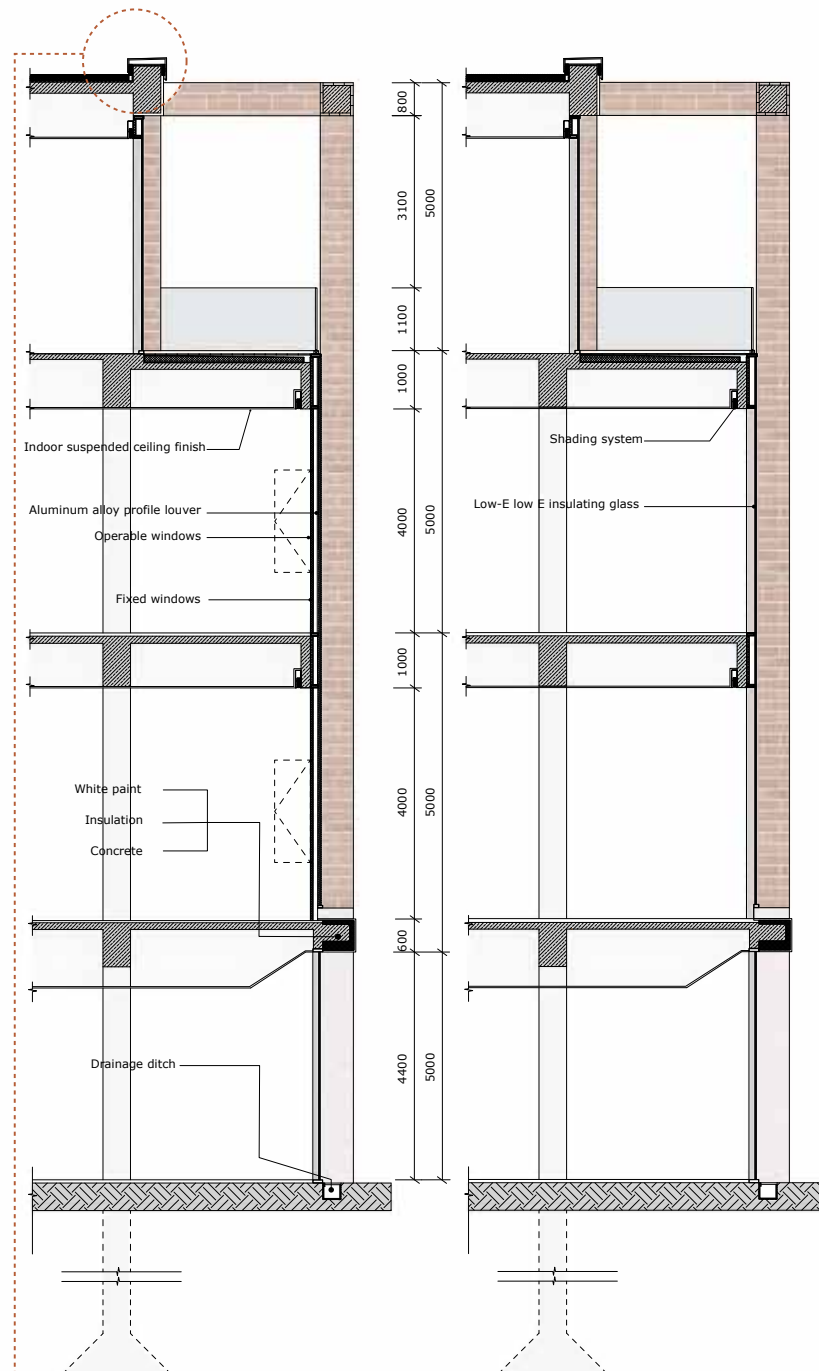
Structure detail

Facade detail





Green turf roof structure detail



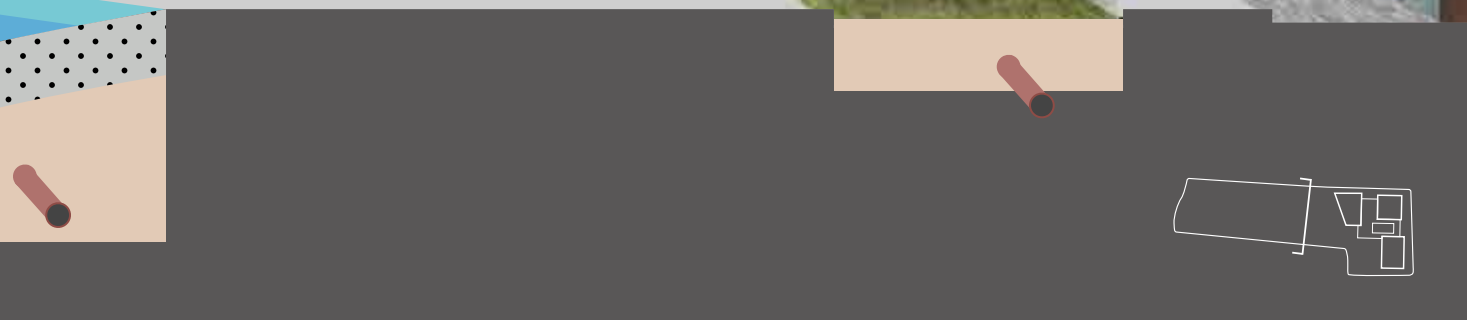
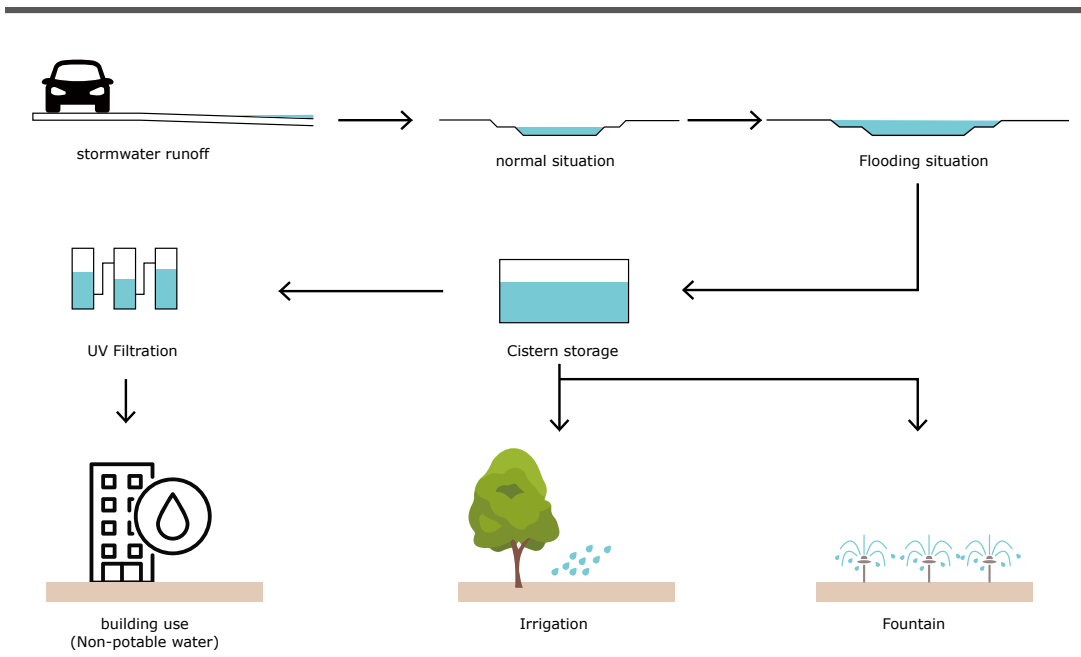
Section 1-1

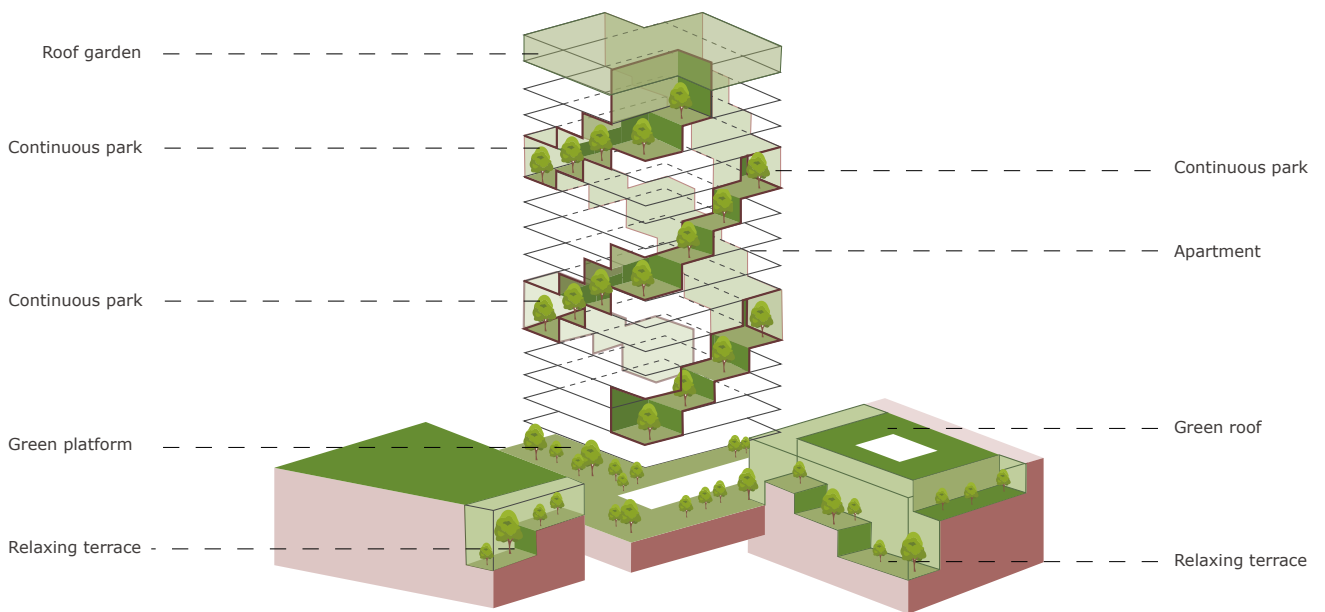
Section 2-2

Sustainable strategy

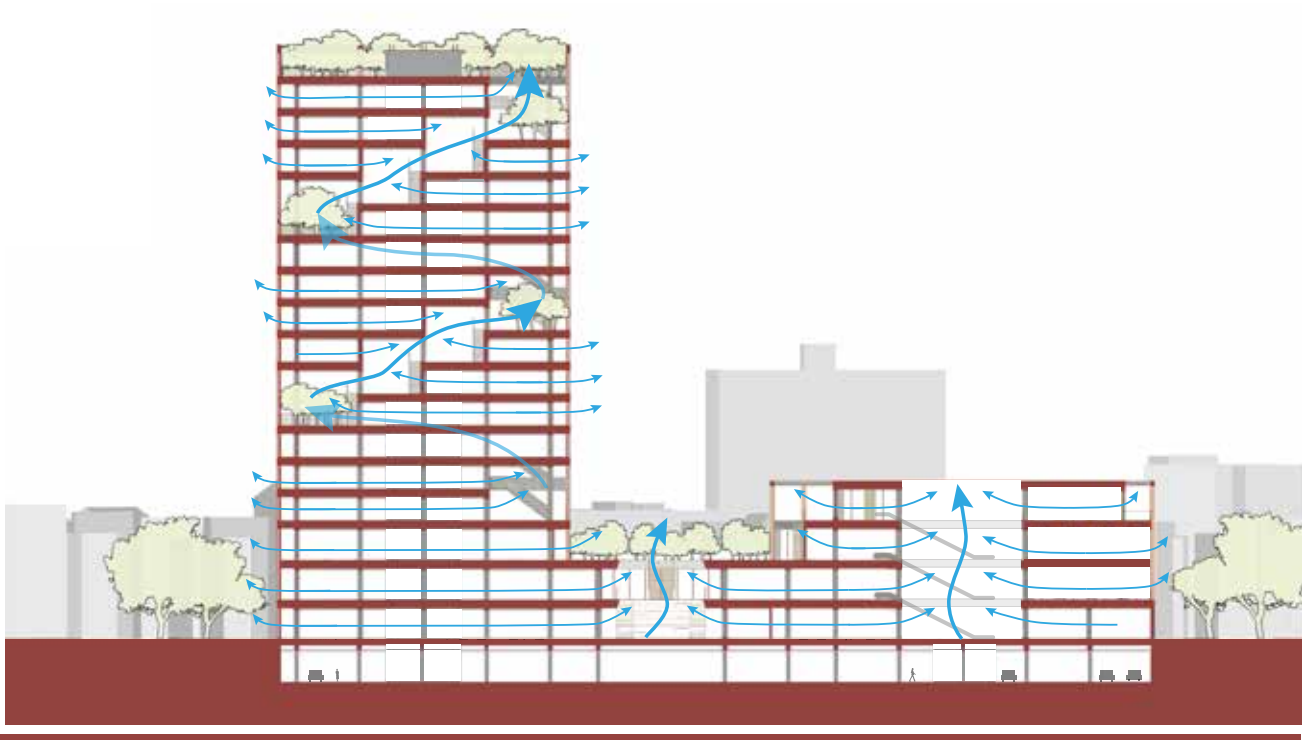
Water park landscape







Vertical green system



Ventilaton

Renderings





Green roof garden





Public courtyards





Sky street balcony





View from square





View from 1943 park





Square market





Top view

05

Reference

Aghabeik, Lili, and Akkelies van Nes. *"Ethnic Groups and Spatial Behaviour in Rotterdam's Neighbourhoods,"* n.d.

"URBAN METABOLISM - Rotterdam." FABRICations, November 25, 2019.
<https://www.fabrications.nl/portfolio-item/rotterdammetabolism/>.

All buildings in the Netherlands, shaded by year of construction. Accessed May 12, 2020. <https://code.waag.org/buildings/#51.909,4.4526,14>.

Bospoldertussendijken. Urban fabric, 2009.

Centraal Bureau. "Werkloosheid 25- Tot 45-Jarigen in Juli Gestegen." Centraal Bureau voor de Statistiek. Centraal Bureau voor de Statistiek, August 15, 2019.
<https://www.cbs.nl/nl-nl/nieuws/2019/33/werkloosheid-25-tot-45-jarigen-in-juli-gestegen>.

CoM, fabioruolo for. "Cities of Making." Cities of Making. Accessed May 12, 2020.
<https://citiesofmaking.com/>.

"Rotterdam Population 2020," n.d.
<http://worldpopulationreview.com/world-cities/rotterdam-population/>.

"De Groene Connectie." de Groene Connectie. Accessed May 12, 2020.
<http://www.degroeneconnectie.nl/>.

"De Stad." Het verhaal van de stad - Rotterdam in 2037. Accessed May 12, 2020.
<https://www.hetverhaalvandestad.nl/thema/de-stad/>.

"Dutch National Accounts." ceicdate, n.d.
<https://www.ceicdata.com/zh-hans/country/netherlands>.

Gemeente Rotterdam. Gemeente Rotterdam, May 12, 2020.
<https://www.rotterdam.nl/>.

Map of the Netherlands. Accessed May 12, 2020.
<https://zh.maps-netherlands.com/>.

"Rotterdam BoTu NEXT." Urhahn, April 1, 2019.
<http://www.urhahn.com/rotterdam-botu-next/>.

"Rotterdam Visserijplein (NL)." Europan. Accessed May 12, 2020.
<https://www.europan-europe.eu/en/session/europan-15/site/rotterdam-visserijplein-nl>.

Sandi, Gabor. "ROTTERDAM." Rotterdam 1998. Accessed May 12, 2020.
<http://www.tundria.com/trams/NLD/Rotterdam-1998.php>.

"Search Results: TU Delft Repositories." Search results | TU Delft Repositories. Accessed May 12, 2020.
<https://repository.tudelft.nl/islandora/search/?collection=research>.

"Social Comprehensive Evaluation of Physical Security," n.d.
<https://wijkprofiel.rotterdam.nl/nl/2018/rotterdam//delfshaven/tussendijken>.

Statistics Netherlands. "CBS," November 21, 2019.
<https://www.cbs.nl/en-gb>.

Statistics Netherlands. "Economic Picture Slightly Less Favourable." Statistics Netherlands. Centraal Bureau voor de Statistiek, July 16, 2019.
<https://www.cbs.nl/en-gb/news/2019/29/economic-picture-slightly-less-favourable>.

strategy-resilient-rotterdam, n.d.
<https://100resilientcities.org/wp-content/uploads/2017/06/strategy-resilient-rotterdam.pdf>.

Water collection of Rotterdam 2030, n.d.
<http://www.Rotterdamgain.eu/en/rotterdam>.

Zoek naar een Dataset - Rotterdam Open Data. Accessed May 12, 2020.
<http://rotterdamopendata.nl/dataset>.

All buildings in the Netherlands, shaded by year of construction. Accessed May 14, 2020.
<https://code.waag.org/buildings/#51.909,4.4526,14>.

architectureguide. Accessed May 14, 2020.
<http://www.architectureguide.nl/map>.

Article written by Hidden Architecture. 2015 02 25. No comments, and Name *.
"Spangen Quarter Housing." Hidden Architecture, June 7, 2019.
<http://hiddenarchitecture.net/spangen-quarter-housing/>.

"Bospolder-Tussendijken, Rotterdam." mdb. Accessed May 14, 2020.
<https://www.mdb.nl/projecten/bospolder-tussendijken,-rotterdam>.

COLLECTIE ROTTERDAM - Nederlands Hervormde Kerk (Sint Anthonius) en directe omgeving. Accessed May 14, 2020.
<https://www.rotterdaminkkaart.nl/archeologie/sint-anthonius-kerk/pointofinterest/detail>.

"OpenStreetMap." OpenStreetMap. Accessed May 14, 2020.
<https://www.openstreetmap.org/#map=16/51.9137/4.4416>.

"Rotterdam BoTu NEXT." Urhahn, April 1, 2019.
<http://www.urhahn.com/rotterdam-botu-next/>.

"Rotterdam Renewal." Knoll. Accessed May 14, 2020.
<https://www.knoll.com/knollnewsdetail/wmf-justus-van-effen>.

"Gebiedsvisie Bospolder-Tussendijken." PDF Gratis download. Accessed May 14, 2020.
<http://docplayer.nl/15091875-Gebiedsvisie-bospolder-tussendijken.html>.

"Héél Véél Informatie over Tussendijken (Update 2020)." AlleCijfers.nl, April 26, 2020. <https://allecijfers.nl/buurt/tussendijken-rotterdam/>.

"ROTTERDAM MAKERS DISTRICT." rotterdammakersdistrict.com. Accessed May 12, 2020. <https://www.rotterdammakersdistrict.com/index-en.php>.

COLLECTIE ROTTERDAM - Sluiscomplex Delfshaven. Accessed May 14, 2020.
<https://www.rotterdaminkkaart.nl/archeologie/sluiscomplex-delfshaven/pointofinterest/detail>.

CBS Statline. Accessed May 12, 2020.
<https://opendata.cbs.nl/statline/#/CBS/nl/dataset/80590ned/table?ts=1568841198748>.

"Countdown to Freedom." Google . Google. Accessed May 12, 2020.
<https://books.google.it/books?id=vgsYNtvg8ngC&pg=PR50&dq=history+of+rotterdam&hl=zh-CN&sa=X&ved=0ahUKEwj0nrSCqNvkAhVtlosKHak-BvQQ6AEIWzAG#v=onepage&q=history+of+rotterdam&f=false>.

"ROTTERDAM MAKERS DISTRICT." rotterdammakersdistrict.com. Accessed May 12, 2020. <https://www.rotterdammakersdistrict.com/index-en.php>.

"Rotterdam Population 2020," n.d. <http://worldpopulationreview.com/world-cities/rotterdam-population/>.