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KANALENEILAND IN UTRECHT

Progetto di rinnovamento urbano sul canale Amsterdam-Rijn

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I would like to sincerely thank
my two Tutors for their suggestions and
my friend Sara for her help.
Moreover I dedicate this work to my parents who
supported me during my studies.

CONTENTS

ABSTRACT

Questa tesi di laurea consiste nel rinnovamento del quartiere residenziale di Kanaleneiland situato vicino al canale Amsterdam-Rijn nella città di Utrecht in Olanda.

Il quartiere fu realizzato alla fine degli anni ‘50 per la classe media e risponde ai principi del movimento moderno: i grossi edifici residenziali (80% sono residenze sociali) sono immersi nel verde e vi è una chiara diversificazione funzionale. Negli ultimi dieci anni si sono sviluppate nel quartiere alcune problematiche sociali e si è verificato il degrado delle abitazioni e degli spazi pubblici. Solo recentemente le autorità locali e le associazioni di edilizia popolare hanno deciso di affrontare le problematiche avviando un processo di rinnovamento urbano che coinvolge tutto il quartiere.

Tale rinnovamento consiste nella riqualificazione di alcuni edifici e nella demolizione di parte delle residenze. Tramite una ricerca si è rilevato che questo modo di operare, è stato usato anche in altri quartieri in Olanda, ad esempio Bijlmeer ad Amsterdam.

Il progetto si inserisce in questo contesto e mira a modificare il quartiere senza però dimenticare la sua natura.

In dettaglio, il progetto consiste:

1) nell’**incremento delle connessioni** tra il quartiere e la città ad oggi poco sviluppate;
2) nella realizzazione di **nuove residenze** (1100 nuovi appartamenti) considerando il contesto urbano esistente;
3) nell’incremento del **mix funzionale** realizzando un polo scientifico tecnologico e nuovi servizi: dei negozi, una scuola e un club nautico;
4) nella realizzazione di nuovi **spazi aperti** e nella **riqualificazione della riva** del canale.

1) INCREMENTO DELLE CONNESSIONI

L’area è stata inserita all’interno di tre percorsi: della cultura, dell’acqua e del verde .

Il primo percorso connette l’area al centro città e, percorrendolo, si possono trovare alcuni musei, la fiera espositiva, un teatro e la cattedrale di Utrecht.

Il secondo unisce Kanalenailand alla città attraverso le vie d’acqua, infatti un servizio di taxi boat è stato realizzato sul canale.

Infine il terzo unisce le nuove aree verdi ai parchi esistenti.

La struttura urbana esistente è stata presa in considerazione ed interrotta da un nuovo boulevard, un asse che conferisce dinamicità alla regolare maglia degli isolati e congiunge la città al canale Amsterdam-Rijn.

Un polo scientifico tecnologico e un club nautico sono agli antipodi dell’asse al fine di designare il suo inizio e la sua fine. Lungo il boulevard vi sono residenze con negozi al piano terreno.

2) NUOVE RESIDENZE

Nel nuovo quartiere vi sono cinque tipologie di residenze:

- **Case galleggianti**

Sono residenze di due piani disposte in un canale creato all’interno del quartiere.

- **Case per appartamenti multipiano**

Sono residenze di sei o sette piani con quattro appartamenti disposti attorno al corpo scala. Queste sono alla fine del boulevard.

- **Case bifamiliari**

Sono di tre piani con un giardino e un parcheggio privato. Queste si trovano vicine ad un parco con attrezzature sportive ed al canale.

- **Case a corte**
- **Case di cohousing**

Le ultime due tipologie sono state studiate più in dettaglio rispetto alle prime e sono di seguito descritte.

Le **case a corte** sono costituite da sedici diverse tipologie di appartamenti che si affacciano in uno spazio semi-privato.

Nella progettazione di questa tipologia è stato fondamentale lo studio del nuovo quartiere **IJburg** ad Amsterdam, che è caratterizzato da una struttura regolare di isolati e presenta diverse soluzioni al tema della residenza a corte. La presenza di uno spazio pubblico all'interno delle residenze è uno dei punti chiave della progettazione. Infatti le residenze a corte si aprono verso le strade e si creano diversi tipi di spazi pubblici.

Come per IJburg anche nelle residenze di progetto lo spazio interno alle corti acquisisce molta importanza per il quartiere. La corte è aperta ed ospita un giardino e degli spazi privati che sono annessi alle case del primo piano. Essa si trova a 1,5 metri sopra il livello stradale e sotto ci sono i parcheggi per i residenti. In alcune case a corte vi sono i negozi al piano terreno e i parcheggi pubblici al primo piano interrato.

Le case a corte presentano facciate in mattone a vista come la maggior parte delle residenze olandesi. Le facciate al primo piano seguono un andamento curvilineo continuo e sono caratterizzate da ampie finestre. Ai piani superiori l'andamento regolare che caratterizza il primo piano, acquisisce maggiore dinamicità grazie ai balconi. I prospetti interni ed esterni presentano diverse caratteristiche.

Le **residenza di cohousing** sono costituite da due edifici in cui i residenti possono usufruire di alcuni spazi comuni e possono decidere di vivere insieme. Il riferimento per questi edifici è stato il **quartiere Spangen** realizzato da Brinkman a Rotterdam nel 1919, caratterizzato da aree comuni (ballatoi, lavanderie, aree verdi) che, come nel progetto descritto, assumono una forte importanza.

Nelle residenze di cohousing le aree comuni (sala della musica, lavanderia, palestra, biblioteca, sala multimediale, asilo) sono riconoscibili grazie al loro design. Esse sono ortogonali alle residenze e presentano facciate vetrate.

Gli edifici hanno, sul lato della strada, un passaggio pedonale di 1,5 metri sotto il livello stradale da cui si può accedere ai duplex con un ufficio o atelier al piano inferiore.

In alcune residenze di cohousing vi sono i negozi e sopra il loro tetto vi sono degli orti di proprietà dei residenti.

Come detto precedentemente i residenti possono decidere di vivere insieme. Infatti le tipologie abitative sono state studiate in modo da potere essere aggregate o divise lungo un asse prestabilito. L'asse è evidenziato in facciata da una serie di grosse finestre e balconi.

Questa tipologia abitativa presenta prospetti in pannelli colorati prefabbricati di diversa dimensione e colore.

3) MIX FUNZIONALE: CLUB NAUTICO

Il club nautico è situato alla fine del boulevard nel canale Amsterdam-Rijn ed è costituito da diversi volumi tenuti insieme da una promenade e da una copertura. Il progetto ha uno sviluppo orizzontale che sottolinea il suo slancio verso l'acqua.

Il riferimento di questo progetto è stato il club nautico **De Hoop** progettato da Michel de Klerk nel 1922 ad Amsterdam. In questo diversi volumi sono

organizzati attorno ad un pennacchio. L'accento è posto sull'asse longitudinale come nel progetto descritto. Inoltre la combinazione tra la parte allungata dell'edificio e quella più piccola e più alta conferisce all'edificio l'aspetto di una nave ormeggiata.

Arrivando dalla città al club, il boulevard si divide in due rampe. Una scende verso l'acqua e porta all'ingresso secondario del edificio, l'altra sale e porta al club nautico. Qui la promenade, che era iniziata nella città, attraversa l'edificio e acquista una nuova funzione e dimensione. All'inizio del edificio la promenade si restringe per poi allargarsi come un cono ottico verso il canale. In tale modo il visitatore viene guidato alla vista del acqua.

Dalla promenade è possibile raggiungere la 'piazza sull'acqua' dove le persone possono rilassarsi e osservare le regate oppure possono prendere un battello e raggiungere il centro città. Dalla promenade è anche possibile accedere alla sala conferenze e all'edificio principale. Quest'ultimo è di sei piani ed è diviso da uno ambiente che è in parte a tutta altezza. All'interno dell'edificio si trovano diverse funzioni: uffici, sala per il club, vasche di allenamento per i canottieri, palestra, piscina e ristoranti.

I prospetti sono in legno e vetro come per l'edificio di de Klerk. La facciata vetrata della sala conferenze segue l'inclinazione dei posti a sedere e rende il volume riconoscibile dalla città. La facciata più interessante è quella curva alla fine dell'edificio che, essendo vetrata, permette di avere un'ottima visuale del canale.

4) SPAZI APERTI

E' stato creato un sistema di aree verdi e aree pavimentate che sono diversamente usufruibili. Come detto precedentemente lo studio di queste aree è stato influenzato dall'analisi del quartiere IJburg.

In particolare sono state realizzate diverse **aree verdi**:

- **Giardini privati**

Sono all'interno delle residenze a corte e nelle case bifamiliari e sono gestiti dai proprietari.

- **Tetti giardino**

Alcune superfici di copertura delle residenze sono state adibite a zone per il jogging e presentano dei giardini. Sulle coperture dei negozi vi sono orti o giardini giapponesi.

- **Orti**

Gli orti sono all'interno delle residenza di cohousing e possono essere di proprietà di singole persone o della comunità.

- **Aree verdi pubbliche di piccole dimensioni**

Un sistema di aree verdi, dedicate a volte giochi per bambini, è presente tra le diverse residenze.

- **Area verde sul canale**

Sulla riva del canale vi è un area verde con panchine e alberi dove le persone possono sedersi e godere dello stretto contatto con l'acqua.

- **Parco con attrezzature sportive**

Vicino al canale c'è un parco con attrezzature sportive che può essere raggiunto dal quartiere e dal canale. Infatti le persone possono attraccare le loro barche e rilassarsi sulla riva.

Nuove tipologie di residenze, di spazi pubblici e di servizi caratterizzano il progetto di rinnovamento del quartiere di Kanaleneiland. Questi, rispetto al vecchio quartiere, sono progettati considerano i nuovi stili di vita, offrono maggiori possibilità di scelta per i residenti e possono attrarre nuove persone nel quartiere.

1. INTRODUCTION

In this book are summarized the research and project that I developed for the renewal of Kanaleneiland in Utrecht. This graduation project represents the synthesis of two years of working, living and studying in the Netherlands. This experience has strongly influenced my personal and professional knowledge.

I knew about this area one year ago by reading the Europan 10 (an European competition for architects) assignments and, after a visit to the site, I decided to develop my final project there for two reasons:

- the possibility to study a reality which has many similarities with others nowadays cities. Indeed today there are many areas located at the border of the cities which have lost their identity and that need to be renewal.
- the possibility to consider different scale of study and tasks: the urban planning, the open space, the housing and the services.

At the beginning I realized a research in order to understand better the housing program in the Netherlands and so to define the themes and the area of study. I identified another area in the Netherlands called Bijlmermeer which has many similarities to Kanaleneiland and that has been renewal. This research is presented in this book in chapter 2.

At the same time I studied and analysed the city of Utrecht and Kanaleneiland neighbourhood, some of these analyses are in chapters 3 and 4.

Later, I came up with some strategies for the renewal of the area which are described in chapter 5, and I started sketching the masterplan. During this phase I looked for some references which, as it is possible to read in this book, had great impact in the design.

I focused on two housing typologies and the boat club projects but, as it is possible to see in chapter 6, I developed a full view of the neighbourhood.

In chapter 7 are the conclusions about to the entire work I have done and what I did learn from it .

2. THE DUTCH HOUSING PROGRAM

2.1. Introduction

After almost a century, the solid social housing Dutch tradition seems to give way to other methods and procedures. The surging of mixed social classes, better-off than those for whom were built the best worker neighbourhoods in the post-war period, has imposed the revision of procedures and of the criteria by which these neighbourhoods were built.

1995 marks the end of state grants to the housing corporations, the Dutch low-incomes housing companies, and the start of a new phase in housing production.

2.2. The birth of social housing

In 1901 the **Housing Act** led to the institutionalization of social housing. The State, the city office and housing corporations, which were largely dependent on state subsidies and loans for financing development, constituted the most important bodies in the creation of housing, together with the municipal planning offices. Thus a link between housing and urban planning was established. Even today, for example, the name of Rotterdam's office of urban planning, Urban Development and Public Housing, remembers that time.

Plan Zuid was the first major project in which the new powers of government were effectively deployed. The College of Mayor and Aldermen, the City Executive, in 1900 asked the architect H.P. Berlage to make an extension plan to provide housing for all income brackets, in consultation with the director of the Department of Public Works, for the Amsterdam-Zuid area.

After a false start in 1904, in 1915 Petrus Berlage drew up a scheme which received wide support. In 1917 it was approved by the city council.

Plan Zuid was intended for three income groups; working class, middle class and the 'elite'. This gave rise to a typical Amsterdam tradition: a mix of rich and poor is still one of the most striking characteristics of Amsterdam's housing.

Figure 1. Rivierenbuurt, Amsterdam 1983 (Buurman M., 2005).

Plan Zuid was schematic, primary establishing the routing of canals, main roads and neighbourhood access roads.
The organisation of the plan was based on two main axes, which addressed two different parts of the new expansion:

- The eastern area, following the east-west axis - where there was a “Y” shape – consisted of the main street. This structure became the matrix of the whole urban plan. A big boulevard with trees was created. This boulevard continued beyond the Amstel thanks to the construction of a new bridge, called *Berlage Brug*, built between 1926 and 1932.

- The second part of the plan began from the station square. It represented a strong tangle inside the city, but it disappeared when the orientation was changed and it moved towards north- south.

Figure 2. Berlage, second plan for Amsterdam south, 1915 (Buurman M., 2005).

The boulevards are not only a solution to the traffic problem but they become a new public space. They represent a new space proportion where green areas play a very significant role.
The railway station was a new important element in the plan. The station and the bridge on the Amstel were the main elements of the expansion plan. Together with the prolongation of the wide monumental streets, they represented the symbol of a new urban area, where a great emphasis was given to the human dimension.
Berlage pursued a relation with the historical city, which was possible using the traditional typologies. The specificity of the plan was that the block was the matrix of the plan. The whole plan, made of squares, streets, public facilities, consists by unified elements.
Berlage solved the problem arranging the block as an independent element, able to compare itself with the older city. The block could be seen as a “recognizable type”, as an element to be used collectively. The plan was based on the concept of living together and using streets as public spaces. The social importance of the single parts reflects a unitary vision.
The block acquired new dimensions (50 meters per 100 or 200 meters, height of four floors on the streets, garden inside) and represented the main architectural unit of the plan.
Berlage committed the architectural drawing of the single blocks to the architects of the so-called Amsterdam school (Van der Mey, Kramer, de Klerk, Wijdeveld, Staal-Kropholled), who were able to figure out a new way to read the urban structure, facing the dwelling problem in terms of urban architecture.

All in all, the realisation of Zuid has taken more than 50 years. During that period the detail of the plan has been carefully filled in. With the passing time, more and more has been altered. However the overall direction remained firmly in the hands of the administration. Amsterdam's Executive - the College of Mayor and Aldermen - and especially the succession of aldermen for Housing and Public Works has implemented an inspired and engaged policy. Public Works detailed the roadways, canals, squares, parks and public gardens and work was usually realized under their direct supervision. All public space was painstakingly designed and harmonized with the style of the architecture of the closed perimeter blocks. The Housing Department kept a watchful eye on the quality of housing and shared the contracts between the housing associations, encouraging the use of the fine architects. The Building Inspector checked planning permission applications and the actual construction. The Land Agency, a division of Public Works, only released the land in leasehold to trustworthy investors and constructors, and not before the Working Party for Zuid had given its fiat to the draft plans. The committee had enormous influence, and its members included directors of the departments involved in construction, a few architects and a building constructor.

The architects assessed all the preliminary sketches and façade designs in a subcommittee. They also sketched silhouettes of streets and outlines of squares that served as an inspiration and guide for the actual designing architects.

Good architects, initially from the Amsterdam School, later from the New Objectivity – the Dutch functionalist movement that was part of the International Modern movement – and then from the Modernist stable, applied their talents to designing the housing and the street elevations.

Figure 3. Jekerstraat, Blaauw and Westerman, Amsterdam South, 1929 (Komossa S., 2005).

2.3. After the Second World War

After the Second World War, there was a severe shortage of housing in the Netherlands. Hundreds of thousands of homes had been destroyed or damaged and very few new homes had been built.

Ever since the Second World War, the Dutch government took the lead in public policies, including housing. Although the most important housing agencies were privately regulated institutions, they became increasingly subject to public regulation.

In practice the hosing corporations become branch offices of government in that central government determined rents, and set very detailed building requirements through subsidies and loans, and local government determined the choice of architect, the manner in which contracts were tendered, and also handled supervision during construction. Local government also took charge of housing allocation.

The dual task of repairing war damage and mitigation of the housing crisis reinforced the natural alliance between urban and housing policies.

The **General Expansion Plan of Amsterdam** (AUP), realized by Cornelis van Eesteren in 1935, was used for Amsterdam's post-war reconstruction.

The plan broke with tradition: previous expansions had been mainly concentric in structure. The AUP introduced the lobate city as the new spatial structure. The perimeter block disappeared and made way for an open plot layout in green space.

As a reply to the densely populated neighbourhoods of the late 19th century, westward of the city a new housing environment of 'light, fresh air and space' was designed according to the principles of the CIAM. The street with their long uninterrupted rows of houses, which were the binding spatial element in the pre-war city, gave way to open spaces consisting of roads and green, interlinking squares.

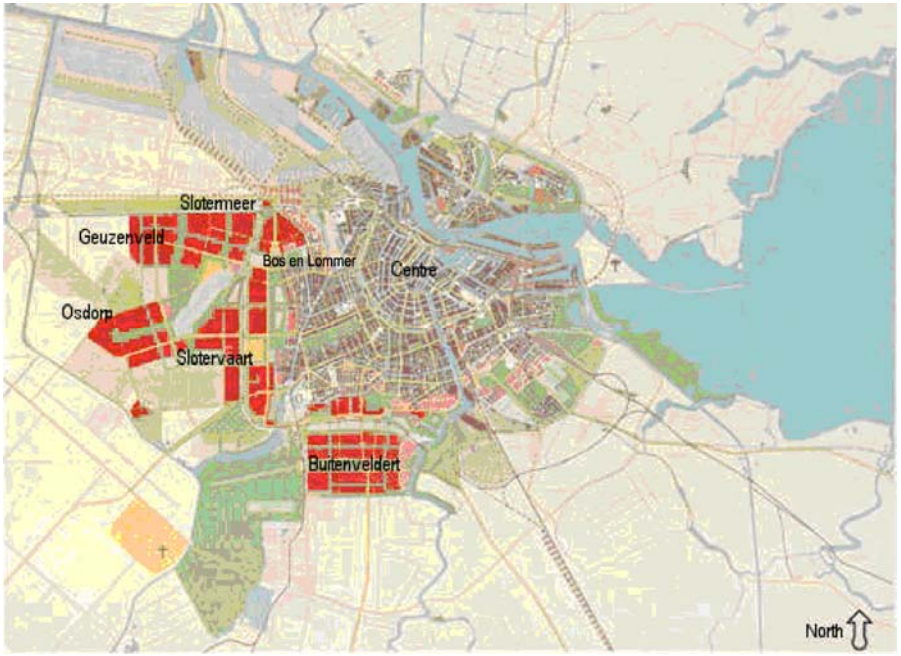


Figure 4. General Extension Plan of Amsterdam, 1935 c.a. (Cervellati P., 1973).

The plan was based on five new districts which were collocated in the West and South area of Amsterdam: Bos en Lommer and Slotermeer, which were partly built according to their original pre-war plans (1937 respectively 1940), Geuzenveld (1953), Buitenveldert (1956), Osdorp (1957) and Slotervaart (1959).

Bos en Lommer and Slotermeer were the only ones which were partly built according to their original pre-war plans.

During the implementation of the AUP, it soon become clear that the goal of fixing the growth of Amsterdam once and for all had by no means been achieved so two partial revisions of the AUP were made in 1958 and 1965: the Amsterdam-Noord plan and the Amsterdam-Zuid and Zuid-Oost plan.

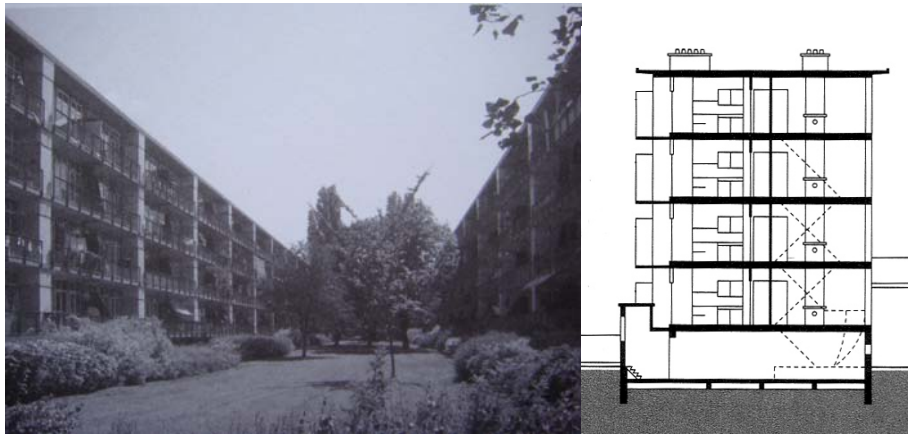


Figure 5. Bos en Lommer, Merkelbach and Karsten, Amsterdam, 1937 (Komossa S., 2005).

The Amsterdam-Noord plan, compared with the AUP, represented a turnaround in thinking about the desired direction of the development of Amsterdam. Amsterdam's Planning Department saw urbanization on the other side of the IJ as an urban planning mistake, especially because the lack of rail connection and barrier effect of the IJ. One of the most important choices in the plan for the Noord was the choice of the trajectory for Boogkanaal ('Arc Canal') which dominates the plan map (see figure 6).

The development of Noord remained under discussion, with numerous plans as a result; none were officially issued. Among this plans it is of great importance for the future Amsterdam, the one developed by Van der Broek and Bakema in 1965 and called '**City on Pampus**'. This was a scheme for a linear city in IJmeer, a lake in Amsterdam's eastern side.

Figure 6. Amsterdam-Noord structure plan, 1958-1964 (Buurman M., 2005).

The project was characterized by skyscrapers ranging in height from 24 to 40 storeys, accesses via fourteen traffic lanes on different levels and surrounded by three districts. This 'megastructure' was to house approximately 350,000 inhabitants. Although it was deemed unrealistic it did spark off thinking about what in the 20th century become the residential district called IJburg.

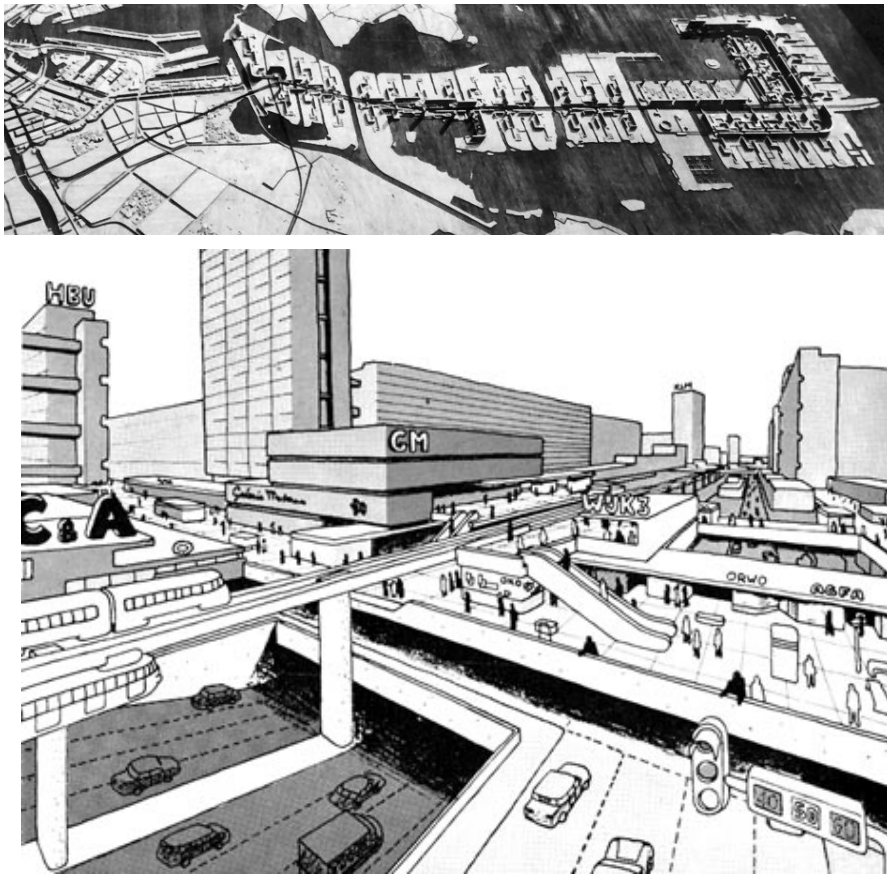


Figure 7. City on Pampus, Van der Broek and Bakema, Amsterdam 1965 (Buurman M., 2005).

The Amsterdam-Zuid and Zuid-Oost plan was the second far-reaching partial revision of the AUP and it was approved in 1965. In this plan the residential district of **Bijlmermeer** was designed. The neighbourhood was based on the modern ideas of CIAM and there was a radical separation of residential, work, recreational and traffic functions.

Figure 8. Bijlmermeer in Amsterdam (Buurman M., 2005).

Between 1968 and 1975, 13.000 dwellings in 31 large blocks were built, each 10 storeys high and 200 to 300 metres long. The units themselves were large and provided with many conveniences. Located on the first floor along “interior walkways” were rooms for communal facilities. The blocks of flats were situated in park-like traffic-free surroundings and formed a hexagonal pattern (honeycomb). These surroundings included watercourses, footpaths, play facilities and cycle tracks.

The Bijlmermeer was designed with two levels of traffic. Cars and buses drove over elevated roads, the decks of which fly over the lower level’s pedestrian avenues and bicycle paths.

Residents could park their cars in car parks located directly along the traffic-ways and could then walk home under covered passageways.

Soon after Bijlmermeer realization problems began and multiplied in the following decades. It is possible to divide the problems into three groups of connected issues.

First of all, there is the unfinished character of the district. A lot of ideas and planned facilities, like stores and spaces for sport and recreation were not realised because of lack of finances. Other facilities, like public transport, were realised too late. The Bijlmermeer became, instead of a city district with the appropriate level of facilities, a satellite town of Amsterdam without good transport links to the centre of the municipality (Luijten, 1997).

The second category of problems are the enormous liveability problems in the Bijlmermeer. It became clear very quickly that the normal process for managing the stock was not sufficient for high-rise blocks. The numerous uncontrollable semi-public and collective spaces like entrees, alleys, corridors, 13.000 storage spaces on the ground level, 110 kilometres of galleries and 31 parking garages turned out to be blind spots rather than cosy places where people could meet each other. Because the flats were in the hands of 16 different housing associations, all based in downtown Amsterdam, management was chaotic. No one was willing to assume responsibility for the large tracts of public green space, which had been laid out in such a way that any form of surveillance was impossible.

Figure 9. Bijlmermeer in Amsterdam (Buurman M., 2005).

The third group of problems refers to the housing market. Demand and supply did not match properly. Even during the construction of the flats there was insufficient demand for them (Kwekkeboom, 2002). The intended inhabitants, middle-class families, preferred other towns around Amsterdam where single-family houses with gardens were built. Socio-economic factors, like increased incomes, more free time and mobility, led to a process of individualisation which did not go hand-in-hand with the collective living of the Bijlmermeer. In 1974, the turnover rate was 30 percent. From the late 1970s, the gap between supply and demand was closed by rentals to poorly-housed, low-paid workers, needy social groups and immigrant ethnic minorities (Surinami people). The Bijlmermeer became more and more a single-class, low-income and unemployed, ethnically diverse and increasingly non-white urban enclave (Blair & Hulsbergen, 1993).

Many solution were tried to solve Bijlmermeer's problems and in 1990s central government and housing associations decided to change radically the urban concept (see paragraph 2.7).

2.4. The dawn of free-market forces

In the late 1970s and 1980s the housing task remained a dominant factor but in opposition with the previous years, the attention was turned to the quantitative and qualitative reinforcement of the urban residential function of the city centre and its surrounding urban residential neighbourhoods.

The municipal executive, which took office in 1978, accomplish an extensive urban renewal program in the older districts and initiated many projects which benefited the city into the new millennium: Nieuw Sloten, Oostelijk Havengebied (Eastern Harbour District) and IJburg.

Nieuw Sloten realized at the beginning of the 80s in the South-West of Amsterdam, had a pioneering function. It was the first residential development in which the 'compact city policy' could find expression. This national policy was aimed at densifying and building compactly in the centre and on edges of the cities, in order to prevent the further urbanization of green areas. Moreover, the compact development was to consist manly of spacious dwellings in the upmarket private sector, with the aim of preventing the more affluent inhabitant from leaving the city. The plan was ambitions and revolutionary because since the thirties Amsterdam had built almost exclusively inexpensive, social rented housing. In the construction of Nieuw Sloten the influence of the market began to become apparent and the housing associations became increasingly involved as market player in the

planning process. In the planning for Nieuw Sloten, they were given a considerable say in the design.

The selection of builders and architects was by, among other things, competition. There were no rules as yet: these were devised along the way. In addition the residential area were clearly issued in fields: for each individual area, there was one architect, one developer and one builder, as a result of which the various neighbourhoods have considerable unity.

Figure 10. Nieuw Sloten in Amsterdam (Buurman M., 2005).

The lessons of Nieuw Sloten were put into practice in **Oostelijk Havengebied** in Amsterdam (Eastern Harbour District). In 1979 the last shipping company in eastern dockland closed its doors, as business moved to the new port facilities west of the city. With the intention of realising as much housing as possible around and near the existing city, in keeping with the concept of the compact city, in 1975 the Amsterdam City Council had designated the eastern docklands as a future residential area. In total between 1989 and 2000 about 8500 dwellings were realised, providing for 17,000 residents.

The project and consisted in the realization of: KNSM Island (1989), Java Island (1995-1996), Borneo and Sporenburg (1996-2000).

The role of the city in this radical and extensive transformation was limited to preparing a global masterplan for the whole area. This masterplan subdivided the Eastern docklands into various sections, for which separate urban development plans were made by external urban designers: JoCoenen for the KNSM Island; Sjoerd Soeters for Java Island; West 8 for Borneo and Sporenburg.

Figure 11. Eastern harbour district in Amsterdam (author's figure, 2010).

In the masterplan the city formulated a number of urban planning principles: the density had to be high, the existing water areas must be left as much intact as possible and there had to be a high degree of differentiation in the types of dwellings realized.

With the inception of the plans for the eastern docklands, the shift in the politics of public housing clearly emerged. The ever-increasing influence of the market is visible in the percentage of owner-occupied housing and rental properties: in KNSM Island the proportion is 50/50 while in the later Java Island, Borneo and Sporenburg the proportion is 70/30.

Figure 12. Apartment buildings in Java Island in Amsterdam (Komossa S., 2005).

Figure 13. Single family houses in Borneo Island in Amsterdam (author's figure, 2008).

2.5. The privatization of the housing associations

In the ‘80s, as described in the previous paragraph, there was a change in the politics of public housing and it began the debate on privatization of the housing associations.

Since 1901, when the Housing Act took effect, until 1995 the State gave loans and grants through which the housing associations and housing corporations built the social housing. The loans were repaid with proceeds from the rentals. The year 1995 marks the end of the financial relationship between the State and associations for social housing. This happened with the so called **Brutering** (balance) operation: future grants are balanced with debt.

Since then, housing corporations are responsible for the loss of housing management and they have to provide at least 30 social houses per hectare. In order to achieve these aims, corporations develop and manage owner-occupied and rented housing which are more expensive than before. After the Brutering there is more attention to the quality of housing and people, who are socially different than before, demand bigger and most comfortable houses. Prior to 1995 social housing were built according to bid, after the production is based on demand. The market-oriented attitude leads to a broader diversification, even in terms of style. In the same building is possible to have more housing typologies than before and there different categories of people can coexist.

This diversification is clearly visible in the new district of IJburg which will be described in the next paragraph.

2.6. Vinex, the new housing expansion

Vinex is the acronym for Vierde Nota over de Ruimtelijke Ordening Extra, in its most literary translation, Fourth Report on Spatial Planning Extra. This report was realized in 1990 and it is a supplement to the fourth in series of policy documents drawn up by Minister of Housing, Spatial Planning and Environment. In the report the Minister earmarked the location in which plans for new urban expansion could drawn up. According to the document a total of 634,800 new dwellings had to be constructed between 1998 and the year 2005, and these had to be realized in covenants underwritten by central government, the provinces and the local authorities. The last one would receive financial assistance from central government for the realization of the new housing.

Two Vinex examples are: Leidsche Rijn in Utrecht (1997-2025) which is next to Kanalenailand area of project and IJburg in Amsterdam (2001-2011).

IJburg is a group of man-made islands in the eastern part of IJmeer in Amsterdam and it is the most urban off all outlying Vinex developments. The district had a long gestation period that goes back to the ‘City on Pampus’ developed by Van der Broek and Bakema in 1965 (see paragraph 2.3).

In 1996, the city council approved the construction of this residential district which provoked an uproar in the city. A war erupted in the media between conservationist to preserve the nature in the IJmeer and supporters of the expansion area. This media attention resulted in a referendum in 1997. When it became apparent that there was not enough opposition to the scheme, IJburg was given the go-ahead.

The office Palmboom and Van den Bout was engaged to draw up the overall urban design scheme. Palmboom designed an archipelago of six artificial islands in the IJmeer. The position of the various islands was based on a

'water scheme'. Wind directions and the direction of the water currents determined the contours of this cluster of islands.

IJburg should be a complete city district with in addition to housing , businesses, schools, shops and recreational facilities. Accessibility was crucial: the A1 and A10 were close by and the new district would be fifteen minutes from Amsterdam's Central Station by high-speed tram.

A quality control team, under the supervision of Kees Rijnboutt, was commissioned to advise the council on the quality of the urban design schemes for the individual islands and of the plans for the public space. In accordance with standard practice, the amenities inspector evaluated the plans.

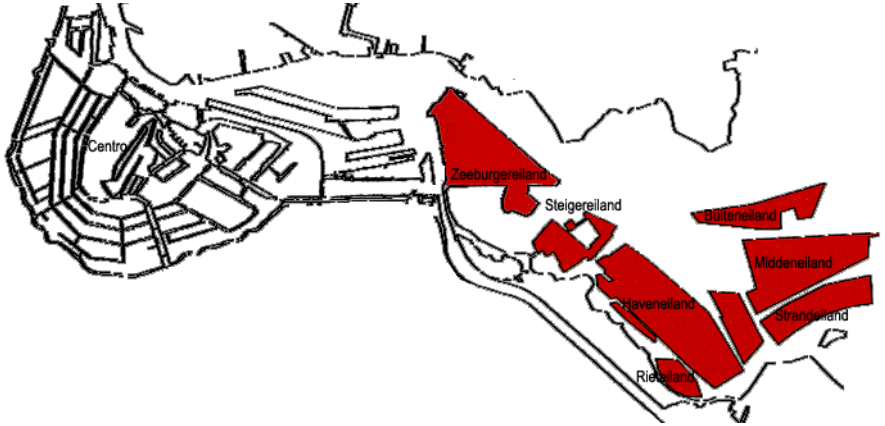


Figure 14. IJburg in Amsterdam (Buurman M., 2005).

In 1998, the council entered into a cooperation agreement with the developers. The council prepared the site for development and built the main access route, while private enterprise was given responsibility for the residential area and the public space. Because a phased development was important, IJburg was divided into three planning sectors, each with a different character and level of facilities. The western section comprises Zeeburgereiland and Steigereiland (self-built plots, some exempt from official interference, and floating houses), the eastern section comprises Centrumeiland, Strandeiland, Middeneiland and Buiteneiland and the middle section comprises Haveneiland and the Rieteilanden (up-market self-build plots organized to a strict urban regime).

The urban design scheme drawn up by Felix Claus, Frits van Dongen, and Ton Schaap of the city's planning department was laid down by the city council in February 2000. In the plan Haveneiland, which is the biggest island, is filled with a grid of street, framing rectangular blocks measuring 70 to 90 m in width by 175 m in length. The grid of blocks and streets is bisected by canal.

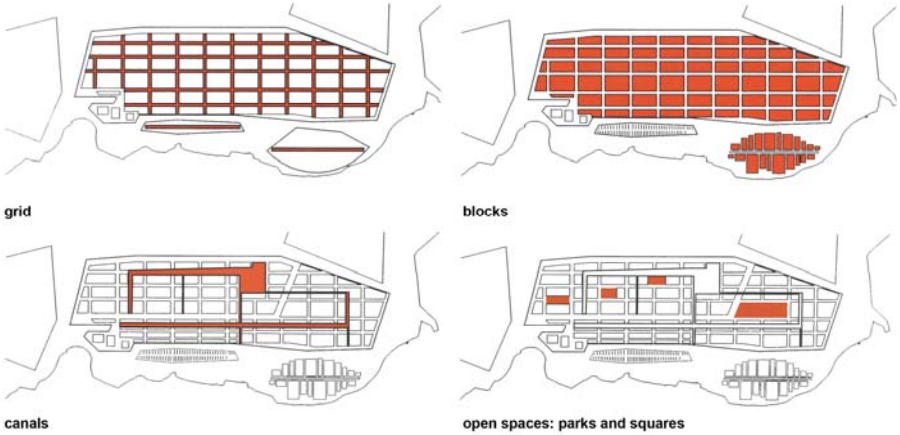


Figure 15. Analysis. IJburg in Amsterdam (Cie Architect, 2000).

Each block was given to different team of architects, with one architect acting as coordinating architect or 'head of block'. The blocks have to respect a number of requirements which lad architects to come out with

creative solutions for the plot layout. Some studies about urban blocks were made during the project and great attention was made in the public spaces.

One key future of the footprint area is that the blocks' enclosed courtyard served as public space. So blocks had to be opened up and their inner courtyards connected with the adjacent streets. The prescribed housing density was so high that it necessitated construction on part of the blocks' internal space. This has led to range of different public spaces within a single block.

Apart from the elevation along IJburglaan, the main street, all blocks are framed by a 1.2 m strip, which eases the transition from public (the street) to private (the home) for residents.

Parking is largely restricted to private property, which resulted almost everywhere in underground car parks.

Figure 16. IJburg in Amsterdam (Cie Architect, 2000).

2.7. The urban renewal

Parallel to the creation of new districts, the Dutch government has accomplish an urban renewal policy since the 1980s. Under that approach, the accent was placed on improving the housing conditions of the 'sitting' residents.

At the end of the 1980s policy concentrated on areas with multiple problems and in a later stage the policy of social renewal had to repair this. The role of the policy was to increase participation in society, via labour market, but also via all kinds of social relations.

In the 1990s the Big City Policy I concentrated on urban neighbourhoods where a relatively large share of population had low income. The policy aimed at fighting this sort of segregation, because especially, the rise of 'income ghettos' was feared. Therefore, the policy concentrated at restructuring the urban housing market: low cost accommodation had to be destroyed and replaced and mixed with more expensive houses in order to attracting new well-to-do households to the neighbourhoods.

This policy was applied to **Bijlmermeer** neighborhood in the south of Amsterdam but also in **Kanaleneiland**, the area of study. There the local authorities and the housing corporations are realizing some plans (see chapter 3.5.) which consist in the demolition and construction of some dwellings and in the renewal of part of the housing stock. The policy is to increase the number of owner-occupied dwellings.

In Bijlmermeer, after years of debate, maintenance experiments, adaptation and partial solutions, it become clear that the urban concept had to change structurally. Radical plans were introduced in 1990 and worked out in 1992. Step by step, these plans are still being realised. The plans included the

demolition of a quarter of the housing stock, another quarter sold and the remaining part improved or upgraded, while new types of houses were planned, including owner-occupied low-rise dwellings.

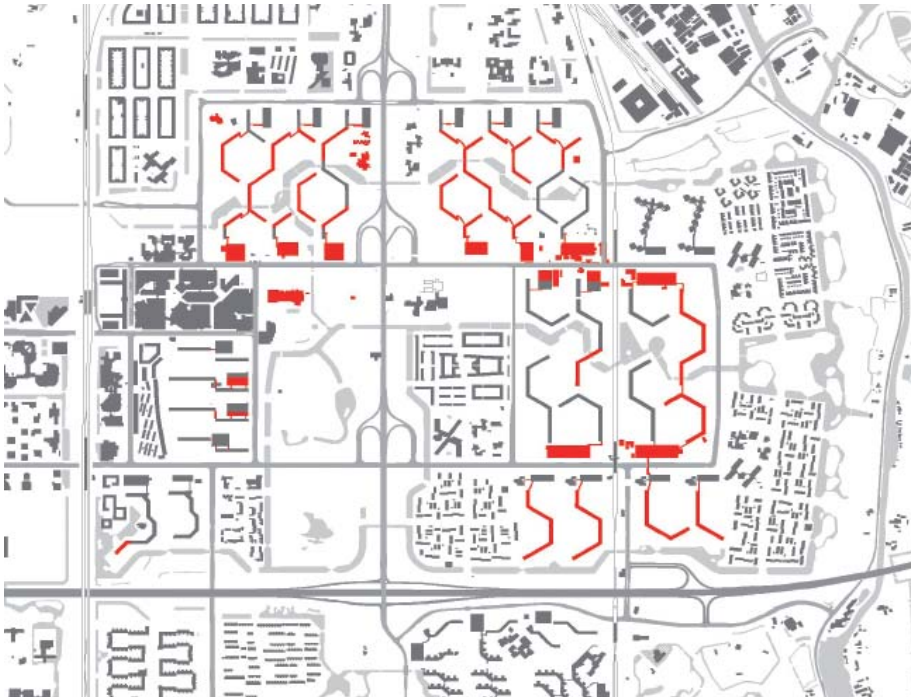


Figure 17. Houses demolished in Bijlmermeer by 2010 in Amsterdam (author's figure, 2010).

These new plans are made in close consultation with the residents. In 2001 a large questionnaire was conducted in the areas to be renewed researching which physical renewal measures residents supported .

The results were remarkable, with almost 70% of the inhabitants agreeing that it is 'a good idea' to demolish one or more of the remaining high-rise blocks.

A total of 6,500 flats have been demolished and 6,000 flats has been renovated. During the renovation of the flats, the interior walkways are often removed and the aerial walkways to the parking garages demolished. Ground-floor storage areas are being replaced by housing or other functions such as studios and business space.

In addition to the renewal of the apartments, the public areas are restructured and a new park with sport facilities has been realised.

Figure 18. Houses and public spaces renovated in Bijlmermeer in Amsterdam (author's figure, 2008).

3. KANALENEILAND DISTRICT: AREA OF PROJECT

3.1. Location

The area of project is on the Northern of Kanaleneiland district which is situated on the South-West side of Utrecht and, as the name suggests, it is between two canals: the Amsterdam-Rijnkanaal on the West side and the Merwedekanaal on the East side. When Kanaleneiland was planned the Amsterdam-Rijnkanaal limited both the district and the city of Utrecht.

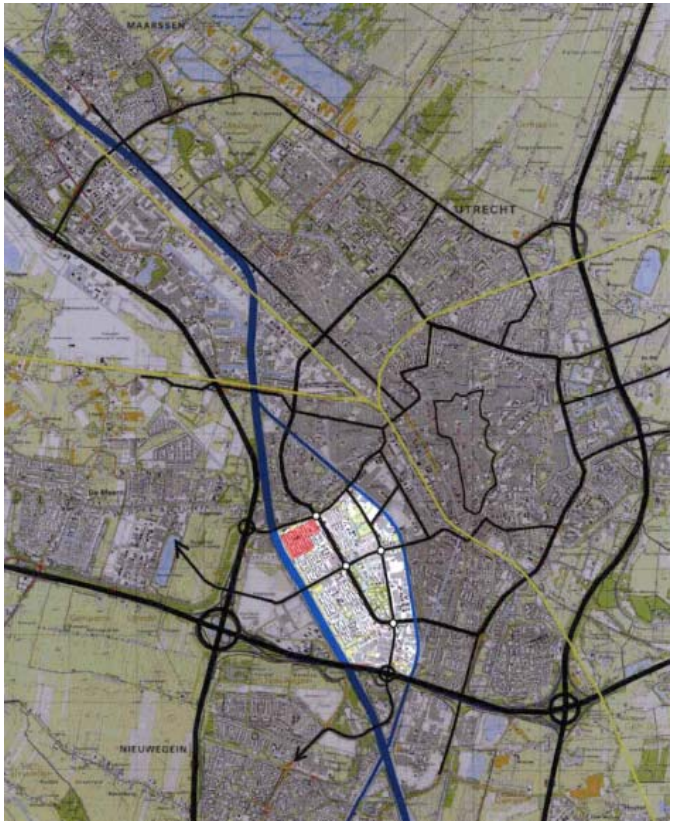


Figure 19. Study area located in the city of Utrecht (author's figure, 2009).

Moreover Martin Luther King Avenue and Verenigde Naties streets divide Kanaleneiland by Deelgebieden Den Hommel and Welgelegen districts on the North. On the West of the Amsterdam-Rijnkanaal there is Kantorenpark Papendorp, on the South and on the East there are the A12 and Benelux Avenue. The latter was part of the ring road planned by Berlage and Holsboer in 1924 and divides Kanaleneiland by Transwijk district.

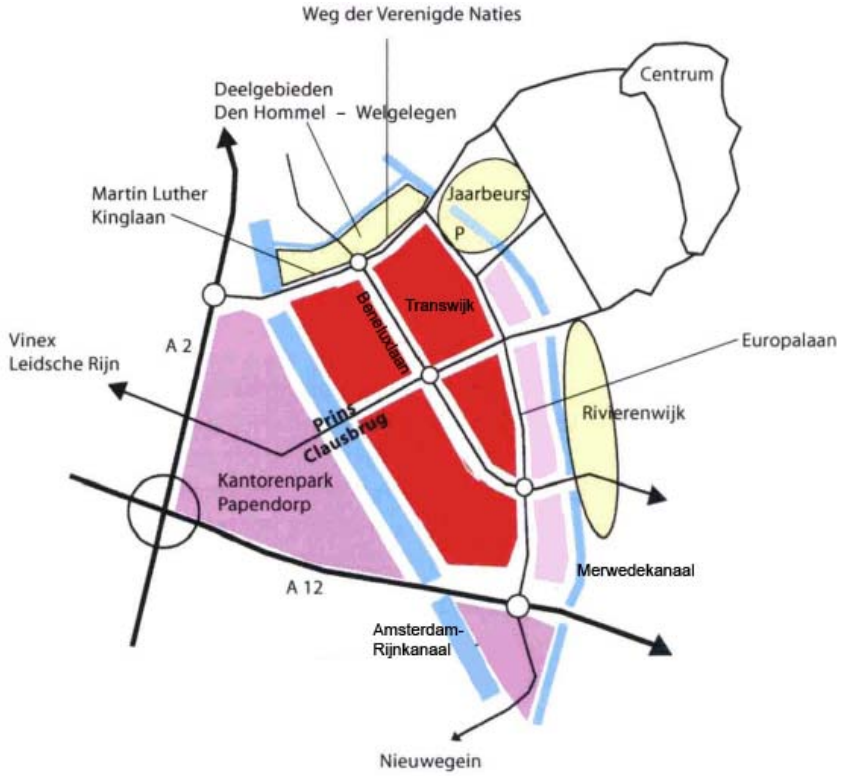


Figure 20. Study area location (Li, 2006).

3.2. History

The construction of Kanaleneiland is part of the large-scale extension of the city which aimed to solve the urban housing shortage after the World War II. Indeed the municipality of Utrecht developed in 1954 a structural plan up to 1970 which led to the construction of three large districts: Kanaleneiland, Overvecht and Hoograven. These were intended for 90,000 inhabitants, of which 30,000 in Kanaleneiland.

The construction of Kanaleneiland started in 1956 and was completed in 1971. During these years 7,500 dwellings had been built for the middle-class families and more than 80 per cent was social housing.

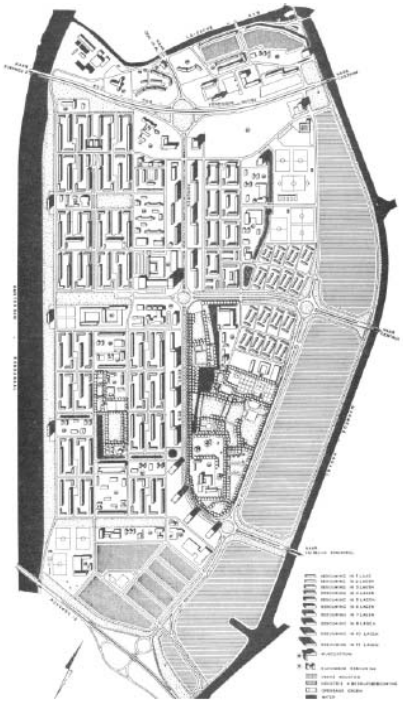


Figure 21. Plan of Kanaleneiland realized by C.M. van der Stad in 1956. (Jacobs, 1988).

3.3. Spatial structure

Kanaleneiland was designed according to the principles of the district mind-set and functionalism. This district thinking was based on developing the district separate from the historical city centre. Each district was given its own facility centre and the residential areas were clustered round this centre. There was a strict separation between different functions. In Kanaleneiland this structure was placed in an austere geometric pattern, with a perpendicular structure of wide traffic routes and cycle tracks. Because the predominantly elongated development is parallel to the Amsterdam-Rijnkanaal, this direction is dominant in the plan.

The residential areas are structured approximately in the same way. They have fixed pattern comprising two flats of four floors and plinth, parallel to each other. The plinth, the ground floor, mainly comprises storage facilities and few functions that generate activity on a street level. The fixed patterns on the side of the buildings end in single family housing on two floors. There are private gardens situated between the flats and the land between the fixed patterns laid out as a playing zone and green zone has, over the years, had to make way for the car.

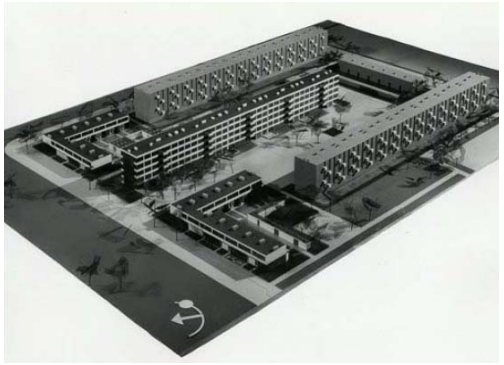


Figure 22. Kanaleneiland stamp (Jacobs, 1988).

3.4. Dynamics: the housing stock and the district residents

When Kanaleneiland was completed it was a sought-after district for the Utrecht middle classes. The residents were proud of their modern housing, the space, the green layout and the provision of facilities with a shopping centre and schools. Rose beds were laid out between the flats. This explains why the district was nicknamed “Rozeneiland”, a name indicating the status and the image of the district. In the past ten years conditions in Kanaleneiland have deteriorated. The district has gained a reputation nationally as a rundown area owing to a concentration of diverse negative developments.

Although Dutch households initially occupied Kanaleneiland, the area turned into a multi-cultural neighbourhood during the years. This process happened mostly in Northern-Kanaleneiland where this project has been developed.

Most original residents could not or did not want to continue their housing career in the area and after they had left, households with a non-Dutch background often succeeded them.

The dwelling types and the quality of both the housing stock and environment can be seen as important factors causing this process. Indeed the lack of single-family housing, owner-occupied dwellings or dwellings with elevators or other facilities, caused people to look for better opportunities elsewhere. As it got financially attractive to buy a house, general demand for the rented sector decreased as well. Although the decline of the quality has been of influence as well. Due to financial problems the owners of the stock, mainly housing corporations and the local government, did not invest money in their proprieties during the late 1980s and early 1990s. As a consequence both the housing stock and the environment underwent a natural process of obsolescence. Tenants experienced discomfort from draught, moisture, bad insulation and noise pollution while the famous rose beds have disappeared.

As Kanaleneiland become less popular the economic value of the stock decreased. Indeed the value of a dwelling was on an average level in the mid 1980s, in 1996 the figure had dropped to 16.3 per cent under the urban average of 922 euro per square meter. By 2002 this difference had even risen to 24.5 per cent (Aalbers, 2003). As a consequence vacant dwellings were often allocated to non-Dutch families, due to low income and large households, or people difficult to place elsewhere (e.g. ex-criminals, drug, addicts, alcoholics). More than 80 per cent of the newcomers are immigrants and most of them are young Moroccans or Turks families with children. Today approximately one third of the residents are under the age of eighteen and 95 per cent of the pupils fall under the so-called “attention for educational policy” of the national government (Aalbers, 2003).

The demographic developments on Kanaleneiland not only caused socio-cultural changes, but resulted in the economic development. Indeed most residents did not seem to have the required skills to get a job and many of them are unemployed (5,4 per cent in Kanaleneiland against 2 per cent in Utrecht in 2001 (Gemeente Utrecht, 2002)).

Next to this unfavourable situation however, the neighbourhood knows some positive developments as well. Several initiatives have been released to improve the situation such as the Van en Voor Jongeren foundation for sports and meeting activities which have a wide impact among youngsters who hang around aimlessly. Furthermore, there are plans (see chapter 2.5.) to restructure the area and increase the number of owner-occupied dwellings. This way, households with a stronger socio-economic background should be attracted.

3.5. New plans for Kanaleneiland

As introduced in the previous chapter, a number of plans for Kanaleneiland are already in the pipeline of the municipality of Utrecht and the houses corporations. These projects, which will be presented below, will be taken into consideration in this work.

1. Fly-over 24 Oktoberplein

North of the study area the 24 Oktoberplain will have a flyover to improve the traffic flow, as a result of which the green area on the North will become narrower.

2. Redevelopment Mesos terrain

On the spot where now the Mesos hospital still stands, housing is planned.

3. Redevelopment As-Kanaleneiland

A new residential environment, called As-Kanaleneiland, will be added in the heart of Kanaleneiland, linking Kanaleneiland-North and South with each other. The construction of the Prins Clausboug, a bridge across the Amsterdam-Rijnkanaal, gave the go-ahead for this. Macanoo Architects are working on this development which aims to give residents with average incomes the opportunity of remaining in the district and, on the other hand, to attract people from outside the area with a positive social-economic background.

The design comprises a mix of apartments and single-family homes. Five hundred homes will be demolished, and the plan is to replace them with approximately 1,300 new ones. The shopping centre, situated within this axis, will undergo a thorough facelift.

4. Playground Peltplantsoen

Hart van Noord is a recently-built affordable single-family housing with a school at ground level. In front of this building a new playground will be built.

5. ARK-park

The Municipality is also developing a plan for a park along the Amsterdam-Rijnkanaal which is called ARK park.

Figure 23. Dynamics (author's figure, 2009). 1) Fly-over 24 Oktoberplein 2) Redevelopment Mesos terrain 3) Redevelopment As-Kanaleneiland 4) Playground Peltplantsoen 5) ARK-park.

Figure 24-25. Redevelopment As-Kanaleneiland (Europan 10, 2009).

Figure 26. Playground Peltplantsoen (Europan 10, 2009).

Figure 27. ARK-park (Europan 10, 2009).

4. ANALYSIS OF KANALENEILAND

In the following pages some aspects of Kanaleneiland will be presented:

- **Infrastructure**

The district is divided symmetrically by a wide street called Marshallaan and surrounded by three important roads that can be considered as boundaries which isolate the area from the city centre.

Even if the last one is not distant from the district, it is accessible only by bus and private cars. In Kanaleneiland there are not parking areas, so the land between the fixed patterns laid out as a playing zone and green zone has, over the years, had to make way for the car.

- **Services**

The district is mostly residential with two shopping centres, one hospital, one mosque and two schools. The mono functionalism of the area is probably one of the causes of its decline.

- **Housing typologies**

The majority of the buildings are social houses of five floors and single family housing of two floors.

The buildings along Beneluxlaan are higher than the previous ones and the tallest is sixteen floors.

- **Public and private spaces**

Between the houses there are big open spaces in which there are private gardens, playing zones, green public areas and parking lots.

Nowadays the common areas are not well maintained and not experienced by the population. Also the waterfront needs to be improved so that it is better equipped for future use.

- **Green spaces**

In the middle of the district there is a park with a playground area and a football pitch. As explain before a new green area will be realized there and called Playground Peltplantsoen.

1. Ponte Prince Claus

2. Marshallaan

infrastrutture

strada urbana principale

strada di quartiere principale

pista ciclabile

autolinea

imbarcazioni

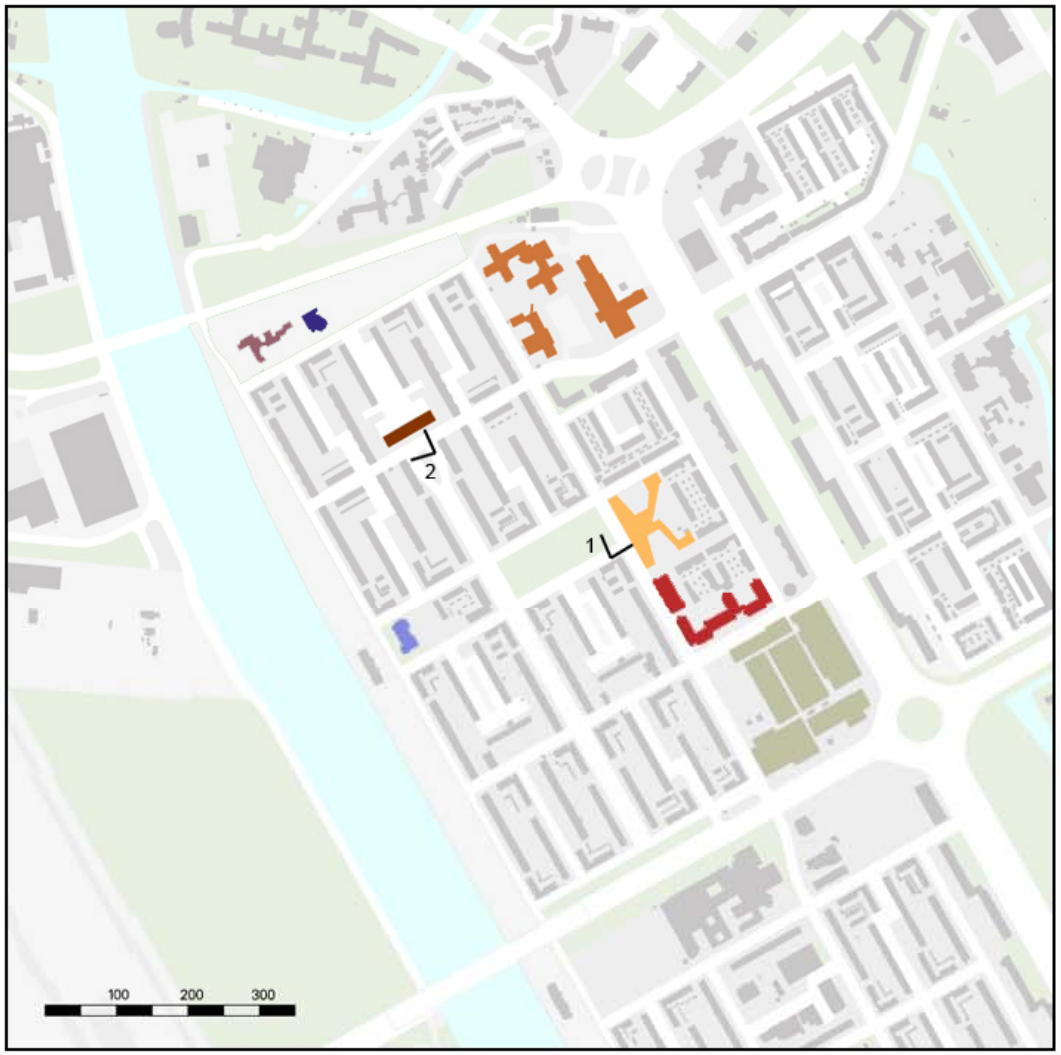
strada urbana secondaria

strada di quartiere secondaria

tram

autobus

Figure 28. Analysis of Kanaleneiland-North: infrastructure (author's figure, 2009).



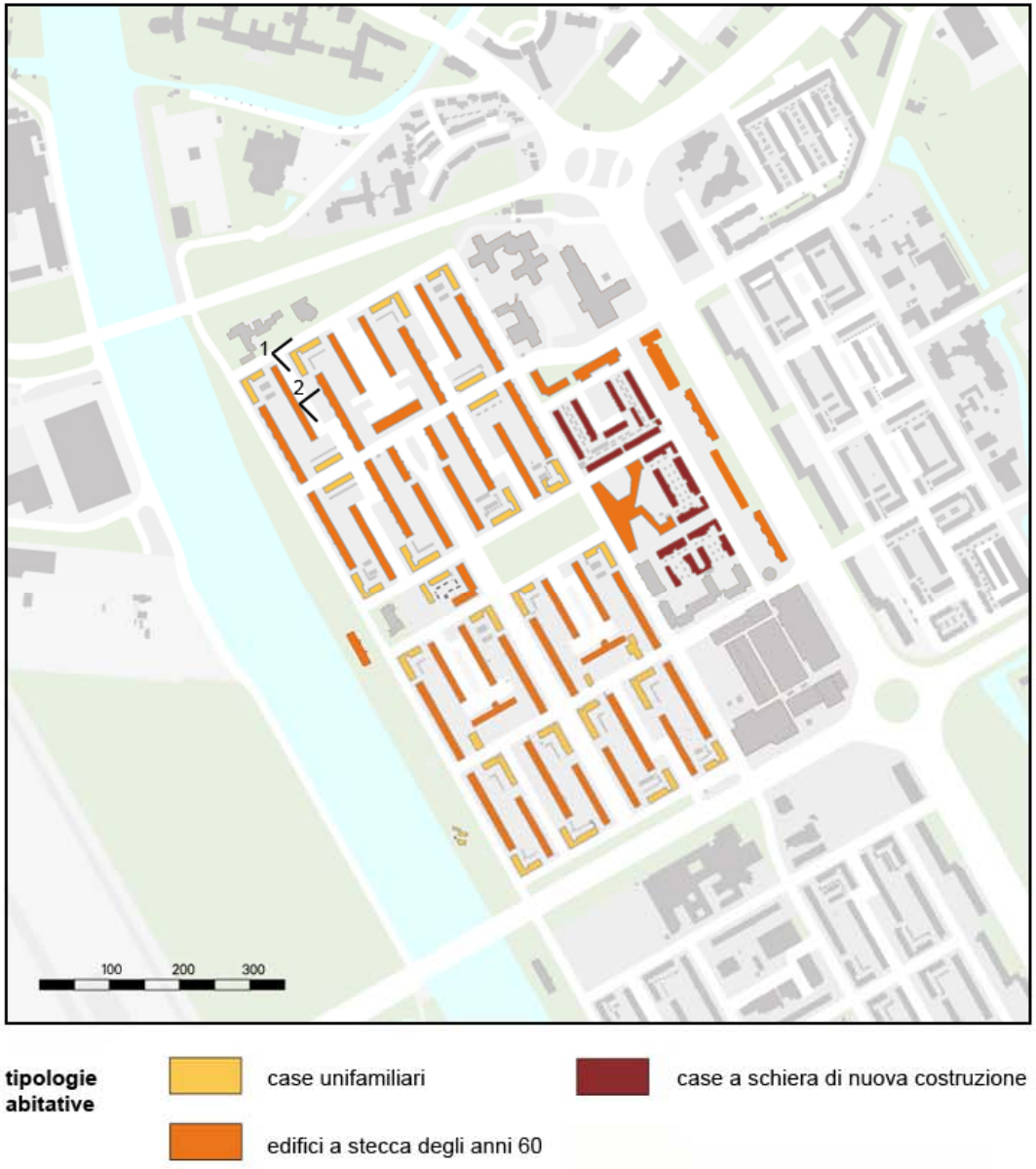
1. Scuola Hart van Noord

2. Centro commerciale Rijnbaan

servizi

- centro commerciale Rijnbaan
- centro commerciale Kanaleneiland
- scuola Hart van Noord
- moschea
- scuola coranica
- centro culturale
- ospedale
- uffici comunali

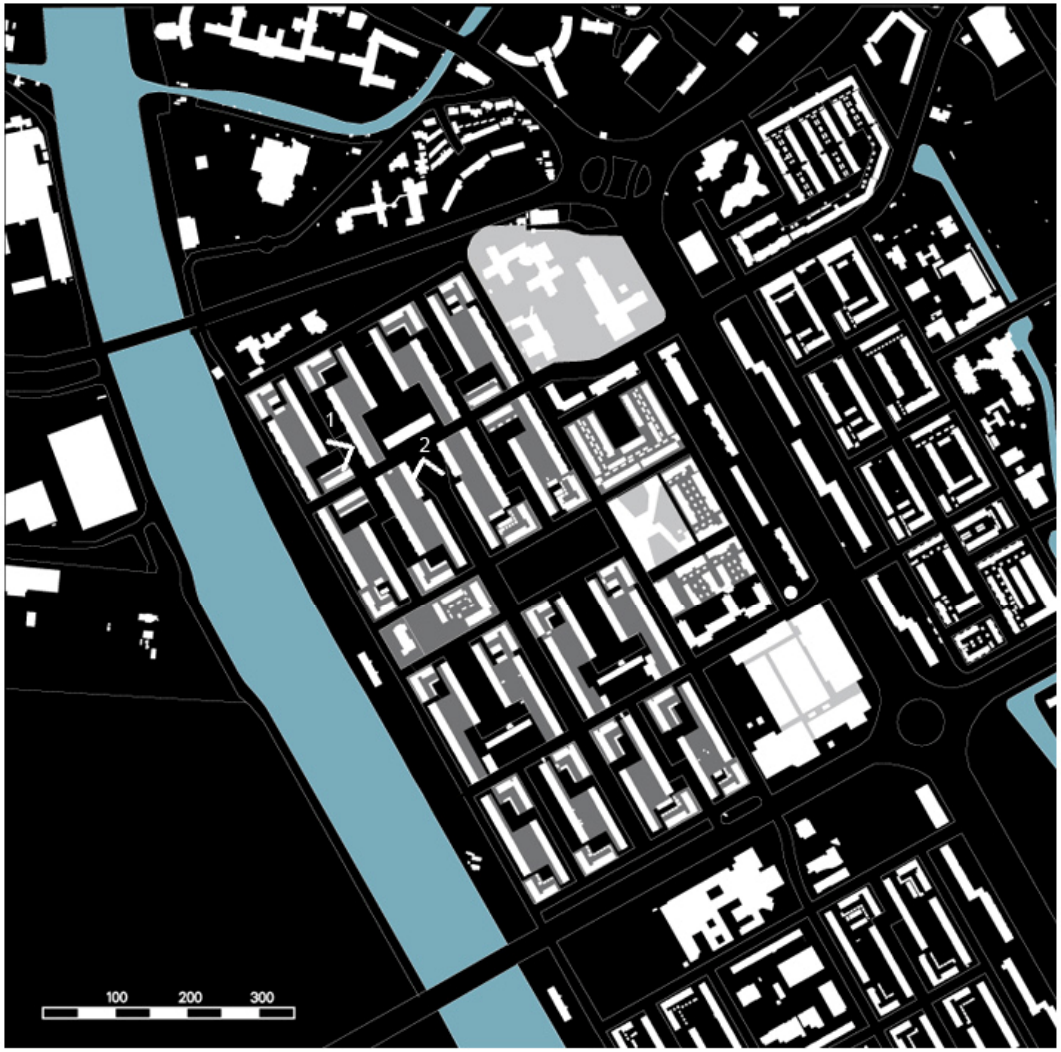
Figure 29. Analysis of Kanaleneiland-North: services (author's figure, 2009).



1. Casa unifamiliare

2. Edificio a stecca

Figure 30. Analysis of Kanaleneiland-North: housing typologies (author's figure, 2009).



1. Maarshallaan

2. Adenauerlaan

Figure 31. Analysis of Kanaleneiland-North: public and private spaces (author's figure, 2009).

1. Canale Amsterdam-Reno

2. Parco Attee

Figure 32. Analysis of Kanaleneiland-North: green spaces (author's figure, 2009).

5. STRATEGIES

The aim of this project is to modify the district in a way that improves physical, social and economic aspects.

In detail the goals are:

- replacement of housing units considering the urban layout of Kanaleneiland;
- differentiation of housing types and price range, creating greater choice;
- a design for the public spaces which takes into consideration new lifestyles and how to manage these areas;
- redevelopment of the waterfront;
- realization of parking areas;
- connection between the district and the city centre;
- mix of functions in the district. The focus is on stimulating the district economy by offering the residents, or people from outside the area, new facilities and work activities;
- realization of new meeting places in which people can share their different experiences and cultures.

6. PROJECT

6.1. Masterplan

The analysis described before show that, in order to regenerate Kanaleneiland, one of the goals has to be to increase the connections between the area and the surrounding. Because of this the area becomes part of three routs: cultural, green and water. The first one connects directly the area to the city centre and along it there are some museums, the exhibition centre, the concert hall and the Cathedral. The second one is based on the idea of redeveloping the canals and realizing, together with the existing parks, a system of green areas. The third one consists in using the existing canals for connecting the area of project to the city.

In the plan the existing urban structure is taken into consideration and broken by a new axis which gives dynamism to the austere geometric pattern.

The beginning and end of the axis are appointed by two buildings which are a science and technology park and a boat club. Along the axis there are houses with shops at the ground floor.

The public green breaks the residential area and connects it to the most important places.

The open spaces draw is influenced by Haveneiland visit and study (see paragraph 2.6). Indeed in the project, as in Haveneiland, one important element is that the blocks' enclosed courtyard served as public space. Courtyards are connected one to each other and to the adjacent streets by areas of transition. This has led to range of different public spaces within the masterplan.

Below some early ideas and masterplans are presented. In these is possible to observe different solutions referring to the relationship between public and private areas and housing typologies.

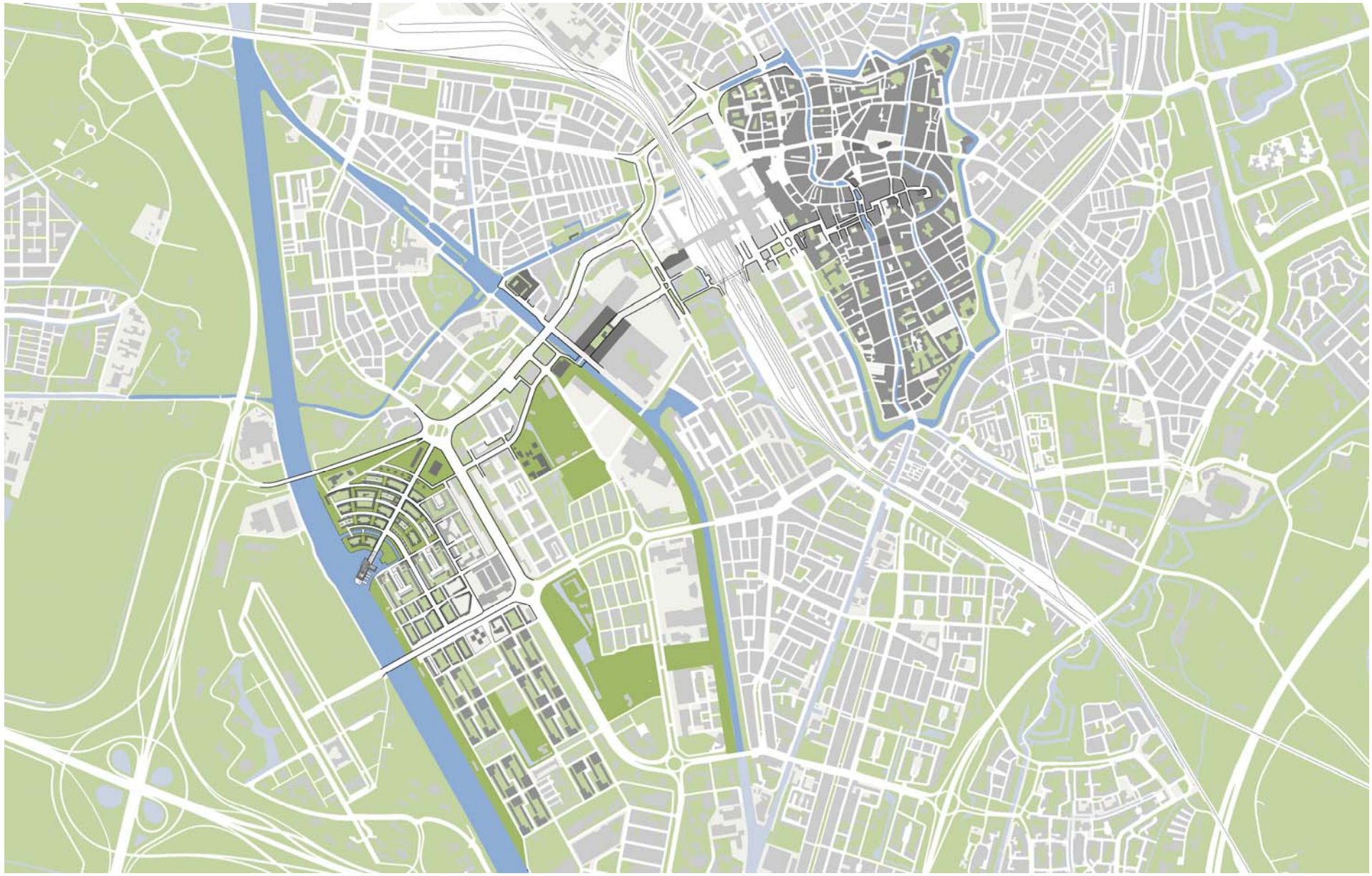


Figure 33. Masterplan (author's figure, 2010).

Figure 34. Masterplan (author's figure, 2010).

Figure 35. Masterplan first phase (author's figure, 2009).

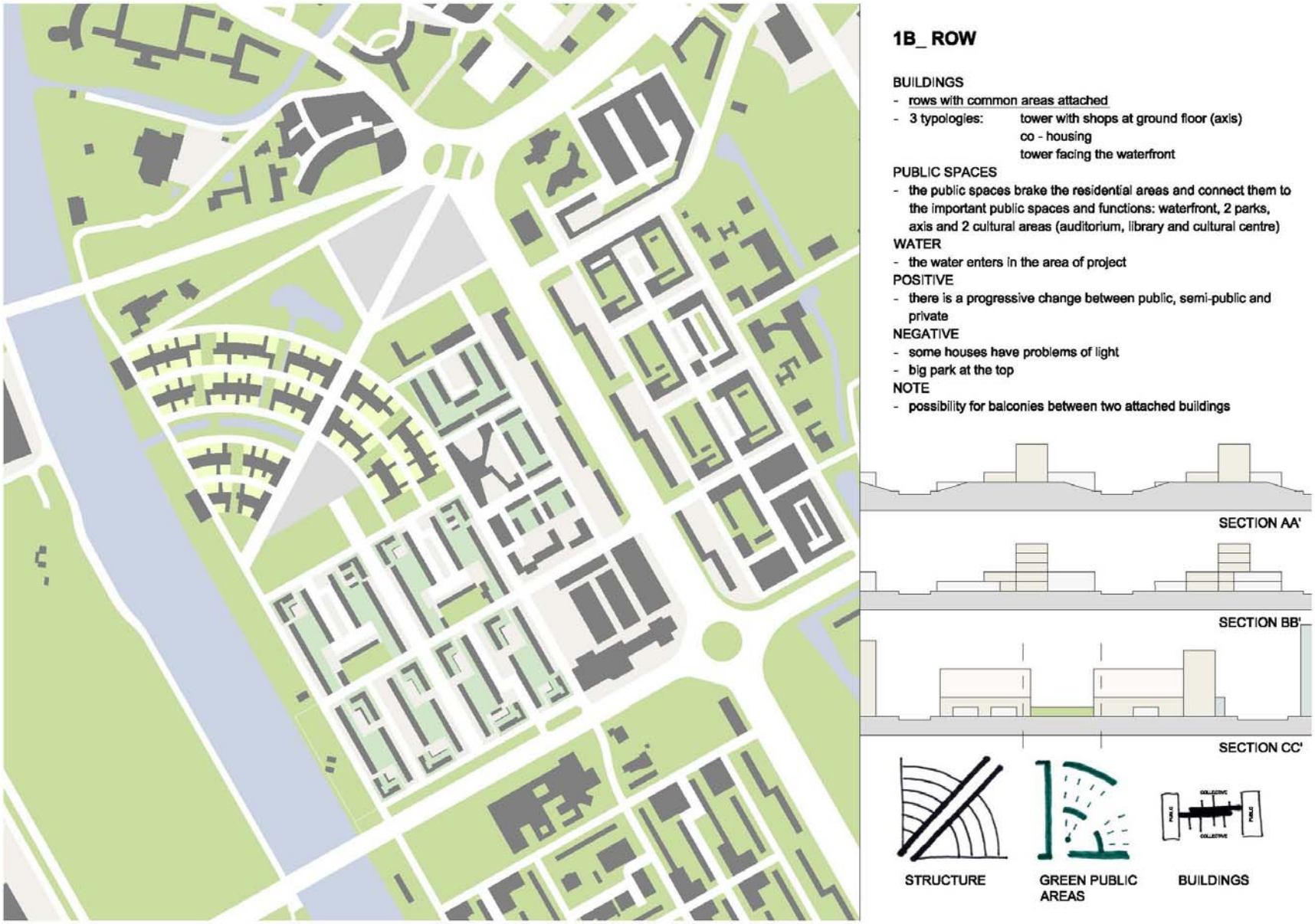


Figure 36. Masterplan first phase (author's figure, 2009).

Figure 37. Masterplan first phase (author's figure, 2009).

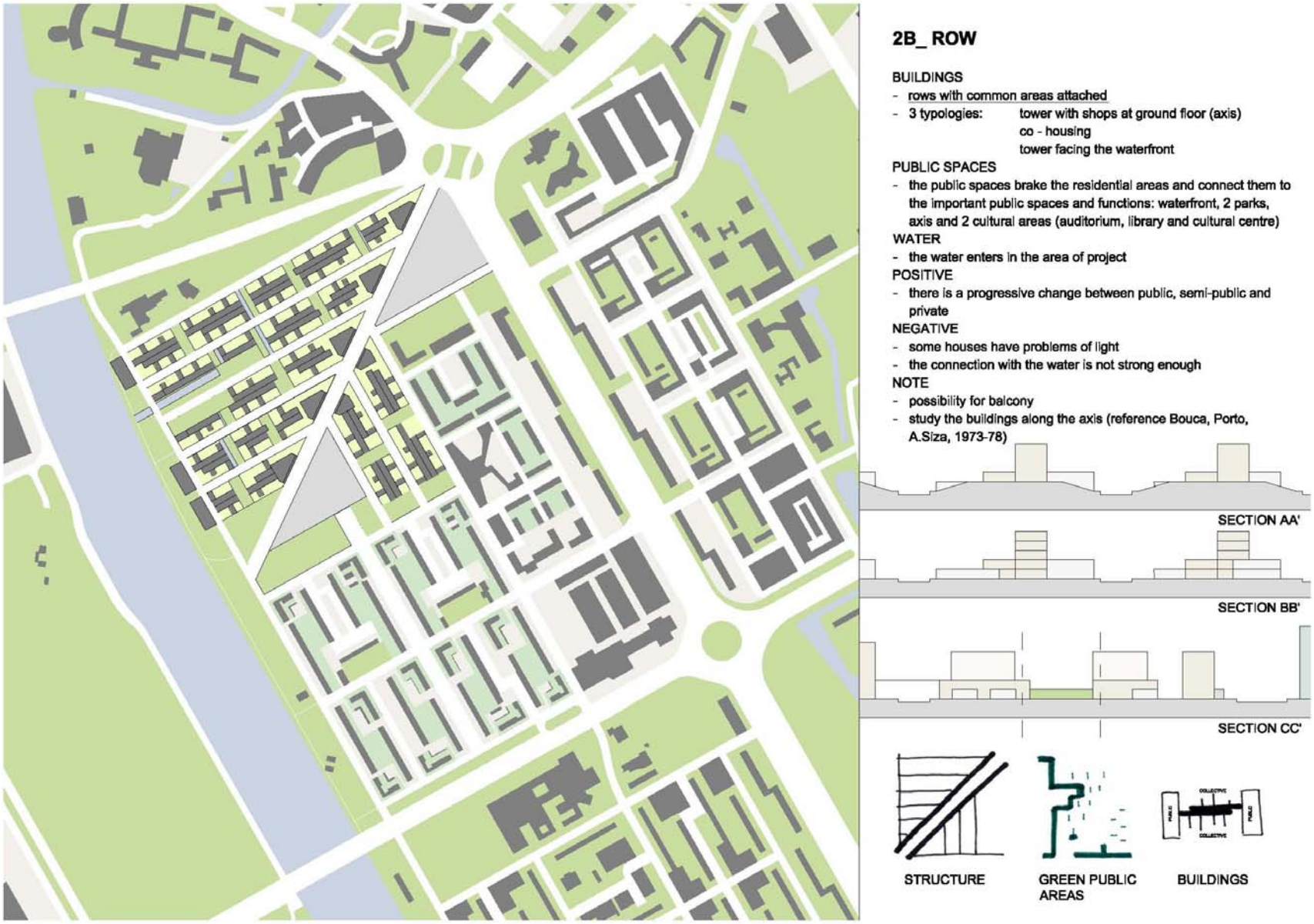


Figure 38. Masterplan first phase (author's figure, 2009).

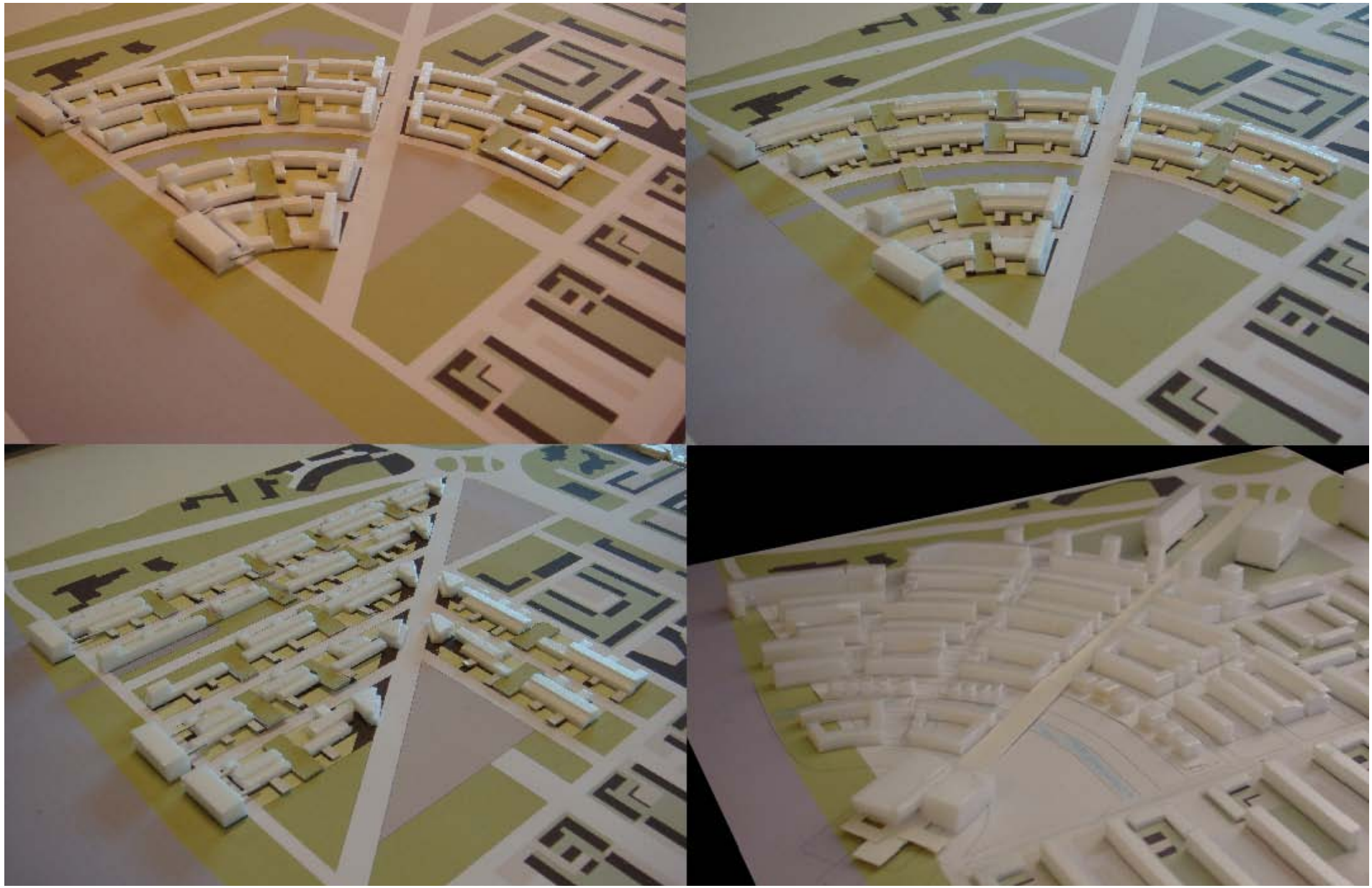


Figure 39. Study models (author's figure,2009).

6.2. Housing

The new neighbourhood counts 1,100 flats for nearly 4,000 people.

In the new neighbourhood there are five different housing typologies:

- **Floating houses** (see figure 41)

These two storeys houses are accessible from the water and the land. At the first floor is possible to experience the water and docking with little boats. The living room and the kitchen are at the first floor while the rooms are at the second floor.

This typology of house is common in the Netherland, some examples are in Amsterdam and Leiden.

- **Apartment houses** (see figure 42)

These are six and seven storeys with four apartments disposed around a central staircase and a common garden. Each flat is nearly 100 square metres.

- **Semi-detached homes** (see figure 43)

These three storeys dwellings have a private garden and a parking. At the ground floor there are the living room and the kitchen, the rooms and a terrace are at the upper floors.

This typology is for one single family, some examples are in Borneo Island which was described before.

- **Courtyard houses** (see paragraph 6.2.1.)

This typology is the most common in the plan. Some early studies are presented in figures 45-46 while the final project is in paragraph 6.2.1.

- **Co-housing** (see paragraph 6.2.2.)

This is composed of two buildings in which there are some common spaces for residents. Some early studies are presented in figures 44-45-46 while the final project is in paragraph 6.2.2.

Figure 40. Housing typologies (author's figure, 2010).

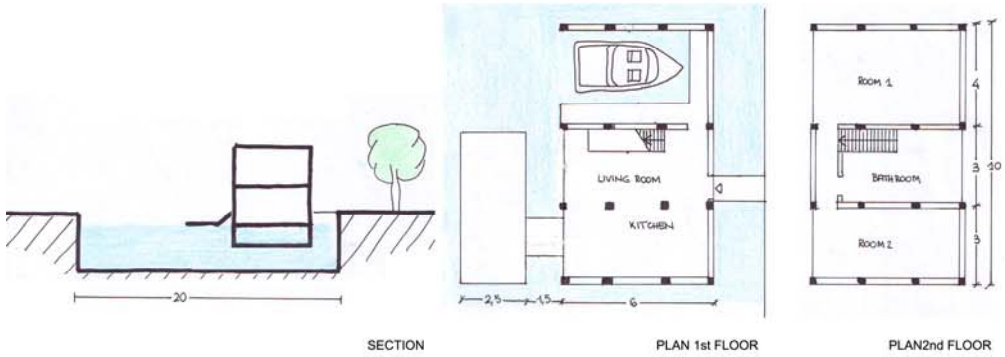


Figure 41. Floating house (author's figure, 2010).

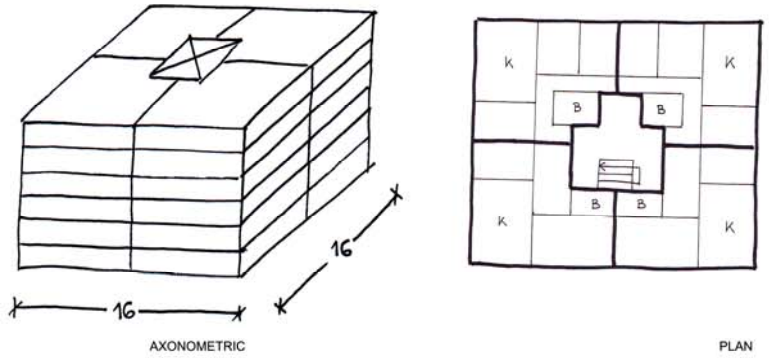
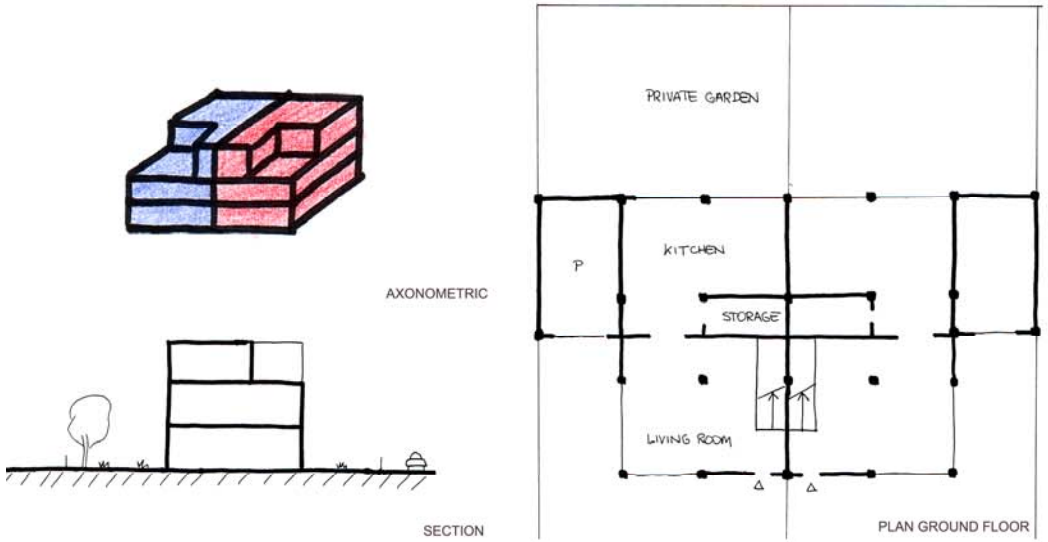


Figure 42. Apartment house (author's figure, 2010).



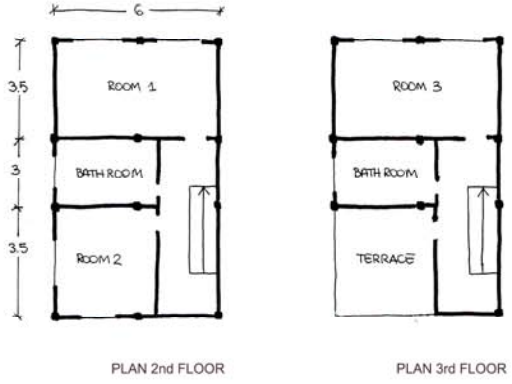


Figure 43. Semi-detached home (author's figure, 2010).

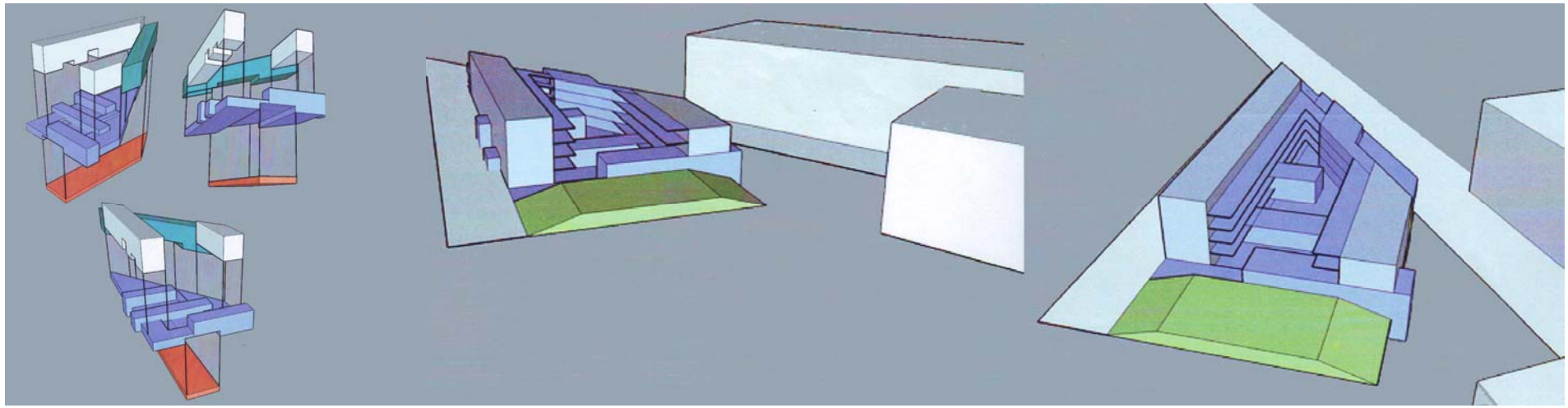


Figure 44. Study of the co-housing. red: parking, blu: common areas, white: houses, light blu: facilities, green: public area (author's figure, 2009).

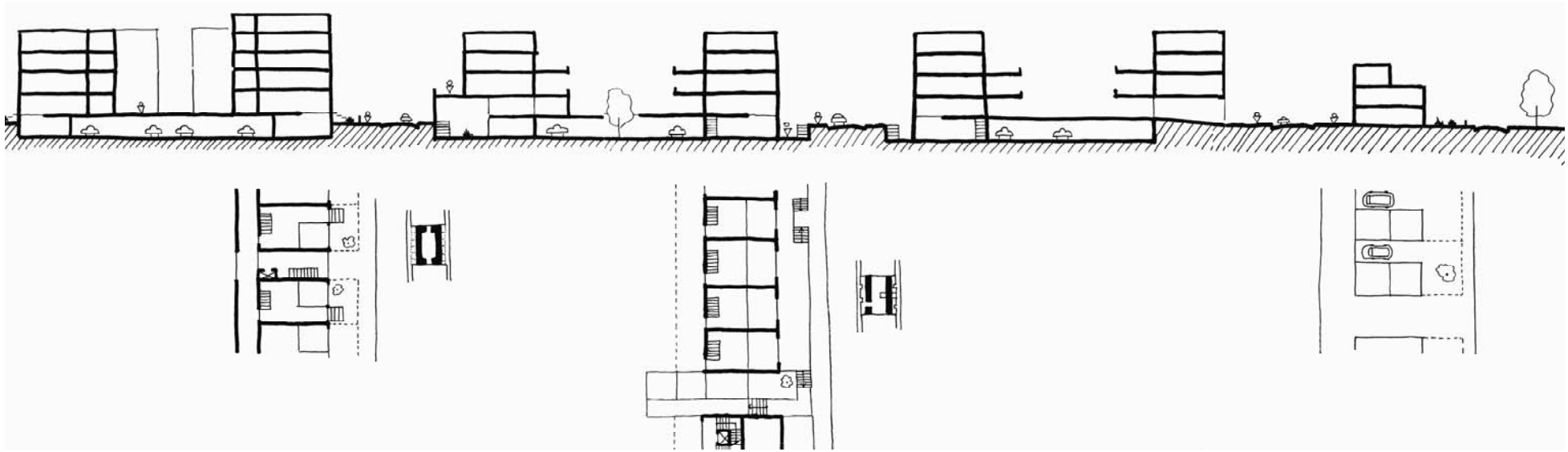


Figure 45. Study section (author's figure, 2009).

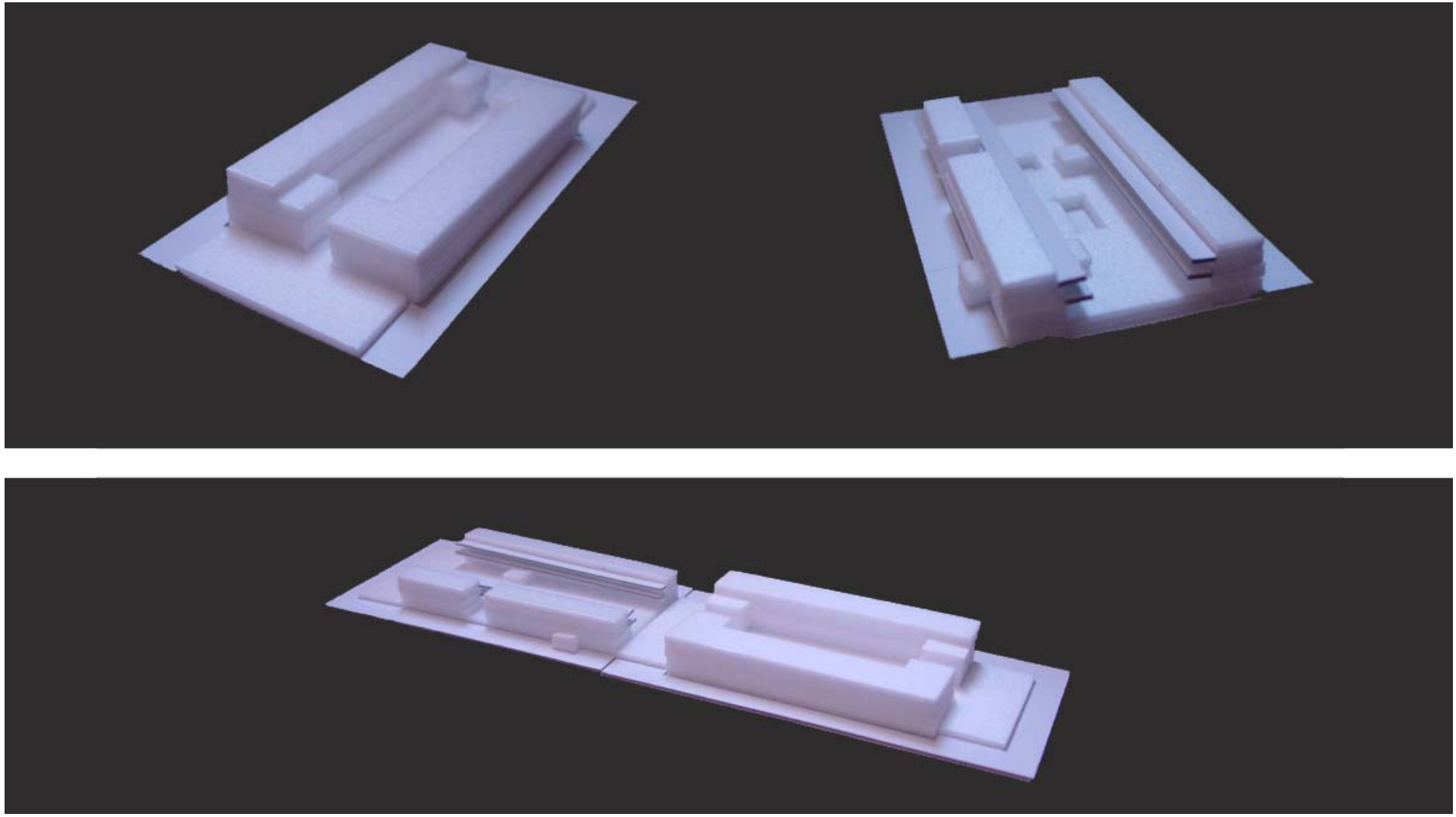


Figure 46. Study models (author's figure, 2009).

6.2.1 Courtyard houses

The courtyard houses are apartment dwellings with a semi-private space and some private gardens in the middle. In the courtyard studied there are shops on the ground floor which face the boulevard.

On the basement there are the cellars and the parking for the residents. Public parking is in some cases, one floor underground.

The flats, which are sixteen different typologies, are accessible from the courtyard and the street where there are staircases next to flower beds.

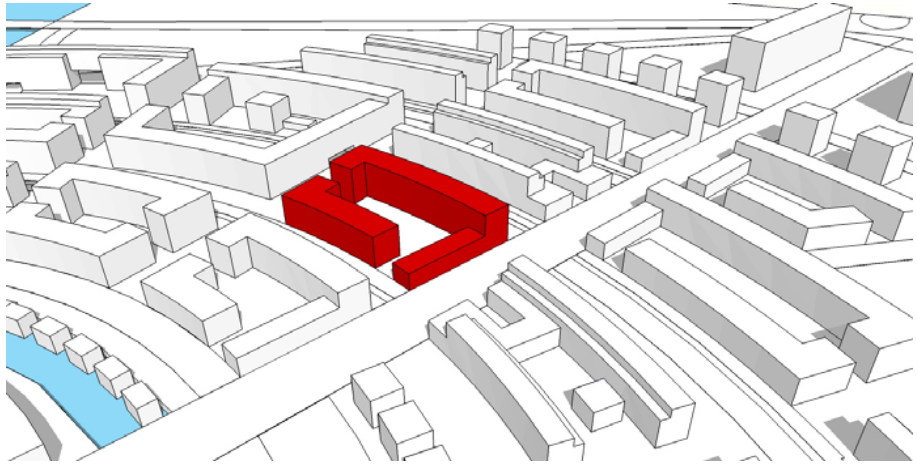


Figure 47. Courtyard house (author's figure, 2010).

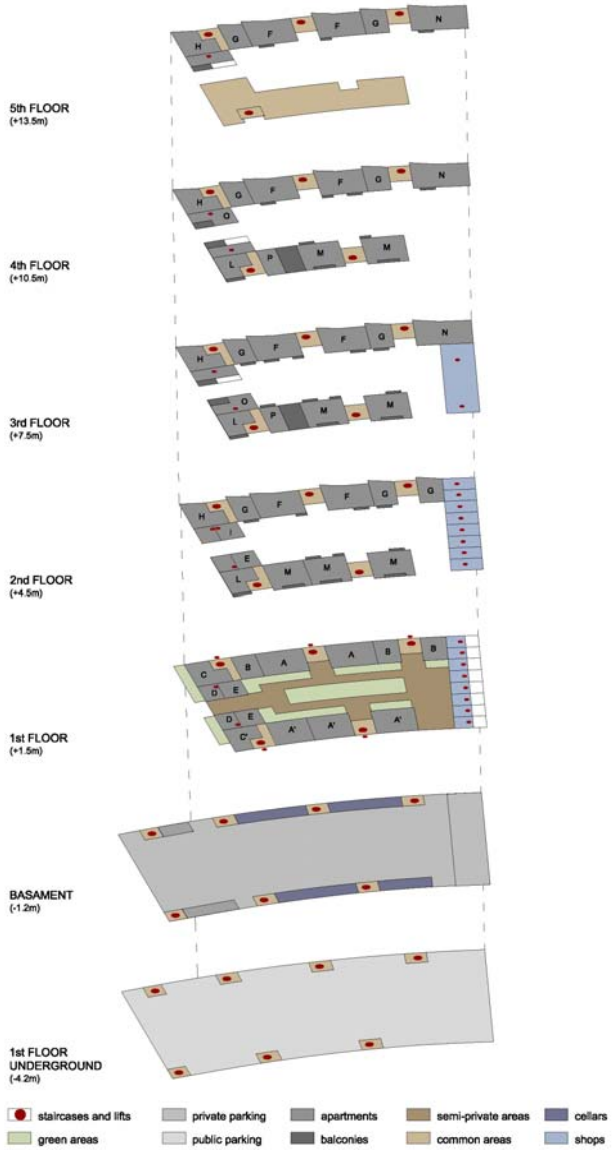


Figure 48. Courtyard house (author's figure, 2010).

The apartments are simplex for the majority and duplex. The two most common simplexes are 75 square metres (typology G) and 135 square metres (topology M). The first one is narrow and long, it refers to the old Dutch houses that were 6.5-7.5 metres wide and 12.5-16 metres deep due to the parcellation of the land. At the entrance there is the living room with the kitchen which face the courtyard. On the other side of the apartment there is a double room. The second typology is characterized by a corridor from which is possible to access to the rooms and the living room that faces both the courtyard and the street.

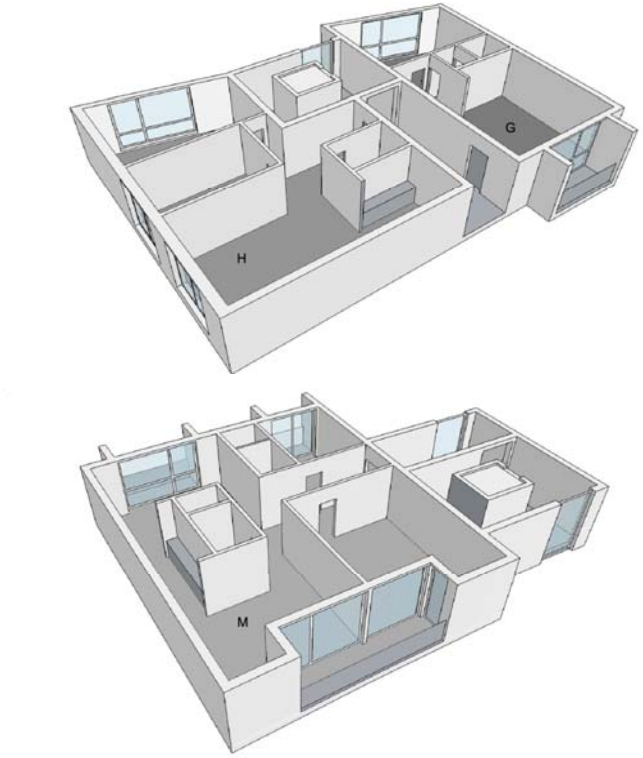


Figure 49. Courtyard house. Typologies H and G (author's figure, 2010).

The duplexes (typologies D and I) have the living room at the first floor and the bedrooms in the upper floor. In some cases a two floor window gives the possible to recognize the duplex.

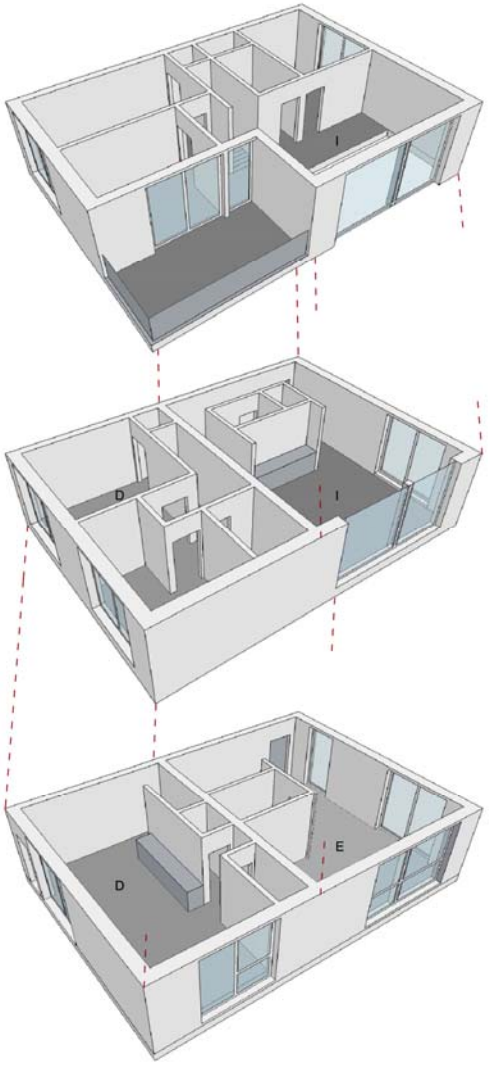
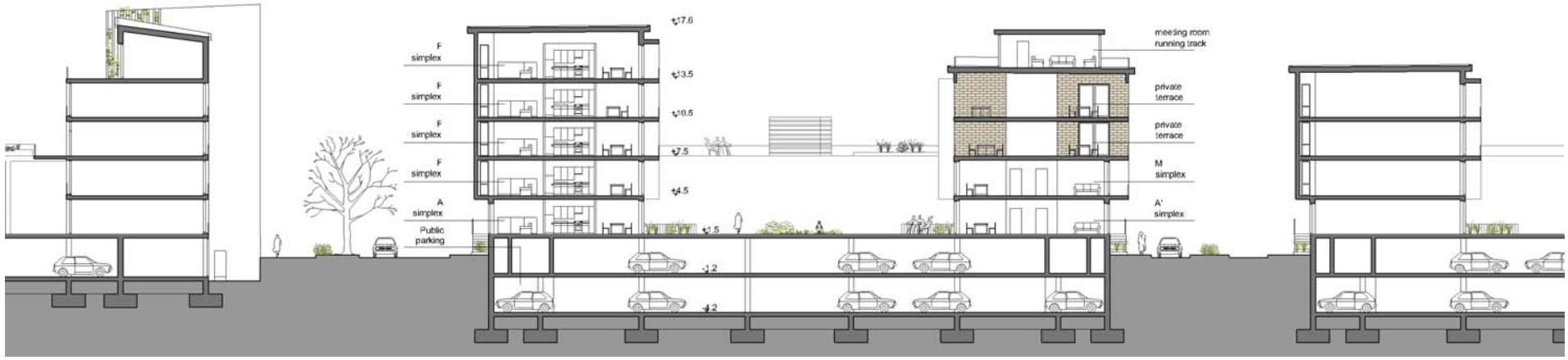


Figure 50. Courtyard house. Typology M (author's figure, 2010).

The elevations are in bricks as many of the Dutch houses. From the second floor the continuous outline which characterizes the first floor, is ever-moving. This is due to the motion of the perimeter block and the large windows which are common in the Netherlands. The internal and external elevations have different character. The internal elevations are characterized by balconies which get out of the façades as boxes.

The two elevations which face the streets are different. The one to the South has a continuous perimeter block which from the second floor, is wider to make space to the balconies. The one to the North does not have balconies and presents a 'zigzag' outline.



Figures 51-52. Courtyard house. Elevation South-West and section (author's figure, 2010).

6.2.2 Co-housing

The co-housing is composed of two houses facing each other in which residents can benefit of some common spaces (these can be opened to the neighbours) and they can decide to live together.

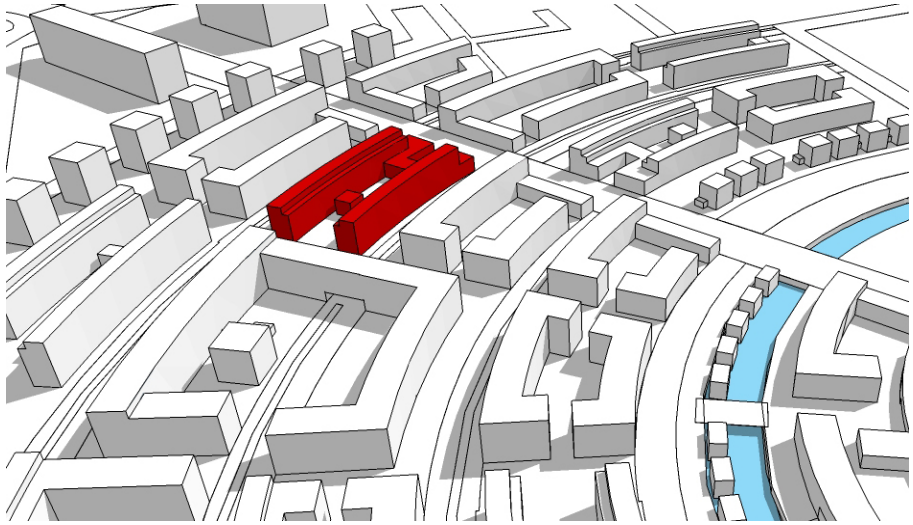


Figure 53. Co-housing (author's figure, 2010).

The reference for this building is the famous Spangen residential neighbourhood in Rotterdam which was built by Michiel Brinkman after the First World War. The building is revolutionary for its collective amenities: a collective, centrally fired laundry with drying attics, a central bicycle shed, outdoor social facilities in the heart of the block such as a sun terrace and playground for children. Moreover, Brinkman developed the idea of the gallery. The dwellings on the ground floor and first storey had their own front door on the inside of the block, and all the dwellings on the second and third storey had front doors on the gallery at the second storey level.

In Brinkman's building the common areas have a great importance as in the co-housing dwelling.

In the latter the common spaces are music rooms, libraries, gyms, kindergartens, exhibition and performance places, laundries, multimedia workshops, electronic, carpentry and mechanic workshops. Their design makes these areas recognizable: boxes mostly with glass facades, interrupt the houses and are orthogonal to them.

The two houses are divided by an open space with gardens, outside games and little squares with benches. This area is a meeting point for the residents but because of its open character, it is also accessible to other people.

The buildings are surrounded by a common passages which are four meters wide and one meter and half below the street level. From these areas is possible to enter in duplexes with a work space on the basement.

Figure 54. Spangen after the renovation, Michiel Brinkman, Rotterdam (1919-22) (author's figure, 2008).

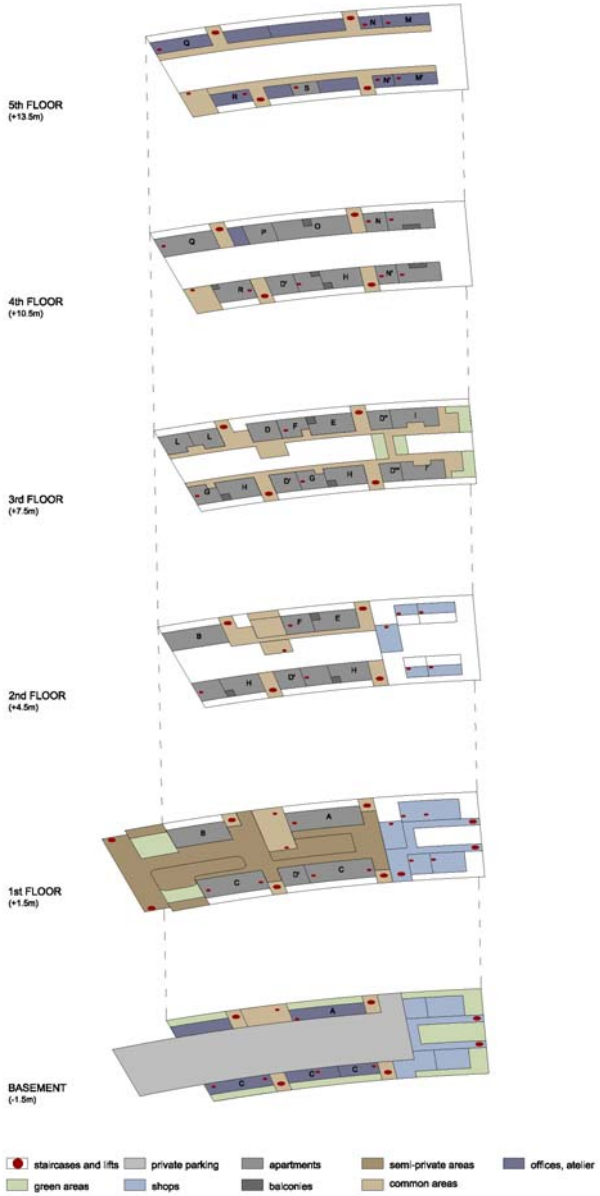


Figure 55. Co-housing (author's figure, 2010).

On the basement there are also the parking and some shops. These face the boulevard and on their roof there are vegetable gardens which are co-housing residents' properties.
On the last floor there are other work spaces which can be rented by residents or other people.

There are twenty-three different apartments but this number can change according to the aggregation or separation of some flats. For examples typology C is 200 square metres and it can be for a large family or two families which want to live together. In case of necessity this apartment can be subdivided in two flats.

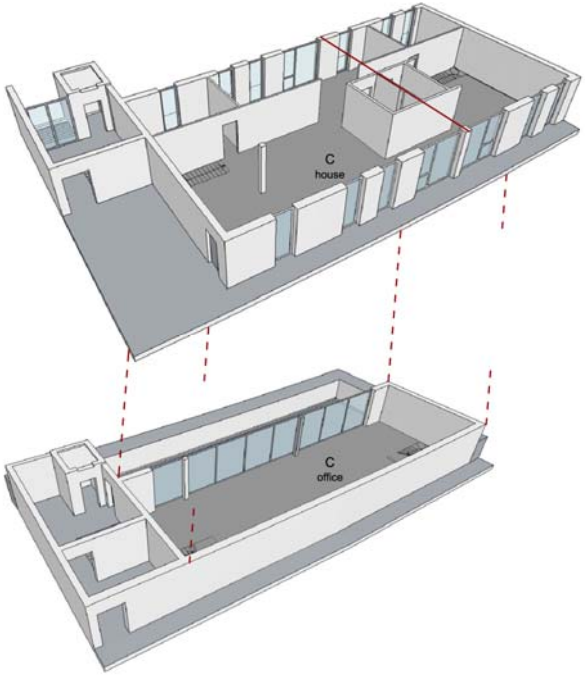


Figure 56. Co-housing. Typology C (author's figure, 2010).

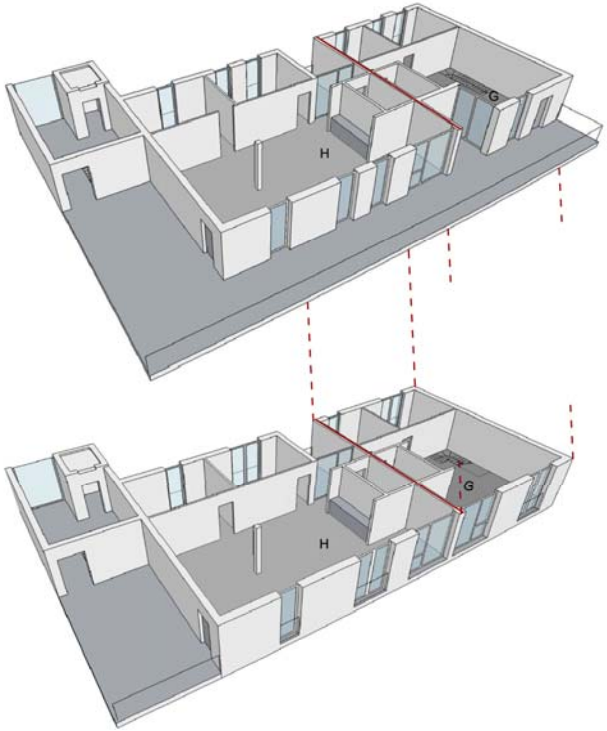


Figure 57. Co-housing. Typologies H and G (author's figure, 2010).

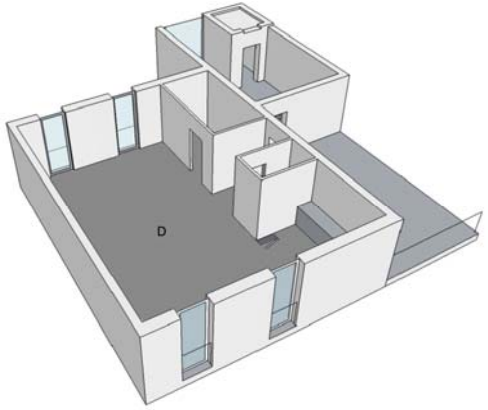


Figure 58. Co-housing. Typology D (author's figure, 2010).

The typologies H and G, respectively a simplex and a duplex, derive form the typology C and they can also be connected or separated.
Not all the apartments are flexible, some are fix. This characteristic is in the typology D which is a simplex that can be suitable for disable people.

The elevations are characterized by large French windows on the basement and prefabricated coloured panels on the other floors. These differ in dimension and colour: the house to the South has green and blue panels while the one to the North has little brownish panels.
Some large windows and balconies mark the axis along which the apartments can be subdivided/connected.
The elevations are also characterized by the roof which with its inclination, creates an effect of motion.

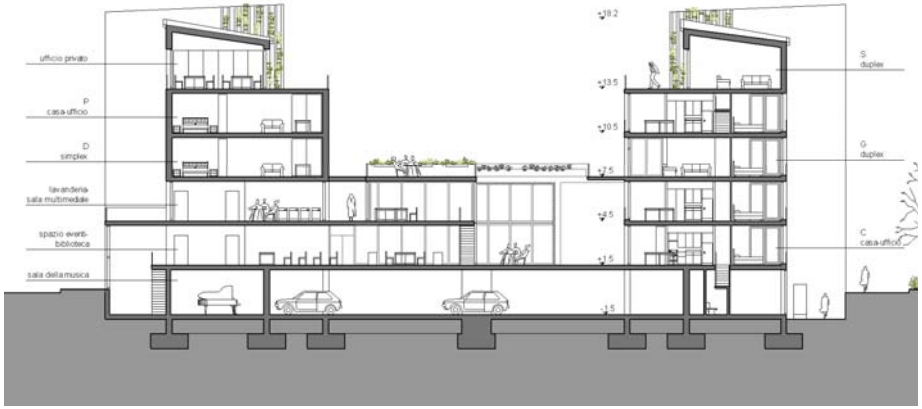


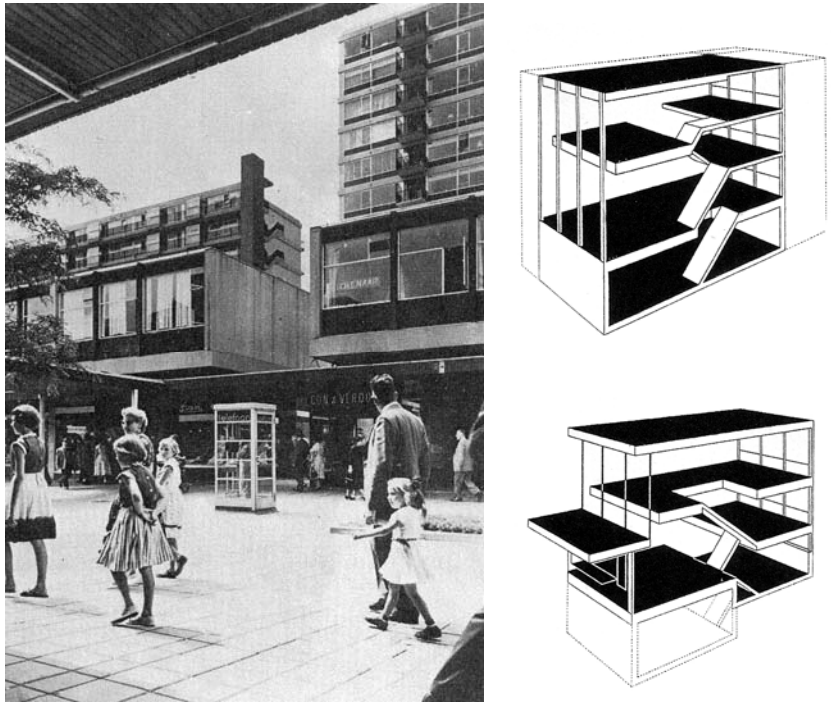
Figure 59. Co-housing. Section (author's figure, 2010).

6.3. Boulevard and facilities

The main element of the new neighbourhood is a boulevard which breaks the austere geometric pattern of the existing urban structure. This boulevard is like a promenade, who walks along it can have different experiences: at its beginning there is the scientific and technologic park which join the new neighbourhood with the old city. These buildings are surrounded by green areas and are detached from the boulevard.
Furthermore there are houses with shops at ground floor.
Continue walking from the chaotic city, it is possible to arrive to a more natural area. Here people can relax and do sport activities.
The promenade experience ends in the Amsterdam-Rijnkanaal, where there is a boat club. Nowadays the waterfront is composed by an empty and low quality green area. This project wants to reactivate the relationship between the canal and the neighbourhood by giving people the possibility to experience the waterfront.

At the beginning of the work it was necessary to think about how to characterize the boulevard and what people could feel by walking along it. For this reason some prospective drawings, which are presented in the next page, were realized.
After that the buildings that face the street were studied and some different solutions were worked out. For examples in figure 65 the idea is to have buildings which are independent from the residential area. These work as “heads” for the system. In figure 66 the idea is to have a boulevard which is an initiator, the residential area is strongly connected to the street.
The letter, which was preferred to the first solution, was longer studied and in figures 67, 68 and 69 some ideas are summarized. In figure 70 is possible to observe the relationship between the housing and shops, they are attached so that from the street is possible to notice what is happening behind it.

The visit to Lijnbaan project influenced the boulevard plan. This was realized in Rotterdam by Van der Broek & Bakema in 1955. There stores are organized as separate two storey blocks on each side of an auto-free pedestrian promenade. The promenade connects with the existing structure of the city and above it there are high-rise residential blocks lie on green courts.



Figures 62-63. Lijnbaan, Van den Broek & Bakema, Rotterdm (1955) (Komossa S., 2005).

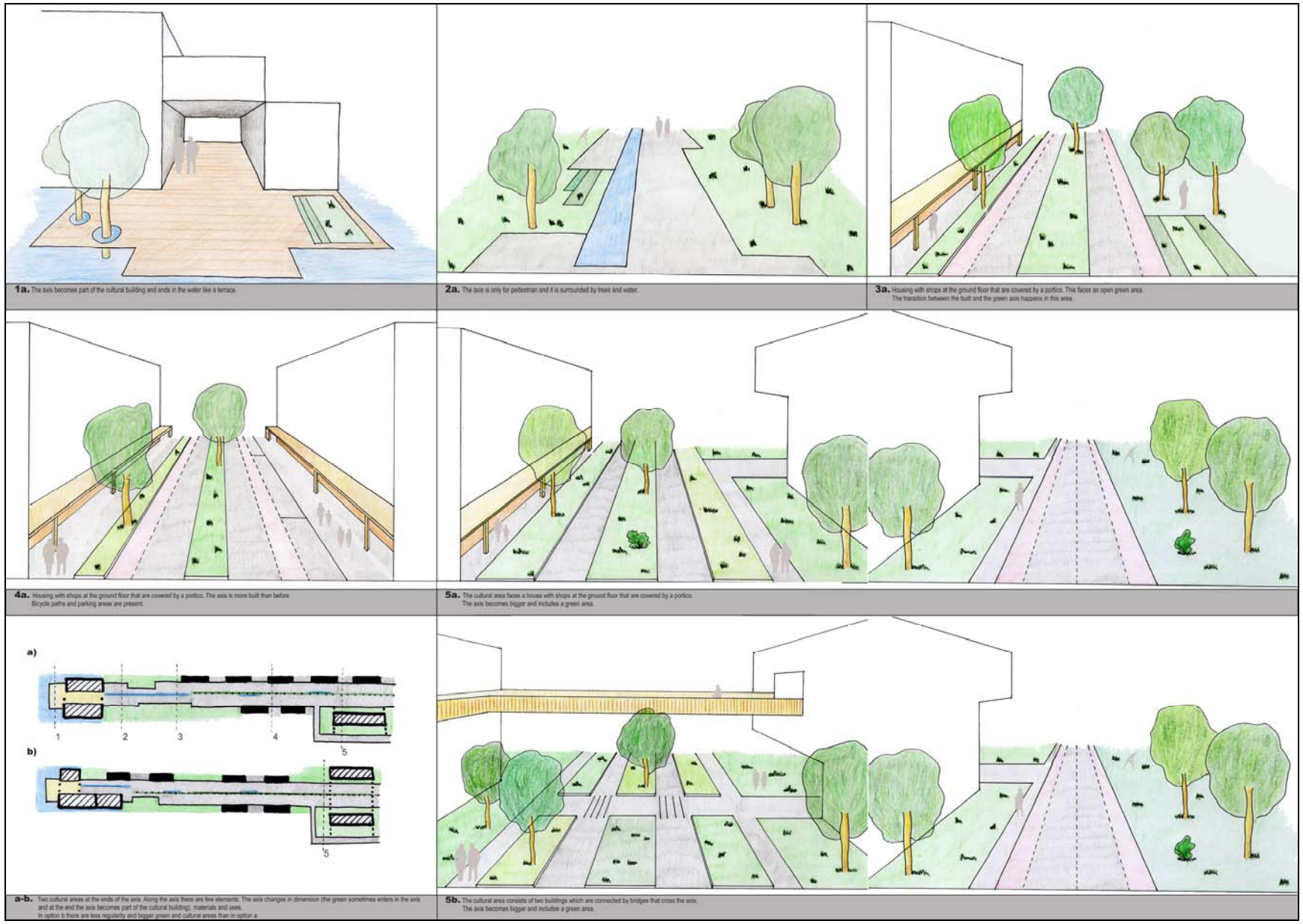


Figure 64. Views of the boulevard (author's figure, 2009)

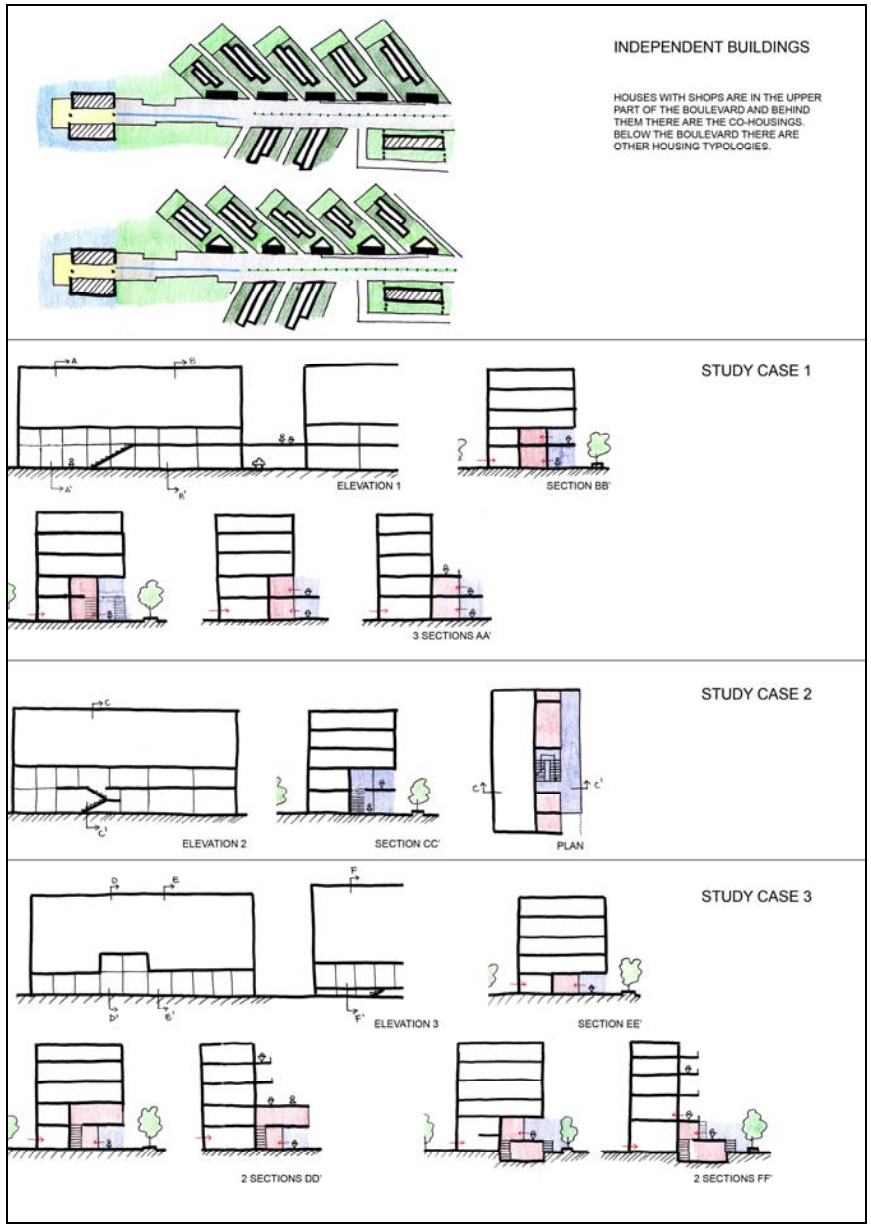


Figure 65. Study case of the boulevard:independent buildings (author's figure, 2009).

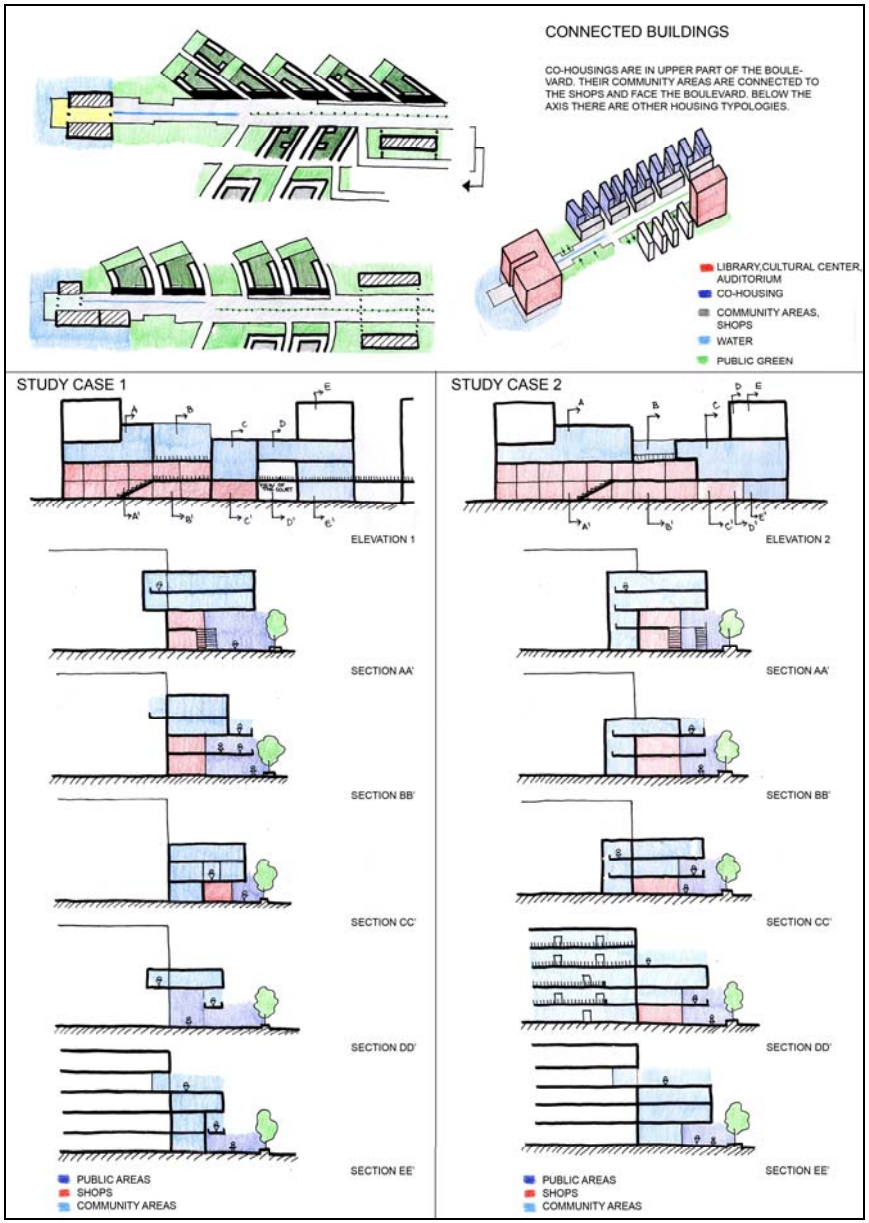


Figure 66. Study case of the boulevard: connected buildings (author's figure, 2009).

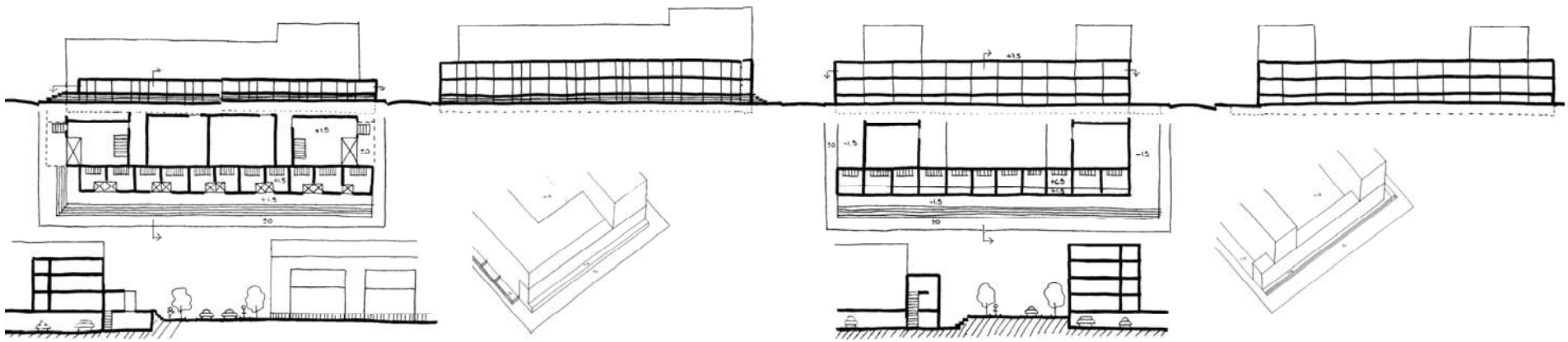


Figure 67. Study case of the boulevard (author's figure, 2009).

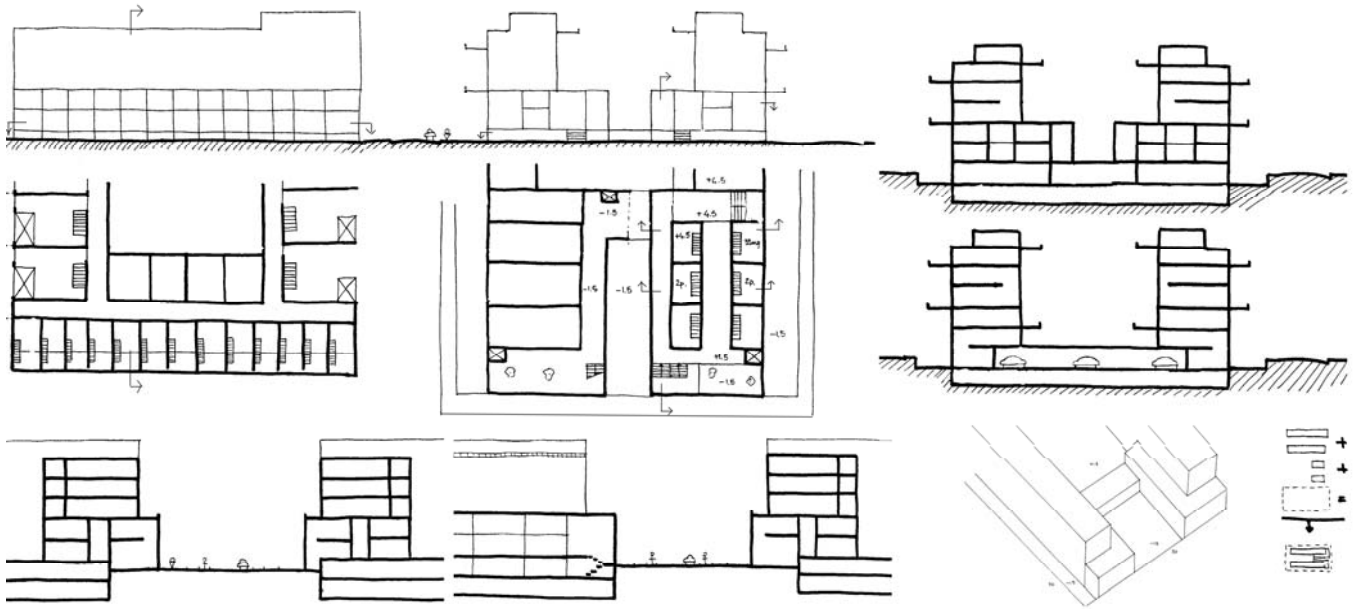


Figure 68. Study case of the boulevard (author's figure, 2009).

Figure 69. Study case of the boulevard (author's figure, 2009).

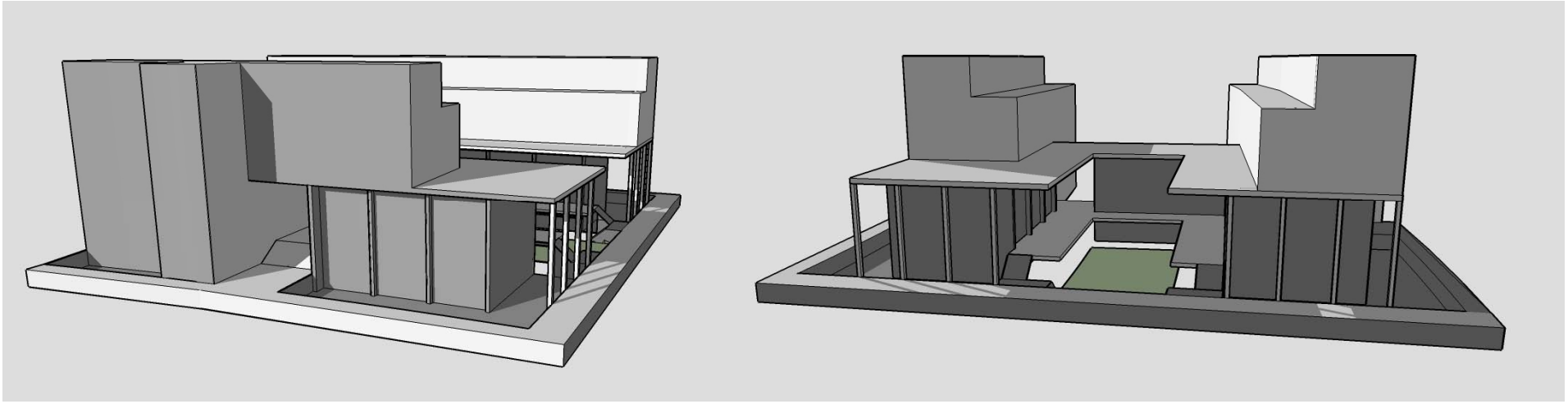


Figure 70. Study of the relationship between the housing and the shops (author's figure, 2009).

6.4. Boat club

The boat club is at the end of the boulevard, in the Amsterdam-Rijn canal.
The boat club is composed of different volumes which are joined together by a promenade and a roof. The building has an horizontal development which wants to emphasize its projection to the water.
The reference to this project is the boat club realized by Michel de Klerk in 1922 in Amsterdam which is called De Hoop. In this one some volumes are organized around a pennon. The emphasis is on the longitudinal axis. The combination of the longest part of the building with the smallest and higher part, seems to create the shape of a ship which is moored. The building was unfortunately demolished in 1944.

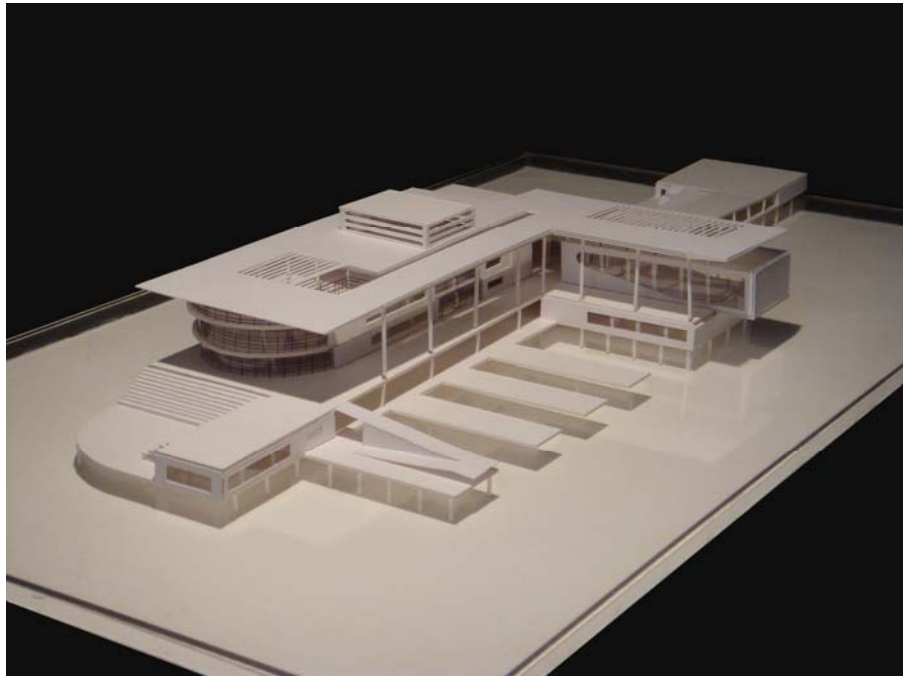


Figure 71. Boat club (author's figure, 2010).

Figure 72. De Hoop, Michel de Klerk, Amsterdam (1922 demolished in 1944) (Bock M., 2001).

Approaching to the boat club from the city, the boulevard is subdivided in two ramps. One goes down and brings directly in contact with the water, people can walk along the canal. There is also a private entrance to the boat club and a bicycle parking. The second one, which is the direct continuation of the boulevard, rises and leads to the boat club. There the urban promenade continues, crosses the boat club and takes a new dimension and function. At the beginning the promenade gets smaller then it opens to the canal like an 'optical cone'. This allows people to have a slowly visual approach to the water.
From the promenade it is possible to go to the 'water square' where people can relax and sometimes look at the row races or take a taxi boat and go to the city centre. From the promenade is also possible to enter in a conference all and the main building. This is six stories and it is subdivided by an open space with staircases and lifts.

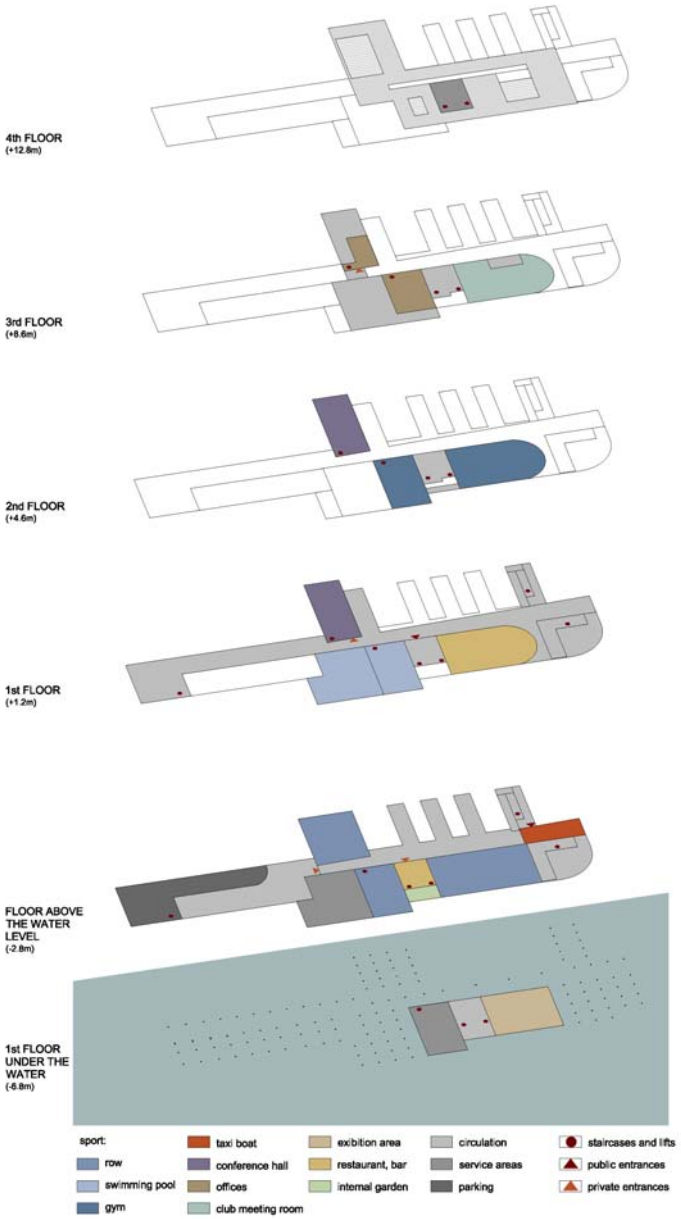
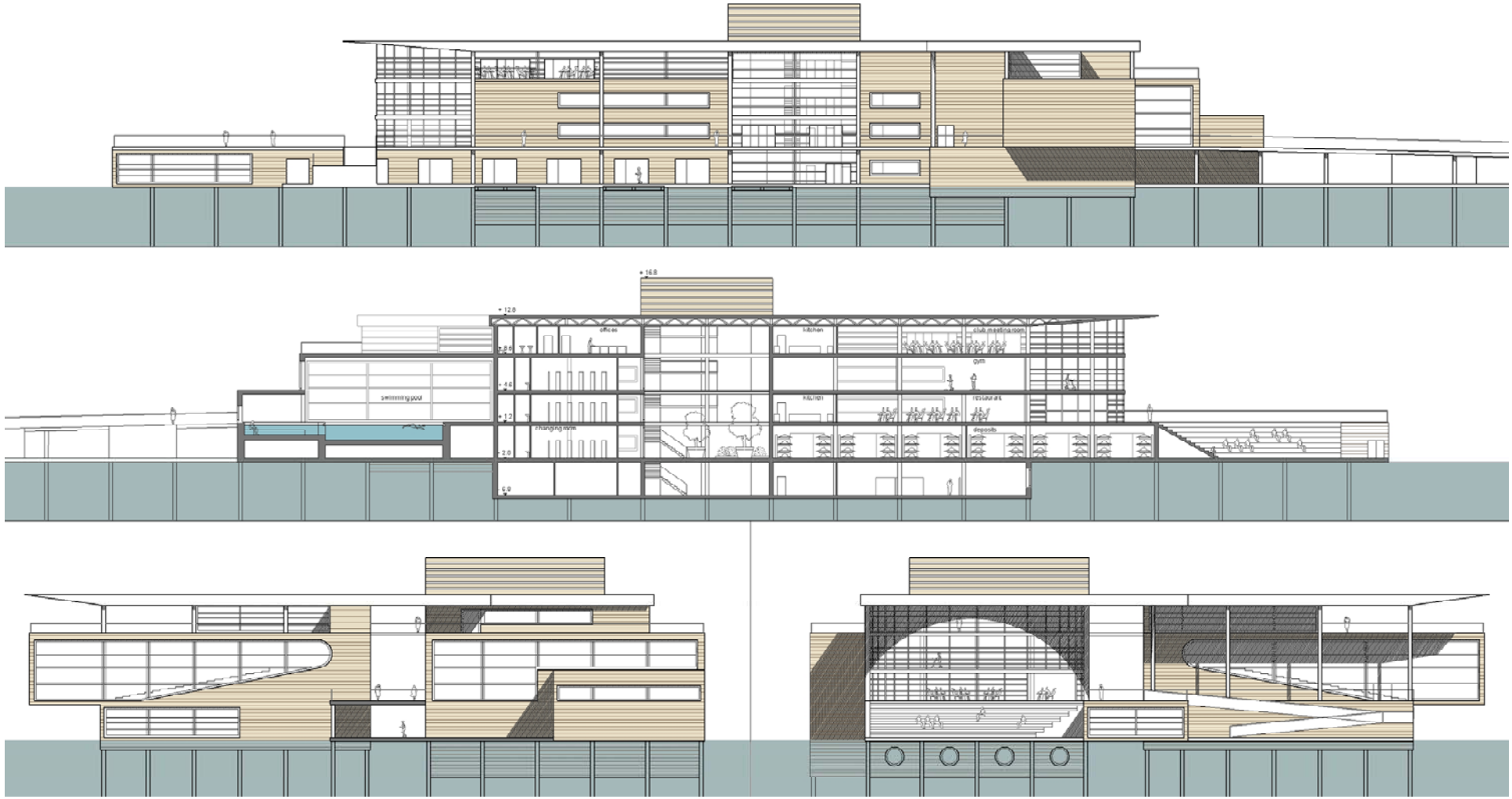


Figure 73. Boat club (author's figure, 2010).

On the upper floor there are some installations, below there are some offices from where is possible to enter in a meeting room above the conference hall. On the same floor there is the club room where people can meet, relax and read some magazines.
On the second floor there is the gym and below the swimming pool and the restaurant. This is characterized by a large curve glass surface which can be opened.
The floor above the water level is mostly for the row activity. There are the deposits, the training area and the platforms.
On the first floor under the water there is an exhibition area.

The elevations are characterized by wooden and glass facades as in Klerk's project. A large glass surface follows the inclination of the seats in the conference hall and makes this volume recognizable from the city. Even the facades of the swimming pool are in glass and from the promenade is possible to look at the people who are inside. The most characteristic facade is the one in glass that curves at the end of the building. This reminds the front part of a boat.



Figures 74-75-76. Boat club. From the top: elevation South-East, section, elevation North-East and South-West (author's figure, 2010).

6.5. Kinder garden

This is located in the middle of a large courtyard. The building is a cubic volume which is excavated by the staircase space. This, with its diagonal orientation, gives to the floor plan a dynamic effect.

The kinder garden was studied not in detail but from the beginning it was clear that it had to have as reference the De Openluchtschool (Open Air School) realized by Johannes Duiker in Amsterdam in 1928.

The school is a pure cubic volume rotated 45º degrees to the courtyard block where it is located. The only addition to the cube is the gym area in the ground plan. The architect created a dynamism thanks to the relationship between the square and the diagonal.

The building is in concrete and glass and it shows proudly its glass-free corners thanks to the white-painted cantilevered structure.

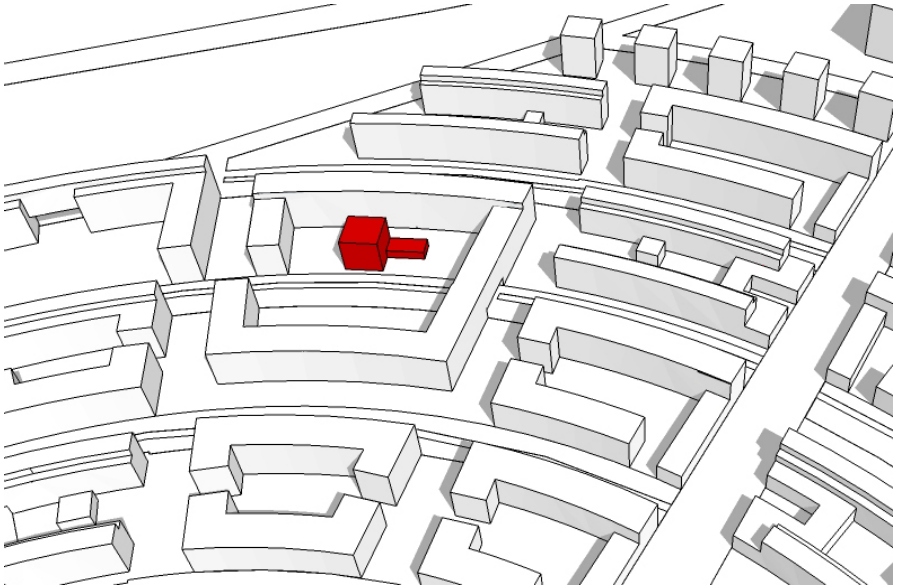
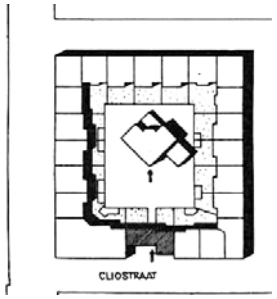


Figure 77. The kinder garden (author's figure, 2010).



Figures 78-79-80. Plan, courtyard entrance and view of De Openluchtschool, Johannes Duiker, Amsterdam (1929-1930) (Alberts A., 1976).

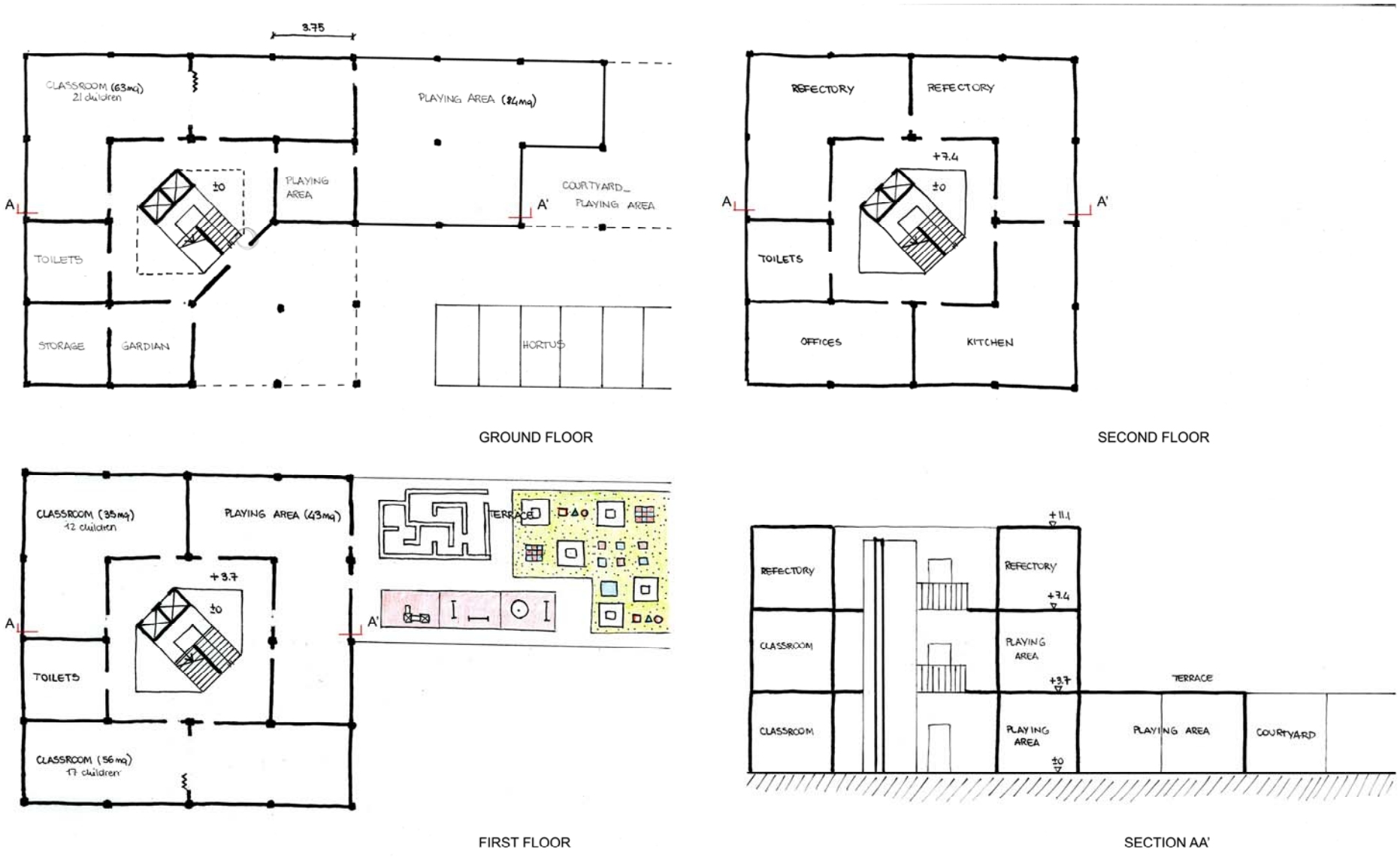


Figure 81. The kinder garden (author's figure, 2009).

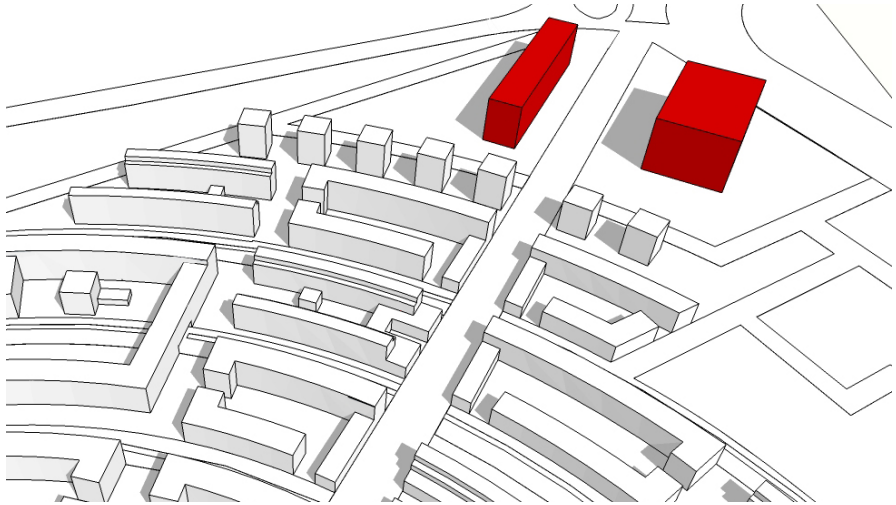
6.7 Scientific and technologic park

The Scientific and technologic park is at the beginning of the boulevard, next to other pre-existing offices and it is composed by two buildings. These are surrounded by green areas and are detached from the boulevard.

In the next page an early study of the building to the North, is presented. This building has a central space with staircases and lifts which joins together two blocks. The facades are in glass and are characterized by continue lines which mark the floors.

The reference to this project is Van Nelle Factory in Rotterdam which was designed by Michiel Brinkman. In 1929, after Brinkman death, the building was realized by Leendert van der Vlugt with Mart Stam help.

This project is an example of Nieuwe Bouwen, modern architecture in the Netherlands. It was commissioned by the then-director of the Van Nelle company, Cees van der Leeuw. The Van Nelle company was a major producer of tobacco products, coffee and tea.



Figures 82. Scientific and technologic park (author's figure, 2010).

The Factory is composed of different volumes connected with balconies and conveyor belts. The big dimension of the building (229 metres) is exalted by the glass free facades which are independent from the pilasters that have a 'mushroom' shape.

Figures 83-84. Van Nelle Factory, Michiel Brinkman and Leendert van der Vlugt, Rotterdam (1927-1929) (Fanelli G., 1978 and author's figure, 2009).

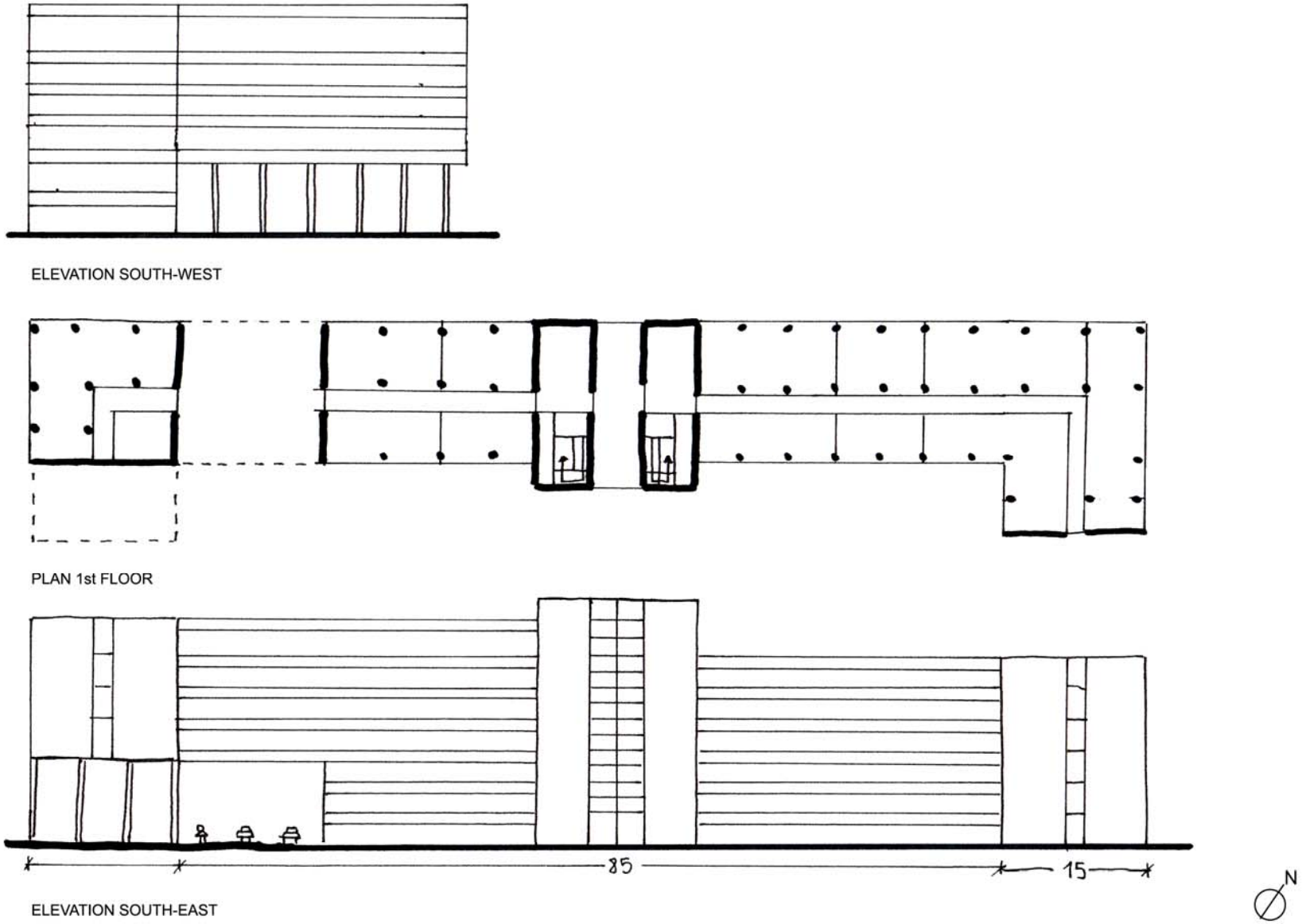


Figure 85. Scientific and technologic park (author's figure, 2009).

6.8. Open spaces

A network of green and paved areas has been realized. These have different levels of publiness.

Regarding to the green areas there are:

- **Private gardens**

Private gardens are in the courtyards and in the semi-detached houses. The owner is responsible of their maintenance.

- **Roof garden**

On some housing roofs there are running tracks and gardens. Above the shops there are vegetable gardens and Japanese gardens.

- **Vegetable gardens**

Vegetable gardens are in the co-housing blocks and the communities or the owners are responsible for their maintenance.

- **Little public green areas**

A network of public green areas with outside games, characterizes the new neighbourhood.

- **Green area along the canal**

Along the canal there is a green area with benches and trees where people can seat and experience the water.

- **Park with sport facilities**

Next to the canal there is a park with sport facilities that is reachable also from the water. Indeed people can dock their boats and play or relax on the shore.

Figure 86. The green area along the canal Amsterdam Rijn (author's figure, 2010).

7. CONCLUSIONS

At the beginning of the project I immediately understood the complexities in renewing Kanaleneiland: the position of the neighbourhood at the border of the city, its big dimension and social problems.
During the project I had to deal with different tasks: history, urban planning, public spaces, housing, services and regulations.
Often I had to research and ask for some suggestions. The study on the housing in the Netherlands, helped me to understand its politic and history. Moreover it gave me the possibility to find and study some projects which I took as references.
At the beginning I focused on the existing urban structure and I designed a neighbourhood which has a new relationship with the water and has a mix of function that improves the quality of the area.
After I studied some Dutch housing typologies and new ways of living, for example the cohousing and the ‘woon-werk’ (living and working) in which there is the combination of living and working activities.
Later I realized the boat club which characterizes the new neighbourhood.

The work process of the project was characterized by a continuous test of design ideas through models. This is a method that I learnt in the Netherlands and I found it very helpful.
Through this final project I developed my cultural and professional knowledge, moreover, the possibility of developing the project in collaboration with the University of Technology of Eindhoven, was positive and it gave me the possibility to understand better the Dutch culture and architecture.

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Other chapters

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