Between a day...

...and a lifetime

Integration of short-stay housing and the sharing economy in the post-war neighbourhood of Groot-IJsselmonde, Rotterdam

Graduation Report - Advanced Housing Design (AR3AD100)
Cedric Hietbrink - 4598946
17-01-2024

Cedric Hietbrink
4598946

Delft University of Technology
Faculty of Architecture and the Built Environment

Course:
AR3AD100
Advanced Housing Design Graduation Studio
Chair of Architecture and Dwelling

Tutors:
Harald Mooij
Robbert Guis
Florian Eckardt

Figue 1: historical aerial view of Groot-IJsselmonde
(Stadsarchief Rotterdam)

Before you lies the graduation report produced to support the design decisions that have led to the final design for the graduation studio Advanced Housing Design, being the last project for my master at the Faculty of Architecture at TU Delft. The topic is on finding housing solutions that tackle issues currently faced throughout Dutch society, with a particular focus on post-war neighbourhood densification.

The graduation report is aimed at exploring relatively new processes that show great potential to change the way we live, being the sharing economy, short-stay housing and the rise of co-housing/co-living/co-working concepts. This report will therefore attempt to provide a theoretical base from which design decisions can be made.

These design decisions will be implemnted in a densification project for the neighbourhood of Groenenhagen, Groot-IJsselmonde, in the South-West of Rotterdam. This is the last of the Southern post-war neighbourhoods built in Rotterdam in the 1960s and 1970s. It has faced environmental and social issues in the recent decades. Introducing aspects of the sharing economy, short-stay housing and co-housing in this neighbourhood will, by also exploring knowledge on urban densification, try to aleviate these problems and place its residents in a integrated society; living alone, together.

I would like to thank my tutors for the support during this graduation project, having opened my eyes to new directions and guiding me in the entire process.

Enjoy reading.

- Cedric Hietbrink

Table of contents

"Strong price increases are making urban housing affordability a pressing issue everywhere in the world."

- Nijskens et al., 2019

Figure 2: Protest on the Dutch housing crisis (NRC.nl)

1. Introduction

1.1 Personal statement

Societies move in an ever increasing pace, with changes in the way we live not being excluded. This is in sharp contrast with the housing stock in the Netherlands, where the majority of the housing stock has been build prior to the 1980s, These so-called post-war neighbourhoods., found in all large cities in the Netherlands, were the modernist response to a pressing housing shortage, where the efficiency of the 'stamps' that could be replicated over and over quickly created a sufficient housing stock with adequate living conditions.

This mass-construction of similar dwellings worked at the time due to most households sharing characteristics in size and lifestyle. Nearly all constructed dwellings were single-family apartments and rowhouses, which aligned with the needs of that time. These days, however, this creates several issues. Household types and sizes have started to vary increasingly more in recent history, as well as the types of jobs emplyed having shifted to be more dynamic and varied. Current trends in the housing market can therefore be observed to also include the sharing economy, with online platforms such as Airbnb having paved the way for efficient and easy peer-to-peer accommodation sharing.

The so called 'short-stay housing' that platforms such as Airbnb offer have revolutionized the way tourism acts in popular tourist cities but has also attracted backlash due to it causing increasing housing prices in city centres and the nuisance which is attributed to the many different tourists using these homes as their stay for their holidays. Nevertheless, it is part of a shifting dynamic towards people not always desiring to be bound to a certain location and tend to move more often, which requires a different type of housing market in which flexibility is provided.

1.2 General problem statement

The housing market in The Netherlands has often been described as slow and immovable, due to factors such as a construction sector which is lagging behind and the (government) regulations not allowing for quick responses to changing wishes and needs in society. Some of these changes are for example the decreasing average household size, mostly due to an increase in single person households, private investors using the housing market for profit and a mismatch between the needs of people looking for housing and the available housing stock.

One of the changes observed in the 21st century is the rise of the sharing economy. Increasingly more people realise that leasing items for a short time can be a favourable option to owning because of its ease and possible cost advantage. The sharing economy has been introduced to the housing market by platforms such as Airbnb, which started operating in 2008 and has steadily grown to play a significant role in the tourism industry, bringing about also changes in the way people look at housing.

1.3 Specific problem statement

A trend has been observed in recent years in which short-stay housing is pushed out of city centres by policy makers as a response to backlash from local residents. They can increasingly be found in neighbouroods along the edges of popular cities, often in places where mobility to the tourist hotspots are good and where favourable conditions in terms of liveability and amenities can be found.

One of the groups that, in the current housing shortage struggles to find the right housing are urgent house seekers, which are for example

recently divorced people, economically homeless people or people who have been kicked out of their house. They have gathered media attention in recent years due to their sometimes desperate situation.

Suggested initiatives to alleviate their problems by meeting the housing demands of this group have been slow to develop and run into a multitude of problems in the legislation and practical issues of the construction process. Modular housing and flexible housing are some of these suggested housing typologies for the urgent house seekers, providing minimal space and facility but being qualitatively good whilst also being economical. These projects can nevertheless be seen as temporary bandaids to release some pressure on the overheated housing market.

Like other large cities, Rotterdam also sees substantial growth and the changing housing demands proliferate more in big cities such as Rotterdam compared to rural areas or smaller villages. This is in conflict with its housing stock, comprising mainly single family homes from the decades right after the second world war.

Groot-IJsselmonde, being built around 1962, was the last 'garden city' lay-out neighbourhood to be built of the southern neighbourhoods in Rotterdam. This lay-out meant that many green spaces run through the different parts of the neighbourhoods. Improving the usability of this greenery in combinations with adding dwellings that fit the current housing demands of groups having trouble finding suitable housing could be the base for a densification strategy to both improve the existing environmental and social structures, as well as create a diversified resident base with new amenities to engage residents in the sharing economy.

1.4 Research Questions

As stated in the previous chapters, the current housing market in the Netherlands doesn't comply with the demand; several groups are having significant trouble finding the housing they need and social problems such as loneliness and poverty might be the result of this. The different temporalities of housing for different target groups are often separated, but therefore neglect potential gains that can be made by integrating these different housing types.

This research will therefore be focussed on identifying positive and negative elements of short-stay housing, co-housing/co-living and how these can be incorporated into the densification strategy for an existing neighbourhood in the city of Rotterdam.

The following research question shall therefore be answered in this research.

"How can the rise of the sharing economy contribute to creating an urban densification strategy integrating short-stay housing in a post-war neighbourhood?"

To come to an elaborate answer to the research question, the following sub questions will be answered:

"How much are people willing to share?

"What have been the effects of short-stay housing on Dutch cities?"

"What is the added value of co-housing projects to the living quality of its inhabitants?"

"How does urban densification impact cities?"

Research Questions

"How can the rise of the ***sharing economy*** contribute to creating an ***urban densification*** strategy integrating ***short-stay housing*** in a post-war neighbourhood?"

"How much are people willing to share?

"What is the added value of co-housing projects to the living quality of its inhabitants?"

"What have been the effects of short-stay housing on Dutch cities?"

"How does urban densification impact cities?"

Design principles for introducing the sharing economy in an existing post-war neighbourhood by diversifying the housing stock with short-stay housing

1.5 Methodology

The methodology for this research can be dissected into two elements.

Firstly, literature on the different topics will give an academic and analytical insight into developments that have taken place in the different domains of the sharing economy, short-stay housing, co-housing and urban densification.

Secondly, reference- and case studies will be provided on the topics of the four sub questions, being the sharing economy, short-stay housing, co-housing/co-living/co-working and urban densification. These case-studies will be the link between the theoretical knowledge gained from the literature and possible design solutions.

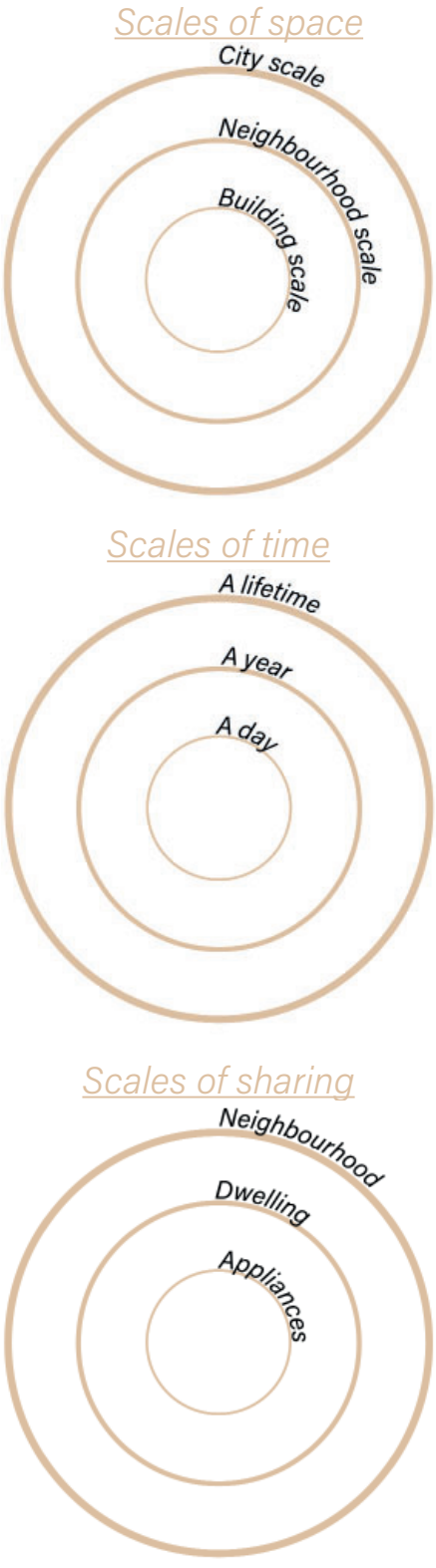
Literature will shed light on the definitions of the sharing economy, the forces that play a role in it, how it has developed and how it is currently perceived by both governments and users.

The chapter on short-stay housing will explore its positive- and negative connotations and how Dutch cities have resprondend to its rise. It will furthermore explore the target groups linked to the housing type.

Co-housing, co-living and co-working will be analysed on the policy- and human level, especially its effects on interaction and integration will be explored.

Urban densifaction makes up the final chapter, providing insights in the opposition to, but also the positives of it.

The combination of the theoretical background and the case-studies will be the base on which the different lensens can be translated into design principles, coming together in a position and give answer to the main research question.



Figue 3: scales of research

(Own work)

1.6 Research Diagram

What?

Research Question

"How can the rise of the *sharing economy* contribute to creating an *urban densification* strategy integrating *short-stay housing* in a post-war neighbourhood?"

Sub Question

"How much are people willing to share?

Sub Question

"What have been the effects of the rise of short-stay housing on Dutch cities?"

Sub Question

"What is the added value of co-housing projects to the living quality of its inhabitants?"

Sub Question

"How does urban densification impact *cities?"*

Why?

Current housing shortage is the result of an aging housing stock, demographic changes, environmental concerns, policy changes and shifting market forces. To be able to develop adequate housing for struggling target groups, upcoming changes in society such as elements of the sharing economy and co-housing developments might provide solutions for a densification strategy in an existing post-war neighbourhood.

How?

Literature analysis on:	
Developments and potential of the sharing economy	*Co-housing projects throughout history*
Short-stay housing developments in Dutch cities	*Effects of urban densification on existing neighbourhoods and its residents*

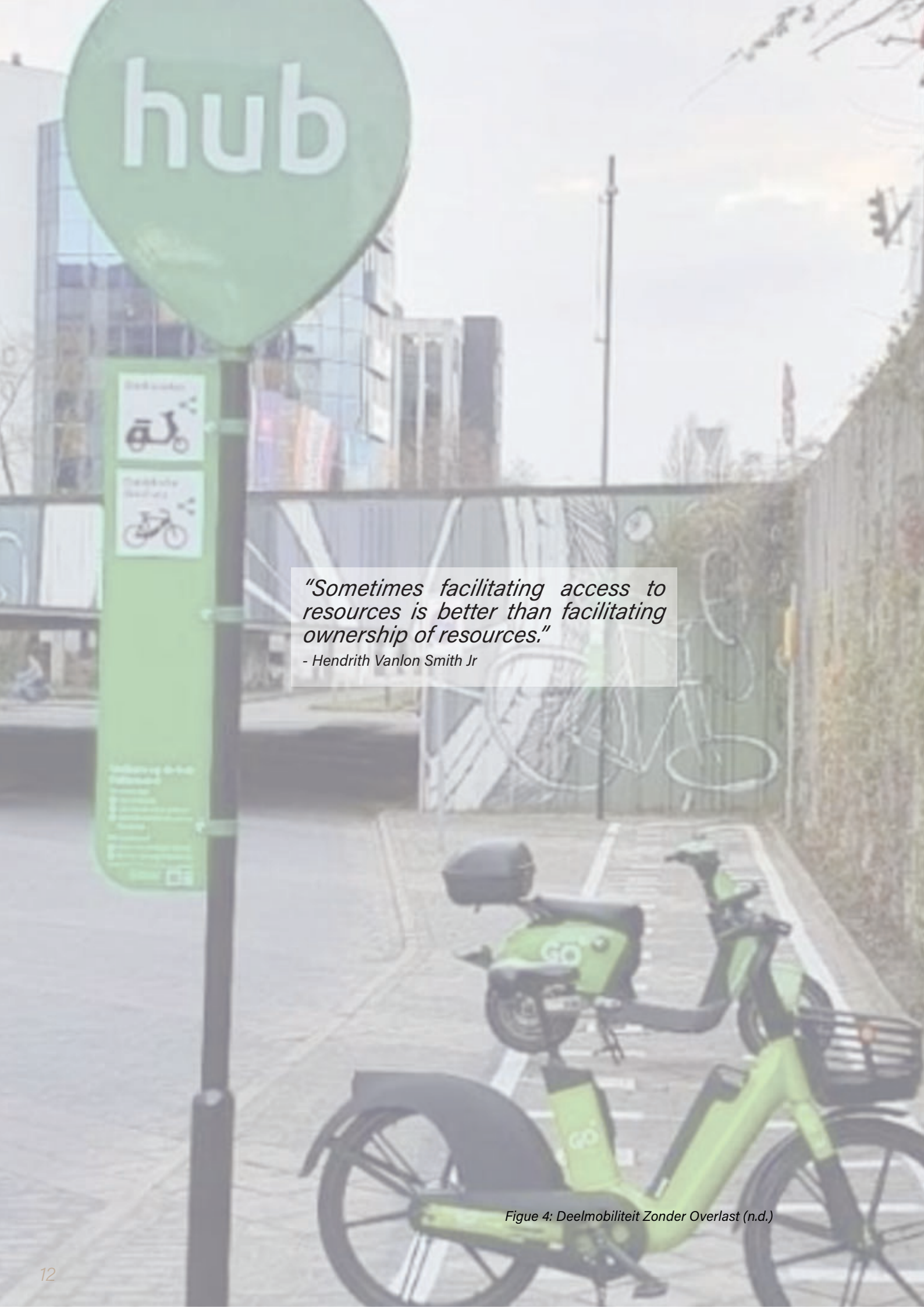
Case studies on:
Sharing economy
Short-stay housing projects
Co-housing/co-living/co-working projects
Densification strategies

Result!

What design principles can be applied in a densification strategy for a post-war neighbourhood to introduce short-stay housing and incorporate the sharing economy in the urban fabric?

Sharing economy *Short-stay* *Co-housing* *Densification*

Design strategy



"Sometimes facilitating access to resources is better than facilitating ownership of resources."

- Hendrith Vanlon Smith Jr

Figue 4: Deelmobiliteit Zonder Overlast (n.d.)

2. Sharing economy

2.1 Reshaping the standards; the rise of the sharing economy

Since the rise of platforms such as Uber between 2009 and 2014 (Dudley et al., 2017) and Airbnb between 2008 and 2016 (Tussyadiah, 2016), many societal changes have taken place all over the world. Digitalisation has created opportunities that challenge the status quo of traditional industries and companies, whereas the 'sharing economy' (also called the 'digital economy' by Görög (2018)) seeks to bring suppliers and consumers together to make use of underutilised spare capacity (Dudley et al., 2017). This is done through so called "peer-to-peer" interaction, through which individuals can trade their personal belongings and skills (Van Den Bussche & Moralès, 2019).

Sharing is currently an economic model in industries such as accommodation sharing, co-working spaces, transportation services and car sharing (Kraus et al., 2020) and its power is enhanced by "scarcity of resources, urbanisation and social and demographic changes" (Görög, 2018). Schor (2016) splits the sharing economy in four broad categories:

1. Recirculation of goods;
2. Increased utilization of durable assets ;
3. Exchange of services;
4. Sharing of productive assets.

What binds these different categories is their availability through the use of the digital platforms. Related definitions to the sharing economy are found to be collaborative consumption, access economy, moral economy, sharing society or social sharing (Görög, 2018), signalling its collaborative nature.

Rather than positioning users as a product online sharing platforms refer to their users as "members of a community". Further strengthened by the platforms promoting users to highlight the personal link between themselves and their offering, where this promotion of "authenticity" enables and promotes social connections (Van Den Bussche & Moralès, 2019). They further observe sharing platforms making private and personal aspects of life productive, whilst making their users into a community. These effects relate to the economic and societal pressure of a desire for community and a more sustainable form of consumption which are tied to the rise of the sharing economy (Tussyadiah, 2016).

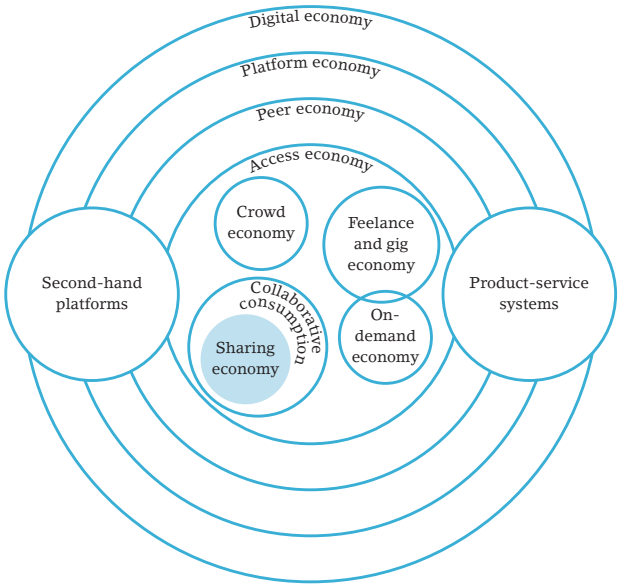


Figure 4: Definitions of Sharing Economy (Görög, 2018)

Rapid growth of these collaborative consumption practices led to an acceleration of the sharing economy and it being an 'innovation hub' (Akarsu et al., 2020). Where the initial collaborative practises were driven by the desire for social interaction and the virtues that came with sharing, many authors nowadays acknowledge the sharing economy being taken over by "instrumental economic logic of big multinational corporations", focussing increasingly on value based processes and 'reputation mechanisms'

(digitally mediated ratings) and therefore making it harder to form interpersonal ties and true social connections (Arvidsson, 2018). Belk (2014) warns for the rise of what he calls 'pseudo sharing', where the sharing is market driven by utility maximization. He states that this 'pseudo sharing' can be identified by the absence of community.

Arvidsson (2018), positions the sharing economy between the logic of market exchange and logic of virtue anchored in communal social relations. He furthermore states that the contribution to a common cause, in this case the virtues of for example autonomy and civic engagement is the direct result of the desire to create and reaffirm social relations. Non-monetized initiatives such as tool libraries have been revived in, mostly neighbourhood-based, groups, where trust among group members is high and transportation cost is being kept to a minimum. The digital platforms are therefore used as a component of neighbourhood building (Schor, 2016). Sharing communities in general were nevertheless found to be 'connective' rather than 'collective', relying on temporary exchanges that signal future potential instead of full interdependence (Arvidsson, 2018).

The sharing economy is built on trust, with higher amounts of trust allowing higher stakes in peer-to-peer exchange, such as borrowing the keys to ones appartment or their car (Sundararajan, 2019). Digitalisation has provided users in the sharing economy with platforms that provide trust, either through trusting in the (digital) systems behind the sharing or for example user reviews (figure 5, Sundararajan, 2019).

Trust Cue	Explanation
Nondigital word of mouth	Confidence based on positive recommendations from trusted friends, family, and colleagues.
Platform brand	Confidence gained because the platform's brand effectively communicates the promises of safe and high-quality service.
Digital trust systems	Confidence built by digital information about the person's authenticity, intent and capabilities, often based on the (sometimes verified) experiences of others, but also from identity verification and credentialing.
Individual digital confidence	Confidence stemming from a consumer becoming more comfortable basing decisions on information from reviews and other digital cues independent of any change in the quality of the digital information.
Individual learning by doing	Confidence from a consumer's positive experiences with similar services; for example, feeling more comfortable with Lyft because of good experiences with Uber.
Societal legitimization	Confidence gained by hearing people talking about the activity generically, often with references that use the brand name as a verb ("Airbnb-ing during vacation"), leading to a feeling the activity is mainstream.
Government and regulation	Confidence that government institutions and regulatory bodies would not allow untrustworthy service providers to persist and that if something goes wrong, these institutions provide robust recourse.

Figure 5: Seven sources of peer-to-peer trust in the sharing economy

(Sundararajan, 2019)

Figure 6: Sharing made possible through digitalisation

(Impact of the Sharing Economy on Construction Craft Labour and Equipment Markets, 2020)

2.2 Sharing lviing spaces; The Airbnb case

Airbnb has been seen as one of the founders of the sharing economy and is practically synonymous with the sharing economy (Schor, 2016). As mentioned previously, the sharing economy utilizes the spare capacity within society. This spare capacity was observed by Airbnb, since its founding in 2008, to be accommodation space, in which previously unaffordable accommodations can be shared (Gassmann et al., 2021). Following the definition given by Palgan et al. (2017) in which accommodation sharing is defined as " the peer-to-peer, [. . .] short-term renting, swapping, borrowing or lending of existing privately-owned idling lodging facilities".

Traditional accommodations for tourism are generally unsustainable and their attempts to realign with more sustainable concepts are slow and often lack to compete with the growing trend of environmentalism (Palgan et al., 2017).
Airbnb provided a bottom-up approach with close ties between the private and communal spheres from which accommodation providers could benefit both socially as financially (Gassmann et al., 2021). They further observed that travellers no longer only look for destinations but desire unique experiences and unconventional accommodations. Airbnb has opened up the hospitality market to the benefits of local, authentic experiences, household amenities and cost savings (Gassmann et al., 2021). The platform has given access to previously unreachable neighbourhoods, speaking to 'new urban tourism', which looks for authentic and everyday activities of the urban life in their destination (Törnberg, 2023)

Figure 7: Airbnb appartment

(reistips.nl, 2020)

Communities can use the Airbnb platform to resist the neoliberal tendency of the established companies and seek for the 'good society', where human kindness matters and we can trust each other (Belk et al., 2019). The sharing platform has nevertheless functioned as a transformative and disruptive to long established business practices (Tussyadiah, 2016). Törnborg (2023) furthermore states that Airbnb has little to do with sharing or digitalization, but is centred around its way of distributing responsibilities among hosts and enabling them to bypass taxation and regulations.

Rabiei-Dastjerdi et al. (2022) describe Airbnb as being "a double-edged sword with an endless list of diverse known and unknown impacts on the socioeconomic and urban development processes in the urban built environment", raising many questions on the impact the platform has on spatial patterns of neighbourhood impact, housing (un)affordability, noise pollution and traffic. They further observe Airbnb to be a driver of gentrification, adding to the negative connotations people have towards the platform. These effects, often observed as having a negative influence on both liveability and economic output, has led to multiple big cities in the Netherlands (partially) banning sharing platforms.

2.3 Sharing mobility; spatial implications

At the same time as the world saw the rise of Airbnb, Uber has, since its start in 2009, grown into a disruptive force in mobility sectors around the world. Shared mobility has since expanded to include not only market led initiatives but has also gained the attention of governmental institutions to reduce pollution and improve the mobility of inhabitants and tourist, albeit only few such projects have yet been created. Shared mobility is observed by Santos (2018) as a promising way to reduce both traffic congestions and carbon emissions. He defines shared mobility as "the sharing of an asset (a vehicle) instead of owning it, and the use of technology (apps and the Internet) to connect users and providers".

Sharing mobility is often focussed on the usage of cars. Santos (2018) divides the sharing of cars in four models, being:

1: Peer-to-peer car rental. Individuals can rent someone else their car when not in private use.

2: 'Modern Car Club'. Short-term rental of vehicles managed and owned by a provider.

3: Company owns no cars themselves but sign up private car owners as drivers.

4: New public transport on demand. On demand cars, vans or buses.

Whilst these types of car-sharing have been hailed as the way to reduce emissions and congestion, literature has so far not concluded significant environmental benefits when comparing between privately owned cars and car-sharing models (Santos 2018, Machado et al., 2018). Machado et al. (2018) nevertheless attribute environmental and social awareness to the availability of car sharing models, with the cars usually being hydrogen- or electric powered.

Next to car sharing, other means of transportation, for example (electric) bikes or electric scooters, play a big role in the sharing mobility sector, and are seen as a novel solution for 'the last-kilometre problem' (McKenzie, 2020). Whilst these modes of transportation have since 2018 been introduced in many big cities around the (western) world, their environmental gain is found by Reck et al. (2022) to be negative compared to ownership of comparable modes of transportation (bikes, electric scooters, etc.), but have the ability to plug holes in urban transport models that replace car usage. Providing these so-called 'micro-mobility' solutions in urban environments contribute to a shift towards sustainable modes of transportation, whilst also reducing congestion, addressing inequality in accessibility and reducing pollution in cities (Abduljabbar et al., 2021).

The Dutch government has also recognised the possibilities of 'micro-mobility' and the broader sharing mobility, and has therefore publishes several reports on the possible implications of these modes of transportation in Dutch cities (Kwantes et al., 2022a,b,c,d). These reports show how urban densification combined with smart (micro-)mobility solutions integrated into street design can lead to improved urban spaces instead of increasingly overcrowded and less-usable public spaces. These solutions can mitigate effects the late 20th century urbanisation has caused. One of the proposed solutions is the creation of 'mobility hubs' on the edges of neighbourhoods, in which both public functions and transportation are concentrated, to create liveable and car-free neighbourhoods.

2.4 Sustainability of sharing; what its sustainability potential?

Proponents of the sharing economy pose the sharing economy to be a more sustainable way of living because of increasing the value of otherwise underused assets, for example peoples private homes (Palgan et al., 2017). One of the claims sharing platforms often boast is the sustainability gain resulting from using their platform, due to a reduced need in privately owned products or services.

However, recent studies show that the increase in availability of several products and services also result in an increase in greenhouse gas emissions (Schor, 2016). Home sharing and car- or ride sharing may for example lead to additional travelling (Laukkanen & Tura, 2020), whilst the car still has a bigger environmental impact than walking, cycling or public transport.
Laukkanen and Tura (2020) observed that whilst most sharing platforms advertised their platform to combat underutilized goods, shared goods didn't necessarily replace the purchase of new products.

There is still a gap in literature on the sustainability of the sharing economy (Laukkanen and Tura, 2020, Boar et al., 2020) Literature on the sustainability of the sharing economy points to specific cases of sharing communities resulting in lowering emissions.Most of them however have, through secondary effect of their provided goods or services, not led to a decrease in environmental impact.
Palgan et al. (2017) have found that major differences can be observed between rental platforms and free sharing platforms, in which rental platforms tend to struggle with extracting the full sustainability potential due to its focus on profit, whereas sharing through free sharing platforms more often results in the, as often described, activation of underutilised goods and facilities which leads to less personal ownership and therefore a more sustainable use.

"Sharing is not a new phenomenon in our society; the new forms of sharing have appeared in recent years and this is the reason why it seems to be a new and disruptive model."
- Görög, 2018

Project info

- completed in 2021
- 120 dwellings
- 7 buildings
- 100 parking spaces
- shared; garden, communal spaces, working spaces, cars, (cargo) bikes, commercial spaces

Figure 8: Facade of block 26 of Woon& (Cobouw.nl)

Woon& Amsterdam

Woon& is a relatively new project, situated in a newly developed area of Amsterdam, called 'het Zeeburgereiland'. Woon& is based on the shared living concept created by Pop-up City for the contractor, BPD. Woon& is comprised out of 120 dwellings divided among 7 buildings.

It has integrated the sharing economy by providing sharable cars, shared serviced (cargo)-bikes and several multifunctional- and workspaces on the ground floor of the building. It furthermore employs the concept of commercial spaces that change function throughout the day.

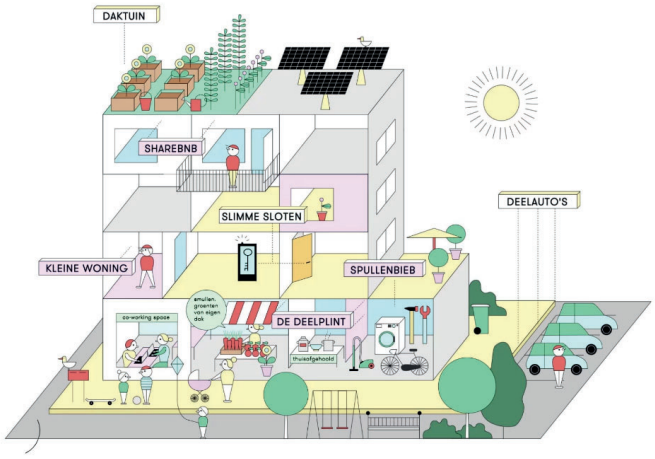


Figure 9: Shared living concept by Pop-up City used as base for developing Woon&, Blok 26 (Pop-up City)

Figure 12: Entrance to blok 26, behind which many of the communal spaces are situated, shared garden on the right and left of the building. (Arons&Gelauff)

Figure 10 (left) & 11 (right): communal spaces that offer multiple functions such as event spaces, work spaces or dining spaces (Arons&Gelauff)

Figure 13 (left) & 14 (right): Commercial spaces that change function throughout the day, in this example being a coffee bar during the day, whilst being a wine bar in evenings (Arons&Gelauff)

Project info

- to be completed in 2021
- 262 dwellings
- 7 buildings
- 100 parking spaces
- shared; common room, gym, parking garage, (cargo) bikes, commercial spaces, 'sharing wall' for tools etc.

Figure 15: Impression of SPOT (Architectenweb.nl)

Spot, Toren E

SPOT, or 'Toren E', is a to be developed project situated in Bullewijk, Amsterdam. The project is part of a larger redevelopment plan in this former office park. It will comprise 262 dwellings, most of them being for private ownership.

The design is centred around the entrance space, which can be described as a four story bycicle garage, portraying the sustainability goals of the architect. It furthermore promotes sharing through a 'sharing wall', in which residents can share tools, books and toys.

Figure 16: Imression of the many bike storages that will shape the entrance spaces of Spot, Toren E (MEI architects)

Figure 17: Impression of the 'Bikeparc', the four story bycicle storage at the heart of the project (MEI architects)

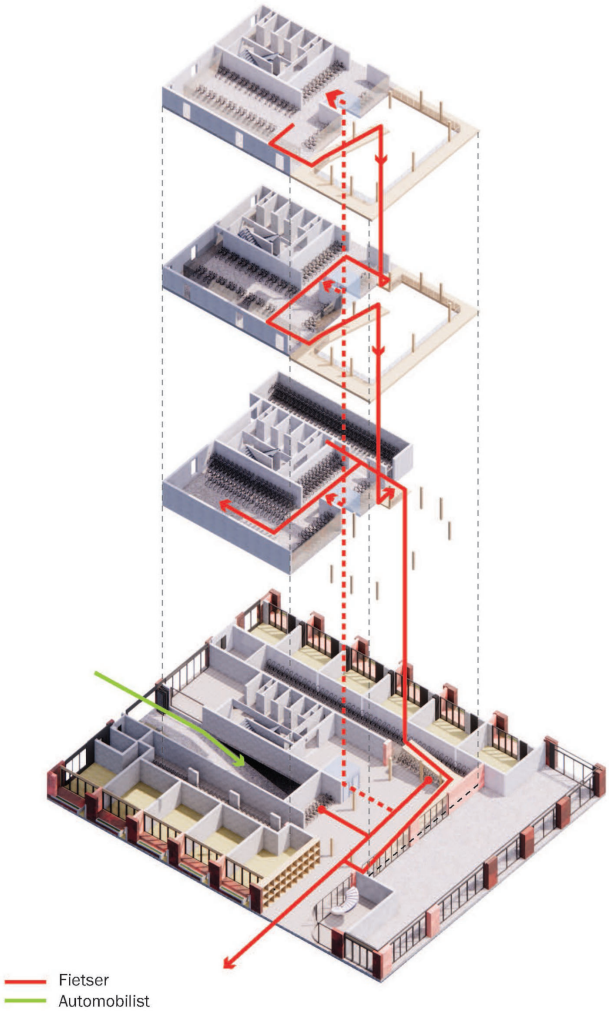


Figure 18: Circulation for cars and bikes in Spot E (MEI architects)

Project info

- Published in 2022
- Aims at improving ‘slow traffic’ in cities
- 6 reports.
- Arguments for ‘the 15 minute city’
- Case-studies on Rotterdam & Zwolle

Figure 19: Programma deelmobiliteit (Kwantes et al.)

Programma deelmobiliteit

Figure 20: The aspects playing a role in smart, sustainable mobility (Kwantes et al.)

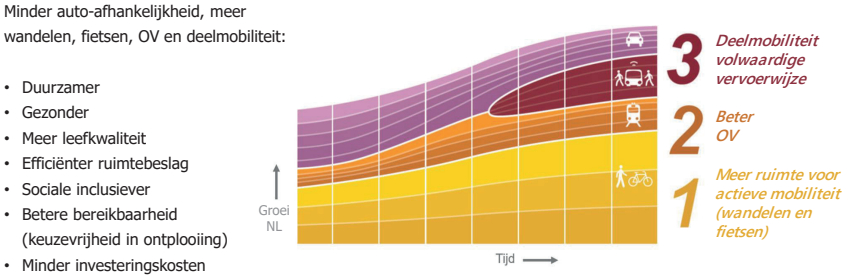


Figure 21: Development of smart mobility (Kwantes et al.)

Figure 22: Different modes of smart mobility for different travel speeds (Kwantes et al.)

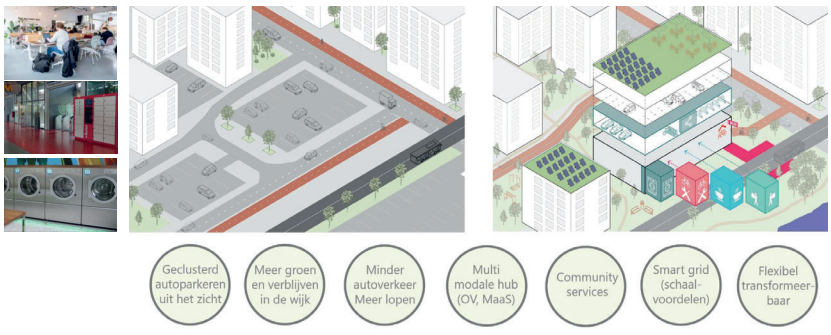


Figure 23: Mobility HUBs on the edges of neighbourhoods (Kwantes et al.)

The 'Programma deelmobiliteit' is a government program that has focussed on the mobility prospects of the future. The primary aim was to identify problems and opportunities, and from that, create strategies to sustainably shape the mobility of the future. It was developed by Goudappel mobility consultants and KAW architects and published in 2022.

It contains several researches, which range from mobility types to interventions in the urban space to allow for a multitude of sustainable mobility services. It also emphasizes the potential of so-called 'Mobility HUBs' on the edges of neighbourhoods, in which shared mobility and other communal functons can be housed, which allows neighbourhoods to become car free and more liveable.

Project info

- completed in 2019
- 51 dwellings
- 7 buildings
- 100 parking spaces
- shared; garden, tools, vegetable garden, bikes, experiences

Figure 24: (Delva Landsape Architectuur)

De Deeltuin

De Deeltuin is a project designed by Heren 5 architects. It comprises 51 dwellings, but when the initial concept was presented, more than 250 potential inhabitants were interested, signalling the desire of certain people to live in a project with collective features. Whilst all houses are relatively large, single family houses, they are bonded by the expansive communal garden that is at the heart of the project.

The shared garden is made out of three areas; the 'ligweide' for relaxing and playing sports, 'the vegetable garden' with a greenhouse as centerpiece and lastly the playing ground, designed as a natural playing ground with natural materials such as tree trunks. By placing parked cars underground, both the streetscape as well as the communal garden are made free of parked cars.

Figure 25: The half-underground parking garage eliminates cars in the streetscape (Delva Landsape Architectuur)

Figure 26: The shared garden with the greenhouse and the 'ligweide', designed for a range of different activities (Delva Landsape Architectuur)

Figure 27: Ground floor plan, showing the shared garden in the centre, with the greenhouse as centerpiece. Shared amenities are situated near entrances (Delva Landsape Architectuur)

Figure 28: The shared garden with the greenhouse and the 'ligweide', designed for a range of different activities (Delva Landsape Architectuur)

Figure 29: Section showing the 'tranquil' shared garden, with cars being placed out of sight underground (Delva Landsape Architectuur)

Figure 30: expats in Rotterdam (WoneninRotterdam)

3. Short-stay housing

3.1 Short-stay housing in the Netherlands

Short-stay housing is not a new phenomenon, it has been around since at least the middle ages, where lodging has already often been defined in literature and tales. The way short-stay has developed has nevertheless seen dramatic changes since the creation of platforms such as Airbnb in 2007, enabling the peer-to-peer sharing that we view as normal nowadays. 'Short-stay' however doesn't limit itself to the tourist industry, it encompasses everyone who stays in a certain accommodation for a defined amount of time. The municipality of Amsterdam for example defines short-stay to encompass a period of stay between seven nights and 6 months (Shortstay in Amsterdam, n.d.).

An overwhelming rise as seen by the peer-to-peer accommodation sharing platforms, with Airbnb at the forefront, has led to frustrations with local communities in the Netherlands, predominantly in the big cities in the Randstad. The backlash these frustrations have created have first led to nationwide legislation being introduced in Januari of 2015 in the shape of the 'Huisvestingswet' (Housing Law), in which the definitions of housing and expected use of these houses is laid out. It has made it possible for municipalities to introduce a 'housing ordinance' that partially or fully obliges housing in their municipality to have permits, limiting home owners to combine or rent out their properties without the municipality knowing it or having any influence over this (Meester Advocaten, n.d.). This legislation has been introduced with the aim to protect the existing housing stock, which is seen as vulnerable and in need of protection.

Following the introduction of the 'Huisvestingswet', big cities have started to experiment with the amount of legislation and control they should put on the (growth of) unregulated short-stay housing. The city of Amsterdam has shown a two-faced policy, on one side stating their ambition to become world's 'first sharing city', but on the other side introducing new policies that severely restrict short-stay housing and private Bed & Breakfast accommodations. This was however seen as necessary to maintain liveability in the tourist centre of Amsterdam, the 'Grachtengordel, which saw increasingly large hordes of tourists flocking there. From the beginning of 2024, no forms of private accommodation rent are allowed without a permit, making the entire accommodation rent market visible and managable for the Amsterdam municipality (Gemeente Amsterdam, n.d.).

Whilst the city of Rotterdam has primarily seen the rise of tourist numbers in the last few years, their legislation is catching up to that of Amsterdam. Rotterdam is also cracking down on the possibilities for short-stay and has, just as the city of Amsterdam currently has, put a 60 nights per calendar year maximum on renting out private dwellings (Gemeente Rotterdam, n.d.). Starting 2023, an obligation to inform the municipality about each instance where their dwelling is rented out has been put in place. Furthermore, the city of Rotterdam has put a 6,5% tax on short-stay rentals, which encompass rental periods between 7 nights and 6 months.

The diverse nature of short-stay nevertheless rises from the current housing demands the Dutch housing market faces, and the problems several groups within society face with finding appropriate housing. These groups would fare well by having a stable (short-stay) housing solution, which they could use as a stepping stone for further integration and climbing up the ladder of the regular housing market.

3.2 Short-stay housing; Target groups

In the Netherlands, green spaces outside of cities are highly valued and seen as vital for keeping the increasingly densifying urban areas liveable, especially in the 'Randstad.' A changing society, with changes in demographics, housing standards and higher levels of connectivity, requires solutions for rapid densification in cities in the Netherlands without losing the valued green spaces that give peace of mind.

One of the demographic groups identified as struggling in the current overheated housing market is the urgent house seekers, which consist of young people, recently divorced, recently homeless, refugees and other groups that fit in the 10 percent of people looking for a temporary and flexible accommodation in the Netherlands (Lub & Luns, n.d.).

These groups would fare well by simple, affordable temporary accommodations which provide shelter in the time they need to get their personal life on track, but regulation and societal protests hamper the development of such projects (Oorschot, 2021).

The Dutch government has also noticed this urgent need for housing for this vulnerable group of people and has issued policy and budget changes to help alleviate the issues around the construction of these affordable (temporary) accommodations (Rijksoverheid, 2021). Having a sufficient stock of such accommodations is seen as one of the pillars to prevent social exclusion and homelessness. (Scheepers et al., 2022)

The observed target groups for short-stay housing are:

- Migrant workers
  - Seasonal migrant worker
  - Expats
- Tourist
- Spoedzoekers
  - Recently divorced
  - Economically homeless
- Refugees/Status holders

These target groups all share a common characteristic; being dispositioned to the bulk of society. Each with their own challenges, but also their unique strengths.

3.3.1
Seasonal migrant workers

Migrant workers in the Netherlands are essential for its economy, performing jobs Dutch citizens do not want to, or cannot do. Four categories of migrant workers are observed by de Hek et al. (2020). These are: Circular migrants, Binationals, Footloose migrants and Settlers.

1. Circular migrants have strong ties with their home country and very weak ties with the Netherlands, often have a partner back home and are not planning to integrate with Dutch society.

2. Binationals have strong ties with both their home country and the Netherlands, are usually higher educated than other migrant worker and plans on staying in the Netherlands for an extended period of time.

3. Footloose migrants have weak ties with both their home country and the Netherlands, often being poorly educated and performing low-paying jobs. Their plans are often to stay in the Netherlands for a short time whilst doing informal jobs and furthermore lack integration.

4. Settlers have strong ties with the Netherlands and weak ties to their home country, resulting in their desire to live in the Netherlands for an extended period of time or even permanently. This group is often highly educated and well-integrated into Dutch society.

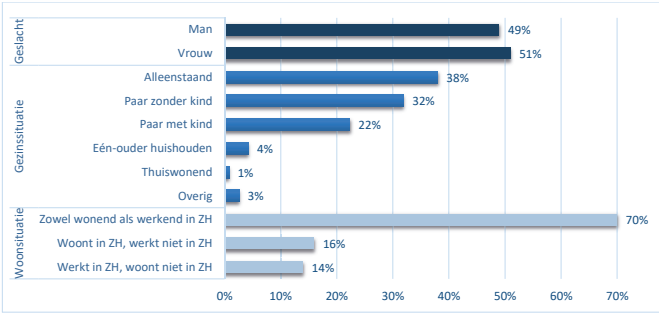


Figure 31: Characteristics of migrant workers in Zuid-Holland (de Hek et al., 2020)

Within these groups, migrant workers that are often seen as socially isolated and causing nuisance are the footloose- and circular migrants, who come from one of the Central and Eastern European countries (CEE from now on) to the Netherlands to perform seasonal work, often working in (agricultural) production and logistics. From this group of workers, by far most

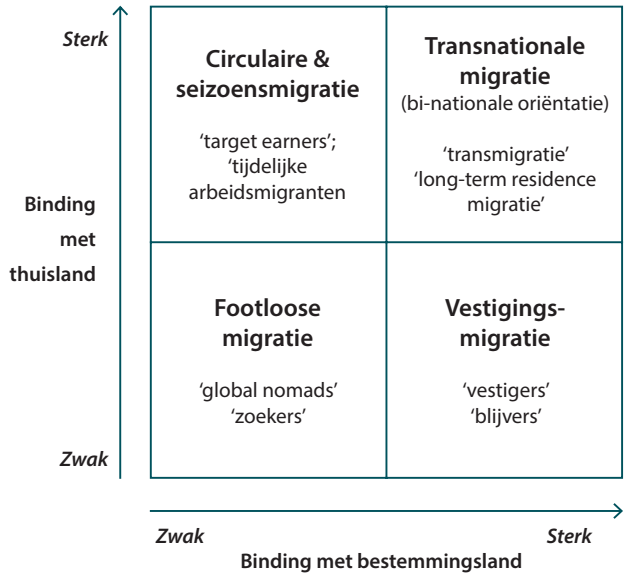


Figure 32: Four patterns of worker migration

(Own image, based on Engsbersen et al. (2013))

of them come from Poland, about 180.000 out of 250.000 CEE workers in the Netherlands. (Hek et al., 2020). Whilst it is expected that the amount of seasonal migrant workers will decline in the coming years due to improved job opportunities in their home countries, the current situation of these low-skilled, low-paid and flexible workers often sees poor housing situations and multiple social issues (Wolf , 2015).

Migrant workers have, in recent years, experienced their housing situation in the Netherlands as being of low quality, lacking privacy and being overall sub-par (Hek et al., 2020). Many migrant workers are in need of immediate lodging (the renting of short-stay dwelling) and due to shortages in the Dutch and also Rotterdam housing market they often opt to live together in crowded spaces (Scholten et al., 2019). The nuisance this clustering of many migrant workers in overcrowded dwellings in already deprived neighbourhoods caused the city of Rotterdam to lobby for a national policy allowing cities to limit the amount of these groups in certain neighbourhoods. The aim of this policy was mainly to protect the already vulnerable inhabitants of the southern neighbourhoods of Rotterdam from increased influxes of nuisance.

Polish immigrant workers are often single and have a hard time maintaining relationships with people back home (Wolf, 2015). Wolf observed the importance of the CEE migrant workers creating and maintaining a strong network to help them with looking for either jobs of housing, being one of the factors most important in determining how successful they are. This network is partially shaped at work, but mostly around their living sphere and at parties or other social events. Scholten et al. (2019) found that many of the CEE migrant workers in low-paying jobs are actually well-educated, with half of them working well below their highest achieved education. They often start in the low-paying jobs and throughout the years work their way up to higher paid, more skilled, jobs. This is in line with the research conducted by Scholten et al. (2019) where they found that only one in five of the migrant workers in Rotterdam plan on staying in the Netherlands for less than 2 years.

The lack of connection to the Netherlands in the footloose- and circular migrant population hampers their chances of a successful stay in the Netherlands. Footloose migrants are found to mostly only having been in the Netherlands for less than a year, raising the question whether it just takes time for people in these groups to shift to one of the migrant groups with stronger ties to the Netherlands (Snel et al. 2015). Nevertheless, footloose migrants are found to cause most nuisance (compared to other migrant groups within Rotterdam), which strengthens the case for the importance of social contacts and a strong network to rely on for the footloose- and circular migrants.

Figuur 2 **'Typen migranten' onder Midden- en Oost-Europeanen**

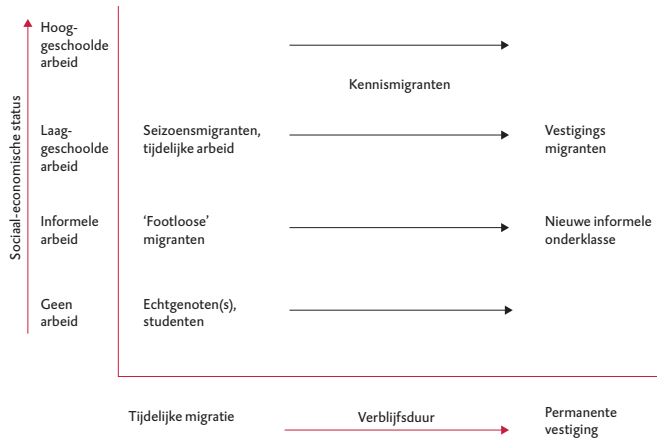


Figure 33: Migrant developments throughout time

(Scholten&vanOstaijen, 2018)

3.3.2 Expats

One of the other groups within migrant workers are usually defined as expats. These are highly educated workers who come to the Netherlands to work in high-paying jobs. Policies from the Dutch government actively support attracting these 'knowledge-workers' (IND, 2023).

The common perceptions of people towards expats are defined by CBS (2015) to be:
1. Born and raised in a different country than the Netherlands;
2. Higher salary than the average employee;
3. Works for an internationally oriented company;
4. Is highly-qualified;
5. Not having the intention to settle in the Netherlands;
6. Not or barely identifying with Dutch values;

This group is furthermore often seen as 'globetrotters', people with several global connections, instead of strong local ties (Van Bochove et al., 2010). The Nicis Institute further observes the 'expat bubble' in which expats advocate themselves as if they want to get in touch with differing cultures and therefore travel around the world, but remain within their international expat-communities. Contrary to low-paid migrant workers, expats often keep comparatively stronger ties to their home country.

From the expat group, Stiemer (2022), has found that 60 percent of the expats were male, with 44% of the expats being between 25 and 35 years old, whilst another 30% of them is between 35 and 45 years old. They also found that almost 50% of expats stayed in the Netherlands longer than 5 years, whilst 25% stays between 3 and 5 years. From the expats, 24% came from neighbouring countries (Germany, the United Kingdom, Belgium).
Van Bochove et al. (2010) found that friendships between expats in the Netherlands and local Dutch people mainly originated at work or within their neighbourhood, either through school or a sports club. Nevertheless, expats experience becoming friends with Dutch people to be a quite a challenge. One of the main issues is the language barrier. Whilst many expats take courses to learn the Dutch language, the Dutch being profound in the English language limits the possibility for expats to learn Dutch in day-to-day situations. Expats therefore experience the Netherlands to be 'easy to set up your life here, but very difficult to integrate into its society.' Another observed difficulty for the integration of expats is the level of separation of work and life. Where expats back home had most of their social networks work-based, the Dutch colleagues did not see their colleagues as friends.

Rotterdam Expat Centre is an effort of the Municipality of Rotterdam to attract as many expats as possible, in 2022 they assisted 7.109

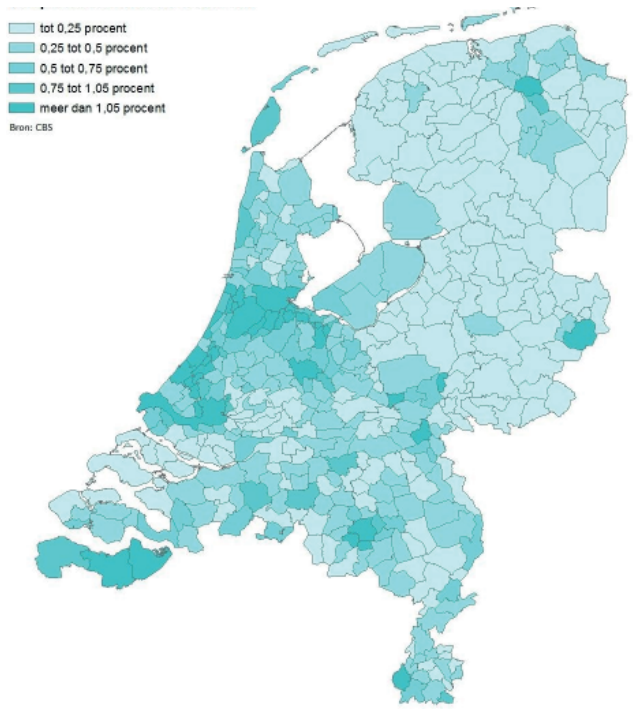


Figure 34: Percentage of expats per municipality (Ooijevaar & Verkooijen, 2015)

expats in finding a job in Rotterdam and settling there. Many of these jobs where found in the IT & Tech and Maritime & Offshore engineering (Rotterdam Partners, 2022). Due to their often relatively short stay in the Netherlands and their higher budget, expats are mostly looking for a furnished dwelling.

Ager and Strang (2008) researched the main domains of integration, having found to be:

1. Markers and Means:
- Employment is seen as one of the key factors to integration; working together with colleagues from the 'new' country enables interaction and therefore integration.

- Housing is of major importance to physical and emotional well-being, creating a sense of place and the possibility to learn from the established neighbours and neighbourhood.

- Education, and more specifically schools, are observed to be the most dominant space to make contact with the local communities.

- Health is important to be able to consistently engage with the community.

Agar & Strang therefore acknowledge these four elements to be "key aspects of integrating into a new society".

2. Social Connection:
- Social Bridging is defined as the 'friendliness' between different members of communities and as intensive involvement in the local community. The first is important for a "sense of safety and security", whilst the second is more important to enable social and economic benefits coming from the community.

- Social Bonds are often described as the establishment of connection with 'like-ethnic groups', with whom they can share cultural practices and familiar patterns.
- Social Links define the connection between individuals and government services. When these connections are easily achieved, integration is stimulated.

Social connections are seen as the defining feature of an integrated community.

3. Facilitators:
- Language and cultural knowledge are understood to be necessary for effective integration into a community, whilst also being acknowledged as a challenge for the newcomer.

- Safety and Stability are paramount for the sense of 'being at home' which catalyses the integration process

Facilitators are therefore observed as elements that can make or break integration.

4.Foundation:
- Rights and Citizenship are the fundamental underpinnings of integration, without these integration is virtually impossible.

A stable foundation or universal human rights are the underlying, less visible, parts of integration.

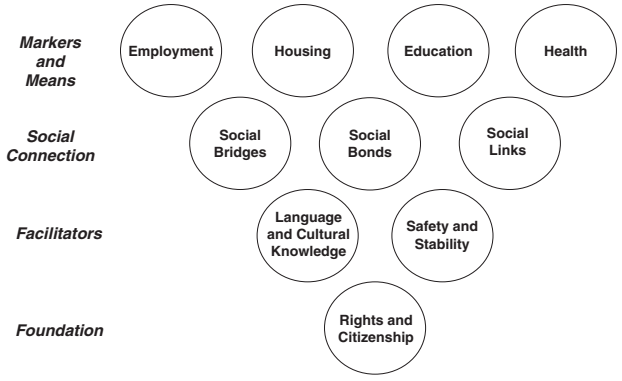


Figure 35: Conceptual framework defining core domains of integration (Agar&Strang, 2008)

3.4
Tourists

Tourism, or the tourist, has many different definitions. Tribe and Xiao (20011) lays out that the tourist can be defined by as someone who temporarily displaces him- of herself from one region to another for a certain necessity, whether this is to visit an event, a business meeting or explore cultural differences (Tribe & Xiao, 2011). He nevertheless also observes tourist definitions to be 'one that travels for pleasure.' The many different definitions for tourism have an overarching theme, which is the movement from one region or country to another to stay there for a certain amount of time, with the intention to return to their original place in a not too distant future.

As mentioned before, the different reasons one travels somewhere can differ significantly, however they all bring different patterns of engagement between tourists and the local community with them. Whereas most literature on tourism focussed on the role of the terrain and cities to attract tourists, Dujmovic and Vitasovic (2022) researched the importance of social interaction in the perception tourists have of their destination. They acknowledge the difficulties intercultural communication brings with it, for example between tourist and host, but state that it is an important driver of tourist satisfaction.

Rotterdam saw nearly 1.2 million visitors staying in hotels in 2022, bringing it almost back to pre-pandemic levels. Almost half of these visitors came from outside the Netherlands.

The city of Rotterdam has, since 2022, a vision for the way they want to develop tourism in Rotterdam, which they lay out in their plan 'As a guest in Rotterdam, a new look on tourism' (Gemeente Rotterdam, 2019). It lays out the benefits of tourism, being a driver of the economy and the general liveability by creating jobs and visitingcreating liveliness in different venues throughout the city.

The report nevertheless also emphasizes the dangers of mass tourism. They take cities as Amsterdam and Venice as examples where mass tourism has caused undesirable living conditions, mostly due to overcrowding and the loss of authentic local venues which were replaced by shops focussed fully on tourists. Therefore, the city of Rotterdam wants to focus on a specific type of tourist, which they call the 'DO-rist.' The so-called 'DO-rist' is portrayed as the tourist that comes to Rotterdam to engage with the things that make Rotterdam unique, that visits part of the city 'regular' tourists normally would not visit.

The municipality sets out to identify the characteristics which make the different neighbourhoods unique and aims to strengthen these identities, while simultaneously improving safety, sustainability and liveability.

Figure 36: Campaign set out by the municipality of Rotterdam to attract 'do-rists)
(AD, 2021)

3.5
'Spoedzoekers'

The Dutch housing market has, as mentioned before, been in a housing crisis for the last several years. Demand is rising whilst legislations and soaring construction costs hamper the development of new properties, causing housing prices to surge. Therefore, 'spoedzoekers' (urgent housing seekers) make little to no chance on the Dutch housing market to find suitbale housing (Oorschot, 2021). She further observes that what is needed for this group of vulnerable people is a so called 'flexible shell' or 'flexible layer' in the housing stock, which positiones itself between having no apartment and having a 'real' house, explaining how this could be the answer to (temporarily) fit the needs of this group.

The types of housing this flexible layer in the housing stock are defined by the Dutch Ministry of the Interior and Kingdom Relations as being flexible solutions for housing that can be realised relatively low-cost and in a short period of time, with an emphasis on the temporary nature of the dwellings, either of the dwelling itself, the duration of stay of the inhabitant or the amount of time the dwelling is positioned on a certain location.

Spoedzoekers can be defined by a broad range of people who are in urgent need of housing, but not urgent enough to get prioritized by housing corporations for social rent housing. Van der Velden & Wassenberg (2023) observe a growing group of people losing their home due to a sudden change in their living situation, whether this is due to moving out of the parental home, moving because of work or the breakup of a relationship or marriage. The last one is often perceived as an dire situation and is a group that speaks to the imagination of many Dutch people (student master thesis, Poelarends, 2015).

Figure 37: Schematic model of integration of 'spoedzoekers' in the city (Lub & Luns, 2018)

3.5.1
Recently divorced

A divorce is seen as one of the most stressful life events during adulthood (Hald et al., 2020) In the Netherlands, around 84 thousand people, either married, as registered partners or living together, get a divorce (CBS, 2021). Mental health problems such as a burnout can be observed in approximately 20% of divorcees, even years after the divorce (Hald et al. 2020). This can be attributed to the stress and emotional burdens divorcees face after the divorce. Relieving stress in recent divorcees is seen as key to remaining a healthy lifestyle, with stability and safety as important factors to this success. Housing has the potential to create the stability these people could fare well by.

One in three 15 year old kids in the Netherland doesn't grow up with both parents living together and it is expected that this number will only grow in the future. Whilst up until the early 90s it was common for eventual kids to live with their mother after the divorce, co-parenting has steadily seen a rise and approximately one in three divorcees now opts for co-parenting (CBS, 2020). They further state the necessary condition of the divorced parents to live relatively closely together, to save time, money and make the managing easier. The closer these parents live together, the more durable the co-parenting arrangement is. It has been found by CBS (2020) that almost 40% of divorcees live within two kilometres of each other, therefore making co-parenting possible. It has also been found that 51% of male divorcees remain in the same house, compared to 36% of the female divorcees.

Of the divorcees, most people remain to do the same job due to it providing a sufficient income. This however doesn't apply for the group of young adult females without a job or children, who tend to start working after their divorce (CBS, 2021). The economic cost in most cases nevertheless fall more heavily on women, they experience a sharper decline in household income and face a greater poverty risk (Leopold, 2018). These studies are however based on data from more than a decade ago so it is likely that due to processes such as emancipation this inequality has shrunk.

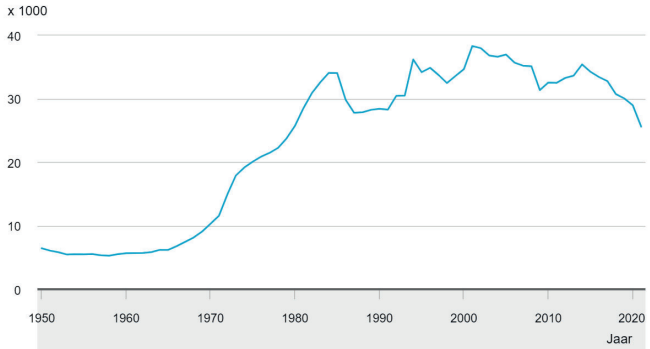


Figure 38: Number of divorces in the Netherlands (CBS,2022)

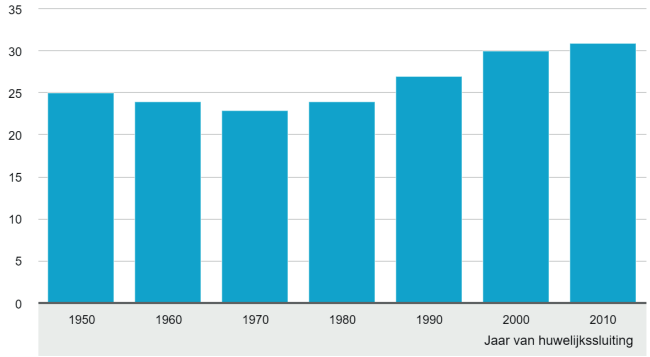


Figure 39: Average age of divorcees in the Netherlands (CBS,2022)

3.5.2
Economically homeless

Homelessness has always been a problem, but in recent years a new group of homeless people have been identified. Where 'traditional' homelessness is often characterised by having (many) healthcare issues, ranging from addictions to mental illnesses, economical homelessness is defined by not being able to obtain any dwelling. Economically homeless usually have a (modest) income, but are unable to a get their hands on a dwelling (van der Velden & Wassenberg, 2023). They furthermore observe this group to have an inability to find suitable dwellings in the current Dutch housing market, whether it is in buying, private rent sector, social rent sector and even the illegal segments such as squatting. The prevailing characteristic is the urgent need for a suitable dwelling which is currently impossible due to the overheated Dutch housing market (Lorkeers et al., 2021).

Lorkeers et al. (2021) have observed the group of economically homeless people to be very diverse. They found the group consisting of both men and women, aged 15 to 46 years old, often sharing characteristics such as a migration background, (expected) relatively low IQ and a lower socio-economic status. These groups often found themselves in a social network which supported them, but after a life event such as a temporary loss of job or the ending of a relationship they slipped into trouble. They temporarily sleep at friends of family in many cases. People working in the sector responsible for care for the homeless therefore also note that homelessness is primarily an issue of the availability of dwellings instead of needing care. They state that to alleviate this problem, affordable housing, whether temporary or permanent, has to be built soon, explaining the solution as 'housing first' (Lorkeers et al., 2021, van der Velden & Wassenberg, 2023).

In the city of Rotterdam, 5000 so-called 'couch sleepers', having no permanent address but also not having to sleep outside, are known of by the municipality. Of these 5000 however, no distinction can be made how much of these people can be attributed as economically homeless compared to 'traditional' homelessness.

The city of Rotterdam has a program to actively approach realtors and landlords to find a suitable permanent dwelling for people who are at risk of homelessness (van der Velden & Wassenberg, 2023). However, this remains a difficult and long process, in which a flexible 'layer' in the Rotterdam housing stock could help alleviate pressure on these instances and people. This flexible layer is observed by van der Velden & Wassenberg to be a stepping stone to get a permanent dwelling.

Figure 40:No options to buy a house because of the overheated housing market (KRO-NCRV, 2022)

3.5.3
Refugees / permit holders

The Netherlands has seen a major influx of refugees arriving since 2015, putting strains on the asylum system. After being granted asylum in the Netherlands, they are appointed one of the social rent public houses that are dispersed throughout the Netherlands. This however raises questions on its effects on the integration of refugees, which is often considered to be subpar (Czischke & Huisman, 2018). Integration of refugees is defined by Maliepaard et al.(2017) as the disappearance of differences between refugees and the local community. Maliepaard et al. (2017) found in their research that these differences are, even after decades in the Netherlands. These differences are often substantial, especially in the job market and in social interaction between them and the local community as well as the community comprising people of their own background.

In a research on the social integration of status holders in the city of Rotterdam, Van der Linden (2020), examined the social connections refugees had with the local community to determine the social capital. Social capital is often attributed to be the defining indicator of having better chances in the job market, stronger ties to the local community, better health and improved knowledge of the new language. The research acknowledges that most previous literature has aimed at observing the social interactions between refugees and local, western, residents, but ignoring the fact that much of the big cities in the Netherland (Rotterdam, Amsterdam, The Hague) are fundamentally diverse with many different cultural backgrounds.

The research found that newly appointed refugees not necessarily tend to have their social contacts with people from their own background and culture, as was previously adopted. They however make social bonds with specific cultural groups that share similarities in language and culture, whilst also actively engage with the local Dutch residents to learn about Dutch culture. It concluded by acknowledging the previously accepted notion that spreading out newly appointed refugees throughout predominantly Dutch neighbourhoods results in increased interaction between the refugees and Dutch residents.

Refugees differ from traditional migrant groups who settled in the Netherlands by the so-called 'refugee gap', which identifies the disadvantages they might face due to for example interrupted education, diplomas not being recognized or (mental) health issues, which all might result from their necessity to flee from their home country (Huink et al., 2017). Resources to facilitate integration are defined by Huink et al. as knowing the local language, being in (relatively) good (mental) health and the education they follow or have followed.

Figure 41:Housing for students and refugees in Amsterdam(nul20.nl, n.d.)

Project info

- completed in 2016
- 546 bedrooms
- 2 building volumes
- crossover between student housing and hotel
- shared; gym, communal lounges, kitchens, bathrooms, roof garden, working spaces, commercial spaces

Figure 42: The Collective Old Oak (PLP Architects)

The Collective Old Oak - London

The Collective Old Oak is a top-down, co-living concept aiming at young professionals that show a desire to connect with others and engage in the co-living life, having abundant facilities provided within the project.

The rent prices include many services provided by the Collective Old Oak, such as game rooms, co-work spaces, a laundry room and other communal spaces. It is positioned as an affordable housing project in the overheated housing market of London.

Figure 43: Communal spaces in the Collective Old Oak (The Collective)

Figure 44: Launderette in the Collective Old Oak (The Collective)

Figure 45: Standard 'Cosy Studio' in the Collective Old Oak (The Collective)

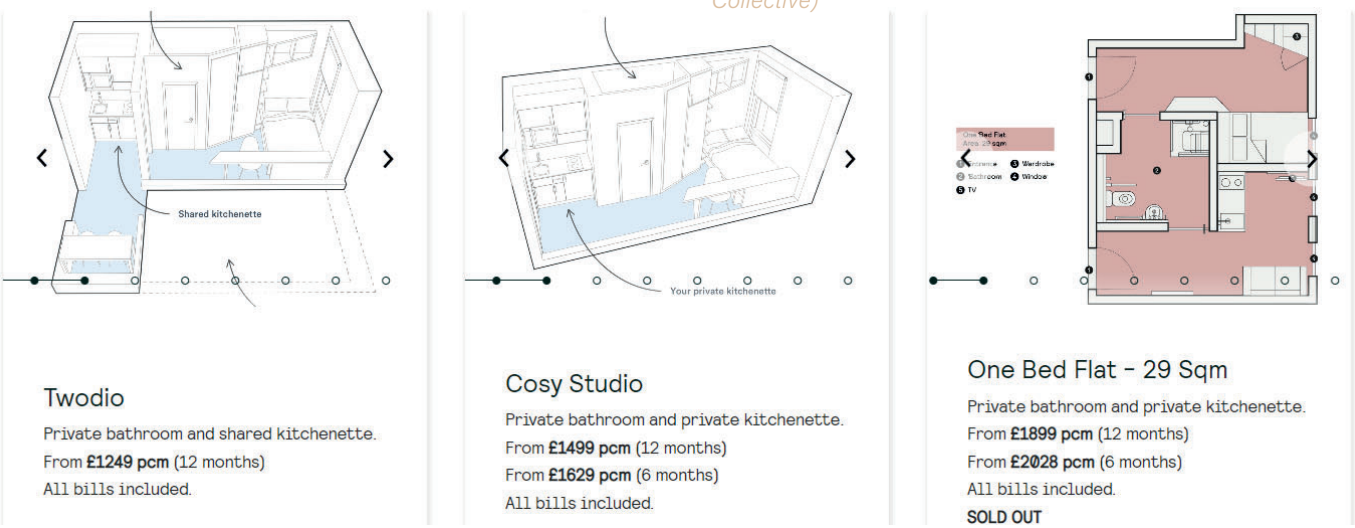


Figure 46: Three types of housing situations in the Collective Old Oak (The Collective)

Project info

- completed in 2019
- 279 units, with up to 412 rooms
- 7 buildings
- connected to a large commercial centre
- shared; gym, communal lounges, kitchens, bathrooms, roof garden, working spaces, commercial spaces

Figure 47: Facade of lyf funan (Discoverasr)

LYF Funan - Singapore

LYF funan is a co-living, short stay housing project in Singapore aimed at 'millenials with a preference for connecting and collaborating within communities', offering co-working, dining, theatre, wellness and outdoor space coming together under one roof.

It offers a variety of different rooms, ranging from single person bedrooms to studios and even appartments with six bedrooms where bedrooms can be rented individually, whilst sharing the amenities.

Figure 49: double studio/bedroom (LifestyleAsia)

Figure 50: Small studio/bedroom (LifestyleAsia)

Figure 48: Entrance to blok 26, behind which many of the communal spaces are situated, shared garden on the right and left of the building (LifestyleAsia)

Figure 51: Studio with kitchenette (LifestyleAsia)

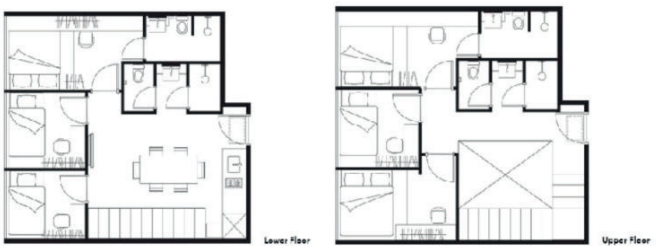


Figure 51: Six-bedroom apppartment floor plan with seperately bookable rooms (Discoverasr)

Figure 52: Four-bedroom apppartment floor plan with seperately bookable rooms (Discoverasr)

Project info

- completed in 2016
- 400 rooms
- Energy production by windmills on top
- A bike is included with the room
- shared; communal spaces, workshop spaces, café, gym

Figure 53: The social hub, eindhoven (The Social Hub)

The Social Hub - Eindhoven

The Social Hub Eindhoven was, at its completion, called 'The Student Hotel', signalling its target group. It offered two types of rooms, a small standard room or a three person room. To diversify it has been rebranded to The Social Hub, where it points out its central location within Eindhoven, being situated directly next to the train station, and offering several facilities within the building. With booking a room, a serviced bike is provided which is stored in an underground bike storage.

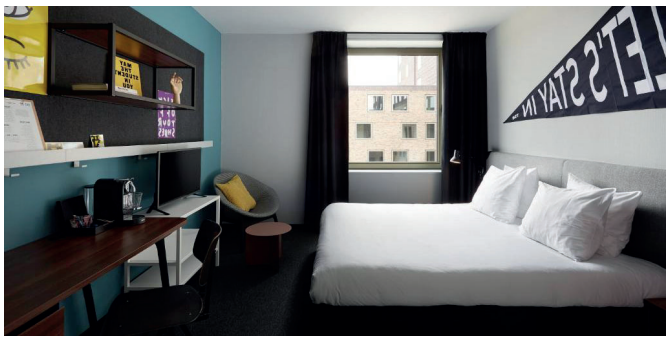


Figure 54: Standard one-person room (The Social Hub)

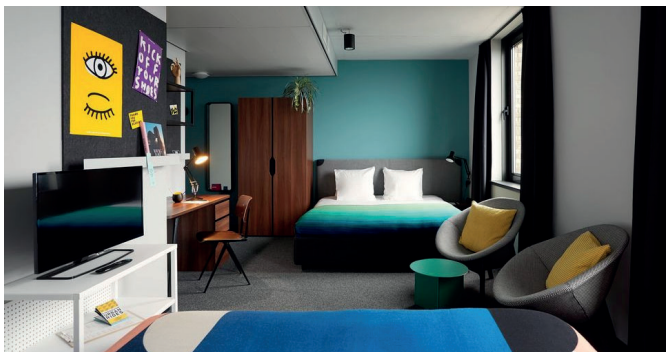


Figure 55: Three person room, also aimed at tourists (The Social Hub)

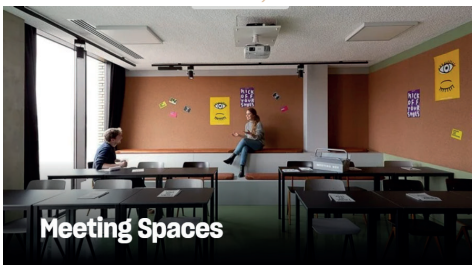


Figure 56, 57, 58: Communal spaces in The Social Hub Eindhoven (The Social Hub)

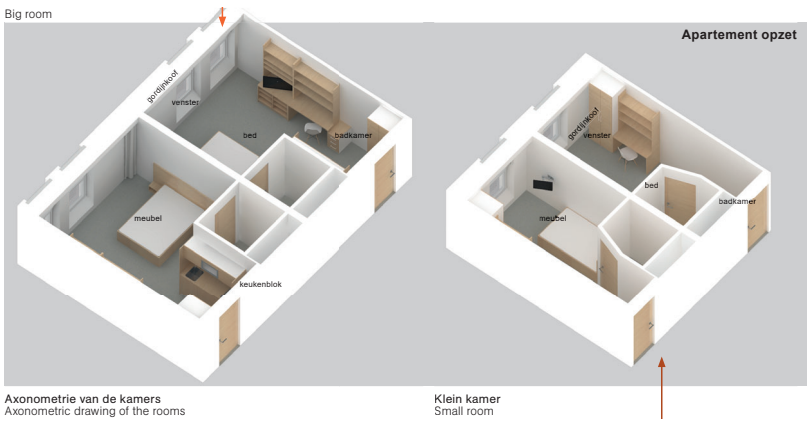


Figure 59: Lay-out of the two types of rooms available in the Social Hub EIndhoven (The Social Hub)

Project info

- completed in 2020
- 340 rooms
- hybrid-hotel concept; high-end hotel functions combined with short- and long-stay student facilites
- shared; communal spaces, working spaces, classrooms, library, meeting rooms, commercial spaces

Figure 60: The Student Hotel, Delft (KCAP Architects)

The Social Hub - Delft

The Student Hotel Delft is part of the larger densification project in Delft on the site where the railway viaduct used to be. The building offers 5 types of rooms, aimed at tourists, business people and students, for differing periods of stay. It furthermore provides a multitude of different facilities that can otherwise often be observed in (high-end) hotels, such as meeting rooms and a library.

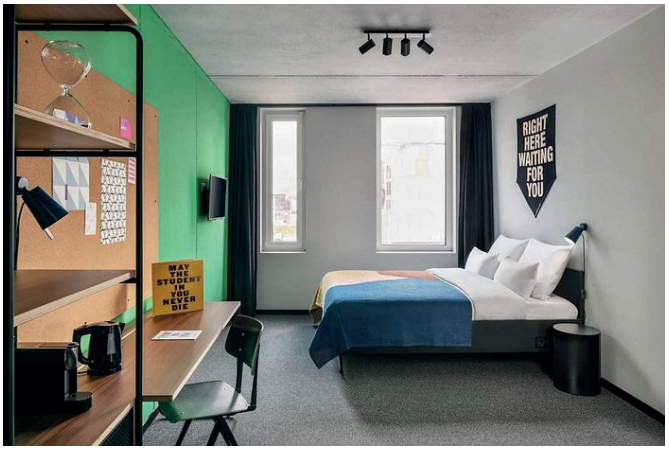


Figure 61: Standard single person room (KCAP Architects)

Figure 63: Communal spaces (KCAP Architects)

Figure 62: Room with kitchenette (KCAP Architects)

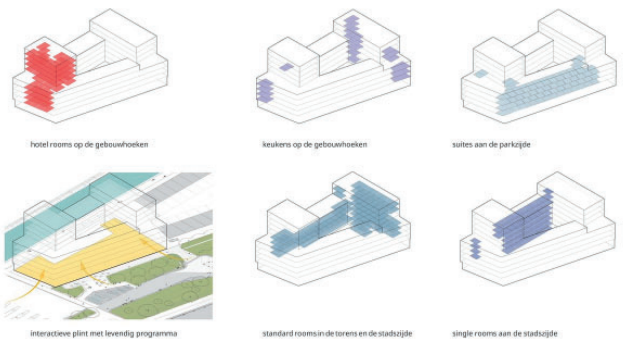


Figure 64: Diagram showing the distribution of spaces and functions throughout the building (KCAP Architects)

Figure 65: Diagram showing the ground floor, semi-public, functions (KCAP Architects)

"Co-housing is the best future for many people, they just don't know it yet."

-Kindig , 2018

Figure 66: History of Cohousing (Milman, 1994)

4. Co-housing

4.1 Co-housing; historical development

Housing plays a vital role in people's health, being widely recognised as a social determinant of health (Carrere et al., 2020). They further state that health outcomes are affected by affordability, stability, quality and the emotional link to housing. One of the ways the emotional link to housing can be strengthened is by engagement in co-housing or co-homing projects (Williams, 2005). Van de Berg (2012) exemplifies the importance of social interaction by starting her argument on co-housing with the statement "it takes a village to raise a child", followed by an elaboration on the significance of the co-housing projects that have taken place in the past and present, focussing on the role of collective functions and sharing facilities.

The first modern cohousing community was established in Denmark in 1972 and many similar projects and research into this type of housing have followed, with the housing type being introducing in countries like the UK in the recent decades, following changing societal needs and regulation changes (Cummings & Kropf, 2019). Tummers (2015) defines co-housing as the "collectively build and self-managed housing clusters", that aim at creating "vivid social networks and healthy environments". For several target groups, the housing type could help alleviate the problem of loneliness and contribute to physical- and mental health. (Jakobsen & Larsen, 2019).

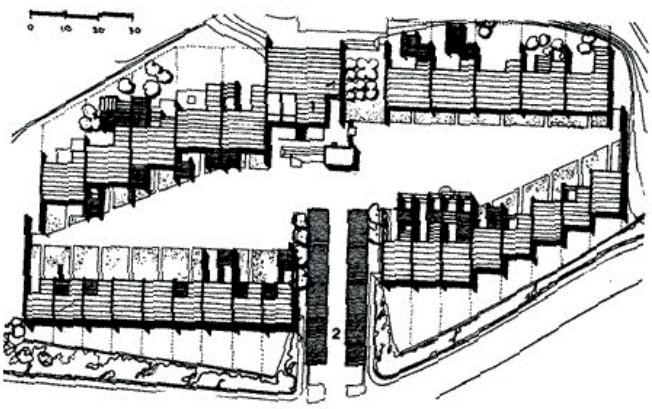


Figure 67: Saettedammen, Denmark

(Poluk, 2021)

Gruen and Mimoun (2019) have, contradictingly, found that co-homing does not foster deep relationships "despite its embeddedness in the sphere of home and hospitality", deep relationships are found in the more traditional workspaces that are dedicated to working. Co-housing has nevertheless grown significantly in the last few decades, both in number of projects as in the academic interest, where comparable phenomena such as collaborative housing, collective housing, communal living, communes and ecovillages have also seen a rise (Jakobsen & Larsen (2018).

Co-housing was viewed in Denmark in the 1980's as being spaces where the educated could live together in so-called 'snug places', whilst others viewed them as 'escape-utopias' which acted as islands within the city (Jakobsen & Larsen, 2018). Jakobsen and Larsen (2018) explored from these critiques who lived in the co-housing projects across Denmark, and found that it are, as stated by critics, mostly well educated Danish residents who had jobs in management or were either self-employed.

Durret & McCamant (2011) identify cohousing by six shared characteristics:

1. Participatory process;
2. Design that facilitate community;
3. Extensive common facilities;
4. Complete residential management;
5. Non-hierarchical structure;
6. Seperate income sources.

4.2 Co-housing; the Netherlands

Co-housing, in the Netherlands also called 'Centraal Wonen', gained traction in the 1980s alongside the squatters movement and has since formed an international network that has also drawn academic interest to how the living concept functions compared to traditional housing arrangements (Tummers, 2015, Tummers, 2015b). The co-housing initiatives stem from a dissatisfaction of the repetitive housing built in the 1960s and 1970s, where in the 1970s the first 'woongroepen' (resident collectives) emerged, followed by government policy called 'Wonen in Groepsverband" (living in a group association) in 1984, in which the housing corporations were positioned as key actors for co-housing projects (De Vos & Spoormans, 2022).

In 2009, a government report looked into the renewed interest in co-housing programs that also aimed at specific ethnic groups, the elderly, and specifically collective private commissioning (CPO). Whilst the renewed interest in co-housing was observed, government policies focussed primarily on CPO's, which themselves found obstacles in obtaining suitable lands in cities such as Rotterdam, where land was often privately owned or appointed to housing associations for social housing (De Vos & Spoormans, 2022).
Nevertheless, cooperation between housing associations and local authorities assisting groups of elderly have resulted in more than 160 completed co-housing projects throughout the Netherlands in 2015, with over 60 more in various stages of completion (Labit, 2015).

Co-housing initiatives in recent history share the characteristics to be organised predominantly by middle-income households and seek the benefits of the city whilst mitigating its negatives. The characteristics often introduced in the co-housing projects are elements such as gardens, playgrounds or spaces for informal interaction Tummers (2015b). She has also observed that co-housing initiatives focus heavily on self-organization and bottom-up approaches, but in practice often end up being constructed partially by institutional agencies, having proven to be necessary for succes of the initiatives.

Nevertheless, the initiatives have been found to usually look for identity and safety in a community with different backgrounds, sharing the 'kindred spirits' mentality necessary for social interaction on the level members of co-housing projects expect from each other. The roots for co-housing often lies in 'the neighbourhood' and ecology movements, aiming at creating holistic projects to satisfy the needs of all (future) inhabitants.

Whilst co-housing projects can differ greatly, they share common characteristics such as sustainability and social cohesion as core values throughout the design, planning and building phase, as well as after completion (Tummers, 2015). Jarvis and Fernández Arrigiotia (2016) described these shared characteristics and their benefits as:

- Co-housing projects perform better economically and ecologically, compared to regular housing;
- Reduced energy use and improved housing performance through collective thinking;
- Improved social- and physical resilience of its residents;
- An enhanced sense of place with increased self-awareness and shared community knowledge.

4.3 Co-living; difference with co-housing

Whereas co-housing is, as laid out in the previous chapter, comes from the desire to create a self-built, self-regulation housing typology in which all inhabitants share the same values towards living together, co-living is seen as a business model that has its roots in the early 2010s, following the economic crisis and the subsequent housing problems (Coricelli, 2022). They describe the current status of co-living as a "hybrid between commercial hospitality, serviced apartments and co-working spaces", offering small private rooms connected to abundant facilities. Ronald et al. (2023) define the surge of households featuring non-related adults living in shared rental accommodations as 'a prominent new asset class' within urban real estate. This illustrates the core difference between co-housing and co-living, where co-housing is positioned as a bottom-up and collective initiative, co-living is seen as a developer-led business asset created for capital gain.

When looking at the inhabitants, or target groups, these types of housing inhabit, a clear distinction can be made. In co-housing initiatives, the people who will be living in the project are, broadly speaking, already known and interacting with each other by finding similarities and making compromises in the building process of the co-housing initiative. Co-living however is a top down, business oriented approach, in which a certain target group is envisioned. Suitable amenities will be created that fit the needs of this target group, whilst the final group of inhabitants can be classified as a collection of 'strangers' (Ronald et al. 2023).

Whereas shared accommodations were traditionally seen to preserve students, hippies and the elderly, the rise of freelancers collectively 'co-working' has broadened the target group to also include starters that mainly operate in the digital environment (Financial Times & Davies, 2015). The participants and executives of 'The Collective' (operating several co-living projects) the Financial Times talked to, define living in a co-living environment as "housing on demand", "[your room].. is your crash pad, and your living room is the rest of the building". They explain that the concept is intended as ".. a transitional product – not somewhere you're going to live for the rest of your life". In an interview with a former resident of one of the co-living projects mentioned before, the former residents explains how she has lived in a co-living project for six months and has found new roommates with whom she now lives together, signalling the connecting power a co-living project can have.

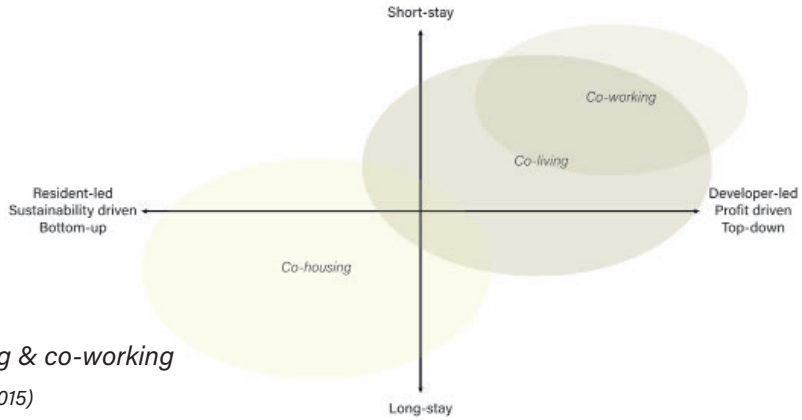


Figure 68: Framework of co-housing, co-living & co-working

(Own work, based on Hoppenbrouwer (master thesis), 2015)

4.4 Co-working; integration catalyst

One of the differences observed between co-housing and co-living is the addition of co-working and the way co-living is structured around this phenomenon. Co-working has grown to include 20% to 30% of the working age population (Gruen & Mimoun, 2019).

Co-housing or co-living has the potential to be extended in the economic sphere in the shape of co-homing, in which home-owners provide their house to be a workspace. According to Gruen and Mimoun (2019) 'co-' comes from the Latin cum (with), which indicates an idea of support and joined activity: collaborative means co-labor, working with. Meaning that consumers of collaborative spaces would not merely seek a place to work, but a place to work with others. This aligns with current trends of increased levels of working from shared homes and the notion of people wanting to share more, both for social, environmental and economic gain (Belk et al., 2019).

Co-working spaces are observed to be an alternative to traditional office spaces, providing flexibility, collaboration, interaction, sharing and promoting networking practices. Even though the concept of co-working has matured in recent years, aspects concerning its location (urban of rural), its spatial features and governance structures can be further explored (Akhavan et al., 2023). Co-working falls under the umbrella of hybrid-working, in which hybrid-working spaces are described by Akhavan et al. (2023) as "spaces [that] represent a flexible combination of working, household, parenting, caring and leisure, where different professions can experience 'working alone together'."

Berbegal-Mirabent (2021) attributes the rise of co-working spaces to the rise of a new kind of workers which are disrupting the traditional way of how and where to work. These co-working spaces are found to be mainly concentrated in inner-city environments, providing an attractive and inspiring space, which lures millennials, which are often seen as the main users of co-working spaces. Berbegal-Mirabent (2021) furthermore describes the sustainability potential of co-working spaces, not only due to increased flexibility resulting in less travelling, but also by creating a sense of community that may drive people to commit to a change.

Gruen and Mimoun (2019) found that the top three motivators to join co-working are:

1. A social and enjoyable atmosphere;
2. Interaction with others;
3. A community.

These findings signal the desire to not just have a space to work, but also a space to work with others. Whilst being portrayed as social happenings, co-working in its current shape is merely a business model, catering to needs that have come up by an increasingly connected and flexible workspace.

Nevertheless, co-working spaces provide a flexible and permeable boundary space which distances itself from home and work but at the same time provides elements of both, providing attractive options for workers to shape their workspace and allowing for interaction with like-minded people.

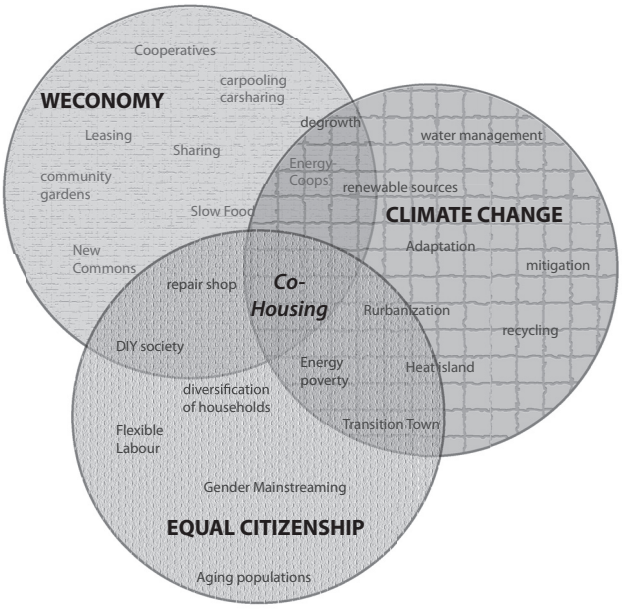


Figure 69: Co-housing as integrative practice

(Tummers, 2015)

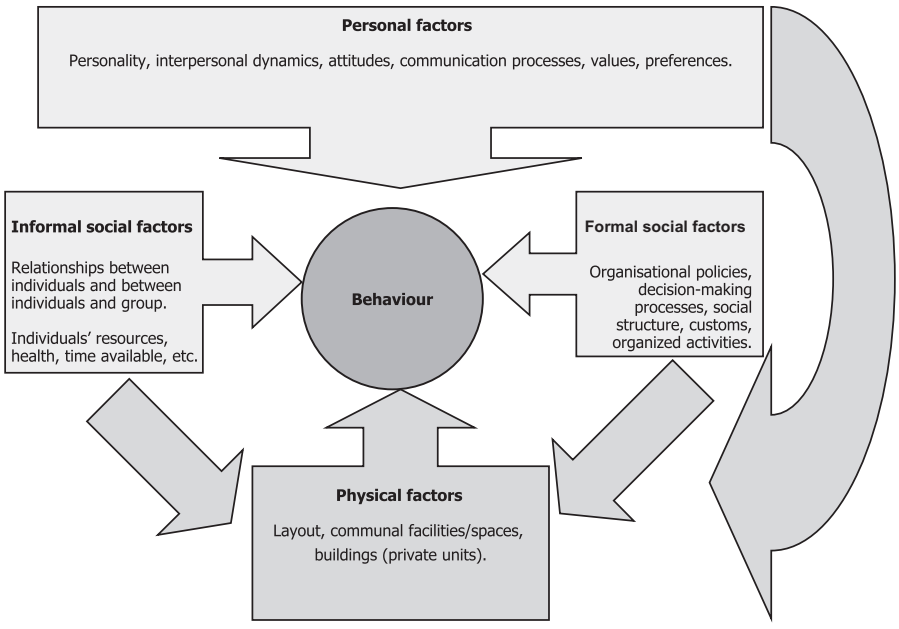


Figure 70: The interaction between design, personal and social factors in cohousing community and its impact on social interaction

(Williams, 2005)

Project info

- completed in 2015
- 11 clusters with 10 to 12 dwellings
- 2 buildings
- shared; common room with living room, kitchen and working spaces, launderette, bikes.

Figure 71: Facade of one of the building blocks (mehr als wohnen)

Dialogweg 6 - Zürich

Dialogweg 6 is part of a masterplan intended to diversify and densify in Zurich. The project consist of private units that all have a kitchenette, bathroom and small private balcony. They share a large common space featuring kitchen, living room, working spaces and a large loggia with 9 or 11 other dwellings.

The project is aimed at singles and families of all different backgrounds and income groups, with a desire to live together in a community.

Figure 72: Analysis of the different housing solutions found in Dialogweg 6 (Own work, based on Duplex architects)

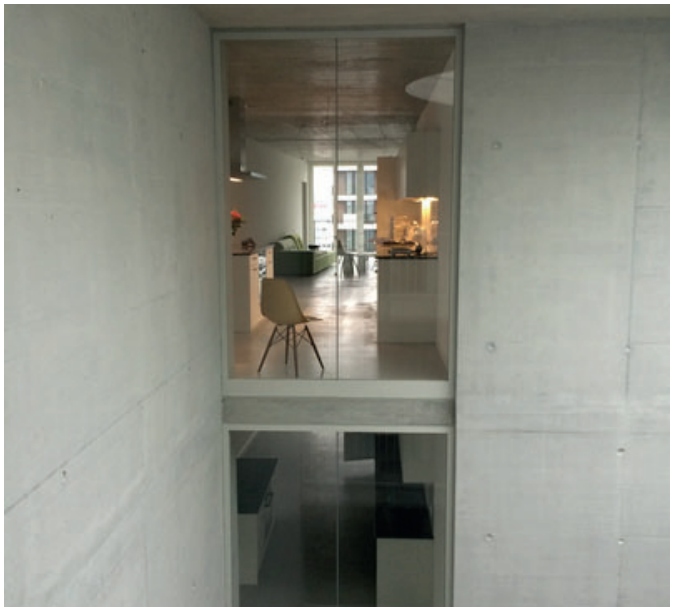


Figure 73: Visibility between different floors and functions (mehr als wohnen)

Figure 74: Shared living space (mehr als wohnen)

Figure 75: Shared kitchen space (mehr als wohnen)

Project info

- completed in 2015
- 138 dwellings
- 5 buildings
- Passive house concept
- shared; event room, restaurant by locals, workshop spaces, offices, guest apartments, laundry room

Figure 76: WagnisArt at night (Archdail,y Gonzaléz)

WagnisArt - Munich

The WagnisART complex is built on a former military site in Munich, which, untill 2010, housed a large artists colony. The project was developed with these former and future inhabitants in mind.

Much attention has been paid to the shared facilities and the different clusters that are spread across 5 buildings, sometimes connected by skybridges.

Figure 77: Transparant circulation spaces (Archdail,y Gonzaléz)

Figure 79: Shared garden (Archdail,y Gonzaléz)

Figure 78: Shared roof garden (Archdail,y Gonzaléz)

Figure 80: Floor plan of a three bedroom appartment (Archdail,y Gonzaléz)

Figure 81: Floor plan of a four appartments sharing a common space (Archdail,y Gonzaléz)

Project info

- completed in 2013
- 64 unique dwellings
- 3 buildings
- Combination of standard appartments and cluster units
- shared; carpentry workshop, kitchen, studios, daycare center, co-working space, spaces for cultural project.

Figure 82: One of the blocks of Spreefeld (Archdaily)

Coop housing River Spreefeld - Berlin

Cooperative housing River Spreefeld is a cooperative housing concept in Berlin, aimed at 'harnessing its location's unique potential to creat a socially just, economically stable and environmentally respornsible urban building block.

It consists of both conventional appartments as well as floors with cluster units, each having a communal living structure that support 4 to 21 people, but always following the same design structures. It is furthermore designed to be both multigenerational and multicultural with fitness rooms, guest rooms, rooftop terraces and music- and youth rooms.

Figure 83: Shared living room and balcony (Archdaily)

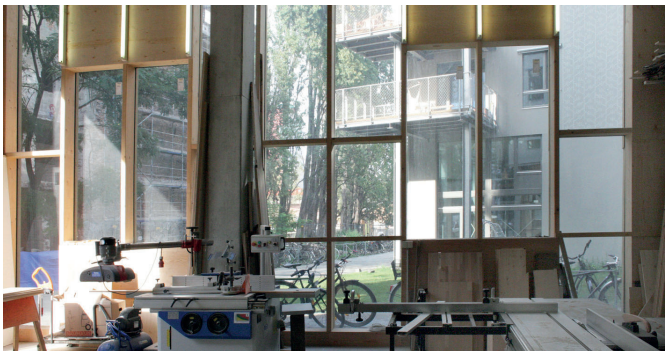


Figure 84: Ground floor workshop spaces

Figure 86: Aerial shot of the building blocks (Archdaily)

Figure 85: Shared dining space in cluster (Archdaily)

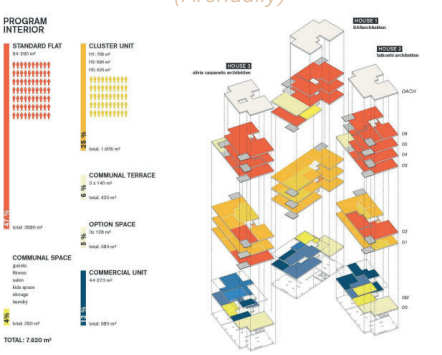


Figure 87: Functions throughout the project (Archdaily)

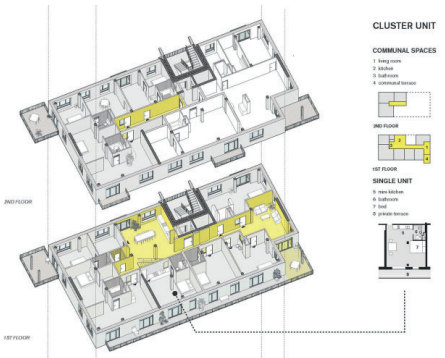


Figure 88: Cluster unit diagram (Archdaily)

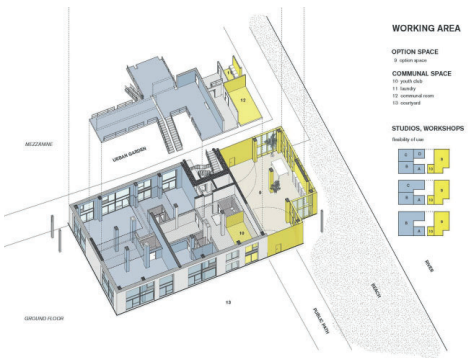


Figure 89: Ground floor working spaces (Archdaily)

Project info

- completed in 2013
- 13 rooms
- 7,2 m2 per room
- shared; kitchen, bathroom, dining, living room, working spaces, laundry, storage

Figure 90: Facade of LT Josai Shared House (Archdaily, b)

LT Josai Shared House - Nagoya

LT Josai Shared House is a project in Japan that responds to the housing trend where young adults who are complete strangers to each other share amenities such as the kitchen.

Whilst the rooms are only 7.2 square meters big, the shared spaces included make it into 23 square meters per person, making it comparable to other one-room appartments according to the architects.

Figure 91: anonymous exterior facades (Archdaily, b)

Figure 92: vertically connected shared spaces bind the rooms together (Archdaily, b)

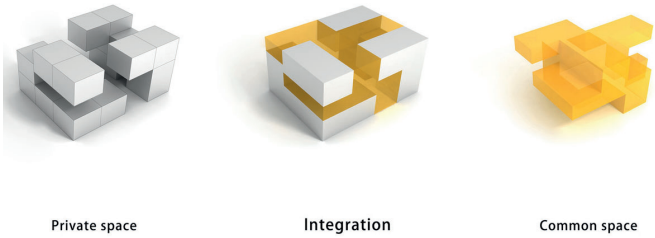


Figure 93: concept diagram (Archdaily, b)

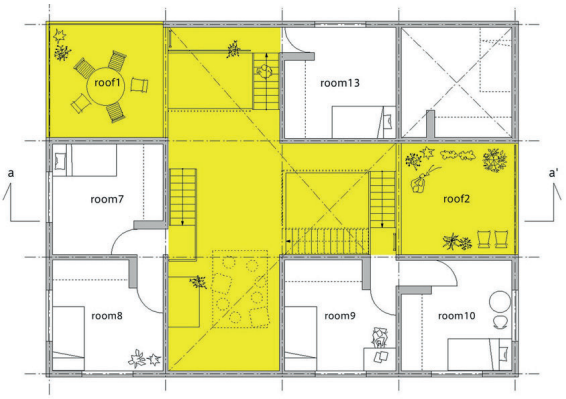


Figure 94: Ground floor floor plan (Archdaily, b)

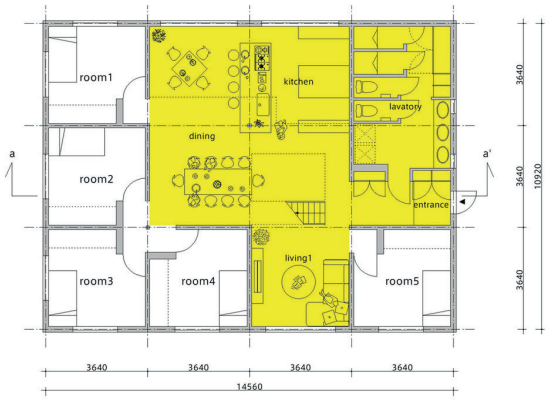


Figure 95: First floor floor plan (Archdaily, b)

Figure 96: Drawing of dense urban fabric (Laurincova, 2019)

5. Urban densification

5.1 Urban densification; definition

Urban densification is often seen as a necessity and is considered as the most relevant strategy for ecological modernization, occurring especially in fast-growing cities (Teller, 2021, Naess et al., 2019). Urban densification is referred to by Claassens et al. (2020) as 'addition of new houses to the existing urban fabric, therefore increasing the initial density.'

Naess et al. (2019) observe the shared view of literature on the correlation between urban expansion due the growth of cities and the subsequent loss of habitat, resulting in decline and fragmentation of species, decreasing biodiversity. They furthermore observe the higher energy consumption that is found to be a direct result of urban sprawl, rendering the realization of greenhouse gas reduction targets of governments difficult.

Two types of urban densification are observed by Teller (2021): soft- and hard urban densification.

- Soft urban densification is the continuous, small-scale adjustments that are made to the urban fabric of a city, often being bottom-up approaches by different stakeholders taking multiple decades to become notable.

One of its main characteristics is the people-centred approach, in which people adapt their structures to their personal needs.

- Hard urban densifications on the other hand are often top-down, large scale and policy-driven developments in which existing urban structures are redeveloped. These urban structures can be unused spaces such as brownfields, or lower density neighbourhoods. The hard urban development's often require private funding, but are facilitated by (local) governments.

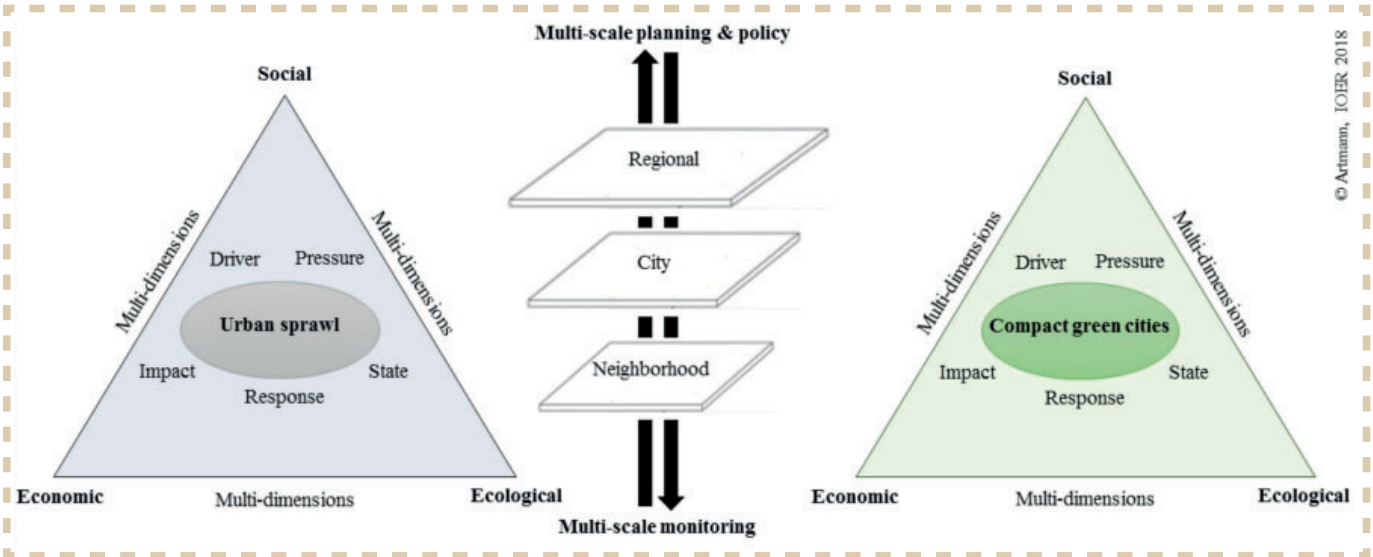


Figure 97: Framework of urban densification

(Artmann, 2018)

5.2 Urban densification; opposition

Urban densification faces the dilemma of being the system to control urban spawl (and therefore limit loss of green spaces and biodiversity) but is also the system to increase urban environmental quality and reduce social disadvantages (Artmann et al.. 2019) This dilemma is called 'the compact city paradox.' Artman et al. (2019) further observed that whilst many governmental policies on sustainable urban densification have been implemented in recent decades, urban green spaces have seen a steady decline over the last decade, much of which is the direct effect of urban densification. One of these policies is the Road map to a Resource-Efficient Europe, issued by the European Commission to advice cities in sustainable urban densification. (European Environment Agency., 2011).

Urban green spaces have been attributed to multiple health benefits, which means that any reduction in the amount of open green space per resident results in negative health impact (Naess et al. 2019). An overall lower living quality is a risk of uncontrolled urban densification. Urban greening policies that span the entire urban region where densification is proposed should be emphasised, implementing for example green fingers, parkways, greenways of ecological networks.

Other than the loss of urban green spaces, local stakeholders often disapprove of urban densification projects, displaying NIMBY (Not In My BackYard) behaviour. Residents often support general densification policies, but strongly disapprove densification in their own neighbourhoods. Densification projects change the status quo of a neighbourhood, worrying local residents because they fear it might negatively affect the existing amenities of their neighbourhood (Wicki & Kaufmann, 2022). It was furthermore found by Naess et al. (2019) that urban densification will, without proper measures, lead to an increase in number of people being exposed to higher levels of noise- and air pollution, therefore being at higher risk of traffic accidents and other negative health implications.

Wicki & Kaufmann (2022) observed that when densification involves low-income households, concerns about, crime, noise and decreasing property value often arise. Residents generally live in places that have a density they prefer, which directly influences their view on any change of this density, people living in dense urban environments are therefore found to generally be less opposed to densification compared to people in less dense environments.

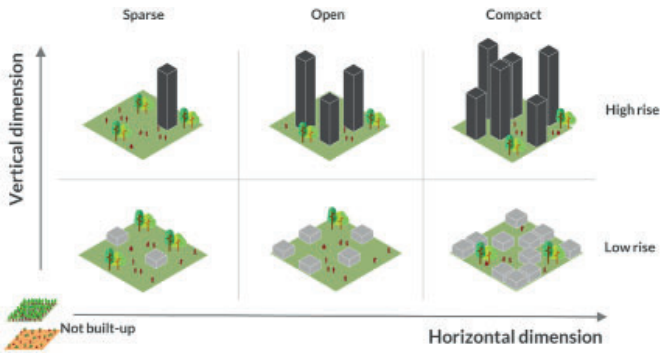


Figure 98: Density types

(Chen et al., 2020)

5.3 Urban densification; positives

Contrary to the negative connotations urban densification may bring, it remains a vital strategy for sustainable growth of large cities (Artmann, 2019). A preference for densification instead of spatial expansion is often expressed by planners, dating back to the 'compact city' concept as proposed by Dantzig and Saaty in 1973 (Claassens et al. 2020). Multiple possible benefits of urban densification are observed by Claassens et al. (2020), being:

1. Reducing pressure on the surrounding open space which is generally regarded as an important amenity;
2. Limiting automobile travel by shortening travel distances and making more sustainable transport modes viable;
3. Act as an urban renewal instrument replacing outdated structures or un(der) used sides by more attractive and sustainable buildings, increasing the quality of the urban area;
4. Decreasing household energy consumption, both by decreased travelling as well as by diminishing heating demand and improving opportunities for shared energy systems;
5. Decreased housing development cost by utilizing existing infrastructure more intensively;
6. Higher density and compactness are associated with mixed land use, diversity, social inclusion and cultural development.

The observed benefits are however case specific, with rigid policies being necessary to ensure the successful implementation of such urban densifications. Compactness is furthermore a widely accepted strategy for sustainable urban clusters, minimizing transport of energy, water, materials, products and people (Jabareen, 2006). He further observed that compactness of cities relates to the quality of life, promoting social interactions, services and facilities. This compactness has two faces, on the one hand being easily walkable but on the other being large enough to facilitate a wide variety of opportunities and services, eliminating the need to travel large distances.

Whilst one of the critiques on urban densification is the loss of green spaces, ecologically seen, loss of biodiversity is greater with construction outside the urban environment compared to urban densification. Part of this can be explained by inner city development projects consisting of higher density developments, requiring less built up space to house the same amount of people (Naess et al., 2019).

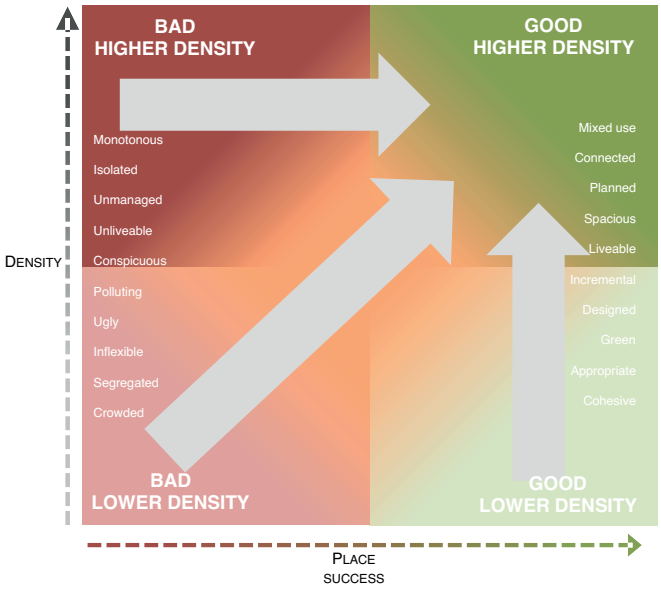


Figure 99:The imperative for density in cities

(Clark & Moonen, 2015)

Project info

- Under construction
- > 16.000 residents
- shared; gardens, communal spaces, working spaces, cars, (cargo) bikes, commercial spaces

Figure 100: Impresion of future quayside dwellings (Merwede)

Merwedekanaalzone - Utrecht

The Merwedekanaalzone encompasses the total transformation of an industrial area into a mixed use area, where greenery, city living and a total mix of functiiiions are all mixed into a mostly car free environment.

This is an example of hard densification, in which top-down governmental decisions combined with large scale projects developed by big players in the industry have a big impact on the existing inhabitants in the surrounding area.

Figure 101: Elements of the '15 minute city' will be implemented (Merwede)

Figure 102: The canal and surrounding greenery will shape a blue-green axis along the entire project (Merwedekanaalzone)

Figure 103: Large green spaces will be introduced to boost liveability and biodiversity (Merwede)

Figure 104: Birds eye view of the entire project once completed (Merwedekanaalzone)

Project info

- completed in 2020
- changing housing needs; smaller households
- 4 strategies for post-war neighbourhoods
- Focusses on environmental, social and economically viable solutions

Figure 105: Example of urban densification (KAW architecten)

KAW ruimte zat in de stad - Nederland

KAW architects published a report providing examples of urban densification in post-war neighbourhoods, coming from the observation that most new housing has, in the last 20 years, been built in already existing urban areas, whilst greenery around cities is seen as very valuable in the Netherlands. The proposed densification strategies can be seen as soft densification, where relatively small scale projects gradually densify certain areas.

A Bestaande woningen

Figure 106: Example of adding housing inbetween existing low-rise rowhouses (KAW architecten)

B Chirurgische ingrepen

Figure 107: Example of adding housing on the blind facades in corners of portico flats (KAW architecten)

C Herstructurering

Figure 108: Example of restructuring existing post-war housing blocks via transformation (KAW architecten)

D Randen

Figure 109: Example of adding housing on the 'empty' edges of post-war neighbourhoods (KAW architecten)

6. Conclusion

The purpose of this research was to find and formulate design principles that can be used to introduce short-stay housing and the sharing economy in the existing post-war neighbourhood of Groot-IJsselmonde, Southern Rotterdam. It therefore focussed on four topics that all play their part in answering the following main research question:

"How can the rise of the sharing economy contribute to creating an urban densification strategy integrating short-stay housing in a post-war neighbourhood?"

The four topics are, as mentioned, the sharing economy, short-stay housing, co-housing and urban densification. To explore these topics adequately, the following sub questions supporting the main research question where formulated:

"How much are people willing to share?

"What have been the effects of short-stay housing on Dutch cities?"

"What is the added value of co-housing projects to the living quality of its inhabitants?"

"How does urban densification impact cities?"

1. How much are people willing to share?

The first chapter dived into the sharing economy, how it has started to impact cities around the world and affect lives of people engaging in it. The chapter provides insight into the changes within society that have made the sharing economy as we know it possible. Afterwards it explains the role the peer-to-peer home sharing platform Airbnb has had in this new sharing economy and how it affects cities around the world. This will be further examined by looking into the role of sharing mobility services, which are often seen as role models for the sharing economy. Finally, literature on the sustainability potential of the sharing economy is discussed. Case-studies on projects and policies functioning in the sphere of the sharing economy will furthermore be used as references.

Firstly, literature on the different faces the sharing economy has been examined, be it economically motivated or being driven by people's desire to do good. What characterises the broader sharing economy is the promotion of a more sustainable way of living, but significant differences can be observed in the different types of sharing, which have been split into four categories, recirculation of goods, increased utilization of assets, services and sharing productive assets. Critics of the sharing economy have pointed to the commercialization of sharing and question its benefits in these models.

The sharing economy, or 'collaborative consumption', is characterized by a community that is build on trust. When this can be observed in a certain system of sharing, a sustainable and durable outcome is expected.
Airbnb is seen as the instigator of the sharing economy, using the rise of digitalisation to connect peers in sharing their living spaces with each other. Literature suggests that users of this platform not only use it to replace traditional hospitality industries, but also actively look for unique experiences. There are however several points of critique on the platform, in its ways to bypass regulations and taxation and its effect on housing affordability and availability.

Sharing mobility mainly focusses on car sharing, with its different systems being peer-to-peer rental, 'Modern car club', private car owners as drivers and public transport on demand. Whilst

the platforms operating these systems promote its sustainability, literature has not yet found conclusive evidence on the environmental benefits of car sharing. Novel solutions for the 'last-kilometre problem' through implementation of 'micro-mobility' are however found to be useful in plugging holes in urban transport models replacing car usage.

The sustainability of the sharing economy is a much researched topic in the literature, with many critiquing its current implementation. Most literature has observed no environmental gain in many of the different facets of the sharing economy. It has nevertheless been found to be a sustainable alternative to ownership when sharing takes place in relatively small community -like groups.

Sharing is therefore found to be a broadly implemented concept, both in communities as well as in businesses, to aim for more sustainable means of utilising assets, whether they are homes or modes of transportation. It has been made possible by digitalisation, which has provided users worldwide with a base from which trust could be gained. The willingness to engage in sharing is found to mainly derive from a desire for social interaction and a more sustainable way of living. These goals can be achieved by forming relatively small, bottom-up, (sharing) communities without a profit goal.

2. What have been the effects of short-stay housing on Dutch cities?

The second chapter looks at the definition and the rise of short-stay housing. It starts by examining the rise of short-stay housing in the Netherlands and how big cities in the Netherlands have responded to it. The different target groups observed to be in need of short-stay housing are then examined in their living situation and housing needs. These target groups are: seasonal migrant workers, expats, tourists, recently divorced, economically homeless and refugees/permit holders.

Short-stay housing was not a new concept when Airbnb introduced itself to the market in 2007, but the concopt since underwent significant changes. Short-stay in the Netherlands encompasses a stay between seven nights and 6 months. After the initial, explosive, growth of home sharing platforms such as Airbnb, legislation was introduced since 2015 to give cities the possibility to regulate this relatively new phenomenon of home sharing. Since 2023, home sharing has been fully regulated in big cities in the Netherlands, pulling it out of the informal sphere and allowing it to be a positive influx of tax and visitors for these cities.

The observed target groups for short-stay housing can mainly be categorized under 'urgent house seekers', which consists of starters, recently divorced, economically homeless, refugees and other groups that fit in the 10 percent of house seekers that look for temporary and flexible accommodation, all being somehow dispositioned to the bulk of the society.

The first group is seasonal migrant workers, who are characterized by performing low-skilled, low-paying, jobs (often seasonal, hence the name) that Dutch residents are unwilling to do. Within the group of seasonal migrant workers, 'footloose migrants' are observed to be the part of seasonal migrant workers that face the highest risk of becoming homeless, to cause nuisance to neighbours or face other social- or economic problems. This group is benefits most from strong social ties within the host country, both with the local community as well as with others in their position.

Expats on the other hand are observed to have high salaries and being highly educated. They are one of the groups the Dutch government actively attracts to boost the desired 'knowledge economy.' Expats are often seen as 'globetrotters' who form little to no local ties but maintain an international network. Nevertheless, literature has found that expats do attempt to integrate in Dutch society, but face problems such as the language barrier and Dutch working culture of keeping life and work separate, whilst generally not making friends in the workspace.

Tourists are observed by the municipality of Rotterdam to be a key part in the growth of the city, having published a new strategy on the spread and focus of tourists in the city of Rotterdam. The city want to focus on the 'Do-rist', which is described as being a tourist who wants to engage in the local community and visit other places then the regular tourist hotspots. Social interaction between hosts and tourists and between tourists among them is furthermore important to the quality of their stay.

Recently divorced people form a group that is in urgent need of housing, with 84 thousand people a year having a divorce in the Netherlands. Relieving stress in recently divorced people has been found to be critical for remaining a healthy lifestyle, in which housing forms a critical component. Recently divorced in the Netherlands increasingly keep contact with each other, with distance between the homes of the divorcees as most influential factor.

Economically homeless are characterised by having jobs but still being unable to find (suitable) housing, risking to become homeless whilst having a (modest) income. The groups is mainly made up out of young adults (under the age of 45) who have a migration background, low IQ or lower socio-economic status. The city of Rotterdam has a program preventing homelessness for this group by actively approaching realtors and offering support.

Refugees, or 'residence permit holders', are a growing group in Dutch society unable to find housing supporting integration. Whilst it was thought that the policy of dispersing refugees throughout the country hampered their integration due to their lack of connecting with people from the same background, literature has found that refugees often seek out people who share similarities in language and culture, instead of place of origin. Furthermore, engaging with local Dutch residents is observed to be vital to successful integration.

Short-stay housing is a disturbing factor to established hospitality services in the Netherlands, with tourists spreading into neighbourhoods where they cause nuisance. Local governments have since implemented policies to be able to regulate this sector and enhance its positives.

The current Dutch housing crisis has shaped a market in which many different target groups can benefit from (short-stay) flexible housing, in which a stable base from which they can form social bonds, build up job experience and eventually, when necessary, find their pace in a more definitive housing situation can be found. All these target groups would benefit from increased levels of interaction, within their target group, between different target groups and especially with local residents, creating social bonds that stimulate integration and helping them in finding suitable housing and job opportunities.

3. What is the added value of co-housing projects on the living quality of its inhabitants

This chapter explores the potential benefits of co-housing, co-living and co-working, originating in the previously found importance of social interaction between and among the different target groups observed to be suitable for short-stay housing. It first explores the origins and benefits of co-housing, followed by how it has developed in the Netherlands. Furthermore, differences and parallels with co-living and co-working are explored. Case-studies on several co-housing, co-living and co-working projects will provide design principles.

Co-housing originated in Denmark in the 1960s and 1970s, with the first cohousing community being established in 1972. The concept of these 'collectively build and self-managed housing clusters' has since spread to other (western) countries, such as the UK the Netherlands.

Co-housing was found to be able to alleviate problems of loneliness and contribute to physical- and mental health. The projects are characterized by a participatory process, a design that facilitates community, common facilities, residential management, a non-hierarchical structure and separate income sources.

Co-housing in the Netherlands is called 'Centraal Wonen' (Centred Living), and has produced more than 200 such projects in the Netherlands. Residents of these projects generally look for identity and safety provided by a community, aiming at sustainability and social cohesion. The Dutch government has, since 2009, shown increasing interest in facilitating building these projects.

Co-living differs from co-housing in it being observed to primarily be a business model, creating a hybrid between commercial hospitality and co-working. Co-living spaces are top-down, profit driven, initiatives that seek to connect differing target groups, whereas co-housing is a bottom-up, collaborative process where (social) sustainability is at the forefront.

Co-working has, in big cities, grown to include 20% to 30% of the working age population, and is a space where strong social bonds are created. These stem from the three top motivators for people to join co-working spaces, being a social and enjoyable atmosphere, interaction with others and forming a community.

Co-housing is a suitable housing system to alleviate problems of loneliness and improve both physical- and mental health, whilst also providing a community in which the occupants can align with an identity and form strong relationships.

Co-living and co-working on the other hand can be found in the economic, profit driven, sphere, in which top-down developments advertise these concepts to be the communities as can be found in co-housing projects. A key difference however is the bottom-up approach that co-housing projects take compared to co-living or co-working. Co-working spaces have nevertheless been found to facilitate in forming strong social bonds, mainly through a shared desire of 'working alone, together.'

4. How does urban densification impact cities?

The final chapter looks at the positives and negatives that urban densification bring. It first shapes the definition, after which it lays out the opposition to urban densification. It then looks at the positives urban densification may provide. Case studies on urban densification projects give examples of densifying projects throughout the Netherlands.

Urban densification is referred to as 'the addition of new houses to the existing urban fabric, therefore increasing the initial density.' It has been viewed as being the cause for loss of habitat and fragmentation of species, whilst also causing higher energy consumption due to urban sprawl. The phenomenon can be split in hard- and soft densification, in which soft densification is comprised of continuous, small-scale adjustments and hard densification by large scale, top-down, policy driven projects.

The opposition of urban densification often points out the loss of urban greenery and displays NIMBY behaviour, fearing that urban densification might negatively affect existing amenities. It is furthermore observed that densification involving low-income households causes concerns on decreasing property values and increased crime rates and nuisance.

Urban densification however shows several clear benefits compared to urban sprawl. These advantages have been observed to be reducing pressure on open spaces outside cities, limiting automobile travel, being an urban renewal instrument, decreased household energy consumption, decreased housing development cost and creating mixed use spaces. Compactness of cities furthermore correlates to quality of life and promotes social interactions.

Urban densification is seen as necessary for the inevitable growth of citiesIt however often faces opposition from current residents, fearing a loss of their trusted environment.
This opposition however has been found to significantly decrease when these concerns are addressed by providing current residents with clear plans on how living quality in their area will increase with the proposed urban densification.

7. Discussion

The initial focus on the influence of the sharing economy on peoples lives in the past few decades has given clear insights into its rise and the different spheres it encompasses. Whilst providing a theoretical base for the implementation of the concept of sharing within a community, an element that is missing in the results from this research on the sharing economy are clear design solutions. It gives a notion of the scale and the types of sharing that provide the social interaction and environmental gains often attributed to the sharing economy, but could be further developed to also explore more specific case studies on the sharing economy.

This research found its roots in the growing housing shortage Dutch society experiences, in which some groups are having more trouble finding housing than others. These groups are also often seen, by the general population, as culprits of this housing shortage. Understanding who make up these groups and what their position within Dutch society is and what their housing needs are has given insight in which sorts of housing might be applicable to their situation and provide more than just adequate housing for their situation. By dissecting the different target groups the overlaps and differences are observed and provided a base from which design decisions could be made.

The research was however limited to the target groups that were initially observed to be suitable for short-stay housing, excluding further target groups who also might benefit from this type of housing. The research has furthermore focused primarily on the background of these different groups and problems they currently face in the Netherlands, without focussing on their current living conditions and what negatives and positives can be found there. An elaborate case study research into their current housing situation could have provided clear design input.

In exploring co-housing, co-living and co-working, significant differences have been found which would all reflect differently on either short-stay or the different target groups that would use this form of housing. In this research, the emphasis has been on the theoretical validation and subsequent dissections of case studies on these topics, to come to, for example, numbers on the number of inhabitants of clusters and the average private- and shared space sizes. This research could however be extended to connect the different target groups to certain case studies, providing insight in how other architects designed for these target groups, instead of only providing the base numbers.

Lastly, the research on urban densification has focussed on the general perception from current residents and the academic findings that attribute its positives. Further exploration of urban densification case-studies could have supported this research by giving examples from which interventions could be derived.

8. Position

My personal interest in this topic was gained through the extensive media coverage on the topic and personal experiences in looking for solutions in the (temporary) housing of both students as well as target groups that were discussed in this report. The housing shortage has caused issues for much of the Dutch population; both the wealthy as well as the ones more limited in funds. . Whilst many initiatives have sprouted in recent years, it has not been proven to be a decisive factor in aleviating the problems these groups experience in finding suitabe housing.

As observed by many institutions that are involved in housing and researching these target groups, they could fare well by a 'flexible layer' in the housing market, which provdes temporary housing solutions for people who urgently need it, from where they can build their social and professional networks. To be able to build these networks, interaction with others, be it in the same socio-economic position as them or in a completely different situation, is crucial. Providing the design solutions that provides situations along which this interaction can take place is, in my view, essential to any project including aimed at housing these target groups.

These design solutions could, on a project level, be made up out of introducing the sharing economy, both on the scale of everyday objects as well as elements such as mobility or even rooms/housing. When combined with a living situation that positions itself between the spheres of co-housing and co-living, relatievly high levels of interaction could be achieved. The added benefit of sharing is the cost advantages it brings; not needing ownership for a multitude of items and appliances can save costs on the level of purchase, maintenance as well as when moving. The target groups that fare well by the before mentioned social interaction have often been observed to have a relatively small budget, putting affordability at the forefront of any such projects.

With the addition of these target groups in an existing post-war neighbourhood comprised of mostly single family rowhouses, the project has the potential to not only provide a stable housing solution for people in urgent need of it, but also to incorporate current residents more into society. This potential lies in the diversification of the people living in the neighbourhood, as well as in the additons of the multitude of elements that make up the sharing economy, whether it is bike sharing, a tool library or co-working spaces.

By combining this densification with a net positive gain in green spaces, measures supporting biodiversity and aleviating problems such as the urban heat island effect and flooding by heavy rainfall, both current and future residents will be provided with a new space; the usable public streetscape.

Whereas currently much of the streetscape in these post-war neighbourhoods in the Netherlands is made up out of extensive parking spaces, wide streets and unusable green spaces, a green streetscape with incorporated spaces for different uses such as neighbourhood festivals, barbecues, sports and other events have the potential to bind people: living with each other instead of past each other.

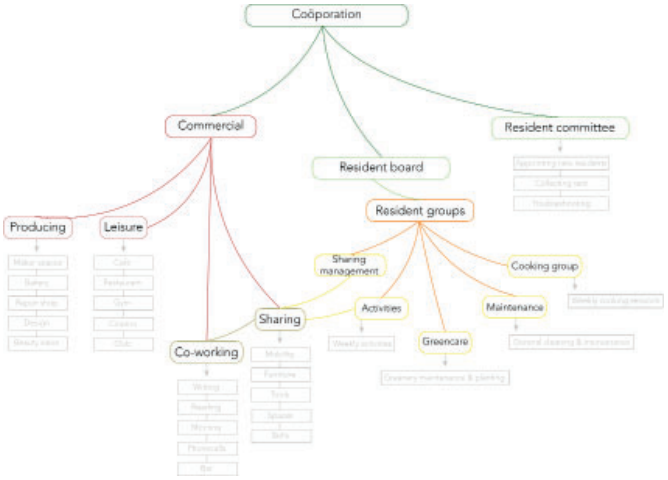


Figure 110: Management structure for hybrid co-housing/co-living project (own work)

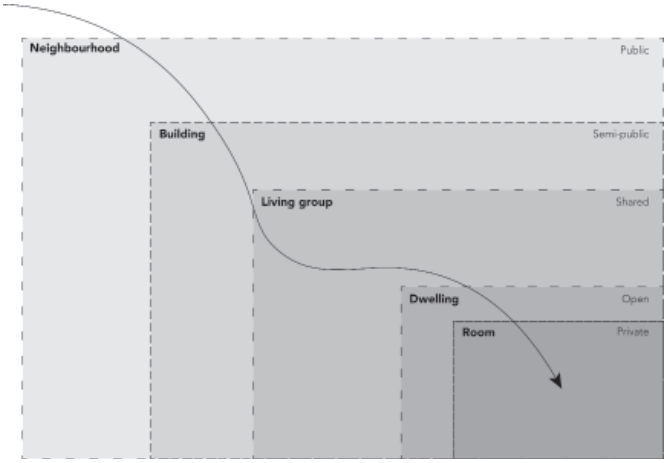
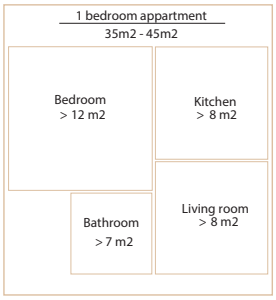


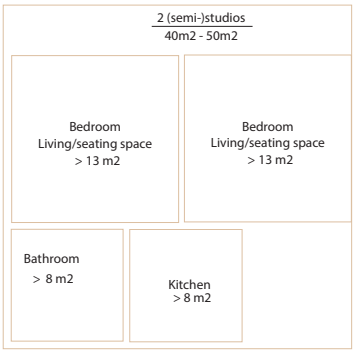
Figure 111: Diagram of approach from public to private (own work)

Figure 112: Diagram of the scales of sharing (own work)

On average; rooms	On average; dwellings
6 rooms per cluster	**7** dwellings per cluster
7 inhabitants per cluster	**12** inhabitants per cluster
1 inhabitant per room	**1,8** inhabitants per dwelling
13 m2 (semi)private space	**23 m2** (semi)private space
Shared spaces:	Shared spaces:
Living room **Kitchen** **Dining** space (**Study/work** space) **Bathroom** **Terrace**	(2) **Living** rooms **Kitchen** **Dining** space (**Study/work** space) **Bathroom** **Terrace**

Averages found in co-housing/co-living projects





Dwelling sizes derived from co-housing/co-living projects

9. Reflection

The graduation studio Advanced Housing Design shaped the conclusion of the years spent in the faculty of Architecture of the TU Delft. The studio topic on Densification Strategies, situated in 'inner-city Randstad', felt like a logical graduation topic to be able to summarize all that has been learned in both the bachelor as well as the master track into one final project.

The freedom to express personal interest in a multitude of topics combined with the expectation to deliver thorough research to support the design decisions has formed a fertile base from which my graduation project could shape itself. As often explained and taught in different courses in the faculty of Architecture, both in the bachelor as well as in the master tracks, is the continuous mediating between reflection and design, guided by an overarching theme (figure 113), which is provided both by the graduation studio as well as personal interests. Reflecting on how this process of going back and forth has influenced my design process sheds light on the benefits it may have provided, but also where untapped potential may have been.

Choosing the master track of Architecture has mainly come from the experiences I had

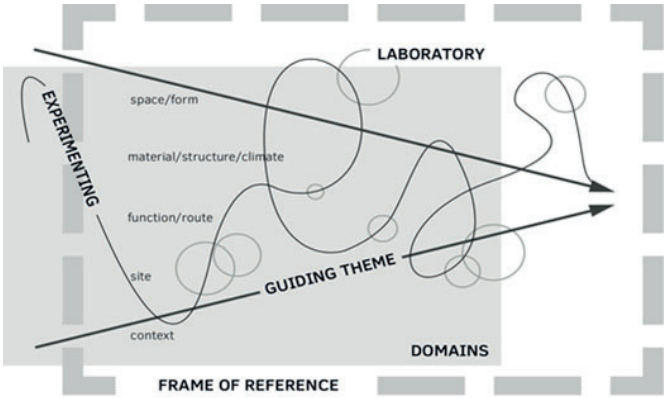


Figure 113: designing along a guiding theme (Van Dooren, 2020)

Relation between graduation project topic, master track and master programme

throughout both the bachelor of Architecture at the TU Delft and a board year which focussed on the transformation of vacant office spaces into student housing, focussing heavily on integrating socially beneficial spaces for the residents and neighbourhood surrounding the projects. From these experiences, a desire to be able to design for the everyday life of different people arose, which I envisioned would be nearly impossible to achieve through the master tracks of Management in the Built Environment, Urbanism or Architectural Engineering. Within the track of Architecture, housing (dwelling) gradually became the main focus of the way this influence on the everyday life of people could be implemented, being able to design for all scales, from city wide to the way a window sill is detailed.

My graduation project topic has been shaped into creating a design strategy to densify the post-war neighbourhood of Groenenhagen, located in the southwest of Rotterdam, with short-stay housing whilst introducing the sharing economy. The topic was shaped by a focus, provided by the studio mentors, on the current housing shortage in the Netherlands, combined with personal knowledge on the difficulties faced by certain groups in Dutch society in finding suitable housing. A topic that quickly gained my attention was the role Airbnb has played in (mostly) big cities in the Netherlands, and the negative connotations people have towards the home sharing platforms. It had increased attention by me due to personal experiences with Airbnb, having myself already thought many times about the influence my presence in a certain area might have, be it positive or negative.

The focus on the everyday life of people has

evolved in my graduation project topic to address a wide variety of target groups, requiring different ways of living. To integrate these in a constantly changing group of inhabitants in the chosen neighbourhood, several design decisions were made that stem from experienced gained over the years, supported by research. One of these design decisions is the implementation of the sharing economy, which acts as a binder of the different scales, again from the city wide networks to the way the window sill is used. This mediating between the different scales is one of the ways the narrative for the project was shaped.

Influence of research on design & of design on research

The research of my graduation topic found its roots in group research that was done at the start of the studio, which for my project meant focussing on the Dutch housing crisis. As mentioned before, the following research topics were a combination of personal interest and insights the research and subsequent notions of my mentors were. The scope of the research was defined quite early on in the process, encompassing three topics; the sharing economy, short-stay housing (with a particular focus on its target groups) and co-housing. These topics were all found to have received substantial academic interest, although having received most relatively recent. It was therefore also no surprise to find several reference projects that touched upon one or more of the different research topics, which were used as a base to define certain design principles.

Most of the research, however, was on the theoretical background of the topics, signalling their potential value. What was found is that much research is done on the individual topics, whilst an architectural project such as my graduation project would benefit from identifying the overlap between these topics. This has, in my graduation project, mostly led to design solutions on the scales between masterplan and dwelling.

Design principles on floor plans, in terms of floor area, number of residents, amenities, where provided by the research, but more elaborate and case specific analysis of individual dwelling floor plans of case studies would have helped me in defining my floor plans in a much earlier phase. In the project, a big portion of time and energy was spent on getting the floor plans to 'fit' into the defined mass and site. Reducing time spent on this aspect of the design process would have freed up time, energy and attention to further develop the (organisational) concept, better detail the human scale and create more studies on elements such as façades or climate concepts.
With the design progressing, the shared realization that a significant amount of mass would be added without changing much of the existing dwellings developed.

The limited demolishing of existing structures was a conscious design decision, with public backlash and opposition, as well as existing social structures, in the back of my mind. The significant masses that would be added shaped the question of how this 'urban densification' would, or could, be accepted by the existing residents of the neighbourhood. In this sense, the design provided an additional research topic that has helped in answering the main research topic.

Value of the approach, methods & methodology

The research was structured around a mainly theoretical, almost scientific, approach to provide 'evidence' that supports the developed concept, which found its roots in the personal knowledge and the topics provided by the studio. This meant

that much of time spent on the research was analyzing academic papers, providing evidence for certain design decisions, but had the negative effect of limiting the creative design impulses that could have elevated the research and design process to be more intertwined, resulting in even more (academically supported) design solutions.

The chosen methods of a strong theoretical background, combined with reference- and case-studies, has nevertheless provided design principles that have helped deciding what to, and sometimes even more importantly, what not to implement in the graduation project. Some of the reference- and case-studies came from topics mentioned by the mentors during the (nearly) weekly meetings, which helped speed up the process and often provided talks that helped open up a narrowed view on the topic being addressed at the moment.

Whilst research was mainly conducted through writing, observing and analysing, the design was in the earlier phases mostly comprised of building a 3D model, developing a set of floor plans and occasionally working on sections. An element that, looking back at the process, would have both accelerated and probably improved the floor plans was extensive studies of floor plan types, not worrying about the overall concepts that were shaped by the theoretical framework. This could have had the effect of broadening my view on the possibilities for living environments and dwelling/room types to be implemented in my graduation project.

Academic & societal value, scope, implications and ethical aspects

As the topic of my graduation topic stems from major societal problems, being the ongoing Dutch housing crisis and the unequal ways this affects different groups within society, the societal value of the graduation project is, in my opinion, significant. The research has not produced results that by themselves provide new insights in the different topics, but the combination of these topics, resulting in my position regarding the studio topic, and the subsequent design for densification in the neighbourhood of Groenenhagen, do provide examples and new ideas on how to alleviate issues currently experienced in Dutch society.

These design ideas are not all visible in this report, with some of the theoretical research being translated into policies, management structures and possible outcomes of combining certain target groups. The academic value of the graduation project can, in my view, be found in the gathering of these several target groups in an area that already faces social- and economic difficulties. While it, as a theoretical graduation project, can not be tested, the academic base of the theories and the several reference-and case studies shape the design principles that the research provides. By positioning the project between the profit driven market of co-living and the bottom-up approach that characterizes co-housing projects, the positive elements of both are attempted to be integrated. This has inevitably led to some values that define the different housing types being underdeveloped, allowing further exploration on how these limitations could be mitigated.

Transferabilty of results & conclusion

The research has touched on many different topics, which all played their part in answering the main research question. Whilst it is structured to form a cohesive narrative, it could be dissected and parts of it to elaborate on, without losing the overall structure of the research, allowing for further research to easily be conducted. This can,

for example, be done by empirical research on the different target groups, urban densification in a certain area or by examining the architecture behind short-stay housing further.

In the end, the graduation project has delivered a project that touches upon the elements of urban densification projects that I think are valuable, being greenery, biodiversity, social inclusivity, affordability, placemaking and the integration in the wider context.

By having researched many topics not visible in this graduation report (regarding for example designing for health, biodiversity and the implementation of a parking garage), a foundation for the implementation of different design elements that fell outside of the scope of the research have all been connected to the graduation project to shape a cohesive project, environmentally and socially. The final stage of the graduation project is expected to further explore the façade design, connecting it with the surrounding architecture, and make the design ideas for the human scale visible, whilst also elaborating on the management and cooperative structures that form the backbone of the project.

10. References

Abduljabbar, R., Liyanage, S., & Dia, H. (2021). The role of micro-mobility in shaping sustainable cities: A systematic literature review. Transportation Research Part D: Transport and Environment, 92, 102734. https://doi.org/10.1016/j.trd.2021.102734

Ager, A., & Strang, A. (2008). Understanding Integration: a Conceptual framework. Journal of Refugee Studies, 21(2), 166–191. https://doi.org/10.1093/jrs/fen016

Akarsu, T. N., Foroudi, P., & Melewar, T. (2020). What makes Airbnb likeable? Exploring the nexus between service attractiveness, country image, perceived authenticity and experience from a social exchange theory perspective within an emerging economy context. International Journal of Hospitality Management, 91, 102635. https://doi.org/10.1016/j.ijhm.2020.102635

Akhavan, M. A., Hölzel, M. H., & Leducq, D. L. (2023). European Narratives on Remote Working and Coworking During the COVID-19 Pandemic A Multidisciplinary Perspective. SpringerBriefs. https://link.springer.com/book/10.1007/978-3-031-26018-6

Archdaily. (n.d.-a). Coop Housing at River Spreefeld / Carpaneto Architekten + Fatkoehl Architekten + BARarchitekten. archdaily.com. https://www.archdaily.com/587590/coop-housing-project-at-the-river-spreefeld-carpaneto-architekten-fatkoehl-architekten-bararchitekten

Archdaily. (n.d.-b). LT Josai Shared House / Naruse Inokuma Architects. Archdaily.com. https://www.archdaily.com/497357/lt-josai-naruse-inokuma-architects

Arons&Gelauff. (n.d.). Blok 26 - Woon&. aronsengelauff.nl. https://aronsengelauff.nl/projecten/blok-26-woon

Artemova, M. A., Ota, N. O., Platteau, A. P., & Wiersma, Q. W. (2021). To regulate or to deregulate: effect of Airbnb activity on the Amsterdam housing market. Retrieved November 10, 2023, from https://wceconometrics.com/wp-content/uploads/2021/04/VU.pdf

Artmann, M., Inostroza, L., & Fan, P. (2019). Urban sprawl, compact urban development and green cities. How much do we know, how much do we agree? Ecological Indicators, 96, 3–9. https://doi.org/10.1016/j.ecolind.2018.10.059

Arvidsson, A. (2018). Value and virtue in the sharing economy. The Sociological Review, 66(2), 289–301. https://doi.org/10.1177/0038026118758531

Belk, R. W. (2014). Sharing versus Pseudo-Sharing in Web 2.0. The Anthropologist, 18(1), 7–23. https://doi.org/10.1080/09720073.2014.11891518

Berbegal&Mirabent, J. (2021). What Do We Know about Co-Working Spaces? Trends and Challenges Ahead. Sustainability, 13(3), 1416. https://doi.org/10.3390/su13031416

Boar, A., Bastida, R., & Marimón, F. (2020). A Systematic Literature Review. Relationships between the Sharing Economy, Sustainability and Sustainable Development Goals. Sustainability, 12(17), 6744. https://doi.org/10.3390/su12176744

Carrere, J., Reyes, A., Oliveras, L., Fernández, A., Peralta, A., Novoa, A. M., Pérez, K., & Borrell, C. (2020). The effects of cohousing model on people's health and wellbeing: a scoping review. Public Health Reviews, 41(1). https://doi.org/10.1186/s40985-020-00138-1

CBS. (2020). Meerderheid gescheiden ouders blijft bij elkaar in de buurt. In cbs.nl. Retrieved November 9, 2023, from https://www.cbs.nl/nl-nl/longread/statistische-trends/2020/meerderheid-gescheiden-ouders-blijft-bij-elkaar-in-de-buurt?onepage=true

CBS. (2021). Economische zelfstandigheid gescheidenen. In cbs.nl. Retrieved November 9, 2023, from https://www.cbs.nl/nl-nl/longread/statistische-trends/2021/de-inkomenssituatie-na-een-scheiding/3-economische-zelfstandigheid-gescheidenen

CBS. (2023). Huwelijksontbindingen; door echtscheiding en door overlijden. In cbs.nl. Retrieved November 9, 2023, from https://www.cbs.nl/nl-nl/cijfers/detail/37425ned?q=scheiding

Chen, T. K., Qiu, C., Schmitt, M., Zhu, X. X., Sabel, C. E., & Prishchepov, A. V. (2020). Mapping horizontal and vertical urban densification in Denmark with Landsat time-series from 1985 to 2018: A semantic segmentation solution. Remote Sensing of Environment, 251, 112096. https://doi.org/10.1016/j.rse.2020.112096

Cheng, M., Chen, G., Wiedmann, T., Hadjikakou, M., Xu, L., & Wang, Y. (2020). The sharing economy and sustainability – assessing Airbnb's direct, indirect and induced carbon footprint in Sydney. Journal of Sustainable Tourism, 28(8), 1083–1099. https://doi.org/10.1080/09669582.2020.1720698

Claassens, J. C., Koomen, E. K., & Rouwendal, J. R. (2020). Urban density and spatial planning: The unforeseen impactsof Dutch devolution. PLoS ONE. https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0240738

Clark, G. C., & Moonen, T. M. (2015). The Density Dividend: solutions for growing and shrinking cities. Urban Land institure. Retrieved November 30, 2023, from https://europe.uli.org/the-density-dividend/

Coricelli, F. (2022). The Co-'s of Co-Living: How the advertisement of living is taking over housing realities. Urban Planning, 7(1), 296–304. https://doi.org/10.17645/up.v7i1.4805
Cummings, & Kropf. (2019). Empirically based interventions targeting social problems. Springer Nature.
Czischke, D., & Huisman, C. J. (2018). Integration through Collaborative Housing? Dutch Starters and Refugees Forming Self-Managing Communities in Amsterdam. Urban Planning, 3(4), 156–165. https://doi.org/10.17645/up.v3i4.1727
Dantzig, G. B. (1973). The ORSA New Orleans address on Compact City. Management Science. https://doi.org/10.1287/mnsc.19.10.1151
De Hek, P. H., Prince, Y. P., & Van Der Toorn, A. J. T. (2020). ARBEIDSMIGRANTEN IN ZUID-HOLLAND: ONTWIKKELING IN AANTAL EN HERKOMSTLANDEN. In seor.nl. Retrieved November 30, 2023, from https://www.seor.nl/CmsMedia/Eindrapportage-Arbeidsmigranten-Zuid-Holland.pdf
De Vos, E., & Spoormans, L. (2022). Collective Housing in Belgium and the Netherlands: a comparative analysis. Urban Planning, 7(1), 336–348. https://doi.org/10.17645/up.v7i1.4750
Delva Landscape Architectuur. (n.d.). De Deeltuin - Utrecht. delva.la. https://delva.la/projecten/de-deeltuin/
Dudley, G., Banister, D., & Schwanen, T. (2017). The rise of Uber and regulating the disruptive innovator. The Political Quarterly, 88(3), 492–499. https://doi.org/10.1111/1467-923x.12373
Dujmovic, M. D., & Vitasovic, A. V. (2022). Sustainable Tourism X. WIT Press.
Durrett, C., & McCamant, K. (2011). Creating cohousing: Building Sustainable Communities. New Society Publishers.
Financial Times, & Davies, S. D. (2015, October 20). Coworking becomes coliving. ft.com. Retrieved November 10, 2023, from https://www.ft.com/content/cf08ca42-65e7-11e5-97d0-1456a776a4f5
Gassmann, S., Nunkoo, R., Tiberius, V., & Kraus, S. (2021). My home is your castle: forecasting the future of accommodation sharing. International Journal of Contemporary Hospitality Management, 33(2), 467–489. https://doi.org/10.1108/ijchm-06-2020-0596
Gemeente Amsterdam. (n.d.). Particuliere vakantieverhuur. amsterdam.nl. Retrieved November 10, 2023, from https://www.amsterdam.nl/wonen-leefomgeving/wonen/vakantieverhuur/
Gemeente Rotterdam. (n.d.). Vakantieverhuur woningen. rotterdam.nl. Retrieved November 10, 2023, from https://www.rotterdam.nl/vakantieverhuur-woningen
González, M. F. G. (n.d.). Cooperative Housing Complex wagnisART / bogevischs buero architekten stadtplaner GmbH + SHAG Schindler Hable. Archdaily.com. https://www.archdaily.com/889159/cooperative-housing-complex-wagnisart-bogevischs-buero-architekten-stadtplaner-gmbh-plus-shag-schindler-hable
Görög, G. (2018). The Definitions of Sharing Economy: A Systematic Literature Review. Management, 175–189. https://doi.org/10.26493/1854-4231.13.175-189
Gruen, A., & Mimoun, L. (2019). Guest, friend or colleague? Unpacking relationship norms in collaborative workplaces. In Edward Elgar Publishing eBooks. https://doi.org/10.4337/9781788110549.00014
Habraken, B. H. (2023, February 2). Deelmobiliteit zonder overlast. Eindhoven.groenlinks.nl. Retrieved November 28, 2023, from https://eindhoven.groenlinks.nl/nieuws/deelmobiliteit-zonder-overlast
Hald, G. M., Cipri, A., Strizzi, J. M., & Sander, S. (2020). "Divorce burnout" among recently divorced individuals. Stress and Health, 36(4), 457–468. https://doi.org/10.1002/smi.2940
Huink, W., Dagevos, J., & Miltenburg, E. (2017). Integration of permit holders: Looking back and moving forward: An overview of research on the integration of permit-holding asylum migrants Een staalkaart van statushouders: Over de integratie van statushouders in Nederland. Mens & Maatschappij, 92(4), 359–394. https://doi.org/10.5117/mem2017.4.hui
Impact of the sharing economy on construction craft labour and equipment markets. (2020, December 6). Designing Buildings. Retrieved November 28, 2023, from https://www.designingbuildings.co.uk/wiki/
Jabareen, Y. R. J. (2006). Sustainable Urban Forms Their Typologies, Models, and Concepts. Journal of Planning Education and Research. https://journals.sagepub.com/doi/10.1177/0739456X05285119
Jakobsen, P., & Larsen, H. G. (2018). An alternative for whom? The evolution and socio-economy of Danish cohousing. Urban Research & Practice, 12(4), 414–430. https://doi.org/10.1080/17535069.2018.1465582
Jansen Lorkeers, L. J. L., Van Der Velden, J. V., & 't Hooft, S. H. (2021). Huisvesting en ondersteuning economische dak- en thuislozen. Retrieved November 9, 2023, from https://www.platform31.nl/artikelen/huisvesting-en-ondersteuning-economische-dak-en-thuislozen/
Jarvis, H. J., & Fernández Arrigiotia, M. F. A. (2016). Co-housing: Shared Futures. White Rose Research Online. Retrieved November 11, 2023, from http://eprints.whiterose.ac.uk/132499/

KAW architecten. (2020). RUIMTE ZAT ONDERZOEK NAAR BETER GEBRUIK VAN DE RUIMTE DIE WE HEBBEN IN DE STAD. https://www.kaw.nl/wp-content/uploads/2020/06/KAWRUIMTEZAT20200623.pdf

KCAP Architects. (n.d.). The Student Hotel, Delft. kcap.eu. https://www.kcap.eu/projects/27/the-student-hotel

Ketelaar, T. (2022, June 22). Woningtekort is nóg groter dan gedacht, blijkt uit nieuwe rekenmethode. NRC. https://www.nrc.nl/nieuws/2022/06/21/woningtekort-groter-met-nieuwe-rekenmethode-100-huizen-voor-105-huishoudens-a4134211

Kraus, S., Li, H., Kang, Q., Westhead, P., & Tiberius, V. (2020). The sharing economy: a bibliometric analysis of the state-of-the-art. International Journal of Entrepreneurial Behaviour & Research, 26(8), 1769–1786. https://doi.org/10.1108/ijebr-06-2020-0438

Kwantes, C. K., Goudappel, Dirks, J. D., Ecorys, Smits, W. S., & KAW. (2022). MOBILITEITSVERNIEUWING EN SLIMME, DUURZAME VERSTEDELIJKING. https://www.rijksoverheid.nl/documenten/rapporten/2022/09/26/onderzoek-mobiliteitsvernieuwing-en-slimme-duurzame-verstedelijking

Labit, A. (2015). Self-managed co-housing in the context of an ageing population in Europe. Urban Research & Practice, 8(1), 32–45. https://doi.org/10.1080/17535069.2015.1011425

Laukkanen, M., & Tura, N. (2020). The potential of sharing economy business models for sustainable value creation. Journal of Cleaner Production, 253, 120004. https://doi.org/10.1016/j.jclepro.2020.120004

Laurincova, B. L. (2019, April 9). Neighbourhood densification. behance.net. https://www.behance.net/gallery/78703715/Neighbourhood-densification

Leopold, T. (2018). Gender Differences in the Consequences of Divorce: A Study of Multiple Outcomes. Demography, 55(3), 769–797. https://doi.org/10.1007/s13524-018-0667-6

Lorkeers, L. J., Buster, M., De Wit, M. W., & Van Loon, A. (2023). De epidemiologie van dakloosheid in Nederland. TSG - Tijdschrift Voor Gezondheidswetenschappen, 101(S2), 53–59. https://doi.org/10.1007/s12508-023-00409-7

Lub, Y. L., & Luns, B. L. (2018). (T)huis voor spoedzoekers ontwerpen & onderzoek met statushouders. https://www.podiumarchitectuur.nl/file/15/SPOEDZOEKERS-WEB.pdf

yf. (n.d.). lyf funan singapore. discoverasr.com. https://www.discoverasr.com/en/lyf/singapore/lyf-funan-singapore/all-together-2-bedroom

Machado, C. a. S., De Salles Hue, N. P. M., Berssaneti, F. T., & Quintanilha, J. A. (2018). An overview of shared mobility. Sustainability, 10(12), 4342. https://doi.org/10.3390/su10124342

Maliepaard, M. M., Witkamp, B. W., & Jennissen, R. J. (2017). Een kwestie van tijd? De integratie van asielmigranten: een cohortonderzoek. Wetenschappelijk Onderzoek- en Documentatiecentrum. https://repository.wodc.nl/handle/20.500.12832/181

McKenzie, G. (2020). Urban mobility in the sharing economy: A spatiotemporal comparison of shared mobility services. Computers, Environment and Urban Systems, 79, 101418. https://doi.org/10.1016/j.compenvurbsys.2019.101418

Meester Advocaten. (n.d.). short stay: Huisvestingswet en bestemmingsplan. meestermeester.nl. Retrieved November 10, 2023, from https://www.meestermeester.nl/bestuursrecht/dossiers/short-stay

mehr als wohnen. (2015). Dialogweg 6, 2015. mehralswohnen.ch. https://www.mehralswohnen.ch/hunziker-areal/das-quartier/dialogweg-6/

Mehr als Wohnen, Häuser A, M Duplex Architekten. (n.d.). Duplex Architecten. https://duplex-architekten.swiss/perch/resources/publications/1509-detail-maw-web.pdf

MEI architects. (n.d.). SPOT Gezond leven in woontoren met fietsconcept. mei-arch.eu. https://mei-arch.eu/projecten/spot/

Merwede. (n.d.). Merwede. Merwede.nl. https://merwede.nl/

Merwedekanaalzone. (n.d.). utrecht.nl. https://www.utrecht.nl/wonen-en-leven/bouwprojecten-en-stedelijke-ontwikkeling/bouwprojecten/merwedekanaalzone/

Midgett, C., Bendickson, J. S., Muldoon, J., & Solomon, S. J. (2018). The sharing economy and sustainability: A case for Airbnb. Small Business Institute Journal, 13(2), 51–71. https://www.sbij.org/index.php/SBIJ/article/download/265/222

Milman, D. M. (1994). The History of Cohousing. cohousing.ca. https://cohousing.ca/about-cohousing/history-of-cohousing/

Næss, P., Saglie, I., & Richardson, T. (2019). Urban sustainability: is densification sufficient? European Planning Studies, 28(1), 146–165. https://doi.org/10.1080/09654313.2019.1604633

Nebbeling, J. N. (2022, June 16). Woon&. https://www.cobouw.nl/305630/woon. https://www.cobouw.nl/305630/woon

Ooijevaar, J. O., & Verkooijen, L. V. (2015). Expat, wanneer ben je het? Rapport w Een afbakening van in het buitenland geboren werknemers op basis van loon. In CBS.nl. Centraal Bureau voor de Statistiek. https://www.cbs.nl/nl-nl/maatwerk/2015/03/expat-wanneer-ben-je-het-#:~:text=Uit%20de%20publicatie%20blijkt%20dat,niet%20de%20Nederlandse%20nationaliteit%20bezitten.

Oorschot, L. (2021). Wie zijn de Woonpioniers 2021? Wie Zijn De VPRO Tegenlicht Woonpioniers 2021? https://doi.org/10.47982/1mh.40

Palgan, Y. V., Zvolska, L., & Mont, O. (2017). Sustainability framings of accommodation sharing. Environmental Innovation and Societal Transitions, 23, 70–83. https://doi.org/10.1016/j.eist.2016.12.002

Pien. (2020, June 15). Wat is Airbnb en hoe werkt het? Alles wat je moet weten! - Reistips.nl. Reistips.nl. https://www.reistips.nl/wat-is-airbnb-en-hoe-werkt-het-alles-wat-je-moet-weten/

PLP architects. (n.d.). THE COLLECTIVE OLD OAK LONDON, UK. plparchitecture.com. https://plparchitecture.com/the-collective-old-oak-london-uk/

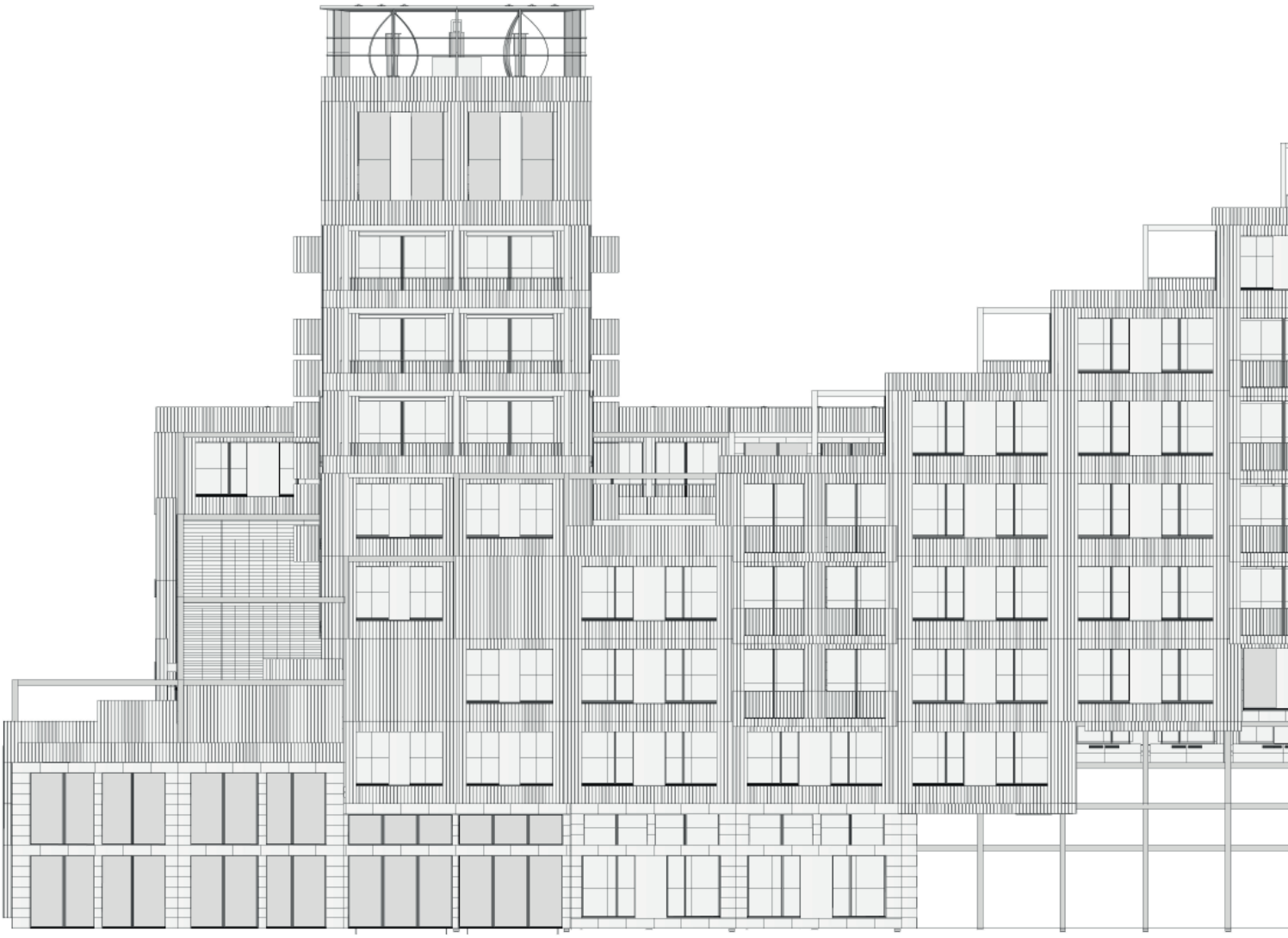
Pop-up City. (2021). Housing Complex for the Sharing Economy. popupcity.net. https://popupcity.net/projects/housing-complex-for-the-sharing-economy/

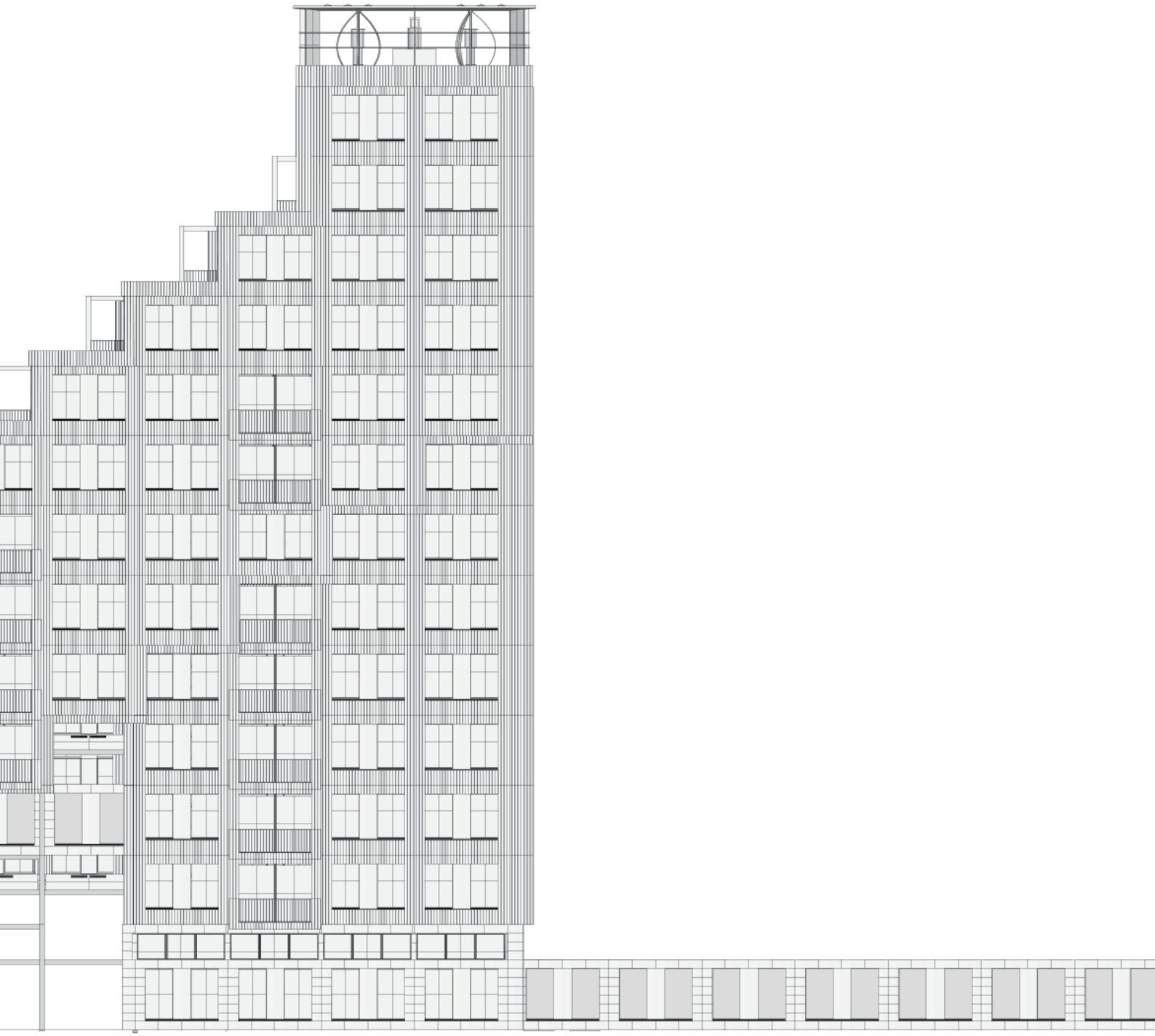
Rabiei-Dastjerdi, H., McArdle, G., & Hynes, W. (2022). Which came first, the gentrification or the Airbnb? Identifying spatial patterns of neighbourhood change using Airbnb data. Habitat International, 125, 102582. https://doi.org/10.1016/j.

habitatint.2022.102582
Reck, D. J., Henry, M., & Axhausen, K. W. (2022). Mode choice, substitution patterns and environmental impacts of shared and personal micro-mobility. Transportation Research Part D: Transport and Environment, 102, 103134. https://doi.org/10.1016/j.trd.2021.103134
Roadmap to a Resource Efficient Europe COM(2011) 571. (n.d.). European Environment Agency. https://www.eea.europa.eu/policy-documents/com-2011-571-roadmap-to
Ronald, R., Schijf, P., & Donovan, K. (2023). The institutionalization of shared rental housing and commercial co-living. Housing Studies, 1–25. https://doi.org/10.1080/02673037.2023.2176830
Rotterdam Partners. (2023). 2022 in cijfers Rotterdam Partners [Press release]. https://rotterdampartners.nl/app/uploads/2023/04/Factsheet-2022-in-cijfers-Rotterdam-Partners.pdf#::text=Page%2016-,In%20totaal%20telde%20Rotterdam%201.161.000%20hotelgasten%20in%202022%2C%20bijna,ten%20opzichte%20van%20voorgaande%20jaren.
Santos, G. (2018). Sustainability and shared mobility models. Sustainability, 10(9), 3194. https://doi.org/10.3390/su10093194
Scheepers, A. S., Van Den Dries, L. D., & Wolf, J. W. (2022). Informatie, interventies en praktijkvoorbeelden Bij preventie van dakloosheid. https://impuls-onderzoekscentrum.nl/wp-content/uploads/bijlage-info-interventies-en-voorbeelden-bij-preventie.pdf
Scholten, P., & Van Ostaijen, M. (2018). Between mobility and migration: The Multi-Level Governance of Intra-European Movement. Springer.
Schor, J. B. (2016). DEBATING THE SHARING ECONOMY. Journal of Self-governance and Management Economics, 4(3), 7. https://doi.org/10.22381/jsme4320161
Shortstay in Amsterdam. (n.d.). amsterdam.nl. Retrieved November 10, 2023, from https://www.amsterdam.nl/wonen-leefomgeving/wonen/shortstaybeleid/#::text=Shortstay%20is%20het%20tijdelijk%20wonen,deel%20uitmaken%20van%20meerdere%20huishoudens.
Snel, E., Faber, M., & Engbersen, G. (2015). Footloose migranten in beeld. Erasmus. https://repub.eur.nl/pub/77575/Metis206012.pdf
Stiemer, D. S. (2022, May 18). Regiorapportage noord-nederland [Slide show; Slides]. https://decisio.nl/wp-content/uploads/Rapport-Monitor-Internationals-Noord-Nederland-mei-2022.pdf
Sundararajan, A. (2019). Commentary: The twilight of brand and consumerism? Digital trust, cultural meaning, and the quest for connection in the sharing economy. Journal of Marketing, 83(5), 32–35. https://doi.org/10.1177/0022242919868965
Tay, J. T. (2019, September 19). The Ascott debuts Lyf, a co-living space designed for millenials, in Funan Singapore. lifestyleasia.com. https://www.lifestyleasia.com/sg/culture/art/ascott-lyf-funan-singapore/
Teller, J. (2021). Regulating urban densification: what factors should be used? Buildings & Cities, 2(1), 302–317. https://doi.org/10.5334/bc.123
The collective. (n.d.). the collective old oak. thecollective.com. https://www.thecollective.com/locations/old-oak
the social hub. (n.d.). A hub to call home. thesocialhub.co. https://www.thesocialhub.co/eindhoven/stay/
Törnberg, P. (2022). How sharing is the "sharing economy"? Evidence from 97 Airbnb markets. PLOS ONE, 17(4), e0266998. https://doi.org/10.1371/journal.pone.0266998
Tribe, J., & Xiao, H. (2011). Developments in tourism social science. Annals of Tourism Research, 38(1), 7–26. https://doi.org/10.1016/j.annals.2010.11.012
Tummers, L. (2015a). Understanding co-housing from a planning perspective: why and how? Urban Research & Practice, 8(1), 64–78. https://doi.org/10.1080/17535069.2015.1011427
Tummers, L. (2015b). The re-emergence of self-managed co-housing in Europe: A critical review of co-housing research. Urban Studies, 53(10), 2023–2040. https://doi.org/10.1177/0042098015586696
Tussyadiah, I. (2016). Factors of satisfaction and intention to use peer-to-peer accommodation. International Journal of Hospitality Management, 55, 70–80. https://doi.org/10.1016/j.ijhm.2016.03.005
Valente, R., Bornioli, A., Vermeulen, S., & Russo, A. P. (2023). Short-term rentals and long-term residence in Amsterdam and Barcelona: A comparative outlook. Cities, 136, 104252. https://doi.org/10.1016/j.cities.2023.104252
Van Bochove, M., Rušinovi, K., & Engbersen, G. (2010). Over de rode loper. Kennismigranten in Rotterdam en Den Haag. Erasmus. https://repub.eur.nl/pub/22366/Over%20de%20rode%20loper.%20Kennismigranten%20in%20Rotterdam%20en%20Den%20Haag.pdf
Van Den Berg, M. (2012). City Children and Genderfied Neighbourhoods: The New Generation as Urban Regeneration Strategy. International Journal of Urban and Regional Research, 37(2), 523–536. https://doi.org/10.1111/j.1468-2427.2012.01172.x
Van Den Bussche, P., & Moralès, J. (2019). Performing (in) the community: accounting, biopower and the sharing economy. In Edward Elgar Publishing eBooks. https://doi.org/10.4337/9781788110549.00038
Van Der Linden, M. (2020). Spreidingsbeleid voor huisvesting van statushouders. Bestuurskunde, 29(3), 34–44. https://doi.org/10.5553/bk/092733872020029003004
Van Der Velden, J., & Wassenberg, F. (2023). Economische dakloosheid en flexwonen in Nederland. TSG - Tijdschrift Voor Gezondheidswetenschappen, 101(S2), 72–76. https://doi.org/10.1007/s12508-023-00407-9
Van Der Zee, E. Z., Brugman, S. B., & Ruis, A. R. (2021). AIRBNB MONITO MONITOR

NOORDNOORD-HOLLAND 2021. https://www.noord-holland.nl/Onderwerpen/Toerismerecreatie/Vitaleverblijfsrecreatie/Beleidsdocumenten/AirbnbMonitorNoordHolland2021.pdf
Van Dooren. (2020, October). Five principles for better design education. tudelft.nl. https://www.tudelft.nl/en/architecture-and-the-built-environment/research/research-stories/five-principles-for-better-design-education
Van Melik, R. M., & Nieuwland, S. N. (2018, April 13). Stedelijke worsteling met Airbnb. geografie.nl. Retrieved November 9, 2023, from https://geografie.nl/artikel/stedelijke-worsteling-met-airbnb
Weessies, R. W. (2020, June 23). Mei en Marc Koehler presenteren ontwerp Toren E in wijk SPOT. architectenweb.nl. https://architectenweb.nl/nieuws/artikel.aspx?ID=47792
Wicki, M., & Kaufmann, D. (2022). Accepting and resisting densification: The importance of project-related factors and the contextualizing role of neighbourhoods. Landscape and Urban Planning, 220, 104350. https://doi.org/10.1016/j.landurbplan.2021.104350
Williams, J. (2005). Designing neighbourhoods for social interaction: the case of cohousing. Journal of Urban Design, 10(2), 195–227. https://doi.org/10.1080/13574800500086998
Wolf, S. W. (2015). Poolse arbeidsmigranten in Nederland en hun behoefte aan informatie en hulp. https://www.kis.nl/sites/default/files/2022-08/Poolse-arbeidsmigranten-in-Nederland.pdf
WoneninRotterdam.(2022,November30).Thebestspotsforexpatsin Rotterdam.www.woneninrotterdam.nl. https://www.woneninrotterdam.nl/en/list/best-spots-for-expats-in-rotterdam/

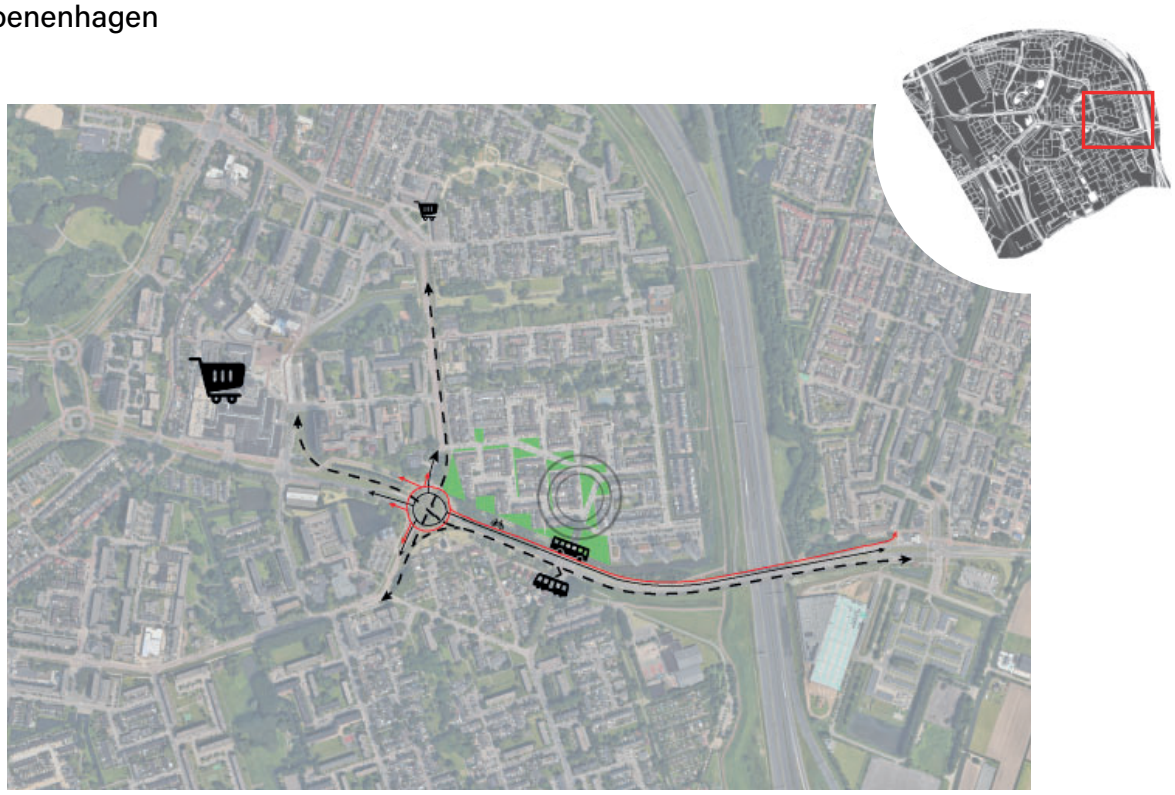
11. Design





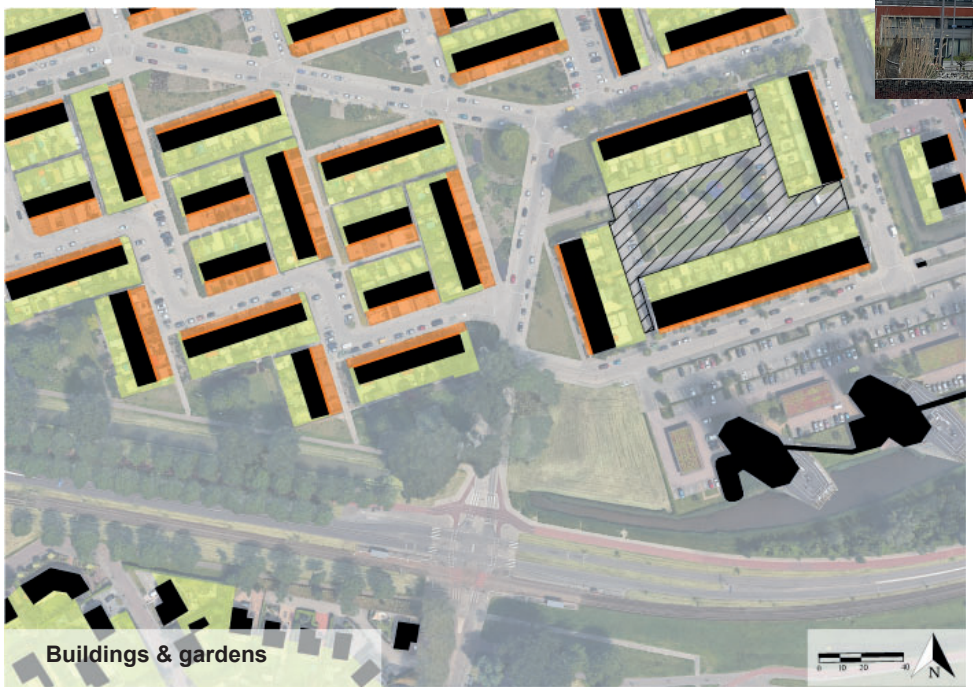
Groot-IJsselmonde

Location; Groenenhagen



Site Analysis

Mix of terraced housing & highrises

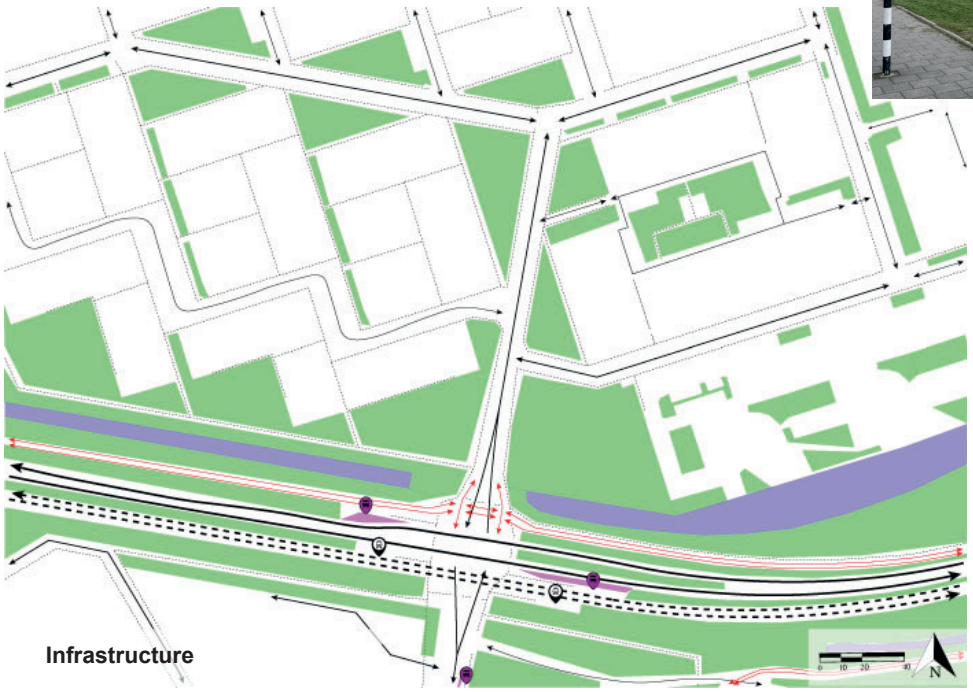


Legend

- Buildings
- Front facade
- Gardens
- Front gardens

Site Analysis

Underused green space & sidewalks

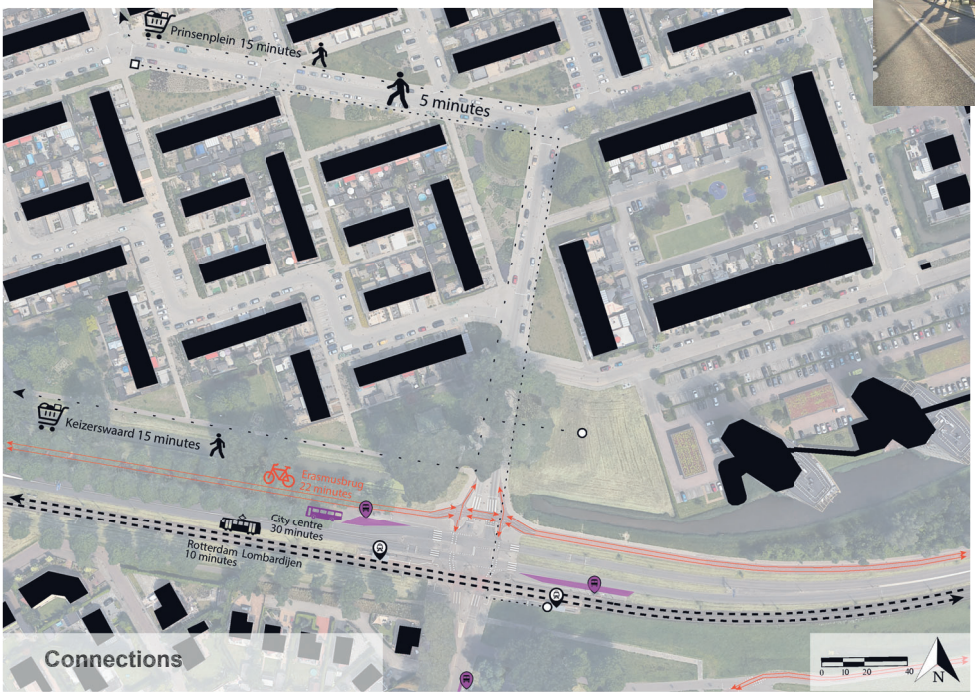


Legend

- Public green
- Car road
- Bike path
- Footpath
- Bus stop
- Tram stop

Site Analysis

Bus & tram stop

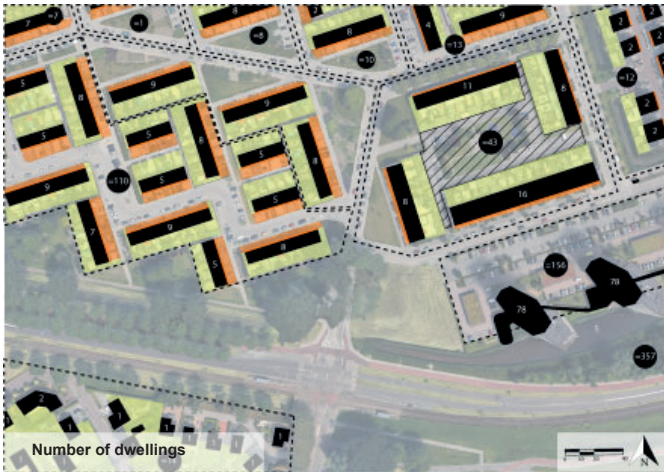


Legend

- Public green
- Car road
- Bike path
- Footpath
- Bus stop
- Tram stop

Site Analysis

Extensive parking lots

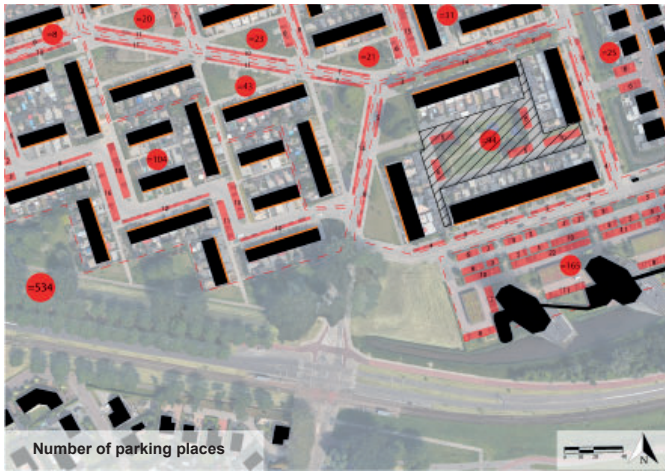


Legend

- Building
- Area border
- Dwellings in area

357

Dwellings



Legend

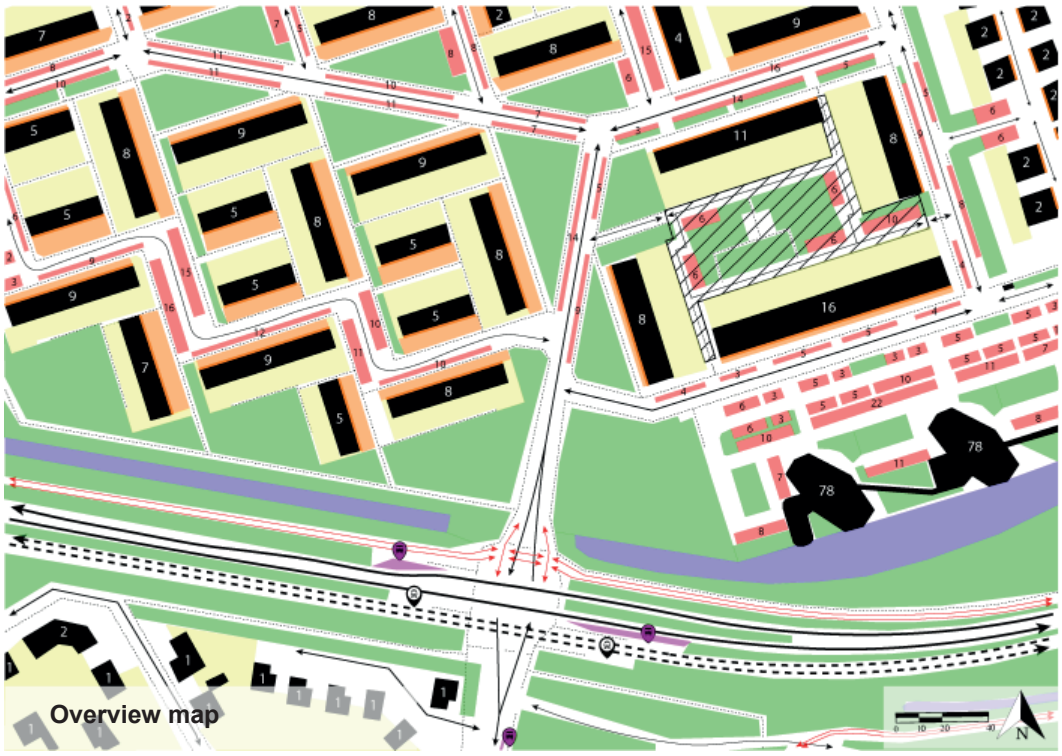
- Building
- Area border
- Dwellings in area

534

Parking spaces

= 1,5 parking spaces per dwelling

Site Analysis

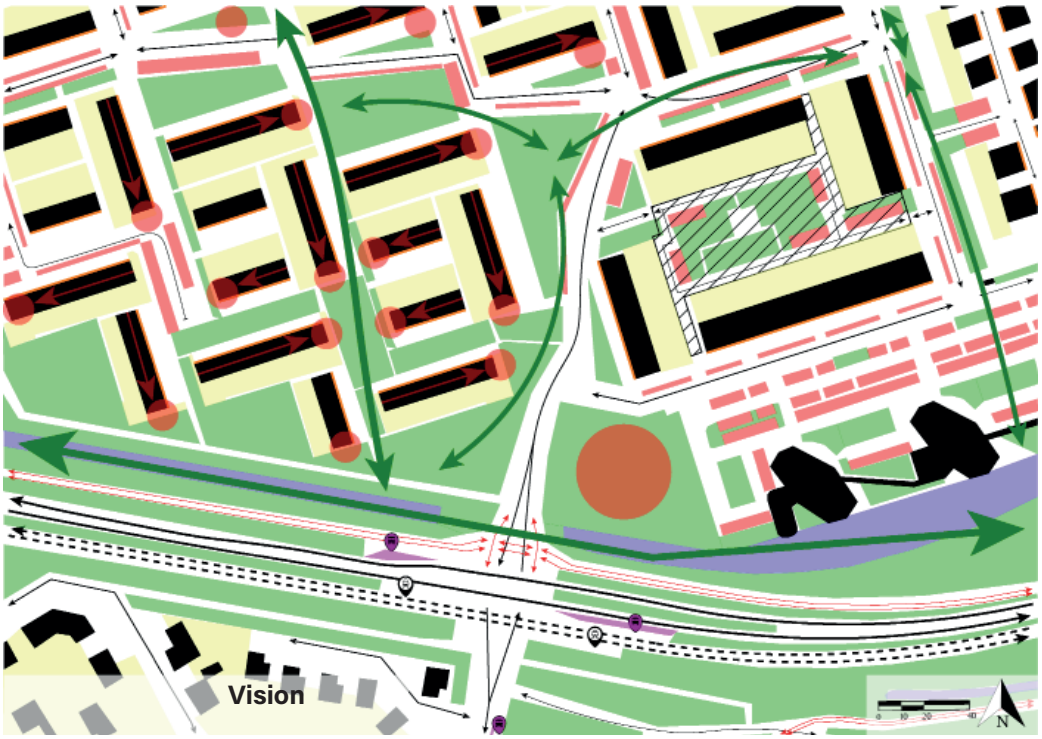



Inbetween spaces

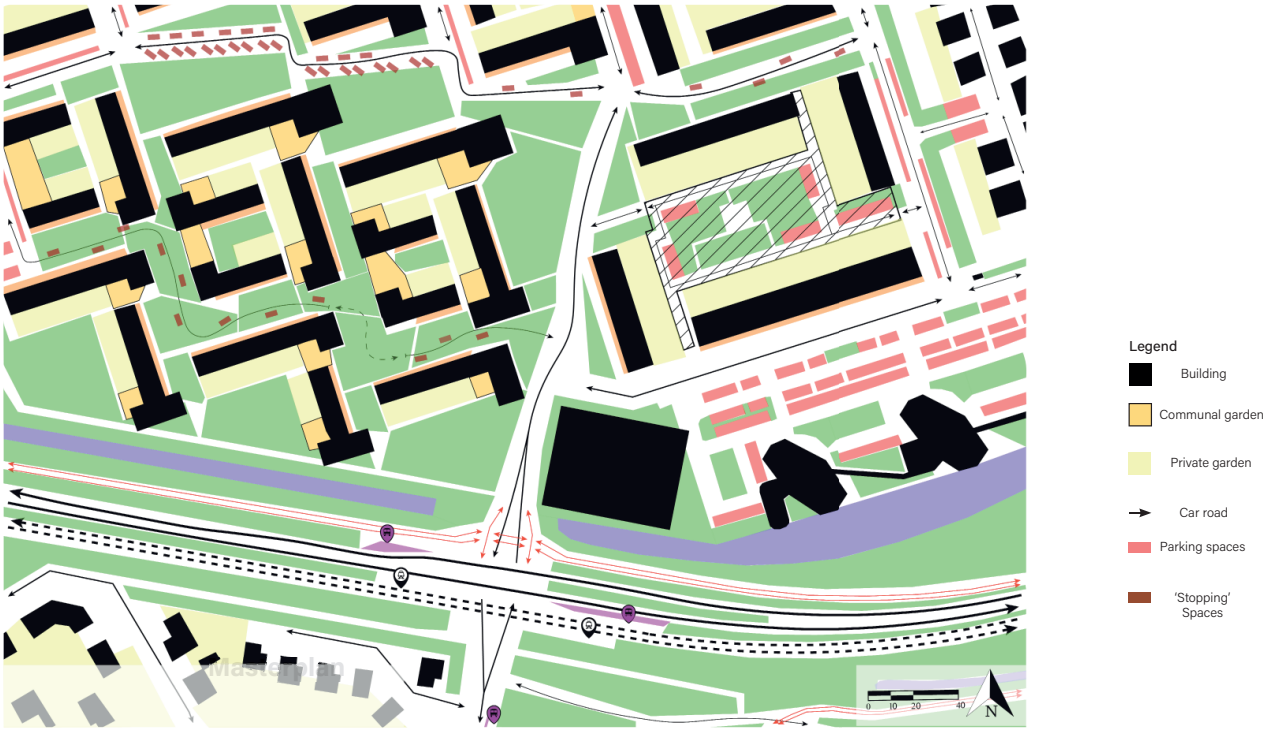

Parking & greenery


Streetscapes

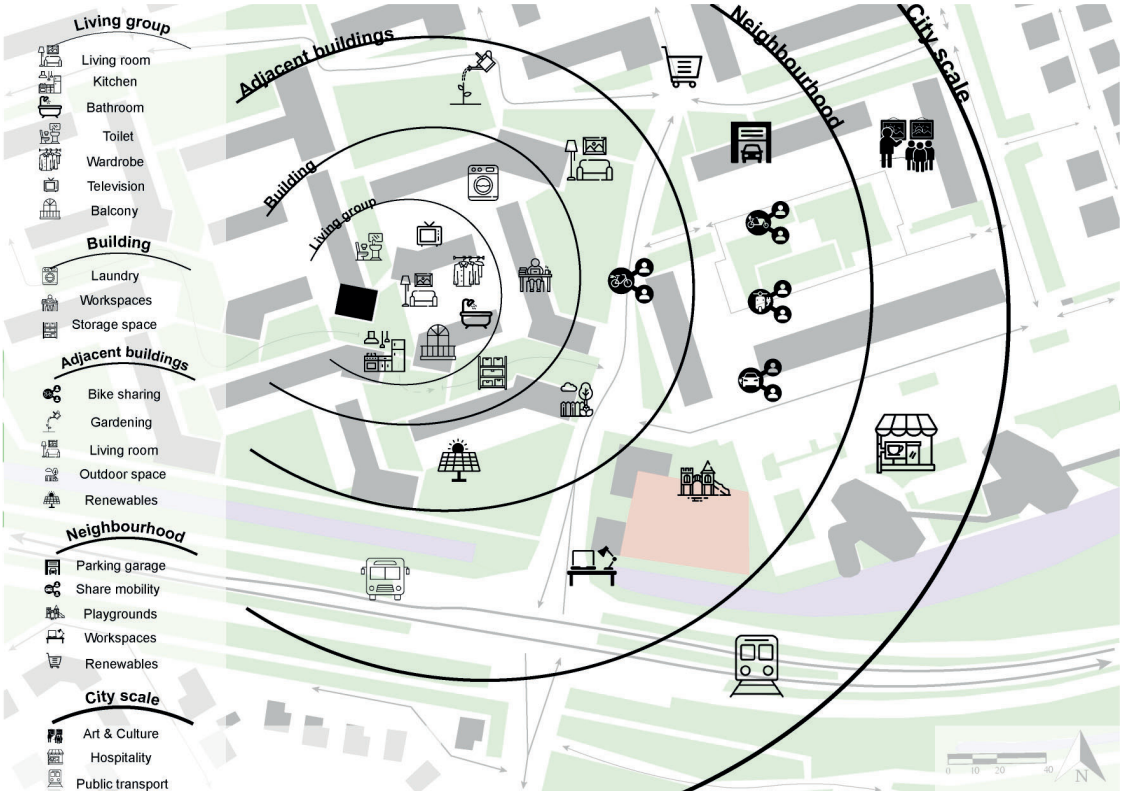
Vision; intentions



Masterplan



Vision; levels of sharing



Detailed masterplan

Masterplan traffic

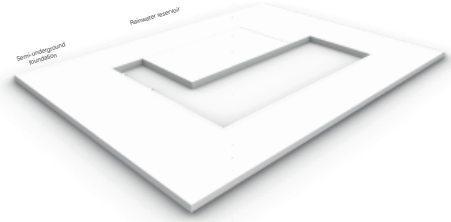
Masterplan densification

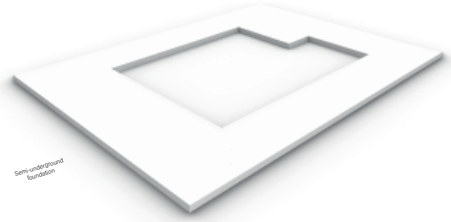
Masterplan

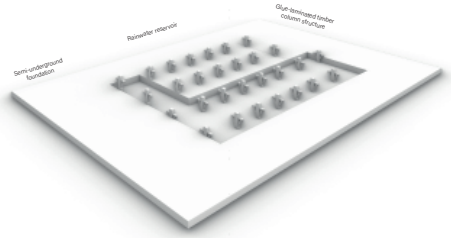
Site

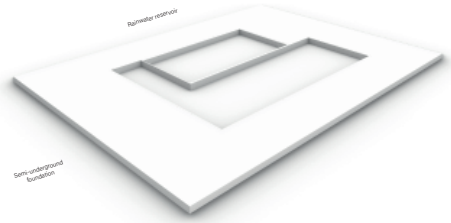

Single-family rowhouses; owner- occupied houses
"De Reigers" appartment blocks
Single-family rowhouses; public housing
Water
Public transport connections
Entrance road to neighbourhood

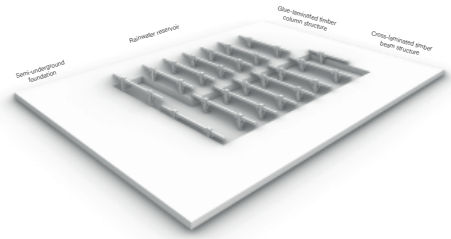
Structure

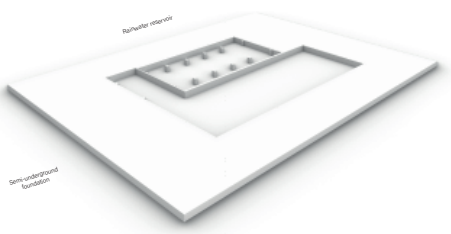

Rainwater reservoir
Semi-underground foundation

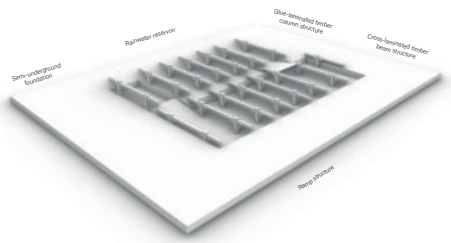

Semi-underground foundation

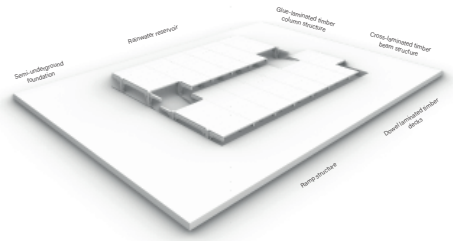

Glue-laminated timber column structure
Rainwater reservoir
Semi-underground foundation

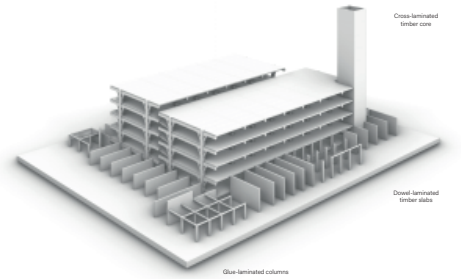

Rainwater reservoir
Semi-underground foundation

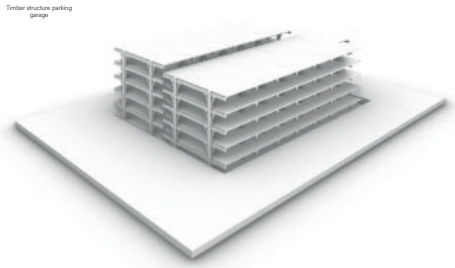

Glue-laminated timber column structure
Rainwater reservoir
Cross-laminated timber beam structure
Semi-underground foundation

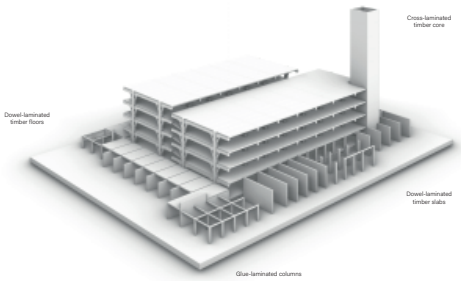

Rainwater reservoir
Semi-underground foundation

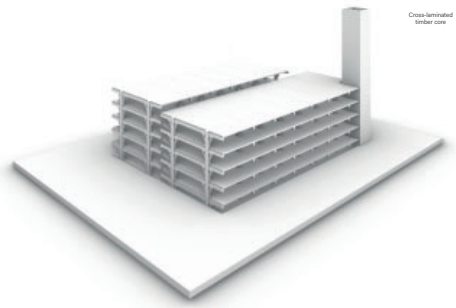

Glue-laminated timber column structure
Rainwater reservoir
Cross-laminated timber beam structure
Semi-underground foundation
Ramp structure

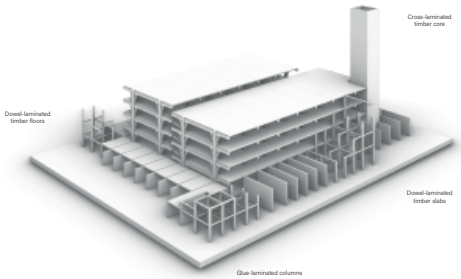

Glue-laminated timber column structure
Rainwater reservoir
Cross-laminated timber beam structure
Semi-undegrmind foundation
Dowel-laminated timber slabs
Ramp structure

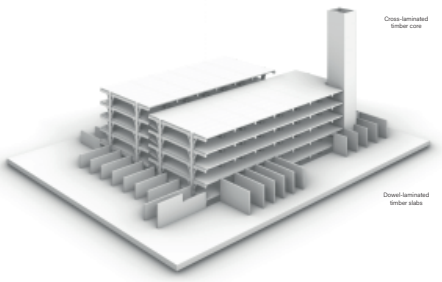

Cross-laminated timber core
Dowel-laminated timber slabs
Glue-laminated columns

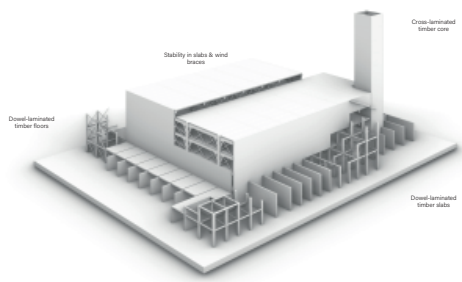

Timber structure parking garage


Cross-laminated timber core
Dowel-laminated timber floors
Dowel-laminated timber slabs
Glue-laminated columns

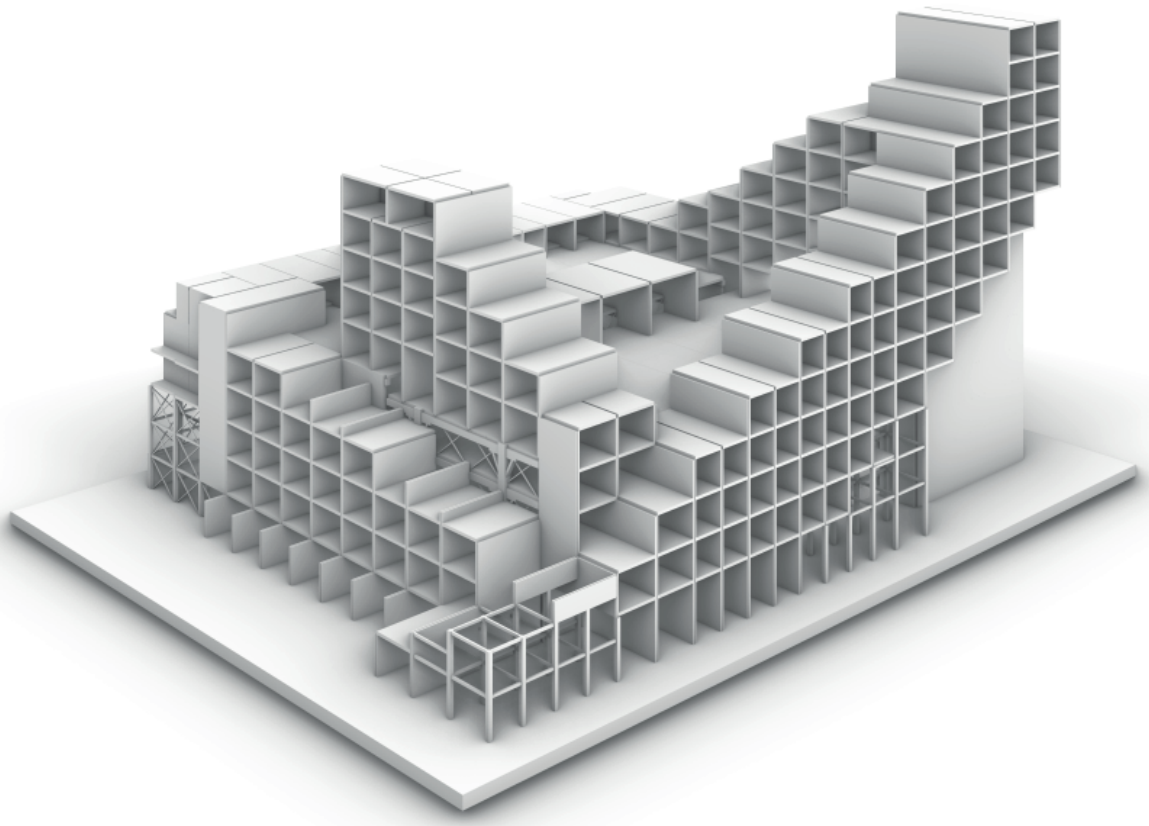

Cross-laminated timber core

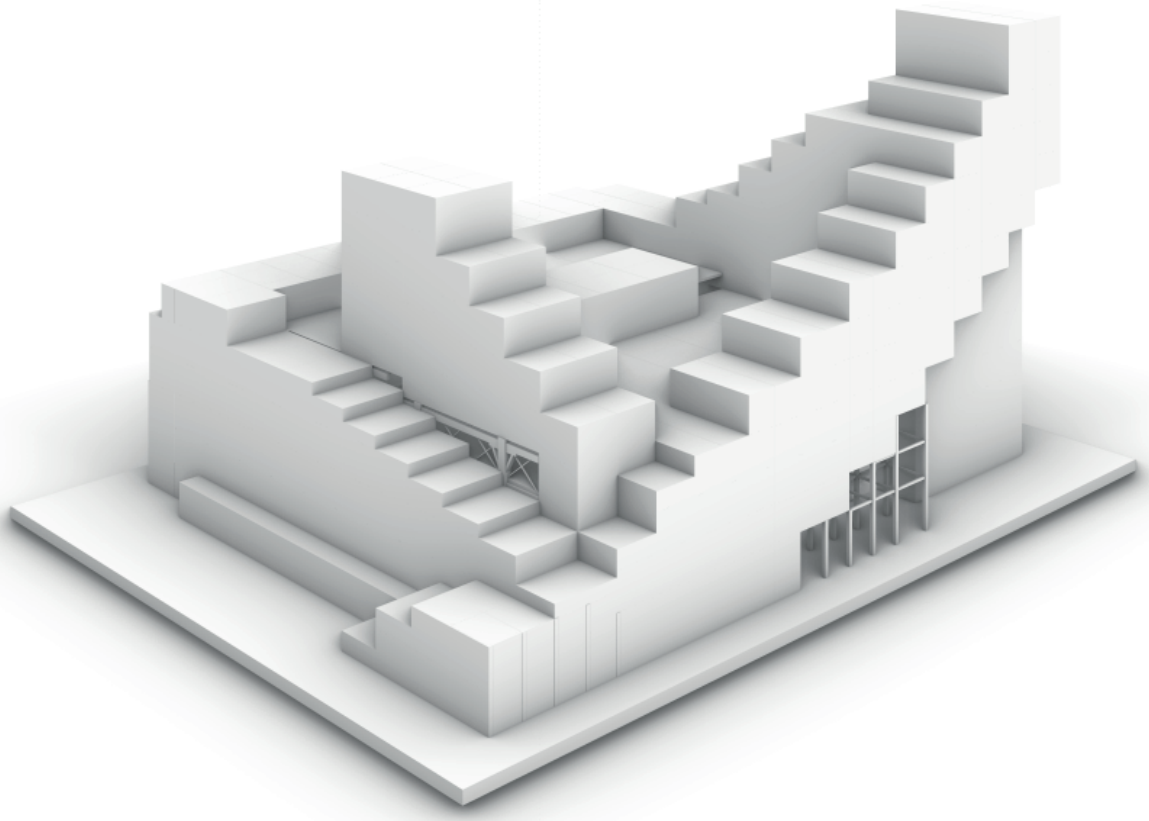

Cross-laminated timber core
Dowel-laminated timber floors
Dowel-laminated timber slabs
Glue-laminated columns

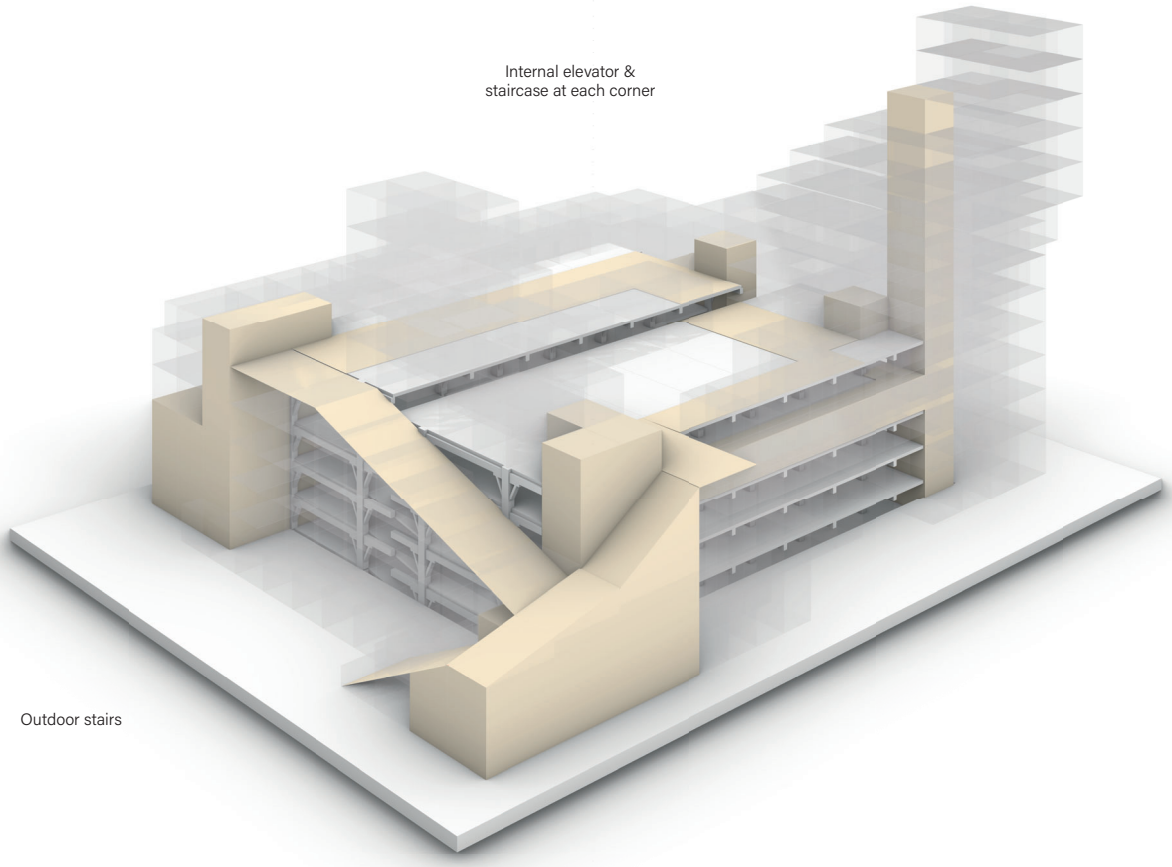

Cross-laminated timber core
Dowel-laminated timber slabs

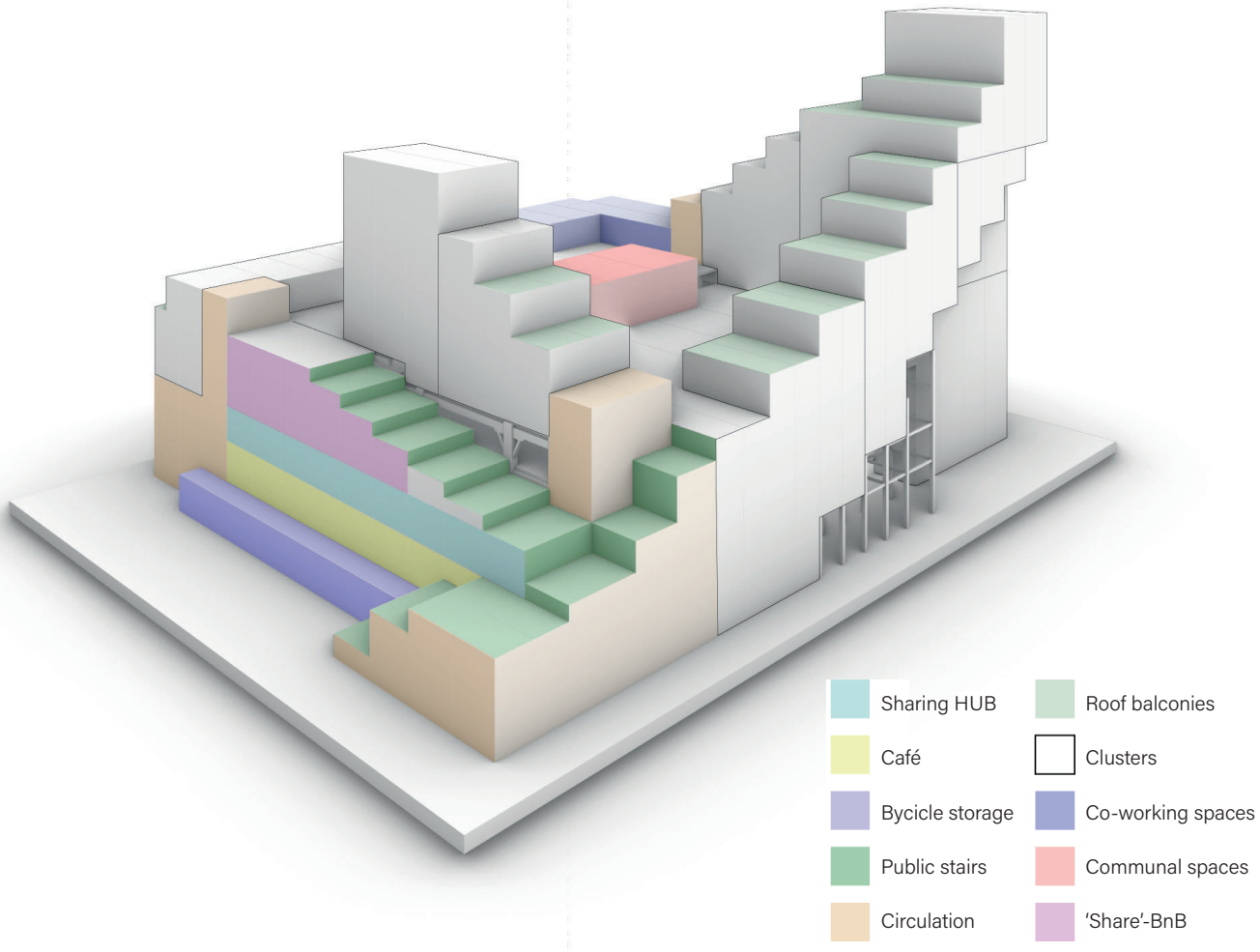

Cross-laminated timber core
Stability in slabs & wind braces
Dowel-laminated timber floors
Dowel-laminated timber slabs
Glue-laminated columns

Structure

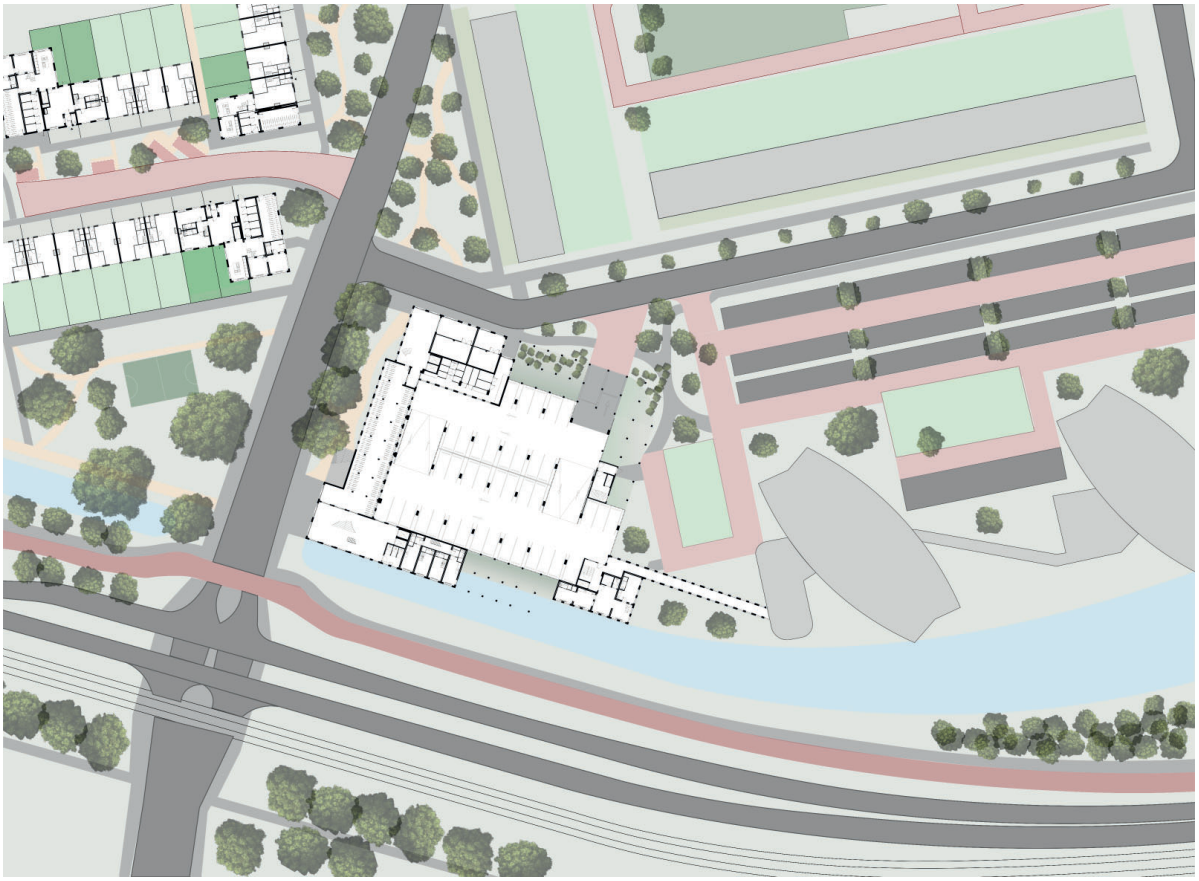




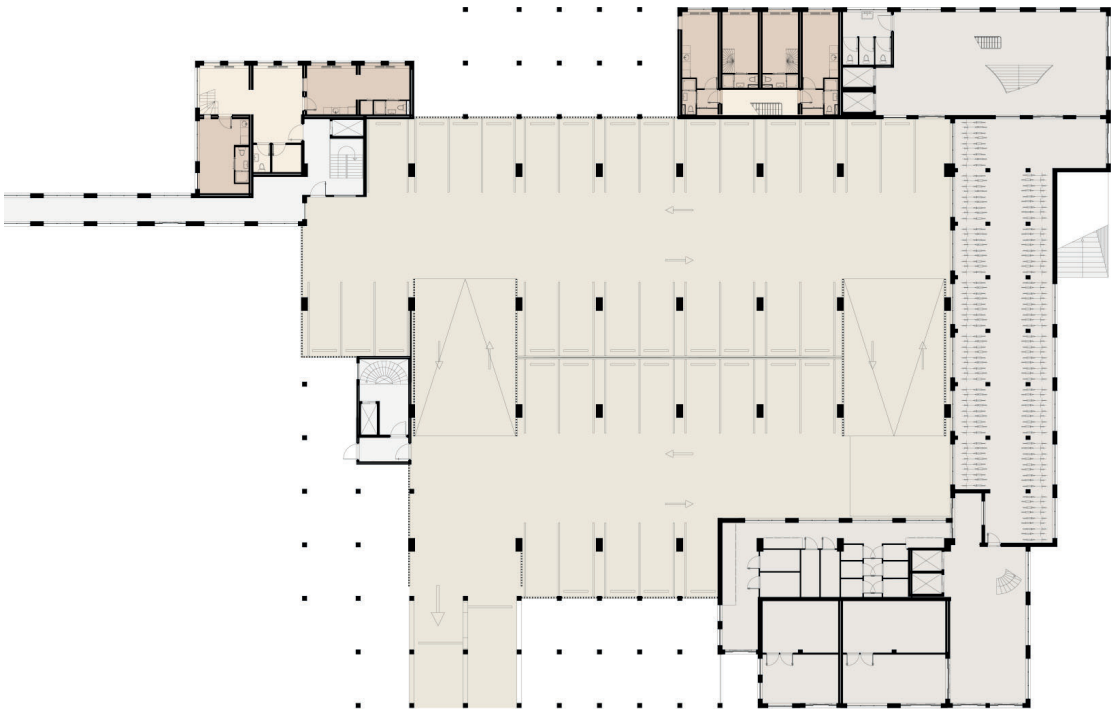

Internal elevator &
staircase at each corner
Outdoor stairs


Sharing HUB
Café
Bycicle storage
Public stairs
Circulation
Roof balconies
Clusters
Co-working spaces
Communal spaces
'Share'-BnB

Ground floor

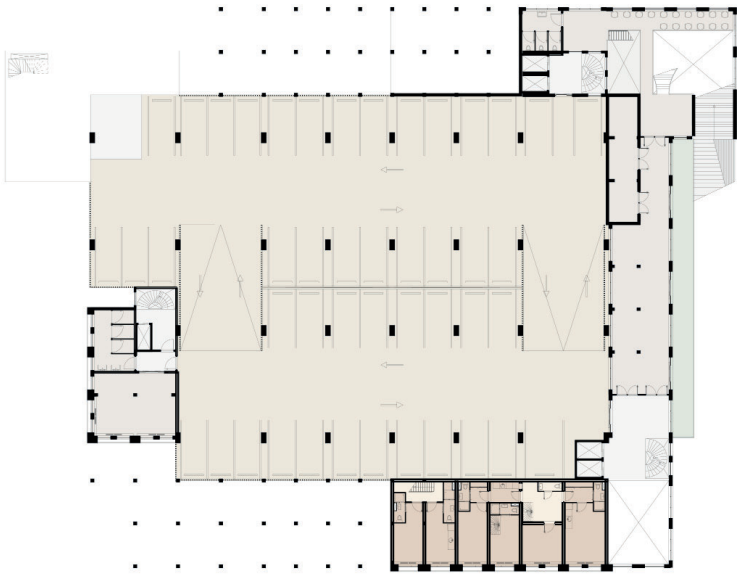


Ground floor

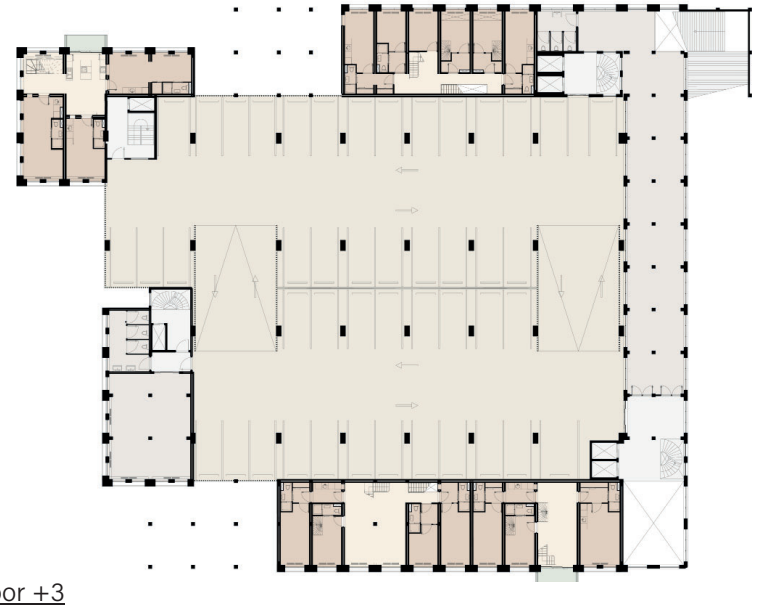


Dwelling
Shared spaces
Communal spaces
Garage
Circulation
Shared outdoor spaces

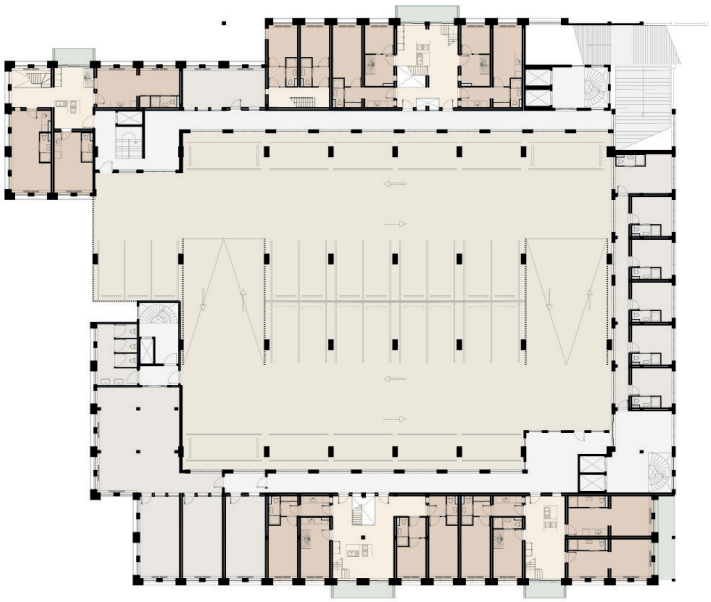
Floor +1

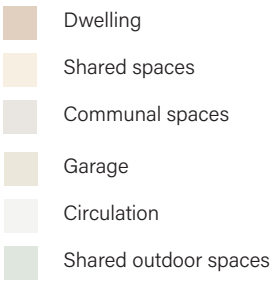


Floor +2

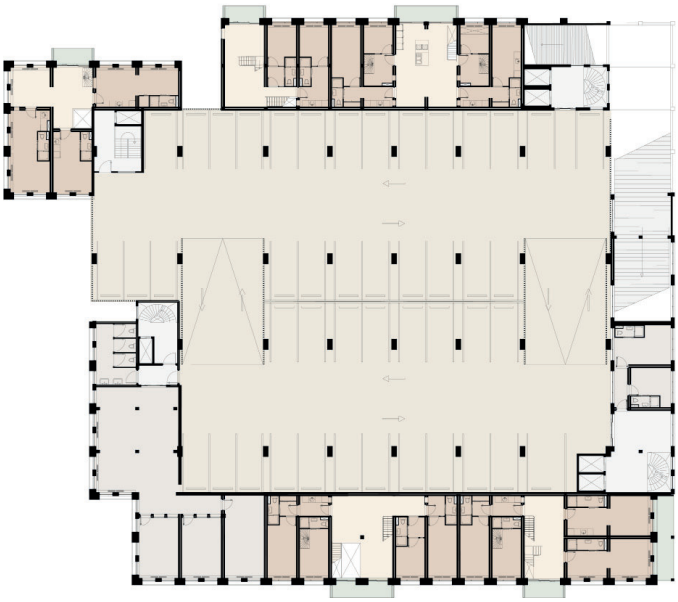


Floor +3

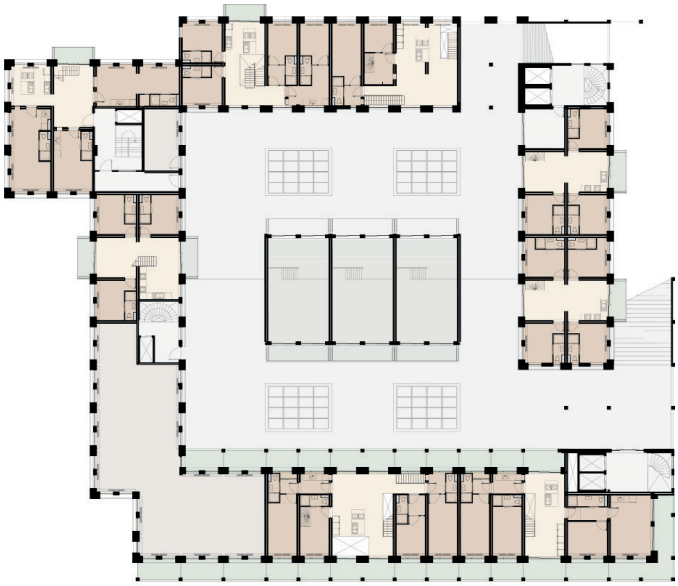




Floor +4



Floor +5



Floor +6

Dwelling

Shared spaces

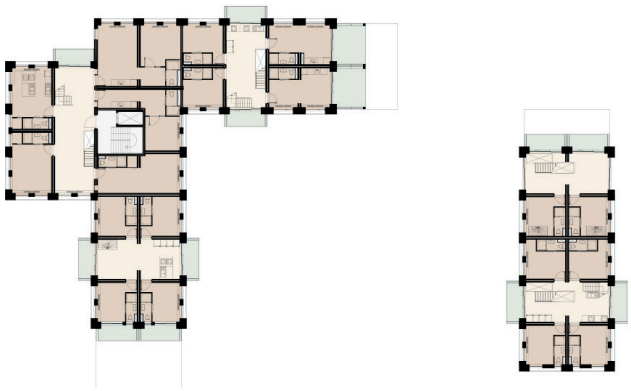
Communal spaces

Garage

Circulation

Shared outdoor spaces

Floor +7



Floor +8

Floor +9

Dwelling

Shared spaces

Communal spaces

Garage

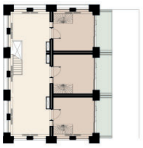
Circulation

Shared outdoor spaces

Floor +10

Floor +11

Floor +12



Floor +13

Dwelling

Shared spaces

Communal spaces

Garage

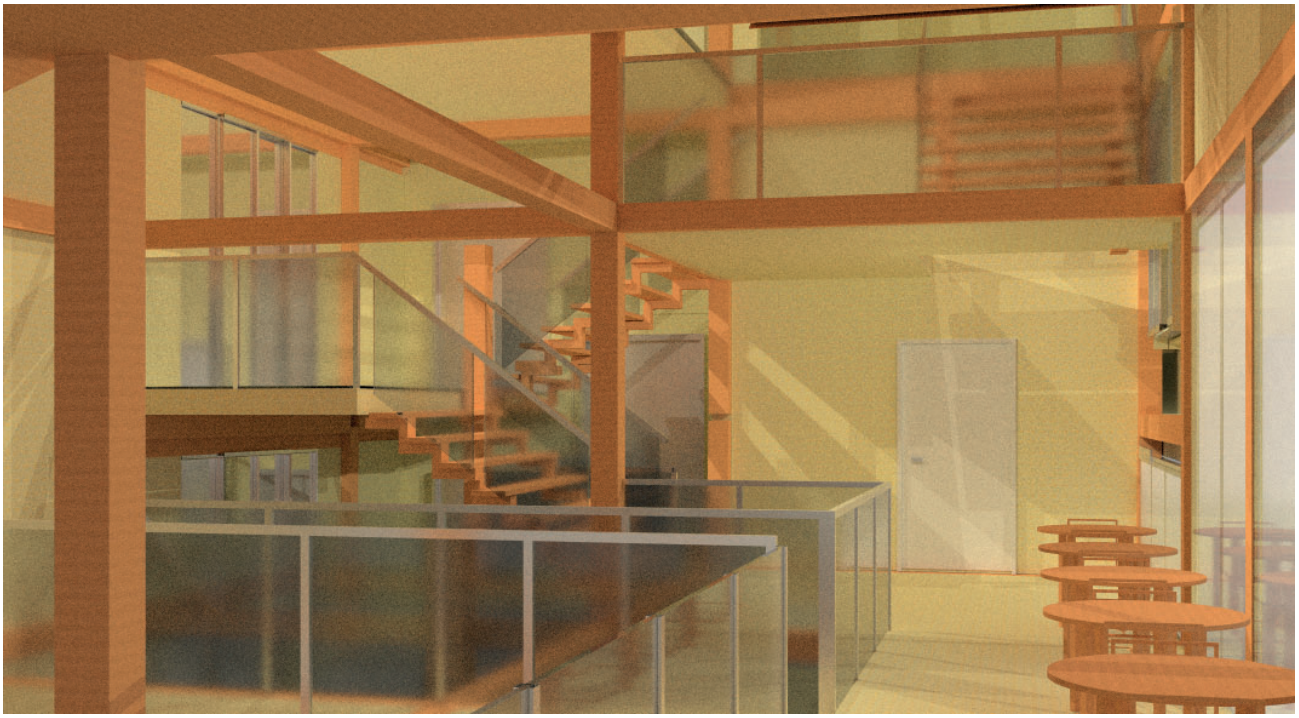
Circulation

Shared outdoor spaces

Entrance

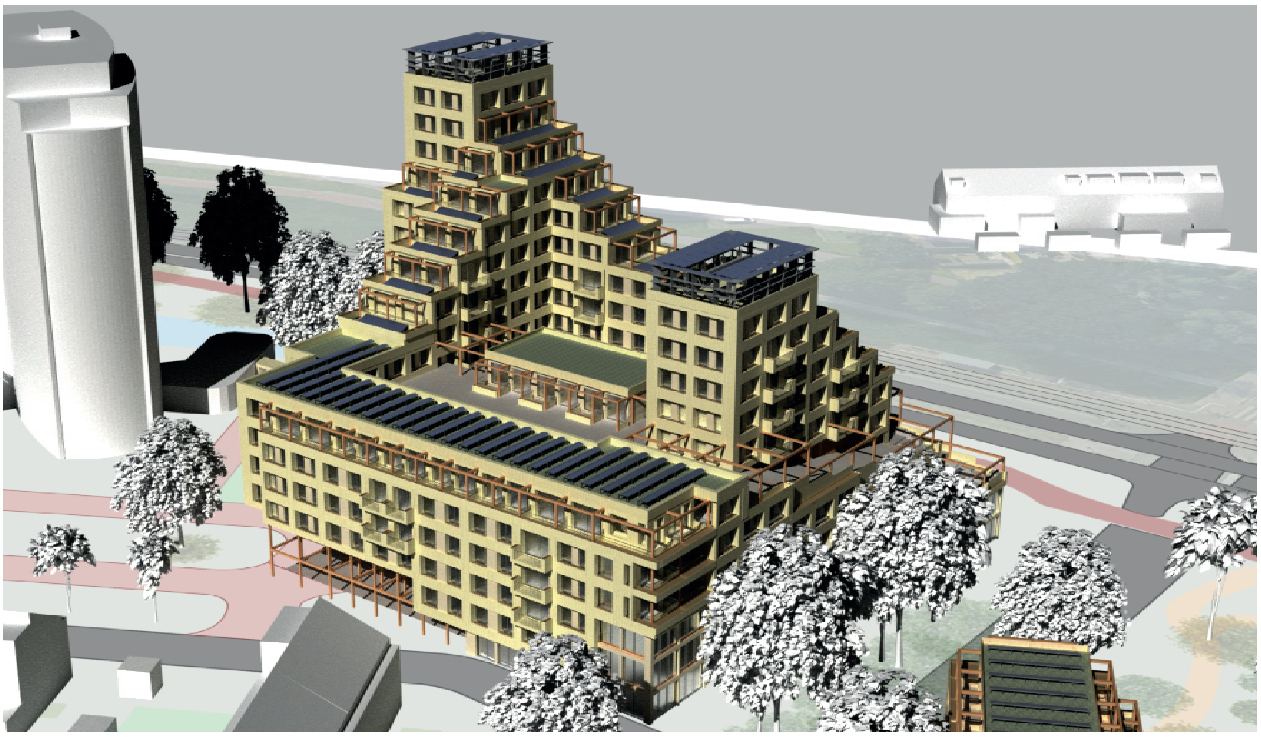
Entrance

Entrance



Hallway

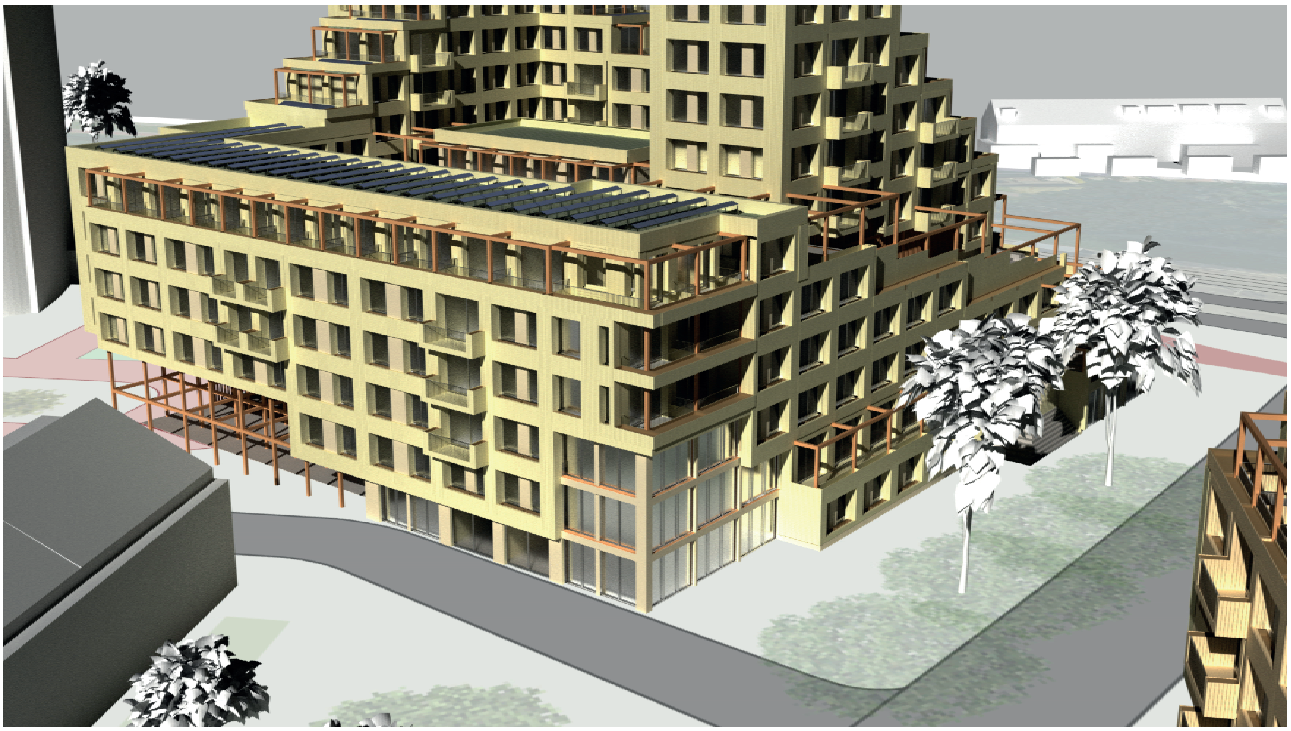
Deck



Highrise

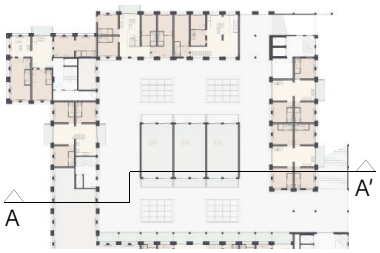
Impressions

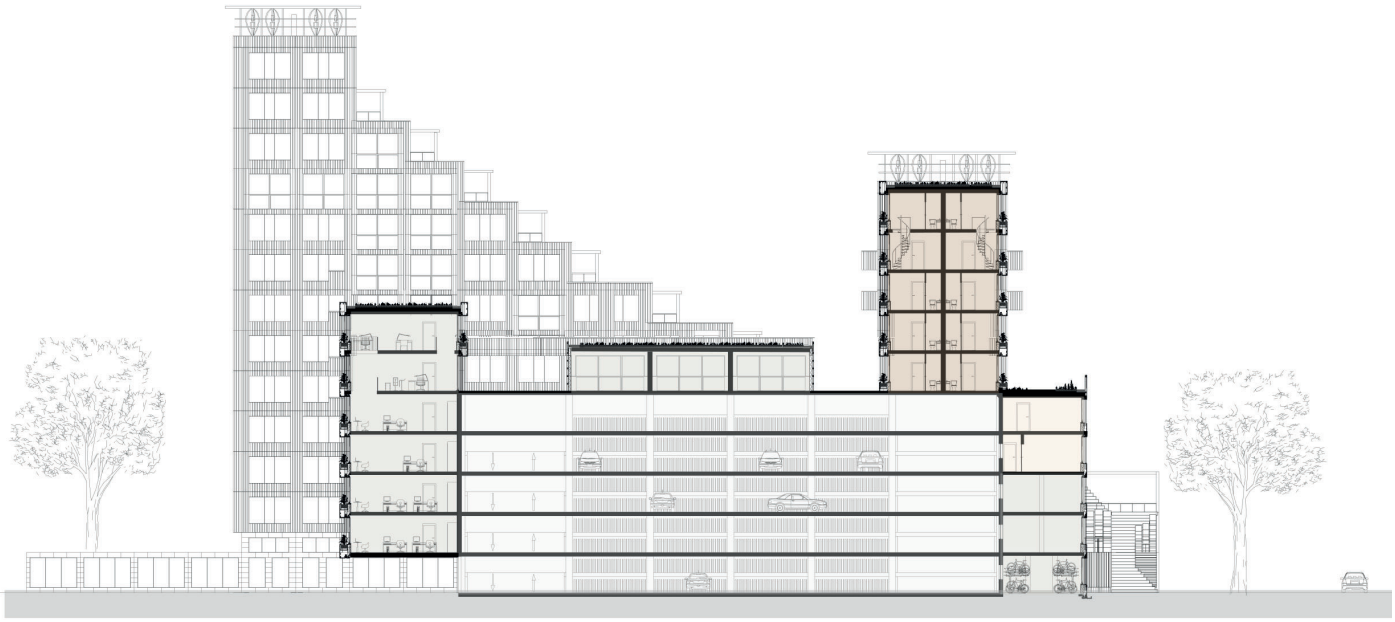
Impressions



Sections 1:100

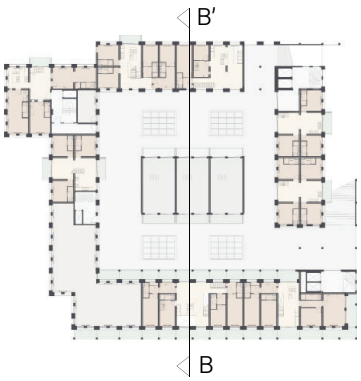
Section A - A'

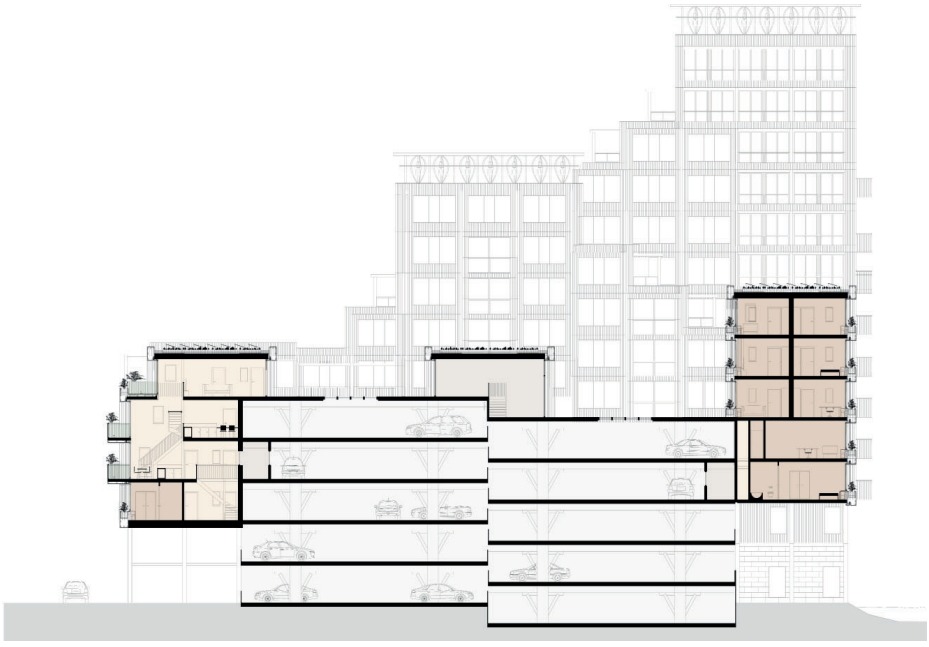




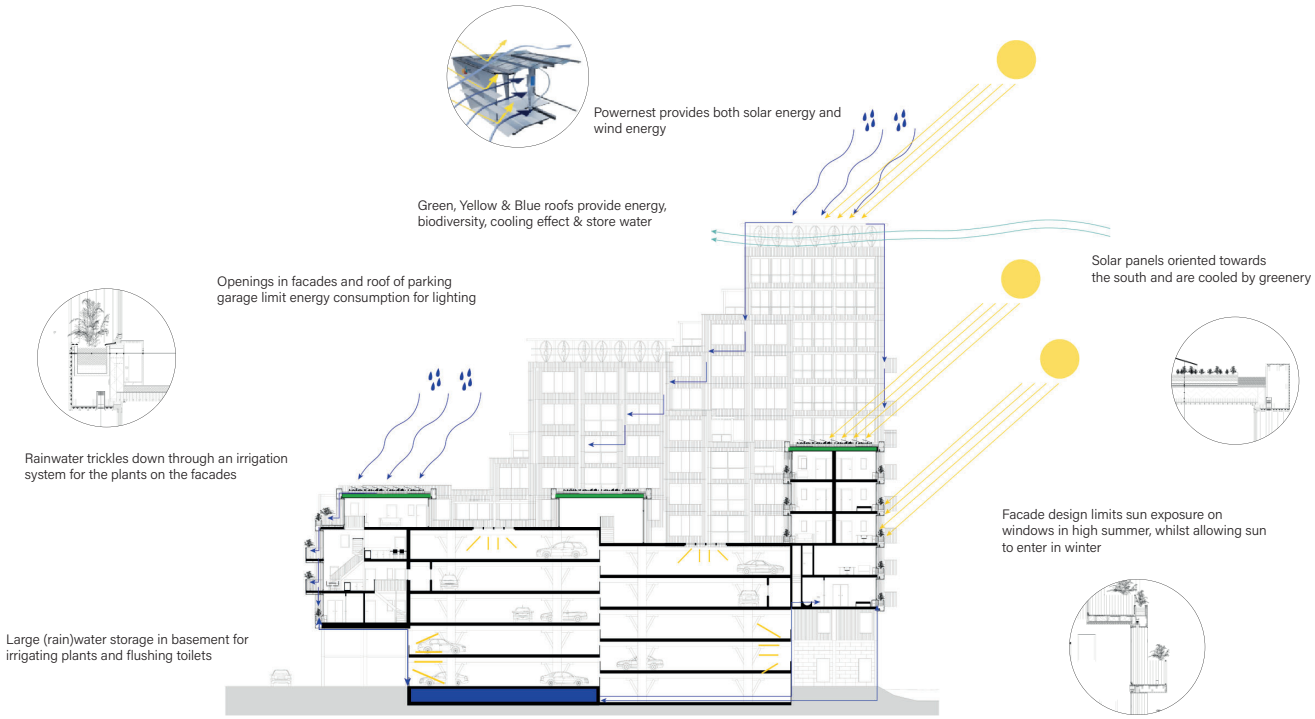
Sections 1:50

Section B - B'

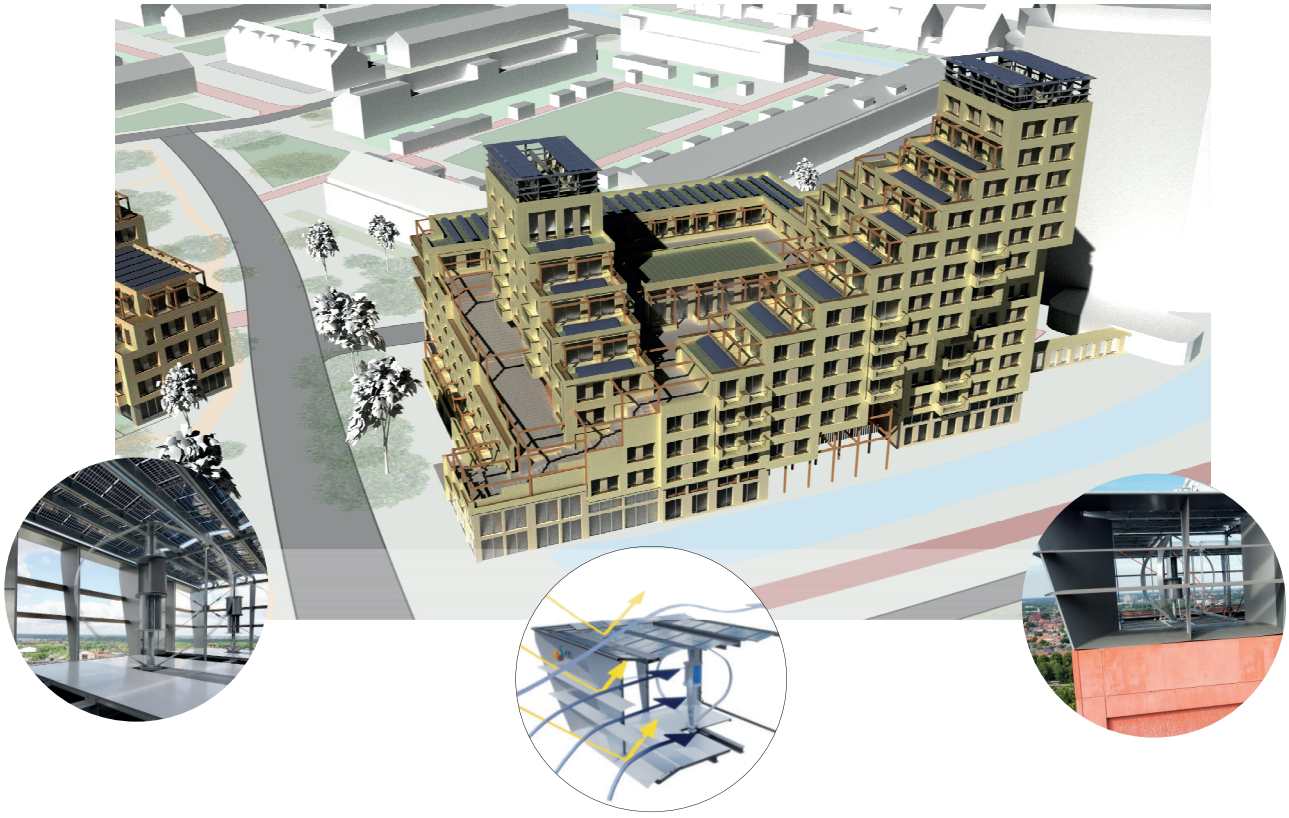




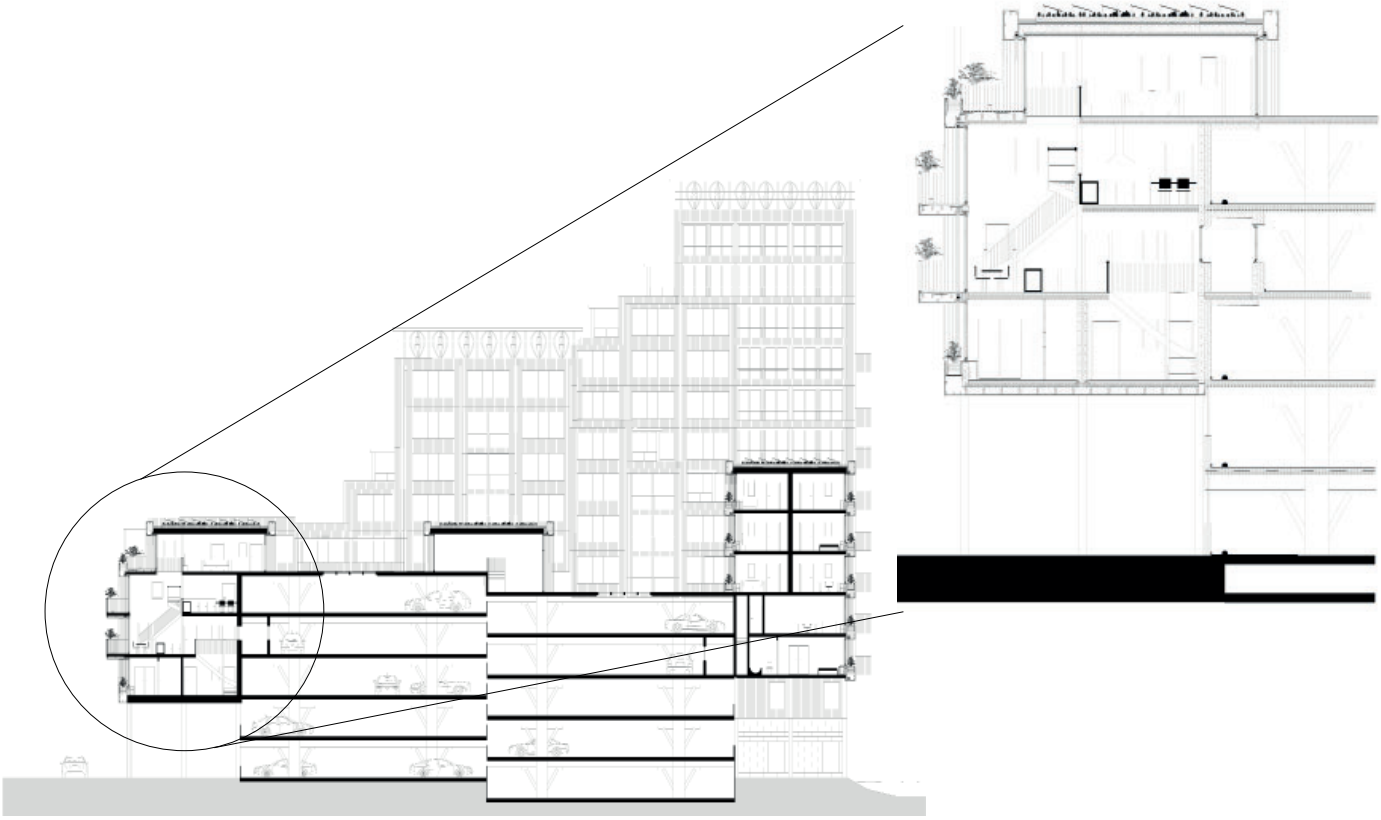
Climate concept section



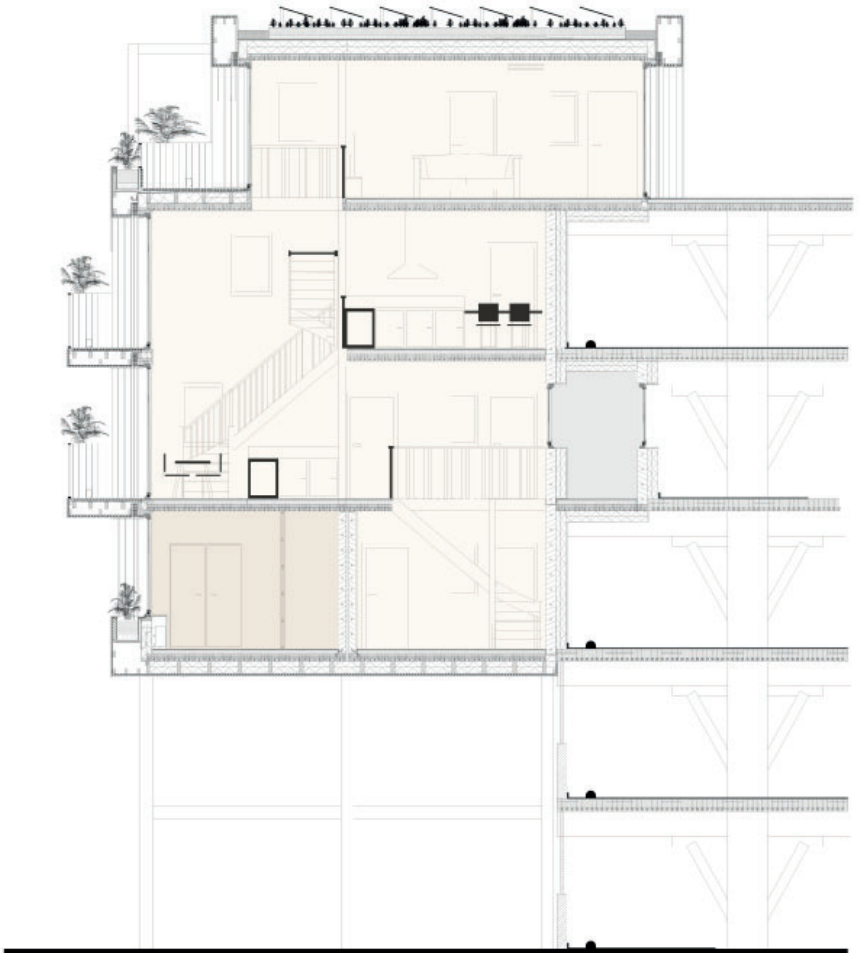
Powernest



Sections 1:50

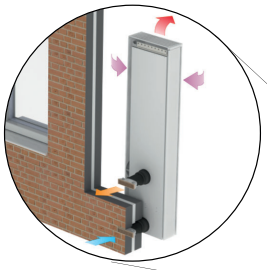


Section 1:50

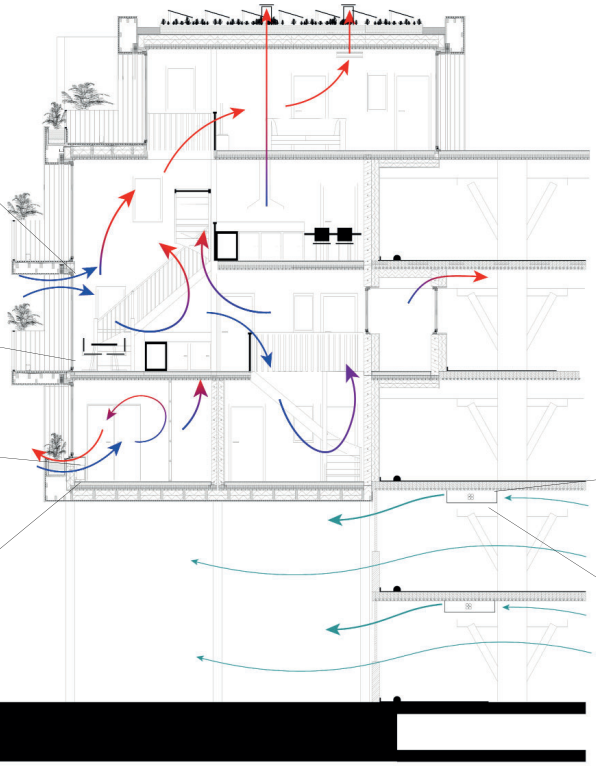


Heating & ventilation

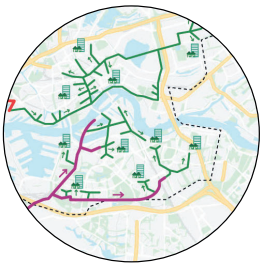
Climarad Ventura V1C-S
Decentralised heating, cooling & ventilation on low temperature heating, with heat recovery



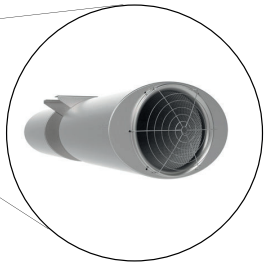
Climarad Vita H1C-S
Decentralised heating, cooling & ventilation on low temperature heating, with heat recovery



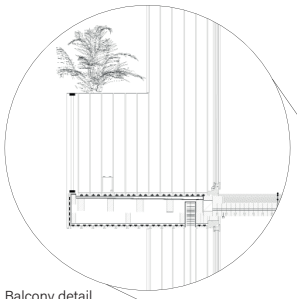
City heat network Rotterdam



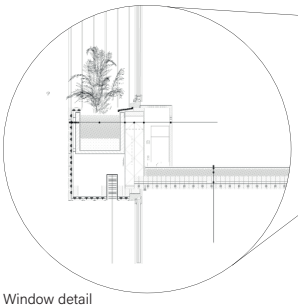
NOVENCO pressure ventilation for parking garages



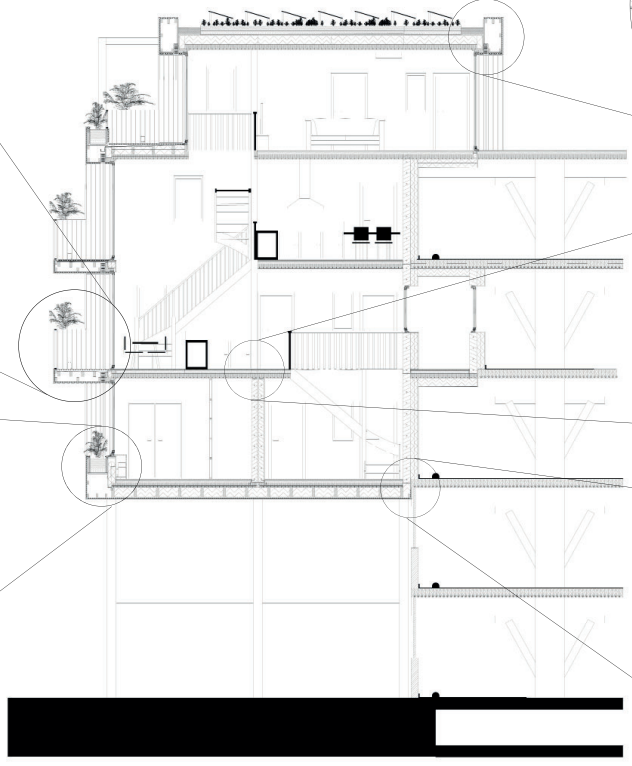
Section 1:50

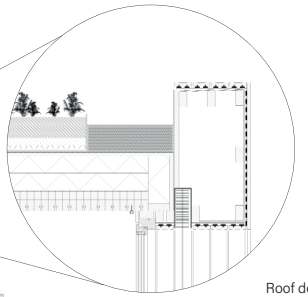


Balcony detail

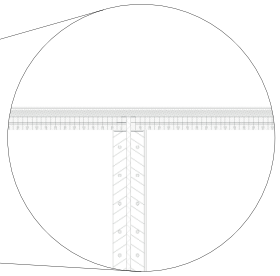


Window detail

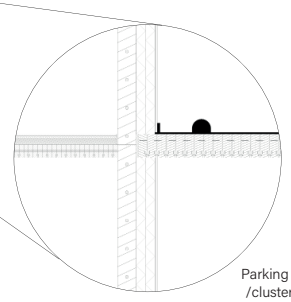




Roof detail

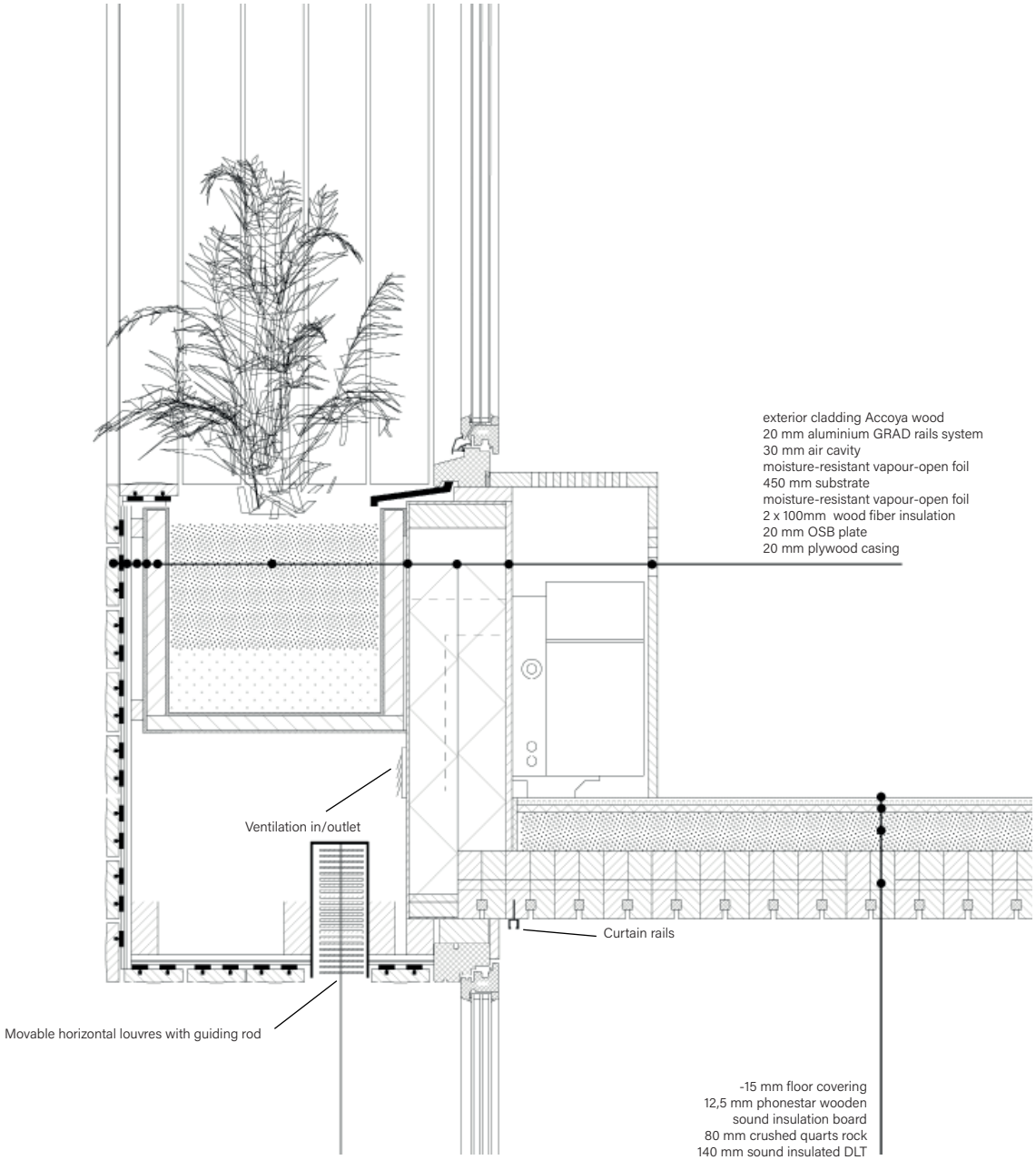


Inner-cluster floor detail

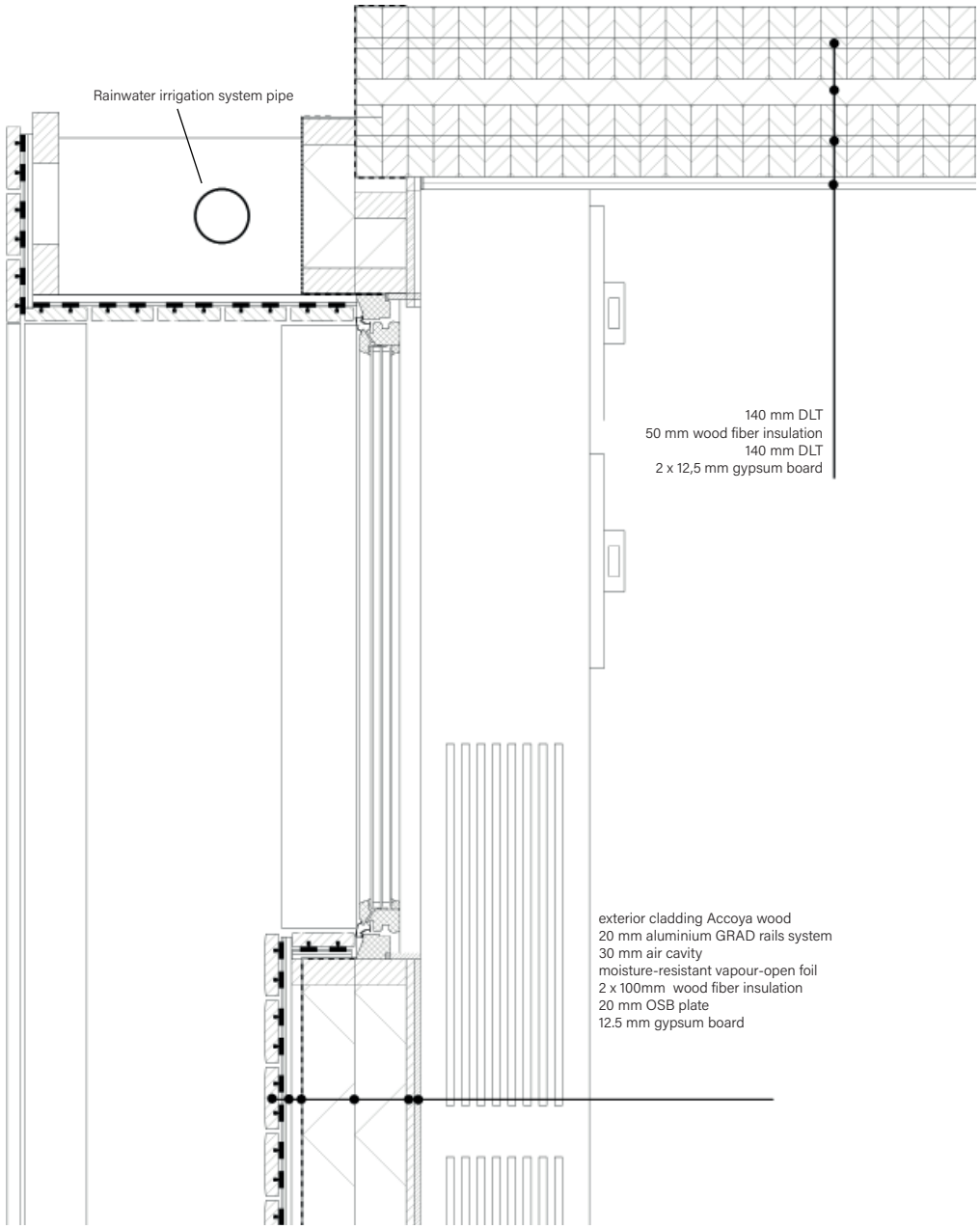


Parking garage /cluster detail

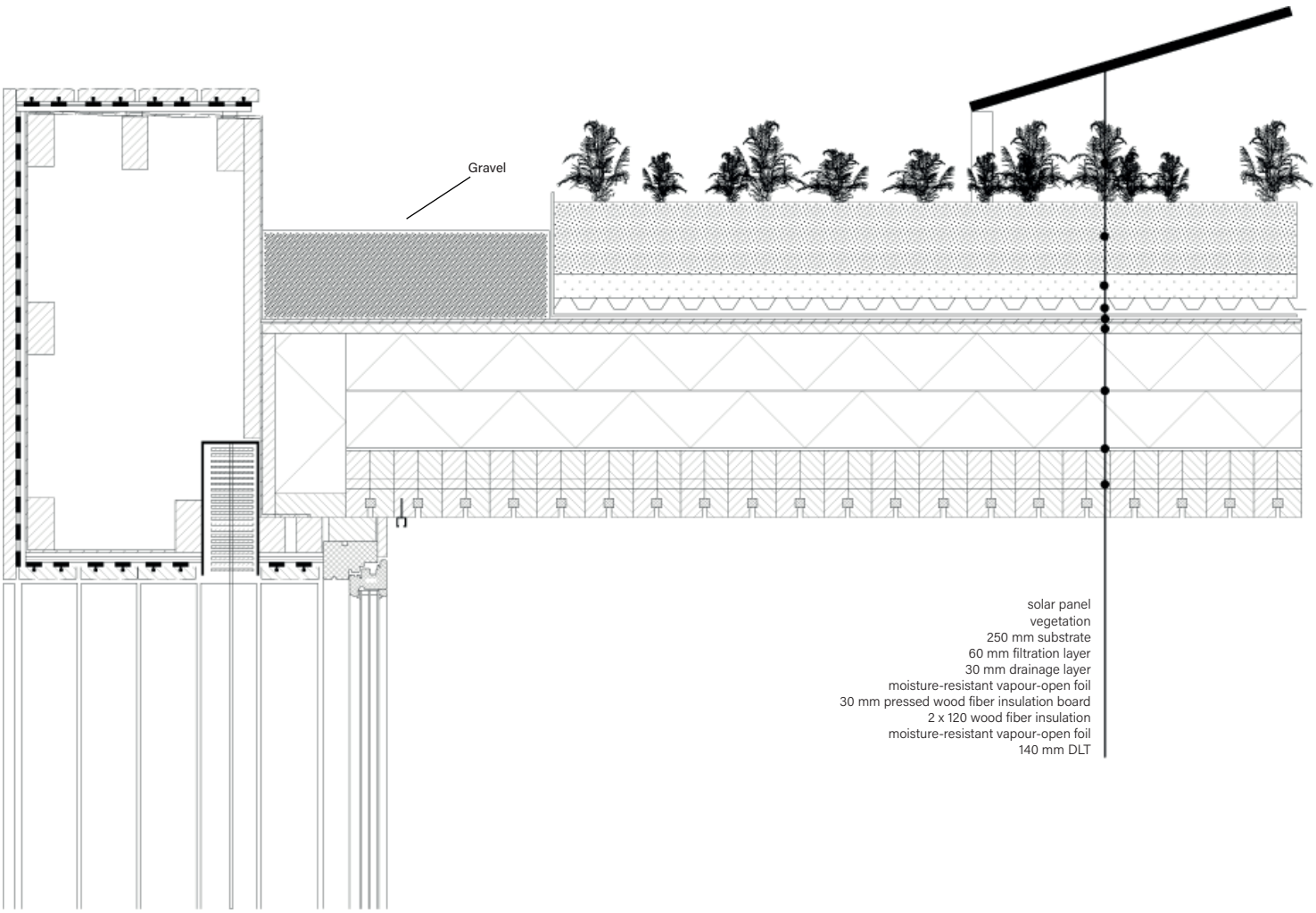
Vertical
window detail scale 1:5



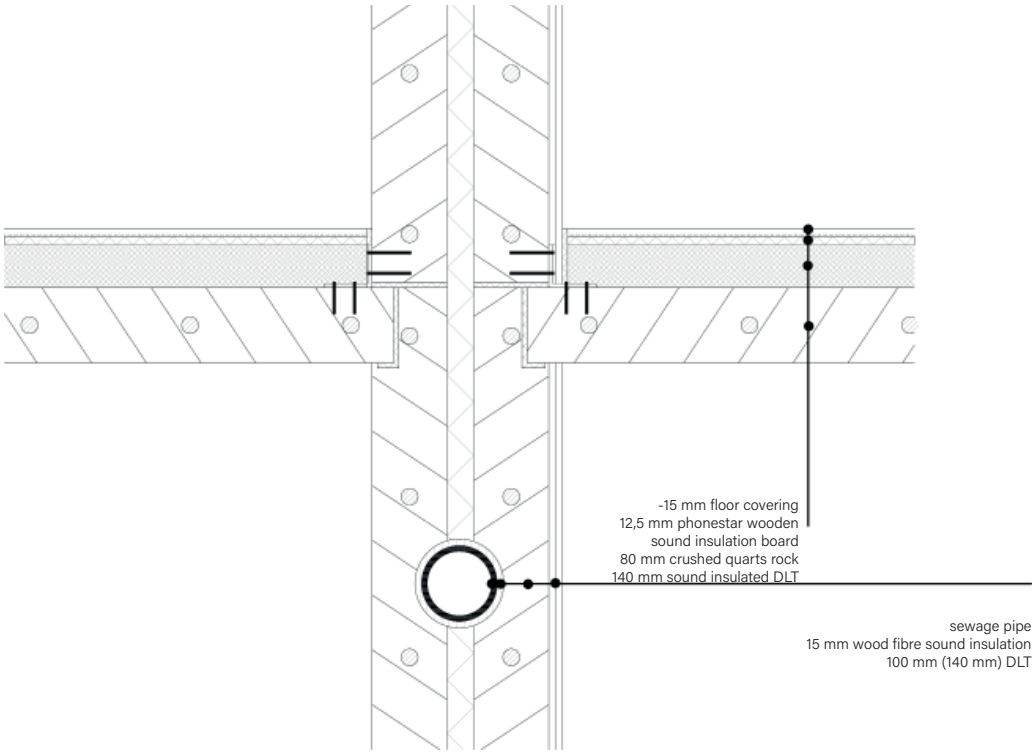
Horizontal
window detail scale 1:5

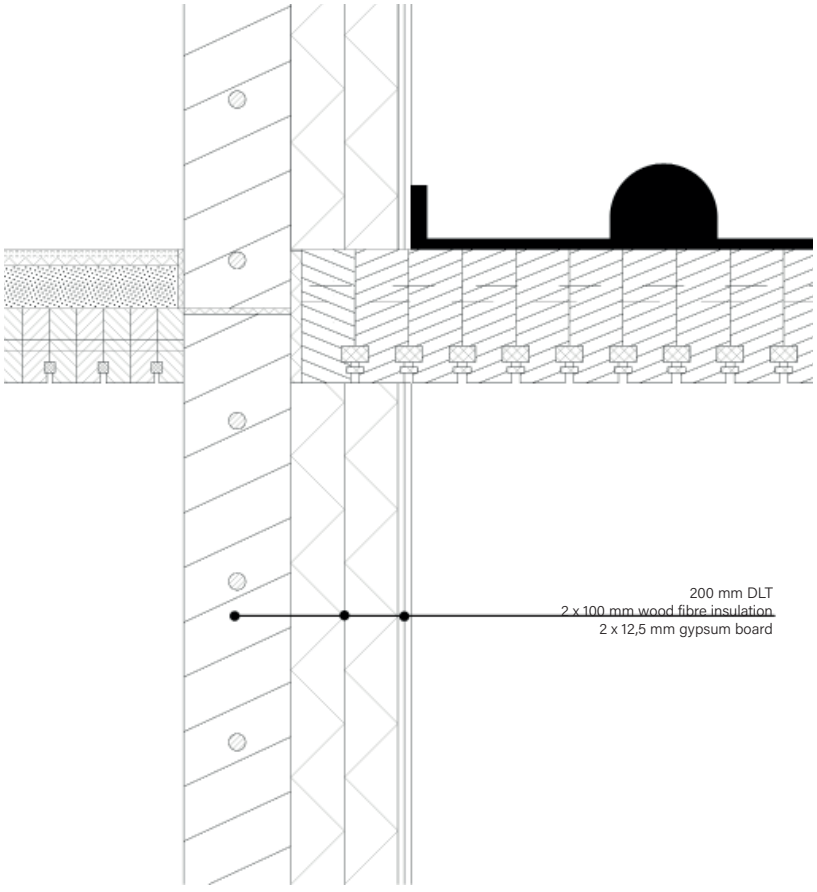


Vertical
roof detail scale 1:5

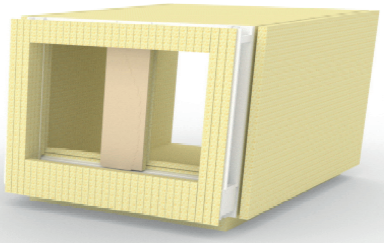


Vertical
floor details scale 1:5

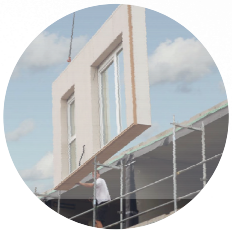




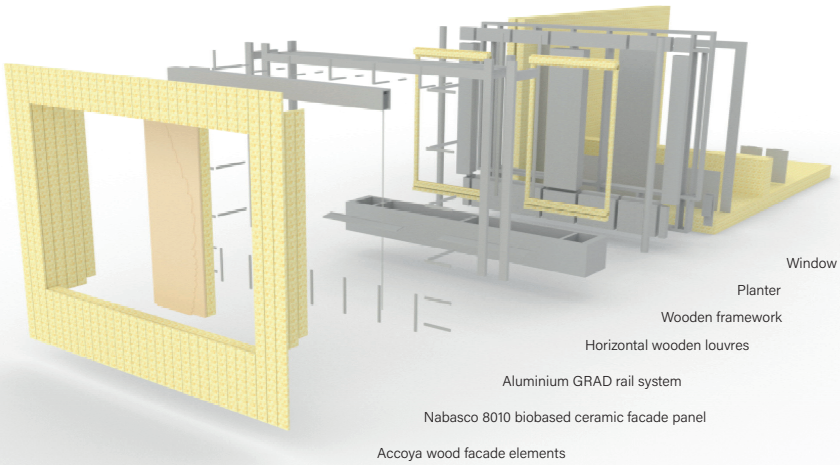
Facade



- Prefab facade elements
- 4 meters wide
- Integrated irrigation system for planter
- Horizontal external wooden louvres
- Double openable windows

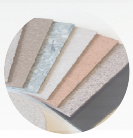


Facade

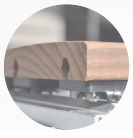


Wood panel interior finishing
Timber frame construction
Wood fiber insulation
Window frame wood
Planter
Wooden framework
Horizontal wooden louvres
Aluminium GRAD rail system
Nabasco 8010 biobased ceramic facade panel
Accoya wood facade elements

Accoya wood facade elements



Nabasco 8010 biobased ceramic facade panel

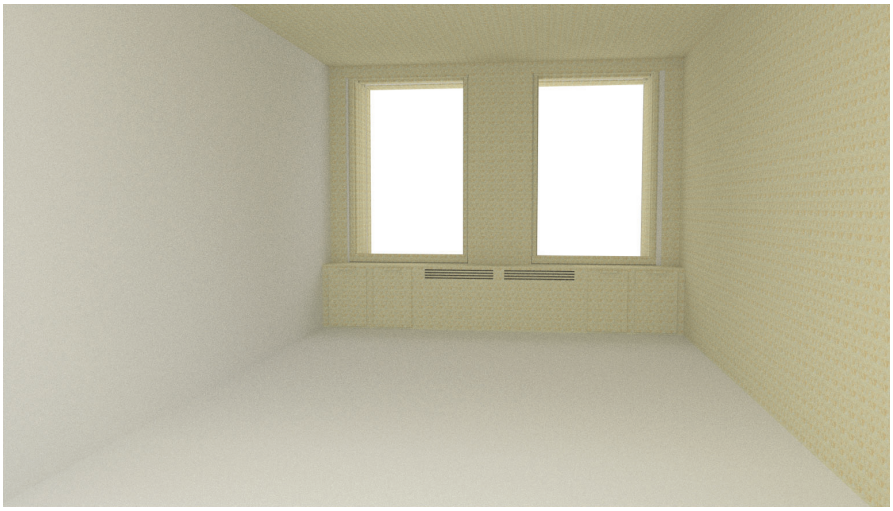


Aluminium GRAD rail system

Planter

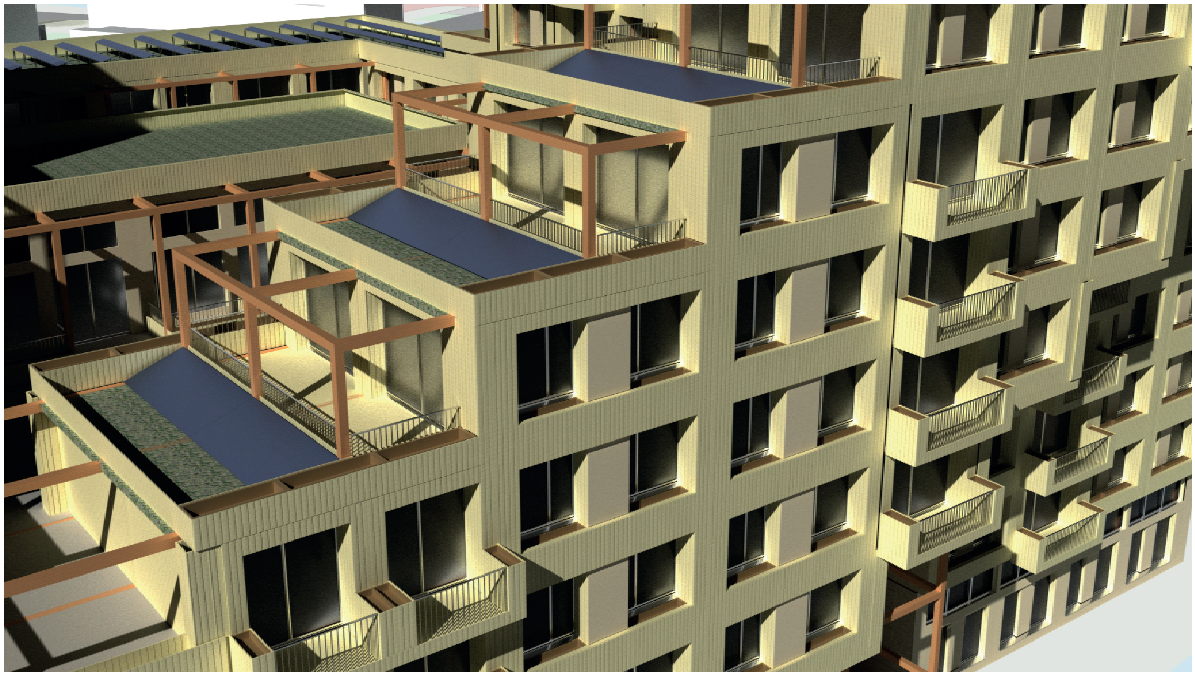
Wood fiber insulation

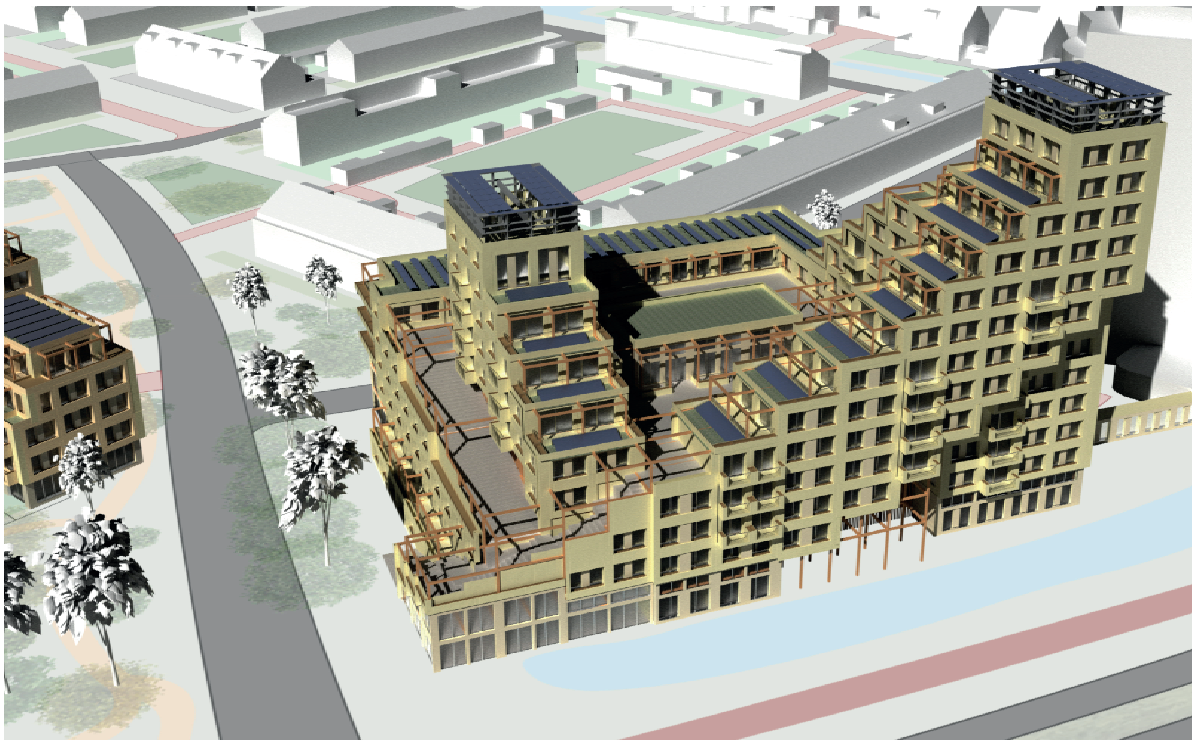
Facade



Usable window sill with storage cabinets and a depth of 350 mm

50% of floor, walls & ceiling is visible (constructive) DLT wood



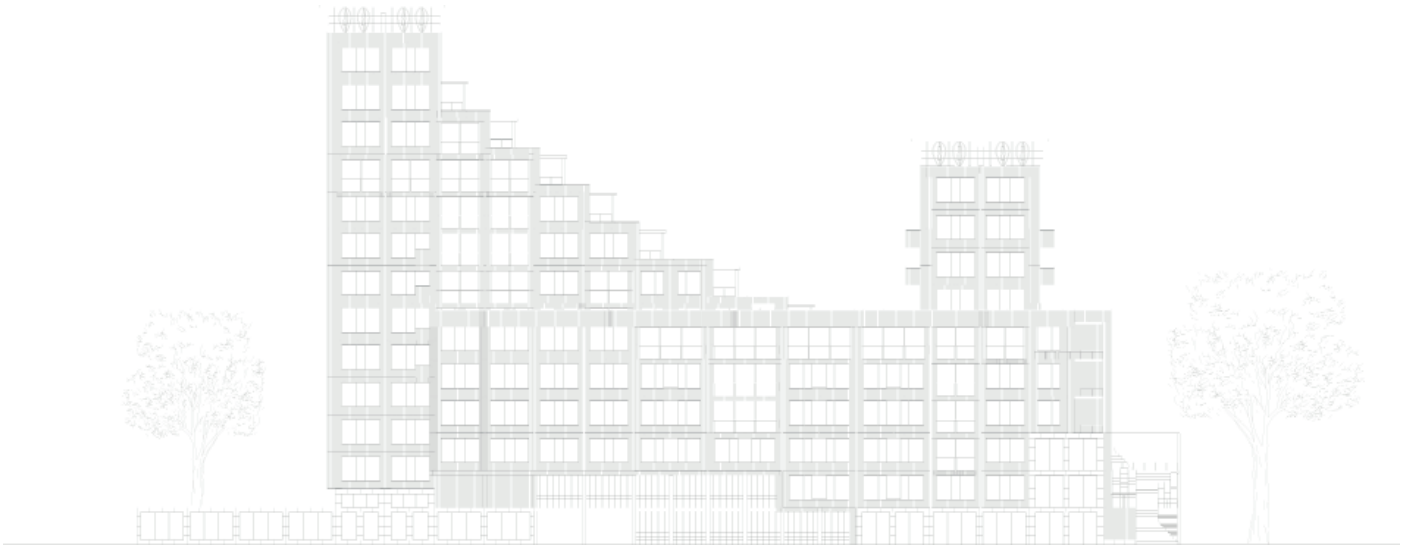


Elevations 1:500

South-east elevation

North-east elevation

Elevations 1:500



North-west elevation

South-west elevation

Clusters 1:500

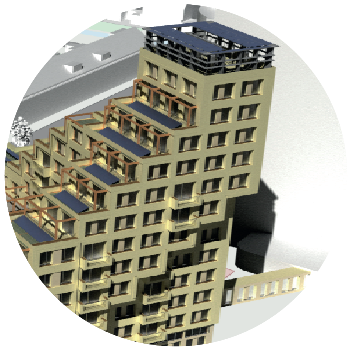
Floor +5

Floor +6

Floor +7

Floor +8

High-end cluster



- Higher incomes

- Spacious private and shared spaces

- For example:
Expats
Recently divorced
Tourists

Clusters 1:500

Floor +1

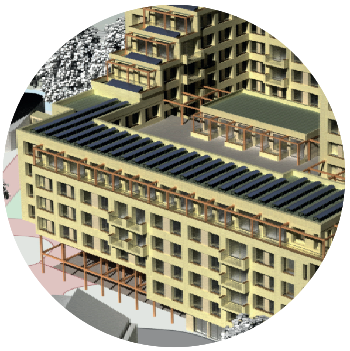
Floor +2

Floor +3

Floor +4

Floor +5

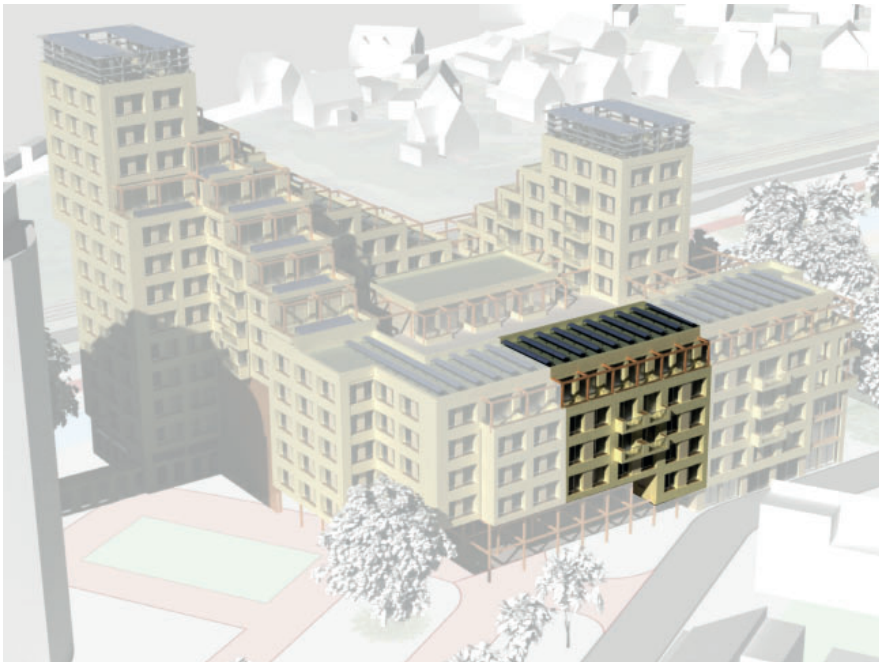
Regular cluster



- Middle incomes

- Variety in spaces and dwellings

- For example:
Recently divorced
Tourists
Economically homeless

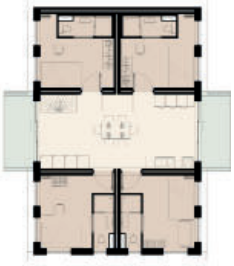


Clusters 1:500

Floor +5

Floor +6

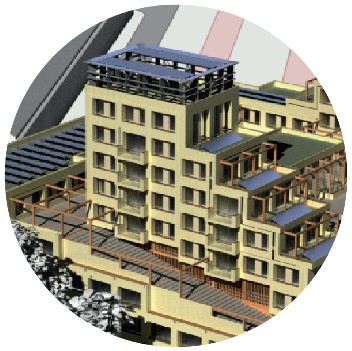
Floor +7



Floor +8

Floor +9

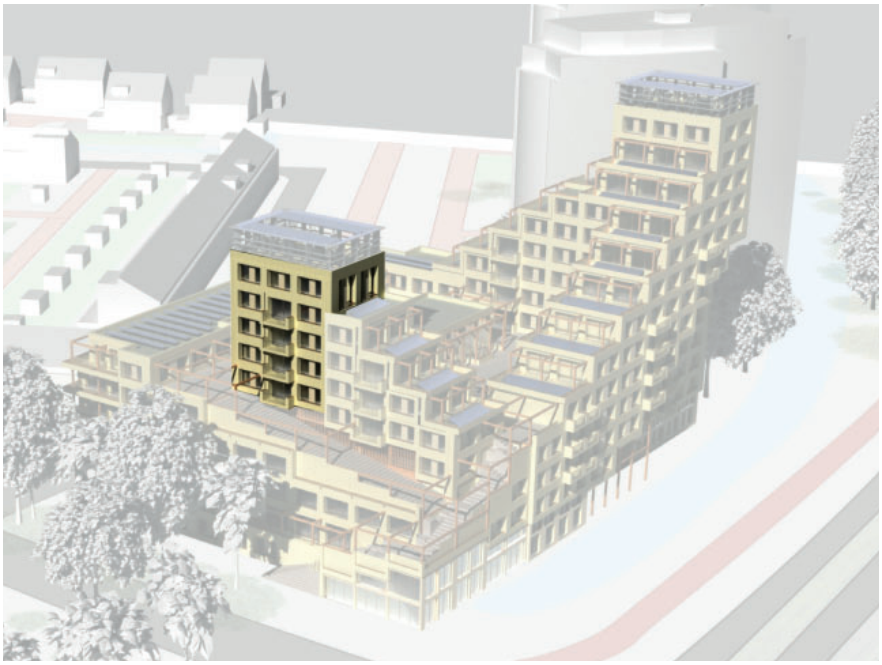
Budget cluster



-Lower incomes

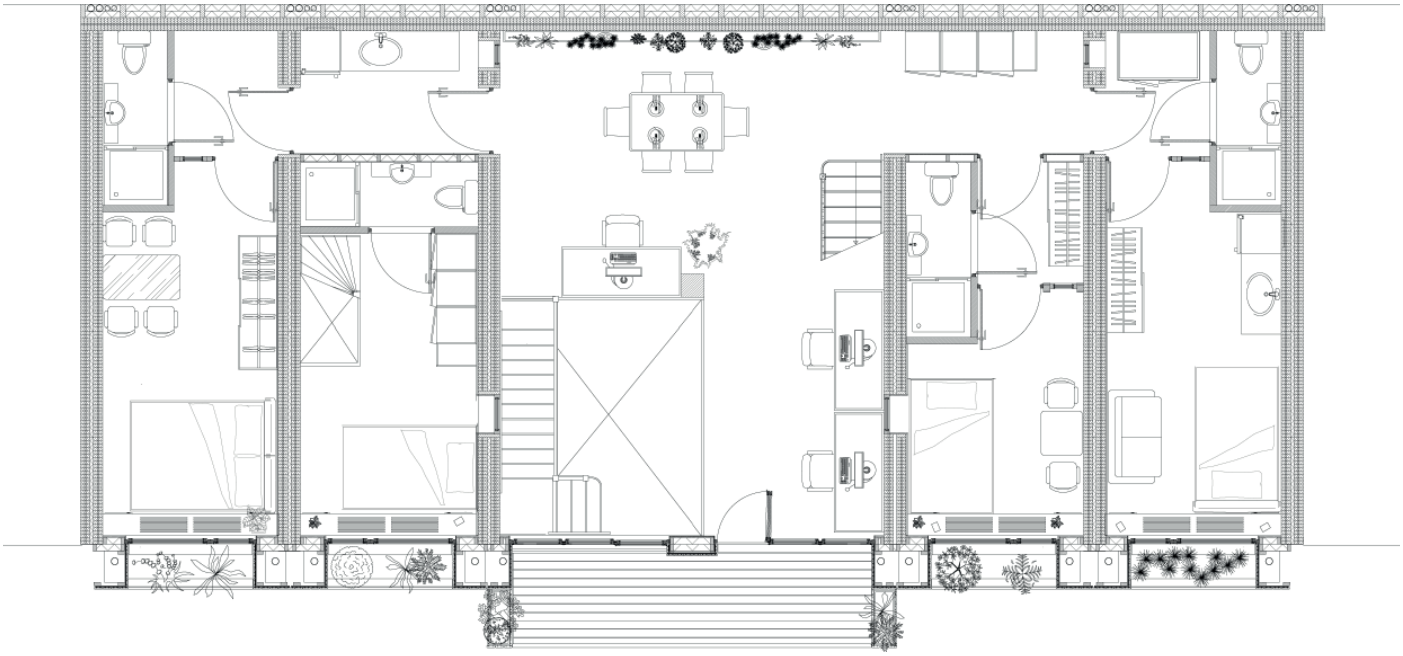
-Basic and minimalistic amenities and dwellings

- For example:
Refugees
Economically homeless
Seasonal migrant workers

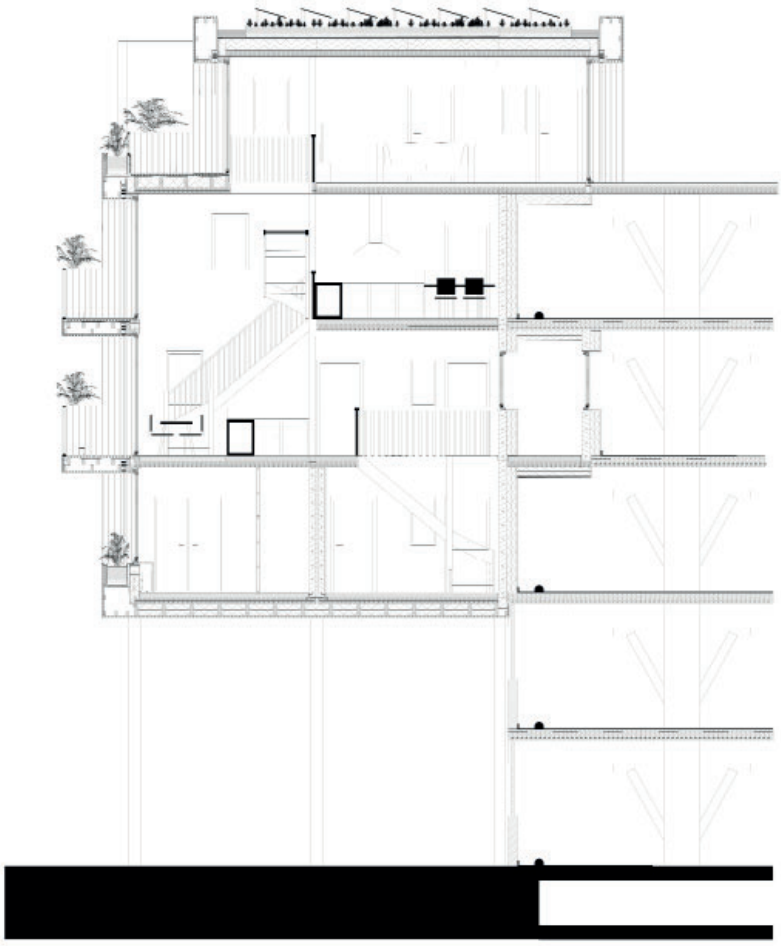


Cluster

Floor plan regular cluster

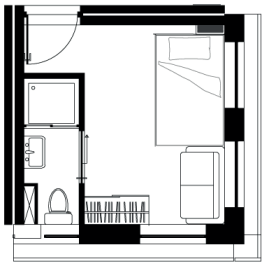


Section shared spaces regular cluster

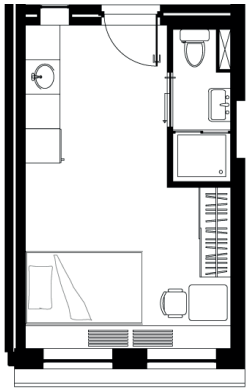


Types of dwellings

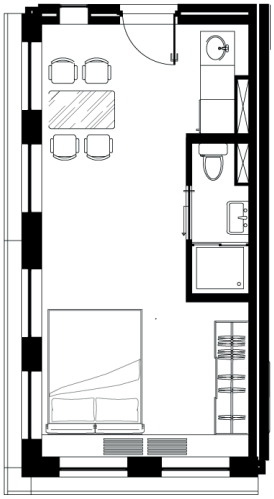
Room +
16 m²



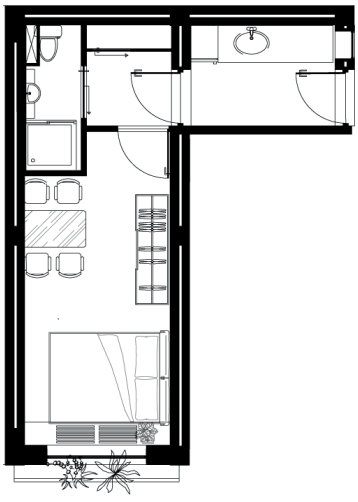
Studio
24 m²



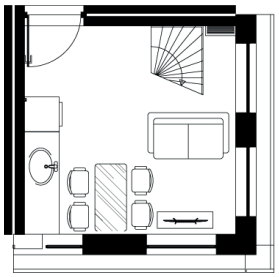
Studio +
32 m²

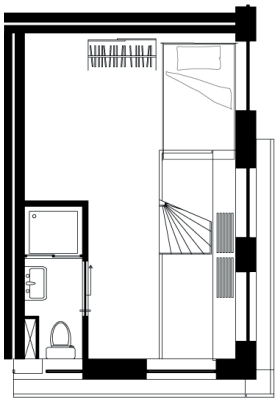


1.5 studio
40 m²

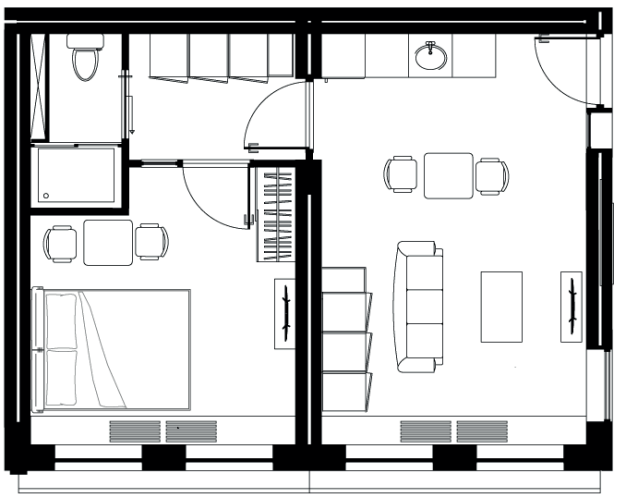


Duplex
40 m²

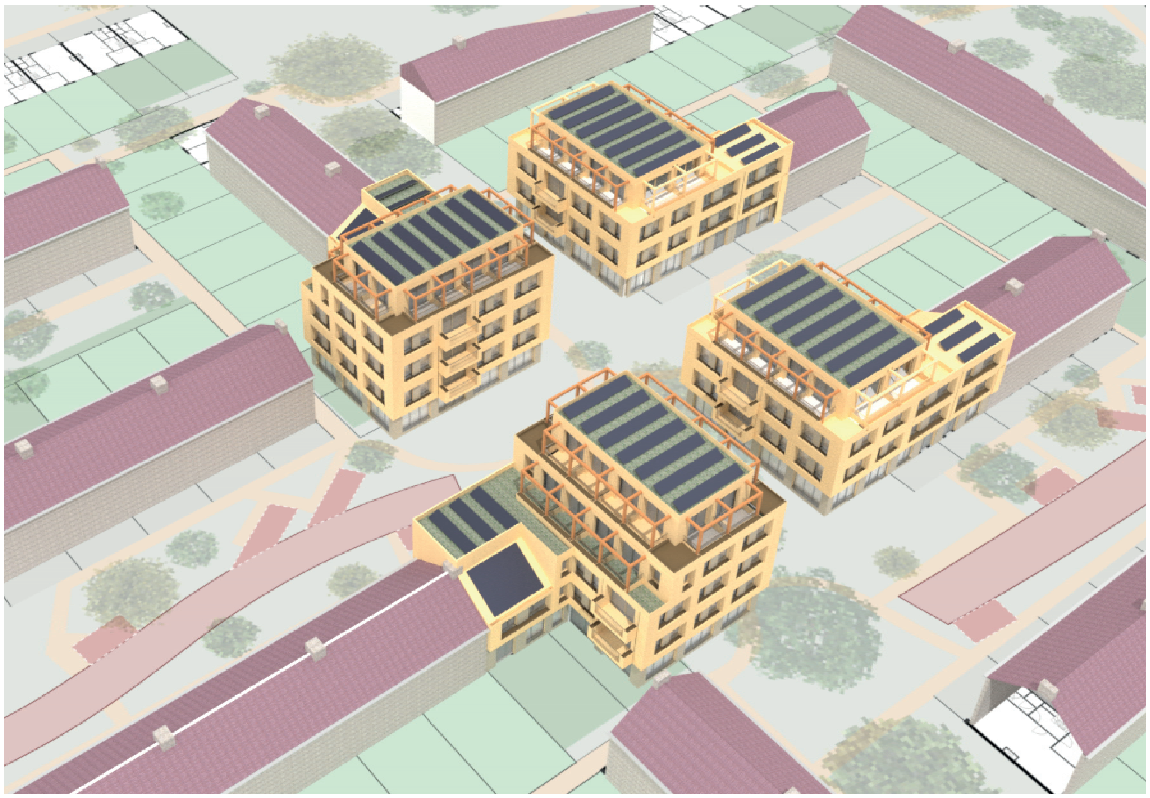




One-bedroom appartment
62 m²



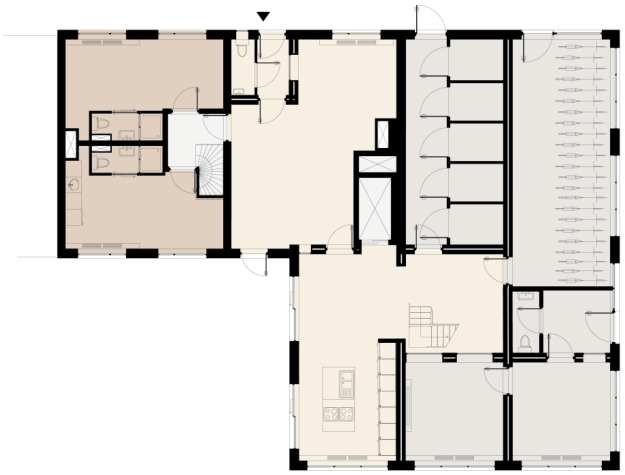
Neighbourhood clusters



Neighbourhood clusters

Floor plans

Ground floor



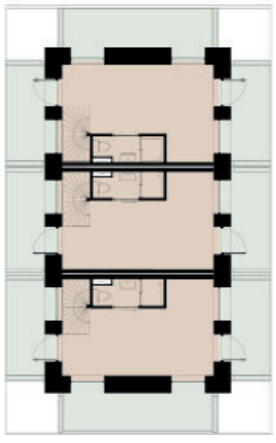
Floor +1

Floor plans

Floor +2

Floor +3

Floor +4



Impressions

Birds eye view south-east

Street view north-west

View from communal garden

Conclusion

17 neighbourhood blocks of +-20 inhabitants

Densification without mass demolition

Design as a method of social interaction

Integrated network of shared spaces

Space for inhabitants ánd biodiversity

148 new dwellings in the mobility hub

Introduced functions for sustainable living

Improved streetscape

Parking spaces removed from sight

Sharing economy at the core