Eindhoven University of Technology

MASTER

The Age-friendly Post-war neighborhood

Adapting age-specific neighborhoods to an aging population

Kromhout, Ward

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Adapting age-specific neighborhoods to an aging population

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Architectural Urban Design & Engineering

The Age-friendly Post-war neighborhood

Adapting age-specific neighborhoods to an aging population

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Summary

This graduation report is part of the graduation studio Healthy and Sustainable Cities, which focusses on creating healthier and more sustainable cities in Europe. Apart from this goal, the further definition of the topic of the project is up to the students.

This particular graduation report is about the demands of older people in the city. Older people have different requirements for the city which are not always met, especially in older neighborhoods. The project is located in the post-war neighborhood Eckart, Eindhoven, a neighborhood with an above-average share of older residents, which isn't fitting the needs of these older residents currently.

Eckart is an example of a more prevalent problem. Neighborhoods from the post-war period often are designed with a focus on families with children, with cars as the main mode of transportation. In the last decades the attention for the demands of older people has increased, and in many post-war neighborhoods projects are built to improve the situation for older adults.

Introduction

The whole world ages. The overall quality of life and well-being of people improved a lot in the last decades, and at the same time families have become smaller. In the Netherlands, this process already started some decades ago. In 1950 the share of people above 65 was only 6.7%. In 2020 this had more than doubled to 14.8% (CBS, 2021). It can be expected that these population changes also affect the way cities should be designed. This project looks at a neighborhood with many older people in Eindhoven to find out what ways this neighborhood could be increased to better fit this older population. What are the challenges for these older people?

The first part of this report looks at the theoretical research on older people in the city. For this research, I looked at older people in the city through three different perspectives, namely active aging, inclusive design, and older people in the housing market. This part will start with an introduction that defines the target group. After this introduction, we will look at older people in the city through the perspective of Active Aging.
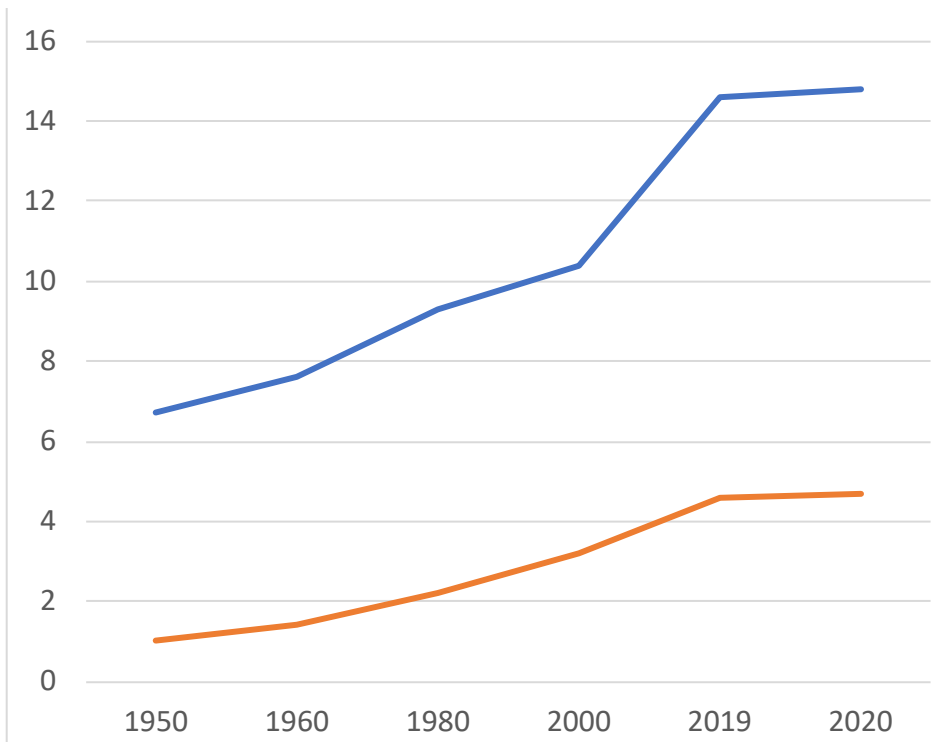

Image 1: share of older people in the Netherlands

— Aged 65 or higher (%)

— Aged 80 or higher(%)

Active Aging is the aim to create a city in which people can age more healthy, which is promoted by the World Health Organization. Secondly, it looks at older people from the perspective of inclusive design. Inclusive design is the aim to design products, services, or environments that can be used by everyone without the need for special adaptations. Thirdly, this chapter looks at older people through the perspective of older people as housing consumers. In the last years, there has been increased attention for the design of housing specifically for older people. This means there are new housing typologies and new ways for older people to live. At the same time, older people play a role in the stalling of the housing market. The theoretical research will be concluded by an aggregation of the findings made through these perspectives.

In the next part the location, Eckart, will be analyzed. The historic ideas behind the neighborhood as well as the physical, socio-economic, and organizational characteristics of the neighborhood will be analyzed, and the value of the buildings in the center is evaluated.

In an intermission between the research and the design of this report, an impression of the needs of older residents of the neighborhood is given in the form of a mind map. This mind map is created with the help of interviews with the residents of the neighborhood. These interviews have been conducted by members of the team "Bejaardenhuis Zonder Muren" that looks for ways for older people in Eckart and Vaartbroek to age in place.

The third part of this report explains the vision created for the redevelopment of the center of Eckart. This vision is based on the findings of the literature research in combination with the analysis of the neighborhood.

Part four will explain the design of the redeveloped center in detail. It looks at the spatial configuration, the different housing options, the placement of facilities in the redeveloped center, mobility, and green space. Visualizations of the different areas will show the materialization of the design. After this, the design will be evaluated in terms of the goals set in the vision.

1. Who are the old?

 The word "old" has been controversial for quite some time. While often the word is used to describe a certain age group, often the people in this age group don't identify with being old themselves. Traditionally there are negative stereotypes around old age, such as frailty, dependency, and (mental) health issues. These negative connotations also resulted in a debate about the "right" term to use for older people. In this report, I'll use the terms "older people" and "older adults", since these seem to be preferred above "elderly" or "senior". (Brown et al., 2011; Pinsker, 2020)

To better know which group of people this research focuses on, it is important to have a better definition of older people. In the past, the term "older people" was used for people who couldn't work anymore and couldn't care for themselves. In the introduction of social security, like pensions, bureaucracy demanded a categorization based on age groups. This resulted in the age of 65 becoming synonymous with being old. Although this categorization has practical uses, this definition of older people is often not accurate. Aging is a gradual process and people don't become old at once on their 65th birthday.

Different age-groups

Although these new categorizations solve problems of feeling discriminated against age for the younger group of older people, these concepts introduce new problems of their own. The new categories define a new group of people with lost agency and autonomy. This creates the dilemma of how we should value this life stage. In the discussion of several conceptions of the later stages of life, Wahl & Ehni (2020) therefore conclude that these concepts should be used with caution. The next paragraphs will go into the lifestyles of older people in the later stages of life. Although these paragraphs refer to these groups of older people as active and frail older people, it is clear that these are not separate groups of people, and that there is no clear border defining who are active and who are frail older people.

Active older people

While the categorization in active and frail older people can be problematic, the research to these different stages of live did help defining the general changes in lifestyle most older people face in these stages.

The most defining changes in the lifestyles of people in the Third Age according to Laslett (1991) are caused by the experience of an empty nest (the last child leaves the household) and the changing role as a professional. This results in a change in the framing of the identity. Individuals re-evaluate their life and may set different priorities while markets see the Third Age as a new period with changes in consumption and life styles. Furthermore, the freedom of work and family obligations allows people in the Third Age to fulfill their life.

Neugarten (1974) focusses more on retirement as a life event which distinguishes the age of the young-old from mid-life. Since many people retired early in the '70s, Neugarten defines the young-old as those who are between 55 and 75. The young-old have many similarities with people in their mid-life, but Neugarten also notes several differences. The first difference are the smaller households, mostly couples and widows. Secondly, Neugarten notes the financial changes coming with retirement. Since the young-old are a diverse group, Neugarten expects that their needs are diverse too, both for self-enhancement and social participation. There could be more options in work, education and leisure for older people. Neugarten expects housing, location and transportation needs to be influenced by how the young-old spend their leisure time. The young-old will seek places where they can spent this time meaningfully. The increase in single households also means a need for more ways for singles to live together.

Frail older people

Both Neugarten (1974) and Laslett (1991) make the distinction between active and frail older people to highlight the emergence of the group of active older people. Frail older people are mostly defined by mental and physical health problems, which make the individual dependent on others and on adaptations or healthcare devices.

Laslett (1991) notes that this phase is usually short and should be seen as less representative for the full life. Neugarten (1974) values the importance of this phase somewhat higher, since she expects the number of people in this phase to grow as well. In her analysis, there should be invested in good care for frail older people. She also notes this will require a higher budget for healthcare. Neugarten (1974) also notes the need for social services and special features in public areas or homes to allow frail older people to enable them to live their day-to-day lives, and social services that focus on social inclusion, to prevent psychological problems related to loneliness.

Age related Changes in health

Aging is often seen as a process of declining competence, both physical and psychological. While this is indeed an important factor of aging, it is important to understand this process as a personal, multifaceted, and unpredictable experience instead of a fixed collective narrative. This process is personal in the way that it differs from person to person. For example, someone can become dependent on others early in life, while someone else still lives completely independent at the age of ninety. The process is multifaceted because not all aspects of competence decline at the same rate. For example, someone can still be mentally very capable regardless of the hearing problems he or she experiences. The process is also unpredictable in the way that there isn't only a decline of competence, but also an increase in competence is possible. For example, a person can recover from a broken leg or undergo surgery for cataracts. Some examples of changes in competence people experience generally can be changes in hearing, vision, strength and stamina, mobility, and bowel and bladder weakness. (Hauderowicz & Serena, 2020)
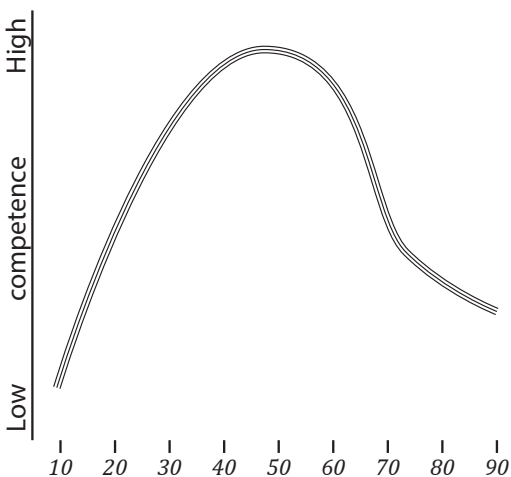
Image 2: Modernistic view on aging. Lives follow a fixed curve of competence, centered around the productive adult life.
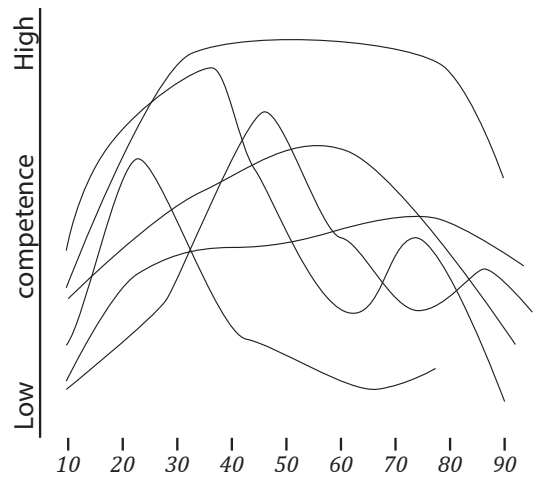
Image 3: new perspective on aging. Lives aren't fixed and competence can increase or decrease through life. (based on Hauderowicz & Serena, 2020)

2. Active Aging

 The debate about active aging is led by the idea that if people stay active, their lifespan increases and they stay healthy for longer. This results both in more quality of life, and lower healthcare costs. The World Health Organization (WHO) is leading in this debate and developed a Policy Framework for Active Aging (World Health Organization, 2002). According to the WHO the term "active aging" refers to continued participation in social, economic, cultural, spiritual, and civic affairs. Their goal is for people to have a longer life while also maintaining quality of life. Consequently, this perspective looks not only at older people, since healthier lifestyles at younger ages will influence health in a later stage of life too.
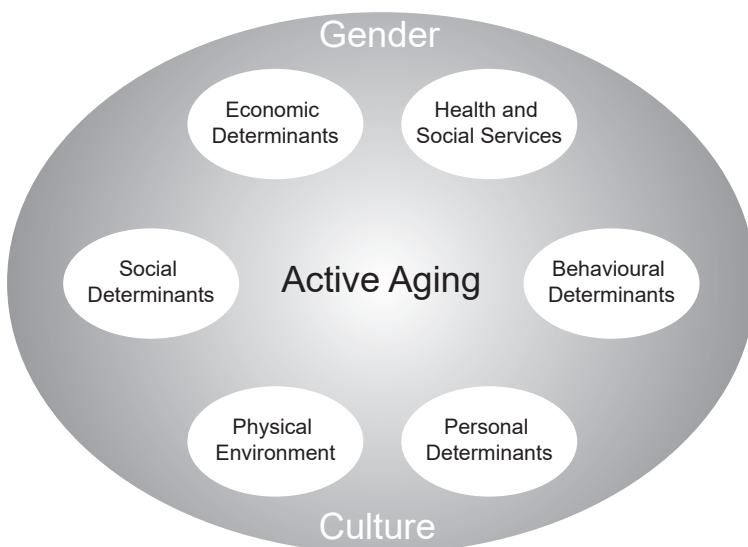
Image 4: Determinants for Active Aging (WHO, 2002)

The Framework for Active Aging identifies multiple determinants that influence the opportunities of people for long qualitative life. These determinants are shown in image 4. Culture and gender are cross-cutting determinants, which cannot be influenced by policies. Culture changes how people age indirectly through its influence on the other determinants, while gender can be seen as a lens through which to consider the appropriateness of various policy options.

To elaborate on the influence of the social and physical environment on active aging, the WHO developed the Global Age-Friendly Cities Guide. (World Health Organization, 2007) This guide has been developed in a bottom-up participatory process, in which older people in 35 cities from all over the world have been interviewed in focus groups
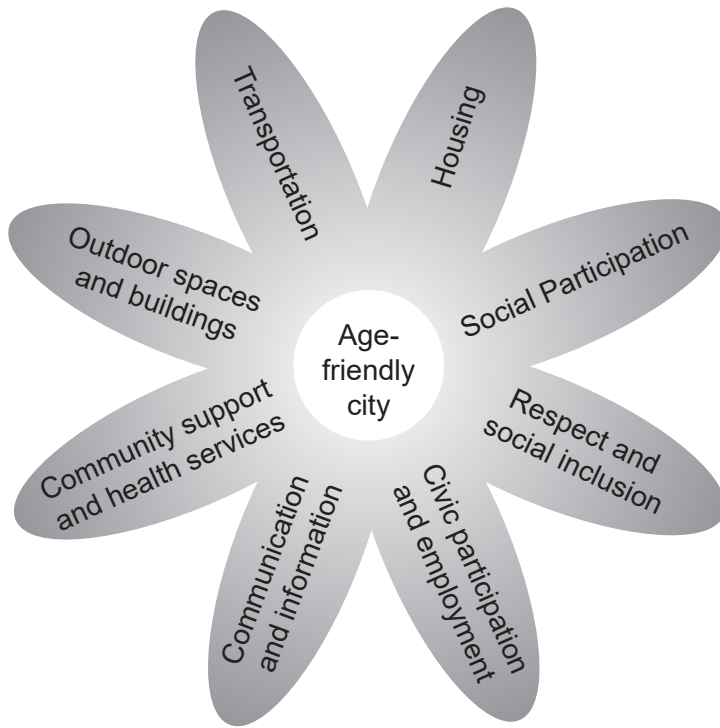
Image 4: Topics Age-Friendly City Framework (WHO, 2007)

about their situation. They were asked about eight discussion topics covering the features of the city's structures, environment, services, and policies that reflect the determinants of active aging.

The first three topics, transportation, housing, and outdoor spaces and buildings, reflect the physical environment of older people. They influence factors such as mobility, safety from injury, security from crime, healthy behavior, and social participation of people. The next three topics, social participation, respect and social inclusion, and civic participation and employment, reflect the social environment of older people. Communication and information and community support and health services are topics that relate both to physical as social problems.

The Global Age-friendly Cities Guide describes per topic the barriers older people experience in cities and concludes per topic with a checklist of age-friendly features. Since the guide is developed for cities all over the world, both less developed as more developed cities are addressed. The wide applicability of this guide is its downside as well. Since the guide is designed to be applicable all over the world and is designed to overcome barriers faced by older people, most of the solutions reported in the checklist are pragmatic. An overview of this checklist can be found in Appendix A.

The Active City

From the side of city design, the guide "the Active City by Urhahn (2017) is interesting to see practical interpretations of how an active city could look. This guide, which describes and translates the ambition of the city Amsterdam to be an "active city" to 10 ambitions and design tools, highlights the topics mobility (cycling and walking), sports, and play & leisure.

Since this guide was written specifically for Amsterdam, not all ambitions are directly translatable to the Eindhoven context. It is useful to look at the ambitions to see how they translate to our context.

Image 6: Connect urban cores with good public transport, in combination with well designed routes for slow traffic

Cycling and walking

Ambition 1: connected urban cores
Good connections give commuters more options for their journey. Good and rapid public transport, in combination with the bicycle, can be an alternative for the car.

Ambition 2: cycling and walking in low-traffic neighborhoods
Everything in the neighborhood can normally be reached by bike. Low-traffic neighborhoods allow for safer streets for pedestrians and bicyclers.

Ambition 3: Shared streets
By sharing streets, cars have to adapt their speed to slower traffic. This "traffic calming" can create more space for slow traffic.

Ambition 4: Safe and obstacle-free public space
Obstacle-free routes can help especially vulnerable people such as older people, disabled people, and children. Clear street profiles and good sidewalks protect pedestrians.

Image 6: In shared streets, cars have to adapt to the speed of slower traffic. The design of the street can slow down fast bicycles as well.

Sports

Ambition 5: Open sports
Open sports facilities in the public domain mean they can be shared by different users. Costs and responsibilities are shared as well. Sports facilities can become new types of parks.
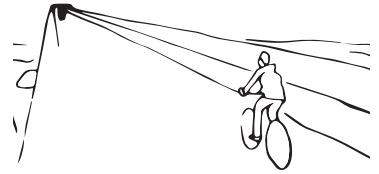

Image 7: Design public sport facilities that can be shared by everyone

Ambition 6: The city as Gym
Public space can be designed so that it offers the oppor-
tunity for sports and physical activity. Squares and parks
offer all sorts of opportunities for sports and games.

Ambition 7: Water as space for physical activity
Amsterdam has a lot of water. The ambition is to open
this up for water sports in the canals, lakes, and open
water.

Play and leisure activities
Ambition 8: places without borders
 Flexible layouts allow users to be creative. Allow dif-
ferent age groups to use the same space, and combine
functions.

Ambition 9: The low-traffic neighborhood for play and
relaxation
Neighborhoods can provide a safe place without much
traffic where children and older people can play and walk
without difficulties.

Ambition 10: Attractive greenery
Green space can be used as an attraction in bigger parks
or used to create a dense network of attractive routes for
people to walk or cycle.

Image 8: Low-traffic neighborhoods
can provide places for play and
relaxation

Image 9: Green space can act as an
attraction in large parks with plenty
of space

3. Age-inclusive design

The idea of age-inclusivity is strongly related to the problem of ageism. This concept was first coined in 1969 by Robert N. Butler, the first director of the National Institute on Aging. The problem of ageism consists of three elements, namely prejudice against older people, discriminatory practices, and institutional practices and policies that perpetuate stereotypes. Age-inclusive design has the goal to design without prejudice to older people and to design objects or places that don't discriminate against them.

Important in the discussion about age-inclusivity in urban design is the idea of "age segregation". In the 20th century, with the rise of the welfare states in Europe, age-specific institutions were promoted. Children went to the daycare while older people lived in retirement homes on the edges of neighborhoods. As a result, cities had diminishing places where people of different ages meet. Older people were removed from public life and therefore lost their representation. Also, since public life became much more homogenous, planning became only more ageist and more age-specific places could develop.

Universal Design

To understand age-inclusive design, both the ideas of inclusive design and universal design are helpful. Inclusive design has been defined as a process in which a product, environment, or service is designed to be usable by as many people as possible. A toolkit developed at the University of Cambridge (2021) describes this process as follows. The process exists of three phases: exploration, creation, and evaluation, which follow each other up in successive cycles. In the exploration phase, the needs of the user are analyzed. In each cycle, the understanding of these needs becomes clearer. The creation phase creates possible solutions, and the evaluation phase leads to stronger evidence for these solutions.

The idea of universal design is based on the idea that there is only one population, comprised of individuals with diverse characteristics and abilities. Therefore, universal design tries to take into account all these differences so that everyone can use the product, environment, or service. While inclusive design describes a design process, universal design is based on seven principles but has the same goal. (The Center for Universal Design, 1997)

1.Equitable Use
2.Flexibility in Use
3.Simple and Intuitive Use
4.Perceptible Information
5.Tolerance for Error
6.Low Physical Effort
7.Size and Space for Approach and Use

The seven principles of Universal Design.

Since these principles help design inclusive environments for all people, they also play a role in designing age-inclusive spaces. When we look more in detail into these principles, we can see the following.

In the context of age-inclusive urban design, equitable use means that there shouldn't be spatial segregation of older people. One way to achieve this is by creating age-inclusive spaces, where people of different ages all come together and share facilities.

Flexibility in use is important in the design of age-inclusive spaces as well. Since aging affects mobility and perception, older people often have different needs to feel secure. In environments not designed for flexible use, older people can withdraw, since they don't feel safe outside. Flexibility can be created by designing flexible spaces, but also by enabling communities to grow, since these communities can act as a safety net.

Simple and intuitive use of the environment is especially important to older people who have lived in a neighborhood for a long time. Neighborhood changes can have a big impact on older people who often have a long history in the neighborhood and have memories that attach them to certain places. This calls for a well-thought analysis of the impact of neighborhood changes on older people. (Burns et al., 2012) Conversely, older neighborhoods often aren't designed very legible, which can be problematic for older people.

Principle 4, perceptible information, relates most to what people think of by universal design. It relates to the communication of information to the user, regardless of sensory abilities or ambient conditions. Examples are tactile pavements and big lettering, but also well-lit bus stops or physical communication in addition to online communication. In the research part of this report, I won't focus on these elements of universal design since they often relate to specific and limited problems, but in the design, it is important to take this principle into account.

Principle 5, tolerance for error, is mostly related to preventing older people from harm in traffic in this context. Because of the changes in mobility and perception, older people are more vulnerable in traffic. Some ways

to prevent harm in traffic are speed reduction for cars, well-maintained sidewalks with reliable pavement, and clear, legible streets.

Principle 6, low physical effort, relates to reducing the necessary effort to use a design. While this principle is important in fields like architecture and industrial design, it has less practical use in urban design. Some examples that will come back in the design are gentle slopes instead of, or in addition to, steps, and smooth pavement that allows wheelchair users to ride without effort.

Principle 7, size and space for approach and use, calls for appropriate size and space provided for the approach, reach, manipulation, and use of the design, regardless of the user's body size, posture, or mobility. Since modernism, architects rely a lot on rules and standards based on a standardized model of the human body. Universal design principles push these standards towards designs that include people of different sizes, in wheelchairs, or with other disabilities. Examples in urban design are accessible bus stops, slopes, and wide enough bicycle paths.

Flexible spaces

The space between the private and public often is important to make spaces flexible in use. This space can act as a safe zone to gaze at public life, as a place to have unplanned encounters, or as a place to express your identity to the passers-by. Examples of transitional space and how these spaces create flexibility in the ways people engage with others are shown below.

The encroachment zone

The encroachment zone, or "stoep" in Dutch, has always been an extension of the private house to the street. Traditionally, the area in front of canal houses in cities like Amsterdam and Utrecht was part of the building. It was used to build the stairs to the raised front doors and for the windows of the basements. Nowadays, this area still is a place owned by the residents. People park their bikes in this place, often show their personal preferences with small gardens, and often this area leads to informal encounters between neighbors. the encroachment zone also acts as a small barrier that protects the privacy of the homes. In its turn, this makes the street safer since it leads to more open windows and eyes on the street. According to Van Ulden et al. (2015), an encroachment zone of 1,00m to 2,00m would work the best in this regard, since bigger zones lead to the appropriation of this zone by the residents as a private area with high hedges or fences. A new example of a well-designed encroachment zone is built in the Kolenkitbuurt by Urhahn.

Image 10: Encroachment zone Kolenkitbuurt (Urhahn)

Access areas

In Multi-family houses, the residents often share a system of galleries, hallways, and stairwells. These areas can become more or less encroached on by the owners, which can create places of informal encounter. The access areas are only accessible by residents, or by visitors that have permission from one of the residents. This makes the encounters more private than those in the transitional zone next to the public streets.

Image 11: Flexible use of galleries De Drie Hoven (Hertzberger)

public areas

Even in public areas, a transition in publicness is possible. Variation in special quality and openness can create spaces that are fitting for all people, enabling people to meet others in these public areas. A gradual transition between the periphery of the space and the central open area can give people the opportunity to gradually overcome social boundaries.

Image 12: Flexibility of the space in Bryant Park, New York

The window

According to Genootschap Onze Taal (2011), the Dutch proverb "achter de geraniums zitten" (literally: sitting behind the geraniums) means living an idle life, often because of age or illness. Although looked down upon, gazing through the window can be a safe way for people to take in the liveliness of their immediate living environments.

Image 13: Gazing over a wall
Based on Hauderowicz and Serena (2020)

Social Infrastructure

To create a sense of belonging in the neighborhood, places of encounter are crucial. Many places could count as a place of encounter, and together they form a social infrastructure. Klinenberg (2020) names several examples of social infrastructure. Vital for the social infrastructure are public institutions like schools, libraries, playgrounds, parks, and swimming pools. Other elements of social infrastructure are spaces like sidewalks, courtyards, and community gardens, and community organizations, such as the church and civic associations, if they have a physical space where people can meet. Also, commercial spaces like cafés, diners, barbershops, and bookstores, where people can linger and meet informally, are part of the social infrastructure.

Van Melik & Pijpers (2017) analyzed the way older people interact with this social infrastructure. By interviewing more than 200 older people in different locations in the Netherlands, they found that older people mostly meet in places not designed specifically for them. The interviewees preferred to meet others in shopping centers, lunchrooms, the church, or public spaces like streets, parks, and squares. Van Melik & Pijpers (2017) conclude that older people like to be flexible in the place where they meet. Many older people prefer to meet somewhere that isn't designed specifically for the old and prefer to seek diversity in their encounters. This calls for more diversity in the places where older people can meet in the city.

Image 14: Local restaurants can be a place where people can meet each other and new connections are formed. (Tripadvisor (2021) Koffiehuisje Eindhoven)

Legibility of space

The way older people read spaces is influenced by their memories. Familiar designs can help create easily recognizable and legible spaces. One way to achieve familiarity is to maintain the structures of the neighborhood, such as hierarchy and local forms. Architectural elements such as doors and windows can be made in local styles and materials to make them easier to recognize for older people.

Another way legibility can be created is by having a clear structure of the city, that easily translates to a mental map. Lynch (1960) revealed five elements that often make up these mental maps: nodes, edges, districts, paths and landmarks. By using these elements in the right way, a city can become more legible.
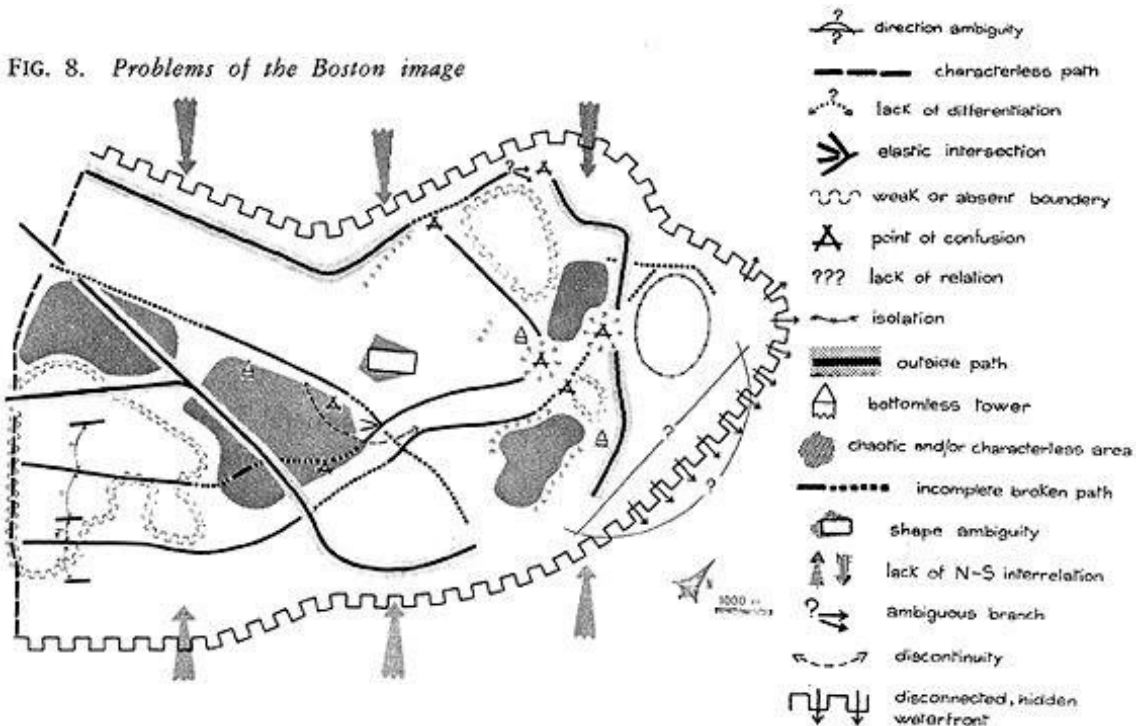

FIG. 8. *Problems of the Boston image*

- direction ambiguity
- characterless path
- lack of differentiation
- elastic intersection
- weak or absent boundary
- point of confusion
- ??? lack of relation
- isolation
- outside path
- bottomless tower
- chaotic and/or characterless area
- incomplete broken path
- shape ambiguity
- lack of N-S interrelation
- ambiguous branch
- discontinuity
- disconnected, hidden waterfront

Image 15: Mental map, K. Lynch (1960)

4. Older people as housing consumers

The third perspective on older people in the city is that of older people as consumers on the housing market. This perspective is interesting in two ways. Firstly, in the last few years, the housing shortage in the Netherlands is peaking. The role of older people in this discussion is important since older people often live in bigger homes while they have smaller households. The first paragraph will show that post-war neighborhoods, like Eckart, can play a role in the battle against this housing shortage. Secondly, older people are a relatively new target group on the housing market that has specific requirements for their homes. Ongoing advancements in the architecture resulted in new typologies and organizations of housing specifically for a wide variety of older people, all with different levels of independence. The second paragraph will analyze these different housing demands.

The housing crisis

The Netherlands is in the middle of a new housing crisis. In 2020, the housing shortage is 4,2%, which means that for 4,2% of the people in the Netherlands there isn't fitting housing. (Rijksoverheid Nederland, 2020) Especially starters and people with middle incomes are having trouble finding fitting housing. At the same time, older residents often live in spacious housing related to their household size, and thus can be said to "over-consume" housing. Clark & Deurloo (2006) found that over 80% of the households in the age category 60-69 years over-consume housing. In his last book, the Chief Government Architect of the Netherlands (Alkemade, 2020) also noted the discrepancy between the housing shortage and the spacious living of older people. While it can seem simple if some people are needing more housing and others have a bigger house than they need, it isn't easy to get older people to move to a smaller home.

Aging in place

To understand why older people generally over-consume housing, it's important to understand why people want to age in place. Clark & Deurloo (2006) state that over-consumption of housing emerges when household sizes get smaller. Children leave the household after high school or college, which leaves the older household naturally with a spacious home. Clark & Deurloo (2006) also state that

there aren't many reasons for older households to move to smaller houses. In the later part of the life-course, there are relatively few live events like marriage, the birth of children, or job changes that require residents to move homes. Since the over-consumption of housing is not a personal problem in most cases, older residents are not willing to give up the extra space. The proportion of older households who move is therefore quite low. Nevertheless, when older households move, they almost always move to a smaller house. The most frequent reasons for moving found by Clark & Deurloo (2006) were related to health. Increasing with age, around three third (60-69) to more than 90% (80+) of the older movers stated that health, the need of care or the size of their previous home was the primary reason to move.

Wiles et al. (2011) note that for older people, there are several advantages to aging in place. Firstly, they link it to the concepts of place attachment and social connectedness. People are attached to the community that lives in the neighborhood, and older people don't want to lose this connection by moving to a different place. Secondly, aging in place is also linked to the sense of security and familiarity. The home and neighborhood often are familiar places to older people. The home acts as a safe refuge, while people's social network in the neighborhood acts as a safety net. The third advantage of aging in place for older people is that their homes often provide a certain identity to them, which they are afraid of losing when they move. An important part of the identity of older people is their autonomy and independence, which they fear losing when they move to a different place. The research of Wiles et al. (2011) shows that older people value their ability to age in place and that this is related not only to their home but also to the community and the neighborhood they live in. This concurs with the idea that older people will be more likely to move when there are good opportunities within the same neighborhood.

Creating more housing in existing post-war neighborhoods

A recent study by KAW Architecten (2020) shows that there are more benefits to the construction of housing in existing neighborhoods. In this study, KAW analyzed the possibilities to create housing in post-war neighborhoods to meet the housing demand. Their analysis shows that the development of new housing in existing neighborhoods can have social, economic, and sustainable benefits. The social benefits are that the construction of housing in existing neighborhoods can help services and facilities in the neighborhood since more people make use of these services and facilities. At the same time, the construction can be combined with social approaches to improve the neighborhood. Economic benefits are the already existing infrastructure and the fact that, contrary to popular belief, projects in existing neighborhoods often are finished faster and are more predictable than projects in unbuilt areas. Participation can be seen as a catalysator that can even speed up the process. Thirdly, creating housing in existing neighborhoods can be sustainable because the unbuilt area is preserved, and it can be combined with improvements in the sustainability of the existing housing in the neighborhood.

Methods of densification

KAW looked at four methods of densification of post-war neighborhoods. The first method is to split or enlarge existing buildings to enable more households to live here. The second method makes use of smaller interventions to build new housing. Buildings like garage courtyards or smaller, inefficient housing blocks can be demolished to create space for bigger buildings while increasing the living quality of the neighborhood. The third method of densification proposed by KAW is to restructure a larger part of the neighborhood. Locations such as shopping centers and school locations can be used for bigger projects. The fourth method is to better use the borders of these neighborhoods. Often, post-war neighborhoods are bordered by bigger arterial roads that needed a large buffer zone to prevent noise pollution. According to KAW, in the future, these locations could take in less space because of changes in mobility.

A Bestaande woningen

C Herstructurering

B Chirurgische ingrepen

D Randen

Image 16: Four methods of densification
(KAW, 2020)

Age-friendly housing

For many older people, there isn't appropriate housing. There is a gap between regular housing and care homes. For active older people, the step to a care facility is too big and the care facilities don't appeal to them. They risk losing agency when they would move to such a facility, and often the amount of care needed also doesn't justify them living in these facilities. (Hauderowicz & Serena, 2020) One way to respond to this problem is to use universal design. Universal design principles can help designing housing fit for older people, without being designed specifically for them. Another approach is to diversify the housing options for older people. Park and Porteus (2018) looked at the housing demands of older people. Their most important findings are identified here.

Types of age-friendly housing

There are numerous types of age-friendly housing. Different combinations of physical and organizational features are possible. Examples are "extra care housing", "retirement housing" and "cohousing". Sadly, most types are not strongly defined or overlap.
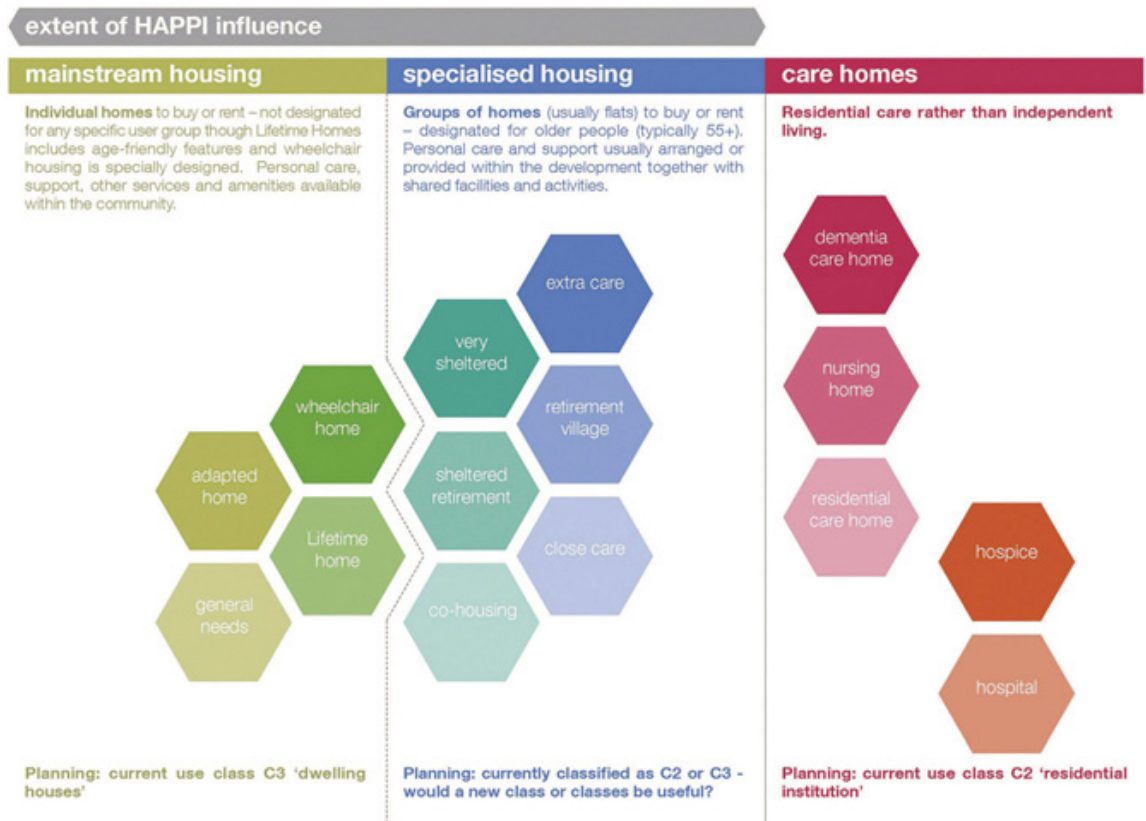

Image 17: Range of current age-friendly housing options (Park and Portheus, 2018)

Integration with the wider community

The integration of housing in the community is recognized as an important feature of age-friendly housing. One way to integrate housing for older people in the community is by placing it in the hearth of the community, rather than its periphery. Another way to integrate projects in the wider community is by looking at the communal facilities in the project. It may be sensible to provide fewer communal facilities when there are already facilities in the neighborhood that can function for the older residents. Also, it may be interesting to look at intergenerational or multigenerational housing options to create finely grained, mixed communities.

Shared spaces

Shared spaces are spaces where people can come together and socialize. These spaces play an important role in promoting an active life and battling loneliness. Circulation space could be designed so that it encourages socializing with wide, covered access decks or including atria and wide single-sided corridors. Courtyards could provide outdoor space that is still sheltered enough to feel collective. The program of these spaces is also im portant to consider since for many people shared spaces can act as a space to take part in communal activities. Examples of these activities could be shared dining, a lounge area, or outdoor space, but also more specific activities such as learning, exercise, or hobbies could take place in shared spaces.

Image 18: Sociable access space. (Park & Portheus, 2018)

Accessibility of the Home

Most older people lived in a single-family house for their entire life, and moving to an apartment or other type of smaller home often is a big step. Therefore, it is important to create homes that feel homely while also being practical and accessible for older people with or without care demands. To create accessible housing, staircases are often avoided. Bungalows are an option but are inefficient with land space. In urban settings, lift-served apartments are more realistic. Most older residents express a demand for a three-room apartment with the option to use one of the bedrooms for guests or activ-

ities. Kitchens and bathrooms have to be accessible and functional to allow residents to perform their daily tasks with as little help as possible. Since older people often have collected many belongings during their life, storage rooms need to be included too. Mobility aids such as a wheelchair and mobility scooter should have appropriate storage space as well.

Private outdoor spaces
 Private outdoor space can give a sense of the surroundings while still being in the privacy of the home. People can connect with nature and with the community through sounds (birds, chatter of neighbors, sounds of the market), sight (gazing from the balcony), and senses like the temperature. Gardens and patios could provide these spaces on the ground floor, while sizeable balconies and roof terraces provide outdoor space on above levels. The orientation and inset of the balconies can increase the attractiveness of the balcony a lot.

Space
While it is true that older people have smaller households, it isn't easy for them to hand in space when they move. To function as a home, there also is a minimum space needed for everything. There should be space for wheelchairs to turn, but sufficient space for cooking, sitting and eating is needed too. A useful balcony is part of this. KAW (2020) tried to calculate the minimal space needed for useful and pleasant homes, and concluded that 50 m^2 would be enough for a single or couple.
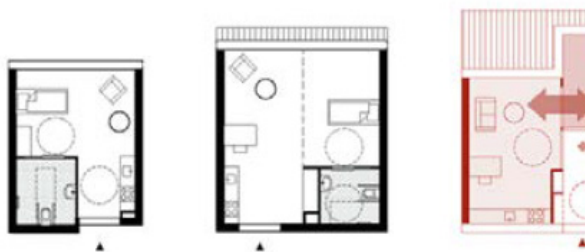

Image 19: Minimal space for small housing
(KAW, 2020)

Image 20: Private semi-outdoor space, providing enough space to have guests over.
Windmill Court, Chingford, London

5.Results

This chapter aggregates the findings made by looking at older people in the city through different perspectives. To do this, we will differentiate between active older people and frail older people, since the measures for these groups often vary a lot. For both groups, we will look at the ways we could improve their social life, their active life, and their housing situations. Although these topics seem to imply that they are the result of only one of the perspectives, all three perspectives seem to make statements about all three topics of the findings.
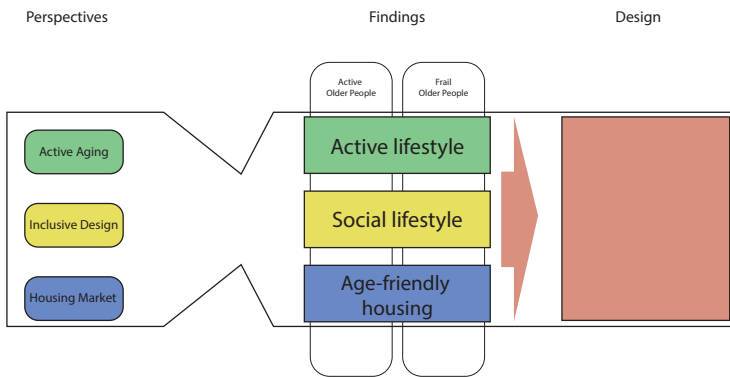
Active older people

Active older people are characterized by an empty nest and a changing professional life. They have more time and freedom for activities, changing social relations, and a smaller household.

To improve the **social lives** of active older people, it is important to pay attention to the social infrastructure in the neighborhood. Provide spaces where people can meet, preferably intergenerational. Design spaces for people to meet in public, but also inside residential blocks or buildings. Cooperative housing can help create denser social networks.

To improve the **active lives** of active older people, it is important to provide enough options for people to be active. Since active older people experience more freedom, there is a need for good facilities to be active. The environment can influence the level of activity of all people, and with older people, there is more need for an active life. Examples of ways to improve the possibilities for an active lifestyle are to design more green spaces, better infrastructure for slow traffic, and better public transport options to improve mobility.

Encouraging (intergenerational) interaction

To improve the **housing situation** for active older people, it is important to create a mixed housing supply with enough options for smaller households. To attract active older residents to move to a smaller home, it is important to provide good alternatives in the neighborhood. This means there is a need for affordable smaller housing with enough quality. For example, the outdoor space needs to be big enough for a table and some chairs, there needs to be enough space for storage and the possibility to have guests stay over, and the integration in the neighborhood is important.

Encouraging active lifestyles

Frail older people

Frail older people are characterized by having more age-related health problems that influence their ability to be independent. At the same time, their social network is diminishing. Their dependence on care influences their social and active life and creates new demands for their housing situation.

To improve the **social lives** of frail older people, it is important to create opportunities for them to participate in fitting ways. Participate is possible on many levels. Sometimes older people prefer to participate just by watching others, while in other cases older people can participate fully. To provide the flexibility for older people to participate in the way they want, it is important to design with attention to transitional spaces and to provide options for older people to participate with aid of others.

creating more age-friendly housing

To improve the **active lives** of frail older people, it is important to reduce barriers as much as possible. Universal design can help create spaces that are not only better for older people, but all people. Examples of ways to reduce barriers are the implementation of smooth pavement, accessible public transport, and housing with enough space to move around in a wheelchair.

To improve the **housing situation** for frail older people, it is important to build age-friendly housing in the hearth of communities and near to facilities. This way older people can participate in the community and keep active lives.

1. Location choice

The whole world is aging, and this creates challenges in urban design and planning in many places around the world. It is also expected that people will move to cities. Cities will thus face two challenges, a higher population which also will be older.

Since the process of aging has already started, it is interesting to look at neighborhoods with an already high percentage of older people. Image 21 shows the distribution of older people in Eindhoven (65+). It shows the percentage of older people of Einhoven living in each neighborhood. It is clear that most older people live in the north of Eindhoven, in the district Woensel. One of the neighborhoods here is Eckart, which this report will focus on as an example of a post-war neighborhood with a high percentage of older adults. In Eckart, the percentage of people above 65 is 22.8%, which is significantly higher than the average of 16,7% for Eindhoven. (gemeente Eindhoven, 2020)

While this report will focus on Eckart and will end with a design specific to this neighborhood, the findings of the theoretical research can be applied to other neighborhoods as well. Especially in other post-war neighborhoods, it is likely that the same problems can be found and similar solutions as proposed for Eckart in this report can maybe work for these neighborhoods as well.
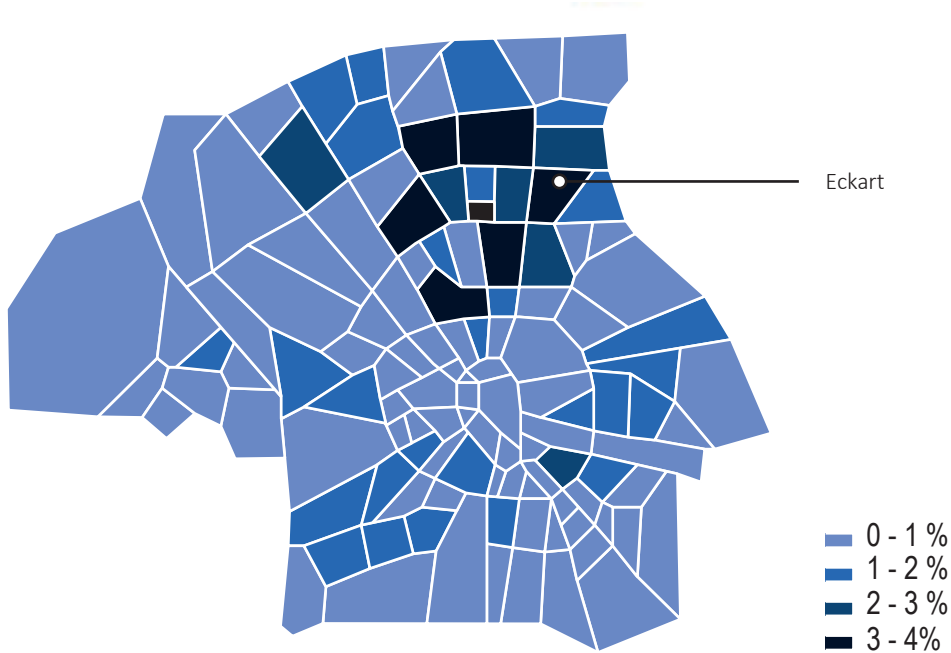

Image 21: Where older people live in Eindhoven. (CBS, 2020)

2. The origins of Eckart

The first ideas for the neighborhood Eckart appear on the Algemeen Uitbreidingsplan of J.M. de Casseres in 1930. This plan, which had the goal to reduce the existing traffic congestion in the center with a structure of ring roads and arterials, integrated the five villages Woensel, Gestel, Tongelre, Stratum, and Strijp in the city of Eindhoven. With this integration, the city could also expand to the north. Around 1970, the neighborhood Eckart is built as one of the many neighborhoods in this expansion.
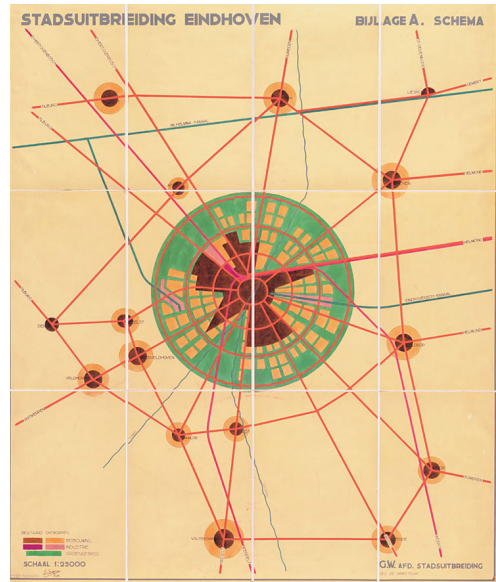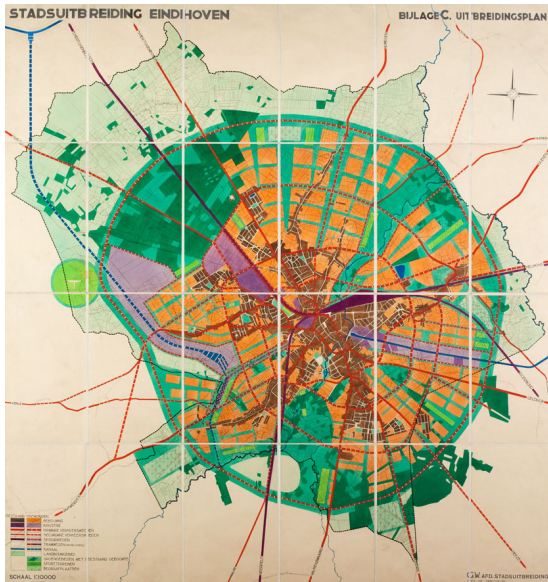

Image 22 and 23: Algemeen Uitbreidingsplan Eindhoven and its schematic. J.M. de Casseres (1930)

De Wijkgedachte

It took until after the second world war before most of these expansion plans were being realized. In the middle of a housing crisis, Eindhoven expanded rapidly to the north. The expansion was influenced by the "Wijkgedachte", a philosophy coined by A. Bos (1946). This philosophy decentralized the city, with a hierarchical model in which the family is viewed as the central element. Around the family, there is a neighborhood with all facilities for daily activities. The neighborhood is small enough to act like a village in which neighbors know each other. The neighborhoods together create the city, where specialized facilities can be shared between neighborhoods.

In the philosophy of A. Bos, the neighborhood offers housing to all different kinds of households, such as singles, couples, families, and older people. For these different households, he also thinks of the ideal housing options, which means there should be some apartments or smaller housing for singles, single-family housing for couples and families, and later the residents move to smaller housing again, which will be concluded by specialized housing for "elderly". Interestingly, Bos notes that the elderly housing should be integrated with the community to continue the contact with family and children and the connection with the full society.
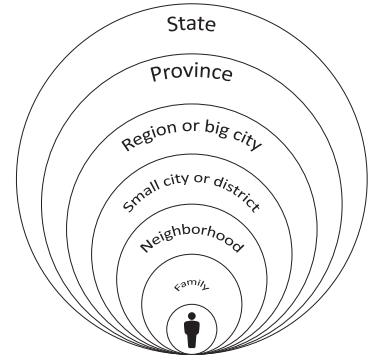

Image 22: The idea of the "Wijkgedachte"

Post-war Neighborhood design

After the second world war, the Netherlands experienced a housing crisis. Housing had to be built fast and had to be cheap. Therefore, many neighborhoods have been designed with stamping plan designs, where specific configurations of housing are repeated. The housing blocks were open to allow light and air to enter. The open housing blocks were a radical departure from the traditional streets since the housing blocks were not attached to the street in any way but could be placed freely in space. This created a different structure based more on movement and mobility then on the street as a living space. The neighborhoods are spacious with a lot of green space to prevent overcrowding and to allow the children of the big families of this period to have a place to play.
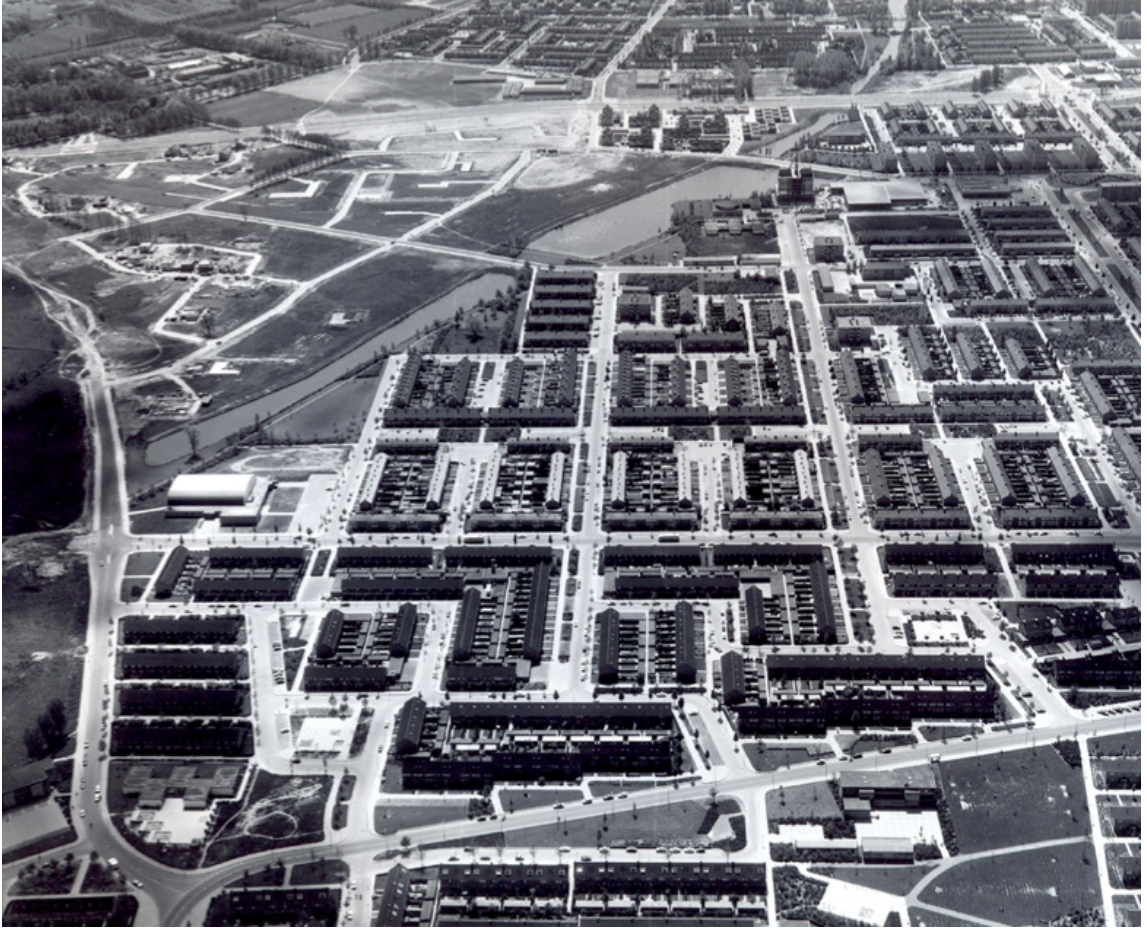
Image 24: The development of Eckart in 1970, viewed from the north.
(Alpen, 2021)

3. Spatial characteristics

The ideas behind the construction of Eckart are still clearly visible in the spatial characteristics. The neighborhood is built with a hierarchical grid structure, has the typical program and housing typology of a neighborhood designed with the ideas of the Wijkgedachte and in the design of the public space, the car was dominant.

Hierarchical grid structure

Eckart has been designed in a grid with a highly hierarchical traffic structure. The neighborhood is bordered by three arterial roads and a water structure. The north-south oriented Mercuriuslaan functions as the spine of the neighborhood, on which smaller roads connect that finally lead to residential roads. This hierarchical structure creates residential roads that lead to a dead end. These streets attract few people and are quiet. Since they are often further away from the main routes, they are more prone to burglaries or vandalism. (Lopez, 2013)

The grid structure of Eckart is cut by a high voltage powerline that cuts the grid diagonally which creates a diagonal series of rest green through the neighborhood. The area north of this is only loosely connected to the rest of the neighborhood with the Grote Beerlaan/Orionstraat as most important connection.

Image 25: Road structure of Eckart

Image 26-30: hierarchy of the road structure. The first picture is the central
Mercuriuslaan. The other pictures are examples of living streets.

Housing Typologies: Row housing

The neighborhood consists of mostly (62%) row housing. Of all housing, 67% is social rent. The residents have an average disposal household income of €31.700,-, well below the average of Eindhoven. (gemeente Eindhoven, 2020)

The rowhouses are developed mostly as open building blocks with 12 meter deep backyards and a narrow path between the housing. Front yards are typically 2 meter deep and paved. The neighborhood has several areas of "strokenbouw", where all houses are orientated the same way. The goal of this design was to harness the sun optimally. The strips of housing are oriented perpendicular to the streets and the housing is accessed through pedestrian paths between the strips. This type of housing completely departed from the historical typology of the streets, since the relation between the street and the building has been abandoned. A problem of this typology is that the formal fronts of one strip of housing face the informal backs of the other strip. Therefore, the space in-between often is unclear.

Image 31: example of a living street in the north of Eckart.

Image 32: unclear space between housing blocks in "strokenbouw"

Image 33: Housing typologies

- Row housing
- Lower apartment buildings
- Higher apartment buildings
- (Semi-)detached housing

Housing Typologies: Apartments

Apart from row housing, most of the housing consists of high-rise apartment buildings dating from the '70s. Along the J.F. Kennedylaan, as well as next to the Oude Gracht are high rise apartment buildings of about 30 meters built during the first development of the neighborhood. In the center of the neighborhood, there is one newer apartment building from the '90s, Andromeda, with a maximum height of 14 floors (around 42 meters). In the center, next to Andromeda, five apartment blocks of 4 floors with a north - south orientation are built as well. The blocks have sufficient space between them and the surrounding is a green space with visual quality. These apartments are one of the landmarks in the neighborhood. Around the neighborhood, several other apartment blocks of 4 floors are scattered. These apartment blocks consist of a central staircase without an elevator with four apartments around the central staircase on all floors.
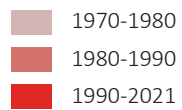
Image 38: Building years

■	1970-1980
■	1980-1990
■	1990-2021

Image 34-37 (left): A selection of the apartment buildings
in Eckart.

Housing Exeptions

The few exceptions on the normal housing typologies can be found along the Oude Gracht, where around the '80s a cul-de-sac with detached housing is developed and mentally challenged people can live assisted in a specialized house of two floors, and along the Orionstraat in the center where two rows of (semi-)detached houses are developed. In the northwest corner of the neighborhood, there is a service flat for older residents.

Evaluation of the housing options

The existing housing typologies aren't a good fit for the older residents in the neighborhood at this time. The row housing is big for the smaller households most older people live in. The apartments don't suffice for the older residents either, since they aren't adjusted for older people and don't have the quality that is expected by them. Doorsteps are too high and make it hard for residents in wheelchairs or with other mobility aids to enter these apartments, and spaces like kitchens aren't designed to function for them either. The small balconies aren't a good alternative for the big back yards most older residents have in their family homes either. The service-flat in the neighborhood isn't a good option for the residents in Eckart either. The location, tucked away in the corner of the neighborhood, makes it hard for residents to connect to other residents living in the neighborhood. The building is far away from services like the supermarket, making it difficult for the residents to keep an active life and care for themselves.

Image 39-42: Some of the exeptions on the normal typologies.

Program

The neighborhood exists mostly of residential area with several facilities around the Orionstraat. There is not a clear center in which all functions are grouped, but there are different buildings with different functions, such as the shopping center, the care center, the elementary school, and the neighborhood center. In the northeast corner, an older sports hall just has been demolished to build a replacement for the current elementary school in the neighborhood.

The neighborhood is missing good social infrastructure. There aren't good places where residents can meet each other like a vibrant center or restaurants. There is green space around the Oude Gracht but this space doesn't function very well either since the routes along the canal aren't continuous but end on an unappealing parking lot behind the shopping center.

Image 43: Inside of the shopping center

Image 44: Program of Eckart

🟪	Supermarket and retail
🟥	Care facilities
🟧	Social functions
🟩	Elementary school
🟫	Offices
🟪	Sports hall

Public space

There are many places with low visibility in Eckart. Two of the causes are the abundance of bushes that take away sight lines, and the courtyards of garage boxes where there is no control of anyone. These areas create some problems, and there is a low feeling of safety. (Lopez, 2007)

The green space doesn't have much programatic value and is mostly rest space. There are opportunities for the park around the Oude Gracht, but right now the paths don't connect well and the area doesn't feel safe since there is no control. Buildings are placed with their backs or sides to the water and this park.

Image 45: Rest green under the high voltage lines
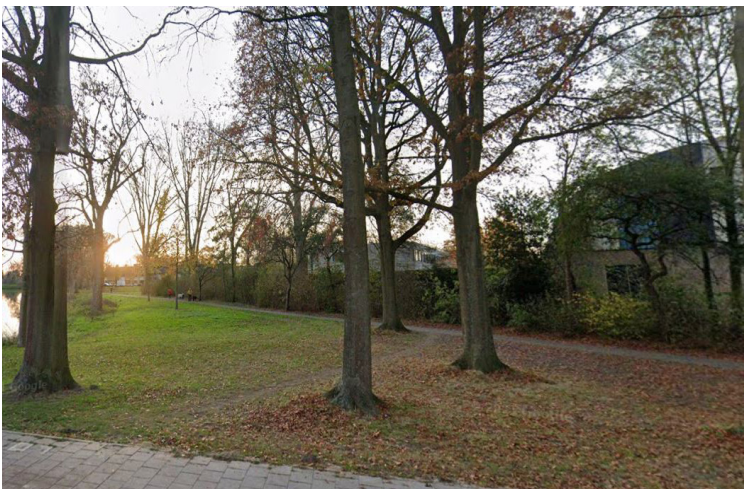
Image 46: unsafe park along the water of the Oude Gracht

Image 47: Green structure

Structural green space
Rest green

Changing neighborhood

The majority of Eckart has been built around 1970. In later years, there only small changes have been made to the neighborhood. Along the Oude Gracht, some smaller facilities and detached housing were built several years after the first development of the neighborhood. In the '90s, the apartment building "Andromeda" was built in the heart of the neighborhood, which has been a new icon for the area since then.

Socio-economic changes
While structurally, the neighborhood has changed little over time, socio-economic changes in our society have had a big impact on the neighborhood. One example of these changes is the way the shopping center is used. According to older residents of Eckart, the neighborhood center has been a lively place in the past with many smaller shops like a bakery, butchery, and drugstore. Residents met each other around this place. Nowadays, the smaller shops have been replaced by a supermarket and a bargain shop. The shopping center has deteriorated because of its age, and because of the changes in program it doesn't act as a meeting place anymore.

Another example is that the neighborhood has become much more diverse in cultures. When Eckart was built, only the first labor immigrants lived in the Netherlands. Nowadays, 24,6% of the people in the Netherlands have a migration background, and this is mostly visible in neighborhoods with much social housing such as Eckart. In Eckart, the percentage of people with an immigration background is therefore quite high with 46%. (CBS, 2021) Newcomers with a different culture can be a problem for older residents who see their neighborhood changing and have more difficulties in adapting. Lopez (2013) notes that the social cohesion in Eckart has been declined and that there have been some problems with youth, but that these problems weren't that bad in 2013.

Vision

By combining the findings of the literature review with the physical and socio-economic situation of Eckart, a vision will be made for an improvement of the situation in the neighborhood for older people. The vision consists of three building blocks that combine and strengthen each other. The building blocks are a new center for the neighborhood, the development of more diverse housing, and the creation of attractive and safe routes for slow traffic from and to the center. These building blocks will together create more possibilities for community building and encounters, for residents to stay active, and for older people to find fitting housing where they have the possibility to age in place without getting isolated or losing agency.
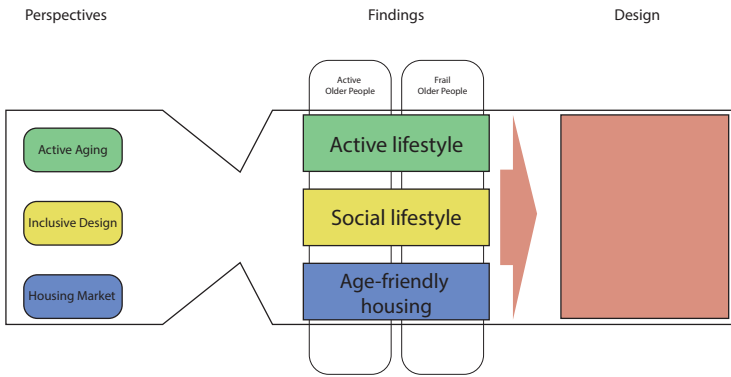
Image 48: Structure of the project

The Center: identity and a place to meet

One of the conclusions of the literature study is that both active and frail older people need good social infrastructure. Active older people require diversity in the options of where they can meet and prefer places where people of all ages come. For frail older people, a low threshold for participation and the option to participate on their own terms is important.

As we have seen in the neighborhood analysis, Eckart lacks this social infrastructure. This is mostly visible in the center, where there aren't enough options for active older people to meet and which has quite some barriers that make it difficult for frail older people to participate. The current center is mostly functional, a place where people can do groceries. There aren't good restaurants or other social places, besides the neighborhood center. Also, the public space around the center is focused on cars and isn't easily accessible for residents with walking aids.

To improve the social infrastructure in Eckart, a restructuring of the neighborhood center is needed. A new center for the neighborhood can facilitate both active and frail older people in meeting others. The proposed new center is focused around a new neighborhood square along the Oude Gracht. The facilities of the neighborhood are all placed on the square, to create a lively place where all the residents of the neighborhood come together.

Housing: Smaller and more diverse

The final conclusion of the literature study was that more fitting housing options are needed for older people. In Eckart, there are indeed not enough options for housing for older people, resulting in many older people having concerns about the future. Most of the housing is row housing or apartments built in the '70s and many older residents still live in homes with staircases that aren't adapted for older people.

To increase the housing options in Eckart, around the restructured center of Eckart a diversity of housing blocks will be created with a relatively high density. For frail older people, this will allow them to stay autonomous longer since all facilities are nearby. Since attention is paid to places where neighbors can meet in informal ways, the risk of isolation is much lower as well. The housing around the center will be fitting for active older people as well. The center provides options for activities and is connected well to the center of Eindhoven, allowing older people to cycle to the center and staying active.

The redevelopment will not consist only of housing for older people but all new residents are welcome to create a healthy, living space with a mix of younger and older people.

Apart from the redevelopment of the center of Eckart, there are opportunities in Eckart to create smaller housing blocks in patches throughout the neighborhood. The neighborhood has many courtyards with garage boxes, which are underdeveloped spaces in the neighborhood that also create safety issues for the residents. By developing housing in these patches, the social safety in the neighborhood can be increased.

Mobility: Accessible and attractive

Another conclusion of the literature study is that older people should be enabled to adopt healthy active lifestyles. For active older people, this means that it should become more attractive to be active by having more options for activity. For example, recreational routes for cycling or walking could be created through the parks or next to the water, to attract people to walk or cycle for fun, or instead of taking the car. For frail older people, this means that barriers should be as low as possible, to make them more mobile and enable them to be active.

Eckart currently isn't very attractive for slow traffic and has many barriers for older people with walking aids. The neighborhood is focused on car traffic and the trottoirs aren't maintained very well. There are some options for attractive routes through the neighborhood, but these routes aren't there yet.

To improve the mobility of older people in Eckart and promote an active lifestyle, the most important streets of the neighborhood can be redesigned to remove barriers. This way a new network of safe streets is added to the neighborhood, allowing older people from the neighborhood to visit the center. This network should have safe crossings and a smooth surface without too many height differences for pedestrians, and broad bicycle lanes to slow traffic. A recreational route is added along the Oude Gracht that connects the neighborhood with the center of Eindhoven and with the nature reserve around the Dommel.

Integration in the neighborhood

The ideas of the vision come together in the vision map. The focus of the vision lies in the restructuring of the center, which is the new social hub that focuses on accessibility and active lifestyles with age-friendly housing build around it. In the next chapter, the design of this area will be shown. The design of this center is not an isolated restructuring though. This vision map shows how the restructuring of the center relates to the ideas for the rest of the neighborhood.

To connect the new center to the rest of the neighborhood, the routes to the center are reinforced for slow traffic. The Grote Beerlaan is an important route to the northern part of the neighborhood. The rest of the neighborhood follows the Mercuriuslaan to get to the center. Since the center is not located directly at the Mercuriuslaan, there is a need for a stronger connection between the center and the Mercuriuslaan too. To achieve this, the Orionstraat and Grote Beerlaan become bicycle roads to allow the residents of Eckart to cycle safely to the center.

Image 49: Vision Map
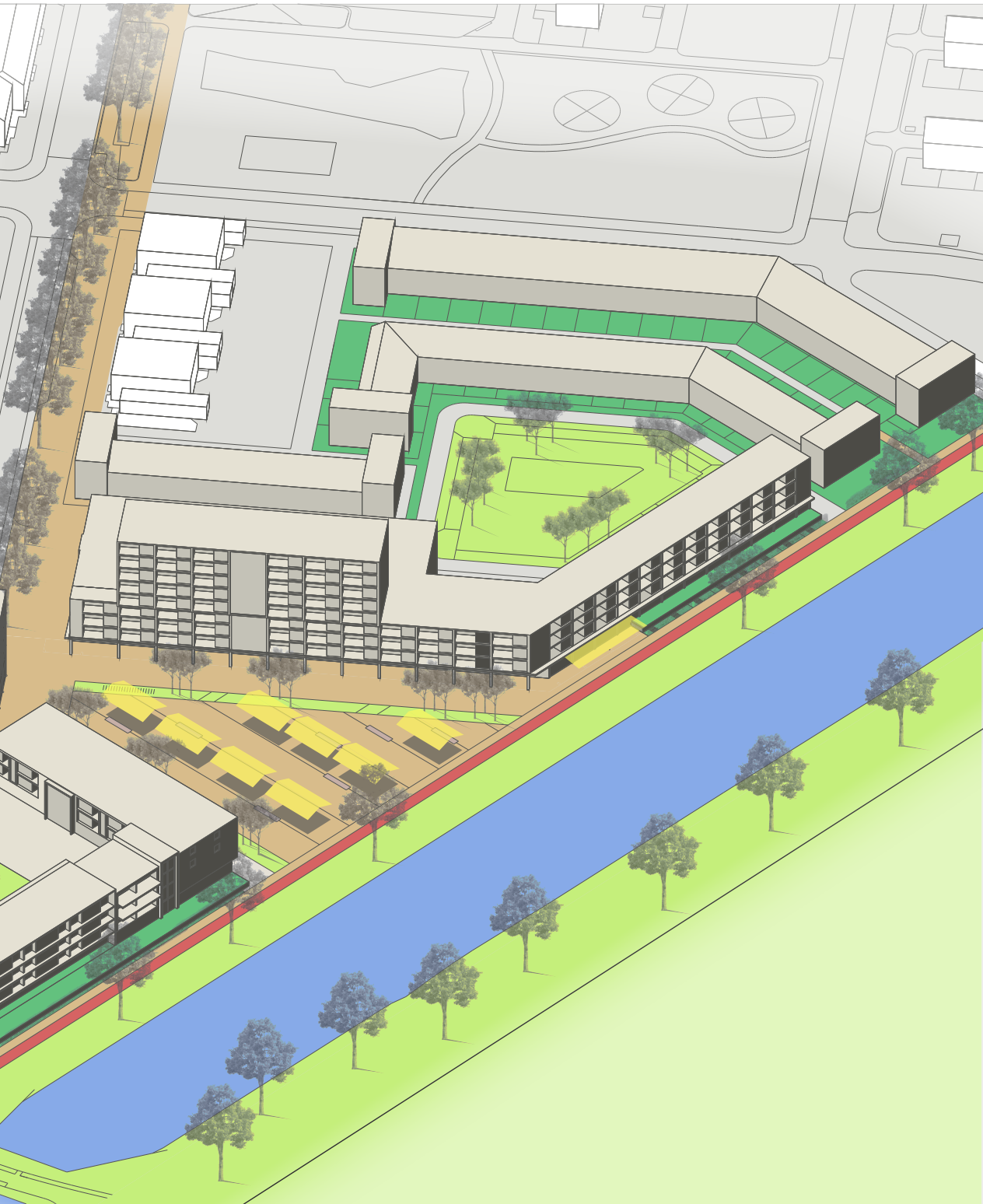
Design

Image 50: Situation before the redevelopment

Image 51: After the redevelopment

Spatial configuration

Spatially, the redesign of the center of Eckart consists of linked squares and courtyards, filling the space between the Orionstraat and the Oude Gracht. Central to the plan is the neighborhood square with the important functions such as shops and restaurants. For residents of the neighborhood, the Orionstraat will stay the primary route to the center for slow traffic. It connects directly to the neighborhood square. For pedestrians, there is a secondary route that meanders trough the area which links the courtyards and the square together. The central square opens up to the Oude Gracht, connecting it with the water and the new recreational route along this water.

Image 52: Spatial configuration

Housing

The redevelopment of the center of Eckart creates a mix of housing options for older people. The apartments on the north side of the central square are great for frail older people since they have all facilities nearby. On the ground floor is a lounge where residents can go to meet others, and facilities like the hairdresser, home care and maintenance can be found here. The apartments along the Oude Gracht are connected to this building but have their own entrance too.

Above the supermarket and the parking are apartments that are part of a larger owner association. This owner association can use the courtyard above the supermarket and the parking for activities. On the west side of the central square, there is an apartment building of 10 floors with the new neighborhood center on the ground floor. This tower has affordable smaller housing for older people but also for starters. This way a mix of housing for all ages is created. The same counts for the row housing north of the central square, which is housing for families. The courtyard in the west exist of owner occupied apartments in smaller owner associations.
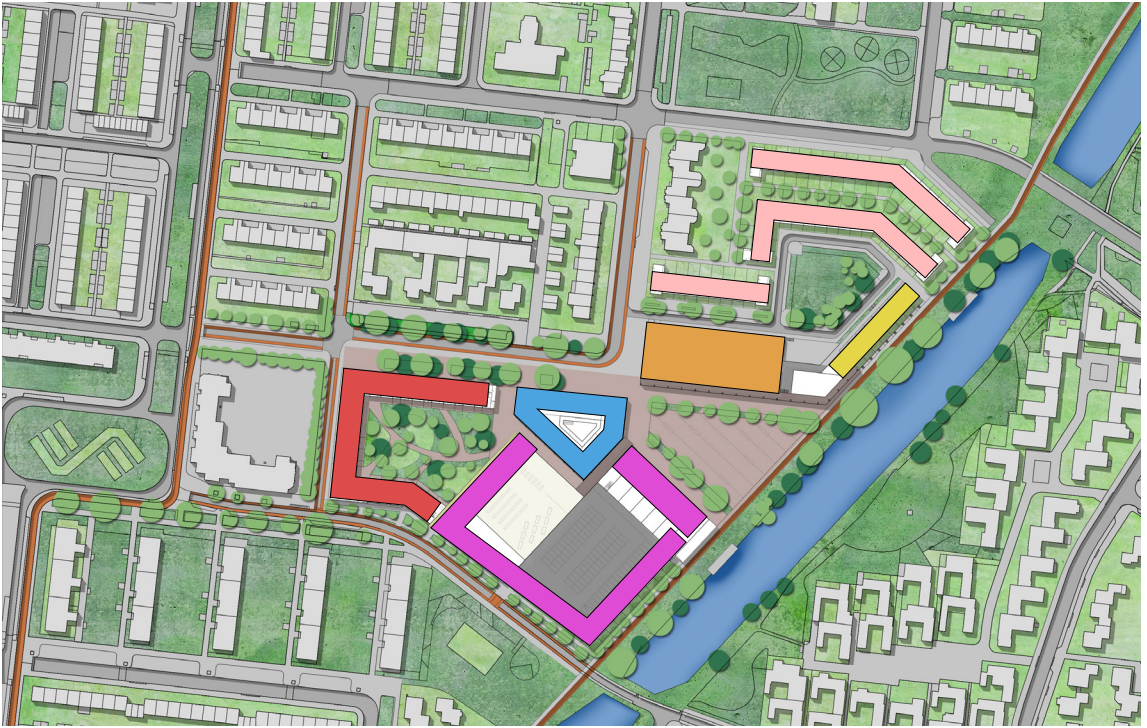
Image 52: Housing options

Row housing
Sheltered housing
Extra care
Starters housing
Shared living with a raised courtyard
Appartments around a public garden

Facilities

The facilities of the neighborhood are located along the central square to create a lively place. On the northern facade, there is a lunchroom and restaurant located which has terrasses on the square. On the south, there are some smaller retail shops and services. On the west of the square, there is a bigger apartment tower with a neighborhood center on the first two floors. This neighborhood center can be used by the whole neighborhood for activities like courses, sports or social activities.

The supermarket is located a little to the back but has a clear access from the square through a large passage between the retail shops and the neighborhood center. The other underground garage is for the residents of the other two courtyards. This parking has enough space for a parking ratio of 1,2 for mid-sized apartments. For visitors of the supermarket and the other facilities on the central square, there is a car parking on the ground floor next to the supermarket with 75 places. The visitors and the residents share the entrance of this garage.

Image 52: Program of Eckart

Housing
Restaurant
Care facilities
Cultural center
Retail
Supermarket

Slow traffic routes

The development focusses on slow traffic such as pedestrians and bicyclers. The entrance of the central square is at the side of the Orionstraat. To make the center more accessible for slow traffic, the approach roads are redesigned as bicycle roads.

For the residents, all courtyards and the square are connected easily by foot. Pedestrians can walk from the northern courtyard under the apartment building to the central square, from where they can go to the courtyard in the west trough the passage between the supermarket and the neighborhood center. Bicycles are all stored on the ground floor to have easy access, while cars are parked in underground garages. This way residents are more likely to take the bicycle for short trips which will reduce car traffic in the area.
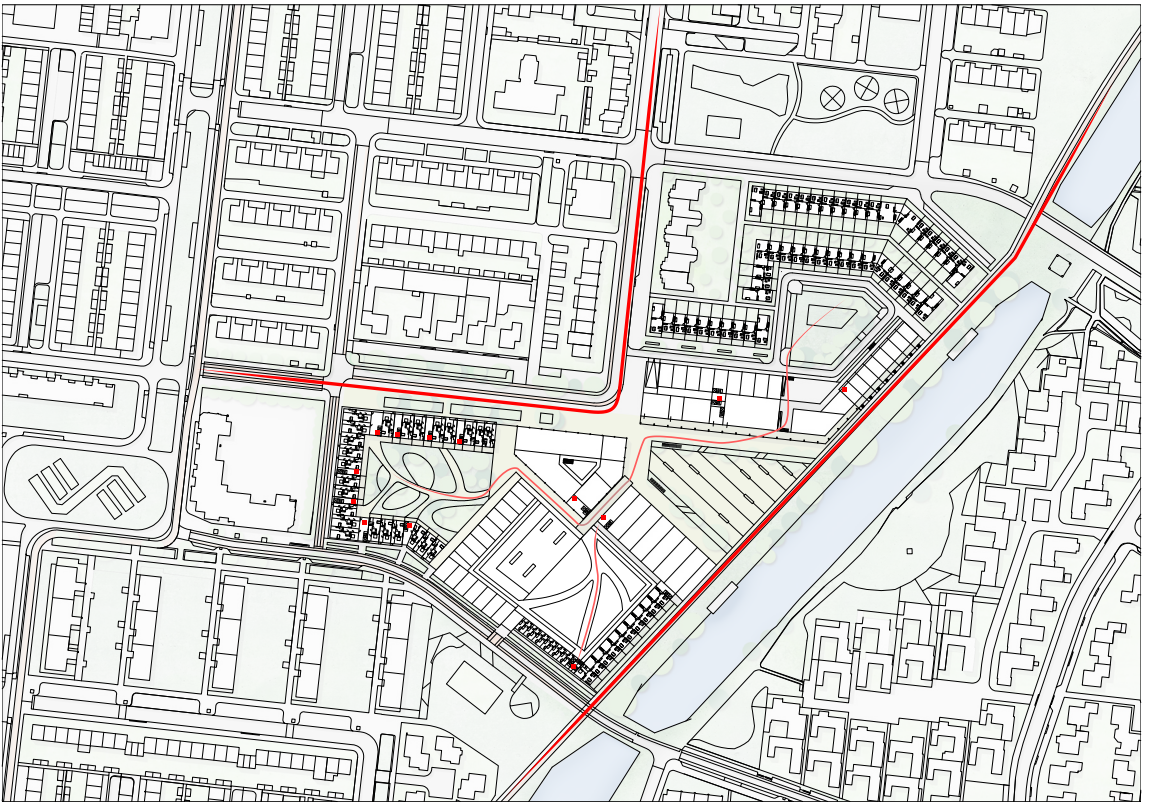
Image 52: Slow traffic

Green structure

The development of the center will create several new green areas. The green area along the Oude Gracht will support the recreational route along the water. This will be done by accentuating the linearity of the area. The different courtyards will all get their own green area's which can be used by the residents. The central square will be partly green too to create a place where people will stay pleasantly.

The green spaces in the courtyards will be managed by the housing associations. This allows them to give transfer maintenance partly to the residents and to use these spaces for more activities. These areas can be used for (vegetable) gardens or communal activities for example.

Image 52: Slow traffic

■ Public green
■ Houising associations
■ Private green

Cars and parking

Most of the new development is car free. There are two underground parking garages for residents. One is located under the apartment building on the north side of the central square and has place for all residents in this building and for the residents of the row housing on the inside of the courtyard. This is with a parking ratio of 1,0 for the smaller apartments, and a ratio of 1,2 for row housing. (Gemeente Eindhoven, 2019)
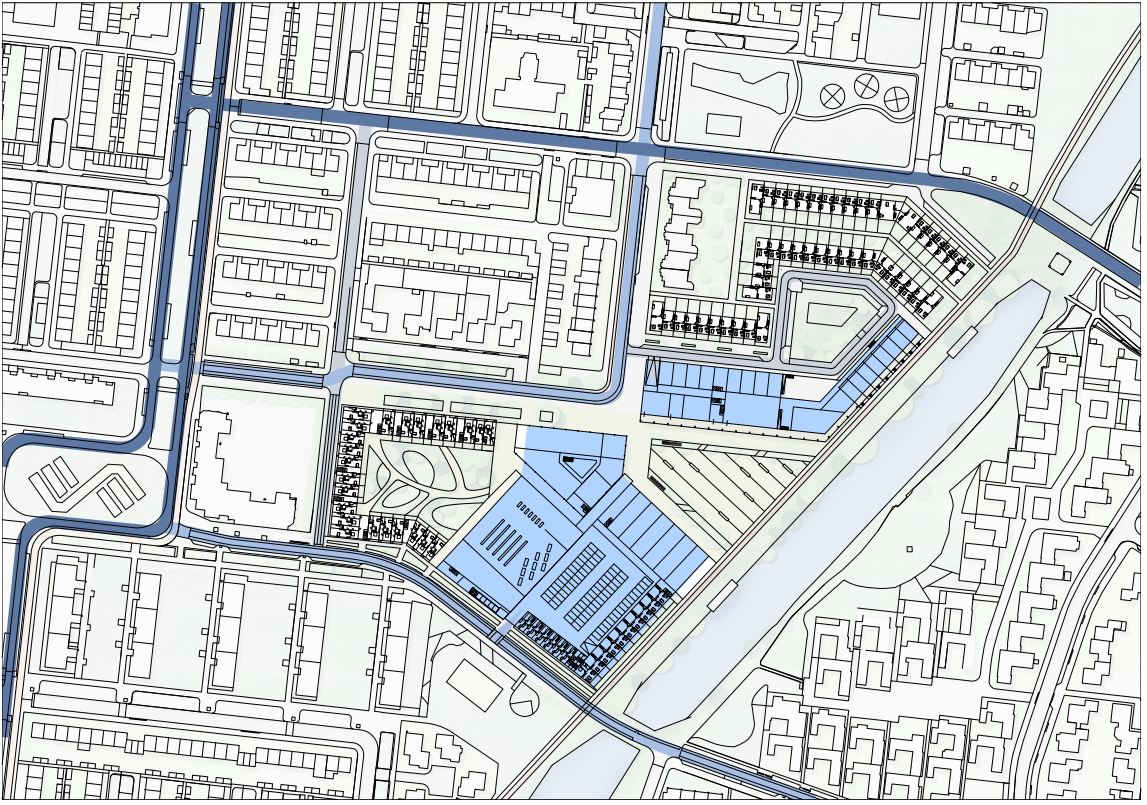
Underground Parking
Approach route

Evaluation

Active Lifestyles

The design for the redevelopment of the center of Eckart activates the residents in several ways. Near the homes there are gardens which they can use for activities. Further away there is the central square with many options for people to meet and be active. The neighborhood is connected well to the surrounding by bicycle and foot, alowing the residents to walk and cycle to stay healthy.

Social Lifestyles

The design creates a better place for the neighborhood where residents can come togheter and create a community. The design takes the vulnarabilities of older people into account and creates flexible places, that allow older people to participate on their own terms.

Housing

The design consists of a diverse mix of housing, for all ages. By filling a part of the Oude Gracht, a lot of space is gained to create more density in the neighborhood to suport the facilities in the center. There is a mix of affordable housing and mid- to high range housing.

outdoor spaces and buildings	Transportation	Housing	Social participation
Clean, calm public environment	Public transportation is affordable for all older people	There is sufficient and affordable housing for older people in the local area	Events and activities are in accessible and varied locations
enough green space	Public transportation is reliable and frequent	Essential services for older people are provided that are affordable	Older people have the possibility to participate in events and activities with a friend or caregiver
seating facilities on important places	Key destinations are easily to reach by public transport	Housing is safe, accessible for all, and has a comfortable environment to older people	Events and activities are held on convenient times during the day
safe pedestrian walkways with low curbs for wheelchairs	Vehicles are accessible, clean and well maintained	Housing modifications and maintenance for older people are possible and affordable	admission of events is open and the process of buying tickets for events is easy for all older people
Priority for slow traffic	Vehicles have priority seating for older people	Housing is closely located to services and facilities	Events and activities are affordable
Separate cycle paths for cyclists	Drivers are respectful to older people and drive safely	Housing design allows for continued integration into the community	voluntary organizations are supported to keep costs of activities low
Public safety is a priority	Public transport is safe from crime and not overcrowded	There is a wide variety of housing options appropriate for older people	A wide variety of activities is available to appeal to a diverse population of older people
Services are clustered and located in proximity to where older people live	Stops are located close to where older people live, and are safe, accessible and comfortable	Older people are well informed about the housing options	Activities are clearly communicated to older people
There are special customer services for older people, such as special queues	Information is clear and accessible	Older people feel safe and comfortble in their housing environment	Isolation of older people is addressed by sending personal invitations to activities, having low barriers for events and personal visits or phone calls
Buildings are accessible also for older people	There are options for door-to-door transportation for older people		Community facilties promote shared and multipurpose use by people of different ages and interests
There are enough public toilets	Parking places are accessible for all older people		Local gathering places and activities promote familiarity and exchange among neighborhood residents

Respect and social inclusion	Civic participation and employment	Communication	Community support and health services
Older people are consulted by public and commercial services on ways to serve them better	There is a range of options for older volunteers to participate	A basic, universal communications system of written and broadcast media and telephone reaches every resident	Health and social services are well-distributed throughout the city, are conveniently co-located, and can be reached easily by all means of transportation
Public and commercial services provide services and products adapted to older people's needs and preferences	Voluntary organizations are well-developed, with infrastructure, training programmes and a workforce of volunteers	government or voluntary organizations distribute information regularly and reliably	Residential care facilities are located close to services and other residential area, so that these facilities are integrated in the larger community
Services have helpful and courteous staff trained to respond to older people	The skills and interests of volunteers are matched to positions	Oral communication accessible to older people is preferred, for instance through public meetings, community centers or clubs	Service facilities are safe and accessible for all people
Older people are included and depicted positively, without stereotypes in media	Volunteers are supported in their voluntary work, for example by being provided with transportation or having the cost of parking reimbursed	People at risk of isolation get informed as well by trusted individuals	Bureaucracy and economic barriers to services are kept to a minimum
Older people are included in public spaces, activties and events by accommodating age-specific needs and preferences	There is a range of opportunities for older people to work	Printed information has large lettering and is easy readable	Administrative and service personnel treat older people with respect and sensitivity
Activities that bring generations togheter are regularly held	Policy and legislation prevent discrimination on the basis of age	Telephone answering services give instructions slowly and clearly and tell callers how to repeat the message at any time	There is adequate access to designated burial sites
Schools teach about aging and older people	Retirement is a choice, not mandatory	Users of automatic communication have the choice of speaking to a real person or leaving a message for someone to call back	There are enough services to promote, maintain and restore health
Older people are actively and regularly involved in local school activities	There are flexible opportunities, with options for part-time or seasonal employment for older people	Electronic equipment, such as mobile phones, radios or television has large buttons and big lettering	Home care services are offered that include health services, personal care and housekeeping
Older people are provided opportunities to share their knowledge, history and expertise with other generations	Training in post-retirement opportuni- ties is provided for older workers	Display pannels are well illuminated and can be reached by people of different heights as well as people in wheelchairs	Health and social services offered address the needs and concerns of older people
Older people are included as full partners in community descion-making affecting them	Opportunities for voluntary or paid work are known and promoted	There is wide public access to affordable internet	Service professionals have appropriate skills and training to communicate with and effectively serve older people
Older people are recognized by the com- munity for their past as well as their pres- ent contributions	Workplaces are accessible for older people and there are good transportation options	Tailored instructions and individual assistance for users of public computers is readily available	Volunteers of all ages are encouraged and supported to assist older people in a wide range of health and community settings
Community action to strengthen neigh- bourhood ties and support include older residents as key informants, advisers, actors and benefi ciaries	Older people are encouraged to participate and are part of the descion-making process		Emergency planning includes older people, taking into account their needs and capacities in preparing for and responding to emergencies