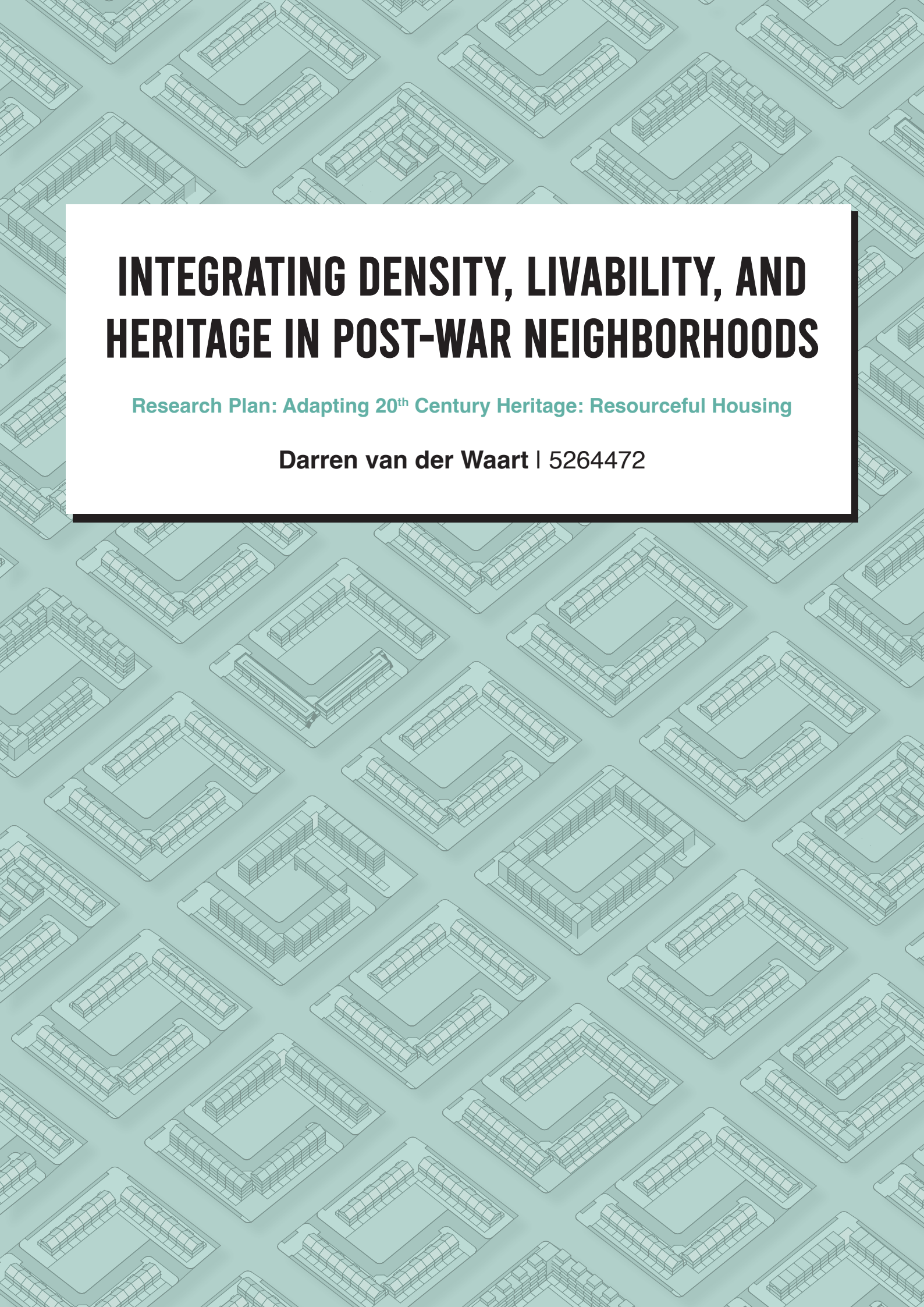




INTEGRATING DENSITY, LIVABILITY, AND HERITAGE IN POST-WAR NEIGHBORHOODS

Research Plan: Adapting 20th Century Heritage: Resourceful Housing

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This research plan was written based on the graduation studio “Heritage & Architecture: Adapting 20th Century Heritage: Resourceful Housing” at Delft University of Technology.

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1. INTRODUCTION

1.1 BACKGROUND

Worldwide, the population is expected to increase due to a combination of factors, including higher birth rates, life expectancy, increased fertility, immigration, and economic stability. As a result of this phenomenon, the United Nations (2023) expect the population to grow to 9.8 billion by the year 2050, which translates to an increase of 1.7 billion inhabitants from the current 8.1 billion. Due to the increasing population, a demographic transition is taking place across the world, which requires urban expansion to facilitate the increasing number of inhabitants. Everywhere in the world, cities are growing and countries are becoming more urbanized. From only 3% of the world's population living in cities in 1800, it has now grown to approximately 56% and is expected to reach 68% by 2050 (United Nations, 2018).

This is especially the case for growing cities in Europe. These cities are getting denser because of higher immigration rates and reduced land used for housing (Cordis, 2022). Cities generally offer more economic opportunities than rural areas because they bring together work opportunities, industry, education, and cultural facilities. These amenities attract people seeking a better quality of life.

However, this migration has multiple implications for the urban future of European cities, including the various demands for land use in and around cities, urban configurations, housing stock, and housing policies (EEA, 2006). Expanding the cities outside its borders is considered to be a significant concern for sustainable development. The expansion would threaten biodiversity, lead to the loss of agriculture, increase travel distances and gas emissions, and contribute to climate change (Artmann et al., 2019). Because of this urgent need for urbanization, densification is inevitable. Jenks et al. (2003) define densification as an urbanization strategy for achieving compact cities as opposed to expanding cities, intensifying the built form, and making optimal use of limited space for living. Densification stimulates direct and indirect socio-economic effects by increasing the housing stock and helping to ensure housing affordability on a wider metropolitan scale (Ahlfeldt & Pietrostefani, 2019). However, current research suggests that densification could harm the livability of cities

(Pont et al., 2020). According to the Cambridge Dictionary (2023), livability is the degree to which a place is good for living. Livability refers to the concerns related to the long-term well-being of individuals and communities. This term is often confused with 'quality of life' although the two have different definitions. While the quality of life relates to personal experiences and perceptions of happiness, livability is more concerned with the communal connection with the urban surroundings and how desirable and suitable an area or community is to live in (Van Kamp et al., 2003).

For suitable areas that can be densified, many countries are looking at post-war neighborhoods because of their low urban density. However, densifying these neighborhoods may result in the loss of their cultural values. Therefore, these must be treated with care. In theory, densification is not necessarily that difficult. The challenge isn't finding more space to build dwellings. The challenge is to maintain and preferably improve the livability, sustainability, and cultural values in these possible densification areas. However, there is not yet significant research done on the possible positive relationship between livability and densification (Mouratidis, 2019). This research seeks to find the balance between densification and livability by exploring strategies and approaches that align with the principles of these cities while improving their livability. As a project location to find this balance, the Western Garden Cities in Amsterdam New West is chosen. Within this project location, a post-war neighborhood will be chosen as a case study.

Keywords: densification, livability, sustainability, post-war neighborhoods, cultural values

1.2 PROBLEM STATEMENT

Like other countries, the Netherlands is facing how to deal with its growing population. The current population growth along with immigration, an aging society, and an increase in the number of single-person households is causing a great shortage of housing in the Netherlands. This, combined with long construction procedures and limited building space, makes it difficult for many people to acquire a home that suits their needs and capabilities (Central Government, 2023).

In response to the great shortage of housing, the City of Amsterdam plans to expand by 150.000 new homes to accommodate the expected 250.000 new residents by the year 2050 (Gemeente Amsterdam, 2021). According to CBS (2023), this will bring the population of Amsterdam to about 1.19 million inhabitants by 2050 (see Figure 1). However, this growth is subject to conditions that result in limiting expansion opportunities. The Municipality of Amsterdam (2021) wants the expansion to take place only within the current city borders. Because Amsterdam was originally densely built, the City of Amsterdam (2021) sees great potential for densification mainly in the city districts outside the center. Especially post-war neighborhoods such as in the Western Garden Cities in Amsterdam New West, due to the relatively large amount of public green areas and low urban density. The Western Garden Cities are part of the expansion of Amsterdam following the 'Algemeen Uitbreidingsplan' (AUP) in 1934 by urban planner Cornelis van Eesteren. After World War II, the neighborhoods of the Western Garden Cities were built according to modernist principles. Under the motto "light, air, and space," wide-open housing blocks with lots of open green spaces were realized (Rijksdienst voor het Cultureel Erfgoed, 2016).

However, as previously addressed, densification can affect the livability of cities (Pont et al., 2020), as less space is available for nature, and the urban quality could decrease (Elsawy et al., 2019). In the Dutch livability meter (leefbaarometer), density was found to be statistically the most negative factor for livability. The denser an area, the more people answered to be dissatisfied with their living environment (Burema et al., 2021). It is therefore important to investigate the balance between

densification and livability and how these can go hand in hand. This is especially the case for the Western Garden Cities. This district scores lowest on neighborhood satisfaction compared to the other city districts (Gemeente Amsterdam, 2022). Every neighborhood in this district scores below average and most neighborhoods score the lowest in all of Amsterdam. It can be concluded from the scores that the livability of the Western Garden Cities needs to be improved.

In the Netherlands, urban restructuring initiatives over the past few decades have mostly concentrated on demolishing and replacing its current housing stock (Gruis et al., 2006). Certain areas were severely impacted, such as the Western Garden Cities, and numerous housing corporations started large-scale demolition projects on the less appreciated post-war social housing estates. According to Flier and Thomson (2006), the Western Garden Cities became one of the four biggest demolition sites in the nation as a result of this initiative. This demolition is causing the cultural values of post-war neighborhoods in the Western Garden Cities to fade, which must be preserved. In 2011, the Western Garden Cities were selected by the National Cultural Heritage Agency as one of the 15 post-war neighborhoods that are of national importance. The listing's aim states that the post-war construction period 1940-1965 shall remain recognizable on the level of the area in future developments (Havinga et al., 2020).

In this context, the problem statement revolves around the need to reconcile densification with livability while retaining the cultural heritage of post-war neighborhoods. This challenge demands thoughtful strategies and approaches that align with the principles of urban development and simultaneously enhance the well-being of residents. Therefore, there is a pressing need to explore how densification can be carried out in a manner that not only addresses the urgent need for urbanization but also contributes positively to the overall livability and sustainability of cities.

1.3 RESEARCH GOALS

The goals of this research are to investigate the impact of population growth, respond to the great shortage of housing, and the challenges posed by densification with a focus on balancing densification and livability in post-war neighborhoods while preserving cultural heritage. For this purpose, a new framework must be developed that allows post-war neighborhoods to densify while preserving existing cultural values and simultaneously improving the livability of the neighborhood.

To develop this framework, knowledge must be acquired on what the challenges and methods are for densifying post-war neighborhoods while preserving their cultural heritage. Also, a set of factors needs to be determined to measure the livability of a neighborhood and how these can be improved. To do this, it is important to get an understanding of the Western Garden Cities and what the cultural values are.

The acquired knowledge will be translated during the research phase into a framework that serves as a densification strategy for the Louis Couperusbuurt in Amsterdam New West. In the design phase, one or more building blocks in the Louis Couperusbuurt will be densified using the developed framework while improving the livability of the residents.

1.4 RESEARCH QUESTIONS

To respond to the problem statement, research should be conducted accompanied by several research questions, starting with the main research question, to develop a framework for the identified challenges. The main question for this research is as follows:

How can a post-war neighborhood be densified, while improving its livability?

To further develop the necessary background knowledge to develop a framework for the problem statement, a selection of sub-questions is formed. The answers to the sub-questions will result in an answer to the main research question. The sub-questions for this research are the following:

1. What are the challenges and methods for densifying a post-war neighborhood?
2. What set of factors determines the livability of a neighborhood?
3. What is the current livability of the Louis Couperusbuurt in Amsterdam New West and how can this be improved?

1.5 RESEARCH HYPOTHESIS

The hypothesis for this research is that by developing a comprehensive framework that addresses the challenges of densifying post-war neighborhoods, incorporates factors contributing to neighborhood livability, and values the preservation of cultural heritage, it is possible to densify post-war neighborhoods while improving their overall livability. The application of this framework to the Louis Couperusbuurt in Amsterdam New West will demonstrate the feasibility and effectiveness of this approach, resulting in a more sustainable, and livable urban environment.

The research hypothesis acts as a guided master while conducting the research. The research hypothesis can be compared with the conclusion after the research has been conducted. Any divergences or outcomes can be explained and addressed in the discussion.

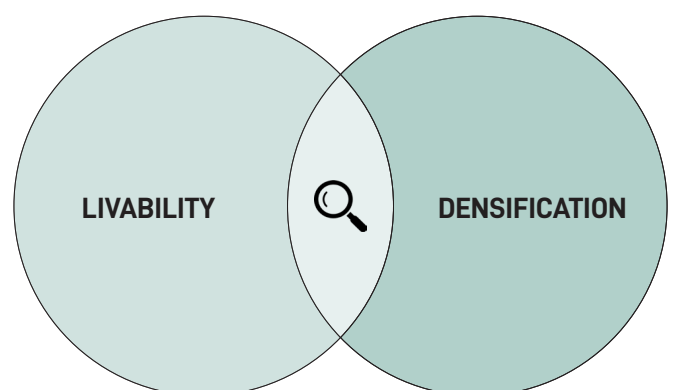


Figure 1: Diagram illustrating the research topics (own image).

2. THEORETICAL FRAMEWORK

2.1 THEORETICAL FRAMEWORK DIAGRAM

This theoretical framework describes studies that have already been done within the topics of this research. The studies can be divided into two main categories related to the main and sub-question of this research. The categories are densification and livability.

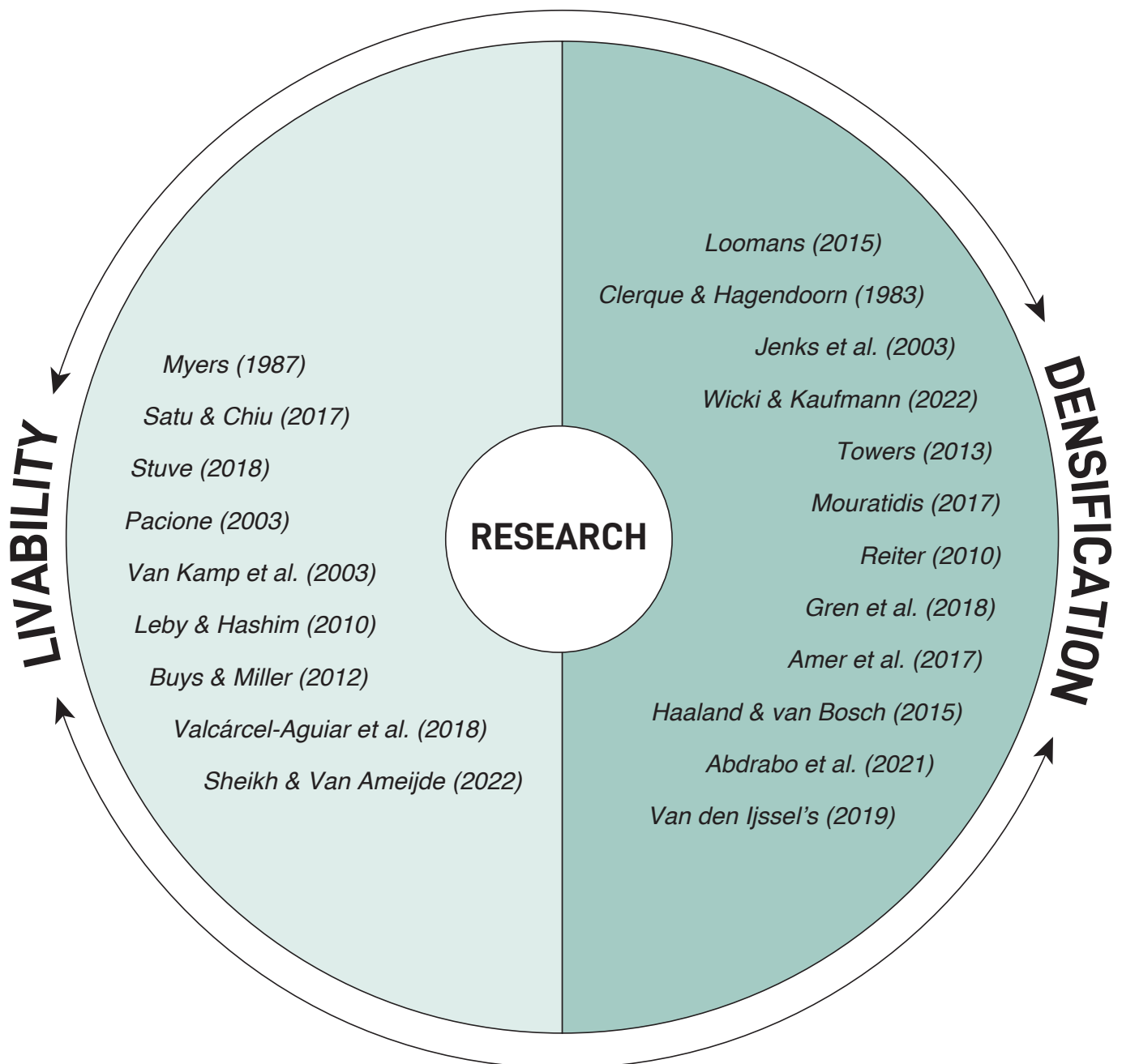


Figure 2: Diagram illustrating the theoretical framework (own image).

2.2 LIVABILITY

Research on livability is relatively recent. The idea originated in the 1960s when social factors were studied as part of scientific research on the quality of life. The term 'livability' was first used in the 1980s to describe the increased interest in the study of the urban quality of life (Myers, 1987). Over the years, livability has received increasing attention due to the globally increasing population. However, a fixed definition and framework for defining the factors that determine livability is still lacking. Livability has been defined in different ways based on different urban contexts and dimensions, all of which emphasize different livability factors (Satu & Chiu 2017). Stuve (2018) argues that livability is not only a tangible result of desirable urban conditions but also a result of people's perceptions of urban life. Pacione (2003) emphasizes that the definition of livability is relative to place, time, and the values of the evaluator.

Van Kamp et al. (2003) reviews multiple concepts of livability, environmental quality, and quality of life. These different concepts are compared along the factors of domain, indicator, scale, time frame, and context in understanding these concepts. Examples of underlying conceptual models of these different concepts are provided but the study concludes that is not possible to formulate one framework with fixed factors that determine livability.

However, several studies are proposing different frameworks to measure livability. The article by Sheikh & Van Ameijde (2022) proposes a livability framework based on Abraham Maslow's Theory of Human Needs, which integrates important factors of urban design with the needs of different types of user groups. Factors such as belongingness, safety, accessibility, and the availability of social and cultural urban facilities are used. The framework aims to promote livable communities by identifying and addressing the challenges of spatial justice and social segregation. The study by Leby & Hashim (2010) aims to identify the factors and dimensions that residents take into account when assessing the livability of their neighborhoods, as well as to assess the value of these factors and dimensions. This study measured livability along four factors: social, physical, functional, and safety.

Additionally, sixteen factors are found to be indicators for the four dimensions. 170 questionnaires in all were used for the study, with the greatest concern of the residents, according to the results, is safety, with social issues seen as the least significant consideration. The article by Valcárcel-Aguilar et al. (2018) defines liveability as a form of sustainability that aims to improve the environmental, social, and economic characteristics of an urban area and by doing so the quality of life. The article proposes a framework of multiple natural- and built environment factors to determine livability. The article by Satu & Chiu (2017) investigates the livability of dense residential neighborhoods. Focusing on the role of housing and planning in reducing density problems and utilizing the benefits of high-density living. To determine the livability factors such as accessibility, public transport, community facilities, open spaces, sense of community, sense of safety, and dwelling space are analyzed. The findings suggest that while there are challenges in terms of accessibility and public transport, residents generally express satisfaction with community facilities and open spaces. The study emphasizes the importance of considering residents' experiences and views at the neighborhood level.

In the existing literature, social and physical factors consistently emerge but a concrete set of factors to determine livability cannot be described. The literature also deals primarily with livability at the neighborhood scale. The livability of dwellings themselves is not addressed. However, Buys & Miller (2012) argue that the built environment, of both dwellings and neighborhood characteristics, has a major influence on the physical character and livability of a place.

2.3 DENSIFICATION

Densification has been linked to the compact city approach since the 1990s which is the main planning strategy to cope with the challenges between land uses as a result of global urbanization (Haaland & Van Den Bosch, 2015). The compact city approach suggests that existing urban areas should be utilized as much as possible. This can be achieved by building at high densities, mixing functions, and keeping new urbanization compact in close proximity to the existing built environment (Clerque & Hagendoorn, 1983).

Densification has been put forward by Jenks et al. (2003) as an urbanization strategy for the efficient use of limited space for living, to intensify the built form, and to realize compact cities as opposed to expanding cities. The main goals described by Wicki & Kaufmann (2022) for densifying existing areas are to protect undeveloped land, reduce CO₂ emissions, and the provision of housing. This theory aligns with the current goals set by the Municipality of Amsterdam (2021) in the 'Omgevingsvisie Amsterdam 2050', where the expansion of the city of Amsterdam only can take place within the current city borders to keep the vulnerable landscapes outside its borders intact.

However, there is a contrasting stigma on densification and its application. Various advantages and disadvantages are pointed out. Towers (2013) states that living in close proximity to others promotes attractive facilities, including shops and efficient public transport, enhancing the area's appeal. Dense neighborhoods also offer environmental advantages, particularly in transport, significantly reducing energy consumption due to mutual insulation in row housing and stacked housing. Mouratidis (2017) suggests that social segregation could decrease as a neighborhood becomes more dense and that inhabitants of dense areas are generally found healthier. This is because dense areas are less dependent on cars, which stimulates physical movement. In contrast, Reiter (2010) argues that urban densification poses several risks, including increased air pollution, traffic jams, the creation of heat islands, and wind discomfort. Reiter also states that densification poses a risk to existing urban morphologies, architectural typologies, and urban heritage.

Gren et al. (2018) state that higher density could result in reduced daylighting for inhabitants and environmental degradation with the loss of public green areas.

The report by Amer et al. (2017) presents a methodology for decision-making on urban densification through roof stacking. The methodology consists of three levels: urban, engineering, and social. It identifies multiple criteria to assess and map the potential for roof stacking in terms of location and number of added floors. Abdrabo et al. (2021) also present a methodological approach to sustainable urban densification for controlling urban expansion at the microscale. The study aims to develop a methodology for identifying potential areas for urban densification and prioritize them based on sustainability parameters. The five densification methods considered are filling backyards, infilling land, demolition and rebuilding, roof transformation, and roof stacking. The article by Loomans (2015) suggests different methods for densification and focuses on rather internal densification methods than external ones. The five densification methods mentioned are making single-family houses into community houses, accessory dwelling units, scaling duplex into fourplex dwellings, tiny house communities, and shared urban facilities. Van den Ijssel's (2019) research report focuses on the role of high-rise buildings in the densification of post-war city districts in Amsterdam. It also explores the role of discourse coalitions in the high-rise building debate and how this role can be explained. The findings suggest that post-war neighborhoods are seen as suitable locations for densification due to their building typology and open spaces.

From the retrieved literature it can be concluded that urban densification is a complicated but necessary method that calls for careful planning and consideration of sustainability. Achieving a successful implementation requires balancing the benefits and drawbacks. The various methodological approaches that are found could aid in the decision-making process for determining a densification strategy.

3. METHODS

3.1 RESEARCH METHODS

Now that the research questions have been defined, it is time to discuss the approach that will be taken to discover the solutions. For the result of this research to have context, meaning, and purpose, several research methods are needed. The research methods used for this research are literature review and fieldwork consisting of in-depth interviews and observations. Listed below the approach for each given sub-question is described with the steps, tasks, and output of the method.

1. What are the challenges and methods for densifying a post-war neighborhood?

The first sub-question, dedicated to gaining knowledge about the challenges and methods for densifying a post-war neighborhood, will be investigated through a literature review and observations. In the literature sources about densification in the theoretical framework, various advantages and disadvantages are pointed out. These advantages and disadvantages will be analyzed together with the cultural values to determine the challenges for densifying the Louis Couperusbuurt. This will be done because as previously brought forth densification can result in the loss of cultural heritage. To determine the cultural values, multiple literature will be reviewed. For instance, 'Heritage attributes of post-war housing in Amsterdam' by Havinga et al. (2020) will be reviewed. Also, the 'Algemeen Uitbreidingsplan' by Van Eesteren Museum (2019) and the 'De Wijkgedachte' by Van Der Lans (2021) will be analyzed to get an understanding of the concept by which the Western Garden Cities were constructed.

Furthermore, the following literature will be analyzed to discover multiple densification methods and frameworks:

- 'A methodology to determine the potential of urban densification through roof stacking' by Amer et al. (2017)
- 'A Methodological Approach towards Sustainable Urban Densification for Urban Sprawl Control at the Microscale' by Abdrabo et al. (2021)
- '5 Ways to Add Density without Building High-Rises' by Loomans (2015)

- 'Densification by High-Rise?' by Van Den IJssel (2019)

These various methods and frameworks will be compared to determine the most suitable densification strategy for the Louis Couperusbuurt in Amsterdam New West. Choosing the most appropriate strategy will be supported by observations. For instance, a SWOT analysis in the Louis Couperus neighborhood will be conducted to determine the strengths, weaknesses, opportunities, and threats.

2. What set of factors determines the livability of a neighborhood?

The second sub-question, concerning what set of factors determines the livability of a neighborhood, will be addressed by a literature review and in-depth interviews in Louis Couperusbuurt. The following frameworks that provide a set of factors to determine the livability of a neighborhood will be analyzed and compared:

- 'Environmental Quality and Human Well-being' by Van Kamp et al. (2003)
- 'Promoting livability through urban planning: A comprehensive framework based on the theory of human needs' by Sheikh & Van Ameijde (2022)
- 'Liveability Dimensions and Attributes: Their relative importance in the eyes of Neighbourhood' by Leby & Hashim (2010)
- 'Sustainable Urban Liveability: A practical proposal based on a composite indicator' by Valcárcel-Aguilar et al. (2018)
- 'Livability in dense residential neighborhoods' by Satu & Chiu (2017)

Based on the literature above, a set of factors that determine the livability of a neighborhood will be determined. In addition, fieldwork in the form of in-depth interviews will be used to survey the residents of the Louis Couperusbuurt on what factors they consider important for livability and what their current perceptions of this are.

3. What is the current livability of the Louis Couperusbuurt in Amsterdam New West and how can this be improved?

The third sub-question, dedicated to finding out the current livability of the Louis Couperusbuurt and how this can be improved, will be investigated through a literature review and observations. Based on the outcome of sub-question 2, a set of factors will have been defined for determining the livability of a neighborhood. The presence of this set of factors will be examined in the Louis Couperusbuurt. This will be done through fieldwork in the form of observations. In addition to observing the set of factors that determine livability, a SWOT analysis will also be conducted in the neighborhood.

The results of this research will be compared with the results of the Dutch livability meter (leefbarometer) of the Louis Couperusbuurt. Based on the comparison, a strategy will be determined on how the current livability can be improved.

3.2 CASE-STUDY

The case study chosen for this research is the Louis Couperusbuurt (see Figure 3) in Amsterdam New West. This post-war neighborhood is located in the Sloterveer district within the Western Garden Cities.

This neighborhood was chosen because, except for Osdorp, it scored the worst in terms of neighborhood satisfaction of all the districts in Amsterdam. Amsterdam's average score in neighborhood satisfaction is about a 7, with Osdorp scoring a 6.4 and Louis Couperusbuurt a 6.5 (Gemeente Amsterdam, 2022). This neighborhood is characterized by its social problems, including a combination of low education levels, low income, and high unemployment.

The Louis Couperusbuurt was built from 1945-1966 based on the Algemeen Uitbreidingsplan (AUP). The neighborhood has a total of 906 dwellings, 86 percent of which are housing corporation-owned. Of these, the majority are owned by the housing corporation Stadgenoot and the remainder by the housing corporation Ymere. The dwellings in the

neighborhood consist mainly of duplexes (beneden-bovenwoningen). A small open porch provides access to both the 4 dwellings and the storages that are semi-underground in front of the dwellings. Furthermore, porch houses (portiekwoningen) are found with residential blocks of four stories.

According to KadastraleKaart (2023), the largest target group in the neighborhood is young adults aged 25-44 with 37%. Furthermore, most residents are non-Western and the composition of households consists mainly of single-person households.

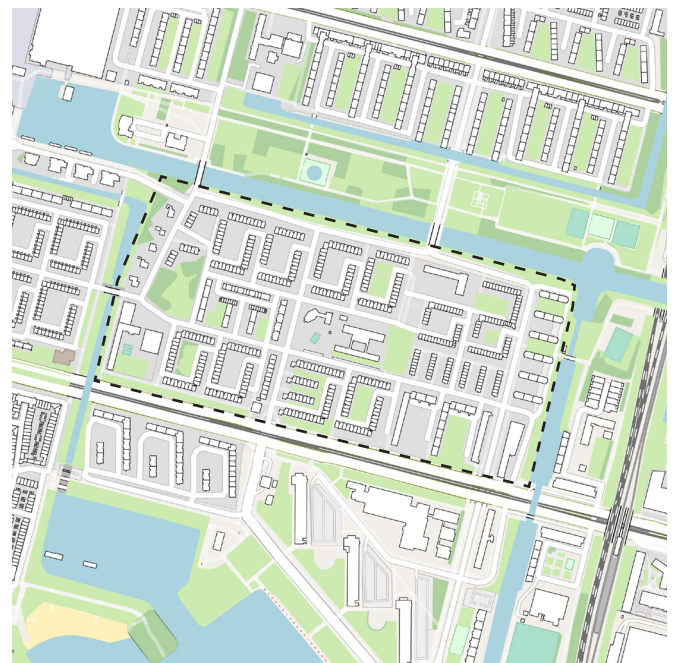


Figure 3: Case-study: Louis Couperusbuurt (own image).

4. WORKPLAN

4.1 RESEARCH DIAGRAM

The research diagram shows the steps that will be taken in the research with the accompanied research methods. The results of the research will provide a strategy that will be used as input for the design phase.

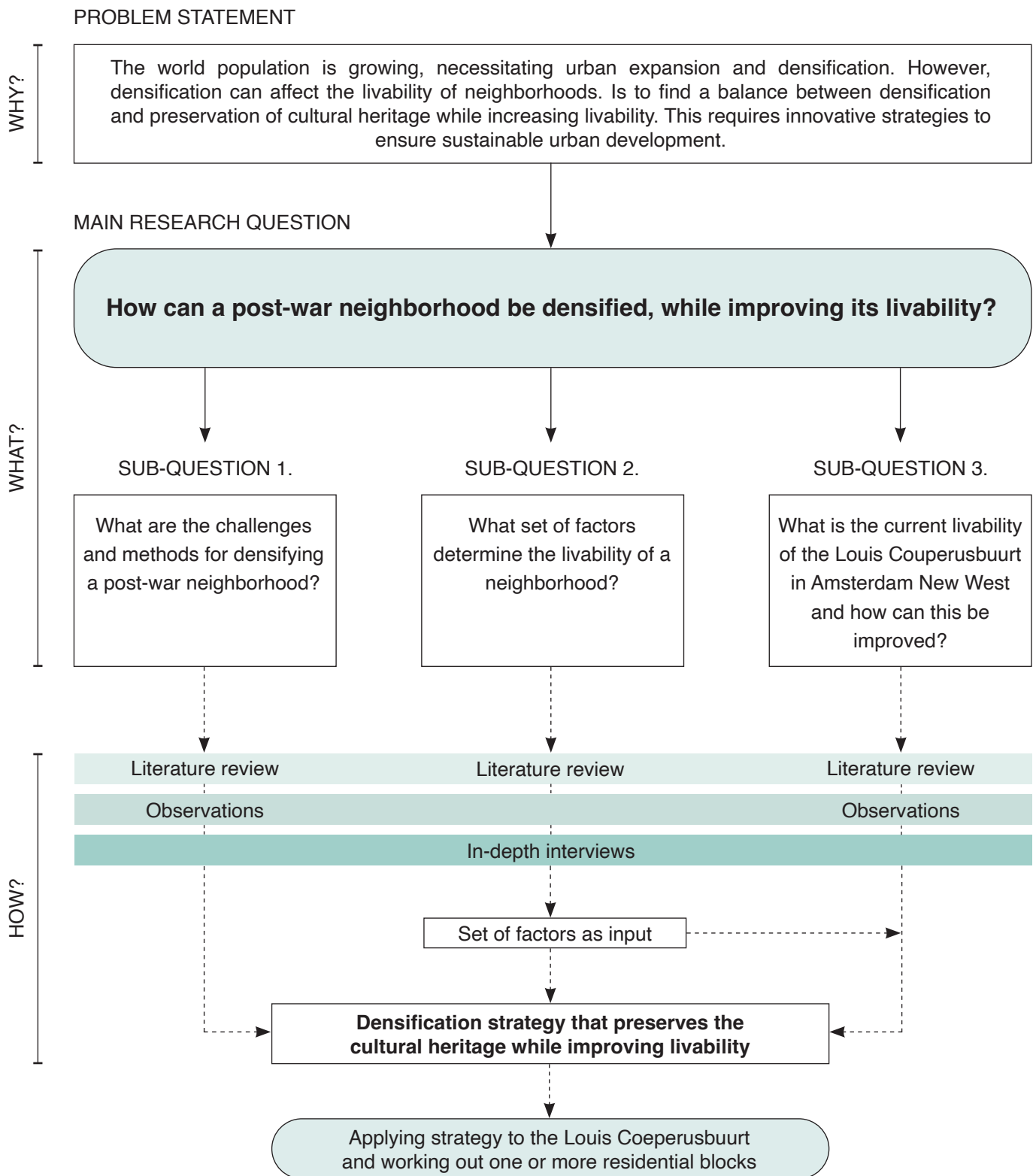


Figure 4: Research diagram (own image).

4.2 PLANNING

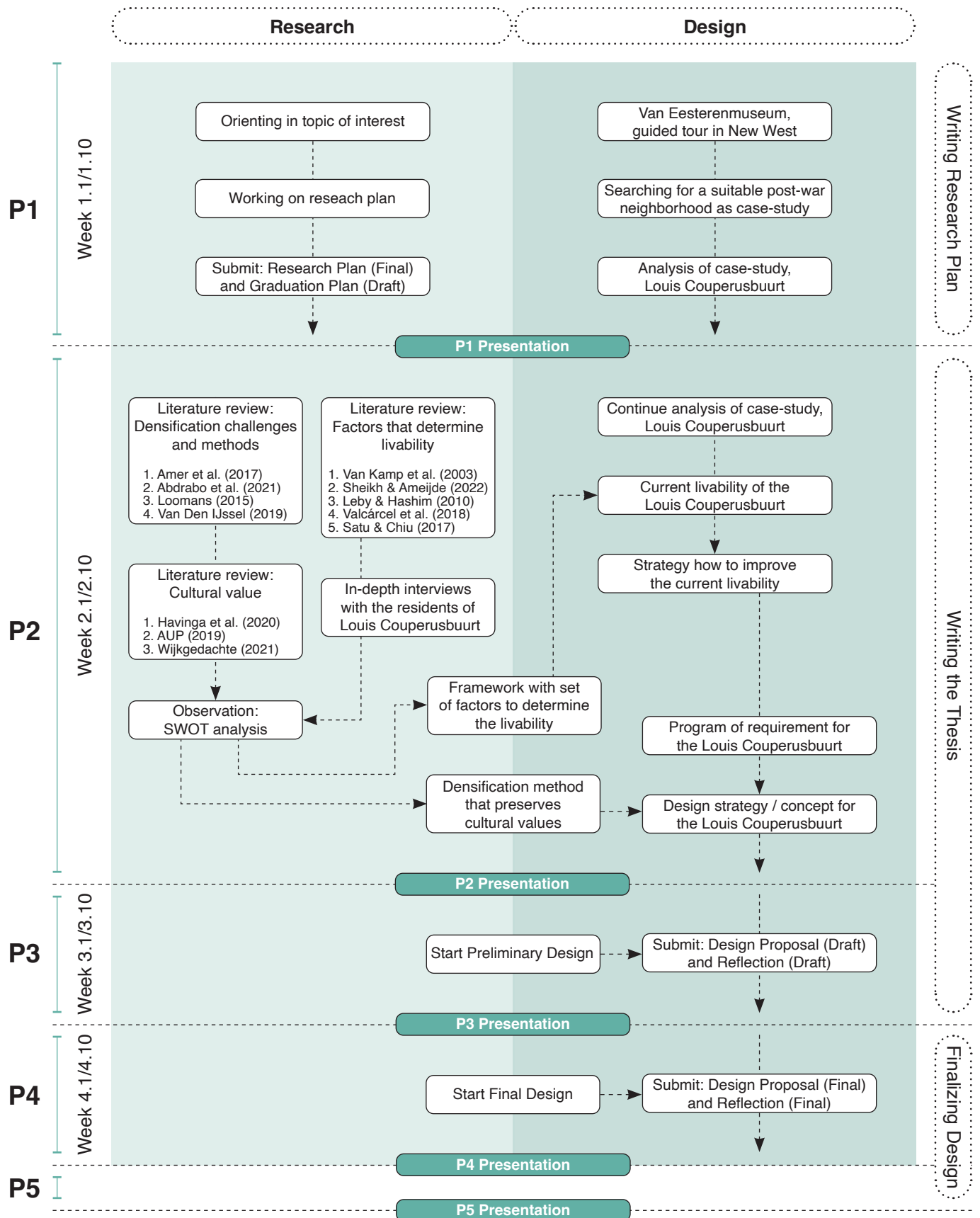


Figure 5: Planning diagram (own image).

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5.2 IMAGE SOURCES

