



From suburb to compact city

A study of shifting ideals in green planning, with the case of Upplands Väsby

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Independent project • 30 credits

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Landscape Architecture for Sustainable Urbanisation – Master's Programme

Uppsala 2022



From suburb to compact city – a study of shifting ideals in green planning, with the case of Upplands Väsby

Från förort till tät stad – en studie om skiftande ideal i grönplanering, med fallet Upplands Väsby

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Credits: 30 credits
Level: Second cycle, A2E
Course title: Independent Project in Landscape Architecture, A2E – Landscape Architecture for Sustainable Urbanisation – Master’s Programme
Course code: EX0945
Programme/education: Landscape Architecture for Sustainable Urbanisation – Master’s Programme
Course coordinating dept: Department of Urban and Rural Development
Place of publication: Uppsala, Sweden
Year of publication: 2022

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Online publication: <https://stud.epsilon.slu.se>

Keywords: Green structure, planning ideals, compact city, urban ecology, planning historical research

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Abstract

Planning of cities today is often focused on delivering a compact built structure and more green structure, since both these are regarded as sustainable solutions. However, the increasingly compact city form decreases the green spaces while the ecological functions of greenery is a fundamental part of a well-functioning compact city. For this reason, this thesis seeks to investigate how the compact city ideal redefines the role and reshapes the geography of the green structure. A planning historical research enables an understanding of different roles of green structure over time, to provide answers to how the green structure has been redefined. A closer study of contemporary planning that incorporates the compact city ideal and also urban ecology to enhance the green structure, acknowledges how the green structure is being reshaped. These are carried out in a qualitative case study of Swedish municipal planning, through the single case of Upplands Väsby municipality. The current vision of Upplands Väsby municipality is to go from being a suburb to becoming a green city and the already compact part of the municipality is undergoing further densification. This makes Upplands Väsby an interesting case where the compact city ideal's influence on the green structure can be investigated. The planning historical research shows shifts over time in vision, purpose, strategy and balancing of interests, regarding the green structure in municipal plans. It also shows how the construction of the compact city ideal has redefined the role of the green structure over time, to successively contain more functions with increasing focus on ecology. The study of contemporary planning reveals how the compact city ideal reshapes the geography of the green structure, by mainly giving space to well-organized green structure with clear purposes and multiple functions. Green spaces are thus shrunk. If these functions are shown to impair one another's purposes, this would create a problem caused by the contemporary planning ideal of the compact city, for further planning to solve. Such construction of previous problems and how planning has attempted to solve these, is highlighted by the historical approach in this study. Hence, this study may encourage contemporary planning to question the strong compact city ideal as the default solution.

Keywords: green structure, planning ideals, compact city, urban ecology, planning historical research

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1. Introduction

The increasing urbanization implies ecological challenges for contemporary planning to solve. Over half of the human population lives in urban areas, and this proportion is expected to continue to rise (McIntyre 2021). This development has put pressure on the climate and ecology, both locally, regionally and globally (Anderson 2021). Increased awareness of environmental problems has called for the use of ecological knowledge combined with urban design (Duvall et al. 2017; Goode 2021; McIntyre 2021). When ecology was incorporated in the planning of cities, the concept of urban ecology was born (Collins et al. 2000) and had its breakthrough in the early 21st century (Goode 2021). Contemporary planning needs to consider both ecologic, economic and social sustainability (Boverket 2020a). Concerning the ecological dimension of sustainability, urban planning focuses on implementing the most suitable method of development to minimize its environmental impacts, primarily about how the land will be used (Soga et al. 2014).

An increasingly dominant vision of sustainable development within urban planning is the idea of the compact city, which is usually achieved by densifying the existing built structure (Zalar & Pries 2022). A compact structure enables conservation of larger, consolidated blocks of green structure (Soga et al. 2014). The compact city model is also argued to increase closeness to functions within the city and thereby decrease the need for transportation (Tunström 2009), which promotes both the economic, social and ecological dimensions of sustainability. The growing trend of the city ideal is evident in the frequent attempt within planning to increase the density of cities. Density has emerged as a measure of the degree of city (ibid.) and has become an almost common-sense planning term (Zalar & Pries 2022). Residential areas are often being developed with the ambition to make a city out of them, or creating a city in the city, and there are Swedish municipalities that have replaced their title *municipality* with *city* (Tunström 2009). Authors are however challenging whether the compact city, alone, is to solve all urban problems. Zalar and Pries (2022) question the compact city as the default sustainability solution. Tunström (2009) highlights due to this the importance of critically reflecting on the discussion about the contemporary city and to search for alternatives.

Another common approach to achieve more sustainable cities is the incorporation of green structures and solutions of ecological problems. The increased use of ecology within city planning includes the concept of green infrastructure, which is widely used to deliver multiple benefits (Garmendia et al. 2016). A “renaturing” of cities is a sustainability strategy to promote local and global ecosystems, enhance human well-being and address environmental concerns such as climate change (Duvall et al. 2017). Zalar and Pries (2022) suggest that there is a potential tension between the compact city and the green city. Considering previous research on densification and green structure, presented in the following section, these two aspirations combined are expected to result in a reshaping of the green structure to fit in within the compact city. It has previously been observed that green structure has had different roles through the years and several authors have studied its development as a paradigm shift in planning (Hautamäki 2019; Qviström 2022). An understanding of different roles of green structure over time is needed, to scrutinize how planning of the compact city redefines the green structure and what values are at risk of getting lost. Knowledge about city planning historically, provides an important foundation in the discussion of present and future (Tunström 2009).

The development of cities over space and time changes the attributes of green spaces (Colding et al. 2020). Hautamäki (2019) finds that the pursuit of compact cities redefines and reshapes the urban green structure, and also expresses that green spaces are threatened by densification. This threat is evident in a lot of research, referring to “green pockets” in increasingly compact cities often being regarded as available land to densify (Anderson 2021; Colding et al. 2020; Zalar & Pries 2022). Duvall et al. (2017) notice a knowledge deficit about how the changing conceptualization of nature has influenced how urban planning, when it comes to nature, has evolved. Their examination concludes that the increasing urbanity generates perceived problems for planning to solve, which creates altering views on what nature is (ibid.). Zalar and Pries (2022) observe in their study that such problems are being constructed by planning itself, in the planning documents, to be solved by the compact city model. They conclude that their studied densification project manages to get around the potential tension between the compact city and the green city, by in different ways neglecting green space that is desired for densification. One way is by narrowing the categorization of green space worth preserving, in order to justify densification of green spaces that do not fit this frame (ibid.). Hautamäki (2019) also scrutinizes the compact city model by looking at how the paradigm shift regarding green areas is manifested in policy, and notices how the priority to densify has altered attitudes towards preservation of nature. Her study argues that green structure is organized to fit within the concept of the compact city model, which results in intensively maintained urban greenery (ibid.).

What kind of green functions and values are possible in the compact city? What can be sacrificed to make space for the compact city?

1.1 Problem description

The compact city and the green city are two aspirations that to some extent counteract each other. Densification is a strategy to prevent a scattered built environment that would claim large areas of land outside the city (Duvall et al. 2017; Hautamäki 2019; Tunström 2009) and to facilitate sustainable transportation (Bolleter & Ramalho 2020; Tunström 2009), among other things. Many authors argue that increased density equals decreased access to green space (Duvall et al. 2017). Extensive research has shown that as a consequence of densifying an already compact city environment, "green pockets" in the city are threatened since these are often regarded as available land (Anderson 2021; Colding et al. 2020; Goode 2021; Hautamäki 2019; Zalar & Pries 2022). At the same time, the discussion about urban ecology is increasing where green spaces are regarded as fundamental in the compact city. This arouses our curiosity about the growth of the contemporary ideas of planning and how the compact city ideal and urban ecology have been developed in municipal planning throughout the history, as well as how the contemporary ideal of a compact city is materialized.

1.2 Purpose and research questions

Densification and "renaturing" of cities supported by the growing field of urban ecology are both current strategies towards sustainability. Since densification often claims green areas, it is interesting to examine what kind of green structure is possible in the compact city. Considering the desire for both compact and green cities, the purpose of this study is to investigate how the compact city ideal redefines the role and reshapes the geography of the green structure. This is done by examining current development and projects leading to the materialization of the compact city ideal. This ideal is also studied in reference to a time-depth, in order to enable an interpretation of how the role and geography of the green structure have been redefined over time. This is to get an understanding of what is being transformed due to the implementation of the compact city. An objective in the thesis is also to get an understanding of how planning ideals in theory are applied in practice.

To investigate how the compact city ideal redefines the role of the green structure, the following research question has been formulated:

- *How has the geography of the green structure been constructed over time in urban planning?*

To investigate how the compact city ideal reshapes the geography of the green structure, the following research question has been formulated:

- *How is the conceptualization and geography of the green structure affected through the compact city ideal?*

On a methodological level we also ask:

- *How can a planning historical research facilitate an identification of the consequences of a shift towards the contemporary city ideal and urban ecology within planning?*

1.3 Case study: Upplands Väsby as an example of municipal planning

The research design of this thesis is based on a single qualitative case study of municipal planning, combining a study of historical and contemporary planning. The case of Upplands Väsby municipality is chosen, since they are one of the municipalities that are replacing their title municipality with city. Their current vision is to go from being a suburb to becoming a city by 2040 (Upplands Väsby kommun 2022b). This includes a densified city core, which is motivated by the enabling of a more effective usage of resources and having benefits for social, ecological and economic sustainability (Upplands Väsby kommun 2018a). Besides becoming a compact city, Upplands Väsby municipality also envisions becoming a green city until 2040 since there is a need for more greenery in the compact part of the municipality (Upplands Väsby kommun 2018b). Upplands Väsby municipality is located 25 kilometres north of Stockholm, along the road E4 towards Uppsala (see figure 1).

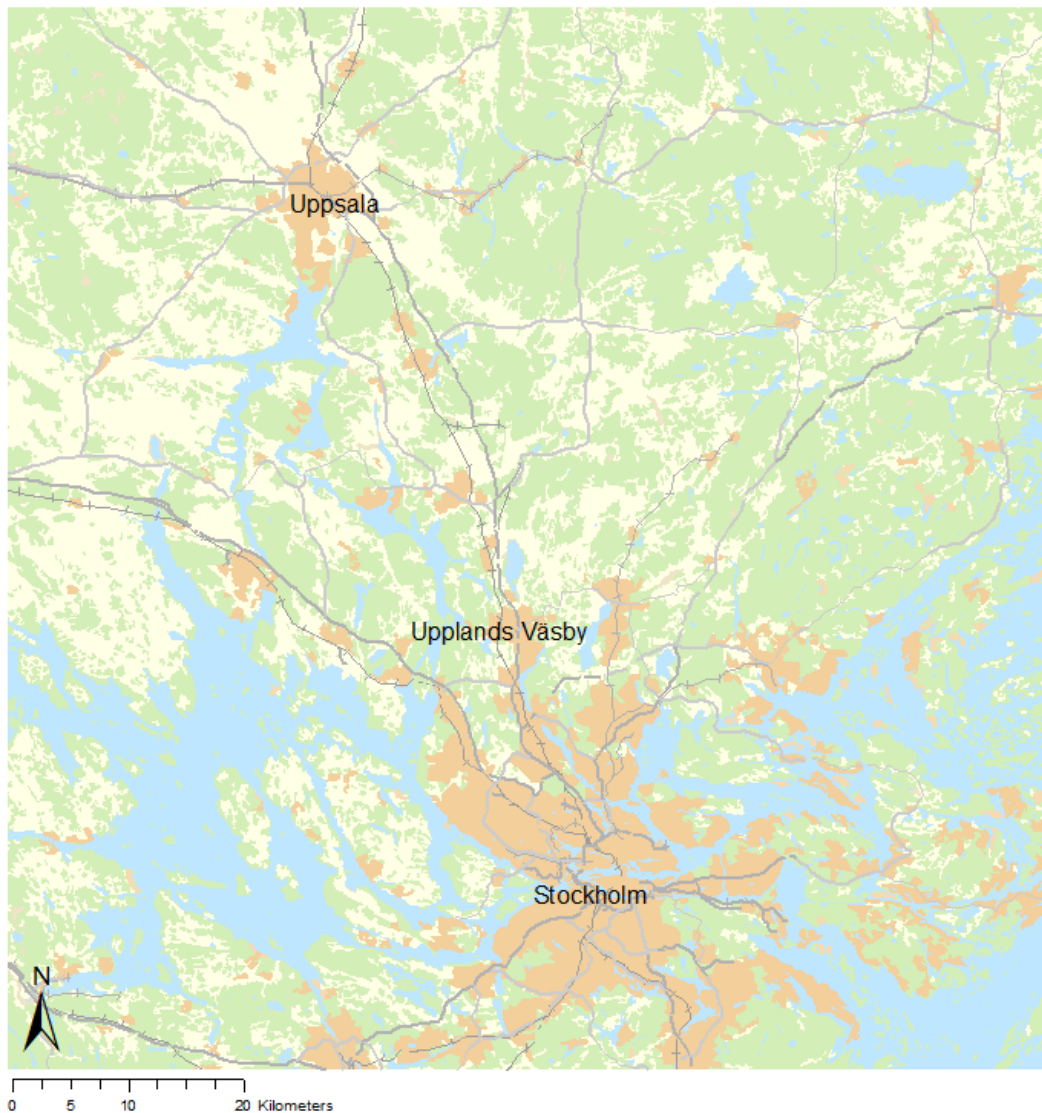


Figure 1. Location of Upplands Väsby. (Source: General map © Lantmäteriet. Edited by the authors).

The vision of Upplands Väsby municipality has shifted from being a municipality in the 90s, to a modern small city 15 years later, arriving at today's envisioning of becoming a city. In their comprehensive plan, the identity of Upplands Väsby is characterized as a suburbia shaped by both the industrialized station community at the end of the 19th century and the modernist city ideal, consisting of the Väsby center built in the 1970s surrounded by tall, monotonous buildings from the 1980s and 1990s (Upplands Väsby kommun 2018b). Upplands Väsby municipality has had a population growth since the beginning of the 21st century. At this time, the urban area continued to develop through densification with a focus on a compact city ideal. The municipality started to have the ambition to link the station with the center to achieve the "small, modern city", which was later supplemented by "the modern, green city" (ibid.).

The rapid growth and the variation of ideals of Upplands Väsby municipality arouses our curiosity about how the green structure has been, and is, reshaped and redefined. In the current comprehensive plan for Upplands Väsby, development of the built structure is divided into three levels reflecting intended density: small-scale urban area, medium compact urban area and compact urban area. This study will focus on the designated compact urban area, as such and in relation to the municipality as a whole. This will be done by further investigating an ongoing densification project within that area, called *Fyrklövern* (figure 2).



Figure 2. Location of the densification project *Fyrklövern* within the designated dense urban area. (Source: Eniro / © Lantmäteriet. Edited by the authors).

1.3.1 Municipal planning

Since this study examines both past and current planning in a Swedish municipality, an explanation of the Swedish planning process and its documents is presented here. Boverket (2021) explains that physical planning is about deciding how land and water areas are to be used. To steer the development of planning in a desired direction, Swedish municipalities establish a long-term comprehensive plan. It includes a vision of the future and strategies for how the land use will be managed, as well as how the municipality takes into account goals of significance for sustainable development (ibid.).

Comprehensive planning in Sweden: From the general plan to the comprehensive plan

Municipalities have for a long time been in need of a city overview provided by comprehensive planning, a need that emerged due to the rapid growth in the late 19th century (Nyström & Tonell 2012; Rudberg 1985). However, the plans have undergone extensive changes regarding content and design over the time (Rudberg 1985). At the beginning of the 1900's, the shape of the built environment was important. Ideals and urban development as a form of art was emphasized and the process of modernity was expressed through architecture (Nyström & Tonell 2012). The level of detail in the city plans shifted from high at the beginning of the 1900's to low in the general plans at the 1930's as the focus on zoning increased (Nyström & Tonell 2012; Rudberg 1985). After the second world war, a pervasive building act was adopted and comprehensive planning had its breakthrough in Swedish municipalities (Rudberg 1985). All municipalities became responsible for physical planning since the planning monopoly was introduced, and from here it was possible for municipalities to decide how, where and when the city should be developed (ibid.). The plans were still called general plans, which presented how the land use is intended to be used in the future, mainly in the urban area (ibid.). In other words, the land outside the urban area was not consistently included in the general plan, unless it was considered as valuable nature to be saved (ibid.). Unlike today's comprehensive plan, the general plan was not mandatory to confirm (Nyström & Tonell 2012). The general plan was followed by an optional plan called 'Municipal overview' before the mandatory comprehensive plan was introduced. The introduction of today's municipal plan took place when new forms were decided in accordance with the new Planning and Building act, adopted in 1987 (ibid.). According to the Planning and Building Act, it is mandatory for all municipalities to establish a comprehensive plan (SFS 2010:900). The comprehensive plan is contemporary and covers the entire area of the municipality, including land and water areas (Boverket 2021). In the comprehensive plan, the municipality presents the current use of the land and how it is intended to be used in the future. That includes preservation and development and in what way different interests such as public and national will be taken into consideration (ibid.).

The detailed development plan

With the comprehensive plan as a basis for the future development, the municipality prepare a detailed development plan for the area to be developed. In a detailed development plan, the municipality decides the design of land and water areas and how they are to be used (Boverket 2021). The detailed development plan regulates what the built environment is to look like and examines the suitability of a land or water area to contain a certain built structure (SFS 2010:900). It regulates what is public space and what is development districts. Sometimes the level of detail is

higher, when for example determining the placement or size of buildings (Boverket 2021). What is regulated in a detailed development plan is legally binding for adjudication of building permits (ibid.).

1.3.2 The historical perspective

A historical development of planning-ideals is studied to be able to analyse both a shift of ideals and contemporary ideals in the municipality Upplands Väsby, which is the chosen case of Swedish municipal planning. Qviström (2013a; 2013b) states that an insight into planning history and its intentions is important in order to comprehend the character and ideals of contemporary planning. New concepts have traces of former interpretations, perceptions of nature in planning policy are for example consisting of a mixture of previous views and more recent ideas (Duvall et al. 2017). History plays an important part in the construction of ideals (Tunström 2009). Qviström (2022) explains further that historical studies can detect potential values that are under threat due to new construction. An examination of differences between past planning and planning today, enables a review of contemporary planning, its ideals and in what ways it redefines and reshapes the green structure. Considering this, one part of the study is a planning historical research of Upplands Väsby's comprehensive planning documents from 1966 until 2018, which is when their current comprehensive plan was adopted. The historical research contains an investigation of the development of the compact city ideal, and how it redefines the role and geography of the green structure. It also enables an insight into when and in what ways ecology receives attention in municipal planning. The time span 1966 to 2018 depends on the availability of previous plans. There is a difference in content of the different plans, which is explained in the previous chapter that provides a review of municipal planning and its different types of plans through time. These plans are rich in content, which is why a qualitative content analysis is chosen as a method to reduce the amount of text and facilitate a focus on the relevant parts of the text, which in this study is green structure and densification. This description of the method is obtained from Schreier (2013) and is, together with the collection of material, further explained in chapter 4, *Methodology and material*.

1.3.3 The contemporary perspective

While the historical research that is described in the above section focuses on plans for the municipality as a whole, the second part of the study is delimited to the district Fyrklövern. Here, contemporary planning with a focus on the compact city ideal, densification and green structure, is further studied in an ongoing densification project to investigate how the compact city redefines the role and reshapes the geography of the green structure. The actual incorporation and

implementation of ecology in plans is also possible to study here. This project is located in a designated compact urban area and is to be more densified. Since the historical documents can mainly show current land use at the time and intended development or preservation, this contemporary densification project is used to capture how intentions and ideals of contemporary plans are actually materialized. This is done both by studying programs and detailed development plans that cover the area of this particular project and by a site visit. This combination enables an analysis of how planned development and preservation are realized on site, since ideals of plans and how these are implemented in reality may not always comply. Understanding from the historical research also provides perspectives to use when reviewing contemporary planning in this part of the study. A more thorough description of this part is also provided in chapter 4, Methodology and material.

1.4 Delimitations

This project is limited to a single case, Upplands Väsby municipality, and to a smaller part of the planned compact city. The historical part of the study is limited to the few available comprehensive plans, as a closer look at other archival materials would have made it impossible to also find the time to study the contemporary development. The study of the contemporary development is limited to a study of plan documents that are explicitly connected to that delimited area, while documents on a municipal level have not been included in this part of the study.

Since this study both takes on a historical perspective and a contemporary perspective, the conduction of both of these have had to be compromised to a certain degree to ensure there is enough time. The two parts depend on each other to fulfil the aim of the study. The historical part is needed to enable an analysis of how planning ideals have shifted through time and how these shifts have redefined the green structure. Similarly, the contemporary part is necessary to review today's planning ideals and how these may, and are, redefining and reshaping the green structure. The compromise implied that our initial idea to interview planners at Upplands Väsby municipality, to enhance our understanding of decisions made in the plans, needed to be excluded. The time span considering implementations of the plans for Fyrklöver is another delimitation. The site visit enabled us to get a view of parts of the plans materialized, while other parts still consisted of construction works.

Although the emphasis in this thesis is on the ecology of green structure, it is hard to focus on its ecological aspects without also touching upon its social aspects. As the theoretical framework will show in the upcoming two chapters, nature and society are closely connected and to a certain degree intertwined.

1.5 Approach and disposition of the work

This study investigates how the compact city ideal redefines and reshapes the green structure, with the overall goal of enabling an understanding of how planning ideals in theory are applied in practice. The examination of planning ideals and answering of the posed research questions, is worked out by the case study of Upplands Väsby municipality.

Different sources of information are collected, interpreted, compared and analysed in this study, which is a way to validate what it describes. Literature and empirical material are used simultaneously in this study. The way of continuously shifting between theory and empiricism is called an abductive approach (Capelán & Göransson 2021). This implies that the researchers have a theoretical understanding of the contexts of the studied material (Bryman 2018). The collected literature examines changing roles of nature in planning, the development of planning ideals, previous research on the subjects densification and green planning, and information about urban ecology which has received increased attention within planning. The results of this literature review constitute the theoretical framework of this study and are presented in chapter 2, *The shifting role of nature in planning* and in chapter 3, *The urban ecology perspective on the compact city*. These two chapters also provide the research with two theoretical lenses, that the case is studied through. The empirical material is processed during the case study, and is obtained from plan documents, maps and a site visit. The collection of empirical material is described in chapter 4, *Methodology and material*, followed by a presentation and interpretation of this material in chapter 5, *From suburbia to the compact city: the case of Upplands Väsby*. The literature and the information about Swedish planning provides a knowledge basis that, together with the collected empirical material, is analysed and discussed in chapter 6, *Analysis and discussion* to answer the first two research questions. In chapter 7, *Discussion of methodology*, the methodological question is answered and new knowledge is presented, followed by a discussion about the suitability of the chosen approach. Chapter 8, *Conclusion* briefly summarizes what has been investigated and suggests potential development of the study. This chapter also returns to the purpose and objective of the study.

2. The shifting role of nature in planning

This chapter provides a historical overview of how the idea of green structure in the city has changed over time. This includes a review of what has been important and what planning has had to solve. History has a part in how ideals are constructed and this chapter is later used as a theoretical lens in the case study.

2.1 The construction of earlier planning ideals

People's perceptions of nature alter and influence the directions of planning policy, simultaneously as planning policy influences the perceptions of nature (Duvall et al. 2017). Earlier planning ideals have tested the idea of combining nature and urbanity to offer the best of both, however by restructuring the existing city completely and with doubtful success (Bolleter & Ramalho 2020).

In the 18th and 19th centuries, the progress of the industrial revolution reversed the roles of nature and city. Historically in Europe, nature had mostly been feared and perceived as dangerous, messy and unfamiliar, while cities were seen as secure and a refuge from the threats of nature (Duvall et al. 2017). Since the industrialization entailed more crowded and polluted cities, nature instead became their desired opposite (Duvall et al. 2017; Kaika 2005). Such switched meanings of nature have occurred several times and can be recognized in planning history. Howard's garden city arose in 1902 as a planning ideal to save dwellers in the industrialized cities from the unsanitary conditions, by cleaning up the city with nature (Bolleter & Ramalho 2020; Kaika 2005). One element of this ideal was to let urban green belts encircle the city to restrict urban expansion, which have influenced planning since the beginning of the 20th century (Duvall et al. 2017).

Heading towards the mid 20th century, the garden city ideal influenced subsequent modernist planning ideals, both with Le Corbusier's idea of bringing nature back into the city and Wright's proposal of bringing the city into nature (Kaika 2005), the former by planning for "towers in the park" and the latter by the "broadacre city" (Bolleter & Ramalho 2020). "Towers in the park" was an ideal of high density, with greenery surrounding high rise buildings, while the "broadacre city" envisioned a low density suburb. However, the both ideals imagined a manufactured nature and unlike the garden city's sacred nature, nature was according to these ideals once again something uncivilized in need of domestication

(Kaika 2005). Le Corbusier depicted a separation of different components of modern living, such as home, work, recreation and traffic, which resulted in different zones of functions and land use (ibid.). Tunström (2009) has analysed how reports about city planning use expressions and concepts that refer to elements of the city. She finds that “green area” can be connected to the modernist separation of functions. In Sweden, large green areas in the urban environment played an important role within the welfare planning of the 1960s-70s. These were to provide access to recreation and greenery as a public good (Qviström 2022; Zalar & Pries 2022). The idea of green spaces providing multiple everyday assets was common in post-war planning, and appeared in Swedish national policy already in the 1940s (Zalar & Pries 2022).

2.2 The emergence of the compact city ideal

Often, planning ideals in theory and in practice are only partly coherent since the realization of an ideal can look different. The actual outcomes of the planning ideals have brought problems that have needed to be solved by even more planning and new approaches. The suburbs that drowned in greenery (Kaika 2005) had claimed productive land, turned out to imply high infrastructure costs and increased car travels (Bolleter & Ramalho 2020; Duvall et al. 2017). Green spaces once again became less attractive and dark areas to avoid, due to poor management or fear of crime (Colding et al. 2020; Kaika 2005). Tunström (2009) notices that green spaces are often perceived as not only unkempt, but as undefined or a no-man’s-land. She also gets the sense that while parks are perceived as part of the traditional city, the green area has remained more of a secluded zone. Suburban growth and its sprawling built structure is one of the results of contemporary urbanization, and its environmental issues have called for a more compact city model delivered by urban densification (Bolleter & Ramalho 2020; Duvall et al. 2017). Urban densification is argued to increase the proximity to functions within the city and by that decrease the need for transportation (Tunström 2009), which favours both the economic, social and ecological dimensions of sustainability.

While the benefits of nature still had a major anthropocentric emphasis at the time, the emerging compact city approach contained environmental concerns. A growing field of ecology and earth sciences in the 1960s increased the awareness of the environmental problems in cities, such as air pollution, and inserted ecological values (Duvall et al. 2017). One example is the landscape architect McHarg, who in his urban development plans protected natural areas that provided important services (Bolleter & Ramalho 2020). Although the science of ecology was studied by biologists already during the late 19th century, the concept of urban ecology was born when ecology was incorporated in the planning of cities (Collins et al. 2000). Goode (2021) describes a boom of urban ecology in the early 21st

century. Duvall et al. (2017) find in their study that nature was solely considered an amenity for humans in planning documents until after the 1980s, when it gained more ecological focus and eventually became part of today's large emphasis on sustainable development. Despite this, and the environmental aspects of the compact city model, tensions may exist between a compact city and the incorporation of nature in urban areas. Many authors argue that an increased density entails a decreased availability of green spaces (Duvall et al. 2017). Hautamäki (2019) for instance finds that the effort to densify the urban structure implies that urban green spaces are threatened. Another consequence urged by Qviström (2022) is that former ideals of green spaces are silenced and replaced by the compact city model. The recreational purposes of the welfare planning in the 1970s was to be replaced by a new division consisting of park planning, sports, and nature conservation resulting from an expanded focus on landscape ecological conditions (ibid.).

2.3 A social ecological perspective

The alterations in the human-nature relationship have implied various meanings of the environment within planning. This has influenced the choices made between preservation, enhancement, protection, compromise, trade and exploitation of the environment (Duvall et al. 2017). An enhanced connection and contact with nature is for instance proven to foster people's commitment towards environmental protection (Bolleter & Ramalho 2020). In the 1990s and early 2000s, research increasingly pointed to human and urban pressures on ecosystems, thus the impacts of cities on both local and global ecosystems (Duvall et al. 2017). Since then, cities themselves have come to be regarded as ecosystems within which humans play crucial roles (Duvall et al. 2017; McIntyre 2021). Recent scholars would argue that nature is involved in the production of urban, social worlds, and urbanization can be thought of as a social process where nature is being transformed and altered (Angelo & Wachsmuth 2015). This calls for a recognition of society and ecology as united, not separated. Cities are social ecological systems (Duvall et al. 2017) and urbanization is socionatural (Angelo & Wachsmuth 2015). Kaika (2005) describes the 21st century nature as a socially constructed hybrid and a result of intense interaction between humans and the natural environment. This social ecological perspective can be seen as a fusion and expansion of earlier perspectives that addresses the increased focus on the environment and sustainability that arose in the late 20th century (Duvall et al. 2017).

2.4 Reflection

Nature and green structure have played different roles throughout history. An understanding of nature's role in the history of planning provides us a perspective on the contemporary ideas of planning, which otherwise can easily be taken for granted. The depiction made in the historical overview above can be used as a theoretical lense to see the shifting ideals in the forthcoming planning historical research. The idea of green structure has shifted, from being perceived as messy and unfamiliar to being used to sanitize polluted cities, to once again being perceived as something that is in need of domestication. In the historical overview it is also informed that the growing field of ecology and earth sciences in the 1960s increased the awareness of the environmental problems in cities, and inserted ecological values. This makes it interesting to look back at the 1960's municipal planning in Sweden, to examine how ecology was interpreted.

Contemporary planning has called for a more compact structure where there is no place for unkempt green spaces and no-man's-land. The historical review reveals that planning does not only solve problems, it also creates new problems. This overview can be used to scrutinize contemporary planning and to highlight new problems. It is also evident that the realization of planning ideals may not completely match what they imply in theory, which is why a study of the actual plans and their implementation becomes valuable. What we already know of is the issue in contemporary planning of the compact city versus the green city. Both are argued as sustainable approaches in urban planning, but they are counteracting at the same time since green spaces are endangered in the compact city. Due to this risk, solutions using ecological knowledge are called for in order to reach a sustainable, compact city. The ecological perspective on the compact city is presented in the following chapter.

3. The urban ecology perspective on the compact city

With the growing population and the need for urban expansion, whilst climate change must be taken into consideration, we see a closer integration between ecology and urban design promoting biodiversity as a fundamental part of sustainability (Goode 2021). Biodiversity is defined by Anderson (2021) as what describes the variety of life, and can be measured in units of anything from genes to entire ecosystems. Research shows that urban areas, or cities, and their growth have considerable and determining effects on ecology at local, regional and global scales (ibid.). Consequently, there is an urge to implement the best method of development to minimize these impacts (Soga et al. 2014). An increasingly compact urban cover reduces urban green spaces, leading to the destruction or fragmentation of natural habitat, homogenization of ecosystems (Anderson 2021; Colding et al. 2020) and decreasing density of flora (Anderson 2021). This implies a loss of the ecosystem services that natural systems provide humans with (Colding et al. 2020). Benefits that people can obtain from ecosystems, the so called ecosystem services, can be *providing* for example food and drinking water, *regulating* as for instance purifying air and water, *cultural* such as catering recreational environments and *supporting* as providing conditions for the other three types of services to function (Naturvårdsverket n.d.). According to Soga et al. (2014), cities are usually developed on land previously occupied by highly productive ecosystems, and they mean that these developments are, relative to their extent, threatening processes. National pressures for further development, driven by the need for more homes, will inevitably lead to the loss of more pockets of urban land that are currently protected for their biodiversity (Goode 2021). Inhabitants are likely to rely more on the city's public parks and spaces as the density increases and their courtyards become smaller (Stockholms stad 2016).

3.1 Green infrastructure and multifunctional planning

The increased awareness of environmental issues has called for solutions using ecological knowledge (Goode 2021) and the demand for green infrastructure is intensified as cities are challenged with becoming more sustainable. Green

infrastructure intends to use the concept of ecosystem services in planning, design and management of urban spaces (Duvall et al. 2017). For instance, ecosystem services help alleviate rising temperatures and pollutants (Avolio & Trammell 2021). These ideas are expected to mitigate and prevent effects caused by urban areas, such as the urban heat island effect. This kind of effect, where the temperature in urban areas is higher compared to its rural surroundings, is for example managed by planting urban trees in order to cool down the local climate (Roth 2021). A central idea within the concept of green infrastructure is multi-functional planning, which means providing solutions for one delimited area in order to strengthen multiple benefits. Such benefits usually involve both ecological and social aspects. These may be, for example, biodiversity conservation, recreation, economic growth, water regulation and well-being (Garmendia et al. 2016). Soga et al. (2014) explain that nature in cities is fundamental for human health and well-being. For example green, walkable streets that combine safe pedestrian access and stormwater management meet the inquiry for both ecological and social sustainability. Another example is recreational corridors whose focus lies on connecting greenspaces to benefit human health and well-being (Pauleit et al. 2021). Additionally, exposure to nature engages people in natural environments, which may influence the support for conservation action (Soga et al. 2014).

Colding et al. (2020) highlight multifunctional planning as an approach to deal with the scarceness of green spaces, in allowing one green space to provide multiple functions. They describe this as a quick fix for dealing with overcrowding effects in public parklands as a result of urban densification and urban growth, meaning that more individuals compete for the same space to perform different activities. Stockholm is described as using this approach to deal with their ongoing population boom (ibid.). Stockholm municipality describes that as their city is densifying, its green structure will need to contain both more social qualities and functions for climate adaptation (Stockholms stad 2016). Garmendia et al. (2016) notes that multifunctional planning seeks to provide a “win-win” solution where no value is lost. Saunders (2012) questions the possibility to achieve several goals of a green area, goals such as a healthy relationship between nature and society, an enhanced quality of the everyday lives of residents and preservation of wildlife habitats, without causing incompatibility.

3.2 Conservation

Conservation of urban nature is another part of the solution to the problems of urban growth, why biodiversity has come to be an increasingly common expression (Goode 2021) not least within urban planning. Biodiversity loss as a result of urbanization constitutes a great challenge for city planning and cities in turn make up important sites for biodiversity conservation. Conservation and restoration of urban biodiversity is increasingly considered in planning policies, and this raises the question of which kind of development best protects biodiversity (Soga et al 2014). Soga et al. (2014) presents two different forms of city development with emphasis on conservation of green spaces and stresses the importance of city planning to use the most suitable one. An intense development, where its spatial extent is minimized, enables the endurance of surrounding large, cohesive areas of green spaces. This can be equated with densification of an already built area, which also according to Hautamäki (2019) supports preservation of landscapes outside the city. However, in her own study of a densification project she finds that coherent green areas that were previously emphasized as historically and ecologically valuable, are endangered by the compact construction suggested in the latest master plan (ibid.).

The other development form presented by Soga et al. (2014) is less intense and more evenly distributed, but requires more land to accommodate a certain number of houses. This implies more fragmented green spaces while residential areas have closer access to them. Which alternative to prefer depends on the level of urbanization, which can be thought of as increasing with the number of buildings in the landscape (ibid.). Areas with a future heavy urbanization should stick to the sparing of large green spaces, while at moderate and low development a hybrid of both large and fragmented green spaces can favour different ecosystem services and species (ibid.). The sparing of nature is questioned by Cronon (1996) who argues that nature near where we live is threatened by the glorification of “wild, untouched nature” far away from us. In other words, he points out that a tree in the city is of as much value as a tree out in the “wild”. The sum of this is that the value of a tree in the city should not be completely dismissed.

Garmendia et al. (2016) problematize the approach of green structure planning in a context of increasing urban development, by pointing out that development of green connectivity and wildlife corridors can be used to legitimize destruction of habitats by fencing in “the best”. Similarly, Zalar and Pries (2022) find how planning documents legitimize the claiming of green spaces for densification, by representing greenery as something else than green space worth preserving or by calling green spaces “non-cared for” or “of limited green qualities”. Although the quantity of greenery decreases, this can according to the planning documents be compensated by enhancing the quality of greenery. This also leads to unawareness of green spaces being designated for densification (ibid.).

3.3 Ecosystem disservices

Although there is a large focus on serving both ecological and social aspects when applying urban ecology into the development of a city, the needs for each aspect are not always congruent. Pataki (2021) highlights ecosystem disservices, which occur from ecologically positive functions that are perceived as negative for human well-being. Examples where these functions do not concur are green spaces that have aesthetically displeasing management that discourage visitation (ibid.). Nassauer (1995) states that an obstacle to providing greater biodiversity in the urban landscape is that people often perceive biodiverse landscapes as messy and unkempt, and that characteristics of these landscapes tend to be mistaken for a lack of care. There is a human will to make the landscape look neat, picturesque, safe and inviting. This endeavour and human dominance of the landscape often lead to manipulation of ecosystems (ibid.). Hautamäki (2019) discovers a difference in design principles between previous green planning and current, where well-maintained parks of high functionality are desired rather than unorganized and amorphous green areas. Zalar and Pries (2022) witness that neglected green spaces are nowadays often claimed for densification, instead of being interpreted as everyday sites that easily can be improved by moderate improvements of their design. Nassauer (1995) suggests that crucial ecological functions risk not being maintained if these are not actively represented for human experience, since they can often be invisible to people. However, Colding et al. (2020) note that social aspirations of green planning may go against ecological aspirations of making the city persistent against the effects of climate change and protecting biodiversity. Corridors developed for other purposes than biodiversity, e.g. a walking path between residential areas, may be of poor ecological value and species-group specific (Garmendia et al. 2016). Likewise, positive functions for human well-being such as street lights have a negative impact on species and hence are not ecologically sustainable (Grose & Jones 2021).

3.4 Reflection

This chapter has provided an overview of the growing integration of urban ecology and urban planning. In a densifying city, the green structure will need to contain both social qualities and functions for climate adaptation. The rising awareness of urban ecology increases the discussion of what is needed in the compact city, for example urban trees for cooling down the local climate. This will be investigated in Upplands Väsby municipality's comprehensive plans, by looking at how they express their vision and how it is subsequently materialized since the compact city calls for solutions to problems caused by the densification. How is this to be solved and what kind of ecological values are possible in the compact city? A few of the

ecological solutions are criticized by several authors, meaning that the creation of multifunctional planning may cause incompatibility. For example, the human will to make the landscape look neat and inviting risk manipulating ecosystems. Also, there are advantages and disadvantages of densifying the city, which implies that there is no universal solution without losses. This will be taken into consideration when analysing the discussion about balance of interests and conflicts in the comprehensive plans. Are there ecological values of older planning ideals that risk getting lost in the compact city?

4. Methodology and material

This chapter describes how the case study of municipal planning in Upplands Väsby municipality has been conducted. The study is divided into two parts, the first is a planning historical research of comprehensive planning documents through time, and the second a closer study of the densification project Fyrklövern through detailed development plans and other planning documents, as well as by a site visit. For analysis of documents, we find support in Zalar and Pries (2022) who declare that planning documents are a type of primary source which contain artefacts from the act of planning and enable study of both how plans represent the landscape and which issues planning is to solve.

This study is taking an abductive approach, which means that the researchers continuously shift between theory and empiricism (Capelán & Göransson 2021). The researchers set up a theoretical understanding of the contexts that are shaping the studied people's viewpoints (Bryman 2018). Abduction means that the theoretical description is based on the viewpoint of the studied (*ibid.*), which in this case is Upplands Väsby municipality. According to Bryman (2018) it is important to not lose the contact of their viewpoint, where the data is collected from. For example, the obtained knowledge about planning history from the literature review was kept in mind when studying comprehensive plan documents from different time periods. The understanding of ideals and intentions of former planning increased the awareness of ideals and intentions in the plan documents. Further, the abduction relies on explanation and understanding of the perspective used in the empirical material (*ibid.*). Similarly, qualitative methods are about the characterization of the material, its nature and its attributes (Larsson 2021).

It is difficult to replicate a qualitative study due to its unstructured approach based on the author's own ingenuity (Bryman 2018). In this study, we started with a considerably open view and revised the questions afterwards, which is described by Bryman (2018) as a common approach for a qualitative researcher. The advantage of an open view is that it prevents the study from being locked, which can be the case if the formulation of problems and questions is too distinct from the beginning (Larsson 2021). Therefore, researchers are often advised to enter a field with openness and with a more generally formulated interest or focus that then successively can be sharpened (*ibid.*). This study was initiated with the aim to investigate the interplay between densification and green structure. As the literature

and collected material were being reviewed and interpreted, the purpose, objective as well as research questions were more definitely formulated. It is also difficult to generalize from one case study to other, corresponding cases (ibid.). Larsson (2021) suggests that results of the case study can provide knowledge to keep in mind when looking at other cases, and hence enable a discovery of the relevance in the results. A clear description of the general and central characters of the material is required, for the case study to be usable outside its own context (ibid.). Therefore chapter 5 mainly contains presentations of what Upplands Väsby municipality is stating. An analysis and discussion of these statements are following in chapters 6 and 7.

4.1 Planning historical research

A planning historical research was conducted to investigate how the compact city redefines the role of the green structure, to answer the research question *How has the geography of the green structure been constructed over time in urban planning?*

The planning historical research was made on a municipal level, focusing on comprehensive planning documents that include the whole municipality. Such plans are not particularly detailed and rather show the municipality's will and direction. Our choice of this material was based on an assumption that the municipality's overall will and direction was able to show how the geography of the green structure has been constructed over time, for instance similarities and differences in the municipality's view on green structure in different plans. Selected plan documents were all considering the overall characteristics of the municipality's intended use of land and water areas, as well as intended development and preservation. Chosen documents before 1987 were one general plan and one municipal overview, and documents produced after 1987 were all comprehensive plans.

The availability of material has decided what material to study. The three older plans were made available with the help of the municipal archive of Upplands Väsby, after we had requested to look at all comprehensive plans and general plans. As a response to this request, the staff at the archive searched for all available plans and informed us that these three were the only plans they could find. These plans were scanned before reading, using the phone application *Adobe Scan*. The latest two plans, from 2005 and 2018, were available digitally on the web.

List of collected and read plan documents (author's own translations)

- "General plan of Upplands Väsby", 1966
- "Planning conditions Upplands Väsby - municipal overview, agricultural land program", 1976
- "Comprehensive plan 1990, Upplands Väsby municipality", 1990

- “The future Upplands Väsby - the modern small city, strategic municipal plan 2005-2020”, 2005
- “Väsby city 2040”, 2018

4.1.1 Qualitative content analysis

The chosen plan documents were rather rich in content, and in order to extract relevant data from the material a qualitative content analysis was chosen as a method. Qualitative content analysis is a method for interpreting text material such as documents (Bryman 2018; Isaksson 2021). It is flexible and helps reduce the amount of material, by allowing the researcher to focus on aspects relevant to the study (Schreier 2013). Isaksson (2021) describes that there are different degrees of interpreting the meaning of the material. Emphasis can be on merely describing the data and what is actually being expressed, or interpreting the underlying meaning of the data, in other words reading between the lines. Usually the analysis combines these two levels by using them during different stages (ibid.). In this study, the actual content analysis focused on keeping what was being expressed, while at later stages in chapter 5 and forward it became useful to interpret what the underlying meaning might have been.

In order to get familiar with the material before selecting particular parts, all documents were read in their entirety according to Bryman’s (2018) recommendation. By examining every single part of the material that relates to the research in any way, it alleviates the risk of looking at it only through the lens of previous assumptions and expectations (Schreier 2013). Due to this we decided to, after reading through the whole material, select all sections concerning any kind of green structure as well as city expansion, densification in particular, to be read more thoroughly. We assessed that these were extensive enough to cover information regarding our research questions. Only searching out particular chapters instead of reading the whole material was not considered an option. This is because, as disclosed in the titles of the chosen plan documents, content and layout differ between the documents.

The next step in the analysis process was to assign names, also called codes, to the different passages that were selected from the documents (Bryman 2018). An example of this is illustrated in figure 3 below. The original texts in the plan documents are in Swedish, but the codes were written directly in English to shorten the process. The coding goes beyond the specifics of a passage and instead refers to the overall meaning of it. This allows for a number of slightly different passages to be compared and related to each other, even if it may imply the loss of concrete information (Schreier 2013). This also enabled the subsequent step, where the codes were reduced by developing them into themes. The theme reflects what the different codes within it have in common, but also what distinguishes them (Bryman 2018). Each theme should cover one aspect of the material only (Schreier 2013) and can

be assigned subthemes that specify what is said in the material (Bryman 2018; Schreier 2013). It is also important that all relevant aspects in the material are covered by a theme, to ensure that all parts are equally accounted for (Schreier 2013). Lastly, possible connections and patterns among the concepts, or codes, within each theme could be investigated. The themes also enable a connection of the collected material with the theoretical framework produced for the study and also with the research questions (Bryman 2018) which was useful when analyzing the findings further on in this thesis.



Figure 3. Example of a text passage turned into a code and sorted into a theme. (Illustration made by the authors).

4.1.2 Analysis of maps

The qualitative content analysis was complemented with an analysis of maps. This is to help us investigate how the geography of the green structure has been constructed over time in comprehensive plans. Maps from the latest comprehensive plan were compared with maps from previous plan documents in order to identify what kind of green structure the plans show and how it is defined, as well as how the urban area expands. Other maps were also selected to illustrate what was important at a particular time period. These maps were not compared because they did not have a corresponding map from other plans, but they were analysed in order to get an understanding of altering purposes of the green structure. When analysing all maps, we looked at which geographical areas were being displayed and in what ways, for example how these were represented through labels and symbols.

4.2 A closer study of the contemporary densification project Fyrklövern

This part of the study investigates how the compact city reshapes the geography of the green structure, to answer the research question *How is the conceptualization and geography of the green structure affected through the compact city ideal?*

In order to concretize findings from the planning historical research and to investigate how the contemporary compact city ideal is materialized, a closer study

of the ongoing densification project Fyrklövern was conducted (see figure 4). Insight into the intentions of earlier planning, obtained from the planning historical research, was helpful to understand the character and ideals of today's planning, as well as discovering potential values that are threatened today. Further development for Fyrklövern has been established in a plan program from 2012. The program area consists of several detailed development plans, which were studied together with associated documents, to capture the realization of the envisioned compact and green city. The study areas consist of two densification projects, where green spaces to a large extent will be claimed for building development, and one project where a brownfield is turned into a park. In this part of the study it was useful to also look at pictures and maps from the program and the detailed development plans, to discover changes to the land. This included a comparison of maps inspired by Hautamäki (2019) where illustration plans are compared with orthophotos of the site. The comparison is complemented by photographs taken at a site visit.

The methodology for studying the collected documents was based on the lenses provided by the understanding of the altered green planning, which was obtained from the planning historical research. Increasingly used concepts and trends in contemporary planning were leading in the search of how the green structure is being affected. As the literature has shown, there is a rising use of the concept of urban ecology which will hence be a part of the lenses used in this part of the thesis. The planning historical research helped understand which values tend to be lost due to the implementation of the compact city ideal on a small scale level. The material in this part of the study was not processed in a qualitative content analysis. The documents were all read in their entirety, but only relevant text passages were collected and included in the further study. Passages were regarded as relevant if, similarly to in the planning historical research, they concerned green structure or city expansion. Also, since this part of the study did not include the discovery of patterns, differences or similarities among the documents, a qualitative content analysis did not seem necessary.

All documents studied here were available online at the website of Upplands Väsby municipality. List of studied plans and programs concerning Fyrklövern (author's own translations):

- “Plan program for Fyrklövern”, 2012
- “Detailed development plan for Fyrklövern 1 - public space in Upplands Väsby municipality”, 2015
- “Detailed development plan for the area west of Dragonvägen within Fyrklövern in Upplands Väsby municipality”, 2017
- “Detailed development plan for Norra Ekebo within Fyrklövern”, 2019
- “Detailed development plan for Fyrklövern north of Mälarvägen”, 2020

A guiding document for the development of becoming a city in Upplands Väsby was studied as well, to bring out how their vision of Väsby city will be achieved:

- “The definition of urban”, 2018



Figure 4. Site boundary. (Source: Upplands Väsby kommun 2012).

4.2.1 Site visit

As a last step in the study of how the compact city reshapes the geography of the green structure, a site visit at Fyrklövern was conducted. This was done by examining how the detailed development plans are being realized and how the compact city ideal is materialized in the physical environment. Focus was on green structure within the site boundary of the detailed development plans, both what has been removed and what has been preserved, as well as newly constructed green

structure. The visit took place in the spring, which made it possible to see the volume of the trees since they had begun to bloom. At the site visit the authors took photographs and notes as a basis for a deeper discussion.

5. From suburbia to the compact city: the case of Upplands Väsby

In the first part of this chapter we present our themes from the planning historical research and how each comprehensive plan, hence each time period, relates to it. This section applies to the whole municipality and illustrates how the role of green structure has been, and is redefined. The second part presents an in-depth study and concretization of ongoing urban development in the central part of Upplands Väsby, in order to get an example of how the green structure is reshaped by the materialization of the compact city ideal.

5.1 Themes: The construction of the compact city ideal and green structure from a historical context

The themes are based on codes collected from all sections concerning any kind of green structure as well as city expansion, densification in particular, that were read more thoroughly. When developing the codes into themes, it became clear that the different text passages, later codes, often only contained a part of the whole picture. Some only concerned a sought result or a vision, others only why something is desirable but not a strategy to achieve it, and sometimes only a strategy without the intended result. However, some passages contained more of a discussion about all these parts, or a balancing of different interests. Therefore, the codes ended up being divided into four different themes, considering either *what* to be achieved (vision and ideal of the municipality), *why* something should be achieved (purpose and function of the green structure), *how* to achieve something (strategy) or how the *balancing of interests and conflicts* looked like. The different themes are described more thoroughly below, together with a review of how each has evolved between different plans.

5.1.1 Vision & ideal of the municipality

This theme gives a sense of what the municipality aims towards and wants to achieve. In some cases it contains visions or ideals, while much of it refers to more concrete statements of what is desired.

“Väsby 2040 is a modern green small city, a mixed city with a rich supply of housing, operations, service, meeting spots and greenery. A compact cohesive built structure within the urban area enables the increase of 20,000 more Väsby residents by 2040 at the same time as large natural areas are preserved. The green structure and the cultural environment is a high priority in the municipality. Väsby offers a good living environment with large recreational areas and nature close to homes where valuable ecosystem services have been safeguarded.” (Upplands Väsby 2018b:26, author’s own translation)

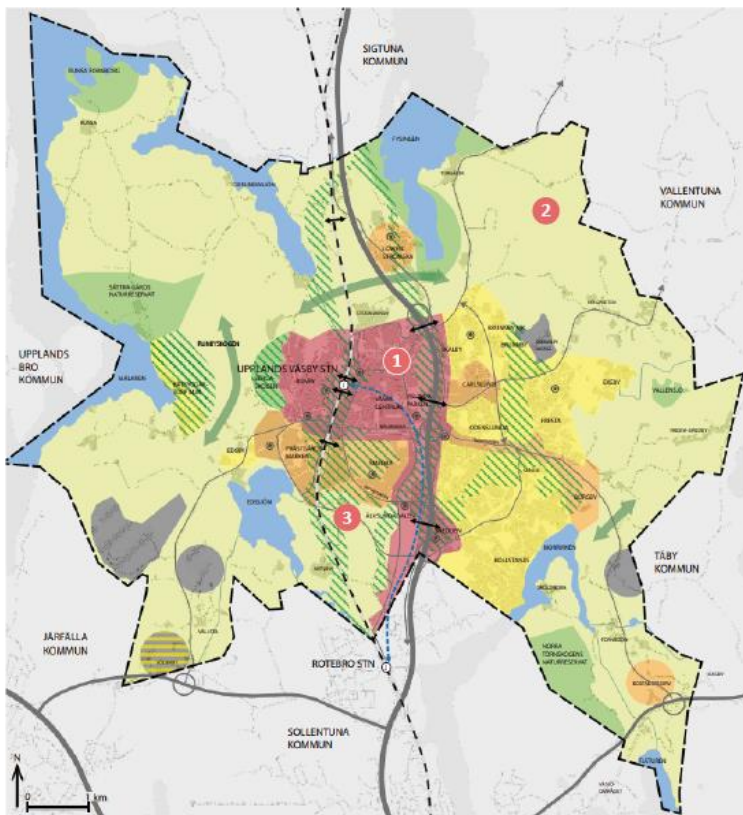
Towards a denser built environment

Upplands Väsby municipality have since the 1960’s planned that the housing stock should expand mainly through densification (Upplands Väsby kommun 1966; 1976; 1990; 2005; 2018b). However, the level of densification seems to intensify with time. In addition to the text in the comprehensive plans, it is also visible in the maps. A comparison is made and can be seen in figure 5, where the development is concentrated in the urban area. Additionally, this map reveals that areas labeled as “areas for recreation” in 1960 are now labeled as “ecological and recreational values”. The latest map also defines three levels of compactness, showing that the central area will be more compact than the surrounding ones. The map from 1960 does not have these levels but the municipality talks about densification of an area designated for urban development. In the 1960’s, Upplands Väsby municipality states that a gradual densification will happen and describes more of a renewal of the built environment that consists of single-family houses, which will be densified with town houses and apartment buildings (Upplands Väsby kommun 1966). Similarly, in the 1970s they plan that the densification is directed towards the single-family housing stock (Upplands Väsby kommun 1976). The renewal and conversion of current buildings as a form of densification, is prevailing in 1966, 1976 and 1990 but not brought up as an alternative in 2005 or 2018. In these two later comprehensive plans, the municipality mainly focuses on densification of the central parts (Upplands Väsby kommun 2005; 2018b), where the goal seems to be an increased urbanity. Unlike the plans released around the 2000’s, their general plan from 1966 and the municipal overview from 1976 do scarcely include a vision for the municipality (Upplands Väsby kommun 1966; 1976). However, from the year 1990 they started to include the strengthening of the municipality’s identity (Upplands Väsby kommun 1990). In their comprehensive plan from 2005, Upplands Väsby refers to the vision of a compact, modern and green city, while their comprehensive plan in 2018 describes a resource effective and resilient city (Upplands Väsby 2018b). In 2005 they are unsure if the vision of a city will be achieved and describe that the densification of the central parts may result in the character of a city core, while in 2018 they seem more sure of the city ideal and refer to the urbanity that the plan aims to achieve (Upplands Väsby kommun 2005; 2018b).



Development plan
General plan 1966,
Upplands Väsby

- Legend
- 1 — Area for urban development
 - 2 — Development of Väsby centrum
 - 3 — Area for agriculture, forestry and outdoor life
 - 4 — Area for recreation



Vision (Development plan)
Comprehensive plan 2018,
Upplands Väsby

- Legend
- 1 — Area for urban development (compact) including Väsby center
 - 2 — Area for urban development (medium)
 - 3 — Area for urban development (small-scale)
 - 4 — Rural area
 - 5 — Ecological and recreational values

Figure 5. Comparison between the development plan from Upplands Väsby's general plan from 1966 and their vision in their comprehensive plan from 2018 (legends edited and translated by the authors). "Areas for recreation" has shifted to "Ecological and recreational values". (Sources: Upplands Väsby kommun 1966 & 2018b).

The importance of greenery

Recurring in all five plans is the importance of access to green areas, and how to increase the access by enhancing the connectivity. In their plan from 1976 Upplands Väsby municipality briefly presents the importance of cohesive, green walking areas for outdoor life (Upplands Väsby kommun 1976). Earlier, in the 1960's there is a sense of letting the existing green structure guide the location of new development. A trail of parks is expressed as a midpoint, around which housing, service, schools and other functions should be concentrated to ensure access to greenery (Upplands Väsby kommun 1966). In comparison with these older plans, the municipality seems more focused on adding new green structure in their later plans from 1990 until today. These plans acknowledge that the focus on densification implies degradation of green spaces to some extent, and contains suggestions of additional greenery (Upplands Väsby kommun 1990; 2005; 2018b). In the 1990's, they want to improve the standard of green areas in the central parts and design parks of high quality. This plan presents minimum amounts of green spaces per city district, maximum distances between homes and green areas and minimum sizes of green spaces (Upplands Väsby kommun 1990). They are vaguer in their comprehensive plan from 2005 and express that greenery should exist close to housing and that there should be larger nature areas not too far away from urban areas (Upplands Väsby kommun 2005).

In order to create possibilities for recreation, the municipality focuses on developing "experience passages" that should enhance the connection between valuable nature areas while preserving the cultural landscape and increasing biodiversity. However, it is not fully explained how such a passage is materialized and how it can preserve the cultural landscape and increase biodiversity (Upplands Väsby kommun 2005). They also recognize a lack of green spaces close to housing in the most central parts, and present desires for a both compact and green Upplands Väsby, where the green structure is part of the municipality's character. The green structure is conveyed as "more appropriate" (ibid.), in similarity with the 1990 plan's statement about high quality, but the plans don't go into more detail about what is regarded as appropriate or high quality. In the latest plan from 2018, Upplands Väsby municipality continues on their former wish for the both compact and green city. They also continue to stress a lack of green structure in the central part of the urban area (Upplands Väsby kommun 2018b). This plan presents greenery as a quality in the urban environment and suggests that densification needs to be implemented with a remaining closeness to nature. The specifics about distances to, and sizes of, green spaces are reintroduced and it also presents small

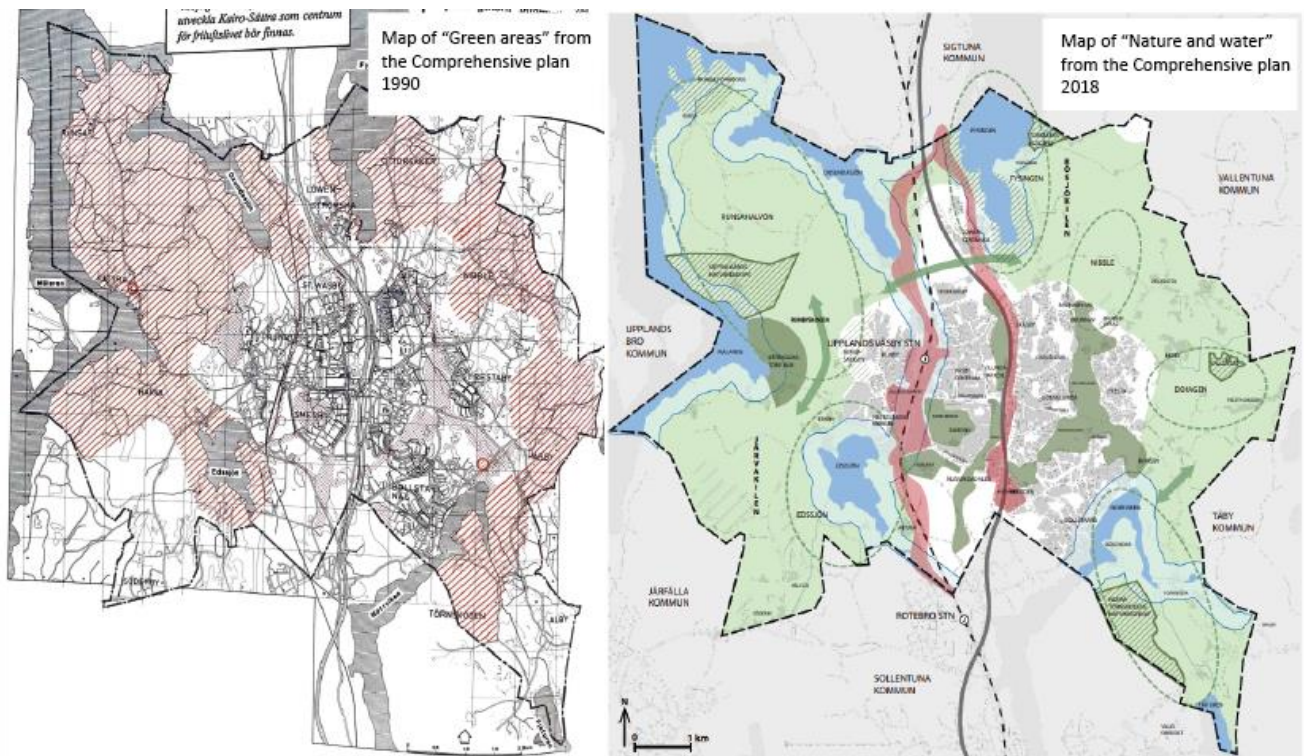
pockets of greenery as a way of solving the lack of nature in the compact, central parts (Upplands Väsby kommun 2018b).

5.1.2 Purpose and function of the green structure

This theme gives a sense of why different proposals concerning the green structure are desirable. A large part of this theme contains various functions of nature, both different ways of making use of nature or scientifically established benefits of nature.

Nature for recreation

The role of the green structure is mostly expressed as recreational in the general plan from 1966. It is here, according to Upplands Väsby municipality, important to connect green areas and make them accessible for walking. They point out natural areas important for outdoor life, often outside built areas. In residential areas, it is instead an emphasis on accessible parks. The recreational areas are also pointed out for education, but what kind of education it is is not expressed in the plan (Upplands Väsby kommun 1966). In the 1970's and 1990's, the municipality put a large focus on walking areas in the plans as well. The green structure intends to cater walks and outdoor life but also to shape the image of the city and landscape (Upplands Väsby kommun 1976; 1990). According to Upplands Väsby municipality (1990) it is important to preserve large green areas to ensure space large enough for walking and outdoor life. In the newer plans, recreation is often presented in combination with other functions, such as ecosystem services and biodiversity. In other words, green areas are not often planned to serve only recreational activities anymore. For example, the conservation and development of green wedges are said to have important connections for both recreation for humans and migration of species. Thus, a coherent nature is stressed as important for both humans and animals (Upplands Väsby kommun 2005; 2018b). This shift in purposes is visible in figure 6, where the same green areas are being presented in 1990 and 2018 but with different labels.



Legend

1990	2018	
Walking areas	Regional green wedge	Important migration corridors
Other green areas	Areas with ecological values	Development of ecological values

Figure 6. A comparison between mapped nature in the 1990 plan and the 2018 plan (legend edited and translated by the authors). The same areas are marked out but have different labels. For example, the area labeled as “walking areas” in 1990 is now labeled as “regional green wedge”. In the same way, “other green areas” in 1990 are labeled as “areas with ecological values”. The 2018 plan also includes conceptual elements, such as arrows for migration corridors. (Sources: Upplands Väsby kommun 1990 & 2018b).

Nature for experiences

In the municipal overview from 1976, Upplands Väsby municipality labels certain areas as beautiful, scientific valuable, interesting and attractive. Especially the word beauty is used frequently to describe nature, rarely accompanied by an explanation of why it is beautiful. However, it is expressed that nature also has recreational purposes in the plan (Upplands Väsby kommun 1976). Later, in 2005, Upplands Väsby started to put a large emphasis on experiences and human well-being as it is written that nature improves quality of life. Beautiful green areas and nature creates experiences and are functioning as meeting spots and lush yards create identity in the municipality (Upplands Väsby kommun 2005). Green areas should, according to this plan, have different functions and fulfil several purposes such as ecological, cultural and social (ibid.). In the same manner, the plan from 2018 also highlights the importance of using green structure to enhance human well-being. Green areas can provide nature experiences and also serenity, by using vegetation as noise mitigation (Upplands Väsby 2018b).

Nature for ecology

In the three earliest examined comprehensive plans the municipality points out “scientific values” in areas of particular interest to nature conservation (Upplands Väsby kommun 1966; 1976; 1990). Mapping of scientific natural values in Upplands Väsby in 1976 is visible in figure 7 below. In the 1990 plan, the scientific value is paired with cultural values as well, such as “scientific-cultural nature”. In a nature inventory, scientific-cultural nature conservation objects were noticed (Upplands Väsby kommun 1990). One of these areas is described as a biological core area that is of particular value due to its versatility and biodiversity. Another area is considered as valuable due to its size and that it is untouched, and hence has a wilderness character (Upplands Väsby kommun 1990). Thus, a discussion about ecology was visible already in the 1990’s even if it is not as clear as in their latest comprehensive plan from 2018. The use of the notion “scientific values” is no longer present in the plans established after 1990. However, in 2005 they plan for “Biological plazas” to create an environment for insects and birds, which also contribute to an enhanced understanding of nature. They also suggest that schoolyards should be developed into ecological “outdoor rooms” and there is an interest in spreading knowledge about ecology and the environment for both children and adults (Upplands Väsby kommun 2005).

Accordingly, planning for explicitly ecological purposes entered the discussion of green structure, albeit to a small extent, in the 1990’s. Here Upplands Väsby municipality explains, like in the 2005 and 2018 plans, that a network of large green areas is important for both recreational and ecological purposes (Upplands Väsby kommun 1990). In 2005 they started to be more detailed about functions of green structure, such as trees operating as air purifiers (Upplands Väsby kommun 2005).

According to the plan from 2005 the meaning of green structure can be divided in two aspects: it is fundamental biodiversity and it is of great value for human well-being.

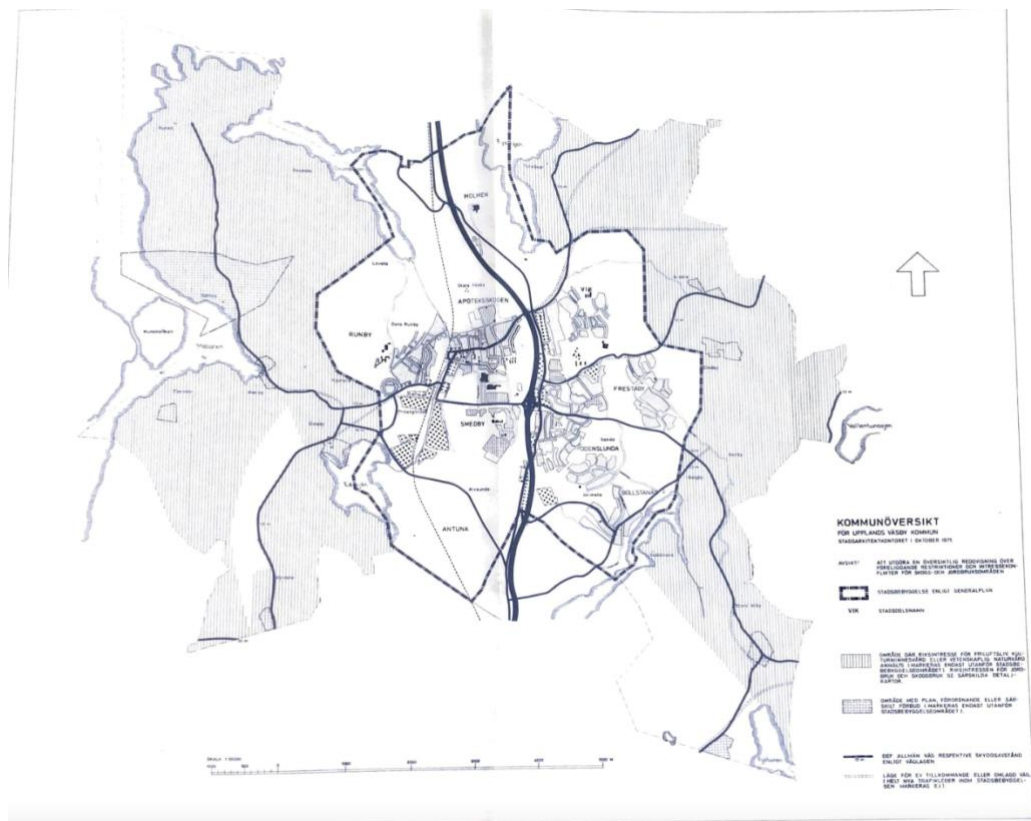


Figure 7. Mapped areas of national interest: Scientific natural values and outdoor life, are marked out by the dashed area outside the urban boundary. (Source: Upplands Väsby kommun 1976).

Despite a growing discussion about ecology from the 1990 plan and forth, the purpose and function of the green structure described in the comprehensive plan from 2018 differs significantly from the older plans. A large focus on ecology permeates the planning of the green structure. It is urged by Upplands Väsby kommun (2018b) that green wedges are important for ecosystem services and function as lungs that clean the air and regulate the temperature. The planning of green structure is hence connected to urban expansion where nature is used to mitigate effects caused by the increasingly compact city (see figure 8). By adding the boundary of the compact urban area to the map of climate adaptation, it becomes evident that the area with most suggested measures for climate adaptation, is mostly located in the urban area that is planned to become more compact according to the 2018 plan. To solve this, the denser part of the city is provided with green lungs as well, but in the form of parks. Additionally, the development of these parks strives for a multifunctionality since they create room for recreation, meetings and at the same time they regulate the local climate (Upplands Väsby kommun 2018b).

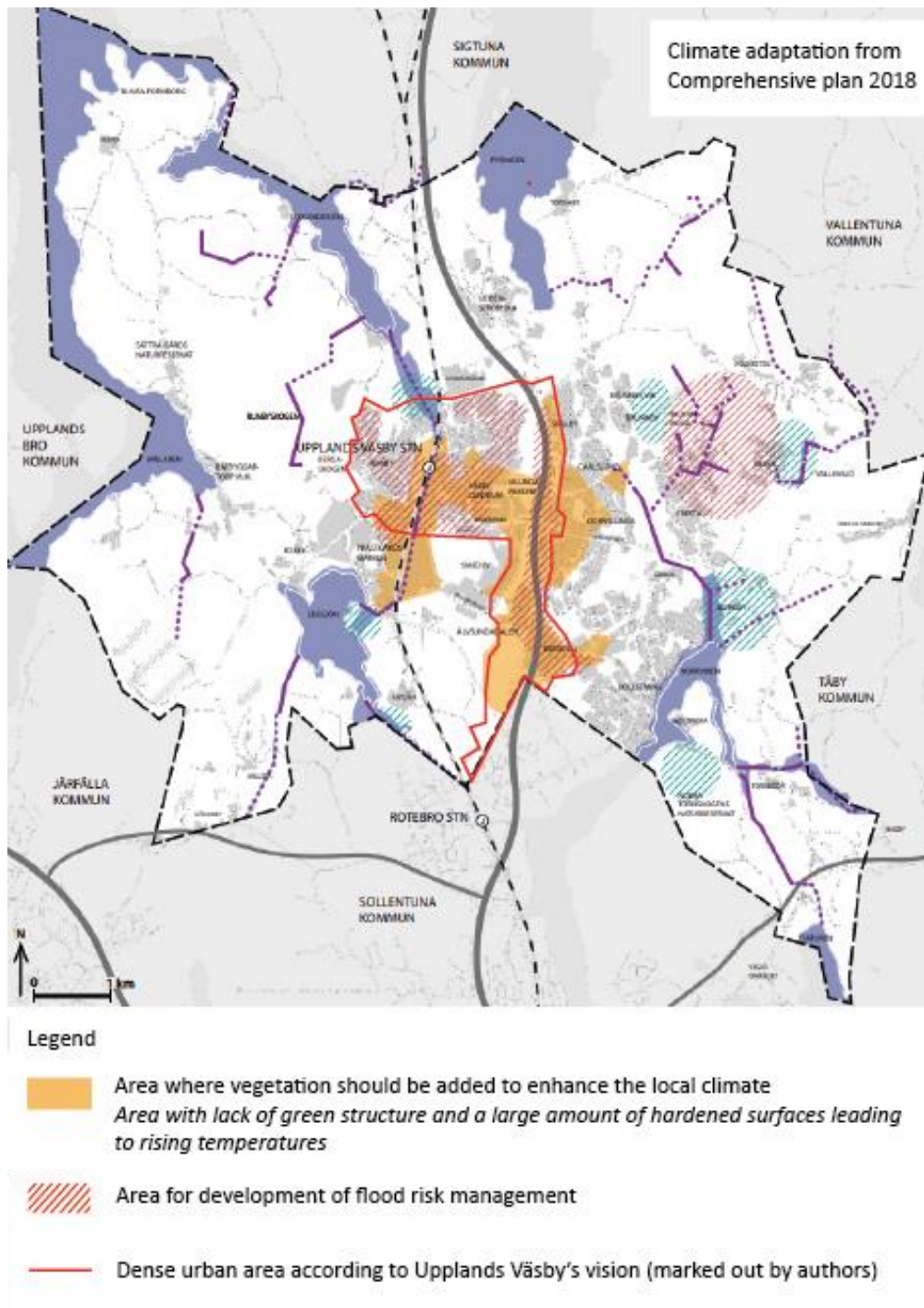


Figure 8. Mapped areas that are in need of more vegetation and flood risk management from the latest plan. The map Climate adaptation is overlaid with the area designated to be compact. (Source: Upplands Väsby kommun 2018b. Map edited and legend translated by the authors).

5.1.3 Strategy

This theme describes how something will be developed or how a certain goal is to be achieved. It allows us to get an idea of strategies that the municipality uses. The theme contains different ways of conservation or development, of either green structure or city expansion. There are for example different measures to establish protection of an area, such as nature reserves.

Limited expansion of the built environment

Common to all plans is a wish to limit the expansion of the built environment (Upplands Väsby kommun 1966; 1976; 1990; 2005; 2018b). The 1966's general plan is based on a delimitation within which the city is allowed to expand, and shows designated areas for urban development, forestry, agriculture and outdoor life. The 1976's plan strives for low land use by concentrating on completion of already planned areas and development on already utilized land. Upplands Väsby kommun (1990) plan that the built environment is still delimited by being concentrated to the core, while its surrounding large green areas are allowed to remain. Densification is, together with conversion of existing buildings, the prevailing strategy in the plan (Upplands Väsby kommun 1990). Similarly to 1990, Upplands Väsby kommun (2005; 2018b) also notes that by keeping the cohesive built structure and concentrating on densification, development on larger, valuable green areas is limited. Upplands Väsby kommun (2018) brings up its own motive for preservation of these larger, coherent green areas, which is production of ecosystem services. In the previous plans the preservation of these areas has seemed more focused on recreational purposes. They also suggest building on already used land, and stresses that development should be preceded by an inventory of nature values, and followed by both conservation and development of green structure (Upplands Väsby kommun 2018b). Similarly, in the nature inventory referred to in 1990, it is recommended that scientific-cultural nature conservation objects are preserved through a limited expansion of the built environment (Upplands Väsby kommun 1990).

Conservation and protection

All five plans bring up conservation, with varying frequency. While the general plan from 1966 only mentions preservation of the agricultural industry, the 1976 municipal overview adds preservation of areas for outdoor life, both nature and scientific nature, and culture (Upplands Väsby kommun 1966; 1976) (see figure 9). It also brings up restoration of natural land, due to the closure of a landfill. Also in 2018, Upplands Väsby municipality mentions recreating natural values on previously exploited land. The three comprehensive plans are all going into more detail about what to conserve and why. These plans also emphasize conservation of nature, and add nature reserves and preservation of biodiversity (Upplands Väsby

kommun 1990; 2005: 2018b). In 1990, the plan highlights protection of areas of importance to outdoor life, and states that this is of particular importance in densely populated areas. It also brings up protection of aesthetic, cultural and scientific values (Upplands Väsby kommun 1990). Areas of recreational interest are also protected in the 2005 plan, which also adds protection of quiet areas. This plan stresses preservation and development of the walking areas in nature and the green local environment, and highlights this as one of the largest assets of the municipality (Upplands Väsby kommun 2005).

Preservation of the green wedges is brought up by the municipality as important in both 2005 and 2018. The 2018 plan also mentions conservation in favour of recreation, and in similarity to the 2005 plan it highlights nature as a value of importance to the municipality and its identity. Otherwise the motives of conservation in this plan are dominantly ecological, for example preservation and promotion of migratory possibilities for animals and vegetation. Conservation and enhancement of ecosystem services is urged, through preservation of the green connectivity and development of biological values. The importance of keeping ecologically sensitive areas intact is emphasized (Upplands Väsby kommun 2018b). Unlike 1966's more industrial reasons, the motive for conserving agricultural landscapes is in 2018 to enhance biodiversity.

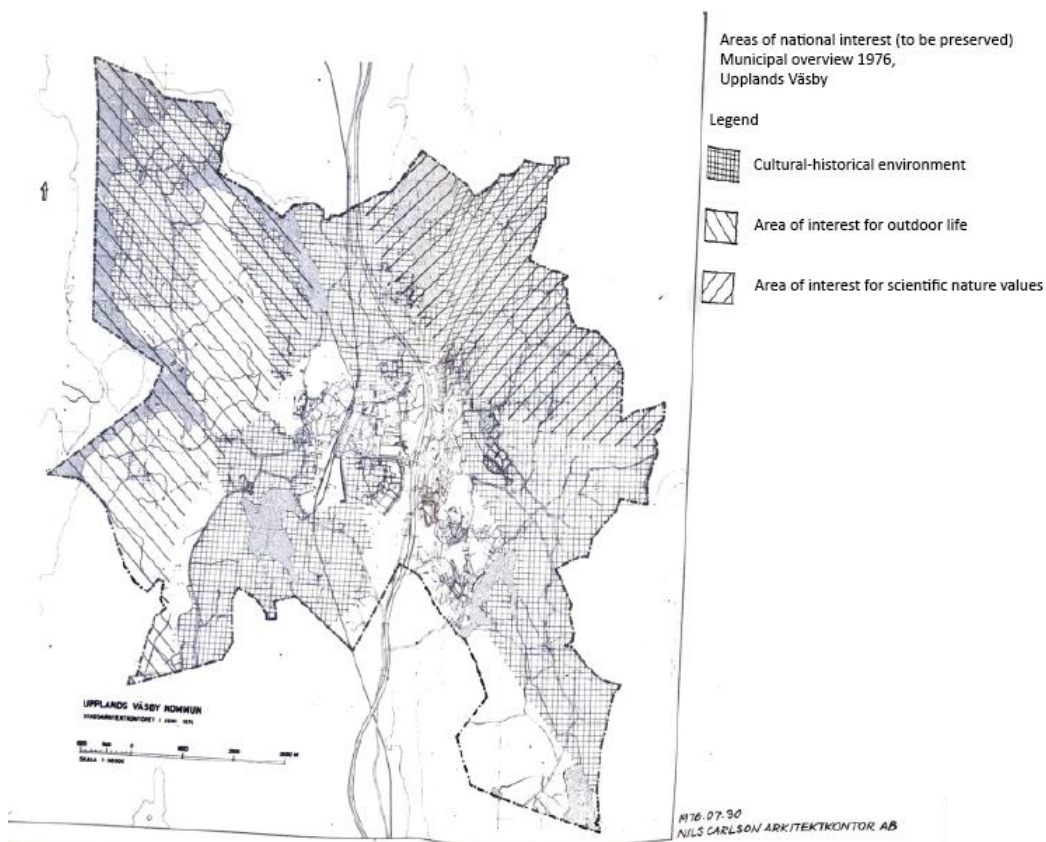


Figure 9. Preservation of areas for outdoor life, both nature and scientific nature, and culture in 1976. (Source: Upplands Väsby kommun 1976. Map edited and legend translated by the authors).

5.1.4 Balance of interests and conflicts

This theme reflects how the balancing of interests and conflicts has looked like, which offers an insight into the process of developing the plans. In some passages of the plans it is possible to see how a discussion to arrive at a certain decision has looked like, or how different interests and conflicts have been balanced against each other. It becomes evident that a particular space can be interesting for different kinds of uses, that some uses are not appropriate in all spaces and that different interests can conflict with each other or need to consider each other.

Year 1966 and 1976

In the 1966 plan no balancing of interests or conflicts is explicitly mentioned, except for the statement that planning should avoid damaging forestry and agriculture (Upplands Väsby kommun 1966). This plan is very short and most suggestions are presented without visible considerations or discussions. Possibly, the plan from 1976 gives an explanation of this lack, since it states that a change of views on using land resources have altered the discussions about development (Upplands Väsby kommun 1976). This could speak for a sharpened focus on sustainable land use in 1976. The municipal overview from 1976 presents areas that are suitable for development and describes what kind of land that will be used, which clarifies what gets lost due to development (ibid.). For example, it describes that residential areas are planned on agricultural land, forests or marshland. This plan also refers to assessments of whether there will be possible conflicts between development and conservation of any current values at the sites. The plan does not exclude development on agricultural land, but considers what land to preserve and what land to claim. For one designated area in particular, the balancing of such interests became evident. After some discussions, it was decided that housing should be placed on parts of agricultural land that in earlier planning had been desired to save, in order to instead preserve an “interesting” walking area. This plan puts a large emphasis on interests of outdoor life and how these are taken into consideration, which could be a possible explanation of prioritizing recreational interests instead of agricultural interests in the above example (ibid.).

Year 1990

In the 1990's, on the other hand, the municipality states that usable agricultural land should not be developed due to its biological value (Upplands Väsby kommun 1990). In this plan, developments are planned in consideration of nature values, outdoor life and agriculture. However, it admits a need to develop on both agricultural land and forests, followed by a loss of nature values, in order to realize a desired expansion of the built environment. In the 1990 plan, a large balancing of conflicting interests involves desires to build additional roads and railways, which is overcome by the consideration of the negative effects this would have on green

areas. The plan therefore establishes that this kind of development, despite its advantages for the municipality, would be unacceptable due to, for instance, its encroachments in recreational areas. At the same time it admits that the large green, recreational areas in the outskirts of the urban area, are interesting for urban expansion (ibid.). This conflicts with the, in this plan, argued need for increased access to outdoor life that follows an increasing population.

Year 2005

In 2005, the municipality makes a clear statement about a growing population that increases the competition for land, and thereby increases the claim on green areas (Upplands Väsby kommun 2005). This plan also considers natural values and outdoor life when planning for development, but in difference to the older plans this one expresses more of restrictions for implemented development rather than avoiding development. In this plan more of a discussion about densification is introduced, where both advantages and disadvantages are presented. It admits that densification may claim green areas and prevent the desired increased access to recreational areas, but as previously mentioned it also points out that densification can hinder development on the valuable green areas surrounding the city (ibid.). It also brings up a conflict of interests regarding the promotion of green areas in the central parts, that on the one hand could bring barrier effects and increased insecurity but on the other hand increase the recreational opportunities and the biodiversity.

Year 2018

The 2018 plan elucidates a need to balance interests to avoid the loss of ecosystem services, recreational areas and nature values (Upplands Väsby kommun 2018b). Also, the conflict between preservation of agricultural land and expansion of the built environment recur. It highlights careful balancing between the importance of development, to the municipality and society as a whole, and conservation of agricultural land. The plan states that building on unexploited land needs to compensate for negative impacts on natural values, to maintain both biological and recreational values. It discusses that development of housing needs to be carried out in consideration of ecologically sensitive areas, but also that the development makes natural values accessible to humans. The buildings should also be adapted to nature values, green wedges, ecosystems and conditions of the terrain (ibid.). Hence, similarly to the 2005 plan this plan also stresses restrictions of development, rather than avoiding developing at all.

5.1.5 Reflection of the themes

This chapter gives a historical overview as well as today's vision of the development in municipal planning, using Upplands Väsby as an example. The themes *Vision and ideal of the municipality*, *Purpose and function of the green structure*, *Strategy* and *Balance of interests and conflicts* was organized in order to see the shifting ideas of nature's role in the history of municipal planning.

The first theme, *Vision and ideal of the municipality*, revealed that expansion should be done mainly through densification. This implies conservation of larger areas. Common to all maps presented in this chapter, is that the same green areas are designated for preservation. This can be easily observed especially in the outskirts of the municipality. However, the reasons for preservation differ. If the latest plan from 2018 would be used as an exemplar for preservation of ecological valuable green areas, it can be stated that the general plan from 1966 actually planned with respect for recreational values as the green areas almost are the same (figure 5). The comparison between maps presenting green structure shows new definitions of green areas in Upplands Väsby municipality on a large scale, where the green areas surrounding the city go from an exclusively recreational purpose to also emphasize ecological functions (figure 6). The green structure in contemporary planning gains more purposes to mitigate effects caused by urbanization. Green areas closest to housing also recurs through time and remain similar except for shifting definitions of quality and constitution.

The historical research shows that the discussion of ecology and ecological compensation has increased considerably, especially under the theme *Purpose and function of the green structure*. Referring to the map (figure 8), it is clear that the need for more vegetation counteracts the wish of the compact city. The ecological values are noticed, at the same time as the compact city involves loss of green spaces. Nonetheless, the strong focus on adding more green structure is clear in the latest plan. This implies that adding new green structure can compensate for the removal of the existing green structure, since the same area is designated to become compact and green. What is most beneficial from an ecological perspective can be discussed. However, the vision of becoming a city is favoured by the reshaping of green structure, in order to fit in within the compact model. On the other hand, Upplands Väsby prevents urban sprawl by concentrating the development into a compact city, which is clear in the theme *Strategy*.

The theme *Balance of interests and conflicts* highlighted how the discussion about potential losses due to the development has shifted. In 1990, valuable walking areas in the outskirts of the built environment are brought up as interesting for urban expansion, which conflicts with the wish for enhanced access to outdoor life. Increased access to recreational areas is stressed as a need when the population increases. As Upplands Väsby expands through densification, the focus shifts from mainly larger surrounding recreational areas to also involve recreational green

spaces within the more and more densely built urban area, as an answer to a decreased close access to green spaces there. This, together with the increased focus on adding more greenery of ecological functions within the compact area to solve the environmental problems of density, highlights one of several contradictions of a compact and a green city. Upplands Väsby meet this contradiction by stating in their latest plan from 2018 that building on unexploited land needs to compensate for negative impacts on natural values, to maintain both biological and recreational values.

In the following chapter about Fyrklöver, we bring up an example of how a constructed new park is planned in order to compensate for the removed green structure. The perspective on the shifting role of the green structure and the growing discussion of urban ecology is brought into the next part of the case study, by examining how the definition of green structure is materialized in the compact city.

5.2 Fyrklövern: Materialization of the compact city

The case of Fyrklövern became interesting due to its location within the designated compact urban area. This development project exemplifies how the compact city affects the conceptualization and geography of the green structure. Looking at pictures and maps from different time periods, obtained from the plan program and the detailed development plans, changes to the land use in Fyrklövern are evident. Three sites become particularly interesting due to this, all included in the development project Fyrklövern. These sites are given the names Mälurvägen, Dragonvägen and Blå parken (see figure 10). A demolished, former school building leaving a hardened surface, is in the Fyrklövern project developed into a new park called Blå parken. At the same time, a green area that, at least since the 1980's and until 2012 has been planned as a park, is now designated for densification instead. This area is located in the west part of Fyrklövern along the road Dragonvägen. In the north part of Fyrklövern, another project with the same aim as in Dragonvägen, is going on around the road Mälurvägen.

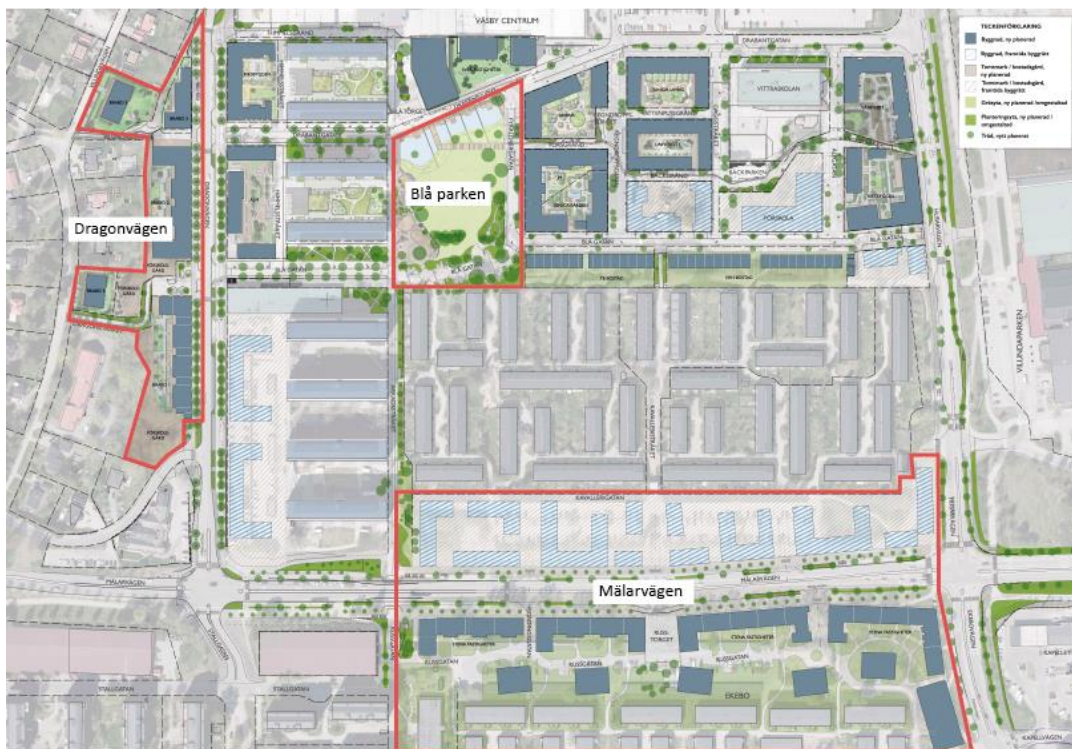


Figure 10. Illustration plan of the ongoing development in Fyrklövern. Three focus areas are marked out in red: The new park Blå parken, development along Dragonvägen and development around Mälurvägen (Source: Upplands Väsby kommun 2021. Edited by the authors).

5.2.1 A transformation from the modernist city ideal to the compact city ideal

Fyrklöver, located in central Upplands Väsby is currently going through redevelopment. The aim of the development in Fyrklöver is to create a lively city core through densification according to the plan program for Fyrklöver from 2012 (Upplands Väsby kommun 2012). The program gives an idea of how the public space in Fyrklöver can be shaped to achieve this lively city core and there is a wish for a well-connected public space full of experiences. Fyrklöver is characterized by large-scale, monotonous architecture, which is also highlighted by the municipality. In the program, they point out that development of Fyrklöver should take into account former ideas of the construction from the 1970s. Later in the program, it is said that the development along Mälarvägen and Husarvägen will affect the city image and the impression of a typical 1970's area. This includes the Väsby centrum and the housing complex "Blå husen" which was erected in the 1970s (see figure 11). Those areas are also urged in the program as in need of a visual rearmament (ibid.).

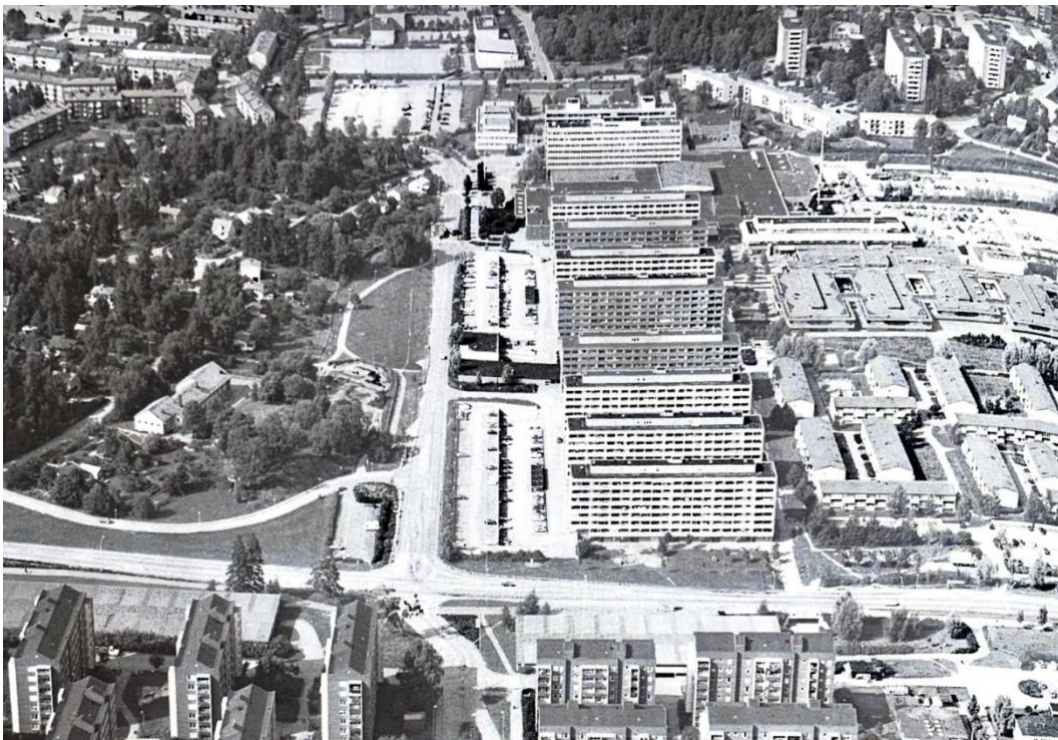


Figure 11. View of Fyrklöver, photograph taken in 1990. Väsby centrum and Blå husen were erected in the 1970's, whose ideas from that time are to be taken into account in the development of Fyrklöver (Source: Upplands Väsby kommun 1990).

The program expresses an opportunity to densify along the roads Dragonvägen and Mälarvägen, as a way to strengthen the entrances to Väsby city. At the time the program was written, the vague division between public and private space was

pointed out as a potential cause of difficult orientation (Upplands Väsby kommun 2012). Explained in Upplands Väsby's definition of urban, it is fundamental for the city model to have a clear structure where the boundary between public and private space is obvious, otherwise these are not taken care of. They describe that no place is forgotten and becomes no-man's-land and amorphous spaces by doing in this way (Upplands Väsby kommun 2018a).

In the program for Fyrklövern it is argued that densification in this area is sustainable in an economic, ecological and a social perspective (Upplands Väsby kommun 2012). A well-developed transport system, service and climate adaptation are examples of strategies towards sustainability. In the program the municipality presents planning principles in order to achieve their vision and become an ecologically, economically and socially sustainable city district. One of these principles that they present is well connected parks. Parks are said to be available for more people than just residents, in line with creating a lively city core. Another planning principle is climate adapted solutions in parks, for instance stormwater management (ibid.). Similarly in their definition of urban, they say that nature in public places should get enough space to deliver ecosystem services (Upplands Väsby kommun 2018a). This includes vegetation regulating the local climate, stormwater management and migratory links. This is expressed as beneficial for human well-being as well as the character of the public space (ibid.).

It is urged in the plan program that it is necessary to preserve and enhance the green areas by reason of the construction. Another ambition stated is to strengthen the connection to larger, continuous green areas close to the district (Upplands Väsby kommun 2012). The detailed development plan for south of Mälarvägen declares that Fyrklövern is part of the area designated as a compact urban area (Upplands Väsby kommun 2019). At the same time, this detailed development plan also states that Fyrklövern has an ambition of being a green district. To achieve this, the courtyards are stated to have a significant role and contribute to a pleasant environment for the residents, and the greenery to benefit ecosystem services (ibid.).

5.2.2 Mälurvägen

Mälurvägen (figure 12) is designated to be transformed into a city street and is described as getting greener and a clearer structure. Trees and other plantations along the road clarifies passages and contributes to a more green and attractive environment (Upplands Väsby kommun 2020).

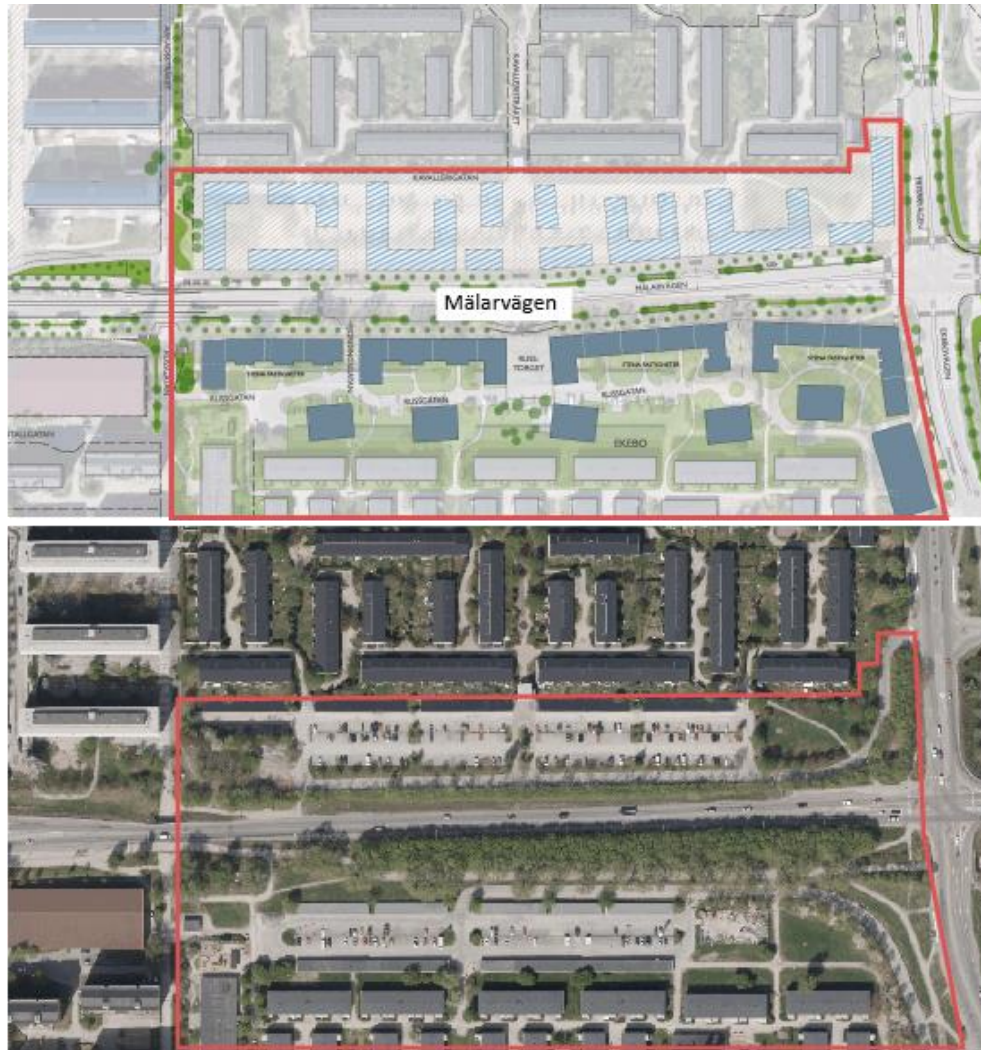


Figure 12. Mälurvägen according to planned development and before development. (Sources: Upplands Väsby kommun 2021 & Upplands Väsby kommun 2022. Edited by the authors).

Implementation of the two detailed development plans along Mälärvägen will imply a replacement of existing parking lots, garage buildings and green spaces, with residential buildings (Upplands Väsby kommun 2019; 2020). The vegetation along Mälärvägen is described as large and dense, which on one hand makes up a visual barrier (ibid.) and on the other hand provides visual protection from traffic (Upplands Väsby kommun 2019). On both sides of Mälärvägen there are tree alleys, covered by biotope protection that the municipality plans to remove by applying for exemptions from the County administrative board (Upplands Väsby kommun 2019; 2020). Some of the trees are at least 30 years old but are claimed to lack a high biological value. On the south side of the road, the plan is to replace the alley with a new one (Upplands Väsby kommun 2019). Both plans admit to removal of prevailing green structure and to the loss of ecosystem services. Loss of greenery will be compensated by planting of new trees within the area and along Mälärvägen, as well as by the creation of new ecosystem services in the area and in the new park Blå parken (Upplands Väsby kommun 2019; 2020). At the site visit, only the south side of Mälärvägen was accessible due to construction work. The implementation of these plans had not come far at all during the site visit, in terms of new buildings and yards. This makes it hard to take a stand on how the plans are materialized. It was still possible to see that most of the vegetation and the alley on the north side did not remain. The alley on the south side however had not been removed. New trees have been planted alongside Mälärvägen and are visible in the background of figure 13 with the old trees in the foreground. Evidently the new trees are much smaller than the old ones, which also makes it hard to get a fair assessment of the finished project.



Figure 13. Old trees in the foreground and new planted trees in the background, alongside Mälärvägen. (Photo: the authors, May 2022).

The ecosystem services planned by the municipality are described to be purification and regulation of water, micro climate and climate regulation, social relations, biodiversity, pollination and education. The ecosystem service of education is explained by having a school in the area that can access nature and by that gain knowledge about nature. The plan also states that, by its implementation, nature close to housing is guaranteed (Upplands Väsby kommun 2019). The prevailing green spaces on the north side of Mälärvägen are suggested to be claimed as temporary parking lots, to compensate for lost parking spaces (Upplands Väsby kommun 2020). Green spaces are also proposed to both be used as a safety buffer zone between housing and underground lines, and as a zone between housing and streets where there needs to be a clear difference between private space and public space (ibid.). The municipality states that a densification of this area will replace open spaces with a more closed built structure. They also argue that this kind of built structure would have the same character as most of the prevailing, densely built structure in the city core and would thereby contribute to the city image and landscape image (ibid.).

5.2.3 Dragonvägen

A green area along Dragonvägen is being densified into a residential area (figure 14). This development is in the plan program motivated by making Dragonvägen a more clear city street (see figure 15), similar to the motivation of the transformations along Mälärvägen (Upplands Väsby kommun 2012). The program also describes the development as an extension of the densification that started in the 2000's. The built structure intended to some extent be open and offer a green passage to a larger park and also strengthen the connections between this district and surrounding green areas (ibid.).



Figure 14. Dragonvägen according to planned development and before development. (Sources: Upplands Väsby kommun 2021 & Upplands Väsby kommun 2022. Edited by the authors).

The land before implementation of the plan is described in varying ways. The detailed development plan presents it as a green area and green passage, which contains a number of older, valuable trees and dense shrubbery (Upplands Väsby kommun 2017). The plan program for Fyrklövern describes it both as an overgrown green area that scarcely invites people to visit it, and as a park (Upplands Väsby kommun 2012).

The detailed development plan acknowledges a loss of ecosystem services due to the development of this green area. It also stresses that all trees that can be preserved, should be, and especially older trees. Preservation of trees is limited to the western part, on former house plots, and to the southern part where a schoolyard is planned (Upplands Väsby kommun 2017). The site visit confirmed that dense vegetation has been preserved in these parts of the area (figure 16). In the rest of the area, trees will be removed due to the development because the buildings will have garages below ground (ibid.). The plan allows smaller park passages for pedestrians and also suggests that part of a planned square should consist of a pocket park, which is described as a park in a smaller format. It also proposes that green yards for the new buildings along Dragonvägen can be created (ibid.). At the time of the site visit, the square, park and passages were under construction at a too early state to see their materialization. One of the yards was possible to see and had a smaller lawn and plantations (figure 17).

Trees are explained to ensure runoff of surface water as well as create a good micro climate by providing shade. The municipality states that new vegetation will be planted as compensation for what is being removed due to the densification project. This, as needed for ecosystem services to be ensured (Upplands Väsby kommun 2017). They suggest that vegetation should be chosen to benefit pollinators and enhance ecological connection. Lost ecosystem services are also said to be compensated in the new park, Blå parken. The same examples of ecosystem services are provided here as for Mälarvägen, such as purification and regulation of water, micro climate and climate regulation, social relations, biodiversity, pollination and education. Recreation, explained as beautiful environments, and social relations are stated as ecosystem services that should be integrated in green meeting spots (ibid.).



Figure 15. Materialization of Dragonvägen as a clear city street. The buildings have replaced a green area. (Photo: the authors, May 2022).



Figure 16. Part of preserved vegetation in the south part of Dragonvägen. (Photo: the authors, May 2022).



Figure 17. Yard belonging to new buildings along Dragonvägen. (Photo: the authors, May 2022).

5.2.4 Blå parken

Explained in the plan program for Fyrklövern, the former school Vilunda Gymnasium was demolished in 2007 due to its poor condition (Upplands Väsby kommun 2012). Today, a part of this brownfield and a former park consists of the new park Blå parken (see figure 18). Stated in the detailed development plan for public spaces in Fyrklövern, the intention is to create a park with an urban character. This is motivated by making the space available for more people than only the residents in the district (Upplands Väsby kommun 2015). At the same time, the park should function as nearby recreation according to the detailed development plan for Dragonvägen (Upplands Väsby kommun 2017).



Figure 18. Blå parken according to the illustration plan and before development (Sources: Upplands Väsby kommun 2021 & Upplands Väsby kommun 2022. Edited by the authors).

Blå parken is developed from a hardened surface into lawns and meadow land (Upplands Väsby kommun 2022a). At the same time, there is a new hardened surface used as shared space in the southern part of Blå Parken (see figures 19 and 20). This surface was earlier a green space used as a park, this can be seen within

the framed area at the bottom of figure 18. According to Upplands Väsby kommun (2022a) there are 77 new planted trees in the area. At the site visit an information sign described that 35 trees have also been moved into Blå parken from other spots around Fyrklövern. Some of these trees were observed and are shown in figure 21. This showed that, except for being resource effective, it also contributes to already full grown trees that can provide more shade and greenery than a small, young tree. Besides the ecological focus and solutions, there is also a focus on making opportunities for meetings, relaxation and events in the park (ibid.). This was examined at the site visit. The ecological focus was expressed with a number of information signs, for example they gave information about biodiversity, stormwater treatment, climate regulation and other ecosystem services connected to green structure. According to the sign about biodiversity, there are habitats in the park such as dead wood and stacked stones. These habitats could not be found during the site visit and could therefore not be examined. The park is also described as an important space for migration of species to surrounding green areas in Upplands Väsby. At the site visit it was stated that a lot of functions compete in the same area. Where to play, socialize and to relax was obvious in the park. There were traces from human activities, like rubbish and wear on the lawn along the designated areas for activities (see figure 22 and 23).



Figure 19 and 20. Shared space in the southern part of Blå parken. (Photos: the authors, May 2022).



Figure 21. Planted trees (Photo: the authors, May 2022).



Figure 22 and 23. Wear and tear on the lawn caused by human activity, which is a result of a social function that impairs the quality of the lawn.. (Photos: the authors, May 2022).

5.2.5 Reflection of the development in Fyrklövern

Figure 24 summarizes how the green structure in Fyrklövern is both redefined and reshaped, by the implementation of a more compact city. What can be stated is that large parts of the green structure in Mälärvägen and Dragonvägen, have had to leave room for more buildings. Lost greenery is compensated with new greenery of smaller volumes, in the case of Mälärvägen with new, young trees and in the case of Dragonvägen with a small so-called pocket park. Greenery in yards belonging to the residential buildings and around the area is also suggested to solve the needed access to green spaces. At the same time, Blå Parken is wished to both be a park to more people than only residents in the area and function as nearby recreation.



Figure 24. View over the Fyrklövern area before implementation of the densification plans. (Source: Upplands Väsby kommun 2017. Edited by the authors). Information in the figure is obtained from the different plan documents that are presented in this chapter.

6. Analysis and discussion

The previous chapter has examined the construction and development of the compact city ideal in a historical context and the materialization of it in a contemporary densification project. The planning historical research enables an understanding of how planning ideals in theory redefines green structure, while the contemporary study of Fyrklövern investigates how the compact city ideal in practice is materialized and reshapes green structure. In this chapter, these findings are analysed and discussed in relation to the theoretical framework and previous research, in order to answer the research questions as well as to get an understanding of how planning ideals in theory are applied in practice. The first question is answered in the first part of this chapter to investigate how the compact city redefines the role of the green structure. The second question is answered in the second part of this chapter to investigate how the compact city reshapes the geography of the green structure. The last research question, which was asked on a methodological level, is answered in the following chapter by discussing the method.

6.1 The construction of the compact city ideal over time and its redefinition of green structure

The planning historical research of comprehensive plans, with help of the theme *Vision and ideal of the municipality*, revealed a consistent focus on densification and strategies to utilize already developed land and hardened surfaces, although with increasing intensity. The comprehensive plans recognize the risks of losing greenery to densification, but also motivate densification of already compact, central parts while larger, green areas surrounding the city are preserved. This is presented in the theme *Strategy*, where sparing of larger green areas justify the construction of the compact city model. Soga et al. (2014) discuss that a minimized extent of the development enables preservation of large, cohesive green areas and that this, which the authors refer to as sparing, of green spaces is preferable if an area is to be heavily urbanized. They also point out that the opposite alternative, a more scattered development, requires more land and leads to fragmented green

spaces, while it gives residential areas closer access to these green spaces. The question of enhancing access to greenery recurs in all comprehensive plans, and the contradiction of densification and access to green spaces becomes a clear discussion in the latest plans from 1990, 2005 and 2018. From there, more of an addition of green structure is occurring and also an increasingly constructed greenery responding to maximum distances and minimum sizes. The predicted decrease of green spaces due to densification becomes a fact in 2005 and 2018 where there is a recognition of lacking green space provision in the more central and compact parts of the municipality, which confirms Soga et al. 's (2014) comparison between a more limited and a more scattered development and what these may result in.

As Duvall et al. (2017) conclude, the increasing urbanity leads to problems that need to be solved by planning and changes the views on what nature is. The pursuit of increased urbanity and hence the city ideal, is clear in the two latest comprehensive plans. Altering views on nature becomes evident in the planning historical research, where the purposes of nature goes from being solely an amenity to, in the 2005 plan and forward, also becoming a solution to environmental problems. This recalls one of the aspects of Howard's garden city ideal from the beginning of the 20th century, that was to remedy the unsanitary conditions created in industrialized cities by cleaning up the city with nature (Kaika 2005). Duvall et al. (2017) refer to a spread of ecological awareness already in the 1960s, but similar to their own study, ecology's presence in Upplands Väsby's municipal planning becomes visible first after the 1980's. Although, the plans from 1966, 1976 and 1990 describe some parts of nature as "scientifically valuable" which could imply an ecological focus. On the other hand, scientific values could involve education since they talk about "areas for recreation and education" in the 1966 plan. Therefore it is uncertain at which year Upplands Väsby municipality started to take ecological values into consideration. The 1976 plan describes that a change of views on using land resources have affected the discussion about development. However, it can be concluded that nature explicitly being used for ecological solutions, belongs to contemporary planning.

The altered views on nature have affected the meanings of the environment within planning, which in turn influences choices made between exploitation, preservation, enhancement, protection of the environment (Duvall et al. 2017). The balancing of such interests and conflicts is somewhat vague in newer comprehensive plans unlike in the older plans. This was noticed in the theme *Balance of interests and conflicts*. The 1976 plan indicates more precisely what kind of land will disappear due to development and shows the balancing between different interests as well as whether the plan is likely to lead to conflicts between interests. Also the 1990 plan admits to a loss of natural values, while in 2005 and 2018 these balances of interests become less evident and discussions are more about consideration of values and how to compensate for an eventual loss of these. The

ecological reasons behind conservation and preservation are increasing from the 1990 plan, although they are most prominent in 2018. This confirms Duvall et al. 's (2017) explanation of a rising attention to human and urban pressures on ecosystems in the 1990s. The development of the green structure in the two latest plans is frequently mentioned as having multiple benefits, where all kinds of values are taken into consideration. These results corroborate the ideas of Garmendia et al. (2016) who argue that multifunctional planning seeks to provide a win-win solution where no value is lost. This also reflects an increased pressure on municipal planning to make urban areas greener and incorporate urban ecology, to prevent further effects caused by urbanization. In the 21th century it no longer seems acceptable to let natural values disappear without being considered or compensated, since these are fundamental in sustainable cities.

A consequence of the compact city model is highlighted by Qviström (2022) as a replacement of former ideals of green spaces, where recreational purposes of the welfare planning in the 1970s is replaced by new divisions of green planning resulting from an expanded focus on landscape ecological conditions. This kind of development is apparent in the theme *Purpose and functions* made in the planning historical research. A map of nature areas from the 1990 plan was compared with a map of nature from the 2018 plan, and the results show new labels for the same green areas. For example, patches labeled as “other green areas” in the 1990 plan are today labeled as “areas with ecological values” in the latest plan. These results match those observed new divisions of green planning as a consequence of an increased focus on ecology in the study made by Qviström (2022). Additionally, observed in the text in the latest plans from 2005 and 2018, is that areas planned for recreation should also provide ecosystem services and biodiversity. For example, the development of green wedges are presented as important for both recreation and migration of species. This is also a result of the expanded focus on landscape ecological conditions. Noted in the comparison of maps is that green areas labeled as ecologically valuable today, were previously designated as to be preserved but for other reasons. This means that the planning of Upplands Väsby municipality was also beneficial for ecology before this was being literally stated in the plan.

6.1.1 How has the geography of the green structure been constructed over time in urban planning?

Maps from different time periods reveal a change in purpose of green areas rather than a change of location. The same large, green areas outside the built environment have been protected, at least since the 1960's, but for different reasons. However, the actual texts reveal a possible change of location concerning the rise of ecological compensation. Starting in the 2000's, the loss of greenery is no longer just accepted as a result of urban development, but is to be compensated by adding new green

structure. An actual change of location is evident on the small-scale level in Fyrklövern, where disappearing green spaces are in fact compensated at another place by the construction of a park. Ecological compensation can be seen as a symbol for the problems created by contemporary planning, where solutions are to be implemented simultaneously as the problems occur. Increasing urbanity and the problem of decreasing greenery that follows, have made the green structure increasingly constructed, following a template of figures and minimums, and also more multifunctional. Greenery has previously been incorporated in planning to mainly provide social benefits, but from the 1990's and forward it has increasingly gained ecological purposes as well. Green structure thereby receives a new role in the urban ecology that is incorporated in contemporary planning to solve its environmental problems, similar to how it has had shifting roles through history to solve problems. This new role is reflected in the ecosystem services and green infrastructure that appear in comprehensive plans in the 2000's. Green structure today is still regarded as a necessity to human health and everyday life, and increasingly an obvious key to healthy cities. Although, a more urgent need of urban ecology expressed in contemporary planning does not exclude that previous planning have had ecological benefits, just because those plans have not explicitly contained such purposes of green structure.

6.2 Fyrklövern: Materialization of the compact city and its reshaping of green structure

The case study of Fyrklövern exemplifies densification on both hardened surfaces such as parking lots and on lush green spaces, which turns out in the planning historical research to be a constant balancing in municipal planning when applying the compact city model. The benefit of larger green areas outside the city being preserved is recurring and is also found as motivation in Fyrklövern, where connections to surrounding greenery is stated as a solution to the lack of greenery in this particular area. The planning historical research discovered that the former ideas of green areas in close proximity to housing are still important in contemporary comprehensive planning, however in the case of Fyrklövern this seems to be exclusively solved by a multifunctional and organized park. Looking at figure 24 it is evident that several green areas close to housing are disappearing due to the ongoing densification. Although the municipality in their plans for Fyrklövern guarantees nature close to housing, the only concrete examples of this that can be ascertained in the plans are Blå Parken and green yards. The site visit, however, did not show more than one example of new yards since much was still under construction. Because of this it is difficult for us to assess how it will look and how it will function for the inhabitants when it is finalized.

The development plans for Fyrklövern reflect the pursuit of increased urbanity and the ideal of a compact city, in expression such as city image, city street, lively city core, densely built structure and strengthened entrances to the city. The incorporation of nature to solve problems is also visible in the Fyrklövern project, where greenery is expressed to solve urgent problems of air quality, water pollution and urban heat effects. This area exhibits the contradictions of the green and compact city, since it is included in the most compact part of the municipality and is destined to become even more compact (figure 8 in chapter 5.1). It is simultaneously pointed out in the latest comprehensive plan as in need of the adding of vegetation to regulate the local climate and rising temperatures, as an effect of the compact built structure. This has been discussed in the theme *Purpose and function of the green structure*, and has been an interesting contradiction to keep in mind when examining Fyrklövern. Instead of adding more green structure, as called for in the plans, the municipality densifies on green spaces and tries to make room for more benefits and ecological compensation in the diminished green spaces. This becomes a problem constructed by planning, to be solved by planning. Zalar and Pries (2022) find how a decreased quantity of green spaces is said to be compensated by enhancing the quality of greenery. The highly organized Blå parken discussed below may offer an example of how this kind of compensation takes place in Fyrklövern.

Findings obtained from the study of Fyrklövern, are consistent with Hautamäki's (2019) identified design principles. In Upplands Väsby municipality's definition of urban, it is highlighted that no-man's-land and amorphous spaces should be avoided. These are in agreement with Hautamäki's (2019) findings which show that well-maintained and highly functional parks are desired, rather than unorganized and amorphous green areas. Hautamäki (2019) argues that green structure is organized to fit within the concept of the compact city model. Results show that Upplands Väsby municipality reshapes the green structure due to the development in Fyrklövern, where the added green structure is compensating what has been lost. The compensation in Fyrklövern includes the new park Blå parken, which could be an example of Hautamäki's (2019) description of intensively maintained urban parks resulting from the compact city. Tunström's (2009) observation of parks being related to the city, while green areas can be perceived as secluded and belonging to the older, modernist ideal, could offer an explanation of why Blå parken alone seems to be the provision of green areas close to housing while other green areas are destined for densification. Blå parken contains both recreational and ecological functions, which is argued as necessary as the city is densifying (Stockholm stad 2016). On the contrary, Saunders (2012) is questioning if it is possible to achieve several goals of the same green area, such as social qualities and functions for climate adaptation, without causing incompatibility.

Zalar and Pries (2022) notice how green spaces without a clear structure and that are regarded as standing in the way of the compact city form, are either not represented as green at all or labeled as “non-cared for” or “of limited green qualities”. The different plans concerning Fyrklövern offer an insight into what green spaces there are and whether these will be lost due to densification or preserved. The labelling of greenery can however be seen in the development around Dragonvägen, where the vegetation that will be removed is described in one plan as overgrown and uninviting. This can be connected to the notions of unkempt, unorganized and undefined no-man’s-land from both Tunström (2009) and Hautamäki (2019). Nassauer (1995) describes that there is a desire to make the landscape look neat, safe and inviting, which risks manipulating ecosystems. On the contrary, Pataki (2021) states that areas with ecologically positive functions can be perceived as negative for human well-being because of aesthetically displeasing management. This may explain the removal of the green area along Dragonvägen, since Upplands Väsby municipality describes it as an overgrown green area that scarcely encourages people to visit. This redevelopment of the area could be beneficial from both an economic and a social perspective, where messy and undefined nature is cleaned up in order to make a clear city street along Väsby center, inviting for visitation. This former green area can be regarded as a residential green area of previous ideals that no longer fits the frame that is constructed in the compact city. Zalar and Pries (2022) discuss how such neglected green space that used to be interpreted as everyday sites that just need some improvements of their design, are now being removed by densification and that the labelling can help justify this. Another aspect that becomes visible in Fyrklövern, is that claiming of green space is a way out when another interest needs to be considered. The statement of green spaces around Mälärvägen to be used as temporary parking spots to compensate for lost parking lots is one example, beyond the previously mentioned loss of green space due to densification.

As Nassauer (1995) also mentions, unkempt landscapes that are perceived to be uncared for, may hold a higher biodiversity that gets disregarded in the attempt to achieve a city with a clear structure. Upplands Väsby municipality is transparent in the plans relating to Fyrklövern that vegetation, even protected and valuable, risks being removed in favour of densification. The different information signs in Blå Parken can be seen as a way to represent ecological functions, which according to Nassauer (1995) otherwise risk being invisible to people and not cared for. When people’s connection to nature is enhanced, they tend to get more engaged in natural environments and support conservation of these when exposed to their values (Bolleter & Ramalho 2020; Soga et al. 2014). However, at the site visit we noticed littering in the park despite all the information signs that emphasize the importance of green structure for ecological purposes.

It is expressed in the plan program for Fyrklövern that a public park in Fyrklövern is desired instead of a residential park in order to make it available for more people than solely residents. At the same time, as the density increases and the inhabitants' courtyards become smaller, the inhabitants are likely to rely more on the city's public parks and spaces (Stockholms stad 2016). This implies that more individuals compete for the same green area, at the same time as it is intended to function for climate adaptation. However in the case of Fyrklövern it is stated that green yards are also part of the provision of greenery. A picture from the site visit at Dragonvägen (figure 17 in chapter 5.2.3) shows how a new yard in connection to the new housing, explained by the detailed development plan as green, is both smaller and less green than the green area it replaces. At the site visit in Blå parken, which is a result of the desired public park, we noticed that human activity caused wear on the lawn. With the decrease of green spaces, the park risks being exposed to more wear and tear as both residents and visitors are crowded on the same surface. The park is also described, according to the information signs by Upplands Väsby municipality, as an important space for migration of species to surrounding green areas in the municipality. In other words, it is clear that Blå parken is expected to provide multiple functions.

6.2.1 How is the conceptualization and geography of the green structure affected through the compact city ideal?

The compact city ideal mainly has room for well-organized green structure with clear purposes. The geography of the green structure is affected by the aspiration of a clear structure that the compact city ideal implies. It is also desirable to build a city park rather than a residential park. The green structure regarded as messy and undefined is cleaned up and compensated by new green alleys and multifunctional parks. Vague expressions in the plans such as “ecosystem services are created based on needs” make it difficult to evaluate how the green structure will function and look like. The removal of green structure that does not appear as aesthetic or organized implies a risk of removing highly biodiverse green structure. The organized design, which aims to create a clearer urban structure and invite people to visit, has both social and economic reasons. How the geography of the green structure is affected by the compact city ideal is visible in the case of Fyrklövern. Uninviting green structure is removed by densification and a more city-like park with multiple functions is constructed in the district by transforming a hard surface into a green surface. This is a way of compensating for the loss of green structure due to the densification of other parts in the district. The case of Fyrklövern demonstrates the attitude that green areas can easily change location with each other to end up in more suitable places that benefit the compact city. Green structure has come to contain more functions and have more purposes than before the compact

city, but instead of an increased amount of green spaces we rather see a multifunctionality distributed to smaller or less green spaces.

7. Discussion of methodology

The first two questions have been answered in the previous chapter. On a methodological level we also asked the question: How can a planning historical research facilitate an identification of the consequences of a shift towards the contemporary city ideal and urban ecology within planning? The methodology discussed in the first part of this chapter provides an answer to this question as well as knowledge gained from the planning historical research. In the second part of this chapter, limitations of the study are discussed.

7.1 The strength of a historical perspective

The implementation of a planning historical research as a methodology made the case of Upplands Väsby municipality possible to be examined in a historical context. This provided a perspective of how the contemporary, compact city ideal has been developed as well as how the role of nature has shifted throughout history. By comparing maps and text in comprehensive plans it was possible to identify an alteration of vision, purpose, strategy and balancing of interests. These differences led to the different themes that have been analysed. The categorization into themes was an essential part of the planning historical research. This made it possible to compare the different plans and to identify a shift towards the contemporary city ideal and the increased focus on urban ecology. Also, by looking back in history one could identify what kind of planning principles that have given rise to problems in the city, and how these problems were to be solved. These are for example urban heat islands caused by lack of green structure and amorphous spaces that contemporary aims to solve. In this way, the consequences of the contemporary planning ideal could more easily be identified using historical knowledge. As mentioned by Tunström (2009), historical knowledge provides a foundation in the discussion of present and future. The historical study highlighted that the contemporary discussion of urban ecology does not have to imply that today's planning is more ecologically sustainable, as planning in the past intended to preserve the same green areas in the outskirts and plan for nearby recreation. For this reason, the planning historical research highlights the differences in how the municipality talks about green structure.

The study of the case made from a historical perspective has been both educational and interesting. However, working with the planning historical research has been a challenge since it was the first time. As a result of this, we have gained a lot of knowledge and hopefully the thesis can encourage others to study from a historical perspective. The historical research resulted in interesting findings as well as an enhanced understanding of how the historical perspective can be used for discussing the present and the future. In addition to this positive outcome, an objective in the thesis was also to get an understanding of how planning ideals in theory are applied in practice. By reading about goals and strategies in the comprehensive plans, to examine detailed development plans and lastly go and visit an ongoing project made us understand how planning ideals in theory are applied in practice.

7.2 Limitations of the study

The material used in the planning historical research was intended to be comprehensive plans from the 1960's until today. Due to this study, we discovered that municipal planning documents by Swedish municipalities have undergone extensive changes regarding content and design over the time, which implied that the two oldest plans differed considerably from the other plans. The three oldest plans could also exclusively be found at the municipal archive. Therefore, the availability of documents may affect the planning historical research. Recently published planning material is easily accessible since these documents can be found on the municipality's website. As the older plans are only available at the municipal archive, additional documents concerning that time period could not be found spontaneously to the same extent as the current plan documents that can be found one search away.

Considering the varying availability of the documents, results from history and present cannot be fairly compared. To reduce this, planning documents for the planning historical research was chosen based on being considered to be somewhat comparable to the current comprehensive plans. Although, the content in the plans differs from each other as a result of what was emphasized for each time period. Planning strategies in the historical documents are in some cases more site specific than today's plans. In these plans, the municipality describes thoroughly what they strive for and sets strategies based on goals. Due to this, one can get the indication of what was important to bring up in previous plans even though the same information could not be found. The purpose of the qualitative content analysis is to contribute to better conditions for a fair assessment, by structuring the text with help of our assigned themes.

The second part of the study was a closer examination of the materialization of the compact city, where Fyrklövern was used as an example. Both detailed development plans and a site visit collected data for this part of the case study. Interviews with planners at Upplands Väsby municipality was discussed as a complement, but was excluded due to the time limit. Nevertheless, it could have been interesting to hear the planners' thoughts on the development to become a compact city, especially together with the aspiration of the green city. This is not an uncommon vision for a municipality, therefore an interview would have contributed with knowledge applicable for a wider perspective. This could also have contributed to our objective of an enhanced understanding of municipal planning. As the site visit took place during a phase of construction, it is important to keep in mind that it is not possible to make a full assessment of how the "final result" of the compact city is materialized. It is difficult to estimate what will be restored and how it will look when it is finalized. However, what has been removed due to the construction could be stated, and thereby answer the question of how the compact city reshapes the green structure.

8. Conclusion

The purpose of this study was to investigate how the compact city ideal redefines the role and reshapes the geography of green structure. Evidently, the city ideal steers a lot of what is being planned and what kind of green structure is possible in the compact city. The geography of the green structure is thereby affected in order to make space for the compact city ideal. Greenery in the compact city is to have both a defined and organized structure, and clear purposes. The construction of the compact city ideal in theory has redefined the role of the green structure over time, to contain more and more functions with increasing focus on ecology. This leads to an ambition of allowing multiple functions to coexist in the shrinking green spaces that by this are reshaped to accommodate all these functions. In contemporary planning, the green structure can be expected to require more organization and division between different functions to avoid incompatibility between these. This can be regarded as positive, since there is evidently a lot of thought behind the design of today's urban green structure and an enhancement of its ecological aspects. However, if these functions are shown to impair one another's purposes, this would form a new problem caused by the contemporary planning ideal of the compact city, for further planning to solve. Such construction of problems has been highlighted by the historical approach in this study, which may enable a questioning of the compact city as a single solution and an attempt within contemporary planning to prevent creation of new problems. An objective of this study was to understand how planning ideals in theory are applied in practice. By both looking back over time and investigating the ongoing materialization of a planning ideal, it was confirmed that theory and practice are not always fully coherent and that reality can turn out different from the ideal stated in a plan.

8.1 Development potential

This study did not enable a full comprehension of the materialization of the compact city ideal and how this reshapes the green structure, since the chosen case was still mainly under construction. Choosing a case that both enables an understanding of the space before the implementation of the compact city, what is being transformed and what consequences that transformation results in, where the chosen methods in this study can be applied, would require a much larger time frame. Therefore, a suggestion on further research is the assessment of a fully implemented

densification project, where ecological solutions can be compared to the original ecological values.

9. References

- Anderson, P. M. L. (2021). Biodiversity and cities. In: Douglas, I et al. (eds). *The routledge handbook of urban ecology*. 2 ed. London: Routledge. 257-264
- Angelo, H. & Wachsmuth, D. (2015). Urbanizing urban political ecology: A critique of methodological cityism. *International Journal of Urban and Regional Research*. 39(1), 16-27. doi:10.1111/1468-2427.12105
- Avolio, M. L. & Trammell, T. L. E. (2021). The analysis of cities as ecosystems. In: Douglas, I et al. (eds). *The routledge handbook of urban ecology*. 2 ed. London: Routledge. 487-496
- Bolleter, J. & Ramalho, C. E. (2020). *Greenspace-Oriented Development Reconciling Urban Density and Nature in Suburban Cities*. Cham: Springer
- Boverket. (2020). *Hållbar utveckling i kommunernas översiktsplaner*.
<https://www.boverket.se/sv/PBL-kunskapsbanken/planering/oversiktsplan/fysisk-planering/forhallningssatt/> [2022-04-27]
- Boverket. (2021). *Planning process*. <https://www.boverket.se/en/start/building-in-sweden/swedish-market/laws-and-regulations/planning-process/> [2022-02-16]
- Bryman, A. (2018). *Samhällsvetenskapliga metoder*. 3, Stockholm: Liber
- Capelán, A. & Göransson, K. (2021). Deltagande observationer. In: Klingberg, G & Hallberg, U. (eds). *Kvalitativa metoder helt enkelt!* Lund: Studentlitteratur. 117-139
- Colding, J., Gren, Å. & Barthel, S. (2020). The Incremental Demise of Urban Green Spaces. *Land*. 9(5), 162-172. doi:10.3390/land9050162
- Collins, J., Kinzig, A., Grimm, N., Fagan, W., Hope, D., Wu, J. & Borer, E. (2000). A new urban ecology. *American scientist*. 88(5), 416–425. doi.org/10.1511/2000.5.416
- Cronon, W. (1996). The Trouble with Wilderness; Or, Getting Back to the Wrong Nature. *Environmental history*, 1(1), 7–28. doi.org/10.2307/3985059
- Duvall, P., Lennon, M. & Scott, M. (2017). The ‘natures’ of planning: Evolving conceptualizations of nature as expressed in urban planning theory and practice. *European Planning Studies*. 26(3), 480-501. doi:10.1080/09654313.2017.1404556
- Garmendia, E., Apostolopoulou, E., Adams, W.M. & Bormpoudakis, D. (2016). Biodiversity and Green Infrastructure in Europe: Boundary object or ecological trap? *Land use policy*, 56, 315–319. doi:10.1016/j.landusepol.2016.04.003
- Goode, D (2021). Urban ecology: Its boom in the first two decades of the twenty-first century. In: Douglas, I et al. (eds). *The routledge handbook of urban ecology*. 2 ed. London: Routledge. 45-55

- Grose, M. J. & Jones, T. M (2021). The impacts of artificial light at night on urban ecosystems. In: Douglas, I et al. (eds). *The routledge handbook of urban ecology*. 2 ed. London: Routledge. 155-163
- Hautamäki, R. (2019). Contested and constructed greenery in the compact city: A case study of Helsinki City Plan 2016. *Journal of Landscape Architecture*. 14(1), 20-29. doi: 10.1080/18626033.2019.1623543
- Isaksson, J (2021). Riktad kvalitativ innehållsanlys. In: Klingberg, G & Hallberg, U. (eds). *Kvalitativa metoder helt enkelt!* Lund: Studentlitteratur. 283-301
- Kaika, M. (2005). *City of flows: modernity, nature and the city*. New York: Routledge.
- Larsson, S. (2021). Om kvalitetskriterier i kvalitativa studier. In: Klingberg, G & Hallberg, U. (eds). *Kvalitativa metoder helt enkelt!* Lund: Studentlitteratur. 325-360
- McIntyre, N. E (2021). Urban areas and urban ecology. In: Douglas, I et al. (eds). *The routledge handbook of urban ecology*. 2 ed. London: Routledge. 5-12
- Nassauer, J. I. (1995). Messy ecosystems, orderly frames. *Landscape Journal*. 14(2), 161-170. doi:10.3368/lj.14.2.161
- Naturvårdsverket (n.d.). *Vad är ekosystemtjänster och varför behövs de?*
<https://www.naturvardsverket.se/amnesomraden/mark-och-vattenanvandning/ekosystemtjanster/varfor-behovs-ekosystemtjanster/> [2022-04-27]
- Nyström, J. & Tonell, L. (2012). *Planeringens grunder: En översikt*. 3, Lund: Studentlitteratur
- Pataki, D, E (2021). Ecosystem disservices from urban nature. In: Douglas, I et al. (eds). *The routledge handbook of urban ecology*. 2 ed. London: Routledge. 571-583
- Pauleit, S., Hansen, R., Rall, E. L. & Rolf, W. (2021). Urban green infrastructure: Strategic planning of urban green and blue for multiple benefits. In: Douglas, I et al. (eds). *The routledge handbook of urban ecology*. 2 ed. London: Routledge. 931-942
- Qviström, M. (2013a). *Om ändamålsenliga strukturer och behovet av en planeringshistorisk analys*. [Fact sheet]. Alnarp: Sveriges Lantbruksuniversitet
- Qviström, M. (2013b). Searching for an open future: planning history as a means of peri-urban landscape analysis. *Journal of Environmental Planning and Management*. 56(10), 1549-1569. doi:10.1080/09640568.2012.734251
- Qviström, M. (2022). Finding the pulse of the welfare landscape: reframing green space provision in modernist planning. *Geografiska Annaler: Series B, Human Geography*. 1-16. doi:10.1080/04353684.2022.2040376
- Roth, M. (2021). Understanding urban heat islands. In: Douglas, I et al. (eds.) *The Routledge handbook of urban ecology*. 2 ed. London: Routledge. 142-154
- Rudberg, E. (1985). *Från mönsterplan till kommunöversikt: den fysiska översiktsplaneringens framväxt i Sverige: [exhibition catalogue]*. Stockholm: Statens råd för byggnadsforskning
- Soga, M., Yuichi, Y., Koike, S. & Gaston, K. J. (2014). Land sharing vs. land sparing: does the compact city reconcile urban development and biodiversity

- conservation? *Journal of Applied Ecology*. 51, 1378-1386. doi:10.1111/1365-2664.12280
- Saunders, W. S (2012). Introduction: Ecology, with pleasure. In: Saunders, W. S (ed.) *Designed ecologies: the landscape architecture of Kingjian Yu*. Basel: Birkhäuser. 8-9. <https://ebookcentral.proquest.com/lib/slub-ebooks/detail.action?docID=1020516#>
- Schreier, M. (2013): *The SAGE handbook of qualitative content analysis*. SAGE publications. doi:10.4135/9781446282243
- SFS 2010:900. *Plan- och bygglag*. Stockholm: Finansdepartementet
- Stockholms stad (2016). *Grönare Stockholm: Riktlinjer för planering, genomförande och förvaltning av stadens parker och naturområden*. (Dnr 171-1292/2016). Stockholm: Stadsledningskontoret. <https://start.stockholm/om-stockholms-stad/politik-och-demokrati/styrdokument/> [2022-02-14]
- Tunström, M. (2009). *På spaning efter den goda staden: Om konstruktioner av ideal och problem i svensk stadsbyggnadsdiskussion*. Diss. Örebro: Örebro universitet. <https://www.diva-portal.org/smash/record.jsf?pid=diva2%3A241251&dswid=-5256>
- Upplands Väsby kommun (1966). *Generalplan Upplands Väsby kommun*
- Upplands Väsby kommun (1976). *Planeringsförutsättningar Upplands Väsby: kommunöversikt jordbruksprogram*
- Upplands Väsby kommun (1990). *Översiktsplan 1990*
- Upplands Väsby kommun (2005). *Framtidens Upplands Väsby - "Den moderna småstaden": strategisk kommunplan 2005-2020*. <https://www.upplandsvasby.se/download/18.4888d21515e5a932a772ae4/1507013363597/> [2022-03-04]
- Upplands Väsby kommun (2012). *Planprogram för Fyrklövern*. <https://www.xn--upplandsvasby-ocb.se/download/18.4a3462da15f4d86bb80e58/1509359406461/Planprogram> [2022-04-07]
- Upplands Väsby kommun (2015). *Detaljplan för Fyrklövern 1: allmän platsmark i Upplands Väsby kommun*. http://arkiv.upplandsvasby.se/Detaljplaner%20g%C3%A4llande/1385/planhandlingar/1385_Planbeskrivning.pdf [2022-04-28]
- Upplands Väsby kommun (2017). *Detaljplan för område väster om Dragonvägen inom Fyrklövern i Upplands Väsby kommun*. http://arkiv.upplandsvasby.se/Detaljplaner%20g%C3%A4llande/1396/planhandlingar/1396_planbeskrivning.pdf [2022-04-05]
- Upplands Väsby kommun (2018a). *Stadsmässighetsdefinition för Upplands Väsby kommun*. <https://www.upplandsvasby.se/bygga-bo-och-miljo/oversiktsplan-och-detaljplaner/stadsmassighetsdefinitionen.html> [2022-04-27]
- Upplands Väsby kommun (2018b). *Väsby stad 2040*. <https://www.upplandsvasby.se/bygga-bo-och-miljo/projekt/vasby-stad-2040.html> [2022-03-01]

- Upplands Väsby kommun (2019). *Detaljplan för Norra Ekebo inom Fyrklövern, Upplands Väsby kommun*. (BN/2014:209).
http://arkiv.upplandsvasby.se/Detailplaner%20g%C3%A4llande/1400/planhandlingar/1400_planbeskrivning.pdf [2022-04-11]
- Upplands Väsby kommun (2020). *Detaljplan för Fyrklövern norr om Mälarvägen: Planbeskrivning - Samråd*. (KS 2020:512).
<https://www.upplandsvasby.se/bygga-bo-och-miljo/oversiktsplan-och-detailplaner/detailplaner-och-omradesbestammelser/detailplaner-pagaende/fyrklovern-norr-om-malarvagen.html> [2022-04-11]
- Upplands Väsby kommun (2022a). *Blå parken*.
<https://upplandsvasby.se/minisajter/fyrklovern/aktuellt/bla-parken.html> [2022-04-15]
- Upplands Väsby kommun (2022b). *Väsby entré*.
<https://www.upplandsvasby.se/minisajter/vasby-entre/detailplaner/pagaende-detailplan-ostra-runby-med-vasby-stationsomrade.html#Media> [2022-03-21]
- Zalar, A. & Pries, J. (2022). Unmapping green space: Discursive dispossession of the right to green space by a compact city planning epistemology. *City, Analysis of Urban Change, Theory, Action*. 26(1), 51-73.
 doi:[10.1080/13604813.2021.2018860](https://doi.org/10.1080/13604813.2021.2018860)

9.1 Figures

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Figure 1: © Lantmäteriet [2022-03-15]

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Figure 4: Upplands Väsby kommun (2012). *Planprogram för Fyrklövern*.

<https://www.vasbykartan.upplandsvasby.se> [2022-03-15]

Figure 5: Upplands Väsby kommun (1966). *Generalplan Upplands Väsby kommun & Upplands Väsby kommun (2018). Väsby stad 2040*.

<https://www.upplandsvasby.se/bygga-bo-och-miljo/projekt/vasby-stad-2040.html> [2022-04-12]

Figure 6: Upplands Väsby kommun (1990). *Översiktsplan 1990 & Upplands Väsby kommun (2018). Väsby stad 2040*. <https://www.upplandsvasby.se/bygga-bo-och-miljo/projekt/vasby-stad-2040.html> [2022-04-12]

Figure 7: Upplands Väsby kommun (1976). *Planeringsförutsättningar Upplands Väsby: kommunöversikt jordbruksprogram*

Figure 8: Upplands Väsby kommun (2018). *Väsby stad 2040*.

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Figure 9: Upplands Väsby kommun (1976). *Planeringsförutsättningar Upplands Väsby: kommunöversikt jordbruksprogram*

Figure 10: Upplands Väsby kommun (2021). *Om Fyrklövern.*

<https://www.upplandsvasby.se/minisajter/fyrklovern/om-fyrklovern.html> [2022-04-12]

Figure 11: Upplands Väsby kommun (1990). *Översiktsplan 1990*

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<https://www.upplandsvasby.se/minisajter/fyrklovern/om-fyrklovern.html> & Upplands Väsby (2022). *Väsbykartan.* <https://vasbykartan.upplandsvasby.se> [2022-04-19]

Figure 24: Upplands Väsby kommun (2017). *Detaljplan Väster om Dragonvägen inom Fyrklövern i Upplands Väsby kommun.* <https://vasbykartan.upplandsvasby.se> [2022-04-14]

Popular science summary

The number of inhabitants in cities is expected to rise, which leads to an increasing urbanization. Increasing the density in cities is regarded as a more sustainable alternative than expanding the cities. An expanded built environment claims large areas of land and requires more transportation. A more compact city model decreases the distances and thereby the need for transportation, which is both economically, socially and ecologically sustainable. The compact city has however turned out to result in a decrease in green spaces that provide important functions in cities. This in turn leads to environmental problems, which has required city planning to bring more greenery into the cities and increased their attention towards urban ecology. This leaves us with a somehow contradicting desire for both more compact and greener cities.

What kind of greenery that is possible in the compact city and what greenery that is lost, is for this reason interesting to examine. This study aims to investigate how the compact city redefines the role and reshapes the geography of the green structure. To interpret how the role of the green structure has been redefined over time, we ask the research question: *how has the geography of the green structure been constructed over time in urban planning?* Answers to this question are provided by the carrying out of a planning historical research. To find out how the compact city reshapes the geography of the green structure, we ask: *How has the compact city ideal affected the conceptualization and geography of the green structure?* This is examined in a study of a contemporary planning project. To evaluate our method of planning historical research, we also ask the question: *How can a planning historical research facilitate an identification of the consequences of a shift towards the contemporary city ideal and urban ecology within planning?*

The planning historical research and the contemporary study are both used in a qualitative case study of Swedish municipal planning, with the case Upplands Väsby municipality. This case constitutes an example, where the posed research questions are investigated. Upplands Väsby municipality is chosen since they strive to be a green city, a city that is destined to become more compact. The planning in Upplands Väsby municipality is examined by the use of municipal planning documents that show how the municipality intends to use and develop the land, and by visiting the site of the contemporary planning project. What we have looked for

is mainly what roles the green structure has had over time, what kind of green structure the compact city has room for and if some green values seem to get lost when the compact city is realized.

Why planning historical research? The analysis of municipal plan documents from different time periods shows that the municipality has discussed nature in different ways. Here it becomes evident that nature and green structure have played different roles throughout history. Today, when Swedish municipalities wish to become a compact city, nature is given new and more purposes in order to optimize the shrinking green areas. By comparing mapped nature from the 90's with today, we see that the case of Upplands Väsby municipality changes labels on the same green areas. Walking areas important for outdoor life have been protected for that cause, while today these areas are protected for ecological causes. Now they are described as green wedges that hold ecological values. However, the municipality has planned to expand through densification since the 60's. This means that the surrounding areas have not been interesting for urban development. As a result of this, the municipality has, and is preserving the surrounding green structure. However, as the city expands inwards, it has always been important for the municipality to ensure green spaces close to housing. What is new in the newer plans, is that the urban green structure is used to solve problems caused by a more densely built environment. At the same time, Upplands Väsby municipality strives to become even more compact in order to achieve an ideal of a city.

What kind of green structure is possible in the compact city? The compact city ideal mainly has room for well-organized green structure with clear purposes. Green structure that is regarded as messy and undefined is removed and is compensated with new parks. The planning of these parks is focused on making an inviting design for both residents and visitors. The design of the park should also have ecological values and ecosystem services, which means for instance planting trees to cool down the local climate and making migration of species possible in the green space. The strategy to achieve the latter aspiration is questioned by authors, who see problems with controlling nature.

What can we learn from history? By looking back into history, we can see how planning ideals were constructed. As we are looking back with years of distance, former ideals can more easily be evaluated since we can see the result of it and are aware of its consequences. This knowledge can be used to criticize contemporary planning. The historical research results in interesting findings as well as an enhanced understanding of how the historical perspective can be used for discussing the present and the future.

The compact city ideal steers a lot of what is being planned and what kind of green structure is possible in the compact city. The green structure is shaped in order to fit the compact structure, as well as it should solve the problems created by the compact city.

Acknowledgements

We would like to thank our supervisor Mattias Qviström for guidance, support and interesting discussions throughout this work. We also thank the staff at the municipal archive of Upplands Väsby for fast and good help with finding suitable material.

Vendela & Lisa, Uppsala 2022

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