Harmonizing aesthetics and function: a naturalistic design proposal for a woodland garden in Östra Ljungby.

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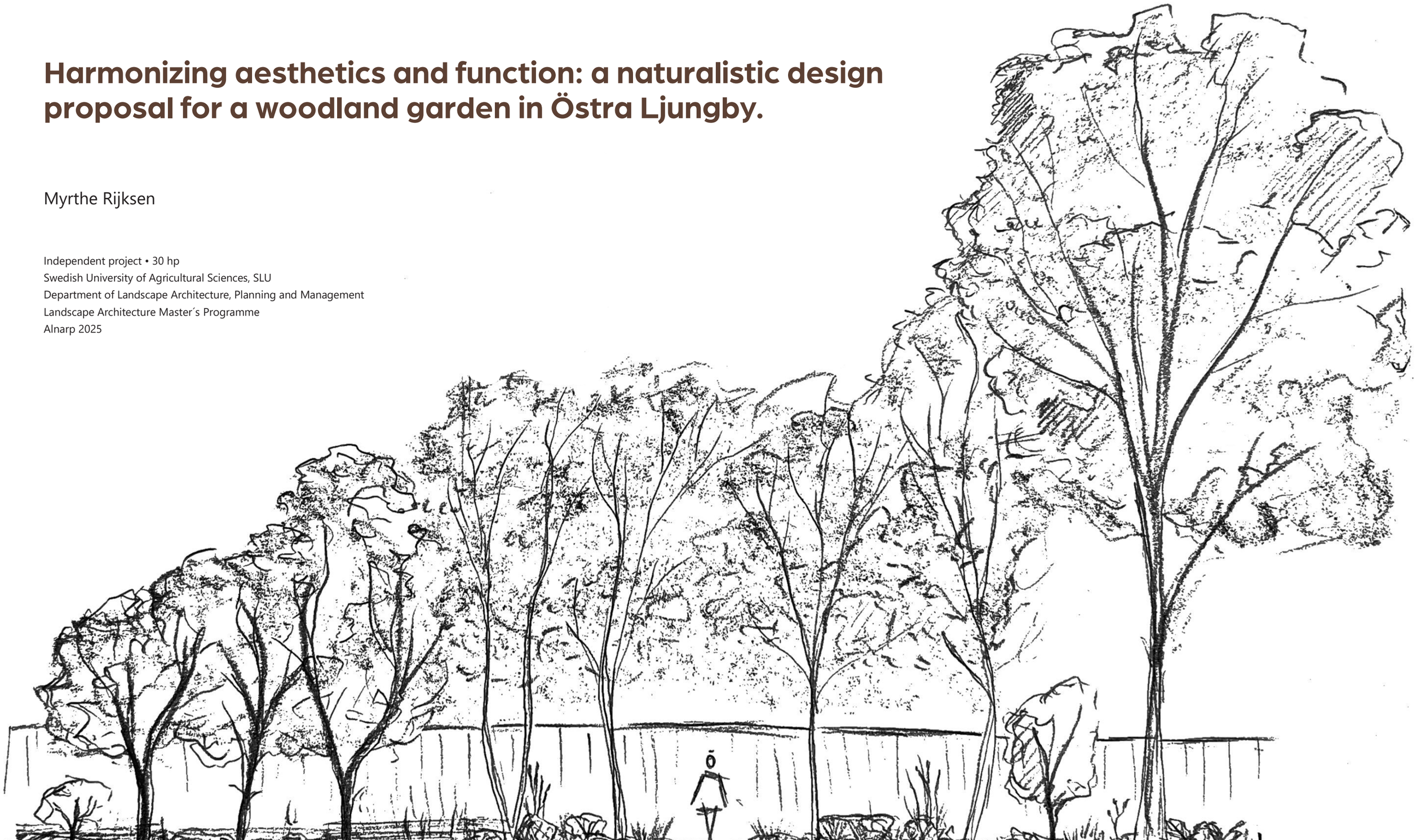

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Abstract

This thesis explored how naturalistic planting design and site analysis can be combined to create a sustainable woodland garden that will harmonize function with aesthetics. The aim has been to develop a woodland garden design that is based on ecological understanding of woodlands and naturalistic planting. It tries to keep the functions of aesthetic appeal and low-maintenance in mind, while still offering ecological and recreational benefit as well.

To achieve this, the project has integrated three core bases: the woodland knowledge base, the naturalistic planting design knowledge base and a site analysis that has informed the environmental base. The synthesis of these elements has helped inform the design development. The key principles included the use of edges, layering, native and non-native balance, human connection, low maintenance and dynamic nature.

The design was tested and developed through an iterative process of sketching, spatial analyses and plant selection, which has led to a design of a dynamic and multifunctional woodland garden that incorporates layered planting, seasonal interest, uniformity and gradual spatial transitions. The woodland garden consists out of different rooms that have been created and informed by the key principles while addressing challenges from the site.

The result has been a resilient, dynamic and flexible garden that incorporates multiple functions such as encouraging biodiversity, offering recreational opportunities and integrating edible species. This project highlights the importance of a site-specific approach when theory is combined with practice in landscape design. It has shown that successful naturalistic woodland gardens are not static, but should be adaptive and evolving landscapes that go further beyond design, since it remains an ongoing interaction between plants, people and place.

Acknowledgements

First, I would like to give my gratitude to my supervisor, Mona Wembling, for her supportive guidance and sharing feedback during this project. With your knowledge and encouragement, you have helped me through this thesis with ease. I am thankful that you were my supervisor.

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I would also like to give my personal circle a special thank you for their immense support and understanding through the tough times of this project. Your constant encouragement and listening ears have kept me motivated and focused.

Thank you all for joining me in this journey, it was one that I have thoroughly enjoyed. I hope you, and the reader, find this thesis as inspiring and meaningful as it has been for me.

Myrthe Rijksen

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1. Introduction

1.1 Problem statement

Woodlands are constantly changing ecosystems and can support biodiversity, while being able to have both aesthetic and recreational values as well. Therefore, the design of a woodland garden requires an intricate approach: it has to respect the nature and qualities of the natural woodland, while still making the garden design functional and aesthetically engaging. The over-structuring of a woodland garden in the design would take away from this natural essence of woodlands, while too little can lead to a space that feels neglected rather than inviting. Probably the greatest challenge is getting the right balance between intervention and natural processes. A 'properly' designed woodland garden should feel immersive and lush, yet structured enough to create movement, seasonal interest and a sense of place. By working with the existing conditions of a site instead of against them, it is possible to guide a woodland's natural evolution rather than imposing a rigid design.

The approach of naturalistic planting design offers a strategy that can help with achieving this intricate balance. It can embrace the quality of woodlands and focuses on plant communities that can naturally engage with each other over time, creating a layered and dynamic composition which maintains biodiversity as well as offering a rich sensory experience for visitors.

The growing interest in naturalistic planting design (both within the field of landscape architecture and within my own interests) offers an exciting opportunity to integrate dynamics and aesthetics, creating landscapes so that they are not only resilient and self-sustaining but also engaging and immersive. In this thesis, I will take on the task of (re-)designing an existing woodland garden, which currently lacks cohesion and structure. Sparse maintenance over the years has made the space a messy and neglected area, rather than one that has been intentionally designed and can provide pleasure and relaxation. Through the use of woodland garden and naturalistic planting design principles, I hope to illustrate how this woodland can be redesigned from an overgrown area into a cohesive landscape, balancing both aesthetics and multifunctionality, while being grounded in research and literature.

The focus of this thesis is the design of a woodland garden for a private client who has reached out to the Swedish University of Agricultural Sciences (SLU) with a request to improve part of her property in Östra Ljungby, Skåne. The client has purchased this property a few years ago and was formerly a school with garden. The property has a 4000 m^2 garden, with the intended woodland element being approximately 1300 m^2. The design aims to create a wild and lush woodland garden that combines aesthetic appeal with low-maintenance requirements, while still offering ecological and recreational benefits. Additionally, a highly valued function by the client is cultivation in the garden, so the design of the garden will incorporate edible plants, further enhancing its multifunctional character.

This thesis is more than just a design exercise: it tries to combine theory with design practice, exploring how relevant principles can be applied in a real-world setting. It also raises broader questions that extend beyond this single project of designing; what are the differences between a woodland and a woodland garden? What are the differences between a woodland garden and a forest garden? What is considered nature in naturalistic planting design? These answers are researched throughout this thesis, so that they can inform design decisions down the process.

The results from this thesis could be valuable for anyone interested in woodland garden design, from landscape architects to private landowners, offering a realistic, site-sensitive approach to designing and forming these unique spaces through applying naturalistic planting design. Through this hands-on research and design, I hope not only to design a beautiful and functional woodland garden but also to refine my own design process and reflect critically on it afterwards. In this manner, I can inspire my own (or another's) future woodland designs in either private or public spaces and contribute to the dialogue of sustainable landscape architecture.

1.2 Study area

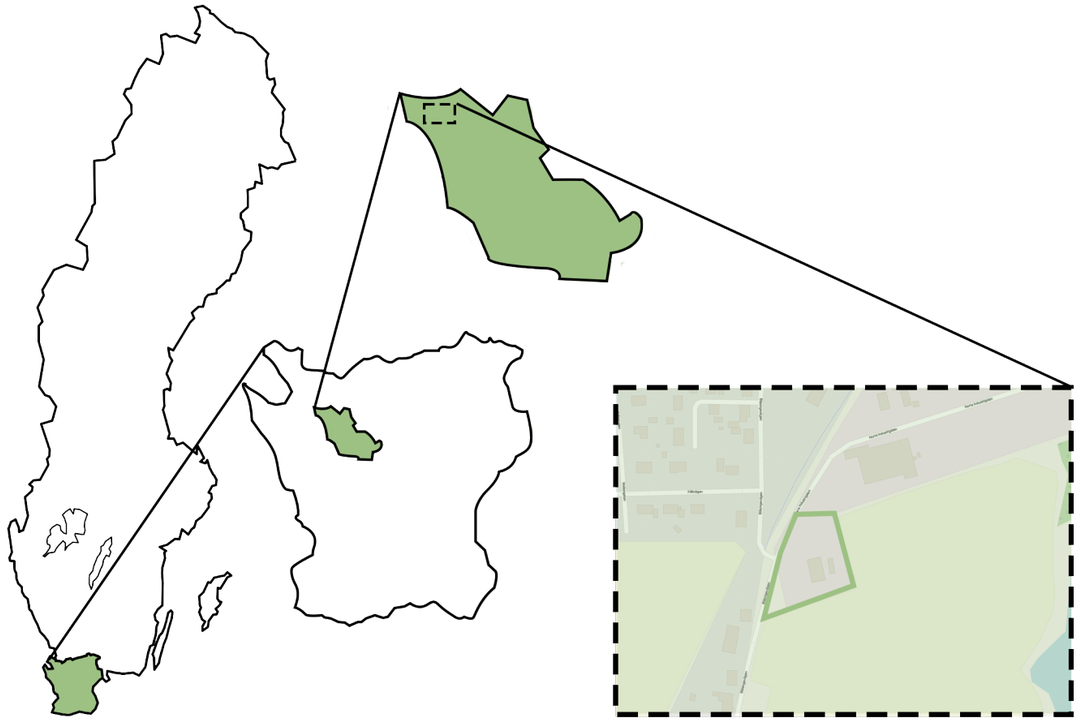


Figure 1.1 Location of Skåne in Sweden, followed by the location of Klippan in Skåne, and the location of the site within the municipality.

This thesis thus takes place in Östra Ljungby, a small village in the Klippan municipality in the Skåne region of southern Sweden (see figure 1-1). Being situated in Skåne, it means that the site is surrounded by a patchwork of agricultural landscape. The property in question is a private garden that belongs to the client, who also lives on-site. In addition to the main residence, the property also includes one rental guest apartment with its entrance on the Northern side of the main building. There are also additional plans for another separate guest apartment in an outbuilding. The northern boundary of the garden faces a small cargo company, whose operations are visually present from the garden. Therefore, a main problem of the location is the need for privacy and separation in space and is to be addressed by creating a sense of seclusion and comfort for both the resident and her Airbnb guests.

1.3 Thesis statement

The goal of the thesis is to develop a naturalistic planting design that responds both to the environmental contexts and the client's needs. The design will be limited to the specified area of the woodland garden, and will mainly focus on spatial organization and species selection. The design should respond to the site and its environmental contexts and include the client's needs (e.g., focus on functions as relaxation and connection with nature, food production, increasing biodiversity, and private spaces). Therefore, naturalistic planting design will be researched, since it not only highly aligns with both the wants and needs of the client, but also with the interests that I want to pursue.

The fitting main research question for this project would be: *''How can naturalistic planting design principles and site analysis be combined to create a woodland garden (that harmonizes function and aesthetics sustainably?)'*

To achieve a design proposal that answers this question, I will first have to answer three sub-research questions. Two research questions aim at deriving design principles/guidelines from the literature, to create a knowledge base on which the design can be based. The third question focuses on creating an environmental base, in which the site is analysed and explored.

Sub-research question 1: *What is a woodland garden? (E.g. defining characteristics, its importance, different kinds/habitats)*

Sub-research question 2: *What is naturalistic planting design? (E.g. Core thoughts, designing with principles)*

Sub-research question 3: *What are the key environmental and spatial characteristics of the site?*

After answering these three sub-research questions, the main research question can be answered through design. The literature analysis, landscape analysis and method of research through design are used to achieve a complete view of the project and be able to answer the main research question.

2. Methods and materials

This thesis will follow the Research Through Design methodology (RTD), where the act of designing is part of the way of investigating (Nijhuis and de Vries, 2019). Unlike research methods that separate theory from the actual practice, RTD integrates theory, site analysis and design iterations in a cyclical process to generate knowledge. To answer the previously mentioned research questions, the three-cycle view from Hevner (2007) will be adapted, which balances the knowledge base (literature), the environmental base (site analysis) and design (Figure 2.1). This means that the thesis will follow an iterative and reflective process, where design solutions will evolve and be created through continuous refinement.

The first phase consists of the knowledge and environmental base development. The knowledge base consists out of a literature review and analysis on naturalistic planting design and woodlands, which can provide design guidelines and helps answer the first and second sub-research question. The goal of this literature study and analysis is to familiarize myself with the existing research on woodlands and naturalistic planting design. To answer the third sub-research question, a site analysis will create the environmental base. For this site analysis, secondary data and observations are used. Data on the location is collected through a variety of data gathering approaches. The results from this analysis will inform design and planting choices later on, functioning as the base for the design together with the knowledge base.

After this, the design process can start. The designing can be seen as an exploratory activity that helps generate knowledge and helps provide an answer the main research question of this thesis (Nijhuis and de Vries, 2019). The initial design proposals and concepts will incorporate insights from both the knowledge base and environmental base. Sketching and reflecting back on the bases throughout the process guide refinements of the design. The design choices are examined to ensure that they address the site context and client's need (e.g. concerning biodiversity, functionality and aesthetic appeal). Adjustments are made based on observed strengths, weaknesses and new findings, and these key insights will be discussed throughout the process as well. The final design proposal can be thought of as the answer to the main research question. The process being iterative will also provide flexibility during the process, and will enable me to incorporate new ideas and feedback at each stage. The process of this thesis can be found in the figure below, each circle referring to the iterative nature of the process (Figure 2.2).

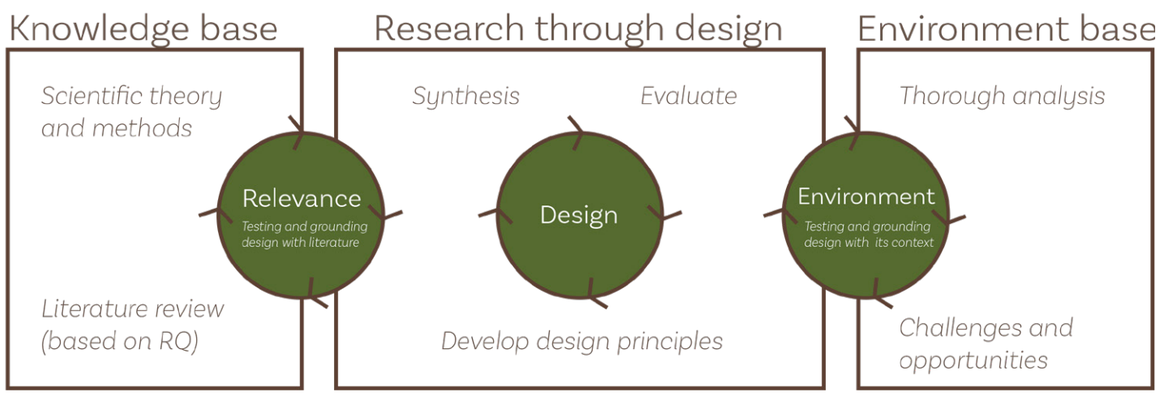


Figure 2.1 The method adapted to this thesis, based on the Three Cycle View from Hevner (2007)

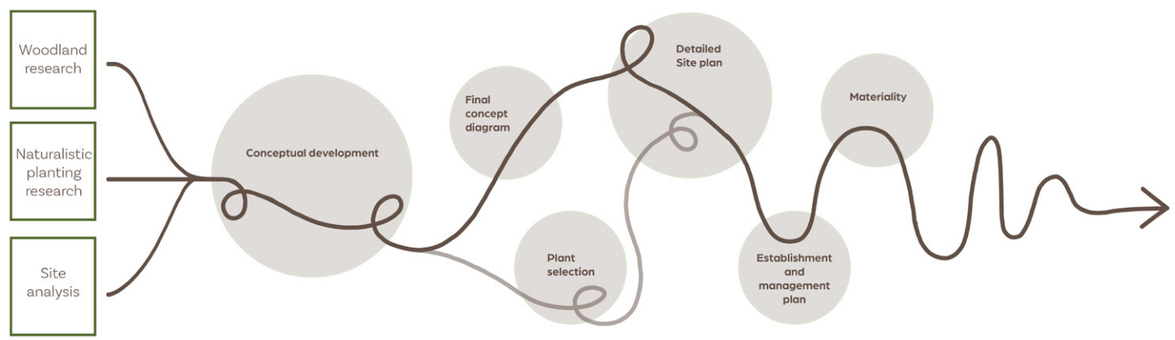


Figure 2.2 The design process throughout this thesis.

3. Knowledge base

3.1 *SRQ1: What is a woodland garden?*

3.1.1 What is considered a woodland?

A woodland is a natural or semi-natural ecosystem: a place where trees, shrubs and ground vegetation grow together in a fine balance. They can include elements such as meadows, glades, streams and wetlands, which enhances their ecological richness. The layered woodland provides a changing, rich environment that supports a lot of wildlife species, including species that go from birds all the way to fungi (Gustavsson, Hitchmough and Dunett, 2004).

Woodlands develop over time through the slow and steady process of natural succession, transforming open land into a tree-dominated forest (Druse, 2015). This process occurs in different stages. It starts with pioneer species colonizing disturbed areas after which they are replaced by slower-growing and longer-lived trees. Woodlands are mainly influenced by natural processes, but human activity has also greatly shaped them. Over time, woodlands have been used for timber production, grazing, shelter belts and recreation, showing our changing relationship with forests. They can thus not only be considered dynamic, but also related to culture. Woodlands do not undergo constant change: instead, they fluctuate between survival and growth, influenced by ecological and human factors. Sometimes they are surviving and sometimes they are thriving.

The way we perceive woodlands has changed throughout history. In the past woodlands were often seen as untamed and maybe even dangerous places (Druse, 2015). As societies evolved and the awareness of ecological systems grew, we began to appreciate woodlands and forests more for their beauty, resources and recreational value. Nowadays, woodlands are often cherished for their aesthetic and recreational benefits. Their spaces are primarily used for walking, wildlife observation and relaxation (Gustavsson, Hitchmough and Dunnett, 2004).

Historically, woodlands and their management have known different purposes because of changing cultural trends. For example, during the Baroque forests and woodlands were designed to become highly structured and formal landscapes. The English style became quite the opposite, favouring a more organic approach, allowing nature to sprawl in a more untamed manner. More recently woodlands are starting to be associated with ecological restoration and biodiversity conservation, playing a role in the naturalistic design movement (Gustavsson, Hitchmough and Dunnett 2004).

Woodlands can vary amongst others in age, size, and purpose. For example, ancient woodlands have been relatively undisturbed for centuries, resulting in unique ecosystems. Where some woodlands are actively managed for conservation, reforestation projects, or commercial purposes. Urban green spaces are other examples of woodlands, providing recreational areas within cities. In some cases, woodlands are planted intentionally to create buffers against urban pollution or noise. Their structure depends on factors such as the local climate, soil conditions and historical land use. A well-managed woodland has layers of vegetation, which creates a complex but balanced environment. This layering benefits both biodiversity values but also offers environmental benefits such as carbon sequestration, air purification and soil stabilization (Gustavsson, Hitchmough and Dunett, 2004). The structural layers can be seen in picture 3.1 and typically consist of (Druse, 2015; Busse Nielsen, 2023; Lorentzon 1997; Darke 2002; Junker, 2007):

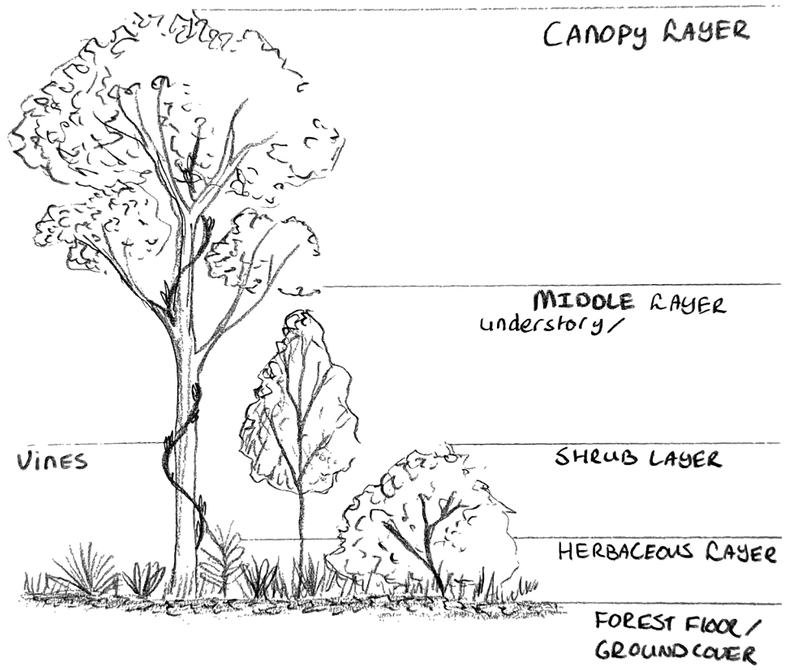


Figure 3.1 Picture showing the different layers as discussed in the text.

- Canopy layer: this layer consists out of the tallest trees and forms the uppermost layer, providing shelter and shade.
- Understory/middle layer: the layer with smaller trees and tall shrubs that grow beneath the canopy, often adapted to the filtered light
- Shrub layer: mainly woody shrubs that provide food and habitat for wildlife
- Herbaceous layer: ferns, grasses, perennials, spring ephemerals and ground covers that can thrive in the shaded areas
- Forest floor/groundcover layer: the layer consisting of leaf litter, decaying wood, fungi and mosses that helps contribute to the soil health.
- Vines: when present, these go through all the layers and link them vertically.

Light availability plays a key role in creating woodland structure, just like soil and water. The interior, where the canopy is dense and continuous, supports primarily shade-tolerant plants. Along the edges of the woodland, the sunlight is more present and creates a dynamic transition that results in a mix of shade-loving and sun-adapted species (Darke, 2002; Crawford, Brown and Smylie-Wild, 2010). Shrubs that may remain more hidden and fruitless within the forest burst into life at the edges, growing stronger and flowering more intensely. This edge zone is one of the most productive areas in both natural woods and forest gardens. Nearby trees and shrubs help trap sunlight for herbs in open spots, shield them from harsh temperatures, maintain humidity and block strong winds. In addition, fallen leaves from trees also improve soil fertility at the edge (Whitefield, 1996). The terms woodland and forest are often used together, yet they do have small differences. Woodlands are typically smaller, park-like forests managed for activities like hunting and walking, reflecting human influence (Lorentzon, 1997). Forests are usually considered larger and may be denser, left to develop naturally.

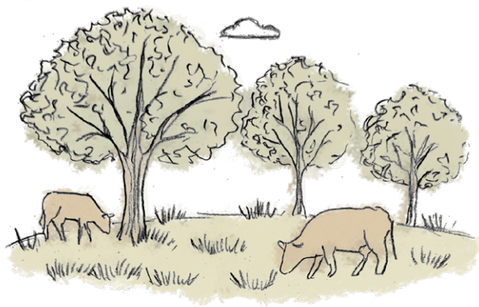
3.1.2 Different woodland types

Woodlands are not uniform landscapes, they vary based on their structure, species composition, function, management and historical or ecological development. Within the literature, different 'types' are discussed: woodland types and main structural types of woodland. The woodland types focus on function, management and cultural or ecological context, where the main structural types of woodland emphasize the physical structure, composition and ecological dynamics of the woodland itself (Gustavsson, Hitchmough and Dunett 2004).

Gustavsson, Hitchmough and Dunett (2004) distinguish roughly six woodland types, that show the complexity and adaptability of woodland landscapes. Whether they are ancient or newly planted, natural or designed, woodlands serve ecological, aesthetic and practical functions. Understanding these types will allow for a more distinct management and effective integration of woodlands into our modern landscapes. These six woodland types are (Gustavsson, Hitchmough and Dunett, 2004):

1. Open woodlands and silvi-pastoral systems.

These are characterized by widely spaced trees with a grassy understory, often maintained by grazing animals. These systems are also named silvi-pastoral landscapes, which are historically seen mainly in agricultural settings. Trees provided the shade and shelter for the livestock grazing below. They are still present today in rural and semi-natural areas. These more open woodlands help contribute to biodiversity by supporting a mix of light-demanding plants and woodland species that thrive in semi-shaded conditions.



OPEN WOODLANDS & SILVI-PASTORAL SYSTEMS

2. Wilderness woodland areas

These are often more ancient, minimally disturbed woodlands where succession has shaped the landscape over centuries. They are often used as a reference site for conservation since these woodlands are highly valued for their biodiversity and habitat. Such woodlands are often protected under laws to preserve their old-growth characteristics like decaying wood, diverse tree ages and rich ground flora. An example reference landscape is The Amsterdamse Bos in the Netherlands, which has retained a long-term woodland identity (Gustavsson, Hitchmough and Dunett, 2004).

WILDERNESS WOODLAND AREAS

3. The adventurous woodland

This kind of woodland is mainly designed with the user experience in mind, focusing on supporting recreation, especially for children. Direct interaction with nature is emphasized in adventurous woodlands and it integrates play areas, climbing trees and contrast between open and dense vegetation to encourage exploration. Because of their frequent use, these woodlands require strong species that can withstand these interactions. Adventurous woodlands are an example of how a woodland can be adapted both for ecological function but also human engagement.

THE ADVENTUROUS WOODLAND

4. Woodlands and shelter belts

Woodland shelter belts are thin strips of woodland that provide shelter and are usually found along roadsides, agricultural land or at urban edges. The belts help with environmental impacts, since they function as windbreaks, visual walls, and barriers for noise. Other benefits are the creation of habitats for animals and reducing soil erosion. The width of the belt highly influences its environmental effects. For example, narrow belts are often just visual barriers, where wider can also be used recreationally.

WOODLAND SHELTER BELTS

5. Plantations as buffer zones and air filters

This is a relatively more modern application of woodland management since they are often established in urban and industrial areas for environmental ecosystem services. These plantations can filter out air pollution, reduce noise and they can absorb excess nutrients. The species found in these woodlands mainly consist of fast-growers and pioneers pioneer species such as birch and poplar. Unlike naturally regenerating woodlands, these plantations are often intensely managed so they will remain effective over time.

BUFFER ZONES AND AIR FILTERS

6. Extreme woodlands

These designed woodlands can be found in extreme site conditions, such as nutrient-poor soils or wetland areas and create unique woodland environments. Within these woodlands plant selection needs to be diversified, which shows that woodlands do not need to conform to ideal growing conditions. Landscape designers can create these resilient and self-sustaining woodland systems by designing with species that are suited to the specific environment. This way woodlands require minimal maintenance.

EXTREME WOODLANDS

The different structural types of woodlands are defined by their vegetation architecture and focuses on the composition and layering of the woodland. These structural types determine how a woodland is functioning ecologically and looks at factors such as light and succession. They describe how woodlands are physically arranged and how the different plant species within this woodland interact over time (Gustavsson, Hitchmough and Dunett, 2004):

1. Dark high woodland

This structure has a dense single-story tree canopy that is often dominated by a single tree species like beech, creating a closed-cathedral-like environment that kind of looks like a 'pillared hall'. This effect creates an enclosed, sheltered environment that can feel calm and mysterious, with limited ground flora because of the low light levels. Since they have this formal and more structured feeling, they are ideal for parks or historical landscape settings. However, the limited understory does require careful thinking when using them.

2. Light high woodland

This woodland has a more open canopy and has a diverse mix of species, like birch and oak. It has a more open canopy that lets more light reach the ground compared to the first type. Because of this, the light high woodland has a richer field layer. The visual overview of this type of woodland is rather homogenous, which makes it aesthetically pleasing and inviting.

3. Many-layered woodland

A highly diverse woodland that has multiple vegetation layers that combine trees, shrubs, understory vegetation and a diverse ground layer. For this system to exist for the long term, there has to be a balance between the light-demanding species and the shade-tolerant species. This structure can maximize biodiversity by creating niches for different species and allows natural succession processes.

4. Low woodland types (Coppice woodland)

This woodland typically consists out of multi-stemmed trees and high shrubs, often associated with traditional coppicing systems with species such as hazel where trees are cut back to the ground to stimulate new shoots. This rotational cutting practice ensures a low and relatively dense canopy. These kinds of woodland are often found in the more rural areas and are historically linked to fuelwood and timber production.

5. Shrub-dominated woodlands

These woodlands consists mainly out of woody shrubs rather then trees. These landscapes can often be seen in park and garden designs or at woodland edges. Shrub-dominated woodlands are often transitional zones between open spaces and tree-dominated forests. They are often found within the woodland edges, softening the transitions. The shrubs provide a compact structure and seasonal variety into the landscape.

6. Half-open landscapes and small-scale mosaics

Just like the shrub-dominated woodland, this is more of a transitional woodland type, combining trees with open meadows or consisting of a mix of woodland and open spaces. This landscape can be seen as rather similar to wood-pasture systems providing a mix of woodland and grassland habitats.

7. Edge types

Woodland edges are a transition type between dense tree cover and open fields and are very important for biodiversity conservation. They are rich in biodiversity, as species from both the woodland and grassland environments coexist in these areas. In the next section, these will be discussed more in detail.

3.1.3 Woodland edges

As mentioned before, light availability plays a big role within the structure of woodlands and defines the separation between the interior and the edges. A variety of both shade-loving and sun-adapted species can be found within this dynamic transition that is caused by the increased sun penetration along the woodland edges (Darke, 2002; Crawford, Brown and Smylie-Wild, 2010). These woodland edges are important to ecological diversity since they transition between the more open and woodland areas and offer a broad range of species. Edges of woodlands are so important to biodiversity and ecological processes, that multiple authors think that much more focus should be given to them (Gustavsson, Hitchmough and Dunett, 2004).

Woodland edges are rich habitats where species from both forests and open environments can thrive. The structural diversity of these zones ranges from tall canopy trees to shrubs and herbaceous plants; thus, they can support a large variety of both flora and fauna. Species diversity is often higher here at the edge than in the woodland interior because of the previously mentioned light availability, resulting in higher productivity as plants can photosynthesize more effectively, leading to more robust plant growth and increased food sources for wildlife. The presence of layered vegetation provides shelter, nesting sites and food sources for birds, pollinators and small mammals that might otherwise struggle in more uniform landscapes. Edges can thus enhance biodiversity, and should not be left unmanaged (Gustavsson, Hitchmough and Dunett, 2004).

Woodland edges also help stabilizing the local microclimates by regulating temperature extremes and reducing wind speed in the area and thus helps to shield the woodland interior from these extreme weather conditions. These buffers are especially important in urban and agricultural landscapes where the pieces of woodlands are often more exposed to external elements. In addition, woodland edges and belts can even serve as natural air cleaners, capturing pollutants and reducing nutrient runoff in the area (Gustavsson, Hitchmough and Dunett, 2004).

Besides their ecological and environmental functions, edges also contribute to landscape aesthetics. They create visually attractive transitions between different land uses. Well-designed woodland edges can enhance experiences because they provide open yet sheltered spaces that could be ideal for recreational use. Gustavsson, Hitchmough and Dunett (2004) argue that woodland edge design can add to the visual diversity of a landscape. When designing woodland edges, variation must be taken into account according to them.

Woodland edges are dynamic and multifunctional landscapes and should definitely not be forgotten in the design of a woodland (garden), they should be carefully designed and managed. Their ecological, environmental and aesthetic contributions make them very important for landscape architecture. By being aware of their significance and keeping them well-managed over the decades, we can create more resilient, biodiverse and pleasing landscapes for generations to come.

3.1.4 What is considered a woodland garden?

A woodland garden can be seen as a designed landscape inspired by the different structures and functions that are found in natural woodlands. It aims to capture the beauty and atmosphere of an actual woodland setting by integrating multiple plant layers like tree layers, shrub layers and ground layers consisting of perennials and bulbs, to create a functioning designed woodland (Junker, 2007; Lorentzon, 1997). This layered approach mimics the nature of woodlands while allowing for greater plant diversity and aesthetic appeal. The aim is to not only achieve harmonious colour scale compositions, but to also create a kind of idealized nature, a garden in which everything harmonizes in the same way a natural woodland would (Lorentzon, 1997).

Woodland gardens are appealing because of their relatively low maintenance. During the establishment phase, closer supervision is required so that the vegetation will grow to what it is aimed to be, but after establishing the goal is to require only minimal effort (Lorentzon 1997).

Unlike a natural woodland that develops through ecological succession over its lifetime, a woodland garden is intentionally designed and maintained to create a harmonious and functional space. The seasonal interest and ecological sustainability are emphasized while offering a serene and captivating experience, creating a magical place at any moment within the year, even within the heavily shaded places (Junker, 2007). Strategic plant selection helps with achieving year-round beauty in the garden, adding to the drama while providing biological complexity (Drake, 2002). There is this emphasis on the seasonal rhythm in the woodland garden as a response to the cycle that sun energy brings throughout the year. Spring ephemerals take advantage of the early light conditions, summer foliage provides depth and autumn colours are vibrant. Ground covers, like ferns and mosses, help retain moisture and suppress weeds, which helps reduce the need for intensive maintenance (Drake, 2002).

A woodland garden often adapts natural elements like light and soil conditions to support a broader range of plants than in natural settings. Trees may be pruned to increase light within the stand, while soil can be enriched to improve fertility and structure. Pathways are carefully integrated into the garden to allow movement without disturbing the ecosystem. Unlike a formal garden that has more rigid structures, a woodland garden evolves over time (Junker, 2007).

3.1.5 Key similarities and differences between a woodland garden and a woodland

To help define the keywords used in this thesis, the distinction between woodlands and woodland gardens needs to be made. Woodlands and woodland gardens actually share many similarities, but they also show significant differences in their purpose, management and amount of human influence.

One of the typical similarities shared between the two is that they possess a layered composition. They both consist of a canopy layer, understory trees, shrubs, herbaceous vegetation and a ground cover layer. These layers combined form a multi-layered and rich plant community, resulting in a complex ecosystem (Darke, 2002). The species in a woodland are layered, and in a woodland garden, we can work with nature to replicate these layers, promoting the contrast of species and create various colour and texture combinations (Junker 2007).

They are similar in the way of the natural aesthetic since a woodland garden tries to mimic the ecological and aesthetic patterns of a natural woodland (Gustavsson, Hitchmough and Dunett, 2004). According to Lorentzon (1997), ''A woodland garden can be seen as a kind of horticultural organism that lives and exists as a whole, where every change and management measure affects all others.' This illustrates how the connection of species of plants within a woodland environment can intentionally be recreated within a garden to develop a balanced and naturalistic setting.

Both woodlands and woodland gardens serve to enhance biodiversity. They are homes for birds, mammals, and insects. Even in a designed woodland garden setting, careful plant selection can provide ecological support to native wildlife like it is done in woodlands (Druse, 2015). The tree canopy influences the amount of available light to plants and helps to retain moisture, both in a woodland and in a woodland garden. The canopy helps regulate moisture and light levels in a woodland, creating microhabitats for understory plants (Druse, 2015). Therefore, this aspect is often replicated in woodland garden designs through strategic plant placement and canopy management.

Despite these similarities, woodlands and woodland gardens also differ in some important ways, one especially being their different purposes. A woodland is a natural ecosystem, often left unmanaged or slightly managed for conservation or timber production, where a woodland garden is a designed space, aiming at enhancing accessibility, aesthetics and seasonal interest (Gustavsson, Hitchmough and Dunett 2004). A woodland garden thus contains the intentional design and human influence, compared to the more organic development of a woodland.

Another difference is the plant selection and management. In most cases, a woodland is naturally dominated by native species with minimal intervention, whereas a woodland garden is carefully planned and more often sees a mix of native and non-native plants to create visual and functional diversity (Lorentzon, 1997).

One thing mentioned is that a woodland develops naturally over time and that a woodland garden often requires soil preparation, pruning and regular care (Druse, 2015). However, different sources also point out the importance of adapting the design to the site conditions, which then also results in the fact that the woodland garden can develop naturally over time, just like a natural woodland.

To summarize, both environments consist of layered vegetation and both contribute to ecological stability. A woodland garden is a carefully designed space that balances aesthetics with ecology, where a natural woodland follows a more organic and unmanaged evolutionary path.

3.1.6 *Woodland* garden versus *Forest* garden

Besides the discussion of woodland gardens, the term 'forest garden' is also coined in the literature. Woodland gardens and forest gardens are alike in many respects, but since there are also a number of differences between the two it is important to distinguish the similarities and differences in this thesis.

One of the biggest similarities between a woodland garden and a forest garden is that both consist of layers. Both try to mimic natural forest systems by incorporating the layers of canopy, understory, herbaceous perennials and ground-cover plants. Woodland gardens are places where inspiration is taken from woodlands and these layers are manipulated to create varied textures and colour combinations (Junker, 2007). Within a forest garden, this vertical layering is similar but emphasized to maximize productive space and ecological function (Crawford, Brown and Smylie-Wild, 2010).

Another similarity between a woodland garden and a forest garden is their ecological approach. Both garden types work with natural processes and rely on native and adaptive plant species. On the usage of natives and non-natives, there are different views. Druse (2015) advocates for the use of planting local species to support wildlife, while Crawford, Brown and Smylie-Wild (2010) emphasize that it is important to design forest gardens as self-sustaining ecosystems that minimize external inputs. They also argue that the word 'native' has multiple definitions, and lots of introduced species have become native over time. The most important is that the exotic species introduced are not and won't become invasive (Crawford, Brown and Smylie-Wild, 2010). Additionally, through the use of plants that suit the location and its soil, both kinds of gardens seek to minimize soil disturbance and enhance the fertility and quality of soils.

While the two are rather comparable, their main differences lie in what they aim to do. Woodland gardens are mainly for recreation and aesthetics. They offer soothing, visually beautiful spaces that represent natural woodland landscapes. Forest gardens, on the other hand, focus more on productivity and sustainability. Crawford, Brown and Smylie-Wild (2010) refer to forest gardens as ecosystems designed to produce food, including fruits, nuts, herbs and perennial vegetables while maintaining a long-term ecological balance.

The difference in canopy density is also a distinction between the two gardens. Woodland gardens tend to have denser canopies that help create shaded and cool environments (Druse, 2015). This shade supports shade-tolerant flora but limits the growth of many edible crops. Forest gardens, on the other hand require a more open canopy to let sunlight through to create a productive underplanting. When the understory is filled with light it will lead to bigger yields from fruit-and nut-bearing shrubs and herbaceous perennials.

The two gardens also have slightly different approaches, but both focus on self-sustaining and low maintenance in the long run. Woodland gardens require moderate maintenance, and then mainly during the establishment phase to make sure the garden can evolve (Lorentzon, 1997). Regular pruning and ground cover adjustments maintain the garden's aesthetic appeal in the long run. Forest gardens are designed for long-term and low-maintenance productivity. Just like a woodland garden, after the initial design and planting phases, forest gardens become largely self-sustaining with minimal human intervention required beyond the occasional pruning and mulching (Whitefield 1996).

Overall, the layered structure is one of the fundamental principles that woodland gardens and forest gardens have in common. While forest gardens promote productivity, woodland gardens place greater stress on beauty. While both methods illustrate a deep respect for natural processes, their different purposes are what help make them well-suited to different gardening needs, preferences and environmental purposes.

3.1.7 Woodland principles and guidelines conclusion

This section functions as a conclusion to the previously discussed literature, showing and concluding the key design principles for creating a woodland garden based on the literature. A distinction is made between principles and guidelines: while principles provide the overall vision, guidelines are a bit more specific and help with achieving the principles into practice. Based on the literature discussed in the previous sections, the following key design principles for woodland garden design can be concluded:

Design principles

1. Embracing layered planting for a natural woodland structure

A woodland garden design tries to mimic the natural layers of woodland to create a whole and diverse ecosystem in a designed environment. The canopy layer, understory and shrub layers, the herbaceous layer and the ground cover are divided up. This multi-layering not only helps with biodiversity but also adds a rich, immersive feel to the design.

2. A low-maintenance, self-sustaining garden

One of the biggest appeals of a woodland garden is that it will continue to grow and thrive with minimal maintenance once planted. While there will be a need for some overview and more heavy-duty maintenance in the initial few years to assist the garden in its establishment, the goal is to let it be a self-sustaining system in the end that only needs some interventions. Ground-covering plants can help suppress weeds and retain water for example, keeping maintenance to a minimum.

3. Biodiversity and habitat creation

The aim of a woodland garden is not simply to look pretty, but it can also be a rich haven for birds, insects, and fungi. By planting and designing with care, the use of native plants can help provide food and shelter for wildlife and pollinators. Additional resources, such as deadwood, leafs and decaying organic material play roles in the upkeep of the soil and presence of useful fungi and insects.

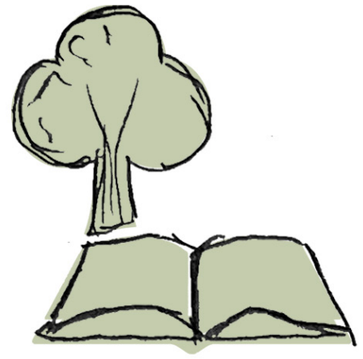
4. Human interaction and experience

A woodland garden should invite visitors to experience and want to connect with nature. Winding paths, natural clearings and seating spaces can help encourage movement without interrupting the woodland structure. They should feel organic and natural, and blend into the surroundings. Open glades for example or carefully framed views can help enhance the sense of discovery, making the woodland garden an immersive, interactive and ever-changing dynamic garden to be discovered.

Guidelines

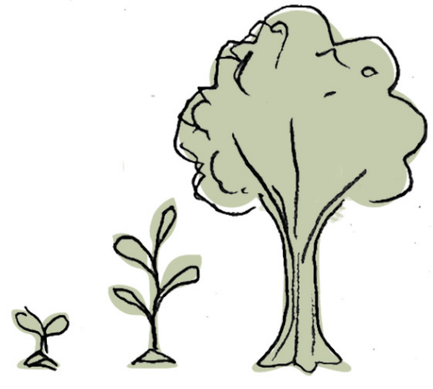
1. Influence of cultural and historical woodland design

As the literature has discussed, woodland garden design often takes inspiration from historic or cultural woodlands. Over the years, the look and design of woodlands and forests have been shaped by culture. From the formally designed Baroque gardens to the more free-flowing English landscape gardens that use more naturalistic style elements. A woodland garden can take inspiration from these traditions, and try to balance the more formal elements with natural forms. Old woodland management techniques such as coppicing or shelter belts can also be used so that they can add historical background to the garden.



2. Long-term evolution and succession

Within woodland garden design, it is important that the garden can evolve over time. Unlike a formal garden that is more static, a woodland garden changes and becomes mature over time. The use of natural succession allows the space to develop organically. Over time, self-seeding plants, slow-growing trees and natural regeneration can help shape the garden in sometimes unexpected, hard-to-design, but harmonious ways.



3. Adaptation to site conditions

Rather than imposing an artificial design onto the landscape, a woodland garden should be adapted to the existing conditions of a site. Whether it is the soil type, water availability or light levels. By choosing plants that work harmoniously with the site's natural conditions, the garden becomes more durable and can exist with little intervention other than the care in the beginning. This relates highly with the low-maintenance, self-sustaining garden principle. By working with the site's conditions, the garden will be more sustainable and will require less maintenance in the long run.

4. Importance of woodland edges

As one of the richest and most diverse areas in any woodland garden, the woodland edge is a transition area and a rich dynamic habitat where both shade and sun-tolerant plants merge. Since it is basically a biodiversity hotspot in itself, this zone plays an important role in attracting pollinators, birds and small mammals into gardens. Therefore, there is a need to thoughtfully design the edges and create smooth transitions among different garden spaces, not only to enhance ecological function but also to create visual appeal in these spaces.

5. Emphasis on natural aesthetics and seasonal interest

One way of enhancing the 'Human interaction and experience'-design principle is by designing with the vision of seasonal interest and natural beauty. Under this vision, the design of a woodland garden focuses on capturing the atmosphere and harmonic feeling of a natural woodland. The combination of light, texture and colour through the seasons provides the space with a dynamic beauty. Spring ephemerals will take advantage of dappled light prior to trees being fully leafed, summer foliage will provide depth and structure and fall colour will provide warmth and vitality. Even winter interest can be provided by evergreens, bark texture and seed heads. The trick is to develop a woodland garden that changes gracefully throughout the year so that it continues to be a magical place in all seasons.

3.2 SRQ2: What is naturalistic planting design?

3.2.1 Short history of naturalistic planting design

The origins of the concept of naturalistic planting design can be traced back at least two centuries ago and start within the concept of ecological planting. Alexander von Humboldt documented how plant communities from different regions but located at similar latitudes display comparable structures. His observations have built the foundation for early ecological planting theories through his book Essai sur la géographie des plantes in 1805 (Woudstra, 2004).

Woudstra (2004) also discusses how, by the early 19th century, two rather distinct approaches to ecological planting had emerged. Firstly, there is the plant-geographical approach that focuses on replicating vegetation from a specific region. Second, there is the physiognomic approach, which prefers plant structures and ecological functions over their geographic origin. These approaches were initially used to design botanical gardens.

At the beginning of the 20th century, the growing popularity of ecological planting lost favor because it became associated with nationalist movements in Germany. Nonetheless, the Institute for Perennials, Shrubs and Applied Plant Sociology was established in 1948 in Germany by Richard Hansen, where experiments were conducted on designed forms of vegetation and their different combinations. Slowly the reputation began to rebuild. Later in the 20th century, ecological planting experienced a big revival through the naturalistic planting design movement, by the influence of designers like Piet Oudolf and Noel Kingsbury. Their work combines aesthetic principles together with ecological functionality, drawing upon the values from the German Lebensbereich system. This system classifies plants according to their preferred site conditions since these kinds of plantings have a 'naturalistic aesthetic'. The connection between the ecological conditions of the site and the ecological preferences of a species is considered most important within this German system (Kingsbury, 2004).

By the early 21st century, naturalistic planting design has developed into a fusion of both ecological science and aesthetic considerations. Designers such as Nigel Dunett and James Hitchmough have tried to further refine the approach by incorporating amongst others plant succession, seasonal changes and dynamic plant communities (Dunett 2004; Dunett 2019; Hitchmough 2004; Hitchmough and Dunett 2004;).

Nowadays, naturalistic planting design is still evolving, mainly trying to balance sustainability with aesthetics and appeal. I think this also reflects the current trend in landscape architecture concerning the broader shift towards biodiversity-driven and climate-adaptive landscape designs.

3.2.2 What is considered 'nature' in naturalistic planting design?

The concept of nature within planting design is not fixed, but more an evolving concept that focuses on the interaction between ecological processes, cultural perceptions and human intervention. As mentioned previously our understanding of what nature, woodlands and forests are has shifted and this has been influenced by science and artistic interpretation. Hitchmough and Dunnet (2004) outline three main approaches within nature-like planting that define these different understandings of nature:

1. **Habitat restoration:** This approach seeks to recreate historical ecological conditions by trying to restore native plant communities. Within the approach, conservation is really prioritized over design.
2. **Creative conservation landscape style:** this style is more relaxed compared to the habitat restoration, since it acknowledges that complete restoration is generally not feasible. It tries to emphasize ecological adaptation instead and incorporates native species to suit the current environmental conditions.
3. **Anthropogenic landscape:** here the human influences the plant communities through the introduction of non-native species, to create stable and sustainable landscapes. This contradicts the more traditional definition of nature because it allows for novel plant communities not found in historical ecosystems.

Throughout history the perceptions of nature have shifted between aesthetic ideals and science. Woudstra (2004) discusses how 19th century landscape architects in Germany, the Netherlands and North America started to develop nature-like plantings that blended aesthetics together with ecological principles. These efforts were later shaped by cultural movements such as Romanticism, which emphasized the beauty of wild and untamed landscapes, and for example modernism, which sought to rationalize and structure nature.

Dunett (2019) adds to this point by stating that the relationship that we have with nature is deeply psychological. Humans tend to understand landscapes that are well structured and diverse as 'good nature', where the more weedy and chaotic environments are often seen as 'bad nature'. This highlights the role of human perception in defining what we consider natural (Dunett, 2019).

The ecological function of plantings is often seen as the defining criterion within natural planting design. A framework can be outlined for distinguishing between natural and artificial plantings, in which the different planting styles can be seen along this spectrum (Kingsbury, 2004). The three positions that are found within naturalistic planting design are stylised nature, biotope planting and habitat restoration. Stylized nature is a deliberately designed version of natural plant communities, incorporating self-seeding and ecological processes. Biotope planting tries to mimic wild habitats while allowing for species selection both based on aesthetic considerations and ecological suitability to the site. Habitat restoration is the most purist approach, and seeks to recreate natural ecosystems with minimal human intervention. Dunett (2004) expands on this by discussing the dynamic nature of plant communities. He argues that 'natural' plantings should embrace change and succession, rather than seeking the more static and ornamental perfection. This perspective views nature as a process rather than a fixed state.

The debate between native and exotic species is at the center of defining nature in planting design. Traditional conservationists argue that native species tend to enhance biodiversity and need to be prioritized (Hitchmough, 2004). Others argue that non-native species can play a valuable ecological role, especially in the urban environment. For example, naturalistic designed gardens which include a combination of both native and exotic species can enhance biodiversity on degraded lands (Hanus-Fajerska et al.,2010). Rainer and West (2015) are more practical and suggest that the selection of plants should be based on ecological function rather than their origin. They propose that resilient plant communities within naturalistic planting design should adapt to contemporary environmental challenges, such as climate change and urbanization, rather than attempting to replicate historical ecosystems. Designers should therefore focus on creating plant communities that are ecologically functional, aesthetically engaging and adaptable to change, which will also be part of the aim in this thesis.

3.2.3 Strategies within nature and adaptations

To better understand how plant communities are or become ecologically functional, it is important to describe how plants have evolved a range of strategies and adaptations so that they can survive in different environments. Such adaptations are shaped by varying levels of environmental stress like drought, shade or bad soil, and disturbances like grazing, fire or human interventions (Dunett, 2019).

To survive in different environments, plants have different physical, physiological and reproductive adaptations. Structural adaptations that plants use are leaf modifications, root adaptations and growth forms. Physiological adaptations that plants can make are for example resistance to drought, tolerance to cold by dropping leaves and adaptation to fire through regenerating after burning. Reproductive adaptations mainly focus on self-seeding and producing many seeds or for example clonal reproduction to maintain stability through vegetative spread. These considerations are important to avoid overcompetition and make sure to design a stable, compatible plant community (Dunett, 2019).

John Philip Grime's CSR theory categorizes plants based on the response that they have to stress and disturbance. No plant excels in all conditions, species develop traits that are suited to specific environments. Both Dunett (2004) and Rainer and West (2015) discuss these categories and how they basically define how plants, compete, survive and reproduce. There are three categories:

1. *Competitors (C-category)*: these plants thrive in stable, resource rich environments that experience a minimal amount of disturbance, because they invest in rapid growth, large biomass and efficient resource use to outcompete neighbours.

2. *Stress tolerators (S-category):* these plants survive in harsh conditions where environmental stress such as drought, poor soil, cold and shade limits growth. They grow slowly, because they invest in long-lived leaves, deep roots and defensive mechanisms

3. *Ruderals (R-category):* the plants within this category are adapted to frequent disturbances, such as fire, grazing or trampling. They focus on growing quickly and completing a life cycle in a very short time, reproducing abundantly. Typical examples are annuals and weeds.

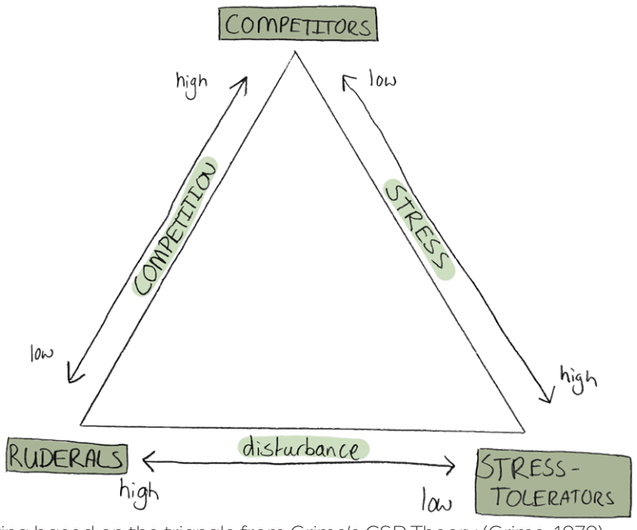


Figure 3.2 A drawing based on the triangle from Grime's CSR Theory (Grime, 1979).

While this CSR theory provides a broad classification, Kühn's plant model recognizes the weaknesses and strengths and refines it by identifying eight plant strategies that are based on the plant's ecological adaptation and competitive ability, making it useful to keep in mind while designing resilient plant communities (Rainer and West, 2015).

1. *Conservative growers (Type 1):* these have a slow-growing, low height and creeping growth habit.

2. *Moderate stress adaptors (Type 2):* these are able to compete on low resources and stressful sites, but may lose their unique adaptations when put in ideal conditions.

3. *Stress avoiders (Type 3):* mainly early flowering species such as spring ephemerals that flower early and go dormant when stress gets high.

4. *Area occupiers (Type 4):* species that dominate fertile sites with excellent growing conditions and where competition is high.

5. *Area coverers (Type 5):* mainly groundcover species that form dense mats, covering all the available remaining habitat space.

6. *Area expanders (Type 6):* these are the rapid spreaders that easily colonize new ground, able to respond very dynamically.

7. *Niche occupiers (Type 7):* mainly meadow plants that are adapted to open habitats that can develop rapidly and maybe flower twice a season when cut back.

8. *Gap occupiers (Type 8):* these are mainly Ruderals that thrive in the frequently (mechanically) disturbed sites and are highly dynamic, short-lived and often produce big amounts of seeds.

This information on plant adaptation strategies is crucial. By knowing and understanding these adaptations, designers are able to design resilient and resilient plant communities that function at their best in their environments. It is applicable to naturalistic planting design because self-sustaining sustainable plantings can be designed that are low maintenance and are able to survive in their own environments. Both the Kühn plant model and the CSR concept can be used to guide the plant selection in the design phase and make the plant communities not only esthetically pleasing but also functionally stable.

3.2.4 Sociability

The sociability within plant communities refers to how plants interact and arrange themselves, and then specifically in terms of their spatial distribution and grouping tendencies. It describes whether a species tends to grow either in dense clusters, loose groups or as more widely scattered individuals (Dunett 2004). Therefore, sociability is essential in naturalistic planting design and especially when consciously using it, it helps create a visually attractive and also an ecological functional landscape.

Both Dunnett (2004) and Rainer and West (2015) classify sociability into five different levels according to Hansen and Stahl (1997), depending on how plants naturally group and interact from low to high sociability: individual plants or small groups, small groups of 3-10 plants, larger groups of 10-20 plants, expansive groups and primarily large areas (Figure 3.3). The sociability of a plant mainly depends on the form of growth of the plant, but there are also other determining factors. Species that die back after their flowering period for example, should not be planted in larger groups because they will become empty spots in the planting. These species have a rather low sociability, because they grow individually and are spaced apart from each other. However, these low sociability species can help break up uniformity and add diversity in a planting scheme.

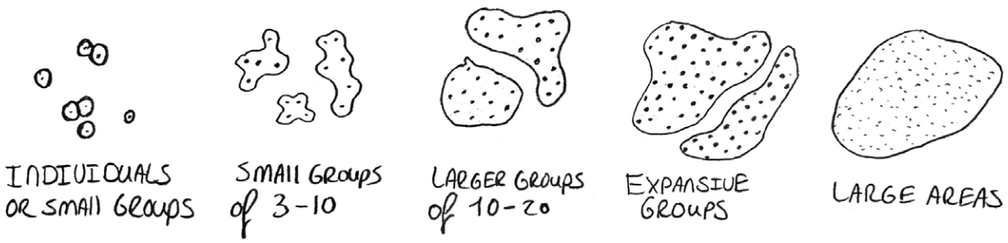


Figure 3.3 Drawing showing the sociability categories, based on the work from Rainer and West (2015).

The more clump-forming perennials can create visually pleasing repetition without overwhelming other species, but once they are placed in larger groups their character often gets lost. The higher sociability species can sometimes even create monocultures, one example being groundcovers. These levels of sociability can help us understand how these species grow and how they should be used in design. It is important in mixed planting systems, where designers must balance the species interactions to prevent the domination of the more aggressive plants while trying to keep both aesthetic variety and ecological function. (Hansen and Stahl, 1997; Rainer and West, 2015). For example, the high-sociability plants are best used for groundcover and weed suppression. Medium-sociability plants can help create naturalistic drifts and waves, where low-sociability plants add diversity and spontaneity to a planting because of their scattered individuals.

Sociability is therefore a key factor in both plant selection and placement. It influences how species interact and how a planting will mature over time. By understanding these natural growth patterns, designers can balance the different structures together with diversity and resilience, thus creating plant communities that are both visually attractive and ecologically sustainable.

3.2.5 Naturalistic planting definition

Naturalistic planting design takes these ecological functions and processes into account. It is an approach that focuses at creating landscapes that mimic natural plant communities (just like a woodland garden tries to mimic a natural woodland), balancing aesthetic beauty with ecological function. Unlike the traditional ornamental plantings that focus on visual impact and structure, naturalistic planting embraces dynamics, self-sustaining growth and adapting a planting to the site conditions (Dunett, 2019). This approach is influenced by ecological principles, horticultural expertise and art, allowing the plant communities to emerge and evolve naturally over time while keeping the intentions of the design (Kingsbury, 2004). Naturalistic planting design can be described in a few main principles based on the literature:

- *Ecological adaptation:* plants are chosen based on their potential to thrive within the specific environmental and site conditions rather than being arranged purely for decoration (Kingsbury 2004; Rainer and West, 2015; Dunnett, 2019).

- *Plantings are dynamic and often self-regulating:* the plant communities are often designed to be self-sustaining, with species spreading, competing and interacting naturally within the planting (Dunnett, 2004; Rainer and West, 2015, Robinson 2016).

- *Layering and diversity:* similar to wild plant ecosystems, naturalistic planting integrates multiple layers (Structure plants, Companion plants, Weavers, Ground-covers and Bulbs) to create a complex yet balanced system, both in an ecologically and visual way (Rainer and West, 2015; Dunnett, 2019).

- *Aesthetic complexity:* while the plantings are inspired by nature, naturalistic planting is not a direct replica of wild environments. It involves structured spontaneity, where designers guide plant communities through subtle interventions (Rainer and West, 2015)

- *Low maintenance and resilience:* unlike more conventional planting that relies on frequent pruning and replanting, naturalistic planting systems are designed for longevity, requiring minimal intervention besides occasional management (Hitchmough and Dunnett, 2004; Kingsbury, 2004)

However, naturalistic planting is often confused with either ecological and/or horticultural planting, two other approaches that have distinct goals, design methods and maintenance requirements. The differences between the three can also be found in the table for a quick overview.

Ecological planting is focused primarily on restoring and/or enhancing biodiversity through design. The main objective is primarily to create a functioning ecosystem rather then an artistic or controlled design (Hitchmough and Dunnett, 2004). Ecological planting is common in habitat restoration projects (one of the previously discussed nature-like planting approaches). Therefore, the purpose of an ecological planting is primarily based on biodiversity and ecosystem function, resulting in plant selection that often uses native species that match local ecosystems. Minimal intervention is expected from the maintenance, allowing the natural succession to shape the planting. A few examples are wildflower meadows, woodland restoration and wetland plantings (Hitchmough and Dunnett, 2004).

Horticultural plantings are designed focusing on visual impact and controlled aesthetics, prioritizing plant form, colour and arrangements over ecological considerations. Their purpose is primarily aesthetic and mainly focuses on structure, symmetry and seasonal displays. Usually, a mix of natives and exotics are selected and the plantings are higher maintenance, so they require regular pruning, weeding and replanting (Hitchmough and Dunett, 2004; Rainer and West 2015). Traditional formal gardens, flower beds and ornamental landscapes like English formal gardens are examples of this type of planting.

Basically, naturalistic planting design combines ideas from both ecological and horticultural planting. It follows an approach that mimics natural processes while maintaining visual attracton (Kingsbury, 2004). It focuses on designing plant communities that evolve over time and it is often used in urban landscapes, public parks and private gardens. The purpose is to balance biodiversity and aesthetics, creating a low-maintenance, ecologically functional yet also visually engaging landscape. This approach also uses both native and non-native species, selected mainly for their adaptability, compatibility and aesthetic qualities. It often requires low to moderate maintenance, since it is needed to guide the plant communities rather then controlling them (Hitchmough and Dunett, 2004; Rainer and West 2015; Dunett 2019).

Table 3.1 Table showing an overview of the main differences between the three different types of planting.

	Ecological planting	Horticultural planting	Naturalistic planting
Main goal	Biodiversity and ecosystem health	Aesthetics and ornamental display	Balance between aesthetics and ecology
Plant selection	Native species	Native and exotic, decorative species	Mixture of native and adaptable exotics
Management	Minimal, mainly natural succession	High and frequent maintenance	Low to moderate, mainly guided adaptation

3.2.6 Conclusion: designing with plants in a naturalistic way

In order to be able to use naturalistic planting design, it is important to distinguish and distillsome of the most important main themes from the literature. This provides a clear framework to analyze and apply the naturalistic planting principles and can help guide decision-making. Derived from the literature, a few main themes can be distinguished:

Nature is dynamic, not static

Naturalistic planting design really recognizes and accepts that plant communities are in a constant state of change and evolve due to environmental changes and ecological interactions (Dunnett, 2004). Instead of resisting this process of succession, designers that take naturalistic planting design into account anticipate and actually also incorporate these changes and dynamics into their plans. Since plant communities evolve in response to environmental conditions and processes, designers need to embrace their spontaneity and adaptive growth. When one designs with succession in mind, plant communities are allowed to regenerate naturally. Within naturalistic planting design it is important that the landscape should not be expected to remain static, it anticipates that species shift and by anticipating the ecological processes maintenance can also be minimized (Dunnett, 2004).

Plant communities

Successful naturalistic plantings often mimic natural ecosystems by assembling species that because of their characteristics are able to function as a plant community. By doing this, ecological compatibility and long-term stability can be ensured (Dunnett, 2004; Robinson 2016). Species are selected based on their ability to coexist and support one another, rather than for their individual aesthetics alone. This can for example be done by looking at their different survival strategies such as CSR, ensuring that the plant communities can self-correct, grow and heal (Rainer and West, 2015). Resilient plantings rely on species that have a complementary stress tolerance, competition levels and adaptation strategies. Through the use of layering techniques stability can be achieved within these plant communities (Rainer and West, 2015).

Contextual integration

When looking at plantings within naturalistic planting design, they are successful when they are aligned with the site conditions, natural processes and the existing ecological relationships of the site. This is similar to the 'Right plant, right place' thought from Dunnett (2004) and concerns the idea that instead of modifying the site and adapting it to the plants, plants should be selected based on their natural adaptations to site-specific conditions.

Seasonal dynamics

Landscapes remain visually attractive and compelling throughout the year by actively planning for these seasonal shifts and understanding the phenology of plants (Hitchmough, 2004). The change of dominance of different species throughout the seasons can lead to a year-round visual attractiveness of the planting, making the landscape engaging beyond the peak bloom periods (Dunnett 2019).

Low maintenance

Designs try to minimize human intervention through allowing natural processes to regulate plant dynamics, which can be considered sustainable. A planting design is designed for resilience, since anticipating the succession ensures that plantings remain stable, which in its own turn can lead to minimal maintenance (Dunnett, 2004). The occasional seasonal maintenance done should mainly focus on supporting this structural integrity of the planting, focusing on preserving the natural evolution of the plant community. This means that it is not individual species that get the focus of maintenance, but the entire community (Rainer and West, 2015).

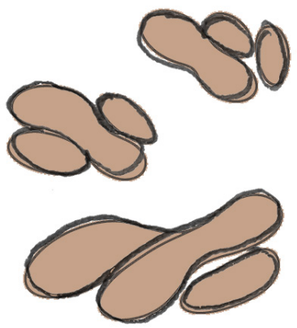
To achieve the goals outlined within the discussed main themes of naturalistic planting design, design principles can be applied to guide plant selection, arrangement and long-term development. The literature on naturalistic planting design discusses a wide range of these that can help guide the design. However, while numerous approaches exist, the following principles represent a distilled selection of those that are most frequently discussed or the ones that sparked interest.

Layered planting

Through the use of layers within a planting, a natural ecosystem can be mimicked. To establish diverse plant communities, perennial plantings should be combined with trees and shrubs. The layers within perennial plantings consist out of roughly five categories: structure plants, companion plants/seasonal theme layer, weavers/dynamic filler layer, ground covers and bulbs (Rainer and West, 2015). Through the use of an anchor species such as a structure plant, visual stability and longevity can be reached. Additionally, companions, weavers and ground covers can help with the ecological stability and maximize biodiversity. These layering techniques can help reduce weed invasion, enhance the visual attractivity and create long-term stable and ecological balance when the species are carefully selected (Dunnett, 2019; Robinson, 2016). It is important to avoid the use of excessive height variations and select species that weave more or less together naturally to create a cohesive and balanced aesthetic, leading us to the next principles.

Natural drift patterns

Focusing more on the aesthetics, arranging plants in more organic clusters and patterns helps enhance the visual cohesion while trying to mimic natural plant distributions. It is important to allow species to intermingle in a natural way, while they are grouped in drifts with denser centers and more dispersed edges. It needs to look natural, so rigid and geometric patterns should be avoided and soft, flowing arrangements are preferred to reflect natural ecosystems (Dunnett et al., 2004; Dunnett 2019).



Rhythmic repetition

Through repeating plant forms, colours and textures throughout the planting design a visual harmony and coherence can be achieved. This rhythmic repetition can be used to create a structured yet natural flow within the planting scheme, maintaining visual order (Rainer and West, 2015; Dunnett, 2019). Through using external framing elements or structural plants the viewer's eye can be guided throughout this repetition and bring order to the planting (Dunnett, 2019). In this case plant sociability can also be used so that species can be grouped based on their natural growth behaviours to reinforce patterns in the planting design.

Cues to care

By framing naturalistic plantings with defined edges, pathways and/or focal points their legibility and public acceptance can be enhanced. Structured randomness through the use of gravity points and gradual transitions can help enhance the aesthetic legibility of the naturalistic plantings while maintaining their ecological benefits. Intentionality in the design is important, and can be provided through the use of clear boundaries in amongst others pathways, mown edges or gravel borders (Rainer and West, 2015).

Native-exotic balance

Blending native species together with ecologically compatible exotic species allows for both a functional and adaptable plant palette for the design. It is important to prioritize native species while including non-natives where they can provide ecological, aesthetic or functional benefits. However, it is important that the species can coexist peacefully, so their ecological functions and site conditions need to be considered thoroughly. However, this decision along where to stand along the native to non-native axis is highly discussed, so it is important to know where you stand along this axis. Incorporating exotic species together with native species is a big part of biotope planting as previously discussed (Kingsbury, 2004).

4. Environmental base

4.1 What are the key environmental and spatial characteristics of the site?

4.1.1 Intuitive analysis of the whole garden

On the 1st of February in 2025, I visited the site for a first and brief analysis, of which part was an intuitive analysis of the whole site. The impressions, thoughts and spatial observations I had during this analysis can be seen in the map to the right.

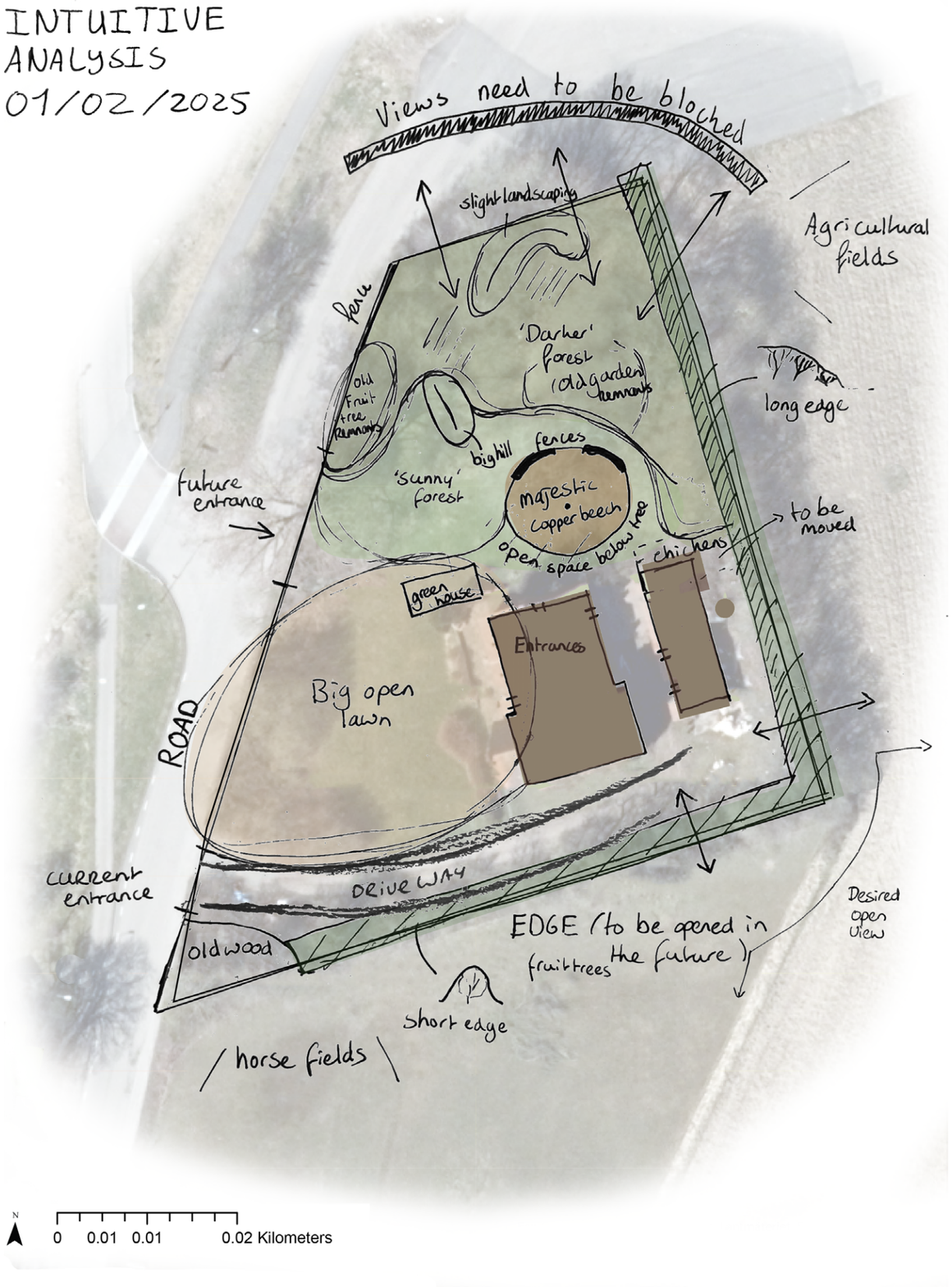
I found that the garden itself is currently layered and contains a lot of different species. While walking through the garden, it was very noticeable that the northern edge opens up visually towards the nearby cargo company, especially in winter. There is a darker, and a bit denser woodland that stands in contrast to a sunnier forest area on the south side of the woodland, probably caused because of the edge effect. The garden's boundary on the northwestern side is decided by a fence, and on the Northern and Eastern edge it has quite a relatively long edge of different species that are planted outside of the property lines.

The main eyecatcher is the magnificent copper beech, that holds a central presence within the garden. Some wooden fencing has been made near the copper beech, consisting of branches, which kind of frames the space below. The owner has expressed the desire to add additional fencing within to woodland, since they can help with creating subtle boundaries and will help with managing and clearing up the space. Within the site, there are also some subtle landscapings and a hill.

To the east and west, the site has views into expansive agricultural fields. On the complete opposite side of the garden, there is a pile of old wood with moss and there are some old tree stumps along the whole garden, both of which could be integrated into the new design. There are also a few existing apple trees, that refer to the old role of an orchard for the garden, and these are to be preserved. However, the owner told me that she does envision the fruiting role of trees in a different part of the property in the future.

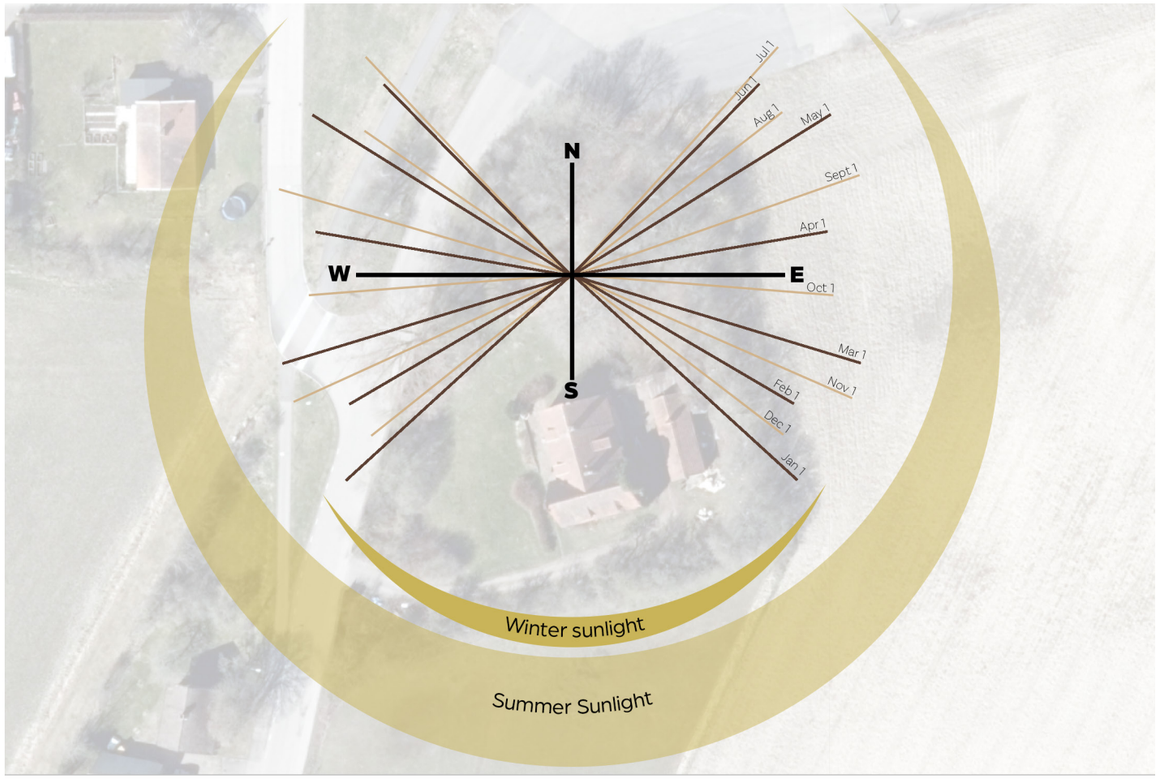
Currently, access to the site is via the driveway in the south, but the plan is to rerout it to the western side, which will change the circulation and views within the garden. The design focus for this thesis lies within the woodland part, since the other parts of the garden are actively being planned by the owner and there was no planning for this part yet.

Altogether, the conclusion after this intuitive analysis was that the site presents a rich canvas, but currently looks and feels very messy. There is much to be gained from this place and can be enhanced by design.



4.1.2 Sunlight analysis

This sunlight analysis shows the angles and amount of sun the site gets throughout the year, with the first of each month.



The greenhouse and the old school

The open grass field

The subtle landscaping in the north and *Acer platanoides* regeneration

The northern edge with the cargo company

The edge with the agricultural fields

The visual connection from within the garden with the cargo company

The messy and 'neglected' inner woodland

The brittlewood fencing

Fraxinus excelsior regeneration

4.1.3 Photo impression

The pictures show an impression of the garden, each with their own description, as of the 7th of February 2025

The brittlewood fencing with the old and dying *Prunus cerasifera* in the background

The view on the garden from the main building. With the *Populus nigra* on the left and Copper beech in the middle.

The hill of around 2 meters with different kind of vegetation

4.1.4 History timeline

1920

Received this picture from the client, from when the school was newly built in 1920. You can clearly see how all the planting was newly established.

1960

This is the first aerial picture from 1960. Here you can clearly see the 'school' purpose the garden has. A big gravel field. The client has also told that the northern part of the garden used to be for producing food, which can also be seen in this picture that is is more of a formal, cultivated garden. The entrance used to be on the northern side to the school. Trees are developing in similar locations to what we have now (e.g. the copper beech) so we can assume that some of these trees are atleast 65 years old.

1975

In 1975 the garden still looks very similar, but the trees are developing more and more

2012

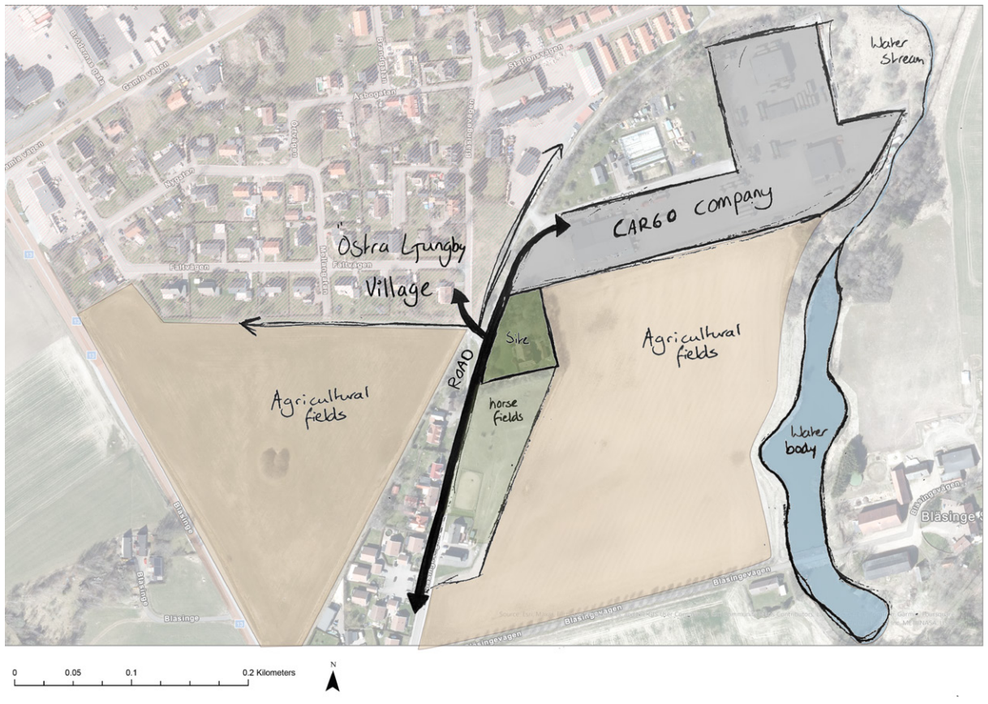
In this picture the switch from school to 'home' can be seen. In the meantime, the property boundaries have also changed, a part of the western side has been taken away for the road, but a part on the north has been added. The entrance has also changed to the south.

2022

In 2021, the ownership of the house changed to the current owner, so in this aerial picture this is the client's place, and comes close to what the site actually looks like right now.

4.1.5 Contextual analysis

When looking on a bigger scale, we can see in which kind of situation the site is acutally located. It is on the edge of the village of Östra Ljungby, surrounded by agricultural fields and horse fields, with the cargo company in the north.



4.1.6 Contextual analysis

The main height differences found in the landscape are one hill (the most prominent one in the map) and the curvy shaped landscaping in the northeastern corner. The other height differences present on the site that can also be seen here on this map are mainly 'mess-piles' from the previous property owner who was kind of a hoarder. This hill mainly throws some shade to the areas behind. This height map was made with information derived from SCALGO.

4.1.7 Soil identification

To identify the soil type present in the area, data sets from The Digital Soil Map of Sweden (Piiki and Söderström, 2019) were used. Three sets of data show the estimated content of clay, silt and sand in the topsoil surrounding the project site (Figure 4.2, 4.3 and 4.4). These values have been classified into sets of ten in ArcGIS Pro, providing percentage estimates for each component, which are displayed next to the maps.

Using these three percentages for clay, silt and sand, the overall soil type was estimated with the help of the soil texture triangle as can be seen in figure 4.1. Further analysis revealed that the same source had actually already classified the soil based on these values (Piiki and Söderström, 2019). Their conclusion was that the soil in the surrounding area is primarily clay loam (Figure 4.5).

However, this data covers only part of the site and does not include the northern section, as can be seen on the maps. The current woodland in the northern part of the garden has existed for some time, making it reasonable to assume a higher level of organic matter in the top layer of the soil due to leaf litter accumulation. This would help suggest that the soil is predominantly loamy, possible tending towards clayey loam as suggested by the data. This assumption is supported by on-site observations that have been performed such as a sensory analysis and the ribbon test.

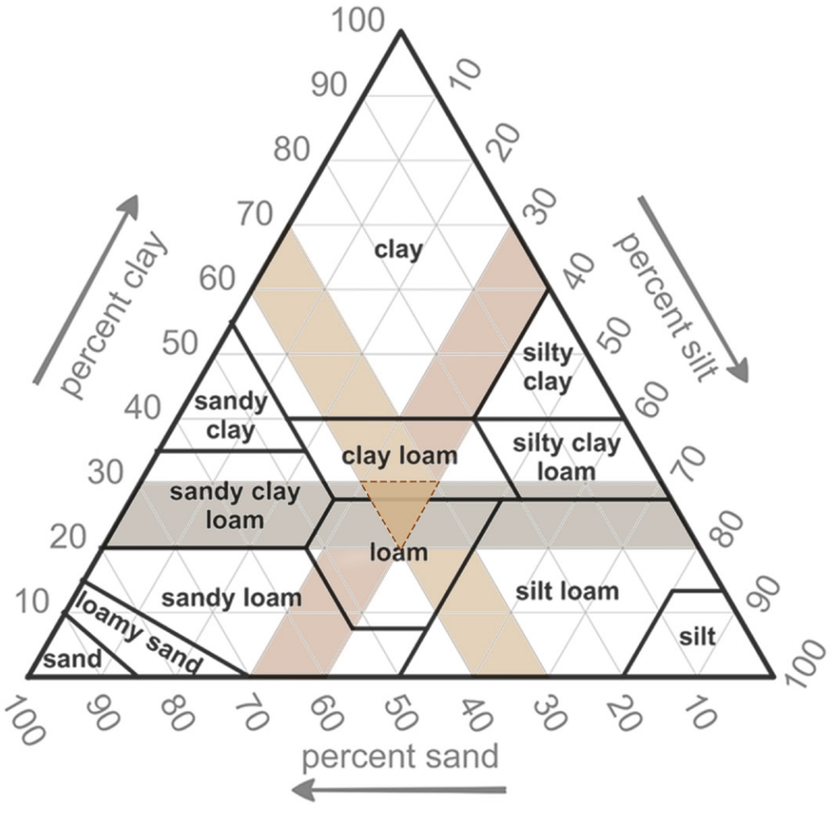


Figure 4.1 Conclusion of the previous percentages together in the USDA Soil Texture Triangle. This means that the assumed soil is mainly loamy leaning towards clayey loam. Adapted from Groenendyk et al. (2015). CC0 1.0 Universal.

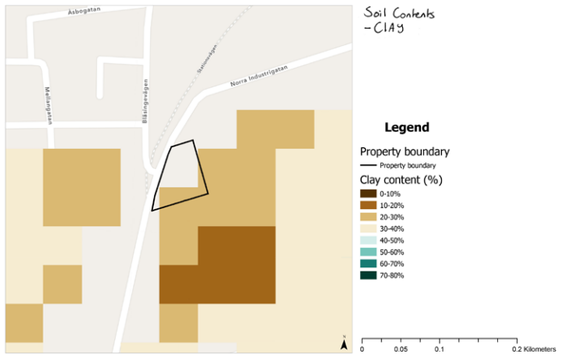


Figure 4.2 Clay content in the soil around the site (20–30%). Map made in ArcGIS PRO by author based on data by Kristin Piiki and Mats Söderström (2019) from the Swedish University of Agricultural Sciences (SLU). CC-BY License.

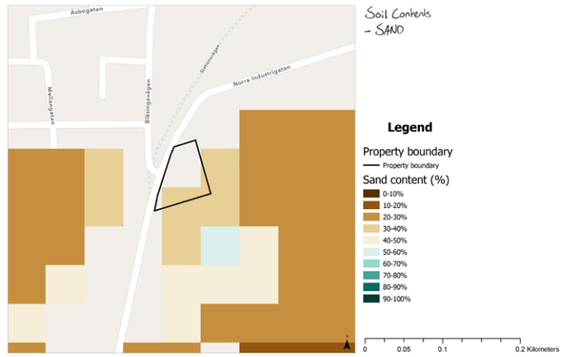


Figure 4.3 Sand content in the soil around the site (30–40%). Map made in ArcGIS PRO by author based on data by Kristin Piiki and Mats Söderström (2019) from the Swedish University of Agricultural Sciences (SLU). CC-BY License.

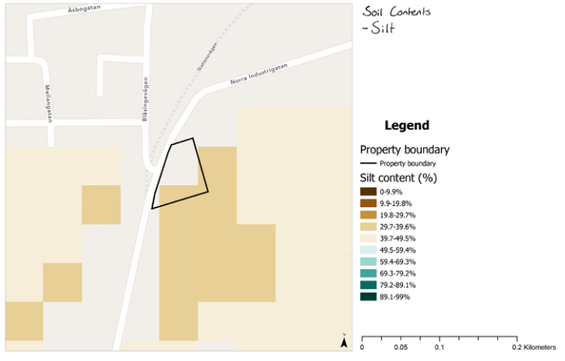
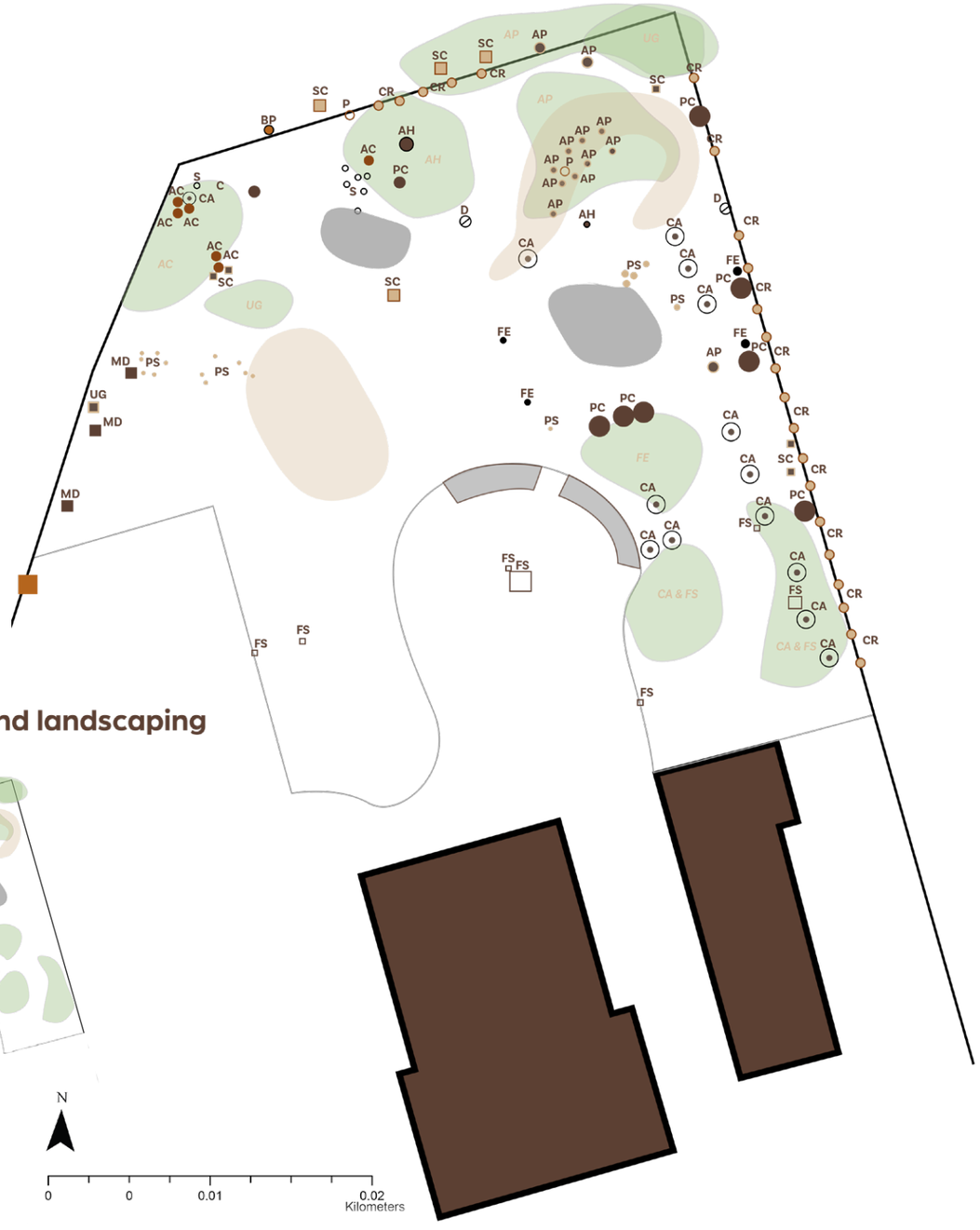


Figure 4.4 Silt content in the soil around the site (29.7–39.6%). Map made in ArcGIS PRO by author based on data by Kristin Piiki and Mats Söderström (2019) from the Swedish University of Agricultural Sciences (SLU). CC-BY License.

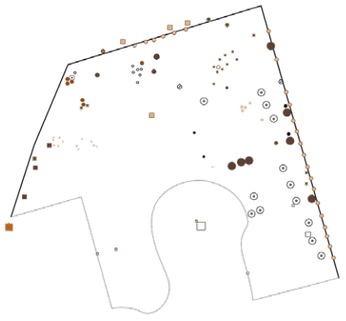
Figure 4.5 Soil type classification by Piiki and Söderström (2019).Map made in ArcGIS PRO by author based on data by Kristin Piiki and Mats Söderström (2019) from the Swedish University of Agricultural Sciences (SLU). CC-BY License.

4.1.8 Existing tree species, regeneration and landscaping

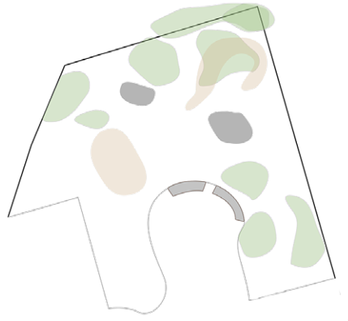
During the second site visit, I determined the different species that are present on the site and their locations, so that these could be used further in the design process. The map with the locations of the trees was then combined with the locations of the regeneration that was present on the site. Regeneration was mapped where there were multiple young saplings of the same species present.



Tree location



Tree regeneration and landscaping



4.1.7 Analysis conclusion

It is possible to conclude that this garden has high potential. There are also some challenges that need to be solved for the long-term sustainability of the design. With this potential, there are both strengths and opportunities, but also weaknesses and challenges that need to be taken into consideration, which will be investigated in this section.

During the winter in February, I observed that the forest ground was receiving a lot of sunlight before the canopy would close after leafing later in the year. This will allow for early-season ground layer development that can promote a diverse understory. Additionally, the soil appears to be in a good addition which is likely because of the years of organic buildup on top of the relatively good soil that can be found surrounding the area. This will support healthy plant growth in the garden.

The existing mature trees provide immediate canopy cover and contribute to the overall character of the space. Since there are so many species present, the owner has said that it can feel quite messy and dense during summer. However, some species, such as the close group of *Prunus cerasifer*a, will need to be removed as they are starting to show signs of a critical age where structural failure becomes a risk and they might fall down. While this may seem like a loss at first it presents an important opportunity for the design: it will create (big) gaps in the canopy that will increase light penetration which in its own turn can enhance regeneration, allowing for a more diverse vertical structure. The removed trees can also be repurposed as deadwood in the design, further enriching the site's biodiversity by providing habitat for fungi, insects and small mammals.

The northern boundary currently lacks sufficient privacy, allowing the cargo company to look into the client's garden. Especially since truckers often stay overnight, it is desirable to have more privacy in this area. There are two small evergreen trees/shrubs growing, which provide the idea of introducing more evergreen species to establish a green visual barrier that functions year-round. Another species of interest is the existing copper beach tree close to the house. It has a big crown, providing shade during summer, and will have beautiful autumn colours. This is currently the focal point of the garden, with the green woodland in the background.

Additionally, the client owns various materials that can be repurposed in a way that supports both aesthetics and biodiversity in future design. There are moss-covered planks and fallen logs that could, for example, be integrated into habitat structures.

The natural variation in the species composition offers the opportunity to design 'rooms' within the landscape, some focusing on being more enclosed for privacy, others more open and inviting. Strategic use of wood fencing similar to the brushwood fencing that can already be found in the garden could help manage the understory and clearing during the beginning stages of the project while helping with dividing up the space in the long term.

Despite the many strengths in the garden, there are also several challenges that needs to be discussed. One of the them is the majestic beech tree. While it is an impressive and defining feature of the garden its dense canopy will continue to limit light availability, even after the *Prunus cerasifera* trees are removed since it is located on the southern part of the woodland garden. This shading will restrict the establishment and species selection of the woodland garden, particularly for species that require higher light levels to establish and regenerate successfully.

There are also two mess piles in the garden that consist of tiles and debris left by the previous owner. These do not necessarily have to be a weakness. But they need to be removed and currently nothing grows there since the ground is covered. This could result in the soil underneath being a bit more compacted because of the weight or less fertile than the surrounding areas where natural mulch has been built up over time.

The natural regeneration present at the site also highlights the shift in the succession dynamics of the site. The regenerating species that can be found are *Fraxinus* (Ash), *Aesculus hippocastanum* (Horse chestnut), *Acer* (Maple), *Ulmus* (Elm) and *Fagus* (Beech), which are mid to late-successional species that thrive in shady conditions. This indicates that the site is currently quite shaded, and additional light gaps may be needed to encourage a more balanced forest structure and a range of successional growth within the stand. The *Prunus cerasifera*, an early successional pioneer species, has reached far into adulthood and is declining rapidly because of age. The current understory is largely unmanaged and messy, leading to a relatively uncontrolled spread of species (such as *Acer platanoides* and *Fraxinus excelsior*).

The main challenge is the species composition of the woodland. Many of the existing plants were selected within a gardening context rather than as a part of a natural Swedish biotope. The trees and ornamental species (*Prunus cerasifera*, *Malus domestica*, *Aesculus hippocastanum*) present are not commonly found together in Swedish woodlands, which makes it difficult to transition the space that refers to a native forest biotope without major intervention. Besides this, the client has also expressed a preference to have the focus on fruit trees elsewhere in the garden, but keep the healthy ones present in the area. This raises the questions on how to spatially design the woodland section of the garden, especially since the client also has a preference for edible species.

To conclude these in some short bullet points:

- ***High potential:*** the garden has a diverse range of species and mature trees that are a strong foundation for biodiversity
- ***Promising soil conditions***: the years of organic buildup that the site has experienced have improved the soil quality, paving the way for perennials to be implemented and support healthy plant growth.
- ***Light dynamics offer design opportunities:*** canopy openings allow for early ground-layer development, combined with the removal of aging trees that can introduce light gaps.
- ***Privacy and spatial structure:*** the northern boundary needs to be screened and spatial 'rooms' are possible with fencing or planting that can improve both privacy and visual structure.
- ***Challenge for species selection:*** the existing trees show more of a gardening/ornamental mix rather than a native woodland biotope, which influences the coherence of an ecological design. However, this can also be seen as a strong suit of the site.
- ***Design tension***: the client's wish for edibility needs to be balanced with a native character in the woodland section, which presents a core spatial and ecological design that needs to be addressed.

5. Synthesis of the literature and analysis

Within this synthesis, the design framework for the woodland garden design is shaped by key design principles that combine aesthetic and functional goals, biodiversity objectives and low-maintenance strategies, to help achieve a balanced and sustainable landscape. These principles are both derived from the knowledge base (concerning woodlands and naturalistic planting design) and from the environmental base in which the site-specific characteristics and analysis have been discussed. This means that the framework for the rest of the deisgn is both informed by conclusions from the literature analysis and by key conclusions from the garden analysis. These findings will be used to shape the spatial composition and guide design decisions.

This section discusses some of the overlapping design guidelines, principles and strategies, as these are the most relevant for the scope of this thesis. These overlaps indicate where naturalistic planting design, woodlands and site-specific characteristics align, making them particularly strong in being able to shape a cohesive and functional woodland garden.

5.1 Concept principles

Looking at the overlapping aspects, this results in six key principles that will guide the woodland garden design. The way the principles overlap is shown and based on which sub-research question /base is shown in in figure 5.1.

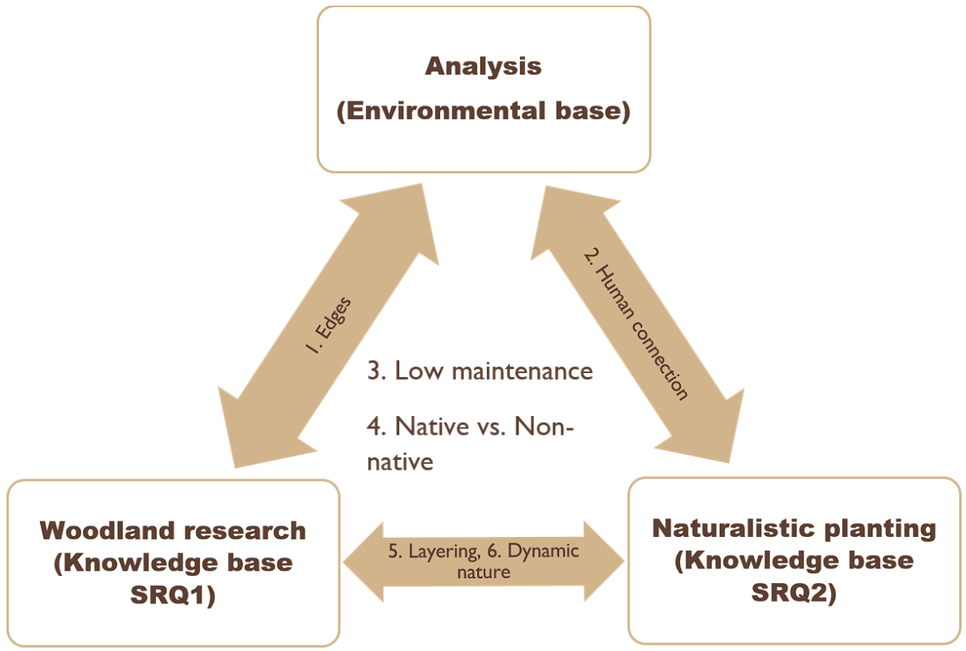


Figure 5.1 The three different pillars of the design. Their overlapping principles are the ones that are used in this thesis. Principle 3 and 4 are found based on all three the bases.

1. Edges

Combines woodland research and site analysis conclusions

Woodland edges are biodiversity hotspots and play a big role in the creation of habitats, visual interest and spatial transitions. By designing soft gradients between dense woodland and open areas, the garden can support plant communities while enhancing privacy. The northern boundary lacks privacy and creates an opportunity to design an edge that can buffer visual impacts. The current site also already has transitional areas where woodlands meet open space and indicating that edges can be enhanced rather than more artificially imposed. Sun-loving and shade-tolerant species interact to create rich, dynamic habitats in which plants flourish, which could help with the desired productivity of edible plants of the site.

2. Human connection

Combines naturalistic planting design and site analysis conclusions

While a woodland design is based on more ecological principles, the design must also entail human engagement. Through the use of winding pathways, framed views and intimate clearings exploration within the garden can be encouraged. The copper beech tree currently is a natural focal point, providing an opportunity to frame views and create intentional pathways. Natural materials, such as logs and moss-covered planks that area already present on the site can be repurposed to enhance the sensory experience and create interactive, immersive spaces. The pathways should feel organic, following the site rather than rigidly imposed layouts. Clearings can be designed for seating, observation or social interaction and can help allow immersive engagement with the landscape.

3. Low maintenance

Combines woodland research, naturalistic planting design and site analysis conclusions

A resilient woodland garden minimizes human intervention while maintaining ecological balance. When plant selection follows the 'right plant, right place' approach, species can thrive in existing site conditions. Through the use of dense groundcover weeds can be suppressed that otherwise need maintenance. The current soil is naturally enriched by years of organic buildup, which means that heavy changes are unnecessary and it is a good base for future plantings.

4. Native vs Non-native

Combines woodland research, naturalistic planting design and site analysis conclusions

The balance between native and non-native species will shape biodiversity, ecological function and long-term resilience. Native species support local ecosystems, while non-natives (yet adaptive and fitting) species can add ornamental value, extend flowering periods and can help increase climate adaptability. The site-analysis shows a mix of native and non-native species already present, and some trees were selected in a gardening context rather than as part of a native woodland biotope. Traditional woodland research emphasizes native plant communities as they provide habitat and food for local wildlife. However, the literature on succession and regeneration of woodlands has also suggested that non-native species can sometimes play a role in transitional woodland structures, supporting the long-term stability of a designed woodland garden. Many designers (Kingsbury, Rainer and West) argue that selection should be based on ecological function rather than origin, stressing that plant sociability and competitive balance is crucial when integrating non-native species.

5. Layering

Combines woodland research and naturalistic planting design conclusions

The design aims at replicating the multi-tiered structure of natural woodland as discussed to enhance biodiversity and visual depth. Natural woodlands consist of multiple vertical layers and is thus a core theme within designing a woodland. It is also a core theme within naturalistic planting and helps ensure that plants grow in functional, self-supporting communities rather than requiring intensive human intervention, relating to the low-maintenance principle as well. Multi-layered plantings enhance seasonal interest as well.

6. Dynamic nature

Combines woodland research and naturalistic planting design conclusions

Acknowledging that landscapes evolve, the design should embrace ecological succession and self-sustaining plant communities. Seasonal change will be central, ensuring the garden remains visually and ecologically engaging year-round. Woodlands are not supposed to be static, they are supposed to evolve over time due to ecological succession, therefore the design should also anticipate this and design into the future.

6. Design development

6.1 Concept development

The design development started with a process of creating multiple conceptual ideas in which sketching was used as a tool to experiment with the different spatial arrangements of the rooms in the garden. This first concept was developed based both on the owner's current plans concerning the garage, parking area, and greenhouse as well as the existing landscaping and tree species on the site. This sketch was the result of trying to integrate the different rooms; focusing on where locations would open up to plant new trees and different spatial qualities already present in the garden.

However, as the design developed, it became clear that the hill located in the middle of the garden poses challenges. As can be seen in the analysis, the hill is relatively high, around 2 meters. Eventhough the cut down *Prunus cerasifera* will allow for light to come into the garden, the elevation of this hill is around two meters, casting substantial shade on its own, which could worsen if additional shrubs or plants are planted on top. Besides this, the soil of the hill appeared poorer and less fertile then in the other parts of the garden, which would not only limit plant possibilities but also contrasts the differences in species in the garden.

This has led to a key conclusion: the hill as it is currently, will hinder the spatial development and planting potential of the concept. Therefore, I decided that the hill should be removed to create a more balanced and usable terrain for the imagined garden rooms.

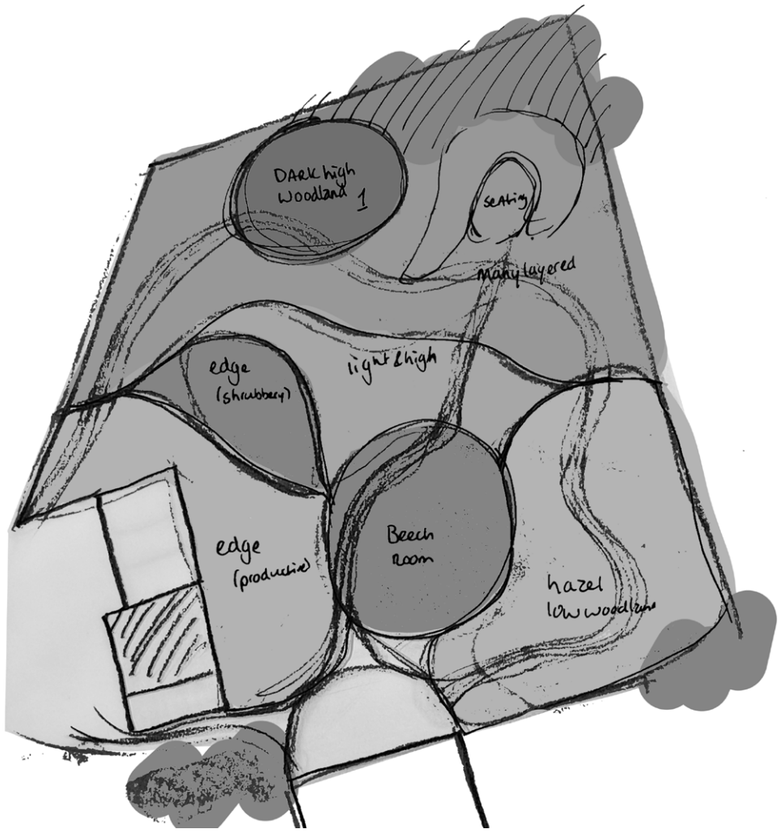


Figure 6.1 First conceptual drawing after sketching

Based on the conclusions from the first concept, I continued sketching towards a new concept (Figure 6.2). This time the hills has been removed, and the spatial potential of the garden became much more clear. Without the elevation of the hill, you can see that the landscape can become more coherent and continues. This results in the opportunity to create a more gradual and natural transition between the different garden rooms. Each of the different rooms can this way relate better to the neighbouring rooms with more subtle changes and without barriers created by shadows.

Removing the hill will improve the growing conditions across the site, resulting in fewer areas with deep shade. The location of the current trees on the site also correspond with the envisioned garden rooms, reinforcing the identity of the current space and enhancing it. At the same time, the new plantings and trees can be introduced with a higher change of success, especially because the edge effect will help with sunlight and inform the species selection later on.

However, this second concept does also reveal another challenge. Even though this concept meant that the spatial transitions between the rooms would be smoother, they also started to feel narrower and not wide enough, which could result in not being able to fully express the unique character or atmosphere. I took this insight into the next phase of the concept development, seeing if I could push the layout and proportions a bit more to strengthen the different rooms.

In the third concept (Figure 6.3), I experimented a bit further with the proportions of the different rooms, seeing what would happen if they were widened, trying to give each space more room to 'breathe' and enhance their individual character. However, as I continued sketching it felt off. While the wider rooms do allow for potentially richer experiences, it felt like they disturbed the subtle spatial rhythm I had achieved in the second concept. Especially near the entrance on the West side, the sequence of garden rooms gets lost, and breaks with the gradual unfolding of the garden. Rather then gently moving from one room to the next, they now seem more disjointed, with each room standing more independently. The sense of coherence and continuity, which is so essential to the overall experience in a garden, began to weaken.

This has led to return to the second concept and make that the foundation for further design development. Despite its limitations in the width of the rooms, it has the most potential to create a readable and immersive series of spaces that relate naturally to another and the existing landscape.

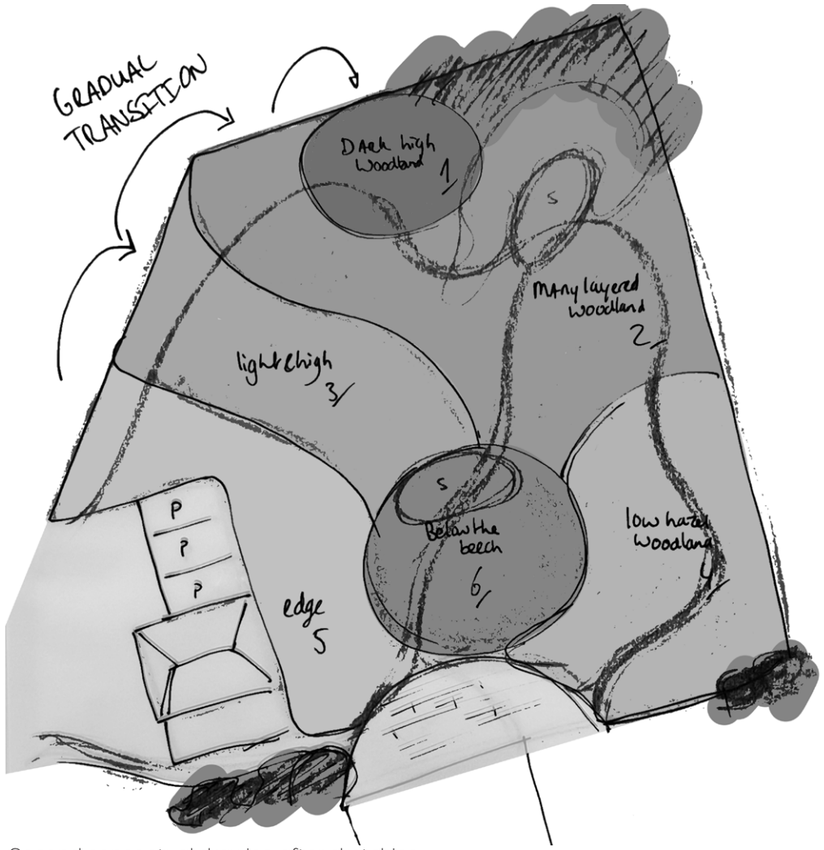


Figure 6.2 Second conceptual drawing after sketching

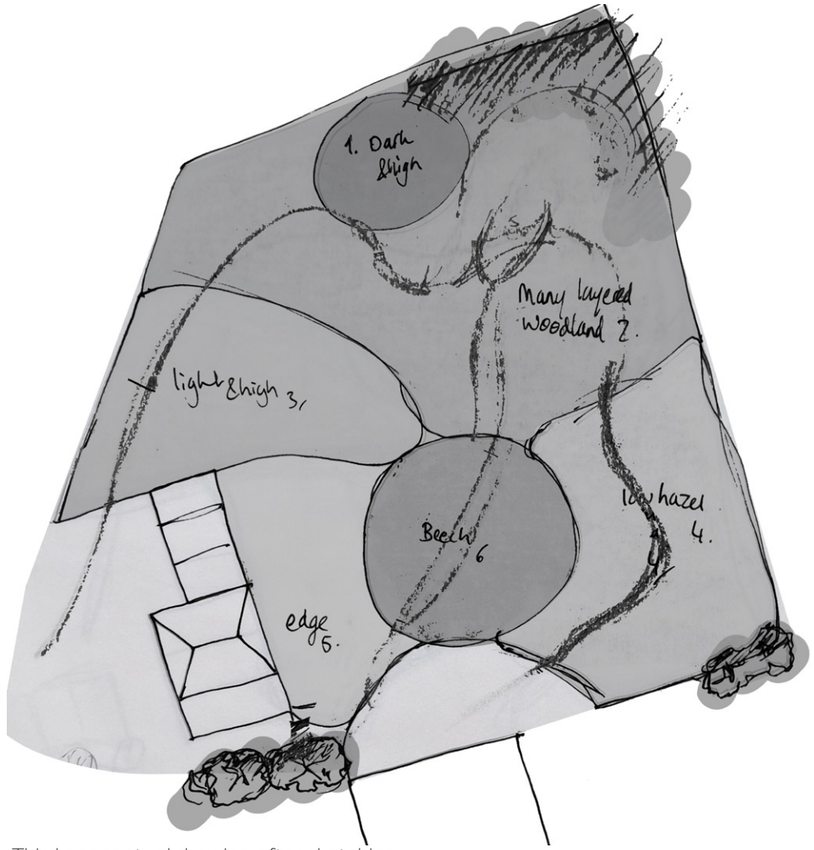


Figure 6.3 Third conceptual drawing after sketching

The conceptual process

The conclusion to my drawing process with the different concepts can be seen in figure 6.4 to the right.

Deciding on the second concept as the one with the most potential, means that it weakness does need to be addressed. To address the narrow rooms the focus will lie on strengthening the coherence not only through the gradual transition between different rooms, but also through planting. This means that rather designing each one of these rooms as a completely separate experience, the planting design will have to help aim to also create this gradual transition between the spaces. This will be achieved by repeating species through different rooms, or the use of same species but different cultivars (how this use of plants has exactly worked out can be found in the Appendix).

Each room will still have its own defining combination that will help establish the identity and mood of the rooms. But by echoing plant selections across the boundaries throughout the different rooms, a sense of continuity between the rooms will show. The visitor will not have to feel as though they are stepping into entirely new worlds every 10 meters, but will move through a connected landscape where the atmosphere shifts gradually and in a more organic way.

Figure 6.4 The whole process of the different concepts and returning back to concept 2.

6.2 Conceptual design

6.2.1 A journey through living landscapes

The planting design for the woodland part of the garden can be seen as a journey through garden rooms, each with its own character. Yet, they are envisioned to connect relatively seamlessly together through the use of a natural gradient of species, structure and maintenance. Rather than thinning out the diverse amount of tree species already present in the area, the design embraces its richness, allowing the species to shine and come to life within their own spaces.

As you move through the landscape, the composition will shift. It flows from the more ornamental, cultivated planting near the house to the wilder, self-sustaining woodland further away. Closer to the house, the garden is lush with relatively more exotic species, some edible plants and some more decorative elements. This does require more care but it will offer an intimate and sensory-rich environment. This space blends aesthetics and function, providing both beauty and some edible yield. Moving outward, the garden gradually transitions into a more natural wildness setting. Native species become more dominant, maintenance is reduced and the landscape takes on a wilder, self-regulating character. This gradient mirrors a passage from cultivated towards the wilder and more untamed, allowing for a deepening connection with the natural surroundings.

An unifying thread throughout the design beside this gradient is the use of evergreen. Near the house, this evergreen is carefully maintained and used as a more ornamental feature, reinforcing structure and cohesion. Further into the landscape, it grows more freely and blends into the natural woodland while still offering privacy from the cargo company in the North because of its year-round presence. In winter, this evergreen element also ensures that the different spaces will remain visually connected while also keeping the gradual transition from the more designed towards the wild.

Figure 6.5 A bubble concept design for the garden, with pictures showing the feeling of each room as you journey through the design.

6.2.2 The concept in catchphrases

Garden rooms: a tapestry of spaces

The planting design is envisioned as a journey through distinct garden rooms each with its own character, connected by a gradient of non-native to native and cultivated-wilderness, structure and maintenance.

The cultivated heart

Near the house there is a lush garden with exotic species, edible plants and more decorative elements. This area will require relatively more maintenance but provides a sensory-rich environment with seasonal interest and vibrant colors. Includes productive plants that contribute to a sustainable, functional garden.

A gentle transition

Moving outwards there is a gradual transition to native species and rooms, reducing maintenance needs. This will also encourage habitat diversity. The shifting balance between structure and spontaneity will also create a sense of discovery

The evergreen thread

The unifying element throughout the garden besides the gradients is a species of evergreen throughout the landscape. Near the house it will be maintained more as a refined ornamental feature, where further away it will grow more freely and blend more into the woodland while still providing the desired privacy from the northern cargo company

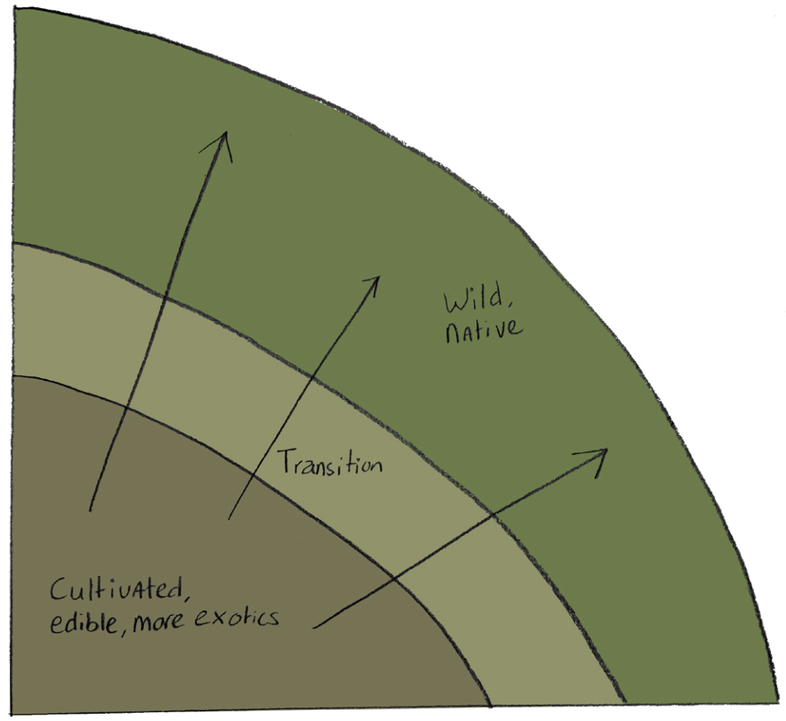
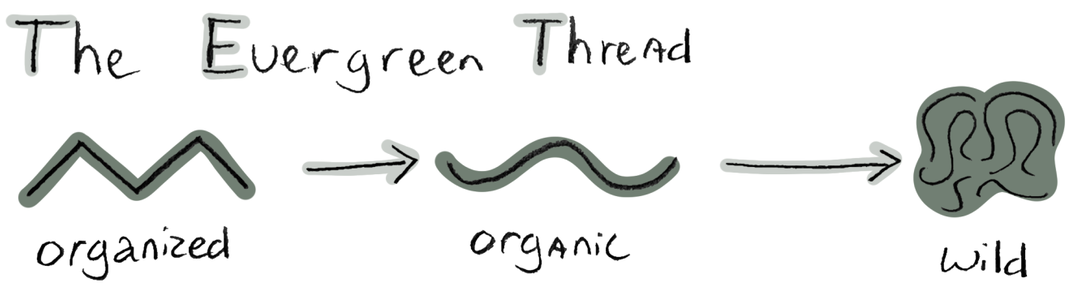


Figure 6.8 Figure combining the cultivated heart and the gentle transition ideas

Evergreen thread reference landscape

Figure 6.6 'Organized' green thread. Reference landscape from Alnarp

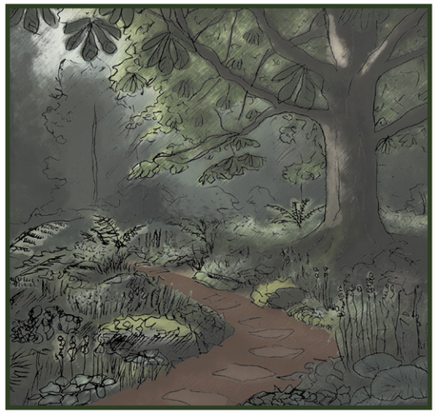
Figure 6.7 'Mix between organic and wild' green thread. (Since it is still maintained. Wild in my concept won't be maintained. Reference landscape from Alnarp



6.2.3 The feelings of the garden

The dark hidden grove (1)

- Feeling of the room: A secluded 'secret woodland retreat' beneath the canopy of the *Aesculus hippocastanum* tree, where deep shadows and shade-loving plants create a mystical atmosphere. Mossy surfaces and lush green foliage are to add to the sense of quiet magic. Subtle pops of colour in early spring or fall will echo the natural rhythm of the forest.
- *Refers to the dark high woodland discussed in chapter 3.1.2*



The layered woodland (2)

- Feeling of the room: A richly layered woodland inspired by Swedish mixed broadleaf forests, where a dynamic canopy structure allows filtered light to reach a diverse and textured understory. This room feels wilder compared to the others that will follow with different layers. There is constant renewal throughout the seasons, a place where you can feel immersed in nature's rhythm.
- *Refers to the many-layered woodland discusses in chapter 4.1.2*

Hazel walkway (3)

- Feeling of the room: a low, coppiced woodland that is shaped by multi-stemmed hazels and forms an inviting passageway into the rest of the garden where light and shadow create an interesting interplay. Inspired by the Swedish Hassellund. This room balances intentional management with the spontaneity of nature. The rotational coppicing ensures a lasting woodland character while understory planting makes you want to glimpse beyond and invite to explore the path further into the garden.
- *Refers to the Low woodland types (Coppice woodland) discussed in chapter 4.1.2*

Bright woodland (4)

- Feeling of the room: this is an airy woodland filled with light provided by the delicate canopy of *Prunus* trees, blending natural structure with ornamental charm. Inspired by the former fruit garden, it offers a vibrant and colourful underlayer, while celebrating openness, dappled sunlight and seasonal bloom. With the carefully pruned trees and a self-sustainable field layer, this space aims at bridging the woodland character and meadow beauty in a graceful and uplifting way.
- *Refers to the light and high woodland discussed in chapter 4.1.2*

Edge meadow (5)

- Feeling of the room: This is a light and open woodland edge, where fruiting shrubs and trees and edible perennials will create a productive flowering yet naturalistic looking meadow landscape. This meadow blends the structured beauty of the garden with the wilder forest that lays beyond, using the edge effect to enhance biodiversity, light and some yield.
- *Refers to both the edges discussed in 4.1.3 but also the forest garden in 4.1.6, since they display similar characteristics.*

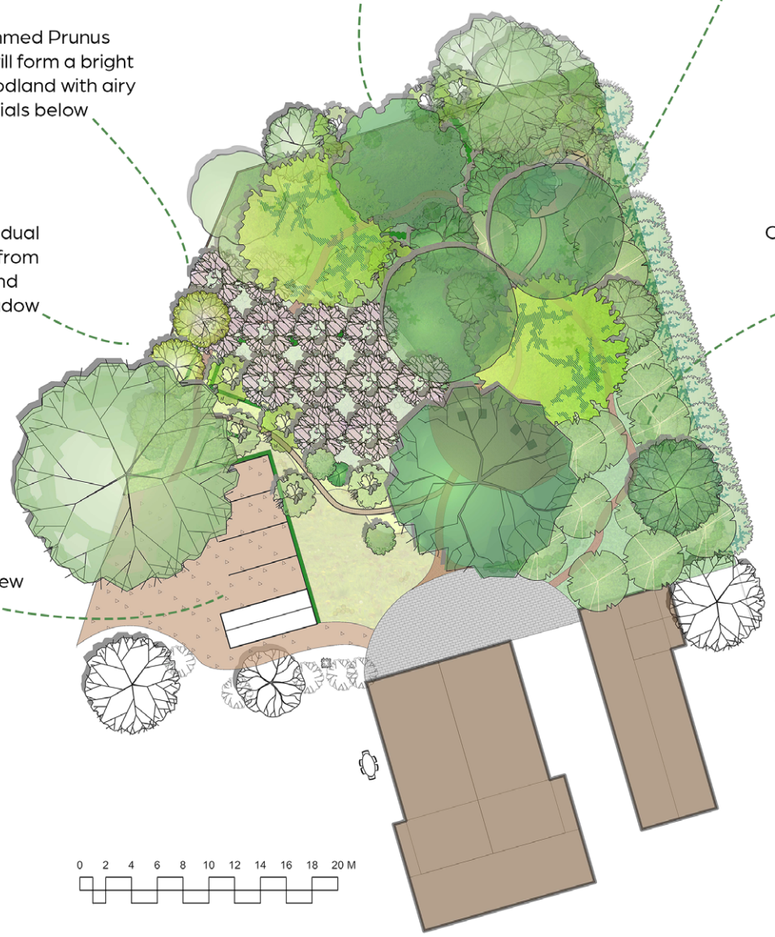
Below the beech (6)

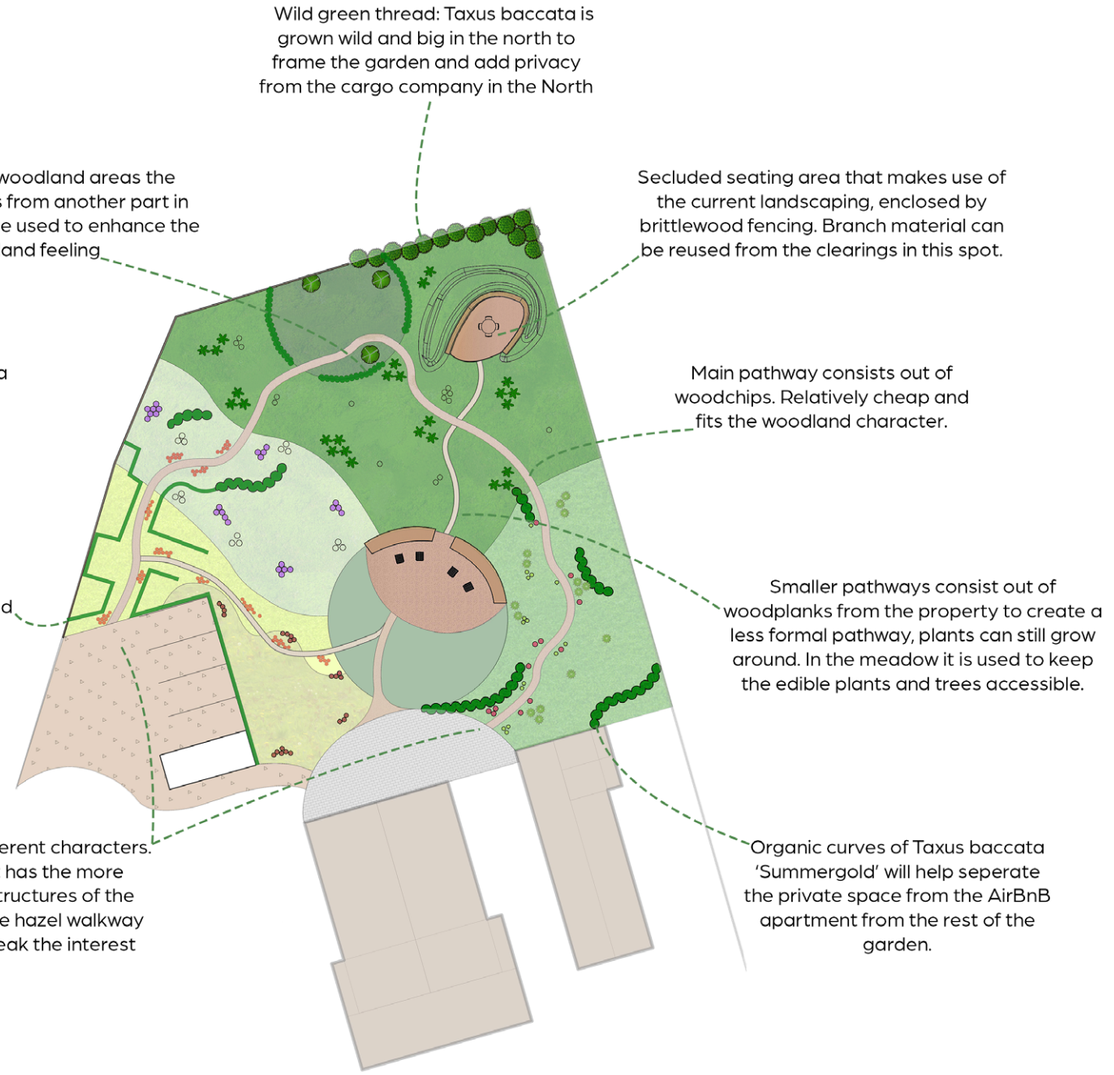
- Feeling of the room: this is a shaded retreat beneath the canopy of the mature *Fagus sylvatica f. purpurea* that offers a semi-secluded restful space combined with the brushwood fencing already present. Has dappled light in spring and deep shade in summer that creates a natural and calming atmosphere that contrasts with the beautifully, more layered lush areas of the garden. With minimal planting, this area will embrace simplicity and stillness, and will together with a cozy seating area be a place to relax.

6.3 Proposed detailed site plan

6.3.1 Illustrative plan

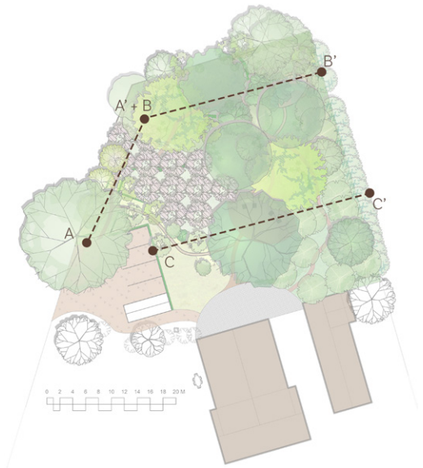
On this page, the illustrative plan is shown through both an above canopy view and a below canopy view to clearly illustrate the locations of the rooms. The explanatory text refers to some choices that have been made and decisions during the design.

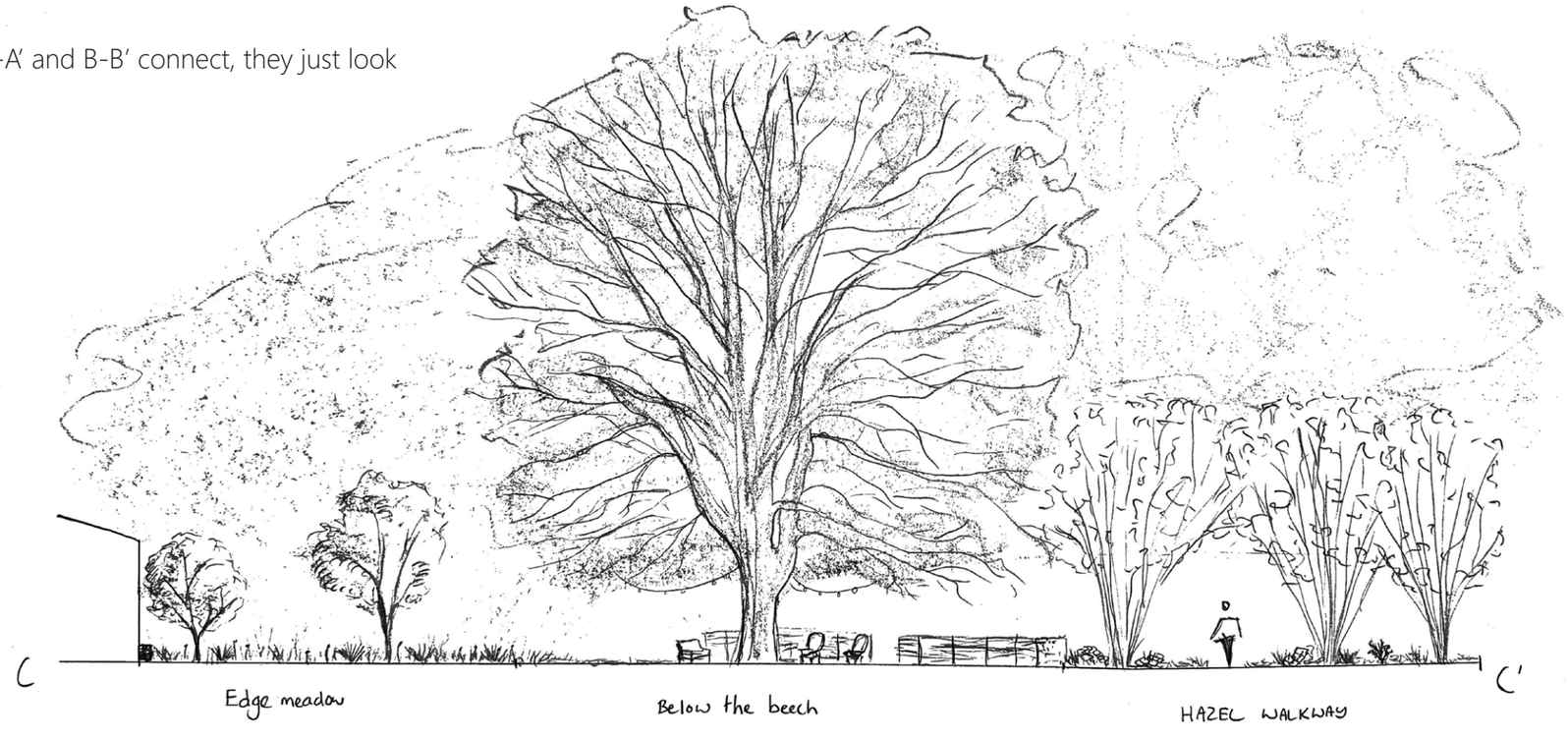


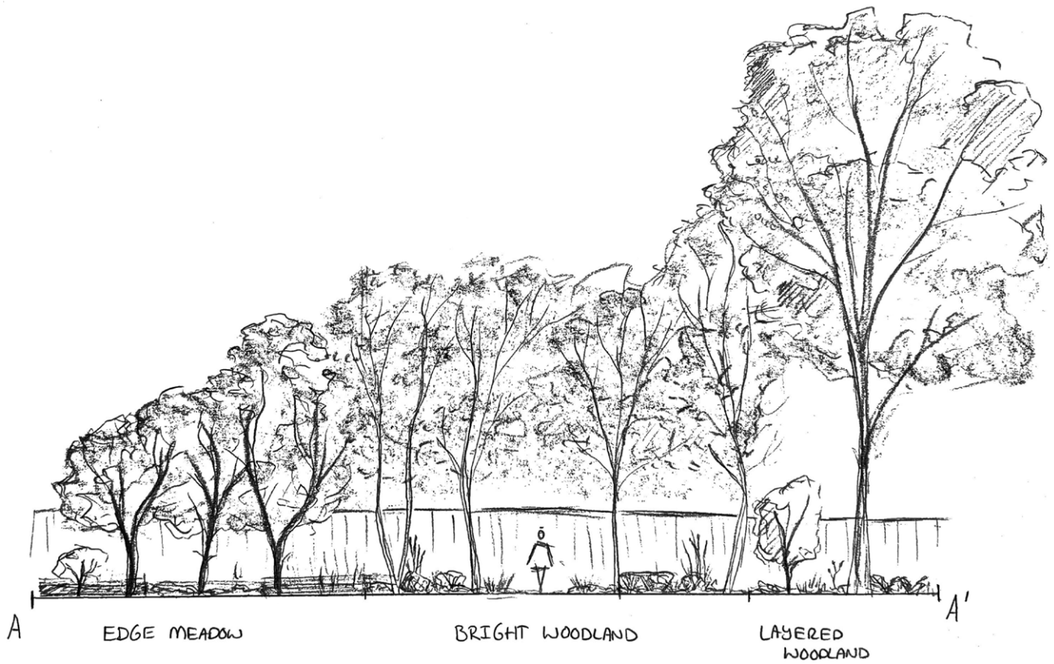


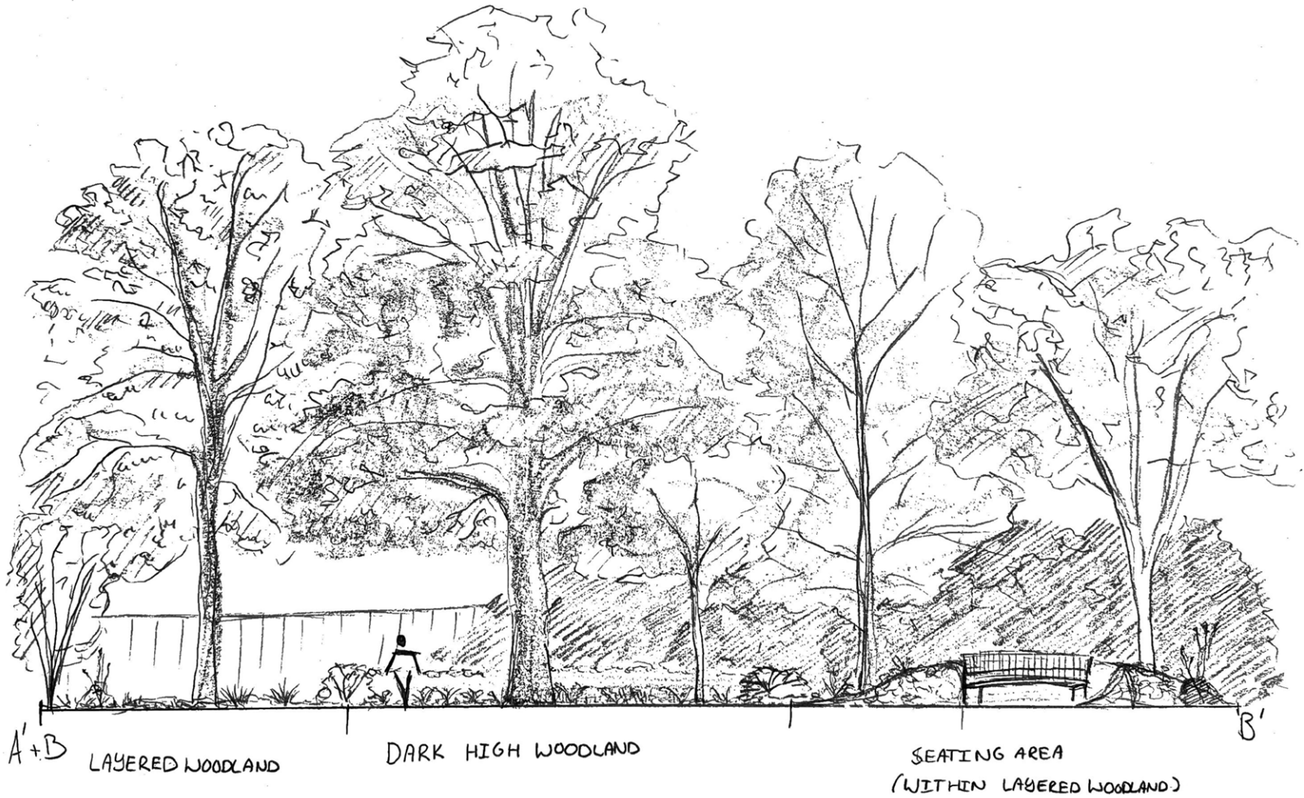
6.3.2 Sections of the design

These sections show the proposed site plan from a side view. A-A' and B-B' connect, they just look at different angles (see picture of the locations on the map).









6.4 Planting design

In this part the detailed planting design will be discussed. To the right, the complete planting plan can be found, which is divided up into different parts on the following page for a clearer view.

Low-maintenance

The planting design within this garden is designed to be low-maintenance. The different rooms aim at being self-sustaining, based on a layered composition. The maintenance measures for the room are initially light, and they mainly exist to guide the planting within the garden. It is more about guiding the whole system through correcting imbalances, managing invasiveness and preserving the intended atmosphere of each room. Nature is given the room to grow and display their dynamics.

This dynamic approach means that change is expected over time, with shifting patterns of plants that self-seed, seasonal succession and interaction between the plants. Over time, the garden should become more increasingly resilient and self-sufficient

Repetition of species

Repetition is important to achieve cohesion in this garden, especially since it is not on a big scale. Therefore, there are overlapping species between the rooms, either identical or through the use of different cultivars. This will help unify the garden, while still allowing each room to have their own distinct character. All the exact species and the overlapping ones can be found in the Appendix.

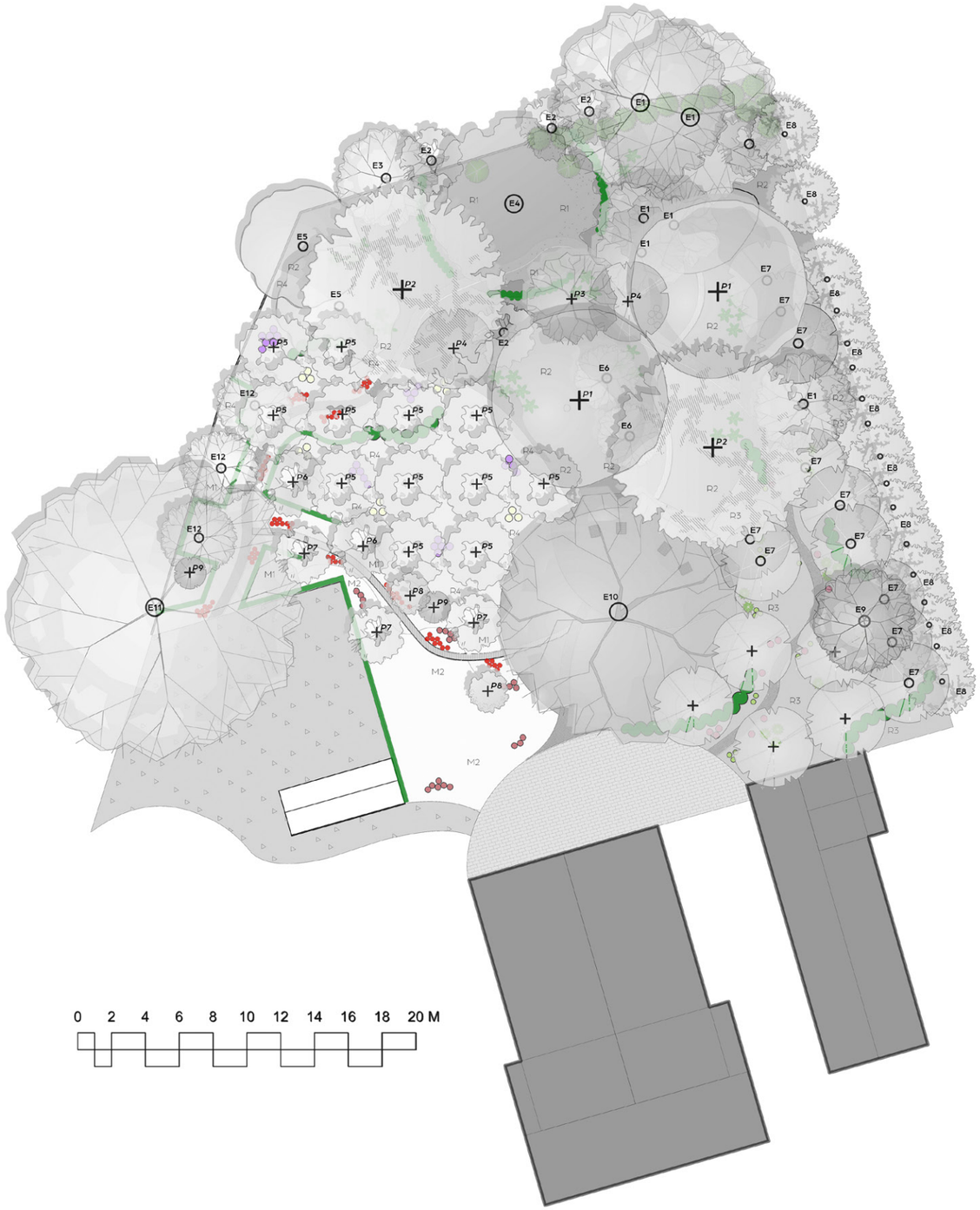
The first years

For long-term success, it is important to focus on the years of establishment. In these years, the planting will need a more guidance and maintenance. The need for maintenance will fade as the planting grows in. It is important to note that not all rooms are established at once. They are to be implemented from their numbering (1-5) to lower all the costs at once and will also help with phasing the initial maintenance years (See chapter 6.5.2).

The establishment process of the perennial planting for each of the rooms will roughly take 3 years, where trees will take a bit longer to establish.

Year 1: Plants will focus on developing their roots, and growth above the ground will be minimal. Regular watering and weeding are needed. Watering is especially important when its dry. The visual coverage of the planting in this year is still relatively sparse.

Year 2: This is the year where foliage will begin to spread, some species might already flower or even self-seed. Plants start to come together, and this is the moment where gaps and weak performers can be identified, and acted accordingly. Watering is still important.



Legend

Existing trees
E1: Acer platanoides
E2: Salix caprea
E3: Betula pendula
E4: Aesculus hippocastanum
E5: Acer campestre
E6: Fraxinus excelsior
E7: Corylus avellana
E8: Crataegus monogyna
E9: Fagus sylvatica
E10: Fagus sylvatica 'purpurea'
E11: Populus nigra
E12: Malus domestica

Trees/shrubs to be planted
P1: Quercus robur
P2: Tilia cordata
P3: Acer platanoides*
P4: Corylus avellana*
P5: Prunus cerasifera
P6: Crataegues monogyna
P7: Halesia carolina
P8: Amelanchier alnifolia
P9: Aronia x prunifolia

Solitaires and drifts
Taxus baccata
Taxus baccata 'Repandens'
Taxus baccata 'Summergold'
Taxus baccata 'Renke's Kleiner Gruner
Ribes alpinum
Actaea racemosa
Dryopteris filix-mas
Bergenia cordifolia
Bergenia cordifolia 'Vinterglöd'
Hosta lancifolia
Veronicastrum virginicum 'Album'
Geranium sylvaticum 'Album'
Fragaria vesca
Sanguisorba officinalis 'Tanna'

Planting mixes
R1: 'Dark and High Woodland'
R2: 'The many-layered Woodland'
R3: 'The Hazel Walkway'
R4: 'Bright woodland;
M1: 'Edge Meadow – Edge section'
M2: 'Edge Meadow – Meadow section'

* Can be reused from the garden

Figure 6.8 Planting plan overview with all the different elements

Year 3: This year the planting starts to stabilize. The ground should be covered and weeds will start to be suppressed naturally, resulting in minimal maintenance, only the one that is needed to lightly edit and guide the succession.

From this point forward, it is expected that each room will become more self-sustaining. The framework for the room is in place and the planting is expected to become more alive and dynamic.

Modules, drifts and solitaires

The planting within the garden rooms uses a mix of solitaire plants, drifts and modules, depending on the needs of each garden room. The modules are 1x1m repeat blocks of the same group of perennials and grasses. They are used in all rooms to bring order, make planting easier and help create a clear rhythm in the garden. The drifts are a bit looser and more natural; they are groups of species to flow a bit more in soft shapes and the way they grow in the wild. They will also help to connect the modules together. Solitaires are large perennials or feature shrubs, and are placed amongst the modules. They create more height and break up the repetition of the modules. They also help anchor the planting and help guide the views throughout the space.

Each of the rooms uses a different mix of these three tools. The choice depends on what fits the space, its size and the plants.

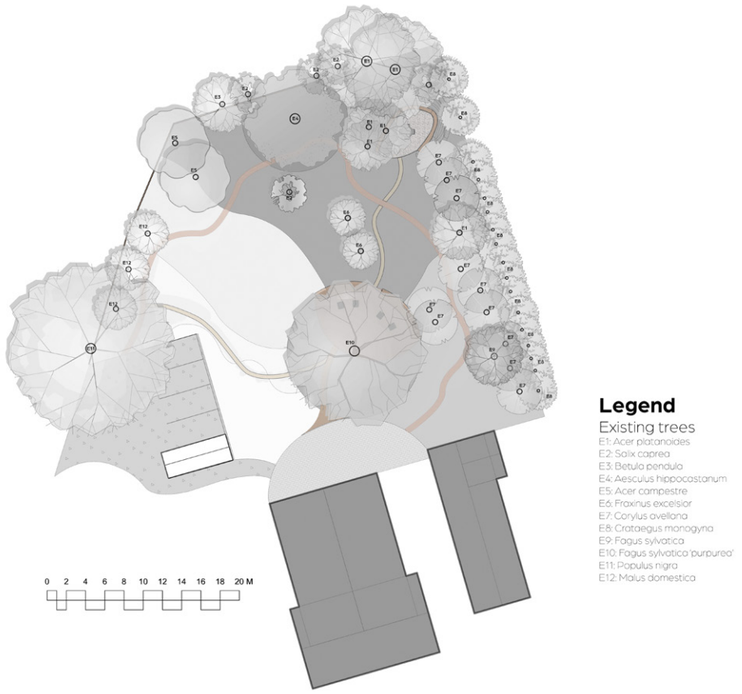


Figure 6.9 Planting plan: existing trees

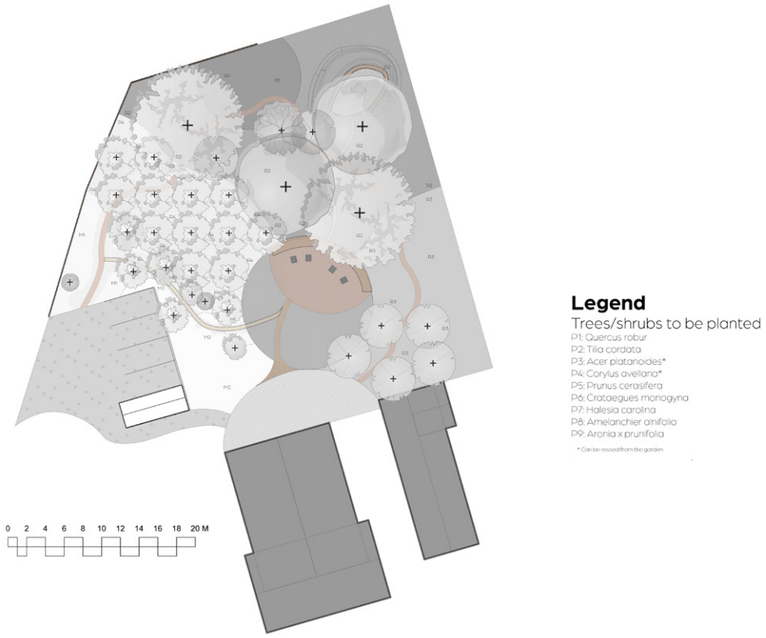


Figure 6.10 Planting plan: trees and shrubs to be planted

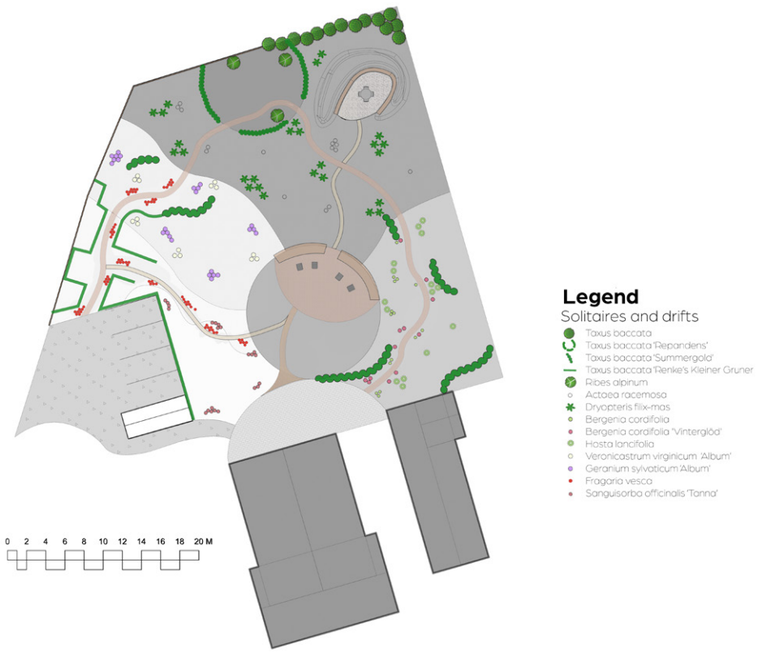


Figure 6.11 Planting plan: solitaires and drifts to be planted

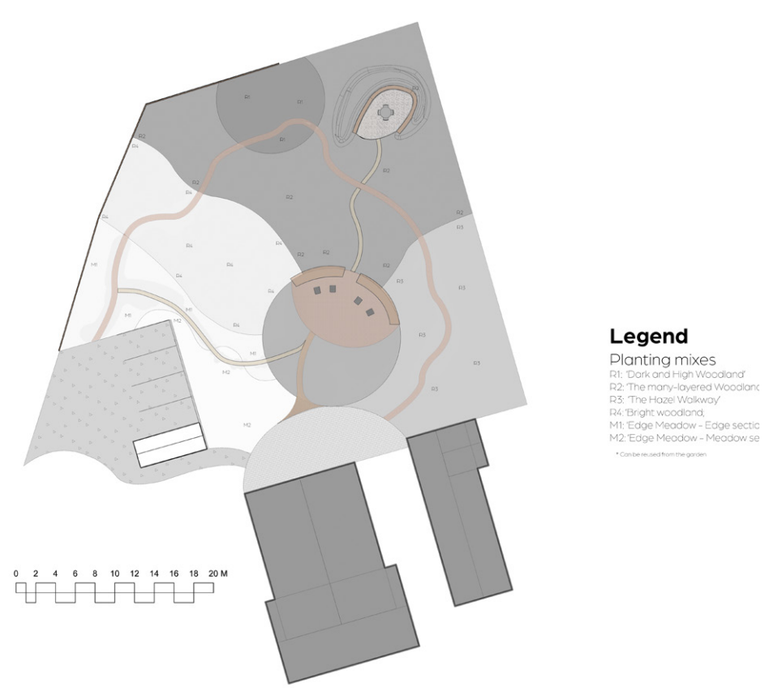
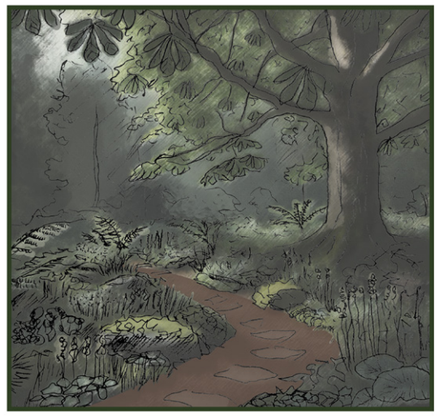


Figure 6.12 Planting plan: perennial mixes

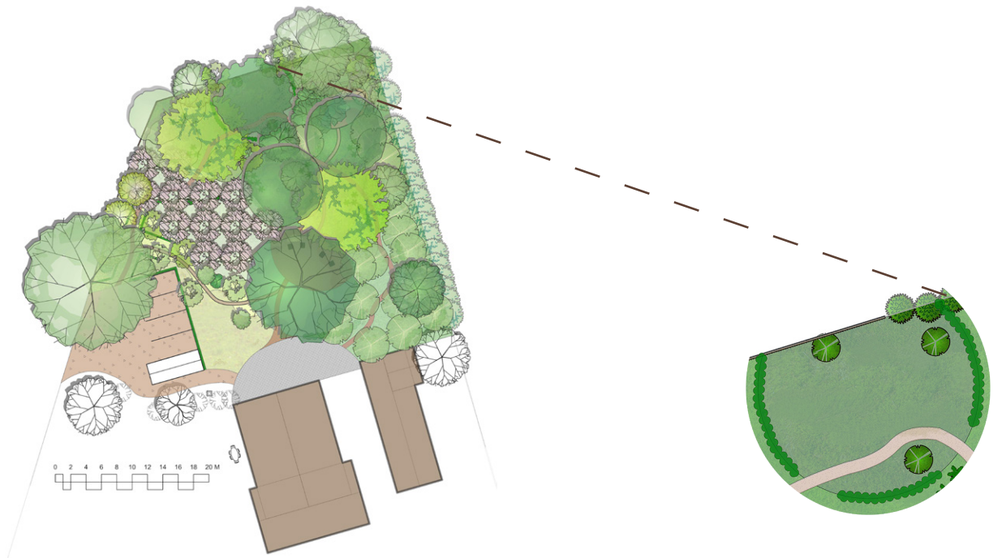
6.4.1 Dark and high woodland



Main tree: *Aesculus hippocastanum*

Reference to concept: Focus on natives, wild and away from the cultivated heart. The evergreen thread is transitioning from organized to wild in this area.

Aim: Glade-like room below the canopy but with a dense shade because of the *Aesculus*, with the present tree being the main tree and regeneration of *Aesculus* slowly coming up to replace this bigger tree in the long run. The aim is to create an enclosed, sheltered environment that can feel calm and mysterious. Below the canopy a lush and green perennial planting with some sparks of colour but mainly dominated with ferns. A dark high woodland can have the key character species of *Aesculus* (Gustavsson 2004).



Planting design: through modules and perennials/shrubs that are too big are taken out and put into the planting plan.

Colour pallete: the planting consists out of mainly green tones with various textures, with subtle whites and in spring some blues and purples.

Needed for success: planting below the mature *Aesculus hippocastanum* tree has some challenges because of its dense canopy, deep shade and relatively strong competition for water. Therefore, it is essential to select shade-tolerant but also species that can tolerate drier conditions. The current regeneration of A*esculus hippocastanum* in the room is valuable for the long term, in order to maintain and eventually replace the aging tree that is already there. The stronger saplings present would need to be selected (with strong central leaders, and good spacing from the existing trees and other saplings) and other competing saplings would need to be thinned. Over the years the regeneration should be monitored so that one of them can eventually take over the big tree, which will help with the long-term continuity of the image of the room.

Trees and shrub/solitaires: *Taxus baccata 'Repandens'* will help enclose the room circular room to mirror the circular room of 'Below the beech' and enhance the dark and mysterious feeling that *Aesculus hippocastanum* provides, and prevent spread of the perennials between this room and the surrounding room while providing a wintergreen character. *Ribes alpinum* will add some vertical shrubbery, extra shade and winter texture, helping to reinforce the enclosure as well positioned in the back against the fence. Its early leaves will also give a nice contrast with the *Aesculus*. The old tree stumps and mossy wood already present in the garden can be positioned in this area to increase the mysterious woodland character.

TREES

"Aesculus hippocastanum" by Bob Harvey. CC BY-SA 2.0

"Aesculus hippocastanum" by soltenviva. CC BY 2.0

"European horse chestnut flowers" by gailhampshire. CC BY 2.0

"Aesculus hippocastanum, Natural monument 2-25/B in Berlin" by Matti Blume. CC BY-SA 4.0

Aesculus hippocastanum (Horse chestnut)

SHRUBS

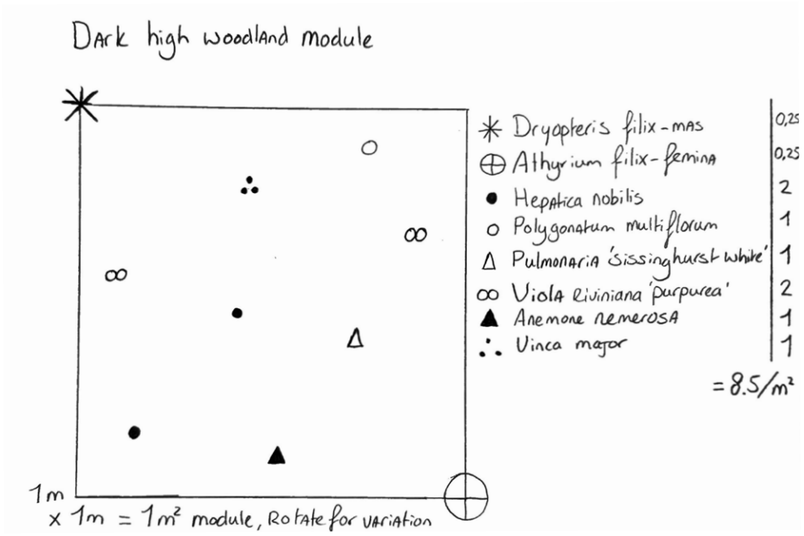
"Ribes alpinum, 2018 photo" by F.D. Richards CC BY-SA 2.0

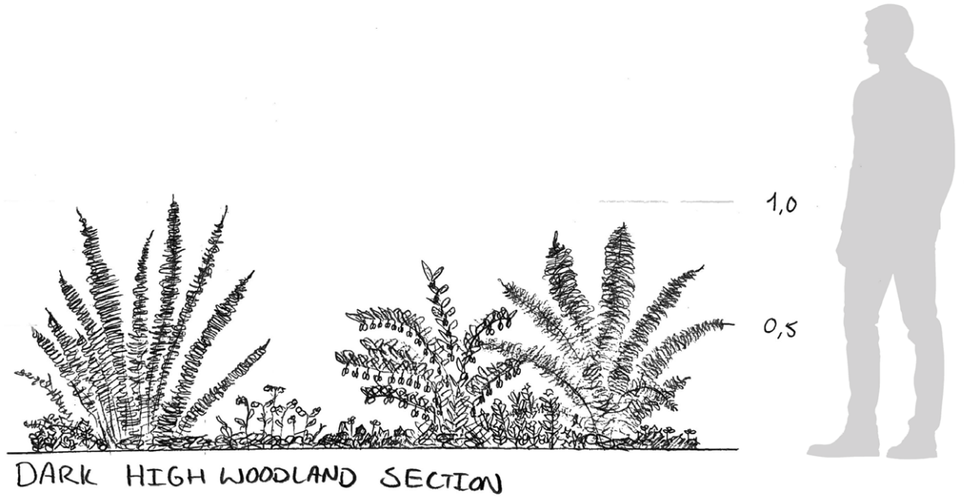
"Taxus baccata 'Repandens', UMCS Botanical Garden in Lublin, Poland." by Salicyna. CC BY-SA 4.0

Perennial planting

The perennial planting in this room is meant to create a calm, yet mysterious atmosphere beneath the large and shade-giving *Aesculus hippocastanum*. The focus lies on rich green textures, with a soft and natural look, and a few hints of colour through the seasons. The ferns *Dryopteris filix-mas* and *Athyrium filix-femina* will form the main structure of the planting, giving the room a lush woodland feel. The smaller plants like *Viola riviniana 'purpurea'*, *Anemone nemorosa* and *Hepatica nobilis* are positioned between these ferns, covering the ground while bringing soft whites, purple and blue tones, especially during early spring. *Polygonatum multiflorum* will add an interesting flowing shape with arching stems, where P*ulmonaria 'Sissinghurst White'* will give bright white flowers early on in the season. *Vinca major* is to be used carefully to add evergreen groundcover.

Together, the species form a dynamic tapestry that can shift showly over time. Several plants gently spread, allowing for the planting to shift and settle into the spots where the conditions will suit them best below the tree. *Vinca major* is expected to take over the lower levels of the planting and *Polygonatum multiflorum* is also expected to spread. This spread will be kept within the boundaries of the room created by the *Taxus baccata 'Repandens'* at the edge. This natural movement within the planting supports the naturalistic planting idea of a planting that evolves slowly over time, becoming more resilient and self-sustaining while maintaining its intended dark and high woodland character.





Name	Nr.	Type	Height (cm)	Amount/ m2	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Dryopteris filix-mas	1	Structure	60-100	0.25												
Athyrium filix-femina	2	Companion	80-100	0.25												
Hepatica nobilis	3	Companion	10-15	2												
Polygonatum multiflorum	4	Companion	50-80	1												
Pulmonaria 'Sissinghurst White'	5	Weaver/ Companion	25-30	1												
Viola riviniana 'Purpurea'	6	Weaver/ Groundcover	10	2												
Vinca major	7	Groundcover	30	1												
Anemone nemorosa	8	Groundcover	10-20	1												

Flowering interest Structural interest Leaf interest

PERENNIALS

"Echter Wurmfarn (Dryopteris filix-mas), Rimberg (Hessen)" by Willow. CC BY 2.5

"Hepatica nobilis" by Noorse. CC BY-SA 3.0.

"Pulmonaria officinalis" by ekenitr. CC BY-NC 2.0.

"Vinca major (Apocynaceae)" by Juan Carlos Fonseca Mata. CC BY-SA 4.0

"Athyrium filix-femina in alder forest near stream in Lusowo by Brojce, NW Poland" by Krzysztof Ziarnek, Kenraiz. CC BY-SA 4.0

"Polygonatum multiflorum" by Kenraize. CC BY-SA 3.0.

"Viola labradorica (Viola riviana 'Purpurea')" by Leonora (Ellie) Enking. CC BY-SA 2.0

"Anemone nemorosa" by Nina Laakso. CC BY 2.0.

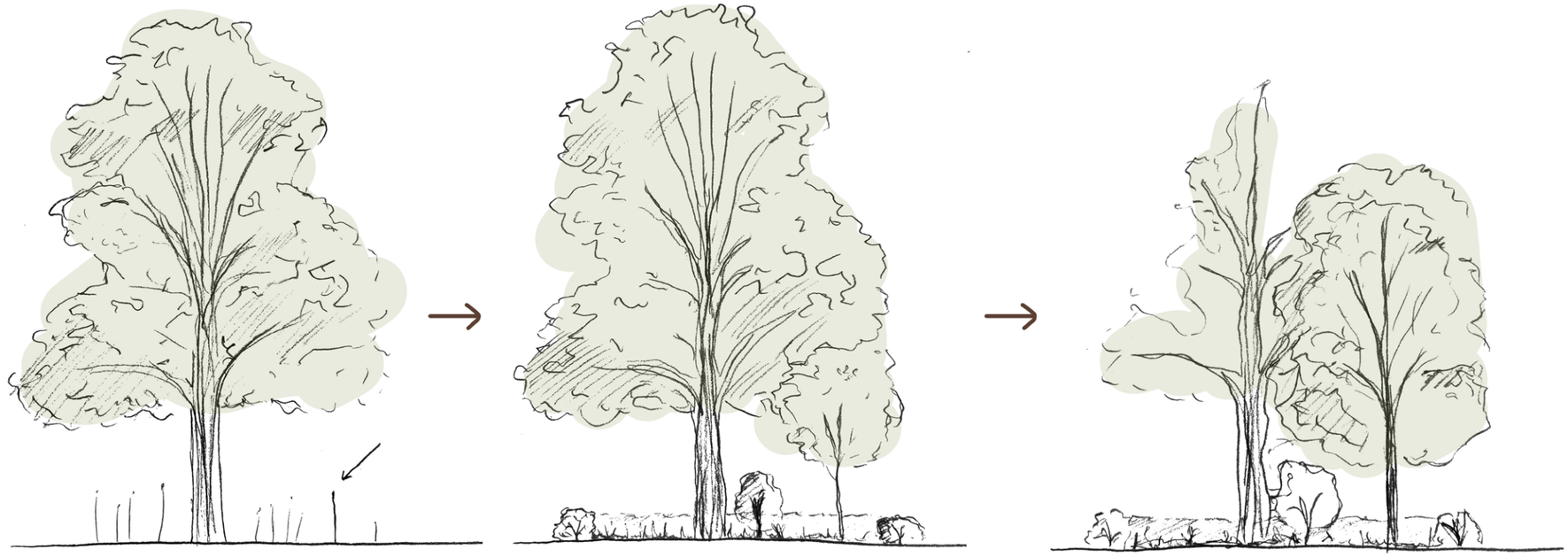


Figure 6.13 Expected development of the room over the years.

Soil preparation: The current soil of the site and the mulch layer already provide a good foundation for this planting. However, at planting, light compost or leaf can be added to the topsoil to help improve moisture retention and help establish the perennials. Deep digging must be avoided to protect the tree roots. Mulch is to be kept during establishment to reduce stress and suppress weeds. After the establishment phase an assessment can be made of the coverage: if the perennials form a dense ground layer, additional mulch top-ups may become unnecessary.

Establishment measures

- *Watering:* the first 1-2 years the area needs to be watered during drought for strong root establishment, since they are not really drought-tolerant yet. Especially important for the more moisture-loving species, which are a bit more vulnerable below the *Aesculus hippocastanum*. Dry conditions early on in the planting can influence the long-term success of the room.
- *Soil improvement:* organic matter (compost or leaves) can lightly be added into the topsoil during the planting to enhance the retention of moisture and nutrient availability. One important thing when incorporating the soil is to avoid deep digging to protect the tree roots
- *Planting time:* plant in early spring or autumn when the soil moisture is higher and the temperatures are expected to be milder.
- *Planting strategy:* a module of 1x1m is proposed and can be rotated for variation, supporting a naturalistic layout. It is expected that plants will self-select their more preferred locations. The more moisture-lovers will probably do better the further away from the tree trunk, where the drier shade performers will naturally settle closer to the tree trunk. This is expected and should be allowed for, maybe with some light editing to guide this process.
- *Regeneration management:* look at the regeneration of the *Aesculus hippocastanum* and select the strong saplings (central leader and good spacing) to support the long-term succession of the room. Before planting the perennials, thin out the weaker or poorly places saplings to avoid overcrowding.

Maintenance measures

- *Mulching:* after establishment, keep the natural leaf litter to enrich the soil and retain moisture.
- *Seasonal maintenance:* once the planting is established, minimal care is needed. However, old growth needs to be cut back in early spring before new shoots emerge. In the autumn, the leaf litter should remain to contribute to the forest floor effect.
- *Weeding:* especially during the first few years it is important to let the plants establish. Once the plants are filling in, most weeds will be outcompeted by the dense planting and weeding will not be needed anymore.
- *Plant dynamics and early editing:* allow variation to emerge. The incorporation of weavers allows for this already. The self-seeding species will shift and settle into the suitable niches over time. Light editing through removing or moving plants might be needed when they are struggling, or overly dominant ones need to be thinned. Fill in the bare spots to maintain the room's balance and feel.
- *Invasiveness monitoring:* The perennial *Vinca major* is quite a strong spreader, so dividing up the plant might be needed to keep the balance in the planting. It is especially important that this plant does not spread to the other rooms, but the incorporation of *Taxus baccata 'Repandens'* as a 'wall' around the room should help with this.

6.4.2 The many-layered woodland

Main tree species:

Already present: *Acer campestre*, *Acer platanoides*, *Fraxinus excelsior*, *Corylus avellana*, *Crataegus monogyna*

Introduced: *Quercus robur*, *Tilia cordata*

Reference to concept: the wild and native woodland that is away from the cultivated heart, the evergreen thread here is wild.

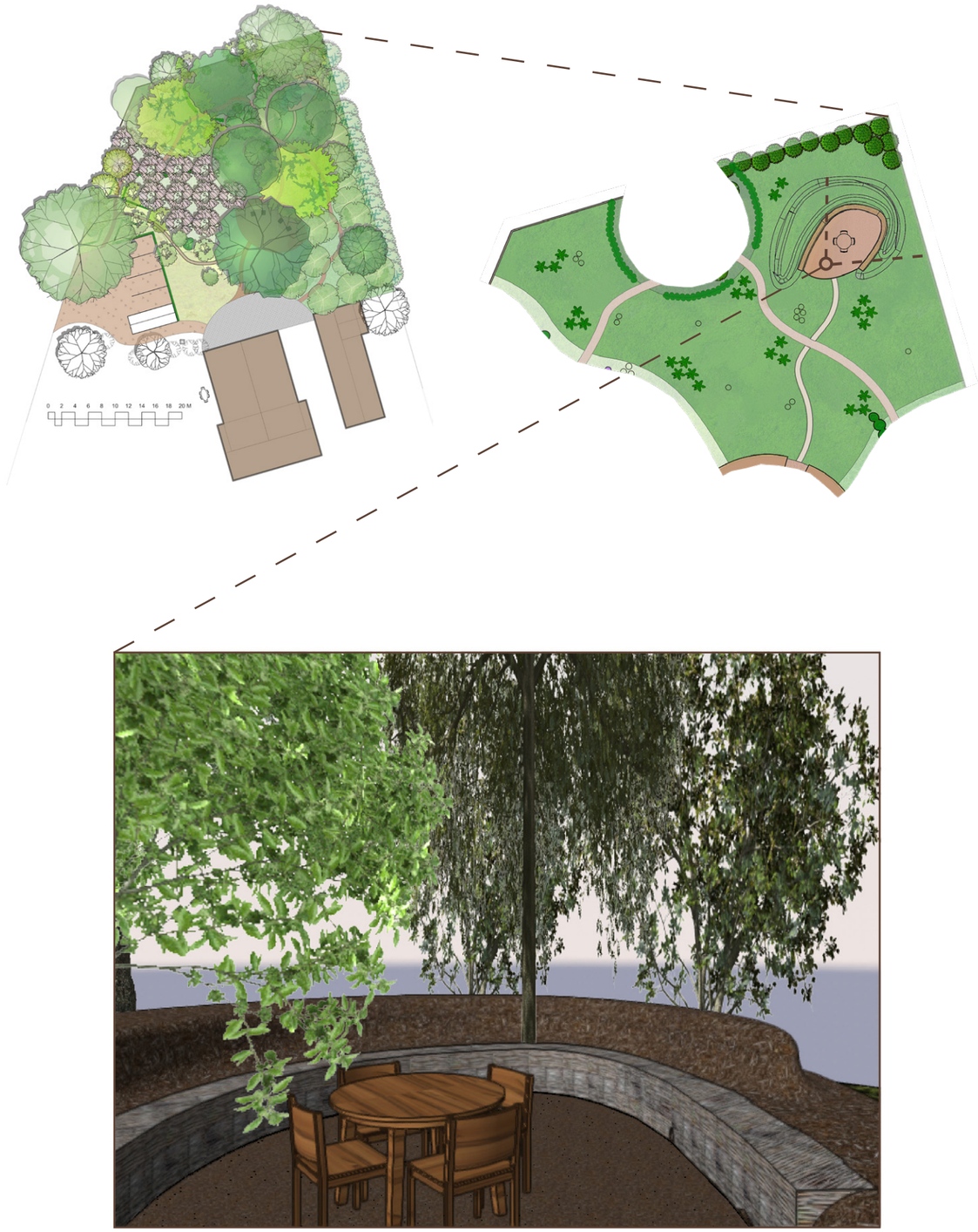
Aim: a multi-layered woodland room that is inspired by the character of the 'Swedish ädellövskog'. A rich deciduous woodland. The space will be shaped in the future by *Quercus robur* and *Tilia cordata*, while existing species like *Acer platanoides* should be guided to play a more balanced role. The feeling is that of a semi-open, dappled light woodland. It is neither dark nor bright, and light is filtered through in places allowing for a rich and structured understory. Perennials are combined into a green tapestry with soft seasonal interests and a diversity of textures. An environment that feels immersive, calm and quietly alive, where there is space for slow transformation through natural regeneration and selective interventions.

Planting design: through modules and perennials/shrubs that are too big are taken out and put into the planting plan as solitaires.

Colour palette: soft and naturalistic, with whites in early spring which progresses into gentle purples and pinks while fresh greens emerge further throughout the season

Needed for success: the main challenge in establishing this woodland room lies within the existing dynamics of the site. There is an area where *Acer platanoides* particularly dominates through regeneration, having rapid growth and lots of seeding. In the long run, this can lead to low species diversity and disrupt the intended multi-layered woodland structure. Additionally, the removal of the old and dying *Prunus cerasifera* in this room will alter light conditions. To tackle these issues and ensure success in the long run, the woodland first needs to undergo some active management. Some of the natural regeneration needs to be thinned, especially the *Acer* and *Fraxinus* that are present, to maintain structural diversity and prevent pieces of monocultures in the woodland.

The new gaps will provide opportunities to introduce key species from the inspiration of the Swedish ädellövskog. *Tilia cordata* will add a light-filtering canopy and edible properties, where *Quercus robur* will give the room character as a long-lived species, suited to develop in canopy gaps. These species will help establish the stable and resilient structure that is so typical for the Swedish forest landscape. The aim will lie at achieving a balance between the more light-demanding canopy trees and a shade-tolerant understory to form a coherent and layered plant community. While most existing species can remain, some, like the existing *Salix caprea*, will play more of a temporary role and will be phased out in the future, as the canopy transitions towards a composition that is centered on *Tilia cordata* and *Quercus robur*.



Simple render of the seating area in the multilayered woodland

Solitaires: *Actaea racemosa* from the perennials is placed in individually or loose groups of 3 to create vertical interests in sightlines or near paths. This gives them room to shine without cluttering the space. *Dryopteris filix-mas* is used to soften transitions between path and planting and structural interests deeper into the planting. Positioned close to the entrance of the room to emphasise the transition.

Trees and shrubs: larger qualities will be used instead of small saplings to help create a more structure from the beginning and help anchoring the tree species better within the light gaps. When using bigger qualities of trees, the perennial layer can also be established below immediately, helping the root systems to develop in parallel. Bare-root trees or container-grown trees can be used. These will establish relatively fast compared to large, heavy trees and are less prone to have a shock from the transplant. The removal of *Prunus cerasifera* opens up the kind of gap opportunity that *Quercus* and *Tilia* thrive in, growing more steadily into a dominant tree canopy over time. Bigger sized quality trees are not necessarily needed because there are already trees present in the area.

SHRUBS

"Corylus avellana (3)" by Marija Gajić. CC BY-SA 4.0

Corylus avellana (Hazel)

"Stoletý Maškovický tis, Maškovice (Povrly)" by Xth-Floor. CC BY-SA 3.0

Taxus baccata (European yew)

TREES

"Feldahorn (Acer campestre)" by Wikimedia Commons. CC0 1.0

"Acer campestre 006" by Willow. CC BY-SA 2.5

"Field Maple (Acer campestre)" by Dean Morley. CC BY-ND 2.0

"Samara and leaf" by Peter O'Connor aka anemoneprojectors. CC BY-SA 2.0

Acer campestre (Field maple)

"Acer platanoides 002" by Willow. CC BY-SA 2.5.

"Acer platanoides 159" by Andrew Butko. CC BY-SA 3.0

"Acer platanoides" by Andreas Rockstein. CC BY-SA 2.0

"Autumn – Acer platanoides" by Nina Laakso. CC BY-SA 2.0

Acer platanoides (Field maple)

"Chêne pédonculé (Quercus robur)" by Jean-Pol GRANDMONT. CC BY-SA 3.0.

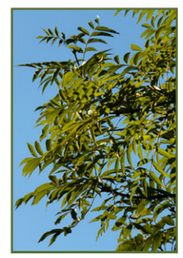
"Quercus robur' by Unknown. CC0

"Oak leaves on a tree branch" by Pixabay. CC0 1.0

"Quercus robur – alone tree" by Bartosz Cuber. CC BY-SA 3.0

Quercus robur (Pedunculate oak)

"A large tree with lots of green leaves. Fraxinus excelsior" by Pixabay. CC0 1.0



"Leaves ash tree' by Unknown. CC0

"20120904Fraxinus excelsior1' by Unknown. CC0

"Ash (Fraxinus excelsior) twig/bud" by Peter O'Connor. CC BY-SA 2.0

Fraxinus excelsior (Ash)

"Salweide Salix caprea m 120324 003" by Jürgen Mangelsdorf. CC BY-NC-ND 2.0

"Salix caprea 026' by Willow. CC BY-SA 2.5

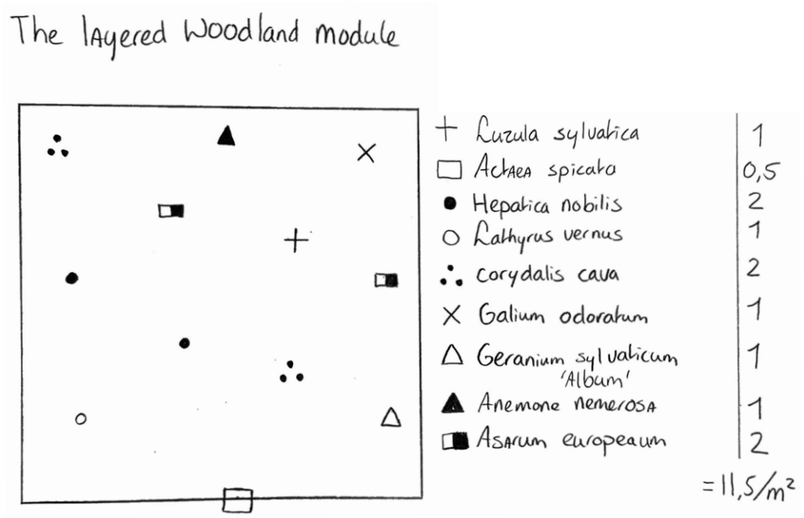
"Salix caprea 017" by Willow. CC BY-SA 2.5

"Salix caprea" by Andreas Rockstein. CC BY-SA 2.0

Salix caprea (Goat willow)

Perennial planting

The perennials are chosen to evoke the atmosphere of a natural Swedish woodland. The focus lies on creating a cohesive ground layer that is rich with green texture, with gentle white and cool toned spring colours flowering through. This planting will support an immersive woodland experience, and will already shine in the early months of the year when the canopy is still developing. *Dryopteris filix-mas* and *Actaea racemosa* will form structural visual anchors as solitairies in this room, where *Luzula sylvatica* will provide wintergreen structure in the module planting. A mix of companion plants as *Actaea spicata*, *Hepatica nobilis* and *Lathyrus vernus* will fill in the ground layer, where *Corydalis cava* and *Galium odoratum* will weave throughout the matrix together with the various ground covers, providing a sense of continuity throughout the seasons. *Galanthus nivalis* will provide early flowering interest together with *Anemone nemerosa* which will both disappear after spring together with *Corydalis cava*. White, purple and blue-toned flowers will emerge in early spring before the canopy fully closes. The planting is not static, it is designed to evolve slowly with species spreading, weaving and adjusting in response to the maturing woodland. This quiet transformation over time is expected and allowed, since it will enhance the naturalistic intent of the room.



Name	Nr.	Type	Height (cm)	Amount/ m2	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Actaea racemosa	1	Structure	60-140	Sol, see Planting												
Dryopteris filix-mas	2	Structure	60-100	Sol, see Planting												
Luzula sylvatica	3	Structure/ Groundcover	30	1												
Actaea spicata	4	Companion	40	0.5												
Hepatica nobilis	5	Companion	10-15	2												
Lathyrus vernus	6	Companion	30-40	1												
Corydalis cava	7	Weaver/Corm	15-30	2												
Galium odoratum	8	Weaver/ Groundcover	15-20	1												
Geranium sylvaticum 'Album'	9	Companion/ Groundcover	50	1												
Asarum europeaum	10	Groundcover	15	1												
Anemone nemorosa	11	Groundcover	10-20	2												
Galanthus nivalis	12	Bulb	10-15	5-20												

Flowering interest Structural interest Leaf interest Semi-evergreen

THE LAYERED WOODLAND SECTION

PERENNIALS


1

"Black cohosh" by BluebridgeKittles. CC BY-NC-SA 2.0


2

"Echter Wurmfarn (Dryopteris filix-mas), Rimberg (Hessen)" by Willow. CC BY 2.5


3

"Luzula sylvatica" by Jerzy Opioła. CC BY-SA 4.0


4

"Actaea spicata 2" by Franz Xaver. CC BY-SA 3.0


5

"Hepatica nobilis" by Noorse. CC BY-SA 3.0.


6

"Lathyrus vernus habitus" by Nefronus. CC0 1.0.


7

"Corydalis cava plant (03)" by Jean- Marie Martig. CC-BY-SA 2.0 FR


8

"Galium odoratum s1" by Stefan Ivfnoor. CC BY-SA 3.0.


9

"Geranium" by Meneerke bloem. CC BY-SA 3.0


10

"Asarum europaeum" by Stefan Ivfnoor. CC BY-SA 4.0


11

"Anemone nemorosa" by Nina Laakso. CC BY 2.0.

BULB


12

"Galanthus nivalis (sneeuwklokje)" by Dominicus Johannes Bergsma. CC BY-SA 3.0

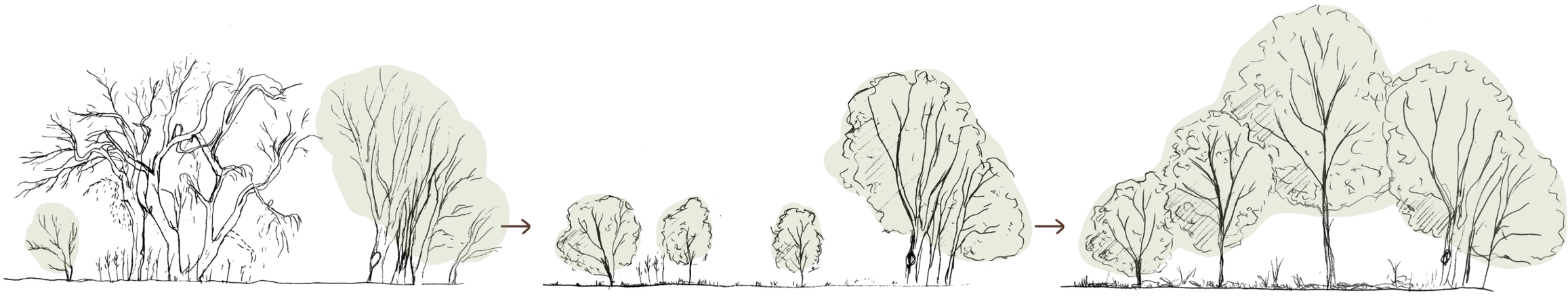


Figure 6.14 Expected development of the room over the years.

Soil preparation

The current soil and mulch already provide a strong base, so only light preparation is needed. Deep digging should be avoided to protect the existing root systems, mainly near trees. In compacted areas (below the current mess piles) the topsoil can be gently loosened to help with the water drainage and root establishment of the plants. The existing mulch layer is enough, but after planting additional compost may be needed during the establishment phase to ensure coverage across disturbed areas. As the perennials establish and begin to form the dense ground layer, the need for additional mulch will fade and the natural leafing will provide enough.

Establishment measures

- *Watering:* the trees and perennials need regular watering during the first growing seasons, especially during drier periods to ensure good roots.
- *Planting time:* the perennials and groundcovers should be planted either in early spring or early autumn. This is when soil moisture is high and temperatures are likely to be mild. The trees and shrubs should be planted either in late autumn or early spring.
- *Planting strategy:* the perennials should be planted at the same time as the 1-1.5m trees. The trees will establish relatively quickly and take advantage of the canopy gaps created by the felling. Both perennials and trees develop in parallel under optimal light and soil conditions. Perennial species are planted into a module for 1x1m and can be rotated for variation and natural effect.
- *Regeneration management:* the natural regeneration of *Acer platanoides* and *Fraxinus excelsior* need to be thinned to prevent monocultures. Some of the regeneration from existing trees should be incorporated for the long-term, but should fit the species composition room structure.

Maintenance measures

- *Monitoring and observation:* throughout each year it is important to do seasonal-walk throughs to assess plant health, light conditions, species balance and emerging dynamics, to see if interventions are needed when imbalances, dominance or stress is spotted.
- *Mulching:* maintaining the mulch layer evenly across the room is important during the first 2-3 years of establishment, especially for the young trees and new perennials. As the perennial layer grows in, mulch inputs can be reduced and eventually phased out, leaving only natural leaf litter.
- *Seasonal maintenance:* in late summer or autumn the perennials can be cut back if needed for access or aesthetics, or you can decide to leave it for winter structure and biodiversity. Otherwise, in early spring winter debris needs to be cut back to support healthy spring growth.
- *Weeding:* in the first 1-2 years, weeding of plants that outcompete the young woodland plants is needed. Once the perennial layer becomes dense, weeding can be reduced to light/selective removal of invasive or unwanted species.
- *Plant dynamics and early editing:* the interactions between the fast and slow growers needs to be monitored. If fast spreaders like *Galium* begin to dominate and take over, thin or relocate them to give more space to the slower and clump forming species.
- *Invasiveness monitoring:* especially the tree species regeneration needs to be monitored. Natural regeneration is encouraged where it adds structure or biodiversity, but needs to be intervened when it starts to conflict with the long-term design and the aim of the room.

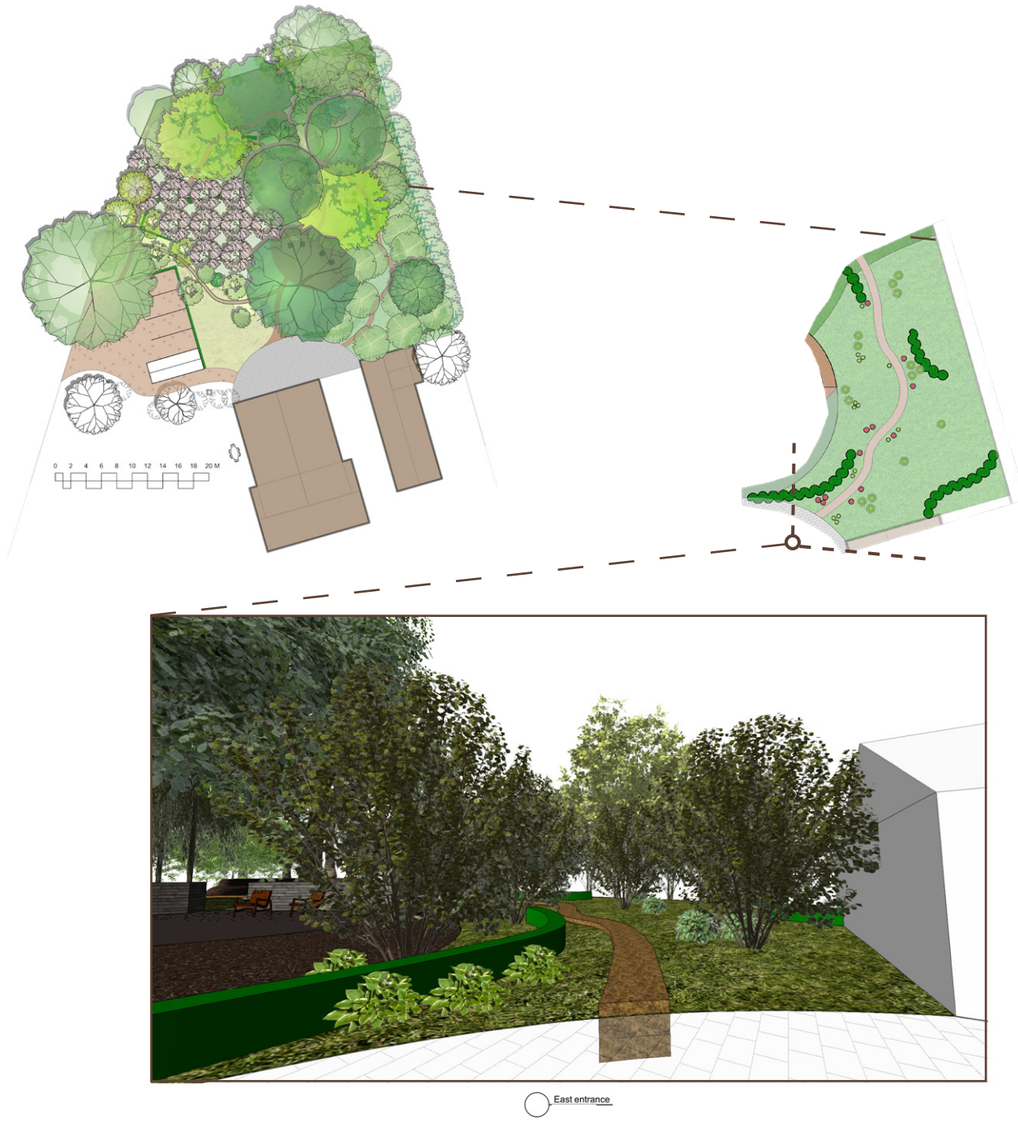
6.4.3 The Hazel Walkway

Main tree: *Corylus avellana*

Reference to concept: the focus lies on the transition from natives to more ornamental and edible. Organic green thread from the concept.

Aim: A semi-open, brushwood woodland that is formed by traditional coppicing, in which low-multi-stemmed trees and understory form a rhythm that takes inspiration from the Swedish 'Hassellund' landscape. It has an inviting walkway that goes through this grove, with on both sides coppiced hazels. The woodland floor is low and open, allowing views through the hazels while offering a rich, ground-level perennial tapestry that weaves the wild and native species together with the more exotic and ornamental. A planting that is soft, layered but still expressive and with a gentle shift throughout the seasons with subtle sparks of white, pink and purple. It is a transitional woodland within the garden, neither fully wild or strictly ornamental.

Planting design: modules combined with bigger anchor perennial plants that are taken out of the modules and designed separately as solitaires in the planting plan.



Colour palette: soft and natural, with greens layered through the seasons with lilac, white and pale blue.

Needed for success: The existing *Corylus avellana* show faint traces of past coppice management and they have the potential to be 'reawakened'. To get to the multi-stemmed image and restore that woodland structure without making it too light all at once, the hazels should be coppiced on a rotational basis. Every six to eight years, each stool can be cut back to around 15-30cm above ground to encourage multiple new shoots to emerge. Over time, this will result in a lovely, coppiced hazel woodland. Hazels do regrow quickly. Around the third year after coppicing, the canopy is expected to close again. An useful indicator for when to coppice another stool is when the spring ephemerals start to decline nearby, since this can act as a cue to let in a little bit lighter by coppicing surrounding hazels. The one larger mature *Fagus sylvatica* in the area can remain, since it is positioned slightly further from the path and thus won't interfere too much with the tunnel-like feeling of the hazel walkway, as its high branching will keep the space open underneath the tree. It will still provide structural interest in the period while trying to achieve this coppiced hazel structure, providing interest when hazels are temporarily cut.

Solitaires: *Taxus Baccata 'Summergold'* acts as the organic green thread through curved, more natural shapes, that also guide the movement and views into the hazel walkway. It also helps with giving the guest apartment more privacy. The perennial *Bergenia* is used as drifts in the mix, to add islands of texture amongst the module together with *Hosta lancifolia*. The *Bergenia* is also used more towards the entrance and less towards the inner parts of the hazel walkway to help in this transition, as discussed in the concept, from the cultivated heart to the woodland rooms further away from the house.

TREES

"Corylus avellana (3)" by Marija Gajić. CC BY-SA 4.0

"Corylus avellana 0003" by H. Zell. CC BY-SA 3.0

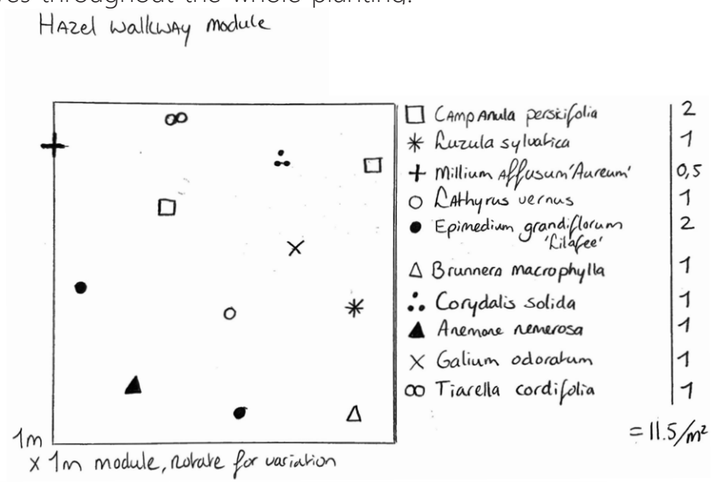
"Corylus avellana" by Isidre blanc. CC BY-SA 4.0

"Gemeiner Hasel (Corylus avellana) im Botanischen Garten Marburg" by Nikanos. CC SA 1.0

Corylus avellana (Hazel)

Perennial planting

The perennials for the hazel walkway are chosen to create a rich and layered ground layer that is able to respond dynamically to the shifting light patterns from the rotational coppicing of the hazel. This room serves as a transition between the cultivated heart of the garden and the more natural woodland areas, focusing on texture, rhythm and subtle colour variations. The structural plants *Bergenia* and *Luzula sylvatica* will provide year-round structure with evergreen foliage. *Bergenia* is used as a solitaire, taken out of the planting module and will add moments of bold leaves, weight and structure where *Luzula sylvatica* has soft and arching leaves throughout the whole planting. *Campanula persicifolia* gives some vertical accents with delicate bell-shaped flowers. Companion plants offer seasonal variation and textural contrast. *Millium effusum 'Aureum'* especially brightens up the understory, complimenting the more upright forms of *Lathyrus vernus*. The weaving species will introduce spontaneity and movement into the module, filling in gaps and softening transitions between the more permanent plants. Besides aesthetics and ecological roles, several of these perennials are edible, fitting in this room since it is the transition zone as discussed in the concept. *Campanula persicifolia*, *Galium odoratum*, *Hosta lancifolia* and *Viola* are edible, referring back to the concept of the 'cultivated heart'.



Name	Nr.	Type	Height (cm)	Amount/ m2	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Bergenia cordifolia	1	Structure	25-40	Sol, see Planting												
Bergenia cordifolia 'Vinter-glöd	2	Structure	40	Sol, see Planting												
Campanula persicifolia	3	Structure	80	2												
Luzula sylvatica	4	Structure/ Groundcover	30	1												
Millium effusum 'Aureum'	5	Companion	70	0.5												
Lathyrus vernus	6	Companion	30-40	1												
Epimedium grandiflorum 'Lilafee'	7	Companion	25	2												
Hosta lancifolia	8	Companion	20	Sol, see planting												
Brunnera macrophylla	9	Weaver	30-40	1												
Viola 'Famös'	10	Weaver/ Groundcover	15	Drift, see planting												
Corydalis solida	11	Weaver	15-30	1												
Anemone nemorosa	12	Groundcover	10-20	1												
Galium odoratum	13	Groundcover	15-20	1												
Tiarella cordifolia	14	Groundcover	20	1												

Flowering interest Structural interest Leaf interest Semi-evergreen

"Bergenia cordifolia" by Athanior. CC BY-SA 4.0

"Bergenia" by Jon Sømoen. CC BY 2.0

"Campanula persicifolia" by T. MA CC BY-NC 2.0

"Luzula sylvatica" by Jerzy Opioła. CC BY-SA 4.0

"Millium effusum 'Aureum'" by Leonora (Ellie) Enking. CC BY-SA 2.0

"Lathyrus vernus habitus" by Nefronus. CC0 1.0.

"Epimedium 'Lilafee' " by Leonora (Ellie) Enking. CC BY-SA 2.0

"Epimedium 'Lilafee' " by Andy king50. CC BY-SA 3.0

"Brunnera in bloom" by Patrick Standish. CC BY 2.0

"Flower garden" by Pascualette. CC0

"Corydalis solida" by Alexandre Bernier. CC BY-NC 2.0

"Anemone nemorosa" by Nina Laakso. CC BY 2.0.

"Galium odoratum s11" by Stefan Ieflnaer. CC BY-SA 3.0.

"Tiarella cordifolia" by Bibliothèque de l'Université Laval. CC BY-SA 4.0.

PERENNIALS

Current messy, rather unstructured *Corylus avellana*

Already present *Corylus avellana* get coppiced to create a well-structured multi-stemmed base, new ones are planted + perennials

They will continue to grow into this semi-open low brushwoodland, with coppiced cycles to continue reinforcing the bases.

Figure 6.15 Expected development of the room over the years.

Soil preparation

The current soil and mulch layer already provide a good foundation for the planting, so only light soil preparation is required, similar to the other rooms. After planting and during establishment, local additions may be needed to ensure coverage across any disturbed areas and help the plants establish. As they grow and begin to form a dense ground layer, the need to add additional mulch will gradually fade, with the natural leaving taking over again to nourish and protect the soil.

Establishment measures

- *Watering:* consistent watering in the first few years of establishment is necessary to help young plants root deeply. Especially when it is dry they need to be watered extra.
- *Planting time:* the planting is best done in autumn or early spring, when moisture levels are higher and the temperatures are expected to be milder.
- *Planting strategy:* planting happens in a 1x1m module, which can be rotated for variation, supporting a naturalistic layout. The more ornamental species *Bergenia* and *Hosta* are used as solitaires to add islands of texture without being overwhelming amongst the modules. They help create the room 'feeling', and guide the vision, helping punctuate the space and welcome visitors into the garden.
- *Regeneration management:* this room solely focuses on having *Corylus avellana* as the main tree in a coppiced way. So, this means if tree regeneration from other species shows up, the preference goes to removing them to keep the image of the room in the long run.
- *Light management:* light levels need to be monitored in the early years, if hazels begin to regrow too densely, the growth of perennials and spring ephemerals might be influenced. When it weakens, it might be a good time to coppice the trees again.

Maintenance measures

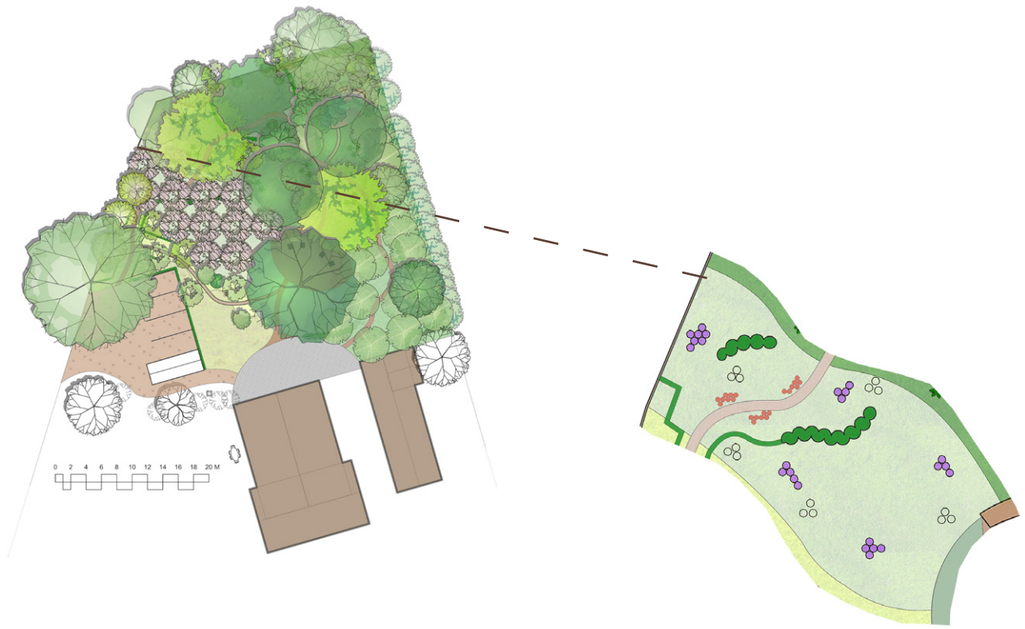
- *Monitoring and observation:* it is important to look for shifts in the balance between plants, especially for signs of dominance or decline. A decline in the spring ephemerals can indicate too much shade, which can be a sign that it is time to coppice again.
- *Light management:* as hazels regrow, it is important that they do not out shade the perennial plants. When necessary, the coppicing rotation timing can be adjusted to open up.
- *Mulching:* the existing mulch layer is good, but keeping an even layer with some additional compost is especially needed in the beginning when the hazel will start their coppice rotation and will thus not provide a lot of natural leafing mulch.
- *Seasonal maintenance:* the bigger solitary perennials can be cut back once a year before new growth appears, preferably in late winter. The planting can be tidied up to make it look nicer, but it is not necessary. Leaving the foliage over winter supports insect life and improves the soil.
- *Weeding:* manual weeding is essential in the first few years, until the perennials will cover the ground. Then only focus on removing persistent or invasive weeds.
- *Plant dynamics and early editing:* the self-seeding species like *Viola* and *Corydalis solida* will reappear dynamically. Allow for this natural drift, but in case they start to crowd too much it is important to thin them out.
- *Invasiveness monitoring:* monitor the spreading species every year to prevent them from dominating the space.

6.4.4 Bright woodland

Main tree species: *Prunus cerasifera*

Reference to concept: focus on transition from natives to more ornamental and edible. Organic green thread.

Aim: this room honours the to-be-removed *Prunus cerasifera* trees that have defined the character of the woodland space in this garden through the years. It bridges the woodland atmosphere in the North with a more ornamental expression, referencing towards the site's historical role as a fruit garden for the old school. A sense of lightness and openness because of the use of only *Prunus cerasifera*, with its delicate and airy foliage which contrasts with the denser and darker woodland nearby. The planting below the canopy is more dynamic and flower-rich, with a mix of native and non-native species indicating the transitional nature of this space.



Planting design: modules with some drifts and bigger anchor perennial plants are taken out of the modules and designed separately in the planting plan.

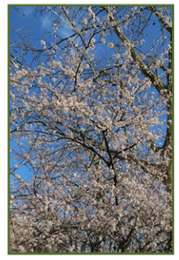
Colour palette: blending soft whites, cool blues, pinks and purples with fresh greens.

Needed for success: this area might need a bit more maintenance than the woodland rooms, mainly because of the *Prunus cerasifera*. The perennial layer is designed to be as self-sustaining as possible, requiring only some guidance or a general tidy-up in spring. To lessen the long-term maintenance of *Prunus cerasifera*, which is mainly caused by pruning needs, it helps to select trees that are already a bit taller and have a more open branching structure, with some preferably having multiple stems emerging from the base. These are easier to shape into the aimed at high and airy canopy, while also decreasing the need for heavy intervention in the later years.

Solitaires and drifts: The organized shaped *Taxus baccata 'Renkes Kleiner Gruner'* transitions into *Taxus Baccata 'Summergold'*. The organized green thread moves into the organic green through going from rigid structures towards curved, more natural shapes, that also guide the movement and views. *Veronicastrum virginicum 'Album'* will give some vertical accents as a solitaire, especially when flowering, while still being light and airy. Planted in small groups, in partial sun areas to break the visual repetition from the module and draw the eye more upwards. Helps creating an inner room by planting them more towards the edges. *Geranium sylvaticum 'Album'* is used in soft drifts to bright the shadier spots and connect the modules visually. *Fragaria vesca* is used as a groundcover and is edible, planted as drifts to offer some soft foliage texture and a wild edible layer under the more architectural perennials. Used deliberately next to the paths for easy accessibility.

TREES

"Prunus cerasifera var. pissardii" by Fernando Losada Rodriguez. CC BY-SA 4.0



"20160224Prunus cerasifera01" by Unknown. CC0.

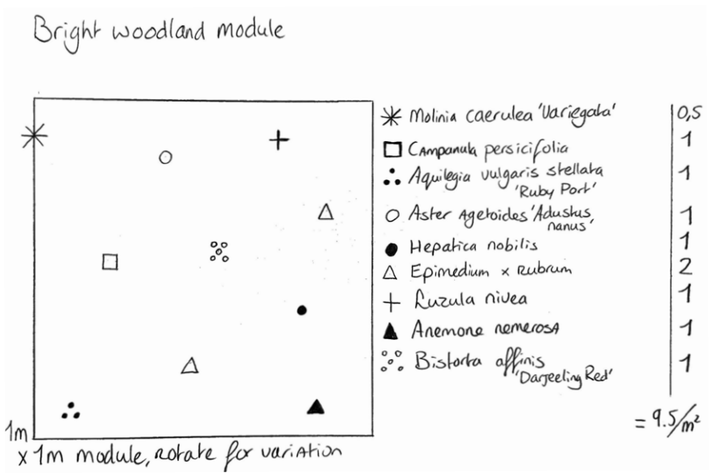
"Prunus cerasifera LC0385" by Jörg Hempel. CC BY-SA 3.0 DE.

"Kirschpflaume (Prunus cerasifera)" by Maja Dumat. CC BY 2.0

Prunus cerasifera (Cherry plum)

Perennial planting

The perennials for the bright woodland room are composed to respond to the generous but yet filtered light from the canopies of the *Prunus cerasifera*. This room is supposed to feel airy and light, and the perennials help convey this feeling. Since it is a transition zone, the woodland character meets openness, resulting in a perennial planting that is light in mood but also rich in texture, while still being grounded in seasonal rhythm. The module combines bell-shapes that are loosely mounding and arching, like *Aquilegia vulgaris 'Ruby Port'* and *Campanula persicifolia* withwoodland companions like E*pimedium rubrum, Hepatica nobilis*, and *Anemone nemerosa* that offer subtle textures and seasonal interest in the lower layers. The grasses help set the mood in this module. *Molinia caerulea 'Variegata'* adds some lightness and height, with fine and upright foliage that adds to the airy atmosphere of the room. In contrast, *Luzula nivea* will add some softness and bloom with its airy flowerheads and narrow leaves. The spring-flowering bulbs will appear first, showing up and marking the start of the season. As the earlier flowering species fade, A*ster ageratoides 'Adustus nanus'* and *Bistorta affinis 'Darjeeling Red'* will offer a flowering display further throughout the season, adding a bit more ornamental value to help in the transition between woodland and cultivated heart as well.



"Campanula persicifolia" by T. MA CC BY-NC 2.0

"Molinia caerulea" by Doderot. CC0 1.0

"Campanula persicifolia" by T. MA CC BY-NC 2.0

Name	Nr.	Type	Height (cm)	Amount/ m2	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Campanula persicifolia	1	Structure	80	1												
Molinia caerulea 'Variegata'	2	Structure/ Groundcover	40-80	0.5												
Veronicastrum virginicum 'Apollo'	3	Structure	120	Sol, see planting												
Aquilegia vulgaris stellata 'Ruby port'	4	Companion/ Weaver	30-70	1												
Aster ageratoides 'Adustus nanus'	5	Companion	20	1												
Geranium sylvaticum 'Album'	6	Companion/ Groundcover	50	Drift, see planting												
Hepatica nobilis	7	Companion	10-15	1												
Epimedium x rubrum	8	Groundcover	20	2												
Fragaria vesca	9	Groundcover	15	Drift, see planting												
Luzula nivea	10	Groundcover	30	1												
Anemone nemorosa	11	Groundcover/ Companion	10-20	1												
Bistorta affinis 'Darjeeling red'	12	Weaver/ Companion	20	1												
Galanthus nivalis	13	Bulb	10-15	5-20												
Hyacinthoides hispanica 'Alba'	14	Bulb	30	5												

Flowering interest Structural interest Leaf interest Semi-evergreen

PERENNIALS

"Dark Columbine" by Harold Stapfle. CC BY-SA-2.5.

"Aster ageratoides" by Kalsotyo. CC BY-SA 3.0

"Geranium" by Meneerke bloem. CC BY-SA 3.0

"Hepatica nobilis" by Noorse. CC BY-SA 3.0.

"Epimedium x rubrum" by Peter coxhead CC BY-SA 3.0

"Fragaria vesca 001" by H. Zell. CC BY-SA 3.0

"Snow-white wood-rush (Luzula nivea)" by Agnieszka Kwiecień, Nova. CC BY-SA 4.0

"Anemone nemorosa" by Nina Laakso. CC BY 2.0.

"Bistorta affinis" by Ah53120. CC BY-SA 4.0

BULBS

"Galanthus nivalis (sneeuwklokje)" by Dominicus Johannes Bergsma. CC BY-SA 3.0

"Hyacinthoides hispanica 'Alba' " by Krzysztof Ziarnek, Kenraiz. CC BY-SA 4.0.

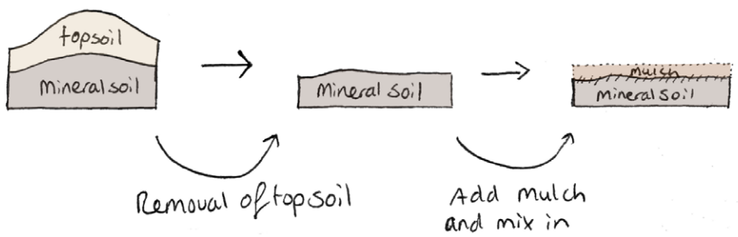


Figure 6.16 Soil preperation with the hill removal

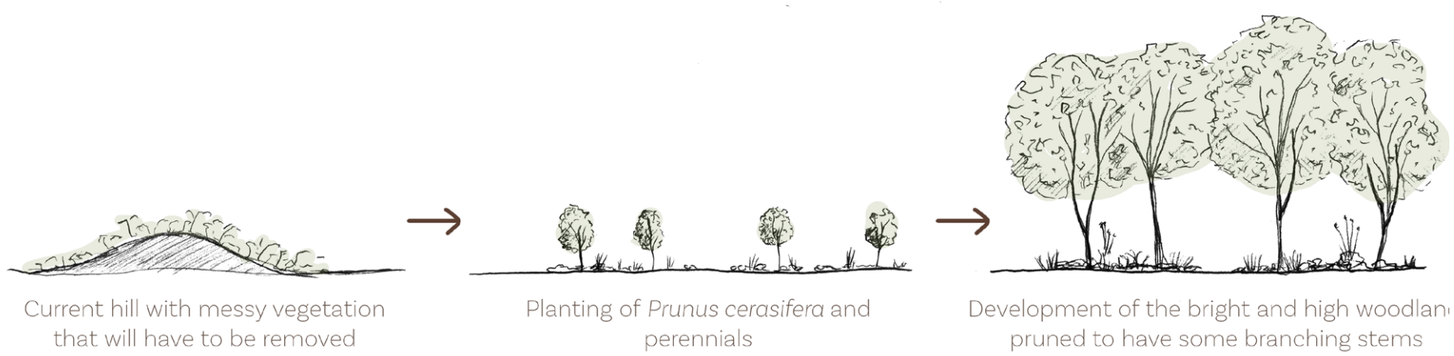


Figure 6.17 Expected development of the room over the years

Soil preparation

The loamy to loamy clay soil with leaf mulch already present provides a good base for this woodland planting. Only on the area where the hill is removed, additional mulch and compost will need to be added so that the soil is similar throughout the area and establishment will happen evenly. The removed soil from the hill will not be reused in the woodland garden, since it is relatively poor, but it can be reused in other parts of the garden for landscaping. The underlying mineral soil needs to be loosened to improve structure and drainage, especially if its turns out to be compacted. Then, a layer of compost can be added (around 5-10cm) and mixed lightly into the top 15-20cm. This will help build up organic matter. This preparation will help with healthy root establishment.

Establishment measures

- *Watering:* regular watering is needed during the first few years, especially during dry periods to support the root development.
- *Planting time:* plant trees and perennials in early spring or autumn
- *Tree quality choice:* higher quality, multi-stemmed *Prunus cerasifera* costs more, but will offer immediate filtered light and structure, which allows the trees to be planted together with the perennials. Smaller trees will take longer to create shade, which requires phased planting of the shade-loving perennials.
- *Planting strategy:* Trees should be planted approximately 2-3 meters apart to promote vertical growth in the early years. Choosing trees that already show the open, multi-stemmed from reduces the need for pruning and thinning later on. Since the garden is aimed at to be low-maintenance, the larger qualities are used in the planting plan.
- *Regeneration management:* The *Prunus cerasifera* tends to have quite some root-suckers, especially when the tree is stressed. Any suckers that are found should be removed at the base to preserve the intention of the multi-stemmed form and prevent unwanted spread of the tree, to keep the room open, light and airy.

Maintenance measures

- *Monitoring and observation:* regularly observe for gaps, plant dominance or plants that are weak. The perennials planted in drifts such as *Veronicastrum virginicum*, *Geranium sylvaticum*, and *Fragaria vesca* can easily be checked regularly to make sure their role in the composition of the room remains visible and strong, or if it is spreading too much.
- *Mulching*: the existing leaf litter should be preserved as it enriches the soil. Additional mulching might be necessary during the establishment years. After establishment, the leafing from the plants itself should be enough to keep the planting self-sustainable, so no additional mulching should be needed.
- *Seasonal maintenance:* In early spring, dead stems from plants like *Veronicastrum*, *Molinia* and *Campanula* should be cut back to make space for new growth and to prevent the garden from looking too messy. During summer, not much maintenance is required as the planting should be self-sustaining. During late summer and autumn, plants should largely be left standing because they give structure. Tidying up can done if a cleaner look is desired but it is not necessary.
- *Weeding:* early in the establishment phase weeding is needed to keep the competition down and to let the perennials establish successfully. This becomes more relevant if the choice is made to go for smaller quality trees and the perennials are phased gradually. However, when the perennial layer fills in, weed will be suppressed and weeding becomes less needed.
- *Plant dynamics and early editing:* the plants have been chosen to evolve together with layered timing (spring ephemerals fade as summer species rise) to prevent bare gaps. However, occasional early editing might be needed to guide the community towards a long-term balance, such as rebalancing the vigorous spreaders or reinforcing the weaker plants.
- *Invasiveness monitoring:* While most species are compatible, *Fragaria vesca* and *Bistorta affinis* can spread enthusiastically under favourable conditions. These should be monitored and where necessary be thinned to preserve the biodiversity and spatial clarity in the room. *Fragaria vesca* can easily be tracked because it is planted in drifts.

6.4.5 Edge meadow

Main trees: *Malus domestica, Crataegus monogyna and Halesia carolina*

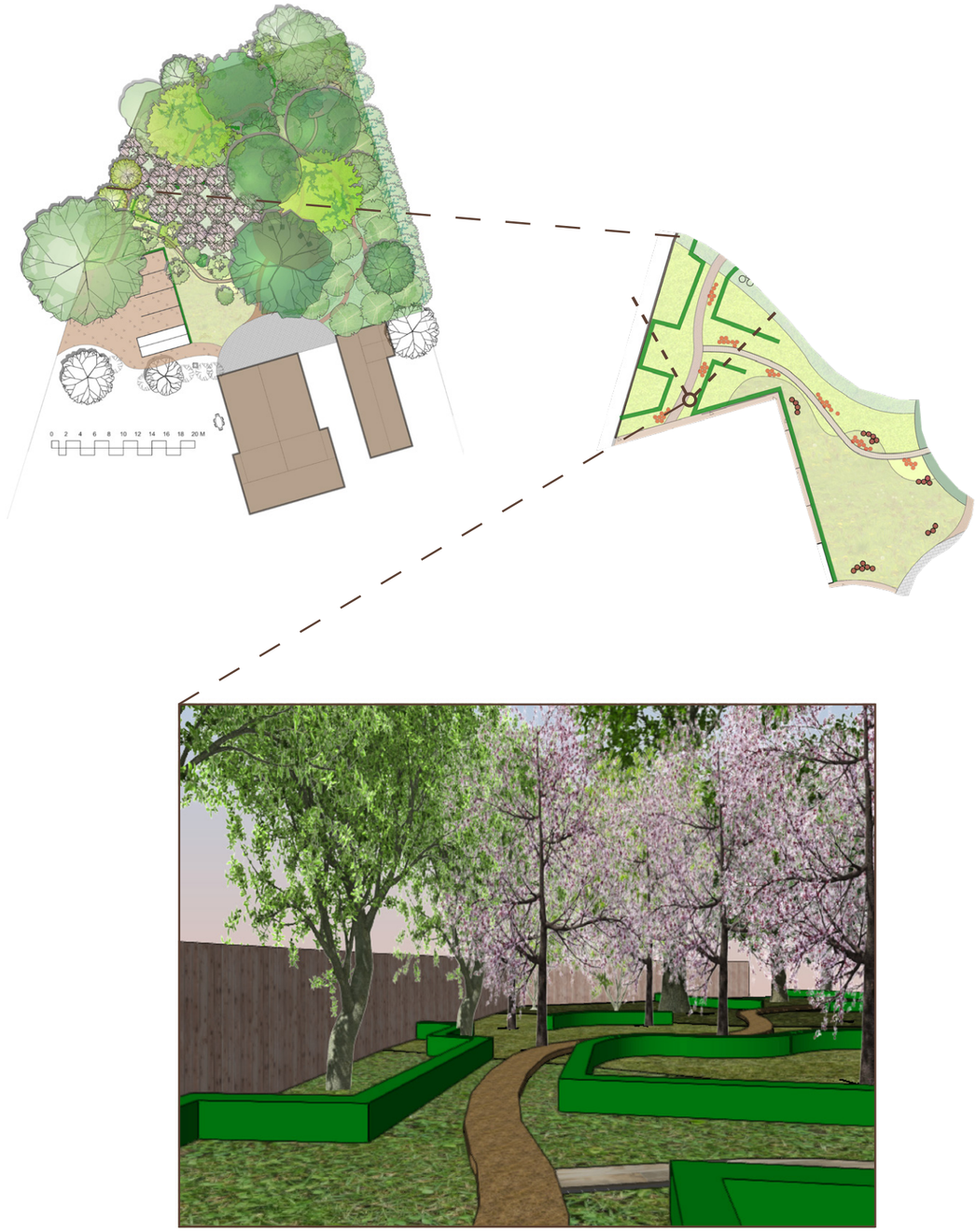
Reference to concept: the cultivated heart of the garden, focus on edible and horticultural meadow. Organized green threat.

Aim: A horticultural meadow that focuses on edible and usable species. It is the cultivation heart of the garden; it is an edge between the open space of the rest of the garden and the denser inner forest. The edge effect is used and applied to enhance biodiversity, productivity and visual interest. Trees with a more open canopy will allow light to filter through to fruiting shrubs, weaving herbs and bold perennials while being arranged in a structure that goes from from tall towards ground-level. The planting combines seasonality and balances soft, spontaneous moments of weavers with structural clarity because of the green thread. It is a space that is productive yet ornamental, planned yet dynamic.

Colour palette: a soft naturalistic colour palette of greens accented with gentle whites and purples, with additional splashes of colour of orange and yellow in the meadow part.

Needed for success: success within this room really depends on maintaining light, structure and ecological balance over time. The planting design relies on thoughtful vertical layering, going from high to low just like a forest edge, from trees and shrubs to perennials, groundcovers, which will not only support the visual rhythm, but will also maximize productivity, particularly in this edge zone where there are more edible species. Shrubs are deliberately spaced to avoid cluttering and to allow the herbaceous layer to shine, in order to create space for movement and seasonal variation. This area is divided into two zones, the 'edge' and the 'meadow'; supporting natural light gradients and allowing different plant communities to thrive under varying conditions, while creating a transition.

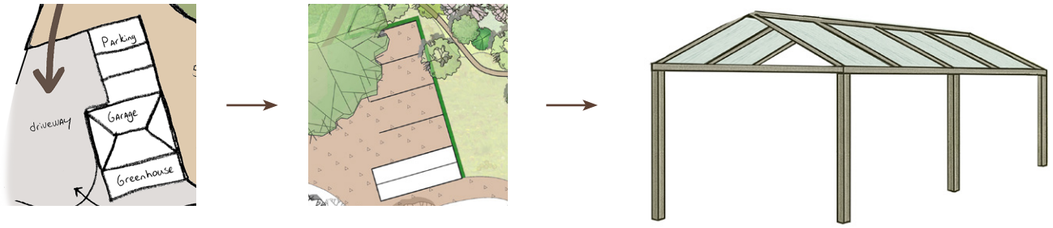
Solitaires and drifts: The organized shaped *Taxus baccata 'Renkes Kleiner Gruner'* provides rigid shapes, according to the green thread concept. These organizes shapes will give a different kind of entrance compared to the hazel walkway, and will guide the visitor into the garden. The *Fragaria vesca* is used as a groundcover in both zones and is edible, planted as drifts to offer some soft foliage texture and a wild edible layer under the more architectural perennials. Used deliberately next to the paths for easy accessibility. *Sanguisorba offinicalis 'Tanna'* is planted in small drifts in the meadow part to give a naturalistic rhythm without overwhelming the diversity of the meadow. The drifts are planted mainly on the edges between the two zones, to soften the transition and add to the flow.



Simple render of the west entrance

From garage to carport

As can be seen in the bubble plan from the concept below in which the parking, garage and greenhouse envisioned by the owner were taken into account, there is a garage planned closed to this room in the garden. A garage in this position would mean light being taken away from the edge and its more sunloving plants. Therefore, I advise the client to either just go with four parking spots, and if a roof overhead is necessary an open carport with a glass/translucent roof will help with the sunlight situation in the garden. The poles of the carport could also be integrated more into the garden through the use of growing climbers as well.



Trees and shrubs

The trees and shrub layer in this room consist out of the three present *Malus domestica* trees, which will have to be pruned to enhance their form since they are old and overgrown a bit. New additions in the room consist out of *Cratageus monogyna* and *Halesia Carolina*, offering seasonal interest and interesting shapes to the garden. *Halesia carolina* will add a particularly special touch because it has delicate, bell-shaped white flowers followed by seedpods. *Amelanchier alnifolia* and *Aronia x prunifolia* are also introduced through one or two placements. These tree and shrub species are naturally a bit more crowded, but can be shaped into more elegant multi-stemmed trees with an open habit, allowing light to filter through for the layered perennial planting underneath. All these species contribute to the edible cultivated heart of the garden, since they offer fruit and berries. They are positioned loosely in the two zones, from high to low, to create a gentle transition edge, making full use of the edge potential.

TREES

"An apple tree in a field with many apples" by Pixabay. CC0 1.0

Malus domestica (Apple)

"Tree with red apples in Barkedal 4" by W.carter. CC0 1.0

"Malus domestica flowers" by Ivon.grzanka. CC BY-SA 3.0

"A group of apples hanging from a tree branch" by Pixabay. CC0 1.0

"Crataegus monogyna 12" by Hladac. CC BY-SA 4.0

Crataegus monogyna (Hawthorn)

"A close up of a plant with green leaves. Crataegus monogyna" by Pixabay. CC0 1.0

"Crataegus monogyna" by Ferran Turmo Gort. CC BY-NC-SA 2.0

"Fall foliage of Crataegus monogyna" by Famartin. CC BY-SA 3.0

"Halesia carolina, habitus" by JMK. CC BY-SA 3.0

"Halesia carolina fruits" by Meneerke bloem. CC BY-SA 3.0

"Halesia carolina 24zz" by David Stang. CC BY-SA 4.0

"Halesia carolina0" by Kurt Stüber. CC BY-SA 3.0

Halesia carolina (Carolina silverbell)

SHRUBS

"Amelanchier alnifolia" by Matt Lavin. CC BY-SA 2.0

Amelanchier alnifolia
(Saskatoon berry)

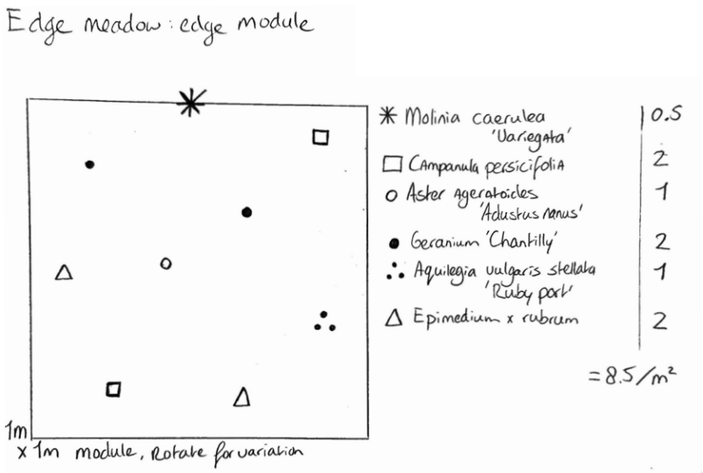
"Aronia prunifolia" by Michael Jeltsch. CC BY-SA 4.0

Aronia x prunifolia
(Purple chokeberry)

Perennial planting - Edge section

The perennial planting is divided into two distinct mixes that complement each other: the edge and the meadow. Both are designed using a 1x1, module, with select species used more freely in drifts.

The edge mix (M1) is tailored to the slightly shadier conditions and is located below the trees and shrubs, and contains many species that are also used in the neighbouring room, the Bright woodland, to create a uniform transition between two rooms and let them weave together. The structured species *Molinia caerulea 'Variegata'* and Campanula persicifolia are a more upright and combined with finer textures from *Aster ageratoides* and *Geranium 'Chantilly'*.



"Campanula persicifolia" by T. MA CC BY-NC 2.0

"Molinia caerulea" by Daderot. CC0 1.0

PERENNIALS - M1

"Aster ageratoides" by Keisotyo. CC BY-SA 3.0

"Geranium renardii flowers" by Averater. CC BY-SA 3.0

"Dark Columbine" by Harald Süpfle. CC BY-SA-2.5.

"Epimedium x rubrum" by Peter coxhead CC BY-SA 3.0

"Fragaria vesca 001" by H. Zell. CC BY-SA 3.0

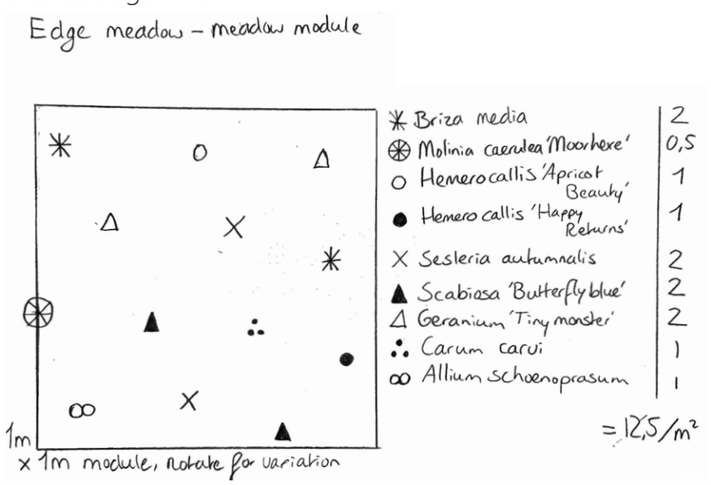
Name	Nr.	Type	Height (cm)	Amount/ m2	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Campanula persicifolia	1	Structure	80	1												
Molinia caerulea 'Variegata'	2	Structure/ Groundcover	40-80	0.5												
Aster ageratoides 'Adustus nanus'	3	Companion	20	Sol, see planting												
Geranium renardii 'Chantilly'	4	Companion	40	1												
Aquilegia vulgaris stellata 'Ruby port'	5	Companion/ Weaver	30-70	1												
Epimedium x rubrum	6	Groundcover	20	Drift, see planting												
Fragaria vesca	7	Groundcover	15	1												

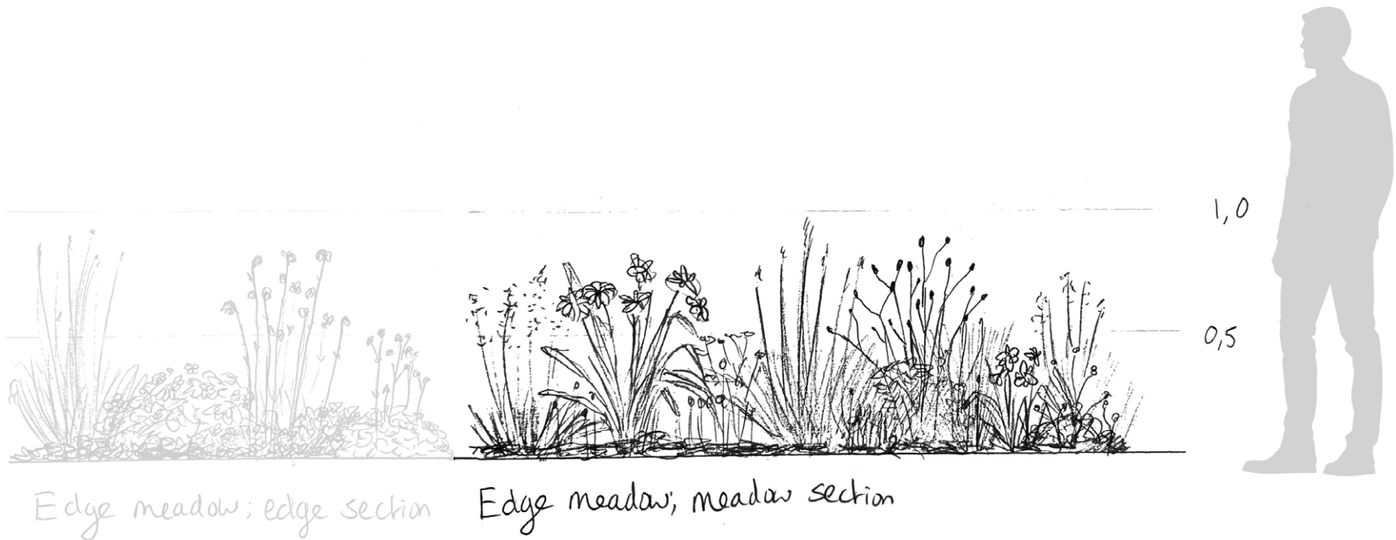
Flowering interest Structural interest Leaf interest Semi-evergreen

Perennial planting - Meadow section

The perennial planting is divided into two distinct yet mixes that complement each other: the edge and the meadow. Both are designed using a 1x1, module, with select species used more freely in drifts.

In contrast, the meadow mix (M2) is adapted to more sunnier and open conditions. It includes a looser and grassier structure with grass species like *Briza media*, *Molinia caerulea 'Moorhexe'* and *Sesleria autumnalis*, that are complemented by flowering perennials such as *Hemerocallis* and *Scabiosa 'Butterfly blue'*. Together with the weaver species, this mix will bring some seasonal dynamics with airy textures and a soft, flowing character that contrasts the more defined edge mix.





Name	Nr.	Type	Height (cm)	Amount/ m2	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Briza media	1	Structure	20	2												
Molinia caerulea 'Moorhexe'	2	Structure	30-75	0.5												
Hemerocallis 'Apricot beauty'	3	Companion	80	1												
Hemerocallis 'Happy returns'	4	Companion	30-40	1												
Sanguisorba officinalis 'Tanna'	5	Companion	30-80	Drifts, see planting												
Allium schoenoprasum	6	Weaver	25	1												
Carum carvi	7	Weaver	50	1												
Scabiosa 'Butterfly blue;	8	Weaver	30-40	2												
Sesleria autumnalis	9	Groundcover	30-50	2												
Geranium 'Tiny monster'	10	Groundcover	20	2												
Fragaria vesca	11	Groundcover	15	Drifts, see planting												

Flowering interest Structural interest Leaf interest Semi-evergreen

PERENNIALS - M2

"Zittergras Briza media" by Hajotthu CC BY-SA 3.0

"Molinia caerulea 2zz" by David Stang. CC BY-SA 4.0

"Apricot Beauty" by Paul Paradis. CC BY-SA 3.0

"Hemerocallis Happy Returns 7zz" by David Stang. CC BY-SA 4.0

"Sanguisorba officinalis 'Tanna'" by Jacki-dee CC BY-NC-ND 2.0

"Allium schoenoprasum in NH 01" by Captain-tucker CC BY-SA 3.0

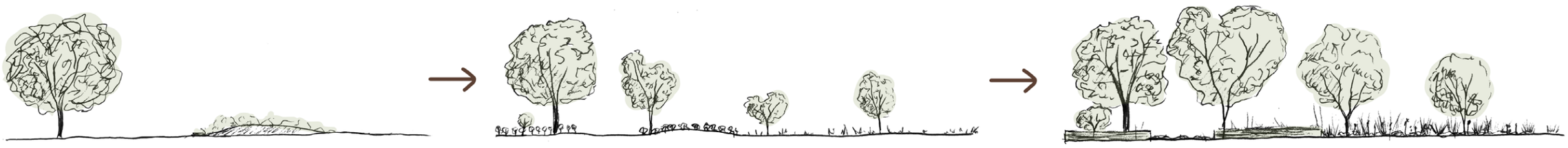
"Carum carvi" by H. Zell. CC BY-SA 3.0

"Scabiosa columbaria Butterfly Blue" by David Stang. CC BY-SA 4.0

"Sesleria autumnalis" by Krzysztof Ziarnek, Kenraiz. CC BY-SA 4.0

"Geranium 'Tiny Monster'" by David Stang. CC BY-SA 4.0

"Fragaria vesca 001" by H. Zell. CC BY-SA 3.0



Removal of part of the hill that is present in this area + pruning of the messy apple trees

Planting of new trees and shrubs, hedge, perennials and meadow plants

Trimmed hedge and development of the edge meadow room with its two sides of 'Edge' and 'Meadow'

Figure 6.18 Expected development of the room over the years.

Soil preperation

Just like all the other rooms, this room's soil already has a strong foundation for the planting. The soil just needs to be loosened and weeds need to be removed. However, the two zones do have separate needs that need to be adressed. For the edge zone, the existing mulch layer is already quite sufficient, but after planting and during establishment it will need some additional compost. However, as the perennials grow the need will fade. For the meadow zone, less intervention is needed. The existing mulch will be cleared only when needed, and no extra additions to the planting areas. This will support the self-seeding nature of plants and encourage dynamic movement. Too fertile conditions will also reduce the plant diversity in this meadow part, since most plants are adapted to moderate to low nutrient conditions. When there is too much compost or mulch a few will start to dominate and the balance in the planting will be reduced.

Establishment measures

Edge mix (M1)

- *Watering:* regular watering is needed in the first growing seasons, especially when it is dry, to support the establishment below the trees.
- *Planting time:* it is best to plant in early spring or autumn to take advantage of the milder temperatures and higher soil moisture.
- *Planting strategy:* the use of 1x1m modules that can be rotated for variety, with drifts of *Fragaria vesca* along the paths.

Meadow mix (M2)

- *Watering:* watering during the establishment phase in dry periods, especially when it is dry. Might be needed more here compared to other parts of the garden since its open and more sunny.
- *Planting time:* early spring or autumn because of the milder temperatures and higher soil moisture.
- *Planting strategy:* no compost of mulch is added to the 1x1m modules that are rotated for variation. Drifts of *Fragaria vesca* along the paths and loose curved drifts of *Sanguisorba officinalis* '*Tanna*'.
- *Regeneration management:* trees and shrubs are kept to the side of this planting area to maintaint the light conditions that these perennials need. Occassional light pruning might be needed if the woody trees and shrubs start to cast too much shade or spread into the meadow with their regeneration.

Maintenance measures

Edge mix

- *Mulching:* maintain a light mulch layer around perennials aftert planting to suppress weeds and conserve moisture
- *Seasonal maintenance:* in the spring there should be a cut-back of dead material. During late summer or autumn, tidying up can done if a cleaner look is desired but it is not necessary.
- *Weeding:* mainly needed in the establishment years, after they start to grow dense weeding should focus on managing unwanted species in the garden
- *Plant dynamics and early editing:* plants are not expected to spread much, the most vigorous is Fragaria vesca, which is planted in drifts and therefore easy to keep track of when it gets out of hand.

Meadow mix

- *Mulching:* avoid mulching in this area to support self-seeding. Mulching can be used along the drifts to help establish those perennials.
- *Seasonal maintenance:* annual late-winter or early spring cut back of the plant growth. The stems can be left standing through winter, mainly because they give some structrue and habitat. Some cut-back material can be left to encourage regeneration and soil life, but it should not smother the planting
- *Weeding:* Initial weeding is needed until the plants cover the ground. In the long run, only unwanted species need to be weeded.
- *Plant dynamics and early editing:* since most plants will stay within their clumps, self-seeding of the weavers is encouraged in this area, however if one species starts to dominate it will help to remove seedheads.

6.4.6 Below the Beech

Main tree: *Fagus sylvatica (f. purpurea)*

Aim: A social place within the garden with seating, both for the owner and the guests.

Feeling of the room: secluded feeling below the tree canopy of the copper *Fagus sylvatica*, which creates a nice and shaded area in the summer, but also a dedicated spot for sunlight in the winter. A natural feeling, a place to rest. Naturalistic feeling of the seating area, a cozy place.

Challenge: The beech provides deep shade, and the shallow spreading roots compete for water and nutrients. The beech leaves also take a long time to decompose and can create a thick layer of leaf litter, making the soil slightly acidic and slow the breakdown of organic matter. Therefore, it makes it challenging for many plants to thrive underneath them.

Design: The idea for this room is to make use of the brittle wood fences that are already present, and give a separation from the rest of the garden. This area will have a permanent floor of woodchips, still allowing water to penetrate to the beech tree, but creating a separate space for the cozy seating area. The rest of the space below the tree, besides the paths, is to be left open and to be 'colonized' by plants from the neighbouring rooms on its own. Because of the rougher conditions below the beech tree, only plants that are able to grow below will find its way over here. Therefore, it is possible that into the future the seating area will become more enclosed. The *Taxus baccata 'Summergold'* from the Hazel Walkway creates a little physical separation from the house, but not really a visual one. This is to preserve the sightlines to the south and allow for the sun to come into the room beautifully during the winter.

TREES

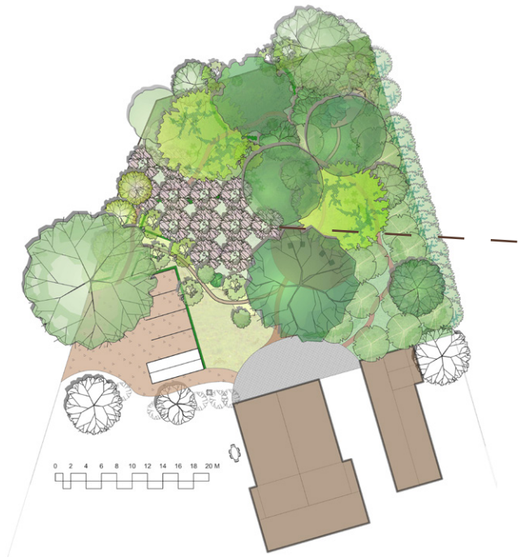
"Ancient Copper beech (Fagus sylvatica f purpurea)" by Evelyn Simak. CC BY-SA 2.0

"Backlit beech leaves." by Bernard Spragg. PDM 1.0

"Copper beech tree on site" by Author.

"Fagus sylvatica purpurea flowers 01" by Liné1. CC BY-SA 3.0

Fagus sylvatica (f. purpurea) (Copper beech)



1 Simple render of the 'Below the beech' seating area
Scale: 1:200

2 Simple render of the view on the house from the seating area
Scale: 1:200

6.5 Materiality and phasing

6.5.1 Materiality

The materials that are going to be used in the garden are simple and natural on purpose, to align with the woodland character of the design. Each surface has been chosen based on its function and integration with the planting, as well as the experience of moving through the garden.

The main path consists out of woodchips and is 60cm wide, and is the main route through the garden. The woodchips provide a soft and permeable surface that feels natural and blends with the woodland character. The narrow width emphasizes the intimacy of the garden and also encourages for a slower pace of movement, which can help the immersion in the relatively small woodland garden. The mossy planks on the site could be used to frame the woodchips on the sides as well.

The secondary pathway is made out of narrow wooden planks laid with space between them so plants can weave their way through. This path is meant to be more rustic and informal. It not only gives a faster access, yet a bit more informal route to the seating area deeper in the garden, but also gives access to the edible trees and shrubs in the edge meadow room without disrupting the ground layer. The width of 40cm makes it wide enough to walk comfortably, narrow enough to be discreet. The mossy planks already present on the site could be used for this.

The seating areas are surfaced with a mix of bark dust and soil (50/50) to form a natural 'paving' that supports informal gatherings while staying true to the woodland setting. Blending the two provides a firmer and more egal surface compared to woodchips or pure bark dust, which is good for garden furniture. Over time, it will settle and partially integrate with the surrounding planting, reducing the visual boundary between the harder and softer scapes.

The driveway uses gravel to allow drainage and echo the informal yet natural materiality throughout the garden. It provides stable yet permeable surface that is suitable for vehicles. The gravel from the current driveway can be re-used for this new location of the driveway.

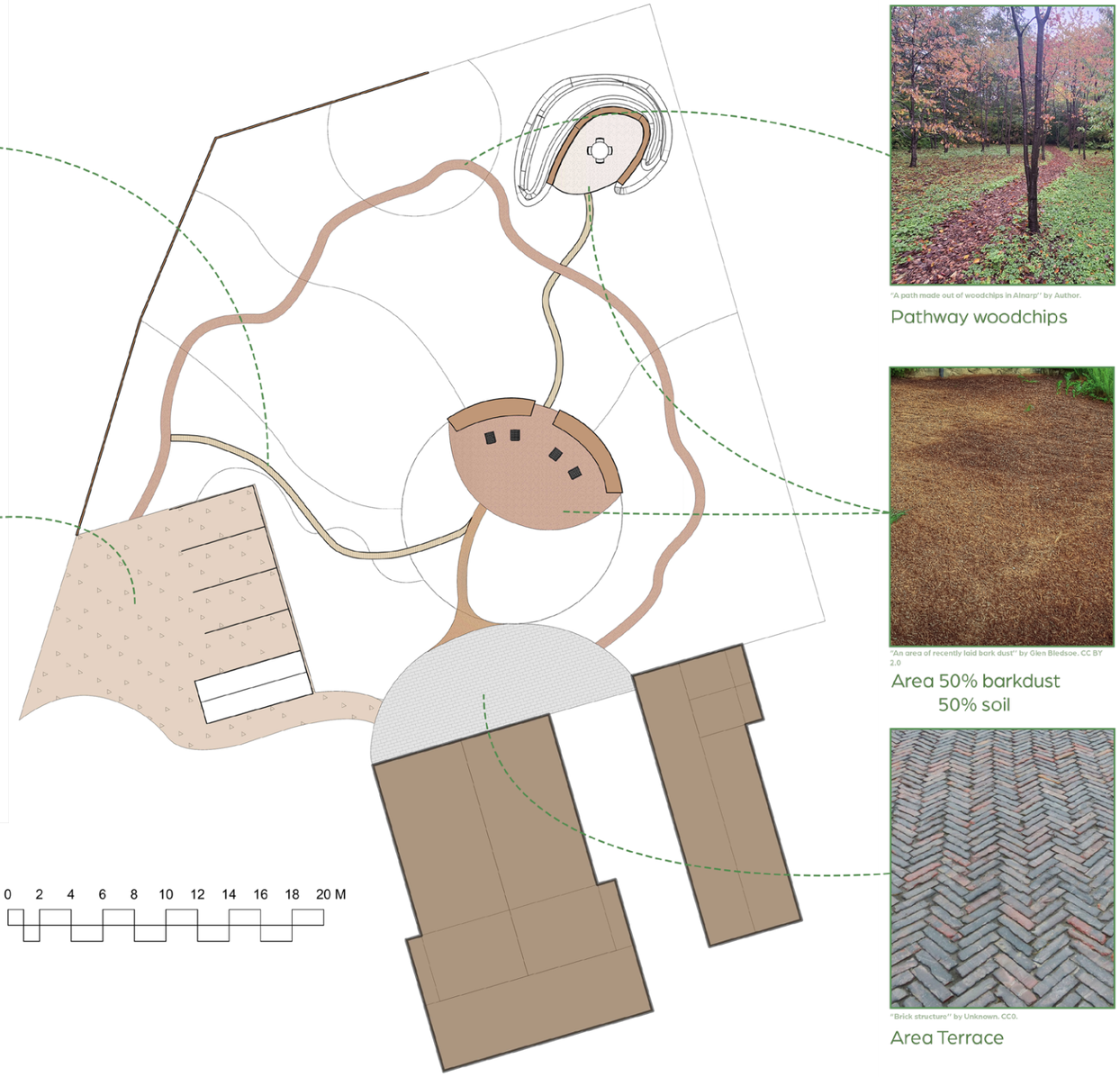
The terrace closes to the house is paved with grey bricks, forming a clear and clean transition between the architecture of the buildings and the garden, that is already present between the two buildings at the moment.

"A path made out of wooden planks in the grass" by Pixabay CC0 1.0

Pathway planks

"A gravel driveway to an old farmhouse" by Famartin. CC BY-SA 4.0

Area gravel (driveway)



"A path made out of woodchips in Alnarp" by Author.

Pathway woodchips

"An area of recently laid bark dust" by Glen Bledsoe. CC BY 2.0

Area 50% barkdust
50% soil

"Brick structure" by Unknown. CC0.

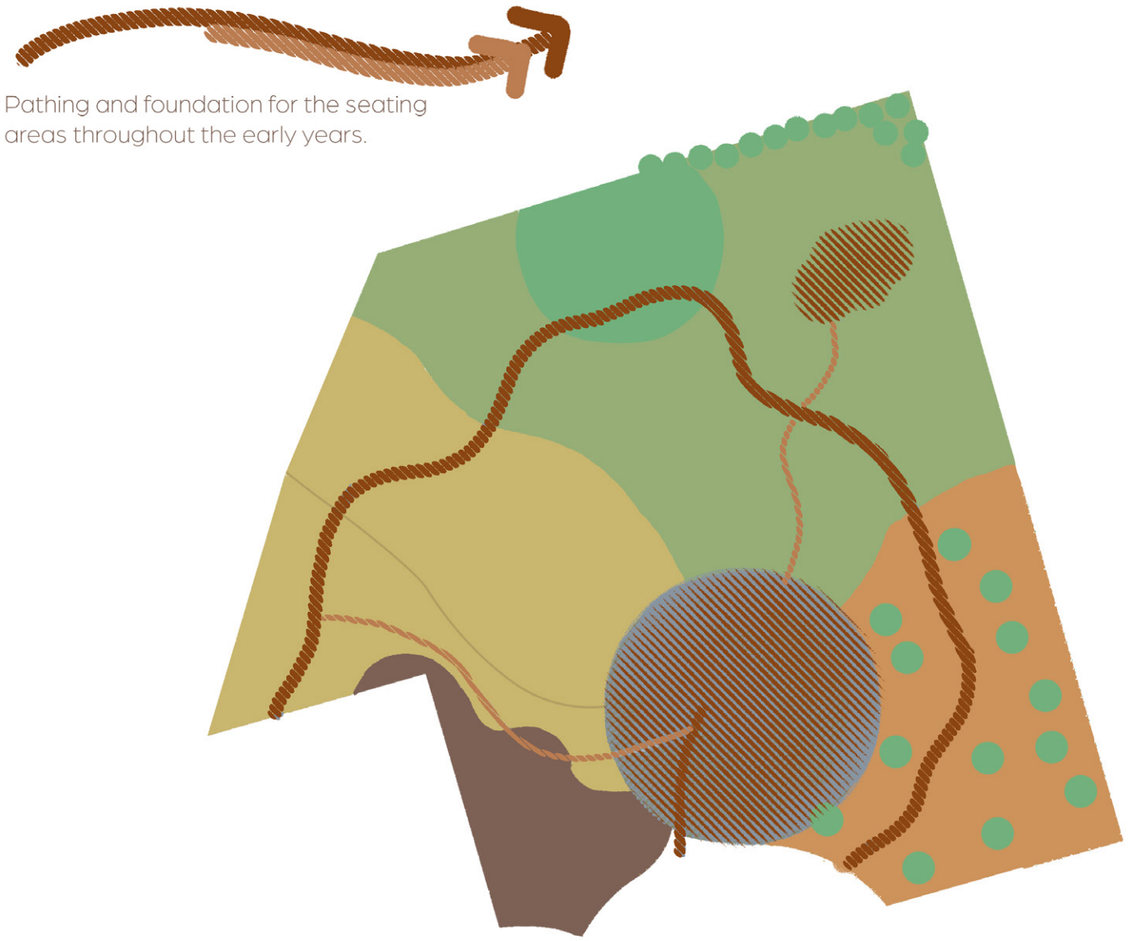
Area Terrace

Materiality	**Area**
Pathway woodchips	51m²
Pathway planks	12m² (x50% = 6m² planks needed)
Area 50%/50%	85m² + 20m² = 105m²(/2 =52.5m² barkdust)
Area gravel (driveway)	193m²
Area terrace	85m²

6.5.2 Phasing and timeline

The garden can be developed in phases, that roughly move from north to south to make use of the sun's path and the edge effect during establishment, ensuring that newly planted species will receive the best light conditions as they root and develop. The different planting modules and rooms give the establishment flexibility, since the rooms can be implemented gradually or, if preferred and practical, established all at once to streamline the maintenance. Placing all the rooms at once would support a more even establishment and simpler long-term care. However, a phasing of the design room by room at a time would spread out the need for intensive maintenance tasks in the beginning years of each room allowing similar activities to concentrate in a single area for a few years before shifting to the next. This proposed timeline is intended as a flexible framework. Depending on the client's wishes and available budget, the actual phasing can be made either longer or shorter, adapted to suit priorities.

The proposed timeline covers roughly 10 years to establish the whole garden, beginning with the dark and high woodland in the 2025-2026 season. This step also includes the coppicing of hazels in another room to restart their rotation and start shaping their regrowth. At the same time, planting *Taxus baccata* in this phase in the northern part of the many-layered woodland is recommended, so the evergreen structure that will give privacy can begin developing early. Each garden room would have an establishment phase of roughly 3 years, with maintenance requirements decreasing over time. During the early years it is also recommended to implement the paths and the foundations for seating areas. By completing these structural elements early on, it will provide clear access during ongoing work. The many-layered woodland is expected to be the most expensive, so a choice could also be made to phase this up in even smaller portions from north to south to budget. When following this phased approach, the rooms are established at intervals. Which results in a proposed timeline in which the garden is expected to transition to a low-maintenance phase from 2036 on forward, that is supported by the management measures laid out for each room in the previous chapters. Meanwhile, room 6 is expected to evolve more naturally over time besides the seating area as neighbouring species begin to spread into the area.



Pathing and foundation for the seating areas throughout the early years.

Room	2025/2026	2026/2027	2027/2028	2028/2029	2029/2030	2030/2031	2031/2032	2032/2033	2033/2034	2034/2035	2035/2036	2036 and on
Dark and high woodland	Establishment phase	Establishment phase	Establishment phase	Maintenance	Maintenance	Maintenance	Maintenance	Maintenance	Maintenance	Maintenance	Maintenance	Maintenance
Many-layered woodland			Establishment phase	Establishment phase	Establishment phase	Maintenance	Maintenance	Maintenance	Maintenance	Maintenance	Maintenance	Maintenance
Bright woodland + edge part of edge meadow					Establishment phase	Establishment phase	Establishment phase	Maintenance	Maintenance	Maintenance	Maintenance	Maintenance
Hazel walkway							Establishment phase	Establishment phase	Establishment phase	Maintenance	Maintenance	Maintenance
Edge meadow									Establishment phase	Establishment phase	Establishment phase	Maintenance

6.6 Planting list

6.6.1 Trees

Different tree qualities have been chosen to mimic the natural forest dynamics in the many-layered woodland and bright woodland. For the bright woodland both single-stems and multiple stems are chosen for visual variety. Overall, smaller qualities have been chosen to adhere to a smaller budget. The pros of smaller qualities are also that there is less change of transplant shock, and too big of the qualities could also visually dominate the young perennials too much. However, the client can also choose to go for bigger qualities to get a more established feeling of the woodland from the start.

Name	Quality	Amount
Acer platanoides	Reuse seedling from site	1
Amelanchier alnifolia	Flst, 2x, C3, 60-80	2
Aronia x prunifolia	Flst, 2x, C2, 40-60	2
Corylus avellana	Flst, 2x, C2/C3, 60-80	7
Crataegus monogyna	Flst, 2x, C2, 40-60	2
Halesia carolina	Flst, 2x, C5, 125-150	3
Prunus cerasifera	Flst, 2x, C5, 125-150 AND Hst, 2x, C5-7.5 stamhöjd 120–150 cm, totalhöjd 150–175 cm	8 AND 4
Quercus robur	Hst, 2x, C7.5, 175-200 AND Hst, 2x, C5, 125-150	1 AND 1
Tilia cordata	Hst, 2x, C7.5-C10, 175-200 AND Hst, 2x, C5-C7.5, 150-175	1 AND 1

6.6.2 Shrubs

The different shrubs mainly contain the different varieties of *Taxus* that are part of the Green thread concept. Since the different varieties will be shaped either organized or organically into hedges, they are to be planted per meter. 'RENKE'S KLEINER GRÜNER®' is the smallest, and will have multiple plants/m to create a well grown hedge. Here you could also go for 5/m to get a fast establishment of the organized hedge, but it would also be more expensive.

Name	Quality	Amount
Ribes alpinum	2x, C2, 30-50	3
Taxus baccata	Flst, 2x, K, 60-80	14
Taxus baccata 'Repandens'	Flst, 2x, C2, 30-40	1/m = 19 in total
Taxus baccata RENKE'S KLEINER GRÜNER®	2X, C2, 25-30	4/m = 240 in total
Taxus baccata 'Summergold'	Flst, 2x, C3, 40-60	1/0.9m = 42 in total

6.6.3 Bulbs

Galanthus nivalis is used across 598 m^2 of the total woodland area (The bright woodland and many-layered woodland). Within this area, they will be planted with different densities. A density of 20/m^2 for a total area of 100 m^2 will give key drifts in the area, a density of 10/m^2 in 200 m^2 will give the feeling of some light naturalizing areas of the bulb and the remaining area will be planted with 5/m^2. *Hyacinthoides hispanica 'Alba'* is to be planted at a density of 5m^2 in the bright woodland to create small, subtle sparks of interest. The use of only two bulbs, of which the majority is *Galanthus nivalis*, has been chosen to create a sense of unity across the whole planting. In that way it is rather similar to the use of *Taxus baccata*.

Name	Quality	Amount	Area
Galanthus nivalis	5/6	5490 (2000+2000+1490)	598 (100 m^2 + 200 m^2 + 298 m^2)
Hyacinthoides hispanica 'Alba'	8/+	945	189 m^2

Room	Planting area
Room 1 Dark and high	75 m^2
Room 2 Many-layered	409 m^2
Room 3 Hazel walkway	213 m^2
Room 4 Bright woodland	189 m^2
Room 5 Edge meadow	Edge section 98 m^2 Meadow section 86 m^2

6.6.4 Perennials

The perennials all have rather similar sizes to ensure a uniform establishment and equal competition. The use of P9/P11 size is also in general less expensive, which makes it more affordable to plant it in bulk. The few plants that are C1/C2 size are some of the bigger plants used in the design, and can give some subtle visual anchor points in the beginning.

Room	Planting area
Room 1 Dark and high	75 m^2
Room 2 Many-layered	409 m^2
Room 3 Hazel walkway	213 m^2
Room 4 Bright woodland	189 m^2
Room 5 Edge meadow	Edge section 98 m^2 Meadow section 86 m^2

Name	Quality	Room	Amount
Actaea racemosa	C1/C2	2	15
Actaea spicata	P9	2	205
Allium schoenoprasum	P9	5	86
Anemone nemorosa	P9	1, 2, 3, 4	886
Aquilegia vulgaris stellata 'Ruby port'	P9	4, 5	287
Asarum europeaum	P9	2	818
Aster ageratoides 'Adustus nanus'	P9	4, 5	287
Athyrium filix-femina	C1/C2	1	19
Bergenia cordifolia	P11	3	15
Bergenia cordifolia 'Vinterglöd'	P11	3	12
Bistorta affinis 'Darjeeling red'	P9	4	189
Briza media	P9	5	172
Brunnera macrophylla	P9	3	213
Campanula persicifolia	P9	3, 4, 5	811
Carum carvi	P9	5	86
Corydalis cava	P9	2	818
Corydalis solida	P9	3	213
Dryopteris filix-mas	P11	1, 2	45
Epimedium grandiflorum 'Lilafee'	P9	3	426
Epimedium x rubrum	P9	4, 5	574
Fragaria vesca	P9	4, 5	77
Galium odoratum	P9	2, 3	622
Geranium renardii 'Chantilly'	P9	5	196
Geranium sylvaticum 'Album'	P9	2, 4	434
Geranium 'Tiny monster'	P9	5	172
Hemerocallis 'Apricot beauty'	P9	5	86
Hemerocallis 'Happy returns'	P9	5	86
Hepatica nobilis	P9	1, 2, 4	1157
Hosta lancifolia	C1/2	3	15
Lathyrus vernus	P9	2, 3	622
Luzula nivea	P9	4	189
Luzula sylvatica	P9	2, 3	622
Millium effusum 'Aureum'	P9	3	107
Molinia caerulea 'Moorhexe'	P9	5	43
Molinia caerulea 'Variegata'	P9	4, 5	144
Polygonatum multiflorum	P9	1	75
Pulmonaria 'Sissinghurst White'	P9	1	75
Sanguisorba officinalis 'Tanna'	P9	5	22
Scabiosa 'Butterfly blue'	P9	5	172
Sesleria autumnalis	P9	5	172
Tiarella cordifolia	P9	3	213
Veronicastrum virginicum 'Album'	P11	4	15
Vinca major	P9	1	75
Viola riviniana 'Purpurea'	P9	1	150

7. Discussion and reflection

This chapter reflects on the development of the woodland garden design, looks at how effective the design process was, what worked well, what could be improved and what lessons were learned along the way.

7.1 The knowledge base

The theory behind this project was based on three sub-research questions, which were answered by a review of the literature on both woodlands and naturalistic planting design. Looking back and comparing these two knowledge bases, a clear difference can be found. The literature about woodlands seems more established and structured, offering strategies like layering, succession and edge dynamics. Where on the other hand, naturalistic planting design sometimes feels a bit more fragmented. Authors like Oudolf, Kingsbury, Dunett, Rainer and West present ideas that often overlap, but are not always aligned ideas. I think this is because it is a developing field, which made it harder to follow one clear framework for naturalistic planting design. I had to choose which ideas to emphasize, which has added a bit of subjectivity to the process. This raised a question I kept coming back to: should you follow one main source or flexibly combine different insights based on the site? For this project, grounding the theory in the site has proven essential. The synthesis I developed in Chapter 6 had helped me distil and connect ideas from the literature to the real conditions of the site and its design.

7.2 The environmental base

This section included the site analysis and has played a big part in inspiring the design. Even though the site analysis gave a lot of information, it also came with some challenges. The site visit was done in February, in the middle of winter. This meant that the trees were still dormant and it was hard to identify many plants as they were just about to bud. This also made it more difficult to assess seasonal changes or the dynamics of light. Ideally, a year-round observation would give more insight into how the site would behave across seasons. But when we look at it realistically, I do think this is just not always possible in design projects. This was a good exercise in learning to read and interpret the 'bare bones' of the site and look for clues of the site in its structure, regeneration and soil conditions. The analysis did result in some key insights: like existing tree species, natural regeneration, soil, and the open views to the North. These have directly influenced design choices throughout the process.

7.3 The synthesis

Bringing the three bases from the sub-research questions together in the synthesis has proved to be a useful and practical method. It helped to develop a design that is grounded both in its context and literature. The overlapping principles between these three sources have helped with making decisions throughout the project. The theoretical ideas were made into practice: they were tested onto the site through sketching, trying out different spatial arrangements and planting combinations. What makes the way of working with a synthesis strong is its flexibility. It helps keep the design based on theory, but also makes it respond to the site-specific conditions. This approach helped a lot, but it required iteration and critical thinking. In the future, it could be helpful to have a clearer method for ranking, weighing and comparing principles to make this process smoother. Looking back, I focused mainly on the overlapping principles between the three bases. For future designs, it might be interesting to explore their differences as well and see how those might enhance or add nuance to a design.

7.4 Design and application of the six design principles

Each of the six design principles from the synthesis phase in chapter 6 was applied in the development of the woodland garden, and here I reflect and discuss on how they worked out in practice:

Edges

This design has tried to apply edges in multiple ways. The evergreen edge on the north side is more of a hard edge, creating privacy and is part of the 'green thread' concept that ties the garden together. Within the boundaries of the design, soft edges are used to guide a gradual transition in height, light and species composition from north to south. As the woodland rooms gradually shift in structure and openness, edge effects are enhanced. This layered use of edges has helped integrate ecological and spatial logic into the narrative of the garden.

Human connection

The garden was designed with the experience in mind: the 'green thread' and gradual transition links rooms together visually and structurally, helping create a cohesive garden. Resting places, diverse paths, and framed views encourage to explore and connect with the space. Natural materials have been chosen to enhance the sensory experience and blend organically into the woodland setting. However, the narrow width of some paths (40cm) may require a bit more maintenance, since overgrowth from the perennials could make the garden look messy or impact movement.

Low maintenance

Naturalistic planting often aims for low-maintenance, but it does not happen automatically, it requires careful planning. The design has tried to create plant communities that can sustain themselves over time through dense planting, layering and the use of groundcovers. However, during the first three years more active intervention is needed during the establishment to guide the plant communities. In transitional areas like the bright woodland, where non-native ornamentals are used, maintenance needs may be higher than expected.

Native vs. non-native balance

The balance between native and non-native species was handled in a practical way, and played a big part in the concept. Closer to the house, more ornamental non-natives are used, while deeper in the garden native species are dominating. This shapes a gradual shift from cultivated to the wild. This spatial narrative allows for both ecological support and aesthetic expression. Visiting reference landscapes could have additionally strengthened the native selection of plants even further. However, since the garden already showed a mix of native and non-native species already present in the garden, the choice was made to follow the literature and go with plant selection based on ecological function rather than their origin, while also focusing on their dynamic nature and seasonality to be able to create human connection to the garden.

Layering

Layering was applied through both vertical and horizontal structuring. Inspired by the Swedish ädellövskog, introduced species *Quercus robur* and *Tilia cordata* are supposed to contribute to a multi-tiered woodland that develops over time. The perennial plantings use modules, drifts, and solitaires to create texture and rhythm on a horizontal scale. However, successful vertical layering does depend on the canopy establishing the way it was intended. In areas where tree growth is slower, adjustments in understory planting may be needed to avoid imbalance or overly sparse compositions.

Dynamic nature

Seasonal change, self-seeding and succession are embraced to make the garden dynamic and evolving. Each room is designed to develop gradually, expressing changes in light, structure and planting composition throughout the seasons and years. This reflects the core of naturalistic planting, to accept and embrace transformation. Placing potentially vigorous species such as *Fragaria vesca* and species of the dark and high woodland within a barrier of *Taxus baccata 'Repandens'* allows for visual clarity and easier monitoring of potentially vigorous species.

This means that the main challenge with this design and its principles concerns the maintenance and care of succession over time. Overall, the strategy of layering helps supports the design in a woodland character. However, the garden rooms could blur with no maintenance or slight editing, resulting in the principles being less present. It might impact the intended gradual progression from the dense woodland to the more productive meadow, which makes the maintenance a weaker part of the design since the result of the garden in the long run is dependent on the light editing within the garden. Still, change should also be embraced as part of the garden's dynamic and evolving nature.

7.5 The position of the design within naturalistic planting design

As discussed in the knowledge base, naturalistic planting design can be looked at through three approaches: stylised nature, biotope planting and habitat restoration. These categories are not strict, but they can help position the garden design within a wider context.

The idea and core of the woodland garden, the dark and high woodland, the many-layered woodland and the hazel walkway, align most closely with the biotope planting. These rooms are inspired by native Swedish woodland types and use mainly native or naturalised species that could occur together in a natural forest. Their structure, layering and seasonal rhythm are all based on woodland dynamics and ecology, which relate them clearly to the approach of biotope planting.

Closer to the house however, the character changes. The bright woodland and edge meadow bring in more stylised elements, since colour, contrasts and rhythm played a bigger role in plant choice. The combination of modules, solitaires and drifts is a conscious design decision that was aimed at shaping how the space will be experienced, rather than strictly mimicking natural plant communities. Species like *Veronicastrum virginicum* and *Bergenia* amongst others reflect this intent. The green thread concept, linking the rooms together in a visual and structural way using evergreen species, also supports this idea of a designed and legible experience, making these rooms relate more to the stylised nature approach.

The garden does not try to restore a lost ecosystem, so it does not fit with habitat restoration. Even though ecological principles like regeneration and layering have been used, they serve the context of the design being a garden. The inclusion of non-native plants for visual or edible purposes also moves the project further away from this category.

7.6 Specific design choices

Native and non-native species

The choice to combine native and non-native species was guided by both ecological reasoning and visual goals. Non-natives were selected for their ability to coexist without becoming invasive, which follows the thinking of designers like Rainer and West (2015), who argue for function over origin. The design uses a spatial gradient: near the house, in the more cultivated heart, non-native ornamentals and edibles are more present, while deeper into the garden the planting becomes increasingly native. This shows the combination that I have tried to make between the theoretical synthesis and a site-based response. One thing to reflect on concerns the potential invasiveness of non-native species. Recently, the Risk list for alien species 2024 has been released, which looks at the likelihood that plants form a risk to the domestic biodiversity of Sweden (SLU Artdatabanken, 2025). During the thesis, I checked whether any of the selected species appeared as high risk on this list. The reasoning why some of these plants are on the list can be debatable. Such lists can sometimes overgeneralize the behaviour of plants, banning species based on behaviour in one region, without considering their behaviour in another. Therefore it is important to look at the context of the design as well. In this project, where the site is private and bordered by agricultural fields, the risk of problematic spread of higher risk species is minimal. Still, it underlines the need for ongoing monitoring as the garden develops.

Modules, drifts and solitaires

These three planting tools have helped structure the different garden rooms. The repeatable 1x1m planting blocks help offer clarity, planting efficiency and ease of maintenance, especially during the establishment phase. But using the modules too rigidly can make a planting feel forced or repetitive, so it is recommended that they will be rotated for variation. The use of drifts helps soften the design, mimicking more spontaneous plant groupings, while solitaires give stronger vertical accents or focal points within the planting. Together, they help create a balance between structure and spontaneousness, especially in the transitional rooms like the hazel walkway and the bright woodland. Plant choices were mostly informed by books and literature sources (Crawford et al., 2010; Delin, 2022; Junker, 2007; Philips and Rix, 1999a; Philips and Rix, 1991b; and Whitefield, 1996) and the online database Planter. This gave me a solid foundation for species choice. However, in hindsight, I think it would have been valuable to directly observe similar reference landscapes. Seeing how species naturally associate compete and/or collaborate in similar climates could have helped strengthen the realism of the design even more and lift it to another level.

Toxic and edible

Since rooms contain edible species, I made a conscious effort to avoid mixing in poisonous plants. For example, *Helleborus* could have worked beautifully in the hazel walkway, but it felt rather inappropriate to have a poisonous plant next to edible plants. I tried to pay care and attention to the use of the garden, which I think also highlights that plant selection was not only based on aesthetics or ecology, but also on the expected human interactions. Designing with edibility in mind has brought another layer of complexity, especially when balancing it with safety and toxicity concerns.

7.7 Personal work process

Designing this woodland was not a straight pathway, sometimes it felt like a rollercoaster with moments of excitement, deep focus and flow while other moments were filled with more doubt. But through it all, I learned a lot these four months. One of the most rewarding and fun aspects of the process was the continuous back-and forth iteration between the theory, plant selection and sketching on paper to test my ideas. Starting with a strong foundation of literature early on and having this part written gave me structure and clarity to base the rest of the process on, which really helped. It gave me something strong to fall back on in times of doubt, and when I was testing and refining the design. This base definitely made the later design work more enjoyable and gave me

clarity in moments of uncertainty. I also learned that it is important to stay flexible. Real sites do not always behave the way books describe and balancing theory with real-life conditions, accepting that designs are not finished in one go were definitely key lessons. Rethinking, sketching again and changing course within the project is not failure, it is part of the process. Rome was not built in one day, and neither is a woodland garden design. The 'Edge meadow' was one of those points where I found myself overthinking, really trying to find the balance point between productivity and aesthetic coherence. Changing up the room and allow the room to develop more conceptually over time, and accepting imperfection with the meadow, helped me move forward.

I also realised through this process once more that I tend to be quite perfectionistic. Combined with my strong interests in woodlands and naturalistic planting design I get very enthusiastic and want to lay everything out clearly and explain my thinking thoroughly. This probably also explains why this thesis has become so extensive. While this is not necessarily a bad thing, it is something that I want to be more aware of in the future: clarity does not always need so many of my words. Going forward, I would like to focus more on structuring and condensing my ideas, so the outcome remains strong, but is maybe easier to communicate.

8. Conclusion

Designing this woodland garden came with several challenges which were shaped by the attempt to bring together theoretical knowledge and site-specific conditions into one, cohesive design. I think that throughout the process, it became clear that while theoretical frameworks like woodland theory and naturalistic planting design offer strong guidance, this thesis shows that their real value lies in how they can be adapted to meet the needs and realities of a specific place, through observation, iteration and reflection.

A garden that is rooted in these dynamic processes should also be approached that way, both through design and management. For this reason, establishment and maintenance measures have also been included along with phased implementation guidelines to make sure the garden is not only realised successfully but will also continue to evolve in alignment with its ecological and aesthetic goals.

The main aim of this thesis was to explore how naturalistic planting design and site analysis can be combined to create a woodland garden, according to the main research question: *''How can naturalistic planting design principles and site analysis be combined to create a woodland garden (that harmonizes function and aesthetics sustainably)?*"

The answer lies in the combination of the three core elements, that has also priorly been discussed: the site-specific site analysis as environmental base, a woodland knowledge base and the naturalistic planting design knowledge base. Together they have formed the foundation of the project. These were not just applied side by side, but woven together in the synthesis to shape a garden that is not only grounded in theory and ecology, but also rich in visual and seasonal interest, capable of evolving with the function of human connection and low maintenance over time.

The woodland knowledge base provided ecological strategies like layering, succession and edge dynamics, which has helped shape the spatial layout and structure of the garden. The naturalistic planting design base on the other hand, has helped translate these insights and strategies into aesthetic and readable planting schemes that emphasize texture, seasonality and plant sociability. Elements such as modules, drifts and solitaires added structure and rhythm, supporting both ecological function and human experience in the design. The site analysis helped ground these theoretical approaches in reality. By having the theory in mind, it revealed opportunities for the design such as existing regeneration and the spatial structure defined by the mature trees. It also made the limitations of the area visible, such as the heavy shade, which demands site-specific design responses. In this way, the analysis helped act as a bridge for the synthesis, helping translate the theory into its context. This triangulated approach formed a design process that is both evidences based and open ended.

To conclude, the answer to the main research question is that a woodland garden that harmonizes function and aesthetics sustainably, can be created by synthesizing these three bases from naturalistic planting design and woodland ecology with the site-specific analysis, allowing ecological understanding, spatial structure and aesthetic expression to inform one another in a grounded and responsive design. This means that a woodland garden that truly balances function and aesthetics does not simply emerge from applying existing principles, but from interpreting and adapting them. It draws from woodland ecology for structural insight, naturalistic planting for aesthetics and legibility, and site analysis to ground both of those in a local context, which results in a rather flexible design method that evolves with place and time instead of fixed model.

This means that the thesis does not propose a universal method that can be adapted and copied elsewhere as a result to the question, but is more a demonstration of how these principles of woodland and naturalistic planting design can guide the creation of multifunctional and beautiful gardens when carefully interpreted and combined with site knowledge. The resulting garden aims to harmonize ecological, social and productive values. Its layered planting and native-rich palette help boost the biodiversity through both structural and seasonal variety. It offers space for recreation and rest, with pathways and rooms designed for experience. Several areas also feature edible species, blending productivity with human connection to the place. This has resulted in a design that takes the multiple desired functions into account.

The synthesis of these tree pillars distilled this theory and analysis into six overarching design principles, which are because of this process not only grounded in literature, but also adapted to the site. They guided decisions from plant selection to spatial layout to seasonal dynamics and helped support a design that is structured, yet dynamic and responsive. That is the strength of this approach with the synthesis: it is not a formula, but a method for grounding design in both place and process. The next project, on a different site, might result in a different synthesis. Therefore, this thesis shows a grounded application instead of a universal method. By combining this ecological insight with aesthetic intent and site-based observations, a woodland garden can emerge that is not only pretty, but also functional and resilient. This process reveals not just the thought process behind such a garden, but also that the dynamic method matters. In that sense, this woodland garden design is not a final product. It is a continuous dialogue between the place, plants and people. This thesis has been one voice in that conversation: the next voice will grow from the garden itself.

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XI. Appendix

1 - High and dark woodland

2 - Many-layered woodland

3 - Hazel woodland

4 - Bright woodland

5 - Edge meadow

Same species present in another room

Different cultivar present in another room