

# Cultural heritage as specific landscape service

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Stimulus of cultural heritage in the Netherlands

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Wageningen University, October 2013





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This thesis is written as a final assignment for the master Landscape Architecture and Planning, specialisation Spatial Planning, at Wageningen University.

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MSc Thesis Land Use Planning (LUP-80436), 36 ECTS



## Abstract

Faced with the changing financial, political and societal climate in the Netherlands, the heritage sector is forced into reorientation in order to remain economically viable. This reorientation requires an innovative perspective that helps to find alternative ways of support. In this thesis, a landscape services perspective is taken to look for new forms of stimulus for cultural heritage. Three estates are in this thesis examined from four dimensions, which appear to be central in the ongoing scientific debate around landscape services.

The research has revealed that the disciplinary background of individuals can be used to increase services supply on estates. Setting out the investigation in two different distance zones, has revealed that also the influence of distance can be considered important for the amount, variation and locations of landscape services on estates. By mapping landscape services by means of GIS, a varied landscape configuration of estates has shown to be decisive for landscape service provisioning. However, these observations are not reflected in the policy documents of the governments in the case study areas.

This research has shown that landscape services could be used as a method, which matches the services supply of an estate with the demand from the local society. The method therefore has the potential to trigger civil society to set up initiatives that could help the sector reorientate. Landscape services therefore deserve a much greater role in the search for stimulus of heritage in the Netherlands.

*Keywords: “Landscape services”, “cultural heritage”, “planning approach”, “landscape service indicators”, “mapping landscape services”*

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## List of acronyms

CAP:	The Common Agricultural Policy
NEN:	National Ecological Network
ICOMOS:	International Council on Monuments and Sites
UNESCO:	United Nations Educational, Scientific and Cultural Organisation
ROB:	Rijksdienst voor het Oudheidkundig Bodemonderzoek
ANWB:	Algemene Nederlandsche Wielrijders-Bond (Koninklijke Nederlandse Toeristenbond)
MA:	Millennium Ecosystem Assessment
TEEB:	The Economics of Ecosystems and Biodiversity
GLK:	Geldersch Landschap & Kasteelen

## Summary

Heritage in the Netherlands has had a stable source of income in the form of subsidy schemes, timber production, land rental and hunting rights. This stable source of income has established a sector that focusses on the preservation of monuments from a very conservative standpoint. Such a standpoint does not fit within the current economic and political climate, forcing a reorientation which (re)connects heritage with the contemporary societal desires, new political situation and new financial climate. A transition is required in which heritage seeks for alternative ways of support. In this thesis, a landscape services perspective on natural and cultural heritage is taken to look for potential economic chances and potential alternative ways for the stimulus of planning, conservation and management of heritage in the Netherlands.

The objective of this research is therefore to determine in what way landscape services could function as a stimulus for planning, conservation and management of heritage when this is regarded from four angles: from different physical configurations; from different disciplines, from different institutional levels and from different distances. These four dimensions are based on a literature review and are kept central throughout the entire report. The approach to this objective is a case study research in which three estates, i.e. Sandwijck, Warnsborn and Vogelenzang, are used to investigate the potential of landscape services. A combination of a questionnaire survey, interviews, document study, GIS mapping and SPSS statistics has been applied to find new forms of stimulus of heritage.

This research has shown that in order to maximize the potential of an estate, some aspects need to be taken into consideration. The *variation in disciplinary backgrounds* of local inhabitants should be considered to increase the amount of landscape services that are provided on an estate. Also the *influence of distance* is important to consider. By doing a questionnaire survey in two distance zones, the influence of distance has been investigated. In general can be said that distance has a significant influence on the amount, variation and locations of received landscape services on estates. Distance should therefore not be neglected. The configuration of an estate is also important for the provisioning of landscape services. Especially estates with a *varied landscape configuration* have shown to provide most landscape services. A policy document study has revealed that governments have only just started their investigation for the heritage sector, however their ideas seem to neglect important service categories. The proposal of the governments to introduce estate zones might therefore not be the right solution to the problem. This research has shown that landscape services could be used as a *method, which matches the supply of an estate to the demand from the local society*. Landscape services could also be used as a great tool to trigger civil society to set up (local) initiatives. Landscape services on estates therefore deserve a much greater role in the current ongoing scientific debate. Heritage should here be regarded as *specific landscape service*, instead of being generalized under the information or amenity services.

## Preface

This thesis report is the result of the graduation research, which is a part of the Master programme Landscape Architecture and Planning at Wageningen University. The main topic of the thesis, cultural heritage, concerns a field of work which I have never studied during previous projects nor theses work. My enthusiasm for cultural heritage started to develop when I was reading the magazine of “Geldersch Landschap & Kasteelen”, an organization which focusses on the conservation of natural and cultural heritage in the province of Gelderland. A meeting with Marjan Visscher, who works for this organization, excited me to do research in their field of work. Hearing about the growing concerns of various heritage organizations in the Netherlands, persuaded me to do my final assignment of my study in this direction.

My personal interest for multifunctional use of landscapes and the services such landscapes provide to society, further influenced the topic for this research. My experiences which I have gained during earlier internships in Malaysia made me aware of the great potential multifunctional landscapes hold in a world where pressure on land is high, and continues to rise. During my minor thesis, which I conducted in collaboration with the Province of Gelderland, I have also studied the potential of multifunctional landscapes and services from these landscapes in the Netherlands, yet from a more ecological dimension.

In the Netherlands, human pressure on land mixed with a variety of environmental forces, established a culturally rich and very dynamic landscape. This mixture of both natural and cultural heritage asks for an integrated and multifunctional perspective on the planning, conservation and management of it, this to ensure that a great variety of services can be provided to a constantly changing society. Yet, the heritage sector in the Netherlands always had (and probably still has) a conservative vision towards its heritage. The stimulus of heritage in the Netherlands asks for new perspectives, one of which I hope to present in this thesis.

Don't hesitate to contact me with questions or remarks about this report.

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## **Acknowledgements**

I would like to express my gratitude and appreciation to all who have assisted me while this report was prepared.

In specific I would like to show my gratitude to my two supervisors, Dr. Ir. W.G.M. van der Knaap and Prof. Dr. Ir. J. Janssen, whose feedback and guiding words helped me to complete this research and who kept me motivated and focused throughout the entire process of this thesis.

I would also like to thank Marjan Visscher of Geldersch Landschap & Kasteelen, for the inspiration and suggestions to my work and for the several meetings she made time available to talk to me. I would also like to thank the owners of the estates, who made time available for an interview.

I would also like to show my appreciation to my colleagues and friends for the great work atmosphere while this report was prepared.

Thank you.

## **1. Introduction**

*Pushed by global trends such as the economic crisis, changes in the political system and also changing societal desires, the Netherlands is now going through a period of transitions and debates about the planning, conservation and management of the landscape which affects the appearance of it. Policy reforms and international obligations, for example in the CAP, the NEN-programme and in various Dutch Natura2000 areas, will also have an impact on the look of the landscape. Decentralization combined with budget cuts of the central government and the effect of the economic crisis makes a shift in spatial planning inevitable. The changing circumstances not only influence the landscape in general, it also significantly influences the field of natural and cultural heritage in the Netherlands as this field has become embedded in spatial planning (Janssen, 2012).*

### **1.1. Problem description**

The impact of these changing circumstances on heritage conservation organisations, is for a part caused by the way income has been generated from privately owned land and in specific from estates. For centuries long this has been achieved with sources such as agricultural land rent, hunting rights and timber production (Kamerbeek, 2012). When in the 50s timber prices started to fall, combined with the effect from land consolidation, strong competition in the European agricultural market and strong wage rises, financial sources evaporated quickly (Kamerbeek, 2012). In this period of time, the state started large subsidize schemes for purchase, conservation and management of land. Since the start of these state subsidize funds, land owners had a stable source of income which triggered sectorial approaches and a focus on the conservation and management of private land instead of (re)development to fit to the dynamic circumstances. This conservative position, however conflicts with the dynamic character of the landscape and the constantly changing Dutch society. The Belvedere Memorandum (1999) helped with the reorientation of heritage conservation in the Netherlands, yet spatial planning and heritage still fail to transform to the new economic and institutional conditions of these times (Janssen, 2012).

Now that the government is turning its back to heritage conservation, many organisations have to alter their vision and look for new sources of income and alternative funding methods for the conservation and management of land. In the meantime the desires of society have developed in such a way that a mismatch has been formed between what is currently provided by heritage and demanded by society. The alteration of the vision of heritage conservation organisation, inevitably comes with a shift in the direction of planning and (re)development of

heritage in the Netherlands. In this new vision, stronger connections with societal desires have to be made in order to enhance (financial) support for heritage conservation organisations.

## **1.2. Problem statement**

The problems facing cultural heritage in the Netherlands are for a great part caused by the changing political, economic and societal circumstances. These changing circumstances require the heritage sector to respond and perhaps reorientate in such a way that heritage can find its necessary support in other forms. So, thinking about the position of the heritage sector in the current economy, it is evident that their static and conservative approach needs to be adjusted (Interview GLK). This asks for an innovative perspective on the stimulus of planning of heritage in the Netherlands.

Janssen (2012) notes the importance of “revitalization and re-use of heritage in spatial developments to create an increased economic value” (p. 19). Janssen especially aims at a transition of heritage that benefits society in general and particularly the nearby area where heritage is located. Janssen also mentions that “spatial planning and heritage conservation need to find alternative ways to connect specific qualities of heritage with new economic chances” (p. 21).

In this thesis, a landscape services perspective on natural and cultural heritage is taken to look for these potential economic chances and potential alternative ways for stimulus of planning, conservation and management of heritage in the Netherlands. Perceiving heritage as a specific landscape services could lead to new opportunities, both in the way income is generated for privately owned land, but also in the way these landscapes are valued by society. Cultural heritage is known to offer opportunities to for example tourism and recreation, yet other opportunities might exist which can help to broaden the potential of cultural heritage in the Netherlands.

## **1.3. Scientific context**

*Before explaining the research questions for this thesis, a short theoretical outline will provide the commonly addressed topics about services from landscapes. The research questions of this thesis have been based upon these, in theory, commonly addressed topics.*

Research focussing on benefits from ecosystems has risen enormously during the last few decades (Fisher *et al.*, 2009). These benefits were in 1977 first named “natures services” by

Westman (p. 960). Termorshuizen & Opdam (2009) mention that the “services concept” (ecosystem services and landscape services) “emphasises the connection between physical systems (ecosystems or landscapes) and human values” (p. 1041). Besides Termorshuizen & Opdam several other authors discuss the topic of landscape services (for example Fisher *et al.*, 2009; Goldman *et al.*, 2007; Hein *et al.*, 2006; Tallis *et al.*, 2008; Veeneklaas, 2012). A literature review, shows that the main debate in relation to services from landscapes, focusses on four common dimensions:

1. The importance of spatial configuration for the supply of services. For example Goldman *et al.* (2007) mention that “the spatial configuration of particular ecosystems is critical to the supply of many services” (p. 333). Natural and cultural heritage consists out of an even more complex relation between ecological and socio-cultural elements in the landscape as these landscapes are at the interface between nature and culture (Mitchell & Buggey, 2000). It is therefore crucial to investigate the connections between physical systems and human values. The first important angle to investigate in this thesis is therefore the topic “physical configuration” of elements in the landscape.
2. Services generated by landscapes are dependent on human values and therefore benefit dependent (Fisher *et al.*, 2009). Fisher *et al.* (2009) note that the “the benefits you are interested in will dictate what you understand as an ecosystem service” (p. 648). Different people with different backgrounds therefore also perceive different services from the landscape. Many authors discuss the relation between the disciplinary background of an individual and the interest for certain services. In line with this, interdisciplinarity is thus important in relation to perception and demand of services from the landscape. However, interdisciplinary constructions are still seldom used by decision makers. The second angle in this thesis is therefore focussing on different disciplines and the relation with the values of different people.
3. Politics and decision making play a crucial role in determining land use forms. Institutions at different levels affect the services from the landscape. Several authors note this link with politics. For example Hein *et al.* (2006) mention that “across the institutional scales, stakeholders can have very different perspectives on the values of ecosystem services, based, among others, on their dependency upon specific services to provide income or sustain their living environment” (p. 225). Therefore, it is important to consider the perspective and arrangement of different institutional levels in this thesis, forming the third important angle of this thesis.

4. The last angle is the influence of distance, and especially the relation between the distance and the influence on the perspective of different people. Hein et al. (2006) note that “identification of scales and stakeholders allows the analysis of potential conflicts in environmental management, in particular between local stakeholders and stakeholders at larger scales” (p. 217). People at different scales could attach different values to services from the landscape, depending on their background and the impact of a service on their lives (Hein *et al.*, 2006).

These above explained dimensions (physical configuration; interdisciplinary, institutional levels and distance) are kept central throughout this thesis. The interconnections between these dimensions determines to what extend services are experienced and to what extend there might be demand for services from a landscape. Viewing services of natural and cultural heritage from these four angles, could potentially help to identify new ways of how heritage could be planned, conserved and managed and could also bring new economic chances to light.

Though most authors note that landscapes are embedded with cultural and historic values, heritage is not regarded as a specific landscape service. Yet heritage holds both ecophysical, socio-economic and cultural values and could therefore be significantly underestimated in this debate. For that reason a gap in the current debates about services from the landscape appears to be present. In view of the above, the link between landscape services and heritage which is made in this thesis, adds to this current scientific debate and by perceiving heritage as a specific landscape service new perceptions could be gained in this discussion. The position which is taken by studying landscape services and heritage conservation, consequently grasps a contemporary societal and institutional concern as well as an apparently scientific gap.

#### **1.4. Research objective and research questions**

The objective of this research is to determine in what way landscape services could function as a stimulus for planning, conservation and management of heritage when this is regarded from four angles: from different physical configurations; from different disciplines, from different institutional levels and from different distances.

Based on this objective, the following general research question has been formulated:

*“In what way could landscape services function as a stimulus for planning, conservation and management of heritage when this is regarded from four angles: from different physical configurations; from different disciplines, from different institutional levels and from different distances?”*

In order to answer the general research question above, the following specific research questions need to be answered:

- *What is the relation between the physical configuration of heritage and the provisioning of landscape services?*
- *What is the effect of different disciplinary backgrounds of individuals on the experience and the demand for landscape services from heritage?*
- *To what extend does the experience and the demand of landscape services from heritage vary when different institutional levels are regarded?*
- *To what extend do differences in distance influence the experience and the demand of landscape services from heritage?*

By answering the above specific research questions, the general research question can be answered, which will lead to the objective of this research.

## **1.5. Reading guide**

The next chapter, chapter 2, will give insight in the applied research method. Chapter 3 is the theoretical framework of this report, followed by the conceptual framework in chapter 4. The conceptual framework also contains the conceptual model, which can be seen as a guiding framework of the entire research process. In chapter 5 the case study locations are introduced and described. Chapter 6 is an explanation of the steps that are done prior to sending the questionnaires. Chapter 7 provides the results, divided in sub-chapters according to the previously mentioned four dimensions. Chapter 8 is a discussion of the results, which can be regarded as a critical reflection of the results and the method that has been used. Chapter 9 is the conclusion of this research, answering the main research question as well as providing hints for future research and some personal recommendations. In the appendix of this report, an example can be found of the used questionnaire. However, there is also a separate appendix bundle (referred to as ‘Appendix B’) which is not included in this report, because of its size and because of privacy reasons of the participants. This separate appendix bundle is only available on request.

## **2. Research method**

*In this chapter an explanation of the applied research method will be given. The chapter starts with the characterisation of the type of study, followed by a description of the research steps and a description of different data collection methods.*

### **2.1. Type of study**

As mentioned by Mitchell & Buggey (2000) cultural landscapes are at the “interface between nature and culture” (p. 43). This results in complex processes and relations between the environment, society and institutions. To be able to study these situations, an understanding of the complexity is important. By investigating literature about cultural heritage and services from the landscape, an understanding of key-concepts and the complexity behind this topic will be achieved. A thorough analysis of scientific literature (theoretical framework) will contribute to the development of a conceptual framework. This conceptual framework will function as the basis for a case study analysis. A case study research is especially useful for such complex situations where the focus is on exploring and understanding (Kumar, 2011). The appropriate research design will thus be determined after the literature review. This indicates that this study could be described as an explorative research. The strategy of inquiry is in this thesis generally based on qualitative research, indicating that meaning of data is for a large part generated by own interpretation. Because the topic of this study, cultural heritage as a specific landscape service, concerns a field of work where there are few studies to refer to, the focus of this research is especially to gain insights and possibly new perspectives for later investigation.

### **2.2. Research steps**

The strategy of inquiry that will be used is for every specific research question different. The research can therefore be divided into different research steps.

- For the first specific research question “What is the relation between the physical configuration of heritage and the provision of landscape services?”, GIS software will be used to analyse the physical configuration of the study locations. The outcome of the GIS study will be maps that show the elements in the landscape, such as hedgerows, treelines, water bodies etc. The analysis of the landscape services will be done by means of interviews and questionnaires, which are then projected on the map to show the location where these are found on the estate. This will provide insight in the influence of the configuration of the landscape.
- The second specific research question “What is the effect of different disciplinary backgrounds of individuals on the experience and the demand for landscape services

from heritage?” will be investigated by sending questionnaires to the inhabitants around the study locations. Questionnaires are here used to be able to reach a larger amount of people in a relatively small period and to be able to compare the outcomes more easily (Kumar, 2011). By sending questionnaires to different individuals with different backgrounds, the disciplinary effect will be investigated.

- The third specific research question “To what extend does the experience and the demand of landscape services from heritage vary when different institutional levels are regarded?” will be investigated by interviews with the owners of the estates and a policy document study. Interviews are here more appropriate, due to the complexity of the situation and the ability to get more in-depth information (Kumar, 2011).
- The last specific research question “To what extend do differences in distance influence the experience and the demand of landscape services from heritage?” will be investigated by using two different distances from the case study locations for the interviews and questionnaires. By comparing the outcomes, insight in the influence of distance from the study location will be achieved.

In the following scheme, fig. 1, the above explained steps are visualised.

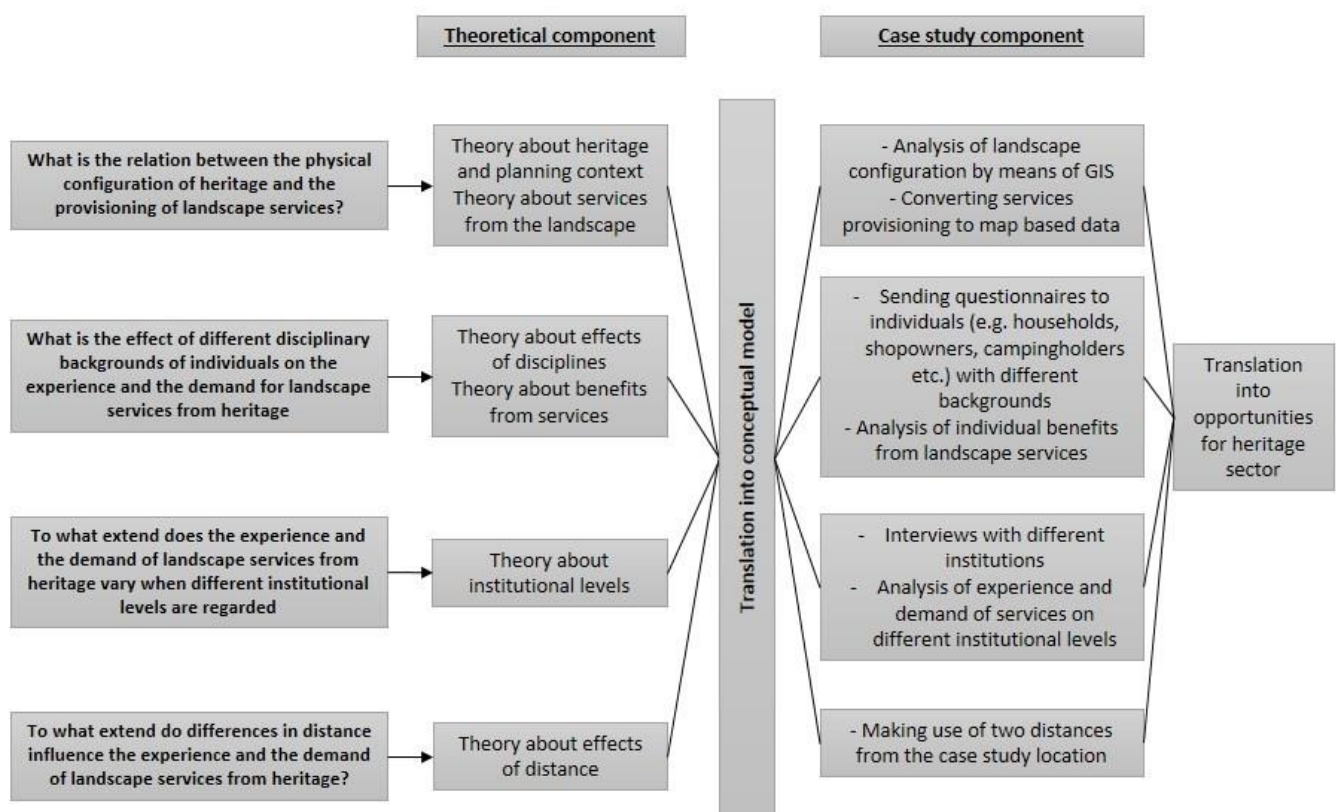


Figure 1. Visualisation of research steps

What can be seen in fig. 1 is that this research includes two main components, namely a theoretical and a case study component. For all four specific research questions, theory is necessary to get the necessary knowledge base for the research. The theoretical component ends with a translation into a conceptual model. This conceptual model visualises the relations between the different theoretical aspects of this research and gives an understanding on how the theoretical component provides guidance to the case study component of this research. The case study component consists out of three cases and can be interpreted as the practical aspect of this research, in which “field data” is gathered through questionnaires and interviews. Field data is then translated into map-based data and projected on maps by means of GIS software. This will help to translate the case study knowledge into opportunities for the heritage sector, which leads to the answer on the general research question of this thesis.

### **2.3. Ethical considerations, validity and reliability**

In this research some ethical considerations have been taken into account to ensure that no stakeholders were harmed during data collection and evaluation. Regarding these ethical considerations, individuals have been randomly selected around the case study locations. In this research 34 individuals per case study, received a questionnaire. The individuals have been randomly selected by the use of satellite images (Google Earth) and/or Streetview, to ensure that a variety of disciplines could be reached. By using a combination of Google Earth and Streetview images, different types of housing have been selected, including apartments, large villas, semi-detached housing, terraced housing and farms. The questionnaires have been equally divided between these housing types. In this way is hoped to reach inhabitants with diverse backgrounds. Also the owners of the estates have been interviewed in order to find out how these individuals experience the problem, how is thought about landscape services and if there is a demand for a certain landscape service. Recommendations to interview a certain person have been taken into consideration. Different categories of stakeholders have been selected to ensure that a proper evaluation of services can be done, without any preconceived notions of what this evaluation should look like. All data, whether agreeing with expectations/assumption or not, has been taken into consideration and handled with equal respect. The interview notes and questionnaire data are because of privacy reasons not included in the main report. In case the reader would like to receive this data, this can be arranged on request.

In this research triangulation refers to the use of different methods and approaches to find necessary data. Triangulation is applied to increase the validity of the research. This is visible in the combination of primary and secondary sources. By going through a large body of literature, different standpoints about the topic are addressed and different theoretical

positions are taken. By discussing different sources of literature, the risk of own biases is therefore reduced. Because this research is for a large part based on qualitative approaches, and not by means of statistical procedures, the findings are dependent on own interpretations and are therefore also subjected to potential errors and biases. This could affect the reliability of the research, as a different researcher might interpret the results from interviews differently. It is therefore crucial to be transparent about the method of data collection. Because reliability of the research could be at risk when only interviews are used, also questionnaires will be used as a method of data collection. This combination of interviews and questionnaires will make this research more reliable. The questionnaire outcomes will however be investigated by means of SPSS statistics and furthermore also linked to ArcGIS mapping, making this research for a part also based on quantitative approaches. The phenomena of biases due to own interests for specific themes might unfold naturally during interviews. To overcome this issue, some guidelines are needed during the interviews to ensure that every interview at least deals with the key subjects of this research. To exclude own biases for the gathering of data from local inhabitants, only questionnaires will be used to gain this information. To increase the reliability of the interviews, the interviews will be recorded and later on worked out on paper to be as transparent as possible. Before sending the questionnaires, a test panel will be used to find out if the questionnaires are easily understood by people. External validity might also be at risk due to generalizations from the interviews, while only a selected group of people are interviewed and from a relatively similar geographical location. It is therefore important to consider this regarding the general conclusions of this research.

### **3. Theoretical Framework**

*This chapter describes the theories and discussions applied behind cultural heritage and services which are provided by landscapes. Also, own interpretations and definitions will be provided for the important concepts of this research. The most important concepts for this research will get additional attention in the form of text boxes throughout this chapter. The theoretical framework starts with a more general study about the concept of heritage, followed by the developments of heritage in the Netherlands and the gradual broadening of the concept of heritage towards cultural landscapes. After this, insight in the ongoing debate about the future of heritage will be provided. This is followed by theory about services and some different ways of classifying these services. This chapter ends with an overview of the most important aspects that underlie the debate about services from landscapes.*

#### **3.1. Defining heritage**

A definition of cultural heritage that is widely accepted does not appear to be existent. The broadest forms describe heritage as “everything handed down to us from the past” (Lowenthal, 2005). The meaning of heritage also seems dynamic; concepts are changing over time with the contemporary societal setting (Harvey, 2001). In general heritage is viewed as precious and essential to personal and collective identity (Lowenthal, 2005). Harvey (2001) notes that heritage should be seen as “a process” (p. 335). People are involved with it, re-work it, correct it and contest it, hence it should be seen as a cultural practice and an instrument of cultural power (Harvey, 2001).

Over the last decades the concept of cultural heritage has developed significantly. The “Venice Charter”, an international congress of architects and specialists of historic buildings, mainly referred to assemblies that focus on historic buildings, or monuments, which need to be preserved (ICOMOS, n.d.). Later the Venice Charter developed in the direction of conservation and restoration of historic buildings, to excavation and archaeology and even historic landscapes and gardens (ICOMOS, n.d.). Bouchenaki (2003) mentions that during the study of historic landscapes and gardens, “the concept of “cultural landscape” highlighted the interpenetration of culture and nature” (p. 27). The Venice Charter has helped to broaden the concept of historic buildings and has been used as a reference point for a number of other publications by the United Nations Educational, Scientific and Cultural Organisation (UNESCO) and the International Council on Monuments and Sites (ICOMOS) (Ahmad, 2006). UNESCO and ICOMOS have formed the lead in defining a common terminology and scope of heritage since 1965 (Ahmad, 2006). Back in 1965 heritage was redefined as consisting out of monuments and sites;

*Article 3:1*

*The term monument shall include all real property.. whether they contain buildings or not, having archaeological, architectural, historic or ethnographical interest and may include besides the furnishing preserved within them*

*The term site shall be defined as a group of elements, either natural or man-made, or combinations of the two, which it is in the public interest to conserve.*

(ICOMOS, 1965)

In 1968 cultural property was redefined by UNESCO as movable and immovable, the first can be seen as the “museum collections” and the second as the “architectural heritage” (Ahmad, 2006, p. 294). Four years later this definition of movable and immovable heritage was already dropped during the World Heritage Convention in 1972. UNESCO (1972) divided heritage into “cultural heritage” and “natural heritage” (p. 2). This division of cultural and natural heritage is still used today (UNESCO, 2012, p. 13). A division in the form of the features that it has, titled moveable or immovable heritage, is still used after UNESCO dropped this division (Willems, 1997). The moveable heritage consists out of art and archaeological items, the immovable heritage includes the (archaeological) monuments, historic buildings and the historic landscape (Cultural Heritage Agency, n.d. (a)). Janssen *et al.* (2012) use a more nuanced division of heritage in the form of a “material and non-material dimension” (p. 11). This non-material dimension, also known as intangible cultural heritage, includes practices, representations and expressions, knowledge and skills that people see as a part of cultural heritage (Smeets, 2004). The trouble different organisations and various authors have in categorising and defining heritage, indicates that heritage is not as black and white as it sometimes appears to be. Heritage cannot be regarded without its context. Though different attempts were made by UNESCO to broaden this scope on heritage, it took a while to define something beyond simply artefacts.

An interface between culture and nature termed “cultural landscape”:

*“The combined works of nature and of man”*

(UNESCO, 2012, p. 14)

arrived in the UNESCO scene in 1992 (Rössler, 2006; UNESCO, 2003). Rössler (2006) notes that “cultural landscapes are a focus of protected areas in a larger ecosystem context, and they are a symbol of the growing recognition of the fundamental links between local communities and their heritage, humankind and its natural environment” (p. 334). The inclusion of cultural landscapes in the UNESCO world heritage scene made the public aware that sites are not isolated islands. As Rössler (2006) describes: “they have to be seen in the ecological system and with their cultural linkages in time and space beyond single monuments and strict nature reserves” (p. 340).

Today the concept of heritage consists of a “social ensemble”, one which is complex and in which the “message” of heritage has become important (Bouchenaki, 2003, p. 27). Ahmad (2006) also notes that “since the Venice Charter 1964, the scope of heritage has broadened from a concern for physical heritage such as historic monuments and buildings to groups of buildings, historic urban and rural centres, historic gardens and to non-physical heritage including environments, social factors and, lately, intangible values” (p. 294).

## HERITAGE

*Both material (historic buildings and monuments of the past, in its context: the historic landscape) and non-material (practices, expressions, knowledge and skills) characteristics together forming a complex and dynamic social ensemble of the past*

### 3.2. Heritage in the Netherlands

The depletion of cultural valuable land and the buildings which are on it, is a relatively recent topic of concern in the Netherlands with its major developments starting around the nineteenth and twentieth century (Willems, 1997). Heritage conservation in the Netherlands especially established after 1947 when “the start was made with the foundation of the ROB (Rijksdienst voor het Oudheidkundig Bodemonderzoek)” (Willems, 1997, p. 6). The ROB brought order in the organisation of the Dutch archaeology, especially in the excavation and deposition of findings (Willems, 1997). After the Second World War public concern about the destruction of cultural resources raised, which led to an involvement on a national level (Willems, 1997). Several organizations were founded around 70s which focus on the protection of the cultural history, including the Nationaal Contact Monumentenzorg (National Contact Monuments), the Stichting voor Nederlandse Archeologie (Netherlands Archaeological Foundation) and the Platform Landschap en Cultuurhistorie (Platform for Landscape and Cultural history) (Feddes, 1999). The studying of archaeological sites from a landscape perspective led to a series of archaeological maps, which was followed in 1978 by

an effort to start the protection of heritage on a large scale, namely in the form of historic landscapes (Willems, 1997). Feddes (1999) mentions that “the relevance of cultural history to nature and recreation is further demonstrated by the number of large organizations, such as Natuurmonumenten, Staatsbosbeheer (the national forestry commission) and the touring organization ANWB which now devote attention to cultural history within their general activities in nature and recreation” (p. 12).

The period around the 70s could be regarded as a first cooperation between planning and heritage in the Netherlands. Janssen (2012) divides the development of heritage in the Netherlands into different phases by focussing on this changing relationship between spatial planning and heritage. Janssen finds three phases, the first characterized by very contrasting values and ideas (50s – 70s), followed by careful approaches between the two (70s – 90s) and later more collaboration and interaction between heritage and spatial planning (90s – 2010). Similarly as Janssen (2012), Willems (1997) notes that heritage conservation gradually became embedded in the field of spatial planning. According to him, heritage in the Netherlands first focussed on the protection of historic buildings and archaeological finds, and later became part of development and regeneration of larger areas (Willems, 1997). In other words, around the 70s the scope was broadened which created a shift in heritage conservation to regeneration and socio-economic development of the city and/or region, for example in the form of tourism, recreation and leisure activities. This shift in the heritage approach is “widening the scope towards landscapes and ensembles” and shifting the approach beyond simply protection of the monuments of the past (Bloemers *et al.*, 2010, p. 6).

### 3.3. Dynamic cultural landscapes

The landscape can be seen as the visualisation of our constantly changing desires. Antrop (2005) mentions that landscapes change because “they are the expression of the dynamic interaction between natural and cultural forces” (p. 21).

‘Change’, related to the interaction between natural and cultural forces, can therefore be seen as an inherent characteristic of landscapes (Bürgi *et al.*, 2004; Antrop, 2005; Terkenli, 2001). Especially in the Netherlands there is a long tradition for reorganization of land, to fit better to the at that moment societal demands. This has to do with a combination of socioeconomic, political, technological, natural, and cultural driving forces (Bürgi *et al.*, 2004; Verburg *et al.*, 2004). A study by Verburg *et al.* (2004) shows that the historic land-use patterns in the Netherlands can for a large part be explained by the

#### CULTURAL LANDSCAPE

*A landscape influenced by human-nature interactions, changing it into a unique mosaic of both natural and cultural elements, and visualising the societal desires of the past*

suitability of the soil for agricultural purposes. More recent land use changes are more determined by accessibility, spatial policies and neighbourhood interactions (Verburg *et al.*, 2004). The result of that constant reorganization of land, is a rich ‘cultural landscape’ in which the societal demand of the past becomes visual. Bloemers *et al.* (2010) describes cultural landscapes as a “product of past human cultural actions”, however added to that is that these landscapes are also “present-day creation by our own cultural and social attitudes” (p. 6). The word “cultural landscape” embraces a complex interaction between humans and the natural environment. As mentioned above, change is one of the typical characteristics of cultural landscapes. Because of the changing society, cultural landscapes are also under pressure. Societal demand for new land, especially those related to the intensification of agriculture, resulted in vanishing or transforming of these highly valued (old) cultural landscapes (Vos & Meekes, 1999). For that reason, “unique” cultural landscapes are protected and attempts are made to enhance the quality of these landscapes (Cultural Heritage Agency, N.d. (b)).

In the Netherlands there are several types of protected landscapes, which were mostly established after the 1970s in order to protect nature and landscape from the radical changes of those times. One of these strategies, called National Landscapes, designates 20 stretches of landscape in order to safeguard its historical character (Cultural Heritage Agency, N.d. (b)) (see fig. 2). Yet there are more designations for the protection of these landscape qualities in the Netherlands, for example through the Monuments and Historic Buildings Act, Natuurschoonwet, Unesco World Heritage Sites, National parks, Belvedere areas, Nature conservation areas, Natura 2000 areas and the National Ecological Network (NEN) (Cultural Heritage Agency, N.d. (c)). National landscapes are landscapes of (inter)national importance, consisting of a diverse mosaic of elements of both cultural heritage and nature (PBL, 2012). Nature reserves, historic landscape elements such as monumental buildings, villages and estates, together form the major pillars in the Dutch national landscapes.



Figure 2. The 20 National Landscapes (Source: PBL, 2012)

### 3.4. Estates

Estates can be seen as the perfect example of a landscape where nature and culture are entangled and which together gives shape to a rich cultural landscape. The exact definition of an estate is difficult to find and tends to vary between different authors and organizations. An important Dutch policy for tax incentives to estate owners “The Estates Act” (Natuurschoonwet), define estates as “immovable property which is entirely or partly covered with nature, forests or woodlands - including the country house, its outbuildings and structures with similar characteristics of the estate -, and which natural beauty is of such quality that existence of the estate in its characteristic form is desirable” (Overheid, n.d., Artikel 1a). Yet this definition still leaves a lot open to own interpretation, such as the concepts behind nature and woodland, as well as the required physical qualities of that estate. Though definitions of an estate varies, some elements en features are commonly addressed. Looking at the way organizations as Natuurmonumenten, Provinciale Landschappen and Staatsbosbeheer describe their estates, an integrated own definition can be made:

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#### ESTATE

*One or multiple monumental buildings (e.g. country house, castle, stronghold, mansions, orangery, chapels, outbuildings, farms) with an area of forest, parks, gardens and agricultural land that together form a visual unit (ensemble) of multiple hectares*

Often also the term “buitenplaats” is mentioned in the definition of estate (for example: Overheid, n.d., Artikel 1a). A “buitenplaats” is a historically important building (with outbuildings and gardens), however it had a specific function of providing temporary housing to the elite in the 17<sup>th</sup> century. A buitenplaats was often used as an escape from the busy cities during the summer months (Utrechtse Buitenplaatsen. N.d.). The exact difference between a buitenplaats and an estate is difficult to determine, the main difference seems to be in that an estate is managed as an economic function which provides income (for example food production), whereas a buitenplaats is originally something that only has expenses because it was meant to be only for recreational purposes (AtelierOverijssel, 2010; Utrechtse Buitenplaatsen, N.d.; Jaar van de Historische Buitenplaats, 2011). Another difference is that estates are bigger in size and that these often contain multiple buildings (often farms) which provided income to the heart of the estate: the “buitenplaats” (Jaar van de Historische Buitenplaats, 2011). In that sense estates could be understood as the company, whereas the “buitenplaats” is meant for pleasure and relaxation.

Providing one characterization for all estates is complicated, if not impossible, as the landscape features of an estate are unique for every individual location and determined by the local historic and societal situation. To give an impression of what characteristics can be found in an estate, an example will be given.

A good example of an estate can be found in Arnhem (fig. 3). In Arnhem a “buitenplaats” can be found in one of its largest city parks, called “Huis Zypendaal”. Through time several parts have been added to form a large estate, in which the “buitenplaats” itself is positioned. The estate now covers a total of 91 hectares of land (Dienst Stadsbeheer, 2008). The estate of Zypendaal, together with the buitenplaats “Huis Zypendaal”, contributes to a diverse cultural landscape in which a great variety of landscape features can be found such as terraced gardens, old monumental trees, several tree-lanes, old agricultural structures, hedgerows, ponds with fountains, streams, woodlands, and several historic out buildings such as the orangerie and a carriage house. The estate provides various possibilities for recreation through a dense network of paths that cover the entire land of the estate.



Figure 3. Estate of Zypendaal in Arnhem (Source: Flickr.com)

Nowadays, new estates are also developed throughout the Netherlands (fig. 4). A new estate has to follow specific legislation to achieve the similar spatial characteristics of an historic estates. Hence, new estates frequently use historic estates as an example. New estate are defined as:

*“... a yet to develop and to be sustainably managed forest complex (with or without other land) containing one building (house) of allure with up to 3 living units. The function of the building is primarily for residential purposes. The minimum size of the forest is five hectares. Up to 10% of the total area is private property and the remaining part is publicly accessible. Altogether it forms an important added societal value”*

(Gemeente Westerveld, 2010)

The “new estate” policy has been introduced to encourage the development of new forests, which moreover also contribute to multiple societal benefits, such as recreation possibilities and the production of raw materials (Gelderlsch Bouwmeesterschap, 2010). Yet, there are still many uncertainties about the success of these new estates. Developing new estates still faces difficulties due to dispersed information, resistance from the surrounding area, long procedures and tax problems (Vader et al., 2011). Though these new estates aim at developing similar landscapes including the main building with allure and several landscape features such as gardens, parks and woodlands, there are still large differences between old en new estates, for example in the accessibility and opportunities for recreation (Geldersch Bouwmeesterschap, 2010). Geldersch Bouwmeesterschap (2010) mentions that due to the spatial complexity on site, many of the stated legislations cannot be met and that rural areas – where these new estates often are yet to be developed – actually ask for completely different interventions to increase spatial qualities. In other words, in order to fit the new estates in the landscape, efforts are required which integrates these plans in spatial planning procedures.



Figure 4. New estate in Bronckhorst (Source: Provincie Gelderland, 2010)

### 3.5. Heritage and spatial planning

The way in which the organisation of our landscape is perceived and valued in the Netherlands, has always fluctuated between different policy orientations (van der Heijden, 2005). Van der Heijden (2005) also explains the major fluctuations in the last 50 years, however focusses on developments in the natural environment in the Netherlands. He divides the “separation of functions” (agriculture and nature) and “interweaving of functions” (p. 432). The first being most prominent before the 80s and the latter from 80s to the year 2000, when the new policy plan “Nature for People, People for Nature” was published that formed a more comprehensive blend of both these directions (van der Heijden, 2005). Van der Heijden states that both directions contain “different ideas about the relation between (agri)culture and nature, ecological mitigation, ecological fidelity and integrity, and so on” (p. 436). The interweaving of functions from 80s onwards, added heritage as an important element to spatial decision making. However, the protection of heritage still is embedded with conflicting ideas with other spatial developments, making a full integration in planning policy a difficult step (Bloemers *et al.*, 2010; Janssen *et al.*, 2012).

Bloemers *et al.* (2010) think that this tension between heritage and spatial planning could be related to contrary thoughts about the “management of archaeological and cultural heritage and corresponding opinions about the possibilities and limitations of spatial planning and design” (p. 28). According to them, heritage and spatial planning have different “schools of thought” at heart, producing “conflicting ambitions and tendencies” (Bloemers *et al.*, 2010, p. 29). Bloemers *et al.* (2010) define these differing schools of thought as the “positivist” and “interpretive” (p. 29). The first can be characterised by the defensive position as it approaches heritage as a collection of valuable relics that need to be preserved by preventing new developments (Bloemers *et al.*, 2010). The second sees heritage as mental constructions, which differs between groups and in time and which can be seen as a way to give meaning to places in the present (Bloemers *et al.*, 2010). The integration of these two fields poses a great challenge, in short because one is concerned with the past and the other with the future. Feddes (1999) notes that “cultural history and spatial planning are two separate disciplines, each with its own dynamics, its own knowledge domain, its own patterns, values, language and perspective” (p. 17). Nevertheless, cultural history and spatial design are also “interrelated to the point of overlapping” because both are concerned with “change” (Feddes, 1999, p. 17), which as mentioned earlier is the inherent characteristic of the landscape. Feddes (1999) therefore describes this relation as a “love-hate relationship” (p. 17).

The connection between heritage and spatial planning - between conservation and development - requires great effort that changes the working method and attitude of two different domains. Janssen *et al.* (2012) note that the approach between heritage and spatial

planning was “accelerated and intensified by the so-called Belvedere Memorandum (1999)” which formed an “important driver behind the reorientation of Dutch heritage conservation” (p. 3). The Belvedere Memorandum aimed at the establishment of appropriate conditions about the way cultural-historic qualities are included in future spatial interventions in the Netherlands (Feddes, 1999). The fact that the Belvedere Memorandum was raised, confirms the growing need to further connect the field of heritage and spatial planning. The Memorandum considered heritage from an integrative perspective and as a determining factor in the spatial design of the Netherlands (Bloemers, 2005). Bloemers (2005) determines the central concept of the Belvedere Memorandum as “protection by development” and notes that “dynamic” and “quality” form leading words in the program (p. 73). “Dynamic” fits to the transforming character of landscapes and “quality” fits to the functioning and meaning of elements of the environment (Bloemers, 2005). The Belvedere programme thus included a “strategy designed not to turn built heritage into museum pieces but to keep it in social, functional and economic circulation” (Janssen *et al.*, 2012, p. 17).

The open view on heritage in the Belvedere programme has helped to link heritage preservation with spatial planning and made that “heritage is no longer shielded from spatial dynamics, but is now used to enhance the spatial quality of towns and regions” (Janssen *et al.*, 2012, p. 17). Though spatial planning and cultural heritage both have mixed feelings with regard to each other, they can together contribute to great new interventions. Feddes (1999) explains this as “seeking a new balance between retention and development” (p. 19). According to him this is a question of continuity: “ensuring the continued existence of old buildings and structures, the continuation of principles of design, and a process of building further upon historic processes in relation to new forms of use” (Feddes, 1999, p. 18). In other words, both domains need to broaden their vision and need to “look over each other’s shoulder” (Feddes, 1999, p. 19). Janssen *et al.*, (2012) conclude that “ten years of Belvedere policy have shown that towns and cities where heritage management is interwoven with urban and spatial planning succeed best in bringing their own heritage into the reprogramming of their town or city” (p. 18). The search for new possibilities to transform the landscape with multiple forms of use and new economic chances can help to shape the future. The recent economic, societal and governmental changes in the Netherlands will enhance this spatial transformation as heritage becomes more exposed to market forces requiring heritage to prove its economic relevance (Janssen *et al.*, 2012). This together with stronger public concern and structural changes (such as decentralization) forces alterations in the role of heritage in spatial developments. Hence, heritage will have to be dealt with in a different way in the future. Janssen (2012) mentions that “spatial planning and heritage conservation need to find alternative ways to connect specific qualities of heritage with new economic chances” (p. 21).

### 3.6. Perspective for the future

Several authors mention that a future perspective of our cultural landscapes needs to include a wider range of functions from our landscape (Vos *et al.*, 1999; van der Valk, 2002; van der Valk & Bloemers, 2004). Van der Valk (2002) shows that mono-functionality is outdated, highlighting the need of a multiple land use focus. Vos *et al.* (1999) observe that there are “multiple demands” from society, which offers a “sound economic base” for landscapes in the form of primary production together with nature, recreation, housing etc. (p. 10). The integration of heritage into spatial planning should therefore be seen as a combined effort, in which an answer to the questions posed by various groups in society is the most important ambition (Van der Valk & Bloemers, 2004). Bosma (2008) mentions that “sectoral thinking” forms one of largest hindrances to a collaboration between heritage and spatial planning (p. 14). Bosma (2008) specifically speaks about an increased dynamic perspective (and re-interpretation) of cultural heritage and the integration of economic gains for a better financial and public efficiency of heritage. Bosma, van der Valk & Bloemers and Vos all raise the importance of forming alliances, the acknowledgment of multiple demands from society and the use of interdisciplinary constructions. In other words, to investigate what is actually demanded from society prior to taking action.

Bazelmans (2006) also suggests that Dutch archaeology will have to deal with a new system to define the public interest. He concludes that “the main challenge for the agenda therefore lies in how it deals with the cultural, political and economic demands that will be made of it” (Bazelmans, 2006, p. 13). It will be necessary to make choices that allows the involvement of local residents and local businesses. Even the Belvedere Memorandum inspired to include the social needs in cultural history: “central to the vision must be the social need to regard cultural history in an integrated and development-oriented way, and to use it as a source of inspiration. So doing, the plans of today can be placed into the long-term perspective” (Feddes, 1999, p. 72).

*“Landscape archaeology and historical landscape studies need to think bigger”*

(Bloemers *et al.*, 2010, p. 664)

New approaches seem necessary, especially those that allow partnerships with other disciplines (Bloemers *et al.*, 2010). Bloemers *et al.* (2010) recommendation to think big and further than the conventional ideas, gives way to investigate the benefits people actually receive from cultural heritage. Bloemers *et al.* (2010) state that “we might usefully ask how much is actually known about what landscape actually means to the wider population” (p. 666). The support of landowners is important, however it is every so often the land users that determines the success of the area. In that sense, “an approach of preservation and restoration

is not always desirable or possible” (Vervloet et al., 2005, p. 154). Vervloet et al. (2005) suggest an approach “by which the historical aspects of cultural landscapes have to be connected with other functions and interests by means of integral planning associated with a large circle of involved disciplines, institutions and citizens” (p. 154). The suggestion of Vervloet et al. asks for a way to define functions and interests in an area that are of a high and collective value. Functions can also be described as “services” when people add value to a function (Termorshuizen & Opdam, 2009). Hence, the concept of landscape services can help to integrate the historical aspect of landscapes with other services from the landscape.

### 3.7. Ecosystem services and landscape services

Research focussing on benefits from ecosystems has risen enormously during the last few decades (Fisher *et al.*, 2009). These benefits were in 1977 first named “natures services” by Westman (p. 960). Westman (1977) hoped that “by weighing the benefits to society of nature in the undeveloped state, against the benefits of resource development, an objective basis for decision-making will be achieved” (p. 960). Fisher et al. (2009) note that we now “commonly refer to Westman’s services as “ecosystem services” (p. 645). The use of this term especially accelerated with the publication of the Millennium Ecosystem Assessment (MA) in 2005. This work of the United Nations assessed consequences of ecosystem change for human well-being and positioned ecosystem services in international debate (Veeneklaas, 2012; De Groot *et al.*, 2010). In the work of the Millennium Ecosystem Assessment (2005a) ecosystem services are defined as “the benefits that people obtain from ecosystems” (p. 78). Ecosystem services are crucial to our survival, for example crop pollination, water purification and climate regulation are provided by ecosystems and crucial to our existence. In the work of the Millennium Ecosystem Assessment (2005c) is even said that “changes in ecosystem services influence all components of human well-being, including the basic material needs for a good life, health, good social relations, security, and freedom of choice and action” (p. 49).

Even though these services are crucial to our survival, the concept “ecosystem service” itself is relatively new, this while the phenomena has always

#### ECOSYSTEM FUNCTION ECOSYSTEM SERVICE

*An ecosystem function is a natural process which takes place in animal and plant communities (an ecosystem)*

*Ecosystem services are the ecological, economic and socio-cultural benefits which are derived directly and indirectly from a certain landscape*

*Hence, “functions” can be translated into “services” when people add value to a function*

been there (Veeneklaas, 2012). Humans from prehistoric times till today have always been dependent on what now is referred to as ecosystem services. This is also mentioned by Tallis et al. (2008), who note that “both the conservation and economic development communities have embraced ecosystem services for at least a decade, without explicitly labelling them as such” (p. 9457). The recent attention to services from ecosystems has to do with the fact that as a result of human actions the structure and functioning of ecosystems changed significantly, leading to severe deterioration of the supply of services (MA, 2005b; Veeneklaas, 2012). In addition to deterioration of supply, the recent attention also has to do with an association with support for our natural environment (Veeneklaas, 2012; Tallis *et al.*, 2008). Veeneklaas (2012) states that by “providing insight into the importance of ecosystem services, more support is generated for management, restoration and development of the natural environment (p. 1). Veeneklaas (2012) refers to this as a situation of either “use it or lose it” (p. 1). Tallis et al. (2008) mention that this combination comes from “conservationists who seek to increase public support for biodiversity protection by integrating economic development, and development agencies that seek to also provide for the stewardship of nature under the mantra of sustainable development” (p. 9457).

Though most literature sources refer to ecosystem services as simple the benefits people receive from ecosystems, some other perspectives regarding ecosystem services can be distinguished. The discussion around the term ecosystem service is even so complex that Fisher et al. (2009) started a study to distinguish different types of perspectives which helped to develop a typology for the various terms used in literature. They systemized the various perspectives in three different categories, namely “organization”, “operation” and “outcome” (p. 645). Their study reveals that what authors refer to as processes, function, functioning (Fisher et al., 2009 even note that there is a debate over the difference between ecosystem function and ecosystem functioning), outcome, benefit, service etc. is so diverse that it could be a topic for a research on its own.

The different ways of defining ecosystems services, is especially related to the position in theory that is taken by the various authors and is frequently linked to valuation of those services. For example Boyd & Banzhaf (2007) proposed a definition for ecosystem services which is rooted in economic and ecological theory and even note to have developed one which is objective rather than qualitative. In contrast to Boyd & Banzhaf, Constanza et al. (1997) take a much more nuanced position towards defining ecosystem services, deliberately expressing the difficulties and uncertainties that are related with valuation of services. Kremen (2005) is also rooted in ecological theory, yet with a strong focus on the role of biodiversity, again providing different perspectives on the definition of services and the valuation of it. Chiesura & de Groot (2003) also distinguish the ecological and economic value of natural capital, yet mention a third direction which focusses on socio-cultural values.

They mention that “national capital, in fact, does not only provides the bio-geochemical context for species and habitat preservation, but also the socio-cultural context for human society” (p. 224). The way different authors refer to ecosystem services appears to rely on the scope of the author. Three main scopes can be distinguished: economic, ecological and socio-cultural scope.

Boyd & Banzhaf focus especially on the economic dimension, though with a link to ecosystems. The biggest problem Boyd & Banzhaf (2007) found is related to the consistency of the various definitions of services, which can be related to the statement that “Because most ecosystem services are public goods, markets are not available to provide clear units of account” (p. 617). Yet the lack of units of account was already an issue back in 1977, as Westman also noted that “Cost-benefit analysis can also be argued to be altogether inappropriate to an assessment of natural values, since there is far from social agreement that monetary units can express the equivalent gains from the loss of nature’s services” (p. 963). Because of the need for units of account, Boyd & Banzhaf (2007) relate services not to the benefits people receive from ecosystems, but instead to the actual “components” of nature that are “directly enjoyed, consumed, or used to yield human well-being” (p. 619). This idea about a service however has one significant problem: all services that arise from the combination with other inputs are not ecosystem services. In their definition, recreation can therefore never be an ecosystem service, because it requires other inputs such as pathways, cycling routes, parking places and so on. Boyd & Banzhaf (2007) note that “the distinction between end-products and intermediate products is fundamental to welfare accounting” (p. 619). The definition of Boyd & Banzhaf (2007) is absolutely embedded with economic considerations, this can especially be seen in their worries for “double counting” and the distinction of “intermediate” and “final” goods (p. 619).

Kremen (2005) is an author with a focus on the ecological dimension. This can be seen in the emphasis on diversity-function relations. In Kremen’s (2005) perspective on ecosystem services four aspects are central, these are “the ecosystem service providers”, “functional relationships”, “factors influencing provision” and “spatial scales of operation” (p. 469). In this perspective functioning, provisioning and spatial scales are often mentioned in relation to ecosystem services.

The socio-cultural dimension is best clarified by Chiesura & de Groot (2003). They mention that this dimension is especially different in that the values are “not directly quantifiable in monetary terms, but which belong to the ethical, spiritual and affective realm of human beings” (p. 224). Chiesura & de Groot (2003) state that the socio-cultural dimension focus on “the human being with its social and psychological context, its non-materialistic needs, its understanding of well-being, and the rational as well as the emotional components of its

attitudes towards the natural environment” (p. 224). The vagueness of this dimension makes it therefore difficult to establish the actual value of it, this also because it is not only to the individual but to the society as a whole that benefits (Chiesura & de Groot, 2003).

Even though Kremen, Chiesura & de Groot, and Boyd & Banzhaf have different perspectives on the concepts that underlie ecosystem services, some similarities about the necessary aspects of ecosystem services can be determined, these aspects are: the providers (Boyd & Banzhaf, prefer the term components), the process (or what Kremen calls “functioning” and what Boyd & Banzhaf refer to as physical interactions between components), and the value of the end-product (use and non-use). In line with the above may be concluded that this term “ecosystem service” is very much multiple interpretable, often depending on the scope which is taken to define it. For simplicity there is here referred to ecosystem services as the

*Ecological, economic and socio-cultural benefits which are derived directly and indirectly from a certain landscape*

In the last decade there is an emphasis in spatial planning on a landscape perspective and at different spatial scales to understand the processes that maintain the landscape (Jones *et al.*, 2012). The term “landscape” in the above definition of ecosystem services, is used to draw attention on the various spatial scales in which ecosystem services are embedded, as also mentioned by Limburg *et al.* (2002): “Ecosystem services are provided by processes functioning at various scales” (p. 411).

As pointed out earlier, change is an important characteristic of a landscape in the Netherlands, therefore a landscape can be defined as

*A dynamic setting that has been formed by a great variety of human as well as environmental forces which altered it into a semi-natural shape and therefore provides a multitude of services*

The multitude of services are established by complex interactions between various features of ecosystems (Limburg *et al.*, 2002). This indicates that these complex interactions contain processes

## SCALE VS. DISTANCE

*Various authors mix-up the terms “scale” and “distance”. Frequently the term “scale” is (mis)used to express a certain physical distance between objects or places. To avoid misunderstandings with the use of this term, scale is in this research regarded as a physical distance, which simply refers to the distance (or length) between objects, points or places*

at various, and sometimes overlapping, spatial scales (Limburg *et al.*, 2002). In a similar way as Limburg *et al.* (2002), Termorshuizen & Opdam (2009) point out this feature-process-functioning relationship. They mention that “functioning of landscapes is the result of the interaction between physical structures, which are the basis for natural processes, and human actions. Because functions can be valued by humans, they connect the performance of the landscape system to human values and use” (p. 1041). Termorshuizen & Opdam’s (2009) interpretation, points out that functions of ecosystems remain present when people are missing. The term “service” is thus a translation when functions are valued by people. This means that if people are out of the picture, the performance of the landscape provides benefits to ecosystems and its biodiversity. De Groot *et al.* (2010) also discuss the relationship between components of ecosystems and their services and show that landscape conversion influences the system properties, processes and components which are the basis of service provisioning. The configuration of the landscape, i.e. land-cover types, differ in provisioning of services to people. Added to that is that land transformation also has an influence on the services that have possibly been provided to people in the past.

*“Change in land use or management will therefore cause a change in service supply, not only for specific services but for the complete bundle of services provided by that (eco)system”*

(De Groot *et al.*, 2010, p. 264)

## LANDSCAPE SERVICES AS A SPECIFICATION TO ECOSYSTEM SERVICES

*The specification of landscape service highlights human-nature interactions and the relationships between elements in the landscape, without the physical boundary of a local ecosystem.*

*The term ecosystem service puts the emphases on the providers, the process and the value of the end-product, within a certain physical setting: frequently one ecosystem.*

*Because human-nature relationships form one of the essential elements within this research, the term landscape service is regarded as more appropriate and therefore used throughout this research*

Termorshuizen & Opdam’s (2009) view on the relationships between physical structures and processes led to a change in direction, i.e. a “landscape service” perspective instead of “ecosystem service”. They mention that “because of these intricate relationships between the spatial pattern of landscape elements and (horizontal) landscape processes, we prefer the term “landscape” because it highlights the importance of spatial pattern, whereas the ecosystem concept highlights the functional (vertical) relationship between ecosystem components” (p.

1043). The interaction between features in the landscape requires a larger scale. O'Neill (2001) also mentioned that "the ecosystem concept assumes that the interactions and feedback loops, necessary and sufficient to explain dynamics, occur within the boundaries. The problem with this assumption is that the spatial distributions of the component populations may be much larger than the ecosystem boundaries" (p. 3277). In his view, though focussed on ecological phenomena, "a range of spatial scales" are required and not the boundary of the local ecosystem (p. 3280). The actual extent of such a spatial scale is therefore not fixed and is difficult to determine (Limburg *et al.*, 2002). Veeneklaas (2012) even mention that a landscape is the setting "what is in sight", the spatial scale is therefore as open as "what someone can see" (p. 5). In addition to the limited boundaries that comes with the term ecosystem service, the term landscape is also more popular and suits to multiple disciplines (Termorshuizen & Opdam, 2009; Veeneklaas, 2012). Veeneklaas (2012) also mentions that:

*"Some functions are linked to the landscape as a whole, which is more than the sum of its composing parts"*

(Veeneklaas, 2012, p. 5)

The functions that he is referring to are the information functions (e.g. appreciation of scenery) and the historic value of the landscape (Veeneklaas, 2012).

In line with what Veeneklaas (2012) notes about the information function can be presumed that cultural heritage fits best in line with the concept "landscape service". This especially because of the relationship between spatial patterns of different elements: i.e. the landscape as a whole. Termorshuizen & Opdam (2009) support this by mentioning that the term ecosystem is more associated with "natural processes and conservation instead of human habitat, cultural patterns, and development" (p. 1043).

De Groot et al. (2010) also note implications from the influence of distances; "stakeholders managing an ecosystem usually benefit from only part of the ecosystem services provided by that ecosystem" (p. 269).

*"for instance, at the scale of the watershed, upstream forest users influence downstream water supply – and forest degradation may lead to increased flood risk or sedimentation"*

(De Groot et al., 2010, p. 269)

Their example shows that people at longer distances from the services source, receive other benefits than the people that are closer to the source (forest users versus water users). Added to that is also that the different users can influence the quality of the services which are provided to people at a longer distance from the source (e.g. a forest). Fisher et al. (2009) therefore propose to use scale qualifiers:

*-in situ, where the services are provided and the benefits are realized in the same location*  
*-omni-directional, where the services are provided in one location, but benefit the surrounding landscape without directional bias*  
*-directional, where the service provision benefits a specific location due to the flow direction*  
(Fisher et al., 2009, p. 650)

Such a classification scheme recognizes that benefit distribution from services can differ across the landscape. Fisher et al. (2009) add that such a classification scheme can help to inform management interventions and set up payment for environmental services.

Besides the diverse distribution of benefits over the landscape, the service itself can also be “benefit dependent” which makes the situation complex. Fisher et al., (2009) note that “the benefits you are interested in will dictate what you understand as an ecosystem service” (p. 648). Because different people (or groups of people), receive different benefits from the same landscape, they can also be conflicting (Fisher et al., 2009). Tress et al. (2001) note that “Communities, legislators, industry, business, local stakeholders, and the public at

## SERVICES VS. BENEFITS

*There is a lot of debate going on about when something can be regarded either a benefit or a service (especially related to economic valuation; see Boyd & Banzhaf, 2007). This debate has to do with the distinction between end-products and intermediate products.*

*A benefit is “the end-product that has a direct effect on human welfare”.*

*Boyd & Banzhaf (2007) note that, “as end-products of nature, final ecosystem services are not benefits nor are they necessarily the final product consumed. For example, recreation often is called an ecosystem service. It is more appropriately considered a benefit produced using both ecological services and conventional goods and services” (p. 619).*

*Hence, benefits (which include things like wood, food, recreations etc.) are related but different to the services that provide them.*

*Because this research does not include any form of economic valuation, this service-benefit distinction will be regarded as negligible*

large simultaneously make different demands on landscapes while also contributing to landscapes” (p. 137). This implies that it is a subject in which both the individual and the society as a whole, are very central and therefore should include a variety of disciplines at different institutional levels. However, landscapes are hardly ever shaped by means of an interdisciplinary process (Tress *et al.*, 2001). Terkenli (2001) notes three interconnecting aspects of the landscape: “the form (the visual), meaning (the cognitive) and function (biophysical processes)” (p. 200). He argues that because these three aspects vary in time, space and social context, landscape analysis must become an inherently transdisciplinary task. Tress *et al.* (2003b) add to this that “large-scale, detailed studies involve more real objects of the landscape... Inter- and transdisciplinary work can hardly be avoided at these scales” (p. 51).

*“The landscape conceived as the perceivable whole that is the result of the interaction between natural processes and human actions cannot be studied by one discipline using a particular set of methods and concepts”*

(Tress *et al.*, 2003b, p. 52)

Jahn *et al.* (2012) see transdisciplinary as an extension of interdisciplinary and note that the integral part of interdisciplinary is the “production of new knowledge” (p. 5). Transdisciplinary is in their opinion a process of mutual learning between science and society. Tress *et al.* (2003a) mention that there is a lack of terminology for the terms inter- and transdisciplinarity, yet both entail the transfer of knowledge across disciplinary boundaries. They also note that:

*“All landscapes are shaped by nature and culture; research, planning and management of landscapes, therefore, demand an interdisciplinary effort that spans these two realms”*

(Tress *et al.*, 2003a, p. 11)

## INTERDISCIPLINARY CONSTRUCTION

*Every individual person has his or her own personal interests, which contribute to different demands on landscapes.*

*In this study, interdisciplinary construction therefore implies the crossing of boundaries between disciplines of persons in order to include diverse perspectives of individuals. The background of a person is therefore seen as the important factor that determines the interdisciplinarity in this study.*

*Scientific research draws interdisciplinarity frequently on the integration of fields of expertise: e.g. spatial planning, design studies, water management, ecology, sociology etc.*

Nevertheless, often only particular actors determine the way the landscape is developed and these trends do not show a creation of a real win-win situations for all (Tress *et al.*, 2003b). Decision making is done at different institutional levels and each level comprises different stakeholders with sometimes conflicting interests (Hein *et al.*, 2006). At the lowest levels these include the individuals and households, while at higher institutional levels the municipal, provincial and national bodies are included. Hein *et al.* (2006) argue that ecosystem services affects stakeholders at all institutional levels, however the interests and values differ between these levels, depending on their cultural background and impact on living conditions.

## SUPPLY AND DEMAND MISMATCH

*The supply of services is often influenced by a different set of institutes, than those who benefit from the provisioning. Added to that is that individuals have a different interest for certain services, which especially differs between institutional levels. This mismatch between those who influence and those who benefit, could potentially lead to sub-optimal landscapes.*

*“Local authorities, that have the specific mandate to look after provincial or municipal interests, cannot be expected to be the appropriate institutional level to ensure the maintenance of this service”*

(Hein *et al.*, 2006, p. 225)

Hein *et al.* (2006) argue that the “formulation or implementation of management plans on the basis of stakeholders’ interest at one institutional scale is bound to lead to sub-optimal ecosystem management from the perspective of stakeholders at other scales” (p. 225). Land use decisions therefore could also lead to landscapes with sub-optimal provisioning of services to people at various institutional levels.

### 3.8. Classification of services

It is important to discuss some aspects about the classification and typology of services. This is especially related to the fact that it can become quite difficult to be precise about what a landscape service actually is. There are a lot of authors that have constructed classification systems for services, yet most of them focus here on “ecosystem services”, instead of the definition that relates to the larger spatial scale “landscape services”. In the classification system for ecosystem services by the MA (2005b) four main categories are distinguished: “These include provisioning, regulating, and cultural services, which directly affect people, and supporting services needed to maintain the other services” (MA, 2005a, p. 78) (see fig. 5).

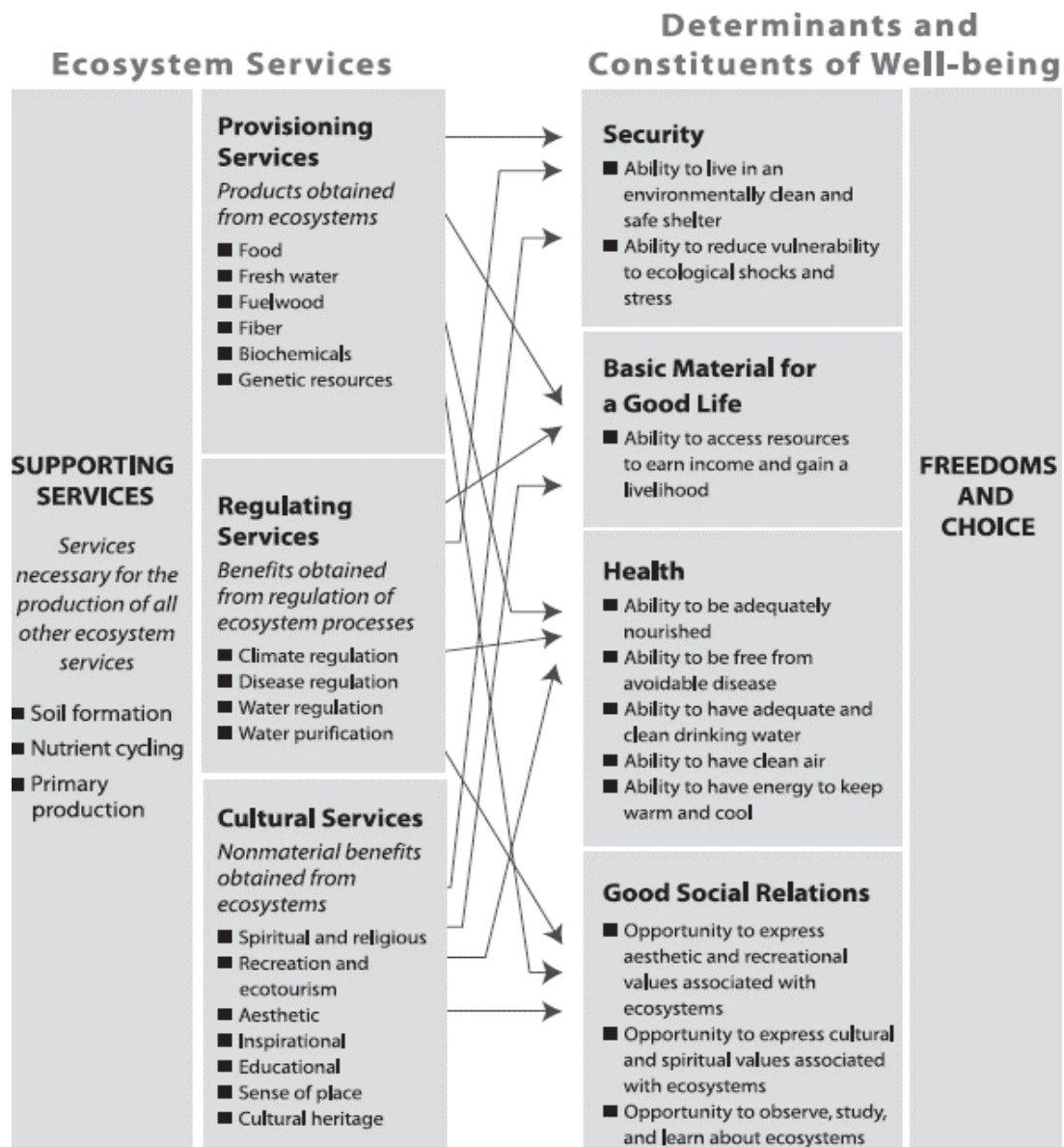


Figure 5. Classification of ecosystem services by MA (MA, 2005a, p. 78)

Human well-being is affected by these services through the determinants security, basic materials, health and social relations, which are in turn influenced by and have an influence on our freedom and choice (MA, 2005b).

As can be seen in fig. 5 the classification system by the MA separates the supporting services from the three other categories. This is done because these supporting services do not directly benefit human well-being (MA, 2005a). As mentioned earlier, there is a lot of discussion going on about the differences between direct and indirect service, and especially around the processes that give rise to a service or benefit of people (for example Boyd & Banzhaf, 2007). Despite the fact that consensus on an integrated approach to ecosystem service classification and valuation is lacking, efforts have been made (often based on the scheme by the MA) to develop classification systems on a more integrated basis. For example De Groot et al. (2002) and De Groot (2006) attempted to provide such an overview of the functions, including the underlying processes and the derived services from the natural environment (fig. 6).

Functions	Ecosystem processes and components	Goods and services (examples)
<b>Regulation functions</b>	<b>Maintenance of essential ecological processes and life support systems</b>	
1 Gas regulation	Role of ecosystems in bio-geochemical cycles (e.g. CO <sub>2</sub> /O <sub>2</sub> balance, ozone layer, etc.)	1.1 UVB-protection by O <sub>3</sub> (preventing disease)  1.2 Maintenance of (good) air quality 1.3 Influence on climate (see also function 2)
2 Climate regulation	Influence of land cover and biol. mediated processes (e.g. DMS-production) on climate	Maintenance of a favorable climate (temp., precipitation, etc) for, for example, human habitation, health, cultivation
3 Disturbance prevention	Influence of ecosystem structure on dampening env. disturbances	3.1 Storm protection (e.g. by coral reefs)  3.2 Flood prevention (e.g. by wetlands and forests)
4 Water regulation	Role of land cover in regulating runoff and river discharge	Drainage and natural irrigation
5 Water supply	Filtering, retention and storage of fresh water (e.g. in aquifers)	Provision of water for consumptive use (e.g. drinking, irrigation and industrial use)
6 Soil retention	Role of vegetation root matrix and soil biota in soil retention	6.1 Maintenance of arable land  6.2 Prevention of damage from erosion/siltation
7 Soil formation	Weathering of rock, accumulation of organic matter	7.1 Maintenance of productivity on arable land  7.2 Maintenance of natural productive soils
8 Nutrient regulation	Role of biota in storage and re-cycling of nutrients (e.g. N, P and S)	Maintenance of healthy soils and productive ecosystems
9 Waste treatment	Role of vegetation and biota in removal or breakdown of xenic nutrients and compounds	9.1 Pollution control/detoxification  9.2 Filtering of dust particles (air quality) 9.3 Abatement of noise pollution
10 Pollination	Role of biota in movement of floral gametes	10.1 Pollination of wild plant species 10.2 Pollination of crops
11 Biological control	Population control through trophic-dynamic relations	11.1 Control of pests and diseases  11.2 Reduction of herbivory (crop damage)
<b>Habitat functions</b>	<b>Providing habitat (suitable living space) for wild plant and animal species</b>	
12 Refugium function	Suitable living space for wild plants and animals	Maintenance of biological and genetic diversity (and, thus, the basis for most other functions)
13 Nursery function	Suitable reproduction-habitat	Maintenance of commercially harvested species
<b>Production functions</b>	<b>Provision of natural resources</b>	
14 Food	Conversion of solar energy into edible plants and animals	14.1 Hunting, gathering of fish, game, fruits, etc.  14.2 Small-scale subsistence farming and aquaculture
15 Raw materials	Conversion of solar energy into biomass for human construction and other uses	15.1 Building and Manufacturing (e.g. lumber  15.2 Fuel and energy (e.g. fuel wood 15.3 Fodder and fertilizer (e.g. krill
16 Genetic resources	Genetic material and evolution in wild plants and animals	16.1 Improve crop resistance to pathogens and pests,  16.2 Other applications (e.g. health care)

17	Medicinal resources	Variety in (bio)chemical sub-stances in, and other medicinal uses of, natural biota	17.1 Drugs and pharmaceuticals 17.2 Chemical models and tools 17.3 Test and essay organisms
18	Ornamental resources	Variety of biota in natural ecosystems with (potential) ornamental use	Resources for fashion, handicraft, jewellery, pets, worship, decoration and souvenirs (e.g. furs, feathers, ivory, orchids, butterflies, aquarium fish, shells, etc.)
Information functions		Providing opportunities for cognitive development	
19	Aesthetic information	Attractive landscape features	Enjoyment of scenery (scenic roads, housing, etc.)
20	Re-creation	Variety in landscapes with (potential) re-creational uses	Travel to natural ecosystems for eco-tourism and (re-creational) nature study
21	Cultural and artistic information	Variety in natural features with cultural and artistic value	Use of nature as motive in books, film, painting, folklore, national symbols, architect, advertising, etc.
22	Spiritual and historic information	Variety in natural features with spiritual and historic value	Use of nature for religious or historic purposes (i.e. heritage value of natural ecosystems and features)
23	Science and education	Variety in nature with scientific and educational value	Use of natural systems for school excursions, etc. Use of nature for scientific research
Carrier functions		Providing a suitable substrate or medium for human activities and infrastructure	
24	Habitation	Depending on the specific land use type, different requirements are placed on environmental conditions (e.g. soil stability and fertility, air and water quality, topography, climate, geology, etc.)	Living space (ranging from small settlements to urban areas)
25	Cultivation		Food and raw materials from cultivated land and aquaculture
26	Energy-conversion		Energy-facilities (solar, wind, water, etc.)
27	Mining		Minerals, oil, gold, etc.
28	Waste disposal		Space for solid waste disposal
29	Transportation		Transportation by land and water
30	Tourism-facilities		Tourism-activities (outdoor sports, beach-tourism, etc.)

Figure 6. Classification system of ecosystem services by De Groot (De Groot, 2006, p. 179)

This attempt to deliver an integrated classification system, that merges economic, ecological and socio-cultural disciplines, helped as an instrument to obtain better insights in the positive and negative effects of projects (De Groot, 2006). The integrated classification system by De Groot (2006) (fig. 6) was based on a wide range of earlier classification schemes emerging in the period between 1997 and 2006 (for example Costanza et al. (1997), De Groot et al. (2002), when the need to show the (economic) benefits of ecosystems and landscapes raised. Nevertheless, the discussion about classifying ecosystem services continued with for example Hein et al. (2006), Boyd and Banzhaf (2007), Fisher et al. (2009) and De Groot et al. (2010). Some even note that it is “impossible to develop one scheme that is adequate for the many contexts in which ecosystem service research may be utilized” (Fisher *et al.*, 2009, p. 643). In a more recent publication by the Economics of Ecosystems and Biodiversity (TEEB) a very similar classification system is still used (fig. 7). The classification system of the TEEB is mainly based on the one of the MA (2005a), Costanza et al. (1997) and De Groot et al. (2002). In this classification scheme, the supporting services which can still be found in the scheme by the MA (fig. 5) are not mentioned anymore. This is done because TEEB (2010) sees these supporting services as a “subset of ecological processes” (p. 19). Compared to the scheme of De Groot (2002) (fig. 6) only minor adjustments have been made, the foremost changes can be found in the applied terminology in the main service categories. The

classification system provided by the TEEB facilitates the multiple services from ecosystems. It has been made clear that ecosystem services comprise out of the provisioning, regulating, habitat and cultural services. However, there are two important aspects that need to be addressed. Firstly, the interaction between nature and man resulting in cultural services is inadequately integrated within the classification system of ecosystem services. The importance of cultural and amenity services has been recognized in most schemes, however these are often seen as a residual category mainly because these have shown to be difficult to evaluate (Daniel *et al.*, 2012). These services however form an essential element of ecosystem services (Schaich *et al.*, 2010). Schaich *et al.* (2010) mention that “this is particularly problematic if the concept of ecosystem services is applied in cultural landscapes, given their long-lasting land use history, their dynamic interactions of humans and nature, their cultural patterns, and people’s identities and values” (p. 274). Secondly, as mentioned earlier, the concept of ecosystem services assumes that functions which provide services to society, occur within the boundaries of an ecosystem. The interaction between features in the landscape (which is the case with complex cultural landscapes) requires a larger scale. The flow of ecosystem services within a landscape, i.e. “landscape services” should therefore be applied with respect to cultural landscapes as an alternative to the concept of ecosystem services. At present, literature with an emphasis on landscape services builds further on the systematics of ecosystem services, without providing such a classification scheme established with a multi-scale approach.

<b><i>Main service types</i></b>
<b>Provisioning Services</b>
Food (e.g. fish, game, fruit)
Water (e.g. for drinking, irrigation, cooling)
Raw Materials (e.g. fiber, timber, fuel wood, fodder, fertilizer)
Genetic resources (e.g. for crop-improvement and medicinal purposes)
Medicinal resources (e.g. biochemical products, models & test-organisms)
Ornamental resources (e.g. artisan work, decorative plants, pet animals, fashion)
<b>Regulating Services</b>
Air quality regulation (e.g. capturing (fine)dust, chemicals, etc.)
Climate regulation (incl. C-sequestration, influence of vegetation on rainfall, etc.)
Moderation of extreme events (e.g. storm protection and flood prevention)
Regulation of water flows (e.g. natural drainage, irrigation and drought prevention)
Waste treatment (especially water purification)
Erosion prevention
Maintenance of soil fertility (incl. soil formation)
Pollination
Biological control (e.g. seed dispersal, pest and disease control)
<b>Habitat Services</b>
Maintenance of life cycles of migratory species (incl. nursery service)
Maintenance of genetic diversity (especially in gene pool protection)
<b>Cultural &amp; Amenity Services</b>
Aesthetic information
Opportunities for recreation & tourism
Inspiration for culture, art and design
Spiritual experience
Information for cognitive development

## USE OF THE TERM LANDSCAPE SERVICE

*Because “landscape service” is a relatively new and unfamiliar concept in science, some sources will be addressed which still make use of “ecosystem service” terminology. In these cases, “ecosystem services” should be interpreted as landscape services*

Figure 7. Classification system of ecosystem services by the TEEB (TEEB, 2010, p.21)

### 3.9. Main results of the theoretical analysis

Research focussing on benefits from landscapes has risen enormously during the last few decades (Fisher *et al.*, 2009). Yet instead of forming a comprehensive and mutual acknowledged body for spatial decision making, it resulted into a theoretical debate which is far from helping to form consensus. The above established theoretical framework, brings four common dimensions to light, which underlie the varied perspectives in the debate about the benefits from landscapes. These four dimensions are: physical configurations; disciplinary background; institutional levels and distance:

- The physical configuration of the landscape forms the basis for services that are provided by landscapes. This is illustrated by Termorshuizen & Opdam (2009), who note that “functioning of landscapes is the result of the interaction between physical structures, which are the basis for natural processes, and human actions. Because functions can be valued by humans, they connect the performance of the landscape system to human values and use” (p. 1041). Limburg *et al.* (2002) also point out that complex interactions between various features of ecosystems establish the multitude of services. These features and especially the configuration and spatial patterns of them is frequently underlying the debate (see: De Groot, 2006; De Groot *et al.*, 2010; Fisher *et al.*, 2009; Goldman *et al.*, 2007; Kremen, 2005; Limburg *et al.*, 2002; Termorshuizen & Opdam, 2009; Verburg *et al.*, 2004 ).
- The background of individuals determines what is valued as a service. Yet, these values are benefit dependent as the benefits that an individual is interested in will dictate what is understood as a service (Fisher *et al.*, 2009). The disciplinary background of humans is therefore crucial in relation to benefits from the landscape. Landscapes are however hardly ever formed with interdisciplinary methods (Tress *et al.*, 2001). Tress *et al.* (2003b) mention in their article that “dealing seriously with the landscape as object of research, means interdisciplinarity” (p. 52). The way different authors refer to ecosystem services also appears to rely on the scope of the author. Three main scopes have been distinguished: economic, ecological and socio-cultural (Boyd & Banzhaf, 2007; Kremen, 2005; Chiesura & de Groot, 2003). The scope of individuals and the need to integrate disciplines is frequently underlying the debate about benefits from the landscape (Tress *et al.*, 2001; Vos & Meekes, 1999).
- Spatial decision making is often done at different institutional levels. The hierarchy of institutions takes decisions over the land use types (Hein *et al.*, 2006). At the lowest institutional level, this includes local businesses and district government agencies. At higher institutional levels government agencies at municipal, provincial, national and international levels are involved in spatial decision making. Hein *et al.* (2006) note that these different levels “attach a different value to ecosystem services, depending on their cultural background, and upon the impact of the service on their income and/or

living conditions” (p. 224). These different institutional levels, with sometimes conflicting interests, require balance in order to form optimal landscapes. Hein et al. (2006) address the problem of “sub-optimal” landscapes, because of a lack of considered interests between institutional levels. There are numerous authors that point out to the importance of interaction between institutional levels (decision makers) and the actual land users in order to create benefits from landscapes and to optimize land use (Hein *et al.*, 2006; Vos & Meekes, 1999; De Groot *et al.*, 2010).

- Studying the interaction between features in the landscape requires a larger physical distance, i.e. the landscape as a whole. Veeneklaas (2012) also notes that “some functions are linked to the landscape as a whole, which is more than the sum of its composing parts” (p. 5). The functions that he refers to are the information functions (e.g. appreciation of scenery) and the historic value of the landscape (Veeneklaas, 2012). There is a lot of debate about the extent of distances and its relation to benefits found from the landscape, yet most acknowledge that distance is crucial in relation to services from the landscape (Fisher *et al.*, 2009; Goldman *et al.*, 2007; De Groot *et al.*, 2002; De Groot *et al.*, 2010; Hein *et al.*, 2006; Termorshuizen & Opdam, 2009). Distance is therefore one of important dimensions in this research.

The above four dimensions which have found to be commonly addressed in the theoretical framework, also appear to be interlinked with each other (fig. 8). Landscape configuration determines which services can be found by humans. Yet, it is also the physical distance between an individual and a certain landscape feature, together with the disciplinary background of that individual, which determines the services that can be received. Added to that is also that different institutional levels decide which landscape configuration is applied at a location. Institutions are however in a way also biased in their decision making by their disciplinary background (e.g. a water board has a specific interest for water retention services). The result of these complex interactions between the four dimensions together determines to what extend humans can receive services from a landscape. For that reason, these four dimensions will be used as a basis during the investigation of cultural heritage as a specific landscape service.



Figure 8. Interaction between the dimensions determines to what extend humans receive landscape services

## 4. Conceptual framework

*After an investigation into the literature concerning the fields of cultural heritage and landscape services, a conceptual framework that merges these two domains will be described in this chapter. By using the earlier described four dimensions as a basis, an attempt is made to establish a conceptual framework in which cultural heritage will be perceived as a specific landscape service. The aim of this conceptual framework is to be able to use this as an operational foundation for the research, making this chapter feel more practical and applicable. Because functioning of landscapes depends upon a lot of factors related to earth processes and spatial decision making, which also take place over larger distances, analysis of services at different distances is bound to lead to misinterpretations and discussion (Hein et al., 2006; De Groot et al., 2010). It is therefore crucial to set up boundaries, a set of indicators and an appropriate analytic scale (Limburg et al., 2002). In this conceptual framework, an attempt is made to operationalize the complexity behind the four dimensions as well as to set up the above mentioned boundaries, indicators and analytic scale. In the following four paragraphs, a specific operational approach will be provided for every dimension. This will provide the necessary insight to set up a conceptual model which can be applied throughout this research.*

### 4.1. Quantitative vs. qualitative approach to determine the influence of the physical configuration of the landscape

Landscape services are provided by certain features that can be found in the landscape. Various authors note the importance of these features, although the applied terms vary between aspects, elements, structures, providers or components (Limburg et al., 2002; Boyd & Banzhaf, 2007; Kremen, 2005; Termorshuizen & Opdam, 2009). Even though most authors note the importance of certain features in the landscape, relatively little is said about which features at what quantity actually provides services to humans. De Groot et al. (2010) attempted to provide indicators for services in order to analyze the implications of land use change on ecosystem services, yet they also note that “these techniques are still in the early stages of development” (p. 270). This might have to do with the complexity of landscapes and the systems in which processes take place (Limburg et al., 2002; Termorshuizen & Opdam, 2009). The complex interaction between physical structures determines functions of the landscape, which humans translate into services (Termorshuizen & Opdam, 2009). This indicates that one landscape can provide multiple services, yet when a single type of service is maximized (for example food production), other services could be reduced. Foley et al., (2005) also found that trade-offs need to be recognized as meeting human needs and maintaining the capacity of ecosystems to provide goods and services includes alteration of ecosystems. Based on quantitative methods, they provided a simple framework to compare

these trade-offs (fig. 9). What can be seen in this framework is that a landscape with a greater variety of elements (semi-natural) can provide multiple services to humans, especially when compared to landscape with a single land use type.

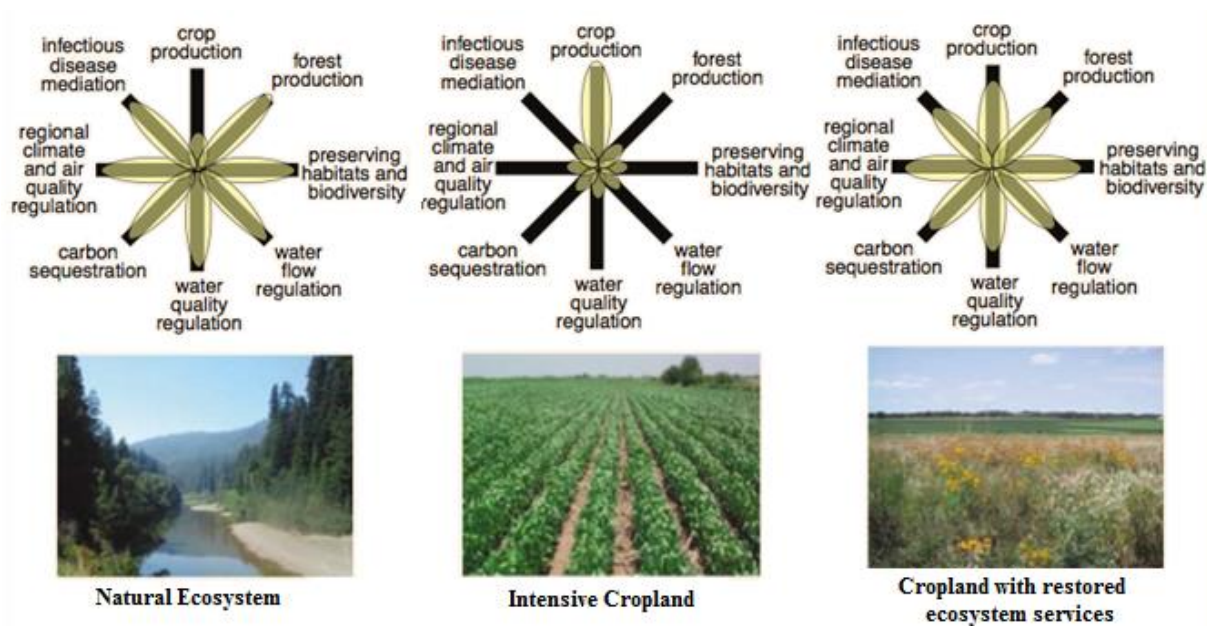


Figure 9. Quantitative approach for comparing land use and trade-offs (source: Foley et al., 2005)

Balmford et al. (2008) also mention that “landscape diversity or complexity is generally positively associated with the abundance and species richness of natural enemies and may be the most crucial factor driving biological control services” (p. 62). Natural areas and green landscape elements are thus beneficial for multiple services (Petz & van Oudenhoven, 2012). Hence, these features in the landscape can provide location-specific information about the provisioning of services to humans. An example of such a quantitative study has been conducted in the Hoeksche Waard in order to explore the relationship between spatial structures and services by the landscape, specifically on how elements in landscapes can provide natural pest control (Steingrover *et al.*, 2010). By comparing different landscapes, insight can be obtained in how different land use types are associated with the provisioning of services to humans.

Modelling has proven to be able to provide quantitative insight in how natural areas provide controlling and production-oriented services, yet for socio-cultural services qualitative approaches are required (Petz & van Oudenhoven, 2012). Petz & van Oudenhoven (2012) suggest to apply more qualitative approaches to get a more complete overview of services. In case of cultural heritage, especially these socio-cultural services are of great importance. Fagerholm et al. (2012) conducted a spatial assessment using local stakeholders as key informants for the evaluation of landscape services. Such an assessment provides better insight in subjective benefits, which are place-related and therefore tend to vary between locations. Especially seen the complex character of cultural landscapes as social

constructions, such an assessment captures the relationships between humans and the landscape, making it a useful source for inspiration to this research.

The study of Fagerholm et al. (2012) introduced a method of “mapping indicators for landscape services through community involvement and participation” (p. 422). They combined several landscape service classification systems to develop their own typologies for services (such as the classification system of the Millennium Ecosystem Assessment and De Groot et al.). Fagerholm et al. (2012) also mention that “the typology is locally adjusted”, in order to fit to the context of their study location in Tanzania, Zanzibar (p. 423). By interviewing a variety of community members, points were mapped for places where landscape services were found. In doing so, “multiple values and perceptions” can be shown, as well as “services and their patterns can be spatially analysed and generalized” (Fagerholm *et al.*, 2012, p. 429). Data collection was organized through semi-structured interview questions to locate the indicators in the rural context, which were translated into main landscape service categories (see fig. 10). The participants were asked to map the locations where services were found. By using Fagerholm’s et al. (2012) method “needed information on the socio-cultural values is created and it can be represented in legitimate spatial form and integrated with other government and expert data sets in GIS” (p. 432). The framework, introduced by Fagerholm et al. (2012), can be applied in different landscapes to get an understanding about how landscape configuration determines the provisioning of multiple landscape services. In contrast to the previously mentioned quantitative approaches, this qualitative approach gives more room for adding personal values to the research, which is especially a crucial element in the case with heritage.

Nevertheless, data collected in the field needs to be converted (and perhaps also generalized) into tables and the locations of the indicator points need to be digitalized in maps (GIS), which indicates that a mixed method of both qualitative and quantitative approach is necessary. By mapping the landscape service indicators, the relationship between the landscape services indicators, the landscape features and the land use type on estates can be visualised. Spatial clustering of landscape service indicators could also be interpreted as key areas, which play a vital role for sustaining service provisioning (Fagerholm *et al.*, 2012). By comparing different estates, the influence of the configuration of the estate can be made visual. By doing so, insight in the relation between the physical configuration of heritage, as well as specific landscape features, and the provisioning of landscape services can be achieved, which can be integrated into the planning, conservation and management of heritage.

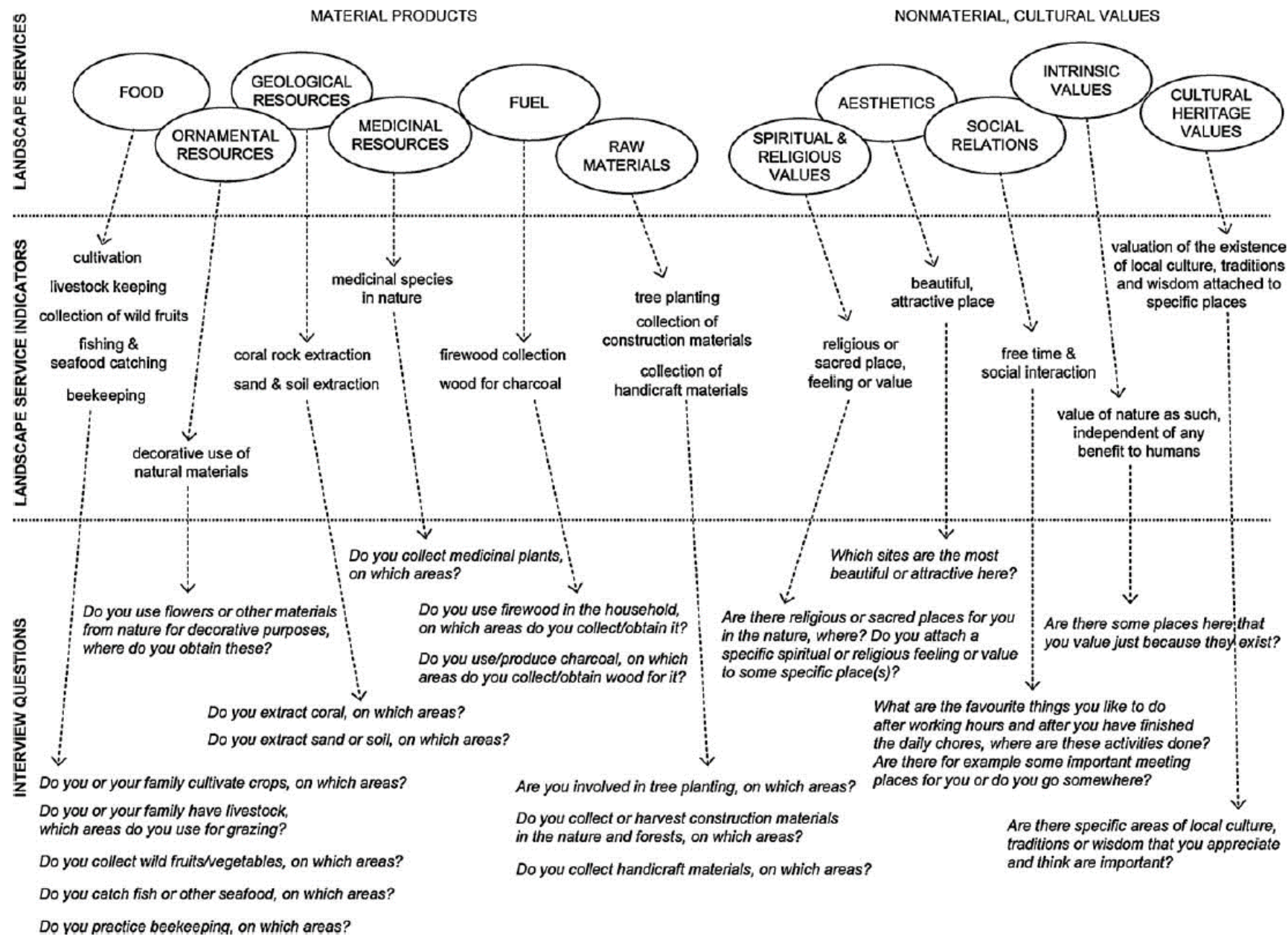


Figure 10. Using interview questions to locate indicators of landscape services (Source: Fagerholm et al., 2012)

## 4.2. Interdisciplinary construction through individual surveys

Tress *et al.* (2003b) mention in their article that “dealing seriously with the landscape as object of research, means interdisciplinarity” (p. 52). However, a lot of issues need to be resolved in order to merge ideas from various disciplines into everyday landscape planning, conservation and management. Based on the idea that landscape services are benefit dependent, different individuals can perceive different benefits from estates (Fisher *et al.*, 2009; Boyd & Banzhaf, 2007). These benefits are dependent on the context of people (their needs, choices, values etc.), hence these are subjective, place-related and dynamic because they change through time (Fagerholm *et al.*, 2012). Based on this, can be presumed that by focusing on an individual-based research with different personal backgrounds, the interdisciplinarity of the research can be achieved. Fagerholm *et al.* (2012) note that due to the dynamic characteristic of landscapes “the evaluation of services is dealing essentially with the complex and dynamic relationships between humans and their environment, rather than simply ecosystems per se” (p. 422). Given the above statement of Fagerholm *et al.* (2012), the involvement of the local community is essential to capture benefit dependent services. This benefit-dependent knowledge emerges from different reasoning ranging from “instrumental value (places that provide sustenance)” to “symbolic value (places that represent ideas)” (Brown, 2004, p. 19). The strength of using this interdisciplinary survey method lies in that it is based on local knowledge of the distribution of landscape services, which differs from mapping based on assumptions, estimates or modelling (Costanza *et al.*, 1997; Kremen, 2005). Fagerholm *et al.* (2012) also note that “stakeholder involvement also has the potential to deepen the assessment and appreciation of the non-material benefits that the landscape and ecosystems provide to humans. These cultural landscape services have quite often been limited to mapping a few indicators, such as recreation and tourism” (p. 422). By focussing on people with different personal backgrounds - e.g. farmers, camping holders, shop owners, local residents etc. - it is expected to find an increased number of indicators, deepening the assessment of services with the effect of the disciplinary background on experience and demand of services.

*Brown (2004) evaluates some data collection methods for public surveys which include personal landscape values. He mentions five main of issues that comes with these types of studies: “the value typology is sensitive to the list of predefined landscape values” (any value included is likely to generate some level of response) (p. 32); abstract landscape values (intrinsic/ non-use or spiritual values) were difficult to associate to a particular landscape attribute (p. 33); when using points rather than polygons, the landscape area associated with a given landscape value is difficult to determine (p. 34); familiarity with the study area influences the type of landscape values that are expressed (p. 35); survey response rates are low (p. 36). Brown (2004) suggests to consider some measures when undertaking public surveys. The first issue, the effect of predefined landscape values, can be reduced by adding unlabeled landscape values, which can be filled in by respondents themselves. The second issue, with abstract landscape values, can be overcome by requesting respondents to include reasons behind their placement of the labels. The third issue, determining the landscape area associated with a value, can be overcome by asking respondents to draw areas instead of points. The fourth issue, familiarity of the area, could be examined by systematically examining outcomes of surveys (comparing local and regional survey results). The fifth issue, the response rate, is difficult to solve but could be increased by sending multiple mailings of survey packets. These measures mentioned by Brown (2004) can be applied in this research to find the personal landscape values on estates.*

### 4.3. Institutional levels and decision-making

As mentioned earlier, stakeholders can attach different values to services from the landscape, depending on their disciplinary background and upon the impact of the service on their income (Hein *et al.*, 2006). As services are supplied to a range of institutional levels, varying from the individual to the global level, interest and demand for certain services can vary greatly which could also lead to conflicting ideas and priorities (Hein *et al.*, 2010; Grimble & Wellard, 1997). Besides the individual resident, any institutional level or position in society might have different interests, and therefore also experience different landscape services from estates. Grimble & Wellard (1997) provided a simple typology for the distinction between these groups (see fig. 11).

They note that “the most fundamental division between stakeholders is likely to be between those who *affect* (determine) a decision or action, and those *affected* by this decision or action (whether positively or negatively)” (p. 176). Hein *et al.* (2006) mention that “if an optimal management strategy is sought on the basis of the interests of one particular scale alone, this may lead to unacceptable solutions for stakeholders at other scales” (p. 224). Based on these different perspectives on the values of a landscapes, trade-offs between different institutional levels are required to balance conflicting objectives (Grimble & Wellard, 1997). However, a plan which is based only a selection of institutional scales could lead to sub-optimal landscapes (Hein *et al.*, 2006). De Groot *et al.* (2010) also note that “at the landscape level, the main challenge is how to decide on the optimal allocation and management of the many different land use options” (p. 260). The above indicates that a possible mismatch between these institutional levels and land-use options could be present. By investigating these different interests and demands between institutional levels, opportunities for the design of estates could be found.

<i>Institutional level</i>	<i>Examples of stakeholders</i>	<i>Issues of environmental interest</i>
Global and international	International agencies Foreign governments Environmental lobbies Future generations	Biodiversity conservation Climatic regulation Global resource base
National	National governments Macro planners Urban pressure groups NGOs	Timber extraction Tourism development Resource and catchment protection
Regional	Forest departments Regional authorities Downstream communities	Forest productivity Water supply protection Soil loss and degradation
Local off-site	Downstream communities Logging companies and sawmills Local officials	Protected water supply Access to timber supply Conflict avoidance
Local on-site	Forest dwellers Forest-fringe farmers Livestock keepers Cottage industry Women fuel collectors	Land for cultivation Timber and non-timber forest products Grazing and fodder Cultural sites

Figure 11. Stakeholders at different institutional levels might have different interests (Source: Grimble & Wellard, 1997)

#### 4.4. The influence of distances

As mentioned earlier, the distance between a landscape and the receiver determines the services that an individual benefits from (Hein *et al.*, 2006). Hein *et al.* (2006) mention that “scales and stakeholders are often correlated, as the scale at which the ecosystem service is supplied determines which stakeholders may benefit from it” (p. 214). Hein *et al.*, (2006) show that the physical distance between stakeholders and an estate, could have an influence on the interest and the experience of landscape services. The various services provided by estates could be received by any institutional level, yet the perspectives on these services vary between the institutional levels, determining which service will be received. Based on the above, can be said that different stakeholders at different distances from an estate, perceive benefits from the landscape services of that area differently, hence these are both distance and benefit-dependent, varying between disciplinary backgrounds of stakeholders and between the institutional levels.

Turner *et al.*, (2008) studied services distribution from wetlands and found out that some of the wetland service benefit outcomes are generated within the wetlands itself, on site, while a much wider range are provided off site. The values for benefits from wetlands were expected to decline with distance to the wetland, the so called “distance decay” effect (Turner *et al.*, 2008). By working with “distance zones”, they found out that the distance decay effect increased with a greater distance from the wetland.

To find out whether or not the distance decay effect is also present in the case of estates, distance zones must be used for landscape service assessments (see fig. 12). This will help to determine if distances influence the experience and demand of landscape services from estates.

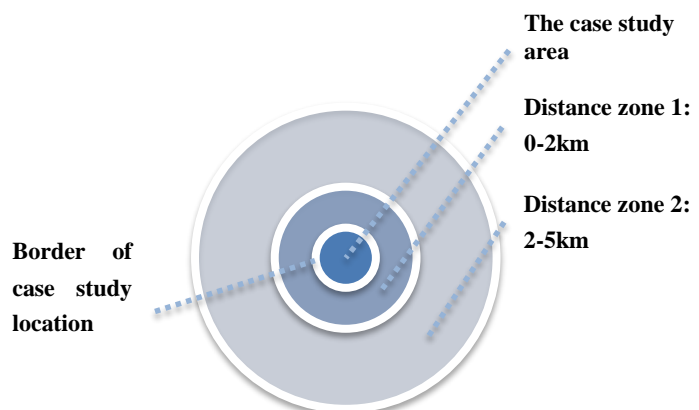


Figure 12. Using distance zones to find the distance decay effect

#### **4.5. Translation into a conceptual model**

For a better understanding of the implications of the above discussed conceptual framework on this research, a model will be presented which illustrates the relations between the four dimensions and the main research question, together with the typologies and indicators of landscape services on estates (fig. 13). Based on findings during the literature review, the following assumptions have been made and inspire the established conceptual model:

- The landscape configuration of estates determines the provisioning of landscape services: e.g. a wetland provides different services compared to a forest, because it contains different landscape features. In this case, an estate which consists out of forest provides different landscape service than an estate which consists out of grasslands.
- The disciplinary background of an individual influences personal interests, which has an effect on the type of landscape services that people receive from an estate: services are benefit-dependent.
- These interests of stakeholders are therefore also determined by their institutional level (position) in society, e.g. whereas national agencies could be interested in timber extraction, regional departments might have conflicting interests such as water supply protection
- Trade-offs between different institutional levels are required to balance conflicting interests and objectives, which has an influence on the decisions that are made about the landscape configuration of estates.
- The distance between an estate and the receiver (the stakeholders), influences the (amount and type) of landscape services which people receive.

As mentioned by Limburg et al. (2002) setting up boundaries, indicators and an analytic scale is crucial in this type of research.

This research focusses on services which are specifically provided by estates. To investigate the influence of distance, two fixed physical distance zones around the estate will be applied (0-2km and 2-5km from the entire estate, see fig. 12). The landscape service typologies have been limited to four main service categories: Controlling, Living space, Material and Non-Material. The categories Material and Non-Material have been included to capture both tangible and intangible benefits of landscape services from estates (Fagerholm, 2012). These are likely to be mentioned by individuals, living around the estates. The category “Controlling” has been added, because the services which are connected to this category are especially of interest for higher institutional levels. The category “Living space” has been added because in general all estates contain a large area of forest (and possibly other

ecosystems), providing a large number of services which are connected to this category. Some specified institutes (such as nature organizations) are expected to refer to this category. The interview with Utrechts Landschap, also showed that Living Space is a service category which humans receive on estates. The typology “residence for humans” has therefore in a later stage of the research been added to this conceptual model.

The typologies which are selected, have been modified from the categories identified by the MA (2005a), De Groot (2006) and TEEB (2010) and are adjusted to fit better to the context of cultural heritage and to the interests in different institutional levels. Water management has been added as a simplified typology for water regulation and water supply (De Groot, 2006). The typologies disturbance prevention, soil retention and formation, nutrient regulation and waste treatment mentioned by De Groot (2006) are not included because these refer to certain specified ecosystem processes, which are unlikely to be mentioned by stakeholders in the field nor by the institutional levels. The category “Living space” focusses on three main service typologies; habitat for animals and plants, nursery and residence for humans. This category is adjusted, because many estates have a high variety of biodiversity and often provided habitat and nursery ground for many species. Yet estates often also provide living space for humans, therefore residence is also included in this category and been given a dotted line in the conceptual model.

The typologies in the category “Material”, are modified from the provisioning services by TEEB (2010). Food and water are combined from TEEB (2010). The typology materials, refers to any resource materials used for example for building and manufacturing. This is a generalized typology, which TEEB (2010) further specifies in raw materials, genetic-, medicinal - and ornamental resources.

The Non-Material category includes four main service typologies which are modified from the MA (2005a) and De Groot (2006). Leisure is a simplified typology for recreation and tourism services (MA, 2005a). Traditions refer to cultural and spiritual services and information refers to any education or science related services. Both MA (2005a) and De Groot (2006) further specify these in separate typologies.

The main service indicators, which could possibly be mentioned by stakeholders, are provided for the different service categories. This is based on the study by Fagerholm (2012). These indicators link to daily life practices and benefits from estates. In this way, indicators help to translate a certain benefit (mentioned by a stakeholder) to a service typology. For example free time activities (e.g. hiking) is an indicator for the leisure services in the non-material services category, and when someone refers to leaseholds on estates this can be linked to the living space services category.

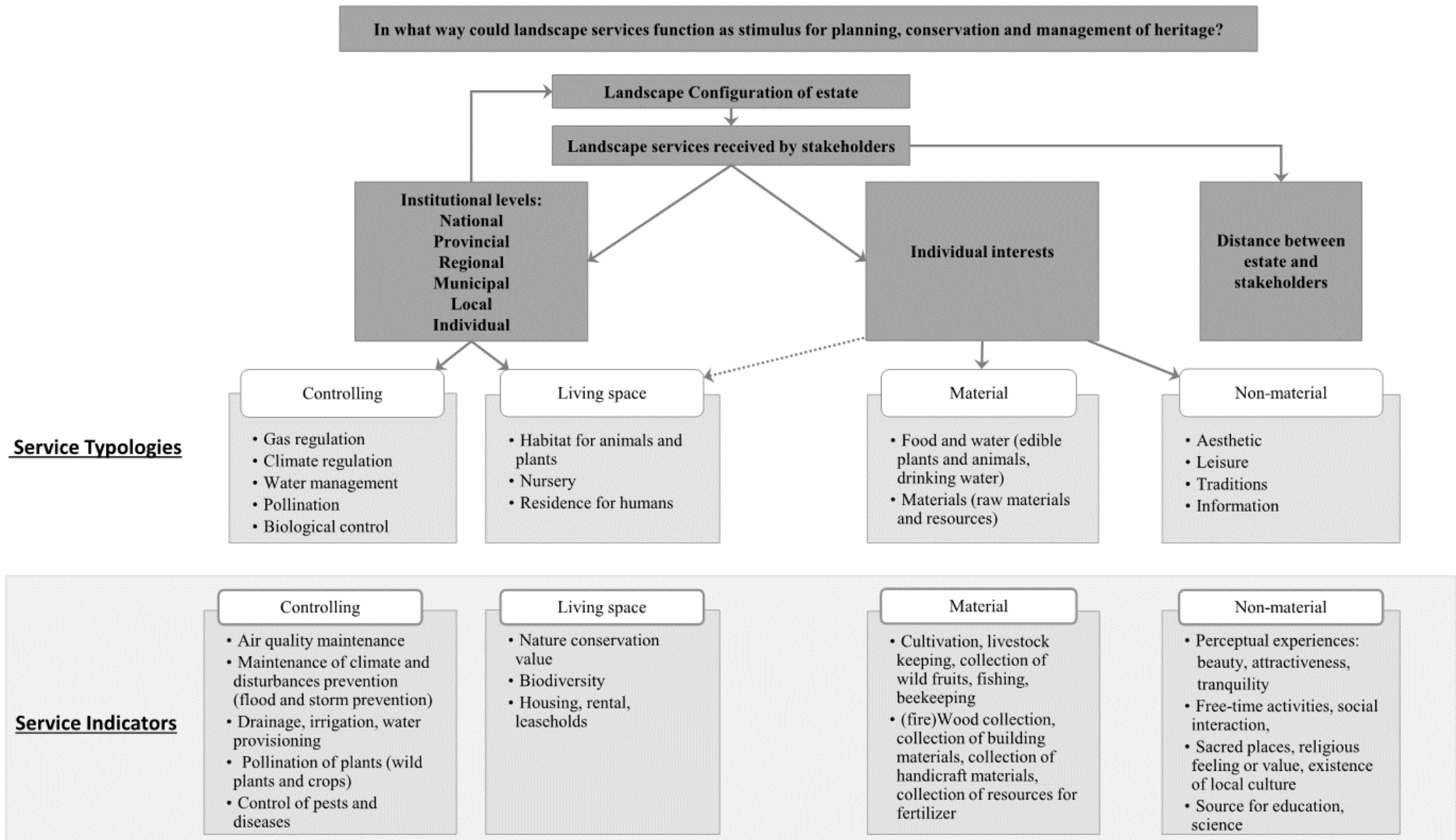


Figure 13. Conceptual Model

## 5. Case study locations

In this research, three case study locations will serve as areas to investigate landscape services from cultural heritage. Three areas are seen as a reasonable number for comparisons and as feasible within the time scope of this research. Obviously, a larger number of cases would benefit to a more comprehensive understanding of services from estates. However, this is unlikely to be able to do within the given period of time for this study.

Based on the literature study, criteria have been established to select the three case study locations. The criteria for the selection of the case study locations are:

- Each location must consist out of different physical configurations and must be located in different landscape types to ensure that a variety of services are provided to society.
- Locations must contain monuments in a historic landscape setting. Therefore, the focus will be on estates which are located in either one of the 20 National Landscapes or in a Belvedere area.
- Locations should be in different provinces to ensure that different institutional levels can be compared
- Locations must differ in demography - both urban and rural locations - to be able to compare several disciplinary backgrounds and several perspectives on services from the landscape (cities and villages)

Based on these criteria, two National Landscapes and one Belvedere area have been selected as a search area for finding the appropriate estates of this research.

The two selected national landscapes are the “Nieuwe Hollandse Waterlinie” and the “Veluwe”. The selected Belvedere area is “Zuid-Kennemerland” (fig. 14). These three landscapes are located in different provinces and consists out of different landscape types.



Figure 14. Three selected search areas for estates

- The Nieuwe Hollandse Waterlinie is a very open and a rather flat landscape of polders which should function as inundation fields during military invasions. Several fortresses, camouflaged as small forest islands, can be found within these polders.
- The Veluwe can be characterized as a diverse hilly landscape with mainly forests, heathlands, sand drifts and agricultural land. The contrasts within this landscape are great: from very open (sand drifts) to very closed landscapes (forests). The Veluwe has a rich diversity of estates, castles and buitenplaatsen and a great variety of visual historic monuments such as buildings, tree lanes, gardens, historic pastures and other farmland.
- Zuid-Kennemerland is a slightly hilly and very varied “rear” dune landscape with old sand ridges and inland dune forests. The spatial variety with the estates, “buitenplaatsen” and their gardens and parks characterize this landscape between the North Sea and the open polders further inland.



Figure 15. The three case study locations

Top: Nieuwe Hollandse Waterlinie

(source: Compendiumvoordeleefomgeving)

Middle: Veluwe (source: [www.grootwarnsborn.nl/](http://www.grootwarnsborn.nl/))

Bottom: Zuid-Kennemerland

(source: <http://www.flickr.com/groups/kennemerland/>)

Within the above described search areas three estates have been selected and will function as the case study locations. These three estates are Sandwijck, Warnsborn and Vogelenzang.

## Estate Sandwijck

Estate Sandwijck is located on the outer edge of the city Utrecht and De Bilt and is squeezed between two highways, the A28 and A27 (see fig. 18). This indicates that estate Sandwijck is located within a densely populated urban environment. Estate Sandwijck falls under the jurisdiction of the province of Utrecht, the municipality of De Bilt and the water board Hoogheemraadschap De Stichtse Rijnlanden. The estate itself is owned by the organisation “Het Utrechts Landschap”, who conserve and maintain the rich and diverse cultural landscape of this estate. Sandwijck can be described as a half-open landscape with grasslands surrounded by hedgerows, ponds, streams and isolated patches of forests. Further to the north, the estate is mainly forested with grasslands in front of the main building (fig. 16). In the forest around the house, several ponds and streams with natural embankment characterize the area. Throughout the estate, a large variety of ornamental plants can be found, including a large collection of solitary tree species. The estate is from a heritage perspective important, because it contains some significant monumental buildings like the 17<sup>th</sup> century old main building, the English gardens, the surrounding park landscape around the main building and two monumental outbuildings (fig. 16 and 17).



Figure 16. The 17th century old main building of Sandwijck (own photo)

Besides the high value of the heritage of this estate, the estate has a very rich variety of biodiversity. Some vulnerable species can still be found on this estate, for example the Mourning Cloak, the European pine marten, the Kingfisher and the Middle Spotted

Woodpecker (Waarneming.nl, 2013b). The rich variety of flora and fauna has developed thanks to the local differences in the groundwater table and different soil formations on the estate. Added to this is also that the estate Sandwijck forms an important link within the NEN



Figure 17. The farm on estate Sandwijck (own photo)

between the “Kromme Rijng gebied” and the “Vechtplassen” (Feijen, 2009). For this reason, the status and classification of the estate of Sandwijck is high in a variety of policy documents of the province of Utrecht and the municipality of De Bilt (Feijen, 2009). Because the value of nature on this estate is so significant, the mission of “Het Utrechts Landschap” is mainly to conserve and maintain the biodiversity while safeguarding the cultural heritage and character of Sandwijck (Feijen, 2009; Interview Paul Vesters). This focus on nature can also be found in the maintenance programme of “Het Utrechts Landschap”, stating: “Nature, thanks to culture” (Feijen, 2009, p. 17). Nevertheless, most of the current high value of nature can be found here thanks to the rich cultural history of the estate. Feijen (2009) notes that without the presence of the estate, the area would probably have been used for urban developments of Utrecht and De Bilt. “Het Utrechts Landschap” stands for the importance of both the natural and cultural values of the estate. They note that because of the fact that a focus on nature could threaten the cultural value of the estate, (and likewise, a focus on the cultural values could threaten the value of nature) it is important to implement a zoning system for this estate (Interview Paul Vesters). On the estate Sandwijck, two zones can be recognized: a cultural or heritage zone around the main building and a nature zone in the forests and grasslands further south of the main building (Interview Paul Vesters). This can be seen in the way the estate has

been divided into a more garden and park like design around the main building and a rough or natural grassland design, further to the south of the main building. The focus on nature in the southern part of the estate also has its implications on the possibilities for recreation; the entire southern part of the estate has been closed for visitors. Visitors can therefore only enter the park and gardens around the main building in the north of Sandwijck.

## Map of Sandwijck



Figure 18. Map of Sandwijck

## Estate Warnsborn

Estate Warnsborn is situated just north of the city Arnhem, among the villages Schaarsbergen and Oosterbeek, on the edge of the forest-rich Veluwezoom (fig. 24). Warnsborn is surrounded by several other estates such as Zijpendaal, Hoge Erf, Mariendaal and Lichtenbeek. The area can therefore be seen as one large cluster of several estates. The different estates are altogether known as the Mariënborn area. The estate cluster Mariënborn is currently owned by the organisation “Geldersch Landschap & Kasteelen”. Warnsborn falls under the jurisdiction of the province of Gelderland and the municipality of Arnhem. The waterboard “Rijn en IJssel” has one of its groundwater pumping stations (for drinking water) on the edge of estate Warnsborn and is therefore also connected to Warnsborn, especially in controlling the water quality of the different waterways and ponds which are owned by GLK (Gemeente Arnhem & DHV, 2009).

Warnsborn consists out of a garden and park-like design with grassland, ornamental plants, ponds, waterfalls and streams in the center of the estate around the main building (fig. 19). Nearby this central area, the estate consists out of mixed forests and pine forests, varied with some small farms (fig. 20). Further to the northern border of the estate, the open character takes over with agricultural land and large open heathlands (fig. 21). What is very typical of Warnsborn, is the hilly character of the estate.



Figure 19. The ponds in the center of estate Warnsborn (own photo)



Figure 20. Small farm on estate Warnsborn (own photo)



Figure 21. Open heathlands of estate Warnsborn (own photos)

From a heritage perspective, the essential buildings on this estate are the chapel, the orangery and the carriage house (Buitenplaatsen in Nederland, N.d.). The 19<sup>th</sup> century old main building has been completely demolished after a large fire in 1945. It has been rebuilt and replaced with the current hotel Groot Warnsborn (fig. 22) (Buitenplaatsen in Nederland, N.d.). The English gardens around the orangery, the surrounding park landscape and the several tree lanes characterize this estate.



Figure 22. Hotel Groot Warnsborn and a burial mound in the forests of Warnsborn (own photos)

What is also special about the forests of Warnsborn is that these still contain some ancient burial mounds (fig. 22). The great variety of landscape types on this estate creates an ideal



Figure 23. "De Schaatsvijver" in autumn (own photo)

habitat for a variety of species. The estate houses a great variety of bird species, including the vulnerable Middle Spotted Woodpecker (Waarneming.nl, 2013a). One of the rare and vulnerable species which can be found on the estate Warnsborn is the European crayfish (*Astacus astacus*). This species of crayfish was quite common until the beginning of 1900, yet in these days the European crayfish can in the Netherlands only be found in one pond ("de

schaatsvijver”) on the estate Warnsborn (see fig. 23) (Ottburg & Roessink, 2012). On the open terrains, including the heathland, several reptile species can be found such as the Sand Lizard, the Common Lizard and the Grass snake. Because of these rare findings, the estate Warnsborn is entirely designated as a Natura2000 area, giving the entire estate a protected designation. Added to this is also that the entire estate of Warnsborn is a part of nature for the National Ecological Network (Provincie Gelderland, n.d.).

## Map of Warnsborn

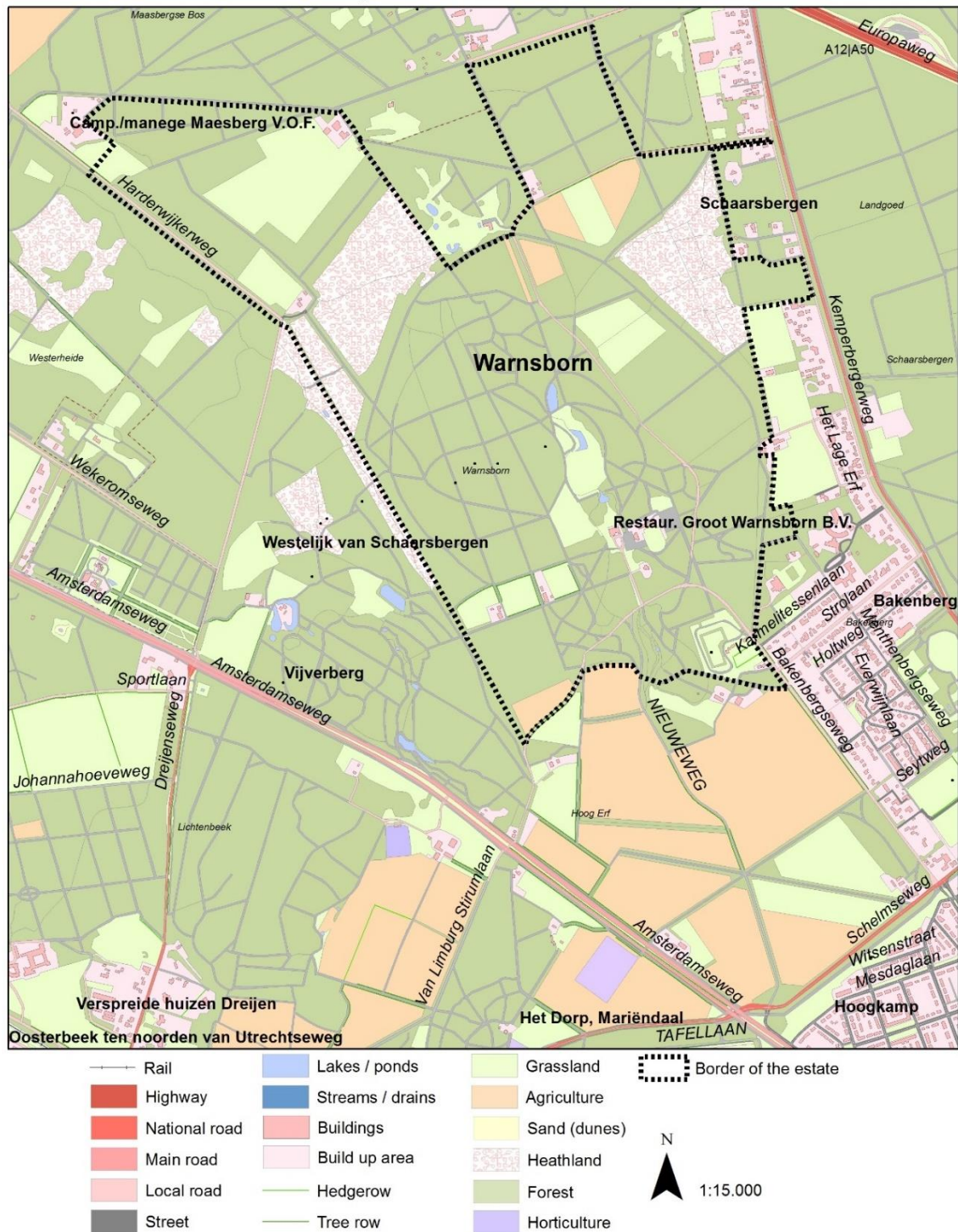


Figure 24. Map of Warnsborn

## Estate Vogelenzang

Estate Vogelenzang is located between Heemstede and Hillegom (fig. 28). It is located on the edge of the Amsterdamse Waterleidingduinen (the Amsterdam Water Supply Dunes), which provides Amsterdam of drinking water. In the direct surrounding of the estate, there are mostly villages, such as Vogelenzang, Bennebroek and De Zilk. The estate Vogelenzang is located on the northern edge of the Southern Bulb Region, which indicates that the main land use type to the south of the estate is the cultivation of flower bulbs for the flower industry. North and east of the estate, the land is mainly characterised by grasslands for livestock keeping (fig. 26). In general the area could be described as a more rural environment, this especially compared to the urban environment of the estate Sandwijck. The estate falls under the jurisdiction of the province of Noord-Holland and the municipality of Bloemendaal. The Hoogheemraadschap van Rijnland, the water board in this area, controls and maintains some of the streams on this estate (Interview fam. Barnaart). Estate Vogelenzang is a privately owned estate by the family Barnaart. The main building on this estate, is still their main residence today (fig. 25).



Figure 25. Residence of family Barnaart, owner of the estate Vogelenzang (own photo)

Estate Vogelenzang is characterized by a half open landscape of grasslands, hedgerows and solitary trees to the east of the main building and predominantly forested landscape to the west of the main building (fig. 27).

Around the main building, the estate has a more garden like design, characterized by the rose garden, the variety of ornamental plants and the central pond. The southern part of the estate provides a camping area and is surrounding by grassland for livestock.



Figure 26. Landscape to the east of the main building



Figure 27. Forest west of the main building (own photo)

On the estate a variety of buildings can be found, most of which have a monumental status. The 17<sup>th</sup> century old main building, called “Huis te Vogelenzang” is a listed buitenplaats, yet the estate also has a range of out-buildings, “workers-houses”, farms and glasshouses which are also listed (Rijksmonumenten.nl, N.d.). Some of the ornaments, such as statues, walls and a sundial are also protected (Rijksmonumenten.nl, N.d.). The building near the Bekslaan entrance of the estate, called Huis Teylingerbosch, is a 17<sup>th</sup> century old monument which was before 1778 a separate buitenplaats (Interview fam. Barnaart; Rijksmonumenten.nl, N.d.).

Estate Vogelenzang has a Natura2000 status as well as the status of NEN (Interview fam. Barnaart; Provincie Noord-Holland n.d.). The estate on the edge of the sand dunes consists out of a rich variety of flora and fauna, clarifying why this estate achieved this protected status. A lot of different bird species can be found on this estate, including the vulnerable European Serin (Waarneming.nl, 2013c). Besides bird species, the estate provides habitat to a number mammals, including the Fallow deer, Roe deer, the Common noctule and the Serotine bat (Waarneming.nl, 2013c). The large number of grazing Fallow Deer on this estate forms a threat to biodiversity and therefore also to the Natura2000 status (Interview fam. Barnaart). Fallow Deer cause a lot of damage to the rich variety of flora which can be found on this estate, including some rare species such as the Hollowroot (Interview fam. Barnaart; Waarneming.nl, 2013c).

The mission of the owner of the estate is especially to conserve the monumental buildings and to maintain the estate in the current historical charm (Interview fam. Barnaart). The owner of the estate is not in favor of public access of this estate, due to the risks of damage to flora and fauna. Yet open access is one of the requirements that comes with the subsidy schemes of the government and therefore it has been forced to implement here (Interview fam. Barnaart). The estate is therefore open to all visitors, however bicycles and dogs are not allowed.

## Map of Vogelenzang

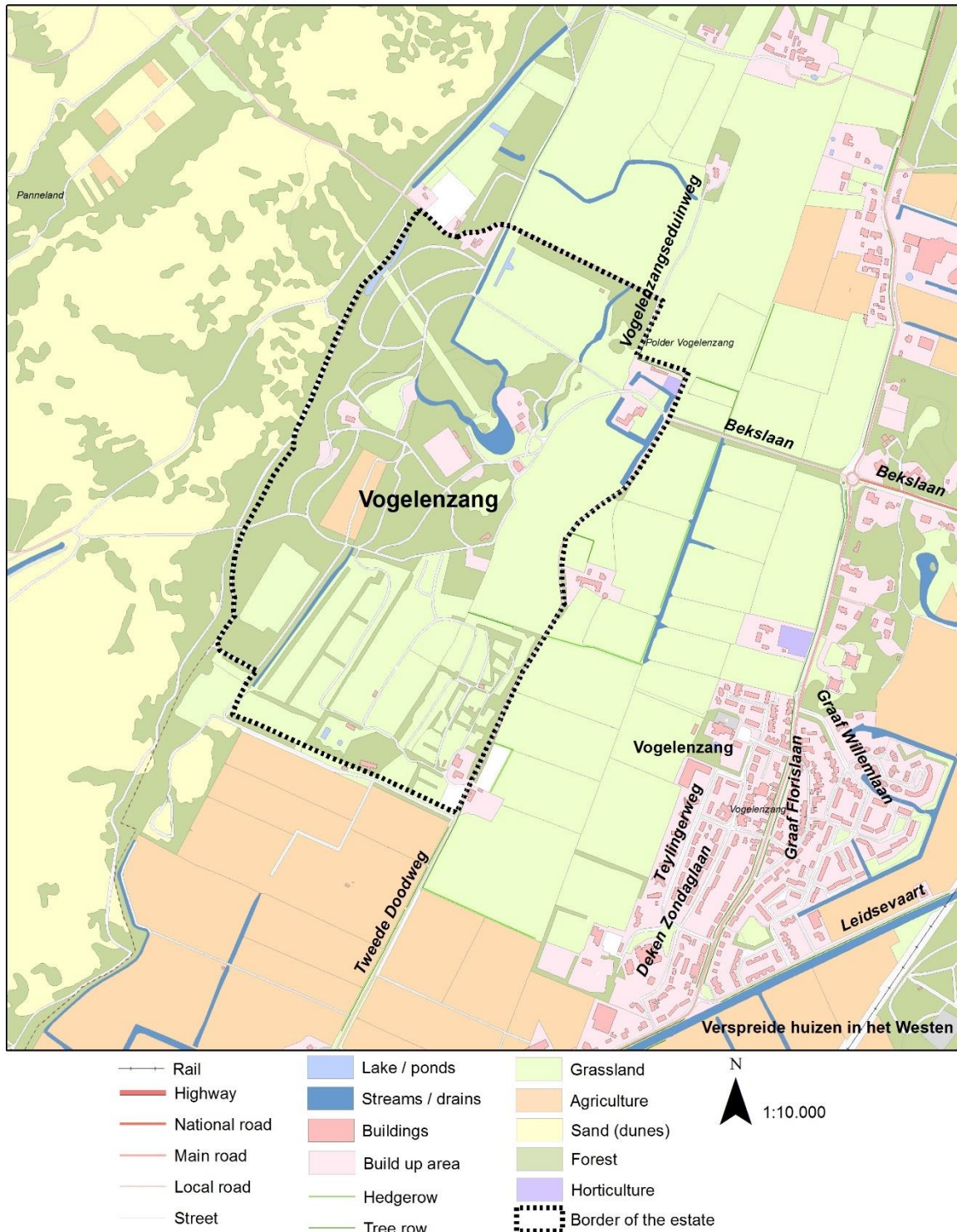


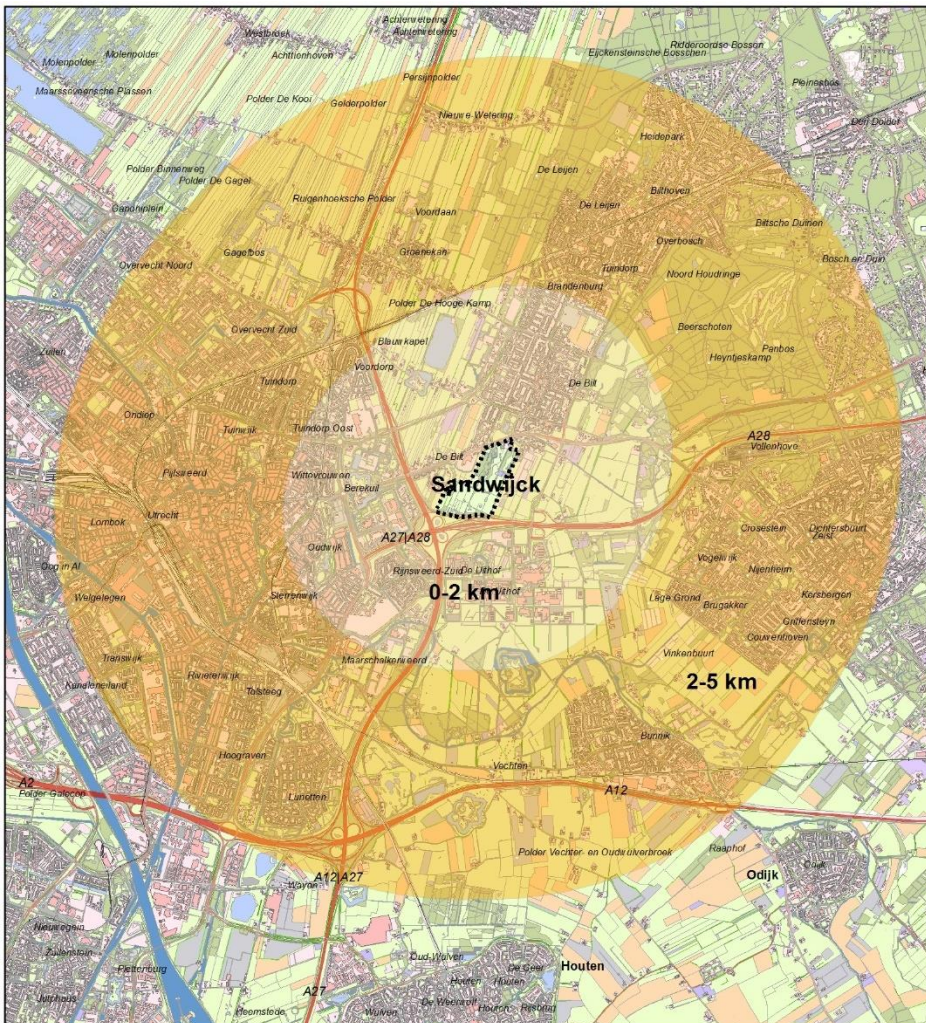
Figure 28. Map of Vogelenzang

## 6. Distance zones for questionnaires

Questionnaires are in this study used to be able to reach a large amount of people in a relatively small period of time, to be able to compare the outcomes easily and to link this to the distance people are living from the estates. By sending questionnaires to different individuals with different backgrounds the disciplinary effect will be investigated. By doing this in different zones, the effect of distance can be associated to the received services on estates. This chapter explains the steps that have been taken to do a questionnaire survey.

### 6.1. Distance zones

As mentioned earlier, two distance zones will be applied for every case study area; a zone of 0 – 2 km from the case study area, and a zone from 2 – 5 km from the case study area. By using GIS software, a buffer zone around the three estates is projected on the map to visualize the ranges of the two zones. This results in three maps on which the zones become visible (fig. 29 – 31). On these maps, the zone 0 – 2 km has a light yellow color and the zone 2 – 5 km has a dark yellow color. These maps are used to select the areas where the questionnaires will be distributed. For every case study area, focus areas were selected because of the relatively low number of available questionnaires and the dependency on the return rate of these questionnaires.



As visible on fig. 29, the distance zones of Sandwijck cover the large city Utrecht and some smaller towns such as Bunnik, Zeist and De Bilt. Because the return rate is expected to be low in Utrecht, it is decided to focus here on De Bilt, Zeist and the rural areas around Bunnik.

Figure 29. Two distance zones around estate Sandwijck

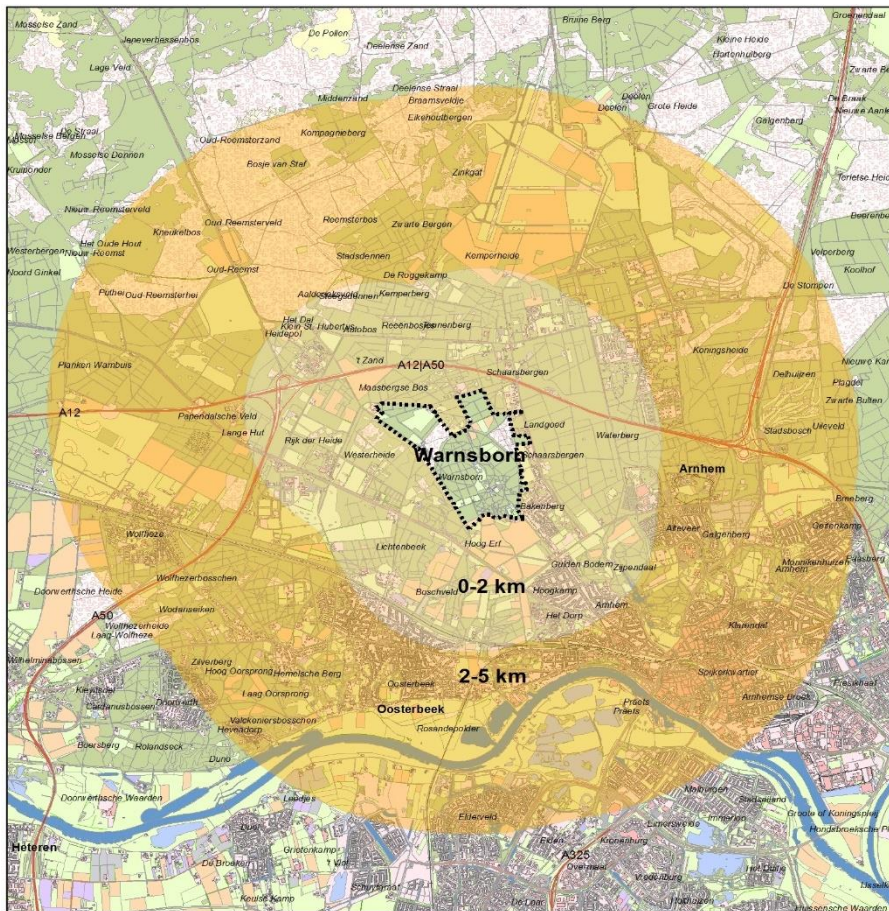


Figure 30. Two distance zones around estate Warnsborn

Fig 30. shows the two distance zones around the estate Warnsborn. The city of Arnhem and some village such as Oosterbeek, Wolfheze and Schaarsbergen are included within the two distance zones. Because the northern part of the distance zones consists for a large part out of nature reserves, the focus will be on Arnhem, Oosterbeek and Wolfheze.

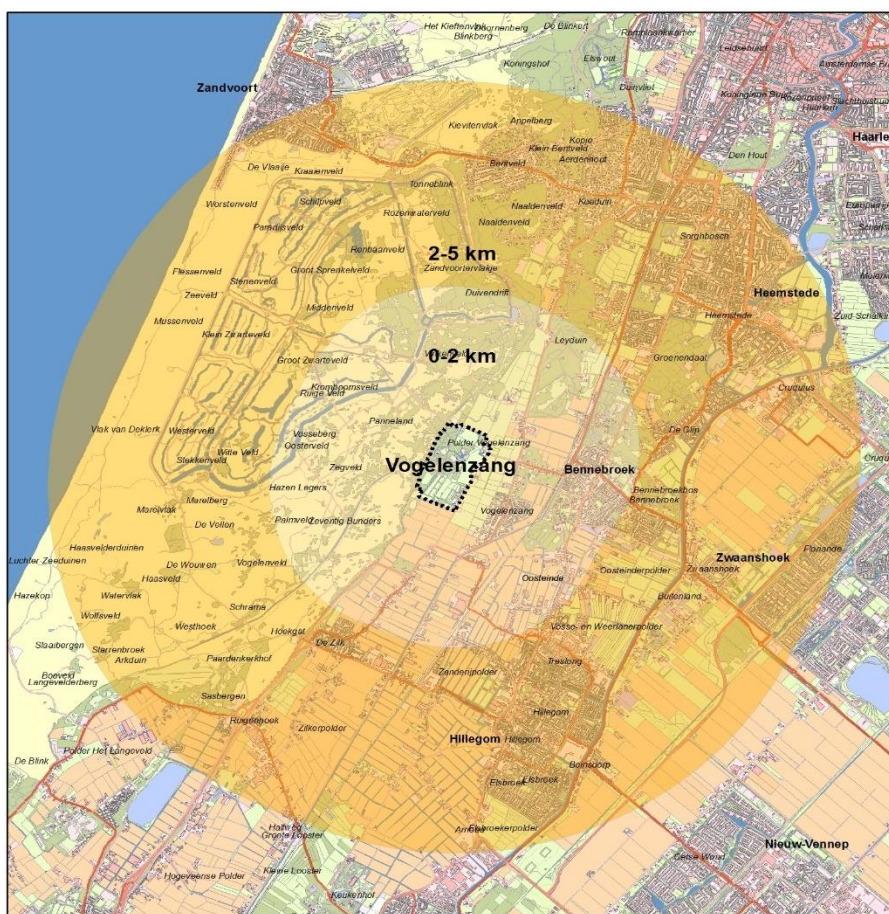


Figure 31. Two distance zones around estate Vogelenzang

Fig 31. Shows the two distance zones around the estate Vogelenzang. The cities Haarlem, Zandvoort, Heemstede and Hillegom, as well as the villages Vogelenzang, Bennebroek, Aerdenhout and De Zilk are covered by the two distance zones. Because of the expected return rate, the focus will be on the direct surrounding towns Vogelenzang and Hillegom.

## 6.2. Selecting residences

One of the aims of the questionnaires is to get an idea about the effect of the background and interests of a person on the types of services which are received on an estate. It is therefore crucial that a variety of people, from different genders, age groups, educational levels, jobs and household formations receive the questionnaire. As it is not possible to find all of this information on forehand, the locations where the questionnaires are to be distributed have been carefully selected prior to distribution and the questionnaires have been personally brought to these different residences in the two zones of the three case study locations. In order to reach a large variety of people, the type of residences has been used in the hope to find a large variety of people. In every distance zone, 17 questionnaires have been distributed among residences in both the built-up areas (towns) and in a rural setting. Questionnaire numbers for these residences have been divided in the following way:

- 4x Terraced housing (in a town)
- 4x Flats / Apartments (in a town)
- 4x Large detached residences (villa houses) (in a town)
- 3x Farms (in a rural setting)
- 2x Detached residences (in a rural setting).

By using a combination of Google earth and Google streetview these types of residences have been selected in the different distance zones and their street names and house numbers have been written down to go distribute the questionnaires in these locations (see Appendix B for a list of residences and their addresses). During the distribution, the residences have been checked for occupancy and in case these were empty, a different (yet in the same street) household received the questionnaire.



Figure 32. Selecting residences by means of Google Streetview: in this case terraced housing in the Godfried Bomanslaan in Vogelenzang (source: maps.google.nl)

### **6.3. Questionnaire preparation and send out**

Using questionnaires for data collection, brings certain disadvantages with it. It is always very important to use simple and easy to understand questions as it is not possible to clarify misunderstandings to the receivers of the questionnaire. In order to develop such an easy questionnaire, a test panel has been applied. The test panel consists out of people from different educational levels, different age groups and different employment sectors, to ensure that the questionnaire is understandable for a variety of people. From the test panel, recommendations have been received which have contributed to a simple and easy to complete questionnaire (see Appendix A for an example of a distributed questionnaire).

Because this type of questionnaire involves personal landscape values, some additional issues need to be taken into consideration (see Brown (2004) on p. 40). One of these issues is the fact that when only predefined interests and values are provided, the chances are high that the receiver cannot find his or her own values or interests on the questionnaire. To overcome this issue, the questionnaire has a lot of open questions and additional options where the receiver can personally fill in his or her answer.

Also, abstract values (especially when considering non-material services) are often difficult to understand without an explanation. Therefore, the receiver will be asked to explain the reasoning behind their answers.

In order to get an idea of the locations where individuals receive services from the landscape, maps will be provided where people can draw the locations where they find their interests on the estate. In this way, personal landscape values can be linked to a location on the estate, providing an explanation of the landscape preferences on the estate. The receiver of the questionnaire will be asked to draw an area or a route on the map, instead of points. This is done so that areas of preference become visible on the map instead of just one point on the estate. By overlaying the individual maps, the total area of preference becomes visible which can then be converted into a GIS map to visualize the total preferred areas of the estate.

In order to increase the response rate of the questionnaire survey, all questionnaires will be accompanied by an answer envelope, giving the receivers the opportunity to reply the questionnaire for free. Also a cover letter which explains the purpose of the questionnaire is attached, in the hope that this will help to encourage people to complete the questionnaire.

## 7. Results

In this chapter the results of both the questionnaires and interviews with the owners of the estates will be explained. The chapter is divided into four sub-chapters, explaining the four dimensions which are kept central throughout the report (see ch. 3.9). However, the order of the dimensions is for this chapter differently, because this is more logical when the results of the questionnaires are explained. The first sub-chapter provides an outline of the replied questionnaires and gives an idea of the different backgrounds of the individuals that filled in the questionnaires. It explains the landscape services that are received on the estates and links this to the backgrounds of the participants of the questionnaires. Hence, the first sub-chapter covers the dimension “disciplinary background”. The second sub-chapter will focus on the dimension “distance”, explaining how the answers on the questions differ when different distances are regarded. It shows the results of the landscape services which are received by the different people that filled in the questionnaires and how these received services change when the distance to the estate increases. The second sub-chapter also explains the visited areas and shows what happens when the received landscape services will be associated to the actual locations where these have been found on the estates. As this is also done in two distance zones, it will give insight in how this differs when different distances are regarded. The maps will also give an impression of the relation between the received landscape services and the physical configuration of the estates, linking it to the third dimension, the “physical configuration”, which is further explained in the third sub-chapter. In the fourth sub-chapter the “institutional” dimension will be clarified by explaining the interests of the different institutional levels and how this affects decision making. This is based on the interviews and a policy document study on different institutional levels.

### 7.1. Disciplines covered by the replied questionnaires

Of the 102 send out questionnaires, a total of 34 have been replied (table 1). These 34 replied questionnaires are divided over the three case study areas in the following way:

	Case study area	
	Frequency	Percent
Estate Sandwijck Distance 1	5	14,7
Estate Sandwijck Distance 2	6	17,6
Estate Warnsborn Distance 1	7	20,6
Estate Warnsborn Distance 2	5	14,7
Estate Vogelenzang Distance 1	5	14,7
Estate Vogelenzang Distance 2	6	17,6
Total	34	100,0

Table 1. Received questionnaires

The 34 questionnaires have been completed by 17 males as well as 17 females. Most of the participants are between 36 and 50 years old (32%), although the group with participants

above the age of 66 is also large (29%). Estate Sandwijck has the largest group of participants above the age of 66 years, while Warnsborn has the most participants between the age of 36 and 50 years. Estate Vogelenzang has a more equally divided group of participants (table 2).

				Case study area						Total
				Estate Sandwijck Distance 1	Estate Sandwijck Distance 2	Estate Warnsborn Distance 1	Estate Warnsborn Distance 2	Estate Vogelenzang Distance 1	Estate Vogelenzang Distance 2	
				Count	Count	Count	Count	Count	Count	
Gender	Male	Age of responders	0 - 35 years old	0	2	0	0	0	1	3
			36 - 50 years old	1	0	3	1	0	1	6
			51 - 65 years old	1	1	1	0	0	1	4
			66 - 100 years old	1	1	1	0	1	0	4
	Female	Age of responders	0 - 35 years old	0	0	0	1	0	0	1
			36 - 50 years old	0	1	0	1	2	1	5
			51 - 65 years old	0	1	2	0	1	1	5
			66 - 100 years old	2	0	0	2	1	1	6

Table 2. Age of responders

Most of the participants (14) have fulfilled an “higher educational” study, followed by a group of 10 participants with a “university” study background. The participants with a higher educational background mostly work in the sector education and science (28,6%) or are currently retired. Of the participants with a university background, 40% works in the commercial and business sector and 30% in the sector

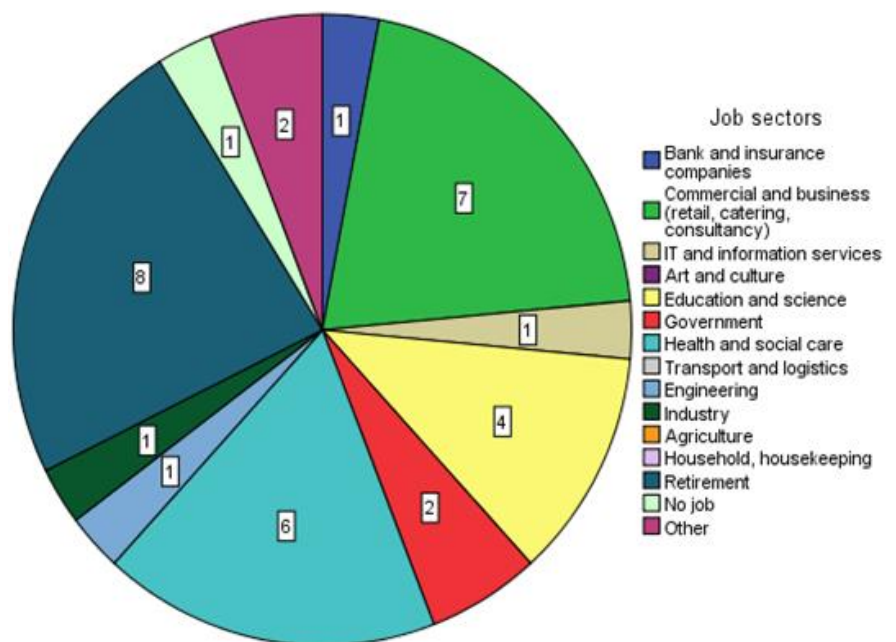


Figure 33. Job sectors. Numbers show the response level

health and social care. Most of the participants (47%) have a household of 2 persons without any children, though the other four types of household compositions are also represented in this study (Table 3). In general can be said that the background of the participants who filled in a questionnaire is relatively widespread, covering a variety of age groups, genders, educational backgrounds, job sectors and family compositions (see Appendix B for extra and more detailed tables).

		Case study area					
		Estate Sandwijk Distance 1	Estate Sandwijk Distance 2	Estate Warnsborn Distance 1	Estate Warnsborn Distance 2	Estate Vogelenzang Distance 1	Estate Vogelenzang Distance 2
		Count	Count	Count	Count	Count	Count
Family / Household composition	One person household	1	1	2	1	0	0
	Household of 2 persons without children	2	3	4	2	3	2
	Household of one or more children of 10 years and younger	1	1	0	1	0	1
	Household of one or more children above 10 years	1	1	0	0	2	2
	Household with children below 10 as well as above 10 years	0	0	1	1	0	1

Table 3. Household composition of participants

### 7.1.1. Received landscape services

The participants who filled in the questionnaires altogether have received 90 different services from the different case study areas. As can be seen in table 4, 21% of these received services are linked to recreation and tourism and almost 19% are linked to perceptual experiences. Other substantial frequencies are found with the services of clean air and the services of variation in plant and animals species, which both make up 10% of the total responses.

Landscape Service Indicator Frequencies				Responses	
				Frequency	Percent
Landscape Service Indicators	Clean air			9	10,0%
	Cool temperatures during summer			7	7,8%
	Holding and retaining rainwater			2	2,2%
	Pollination of crops and plants			1	1,1%
	Variation in plant and animal specials (biodiversity)			9	10,0%
	Food cultivation (agriculture)			4	4,4%
	Animal keeping			5	5,6%
	Collecting food from nature (wild food)			1	1,1%
	Buying local products from the estate			3	3,3%
	Water (as drinking water and/or surface water for irrigation)			3	3,3%
	Gathering materials for building, art or firewood			1	1,1%
	Perceptual experiences, attractiveness, beauty, tranquility			17	18,9%
	Recreation and tourism (hiking, cycling, sports, arts)			19	21,1%
	Religion and spirituality			2	2,2%
	Heritage value and existence of local tradition			4	4,4%
	Research, education			1	1,1%
	Other			2	2,2%
	Total			90	100,0%

Table 4. Landscape Service Indicators

Table 4 still represent the landscape service indicators that link to daily life practices and benefits. This table therefore needs to be converted into the landscape service categories

which have been explained in chapter 4.5. Simply said, the benefits (mentioned by the participants) need to be translated into a landscape service category.

Category	Landscape Service	Frequency	Percentage
<b>Controlling</b>	Biological Control	0	0 %
	Pollination	1	1 %
	Water Management	2	2 %
	Climate Regulation	7	8 %
	Gas Regulation	9	10 %
	Total	19	21 %
<b>Living Space</b>	Habitat	9	10 %
	Hunting	0	0 %
	Total	9	10 %
<b>Material</b>	Food	4	4 %
	Livestock	5	6 %
	Gathering food from nature	1	1 %
	Local products	3	3 %
	Water	3	3 %
	Raw materials and resources	1	1 %
	Total	17	19 %
<b>Non-material</b>	Aesthetics	17	19 %
	Leisure	19	21 %
	Tradition and religion	2	2 %
	Heritage and cultural history	4	4 %
	Information	1	1 %
	Total	43	48 %
<b>Other</b>	All other	2	2 %
	Total	2	2 %
		<b>90</b>	<b>100 %</b>

Table 5. Landscape services according to the landscape service categories

Table 5 shows the translation from landscape service indicators (table 4) into the landscape service categories, this is done according to the conceptual framework. The category Non-material has been most frequently mentioned by the different participants, namely 48% of the total responses. The significantly low percentage for heritage and cultural history is remarkable as the three case study areas are estates with several monumental buildings. This low percentage might be caused by the way people appreciate the heritage. Perhaps people see this more as a part of the aesthetics instead of regarding heritage and cultural history as a separate entity. Many participants have mentioned that they appreciate the variation and contrasts in the landscape of an estate (see Appendix B).

### 7.1.2. Relation between disciplinary background and received landscape services

One of the aspects that need to be found out is how the disciplinary background of the responders effects the amount of received landscape services. In order to give an answer to this; the gender, the agegroups, household compositions, educational backgrounds and job sectors need to be linked to the received landscape services.

		Gender	
		Male	Female
		Count	Count
Familiar with area	Yes, I visit the area regularly (every week, 2-3 times a month)	5	3
	Yes, I visit the area every now and then (once a month to once every 6 months)	8	5
	Yes, I know the area but never visit it	1	3
	No	3	6

Table 6. Familiar with area

In general can be said that males have received more landscape services compared to females (Table 7). This is likely to be caused by the familiarity with the study areas (Table 6). In general the male responders are more frequently familiar with the study areas, whereas females more frequently answered no or do not visit the areas if they know it.

		Gender	
		Male	Female
		Count	Count
Controlling	Gas Regulation	4	5
	Climate Regulation	5	2
	Water Management	2	
	Pollination	1	
Living Space	Biological Control		
	Habitat	4	5
	Hunting		
Material	Food	2	2
	Livestock	3	2
	Gathering food from nature		1
	Local products	1	2
	Water	2	1
	Raw materials and resources	1	
Non-material	Aesthetics	10	7
	Leisure	12	7
	Tradition and religion	1	1
	Heritage and cultural history	2	2
	Information	1	
Other	Received	1	1
Total		52	38

Table 7. The effect of gender on the received landscape services

Looking at how the age of the responders effects the received landscape services, reveals that participants in the age group 36-50 years have received most landscape services (Table 8). However, this is also the age group in which most people have replied a questionnaire form and therefore this increased number is likely to be caused by the response rate and not just by the age of the responders. What is more remarkable to note is that the participants from this age group, have received considerable larger numbers in the category of controlling services, this while the other age groups are more focused on the non-material landscape services.

		Age of responders			
		0 - 35 years old	36 - 50 years old	51 - 65 years old	66 - 100 years old
		Count	Count	Count	Count
Controlling	Gas Regulation		7	1	1
	Climate Regulation		5	1	1
	Water Management		1		1
	Pollination			1	
	Biological Control				
Living Space	Habitat	2	2	2	3
	Hunting				
Material	Food		2	1	1
	Livestock		3	1	1
	Gathering food from nature		1		
	Local products		1	1	1
	Water	1	1	1	
	Raw materials and resources			1	
Non-material	Aesthetics	1	7	5	4
	Leisure	3	6	4	6
	Tradition and religion		1	1	
	Heritage and cultural history		1	2	1
	Information			1	
Other	All other received			1	1

Table 8. Relation between age of responders and received landscape services

Table 9 shows the relation between the educational background and the received landscape services. What can be noticed is that higher education and university (hbo and wo), results in the highest number of received landscape services. Yet the participants who replied a questionnaire form, almost all fulfilled this type of study, making it difficult to tell if the other type of study backgrounds results in a lower amount of received landscape services. However, those who did fulfil the questionnaire with a different type of study background than hbo or wo, did in general receive a smaller amount of landscape services on the estates.

		Highest level of education			
		Mbo	Hbo	Wo	Other
Controlling	Gas Regulation	1	6	2	0
	Climate Regulation	1	3	3	0
	Water Management	0	1	1	0
	Pollination	0	0	1	0
	Biological Control	0	0	0	0
Living Space	Habitat	1	6	2	0
	Hunting	0	0	0	0
Material	Food	1	2	0	1
	Livestock	1	3	0	1
	Gathering food from nature	0	1	0	0
	Local products	0	2	0	1
	Water	1	1	1	0
	Raw materials and resources	0	0	1	0
Non-material	Aesthetics	1	8	7	1
	Leisure	2	8	7	2
	Tradition and religion	0	1	1	0
	Heritage and cultural history	0	1	3	0
	Information	0	0	1	0
Other	Received	0	1	1	0
		9	44	31	6

Table 9. Relation between educational background and received landscape services

		Family / Household composition				
		One person household	Household of 2 persons without children	Household of one or more children of 10 years and younger	Household of one or more children above 10 years	Household with children below 10 as well as above 10 years
Controlling	Gas Regulation	2	2	1	2	2
	Climate Regulation	2	2	1	0	2
	Water Management	1	1	0	0	0
	Pollination	0	1	0	0	0
	Biological Control	0	0	0	0	0
Living Space	Habitat	2	3	2	2	0
	Hunting	0	0	0	0	0
Material	Food	0	3	0	1	0
	Livestock	0	3	1	1	0
	Gathering food from nature	0	0	1	0	0
	Local products	0	2	0	1	0
	Water	0	1	1	1	0
	Raw materials and resources	0	1	0	0	0
Non-material	Aesthetics	3	6	2	3	3
	Leisure	3	8	2	3	3
	Tradition and religion	0	0	0	2	0
	Heritage and cultural history	2	1	0	1	0
	Information	0	1	0	0	0
Other	All other	1	1	0	0	0
Total		16	36	11	17	10

Table 10. Relation between household composition and the received landscape services

Looking at how the household composition effects the number of received landscape services, reveals that households of 2 persons without any children in general receive the highest number of landscape services (table 10). Yet 47% of the received questionnaires have been filled in by participants from this type of household, so the substantial amount of received services is likely to be caused by the response rate and not the household composition alone. When comparing these numbers with the response rate, household composition does not directly seem to influence the amount of landscape services which are received on estates.

In Table 11 the job sectors are compared with the received landscape services and splits these according to gender. The highest numbers are found with the sectors “commercial and business”, “health and social care” and “education and science”. However, these are also the sectors with the highest response rate, hence this is most likely caused by the response rate.

			Job sector								
			Bank and insurance companies	Commercial and business	Education and science	Government	Health and social care	Engineering	Industry	Retirement	Other
Male	Controlling	Gas Regulation	1	3							
		Climate Regulation	1	3			1				
		Water Management		1						1	
		Pollination					1				
		Biological Control									
	Living Space	Habitat				1	1	1		1	
		Hunting									
	Material	Food	1	1							
		Livestock	1	1			1				
		Gathering food from nature									
		Local products		1							
		Water					1	1			
		Raw materials and resources					1				
	Non-material	Aesthetics		3		1	3		1	1	1
		Leisure		4		1	2	1	1	2	1
Tradition and religion						1					
Heritage and cultural history			1			1					
Information						1					
Other	All other					1					
Female	Controlling	Gas Regulation			4	1					
		Climate Regulation			1	1					
		Water Management									
		Pollination									
		Biological Control									
	Living Space	Habitat		1	3					1	
		Hunting									
	Material	Food			2						
		Livestock			2						
		Gathering food from nature				1					
		Local products			2						
		Water			1						
		Raw materials and resources									
	Non-material	Aesthetics			3	1	1			2	
		Leisure		1	2	1	1			2	
Tradition and religion				1							
Heritage and cultural history				1					1		
Information											
Other	All other			1							

Table 11. Comparing background of participants with received landscape services (empty categories have been left out)

Comparison of the background of the participants and the received landscape services, does in general not provide an extraordinary outcome for an explicit background. Yes, some numbers are significantly higher than others, however those increased numbers are most likely caused by a higher response rate in these sub-categories (for example more responders who are

between 36 - 50 years old) and not necessarily because of the background of the responder. In general can therefore be said that the disciplinary background of an individual does not necessarily result in specific outcomes of received landscape services, this because a match between background and received landscape services has not been found when the response rates are also taken into consideration. This indicates that when a variety of disciplinary backgrounds are considered, the received landscape services are also varied.

## 7.2. The effect of distance

In this study, two distance zones have been applied to be able to say something about the influence of distance on the received landscape services. The two zones are 0-2km from the estate and 2-5km from the estate. In the tables, 0-2km is referred to as distance 1, whereas 2-5km is referred to as distance 2.

Of the 34 received questionnaires, 9 persons are not familiar with the area and therefore did not fulfil the questionnaire. Of these 9 participants, 5 are from Sandwijck and 4 from Vogelenzang. 8 of these participants live in the 2-5km zone. What is also remarkable to note, is that Warnsborn is much more popular, as most of the participants living near Warnsborn, also visit the area regularly (table 12). Participants who live in the 2-5km zone, never visit a study area regularly, as this is only answered by people who live in 0-2km zone.

		Case study area					
		Estate Sandwijck Distance 1	Estate Sandwijck Distance 2	Estate Warnsborn Distance 1	Estate Warnsborn Distance 2	Estate Vogelenzang Distance 1	Estate Vogelenzang Distance 2
		Count	Count	Count	Count	Count	Count
Familiar with area	Yes, I visit the area regularly (every week, 2-3 times a month)	1	0	5	0	2	0
	Yes, I visit the area every now and then (once a month to once every 6 months)	2	2	1	4	2	2
	Yes, I know the area but never visit it	1	0	1	1	1	0
	No	1	4	0	0	0	4

Table 12. Familiar with area

Looking at how long people visit the area (table 13), reveals that short visits of <30minutes only happens when people live in the 0-2km zone.

		Case study area					
		Estate Sandwijck Distance 1	Estate Sandwijck Distance 2	Estate Warnsborn Distance 1	Estate Warnsborn Distance 2	Estate Vogelenzang Distance 1	Estate Vogelenzang Distance 2
		Count	Count	Count	Count	Count	Count
Duration of visit	Less than 15 minutes	0	0	0	0	0	0
	Between 15 and 30 minutes	2	0	0	0	3	0
	Between 30 en 60 minutes	1	2	3	3	0	2
	1 to 2 hours	1	0	3	2	2	0
	More than 2 hours	0	0	0	0	0	0

Table 13. Duration of a visit

A visit of 30 to 60 minutes seems to be the most popular for the people in both the distance zones. Longer visits of 1 to 2 hours happens more frequently when people live closer to the area. The participants never visited an area for more than 2 hours, or less than 15 minutes.

		Case study area					
		Estate Sandwijck Distance 1	Estate Sandwijck Distance 2	Estate Warnsborn Distance 1	Estate Warnsborn Distance 2	Estate Vogelenzang Distance 1	Estate Vogelenzang Distance 2
Way to get there	Car	0	1	1	1	0	1
	Motorcycle / Scooter	0	1	0	0	0	0
	Bicycle	3	0	1	3	1	1
	Public transport	0	0	0	0	0	0
	By foot	1	0	4	1	4	0

Table 14. Transport to the area

The participants visit the area most frequently by foot or by bicycle, however this seems not to be related to the distance people live from the area (table 14). Public transport has not been mentioned by any of the participants.

#### 7.2.1. The influence of distance on the received landscape services

As mentioned earlier, a total of 90 different landscape services have been received by the participants who have completed a questionnaire form. Of these 90 different received landscape services, 62 have been received by participants who live in the 0-2km zones (table 15).

This could have to do with the fact that when people do not visit the study area, they did not fulfil the questionnaire form and therefore did not note any landscape services. As those participants who did not fulfil the questionnaire almost all (8 out of 9) live in the 2-5km zones, the total amount of received landscape services in the 2-5km zones is also lower because of this.

The higher number of landscape services for the 0-2km zone could also be caused by more frequent visits of both long and short durations (table 12 and 13), which could therefore contribute to more detailed knowledge of what the estate has to offer. This could be linked to the fact that in table 15, there is a greater variety of received landscape services of participants from the 0-2km zone when compared to the received landscape services in the 2-5km zone.

		Case study area						Total
		Estate Sandwijkstra Distance 1	Estate Sandwijkstra Distance 2	Estate Warnsborn Distance 1	Estate Warnsborn Distance 2	Estate Vogelenzang Distance 1	Estate Vogelenzang Distance 2	
Controlling	Gas Regulation	0	0	3	2	3	1	9
	Climate Regulation	0	0	4	2	0	1	7
	Water Management	1	0	1	0	0	0	2
	Pollination	0	0	1	0	0	0	1
	Biological Control	0	0	0	0	0	0	0
Living Space	Habitat	4	1	0	2	2	0	9
	Hunting	0	0	0	0	0	0	0
Material	Food	0	0	1	0	3	0	4
	Livestock	1	0	1	0	3	0	5
	Gathering food from nature	0	0	0	1	0	0	1
	Local products	0	0	0	0	3	0	3
	Water	0	1	1	0	1	0	3
	Raw materials and resources	0	0	1	0	0	0	1
Non-material	Aesthetics	3	1	5	3	3	2	17
	Leisure	3	2	5	4	3	2	19
	Tradition and religion	0	0	0	0	1	1	2
	Heritage and cultural history	1	0	1	0	1	1	4
	Information	0	0	1	0	0	0	1
Other	Received	0	0	1	1	0	0	2
Total		13	5	26	15	23	8	90

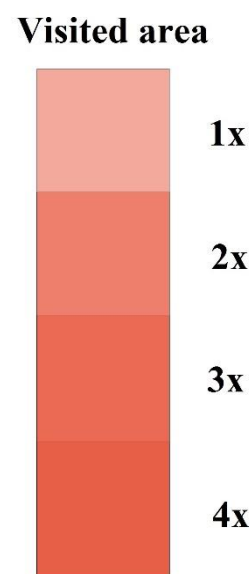
Table 15. The influence of distance on the received landscape services

In general can be said that as the distance to an estate increases, the amount of received landscape services decreases. What is also found is that when distance to an estate increases, the variation in received landscape services decreases.

### 7.2.2. Mapping visited areas and landscape services on estates

An important aspect of the questionnaire has been the request for the participants to draw an area on a map, showing the actual location what they prefer to visit on the estate and what the locations are where they have received landscape services on the estate. When these maps of the several received questionnaires are placed over each other, the total or cumulative preferred areas on the estates become visible. The same has been done for the received landscape services, providing insight in the actual location on the estate where people have received landscape services.

The areas participants visited on the estates, have been given the colour red. The overlapping visited areas have been given a darker colour of red, however this has only been done in the case of an area of a different participant (fig. 34). Overlapping areas of the same participant (some participants used multiple circles to show the locations they have visited), have been given the same red colour to prevent misinterpretations of the maps.



Graduated colours are based on overlapping visited areas of individual responders. In case of a questionnaire with overlapping polygons of a single person, the overlapping area has been given the same colour to avoid misunderstandings.

Figure 35 shows the visited areas on estate Warnsborn. What can be seen is that the participants living in distance zone 1 (0-2km) tend to visit more and diverse areas of Warnsborn than the participants from distance zone 2 (LW2).

Figure 34. Graduated colours are used to show preferred areas (the darker the colour, the more frequent different participants have visited a similar area)

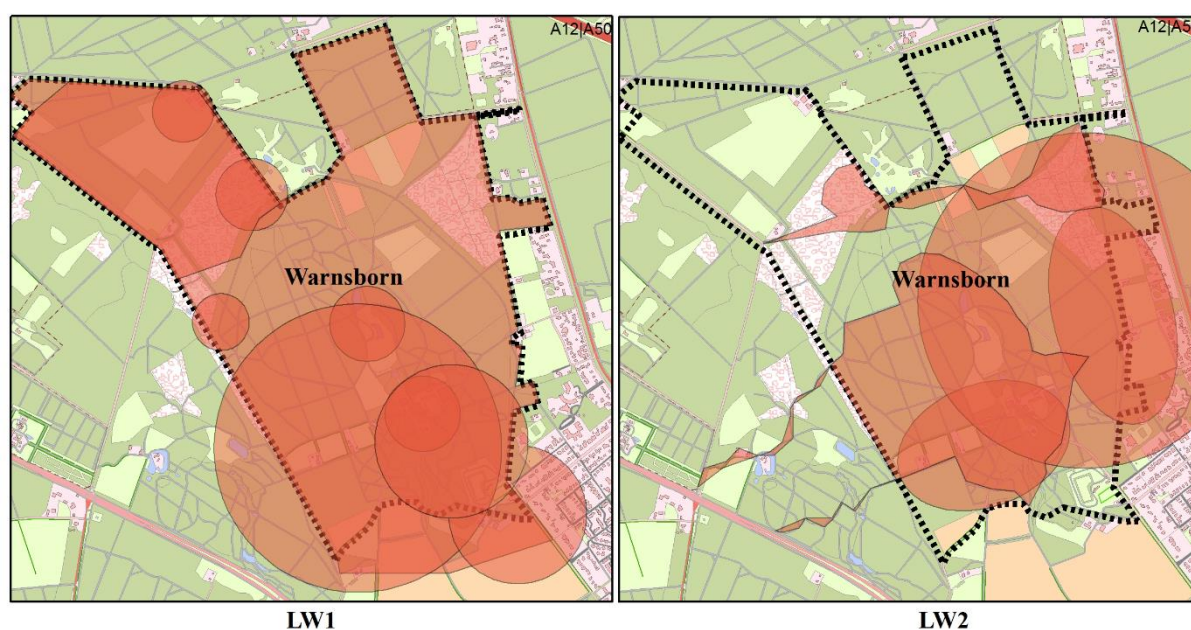


Figure 35. Visited areas on estate Warnsborn (LW1 = 0-2km / LW2 = 2-5km)

The participants living in distance zone 2 focussed more on the central area near the main building (which is also the location for parking and for facilities such as a bar/restaurant), whereas the participants from distance zone 1 also frequently visited the heathland areas in the northwest of Warnsborn.

A similar situation can also be seen on the visited area maps of estate Sandwijck (fig. 36). Comparing the visited areas of participants living in distance zone 1 (LS1) and distance zone 2 (LS2), reveals that the participants from distance zone 1 visit more of the southern edge of the estate, while participants from distance zone 2 focus more around the main building near the entrance.

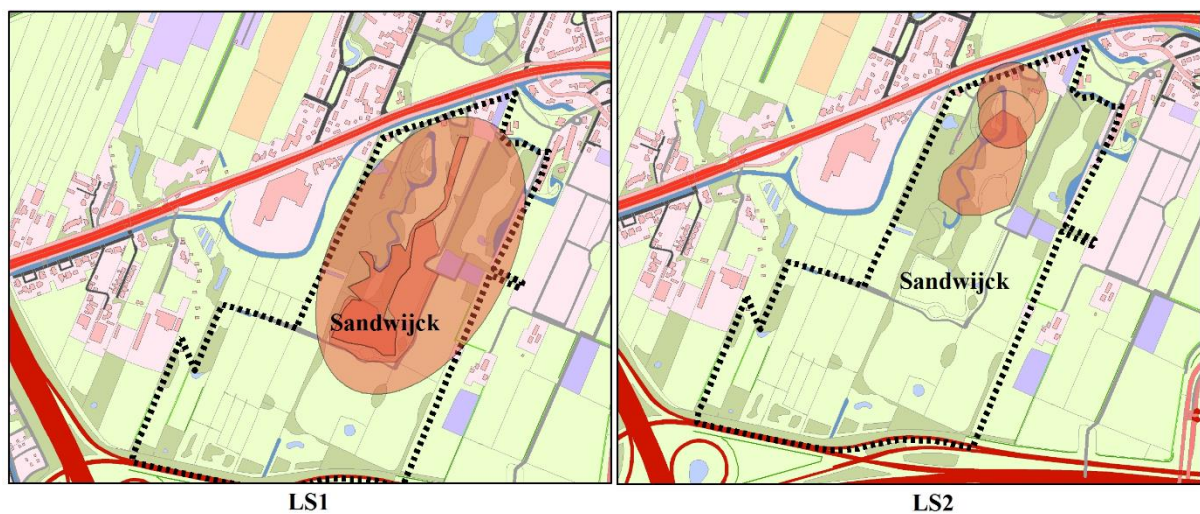


Figure 36. Visited areas on estate Sandwijck (LS1 = 0-2km / LS2 = 2-5km)

What can also be seen is that the visited areas of participants from LS1 covers more of the entire estate, whereas the participants from LS2 visit more of the area near the parking lot and the ponds near the main building. The entire southern part of Sandwijck is not visited, because it is not open for the public as it forms a part of the NEN.

Figure 37 shows the visited areas on estate Vogelenzang. The situation here is slightly different as compared to Warnsborn and Sandwijck. The participants from distance zone 1 visited more of the edge of the estate and some marked specific spots around the main buildings. The participants from distance zone 2 followed a route through the estate or only visited the northern edge. Yet, the visit maps of the participants from Vogelenzang are somewhat distorted because only a few people have drawn an area on the maps of the questionnaire.

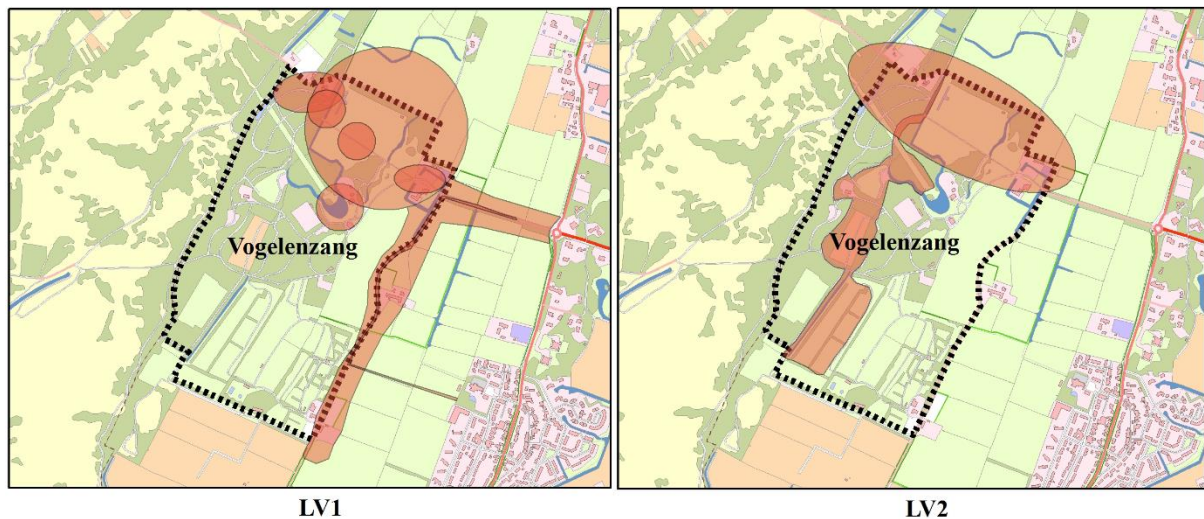


Figure 37. Visited areas on estate Vogelenzang (LV1 = 0-2km / LV2 = 2-5km)

The participants of the questionnaires have also been asked to draw the locations where they have received their landscape services. On figures 39, 40 and 41, the locations of these received landscape services can be seen. Similar to the maps of the visited areas, these locations of the received landscape services have been created by means of overlapping all the individual maps in the received questionnaires. The different numbers, show the center of the area of the received landscape service. Every number is actually made up of a polygon which shows the total area of the selected landscape service (see fig 38), however the borders have been turned off in order to make the maps easier to read. When the borders of the various polygons overlap and crisscross each other, reading such as map turns out to be difficult (fig. 38).

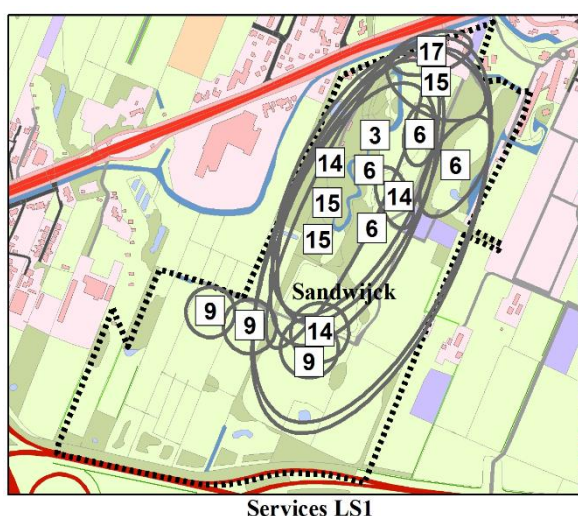


Figure 38. Map of received landscape services when borders are turned on

Category	Number	Landscape Service
Controlling	1	Gas Regulation
	2	Climate Regulation
	3	Water Management
	4	Pollination
	5	Biological Control
Living Space	6	Habitat
	7	Hunting
Material	8	Food
	9	Livestock
	10	Gathering food from nature
	11	Local products
	12	Water
	13	Raw materials and resources
Non-material	14	Aesthetics
	15	Leisure
	16	Tradition and religion
	17	Heritage and cultural history
Other	18	Information
	19	All other received services

Table 16. The numbers on the maps refer to one of the landscape services above

Table 16 provides a clarification of the different numbers that can be found on the different maps.

Figure 39 shows the distribution of the received landscape services on estate Warnsborn. What can be seen is that the received landscape services for the participants from distance zone 1 are more scattered around the entire estate. Participants from distance zone 2 received most of the landscape services near the main building and the ponds around the main building. For both distance zones, the large open terrains such as the heathlands, from an important provider for landscape services. The controlling services seem to have been more frequently received in the forests around the main building, whereas the non-material services are more dispersed around the entire estate.

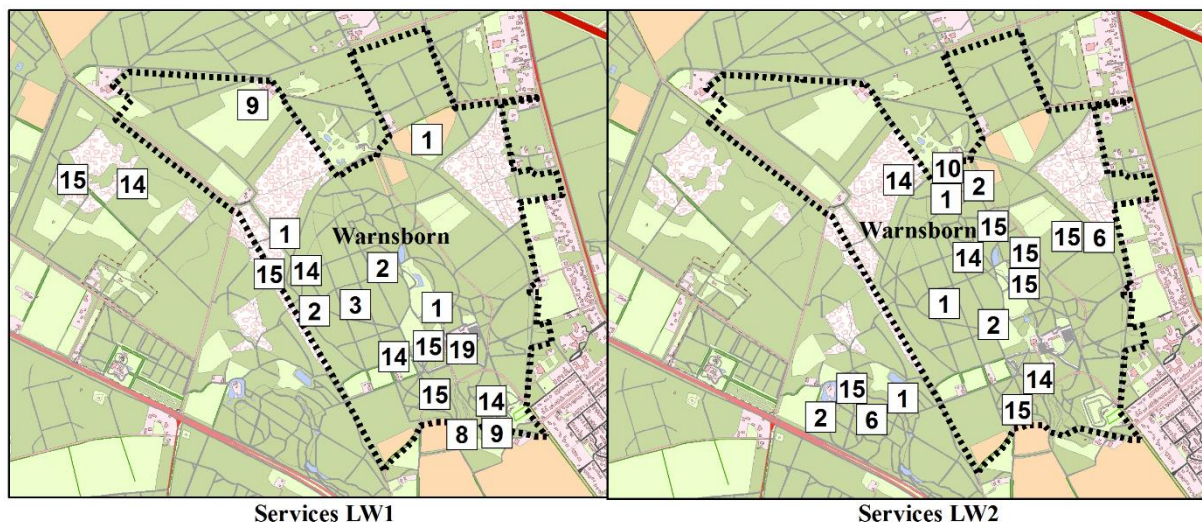


Figure 39. Locations of the received landscape services in estate Warnsborn (LW1 = 0-2km / LW2 = 2-5km)

On estate Sandwijck the received landscape services are even more dispersed around the entire estate when participants come from the 0-2km zone (fig. 40). As soon as participants come from the distance zone 2, the services tend to center around the main building and the garden in front of this building. What is also remarkable is that habitat services are on this estate more popular compared to the other two estates. Little services have been placed on the southern edge of the estate, which is probably caused by the fact that this part is not open for the public.

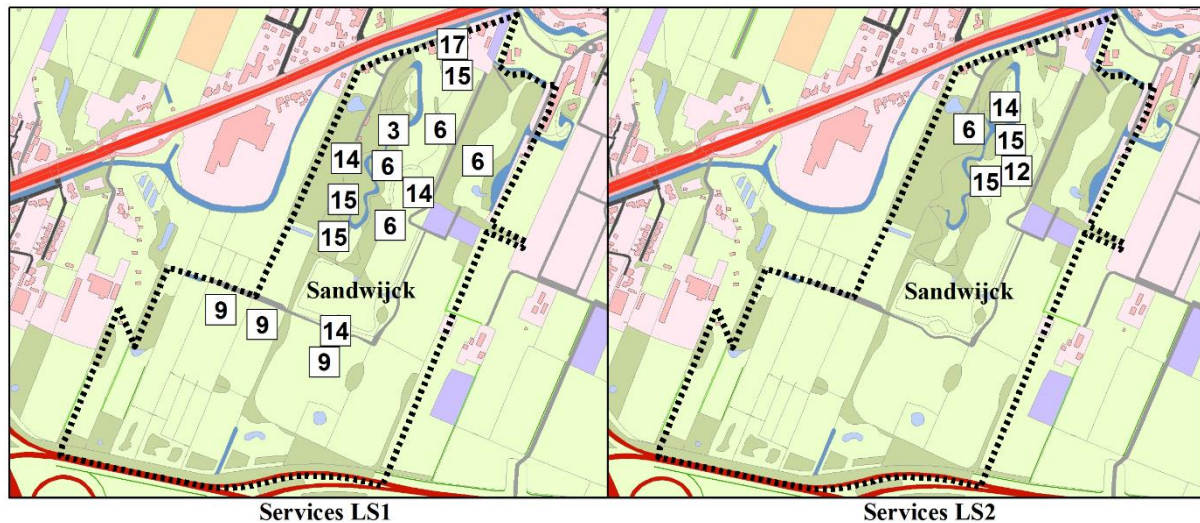


Figure 40. Locations of the received landscape services in estate Sandwijck (LS1 = 0-2km / LS2 = 2-5km)

Looking at the received landscape services on estate Vogelenzang (fig 41), shows that the participants from the distance zone 1, have received more services in their northern part of the estate, whereas the participants from the distance zone 2 found more services near the main building and the forest that borders the Amsterdam Water Supply Dunes. What is also remarkable is that participants from distance zone 1, have received more material landscape services such as food, livestock and local products, whereas participants from distance zone 2 received more non-material services.

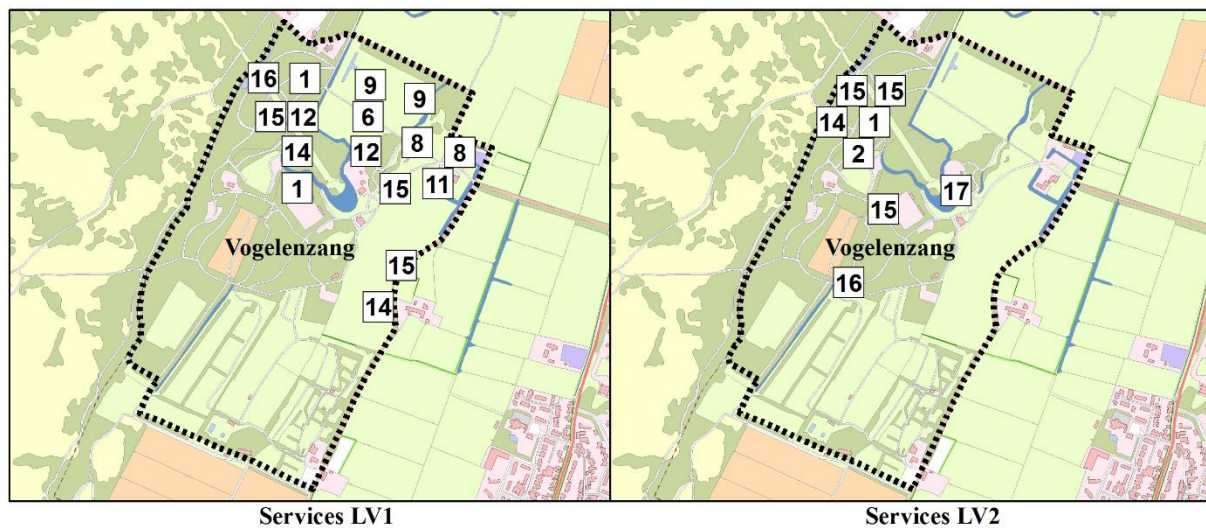


Figure 41. Locations of the received landscape services in estate Vogelenzang (LV1 = 0-2km / LV2 = 2-5km)





On estate Vogelenzang the total received landscape services (fig. 45) are especially clustered around the northern part of the estate. The forest with it streams and ponds, behind the main building appears to be the main provider of landscape services. Forests also turn out to be the favoured area of the participants (table 17). The participants especially appreciate the beauty of the terrain and the fact that it is so well-maintained and authentic. The participants from Vogelenzang gave the estate an average mark of 8- (Appendix B).

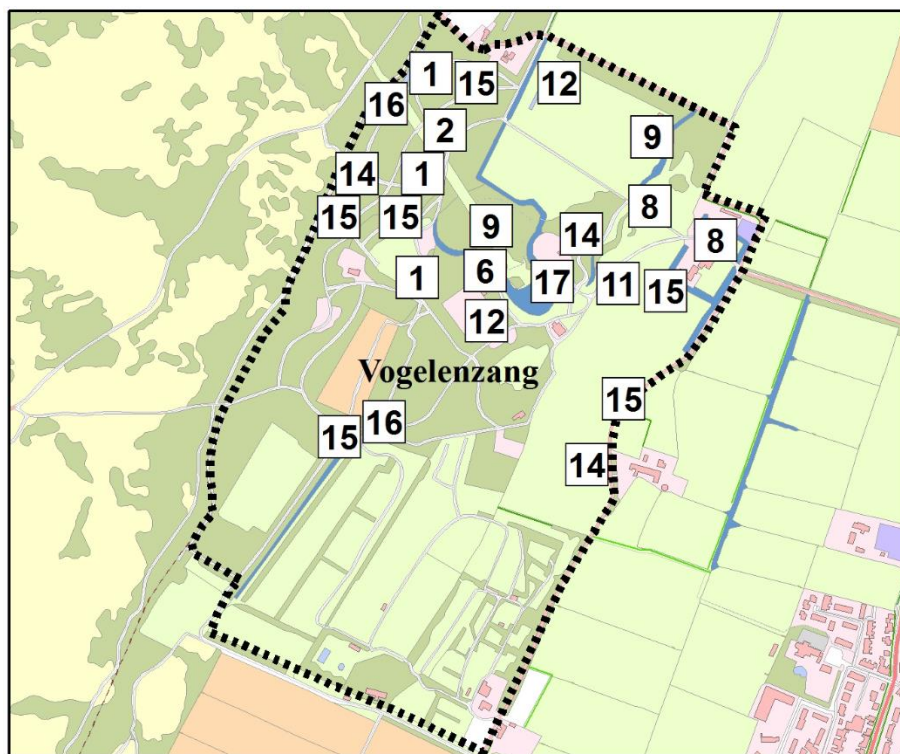


Figure 45. All landscape services found on Vogelenzang

Area	Questionnaire number	Forest	The gardens, grassland and ponds around the main building	Arable land and meadows	Heathland
LS1	2	2	3	1	
	1	3	1	2	
	34	3	2	1	
	4	3	1	2	
LS2	32	2	1	3	
	27	3	2	1	
LW1	28	1	2	4	3
	9	2	3	1	4
	12	1	2	4	3
	8	1	3	4	2
	13	1	4	3	2
	11	1	4	2	3
	30	3	4	2	1
LW2	14	2	1	4	3
	16	1	4	3	2
	31	1	3	2	4
LV1	33	3	1	2	
	17	1	3	2	
	18	2	3	1	
	19	2	3	1	
LV2	25	1	2	3	
	23	2	1	3	

Table 17. Preferred landscape type of the participants of the questionnaires (1 = favourite 4= least favourite)

#### 7.4. Institutional levels and decision making

As mentioned in the theoretical and conceptual framework, spatial decision making is most often done at different institutional levels. In order to give a comprehensive answer to the main research question in this thesis, it would have been most interesting if the views from the different institutional levels could have been compared. Conflicting interests, their way of decision making and possible trade-offs which impact heritage, might then have been found. However, even after numerous attempts, not a single person from the governments (municipalities, provinces and water boards) was willing to make an appointment for a short conversation about their ideas for heritage and specifically for the estates in the area of their jurisdiction. Meetings with the owners of the three case study areas of this research, however did contribute to a better understanding of the situation. The owners of the estates have all been asked if they had contacts in the government, yet in all three occasions this has been answered with no. Now this is already very remarkable, as one would expect that an owner of an estate should have close contacts and a very strong network with the local government. This is however not the case, even though they all receive subsidy schemes for their estates, form a part of the NEN and all are Natura2000 areas (interviews, see Appendix B).

Phone calls with the municipalities mostly ended with the remark that the municipality is not involved with the estates, because estates are owned by the organizations and not by the government. Phone calls with the water board, resulted in similar answers and most answered that estates are not included in their daily practices. The only government that seems to be doing something with estates, is the provincial government. However, a meeting here could not be planned due to time constraints and full schedules.

The topic of this research seems at this moment not to be a concern of the local governments in the three case study areas.

*Do you have any contact with the local water board?*

*“Due to the fact that the streams on Warnsborn do not lead to any major waterway, the water board is not involved with anything on Warnsborn”*

(Geldersch Landschap & Kasteelen)

*Do you have any contact persons at the local government (municipality or province) whom I could speak with?*

*“Regarding this, I can unfortunately not be of service to you”*

(Geldersch Landschap & Kasteelen)

*Do you work in any collaborative arrangements with the governments?*

*“Collaboration with the governments is only necessary because they plan regulations and goals, on which we need to work. So true collaboration is not really there”*

(Utrechts Landschap)

*Do you work together with the surrounding estates?*

*“Collaboration with the surrounding estates is not really happening, because they have a completely different working approach”*

(Estate Vogelenzang)

#### 7.4.1. What governments write about estates in their policy documents

As mentioned earlier, the reason of the limited amount of interest from the local governments, could be due to the fact that the topic of the thesis is still relatively new. To find out if the governments actually consider the preservation of estates, a short policy review into the documents of the municipalities and provinces has been done.

The municipality of Arnhem, in which estate Warnsborn is situated, writes very little to almost nothing about their estates. Only in the Waterplan Arnhem 2009-2015, Warnsborn is mentioned because of the streams on this estate. Yet, maintenance of the streams is for GLK (Gemeente Arnhem & DHV, 2009). Even the integrated environmental plan 2008-2011 of the municipality does not mention anything about Warnsborn or any other estate in the municipality (Gemeente Arnhem, 2008). Only the estates Gulden Bodem, Zypendaal and Sonsbeek seem to be referred to in the policy documents of this municipality, because these form also Arnhem's city parks (Dienst Stadsbeheer, 2008). The province of Gelderland, however does write about the estates and specifically has a plan and vision for cultural heritage in the province. They even have ideas for an estate zone on the edge of the Veluwe: Gelders Arcadie (Provincie Gelderland, 2012).



Figure 46. Map of Gelders Arcadie (source: <http://www.geldersgenootschap.nl>)

The municipality of De Bilt has no specific plan for estates, yet does explain the high value of the estates in different documents. Most of the attention seems to go to the Hollandse Waterlinie. For the estates they mainly focus on the

conservation and accessibility and not necessarily the vitality, plus they focus more on the entire estate zone “Stichtse Lustwarande” instead of individual estates (Gemeente De Bilt, 2012). Possibilities for recreation are high on the agenda of this municipality, yet the value of nature should not be harmed to reach this goal (Gemeente De Bilt, 2012). Estate Sandwijck is once mentioned in the cultural history value map of the municipality (Gemeente De Bilt, 2011). The Province of Utrecht has a separate document called Implementation Agenda for the Historic Estates 2012-2015 in which they explain their ideas for broader support of heritage in the province (Provincie Utrecht, 2011). The ideas in this document of the province of Utrecht are mostly about partnerships, networks, knowledge exchange and the development of guidelines for estate owners, though compared to documents of other governments this document refers most realistically to the issues that are currently happening in the heritage sector (Provincie Utrecht, 2011). In the Provincial Spatial Structure 2013-2028 is even referred to a Cultural History Network as a sort of umbrella programme to reach those goals (Provincie Utrecht, 2013).

The municipality of Bloemendaal started with a structure vision in 2009. In this document the municipality writes about an estate zone along the dunes in the entire municipality (Gemeente Bloemendaal, 2011). Although the description of this zone includes terms like “vitality”, “quality” “conservation” and “cohesion”, the actual ideas behind this zone remain vague (Gemeente Bloemendaal, 2011, p. 23). It seems like the focus for this zone is more on the development of a network of ecosystems (an ecological standpoint), more possibilities for recreation, and an investigation of possible new housing on estates to increase their financial vitality (Gemeente Bloemendaal, 2011). However, the ideas for this zone are still in the very early stages and seem to be more of a vision than that they are concrete plans. The province of Noord-Holland developed a structure vision in 2011. In this document the province states that they are going to “investigate the possibilities for new estate zones”, which also contains “special housing desires of international allure for the metropolitan region” (Provincie Noord-Holland, 2011, p. 89). However, concrete plans are also absent in this document of the province. In a separate document for the landscape and cultural history of the province Noord-Holland, a slightly more detailed description of the track of policy of the province has been set out (Provincie Noord-Holland, 2010). The province states that “central in their policy is the strengthening and connecting of the valuable estates as the fundamentals of spatial quality” (Provincie Noord-Holland, 2010, p. 83). Yet, investments and realization of these goals have only just started (Provincie Noord-Holland, 2013).

What this short policy review reveals is that the different governments from the case study areas, are either not working on the issues in the heritage sector or have only just started their investigation to deal with this topic.

#### 7.4.2. The opinion of the owners of the estates

As has been mentioned earlier in this chapter, interviews and meetings have been accomplished with the owners of the three estates: Geldersch Landschap & Kasteelen (GLK), Utrechts Landschap and the owners of the estate Vogelenzang (private property). In this sub-chapter, their views on the estate will be summarized and compared with each other (the notes of these conversation can be found in Appendix B). Three aspects have been kept central during the meetings with the owners, i.e. their standpoint about landscape services on their estate, their standpoint about the economic vitality of their estate and their standpoint about collaboration between other estates and/or the government. These aspects will now be further explained per owner.

One of the points that has been examined in all three meetings, has been the landscape services that the owners think are found on their estates and whether or not their policy is adapted to promote those services.

Utrechts Landschap, the owner of estate Sandwijck, thinks that housing, recreation and habitat are the main services that are found on the estate. The policy of Utrechts Landschap is adapted to maximize the habitat services on Sandwijck and to sustain the tranquility on the estate. This is also because the estate is a part of the NEN programme of the Province of Utrecht.

*“The focus of Utrechts Landschap is to keep this area quiet”*

Utrechts Landschap

*“There has been a strong focus on the ecology. A negative attitude has developed due to these sectorial work approaches.”*

Geldersch  
Landschap &  
Kasteelen

Geldersch Landschap & Kasteelen, the owner of estate Warnsborn, thinks that the services on this estate are especially related to recreation. However, there has also been a strong focus for the ecology on this estate. The policy of GLK is still very similar to the one of 1929 and focusses on the conservation and maintenance of the landscape and monuments on Warnsborn. Services are therefore not directly on the agenda of GLK.

The owners of estate Vogelenzang, think that heritage and cultural history form the most important services on their estate. Habitat services are also important on their estate, yet these are especially enforced on the estate because of plans from the government such as Natura2000 and the NEN. The ideas of the owners are reflected in the way they maintain their estate, as the focus is very much on preserving an historic estate with gardens,

tree lanes and an authentic landscape. Recreation is quite low on their preferences list for the estate, yet is required to be able to receive the subsidy from the government.

Another important aspect which has been talked about during the meetings is the economic condition of the estate.

*“We generate income from our buildings. Income has to be generated through red and through subsidies. Greenery doesn’t produce much money for us”*

Utrechts Landschap

Utrechts Landschap seems to have no immediate economic concerns and as long as their financial condition is in balance, Sandwijck will also feel no immediate threats.

Utrechts Landschap however worries about the changing subsidy landscape, which would require alternative sources of income in the future.

GLK explains that all their sources of income are slowly sinking and that they are now facing the challenge of finding a

way to keep large estates, such as Warnsborn, profitable. Especially large maintenance projects and recovery projects require new financial sources.

The owners of estate Vogelenzang explain that especially the subsidies for their estate and their monuments are decreasing, forcing them to find other sources of income. The uncertainty of these changing subsidies is making it very difficult for them to invest on their estate, as their income could change any day. They are looking for a way to develop more income through their monumental buildings, such as the old farmhouses, the camping area and possibly also new housing projects.

The last aspect that has been questioned during the meetings with the owners of the estates, is how they think about collaboration with surrounding estates and with other institutions, including the government.

Utrechts Landschap explains that especially considering Sandwijck, collaboration with their volunteers is very important. Collaboration with the government is not happening and when it happens it is only because the government has set up a goal or a new project in which Utrechts Landschap is or should be

*“If the government would acquire this estate, there would be pathways and trails all-over this estate. That is obviously not appropriate on an historic estate”*

Owners of estate  
Vogelenzang

*“If it really becomes financially unbearable, we might have to decide to dispose a section of the estate that is situated in a not so profitable corner”*

Owners of estate  
Vogelenzang

involved. Due to the isolated position of Sandwijck, collaboration with other estates is not high on the agenda of Utrechts Landschap.

GLK is actively representing ideas of their donors, yet true collaboration is not taking place. Partnerships with for example the waterboard are not taking place, even though the waterboard has a drinking water station on the border with estate Warnsborn. The surrounding inhabitants have been questioned for the purpose of knowledge exchange or to talk about possibilities on the estate, yet GLK remains very conservative and this seems to form an obstacle for true collaborative approaches.

The owners of estate Vogelenzang are also not very active on collaboration with surrounding estates, mostly because the surrounding estates are of a larger organization with a completely different perspective on heritage. The owners of estate Vogelenzang also have little contact with the governments, causing problems on the estate with for example the high number of deer from the neighboring Amsterdam Water Dunes. Also with the surrounding inhabitants there is little collaboration. There are for example no volunteers on this estate.

What can be understood from the meetings with the different owners of the case study areas, is that the issues are not similar for every estate, that the ideas and vision towards services are also different and that collaboration is something which is still difficult to implement in their apparently conservative working approaches.

## **8. Discussion**

In this chapter a critical reflection on the findings as presented in the previous chapter will be provided. First of all the results will be discussed according to the related theoretical concepts which have been found during the literature review, next the results will be discussed in light with the objective and research questions and finally the influence of the chosen methods will be discussed.

### **8.1. The results in light of the related theoretical concepts**

In the beginning of this report has been mentioned that there is a theoretical debate going on about the benefits from the landscape. This research has for a large part been based on a review of the main features that seem to be central in this scientific debate about benefits from the landscape. These features have been summarized under four main dimensions and have been kept central throughout the entire research, i.e. the disciplinary background of individuals; the influence of distance; the physical configuration of the landscape; and the hierarchy of institutional levels who look at spatial policy. Taking into consideration that these dimensions have been based on a relatively limited literature study, which took place in relatively short period of time, the likelihoods that some aspects might have been neglected is considerable. The amount of studies and scientific articles about the topic of benefits from landscapes (i.e. landscape services or ecosystem services) is enormous, forcing the research to focus on only a section of this scientific debate. Taking this into consideration, some aspects that came to light during this research should be shared.

One of the first aspects, which seem to be important to take care of has been the interdisciplinary construction of this research (Tress *et al.*, 2003b). This notion of Tress *et al.* could however be interpreted in different ways. In this research this has been interpreted as the background of the participants of the questionnaires. Yet interdisciplinarity could also be seen as the mixing of ideas from various disciplines (i.e. the type of study and the researcher). Based on the idea that landscape services are benefit dependent (different individuals can receive different benefits), the interdisciplinary construction has been generated by means of individual surveys. Yet, it is also the society as a whole that benefits from the landscape (Chiesure & de Groot, 2003), making this decision judgmental.

Another important aspect has been the influence of distances. This has for a large part been derived from studies such as Hein *et al.* (2006), Kremen (2005) and Jones *et al.* (2012). Yet these studies commonly refer to this as spatial scales. The common misuse of this word, creates a lot of misunderstanding and to prevent this from happening in this research it is decided to simply refer to this as the physical distance. This decision is however based on own interpretations of their work and could possibly not reflect the same ideas of Hein *et al.* (2006), Kremen (2005) and Jones *et al.* (2012).

The configuration of the landscape seems to be the fundament for all services that are provided by landscapes. This seems to be a logic outset, however the underlying schools of thought also transform this into a personal judgment. For example Boyd & Banzhaf (2007), who take an economic position in this debate, explain that only the final goods are fundamental for welfare accounting and that double-counting should be feared. Others, such as Kremen (2005) explain this from a biodiversity standpoint and have a completely different perspective on this. The ideas behind studying this topic, is consequently based on the personal background of the researcher. Some commonalities between the researchers have however been found during the literature review. The literature review has for example revealed that the different authors (including Limburg *et al.*, 2002; Boyd & Banzhaf, 2007; Kremen, 2005; Termorshuizen & Opdam, 2009), frequently refer to the same thing, yet with a different word for: 'features'. Taking the discussion for this word for granted, a comparison between the features of the estates has been applied. In order to say something about the configuration of these features on estates, GIS modelling is mixed with a more qualitative approach, the individual questionnaires. This has given insight in the influence of the landscape on services provisioning. What should be taken into consideration is that the literature study has revealed that this is based on the personal background of the researcher. The study of Fagerholm *et al.* (2012) has been an important source of inspiration for the method that has been applied in this research. Their idea about mapping indicators for landscape services has however in this research been applied on a questionnaire survey, instead of their method of interviews. A disadvantage of this approach is that the participants cannot be asked for further explanation or a more detailed location where they found their service indicators on the estate. Yet, a much larger audience can be reached in a relatively short period of time. Furthermore, Fagerholm *et al.* (2012) have a strong emphasis on Material and Non-Material services, as a result the controlling and habitat services are for a large part neglected in their work. The results in this study however reveal that these categories form a significant part of the received landscape services of local communities. Future researchers should therefore not neglect these categories in community based research.

Hein *et al.* (2006) mention that interest and demand for services can vary greatly between institutional levels, and that this could lead to unacceptable solutions for stakeholders at other institutional levels. Because of the limited amount of interviews, only little can be said about the effect of the institutional levels. However, a short policy review already revealed that ideas are indeed not always shared between institutional levels, therefore as mentioned by Hein *et al.* (2006) this could indeed lead to sub-optimal landscape configuration. Further research should therefore be done and possibly not by means of interviews, but in the form of questionnaires to ensure that comparisons can be made between institutional levels.

## **8.2. The results in light of the objective and research questions**

In this thesis, a landscape services perspective on natural and cultural heritage has been taken to look for potential economic chances and potential alternative ways for stimulus of planning, conservation and management of heritage in the Netherlands. The fusion of spatial planning and heritage has shown to be able to provide a completely different approach to look for economic opportunities for heritage. Now, to actually implement a landscape services approach in the sector of cultural heritage is something that will take a long time as the conservative standpoint of this sector makes a complete reorientation very difficult, if not impossible. However, the standpoint which has been taken in this study could help as a source of inspiration for future researchers who are willing to tackle this topic.

Obviously the results, which has been based on a literature reviews, 34 received questionnaires, 3 interviews and a policy document study, cannot simply be taken for granted nor can generalizations be based upon this amount of data. What however is hoped to provide, is some form of new insight on the influence of the disciplinary background, the influence of distance, the influence of landscape configuration and the influence of institutional levels. It is now up to future researchers to further investigate the potential of landscape services as a form of stimulus of heritage.

## **8.3. Influence of the chosen methods**

In this research a combination of a literature review, a questionnaire survey, interviews and a policy document study has been applied in order to give an answer to the main research question. This shows that the research has especially been an exploratory study. The results of this study should therefore also be perceived as a source of insight about the given situation and especially as a source of inspiration for future research topics.

A case study research has been used to investigate the potential of landscape services for heritage in the Netherlands. This is for a large part based on qualitative approaches and therefore the meaning of data has also been subjected to own interpretations. In order to make the research more reliable, the questionnaire data has been converted into ArcGIS maps and comparisons between the participants of the questionnaires have been done with SPSS statistics, therefore a part of the research is also based on quantitative approaches. For the interviews, semi-structured questions have been used in order to give the interviewees as much room as possible for their own inputs. The reports of the interviews have been send back to the interviewees for their approval. The questionnaires have for a part been developed with the recommendations of Brown (2004) (p.40) and have been tested with a panel before personally bringing them to the case study areas. Despite the effort that has been given to make this research as reliable as possible, it is still possible that the outcomes of this study reflects the researchers personal perspectives and ideals.

## 9. Conclusion

Altogether we form a very dynamic society with constantly changing ideals and we expect that our landscape reflects those ideals. If we look back to the last 50 years, the Dutch environment has been under constant change because of our constantly fluctuating perspectives on what we believe is right for our environment. Before the 80s we have been very actively working on the separation of functions, reflected in the separation of agriculture and nature. Later however, we came back on this decision and preferred the interweaving of functions, again forcing the environment to reflect these ideals. Our cultural landscape has been shielded off these developments thanks to large subsidy schemes of the Dutch governments. Now that these are slowly vanishing, the cultural landscape is starting to lose its protective shield, making it sensitive to our constantly changing perspectives. Fundamental in our contemporary ideal is an integrated approach of which we nowadays believe that this is right. Such an approach will contribute to a multifunctional landscape that reflects multiple demands from society. This research has been an investigation into the potential of landscape services as a form of stimulus for planning, conservation and management of cultural heritage and in specific cultural landscapes which contain monumental buildings (estates). The landscape services methodology can provide a basis for a landscape that provides a multitude of benefits to people and to nature. New innovative forms of support have to be looked for, both financially and social-culturally. Innovation and broadening of the sector is required and landscape services have shown to be able to take up an important role in this. However, this thesis only represents one further step towards the stimulus of heritage in the Netherlands. It is therefore a source of inspiration and not a complete answer to the problem which the heritage sector faces.

### 9.1. Answer to the research questions

This research has been an investigation to determine in what way landscape services could function as a stimulus for planning, conservation and management of heritage when this is regarded from four angles: from different physical configurations; from different disciplines, from different institutional levels and from different distances. During this investigation of landscape services as a form of stimulus of heritage, the following answers to the sub-questions have been found;

*What is the effect of different disciplinary backgrounds of individuals on the experience and the demand for landscape services from heritage?*

The outcomes of the questionnaires have shown that when people with different disciplinary backgrounds are asked what kind of services they receive from estates, this generally leads to a variety of mentioned landscape services. In this research has been focused on gender, age, household composition, educational background and job sector as factors that indicate the

disciplinary background of individuals. No link has been found between a specific disciplinary background and a specific type of received landscape services. In general can therefore be said that multiple disciplinary backgrounds also leads to multiple types of received landscape services. This shows that a greater variety in disciplinary backgrounds, could be used as a source to develop a landscape which suits different demands of landscape services. The participants in this research have also been asked what they specifically demand on the estates. Most of these demands are simple remarks for the facilities on the estates, such as more benches, more paths to hike or cycle, more facilities such as bars, and more information panels (see Appendix B). Some also note that the estates should simply be kept in the current state. Therefore, in order to maximize the potential of an estate, the variation in disciplinary backgrounds of inhabitants should be considered in order to increase the amount of landscape services which are provided on an estate. This outcome reflects the statement of Fisher et al. (2009): “the benefits you are interested in will dictate what you understand as an ecosystem service” (p. 648). This research has shown that every individual interprets the landscape differently, resulting in a variety of received landscape services.

*To what extend do differences in distance influence the experience and the demand of landscape services from heritage?*

In this research, two distance zones have been applied, respectively 0-2km from the estate and a zone of 2-5km from the estate. In general can be said that as the distance increases from the estate, the familiarity with the estate decreases. Also the duration and amount of visits decreases when people come from the 2-5km zone. The amount of received landscape services and the variation of received landscape services is also significantly lower when people come from the 2-5km zone. Looking at the differences between the locations that are visited, revealed that when people come from the 2-5km zone they concentrate more around the main buildings and parking lots of the estate, whereas people from the 0-2km zone visited more of the entire estates. This is also seen on the location distribution of landscape services on the estates. People from the 0-2km zone have a much more dispersed range of landscape service locations when compared to the people from the 2-5km zone. In general can therefore be said that distance has a significant influence on the amount, variation and locations of received landscape services on estates. The distance does however not appear to influence the demand of the participants, as the recommendations for improvements of the estates did not reveal great differences between 0-2 and 2-5 km from the estate, except that the number of recommendations is larger when people come from the 0-2km zone (which is more likely to be caused by the response rate).

*What is the relation between the physical configuration of heritage and the provisioning of landscape services?*

The three estates which have been studied in this research, all have their own dominating landscape types and therefore differ with each other. In this way has been studied if the configuration of the estate influences the provisioning of landscape services. When looking at the locations where the participants have received most landscape services, reveals that on all three estates the forests with ponds and streams are the main provider of the services to the people (fig. 43, 44, 45). However, when looking at the comments of the participants it seems that the variation of the landscape is in general more appreciated than the specific landscape types. Considering the locations where participants have received landscape services, describes that a variety of landscape features such as ponds, streams, open fields and dense forests will generally lead to greater number and greater variation of received landscape services. In other words, to increase the landscape services provisioning on estates, the variation between landscapes will have to be the highlight of the estate and not necessarily a well-maintained and authentic garden, which is nowadays frequently a priority of estate owners due to budget cuts. This outcome shows that it is not recommended to diminish maintenance of the cultural landscape (especially on estates) or only focus on gardens that directly surround the monumental buildings.

*To what extend does the experience and the demand of landscape services from heritage vary when different institutional levels are regarded?*

This research has revealed that the governments have only just started to begin their investigation for the heritage sector. The focus here seems to be on the development of estate zones in which cohesion seems to be their common goal. Descriptions of their ideas for the estate zones, shows that the governments appear to focus on aesthetics (the “belevingswaarde”) and leisure services on estates. However, concrete plans are at this moment still absent, making it very difficult to study their experience and demand of landscape services. Meeting with the owners of the estates has revealed that the issues are not similar for every estate; that each owner has different ideas towards landscape service provisioning on their estate and that collaboration is so far not favored because of different approaches of maintenance of estates. Taking this into consideration, the government’s proposals for cohesive estate zones might potentially not be the right approach towards the revitalization of heritage.

## 9.2. Overall conclusion

*“In what way could landscape services function as a stimulus for planning, conservation and management of heritage when this is regarded from four angles: from different physical configurations; from different disciplines, from different institutional levels and from different distances?”*

It is not very likely that landscape services are going to provide a direct source of income to estate owners. At least not from the inhabitants who live around the estates. So the question is in what other way landscape services could form a source of stimulus for cultural heritage and especially the cultural landscape. The answer to this might be found when landscape services are considered as a tool to support a social process. Landscape services could potentially provide a method to increase the support for estates which could then lead to new forms of income. Indirectly, landscape services could therefore be a way to new forms of income. Landscape services could also help to broaden the perspective of estate owners. The emphasis of estate owners on their main buildings, monuments or what is often referred to as the “red” elements on estates, could then be broadened towards an emphasis on estates as “cultural landscapes”. By considering the estate as one entity and not by separating it into red and green (and especially red as income and green as expense), a basis can be laid that will help to trigger a movement in this sector. Landscape services could then perhaps be used to find new opportunities on an estate.

The current pressure on estate owners to find other sources of income from their land, forces them towards direct forms of income from civil society. Because of this concern, the participants of the questionnaires have been questioned about their willingness to financially support estates (See Appendix B). Most of the participants think that the financial concern of estates is the duty of the government and the owner of the estate. The participants also think that when companies get advantages from the estate, they should compensate the estate owners for this advantage. Of the participants only 2 are willing to pay for a visit to the estate, 5 are still in doubt and 14 are not willing to pay for a visit. The question if people who live near the estate should pay for conservation of the estate, shows an almost 50/50 spread of people who (somewhat) agree or disagree. This shows that the search for other forms of financial support, should be extended to companies around the estate. There is also a chance that the inhabitants who live directly next to the estate, are willing to support the area in some form. However, this also means that these people will ask for specific improvements on the estates. For example the owner of estate Vogelenzang, is at this moment not allowing dogs on the estate, which is an aspect that has been mentioned by some participants of the questionnaires. In general the outcomes has shown that inhabitants are willing to support an estate, yet entrance fees, appear not to be the right formula to get their support. The participants of the questionnaires have been asked if they are willing to volunteer on the

estate. Of the 22 participants who answered this question, 7 participants are willing to volunteer. Of these 7 participants, 5 are from estate Warnsborn. What this shows is that volunteers could potentially become a simple solution for maintenance of estates. This could help to reduce the costs of maintenance of estates, while at the same time providing a method to increase support and attachment from the civil society. Perhaps inhabitants will not become a direct source of income, but a potential form of reducing the maintenance costs of an estate by means of their free labor. Volunteers could also help to set up new businesses on estates, such as bars or restaurants, shops with local products of the estate, or to set up small excursions on the estate. Of course there is also more to support of estates, than only this financial aspect.

The landscape services methodology could potentially become a successful source for the development of an estate which reflects the various disciplinary backgrounds of the surrounding inhabitants. In this way, different kind of people will find their interests on the estate, leading to a greater place attachment to the estate. With a greater place attachment from inhabitants, estate owners might be able to find other forms of support from their surrounding inhabitants which is something that seems so far not to be considered as essential for the future of an estate. To be able to utilize landscape services on estates, a considerable shift in the traditional way of thinking is required. Landscape services could then become a great tool to trigger civil society to set up (local) initiatives for the stimulus of heritage, but also to develop a landscape that suits to their personal wishes. Landscape configuration of estates should therefore perhaps be implemented from a bottom-

An example project from Brabant:

### **“The Creative Pyramid”**

The creative pyramid is a brainstorm formula which bundles the inspiration, knowledge, creativity and ideas of large groups of people. The design of a creative pyramid is simple: eleven people form a team in which they will brainstorm about a topic. Such a team consists out of people who have something in common: an interests, goal or a similar background. 1.331 specialists from 11 sectors, with all possible disciplinary backgrounds bundle their ideas to be able to contribute to a better society.

Brabant Brein, 2013  
Creatieve Piramide, 2013



Figure 47. The Creative Pyramid (source: Creatievepiramide.nl)

#### *Why this example?*

The approach of the Creative Pyramid highlights the need to make use of the disciplinary backgrounds of individuals. Such a bottom-up approach, might help to set out a new direction for our cultural landscape. Landscape services could here be used as a tool to bundle ideas and to ensure that numerous benefits from cultural landscapes will be considered during brainstorm sessions.

up approach in which local initiatives determine the configuration, instead of the owner of the estate who decides what configuration is best for the local society. Landscape services could here be used as a form of guiding local initiatives or as a method during brainstorm sessions. This research has shown that landscape services could be used as such a method, which matches the supply of an estate with the demand from the local society. This should therefore be regarded as a planning approach that could benefit to an enhanced cultural landscape, matching the services provisioning on the estates with the demands from civil society. Such a planning approach is therefore a social process, telling estate owners (but also scientists and policy developers) what issues and opportunities are important to consider on the estate. This research can therefore be seen as one further step towards an approach that could trigger society to engage in the planning, conservation and management of the cultural landscape.

### **9.3. Hints for future research and the scientific contribution**

This research has given the impression that there is still a lot to be gained with landscape services as a source of stimulus of cultural landscapes in the Netherlands. The amount of data however does not provide a sound basis to draw general conclusions from. It is therefore necessary to further investigate the potential of landscape services. It is also necessary to broaden the investigation of landscape services to for example companies around estates and visitors (such as tourists) of estates, as this research focused only on the inhabitants living around estates. This research also had a strong focus on estates, yet the applied methodology could also be extended to other landscape types. The methodology can provide a basis for a comprehensive approach towards opportunities for the planning, conservation and management of cultural landscapes. It could provide a basis for a multi-sectorial approach, instead of the often ecologically taken approach to services that are found in the landscape. The broadening of these perspectives could be very useful for finding innovative solutions for our landscape. What this research has also shown, is that estates deserve a much greater role in the ongoing scientific debate around landscape services. At this moment estates are either not mentioned specifically, or are still generalized under the information functions or cultural & amenity services. This research has however revealed that estates provide a variety of services, including controlling services such as water management and gas regulation, but also material and non-material services such as food, livestock, aesthetics and leisure. They even provide services for living space of humans and for biodiversity. This research therefore shows that services from cultural landscapes, go way beyond those of the non-material category. Perhaps estates should therefore be regarded as specific landscape services and not be generalized under the already existing service categories. This notion is especially relevant to researchers who focus on the practical application of the services methodology. The Ecosystem Services Partnership (ES-Partnership), regularly publish papers concerning this topic. The recommendations in this report could therefore be especially relevant to their work, even though the ES-Partnership generally focus on the economic values of ecosystems.

#### 9.4. Some personal recommendations

- Reinsure that our cultural heritage and in specific our cultural landscape, will not be damaged because of the fact that we are currently in an (temporary) economic crisis. According to me, there is an increasing risk that governments are going to allow major function adaptations on estates. This is already visible in some reports, such as the “Structuurvisie 2023” of the municipality of Bloemendaal, where housing projects are seriously considered on estates. Yes, financial worries will force the heritage sector out of its conservative ideals, which is according to me a good and healthy development. However, cultural heritage is something we need to safeguard in order to ensure that future generations will also be able to benefit from services that are generated by heritage. Decisions which include extreme forms of exploitation of estates and the monuments on them, should therefore be taken with extreme caution.
- Taking the previous recommendation into consideration, has to be said that in the contemporary society, isolated estates are not going to survive. Hence, the heritage sector, and especially estate owners will have to change the attitude towards the dynamic politic, economic and societal movements. Strong passion and commitment is required to reach a balance between conservation and development.
- Broaden work approaches: this research has shown that every individual has a different background which leads to different ideas. In order to promote innovations, interdisciplinarity should be utilized up to its maximum.
- Investigate what visitors of estates want, this thesis focused on inhabitants living around estates. A visitor investigation could bring other opportunities to light.
- Investigate if estates could provide services to surrounding companies. If financial support cannot be realized with the help of the surrounding inhabitants, the surrounding companies could become a source of support. The method which has been applied in this research could be used as inspiration to investigate what kind of services estates could provide to companies. Perhaps an estate, such as Warnsborn, could be used for place branding in which surrounding companies could have a leading role. Warnsborn is surrounded by a Zoo, a variety of large museums and major business districts; opportunities could potentially be found on Warnsborns doorstep.
- Maintenance of estates should not only focus on the gardens around the main buildings. This research has revealed that especially the variation between the landscape types is appreciated by inhabitants. With a decreasing budget for maintenance, the focus is more frequently laid on the gardens around the main

building which has its consequences for the surrounding landscape of the estate. Focusing on gardens could become an issue for the amount of landscape services that are found on estates.

- Bundle forces: a multi-faceted umbrella programme is required in which scientists, governments, inhabitants and estate owners bundle their ideas and set out a direction for the near future.
- Exchange knowledge: look at our neighbors. Frequently the world seems to end when borders appear on a map. This can be seen locally, for example municipalities stop planning as soon as estates are private property, but especially international planning is something that seems so far to be unmanageable. Perhaps an international programme should be initiated in order to further challenge this sector and introduce real structural changes.
- Develop simple guidelines, explaining what features in the landscape offer services. At this moment it remains vague what landscape features offer services. This forms an obstacle for on the ground implementation. If landscape services are ever going to help estates to reform, the landscape services methodology will have to be taken out of its scientific context and altered into simple on the ground practices which are clear to estate owners. This research did not go into such a level of detail in order to determine clearly which type landscape elements provide services to society, hence further investigation is required to ensure that these can be communicated to estate owners.

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## **Appendix A – Example of used questionnaire**

Aan de bewoner(s) van dit pand,

Geachte heer/mevrouw,

Ik studeer Ruimtelijke Planning aan Wageningen Universiteit en voor mijn afstudeer onderzoek ben ik erg benieuwd naar uw mening over het landgoed Sandwijck. Het invullen van de enquête kost slechts enkele minuten van uw tijd en u zou mij er heel erg mee helpen.

Er wordt uiteraard zorgvuldig omgegaan met uw privacy. Uw adres zal niet gepubliceerd worden of op een andere manier openbaar gemaakt worden. De ingevulde enquête zal alleen gebruikt worden voor mijn eigen afstudeer onderzoek en zal dus verder niet aan derden verschaft worden.

U kunt deze enquête met de bijgevoegde antwoortenvelop gratis naar mij terug sturen.

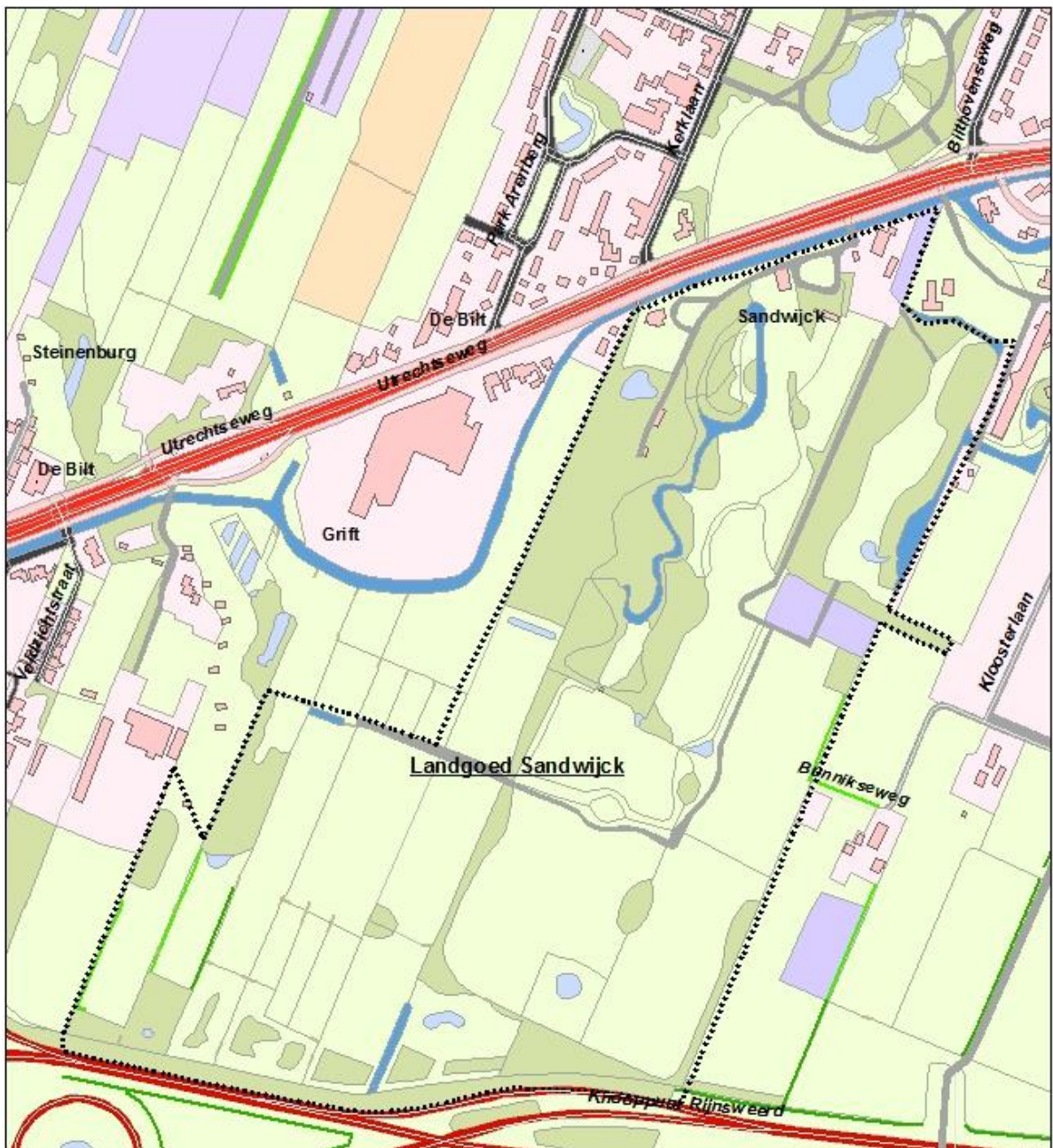
Bedankt voor uw tijd.

Met vriendelijke groet,  
Erwin Luesink

## Enquête Landgoed Sandwijk

- 1) Kunt u aanvinken wat voor u van toepassing is?
  - ☐ Man
  - ☐ Vrouw
- 2) Wat is uw leeftijd?  
..... jaar
- 3) Hoe is het gezin of de huishouding waarvan u deel uitmaakt samengesteld?
  - ☐ Eenpersoonshuishouden
  - ☐ Huishouden van twee personen zonder kinderen
  - ☐ Huishouden met een of meer kinderen van 10 jaar en jonger
  - ☐ Huishouden met een of meer kinderen ouder dan 10 jaar
  - ☐ Huishouden met zowel kinderen van 10 jaar en jonger, als kinderen ouder dan 10 jaar
- 4) Wat is de hoogste opleiding die u heeft afgerond?
  - ☐ MAVO
  - ☐ HAVO
  - ☐ VWO
  - ☐ VMBO
  - ☐ MBO
  - ☐ HBO
  - ☐ WO
  - ☐ Anders, namelijk: .....
- 5) In welke sector bent u hoofdzakelijk actief?
  - ☐ Banken en verzekeraars
  - ☐ Commerciële en zakelijke instellingen (bijv. winkels, horeca, groothandels, advisering)
  - ☐ IT, Informatie en communicatie
  - ☐ Kunst en cultuur
  - ☐ Onderwijs en wetenschap
  - ☐ Overheid
  - ☐ Zorg en welzijn
  - ☐ Transport, vervoer, opslag
  - ☐ Bouw
  - ☐ Industrie
  - ☐ Landbouw, veeteelt, jacht en visserij
  - ☐ Huishouden
  - ☐ Gepensioneerd
  - ☐ Ik heb geen baan
  - ☐ Anders, namelijk: .....
- 6) Bent u bekend met het Landgoed Sandwijk? (bekijk vraag 9 voor een kaart van het gebied)
  - ☐ Ja, ik bezoek dit gebied regelmatig (wekelijks – 2 tot 3 keer per maand)
  - ☐ Ja, ik kom af en toe in dit gebied (eens per maand tot eens in het half jaar)
  - ☐ Ja, ik ken het gebied maar kom er nooit, vanwege  
.....  
.....
  - ☐ Nee (u hoeft de enquête niet verder in te vullen, maar wilt u deze toch naar mij terug sturen?)

- 7) Als u naar het landgoed Sandwijck gaat, hoe komt u hier dan?
- Auto
  - Motorfiets / Scooter
  - Fiets
  - Met het openbaar vervoer
  - Te voet
- 8) Als u naar het landgoed Sandwijck gaat, hoe lang blijft u hier dan meestal?
- Minder dan 15 minuten
  - Tussen 15 en 30 minuten
  - Tussen 30 en 60 minuten
  - 1 tot 2 uur
  - Meer dan twee uur
- 9) Op onderstaande kaart is het landgoed Sandwijck omstippeld. Kunt u omcirkelen of met een route aangeven in welk deel van het gebied u het meest komt?



10) Waarom gaat u hier het meest naartoe?

.....  
.....  
.....

11) Kunt u hieronder omcirkelen welke voordelen u ervaart aan het landgoed Sandwijck? (Meerdere antwoorden mogelijk en u mag ook zelf iets anders invullen bij nr. 19)

- 1) Schone lucht
- 2) Koelte tijdens zomers
- 3) Opvangen en vasthouden van regenwater
- 4) Bestuiving van gewassen en planten door insecten
- 5) Natuurlijke bestrijding van plagen, ziekten en onkruiden
- 6) Variatie in plant- en diersoorten (biodiversiteit)
- 7) Jachtbeheer (ter bestrijding van overlast, als sport, of als natuurbeheersmaatregel)
- 8) Productie van voedsel (land- en tuinbouw, moestuin)
- 9) Houden van dieren (veehouderij)
- 10) Verzamelen van eten uit de natuur (zoals paddenstoelen, kruiden, bessen en noten)
- 11) Kopen van streekproducten afkomstig van het landgoed
- 12) Water (bijvoorbeeld uw eigen waterbron, of gebruik van oppervlaktewater voor besproeiing)
- 13) Verzamelen van materialen (bijvoorbeeld hout als bouw- en brandstof en/of voor kunst)
- 14) Ervaren van schoonheid, vergezichten en rust
- 15) Recreatie en toerisme (wandelen, fietsen, sporten, fotografie, kunst)
- 16) Geloof en spiritualiteit
- 17) Herkenning van oude tradities / geschiedenis en de culturele waarde
- 18) Onderzoek, educatie, studie
- 19) Anders, namelijk:

.....  
.....  
.....

- 12) Kunt u het gebied aangeven waar de aangevinkte voordelen uit vraag 11 te vinden zijn? (u kunt de bovenstaande nummers op de kaart schrijven en met bijvoorbeeld een cirkel aangeven in welk gebied u deze voordelen ervaart)
- 13) Kunt u in het kort omschrijven wat er volgens u zo bijzonder aan het gebied is (of meerdere



gebieden), welke u op de kaart bij vraag 12 aangegeven heeft?

.....

.....

.....

.....

.....

.....

.....

.....

14) Als u het landgoed Sandwijck bezoekt, van welke paden maakt u dan gebruik?

- ☐ Grindpaden
- ☐ Zand- en gras paden (de onverharde paden)
- ☐ Geen voorkeur, ik maak van alle paden gebruik

15) Wat voor cijfer van 0 tot 10 zou u het landgoed Sandwijck geven? (0 = slecht 10= perfect)

0            1            2            3            4            5            6            7            8            9            10

16) Hieronder staan drie soorten landschappen die te vinden zijn op het landgoed Sandwijck. Kunt u deze met de cijfers 1-3 op de volgorde zetten van uw voorkeur? (1 = uw favoriete landschap)

.....	Bos
.....	Het aangelegde park, de gazons en de vijvers rondom het landhuis
.....	Weilanden en akkers

17) Op welk van de volgende punten zou het landgoed Sandwijck volgens u nog kunnen verbeteren? Kruis alleen de verbeterpunten aan die u dringend gewenst vindt (meerdere antwoorden mogelijk)

- ☐ Meer onverharde wandelpaden (zand/gras)
- ☐ Meer grind wandelpaden
- ☐ Meer verharde wandelpaden (asfalt)
- ☐ Meer fietspaden
- ☐ Meer parkeerplaatsen voor auto's
- ☐ Beter te bereiken met het openbaar vervoer
- ☐ Meer horeca voorzieningen
- ☐ Meer voorzieningen voor mindervaliden
- ☐ Meer voorzieningen zoals wandelroutes en informatieborden
- ☐ Anders, namelijk

.....

18) In deze omgeving zijn tal van mogelijkheden om de natuur in te gaan. Kunt u in het kort toelichten waarom u wel/niet het landgoed Sandwijck uitkiest?

- ☐ *Ik kies **voor** Sandwijck,*  
*omdat*.....  
.....  
.....  
.....  
.....
- ☐ *Ik kies **niet voor** Sandwijck,*  
*omdat*.....  
.....  
.....  
.....  
.....

19) Vrijwilligers zijn erg belangrijk voor het beheer van het landgoed Sandwijck. Zou u interesse hebben in vrijwilligerswerk op dit landgoed? (u wordt niet benaderd, u moet daarvoor zelf actie ondernemen)

- ☐ Ja
- ☐ Nee

- 20) Door bezuinigingen van de overheid is het budget voor de instandhouding van natuur en landschap ver achteruit gegaan. Hieronder ziet u een aantal stellingen over Sandwijck. In hoeverre bent u het eens met deze stellingen?

	Oneens	Beetje eens	Eens	Geen mening
Bekostiging van Sandwijck is een kwestie van de overheid en de eigenaar van het landgoed				
Als bedrijven voordelen behalen dankzij Sandwijck, dan moeten ze er ook voor betalen				
Ik ben bereid een kleine toegangsprijs te betalen voor een bezoek aan Sandwijck				
Omwonenden van het landgoed Sandwijck zouden best wat mogen betalen voor de bescherming van Sandwijck				

- 21) Heeft u misschien nog opmerkingen en/of suggesties?

.....

.....

.....

.....

.....

Hartelijk dank voor het invullen van deze enquête.

Met vriendelijke groet,  
Erwin Luesink